



*City of Red Lodge Water
2020 Preliminary Engineering Report*

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1.0 EXECUTIVE SUMMARY

1.1 Introduction and Background

The City of Red Lodge is located in the south-central region of Montana and is the county seat of Carbon County. The City of Red Lodge has been very proactive in replacing infrastructure in the last several decades. The City's last planning document for the water system was the preliminary engineering report for the City of Red Lodge which was completed in 1994. This PER referenced the 1976 water master plan. The work in the PER mainly consisted of water main replacements, the majority of which, have been completed.

In order to re-evaluate and prioritize needed improvements, the City retained Great West Engineering to complete a comprehensive Preliminary Engineering Report (PER) of its water system. This PER follows the interagency Uniform Preliminary Engineering Report Outline and meets all associated requirements. As part of the PER, a thorough analysis of the water system was conducted. Alternatives considered improvements that may be needed and provided recommendations for those improvements. The PER also helps to prioritize the recommended improvements as well as provides a funding strategy for those improvements.

1.2 Problem Definition

The PER provides a thorough description of Red Lodge's water system and a detailed analysis of the performance and condition of the water system infrastructure. The system deficiencies identified in the report include the following:

- Poor fire flows due to undersized, aging mains
- Poor fire flows due to dead end mains
- Health and safety concerns due to dead end mains
- High pressure zone
- Poor fire flows at the booster station due to low pressure in transmission main
- Main breaks and freezes due to inadequate water main cover
- 47% water loss due to leaking cast iron mains.

1.3 Alternatives Considered

The alternative screening process considered numerous alternatives to address the deficiencies in Red Lodge. After an initial evaluation, it was determined that some of the alternatives were not viable and were eliminated from further review. Alternatives that were determined viable and therefore, discussed in greater detail include the following:

Pumping Station Alternatives:

- Alt. P-1 No Action
- Alt. P-4 Bypass Booster Station
- Alt. P-5 Move Booster Station

Distribution System Alternatives:

- Alt. D-2: Park Avenue
- Alt. D-3: Pressure Relief Valve Zone 5 and Replace PRV 1
- Alt. D-4: Replace Cast Iron Mains
- Alt. D-5: Kainu Avenue

1.4 Preferred Alternative

Each of the alternatives presented above were analyzed in detail. A decision matrix was developed to compare the pumping alternatives to select a proposed pumping alternate. The decision matrix was also used to generate a water system capital improvement plan to complete all of the recommended distribution projects, D-2, D-3, D-4 and D-5.. The decision matrix included 20 year life cycle costs, operation and maintenance (non-monetary), permitting, social impacts, environmental impacts, sustainability considerations, public health and safety, and land acquisition issues.

Based upon the results of the matrix, public comment, and feedback from the City of Red Lodge, the recommended alternative is:

- Alt. D-4 Priority 1- Replace Cast Iron Mains in Grant Avenue and Hauser Avenue

Alternative D-4 Priority 1. This includes construction of 750 feet of PVC water main to replace deteriorating 4" cast iron mains in two blocks of Grant Avenue from 20th Street to 22nd Street.

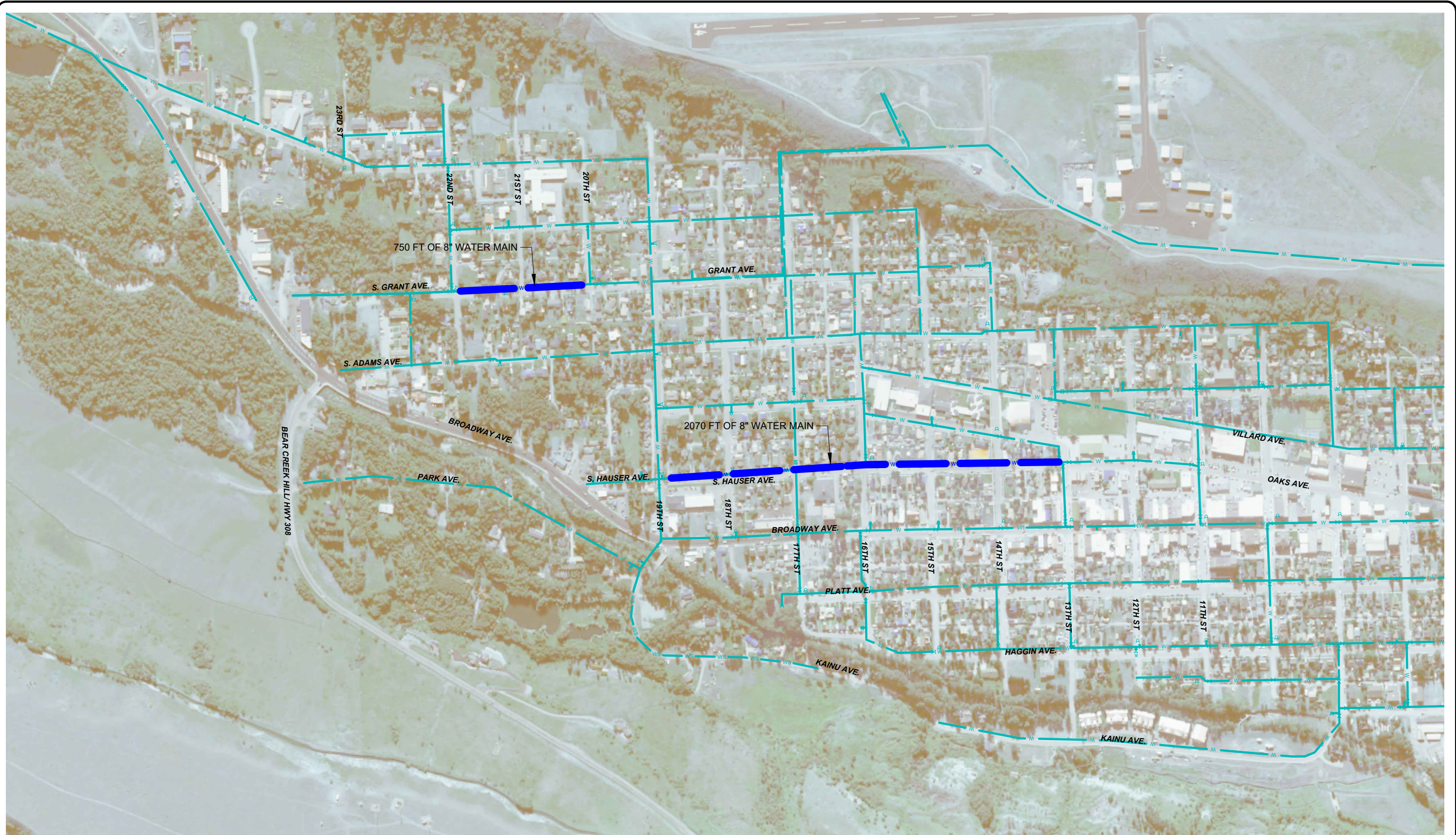


Figure 1:1
Map of Preferred Alternative
Alt. D-4 Priority 1

City of Red Lodge, Montana
2019 Water Preliminary Engineering Report



The Hauser portion of the project includes construction of 2070 ft of 8" PVC water main in Hauser Avenue which will replace 4" cast iron mains in three blocks from 19th Street to 16th Street, and 6" cast iron mains in three blocks from 16th Street to 13th Street.

1.5 Future Projects

The project costs to complete all needed water system upgrades were substantial, and not feasible to complete all of the needed alternatives as part of a single project. The City of Red Lodge used the prioritized improvements to develop a phased approach to allow smaller projects to be completed as funding allows. The future project planning is outlined in the table below:

Table 1-1 Future Project Priority List

| City of Red Lodge Water System Project Priority Table | | |
|---|----------------------------|--|
| Priority | Alternative | Description |
| 1 | Alternative D-4 Priority 1 | Replace cast iron mains in two blocks of Grant Avenue from 20th Street to 22nd Street, and replace cast iron mains in six blocks of Hauser Avenue from 13th Street to 19th Street. |
| 2 | Alternative D-2 | Replace Asbestos Cement Main in Park Avenue, and eliminate four dead end mains. |
| 3 | Alternative D-4 Priority 2 | Replace all remaining 4" Cast Iron Mains |
| 4 | Alternative D-4 Priority 3 | Replace all remaining 6" Cast Iron Mains |
| 5 | Alternative P-4 | Bypass Booster Station |
| 6 | Alternative D-3 | Replace PRV system in White Avenue, and install new PRV system for zone 5. |
| 7 | Alternative D-5 | Construct new water main in Kainu Avenue to eliminate two dead ends. |

1.6 Project Costs and Budget

The following section summarizes project costs, budget, and implementation schedule of the proposed phase 1 Project- Alternative D-4 Priority 1.

Figure 1.1 shows a map and details of the proposed phased improvements.

The total estimated cost for Phase 1 improvements is \$1,372,000, which is detailed in Table 1.2.

Table 1-2 Cost Estimate for Phase 1

| Grant Avenue | | | | |
|--|------|---------------|------------------------|--------------------|
| Item | Unit | Quantity | Unit Cost ¹ | Total |
| Connect to Existing Main | EA | 3 | \$4,500 | \$13,500 |
| 8" PVC Water Main | LF | 750 | \$70 | \$52,500 |
| 8"x8"x8" Tee | EA | 1 | \$2,000 | \$2,000 |
| 8" Gate Valve with Valve Box | EA | 3 | \$2,000 | \$6,000 |
| Fire Hydrant Assembly with Gate Valve | EA | 1 | \$5,800 | \$5,800 |
| 8"x6" Reducer | EA | 1 | \$600 | \$600 |
| 8"x8"x6" Tee | EA | 1 | \$1,500 | \$1,500 |
| Remove Fire Hydrant Assembly | EA | 1 | \$1,000 | \$1,000 |
| 1" Poly Service with insulation | LF | 620 | \$50 | \$31,000 |
| 1" Curb Stop Assembly | EA | 13 | \$600 | \$7,800 |
| 1" Corporation Stop Assembly | EA | 13 | \$525 | \$6,825 |
| Type A Surface Restoration (Asphalt) | LF | 340 | \$60 | \$20,400 |
| Type B Surface Restoration (Aggregate) | LF | 1,020 | \$25 | \$25,500 |
| Underground Utility Crossing | EA | 6 | \$500 | \$3,000 |
| Subtotal: Grant Avenue 2019 Direct Construction Cost | | | | \$178,000 |
| | | | | |
| Hauser Avenue | | | | |
| Connect to Existing Main | EA | 6 | \$4,500 | \$27,000 |
| Abandon Water Main | EA | 2 | \$4,500 | \$9,000 |
| 8" PVC Water Main | LF | 2070 | \$70 | \$144,900 |
| 8" Cross | EA | 1 | \$2,200 | \$2,200 |
| 8"x8"x8" Tee | EA | 1 | \$2,000 | \$2,000 |
| 8" Gate Valve with Valve Box | EA | 6 | \$2,000 | \$12,000 |
| Fire Hydrant Assembly with Gate Valve | EA | 6 | \$5,800 | \$34,800 |
| 8"x8"x6" Tee | EA | 6 | \$1,500 | \$9,000 |
| Remove Fire Hydrant Assembly | EA | 2 | \$1,000 | \$2,000 |
| 1" Poly Service with insulation | LF | 1860 | \$50 | \$93,000 |
| 1" Curb Stop Assembly | EA | 62 | \$600 | \$37,200 |
| 1" Corporation Stop Assembly | EA | 62 | \$525 | \$32,550 |
| Type A Surface Restoration (Asphalt) | LF | 3600 | \$60 | \$216,000 |
| Under Ground Utility Crossing | EA | 25 | \$500 | \$12,500 |
| Flowable Fill | CY | 10 | \$170 | \$1,700 |
| Subtotal: Hauser Avenue 2019 Direct Construction Cost | | | | \$636,000 |
| Grant Avenue and Hauser Avenue 2019 Direct Construction Cost | | | | \$814,000 |
| Mobilization, Bonding, Etc. | | 10.0% | | \$82,000 |
| Traffic Control | | 3.0% | | \$25,000 |
| Total: 2019 Construction Cost | | | | \$921,000 |
| 2022 Construction Cost ² | | 3.0% annually | | \$1,006,000 |
| Contingency | | 10.0% | | \$101,000 |
| Total: 2022 Construction Cost | | | | \$1,107,000 |
| Geotechnical Investigation | | | | \$20,000 |
| Engineering | | 20.0% | | \$222,000 |
| Legal and Administrative | | 2.0% | | \$23,000 |
| Total: D-4 Priority # 1 2022 Capital Cost | | | | \$1,372,000 |
| ¹ Estimated unit costs are based upon estimates from suppliers and bid tabs for similar projects throughout Montana. | | | | |
| ² The ENR 20 year average Construction Cost Index is +2.94% (as of December 2018). Capital improvement costs are projected to 2020 using 3.0% factor. | | | | |

The City may decide to complete the project in smaller portions with the City's Cash reserves as those funds become available. However, funding sources for the improvements are available to the City and were considered in Chapter 8. The funding options include a variety of grant and low interest sources available to the City. Two options have been identified as potential funding sources for the City. The City's preferred funding package and anticipated to be most successful for the Water System Improvements includes the following:

- RD 25% Grant/ 75% Loan
- SRF Loan with potential maximum \$500,000 loan forgiveness.

These funding strategies are presented in Table 1.3. If the City elects to move forward with applying for funding, a detailed project budget and schedule will be generated for the grant application.

Table 1-3 Funding Scenarios

| ITEM | SCENARIO #1 | SCENARIO #2 |
|--|---|--|
| | RD (1.875% for 40 years*, 25% RD Grant) | DNRC, TSEP and SRF (2.5% for 20 years*, SRF Forgiveness) |
| Proposed Improvements | | |
| Distribution Alt D4 Priority 1 Grant Avenue and Hauser Avenue | \$1,372,000 | \$1,372,000 |
| | | |
| Rounded Total | \$1,372,000 | \$1,372,000 |
| DNRC Grant | \$0 | \$0 |
| TSEP Grant | \$0 | \$0 |
| CDBG Grant | | |
| RD Grant | \$343,000 | |
| City Reserves | \$74,300 | \$74,300 |
| SRF Principal Forgiveness/Local Contribution | \$0 | \$500,000 |
| SRF Loan | | \$797,700 |
| RD Loan | \$954,700 | |
| Total Project Funds | \$1,372,000 | \$1,372,000 |
| SRF Bond Reserve (1/2 year payment) | \$0 | \$25,606 |
| Interim Interest | \$34,000 | \$0 |
| Total Loan Amount | \$988,700 | \$823,306 |
| Annual Loan Payment | \$34,220 | \$52,860 |
| Total Loan Payments Over Life of Loan | \$1,368,800 | \$1,057,200 |
| Total Interest Paid Over Life of Loan | \$380,100 | \$233,894 |
| Annual Loan Coverage | \$3,422 | \$5,286 |
| TOTAL ANNUAL CAPITAL DEBT SERVICE COST | \$37,642 | \$58,146 |
| User Capital Cost/Month | \$1.80 | \$2.78 |
| Current Annual O&M ¹ | \$590,000 | \$590,000 |
| Current Annual Debt Service (RD loan) | \$495,357 | \$495,357 |
| Annual Credi from Resort Tax | -\$100,000 | -\$100,000 |
| Additional O&M Due To Project | -\$3,900 | -\$3,900 |
| TOTAL ANNUAL O&M COSTS | \$981,457 | \$981,457 |
| User O&M Cost/Month | \$47.00 | \$47.00 |
| USER COST/MONTH WITH PROJECT² | \$48.81 | \$49.79 |
| Existing Average User Cost/Month/EDU | \$47.60 | \$47.60 |
| COST/MONTH INCREASE/EDU³ | \$1.21 | \$2.19 |
| Existing Other System Cost/Month | \$50.27 | \$50.27 |
| Total Proposed Water & Sewer Cost/Month | \$97.87 | \$100.06 |
| Combined Systems Target Rate | \$81.46 | \$81.46 |
| PERCENT OF COMBINED TARGET RATE | 120.1% | 122.8% |
| ¹ Based on 2019 expenses presented in the Expenditure Budget Report. | | |
| ² Based on 1740 EDUs | | |
| ³ If user cost/month for the project - existing avearge user cost/month is < or = to \$0, then required increase is \$0 | | |

2.0 PROJECT PLANNING

The City of Red Lodge was officially established in 1884 but was an area that served the Crow Indians long before the arrival of permanent settlers. The areas' first mine was opened in 1887 by the Rocky Fork Coal Company and served as the backbone of the community until the mid-20th century. In 1943, an underground explosion killing 74 men at the Smith Mine in Bear Creek devastated the community and effectively ended coal mining. Tourism, recreation, and ranching soon replaced mining and continues to be the primary economy for the city.

Over the past 30 years, the local economy has gone through a transition from the dependence on agriculture and mining to more service-oriented, recreation-based businesses with an emphasis on tourism. The City has a 3% Resort Tax that is collected from lodging, retail, bars and restaurants. There are numerous areas available for backpacking, fishing, hiking, hunting, ATV riding, snowmobiling, skiing and other related activities.

Red Lodge is the forty-sixth largest city in Montana and lies 60 miles south of the state's largest city, Billings. Red Lodge is an incorporated city in Carbon County. The business district of Red Lodge includes a variety of services and restaurants for residents and visitors of the area. Carbon County consists of 2,049 square miles of land. The population density is 4.9 persons per square mile compared with 6.8 persons per square mile for the entire State of Montana.

2.1 Location

The City of Red Lodge is located in southcentral Montana in the south-central region of Carbon County, and according to the 2015 Census information, has a population of 2,236. Carbon County is bordered on the north by Yellowstone County and Stillwater County, on the east by Big Horn County, on the south by Park County, Wyoming and on the west by Park County, Montana. Red Lodge is located about 60 miles south of the City of Billings along Montana Highway 212 at the foothills of the Beartooth Mountains. Red Lodge is considered the gateway to Yellowstone National Park via the Beartooth Highway.

Geographically, Red Lodge is located in one of the great landscapes of Montana. The Beartooth Mountains are immediately to the west of town; the Pryor Mountains to the east, and the valley to the north opens up to the Yellowstone River. Rock Creek flows through town providing fishing

opportunities, and the Red Lodge Mountain Ski Area is just minutes from downtown and provides a major winter attraction.

The water system's service area is also the City's Corporation limits as shown on Figure 2.1.

2.2 Environmental Resources Present

As part of any potential construction project, the impacts of the project on the surrounding environment should be considered and provisions made to mitigate any negative impacts. The Uniform Application streamlines the process by utilizing a standard procedure called the Uniform Environmental Checklist. The Uniform Environmental Checklist combined with some additional environmental review questions will serve as an Environmental Assessment (EA) for this project. An EA must be completed in order to comply with the Montana Environmental Policy Act (MEPA). A completed EA for the proposed water system improvements in Red Lodge is included in Appendix A.

As part of quantifying the impacts to various environmental resources, the EA process includes sending letters to interested local, state, and federal agencies requesting comments on any potential environmental impacts as a result of potential improvements. A copy of the letters along with responses are included in Appendix A. The following is a list of agencies that were contacted:

- U.S. Army Corps of Engineers
- U.S. Fish and Wildlife Service
- USDA Natural Resource and Conservation Service
- U.S. Environmental Protection Agency
- U.S. Forest Service
- U.S. Department of Transportation
- Bureau of Land Management
- Bureau of Indian Affairs
- Occupational Safety and Health Administration
- Federal Aviation Administration
- National Park Service
- Montana Department of Commerce, Census and Economic Information Center
- Montana Department of Labor and Industry
- Montana Department of Natural Resources and Conservation
- Montana Department of Environmental Quality
- Montana Department of Transportation
- Montana Nature Resource Conservation
- Montana Department of Fish, Wildlife and Parks
- Montana State Historic Preservation Office
- Montana Natural Heritage Program (via Website Database)
- Carbon County Floodplain Administration

J:\2-17103 - Red Lodge On-Call 2017\TO 14 - Water PER\CADD 2-17103-14\Sheets\FIGURE 2.1 SERVICE AREA MAP.dwg

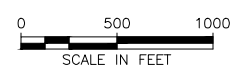
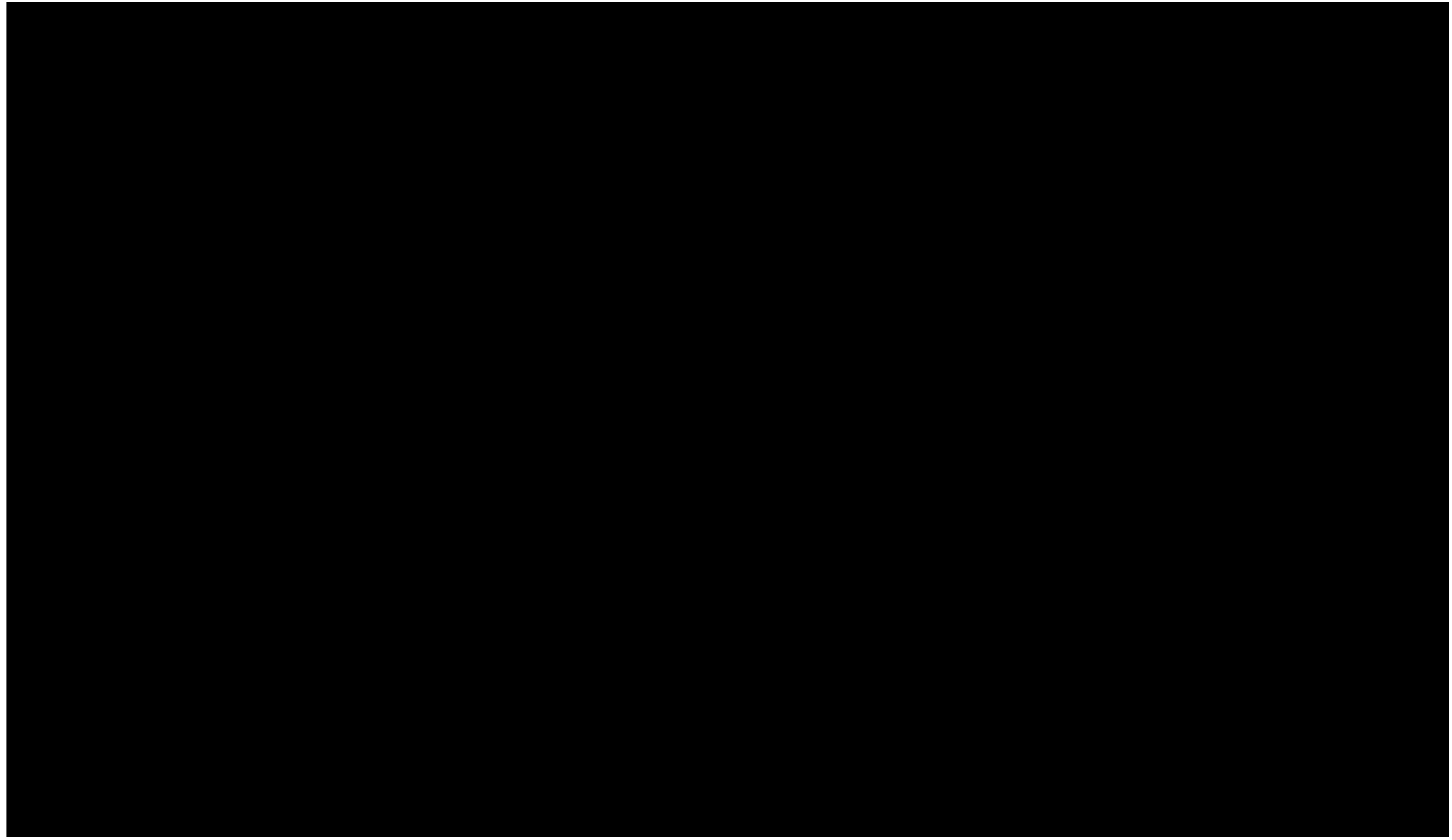


FIGURE 2:1
CITY OF RED LODGE SERVICE
AREA MAP

City of Red Lodge, Montana
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2.2.1 Land Resources

The following are excerpts from the *2015 Red Lodge Growth Policy*:

Strategies for Implementing the Future Land Use Goals –

- *The following regulatory documents should be revised to reflect current laws and goals of this and other referenced documents.*
 - *Subdivision regulations*
 - *Zoning regulations*
 - *Red Lodge Floodplain regulations*
 - *Other City Codes and policies*
- *Infill development should be encouraged as it has proven to be economically and environmentally beneficial. Infill development must be compatible with neighboring uses...*
- *City policy shall discourage sprawling fringe developments*
- *Development site plans shall be evaluated using performance standards that reflect community expectations*
- *The capital facilities planning process shall accommodate the anticipated growth of Red Lodge and the surrounding area.*
- *The City shall actively participate in any process to revise the Carbon County Growth Policy*
- *The Red Lodge Zoning Regulations should address the “perpetual care and maintenance” of landscaping...*
- *The City shall continue to evaluate what protects the night sky within all neighborhoods of Red Lodge*

Municipal Water Distribution System:

The water treatment plant is located southwest of the City. The water treatment plant has adequate capacity to treat the projected demand of 4,140 users by 2026. The water that is delivered to the City is supplied by three wells and is treated with chlorine before it is delivered to two storage reservoirs.

The City should set and adjust user rate fees for the City water system that accurately reflect the costs associated with the collection, treatment and distribution of water to end

users. The rates should also include capital reserves for unanticipated expenses as well as capital for planned upgrades to the water treatment and distribution system. Further, the City water system service area should not be expanded to serve areas that are not annexed to or currently within the City Limits of Red Lodge.

Farmland classification, as defined by the NRCS, identifies soils as prime farmland, farmland of statewide importance, farmland of local importance or unique farmland. It identifies the location and extent of the soils that are best suited to food, feed, fiber, forage and oilseed crops. The majority of the soils within the map area of interest are classified as “prime farmland if irrigated” and “Farmland of statewide importance”. There are also areas within the AOI that are classified as “Not prime farmland”, though these are less prominent than the other two categories. The current land use of the project area will not be affected by the proposed water system upgrades. Because any construction that occurs during this project will be in previously disturbed areas and outside of farming activities, no prime farmland will be disturbed. See Appendix B for a map and table showing the farmland classification of the area soils.

2.2.2 Geology

Located at the foot of the Beartooth mountains, Red Lodge is built upon alluvial terraces along the alluvium channel of Rock Creek. The mountains south and west of town primarily consist of gneissic rock. Geologically, Carbon County contains a wide variety of rocks ranging in age from Precambrian (600 million years) to recent (20,000 years). Bedrock in the area is Precambrian consisting predominantly of granitic gneiss and migmatite.

The elevation of the city is approximately 5,568 feet above sea level. The western portion of town is located on top of a bench that gently slopes to the north. The main portion of town is located on a lower bench and is generally flat and slopes less than 5 percent. The ground surface drains toward the east and north, toward Rock Creek that runs through the eastern portion of the town.

2.2.3 Soil

The NRCS Web Soil Survey was used to generate a map showing the soils in the area around the City of Red Lodge (see Appendix B). The soils found in Red Lodge are primarily composed of gravels, sands, loams, silt, and clays. The predominant soil types identified within the city limits are listed below:

- *Charlos loam, 0 to 2 percent slopes*
- *Charlos loam, 2 to 8 percent slopes*
- *Alluvial land*

Information was obtained describing physical and chemical properties for each soil type. The Natural Resources Conservation Service (NRCS), developed four hydrologic soils groups (A, B, C, and D) to categorize the runoff potential of soils. The NRCS Web Soil Survey provides the following descriptions of the four hydrologic soils groups:

- **Group A.** Soils having a high infiltration rate (low runoff potential) when thoroughly wet. These consist mainly of deep, well-drained to excessively drained sands or gravelly sands. These soils have a high rate of water transmission.
- **Group B.** Soils having a moderate infiltration rate when thoroughly wet. These consist chiefly of moderately deep or deep, moderately well-drained or well-drained soils that have moderately fine texture to moderately coarse texture. These soils have a moderate rate of water transmission.
- **Group C.** Soils having a slow infiltration rate when thoroughly wet. These consist chiefly of soils having a layer that impedes the downward movement of water or soils of moderately fine texture or fine texture. These soils have a slow rate of water transmission.
- **Group D.** Soils having a very slow infiltration rate (high runoff potential) when thoroughly wet. These consist chiefly of clays that have a high shrink-swell potential, soils that have a high-water table, soils that have a claypan or clay layer at or near the surface, and soils that are shallow over nearly impervious material. These soils have a very slow rate of water transmission.

A map illustrating the hydrologic soil group for soils in the Red Lodge area was generated using the NRCS Web Soil Survey, as well as a summary of each soil unit's rating. Both are included in Appendix B. The hydrologic soil groups of the soils in the Red Lodge vicinity are distributed as follows:

Table 2-1 Distribution of Hydrologic Soil Group

| Hydrologic Soils Group | Percent of Area |
|------------------------|-----------------|
| A | <1% |
| B | 83.5% |
| C | 5.6% |
| D | 10.8% |

Another important property of the soils that will affect the materials used in the water system is the propensity of the soils to corrode concrete and/or steel. Therefore, each of these properties was analyzed. According to the NRCS,

“ ‘Risk of corrosion’ [of concrete] pertains to potential soil-induced electrochemical or chemical action that corrodes or weakens concrete. The rate of corrosion of concrete is based mainly on the sulfate and sodium content, texture, moisture content, and acidity of the soil. Special site examination and design may be needed if the combination of factors results in a severe hazard of corrosion. The concrete in installations that intersect soil boundaries or soil layers is more susceptible to corrosion than the concrete in installations that are entirely within one kind of soil or within one soil layer.”

81% of the area of interest (AOI) was rated with a “moderate” risk of corrosion to concrete. The remainder of the AOI contains soils classified as a “low” risk of corrosion of concrete. A report listing the risk of corrosion to concrete is included in Appendix B.

The propensity to corrode steel for each of the soils was also evaluated. According to the NRCS,

“ ‘Risk of corrosion’ [of steel] pertains to potential soil-induced electrochemical or chemical action that corrodes or weakens uncoated steel. The rate of corrosion of uncoated steel is related to such factors as soil moisture, particle-size distribution, acidity, and electrical conductivity of the soil. Special site examination and design may be needed if the combination of factors results in a severe hazard of corrosion. The steel in installations that intersect soil boundaries or soil layers is more susceptible to corrosion than the steel in installations that are entirely within one kind of soil or within one soil layer.”

The majority of the AOI, 93.2%, had a rating of “high” for risk of corrosion. A report listing the risk of corrosion to steel is included in Appendix B.

2.2.4 Climate

The climate in Red Lodge has a humid continental climate per the Koppen climate classification system with annual precipitation rates currently estimated at 21.31 inches. Over 64 percent of the annual precipitation total occurs from March through August. Precipitation can vary significantly from year to year, and location to location within a given year. November through March are the dryer times of the year with average monthly precipitation of 1.15 inches or less. The temperature extremes can range from 10°F in the winter to 78°F in the summer, based on monthly averages. The average growing season (consecutive frost-free days) is 100 days. Prevailing winds are from the west at 5-10 mph and gusts up to 20-30 mph are not uncommon. Climate data is attached in Appendix A.

2.2.5 Biological Resources

The Montana Natural Heritage Program database was queried for information on biological resources. Fauna of the area consists of typical mammalian species found in the intermountain west, including mule deer, whitetail deer, antelope, coyote, rabbit, skunk, weasel, rodents and other species. Common bird species include the black-billed magpie, American robin, Canadian goose, osprey, blackbird, sparrow, warbler, common waterfowl, other raptors, game birds and other species. The nearby Rock Creek holds rainbow, brook trout and brown trout. Reptile and amphibian species prevalent include snakes, lizard, and frogs. In terms of vegetation, the area is typically populated with riparian species and grasses.

The Montana Natural Heritage Program maintains a website with up-to-date lists of Species of Concern across the State of Montana, including species listed as endangered or threatened by the United States Fish and Wildlife Service (USFWS). A review of this information was completed as part of this PER effort and is included in Appendix A. A Species of Concern is a species at risk or potentially at risk as a result of declining population trends, threats to their habitats, and/or restricted distribution. While no statutory or regulatory classification or enforcement is associated with this designation, it helps resource managers make proactive decisions regarding species conservation and data collection priorities.

In the vicinity of Red Lodge (Township 7S, Range 20E), the following species of concern were identified:

- Birds
 - Northern Goshawk
 - Great Blue Heron
 - Veery
 - Greater Sage Grouse
 - Brown Creeper
 - Peregrine Falcon
 - Cassin's Finch
 - Clark's Nutcracker
 - Long-billed Curlew
 - Green-tailed Towhee
 - Brewer's Sparrow

- Reptiles
 - Western Milksnake

- Fish
 - Yellowstone Cutthroat Trout

- Mammals
 - Wolverine
 - Hoary Bat
 - Canada Lynx
 - Grizzly Bear

- Flowering Plants
 - Beautiful Fleabane
 - Wood Lily

The U.S. Fish and Wildlife Service was contacted and provided the following statement:

"The U.S. Fish and Wildlife Service reviewed your letter and has no comments regarding federally listed or proposed threatened or endangered species or other trust species."

The area was also reviewed for Sage Grouse habitat. Based on a review of the Montana Sage Grouse Habitat Conservation Program Mapper (<https://sagegrouse.mt.gov/projects>), the proposed project area is associated with the city limits, the south half of the city is within the "Exempt Community Boundary" of the City of Red Lodge, and the north half of the city is classified as not mapped in an Executive Order (EO) Area for Sage Grouse Habitat. As such, Sage Grouse are not anticipated to be adversely affected by this work. Following the award of grant funds, and within 12 months of the proposed construction date, the City will consult with the MSGHCP regarding the work.

2.2.6 Water Resources

Water resources are identified to be both groundwater and surface water sources within the project planning area. Groundwater wells and surface water sources are identified by the Natural Resources Information System (NRIS) and the Ground Water Information Center (GWIC).

2.2.6.1 Ground Water

The City of Red Lodge currently obtains its municipal public water supply from groundwater sources. The City has three municipal wells. Two of the three wells (wells 2 and 3), located near the water treatment plant, are allocated a flow rate of 1200 gpm and an annual volume of 968 acre-feet under provisional permit 43D 300011 72. The other well, (Well 1) located in Grant Avenue between 19th Street and 18th Street, is allocated a flow rate of 902 gpm and an annual volume of 1450 acre-feet. From these wells the City has a maximum flow rate stipulated by these claims of 2102 gpm with a maximum annual use of 2352 acre-feet.

The City also has two wells for irrigation. The well in the north eastern portion of town is allocated for sprinkler irrigation of the City's sports complex. This well, under water right 43D 66358 00, is allocated a flow rate of 100 gpm and an annual volume of 97.11 acre feet. The other well is allocated a flow rate of 212 gpm and an annual volume of 26 acre feet under water right 43D 45738 00 for the purpose of irrigation of the cemetery. These wells are not part of the municipal supply system. Water rights documentation and well logs are attached in Appendix E.

2.2.6.2 Surface Water

The City of Red Lodge historically obtained their entire public water supply from surface water. The City's water treatment plant is located near the West Fork of Rock Creek where the City's water had previously been supplied through a diversion in the creek. The treatment plant is no longer in use as the West Fork of Rock Creek has moved away from the intake structure.

The City maintains surface water rights for municipal use through the following water rights; 43D 43377 00 with a flow rate of 2.5 cfs and an annual volume of 1272 acre-feet; 43D 43378 00 with a flow rate of 1.25 cfs and an annual volume of 903 acre-feet; and 43D 45737 00 with a flow rate of 1.6 cfs and an annual volume of 32 acre-feet.

From these water rights the City has a maximum flow rate of 5.35 cfs, and an annual maximum annual use of 2207 acre-feet. Water rights documentation is attached in Appendix E.

As part of the environmental review process, the U.S. Army Corp of Engineers (COE) was contacted and asked to comment on potential impacts to surface water in the project area. COE provided a response letter stating that *“DA permits are required for structures or work in, over, under, or affecting navigable waters of the U.S.”*

2.2.7 Floodplains

A review of the Federal Emergency Management Agency (FEMA) floodplain maps was completed in the proposed project area. The Flood Insurance Rate Maps (FIRM – 30009C0692D-2012, FIRM – 30009C0711D-2012, and FIRM 30009C0703D-2012) indicates that portions of the City of Red Lodge are within the 100-year floodplain of Rock Creek. As part of the proposed water project, construction activity may be within the 100-year floodplain and portions of the system adjacent to Rock Creek may be within the 500-year floodplain. A more detailed analysis of the project will be completed during the design phase to determine if a Joint Application Permit package is necessary for any of the proposed projects. The floodplain maps for the City of Red Lodge area are provided in Appendix B.

2.2.8 Wetlands

The National Wetlands Inventory maintained by the USFWS was queried for information on wetlands in the proposed construction areas. The Wetlands Mapper utility indicates that wetland areas are present along Rock Creek, but they all appear to be outside of the limits of the proposed water improvements and will not be impacted by the project. A wetland delineation will be performed to document any jurisdictional wetlands at the site vicinity during the design phase of the project to ensure wetlands are not impacted. Wetland maps are included in Appendix B.

2.2.9 Cultural Resources

As part of the environmental review process, the Montana State Historic Preservation Office (SHPO) was contacted and asked to comment on potential impacts to cultural resources in the project area. SHPO provided a response letter indicating that there are previously recorded sites in the Red Lodge area and that cultural resource inventories have been completed for other projects in the area. The letter further stated that *“As long as disturbance will be kept to existing disturbed roadways or ground, we feel that there is a low likelihood cultural properties will be impacted. We, therefore, feel that a recommendation for a cultural resource inventory is unwarranted at this time. However, should projects need to occur within previously undisturbed*

ground, if structures will be altered, or if cultural materials be inadvertently discovered during this project, we would ask that our office be contacted, and the site investigated.” SHPO correspondence is attached in Appendix A. Below is a list of properties in the City of Red Lodge which are on the National Register of Historic Places.

Table 2-2 Red Lodge Properties Listed on the National Register

| Resource Name | Address | Date Listed |
|---|--|-------------|
| Hi Bug Historic District | Roughly bounded by W. 3 rd St., N. Villard Ave., W. 8 th St., and N. Word Ave. | 1986-07-23 |
| Red Lodge Commercial Historic District | Roughly Broadway from 8 th to 13 th Streets. | 1983-04-14 |
| Red Lodge Commercial Historic District | S. Broadway between 8 th and 15 th Streets. | 1986-08-28 |
| Yodeler Motel | 601 S. Broadway Ave. | 2014-03-26 |
| Warila Boarding House and Sauna | 20 N. Haggin | 1985-10-24 |
| Calvary Episcopal Church | 9 N. Villard Ave. | 1986-10-23 |
| Red Lodge Brewing Company – Red Lodge Canning Company | 904 N. Bonner St. | 2007-09-05 |
| Red Lodge Communal Mausoleum | Montana HWY 78 | 2001-03-21 |

2.2.10 Socio-economic and Environmental Justice Issues

The City of Red Lodge is not considered a minority of low-income community according to the Department of Commerce based on information from the 2015 American Communities Survey (ACS) and Census and Target Rate 2015 Information from Community Development Division. The median household income for Red Lodge, according to the 2015 ACS, is \$42,500.

Red Lodge is considered to have a low and moderate income (LMI) percentage of 37.94%. In order to be eligible for a Community Development Block Grant (CDBG), which is a low-income grant program, a community must have an LMI of at least 51%.

Concerns with the water system are not anticipated to have a disproportionately high adverse effect to minority of low-income sections of the community. The proposed improvements will affect the entire community equally. The improvements will be beneficial to public safety and human health and will not adversely impact the environment.

2.3 Population Trends

Population data for Red Lodge was collected by searching the decennial consensus records on the U.S. Census Bureau website. Census data is included in Appendix D. There has been no known appreciable growth in Red Lodge since the 2010 census was completed. Table 2.3 summarizes the population of the City and County as recorded in decennial censuses by the U.S. Census Bureau. The table also includes the calculated annual growth rate associated with the census populations.

Table 2-3 Population History

| Census | Town of Red Lodge | | Carbon County | |
|---------|-------------------|-----------------|---------------|-----------------|
| | Population | % Annual Growth | Population | % Annual Growth |
| 1960 | 2,278 | -1.80% | 8,317 | -2.10% |
| 1970 | 1,844 | -2.09% | 7,080 | -1.60% |
| 1980 | 1,896 | 0.28% | 8,099 | 1.35% |
| 1990 | 1,979 | 0.43% | 8,080 | -0.02% |
| 2000 | 2,190 | 1.02% | 9,552 | 1.69% |
| 2010 | 2,128 | -0.29% | 10,078 | 0.54% |
| 2019 | 2,294 | 0.84% | 10,714 | 0.68% |
| Average | 2,087 | 0.03% | 8,846 | 0.44% |

Note: 2019 population based on Annual Estimates of the Resident Population from the U.S. Census Bureau, Population Division.

A 20 year design life is typically assumed for major capital improvements, resulting in a design year of 2040 for purposes of the PER. In an effort to be conservative and to more closely match the historical growth of the State, a 1.0% growth was assumed beginning in 2019 through the 20-year design period to the year 2040.

Using these assumptions, Table 2.4 shows the projected population of Red Lodge through the 2040 year design period.

Table 2-4 Population Projections

| Year | Town of Red Lodge | |
|------|----------------------------|----------------------|
| | Assumed Annual Growth Rate | Projected Population |
| 2019 | -- | 2,294 |
| 2020 | 1.0% | 2,317 |
| 2025 | 1.0% | 2,435 |
| 2030 | 1.0% | 2,559 |
| 2035 | 1.0% | 2,690 |
| 2040 | 1.0% | 2,827 |

2.4 Community Engagement

3.0 EXISTING FACILITIES

The components within the City of Red Lodge's municipal water system consists of two 500,000 gallon baffled clear wells at the water treatment plant and a 750,000 gallon buried concrete tank located on the West Bench, a 1.4 MGD direct filtration water treatment plant, an intake structure in the West Fork of Rock Creek, three wells, liquid chlorine injection disinfection, one booster station, three pressure relief valves, and distribution and transmission mains.

3.1 Location Map

The City's intake structure is approximately 1½ miles south west of the City Limits, on Water Works Road. The intake structure has been abandoned as the West Fork of Rock Creek has diverted away from the intake structure. The City's water treatment plant is just east of the intake structure. At the treatment plant is one of the City's two water storage reservoirs. This storage facility has a total storage of 1,000,000 gallons in clearwells. The other storage facility is a 750,000 gallon underground concrete storage tank which is located on the West Bench near the airport.

The City's water system is composed of 5 pressure zones.

- Zone 1 is the main from the water treatment plant to the corporate limits near PRV 1 in White Avenue.
- Zone 2 is the majority of the City. Pressure in Zone 2 is regulated by the water level in the West Bench tank.
- Zone 3 consists of Country Club Estates. The pressure in Zone 3 is controlled by a booster station.
- Zone 4 is the Spires Subdivision loop. The pressure in Zone 4 is regulated by two pressure relief valves. Zone 4 is the northern most portion of the original City. This zone has pressures ranging from 100 to 153 psi.
- Zone 5 pressure is controlled by the tank on the west bench and consists of the majority of the City of Red Lodge.

The City has two wells near the water treatment plant (Wells 2 and 3), and a well in Grant Avenue between 19th Street and 18th Street (Well 1). An overview of the system is provided in Figure 3.1.

3.2 History

The most recent preliminary engineering report for the City of Red Lodge was completed in 1994. This PER referenced the 1976 water master plan. The work in the PER mainly consisted of water main replacements. At the time of the report the water treatment plant had already been taken off of the system.

Red Lodge's water treatment plant is a 1.4 MGD conventional filtration plant constructed in 1983. The plant has been taken out of service because the West Fork of Rock Creek has moved away. Currently the City water source is strictly from wells.

The majority of the City's distribution system was initially constructed using cast iron pipe. The original portions of the distribution system were installed as early as the 1910's. Over the years, the City has been chipping away at water line replacements throughout the distribution system.

A summary of water system improvements that have been completed in the last two decades include:

- 1996: 5 blocks of water main were replaced with 8" ductile iron pipe in the alley between Haggin Avenue and Cooper Avenue between 12th Street and 9th Street.
- 1999: Drilled well No. 2 at the water treatment plant
- 1999: 34 blocks of water main were replaced with ductile iron pipe ranging from 6" to 12" diameter. 4 Blocks were replaced in Broadway Avenue from 3rd Street northward; 6 blocks in Cooper and Chambers in between 9th Street and 5th Street; 4 blocks on the south end of Haggin Avenue and Platt Avenue; 3 blocks in Hauser Avenue, two of which were between 11th Street and 15th Street and one between 20th Street and 19th Street; 4 blocks in Oaks Avenue and Word Avenue between 17th Street and 13th Street; 6 blocks in Word Avenue and Adams Avenue between 13th Street and 8th Street; 1 block in 13th Street between Grant Avenue and Adams Avenue; 6 Blocks in White Avenue, McGillen Avenue, and 22nd Street.
- 2004: 18 blocks of water main were replaced with ductile iron pipe ranging from 6" to 12" diameter. 4 blocks were replaced in Adams Avenue and Word Avenue between 21st Street and 17th Street; 7 blocks in Word Avenue between 11th Street and 4th Street; 5 blocks in

Hauser Avenue between 7th Street and 1st Street; and 2 blocks in 1st Street from Hauser Avenue to Bonner Avenue.

- 2005: Drilled well No. 3 at the water treatment plant.
- 2009: Construction of new 500,000 gallon storage tank at the water treatment plant. Construction of a 16" ductile iron pipe transmission main from the water treatment plant to the PRV in White Avenue.
- 2012: 14 blocks of water main were replaced with 12" ductile iron pipe as part of the Broadway Avenue water replacement project.
- 2013: Replace Well SCADA controls.
- 2018: Upgrade disinfection system at the water treatment plant well location and the grant well location from gas chlorine to liquid chlorination.
- 2019: 19 blocks of water main were replaced with 8" or 6" pvc as part of the Haggin Avenue water replacement project.

3.3 Condition of Existing Facilities

An overview of the water system components was provided in Section 3.1. This section will provide a detailed analysis of each system component. In addition to the analysis provided herein; the Department of Environmental Quality (DEQ) has also completed regular Sanitary Surveys. The latest Sanitary Survey was conducted in July 2019. The sanitary survey noted a few Recommendations/Minor Deficiencies but did not note any Major Deficiencies. A copy of the survey is included in Appendix C for reference.

3.3.1 Water Demand

Water sales by month from January 2014 through December 2019 were obtained from the City. A summary of the gallons sold and number of users on the system by category is included in Appendix C.

3.3.1.1 Average Day Demand

The City has logged daily water use since November of 2016. Each month they record the gallons used on the lowest use day, the average of the month's day use, and the highest day use. See Appendix C. The average gallons per day demand is determined by averaging each month's average day use from January 2016 through the end of December 2018, which is just under 261,500 gallons per day (or 182 gallons per minute).

It is important to note that this water use is established from the water metered and water use estimated for unmetered use. Since 2016 the City has experienced an average water loss of 47% per month. This water loss can be attributed to leakage in the distribution system and services, water used for firefighting or flushing of hydrants, unknown water users, etc. Water loss will be discussed further as part of the distribution system. However, it is worth noting that 47% water loss is concerningly high. The Environmental Protection Agency (EPA) estimates that average water system losses should be less than 16% and up to 75% of that is recoverable. Red Lodge's water loss is nearly triple the EPA estimate.

In order to establish Average Day Demand, the average day used water volume of 261,500 gallons per day was divided by the estimated 2019 population of 2,294 residents, which results in a gallons per capita day usage of 114 gallons per capita day (gpcd). Multiplying the calculated gallons per capita day by the design year population of 2,827 residents results in a projected design average day demand of 322,300 gallons per day (or 224 gallons per minute) for the analyses in this report.

3.3.1.2 Peak Day Demand

Peak day demands or maximum day demands are important to consider as water usage varies throughout the day in addition to the month and year. The water supply should be sufficient to meet the peak day demands without using stored water. The most important reason to consider peak day demand is to ensure that adequate water supply is available to meet peak day demands without using stored water as required in Circular DEQ-1, Section 3.1.1.a.

J:\2-17103 - Red Lodge On-Call 2017\TO 14 - Water PER\CADD 2-17103-14\Sheets\Figure 3.1 Overview of Existing Water System.dwg

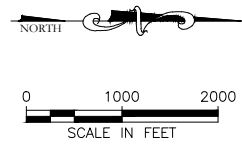
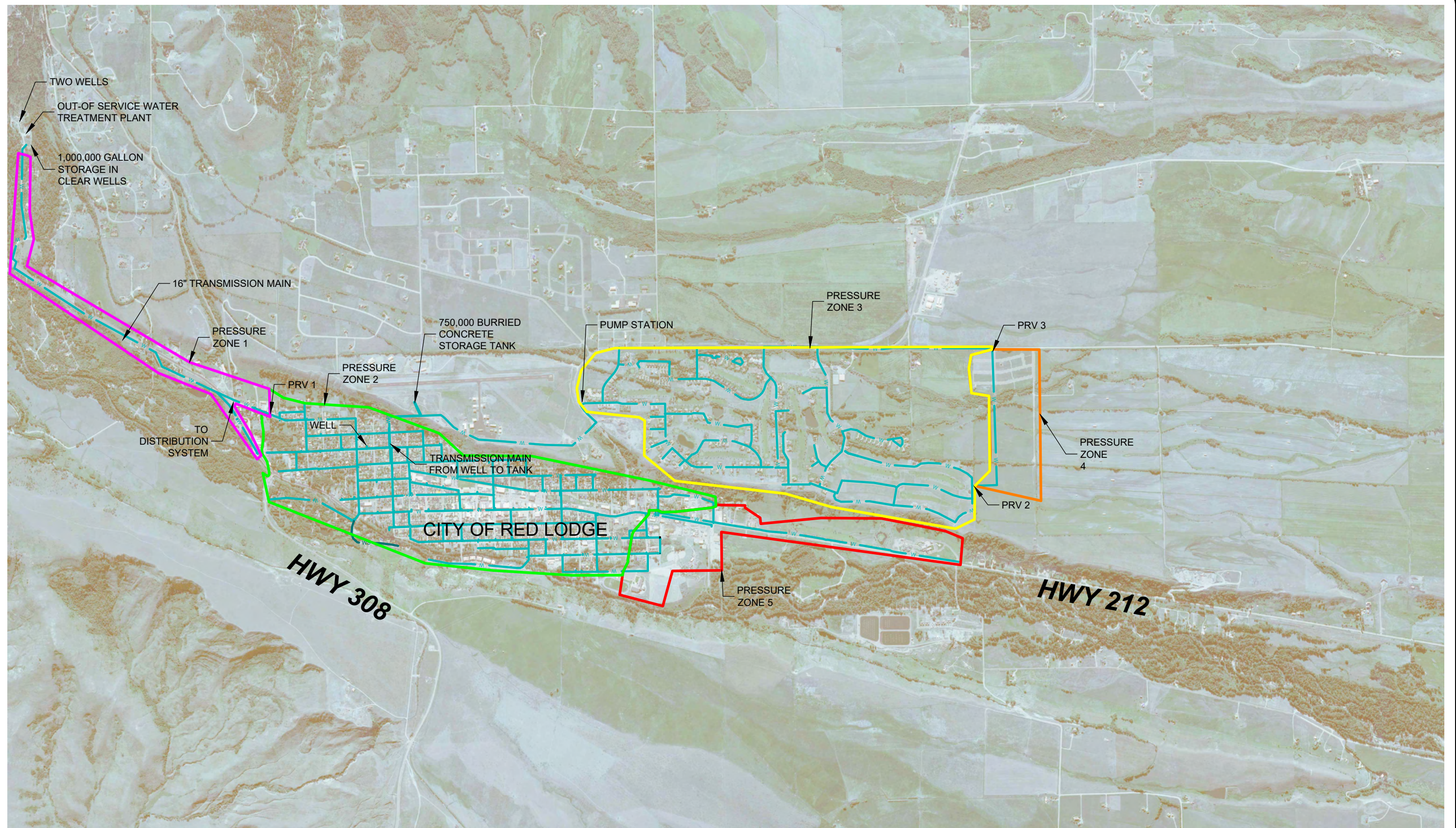


Figure 3:1
Overview of Existing Water System

City of Red Lodge, Montana
 2019 Water Preliminary Engineering Report



A peaking factor is defined as the ratio of the peak day demand to the average day demand. Throughout the United States, peaking factors range from 2 to 5¹. However, studies done throughout Montana and the Dakotas indicate peaking factors of 1.8 to 4.0^{2,3,4,5}. In general, the smaller the water supply system, the larger the peaking factor, though, metered systems typically see lower peaking factors due to a conscious effort made by the users to conserve water. Also, peak days typically occur during the hottest days of the year when lawn watering is at a maximum.

The peak day factor was established using the produced volumes of the system as daily metered used volumes are not available. The City of Red Lodge has recorded daily maximum production flows over the last several years. These water production records and a summary spreadsheet are attached in Appendix D. As provided by the Public Works Director, the day with the highest production volume from November 2016, through December 2019 occurred in August 2018 with a volume of 1,118,000 gallons. The average day production volume during this time period is of 476,700 gallons. Therefore, the peak day factor was determined to be 2.4.

Multiplying the peak day factor by the projected design average day demand of 322,300 gallons per day gives a design peak day demand volume of 773,600 gallons per day.

3.3.1.3 Peak Hour Demand

Just as the peak day demand is the day with the highest usage, the peak hour or peak momentary demand represents the hour with the highest usage. Peak hours typically occur in the mornings prior to work and school (when people are taking showers) with a slightly smaller peak occurring in the evening hours after work. Peak hour demands are important to consider when analyzing or designing booster pumps within a system.

Since there is no data available to determine peak hour demands for Red Lodge, a peak hour peaking factor must be estimated. Peak hour peaking factors generally range from 1.6 to 2.0

¹ Salvato, Joseph A. Environmental Engineering and Sanitation. John Wiley and Sons. 1982.

² HKM Associates. Fort Totten Area Project Report. 1989.

³ HKM Associates. Rosebud Sioux Tribe Municipal, Rural and Industrial Water Needs Assessment. 1989.

⁴ Morrison-Maierle/CSSA. Final Engineering Report, Mni Wiconi Rural Water Supply Project. 1989.

⁵ De Wild Grant Reckert & Associates Company. Engineering Report for Luman-Jones Rural Water System, Mni Wiconi Rural Water Supply Project. 1992.

times the peak day demand. To be conservative, the maximum peaking factor of 2.0 from this range will be used.

The calculated design peak day demand of 773,600 gallons per day equates to 32,240 gallons per hour. Multiplying this by a peak hour factor of 2.0 results in a design peak hour demand of 64,480 gallons per hour.

Because the water for peak hour demand is not needed on a continual basis, any demand above the peak day demand is typically supplied from storage. As will be discussed with the evaluation of the storage, the City has adequate capacity in their storage tank to meet the projected peak hour demands. The actual influence of peak hourly demands on the overall system will be considered in the hydraulic model, though.

Table 3-1 Summary of Existing and Projected Water Demands

| YEAR | POPULATION | AVERAGE PER CAPITA DEMAND | AVERAGE DAY DEMAND | | | MAX DAY PEAKING FACTOR | PEAK DAY DEMAND | | | PEAK HOUR FACTOR | PEAK HOUR DEMAND |
|------|------------|---------------------------|--------------------|-------------|-----|------------------------|-----------------|--------|-----|------------------|------------------|
| | | | gpd | gal/yr | gpm | | gpd | gph | gpm | | gph |
| 2019 | 2,294 | 114 | 261,500 | 95,447,500 | 182 | 2.40 | 627,600 | 26,150 | 440 | 2 | 52,300 |
| 2020 | 2,317 | 114 | 264,200 | 96,433,000 | 183 | 2.40 | 634,100 | 26,430 | 450 | 2 | 52,860 |
| 2025 | 2,435 | 114 | 277,600 | 101,324,000 | 193 | 2.40 | 666,300 | 27,770 | 470 | 2 | 55,540 |
| 2030 | 2,559 | 114 | 291,800 | 106,507,000 | 203 | 2.40 | 700,400 | 29,190 | 490 | 2 | 58,380 |
| 2035 | 2,690 | 114 | 306,700 | 111,945,500 | 213 | 2.40 | 736,100 | 30,680 | 520 | 2 | 61,360 |
| 2040 | 2,827 | 114 | 322,300 | 117,639,500 | 224 | 2.40 | 773,600 | 32,240 | 540 | 2 | 64,480 |

3.3.2 Supply

The City gets its municipal water supply from three groundwater wells. Well No. 1, (Grant Avenue Well) was drilled and completed in 1961. Well No. 2 and Well No. 3, located at the water treatment plant, have a joint header. Well No. 2, drilled and completed in 1999, is the higher producing well of the two and as such is the City's primary water supply well. Well No. 3 was drilled and completed in 2005. Currently the City does not use well No. 3 as it is the lowest producer of the three wells. Well logs from the Groundwater Information Center (GWIC) website⁶ are included in Appendix E. And Table 3.2 provides a summary of characteristics of each well.

⁶ Montana Bureau of Mines and Geology, Groundwater Information Center, <https://mbmggwic.mtech.edu/>.

Well No. 1 is located under the Pump house in Grant avenue. The well is pumped with a vertical turbine pump. The motor and controls were replaced in 2018. Figure 3.2 below shows the well piping and pump.

Table 3-2 Well Log Information

| Characteristic | Units | Well No. 1 | Well No. 2 | Well No. 3 |
|--------------------|-------|------------|------------|------------|
| Completion Date | date | 9/17/1961 | 12/31/1999 | 11/7/2005 |
| Total Depth | feet | 74 | 67 | 61 |
| Static Water Level | feet | 20 | 8 | 13 |
| Screened Interval | feet | | 40-65 | |
| Pump Test Data | | | | |
| Rate | gpm | 900 | 1040 | 500 |
| Drawdown | feet | | 0 | |
| Duration | hours | | 20 | 32 |

Figure 3.2: Grant Well (Well No. 1)



Wells No. 2 and No. 3 are located approximately 1 ½ miles south of the City near the West Fork of Rock Creek. Both wells are completed with a vented pitless unit and a submersible pump set in the screened interval. Well No. 2 is drilled underneath the well building, well No. 3 is approximately 100 feet west of the well building and is connected to the header in the well building via an 8" ductile iron pipe. Each well at the water plant has a 20 hp franklin electric submersible well pump. The City keeps a spare pump in the well header building. The well manifold connects the water from the two wells with an 8" diameter manifold in the building. Figure 3.3 below shows the well header.

Figure 3.3: Water Plant Well Header (Wells 2 and 3)



Only one of Wells No. 2 and No. 3 is operated at a time and the active well must be manually selected. The City currently only uses Well No. 2. at the water treatment plant and Well No. 3 and Well No. 1 at Grant Avenue are two back-up water sources.

3.3.2.1 Water Capacity

Paragraph 3.2.1.1.a of Circular DEQ 1 – Standards for Waterworks (DEQ-1) discusses source capacity and states:

The total developed ground water source capacity for systems utilizing gravity storage or pumped storage, unless otherwise specified by MDEQ, must equal or exceed the design maximum day demand with the largest producing well out of service.

As shown in the table, the stabilized pumping rates for the wells are: well 1-900 gpm, well 2-1040 gpm and well 3-500 gpm for a total of 2840 gpm. As shown in Table 3.2 above, the projected design peak day demand is 960 gpm. These well capacity rates exceed the current and design peak day demands with any two of the three wells, meeting the DEQ requirement for source capacity.

3.3.2.2 Water Quality

Table 3.3 summarizes the most recent water quality testing from the wells in May of 2017.

With respect to primary drinking water standards, Red Lodge's water supply meets the Maximum Contaminant Levels (MCLs) of the Safe Drinking Water Act, and treatment other than disinfection is not required.

Table 3-3 Well Water Quality

| Parameter | Units | Well No. 1 | Well No. 2 | Well No. 3 |
|--|------------|------------|------------|------------|
| Sample Date | date | 5/16/17 | | 5/16/17 |
| Physical Properties | | | | |
| pH | std. units | 6.9 | 6.9 | 7.2 |
| Total Dissolved Solids | mg/L | | 65 | |
| Inorganics | | | | |
| Alkalinity, Total as CaCO ₄ | mg/L | 55 | 0.0 | |
| Bicarbonate as HCO ₃ | mg/L | | 62 | |
| Carbonate as CO ₃ | mg/L | | | |
| Chloride | mg/L | | | |
| Fluoride | mg/L | | | |
| Sulfate | mg/L | ND | 3.0 | ND |
| Nutrients | | | | |
| Nitrate + Nitrite (as N) | mg/L | 0.39 | 0.13 | ND |
| Metals | | | | |
| Antimony | mg/L | | | |
| Arsenic | mg/L | | | |
| Barium | mg/L | 0.023 | 0.4 | |
| Beryllium | mg/L | | | |
| Cadmium | mg/L | | | |
| Calcium | mg/L | 13 | 11 | |
| Chromium | mg/L | | | |
| Copper | mg/L | | | |
| Iron | mg/L | 0.01 | | ND |
| Lead | mg/L | | 0.004 | |
| Magnesium | mg/L | 4.1 | 3.0 | ND |
| Manganese | mg/L | | | |
| Mercury | mg/L | | | |
| Nickel | mg/L | | | |
| Potassium | mg/L | | | |
| Selenium | mg/L | | | |
| Sodium | mg/L | 2.8 | 2.0 | |
| Thallium | mg/L | | | |

Note: "ND" = Not detected. "-" = Parameter Not Analyzed.

3.3.2.3 Water Rights

The City of Red Lodge currently obtains its municipal public water supply from groundwater sources. The City has three municipal wells. Wells 2 and 3, located near the water treatment plant, are allocated a flow rate of 1200 gpm and an annual volume of 968 acre-feet under water provisional permit 43D 300011 72 with a priority date of March 7, 2002. The well 1, located in Grant Avenue between 19th Street and 18th Street, is allocated a flow rate of 902 gpm and an annual volume of 1450 acre-feet. From these wells the City has a maximum flow rate stipulated by these claims of 2102 gpm with a maximum annual use of 2352 acre-feet.

The City also has two wells for irrigation. The well in the north eastern portion of town is allocated for sprinkler irrigation of the City's sports complex. This well, under water right 43D 66358 00, is allocated a flow rate of 100 gpm and an annual volume of 97.11 acre-feet. The other well is allocated a flow rate of 212 gpm and an annual volume of 26 acre-feet under water right 43D 45738 00 for the purpose of irrigation of the cemetery. These wells are not part of the municipal supply system. From these water rights the City has a maximum flow rate of 5.35 cfs, and an annual maximum annual use of 2207 acre-feet. Copies of the City's water rights are included in Appendix E.

The City of Red Lodge historically obtained their entire public water supply from surface water. The City's water treatment plant is located near the West Fork of Rock Creek where the City's water had previously been supplied through a diversion in the creek. The 1994 Red Lodge Water PER stated that "*The treatment plant is no longer in use as priorities on the West Fork of Rock Creek upstream from the Red Lodge Diversion total 39.1 cfs. The second right can only be used when the flow in the creek is greater than 42 cfs*". Also, prior to the 1994 Water PER, Rock Creek's flow had moved away from the water treatment plant intake structure.

The City maintains surface water rights for municipal use through the following water rights; 43D 43377 00 with a flow rate of 2.5 cfs and an annual volume of 1272 acre-feet; 43D 43378 00 with a flow rate of 1.25 cfs and an annual volume of 903 acre-feet; and 43D 45737 00 with a flow rate of 1.6 cfs and an annual volume of 32 acre-feet.

3.3.2.4 Water Source Protection

The City updated its Source Water Delineation and Assessment Report in 2003. A copy of the Source Water Protection Plan is included in Appendix F. With the addition of Well 3 in 2005, the report may need updated.

There were no unusual significant source water protection issues raised in the report. The use of a sanitary sewer system, as well as storm sewer system, while favorable for groundwater quality, does present some risk in the event of a leaking sewer. Two of the three underground storage tanks (UTS) in the City have leak histories which are up gradient of Well 1 pose a potential risk to that well. There is moderate septic density near Well 2. The City has not yet detected pesticides or herbicides in the water supply.

3.3.3 Treatment

The City has two chlorination disinfection systems, one for the water produced from Well No. 1 in Grant Avenue and the other for the water produced from Wells No. 2 and 3 at the water treatment plant. Water is disinfected prior to entering the distribution system. Chlorine disinfection is applied using liquid sodium hypochlorite solution at 12.5%. A single chemical metering pump (peristaltic) is used to properly dose the well discharge, and there is sufficient supply of disinfectant on-site. Figure 3.4 below exhibits the water treatment plant site.

3.3.3.1 Chlorination

The design flowrates of the wells were determined based upon actual historical usage. The flowrate at the water plant wells (Wells 2 and 3) is 700 gpm, and the flowrate at the Grant Well (well 1) is 550 gpm. The capacity from the well logs shown above is what was tested during well construction but is not consistent with the actual pumps that were installed. Therefore, the pump capacity flow rate was used in the following chlorination calculations. The City switched from gas chlorine disinfection to liquid chlorine injection systems in 2018.

Grant Well (Well No. 1) Chlorination

Well No. 1 is located under the pump house in Grant Avenue. Chlorine is injected in the pump house and the residual chlorine is sampled from the pump house. There are two chemical feed pumps plumbed for redundancy in the chemical feed room. Chemicals are stored in a separate room with an emergency eyewash station. After disinfection is applied to water supplied from the

well, water is routed through a 10" main directly to the water tower on the west bench. There are no services on this line. This water main is approximately 2,186 feet. Estimated contact volume is 1,192 cubic feet (point of chlorine application to water tower). The sample tap for measuring minimal residual dose is near the chemical injection point. The City Operators keep the measured residual around 2.0 mg/l, however, the actual feed chemical residual may vary. The City should consider installing a sample tap near the water tank. For this reason, the disinfection calculation used a minimum residual dose of 1 mg/l. A minimum residual dose of 1.0 mg/l into well pump capacity flow rate of 550 gpm (pH 7-9, Temp 0.5°C) gives an actual CT of 16.2, which exceeds the required CT of 12.

Water Plant Wells (Wells No. 2 and No. 3 Chlorination)

After disinfection is applied to water supplied from Wells 2 and 3, it is piped to the two baffled clearwells with a total volume of 1,000,000 gallons. Chlorination is applied to the water in a chlorination room located in the old water treatment plant building, see Figure 3.4 below. The City stores a back-up chemical feed pump in the chlorine contact room. The residual chlorine analyzer is in another building located on the south east corner of the tank and clearwell. After the water passes through the residual chlorine building it enters the 16" ductile iron pipe transmission main. The first metered service on the transmission main is 26 Waterworks Road, which is approximately 1340 feet from the residual chlorine building. The City Operator's run the chemical injection at a residual dose of 1.2 mg/l. A minimum residual dose of 1.2 mg/l into the well pump capacity flow rate of 1040 gpm (pH 7-9, Temp 0.5°C) gives an actual CT of 119, which exceeds the required CT of 12

Figure 3.4: Chlorine Residual Building

3.3.4 Storage

The City's storage consists of two storage locations. The first location is near the water treatment plant, where the majority of the City's storage is contained. At the water treatment plant there is a 500,000 gallon clear well with a baffle creating two equal storage basins which was constructed at the time of the water treatment plant in 1983. The second clearwell at the water treatment plant location holds 500,000 gallons and was constructed in 2009. A photo of the underground clearwell and new storage tank site at the water treatment plant is shown below in Figure 3.5. The second storage location is on the west bench where the City constructed a 750,000 gallon concrete underground storage tank. The City's current total storage is 1,750,000 gallons.

Figure 3.5: Clear Well and Water Plant Underground Storage Tanks

3.3.4.1 Storage Condition

Inspection of the west bench tank and water plant clearwells was completed in July of 2016 as part of the regular maintenance plan. The water plant storage inspections report three clearwells, two are the 500,000 gallon clearwells and one is a vault which connects the two clearwells. The west bench inspections report one 750,000 gallon storage tank. The findings from the inspections are in Appendix I.

The inspection notes are summarized in the table below:

Table 3-4 Storage Tank Inspection Summary

| Concrete Condition Found | Clearwell #1 | Clearwell #2 | Clearwell #3 (Connection Vault) | West Bench Tank |
|--------------------------|--------------|--------------|---------------------------------------|-----------------|
| Cracking | | Walls, Floor | Walls | |
| Settling | | Walls, Floor | | Roof |
| Honeycomb | | | Walls | |
| Pitting | | | | Columns |
| Spalling | Walls, Floor | | | |
| Pop outs | Walls | | | Columns |
| Chalking | | | | Walls, columns |
| Exposed Reinforcement | Walls | | Walls | |

As part of the City's regular maintenance schedule, the reports recommend that the vents on all the tanks should have a security vent shroud and tank hatches should include a security hatch locking device. The tank assessments recommend the tanks be cleaned and reassessed every 3 years.

3.3.4.2 Storage Volume

DEQ gives the following two standards for analyzing minimum required storage volume in water system that provide fire protection:

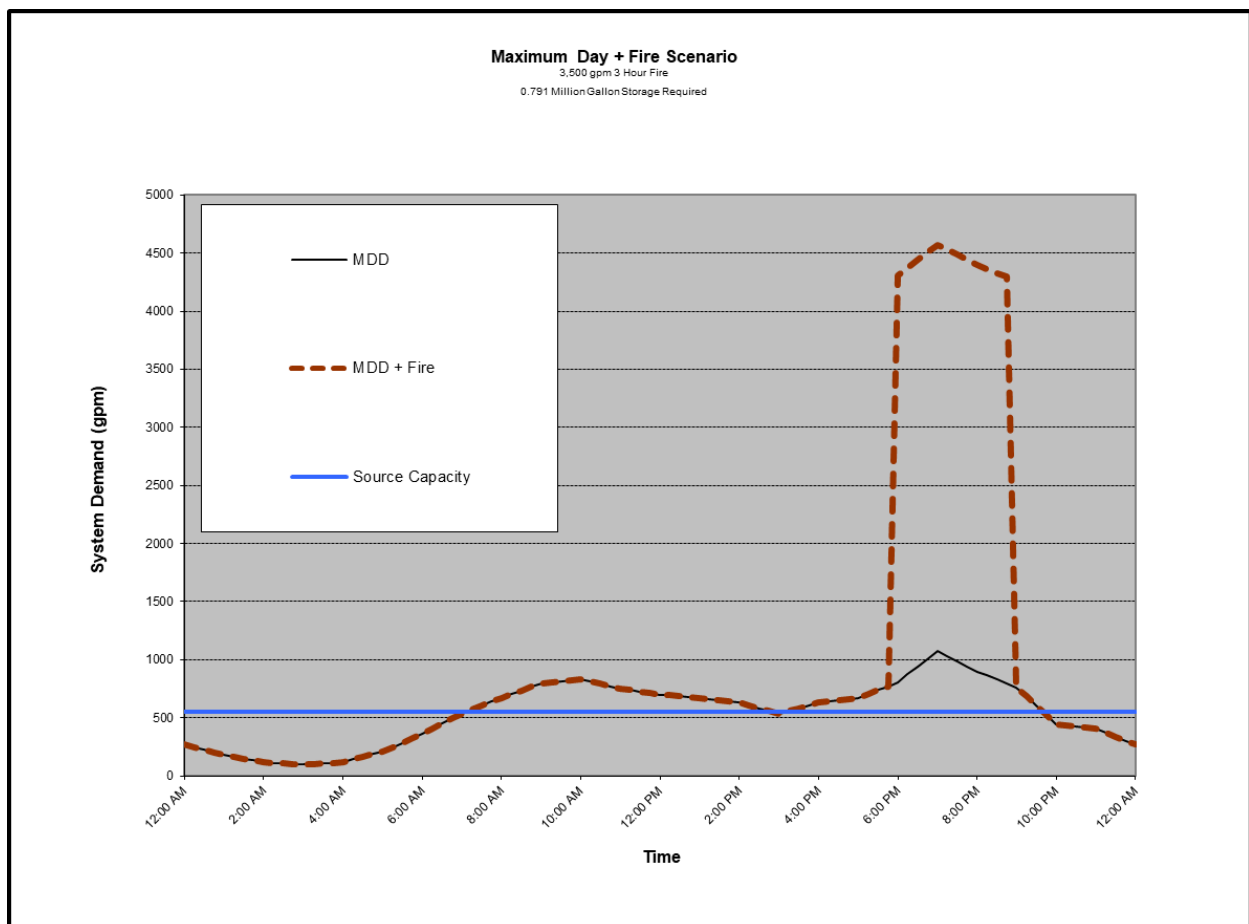
Criteria 1. *“Storage facilities must be sufficient, as determined from engineering studies, to supplement source capacity to satisfy all system demands occurring on the maximum day, plus fire flow demands where fire protection is provided.”* (Circular DEQ-1, Paragraph 7.0.1)

Criteria 2. *“The minimum allowable storage must be equal to the average daily demand for a 24-hour period plus fire flow demand where fire protection is provided.”* (Circular DEQ-1, Paragraph 7.0.1.b)

The building with the highest fire demand is the old Cannery building, which is no longer being used. The demand for the cannery is 4,500 gpm. If the cannery building is upgraded in the future, installation of a fire suppression sprinkler system is recommended. The next highest needed fire flow in the City of Red Lodge is the Roosevelt School, with a needed fire flow of 3,500 gpm. Compliance with Criteria 1 is shown by the graph in Figure 3.6. The graph shows that the existing

combination of source capacity and storage volume is adequate to provide maximum day demand plus fire flow for a 3,500 gpm 3 hour duration fire. The horizontal line on the graph represents the pump capacity of Well No. 1 (550 gallons per minute), which is less than the capacity of joint header wells No 2 and 3. The required storage volume is equal to the area between the “MDD + Fire” curve and the “Source Capacity” line. The total required storage volume in this scenario is 791,000 gallons. The City’s available storage is 1,750,000 gallons.

Figure 3.6: Storage Analysis Graph



To comply with Criteria 2, the City must be able to supply the future average day water usage (322,300 gallons) and needed fire flow with the source out of commission. Therefore, currently the City’s fire storage is:

$$\text{Total Storage} - \text{Average Day Demand} = \text{Fire Storage}$$

$$1,750,000 \text{ gallons} - 322,300 \text{ gallons} = 1,427,700 \text{ gallons}$$

As the total required storage volume for fire flow is 791,000 gallons, and the available fire storage as calculated above is 1,427,700 gallons, the City has adequate storage to meet Criteria 2.

DEQ Circular 1, Paragraph 7.0.1a. states:

Fire flow requirements recommended by the fire protection agency in which the water system is being developed, or in the absence of such a recommendation, the fire code adopted by the State of Montana, must be satisfied where fire protection is provided.

3.3.5 Pumping Stations

The City has one booster station at the intersection of Highway 78 and Lazy M street which was constructed in the mid 1980's. Water from the west bench tank is piped to the booster station through a 16" ductile iron transmission main. The booster station pumps water to approximately 30% of the City of Red Lodge's water system service area. The booster station service area, in general, has a lower residential density than the majority of the City, as it includes the golf course. The booster station pumps 21% of the entire system demand.

The control system used to automatically switch pumps to keep use on the pumps equal, however, it no longer works. City workers must manually cycle the pumps each month. The west pump was replaced in 2019. Figure 3.6 below shows the pump piping inside the booster station building.

Figure 3.7: Booster Station

The pumping station has two 15 hp peerless pumps (model 6 1250A). The 16" main forks into two 8" ductile iron pipes which are piped to the respective pumps to provide redundancy. One pump runs to maintain a pressure of 54 psi. The pumps are adequately sized to convey the design Peak Hour demand. The pressure on the suction end of the pump is controlled by the tank level. During the site visit on November 19, 2019, the pressure was 26 psi.

The Fire Chief noted that the pumps cannot deliver adequate fire flow because of low pressure in the transmission main from the West Bench Tank to the pump station. The water model confirmed that the transmission main low pressure limited available fire flow to the booster station service area. The needed residential fire flow is 1,500 gpm, and the lowest fire flow available in this service area is 1,161 gpm. The majority of intersections have available fire flow less than 1,300 gpm with the exception of the first intersection after the pump, which has available fire flow of 1,524 gpm with the peak day demand applied. Another significant fire flow issue which needs addressed in this service area is the golf course club house, which has a needed fire flow of 2,000

gpm, yet the system can only supply 1,292 gpm as a result of the transmission line which feeds the booster station's low pressure.

3.3.6 Distribution System

The distribution system is laid throughout the community in a grid-like manner. Table 3.5 provides a summary of water main types, sizes, and lengths for the system.

Table 3-5 Distribution System Inventory

| Pipe Size | Length (ft) | | | | Total (ft) |
|--------------|--------------|-------|-----------|-----------------|------------|
| | Ductile Iron | PVC | Cast iron | Asbestos Cement | |
| 2" | 0 | 0 | 301 | 0 | 301 |
| 4" | 0 | 0 | 3,309 | 0 | 3,309 |
| 6" | 8,571 | 1,035 | 5,085 | 2,794 | 17,486 |
| 8" | 83,895 | 5,707 | 0 | 1598 | 91,200 |
| 10" | 2,900 | 0 | 0 | 0 | 2,900 |
| 12" | 16,596 | 0 | 0 | 0 | 16,596 |
| 14" | 2,742 | 0 | 0 | 0 | 2,742 |
| 16" | 14,698 | 0 | 0 | 0 | 14,698 |
| Total | 129,401 | 6,743 | 8,695 | 4,392 | 159,231 |

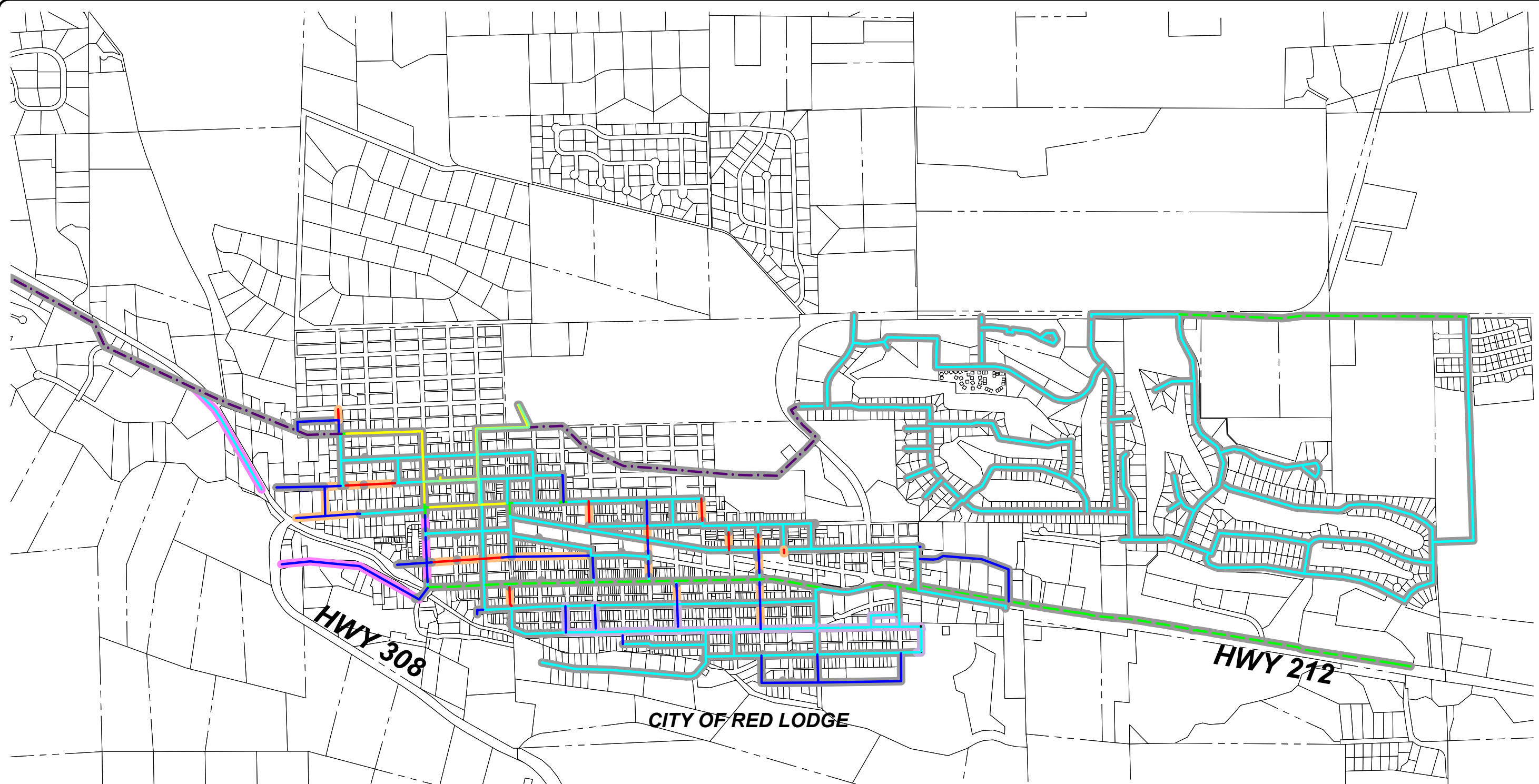
Starting in the mid-1990's the City began replacing much of the City's old water mains with ductile iron pipe. Figure 3.8 Water System Inventory map, shown below, illustrates the City's current water distribution system inventory.

Circular DEQ-1 discusses main size in section 8.2.2. it states that:

The minimum size of water main in the distribution system where fire protection is not to be provided should be a minimum of three inches in diameter.

The City has one known 2-inch water line serving as a water main without fire hydrants in South Kainu. This water line connects to the water main at the intersection of Kainu and Park Avenue and continues north where it dead ends near the would-be intersection of 17th Street.

J:\2-17103 - Red Lodge On-Call 2017\TO 14 - Water PER\CADD 2-17103-14\Sheets\Figure 3.4 PIPE TYPE AND SIZE.dwg



SCALE: 1" = 1/4 MILE

WATER MAIN SIZE LEGEND

- 4" ————
- 6" ————
- 8" ————
- 10" ————
- 12" - - - -
- 14" ————
- 16" - . . . -

WATER MAIN MATERIAL LEGEND

- ASBESTOS CEMENT ————
- CAST IRON ————
- DUCTILE IRON ————
- PVC ————



Figure 3:8
Water System Inventory Map

City of Red Lodge, Montana
2019 Water Preliminary Engineering Report

The City loses on average about 79 million gallons a year. As discussed in Section 3.3.1, since 2014 the City has experienced an average water loss of 47%. This water loss can be attributed to leakage in the distribution system and services, water used for firefighting or flushing of hydrants, unknown water users, etc. It is worth noting that 47% water loss is concerning high. The Environmental Protection Agency (EPA) estimates that average water system losses should be less than 16% and up to 75% of that is recoverable. ^{vii} Red Lodge's water loss is nearly triple the EPA estimate.

The City's average day per capita water use is 114 gpcd while the water loss per capita is 94 gpcd. The City must pump, disinfect and distribute 208 gpcd. The water loss which the City experiences is a significant loss caused by old, leaky cast iron mains, leaky valves, leaky water service pipes, unmetered water use and breaks.

3.3.6.1 Main Breaks and Freezes

During the winter of 2018-2019, the City had over 80 water services freeze. In the winter of 2018-2019 the City had several mains freeze, which the City was unable to thaw without excavation. Several residences were without water for extended periods. The water main in Park Avenue was one of the more extreme cases was the existing 6" water main dead-ends at the intersection of Bear Creek Hill and has minimal cover to protect against freezing. The City has also had approximately three main breaks per year for the last several years.

As a comparison, the frequency of repair from several Cities and Districts around Montana are shown in Table 3-6. It should be noted that the table shows main breaks, not including main freezes. The number of leaks is expected to increase as these mains continue to age.

Table 3-6 Average Water Main Breaks for Cities in Montana

| City | Water Main Length (miles) | Ave. Breaks/year | Breaks/Mile/Year |
|------------|---------------------------|------------------|------------------|
| Red Lodge | 31 | 3 | 0.10 |
| Miles City | 63.5 | 7 | 0.11 |
| Kalispell | 145 | 12 | 0.08 |
| Missoula | 320 | 30 | 0.09 |
| Bozeman | 276 | 6 | 0.02 |
| Wolf Point | 20 | 2 | 0.10 |

*AWWA Standard is 0.15 leaks per mile per year

3.3.6.2 Cast Iron Mains

Although the City has been working vigilantly over the years to improve the distribution system through both pipeline replacements and new installations, there is still a significant amount of 4 inch and 6 inch cast iron mains located throughout the City that are over 80 years old. The City of Red Lodge has 8,695 feet of cast iron main still in operation. The existing cast iron mains are described below:

1. Three blocks of cast iron water main in South Hauser Avenue between 13th Street and 17th Street.
2. Two blocks in Grant Avenue between 20th Street and 22nd Street.
3. Four blocks in 7th Street from Haggin Avenue to Villard Avenue. In 2019 the City replaced the 4" CIP water main in Haggin Avenue with PVC along with 6 side streets. During construction of the project it was discovered that the main in 7th Street between Haggin Avenue and Broadway Avenue has approximately 600 feet of 6" CIP. It is believed that the old 6" cast iron main in 7th Avenue continues westward to Villard Avenue
4. Five block portions which still have cast iron pipe. Scattered throughout the original City as shown "orange" on Figure 3:8 Water System Inventory Map.

The cast iron mains removed from Haggin Avenue in 2019 were found to have pinhole leaks and larger cracks throughout the main. The interior pipe walls were tuberculated. When the main was flushed and excavated the water quality issues caused by these old mains was evident. The water was rust red as shown in Figure 3.9 below which was taken during construction of the Haggin Avenue water main replacement. This picture shows the condition of the water quality in the City of Red Lodge's dated cast iron water mains.

Figure 3.9: Cast Iron Water Main

3.3.6.3 Dead End Mains

Section 8.2.4 of Circular DEQ-1 states the following regarding dead ends:

- a. *To provide increased reliability of the service and reduce headloss dead ends must be minimized by using appropriate tie-ins whenever practical.*
- b. *Where dead-end mains occur, they must be provided with a fire hydrant if flow and pressure are sufficient, or with an approved flushing hydrant or blow-off for flushing purposes.*

Although the existing distribution system is, in general, well-looped, it does contain several dead end mains. In addition to significantly stifling fire flows, these dead-ends also present a serious health concern. This is due to the stagnation of water that can occur in the main. As a result, the

chlorine residual may decay significantly which produces an environment that permits bacteria to thrive, particularly if it is an aged cast iron main with scaled walls.

In addition to DEQ's recommendation regarding dead-ends, they cause a particular additional problem in Red Lodge. Red Lodge is a mountain town which has colder winters and much more snowfall than an average City in Montana. The dead ends are more prone to freezing. The dead-ends of concern are:

1. Park Avenue near Bear Creek Hill
2. Kainue Avenue connects to the water distribution system through on 8" crossing under Rock Creek at 9th Street and dead-ends at 15th Street. There is a 2-inch pipe connecting to the main in Park Avenue which serves as a water main to homes on Kainue Avenue from Park Avenue north to 17th Street.
3. In Highway 212 an 8" main tees from the 16" transmission main and dead ends near Adams avenue.
4. Adams Avenue dead ends west of Highway 212.

The primary reason for connecting dead ends is to mitigate a potential threat to public health but to also significantly improves conveyance which subsequently increases fire flows, and prevent freezing, though normally these improvements are localized.

3.3.6.4 Valves

DEQ-1 Section 8.3 states the following in regard to valves:

Sufficient valves must be provided on water mains so that inconvenience and sanitary hazards will be minimized during repairs. Valves should be located at not more than 500-foot intervals in commercial districts and at no more than one block or 800 foot intervals in other districts."

The as-built plans for much of the City's previous water replacement projects show adequate valving, however, over time many of them have been paved over, and the City Publics Works department is finding several of these valves were not installed. As a result, the City has difficulty isolating sections of mains during repairs. Many of the older valves on cast iron and asbestos cement mains are also found to be in-operable.

Isolation is also increasing difficult as old mains which were previously thought to be abandoned are being found to still be connected to existing cast iron mains in the distribution system. As they are encountered, the City is abandoning these mains. This is likely a major contributing cause to the City's excessive water loss. During construction of the water main replacement in 10th Street in 2019, there was a 4 inch cast iron main in Platt Avenue that was found to be live. When the 8" main was constructed the old 4" was not abandoned. This raises concern that there may be other locations in Platt Avenue, and other locations throughout the City, which may have old mains still live. This is a very concerning issue, not only as a result of difficulty isolating water mains, but also the volume of treated water lost to these old mains as well as serious health concern as leaky water mains can raise a variety of water quality risks including a high risk of cross contamination.

3.3.6.5 Water Services

In winter of 2018-2019 the City had over 80 water services freeze. As a result, as water service breaks occur, they are replaced with poly service pipe, buried with 7 feet of cover and insulated with rigid foam insulation. Until recently, the water services were replaced with copper pipe, however, corrosion has shown to occur on copper services where the copper meets old cast iron pipe. Many of the copper services and cast iron service pipes are leaking. The City is responsible for water services from the corporation stop to the curb stop, and the homeowner is responsible for the water service from the curb stop to the residence. Apart from service freezes, most of the water system leaks are located at the water service connection, of which, they average repairing about one every month.

3.3.6.6 Fire Hydrants

Section 8.2.2 of Circular DEQ-1 requires:

The minimum size of water main for providing fire protection and serving fire hydrants must be six-inches in diameter. Larger size mains will be required if necessary to allow the withdrawal of the required fire flows while maintaining the minimum residual pressure specified in section 8.2.1. [20 psi under all conditions of flow]

The City has approximately 12 blocks of water main that are 4-inch cast iron mains with fire hydrants connected that need to be upsized. The 4" mains with fire hydrants are on shown on Figure 3:8 Water System Inventory Map. Hydraulic water modeling was conducted and will be

discussed below, which provided the analysis necessary to determine the recommended size of water main replacements.

3.3.6.7 Pressure Relief Valves

The City has three existing pressure relief valves (PRV). The first PRV is where the 16" diameter transmission main from the water treatment plant enters the Corporate limits of the City on White Avenue. The valve is 6" diameter and reduces the main pressure from approximately 100 psi to approximately 50 psi. The PRV does not include a secondary fire flow PRV, limiting the available fire flow to the City.

The second PRV is located near the golf course at the north end of Diamond C Trail to reduce pressure to the water main loop through the Spires subdivision. The third PRV is on the west end of the Spires subdivision water main loop at the intersection of Lark Spur Road and Willow Creek Road. The Spires PRVs pressure gauges are inaccessible. Pressures of adjacent fire hydrants were measured to determine that the PRVs reduces pressure from 120 psi to 80 psi in the Spires subdivision loop.

The water main in Spires Subdivision continues on to loop down Willow Creek road and Highway 78. Until recently, the City was unaware of the existence of these PRVs.

There is a significant need for additional pressure relief north of the intersection of Robison Lane and Broadway. DEQ-1 Section 7.3.1 requires:

"The minimum working pressure in the distribution system should be 35 psi and the normal working pressures should be approximately 60 to 80 psi. When static pressures exceed 100 psi, pressure reducing devices must be provided on mains or as part of the setting on individual service lines in the distribution system."

The static pressure on the farthest north fire hydrant near the hospital was measured to be 152 psi. Installation of pressure valve(s) will be needed to reduce the pressure of this zone. See Figure 3:12 System Pressure Map.

3.3.6.8 Hydraulic Model

A new hydraulic water model of the water system was created using the WaterCAD computer modeling software. The size and material of distribution piping used in the model were taken by

compiling various project as-builts and mapping of the City of Red Lodge. Four of the City's fire hydrants were tested in November 2019 to assist in calibrating the computer model. For each of the four hydrants tested, pressures were monitored at two other hydrants, one along the line to the hydrant being tested and one further back in the distribution grid. Hazen-Williams roughness coefficients were adjusted as necessary to allow the model to match within 5 psi of field obtained results. Values of the Hazen Williams coefficients assigned to the distribution mains ranged from 100 for cast iron pipe, and 150 for PVC pipe and varied, in general, according to the size and material of pipe. The pump curve for the booster station was modeled by inserting the pump's curve data and making minor adjustment to the pump curve to calibrate the pumps function within the existing configuration. Appendix G includes fire hydrant test results and water model results. The model is considered to accurately represent the system as it presently exists. A general summary of the water model results are discussed in this section.

Peak Hour Demand Scenario:

The distribution system is considered adequate if the system pressures remain at or above 35 psi during peak demands (DEQ-1, Section 8.2.1). There is one service on the transmission main in between the West Bench Tank and the booster pump which does not meet this DEQ requirement. During peak hour flow, the pressure at this service is 27 psi. The remaining services have pressures of 45 psi or greater.

Maximum Day Demand plus Fire Flow Scenario:

The needed residential fire flow is 1,500 gpm in residential areas according to the City of Red Lodge Fire Chief. The downtown business district fire demand is 3,500 gpm for a two hour duration. The Fire Chief reported buildings with specific fire flow demands. The table below lists the buildings noted as having fire flow demands greater than 1,500 gpm, as well as the available fire flow shown in the water model.

The fire flow results show fire flow available without reducing zone pressure below 20 psi. Nodes on the water lines near the tanks are omitted from the calculation per DEQ 8.2.1.

The distribution system is considered adequate if the system pressure remains at a minimum of 20 psi under maximum day demand plus fire flow. Available fire flow in Country Club Estates subdivision ranged from 1,167 gpm to 1,200 gpm. The majority of the original City had fire flows

in excess of 3,500 gpm, with the exception of dead-end mains and blocks where 4" mains supplied fire hydrants. See the "Available Fire Flow Map" in Figure 3.10.

Table 3-7 Buildings with Needed Fire Flow Greater Than 1500 gpm

| Building Description | Needed Fire Flow (gpm) | Available Fire Flow (gpm) |
|-------------------------|------------------------|---------------------------|
| Red Lodge Country Club | 2,000 | 1,292 |
| Earlywood | 2,500 | 2,676 |
| Cedar Wood Villa | 3,500 | 4,500+ |
| Red Lodge Ales Brewery | 1,750 | 2,900 |
| Red Lodge Inn | 2,000 | 2,150 |
| Red Lodge Fire-EMS | 2,500 | 3,600 |
| Roosevelt School | 3,500 | 4,500+ |
| Cannery Building | 4,500 | 4,500+ |
| Masonic Temple Building | 1,750 | 4,500+ |
| Carbon County News | 2,250 | 4,500+ |

The booster station currently only provides available fire flows up to 1,200 gpm in Country Club Estates and Spires subdivisions. The City Fire Chief stated that needed fire flows in the City's residential areas is 1,500 gpm. When these fire flows are simulated in the model, a zero pressure is given on the 16" transmission main from the west bench tank to the pumping station

The hydraulic model of the water system also helped to evaluate the adequacy of the system to meet anticipated needed fire flows. Initial computer modeling found that the system provides good fire flows throughout most of the City with the exception of a few areas where capacity and or pressures currently fall short of recommended fire flows. In general, it was determined that capacity is restricted in the areas by aged 4-inch cast iron mains or dead ends. Locations with the most pronounced deficiency are in Figure 3:11 Poor Fire Flow Map. The concerning areas include:

1. Park Avenue-Park Avenue's water main is a 6" dead end main with fire hydrants. The available fire flow at the dead end is approximately 600 gpm.
2. South Hauser between 17th Street and 19th Street. 17th street to 18th street in Hauser is 4" CIP, and 18th Street to 19th Street may have a live 2" water main. The approximate available fire flow in the intersection of 18th Street of 780 gpm.

3. South Grant Between 22nd Street and 23rd. This section of Grant is 6" cast iron with a dead end in 23rd Street. The available fire flow at the dead end in 23rd Street is approximately 980 gpm.
4. The west of the intersection of 22nd Street and White Avenue there is a section of 4" CIP main which supplies a hydrant. The available fire flow here is approximately 760 gpm
5. Country Club Estates and Spires subdivision. The needed fire flow of 1500 gpm for residential and 2000 gpm for the Golf Course club house, neither of which can be supplied to the subdivisions as the 16" transmission main pressures lower to zero PSI when flows of 1200 gpm are provided to the subdivisions, restricting fire flow availability.

The hydraulic model also showed zone 5 has excessive pressures. Zone 5 is the most northern section of the City as shown on Figure 3:1. Pressures in this zone ranged from over 100 psi to 152 psi at the Hospital. As mentioned previously, DEQ-1 requires pressure reducing infrastructure to reduce static pressures above 100 psi. Figure 3:12 System Pressure Map, shown below, illustrates the model's result of the City's water system pressures.

As shown in the figure, the pressures exceed 100 psi in a triangle shaped area east of Bonner from 1st street south east to the intersection of Chambers Avenue and what would be 4th Street. If the City chose to address the pressures in this area, service pressure relief systems could be provided, as the looping would require four main line pressure relief valves.

The model also determined that when the west bench water tower is out of commission and the entirety of the City's water supply is from the water treatment plant storage, PRV 1 in White Avenue is inadequately sized to provide needed fire flows. In this case, the 3500 gpm fire flow needed for the commercial buildings in Broadway Avenue is not met. The available flow is reduced to 2900 gpm.

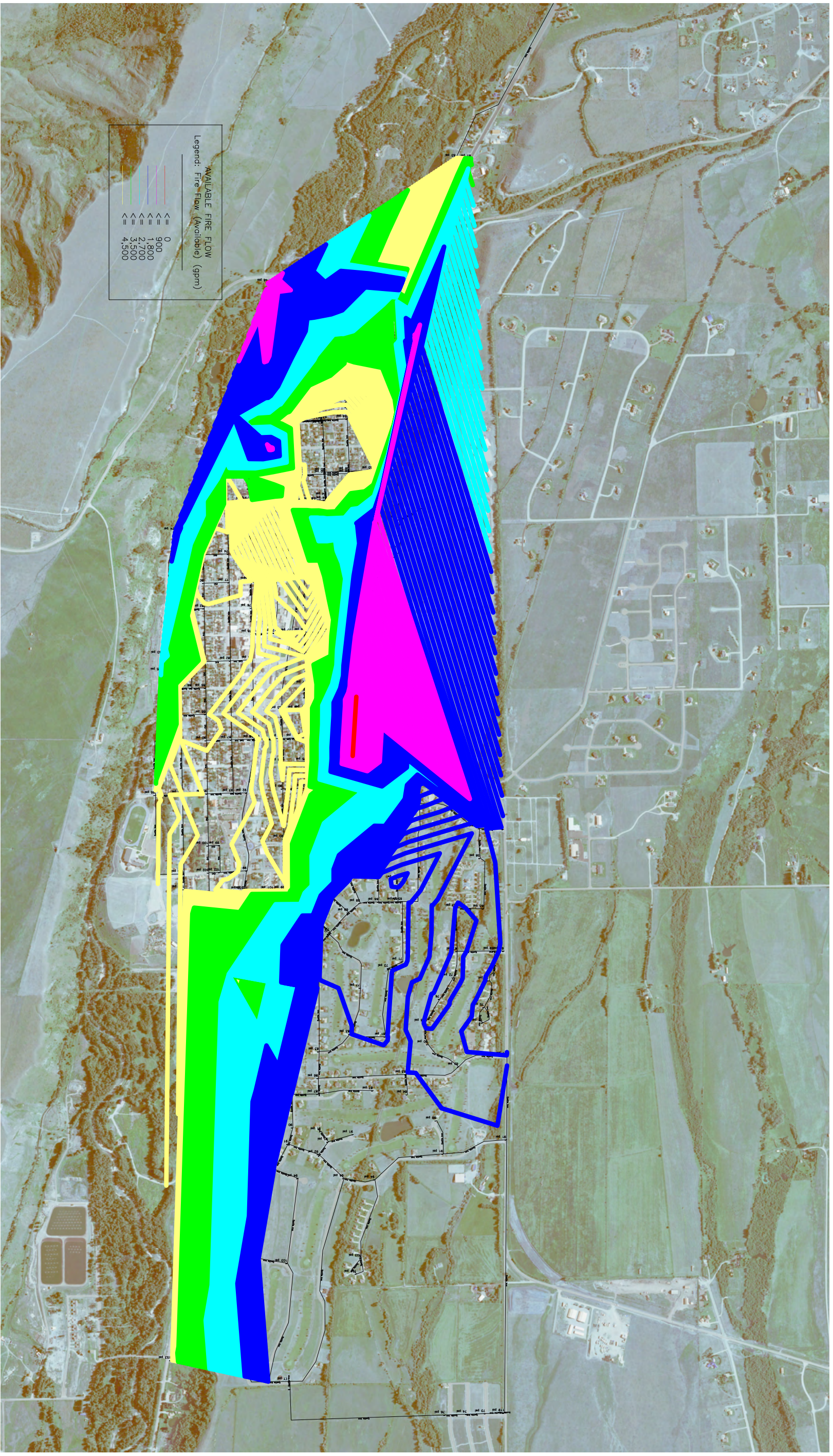
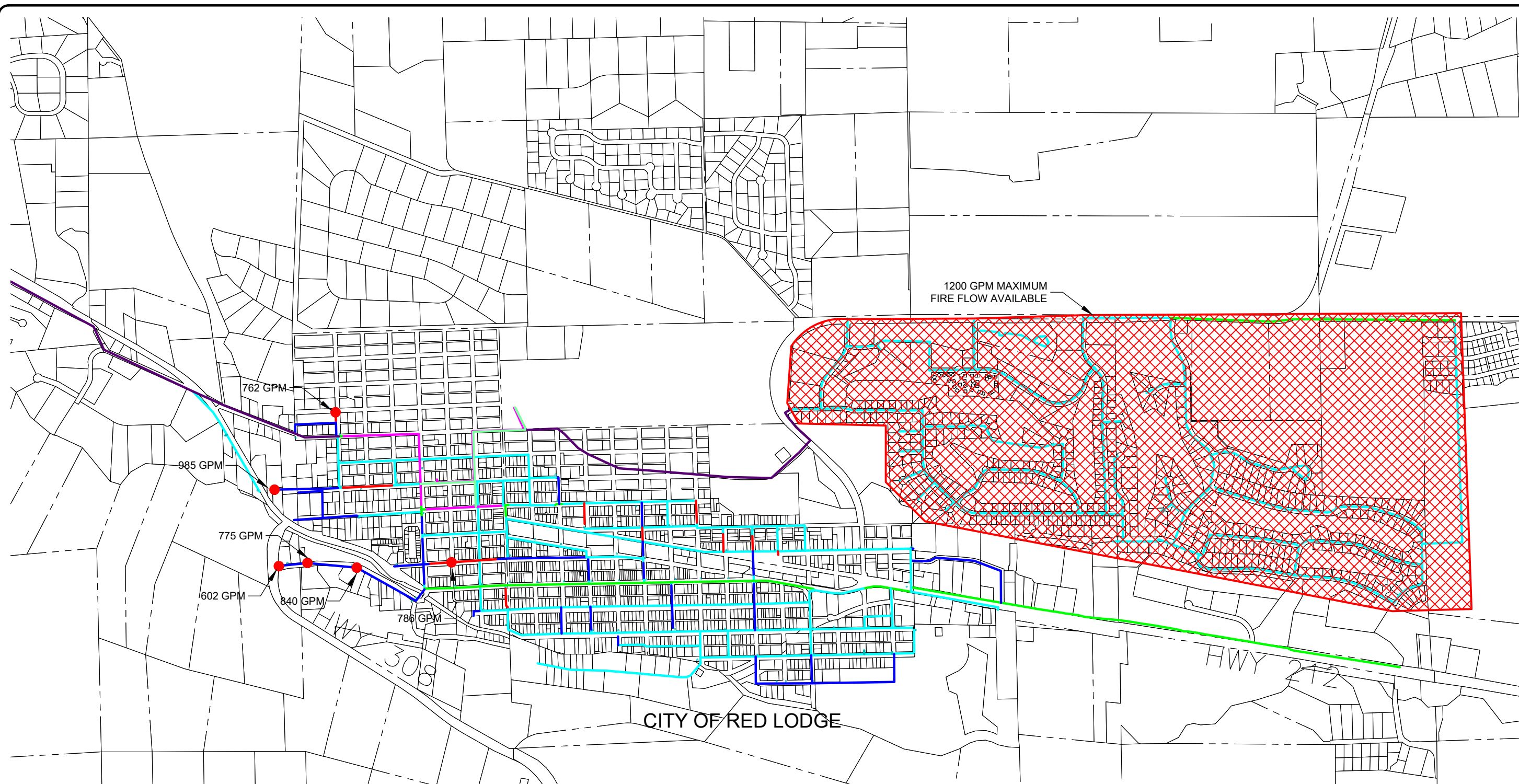


Figure 3:
AVAILABLE FIRE FLOW MAP

J:\2-17103 - Red Lodge On-Call 2017\TO 14 - Water PER\CADD 2-17103-14\Sheets\Figure 3.7 existing fireflow figure.dwg



CITY OF RED LODGE



SCALE: 1" = 1/4 MILE

LEGEND

| | |
|-----------------------|---|
| FIRE FLOW < 1,000 GPM | ● |
| 4" WATER MAIN | — |
| 6" WATER MAIN | — |
| 8" WATER MAIN | — |
| 10" WATER MAIN | — |
| 12" WATER MAIN | — |
| 14" WATER MAIN | — |
| 16" WATER MAIN | — |



Figure 3:11
POOR FIRE FLOW MAP
 City of Red Lodge, Montana
 2019 Water Preliminary Engineering Report



Figure 3:
WATER SYSTEM PRESSURE MAP

3.4 Operational and Management Practices and Capabilities

The City of Red Lodge Public Works staff does an exceptional job of operating and managing their water system given the limited amount of resources they have and the challenges related to operating a system with portions nearly 100 years old. Some of the operational challenges that were discussed in previous sections include the following:

1. Repairing an excessive amount of water main and service freezes.
2. Excessive amount of service breaks.
3. Dealing with inadequate valve spacing and inoperable valves, making it difficult to isolate portions of the system when breaks occur.
4. Maintaining reasonable pressures in high-pressure zones without proper pressure relief valving.

3.5 Financial Status of any Existing Facilities

Income and expenditures for the water system, including operation and maintenance, are included in the Water Enterprise Fund under the City's accounting system.

3.5.1.1 Expenses and Revenue

The City increased its water rates in August of 2019 to address a shortfall in the water enterprise fund. A copy of the current rates is included in Appendix H. A summary of the expenditures and revenue for the last three fiscal years before the rate increase was enacted is included in Table 3-8, and a complete breakout of the expenses and revenues is included in Appendix H. It should be noted that the intergovernmental revenue from the capital grant have been removed from the summary of fiscal year 2018-2019 to provide a more accurate overview of the City's annual O&M costs for the system.

Table 3-8 Summary of Income and Expenses

| Account | FY 16-17 | FY 17-18 | FY 18-19 | Average |
|---|-----------------|-----------------|-----------------|-----------------|
| Expenses | | | | |
| 430510 Water | \$ 395,046.66 | \$ 476,345.10 | \$ 589,867.28 | \$ 487,086.35 |
| Total Expense | \$ 395,046.66 | \$ 476,345.10 | \$ 589,867.28 | \$ 487,086.35 |
| Revenue | | | | |
| 33000 Intergovernmental Revenue | \$ 1,890.00 | \$ 1,857.00 | \$ 2,426.00 | \$ 2,057.67 |
| 340000 Charges for Services | \$ 955,728.92 | \$ 1,099,807.71 | \$ 1,195,922.87 | \$ 1,083,819.83 |
| Misc. Revenues | | | \$ 9,075.20 | \$ 9,075.20 |
| 370000 Investments and Royalty Earnings | \$ 1,355.35 | \$ 4,198.43 | \$ 6,918.98 | \$ 4,157.59 |
| 383000 Resort Tax | \$ 100,000.00 | \$ 100,000.00 | \$ 201,477.10 | \$ 133,825.70 |
| Total Revenue | \$ 1,058,974.27 | \$ 1,205,863.14 | \$ 1,415,820.15 | \$ 1,226,885.85 |
| Revenue Minus Expenses=Reserves | \$ 663,927.61 | \$ 729,518.04 | \$ 825,952.87 | \$ 739,799.51 |

3.5.1.2 Debt Services

The City has debt service for two loans. One loan is a Drinking Water State Revolving fund (DWSRF) loan that was utilized to construct the Haggin Avenue Water Replacement project, and the other loan is the refinanced loan of the Broadway Avenue and Water Treatment Plant Improvements. The table below includes the existing loans and yearly payment amounts.

Table 3-9 City of Red Lodge Water System Debt Service

| Debt Service | | |
|---------------------|-------------------|--------------------|
| Month | Balance Remaining | Payment (per year) |
| 2019B Bond | \$ 922,466 | \$ 59,913 |
| 2019C Bond | \$ 4,695,000 | \$ 435,444 |
| Total | \$ 5,617,466 | \$ 495,357 |

3.5.1.3 Water System Energy Use

Power bills for the City’s well pumps, PRV, and booster station from 2019 are summarized in the following three table summarizing electricity usage and costs for each of the three locations. The bills are located in Appendix H.

Table 3-10 2019 Well Power Use and Cost

| Month | Electrical Usage at Water Treatment Plant Wells | | Electrical Usage at Grant Avenue Well | |
|-----------------------------|---|------------------|---------------------------------------|------------------|
| | Electricity Usage (kWh) | Electricity Cost | Electricity Usage (kWh) | Electricity Cost |
| Dec-18 | 13,760 | \$ 1,749.39 | 3,200 | \$ 739.68 |
| Jan-19 | 12,520 | \$ 1,619.34 | 4,160 | \$ 819.03 |
| Feb-19 | 12,420 | \$ 1,621.91 | 4,240 | \$ 870.98 |
| Mar-19 | 12,260 | \$ 1,646.60 | 4,080 | \$ 858.67 |
| Apr-19 | 13,580 | \$ 1,664.52 | 4,720 | \$ 880.44 |
| May-19 | 13,640 | \$ 1,677.53 | 4,960 | \$ 913.10 |
| Jun-19 | 12,440 | \$ 1,498.44 | 2,640 | \$ 734.18 |
| Jul-19 | 16,040 | \$ 1,738.99 | 1,600 | \$ 654.04 |
| Aug-19 | 16,200 | \$ 1,709.94 | 2,720 | \$ 732.10 |
| Sep-19 | 17,480 | \$ 1,818.35 | 2,400 | \$ 707.39 |
| Oct-19 | 11,800 | \$ 1,451.63 | 2,240 | \$ 697.66 |
| Nov-19 | 11,780 | \$ 1,583.39 | 3,040 | \$ 803.70 |
| Annual Total | 163,920 | \$ 19,780.03 | 40,000 | \$ 9,410.97 |
| 2019 Well Power Usage (kWh) | | | 203,920 | |
| 2019 Well Power Cost | | | \$ 29,191.00 | |

Table 3-11 2019 Existing PRV Power Use and Cost

| Water Electrical Usage at PRV | | |
|-------------------------------|-------------------------|------------------|
| Month | Electricity Usage (kWh) | Electricity Cost |
| Dec-18 | 674 | \$ 87.52 |
| Jan-19 | 700 | \$ 91.47 |
| Feb-19 | 736 | \$ 97.61 |
| Mar-19 | 765 | \$ 101.21 |
| Apr-19 | 684 | \$ 91.63 |
| May-19 | 625 | \$ 85.28 |
| Jun-19 | 548 | \$ 75.54 |
| Jul-19 | 414 | \$ 58.58 |
| Aug-19 | 461 | \$ 64.58 |
| Sep-19 | 472 | \$ 65.98 |
| Oct-19 | 360 | \$ 52.19 |
| Annual Total | 6439 | \$ 871.59 |

Table 3-12 2019 Booster Station Power Use and Cost

| Water Electrical Usage at Booster Station | | |
|---|-------------------------|------------------|
| Month | Electricity Usage (kWh) | Electricity Cost |
| *Nov-18 | 4548 | \$ 450.00 |
| Dec-18 | 2728 | \$ 314.21 |
| Jan-19 | 4218 | \$ 427.28 |
| Feb-19 | 423 | \$ 144.23 |
| Mar-19 | 1353 | \$ 208.93 |
| Apr-19 | 5898 | \$ 566.58 |
| May-19 | 6104 | \$ 584.22 |
| Jun-19 | 4239 | \$ 454.13 |
| Jul-19 | 4592 | \$ 451.36 |
| Aug-19 | 4113 | \$ 417.80 |
| Sep-19 | 4113 | \$ 415.21 |
| Oct-19 | 3388 | \$ 372.96 |
| Annual Total | 45717 | \$ 4,806.91 |

*Electricity Usage given on Dec 18 Bill, however Bill amount not given. Electricity cost assumed based off of Jul-19 cost with similar usage.

3.5.2 Existing User Rates

Also important to the financial status of the City is the City's ability to meet the "target rate." The target rate is a user rate established by the Montana Department of Commerce (MDOC) for each municipality across the state. The rate is used to determine whether or not a municipality is paying its "fair share" of a project's cost. In order to apply for grant funding from the MDOC, the user rates after completion of the project must meet or exceed the established target rates. According to the 2015 American Community Survey, the City of Red Lodge's median household income (MHI) is \$42,500 with an low to moderate income (LMI) of 48.97%.

The MDOC has determined, based on surveying communities that have undergone recent upgrades to their water and/or wastewater system, the "fair share" of cost per user after completing a project should be approximately 0.9% of the MHI for wastewater alone, 1.4% of the MHI for water alone, or 2.3% of the MHI for wastewater and water combined.

Thus, the final target rates are calculated in Table 3.13 below:

Table 3-13 Target Rate for Red Lodge

| System | MHI | % | Target Rate | |
|----------------------------------|---------------------|-------------|------------------|-----------------|
| | | | Annual | Monthly |
| MDOC: WATER ONLY | \$ 42,500.00 | 1.4% | \$ 594.96 | \$ 49.58 |
| MDOC: WASTEWATER ONLY | \$ 42,500.00 | 0.9% | \$ 382.56 | \$ 31.88 |
| MDOC: COMBINE TARGET RATE | \$ 42,500.00 | 2.3% | \$ 977.52 | \$ 81.46 |

Since target rates are based upon equivalent dwelling units (EDU's), it is important to calculate the City's rates based upon EDU's. An EDU rate system charges are based on the area of the service size. A 3/4" water service is a typical residential water service and is considered to be 1 EDU. The EDUs for each service line are then calculated based on the area of the service size divided by the area of the 3/4" service size.

Table 3-14 presents a summary of the EDU's for the City of Red Lodge.

Table 3-14 Existing EDU's for Red Lodge

| Service Size (inches) | EDU's per Service | Residential | | Commercial | | Total | |
|-----------------------|-------------------|-------------|-------------|------------|------------|-------------|-------------|
| | | Number | EDU's | Number | EDU's | Number | EDU's |
| 3/4 | 1.00 | 1363 | 1363 | 129 | 129 | 1492 | 1492 |
| 1 | 1.79 | 21 | 38 | 33 | 59 | 54 | 97 |
| 1 1/2 | 4.00 | 3 | 12 | 11 | 44 | 14 | 56 |
| 2 | 7.14 | 1 | 7 | 10 | 72 | 11 | 79 |
| 3 | 16.00 | 0 | 0 | 1 | 16 | 1 | 16 |
| TOTAL | | 1388 | 1420 | 184 | 320 | 1572 | 1740 |

The Montana Department of Commerce (MDOC) considers both the water and wastewater rates combined for systems which have both. The current base rates are established at:

- Water: \$40.91 base rate (0 to 3,000 gallons) + \$ 4.46 per 1,000 gallons (3,001 to 8,000 gallons) + \$5.86 per 1,000 gallons (8,001 to 20,000 gallons) + \$7.39 per 1,000 gallons (>20,001 gallons)
- Wastewater: \$50.27 base rate (0 to 3,000 gallons) + \$1.74 per 1,000 gallons (3,001 to 8,000 gallons) + \$2.28 per 1,000 gallons (8,001 to 20,000 gallons) + \$2.98 per 1,000 gallons (>20,001 gallons)

The average water usage is based on the yearly average day use as discussed in Section 3.3.1. The metered average day use is 261,500 gallons. With 1740 existing EDU's, the average water use is 4,500 gallons per month. Applying this usage to the rate structure, the average water billing rate is \$47.60 per month.

Wastewater usage is based upon the average usage over the winter months. Billing reports indicate the average residential sewer usage is just under 3,000 gallons per month. Applying this usage to the rate structure, the average wastewater billing rate is \$50.27 per month.

As shown in the Table below. The average combined monthly water and wastewater rate for a residential household (or per EDU) is \$97.87 per month, which is 120% of the target rate of \$81.46 listed on the MDOC website.

Table 3-15 Current Water and Sewer Rates

| System | MDOC Target Rate | Average Existing Rate per EDU |
|------------------------|-------------------------|--------------------------------------|
| Water Only | \$49.58 | \$47.60 |
| Wastewater Only | \$31.88 | \$50.27 |
| Combined | \$81.46 | \$97.87 |
| Percent of Target Rate | --- | 120% |

3.6 Water/Energy/Waste Audits

The City conducts their own water audits utilizing information from both their production meter as well as their customer meters. This has proven to be a powerful tool for the City personnel to know when there may be a new leak within the system. However, the leaks can be very challenging to find due to the type of soils in the area (leaks don't surface). If the City continues their path to replace older mains, they will also continue to discover leaking service lines and mains and continue to reduce their overall system water loss.

The City has not completed any recent energy or waste audits.

4.0 NEED FOR PROJECT

In addition to identifying deficiencies within a public utility system and developing alternatives to correct those deficiencies, a PER must also discuss the relevant need for the project to help communities prioritize capital projects and manage limited resources and budgets. The following subsections will provide an overview of the system needs.

4.1 Health, Sanitation and Security

Health and safety of the public is by far the largest concern for any community water system. The City of Red Lodge has a few deficiencies within the water system that compromise the health and safety of the public. Lack of fire protection, dead-end mains and old cast iron mains are the largest community concern.

4.1.1 Undersized Mains

The system currently has multiple fire hydrants throughout the City that are served by 4" cast iron mains. This is clearly out of compliance with DEQ standards. Circular DEQ-1 states:

The minimum size of water main for providing fire protection and serving fire hydrants must be six inches in diameter.

The concern here is 4" lines, particularly corroded ones, present a significant restriction on capacity and hence fire protection. This deficiency represents a threat to public safety. Figure 4.1 highlights the 4" water mains within the distribution system that have fire hydrants connected to them.

Circular DEQ-1 discusses main size in section 8.2.2. it states that:

The minimum size of water main in the distribution system where fire protection is not to be provided should be a minimum of three inches in diameter.

The City has one known 2" water line serving as a water main without fire hydrants. This water line connects to the water main at the intersection of Kainu and Park avenue and continues north where it dead ends near the would-be intersection of 17th Street.

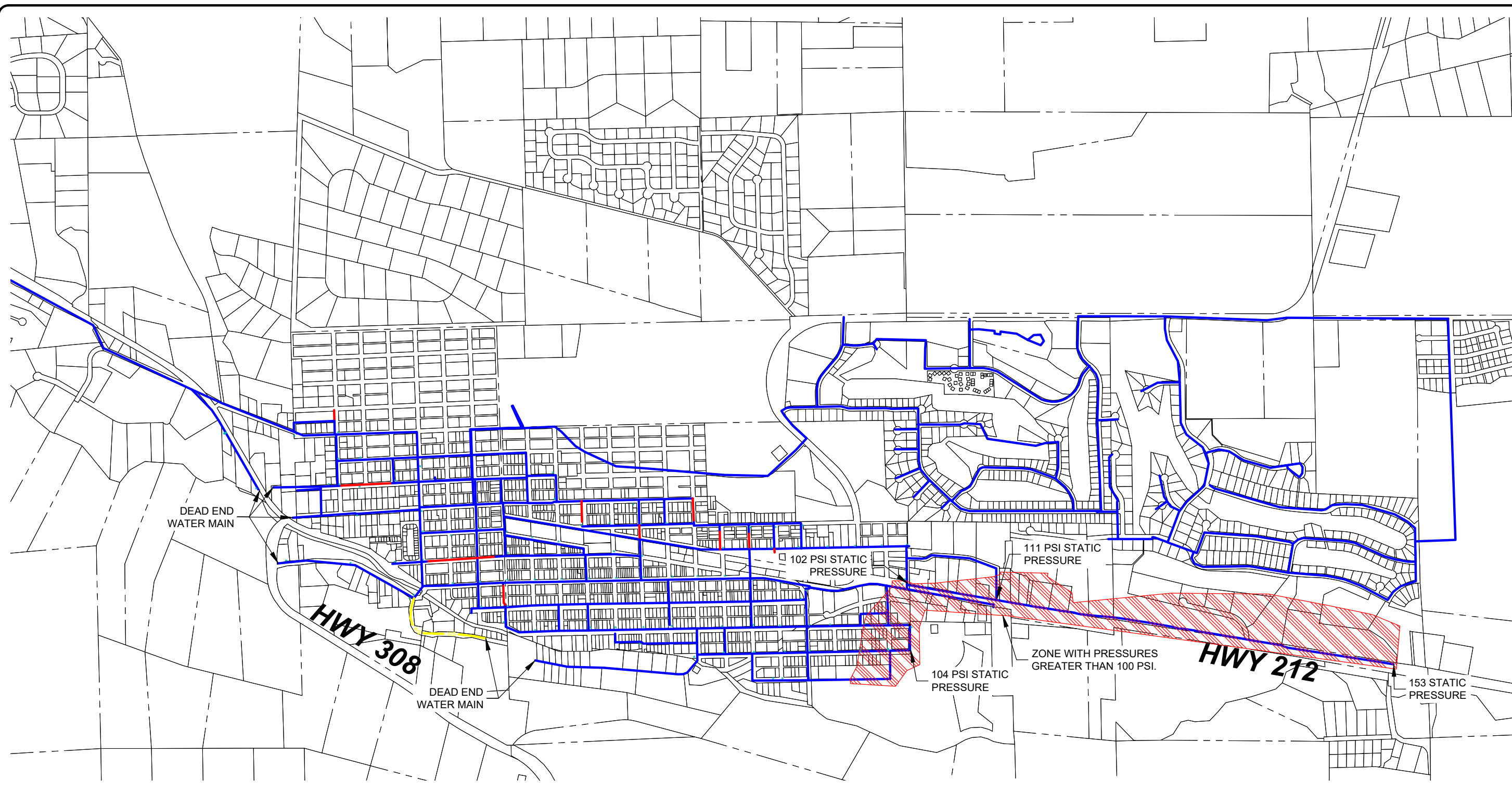
4.1.2 Dead-End Mains

There are several dead end mains in the current distribution system, which in addition to significantly stifling fire flows, also presents a serious health concern. This is due to the stagnation of water that can occur in the main. As a result, the chlorine residual may decay significantly which produces an environment that permits bacteria to thrive, particularly if it is an aged cast iron main with scaled walls. Dead end mains are discussed in Circular DEQ-1 section 8.2.4, in which it is recommended that they be minimized and looped in the system whenever it is feasible to do so.

The City's dead-end mains can be seen in Figure 4.2, and are described below:

1. South of Highway 212, an 8" line dead ends 1200 feet north of the intersection of Highway 212 and Ski Run Road.
2. The main in South Adams Avenue dead ends near Beartooth Hideaway Inn.
3. The water main in Park Avenue dead ends at the intersection of Park Avenue and Bear Creek Hill.
4. The 2" water main in the southern portion of Kainu Avenue dead ends at what would be the intersection of 16th Street.
5. The water main in South Adams Avenue dead ends on the west side of the intersection of South Adams Avenue and Highway 212.
6. The water main in Kainu Avenue dead ends at what would be the intersection of Kainu Avenue and 15th Street.

J:\2-17103 - Red Lodge On-Call 2017\TO 14 - Water PER\CADD 2-17103-14\Sheets\Figure 4.1 Undersized Mains.dwg



SCALE: 1" = 1/4 MILE

LEGEND

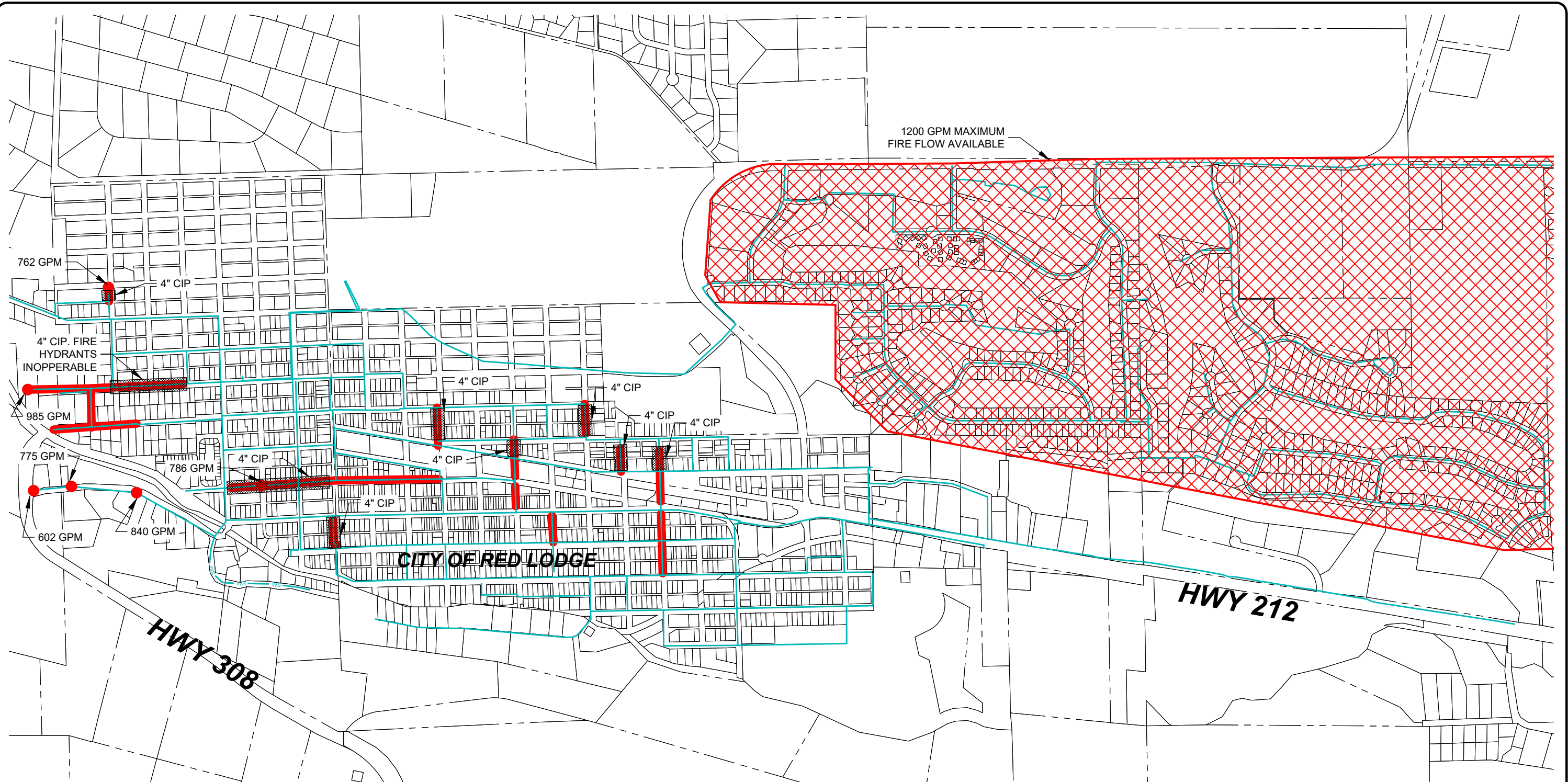
- 4" WATER MAIN W/ HYDRANTS —
- 2" WATER MAIN W/O HYDRANTS —
- ADEQUATELY SIZED WATER MAIN —



**Figure 4:1
NEED FOR PROJECT MAP**

City of Red Lodge, Montana
2019 Water Preliminary Engineering Report

J:\2-17103 - Red Lodge On-Call 2017\TO 14 - Water PER\CADD 2-17103-14\Sheets\Figure 4.5 CAST IRON WATER MAINS.dwg



SCALE: 1" = 1,000 FT

LEGEND
 CAST IRON WATER MAIN

Figure 4:2
CAST IRON WATER MAINS AND
INADEQUATE FIRE FLOW

City of Red Lodge, Montana
 2019 Water Preliminary Engineering Report



4.1.3 System Pressure

There is a significant need for additional pressure relief north of the intersection of Robison Lane and Broadway. DEQ-1 Section 7.3.1 requires:

“The minimum working pressure in the distribution system should be 35 psi and the normal working pressures should be approximately 60 to 80 psi. When static pressures exceed 100 psi, pressure reducing devices must be provided on mains or as part of the setting on individual service lines in the distribution system.”

The static pressure on the farthest north fire hydrant near the hospital was measured to be 152 psi. This is 150% of the recommended maximum system pressure of 100 psi. Installation of pressure relieve valve(s) will be needed to reduce the pressure of this zone. Figure 4.2 shows the main pressures in the high pressure area.

The existing PRV in White Avenue (PRV 1) consists of one 6” PRV without an additional fire flow PRV. In the case where the west bench water tower or Grant Avenue Well is out of commission, it is necessary to replace this PRV system with a new PRV vault which would include a normal operation PRV and an additional fire flow PRV. This will increase system resiliency. Currently, in the event that the west bench tower is out of commission, the entirety of the historic commercial buildings do not have the needed 3,500 gpm fire flow. Addition of a secondary pressure relief valve at PRV 1 will allow the system to supply needed fire flow in the event the west bench tower is out of commission.

4.1.4 Fire Flow

In general, it was determined that capacity is restricted in the areas by aged 4-inch cast iron mains or dead ends. Locations with the most pronounced deficiency are in Figure 4.2 Inadequate Fire Flow map. The concerning areas include:

1. Park Avenue-Park avenue is a 6” dead end main with fire hydrants. The available fire flow at the dead end is approximately 600 gpm.
2. South Hauser between 17th Street and 19th Street. 17th street to 18th street in Hauser is 4” CIP, and 18th Street to 19th Street may have a live 2” water main. The approximate available fire flow in the intersection of 18th Street of 780 gpm.

3. South Grant Between 22nd Street and 23rd. This section of Grant is 6" cast iron with a dead end in 23rd Street. The available fire flow at the dead end in 23rd Street is approximately 980 gpm.
4. The west of the intersection of 22nd Street and White Avenue there is a section of 4" CIP main which supplies a hydrant. The available fire flow here is approximately 760 gpm

Another concern is fire flow availability provided after the booster station. The booster station currently only provides available fire flows up to 1200 gpm in Country Club Estates and Spires subdivisions. The City Fire Chief stated that needed fire flows in the City's residential areas is 1500 gpm. When these fire flows are ran in the model, a zero pressure is given on the 16" transmission main from the west bench tank to the pumping station. The low pressure in the transmission main limits the booster station's ability to provide the needed fire flow to the entirety of Zone 3 as shown on Figure 4.2.

As mentioned in 4.1.3 above, PRV 1 limits needed fire flows in town in the event the west bench tank is out of commission.

4.2 Aging Infrastructure

The City of Red Lodge has been continually working to replace the aging infrastructure within the water system. Despite their efforts, there are still a large number of cast iron mains that are approximately 80 years old. Figure 4.2 identifies the cast iron mains located within the distribution system.

As discussed in Chapter 3, tuberculation is a common problem in cast iron mains. Not only is the inside diameter of the pipe reduced, the roughness is also increased, which causes further hydraulic loss in the pipeline. The age and condition of the pipes results in a very inefficient system. In severe cases such as in Red Lodge, the tuberculation can also lead to pipe leaks. Leaky pipes contribute to not only water loss, but also expose the water distribution system to potential cross contamination.

Since 2014 the City has experienced a 47% water loss, or on average of 79 million gallons a year. the Environmental Protection Agency (EPA) estimates that average water system losses should be less than 16% and up to 75% of that is recoverable. ^{vii} Red Lodge's water loss is nearly triple the EPA estimate. This loss is attributed to old cast iron mains as well as old, leaky services.

Park Avenue and the line in 19th Street between Broadway and Hauser are asbestos cement pipe. Asbestos-cement pipe was used extensively in the mid-1900's in potable water distribution systems, particularly in the western United States. The Chrysotile Institute estimates AC pipe life span at 70 years, but actual service life depends largely on pipe condition and working environment. Over time, AC pipe undergoes gradual degradation in the form of corrosion (i.e. internal calcium leaching due to conveyed water and/or external leaching due to ground water). Such leaching leads to reduction in effective cross section, which results in pipe softening and loss of mechanical strength. These lines experience frequent breaks from freezing in Red Lodge. The AC pipe is also extremely dangerous to live tap. With the City's frequency of service failures, they are frequently exposed to the danger when a new tap is needed.

Although the public works department does not spend an extraordinary amount of resources on repairing leaks on water mains, they do notice continual problems with leakage at the service line connections. Service line leakage is likely a major contributor to overall system water losses, which is very high. It is also worth noting that these leaks are extremely difficult to locate as the water rarely surfaces due to the extremely porous soils in the area.

4.3 Reasonable Growth

Population figures and projections were presented in Section 2.3. The population of the City of Red Lodge is anticipated to grow with a gradual increase through the planning period of 2040 to 2,827 persons.

Water demands were discussed in detail in Section 3.2.1 and were projected over the planning period. All design and planning are based upon the projected demands for an average day demand of 322,300 gpd and a peak demand of 773,600 gpd.

5.0 ALTERNATIVES CONSIDERED

Numerous alternatives exist which would address the identified deficiencies within the City's water system. Because several of the alternatives may not be viable for various reasons, the alternative screening process will be used to discuss the available alternatives and determine which ones are viable for detailed consideration in the alternative analysis in the next Chapter.

5.1 Alternative Screening

5.1.1 Supply Alternatives

No supply deficiencies were identified within the City's water system. Therefore, no other alternatives are necessary.

5.1.2 Treatment Alternatives

No treatment deficiencies were identified within the City's water system. Therefore, no other alternatives are necessary.

5.1.3 Storage Alternatives

The storage deficiencies noted in Chapter 3 consist of standard maintenance repair of the tanks. The City is planning these repairs once a new inspection is completed. No other storage deficiencies were identified with the City's water system. Therefore, no other alternatives are necessary.

5.1.4 Pumping Station Alternatives

The booster station currently only provides available fire flows up to 1200 gpm in Country Club Estates and Spires subdivisions. The City Fire Chief stated that needed fire flows in the City's residential areas is 1500 gpm and 2000 gpm at the Clubhouse. When these fire flows are run in the model, a zero pressure is given on the 16" transmission main from the west bench tank to the pumping station, limiting the flows to the subdivisions. The following alternatives have been identified as possible solutions.

Alternative P-1: No Action. The "No Action" alternative is an attractive alternative for communities since there are no capital costs associated with it. In this case,

the No Action alternative has a slightly negative impact on public health and safety in that the needed fire flow of 1500 gpm to the Country Club Estates and Spires Subdivisions is not available as the pumps can only supply 1200 gpm. The system can supply 80% of the needed residential fire flow. The system has adequate flow, pressure, and pump redundancy to supply water in all other cases except the fire flow. Since the system satisfies all other requirements this alternative will be considered further.

Alternative P-2: Update Controls at the booster station. The option of updating controls to allow both pumps to run to provide the fire flows is not viable as the increased flow will cavitate pressures in the transmission main. This option also does not allow for system redundancy, in the event that one of the pumps is down, there wouldn't be a back up pump available to supply needed fire flows. Therefore, this option will not be considered further.

Alternative P-3 Add a fire flow pump to the booster station. The option of adding an additional fire flow pump to the booster station would satisfy the pump redundancy issue, but as with option P-2, this option is not viable as the low pressure in the transmission main limits the available flow to the pumps, therefore this option will not be considered further.

Alternative P-4 Bypass Booster Station. This alternative would interconnect the 16" transmission main from the water treatment plant, prior to PRV 1, to the 16" transmission main between the west bench tank and the booster station and remove the existing booster station. This Alternative will provide the needed fire flow, allow the pressure on the 16" transmission main to increase so that additional services could be installed on the main, and the City will save on maintenance and energy costs of maintaining the booster station. Therefore, this alternative will be considered further.

Alternative P-5 Move Booster Station. This alternative would remove the booster station in its current location and install a new booster station on the 16" transmission main closer to the west bench tank. This Alternative will provide the needed fire flow and allow the pressure on the 16" transmission main to increase

so that additional services could be installed on the main. Therefore, this alternative will be considered further.

5.1.5 Distribution System Alternatives

Distribution alternatives that were considered address fire flows, condition of the pipes, and dead end mains. In Addition, to determine the adequacy of the proposed alternatives for the distribution and to provide optimum design the computerized hydraulic model, as discussed in Section 3.3.6 was used to identify the highest priorities within the distribution system and to help evaluate proposed alternatives. The alternatives discussed below were narrowed down from the hydraulic model and considered the options to address the concerns within the distribution system.

Alternative D-1: No Action The “No Action” Alternative is sometimes an attractive alternative for communities since there are no capital costs associated with it. However, in this case, by not completing these improvements, public health and safety will be continuously at risk as a result of lack of fire flow capacity and continued high maintenance, water loss, and inoperable fire hydrants and valves. The City would still need to continue to repair the existing cast iron water main leaks which are draining their resources and exposing the system to various contaminants. By not making any improvements, the system will continue to operate in its current state and deteriorate further. Therefore, the no action alternative is not considered viable and will not be considered further.

Alternative D-2: Park Avenue Project. This alternate would eliminate 4 dead ends within the distribution system, replace 6” AC main with 8” PVC and increase fire flows at four of the intersections which currently have less than 900 gpm fire flows. This alternative will be considered further.

Alternative D-3 Pressure Relief in Zone 5 and Replace PRV 1. This alternative will install pressure reducing valves to reduce the pressures in Zone 5, which currently are in excess of 150 psi as well as replace the existing PRV in White Avenue, PRV 1, with a new PRV vault which will include a normal operation pressure relief valve as well as an additional fire flow pressure relief valve. This alternative would increase public health and safety by updating PRV 1 so that adequate fire flows can be conveyed through PRV-

1. The PRV's in Zone 5 would reduce system pressure and reduce water loss in the event of a break by bringing Zone 5's pressure into compliance with DEQ requirements for system pressure. Therefore, this alternative will be considered further.

Alternative D-4 Replace all cast iron mains. This alternative will be analyzed by breaking the pipe replacement into four options, options A through D. The options will be prioritized by comparing each option's need for fire flow improvement, pipe diameter to meet DEQ's minimum 6" diameter to supply fire hydrants, and will reduce water loss through and potential contamination by removing all the cast iron mains in the system and replacing them with 8" PVC. Therefore, this alternative will be considered further.

Alternative D-5 Kainu Avenue Project. This alternate would eliminate 2 dead ends within the distribution system by constructing new 8" water main from Park Avenue, northward along the southern portion of Kainu Avenue to the approximate intersection of 15th Street. to connect to the water main in the northern portion of Kainu Avenue. By connecting the two dead end mains in Kainu, system pressures in North Kainu will be improved. This alternative will be considered further.

5.2 Pumping Station Alternatives

Section 5.1 discussed various alternatives considered for the distribution system. The following alternatives were considered feasible and will be discussed in detail in this section.

- Alt. P-1 No Action
- Alt. P-4 Bypass Booster Station
- Alt. P-5 Move Booster Station

5.2.1 Alt. P-1 No Action

This option includes keeping the booster station in its current condition. Alt. P-1 is an attractive alternative since there are no capital costs associated with it. In this case, the No Action alternative has a slightly negative impact on public health and safety in that the needed fire flow of 1,500

gpm to the Country Club Estates and Spires Subdivisions is not available as the pumps can only supply 1,200 gpm. This alternate will maintain the current available fire flow to those subdivision of 80% of the needed fire flow. Currently, the booster station has adequate flow, pressure, and pump redundancy to supply water in all other cases except the fire flow.

Alt. P-1 will keep the static pressure on the 16" transmission main at its current levels. The transmission main in this alternative will not have adequate pressures to meet DEQ's minimum static pressure for services, therefore the 16" main will remain functioning as a transmission main and any future services would require individual booster pumps.

There will be no change to annual O&M, and energy use costs associated with Alt. P-1.

5.2.2 Alt. P-4: Bypass Booster Station

This option includes installation of a new 16" main from the water plant transmission main, down White Avenue and connecting to the existing 16" transmission main in between the west bench tank and the booster station. The existing 16" transmission main would remain connected to the west bench tank with a check valve that would open in the event the new 16" transmission main from the water treatment plant is out of commission. With Alternate P-4, water would be supplied to the subdivisions from the water plant sources. The fire flows in the subdivision will be increased to meet needed fire flow demands and the booster station removed.

Installation of a PRV would be required near the existing pumping system and could potentially be installed in the existing pump house. The PRV system will include fire flow bypass so that the 2,000 gallon needed fire flow can be supplied to the golf course club house.

The City has a desire to supply water to the airport, but with existing pressures in the 16" line near the airport, a booster pump for that service would need to be installed. This option allows for adequate pressures to serve the airport. Also, fire flows are greatly increased in the 16" main from less than 500 gpm to greater than 2,500 gpm. Static pressures in the main will be increased from a low of 11 psi to just over 70 psi.

A normally closed valve will be installed at the high pressure tie in to prevent excessive pressure loss in the transmission main to the subdivisions in the unlikely event of a break in the transmission main from the water treatment plant transmission main. The valve will automatically open the line to the west bench water tank if the main pressure drops below 10 psi. The valve will be integrated with the City's existing SCADA system to alarm them of the pressure loss.

Design Criteria

The new main and PRV will be constructed following DEQ-1.

Permitting would involve obtaining DEQ approval of the project plans and specifications. If the project disturbs an area greater than one acre, it would fall under the requirements of the “General Permit for Storm Water Discharges Associated with Construction Activity”, which is required by the Federal Water Pollution Control Act and enforced by DEQ.

Map

The map in Figure 5:1 shows the layout of the proposed system improvements.

Environmental Impacts

This alternative will have very few environmental impacts. The new water main, and PRV will be placed within City streets surrounded by already developed lots.

No known floodplains, wetlands, endangered species, historical or archeological properties are anticipated to be disturbed as a result of the project.

Land Requirements

The project will be constructed entirely within City Right-of Way.

Potential Construction Problems

A geotechnical investigation will need to be completed to ensure the soils are suitable for construction or to determine if any special design requirements will be necessary. Soils within the general vicinity of the City are similar in nature and have been suitable for development. Larger cobble may be encountered and may need to be screened from the excavated material prior to backfill. Cost for a geotechnical evaluation are factored into the cost estimate.

The two southernmost blocks in White avenue where the water main will be constructed have existing sanitary sewer and storm sewer. Sewer and water main separation will be maintained per DEQ-1.

Sustainability Considerations

This option will improve the City's energy use by removing the need for pumping. The proposed project will remove the City's only booster station, allowing pressures to be supplied to Country Club Estates, Spires Subdivision, and a water service to the airport without pumping.

J:\2-17103 - Red Lodge On-Call 2017\TO 14 - Water PER\CADD 2-17103-14\Sheets\Figure 5.1 Alternate P2 remove pumps.dwg

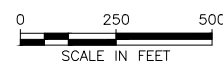


Figure 5:1
Alt. P-4 Bypass Booster Station

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Water and Energy Efficiency

This option has a significant positive impact on energy efficiency. The existing pumping station requires a significant amount of power use to operate full time. With this main connection and the removal of the pumps, fire flow and needed pressure will be provided without the use of power needed for the pumps. The PRV can be installed in the existing booster station building. The building will need a power supply for lighting and heating.

Green Infrastructure

This alternate will reduce the City's use of natural resources by removing the power use associated with the current booster station. The City used 45,717 kWh which cost \$4,800 in 2019 to power the booster pumps, see Table 3-11. This option will add a PRV in the existing booster station which has an estimated power use similar to the existing PRV in White Avenue which used 6,439 kWh which cost \$870 in 2019, See Table 3-10. Therefore, Alt P-4 could potentially reduce the City's energy usage by nearly 40,000 kWh annually, saving the City up to \$4,000 annually.

Other

This option increases the City's water distribution system resiliency. Approximately $\frac{1}{4}$ of residential neighborhood area served by the City's water system has water currently supplied through the booster station. There are redundant pumps in the booster station in case of pump failure, however, the pump station is vulnerable to power-outage. The system currently depends on the booster pumps to normal flows and fire flows. With the proposed improvements, needed fire flow and day demands can be supplied to these residences in the event of a power outage.

The transmission main will have a minimum static pressure of 70 psi, which will allow a service to the airport and potential future water services along Airport Road.

Cost Estimates

Table 5.1 presents an estimated opinion of probable cost for Alternative P-4, and Table 5.2 addresses costs related to operation and maintenance of the improvements. The annual operation and maintenance costs are presented for comparison purposes only of the alternatives.

Table 5-1 Opinion of Probable Cost for Alt. P-4: Bypass Booster Station

| OPINION OF PROBABLE COST | | | | |
|--|------|---------------|------------------------|--------------------|
| City of Red Lodge 2020 Water PER | | | | |
| Alternate P-4 Bypass Booster Station | | | | |
| Item | Unit | Quantity | Unit Cost ¹ | Total |
| Connect to Existing Main | EA | 2 | \$8,000 | \$16,000 |
| Swing Check Valve | EA | 1 | \$15,000 | \$15,000 |
| Specialty Valve Vault, Piping and Contols | LSM | 1 | \$30,000 | \$30,000 |
| 16"x16" Tee | EA | 1 | \$4,500 | \$4,500 |
| 16" Cap | EA | 1 | \$3,000 | \$3,000 |
| Abandon Water Main | EA | 1 | \$2,500 | \$2,500 |
| Under Ground Utility Crossing | EA | 80 | \$500 | \$40,000 |
| 16" PVC Water Main | LF | 3,500 | \$90 | \$315,000 |
| Flowable Fill | CY | 30 | \$250 | \$7,500 |
| 16" Gate Valve | EA | 6 | \$7,000 | \$42,000 |
| 16" Bend | EA | 7 | \$3,500 | \$24,500 |
| Remove Pumps | LSM | 1 | \$10,000 | \$10,000 |
| Install PRV's in Existing Building | LSM | 1 | \$60,000 | \$60,000 |
| Type A Surface Restoration (Asphalt) | LF | 3,000 | \$60 | \$180,000 |
| | | | | \$750,000 |
| Mobilization | | 10.00% | | \$75,000 |
| Traffic Control | | 2.5% | | \$2,000 |
| Subtotal 2019 Construction Cost | | | | \$827,000 |
| 2022 Construction Cost ² | | 3.0% annually | | \$904,000 |
| Contingency | | 10.0% | | \$91,000 |
| Total: D-4 2022 Construction Cost: | | | | \$995,000 |
| Geotechnical Investigation | | | | \$20,000 |
| Engineering | | 20.0% | | \$199,000 |
| Legal and Administrative | | 2.0% | | \$20,000 |
| Total: D-3 2022 Capital Cost | | | | \$1,234,000 |
| ¹ Estimated unit costs are based upon estimates from suppliers and bid tabs for similar projects throughout Montana. | | | | |
| ² The ENR 20 year average Construction Cost Index is +2.94% (as of December 2018). Capital improvement costs are projected to 2020 using 3.0% factor. | | | | |

Table 5-2 Alternative P-4 Opinion of Probable Annual O&M Costs

| PRESENT WORTH ANALYSIS CITY OF RED LODGE 2019 WATER PER Alternative P-4: Bypass Booster Station | | | | |
|---|----------------|---------------------|------------------------|---------------------|
| O&M Item | Estimated Cost | Recurrence Interval | Equivalent Annual O&M1 | Present Worth2 |
| <u>Distribution System Improvements</u> | | | | \$ - |
| Electrical Costs | (\$4,000) | 1 | \$ (4,000) | \$ (77,534.50) |
| | | | \$ - | \$ - |
| | | | \$ - | \$ - |
| Total O&M Present Worth | | | \$ (4,000) | \$ (77,534) |
| Capital Cost | | | | \$ 1,234,000 |
| Alternative Total Present Worth | | | | \$ 1,156,000 |
| Construction Cost Index | 3.00% | | | |
| Discount Factor | 0.30% | | | |
| <i>1 Equivalent Annual O&M calculated using the "real" discount rate from the Office of Management and Budget (OMB)</i> | | | | |
| <i>2 Present worth based upon a 20 year life cycle using calculated discount rate.</i> | | | | |

5.2.3 Alt P-5: Move Booster Station

The booster station’s current location limits its ability to provide fire flows to Country Club Estates and Spires subdivision as the 16” transmission main in between the west bench storage tank and the booster station limits flow capacity. When fire flows are modeled, the flows are limited by a zero pressure section in the 16” transmission main. This alternative includes demolition of the existing booster station and construction of a new booster station near the west bench tank on the 16” transmission main to remove the low pressure from the system.

A new 25’x30’ concrete masonry unit (CMU) building will be constructed near the existing west bench water tank. A total of 4 pumps will be required, all of which will have VFD’s. One pump will be a smaller pump sized to supply the average day demand flow. The second pump will be sized to aid the fist pump during the peak hour demand. The third pump will be the same size as the second and will be installed as a redundant pump. The fourth pump will be sized to supply the needed 2,500 gpm fire flow demand. Controls will be integrated with the City’s existing SCADA system.

This booster station will require three-phase power be ran to the new building. A back-up power source will be provided by a generator. The pump head will be sized to add approximately 40 psi

of head to the system in order to match the existing system pressure after the current booster station.

The existing booster station will be demolished and the underground 8" water main piping will be reconnected at the existing booster station. A security fence with a gate will be installed around the perimeter of the building. An access road will be constructed off of Airport Road.

Design Criteria

Permitting would involve obtaining DEQ approval of the project plans and specifications. If the project disturbs an area greater than one acre, it would fall under the requirements of the "General Permit for Storm Water Discharges Associated with Construction Activity", which is required by the Federal Water Pollution Control Act and enforced by DEQ.

Map

Figure 5.2 below illustrates Alternate P-5 improvements.

Environmental Impacts

This alternative will have very few environmental impacts. The new booster station will be located near the existing west bench tank along Airport Road.

No known floodplains, wetlands, endangered species, historical or archeological properties are anticipated to be disturbed as a result of the project.

Land Requirements

The project will be constructed entirely within City Right-of Way and City property.

Potential Construction Problems

A geotechnical investigation will need to be completed to ensure the soils are suitable for construction or to determine if any special design requirements will be necessary. Soils within the general vicinity of the City are similar in nature and have been suitable for development. Larger cobbles may be encountered and may need to be screened from the excavated material prior to backfill. Cost for a geotechnical evaluation are factored into the cost estimate.

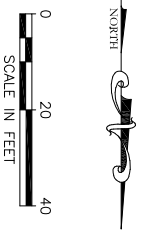
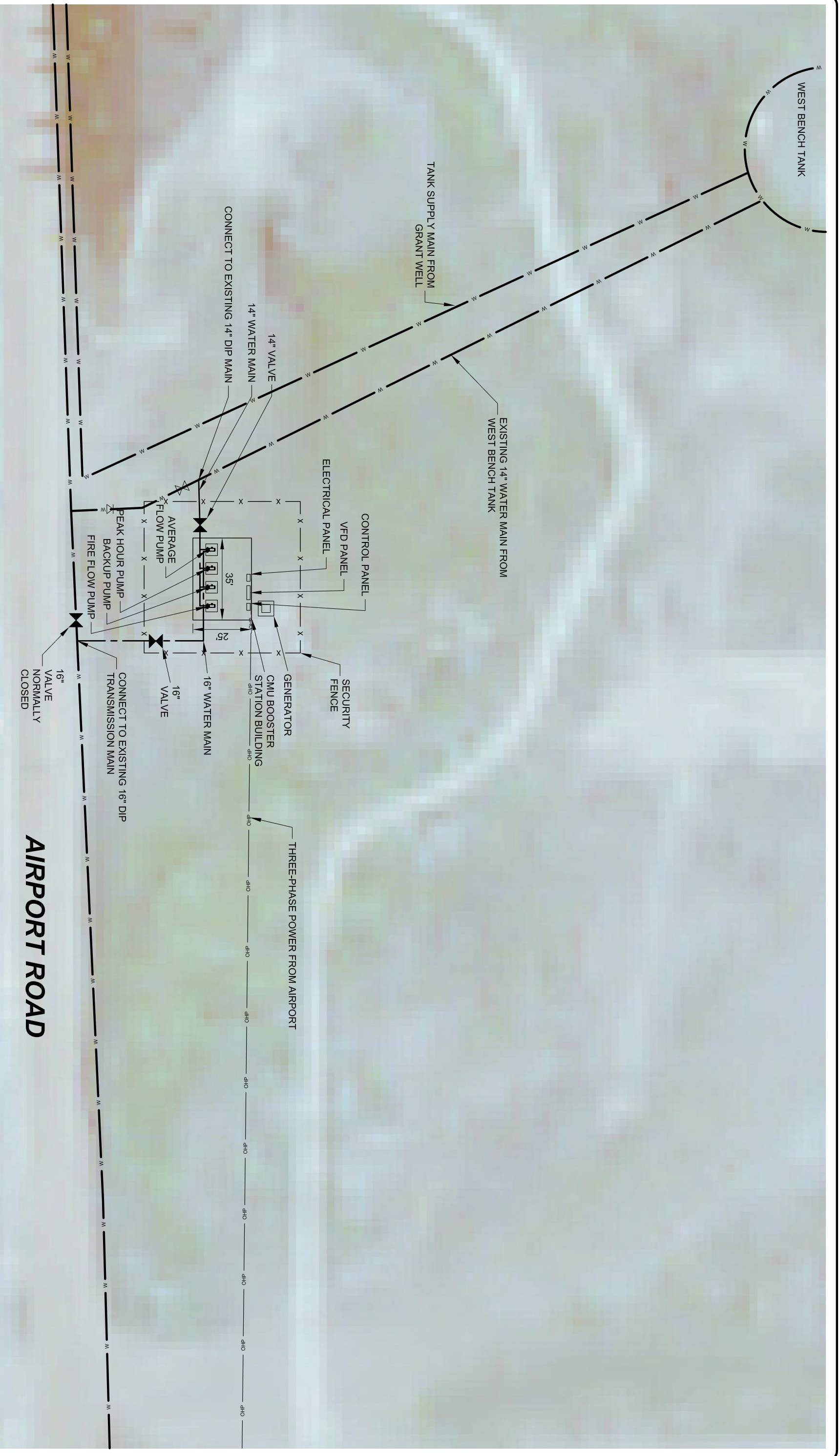


Figure 5:2
MOVE PUMP STATION

Sustainability Considerations

Water and Energy Efficiency

This project includes removal of the current booster station and construction of a new booster station. With addition of larger pumps for average flow demand and the fire flow pump, electricity use is likely to increase.

Green Infrastructure

Alternate P-5 will have little impact on green infrastructure. Construction of a new booster station building, access road and piping will be installed on the west side of Airport road near the existing west bench water tower. The existing booster station will be demolished.

Other

Annual operation and maintenance duties of Alternate P-5 will likely similar to the O&M requirements of the existing booster station.

Cost Estimates

Table 5.3 presents an estimated opinion of probable cost for Alternative P-5, and Table 5.4 addresses costs related to operation and maintenance of the improvements. The annual operation and maintenance costs are presented for comparison purposes only of the alternatives.

Table 5-3 Opinion of Probable Cost for Alt. P-5: Move Booster Station

| OPINION OF PROBABLE COST | | | | |
|--|------|---------------|------------------------|--------------------|
| City of Red Lodge 2020 Water PER | | | | |
| Alternate P-5 Move Booster Station | | | | |
| Item | Unit | Quantity | Unit Cost ¹ | Total |
| Connect to Existing Main | EA | 2 | \$8,000 | \$16,000 |
| 25x35 CMU Pump Building | LSM | 1 | \$220,000 | \$220,000 |
| Three Phase Power to Building | LF | 1,300 | \$12 | \$15,600 |
| 16" Water Main | LF | 70 | \$100 | \$7,000 |
| 16" Valve | EA | 2 | \$9,000 | \$18,000 |
| 16" Tee | EA | 1 | \$5,500 | \$5,500 |
| 16" Bend | EA | 3 | \$4,500 | \$13,500 |
| 14" Water Main | LF | 40 | \$95 | \$3,800 |
| 14" Valve | EA | 2 | \$8,000 | \$16,000 |
| 14" Tee | EA | 1 | \$3,500 | \$3,500 |
| 14" Bend | EA | 2 | \$3,000 | \$6,000 |
| Pumps and Piping | LSM | 1 | \$140,000 | \$140,000 |
| Controls | LSM | 1 | \$60,000 | \$60,000 |
| Electrical Panel | LSM | 1 | \$34,000 | \$34,000 |
| Generator and Automatic Transfer Switch | EA | 1 | \$70,000 | \$70,000 |
| Building Electrical | LSM | 1 | \$95,000 | \$95,000 |
| Demolish Existing Pump Building | LSM | 1 | \$35,000 | \$35,000 |
| Reconnect 8" Water Main at Existing Building | LSM | 1 | \$8,000 | \$8,000 |
| Gate | EA | 1 | \$2,000 | \$2,000 |
| Security Fence | LF | 260 | \$25 | \$6,500 |
| Site Grading and Access Road | LSM | 1 | \$25,000 | \$25,000 |
| | | | | \$801,000 |
| Mobilization | | 10.00% | | \$81,000 |
| Traffic Control | | 2.5% | | \$3,000 |
| Subtotal 2019 Construction Cost | | | | \$885,000 |
| 2022 Construction Cost ² | | 3.0% annually | | \$967,000 |
| Contingency | | 10.0% | | \$97,000 |
| Total: D-5 2022 Construction Cost: | | | | \$1,064,000 |
| Geotechnical Investigation | | | | \$20,000 |
| Engineering | | 20.0% | | \$213,000 |
| Legal and Administrative | | 2.0% | | \$22,000 |
| Total: D-5 2022 Capital Cost | | | | \$1,319,000 |
| ¹ Estimated unit costs are based upon estimates from suppliers and bid tabs for similar projects throughout Montana. | | | | |
| ² The ENR 20 year average Construction Cost Index is +2.94% (as of December 2018). Capital improvement costs are projected to 2020 using 3.0% factor. | | | | |

Table 5-4 Alternative P-5 Opinion of Probable Annual O&M Costs

| PRESENT WORTH ANALYSIS CITY OF RED LODGE 2019 WATER PER Alternative P-5: Move Booster Station | | | | |
|---|----------------|---------------------|------------------------------------|----------------------------|
| O&M Item | Estimated Cost | Recurrence Interval | Equivalent Annual O&M ¹ | Present Worth ² |
| <u>Distribution System Improvements</u> | | | | \$ - |
| Electrical Costs | \$10,000 | 1 | \$ 10,000 | \$ 193,836.24 |
| | | | \$ - | \$ - |
| | | | \$ - | \$ - |
| Total O&M Present Worth | | | \$ 10,000 | \$ 193,836 |
| Capital Cost | | | | \$ 1,319,000 |
| Alternative Total Present Worth | | | | \$ 1,513,000 |
| Construction Cost Index | 3.00% | | | |
| Discount Factor | 0.30% | | | |
| <i>1 Equivalent Annual O&M calculated using the "real" discount rate from the Office of Management and Budget (OMB)</i> | | | | |
| <i>2 Present worth based upon a 20 year life cycle using calculated discount rate.</i> | | | | |

5.3 Distribution System Alternatives

Section 5.1 discussed various alternatives considered for the distribution system. The following alternatives were considered feasible and will be discussed in detail in this section:

- Alt. D-2: Park Avenue
- Alt. D-3: Pressure Relief Valve Zone 5 and Replace PRV 1
- Alt. D-4: Replace Cast Iron Mains
- Alt. D-5: Kainu Avenue

5.3.1 Alt. D-2: Park Avenue

Four dead ends will be eliminated with construction of this project, fire flows will be improved, undersized water mains will be replaced, and fire hydrants will be added. Freezing mains will be reduced by eliminating dead ends increasing water main cover.

The shallow 6" AC main in Park Avenue will be replaced with an 8" main. The dead end in Park Avenue will be eliminated by continuing new main westward in Bear Creek Hill Road and continuing westward to cross Rock Creek and Broadway Avenue to connect to the existing dead end in South Adams Avenue.

The dead end in South Grant Avenue will cross Highway 212 to connect to the dead end on the water main which runs along the east side of Highway 212. A PRV will be installed at this connection to reduce pressure from the Highway 212 main. The existing static pressures at the eastern main is 100 psi. The PRV will reduce the pressure to approximately 48 psi to match the existing system pressure.

With construction of this project available fire flow on the southeastern quadrant of town will be greatly improved. Figure 5.3 Alternate D-2 Fire Flow Map shown below illustrates the improved fire flow as a result of Alternate D-2.

Design Criteria

The water main improvements will be the replacement of all existing hydrants, hydrant lead lines with auxiliary valves, replacement of all existing gate valves and water services from the main to the curb stops. In addition to the portions of water main being replaced, new mains will be installed to eliminate dead ends. Additional fire hydrants and valves will also be installed to bring the system into compliance with DEQ Circular 1, which were listed in Chapter 3.

Permitting would involve obtaining DEQ approval of the project plans and specifications. If the project disturbs an area greater than one acre, it would fall under the requirements of the “*General Permit for Storm Water Discharges Associated with Construction Activity*”, which is required by the Federal *Water Pollution Control Act* and enforced by DEQ.

Other permits could include occupancy permits from the Montana Department of Transportation for all work within State right-of-way.

Map

Alternate D-2 is shown in Figure 5.4 below.

Environmental Impacts

All improvements will be constructed in existing City Streets and right of ways. A water main will need to be constructed under Rock Creek. In order to cross Rock Creek HDPE water main will be horizontal directional drill (HDD) under both Rock Creek and Broadway Avenue. No Wetlands or environmentally sensitive areas will be disturbed and the AC main will be abandoned.

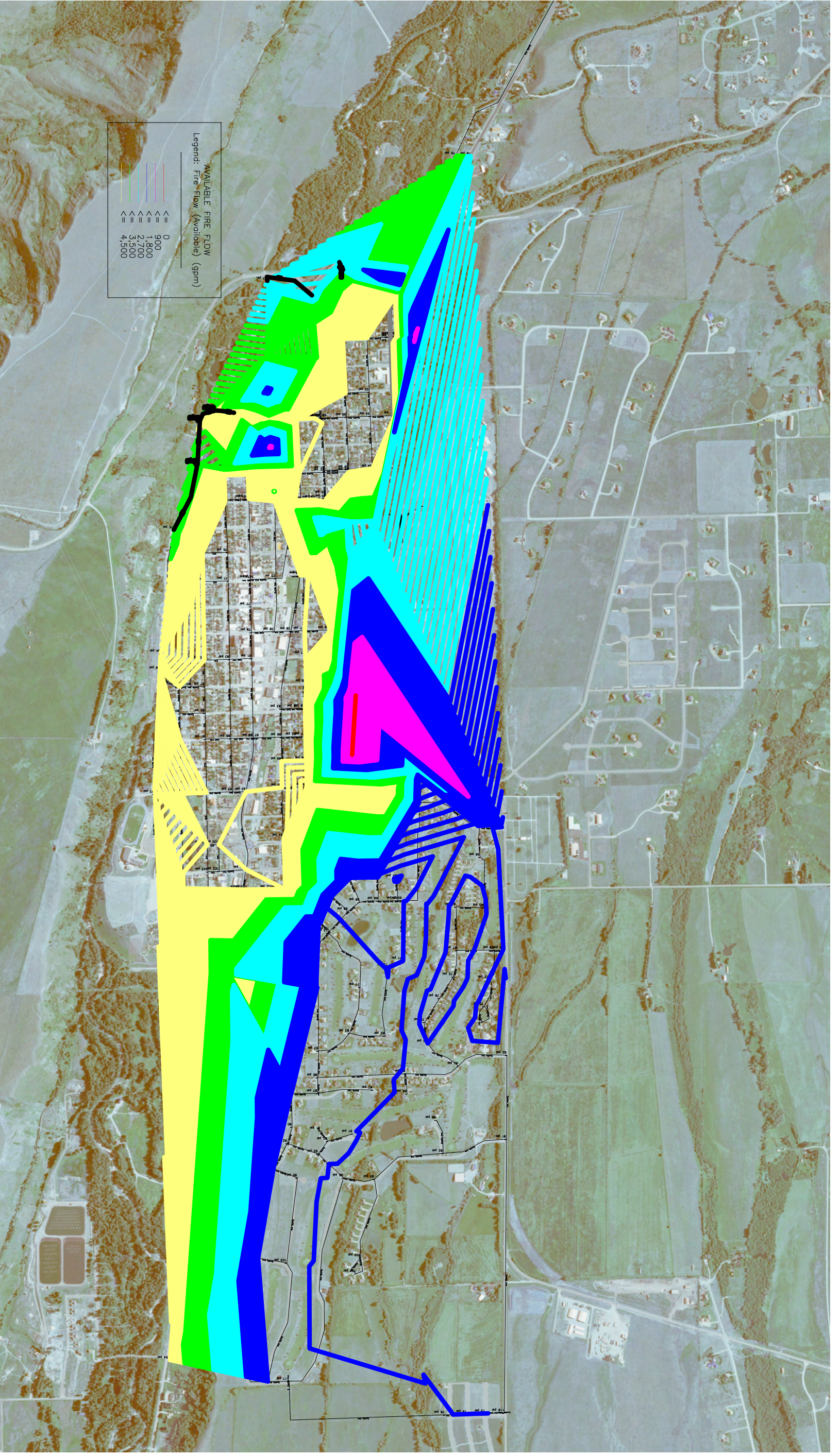


Figure 5:2
Alt. D-2 Fire Flow Map

J:\2-17103 - Red Lodge On-Call 2017\TO 14 - Water PER\CADD 2-17103-14\Sheets\Figure 5.3 Alternative D-2 Park Ave.dwg

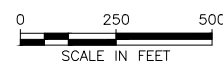
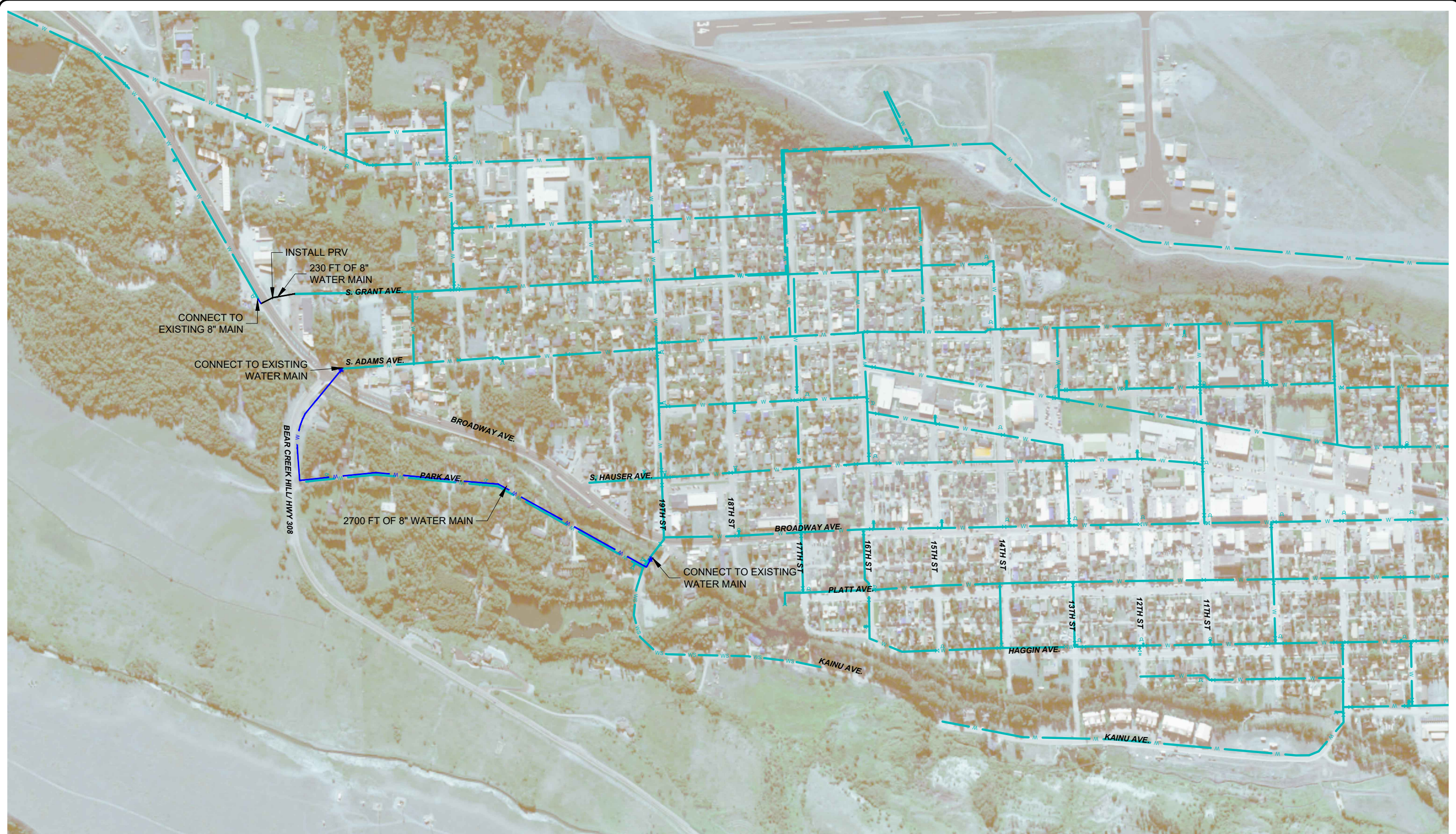


Figure 5:3
ALTERNATE D-2 PARK AVENUE

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Land Requirements

The work within Montana Department of Transportation right-of-way will require occupancy permits.

Potential Construction Problems

Although this project replaces existing mains, there are still several challenges that will need to be addressed during construction. Temporary water will need to be installed to each of the homes affected by the main replacement. Traffic control will need to be established to route traffic around project sites that follows MUTCD standards, especially in the highways.

A geotechnical investigation will need to be completed to ensure the soils are suitable for construction or to determine if any special design requirements will be necessary. Soils within the general vicinity of the City are similar in nature and have been suitable for development. Larger cobbles may be encountered and may need to be screened from the excavated material prior to backfill. Cost for a geotechnical evaluation are factored into the cost estimate.

The crossing of Rock Creek and Broadway will need to be directional drilled under the creek and Broadway Avenue to the connection in South Adams Avenue. The Broadway crossing at Grant Avenue will be open cut. As this is in MDT right of way, flowable fill backfill will be required.

Sustainability Considerations

The existing distribution system has inadequate cover and six dead ends which cause excessive water main freezes which create frequent breaks. With the project's additional cover and removal of the dead ends, the risk of these breaks caused by freezing will be reduced, thus reducing the City's water loss as well as energy use from the well pumps.

Water and Energy Efficiency

Since the new mains will result in significantly less breaks and freezes compared to the existing mains, they would require fewer repairs and maintenance and reduced water loss from leaks. Consequently, less energy would be needed for pumping the water from the wells, disinfection, running heavy equipment, transporting materials and flushing the water system.

Green Infrastructure

This alternative would reduce amount of groundwater removed from the aquifer and the amount of energy consumed by the City, thus reducing the City's use of natural resources.

Other

By decreasing the amount of water leaks, the City will also spend less on O&M costs due to decreases in City personnel time, operation of heavy equipment costs, repair parts, and surface repair costs.

Cost Estimates

Table 5.5 presents an estimated opinion of probable cost for Alternative D-2, and Table 5.6 addresses costs related to operation and maintenance of the improvements. The annual operation and maintenance costs are presented for comparison purposes only of the alternatives.

Table 5-5 Opinion of Probable Cost for Alt. D-2: Park Avenue

| OPINION OF PROBABLE COST | | | | |
|--|------|---------------|------------------------|--------------------|
| City of Red Lodge 2019 Water PER | | | | |
| Alternate D-2 Park Avenue Water Main | | | | |
| Item | Unit | Quantity | Unit Cost ¹ | Total |
| Connect to Existing Water Main | LSM | 4 | \$10,000 | \$40,000 |
| Pressure Relief Valve System | LSM | 1 | \$150,000 | \$150,000 |
| Directional Drill Under Highway and Rock Creek | LF | 180 | \$500 | \$90,000 |
| 8" HDPE Water Main | LF | 180 | \$50 | \$9,000 |
| 14" Steel Casing | LF | 80 | \$350 | \$28,000 |
| 8" Restrained PVC Carrier Pipe | LF | 80 | \$85 | \$6,800 |
| Flowable Fill in MDT Right-of-Way | CY | 45 | \$60 | \$2,700 |
| 8" PVC Water Main | LF | 2,700 | \$70 | \$189,000 |
| 8" Gate Valve | EA | 8 | \$2,000 | \$16,000 |
| 8"x6" Tee | EA | 3 | \$900 | \$2,700 |
| 6" Fire Hydrant Assembly with Gate Valve | EA | 3 | \$5,800 | \$17,400 |
| 6" PVC Water Main (FH Lead) | LF | 50 | \$65 | \$3,250 |
| 8" Bend | EA | 9 | \$800 | \$7,200 |
| 1" Corporation Stop Assembly | EA | 21 | \$525 | \$11,025 |
| 1" Poly Service Line w/ Insulation | LF | 315 | \$50 | \$15,750 |
| 1" Curb Stop Assembly | EA | 21 | \$600 | \$12,600 |
| Remove Existing Fire Hydrant | EA | 3 | \$1,000 | \$3,000 |
| Abandon Existing Main | EA | 1 | \$4,500 | \$4,500 |
| Underground Utility Crossing | EA | 10 | \$750 | \$7,500 |
| Exploratory Excavation | HR | 10 | \$175 | \$1,750 |
| Type A Surface Restoration (Highway) | SY | 150 | \$100 | \$15,000 |
| Type A Surface Restoration (Asphalt) | SY | 3,650 | \$60 | \$219,000 |
| Type B Surface Restoration (Aggregate) | SY | 280 | \$16 | \$4,480 |
| Type C Surface Restoration (Grass) | SY | 560 | \$12 | \$6,720 |
| Subtotal: 2019 Direct Construction Cost | | | | \$864,000 |
| Mobilization, Bonding, Etc. | | 10.0% | | \$87,000 |
| Traffic Control | | 2.5% | | \$22,000 |
| Total: 2019 Construction Cost | | | | \$973,000 |
| 2022 Construction Cost ² | | 3.0% annually | | \$1,063,000 |
| Contingency | | 10.0% | | \$107,000 |
| Total: 2022 Construction Cost | | | | \$1,170,000 |
| Geotechnical Investigation | | | | \$20,000 |
| Engineering | | 20.0% | | \$234,000 |
| Easement Acquisition | | | | \$40,000 |
| Legal and Administrative | | 2.0% | | \$24,000 |
| Total: D-2 2022 Capital Cost | | | | \$1,488,000 |
| ¹ Estimated unit costs are based upon estimates from suppliers and bid tabs for similar projects throughout Montana. | | | | |
| ² The ENR 20 year average Construction Cost Index is +2.94% (as of December 2018). Capital improvement costs are projected to 2020 using 3.0% factor. | | | | |

Table 5-6 Opinion of Probable Annual O&M Costs Alt. D-2

| PRESENT WORTH ANALYSIS CITY OF RED LODGE 2019 WATER PER Alternative D-2: Park Avenue | | | | |
|---|-----------------------|----------------------------|-----------------------------------|-----------------------------------|
| O&M Item | Estimated Cost | Recurrence Interval | Equivalent Annual O&M1 | Present Worth ² |
| <u>Distribution System Improvements</u> | | | | |
| 3 Leak Repairs Per Year | (\$6,000) | 1 | \$ (6,000) | \$ (116,301.75) |
| | | | \$ - | \$ - |
| | | | \$ - | \$ - |
| Total O&M Present Worth | | | \$ (6,000) | \$ (116,302) |
| Capital Cost | | | | \$ 1,488,000 |
| Alternative Total Present Worth | | | | \$ 1,372,000 |
| Construction Cost Index | 3.00% | | | |
| Discount Factor | 0.30% | | | |
| <i>1 Equivalent Annual O&M calculated using the "real" discount rate from the Office of Management and Budget (OMB)</i> | | | | |
| <i>2 Present worth based upon a 20 year life cycle using calculated discount rate.</i> | | | | |

5.3.2 Alt. D-3: Pressure Relief Valve Zone 5 and Replace PRV 1

Alternate D-3 will reduce pressures in Zone 5 as shown Figure 4.3 and includes replacement of the PRV in White Avenue (PRV-1). Pressures in Zone 5 is in excess of 150 psi. In order to reduce pressures west of Broadway Avenue and North of 2nd Street two pressure relief valves will need to be installed. One in Hauser Avenue between 5th Street and 1st Street and the other in Broadway between 5th Street and 1st Street. This will reduce pressures so that the maximum pressure in the zone is decreased to less than 100 psi. The PRV's will be installed in a vault which will contain one PRV for normal flows, and an additional PRV for fire flows.

There is also a strong need to replace PRV 1. The PRV vault has one 6" pressure relief valve, but no secondary fire flow bypass PRV. The existing vault may be large enough to keep in place, however, it is very likely the space available in the PRV is not enough to install the piping and a new fire flow PRV. For the purpose of this PER, it will be assumed that a new vault is needed.

Design Criteria

The water main improvements will include replacement of one pressure reducing valve vaults in White Avenue with a PRV vault sized to properly handle fire flows, as well as addition of two new pressure reducing valve vaults near 2nd Street to reduce pressure to the high pressure zone identified in Chapter 5. Each PRV vault will include the needed PRV(s), vault, piping and needed

valving for installation of a complete pressure reducing system. The PRV vaults will be installed to bring the system into compliance with DEQ Circular 1, Section 7.3.1 which requires:

“The minimum working pressure in the distribution system should be 35 psi and the normal working pressures should be approximately 60 to 80 psi. When static pressures exceed 100 psi, pressure reducing devices must be provided on mains or as part of the setting on individual service lines in the distribution system.”

Permitting would involve obtaining DEQ approval of the project plans and specifications. If the project disturbs an area greater than one acre, it would fall under the requirements of the “*General Permit for Storm Water Discharges Associated with Construction Activity*”, which is required by the Federal *Water Pollution Control Act* and enforced by DEQ.

Other permits could include occupancy permits from the Montana Department of Transportation for all work within State right-of-way.

Map

Alternative D-3 is shown in Figure 5:5 below.

Environmental Impacts

Since construction will take place within improved City streets, there are no anticipated negative environmental impacts associated with this alternative. No wetlands or environmentally sensitive areas will be disturbed.

Land Requirements

The work within Montana Department of Transportation right-of-way near the intersection of Broadway and 2nd Street will require occupancy permit.

All other work in this alternate would be completed within existing City rights-of-way and will not require easement acquisitions.

Potential Construction Problems

A geotechnical investigation will need to be completed to ensure the soils are suitable for construction or to determine if any special design requirements will be necessary. Soils within the

general vicinity of the City are similar in nature and have been suitable for development. Larger cobble may be encountered and may need to be screened from the excavated material prior to backfill. Cost for a geotechnical evaluation are factored into the cost estimate.

Isolation of the existing mains may require additional valves be installed. Temporary water will need to be installed to each of the homes and businesses affected by the PRV installation. Isolation of the mains due to non-working valves may create areas that have to be live tapped. Traffic control will need to be established to route traffic around project sites that follows MUTCD standards, especially in the highway where it will impact the business district.

Sustainability Considerations

In the event of a leak in the high pressure zone where pressure can reach over 150 psi, a considerable amount of water loss will occur. This high pressure also increases the likelihood of service breaks, as well as user plumbing breaks. Reducing the pressure will reduce break frequency as well as the volume of water loss associated with those breaks.

Water and Energy Efficiency

Since the reduced pressure to the mains will decrease the number of leaks compared to the existing pressures, they would require fewer repairs and maintenance. Consequently, less energy would be needed for pumping the water from the wells, disinfection, running heavy equipment, transporting materials and flushing the water system. Also, in the event of a leak considerably less volume of water will be lost with decreased pressures.

Green Infrastructure

This alternative would reduce amount of groundwater removed from the aquifer and the amount of energy consumed by the City, thus reducing the City's use of natural resources.

Other

By decreasing the amount of water leaks, the City will also spend less on O&M costs due to decreases in City personnel time, operation of heavy equipment costs, repair parts, and surface repair costs. Reducing the pressure will also reduce the risk to breaks within residences and business.

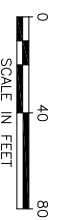


Figure 5:4
ALT. D-3 PRESSURE RELIEF SYSTEM

Cost Estimates

Table 5.7 presents an estimated opinion of probable cost for Alternative D-3. The opinion of probable costs assumes that the PRV at Broadway and 2nd Street will be located no further away from the main than 35 feet. Table 5.8 addresses costs related to operation and maintenance of the improvements. The annual operation and maintenance costs are presented for comparison purposes only of the alternatives.

Table 5-7 Opinion of Probable Cost for Alt. D-3: Pressure Reducing Valves

| OPINION OF PROBABLE COST | | | | |
|--|------|---------------|------------------------|--------------------|
| City of Red Lodge 2019 Water PER | | | | |
| Alternate D-3 Pressure Reducing Valves | | | | |
| White Avenue PRV Replacement | | | | |
| Item | Unit | Quantity | Unit Cost ¹ | Total |
| Remove Existing PRV Vault | LSM | 1 | \$10,000 | \$10,000 |
| New PRV Station | LSM | 1 | \$150,000 | \$150,000 |
| Connect to Existing Main | EA | 2 | \$10,000 | \$20,000 |
| 16" PVC Water Main | LF | 20 | \$120 | \$2,400 |
| 16" Bend | EA | 2 | \$1,400 | \$2,800 |
| Type C Surface Restoration (Grass) | SY | 100 | \$12 | \$1,200 |
| Subtotal: White Avenue PRV Direct Construction Cost | | | | \$187,000 |
| 2nd Avenue North Pressure Relief System | | | | |
| Item | Unit | Quantity | Unit Cost ¹ | Total |
| New PRV Station | LSM | 2 | \$150,000 | \$300,000 |
| Connect to Existing Main | EA | 4 | \$10,000 | \$40,000 |
| Abandon Existing Main | EA | 2 | \$4,500 | \$9,000 |
| 12" PVC Water Main | LF | 70 | \$100 | \$7,000 |
| 12" Bend | EA | 2 | \$1,200 | \$2,400 |
| 8" PVC Water Main | LF | 30 | \$70 | \$2,100 |
| 8" Bend | EA | 2 | \$800 | \$1,600 |
| Flowable Fill MDT Right of Way | CY | 110 | \$60 | \$6,600 |
| Exploratory Excavation | HR | 10 | \$175 | \$1,750 |
| Type A Restoration (Asphalt-MDT) | SY | 47 | \$100 | \$4,667 |
| Type A Restoration (Asphalt) | SY | 50 | \$60 | \$3,000 |
| Type C Surface Restoration (Grass) | SY | 100 | \$12 | \$1,200 |
| Subtotal: 2nd Ave North PRV Direct Construction Cost | | | | \$380,000 |
| White Avenue and 2nd Avenue North PRV Subtotal: | | | | \$567,000 |
| Mobilization, Bonding, Etc. | | 10.0% | | \$38,000 |
| Traffic Control | | 2.5% | | \$10,000 |
| Total: D-3 2019 Construction Cost: | | | | \$995,000 |
| 2022 Construction Cost ² | | 3.0% annually | | \$1,087,000 |
| Contingency | | 10.0% | | \$109,000 |
| Total: D-3 2022 Construction Cost: | | | | \$1,196,000 |
| Geotechnical Investigation | | | | \$10,000 |
| Engineering | | 20.0% | | \$240,000 |
| Easement Acquisition | | | | \$40,000 |
| Legal and Administrative | | 2.0% | | \$24,000 |
| Total: D-3 2022 Capital Cost | | | | \$1,510,000 |
| ¹ Estimated unit costs are based upon estimates from suppliers and bid tabs for similar projects throughout Montana. | | | | |
| ² The ENR 20 year average Construction Cost Index is +2.94% (as of December 2018). Capital improvement costs are projected to 2020 using 3.0% factor. | | | | |

Table 5-8 Operation and Maintenance Cost Alt. D-3: Present Value

| PRESENT WORTH ANALYSIS | | | | |
|---|-----------------------|----------------------------|-----------------------------------|-----------------------------------|
| CITY OF RED LODGE 2019 WATER PER | | | | |
| Alternative D-3: Pressure Reducing Valves | | | | |
| O&M Item | Estimated Cost | Recurrence Interval | Equivalent Annual O&M1 | Present Worth ² |
| <u>Distribution System Improvements</u> | | | | \$ - |
| Leak Repairs | (\$2,000) | 1 | \$ (2,000) | \$ (38,767.25) |
| Energy Costs | \$1,600 | 1 | \$ 1,600 | \$31,013.80 |
| | | | \$ - | \$ - |
| Total O&M Present Worth | | | \$ (400) | \$ (7,753) |
| Capital Cost | | | | \$ 1,510,000 |
| Alternative Total Present Worth | | | | \$ 1,502,000 |
| Construction Cost Index | 3.00% | | | |
| Discount Factor | 0.30% | | | |
| <i>1 Equivalent Annual O&M calculated using the "real" discount rate from the Office of Management and Budget (OMB)</i> | | | | |
| <i>2 Present worth based upon a 20 year life cycle using calculated discount rate.</i> | | | | |

5.3.3 Alt. D-4: Replace Cast Iron Mains

Due to the condition and age of the cast iron mains in the existing system, this alternate includes replacement of all of the cast iron mains regardless of size. Most mains are 4" and 6" but would be upsized to 8" mains in accordance with the recommendations from the water model. The 8" pipes have a significant hydraulic benefit over 6" pipes and greatly improve fire flows throughout the entire distribution system. The locations of these existing cast iron mains were compiled using as-builts from the City's projects starting from 1994. Size, type and location of each main should be field verified prior to the design phase.

The method of pipeline replacement is anticipated to be typical open trenching for all the mains. Trenchless technologies such as pipe bursting can be completed on pipelines as small as 4" in diameter. However, costs to burst the smaller diameter pipelines are higher. Pipe bursting would likely also be challenging given the anticipated condition of the existing cast iron mains (high tuberculation). In general, pipeline replacements identified in the alternative are located within street right of way where there is not a major concern with width restrictions.

Within this alternative, there are priorities of replacement based upon condition, size, and fire flow. The cast iron water main replacement will be prioritized by defining 3 Priorities. These options are shown on Figure 5:6 Alt. D-4 Replace Cast Iron Water Mains and are as described below:

Priority 1

Alternative D-4 Priority 1 project includes the portions of water main within the City that are undersized deteriorating cast iron mains which frequently break and freeze as a result of inadequate cover. As a result of the leaking mains, inadequate main size, and inadequate fire hydrant spacing, these blocks also have inadequate available fire flows.

Alternate D-4 Priority 1 includes replacing CIP in Grant Avenue from 20th Street to 22nd Street. This section of water main is currently a 4" cast iron main, which frequently breaks and freezes as a result of inadequate cover. Construction Plans are currently being prepared for the replacement of this project so that once funding for the project is established, construction can begin.

Priority 1 also includes several blocks in Hauser Avenue. The water main in Hauser Avenue from 13th Street to 19th Street also has inadequate cover and frequently breaks or freezes. This includes 4" CIP in South Hauser Avenue between 19th Street and 13th Street. It is unknown if the water main in South Hauser Avenue from 19th Street to 17th Street is 2" CIP or 4" CIP. For purpose of this report it is assumed the line is 4" CIP.

Priority 2

Alternative D-4 Priority 2 projects include the remaining 4" cast iron water mains within the distribution system. The water mains in Priority 2 are inadequately sized. As mentioned in Chapter 3, the City has been replacing water mains since 1994. These sections of main are one-block sections of main with fire hydrants at the intersections being supplied by adequately sized, new mains. Similar to the cast iron mains in Priority 1, these lines have continuing breaks, leaks, and inadequate cover which increases the risk of freezing. The Priority 2 water main locations are shown in Figure 5:6. and are described as follows:

- ¼ block of 4" CIP main in the west end of 21st Street.
- 1 block of 4" CIP in 16th Street between Broadway Avenue and Platt Avenue.
- 1 block of 4" CIP in 13th Street between Adams Avenue and Word Avenue.
- ½ block of 4" CIP in 11th Street between Word Avenue and Villard Avenue.
- 2 blocks of 4" CIP in 9th Street between Adams Avenue and Hauser Avenue.
- 1 block of 4" CIP in 8th Street between Word Avenue and Hauser Avenue.
- 1 block of 4" CIP in 7th Street between Word Avenue and Hauser Avenue.

Priority 3

Alternative D-4 Priority 3 includes replacing the remaining 6" cast iron mains within the City. Priority 3 water mains are adequately sized to supply fire suppression. Similar to the cast iron mains in Priority 1 and Priority 2, these lines have continuing breaks, leaks, and inadequate cover which increases the risk of freezing. The Priority 3 water main locations are shown in Figure 3.5. and are described as follows:

- 1 block in Grant Avenue from what would be the intersection of 23rd Street to 22nd Street.
- 1 block behind Frontier Communities between Grant Avenue and Adams Avenue.
- 2 ½ blocks in Adams Avenue from Broadway Avenue to midway between 22nd Street and 21st Street.
- 2 blocks in 11th Street between Villard Avenue to Broadway Avenue.
- 1 block in 10th Street between Broadway Avenue and Platt Avenue.
- 3 blocks in 7th Street between Hauser Avenue and Haggin Avenue.

It is important to note that the dead end water mains in Grant Avenue and Adams Avenue in Priority 3 result in low available fire flows at those intersections. This low available fire flow issue is being addressed in Alternative D-2 Park Avenue.

The table below is provided to summarize the methodology used to prioritize Alternative D-4 options. The fire flow column has the number of intersections with low fire flows, the leaks column has the number of blocks with leaky pipes, and the diameter column has the number of blocks that do not meet DEQ's minimum requirement of 6".

Table 5-9 Alt. D-4 Option Comparison

| Alt. D-4 Option | Fire Flow | Leaks | Diameter | Score |
|-----------------|-----------|-------|----------|-------|
| Priority 1 | 10 | 8 | 5 | 23 |
| Priority 2 | 1 | 8 | 8 | 17 |
| Priority 3 | 2 | 10 | 0 | 12 |

With construction of this project available fire flow on these mains will meet the needed fire flow demands. The improved fire flow as a result of Alternate D-4 are given in the water model results appendix.

Design Criteria

The water main improvements will be the replacement of all existing hydrants, hydrant lead lines with auxiliary valves, replacement of all existing gate valves and water services from the main to the curb stops. In addition to the portions of water main being replaced, new mains will be installed to eliminate dead ends. Additional fire hydrants and valves will also be installed to bring the system into compliance with DEQ Circular 1, which were listed in Chapter 3.

Permitting would involve obtaining DEQ approval of the project plans and specifications. If the project disturbs an area greater than one acre, it would fall under the requirements of the “*General Permit for Storm Water Discharges Associated with Construction Activity*”, which is required by the Federal *Water Pollution Control Act* and enforced by DEQ.

Map

Alternate D-4 is shown in Figure 5.6.

Environmental impacts

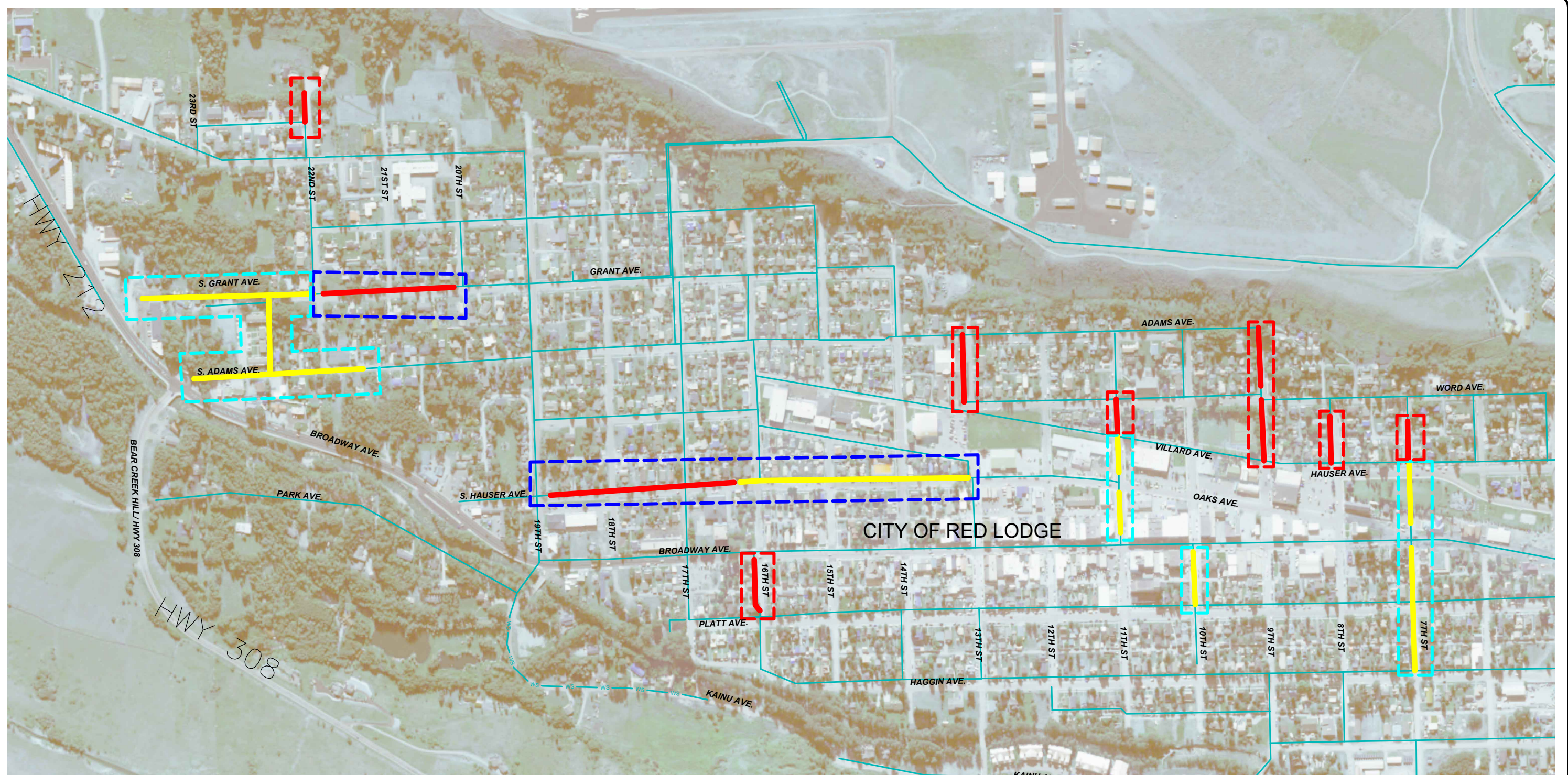
General environmental conditions were discussed in Section 2.2. Although a significant amount of ground will be disturbed, the pipeline will be located underground and will not have a long-term impact on the environment. In addition, the ground affected by these improvements has been previously disturbed through previous water line installations, construction of streets, and/or construction of buildings. No environmental problems are anticipated.

Land Requirements

The improvements in Alternate D-4 replace existing water mains. The City already owns the land or has an existing easement for the water mains. Most of the City’s existing water mains are in alley’s or streets, which the City has jurisdiction over. The improvements do not include any work to be conducted within MDT right-of-way.

Potential Construction Problems

Although this project replaces existing mains, there are still several challenges that will need to be addressed during construction. Temporary water will need to be installed to each of the homes affected by the main replacement. Traffic control will need to be established to route traffic around project sites.



LEGEND

- REPLACE 4"CAST IRON WATER MAIN WITH 8" ———
- REPLACE 6"CAST IRON WATER MAIN WITH 8" ———
- ALTERNATE D-4: PRIORITY 1, GRANT AND HAUSER - - - -
- ALTERNATE D-4: PRIORITY 2, REPLACE 4" CIP - - - -
- ALTERNATE D-4: PRIORITY 3, REPLACE 6" CIP - - - -



SCALE: 1"= 500 FT

**Figure 5:6
ALT D-4 REPLACE CAST IRON WATER
MAINS**

City of Red Lodge, Montana
2019 Water Preliminary Engineering Report



A geotechnical investigation will need to be completed to ensure the soils are suitable for construction or to determine if any special design requirements will be necessary. Soils within the general vicinity of the City are similar in nature and have been suitable for development. Larger cobble may be encountered and may need to be screened from the excavated material prior to backfill. Cost for a geotechnical evaluation are factored into the cost estimate.

Sustainability Considerations

The existing cast iron water mains in the distribution system have frequent breaks and have excessive leaks. The City currently has a 47% water loss. Alternate D-4 will replace the remaining cast iron mains with new PVC mains which will be cutting up to 25% of the lost water, reducing energy usage from well pumps.

Water and Energy Efficiency

Since the new mains would not have nearly the number of leaks compared to the existing mains, they would require fewer repairs and maintenance. Consequently, less energy would be needed for pumping water from the wells, disinfection, and running heavy equipment, transporting materials and flushing the water system.

This alternative will reduce energy consumption of the community. Table 3-9 summarizes the energy usage and cost at the well pumps in 2019. Annual electricity used at the wells costs the City nearly \$30,000 annually. Estimating a 25% reduction in water lost, thus a 25% reduction in well pump power usage, would mean an annual savings of 50,980 kWh, and potentially \$7,000 in energy costs for supplying the water lost per year.

Green Infrastructure

This alternative would reduce the amount of groundwater removed from the aquifer. This City currently loses nearly 79 million gallons of water annually. Alternate D-4 could potentially reduce that leakage by 25%, saving approximately 20 million gallons of water.

Other

By decreasing the amount of water leaks, the City will also spend less on O&M costs due to decreases in City personnel time, operation of heavy equipment costs, repair parts, and surface

repair costs. Operability of the distribution system will be improved with valves which will allow the City to more efficiently isolate sections of water main.

Alternate D-4 will increase the distribution system resiliency, as the existing line's pinhole leaks expose the City to potential contamination into their water system.

Cost Estimates

Tables 5.10 through 5.12 present estimated opinion of probable cost for the Alternative D-4 Options. Table 5.13 shows the total cost of Alternate D-4.

Table 5-10 Opinion of Probable Cost for Alt. D-4 Priority 1-Grant Avenue and Hauser Avenue

| OPINION OF PROBABLE COST | | | | |
|--|------|---------------|------------------------|--------------------|
| City of Red Lodge 2019 Water PER | | | | |
| Alternate D-4.Priority 1 Grant and Hauser | | | | |
| Grant Avenue | | | | |
| Item | Unit | Quantity | Unit Cost ¹ | Total |
| Connect to Existing Main | EA | 3 | \$4,500 | \$13,500 |
| 8" PVC Water Main | LF | 750 | \$70 | \$52,500 |
| 8"x8"x8" Tee | EA | 1 | \$2,000 | \$2,000 |
| 8" Gate Valve with Valve Box | EA | 3 | \$2,000 | \$6,000 |
| Fire Hydrant Assembly with Gate Valve | EA | 1 | \$5,800 | \$5,800 |
| 8"x6" Reducer | EA | 1 | \$600 | \$600 |
| 8"x8"x6" Tee | EA | 1 | \$1,500 | \$1,500 |
| Remove Fire Hydrant Assembly | EA | 1 | \$1,000 | \$1,000 |
| 1" Poly Service with insulation | LF | 620 | \$50 | \$31,000 |
| 1" Curb Stop Assembly | EA | 13 | \$600 | \$7,800 |
| 1" Corporation Stop Assembly | EA | 13 | \$525 | \$6,825 |
| Type A Surface Restoration (Asphalt) | LF | 340 | \$60 | \$20,400 |
| Type B Surface Restoration (Aggregate) | LF | 1,020 | \$25 | \$25,500 |
| Underground Utility Crossing | EA | 6 | \$500 | \$3,000 |
| Subtotal: Grant Avenue 2019 Direct Construction Cost | | | | \$178,000 |
| Hauser Avenue | | | | |
| Connect to Existing Main | EA | 6 | \$4,500 | \$27,000 |
| Abandon Water Main | EA | 2 | \$4,500 | \$9,000 |
| 8" PVC Water Main | LF | 2070 | \$70 | \$144,900 |
| 8" Cross | EA | 1 | \$2,200 | \$2,200 |
| 8"x8"x8" Tee | EA | 1 | \$2,000 | \$2,000 |
| 8" Gate Valve with Valve Box | EA | 6 | \$2,000 | \$12,000 |
| Fire Hydrant Assembly with Gate Valve | EA | 6 | \$5,800 | \$34,800 |
| 8"x8"x6" Tee | EA | 6 | \$1,500 | \$9,000 |
| Remove Fire Hydrant Assembly | EA | 2 | \$1,000 | \$2,000 |
| 1" Poly Service with insulation | LF | 1860 | \$50 | \$93,000 |
| 1" Curb Stop Assembly | EA | 62 | \$600 | \$37,200 |
| 1" Corporation Stop Assembly | EA | 62 | \$525 | \$32,550 |
| Type A Surface Restoration (Asphalt) | LF | 3600 | \$60 | \$216,000 |
| Under Ground Utility Crossing | EA | 25 | \$500 | \$12,500 |
| Flowable Fill | CY | 10 | \$170 | \$1,700 |
| Subtotal: Hauser Avenue 2019 Direct Construction Cost | | | | \$636,000 |
| Grant Avenue and Hauser Avenue 2019 Direct Construction Cost | | | | \$814,000 |
| Mobilization, Bonding, Etc. | | 10.0% | | \$82,000 |
| Traffic Control | | 3.0% | | \$25,000 |
| Total: 2019 Construction Cost | | | | \$921,000 |
| 2022 Construction Cost ² | | 3.0% annually | | \$1,006,000 |
| Contingency | | 10.0% | | \$101,000 |
| Total: 2022 Construction Cost | | | | \$1,107,000 |
| Geotechnical Investigation | | | | \$20,000 |
| Engineering | | 20.0% | | \$222,000 |
| Legal and Administrative | | 2.0% | | \$23,000 |
| Total: D-4 Priority # 1 2022 Capital Cost | | | | \$1,372,000 |
| ¹ Estimated unit costs are based upon estimates from suppliers and bid tabs for similar projects throughout Montana. | | | | |
| ² The ENR 20 year average Construction Cost Index is +2.94% (as of December 2018). Capital improvement costs are projected to 2020 using 3.0% factor. | | | | |

Table 5-11 Opinion of Probable Cost for Alt. D-4 Priority 2-Replace 4" CIP

| OPINION OF PROBABLE COST | | | | |
|--|------|---------------|------------------------|--------------------|
| City of Red Lodge 2020 Water PER | | | | |
| Alternate D-4. Priority 2 Replace 4" Cast Iron Mains | | | | |
| Item | Unit | Quantity | Unit Cost ¹ | Total |
| Connect to Existing Main | EA | 24 | \$4,500 | \$108,000 |
| 6" PVC Water Main (22nd Street Water Main) | LF | 144 | \$65 | \$9,360 |
| 8" PVC Water Main | LF | 1,933 | \$70 | \$135,310 |
| 6"x6"x6" Tee | EA | 1 | \$900 | \$900 |
| 8" cross | EA | 2 | \$2,200 | \$4,400 |
| 8"x8"x8" Tee | EA | 6 | \$2,000 | \$12,000 |
| 8" Bend | EA | 3 | \$800 | \$2,400 |
| 6" Gate Valve with Valve Box | EA | 1 | \$1,800 | \$1,800 |
| 8" Gate Valve with Valve Box | EA | 9 | \$2,000 | \$18,000 |
| Fire Hydrant Assembly with Gate Valve | EA | 8 | \$5,800 | \$46,400 |
| 8"x8"x6" Tee | EA | 8 | \$1,500 | \$12,000 |
| Remove Fire Hydrant Assembly | EA | 2 | \$1,000 | \$2,000 |
| 1" Poly Service with insulation | LF | 1,110 | \$50 | \$55,500 |
| 1" Curb Stop Assembly | EA | 36 | \$600 | \$21,600 |
| 1" Corporation Stop Assembly | EA | 36 | \$525 | \$18,900 |
| Type A Surface Restoration (Asphalt) | LF | 3,154 | \$60 | \$189,240 |
| Under Ground Utility Crossing | EA | 37 | \$500 | \$18,500 |
| Flowable Fill | CYD | 15 | \$170 | \$2,550 |
| Subtotal: Alternate D-4 Priority #2 2019 Direct Construction Cost | | | | \$659,000 |
| Mobilization, Bonding, Etc. | | 10.0% | | \$66,000 |
| Traffic Control | | 3.0% | | \$20,000 |
| Total: 2019 Construction Cost | | | | \$745,000 |
| 2022 Construction Cost ² | | 3.0% annually | | \$814,000 |
| Contingency | | 10.0% | | \$82,000 |
| Total: 2022 Construction Cost | | | | \$896,000 |
| Geotechnical Investigation | | | | \$20,000 |
| Engineering | | 20.0% | | \$180,000 |
| Legal and Administrative | | 2.0% | | \$18,000 |
| Total: D-4 Priority #2 2022 Capital Cost | | | | \$1,114,000 |
| ¹ Estimated unit costs are based upon estimates from suppliers and bid tabs for similar projects throughout Montana. | | | | |
| ² The ENR 20 year average Construction Cost Index is +2.94% (as of December 2018). Capital improvement costs are projected to 2020 using 3.0% factor. | | | | |

Table 5-12 Opinion of Probable Cost for Alt. D-4 Priority 3 Replace 6" CIP

| OPINION OF PROBABLE COST | | | | |
|--|------|---------------|------------------------|--------------------|
| City of Red Lodge 2019 Water PER | | | | |
| Alternate D-4.Priority 3 Replace 6" Cast Iron Mains | | | | |
| Item | Unit | Quantity | Unit Cost ¹ | Total |
| Connect to Existing Main | EA | 18 | \$4,500 | \$81,000 |
| Abandon Water Main | EA | 1 | \$4,500 | \$4,500 |
| 8" PVC Water Main | LF | 3,640 | \$70 | \$254,800 |
| 8" cross | EA | 1 | \$2,200 | \$2,200 |
| 8"x8"x8" Tee | EA | 3 | \$2,000 | \$6,000 |
| 8" Gate Valve with Valve Box | EA | 19 | \$2,000 | \$38,000 |
| Fire Hydrant Assembly with Gate Valve | EA | 9 | \$5,800 | \$52,200 |
| 8"x8"x6" Tee | EA | 9 | \$1,500 | \$13,500 |
| Remove Fire Hydrant Assembly | EA | 4 | \$1,000 | \$4,000 |
| 1" Poly Service with insulation | LF | 1,290 | \$50 | \$64,500 |
| 1" Curb Stop Assembly | EA | 43 | \$600 | \$25,800 |
| 1" Corporation Stop Assembly | EA | 43 | \$525 | \$22,575 |
| Type A Surface Restoration (Asphalt) | LF | 4,920 | \$60 | \$295,200 |
| Under Ground Utility Crossing | EA | 68 | \$500 | \$34,000 |
| Flowable Fill | CYD | 20 | \$170 | \$3,400 |
| Subtotal: Alternate D-4 Priority #3 2019 Direct Construction Cost | | | | \$902,000 |
| Mobilization, Bonding, Etc. | | 10.0% | | \$91,000 |
| Traffic Control | | 3.0% | | \$28,000 |
| Total: 2019 Construction Cost | | | | \$1,021,000 |
| 2022 Construction Cost ² | | 3.0% annually | | \$1,116,000 |
| Contingency | | 10.0% | | \$112,000 |
| Total: 2022 Construction Cost | | | | \$1,228,000 |
| Geotechnical Investigation | | | | \$20,000 |
| Engineering | | 20.0% | | \$246,000 |
| Legal and Administrative | | 2.0% | | \$25,000 |
| Total: D-4 Priority #3 2022 Capital Cost | | | | \$1,519,000 |
| ¹ Estimated unit costs are based upon estimates from suppliers and bid tabs for similar projects throughout Montana. | | | | |
| ² The ENR 20 year average Construction Cost Index is +2.94% (as of December 2018). Capital improvement costs are projected to 2020 using 3.0% factor. | | | | |

Table 5-13 Summary Table of Opinion of Probable Cost for Alt. D-4

| Alternate D-4 Cost Summary | |
|-----------------------------------|--------------------|
| Priority 1 | \$1,372,000 |
| Priority 2 | \$1,114,000 |
| Priority 3 | \$1,519,000 |
| Alt. D-4 Total | \$4,005,000 |

Tables 5-14 through Table 5-16 address costs related to operation and maintenance of the Options respective improvements. Table 5-17 presents operation and maintenance of the complete Alternate D-4 project which replaces all existing cast iron water mains. The annual operation and maintenance costs are presented for comparison purposes only of the alternatives.

Table 5-14 Operation and Maintenance Cost for Alt. D-4 Priority 1

| PRESENT WORTH ANALYSIS CITY OF RED LODGE 2019 WATER PER Alternative D-4 Priority 1 Grant Avenue and Hauser Avenue | | | | |
|---|----------------|---------------------|------------------------|----------------------------|
| O&M Item | Estimated Cost | Recurrence Interval | Equivalent Annual O&M1 | Present Worth ² |
| <u>Distribution System Improvements</u> | | | | \$ - |
| Leak Repairs | (\$2,400) | 1 | \$ (2,400) | \$ (46,520.70) |
| Energy Savings | (\$1,500) | 1 | \$ (1,500) | \$ (29,075.44) |
| | | | \$ - | \$ - |
| Total O&M Present Worth | | | \$ (3,900) | \$ (75,596) |
| Capital Cost | | | | \$ 948,000 |
| Alternative Option Total Present Worth | | | | \$ 872,000 |
| Construction Cost Index | 3.00% | | | |
| Discount Factor | 0.30% | | | |
| <i>1 Equivalent Annual O&M calculated using the "real" discount rate from the Office of Management and Budget (OMB)</i> | | | | |
| <i>2 Present worth based upon a 20 year life cycle using calculated discount rate.</i> | | | | |

Table 5-15 Operation and Maintenance Cost for Alt. D-4 Priority 2

| PRESENT WORTH ANALYSIS CITY OF RED LODGE 2019 WATER PER Alternative D-4 Priority 2 Replace 4" CIP | | | | |
|---|----------------|---------------------|------------------------|----------------------------|
| O&M Item | Estimated Cost | Recurrence Interval | Equivalent Annual O&M1 | Present Worth ² |
| <u>Distribution System Improvements</u> | | | | \$ - |
| Leak Repairs | (\$2,400) | 1 | \$ (2,400) | \$ (46,520.70) |
| Energy Savings | (\$1,500) | 1 | \$ (1,500) | \$ (29,075.44) |
| | | | \$ - | \$ - |
| Total O&M Present Worth | | | \$ (3,900) | \$ (75,596) |
| Capital Cost | | | | \$ 1,025,000 |
| Alternative Optoin Total Present Worth | | | | \$ 949,000 |
| Construction Cost Index | 3.00% | | | |
| Discount Factor | 0.30% | | | |
| <i>1 Equivalent Annual O&M calculated using the "real" discount rate from the Office of Management and Budget (OMB)</i> | | | | |
| <i>2 Present worth based upon a 20 year life cycle using calculated discount rate.</i> | | | | |

Table 5-16 Operation and Maintenance Cost for Alt. D-4 Priority 3

| PRESENT WORTH ANALYSIS CITY OF RED LODGE 2019 WATER PER Alternative D-4 Priority 3 Replace 6" CIP | | | | |
|---|----------------|---------------------|------------------------|----------------------------|
| O&M Item | Estimated Cost | Recurrence Interval | Equivalent Annual O&M1 | Present Worth ² |
| <u>Distribution System Improvements</u> | | | | \$ - |
| Leak Repairs | (\$2,800) | 1 | \$ (2,800) | \$ (54,274.15) |
| Energy Savings | (\$1,500) | 1 | \$ (1,500) | \$ (29,075.44) |
| | | | \$ - | \$ - |
| Total O&M Present Worth | | | \$ (4,300) | \$ (83,350) |
| Capital Cost | | | | \$ 776,000 |
| Alternative Option Total Present Worth | | | | \$ 693,000 |
| Construction Cost Index | 3.00% | | | |
| Discount Factor | 0.30% | | | |
| <i>1 Equivalent Annual O&M calculated using the "real" discount rate from the Office of Management and Budget (OMB)</i> | | | | |
| <i>2 Present worth based upon a 20 year life cycle using calculated discount rate.</i> | | | | |

Table 5-17 Operation and Maintenance Cost for Alt. D-4

| PRESENT WORTH ANALYSIS CITY OF RED LODGE 2019 WATER PER Alternative D-4: Replace Cast Iron Mains | | | | |
|---|----------------|---------------------|------------------------|----------------------------|
| O&M Item | Estimated Cost | Recurrence Interval | Equivalent Annual O&M1 | Present Worth ² |
| <u>Distribution System Improvements</u> | | | | \$ - |
| Leak Repairs | (\$7,600) | 1 | \$ (7,600) | \$ (147,315.54) |
| Energy Savings | (\$4,500) | 1 | \$ (4,500) | \$ (87,226.31) |
| | | | \$ - | \$ - |
| Total O&M Present Worth | | | \$ (12,100) | \$ (234,542) |
| Capital Cost | | | | \$ 3,323,000 |
| Alternative Total Present Worth | | | | \$ 3,088,000 |
| Construction Cost Index | 3.00% | | | |
| Discount Factor | 0.30% | | | |
| <i>1 Equivalent Annual O&M calculated using the "real" discount rate from the Office of Management and Budget (OMB)</i> | | | | |
| <i>2 Present worth based upon a 20 year life cycle using calculated discount rate.</i> | | | | |

5.3.4 Alt. D-5: Kainu Avenue

Two dead ends will be eliminated with construction of this project, fire flows will be improved, undersized water mains will be replaced, and fire hydrants will be added.

The 2 inch water service on the southern half of Kainu avenue serves several residences. It will be replaced with an 8" main which will extend from Park Avenue to the dead end in the northern section of Kainu near 15th Avenue.

Design Criteria

The water main improvements will be the replacement of all existing hydrants, hydrant lead lines with auxiliary valves, replacement of all existing gate valves and water services from the main to the curb stops. In addition to the portions of water main being replaced, new mains will be installed to eliminate dead ends. Additional fire hydrants and valves will also be installed to bring the system into compliance with DEQ Circular 1, which were listed in Chapter 3.

Permitting would involve obtaining DEQ approval of the project plans and specifications. If the project disturbs an area greater than one acre, it would fall under the requirements of the "*General Permit for Storm Water Discharges Associated with Construction Activity*", which is required by the Federal *Water Pollution Control Act* and enforced by DEQ.

Other permits could include occupancy permits from the Montana Department of Transportation for all work within State right-of-way.

Map

Alternate D-5 is shown in Figure 5.7 below.

Environmental Impacts

The Kainu connection from 15th Street to 16th Street will be constructed along a graveled road. General environmental conditions were discussed in Section 2.2. Although a significant amount of ground will be disturbed, the pipeline will be located underground and will not have a long-term impact on the environment. No environmental problems are anticipated.

Land Requirements

In order to connect the southern portion on Kainu Avenue's water main with the Northern portion, one block of right of way or easement may need to be acquired from what would be the intersection of 15th Street to what would be the intersection of 16th Street.

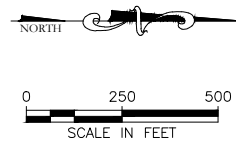
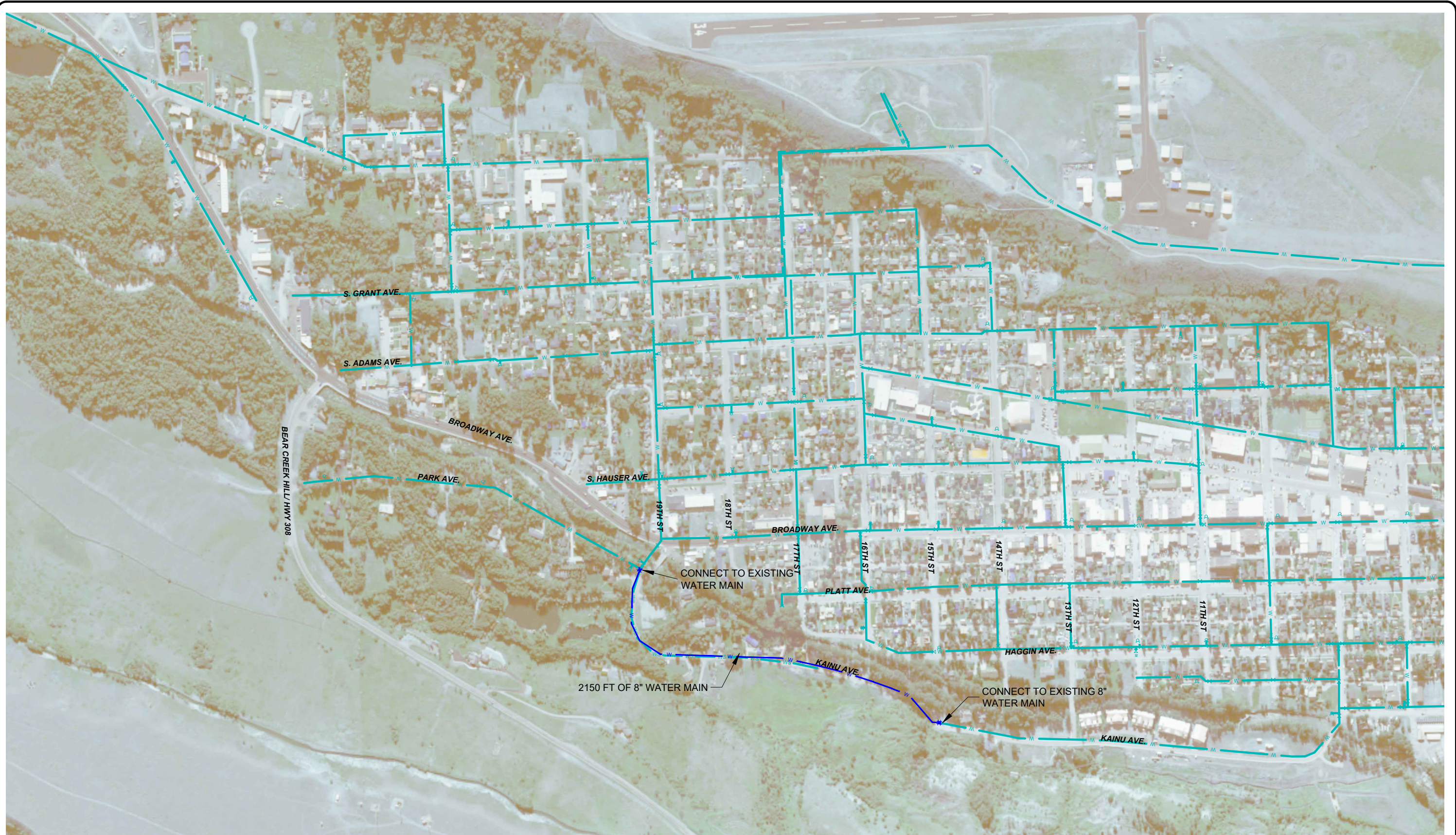


Figure 5:7
ALTERNATE D-5 KAINU AVENUE

City of Red Lodge, Montana
2019 Water Preliminary Engineering Report



Potential Construction Problems

With construction of this new main several challenges that will need to be addressed during construction. Temporary water will need to be installed to each of the homes affected by the main replacement. Traffic control will need to be established to route traffic around project sites that follows MUTCD standards.

A geotechnical investigation will need to be completed to ensure the soils are suitable for construction or to determine if any special design requirements will be necessary. Soils within the general vicinity of the City are similar in nature and have been suitable for development. Larger coble may be encountered and may need to be screened from the excavated material prior to backfill. Cost for a geotechnical evaluation are factored into the cost estimate.

Sustainability Considerations

The connection of the two dead ends will have a minimal impact on sustainability. As the new main will connect a relatively new 8" ductile iron water main with the water main in Park Avenue, water loss is not anticipated to be reduced or increased by this project.

Water and Energy Efficiency

Since the new main will eliminate two dead ends, the need to flush the dead ends will be removed. Consequently, less energy would be needed for pumping the water from the wells and flushing the water system.

Green Infrastructure

This alternative would reduce amount of groundwater removed from the aquifer and the amount of energy consumed by the City, thus reducing the City's use of natural resources.

Other

By decreasing the amount of flushing, the City will also spend less on O&M costs due to decreases in City personnel time.

Cost Estimates

Table 5-18 presents an estimated opinion of probable cost for Alternative D-5, and Table 5-21 addresses costs related to operation and maintenance of the improvements. The annual operation and maintenance costs are presented for comparison purposes only of the alternatives.

Table 5-18 Opinion of Probable Cost for Alt. D-5: Kainu Avenue

| OPINION OF PROBABLE COST | | | | |
|--|------|----------|------------------------|------------------|
| City of Red Lodge 2019 Water PER | | | | |
| Alternate D-5 Kainu Avenue Water Main | | | | |
| Item | Unit | Quantity | Unit Cost ¹ | Total |
| Connect to Existing Water Main | LSM | 1 | \$10,000 | \$10,000 |
| 8"x8" Tee | EA | 1 | \$1,000 | \$1,000 |
| 8" PVC Water Main | LF | 2,150 | \$70 | \$150,500 |
| 8" Gate Valve | EA | 4 | \$2,000 | \$8,000 |
| 8"x6" Tee | EA | 4 | \$900 | \$3,600 |
| 6" Fire Hydrant Assembly with Gate Valve | EA | 4 | \$5,800 | \$23,200 |
| 6" PVC Water Main (FH Lead) | LF | 80 | \$65 | \$5,200 |
| 8" Bend | EA | 6 | \$800 | \$4,800 |
| 1" Corporation Stop Assembly | EA | 15 | \$525 | \$7,875 |
| 1" Poly Service Line w/ Insulation | LF | 300 | \$50 | \$15,000 |
| 1" Curb Stop Assembly | EA | 15 | \$600 | \$9,000 |
| Underground Utility Crossing | EA | 10 | \$750 | \$7,500 |
| Exploratory Excavation | HR | 10 | \$175 | \$1,750 |
| Type A Surface Restoration (Asphalt) | SY | 2,530 | \$60 | \$151,800 |
| Type B Surface Restoration (Aggregate) | SY | 940 | \$16 | \$15,040 |
| Type C Surface Restoration (Grass) | SY | 540 | \$12 | \$6,480 |
| Subtotal: 2019 Direct Construction Cost | | | | \$421,000 |
| Mobilization, Bonding, Etc. | | 10.0% | | \$43,000 |
| Traffic Control | | 2.5% | | \$11,000 |
| Total: 2019 Construction Cost | | | | \$475,000 |
| 2022 Construction Cost ² | | 3.0% | annually | \$519,000 |
| Contingency | | 10.0% | | \$52,000 |
| Total: 2022 Construction Cost | | | | \$571,000 |
| Geotechnical Investigation | | | | \$20,000 |
| Engineering | | 20.0% | | \$115,000 |
| Easement Acquisition | | | | \$40,000 |
| Legal and Administrative | | 2.0% | | \$12,000 |
| Total: D-5 2022 Capital Cost | | | | \$758,000 |
| ¹ Estimated unit costs are based upon estimates from suppliers and bid tabs for similar projects throughout Montana. | | | | |
| ² The ENR 20 year average Construction Cost Index is +2.94% (as of December 2018). Capital improvement costs are projected to 2020 using 3.0% factor. | | | | |

Table 5-19 Opinion of Probable Annual O&M Costs Alt. D-5

| PRESENT WORTH ANALYSIS CITY OF RED LODGE 2019 WATER PER Alternative D-5: Kainu Avenue | | | | |
|---|-----------------------|----------------------------|--|-----------------------------------|
| O&M Item | Estimated Cost | Recurrence Interval | Equivalent Annual O&M¹ | Present Worth ² |
| <u>Distribution System Improvements</u> | | | | \$ - |
| Fire Hydrant Flushing | (\$200) | 1 | \$ (200) | \$ (3,876.72) |
| | | | \$ - | \$ - |
| | | | \$ - | \$ - |
| Total O&M Present Worth | | | \$ (200) | \$ (3,877) |
| Capital Cost | | | | \$ 758,000 |
| Alternative Total Present Worth | | | | \$ 754,000 |
| Construction Cost Index | 3.00% | | | |
| Discount Factor | 0.30% | | | |
| <i>1 Equivalent Annual O&M calculated using the "real" discount rate from the Office of Management and Budget (OMB)</i> | | | | |
| <i>2 Present worth based upon a 20 year life cycle using calculated discount rate.</i> | | | | |

6.0 SELECTION OF AN ALTERNATIVE

Each of the technically feasible alternatives considered meet the design criteria and applicable regulations identified in the alternative description. This section will examine advantages and disadvantages of each in terms of life cycle costs, operational and maintenance considerations, permitting concerns, social impacts, environmental impacts, and other non-monetary considerations.

6.1 Life Cycle Cost Analysis

The cost of extensive capital improvements to meet minimum health and safety requirements, applicable regulations, and reduce environmental impacts is a great concern to small communities with limited budgets and resources. At the same time, some alternatives may have a low capital costs but high O&M costs that will put a continual burden on the community. A life cycle cost analysis provides a method to compare the costs of each alternative to one another.

To complete the life cycle cost analysis, the anticipated annual increase to O&M costs and estimated salvage value of any improvements based upon a straight-line depreciation are converted to present day dollars using the “real” discount rate from Appendix C of OMB A-94. The net present value is then calculated for each alternative by adding the estimated capital cost and present worth of the increased O&M and then subtracting the present worth of the calculated salvage value.

Table 6-1 summarizes the life cycle cost analysis for all the alternatives.

Table 6-1 Present Worth Life Cycle Analysis

| System Alternatives | | | | | | | |
|---------------------|-----------------|------------------------|-------------------------------|-----------------------|--------------------------|-------------------|----------------|
| Alternative | Capital Cost | Annual Increase to O&M | Present Worth of O&M Increase | 20 year Salvage Value | Present Worth of Salvage | Net Present Value | Criteria Score |
| P-1 | \$ - | \$ - | \$ - | \$ - | \$ - | \$ - | 10.0 |
| P-4 | \$ 1,234,000.00 | \$ (4,000.00) | \$ (77,534.00) | \$ 270,800.00 | \$ 255,000.00 | \$ 901,466.00 | 1.4 |
| P-5 | \$ 1,319,000.00 | \$ 10,000.00 | \$ 193,836.00 | \$ 276,200.00 | \$ 260,000.00 | \$ 1,252,836.00 | 0.0 |
| D-2 | \$ 1,488,000.00 | \$ (6,000.00) | \$ (116,302.00) | \$ 283,100.00 | \$ 267,000.00 | \$ 1,104,698.00 | 3.6 |
| D-3 | \$ 1,510,000.00 | \$ (400.00) | \$ (6,800.00) | \$ 247,500.00 | \$ 233,000.00 | \$ 1,270,200.00 | 2.5 |
| D-4 Priority 1 | \$ 1,372,000.00 | \$ (3,900.00) | \$ (75,600.00) | \$ 380,400.00 | \$ 358,000.00 | \$ 938,400.00 | 4.7 |
| D-4 Priority 2 | \$ 1,114,000.00 | \$ (3,900.00) | \$ (75,600.00) | \$ 275,400.00 | \$ 259,000.00 | \$ 779,400.00 | 6.1 |
| D-4 Priority 3 | \$ 1,519,000.00 | \$ (4,300.00) | \$ (52,700.00) | \$ 408,000.00 | \$ 384,000.00 | \$ 1,082,300.00 | 3.7 |
| D-5 | \$ 758,000.00 | \$ (200.00) | \$ (3,870.00) | \$ 116,000.00 | \$ 109,000.00 | \$ 645,130.00 | 7.5 |

6.2 Ranking Criteria

A matrix to compare each alternative objectively against the other will be developed to select the preferred alternative. Each alternative will be given a score ranging from 0 to 10 for a number of criteria, with 0 representing a negative impact and 10 representing the maximum benefit to the community. The alternatives will begin with a score of 5 for each criterion, and then the score will be adjusted up or down relative to the benefit of the particular alternative in relation to the other alternatives.

In addition to scoring each alternative, the criteria themselves will be weighted in relation to one another. Weighting factors ranging from 1 to 10 will be used to give greater importance to items such as cost. This is appropriate, as often times higher investments are made to overcome many other problems such as reliability or to mitigate problems with technical feasibility or environmental concerns.

6.2.1 Life Cycle Costs

The cost of extensive capital improvements to meet minimum health and safety requirements, applicable regulations, and environmental impacts is a great concern to small communities with limited budgets and resources. Life cycle costs also include anticipated increases to ongoing O&M costs.

Accordingly, this criterion will be provided with the maximum weighting factor of 10. This represents over 30% of the total weighting, and Public Opinion is closely tied to cost also, giving the cost for each alternative even more weight.

In addition to providing the maximum emphasis on costs, a method must be utilized to provide an objective comparison of costs for each alternative relative to one another and not just an overall comparison. Given a range of costs for various alternatives, the relative cost of any alternative can be determined using the lowest cost and the highest cost from the range of costs and the following equation.

$$5 \times [(Lowest\ Cost) / (Cost) + (Highest\ Cost - Cost) / (Highest\ Cost)]$$

For example, if a number of alternatives were compared having costs of \$500,000, \$1,000,000 and \$2,000,000, the above equation would provide scores of 8.8, 5.0, and 1.3, respectively. The utilization of a formula to score the 20 year life cycle costs in the matrix eliminates any subjectivity and provides a consistent, relative comparison of costs.

6.2.2 Operational and Maintenance Considerations

Operation and maintenance is an important issue when considering any large capital improvements within a small community. The costs for O&M associated with the alternatives is included in the 20 year life cycle costs compared under the financial feasibility, but there are other considerations that must be weighed for the O&M associated with each alternative.

The City has limited resources and manpower, and some alternatives may have O&M requirements that drastically tax those limited resources creating deficiencies in other areas. City personnel also have a much more intrinsic knowledge of the system than the average resident or even Council members. Priorities identified by the operators to facilitate the efficient operation of the system must be given some weight.

This criterion will be provided with a weighting factor of 7.

6.2.3 Permitting Issues

Some alternatives may encounter permitting issues that would significantly delay the project and/or result in additional expenses for the community. Consideration for these concerns will be given under this criterion.

This criterion will be provided with a weighting factor of 4.

6.2.4 Social Impacts

Social impacts will be considered in the final alternative selection as a project poorly supported by the community will have a limited chance of success. Efforts such as public hearings are ways to identify public opinion and perceptions. Costs are always a concern with consumers, but the health and safety of their families is just as important.

This criterion will be provided with a weighting factor of 5.

6.2.5 Environmental Impacts

Environmental impacts for each alternative, whether detrimental or beneficial, need to be considered in the final selection of a preferred alternative.

This criterion will be provided with a weighting factor of 5.

6.2.6 Sustainability Considerations

Sustainable utility management practices can greatly benefit a community and result in cost savings. Consideration will be given to alternatives benefitting the sustainability of the utility.

This criterion will be provided with a weighting factor of 4.

6.2.7 Public Health and Safety

Alternatives that do not meet the public health and safety requirements as required by the state and federal governments were eliminated during the Alternative Development. The alternatives retained for the alternative Analysis are designed to meet public health and safety laws, so the scoring for each alternative under this criterion would be expected to be fairly high. However, addressing public health and safety concerns is the main purpose of the entire report, so this category will still be given a higher weighting factor.

This criterion will be provided with a weighting factor of 7.

6.2.8 Land Acquisition

Issues with land acquisition often supersede the black-and-white world of engineering. This ranking category will include the feasibility of acquiring sufficient land in terms of lease, right-of-way, and/or land purchases. Although these are not strict engineering issues, problems with land acquisition can greatly impact a project's overall feasibility and require that land issues be given a very serious consideration.

This criterion will be provided with a weighting factor of 3.

6.3 Scoring of Pumping Station Alternatives

A matrix to compare each alternative objectively against the other will be developed to select the preferred alternate and to develop needed alternative prioritization. Each alternative will be given a score ranging from 1 to 10 for a number or criteria, with 0 representing a negative impact and 10 representing the maximum benefit to the community. The alternatives will begin with a score of 5 for each criterion, and then the score will be adjusted up or down relative to the benefit of that alternative in relation to the other alternatives.

The alternatives that will be discussed and scored under this section include:

- P-1: "No Action" Pumping Alternative
- P-4: "Bypass Booster Station" Pumping Alternative
- P-5: "Move Booster Station" Pumping Alternative

6.3.1 Life Cycle Costs

The scoring for the life cycle cost was calculated using the formula presented in the ranking criteria discussion and is summarized in Table 6-1.

6.3.2 Operational and Maintenance Considerations

Alternative P-1: "No Action" would not result in a significant increase or decrease to current system O&M requirements, so it will be given the base score of 5

Alternative P-4: “Bypass Booster Station” would remove O&M costs associated with the booster station but would introduce slight O&M costs with addition of the PRV system. Overall, there would be a net reduction in O&M costs, so it will be given a score of 8.5.

Alternative P-5: “Move Booster Station” would increase O&M costs as the proposed booster station would require a higher horsepower pump for fire flows in addition to normal operating pumps, as well as O&M costs associated with a back-up generator. Therefore, it will be given a score of 3.

6.3.3 Permitting Issues

All of the pumping alternatives (P-1, P-4, P-5) would only require routine permitting and DEQ review and approval so they will be given a score of 5 for this criterion.

6.3.4 Social Impacts

Public opinion for system improvements are often based on the maximum benefit received by the community that would increase monthly rates the least. Alternatives P-1, P-4 and P-5 will be scored against each other relative to the life cycle costs. Therefore, the pump alternatives will be given scores of 8, 5, and 1 respectively. The score for alternative P-4 was increased from 2 to a 5 as the City of Red Lodge have shown interest in pursuing ways to reducing the City’s energy use.

6.3.5 Environmental Impacts

Alternative P-1 has no environmental impact and will be given a score of 5 for this criterion.

Alternative P-4 includes construction of new transmission main. The proposed new main will be located on ground that has been disturbed through previous water line installations, construction of streets, and/or construction of buildings. However, the project will reduce energy use. Therefore, this alternative will be given a score of 5 for this criterion

Alternative P-5 will require construction of a new building and site development. Therefore, Alternative P-5 will be given a score of 3 for this criterion.

6.3.6 Sustainability Considerations

Alternative P-1: “No Action” would have a negative impact on the system resiliency and sustainability for a specific neighborhood, as the existing pump station has limited capability to supply needed fire flow, and no redundant power source to supply water to the neighborhood in the event of a power outage. Therefore, Alternative P-1 will be given a score of 2 for this criterion.

Alternative P-4: “Bypass Booster Station” would increase the sustainability and resilience of the system by removing the City’s only booster station. Therefore, Alternative P-4 will be given a score of 9 for this criterion.

Alternative P-5: “Move Booster Station” would increase the resilience of the system. However, it will have increased energy use as the proposed booster station would require a higher horsepower pump for fire flows in addition to normal operating pumps. Alternative P-5 will be given a score of 5.

6.3.7 Public Health and Safety

Alternative P-1 maintains the existing risk to public health and safety as the available fire flow to Country Club Estates and Spires subdivisions will remain limited. Also, without redundant power, the subdivision has a risk of loss of water supply during a power outage at the booster station. Therefore, Alternate P-1 will be given a score of 1 for this criterion.

Alternatives P-4 and P-5 have equal improvements to public health and safety and will be given a score of 8 for this criterion.

6.3.8 Land Acquisition

Alternatives P-1 and P-4 will be constructed within existing City property and right of way. Therefore, these alternatives will be given a rank of 8 for this criterion.

Alternate P-5 may require Land Acquisition for a new booster station location. Therefore, this alternative will be given a rank of 2 for this criterion.

6.4 Scoring of Distribution Alternatives

A matrix to compare each alternative objectively against the other will be developed to select the preferred alternate and to develop needed alternative prioritization. Each alternative will be given

a score ranging from 1 to 10 for a number or criteria, with 0 representing a negative impact and 10 representing the maximum benefit to the community. The alternatives will begin with a score of 5 for each criterion, and then the score will be adjusted up or down relative to the benefit of that alternative in relation to the other alternatives.

The alternatives that will be discussed and scored under this section include:

- D-2: “Park Avenue Water Main”
- D-3: “Pressure Relief Zone 5 and Replace PRV 1”
- D-4: “Priority 1-Grant Avenue and Hauser Avenue”
- D-4: “Priority 2-Replace 4” Cast Iron Mains”
- D-4: “Priority 3-Replace 6” Cast Iron Mains”
- D-5: “Kainu Water Main”

6.4.1 Life Cycle Costs

The scoring for the life cycle cost was calculated using the formula presented in the ranking criteria discussion and is summarized in Table 6-1.

6.4.2 Operational and Maintenance Considerations

Alternative D-2: “Park Avenue” will eliminate the need for the City to repair reoccurring leaks and freezes, typically three per year, in the line, so it will be given a score of 9.

Alternative D-3: “Pressure Relief Zone 5 and Replace PRV 1” will reduce O&M costs incurred by the City by reducing water loss from leaks in the high pressure zones. Installation of the PRV’s will also reduce the frequency of breaks by reducing high pressures. Therefore, the PRV’s will be given a score of 5.

D-4 Priority 1 includes replacing the sections of cast iron main within the City which cause the most frequent maintenance issues and is the Public Work’s Director’s highest area of concern in all of Option D-4. Therefore D-4 Priority 1 will be given a score of 9.

D-4 Priority 2 and Priority 3 have similar O&M costs and similar frequency of maintenance issues; therefore, they will be given a score of 7 for this criterion.

D-5 will have little impact on the City's operation and maintenance cost as the dead ends only require additional fire hydrant flushing. Therefore, this alternative will be given a score of 5 for this criterion.

6.4.3 Permitting Issues

Alternative D-2 includes two highway crossings which would require permits from the Montana Department of Transportation. This alternate also includes horizontal drilling under rock creek, therefore there is potential that stream permitting through a Joint Application may be required. Therefore, this alternative will be given a score of 4 for this criterion.

All of the other alternatives (D-3, all options in D-4, and D-5) would only require routine permitting and DEQ review and approval so they will be given a score of 5 for this criterion.

6.4.4 Social Impacts

Public opinion for system improvements are often based on the maximum benefit received by the community that would increase monthly rates the least. The various options for Alternative D-4 and Alternative D-2 will be scored against each other relative to the life cycle costs and maintenance costs, yet score higher in general as these alternatives have the highest social impact as the City residents are very aware of the need continue replacing water mains. Therefore, Alternate D-2 and Alternative D-4 Priority 1 will be given a score of 8, D-3 will be given a score of 5, Alternatives D-4 Priority 2 and D-4 Priority 3 will be given a score of 6. Alternative D-5 will be given a score of 4.

6.4.5 Environmental Impacts

Alternatives D-3, D-4 Priority 2, D-4 Priority 3, and D-5 will be given a score of 5, as these proposed new water mains will be installed in areas that have previously been disturbed for utility installation and streets. New hydrants and PRV vaults will be located on ground that has been disturbed through previous water line installations, construction of streets, and/or construction of buildings

Alternative D-2 and D-4 Priority 1 are given a score of 7, as these existing water mains have the highest volume of water loss due to leaks and breaks.

6.4.6 Sustainability Considerations

Alternatives D-2, all priorities in Alternate D-4 will eliminate the need for the City to repair reoccurring leaks and freezing. Therefore, these alternatives will be given a score of 8.

Alternative D-3: "Pressure Relief Zone 5 and Replace PRV 1" will increase sustainability by reducing system pressures, which will reduce water loss, and allow more fire flow to the City by installation of a PRV sized to allow needed fire flow though. Therefore, Alternative D-3 will be given a score of 8.

Alternative D-5 will have slightly improve sustainability, as the increased sustainability will be localized to the blocks where the mains will be replaced Therefore, this alternative will be given a score of 5 for this criterion.

6.4.7 Public Health and Safety

Alternative D-2 will improve public health and safety by reducing breaks, freezing, and loss of water supply to the users on the mains being replaced as well as improve water quality and increase available fire flow for a much of the City by eliminating dead end water mains. Therefore this Alternative will be given a score of 9 for this criterion.

Alternative D-3 will improve public health and safety by increasing available fire flow to the City in the event that the west bench water tower is out of commission. Therefore, this alternative will be given a score of 8 for this criterion.

Alternative D-4 will offer great improvement to public health and safety. The deteriorating water mains pose a risk for cross-contamination, freezing, breaks, and loss of water service to several water users. The improvements in D-4 Priority 1 will provide significant increase to public health and safety and will be given a score of 9. The improvements in D-4 Priority 2 and Priority 3 will greatly improve these public health and safety concerns for several users in the City. Therefore, D-4 Priority 2 and D-4 Priority 3 will be given a score of 7 for this criterion.

Alternative D-5 will have a localized impact on public health and safety, and will be given a score of 5.

6.4.8 Land Acquisition

Alternate D-2 may require Land Acquisition for a utility easement to connect the water mains in Kainu Avenue. Therefore, this alternative will be given a score of 5 for this criterion.

Alternatives D-3 and all priorities in D-4 will likely not require land acquisition. Therefore, they will be given a score of 8 for this criterion.

Alternative D-5 will require Land Acquisition of property in between South. Kainu Avenue and North Kainu Avenue, therefore this alternative will be given a score of 5.

6.5 Decision Matrix and Selection of Preferred Alternative

The scores and the weighted scores for each alternative were compiled to provide a comparison using a decision matrix as shown in Table 6.2.

Based on the ranking criteria, there was a preference on the pumping station alternatives for Alternative P-4 “Bypass Booster Station”. Several of the distribution system improvements, however, had significantly higher number of total points. Due to the subjective nature of the scoring and weighting of criteria, alternatives that rank within 10 points of each other are typically given the same degree of preference. The Table below outlines the City of Red Lodge’s needed water system improvements by priority established in the above decision matrix.

The City will not be able to address all of these system improvements in a single phase due to the costs, short construction season and the resulting financial burdens it would have on the rate payers. Therefore, the City will need to determine the highest priority improvements and complete projects as part of a water system improvement plan. Moving forward, the preferred alternative for further analysis in this report is Alternative D-4 Priority 1: “Grant Avenue and Hauser Avenue.

Table 6-2 Decision Matrix

| Table 6.2: Decision Matrix | | | | | | | | | | | | | | | | | |
|----------------------------|-----------------|------|---------------------------|------|-------------------|------|----------------|------|-----------------------|------|----------------|------|--------------------------|------|------------------|------|-------|
| Alternative | Life Cycle Cost | | Operation and Maintenance | | Permitting Issues | | Social Impacts | | Environmental Impacts | | Sustainability | | Public Health and Safety | | Land Acquisition | | TOTAL |
| | Weight: 10 | | Weight: 7 | | Weight: 4 | | Weight: 5 | | Weight: 5 | | Weight: 4 | | Weight: 7 | | Weight: 3 | | |
| | Score | Wtd. | Score | Wtd. | Score | Wtd. | Score | Wtd. | Score | Wtd. | Score | Wtd. | Score | Wtd. | Score | Wtd. | |
| P-1 | 10.0 | 100 | 5.0 | 35 | 5.0 | 20 | 8.0 | 40 | 5.0 | 25 | 2.0 | 8 | 1.0 | 7 | 8.0 | 24 | 283 |
| P-4 | 1.4 | 14 | 8.5 | 60 | 5.0 | 20 | 5.0 | 25 | 5.0 | 25 | 9.0 | 36 | 8.0 | 56 | 8.0 | 24 | 284 |
| P-5 | 0.0 | 0 | 3.0 | 21 | 5.0 | 20 | 1.0 | 5 | 3.0 | 15 | 5.0 | 20 | 8.0 | 56 | 2.0 | 6 | 149 |
| D-2 | 3.6 | 36 | 9.0 | 63 | 4.0 | 16 | 8.0 | 40 | 7.0 | 35 | 8.0 | 32 | 9.0 | 63 | 5.0 | 15 | 315 |
| D-3 | 2.5 | 25 | 5.0 | 35 | 5.0 | 20 | 5.0 | 25 | 5.0 | 25 | 8.0 | 32 | 8.0 | 56 | 8.0 | 24 | 266 |
| D-4 Priority 1 | 4.7 | 47 | 9.0 | 63 | 5.0 | 20 | 8.0 | 40 | 7.0 | 35 | 8.0 | 32 | 9.0 | 63 | 8.0 | 24 | 348 |
| D-4 Priority 2 | 6.1 | 61 | 7.0 | 49 | 5.0 | 20 | 6.0 | 30 | 5.0 | 25 | 8.0 | 32 | 7.0 | 49 | 8.0 | 24 | 314 |
| D-4 Priority 3 | 3.7 | 37 | 7.0 | 49 | 5.0 | 20 | 6.0 | 30 | 5.0 | 25 | 8.0 | 32 | 7.0 | 49 | 8.0 | 24 | 290 |
| D-5 | 7.5 | 75 | 5.0 | 35 | 5.0 | 20 | 4.0 | 20 | 5.0 | 25 | 5.0 | 20 | 5.0 | 35 | 5.0 | 15 | 260 |

It is important to note that the above scoring and weighting are subjective. Alternatives that score overall within 10 pts of each other may essentially hold the same degree of preference.

The decision matrix above compared the three pumping alternatives to determine which pumping alternative is the preferred alternative. The distribution projects, D-2, D-3, D-4 and D-5, as well as the preferred pumping alternative were then prioritized to establish a list of priorities for the water system. This water system capital improvement project prioritization established from the decision matrix is given in Table 6-3.

Table 6-3 Water System Project Priority Table

| City of Red Lodge Water System Project Priority Table | | |
|---|----------------------------|--|
| Priority | Alternative | Description |
| 1 | Alternative D-4 Priority 1 | Replace cast iron mains in two blocks of Grant Avenue from 20th Street to 22nd Street, and replace cast iron mains in six blocks of Hauser Avenue from 13th Street to 19th Street. |
| 2 | Alternative D-2 | Replace Asbestos Cement Main in Park Avenue, and eliminate four dead end mains. |
| 3 | Alternative D-4 Priority 2 | Replace all remaining 4" Cast Iron Mains |
| 4 | Alternative D-4 Priority 3 | Replace all remaining 6" Cast Iron Mains |
| 5 | Alternative P-4 | Bypass Booster Station |
| 6 | Alternative D-3 | Replace PRV system in White Avenue, and install new PRV system for zone 5. |
| 7 | Alternative D-5 | Construct new water main in Kainu Avenue to eliminate two dead ends. |

7.0 PROPOSED PROJECT

The preferred alternative is Alternative D-4 Priority 1: Grant Avenue and Hauser Avenue

7.1 Preliminary Project Design

Chapter 3 included a detailed analysis of the need for improvements. Without a doubt, the highest priority is the replacement of the undersized and fragile mains due to their negative health and safety effects on the public.

7.1.1 Pumping Stations

The proposed project does not include any pumping stations.

7.1.2 Distribution System

The proposed project includes replacement of the highest priority cast iron mains within the City. This includes construction of 750 feet of PVC water main to replace deteriorating 4" cast iron mains in two blocks of Grant Avenue from 20th Street to 22nd Street. The Hauser portion of the project includes construction of 2070 ft of 8" PVC water main in Hauser Avenue which will replace 4" cast iron mains in three blocks from 19th Street to 16th Street, and 6" cast iron mains in three blocks from 16th Street to 13th Street.

The improvements to the distribution system will be completed in accordance with *Circular DEQ-1, Standards for Water Works*,

Chapter 8. Specifically, the following sections will be addressed:

Section 8.3: Sufficient valves must be provided on water mains so that inconvenience and sanitary hazards will be minimized during repairs. Valves should be located at not more than 500-foot intervals in commercial districts and at no more than one block or 800-foot intervals in other districts.

Section 8.4.3: Hydrant leads must be a minimum of 6" in diameter.

Section 8.2.2: The minimum size for a water main providing fire protection is 6".

Section 8.2.3: *Water mains not designed to carry fire-flows may not have fire hydrants connected to them.*

Section 8.4.1: *Hydrants should be provided at each street intersection.*

All distribution system reconstruction would be located within existing City, County or State rights-of-way. The existing mains are located within existing streets or right-of-ways.

Figure 7:1 illustrates the Proposed Project, Alternate D-4 Priority 1: “Grant Avenue and Hauser Avenue”.

7.2 Project Schedule

Table 8.4 in Chapter 8 includes a detailed project implementation schedule, which includes a timeline of when funding is anticipated to be available.

7.3 Permit Requirements

Permitting would involve obtaining DEQ approval of the project plans and specifications. If the project disturbs an area greater than one acre, it would fall under the requirements of the “General Permit for Storm Water Discharges Associated with Construction Activity”, which is required by the Federal Water Pollution Control Act and enforced by DEQ.

7.4 Sustainability Considerations

The existing distribution system has portions of water main that are undersized and that have developed an excessive amount of water breaks. By rehabilitating these portions of the distribution system, the City will be conserving an estimated 25% of the pumped water, reducing energy usage from well pumps, and treatment costs. This improves the health and safety of the public through the proper fire protection for a more sustainable utility.

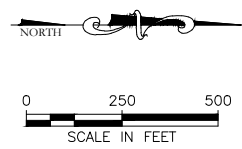
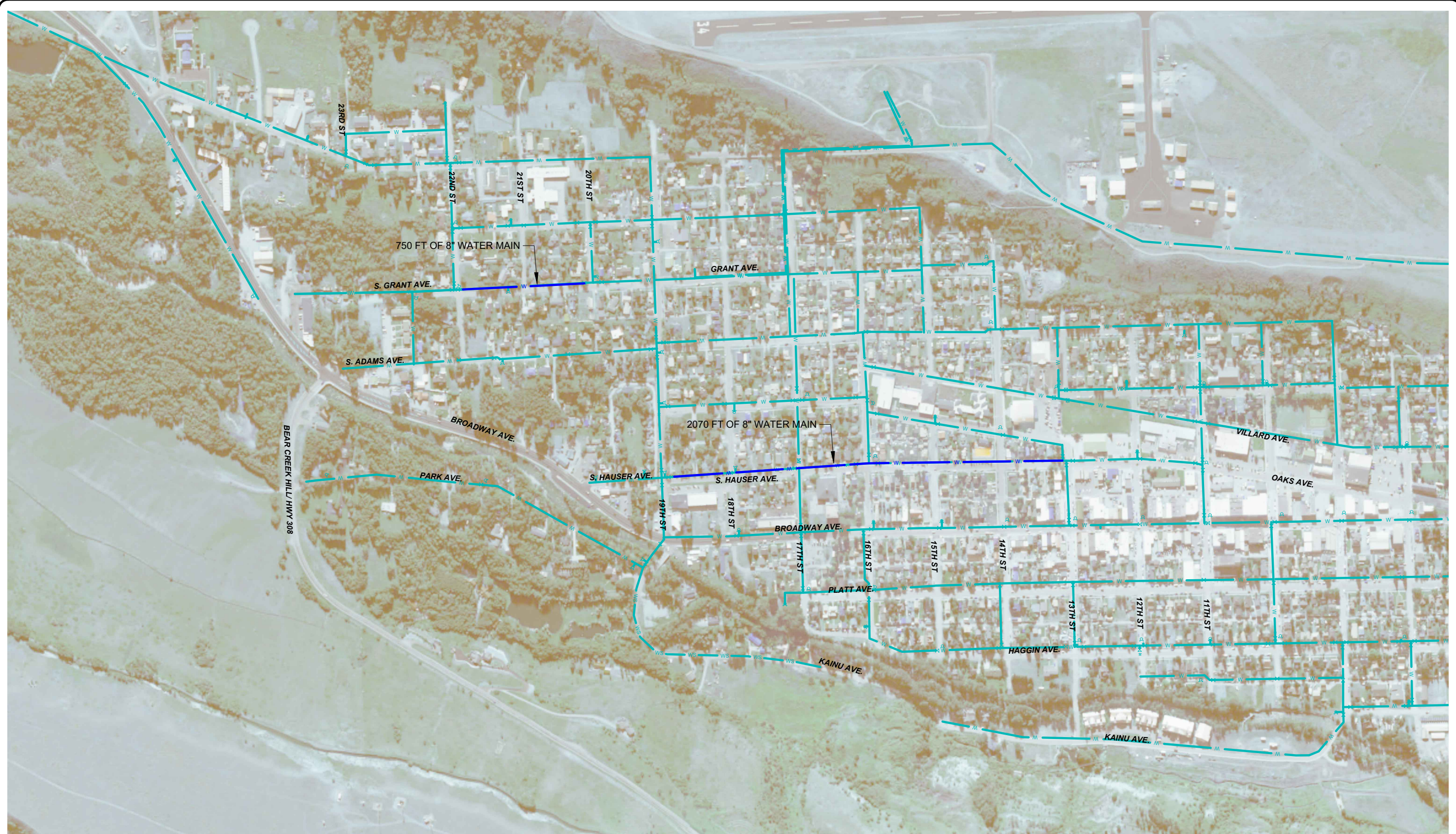


Figure 7:1
Map of Preferred Alternative
Alt. D-4 Priority 1
City of Red Lodge, Montana
2019 Water Preliminary Engineering Report



7.4.1 Water and Energy Efficiency

Since the new water mains would not have nearly the amount of leaks compared to the existing mains, they would require fewer repairs and maintenance. Consequently, less energy would be needed for pumping the water from the wells, running heavy equipment, transporting materials and flushing the water system. Also, with fewer leaks in the system, less water would be lost which would result in lower energy demands for pumping. These improvements will reduce energy consumption of the community. Annual electricity used at the wells costs the City nearly \$30,000 annually. Estimating a 25% reduction in water lost, thus a 25% reduction in well pump power usage, would mean an annual savings of 50,980 kWh, and potentially \$7,000 in energy costs for supplying the water lost per year.

7.4.2 Green Infrastructure

These improvements would reduce the amount of groundwater removed from the aquifer. This City currently loses nearly 79 million gallons of water annually. Alternate D-4 could potentially reduce that leakage by 25%, saving approximately 20 million gallons of water.

7.4.3 Other

The replacement of the existing dilapidated portions of the distribution system will reduce operator time spent excavating and repairing leaks. By adding additional working valves and fire hydrants, the system will meet current DEQ standards, will simplify operation for the City, along with adding additional longevity to the existing system.

7.5 Total Project Cost Estimate

The table below presents a cost estimate for the distribution system alternative D-4 Priority 1.

Table 7-1 Cost Estimate for Proposed Project Alternative D-4 Priority 1

| Grant Avenue | | | | |
|--|------|---------------|------------------------|--------------------|
| Item | Unit | Quantity | Unit Cost ¹ | Total |
| Connect to Existing Main | EA | 3 | \$4,500 | \$13,500 |
| 8" PVC Water Main | LF | 750 | \$70 | \$52,500 |
| 8"x8"x8" Tee | EA | 1 | \$2,000 | \$2,000 |
| 8" Gate Valve with Valve Box | EA | 3 | \$2,000 | \$6,000 |
| Fire Hydrant Assembly with Gate Valve | EA | 1 | \$5,800 | \$5,800 |
| 8"x6" Reducer | EA | 1 | \$600 | \$600 |
| 8"x8"x6" Tee | EA | 1 | \$1,500 | \$1,500 |
| Remove Fire Hydrant Assembly | EA | 1 | \$1,000 | \$1,000 |
| 1" Poly Service with insulation | LF | 620 | \$50 | \$31,000 |
| 1" Curb Stop Assembly | EA | 13 | \$600 | \$7,800 |
| 1" Corporation Stop Assembly | EA | 13 | \$525 | \$6,825 |
| Type A Surface Restoration (Asphalt) | LF | 340 | \$60 | \$20,400 |
| Type B Surface Restoration (Aggregate) | LF | 1,020 | \$25 | \$25,500 |
| Underground Utility Crossing | EA | 6 | \$500 | \$3,000 |
| Subtotal: Grant Avenue 2019 Direct Construction Cost | | | | \$178,000 |
| Hauser Avenue | | | | |
| Connect to Existing Main | EA | 6 | \$4,500 | \$27,000 |
| Abandon Water Main | EA | 2 | \$4,500 | \$9,000 |
| 8" PVC Water Main | LF | 2070 | \$70 | \$144,900 |
| 8" Cross | EA | 1 | \$2,200 | \$2,200 |
| 8"x8"x8" Tee | EA | 1 | \$2,000 | \$2,000 |
| 8" Gate Valve with Valve Box | EA | 6 | \$2,000 | \$12,000 |
| Fire Hydrant Assembly with Gate Valve | EA | 6 | \$5,800 | \$34,800 |
| 8"x8"x6" Tee | EA | 6 | \$1,500 | \$9,000 |
| Remove Fire Hydrant Assembly | EA | 2 | \$1,000 | \$2,000 |
| 1" Poly Service with insulation | LF | 1860 | \$50 | \$93,000 |
| 1" Curb Stop Assembly | EA | 62 | \$600 | \$37,200 |
| 1" Corporation Stop Assembly | EA | 62 | \$525 | \$32,550 |
| Type A Surface Restoration (Asphalt) | LF | 3600 | \$60 | \$216,000 |
| Under Ground Utility Crossing | EA | 25 | \$500 | \$12,500 |
| Flowable Fill | CY | 10 | \$170 | \$1,700 |
| Subtotal: Hauser Avenue 2019 Direct Construction Cost | | | | \$636,000 |
| Grant Avenue and Hauser Avenue 2019 Direct Construction Cost | | | | \$814,000 |
| Mobilization, Bonding, Etc. | | 10.0% | | \$82,000 |
| Traffic Control | | 3.0% | | \$25,000 |
| Total: 2019 Construction Cost | | | | \$921,000 |
| 2022 Construction Cost ² | | 3.0% annually | | \$1,006,000 |
| Contingency | | 10.0% | | \$101,000 |
| Total: 2022 Construction Cost | | | | \$1,107,000 |
| Geotechnical Investigation | | | | \$20,000 |
| Engineering | | 20.0% | | \$222,000 |
| Legal and Administrative | | 2.0% | | \$23,000 |
| Total: D-4 Priority # 1 2022 Capital Cost | | | | \$1,372,000 |
| ¹ Estimated unit costs are based upon estimates from suppliers and bid tabs for similar projects throughout Montana. | | | | |
| ² The ENR 20 year average Construction Cost Index is +2.94% (as of December 2018). Capital improvement costs are projected to 2020 using 3.0% factor. | | | | |

7.6 Annual Operating Budget

The financial status of the City's water system was discussed in detail in Section 3.5. Current water rates are set at approximately \$47.60 for average residential water service connections, and \$97.87 for water and sewer service connections combined. Using information from the last three years of financial data, an operating budget was estimated for the construction year of 2022.

Table 7-2 Probable Annual Operating Budget for 2020

| Account | FY 16-17 | FY 17-18 | FY 18-19 | Projected 2022 Budget |
|---|----------------|-----------------|-----------------|-----------------------|
| Expenses | | | | |
| 430510 Water | \$ 395,046.66 | \$ 476,345.10 | \$ 589,867.28 | \$ 740,000.00 |
| Total Expense | \$ 395,046.66 | \$ 476,345.10 | \$ 589,867.28 | \$ 740,000.00 |
| Revenue | | | | |
| 33000 Intergovernmental Revenue | \$ 1,890.00 | \$ 1,857.00 | \$ 2,426.00 | \$ 3,000.00 |
| 340000 Charges for Services | \$ 955,728.92 | \$ 1,099,807.71 | \$ 1,195,922.87 | \$ 1,350,000.00 |
| Misc. Revenues | | | \$ 9,075.20 | \$ 10,000.00 |
| 370000 Investments and Royalty Earnings | \$ 1,355.35 | \$ 4,198.43 | \$ 6,918.98 | \$ 12,000.00 |
| 383000 Resort Tax | \$ 100,000.00 | \$ 100,000.00 | \$ 201,477.10 | \$ 225,000.00 |
| Total Revenue | \$1,058,974.27 | \$ 1,205,863.14 | \$1,415,820.15 | \$ 1,600,000.00 |
| Revenue Minus Expenses=Reserves | \$ 663,927.61 | \$ 729,518.04 | \$ 825,952.87 | \$ 860,000.00 |

7.6.1 Income

Table 3.8 presented in Section 3.5 provided a summary of income over the last three years as well as a projected budget. For the last five fiscal years, the rate charges, miscellaneous water revenue, and Resort Tax revenue averaged \$1,226,885.85 and reserves averaged \$739,799.50.

Table 7.3 provides a projected income based on the current rate structure. A separate rate analysis is provided in Chapter 8, which specifically considers how user rates would be impacted as a result of the proposed project.

7.6.2 Annual O&M Costs

Average O&M expenses for the last three fiscal years as well as projected O&M expenses were presented in Table 3.8 in Section 3.5. Average expenses for the last three years were found to be \$487,086.35. Table 7.3 shows projected expenses based on the expenses anticipated within the existing system. Changes to the O&M costs associated with the proposed project were

identified as part of the alternative analysis and are factored into the rate analysis included in Chapter 8.

7.6.3 Debt Repayments

Funding strategy options for the proposed projects will be outlined in the next chapter, which will provide possible funding options for the City's water system improvements. Where loan funds are used, increases in annual costs for both debt repayment and coverage requirements will be considered in addition to project costs.

The City Water enterprise has two outstanding loans. One loan is from the construction of the Haggin Avenue Water Replacement Project. The second is the refinance of the Broadway Avenue and Water Treatment Plant project loans. Existing loans and yearly payment amounts are shown in the table below:

Table 7-3 City of Red Lodge Water System Debt Service

| Debt Service | | |
|-------------------|-------------------|--------------------|
| Month | Balance Remaining | Payment (per year) |
| Series 2019B Bond | \$ 922,466 | \$ 59,913 |
| Series 2019C Bond | \$ 4,695,000 | \$ 435,444 |
| Total | \$ 5,617,466 | \$ 495,357 |

Any new debt service as a result of the proposed project will be considered as part of the funding strategy and rates projected accordingly.

7.6.4 Reserves

Debt Service Reserve

SRF typically requires half a year payment for Debt Service Reserve. For Series 2019B Bond the debt service reserve requirement is \$29,956.50, and for Series 2019C Bond the debt service reserve requirement is \$217,722.00. Therefore, the total debt service reserve requirement is \$247,678.50.

Short-Lived Asset Reserve

Short-lived assets include those items not covered under O&M and are not considered a capital improvement on the basis that their expected replacement timeline is less than 15 years. The table below shows the City's short-lived assets of the water system, as outlined in the TSEP Uniform Application, Appendix A. The "Total Short Lived Assets Annual Contribution" total shown in the table below is a recommended minimum reserve the City should maintain for the water system short lived assets.

Table 7-4 City of Red Lodge Water System Short Lived Assets

| Short Lived Assets | |
|---|----------------------------|
| City of Red Lodge-Water System | |
| 1-5 Years | Annual Contribution |
| Billing Software Updates | \$ 250 |
| New Computer | \$ 250 |
| New Printer | \$ 250 |
| Tank Cleaning and Inspection | \$ 5,000 |
| Total | \$ 5,750 |
| 5-10 Years | |
| Well Pump Replacement | \$ 8,000 |
| Booster Pump Replacement | \$ 4,000 |
| Booster Pump Controls | \$ 1,600 |
| Chemical Feed Pump Replacement | \$ 800 |
| Vehicle Replacement | \$ 5,000 |
| Backhoe Replacement | \$ 4,000 |
| Total | \$ 23,400 |
| 10-15 Years | |
| Recoating Water Tanks | \$ 45,000 |
| Altitude Valve | \$ 2,000 |
| Flow Meters | \$ 1,000 |
| Alarms and Telemetry | \$ 2,500 |
| Hydrant Repair | \$ 30,000 |
| Pressure Reducing Valve Replacement | \$ 2,500 |
| Total | \$ 83,000 |
| Total Short Lived Assets Annual Contribution | \$ 112,150 |

8.0 CONCLUSIONS AND RECOMMENDATIONS

The following sections will develop potential funding options for the alternatives.

8.1 Funding

8.1.1 Funding Sources

The following sections provide a brief description of the potential funding sources and whether or not the City of Red Lodge would be eligible for those funds.

Treasure State Endowment Program (TSEP)

TSEP is a state funded grant program, which is administered by the Montana Department of Commerce (MDOC). TSEP provides financial assistance to local governments for infrastructure improvements. Grants can be obtained from TSEP for up to \$500,000 if the projected user rates are less than 125% of the target rate, for up to \$625,000 if projected user rates are between 125% and 150% of the target rate, and for up to \$750,000 if the projected user rates are over 150% of the target rate. TSEP grant recipients are required to match the grant dollar for dollar, but the match may come from a variety of sources including other grants, loans, or cash contributions.

The median household income (MHI) for the City of Red lodge is \$42,500 The combined water and wastewater target rate for this level of income is \$81.46/month. The City residents are currently paying approximately 120% of the target rate. The City of Red Lodge's water improvement projects would be eligible for a \$500,000 TSEP grant. However, since they are applying for a TSEP Grant for the stormwater improvements they are not eligible at this time

Renewable Resource Grant and Loan Program (RRGL)

RRGL is a state program that is funded through interest accrues on the Resource Indemnity Trust Fund and the sale of Coal Severance Tax Bonds and is administered by the Montana Department of Natural Resources and Conservation (DNRC). The primary purpose of the RRGL is to enhance Montana's renewable resources. For public facilities projects that conserve, manage, develop, or protect renewable resources, grants of up to \$125,000 are available.

The proposed improvements to the distribution system will conserve, manage, and preserve natural resources by eliminating leaking water and significantly reducing the energy required for

pumping and treatment. The proposed improvements will also preserve natural resources by protecting groundwater from chlorinated water by reducing leaks and volume of water loss. Therefore, the City of Red Lodge's water improvement projects would be eligible for a DNRC-RRGL grant.

Community Development Block Grant (CDBG)

CDBG is a federally funded program that is also administered by the Montana Department of Commerce (MDOC). The primary purpose of CDBG funds is to benefit low to moderate income (LMI) families. Hence, a municipality must have an LMI of 51% or greater. This is usually determined by the current Census. However, under certain circumstances, the MDOC may allow an income survey to be completed (such as there have been major economic changes since the Census or if a community is only slightly under the required LMI percentage).

The CDBG grant funds can be applied for in an amount of up to \$450,000 with a limit of \$15,000 per LMI household, so a community needs 30 LMI households to apply for the maximum grant funds. The use of CDBG funds requires a 25% local match that can be provided through cash funds, loans, or a combination thereof.

Based on the data from CEIC 48.97% of the population of the City of Red Lodge is in the low to moderate income bracket. Even though current user rates are above the target rate, the City of Red Lodge's water improvements would not qualify for CDBG grants.

State Revolving Fund (SRF)

SRF provides low-interest loan funds for both water and wastewater projects through the Drinking Water State Revolving Fund (DWSRF) and the Water Pollution Control State Revolving Fund (WPCSRF), respectively. The SRF program is administered by the Montana Department of Environmental Quality. Current loan terms include an interest rate of 2.5% for a 20 year period.

SRF loans are available for projects that involve upgrading and replacing infrastructure and facilitate compliance with the national primary and secondary drinking water regulations-such as the improvements proposed with this report. Therefore, the City of Red Lodge is eligible for a DWSRF loan.

USDA Rural Development (RD)

RD provides grant and loan funding to municipalities for water and wastewater projects that improve the quality of life and promote economic development in Rural America. Municipalities with a population of less than 10,000 are eligible to apply, though; priority is given to those with a population of less than 5,500.

Grant eligibility and loan interest rates are based on the community's median household income (MHI) and user rates. If the area to be served has a MHI of \$38,205 or lower and the project is necessary to alleviate a health and/or sanitation concern, up to 75% of the project costs are grant eligible. Up to 45% of the project costs are grant eligible if the planning area has an MHI between \$38,205 and \$47,757.

The 2019 population of the City of Red Lodge is 2,294 with a MHI of \$42,500. Therefore, the City may be eligible to apply for a RD loan up to 45% of a project's cost. However, the loan term is 40 years, and the realistic match may be closer to 25%,

Montana Coal Board

The Coal Board provides grant funding to municipalities to adequately provide for the expansion of public services or facilities needed as a direct consequence of coal development activities. There is no maximum limit to the amount the Coal Board can fund, but available funding is very limited so it can be difficult to receive any funds from the Coal Board, especially large sums.

The Coal Board has a designated coal impact area, where most of the funds are allotted. Carbon County is in the Coal Board Grants' Funding Distribution greater than 50% impact area. Therefore, the City of Red Lodge may be eligible for Montana Coal Board grants for projects proposed in this report.

Economic Development Administration (EDA)

EDA provides grant funding for projects that are demonstrated to be needed for the placement of a new business. The amount of grant is dependent on the number of jobs created. There are no known job creations or business expansions that are anticipated as a direct result of the project. Thus, the City would likely not be eligible to receive grant funding from EDA for this project.

INTERCAP

INTERCAP provides loan funds at a low cost, variable interest rate to local governments. INTERCAP is administered by the Montana Board of Investments and is very flexible in the variety of funding which would include both water and wastewater projects. There is no funding cycle (funds are always available), however, the maximum loan term is 10 years.

Due to the relatively large amount of financing required, an INTERCAP loan with the shorter loan term would cause extremely high user rates for the residents and is not recommended for long-term financing. Should the City be in need of interim financing at any point during these projects, INTERCAP would be an excellent source.

8.1.2 Funding Strategy

The City may decide to complete the project in smaller portions with the City's Cash reserves as those funds become available. However, funding sources for the improvements are available to the City. The funding options include a variety of grant and low interest sources available to the City. Two options have been identified as potential funding sources for the City. The City's preferred funding package and anticipated to be most successful for the Water System Improvements includes the following:

- RD 25% Grant/ 75% Loan
- SRF Loan with potential maximum \$500,000 loan forgiveness.

These funding strategies are presented in Table 8.1. If the City elects to move forward with applying for funding, a detailed project budget and schedule will be generated for the grant application.

Table 8-1 Funding Scenarios

| ITEM | SCENARIO #1 | SCENARIO #2 |
|--|---|--|
| | RD (1.875% for 40 years*, 25% RD Grant) | DNRC, TSEP and SRF (2.5% for 20 years*, SRF Forgiveness) |
| Proposed Improvements | | |
| Distribution Alt D4 Priority 1 Grant Avenue and Hauser Avenue | \$1,372,000 | \$1,372,000 |
| | | |
| Rounded Total | \$1,372,000 | \$1,372,000 |
| DNRC Grant | \$0 | \$0 |
| TSEP Grant | \$0 | \$0 |
| CDBG Grant | | |
| RD Grant | \$343,000 | |
| City Reserves | \$74,300 | \$74,300 |
| SRF Principal Forgiveness/Local Contribution | \$0 | \$500,000 |
| SRF Loan | | \$797,700 |
| RD Loan | \$954,700 | |
| Total Project Funds | \$1,372,000 | \$1,372,000 |
| SRF Bond Reserve (1/2 year payment) | \$0 | \$25,606 |
| Interim Interest | \$34,000 | \$0 |
| Total Loan Amount | \$988,700 | \$823,306 |
| Annual Loan Payment | \$34,220 | \$52,860 |
| Total Loan Payments Over Life of Loan | \$1,368,800 | \$1,057,200 |
| Total Interest Paid Over Life of Loan | \$380,100 | \$233,894 |
| Annual Loan Coverage | \$3,422 | \$5,286 |
| TOTAL ANNUAL CAPITAL DEBT SERVICE COST | \$37,642 | \$58,146 |
| User Capital Cost/Month | \$1.80 | \$2.78 |
| Current Annual O&M ¹ | \$590,000 | \$590,000 |
| Current Annual Debt Service (RD loan) | \$495,357 | \$495,357 |
| Annual Credi from Resort Tax | -\$100,000 | -\$100,000 |
| Additional O&M Due To Project | -\$3,900 | -\$3,900 |
| TOTAL ANNUAL O&M COSTS | \$981,457 | \$981,457 |
| User O&M Cost/Month | \$47.00 | \$47.00 |
| USER COST/MONTH WITH PROJECT² | \$48.81 | \$49.79 |
| Existing Average User Cost/Month/EDU | \$47.60 | \$47.60 |
| COST/MONTH INCREASE/EDU³ | \$1.21 | \$2.19 |
| Existing Other System Cost/Month | \$50.27 | \$50.27 |
| Total Proposed Water & Sewer Cost/Month | \$97.87 | \$100.06 |
| Combined Systems Target Rate | \$81.46 | \$81.46 |
| PERCENT OF COMBINED TARGET RATE | 120.1% | 122.8% |
| ¹ Based on 2019 expenses presented in the Expenditure Budget Report. | | |
| ² Based on 1740 EDUs | | |
| ³ If user cost/month for the project - existing avearge user cost/month is < or = to \$0, then required increase is \$0 | | |

9.0 REFERENCES

- Montana Natural Heritage Program. State of Montana. <http://mtnhp.org/mapviewer/>.
- ¹ Montana Natural Heritage Program. State of Montana. <http://mtnhp.org/SpeciesOfConcern/>.
- ¹ Federal Emergency Management Agency (FEMA). *Flood Map Service Center*. [http.msc.fema.gov/portal/search](http://msc.fema.gov/portal/search). Map Index for Richland County, Montana (Community Panels 30083C0975C and 30083C1000C).
- ¹ U.S. Fish and Wildlife Service. United States Department of the Interior. *National Wetlands Inventory*. <http://www.fws.gov/nwi/>.
- ¹ Montana Department of Commerce. State of Montana. *Census & Target Rate Information*. <http://comdev.mt.gov/Resources/censustargetrateinfo.mcp>x
- ¹ United States Census Bureau. United States Department of Commerce. <http://www.census.gov>.
- ¹ United States Environmental Protection Agency. *Water Audits and Water Loss Control for Public Water Systems*. July 2013.

Appendix A:

Uniform Environmental Checklist and Environmental Correspondence

UNIFORM ENVIRONMENTAL CHECKLIST

As the engineer that prepared the Preliminary Engineering Report, I Amy Carter, P.E. , have reviewed the information presented in this checklist and believe that it accurately identifies the environmental resources in the area and the potential impacts that the project could have on those resources. In addition, the required state and federal agencies were provided with the required information about the project and requested to provide comments on the proposed public facility project. Their comments have been incorporated into and attached to the Preliminary Engineering Report.

Engineer's Signature: _____
Date: _____

Key Letter: N – No Impact **B** – Potentially Beneficial **A** – Potentially Adverse
P – Approval/Permits Required **M** – Mitigation Required

| PHYSICAL ENVIRONMENT | |
|----------------------|---|
| <u>Key</u> N | <p>1. Soil Suitability, Topographic and/or Geologic Constraints (e.g., soil slump, steep slopes, subsidence, seismic activity)</p> <p><i>Comments and Source of Information:</i> NRCS Soil Maps indicate that the project locations are in areas with soil composed of primarily charlos loams and stony loam. The maps show that the site soils have low to moderate concern for corrosion to concrete, and a high concern of corrosion to steel. There are no identified topographical or geological constraints. Slopes across the project vary from 0% to 8+%.</p> <p>-Amy Carter, P.E. -USDA National Cooperative Soil Survey</p> |
| <u>Key</u> M | <p>2. Hazardous Facilities (e.g., power lines, EPA hazardous waste sites, acceptable distance from explosive and flammable hazards including chemical/petrochemical storage tanks, underground fuel storage tanks, and related facilities such as natural gas storage facilities & propane storage tanks)</p> <p><i>Comments and Source of Information:</i> A Search of the Montana Department of Environmental Quality (DEQ) State Digital Atlas indicates that the underground storage tanks may be present near proposed work sites. It is possible that some of the spill and tank sites may affect some of the proposed water facility improvement construction. During the design phase, DEQ spill information will be closely reviewed so that spill areas can be avoided during construction. If a spill area cannot be avoided, DEQ will be contacted and appropriate measures taken.</p> <p>-Amy Carter, P.E. -Montana Department of Environmental Quality State Digital Atlas</p> |
| <u>Key</u> N | <p>3. Effects of Project on Surrounding Air Quality or Any Kind of Effects of Existing Air Quality on Project (e.g., dust, odors, emissions)</p> <p><i>Comments and Source of Information:</i> The only impacts on air quality may be temporary dust and exhaust during construction. Reasonable efforts will be taken during construction to minimize these temporary impacts.</p> <p>-Amy Carter, P.E.:</p> |

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| <p style="text-align: center;"><u>Key</u> N/P</p> | <p>4. Groundwater Resources & Aquifers (e.g., quantity, quality, distribution, depth to groundwater, sole source aquifers)</p> <p><i>Comments and Source of Information:</i> Information from Montana Well Log Reports in the vicinity shows that the average static ground water level is 19.7 feet below the ground surface, some wells do show groundwater within 5 feet of the ground surface. Where groundwater is encountered during construction, a construction dewatering permit will be obtained through DEQ by the Contractor. Adherence to this permit will mitigate any temporary effects associated with construction. No long-term impacts to groundwater are anticipated</p> <p>-Amy Carter, P.E. -Montana Bureau of Mines and Geology, GWIC (T07S, R20E, Sec: 15,14,21,22,23,28,27,26,33,34,35)</p> |
| <p style="text-align: center;"><u>Key</u> N/P</p> | <p>5. Surface Water/Water Quality, Quantity & Distribution (e.g., streams, lakes, storm runoff, irrigation systems, canals)</p> <p><i>Comments and Source of Information:</i> The project is not anticipated to impact the quantity, quality, or distribution of any surface waters. The Army Corp of Engineers stated that as long as no fill is placed in jurisdictional water, no permit would be required. No fill is proposed to be placed in any waters.</p> <p>However, a DA permit may be required in order to bore a new water main under Rock Creek. The U. S. Fish and Wildlife Service and the Montana Fish and Wildlife, and Parks were contacted but had no comments regarding the project.</p> <p>If in the design stage it is determined that more than one acre will be disturbed by project implementation, then a Montana Pollutant Discharge Elimination System (MPDES) construction stormwater permit would be required.</p> <p>-Amy Carter, P.E. -MT DEQ MPDES Permitting Section -Marena Gilbert, US Army Corp of Engineers</p> |
| <p style="text-align: center;"><u>Key</u> N/P</p> | <p>6. Floodplains & Floodplain Management (Identify any floodplains within one mile of the boundary of the project.)</p> <p><i>Comments and Source of Information:</i> A flood insurance map created by the Federal Emergency Management Agency (FEMA) shows the areas around the Rock Creek Crossing are within the 100 year flood plain, and portions of the water system adjacent to Rock Creek may be within the 500 year floodplain. A more detailed analysis of the project will be completed during the design phase to determine if a Joint Application Permit package is required.</p> <p>James Caniglia had no comments on the proposed project.</p> <p>-Amy Carter, P.E. -James Caniglia, Carbon County Floodplain Administrator -FEMA Community Panel 30009C0692D, 30009C0703D, 30009C0711D</p> |
| <p style="text-align: center;"><u>Key</u> N/P</p> | <p>7. Wetlands Protection (Identify any wetlands within one mile of the boundary of the project.)</p> <p><i>Comments and Source of Information:</i> The National Wetlands Inventory shows some wetlands in addition to Rock Creek near Red Lodge. Portions of the projected may be constructed near wetlands near Rock Creek. A wetland delineation may need to be performed to document any jurisdictional wetlands at the site vicinity during the design phase of the Park Avenue project. If wetland delineation is</p> |

needed, the entire footprint of the of proposed construction disturbance will be evaluated for the presence of wetlands and those wetlands will be delineated and mapped in accordance with the Corp 1987 delineation Manual (and applicable Regional Supplement). Wetlands boundaries will be flagged in the field and numbered. Flag numbers and locations will be surveyed using a sub-meter GPS and depicted on the delineation map.

-Amy Carter, P.E.

-USFWS National Wetlands Inventory

- Marena Gilbert, US Army Corp of Engineers

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| <p style="text-align: center;"><u>Key</u> N</p> | <p>8. Agricultural Lands, Production, & Farmland Protection (e.g., grazing, forestry, cropland, prime or unique agricultural lands) (Identify any prime or important farm ground or forest lands within one mile of the boundary of the project.)</p> <p><i>Comments and Source of Information:</i></p> <p>The project is located within City Limits; therefore, no agricultural land will be impacted. The soils within the city and the project areas are described as farmland of statewide importance, farmland of local importance, prime farmland if irrigated, and some areas of not prime farmland. (Natural Resource Conservation Service (NRCS) Soils Map), however the existing urban land use within the project area would exclude agricultural land use. Impact to these areas is not anticipated. No forest lands existing within one mile of the project.</p> <p>The Federal Farmland Protection Act does not apply to the project for several reasons including the project's location within urbanized area. The majority of the project involves replacement/repair of an existing structure. Therefore, project permitting by the NRCS is not required.</p> <p>-Amy Carter, P.E. -USDA National Cooperative Soil Survey</p> |
| <p style="text-align: center;"><u>Key</u> N/M</p> | <p>9. Vegetation & Wildlife Species & Habitats, Including Fish (e.g., terrestrial, avian and aquatic life and habitats)</p> <p><i>Comments and Source of Information:</i></p> <p>The proposed project is not expected to have any permanent effects on vegetation or terrestrial wildlife. Any effects on plant species due to construction activities will be re-seeded to promote revegetation and reduce erosion. No plant species of concern are listed for the project area by the Montana Natural Heritage Program (MNHP). No terrestrial habitat will be lost as a result of the project because work will be conducted within developed areas within the City of Red Lodge.</p> <p>The US Fish and Wildlife Service (USFWS) states: <i>"The Service reviewed the project description and has no comments regarding federally-listed or proposed threatened or endangered species, critical habitat, or other trust species."</i></p> <p>A database search conducted using the Montana Natural Heritage Program website found seven species of concern or potential species of concern that may occur in the region: Wolverine (<i>Gulo gulo</i>), Canada Lynx (<i>Lynx canadensis</i>), Grizzly Bear (<i>Ursus arctos</i>), Peregrine Falcon (<i>Falco peregrinus</i>), Cassin's Finch (<i>Haemorhous cassinii</i>), Green tailed Towhee (<i>Pipilo chlorurus</i>), Yellowstone Cutthroat Trout (<i>Oncorhynchus clarkia bouvieri</i>). The above listed avian and aquatic species should not be affected by the proposed project because the existing systems do not support aquatic wildlife populations. Due to the developed nature of the project area, no habitat will be lost as a result of the project.</p> <p>Based on a review of the Montana Sage Grouse Habitat Conservation Program Mapper (https://sagegrouse.mt.gov/projects), the proposed project is mapped in an Executive Order (EO) General Area for Sage Grouse Habitat but is located in an exempt community boundary. Such as, Sage Grouse are not anticipated to be adversely affected by this work.</p> <p>Temporary adverse effects to water quality are expected during project implementation. However, mitigation measures including construction Best Management Practices (BMPs) will be implemented to reduce sedimentation and downstream effects on aquatic habitat. All necessary stream permits will be acquired prior to construction, and the Contractor will be required to adhere to all guidelines outlined in these documents.</p> <p>-Amy Carter, P.E. -Jacob Martin, USFWS</p> |

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P – Approval/Permits Required **M** – Mitigation Required

-Montana Natural Heritage Program

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| <p><u>Key</u> N</p> | <p>10. Unique, Endangered, Fragile, or Limited Environmental Resources, Including Endangered Species (e.g., plants, fish, sage grouse, or other wildlife)</p> <p><i>Comments and Source of Information:</i> Because the work is limited to existing water main and proposed water main in developed areas, the proposed project is not expected to have any effects on unique, endangered, fragile, or limited environmental resources, including endangered species.</p> <p>The US Fish and Wildlife Service (USFWS) states: “<i>The Service reviewed the project description and has no comments regarding federally-listed or proposed threatened or endangered species, critical habitat, or other trust species.</i>”</p> <p>A database search conducted using the Montana Natural Heritage Program website found seven species of concern or potential species of concern that may occur in the region: Wolverine (<i>Gulo gulo</i>), Canada Lynx (<i>Lynx canadensis</i>), Grizzly Bear (<i>Ursus arctos</i>), Peregrine Faloon (<i>Falco peregrinus</i>), Cassin’s Finah (<i>Haemorhous cassinii</i>), Grean tailed Towhee (<i>Pipilo chlorurus</i>), Yellowstone Cutthroat Trout (<i>Oncorhynchus clarkia bouvieri</i>). The above listed avian and aquatic species should not be affected by the proposed project because the existing systems to not support aquatic wildlife populations. Due to the developed nature of the project area, no habitat will be lost as a result of the project.</p> <p>-Amy Carter, P.E. -Jacob Martin, USFWS -Montana Natural Heritage Program -Montana Sage Grouse Habitat Conservation Program</p> |
| <p><u>Key</u> N</p> | <p>11. Unique Natural Features (e.g., geologic features)</p> <p><i>Comments and Source of Information:</i> There are no unique natural features located in the vicinity of the proposed project.t</p> <p>-Amy Carter, P.E.</p> |
| <p><u>Key</u> N</p> | <p>12. Access to, and Quality of, Recreational & Wilderness Activities, Public Lands and Waterways (including Federally Designated Wild & Scenic Rivers), and Public Open Space</p> <p><i>Comments and Source of Information:</i> The proposed water facility improvements will not affect access to, and quality of, recreational and wilderness activities, public lands, and waterways.</p> <p>-Amy Carter, P.E.</p> |
| <p>HUMAN POPULATION</p> | |
| <p><u>Key</u> N</p> | <p>1. Visual Quality – Coherence, Diversity, Compatibility of Use and Scale, Aesthetics</p> <p><i>Comments and Source of Information:</i> <i>The proposed improvements consist of replacing existing water mains and installing new water mains and structures in developed areas.</i> Because the infrastructure is buried, impact on the visual quality of the area is not anticipated once work is complete.</p> <p>-Amy Carter, P.E.</p> |

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| <p style="text-align: center;"><u>Key</u> M/N</p> | <p>2. Nuisances (e.g., glare, fumes)</p> <p><i>Comments and Source of Information:</i> M: Mitigation would be required in the short term during project construction. The proposed project may cause temporary nuisances such as noise and exhaust fumes from construction equipment, traffic detours while sections beneath roadways are under construction. Efforts will be made to minimize nuisances including detours and select timing of construction work in residential areas.</p> <p>N: No nuisance impacts are anticipated following project construction. The improve water system improvements will not create any long term nuisance.</p> <p>-Amy Carter, P.E.</p> |
| <p style="text-align: center;"><u>Key</u> M/N</p> | <p>3. Noise -- suitable separation between noise sensitive activities (such as residential areas) and major noise sources (aircraft, highways & railroads)</p> <p><i>Comments and Source of Information:</i> M – Mitigation would be required in the short term during project implementation. Nearby residences may be temporarily affected by noise from excavation and construction work. Efforts will be made to minimize nuisances including select timing of construction equipment operation in residential areas.</p> <p>N – No impact is anticipated following project implementation. The improved water system will not create any long-term noise issues.</p> <p>-Amy Carter, P.E.</p> |
| <p style="text-align: center;"><u>Key</u> N</p> | <p>4. Historic Properties, Cultural, and Archaeological Resources</p> <p><i>Comments and Source of Information:</i></p> <p>Damon Murdo of the State Historical Preservation Office (SHOP) states “<i>It is SHPO’s position that any structure over fifty years of age is considered historic and is potentially eligible for listing on the National Register of Historic Places. If any structures are to be altered and are over fifty years old, we would recommend that they be recorded, and a determination of their eligibility be made prior to any disturbance taking place.</i></p> <p><i>As long as disturbance will be kept to existing disturbed roadways or ground, we feel that there is a low likelihood cultural properties will be impacted. We, therefore, feel that a recommendation for a cultural resource inventory is unwarranted at this time. However, should the projects need to occur within previously undisturbed ground, if structures need to be altered, or if cultural materials be inadvertently discovered during this project, we would ask that our office be contacted, and the site investigated.”</i></p> <p>If proposed work is to be located in previously undisturbed ground, SHPO will be contacted during design.</p> <p>-Amy Carter, P.E. -Damon Murdo, State Historical Preservation Office</p> |

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| <p style="text-align: center;"><u>Key</u> N</p> | <p>5. Changes in Demographic (population) Characteristics (e.g., quantity, distribution, density)</p> <p><i>Comments and Source of Information:</i> The proposed project is not anticipated to affect any changes in demographics to the area.</p> <p>-Amy Carter, P.E.</p> |
| <p style="text-align: center;"><u>Key</u> N</p> | <p>6. Environmental Justice – (Does the project avoid placing lower income households in areas where environmental degradation has occurred, such as adjacent to brownfield sites?)</p> <p><i>Comments and Source of Information:</i> No impact to environmental justice is anticipated. Housing will not be placed as part of the project. The project will improve water service to users in developed housing areas.</p> <p>-Amy Carter, P.E.</p> |
| <p style="text-align: center;"><u>Key</u> B</p> | <p>7. General Housing Conditions - Quality, Quantity, Affordability</p> <p><i>Comments and Source of Information:</i> The project will improve available fire flow and improve water service to residences in developed and housing areas.</p> <p>-Amy Carter, P.E.</p> |
| <p style="text-align: center;"><u>Key</u> N</p> | <p>8. Displacement or Relocation of Businesses or Residents</p> <p><i>Comments and Source of Information:</i> No Business or residents will be relocated in conjunction with the proposed improvements. The project will reduce the risk of displacements/relocations by increasing available fire flow in existing developed and housing areas.</p> <p>-Amy Carter, P.E.</p> |
| <p style="text-align: center;"><u>Key</u> B</p> | <p>9. Public Health and Safety</p> <p><i>Comments and Source of Information:</i> The water system improvements will improve water service quality and pressure, as well as increasing available fire flow. The replacement will reduce the frequency of water main breaks.</p> <p>-Amy Carter, P.E.</p> |
| <p style="text-align: center;"><u>Key</u> N</p> | <p>10. Lead Based Paint and/or Asbestos</p> <p><i>Comments and Source of Information:</i> There is no known lead-based paint or asbestos in the water system, therefore no lead-based paint or asbestos is anticipated to be encountered as part of the proposed improvements. However, requirements from Montana DEQ require an inspection for asbestos (performed by an accredited inspector) prior to demolition taking place. This inspection may be waived depending on the type of structure. This inspection will likely be required for removal of the existing PRV valve.</p> <p>-Amy Carter, P.E.</p> |

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| <p style="text-align: center;"><u>Key</u> N</p> | <p>11. Local Employment & Income Patterns - Quantity and Distribution of Employment, Economic Impact</p> <p><i>Comments and Source of Information:</i> The proposed project may offer temporary local employment of works for the associated project, but no long-term impact to local employment and income patterns are anticipated.</p> <p>-Amy Carter, P.E.</p> |
| <p style="text-align: center;"><u>Key</u> N</p> | <p>12. Local & State Tax Base & Revenues</p> <p><i>Comments and Source of Information:</i> The proposed project should have no impact on local and state tax base revenues.</p> <p>-Amy Carter, P.E.</p> |
| <p style="text-align: center;"><u>Key</u> N</p> | <p>13. Educational Facilities - Schools, Colleges, Universities</p> <p><i>Comments and Source of Information:</i> The proposed project should have no impact on educational facilities.</p> <p>-Amy Carter, P.E.</p> |
| <p style="text-align: center;"><u>Key</u> B</p> | <p>14. Commercial and Industrial Facilities - Production & Activity, Growth or Decline</p> <p><i>Comments and Source of Information:</i> Improving the water system available flow, and pressures in the City of Red Lodge will aid in fire protection and the risk of water service interruption. As a result, the proposed improvements may have an indirect benefit of encouraging commercial and industrial growth in the city.</p> <p>-Amy Carter, P.E.</p> |

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| <p style="text-align: center;"><u>Key</u> B</p> | <p>15. Health Care – Medical Services</p> <p><i>Comments and Source of Information:</i> The water main pressure reduction provided by the improvements will provide the needed pressure reduction at the hospital will reduce the risk of water main and service breaks, thus preventing interruptions to water service at the City’s medical facilities.</p> <p>-Amy Carter, P.E.</p> |
| <p style="text-align: center;"><u>Key</u> N</p> | <p>16. Social Services – Governmental Services (e.g., demand on)</p> <p><i>Comments and Source of Information:</i> The proposed project should not have any impact on social services or governmental services.</p> <p>-Amy Carter, P.E.</p> |
| <p style="text-align: center;"><u>Key</u> N</p> | <p>17. Social Structures & Mores (Standards of Social Conduct/Social Conventions)</p> <p><i>Comments and Source of Information:</i> The proposed project should not have any impact on social structures and mores.</p> <p>-Amy Carter, P.E.</p> |
| <p style="text-align: center;"><u>Key</u> B</p> | <p>18. Land Use Compatibility (e.g., growth, land use change, development activity, adjacent land uses and potential conflicts)</p> <p><i>Comments and Source of Information:</i> The reduce risk of water service interruption, improved pressures and improved available fire flow would indirectly promote the stability and growth and development within the City of Red Lodge.</p> <p>-Amy Carter, P.E.</p> |
| <p style="text-align: center;"><u>Key</u> B</p> | <p>19. Energy Resources - Consumption and Conservation</p> <p><i>Comments and Source of Information:</i> The water system replacements will reduce leakage, which would reduce the energy required to pump and distribute water. The removal of the pump station will reduce energy use.</p> <p>-Amy Carter, P.E.</p> |
| <p style="text-align: center;"><u>Key</u> N</p> | <p>20. Solid Waste Management</p> <p><i>Comments and Source of Information:</i> The proposed improvements will not impact the City’s solid waste management.</p> <p>-Amy Carter, P.E.</p> |
| <p style="text-align: center;"><u>Key</u> N</p> | <p>21. Wastewater Treatment - Sewage System</p> <p><i>Comments and Source of Information:</i> The proposed improvements t will not impact the City’s sewage system.</p> <p>-Amy Carter, P.E.</p> |

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| <p style="text-align: center;"><u>Key</u> N</p> | <p>22. Storm Water – Surface Drainage</p> <p><i>Comments and Source of Information:</i> The proposed improvements will not impact the City’s storm water system.</p> |
| <p style="text-align: center;"><u>Key</u> B</p> | <p>23. Community Water Supply</p> <p><i>Comments and Source of Information:</i> The proposed improvements will improve the community water supply significantly. The projects will reduce frequency of water main and service freezes and breaks, provide better valving for main isolation, improve system pressures, and provide increased fire flow to the City. By replacing leaking mains, the City’s potential for contamination in their water supply system is greatly reduced.</p> <p>-Amy Carter, P.E.</p> |
| <p style="text-align: center;"><u>Key</u> N</p> | <p>24. Public Safety – Police</p> <p><i>Comments and Source of Information:</i> The proposed improvements will not impact the Police Department.</p> |
| <p style="text-align: center;"><u>Key</u> B</p> | <p>25. Fire Protection – Hazards</p> <p><i>Comments and Source of Information:</i> The proposed water system improvements will have a positive impact on Fire Protection within the City. Replacement of the pressure relief valve system on the water trunk main from the water treatment plant will increase available fire flow through the City. Bypass of the existing booster station will allow needed fire flows to be supplied to the residential area on the north-west portion of the City Limits. Also, inoperable fire hydrants will be replaced, and additional fire hydrants will be constructed.</p> <p>-Amy Carter, P.E.</p> |

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| <p style="text-align: center;"><u>Key</u> N</p> | <p>26. Emergency Medical Services</p> <p><i>Comments and Source of Information:</i> The proposed improvements have no impact on Emergency Medical Services.</p> <p>-Amy Carter, P.E.</p> |
| <p style="text-align: center;"><u>Key</u> N</p> | <p>27. Parks, Playgrounds, & Open Space</p> <p><i>Comments and Source of Information:</i> The proposed improvements have no impact on parks, playgrounds, & open space.</p> <p>-Amy Carter, P.E.</p> |
| <p style="text-align: center;"><u>Key</u> N/B</p> | <p>28. Cultural Facilities, Cultural Uniqueness & Diversity</p> <p><i>Comments and Source of Information:</i> Damon Murdo of the State Historical Preservation Office (SHOP) states “It is SHPO’s position that any structure over fifty years of age is considered historic and is potentially eligible for listing on the National Register of Historic Places. If any structures are to be altered and are over fifty years old, we would recommend that they be recorded, and a determination of their eligibility be made prior to any disturbance taking place.</p> <p><i>As long as disturbance will be kept to existing disturbed roadways or ground, we feel that there is a low likelihood cultural properties will be impacted. We, therefore, feel that a recommendation for a cultural resource inventory is unwarranted at this time. However, should the projects need to occur within previously undisturbed ground, if structures need to be altered, or if cultural materials be inadvertently discovered during this project, we would ask that our office be contacted, and the site investigated.”</i></p> <p>If proposed work is to be located in previously undisturbed ground, SHPO will be contacted during design.</p> <p>Increased available fire flow throughout the City will allow the City to protect cultural facilities in the event that a historic building experiences a building fire.</p> <p>-Amy Carter, P.E. -Damon Murdo, State Historical Preservation Office</p> |
| <p style="text-align: center;"><u>Key</u> N</p> | <p>29. Transportation Networks and Traffic Flow Conflicts (e.g., rail; auto including local traffic; airport runway clear zones - avoidance of incompatible land use in airport runway clear zones)</p> <p><i>Comments and Source of Information:</i> The proposed improvements will not impact existing transportation networks.</p> <p>-Amy Carter, P.E.</p> |
| <p style="text-align: center;"><u>Key</u> B</p> | <p>30. Consistency with Local Ordinances, Resolutions, or Plans (e.g., conformance with local comprehensive plans, zoning, or capital improvement plans)</p> |

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| | <p><i>Comments and Source of Information:</i> The project is in accordance with the City's 2019 Capital Improvement Plan, which prioritizes these needed improvements to the water system.</p> <p>-Amy Carter, P.E. -2019 City of Red Lodge Capital Improvement Plan</p> |
| <p style="text-align: center;"><u>Key</u> N</p> | <p>31. Is There a Regulatory Action on Private Property Rights as a Result of this Project? (consider options that reduce, minimize, or eliminate the regulation of private property rights.)</p> <p><i>Comments and Source of Information:</i> The proposed water system improvements would be implemented in existing right-of-way.</p> <p>-Amy Carter, P.E.</p> |

ENVIRONMENTAL REQUIREMENTS AFTER THE PER HAS BEEN COMPLETED

I. Environmental Report (ER) with Categorical Exclusion (CE)

Depending on the sources of funding, once the PER has been completed and the potential environmental impacts have been determined, projects may have no additional environmental requirements other than obtaining appropriate permits. However, if the project is being funded by the USDA Rural Development Community Facility Programs, an Environmental Report must be completed. Depending on the outcome of the Environmental Report, either a Categorical Exclusion (CE) will need to be completed or an Environmental Assessment (EA) or Environmental Impact Statement (EIS) will be required. Projects funded through the SRF Loan Program, the TSEP, or the CDBG Program also require a Categorical Exclusion or an EA before construction can be authorized. Contact the funding agencies involved for details.

The USDA RD Program has a guide available to assist you in preparing the ER. See Guide to Applicants for Preparing Environmental Reports for Categorical Exclusions under § 1970.54 RD Instruction 1970-B, Exhibit C, FINAL RULE 81 FR 11000 Published March 2, 2016 with an Effective Date April 1, 2016. The Guide can be obtained by contacting the RD Program staff, or at the following Internet address:

RD 1970 Environmental Policies and Procedures RD Instruction 1970-B, Exhibit C provides specific guidance for preparing the ER including the format and information required; the environmental issues that must be considered during the proposed project’s planning and design activities; the sources for locating the required information; and the documentation required to determine that there are no extraordinary circumstances that require a higher level of review including an EA or an EIS.

II. Environmental Assessment with FONSI

Depending on the sources of funding, once the PER has been completed and potential environmental impacts associated with the project have been identified, proposed projects may require an EA. For projects that anticipate funding through the USDA RD Community Facility Programs, the SRF Loan Programs, the TSEP, or the CDBG Program, an EA must be completed if the environmental review identifies potential environmental impacts beyond those qualifying for a Categorical Exclusion. Depending on the findings of the EA, either a Finding of No Significant Impact (FONSI) must be published or an Environmental Impact Statement (EIS) prepared. Assuming the EA determines there are no significant environmental impacts, the funding agency will prepare the FONSI and direct the applicant to publish it. The following chart provides specific program requirements for publishing the FONSI.

| | CDBG | DNRC | RD | SRF | TSEP |
|------------------------------|--------------------|------------------------|---|--|------------------------------|
| Notice of Availability of EA | Contact CDBG staff | Not Required | Publish once; 30-day comment period required* | Not Required | Contact Infrastructure Staff |
| Notice of FONSI | Contact CDBG staff | Provide copy of FONSI. | Publish once; no comment period required | Publish once; 30-day comment period required | Contact Infrastructure Staff |

*RD requires a Notice of Availability of the EA to be published once, which allows for a 30-day comment period prior to publishing the FONSI.

If two or more agencies provide funding for a project, a combined publication notice may possibly be used to satisfy the requirements of all agencies. Check with the applicable agencies to determine if a combined publication notice is possible.



REPLY TO
ATTENTION OF

DEPARTMENT OF THE ARMY
CORPS OF ENGINEERS, OMAHA DISTRICT
HELENA REGULATORY OFFICE
10 WEST 15TH STREET, SUITE 2200
HELENA, MONTANA 59626

April 22, 2020

Regulatory Branch
Montana State Program
Corps No. **NWO-2020-00702-MTB**

Subject: City of Red Lodge – Water System Improvements – Rock Creek

Great West Engineering
Attn: Amy Carter
6780 Trade Center Ave.
Billings, MT 59101

Dear Ms. Carter:

We are responding to your request for comment, on behalf of the City of Red Lodge, regarding the Water System Improvements project in Carbon County, Montana. The project includes the proposed construction of new water main line, the replacement of old cast iron water main lines, installation of pressure release valves and vaults, and improvements to the booster station. Waterways located within the identified boundary include Rock Creek, its tributaries and adjacent wetlands. The project is located within Section 22/27/34, Township 7 S, Range 20 E, Red Lodge, Carbon County, Montana.

The mission of the U.S. Army Corps of Engineers (Corps) Regulatory Program is to protect the Nation's aquatic resources while allowing reasonable development through fair, flexible and balanced permit decisions. In particular, under Section 404 of the Clean Water Act and Section 10 of the Rivers and Harbors Act of 1899, we work to protect the biological, physical, and chemical integrity of the Nation's aquatic resources. Projects are evaluated on a case-by-case basis to determine the potential benefits and detriments that may occur as a result of the proposal. In all cases an applicant must avoid and minimize impacts to aquatic resources to the greatest extent practicable.

Under the authority of Section 404 of the Clean Water Act (CWA), Department of the Army (DA) permits are required for the discharge of fill material into waters of the U.S. Waters of the U.S. include the area below the ordinary high water mark of stream channels and lakes or ponds connected to the tributary system, and wetlands adjacent to these waters. Isolated waters and wetlands, as well as man-made channels, may be waters of the U.S. in certain circumstances, which must be determined on a case-by-case basis. Under the authority of Section 10 of the Rivers and Harbors Act, DA permits are required for structures or work in, over, under or affecting navigable waters of the U.S.

Based on the information provided in your submittal, we are unable to ascertain if regulated activities are proposed. If the final design includes the placement of fill or dredged material in any of the jurisdictional areas described in the paragraph above, or otherwise requires authorization by a DA permit, please submit a permit application to this office prior to starting any work. Any loss of an aquatic site may require mitigation. Mitigation requirements will be determined during the Department of the Army permitting review. After a review of the materials submitted we will determine what type of permit, if any, will be required. In order to provide the necessary information you may use the Montana Joint Permit Application Form,

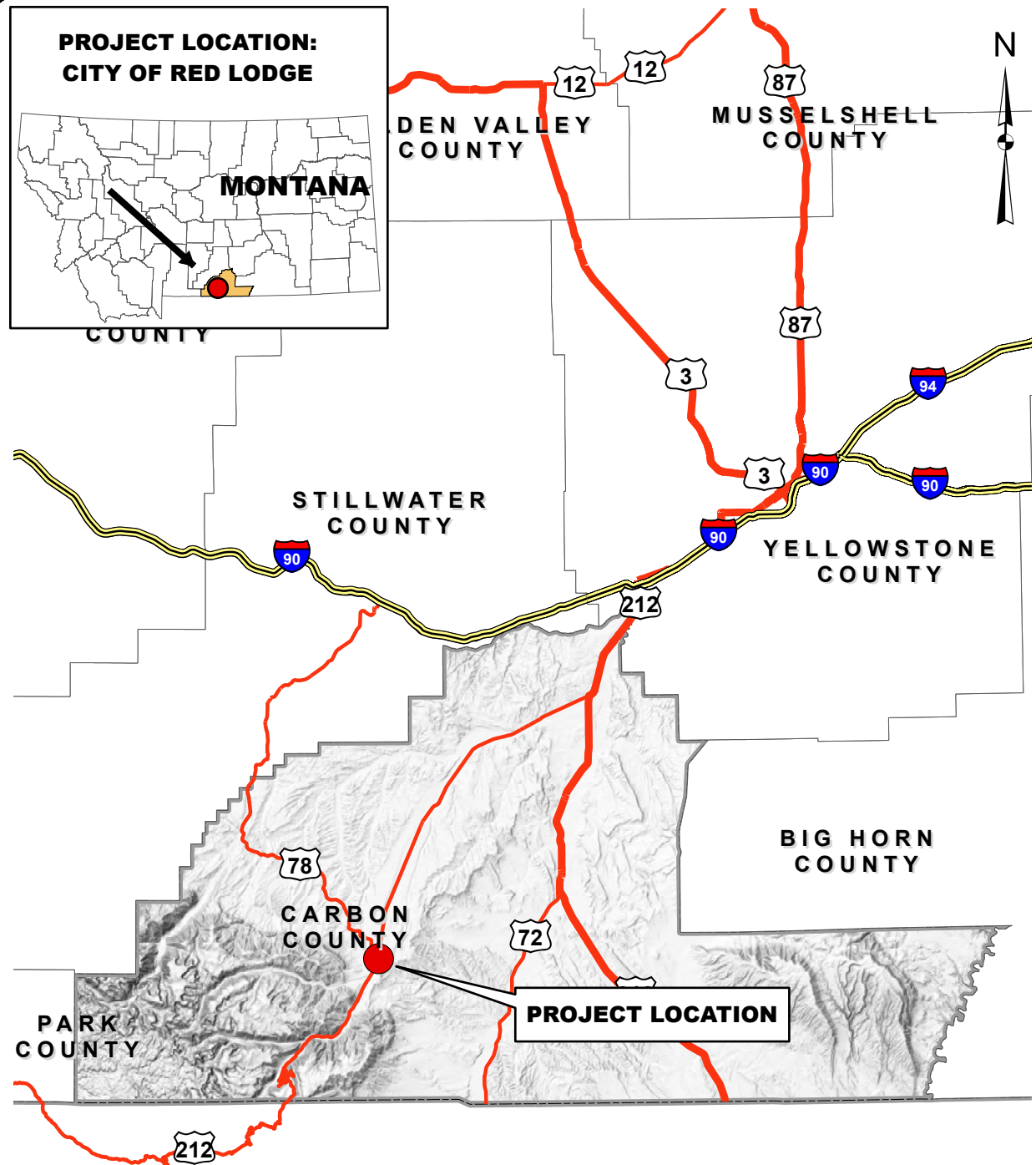
found at: <http://www.dnrc.mt.gov/licenses-and-permits/stream-permitting>. If you do not wish to use this form, or do not have internet access please contact our office at the address below to obtain more information.

Note that this letter is not a DA authorization to proceed. It only informs you of your need to obtain a DA permit if waters of the U.S. will be affected. If waters of the U.S. will not be affected by a jurisdictional activity a DA permit will not be required for the project.

Please refer to identification number **NWO-2020-00702-MTB** in any correspondence concerning this project. If you have any questions, please contact me at Post Office Box 7032, Billings, Montana 59103, by email at Marena.A.Gilbert@usace.army.mil, or by telephone at 406-657-5912 or 406-200-2689.

Sincerely,

Marena A. Gilbert
Regulatory Project Manager



NOT TO SCALE

**RED LODGE WATER IMPROVEMENTS
FIGURE 1 - PROJECT LOCATION**

CITY OF RED LODGE, MONTANA
2020 WATER SYSTEM PRELIMINARY ENGINEERING REPORT







Red Lodge Stormwater PER Location Map

J:\2-17103 - Red Lodge On-Call 2017\TO 14 - Water PER\CADD 2-17103-14\Exhibits\EA EXHIBITS\Figure 2 Water Improvements.dwg



LEGEND

-  EXISTING WATER MAIN CONSIDERED FOR POTENTIAL REPLACEMENT
-  POTENTIAL NEW WATER MAIN
-  POTENTIAL NEW BOOSTER STATION PROJECT LOCATION
-  POTENTIAL PRESSURE RELIEF VALVE PROJECT LOCATION

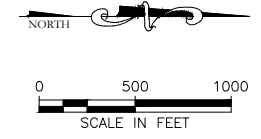


Figure 2
RED LODGE WATER PROPOSED IMPROVEMENTS
 City of Red Lodge, Montana
 2019 Water Preliminary Engineering Report

BILLINGS

6780 Trade Center Ave.
Billings, MT 59101
406.652.5000 ▪ Fax 406.248.1363
www.greatwesteng.com



April 7, 2020

Department of Commerce, Census and Economic Information Center
301 S Park Ave
PO Box 200505
Helena, MT 59620-0505

RE: Water System Improvements-Red Lodge, MT

Dear Reviewer:

The City of Red Lodge is in the process of evaluation and improving their water system. In order to determine needed improvements, the City completed a Preliminary Engineering Report (PER) for the water system. The project will take place in Sections 22, 27, and 34 of Township 07 South and Range 20 East. A map indicating the project location and surrounding area is attached.

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Please return your written comments to acarter@greatwesteng.com or the following address:

Amy Carter, PE
Great West Engineering
6780 Trade Center Ave.
Billings, MT 59101

BOISE

3050 N. Lakeharbor Ln.
Suite 201
Boise, ID 83703
208.576.6646

HELENA

2501 Belt View Dr.
PO Box 4817
Helena, MT 59604
406.449.8627

GREAT FALLS

702 2nd Street South #2
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406.952.1109

SPOKANE

9221 N. Division St.,
Suite F
Spokane, WA 99218
509.413.1430



We would greatly appreciate your reply as soon as possible. If you have any questions you may call (406) 652-5000. Thank you.

Sincerely,

Great West Engineering, Inc.

Amy Carter

Amy Carter, PE
Project Engineer

Attachments: (1) Vicinity Map
(2) Figure Identifying Existing Facilities

[] The Department of Commerce, Census and Economic Information Center has reviewed the enclosed proposal and has no comments.

Signature

BILLINGS

6780 Trade Center Ave.
Billings, MT 59101
406.652.5000 ▪ Fax 406.248.1363
www.greatwesteng.com



April 7, 2020

Department of Labor and Industry
1327 Lockey
PO Box 1728
Helena, MT 59624

RE: Water System Improvements-Red Lodge, MT

Dear Reviewer:

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Great West Engineering, Inc.

Amy Carter

Amy Carter, PE
Project Engineer

Attachments: (1) Vicinity Map
(2) Figure Identifying Existing Facilities

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Signature

BILLINGS

6780 Trade Center Ave.
Billings, MT 59101
406.652.5000 ▪ Fax 406.248.1363
www.greatwesteng.com



April 7, 2020

Department of Environmental Quality
Permitting and Compliance Division
1520 E. 6th Ave.
PO Box 200901
Helena, MT 59620-0901

RE: Water System Improvements-Red Lodge, MT

Dear Reviewer:

The City of Red Lodge is in the process of evaluation and improving their water system. In order to determine needed improvements, the City completed a Preliminary Engineering Report (PER) for the water system. The project will take place in Sections 22, 27, and 34 of Township 07 South and Range 20 East. A map indicating the project location and surrounding area is attached.

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Sincerely,

Great West Engineering, Inc.

Amy Carter

Amy Carter, PE
Project Engineer

Attachments: (1) Vicinity Map
(2) Figure Identifying Existing Facilities

[] The Department of Environmental Quality has reviewed the enclosed proposal and has no comments.

Signature

BILLINGS

6780 Trade Center Ave.
Billings, MT 59101
406.652.5000 ▪ Fax 406.248.1363
www.greatwesteng.com



April 7, 2020

Department of Fish, Wildlife and Parks
1420 E. 6th Ave.
Helena, MT 59620

RE: Water System Improvements-Red Lodge, MT

Dear Reviewer:

The City of Red Lodge is in the process of evaluation and improving their water system. In order to determine needed improvements, the City completed a Preliminary Engineering Report (PER) for the water system. The project will take place in Sections 22, 27, and 34 of Township 07 South and Range 20 East. A map indicating the project location and surrounding area is attached.

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Sincerely,

Great West Engineering, Inc.

Amy Carter

Amy Carter, PE
Project Engineer

Attachments: (1) Vicinity Map
(2) Figure Identifying Existing Facilities

[] The Department of Fish, Wildlife and Parks has reviewed the enclosed proposal and has no comments.

Signature

BILLINGS

6780 Trade Center Ave.
Billings, MT 59101
406.652.5000 ▪ Fax 406.248.1363
www.greatwesteng.com



April 7, 2020

Department of Natural Resources and Conservation
Attn: Resource Development Bureau Engineer
1625 11th Ave.
PO Box 201601
Helena, MT 59620-1601

RE: Water System Improvements-Red Lodge, MT

Dear Reviewer:

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Sincerely,

Great West Engineering, Inc.

Amy Carter

Amy Carter, PE
Project Engineer

Attachments: (1) Vicinity Map
(2) Figure Identifying Existing Facilities

[] The Department of Natural Resources and Conservation has reviewed the enclosed proposal and has no comments.

Signature

BILLINGS

6780 Trade Center Ave.
Billings, MT 59101
406.652.5000 ▪ Fax 406.248.1363
www.greatwesteng.com



April 7, 2020

Department of Transportation
2701 Prospect Ave
PO Box 201001
Helena, MT 59620

RE: Water System Improvements-Red Lodge, MT

Dear Reviewer:

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Sincerely,

Great West Engineering, Inc.

Amy Carter

Amy Carter, PE
Project Engineer

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(2) Figure Identifying Existing Facilities

[] The Department of Transportation has reviewed the enclosed proposal and has no comments.

Signature

BILLINGS

6780 Trade Center Ave.
Billings, MT 59101
406.652.5000 ▪ Fax 406.248.1363
www.greatwesteng.com



April 7, 2020

Damon Murdo
State Historic Preservation Office
1410 8th Ave.
PO Box 201202
Helena, MT 59620

RE: Water System Improvements-Red Lodge, MT

Dear Reviewer:

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Sincerely,

Great West Engineering, Inc.

Amy Carter

Amy Carter, PE
Project Engineer

Attachments: (1) Vicinity Map
(2) Figure Identifying Existing Facilities

[] The State Historic Preservation Office has reviewed the enclosed proposal and has no comments.

Signature

BILLINGS

6780 Trade Center Ave.
Billings, MT 59101
406.652.5000 ▪ Fax 406.248.1363
www.greatwesteng.com



April 7, 2020

James Caniglia
City of Red Lodge
Floodplain Administrator
PO Box 9
Red Lodge, MT 59068

RE: Water System Improvements-Red Lodge, MT

Dear Reviewer:

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Sincerely,

Great West Engineering, Inc.

Amy Carter

Amy Carter, PE
Project Engineer

Attachments: (1) Vicinity Map
(2) Figure Identifying Existing Facilities

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Signature

BILLINGS

6780 Trade Center Ave.
Billings, MT 59101
406.652.5000 ▪ Fax 406.248.1363
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April 7, 2020

US Environmental Protection Agency
Montana Office
Federal Building
10 West 15th Street, Suite 3200
Helena, MT 59625

RE: Water System Improvements-Red Lodge, MT

Dear Reviewer:

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Great West Engineering, Inc.

Amy Carter

Amy Carter, PE
Project Engineer

Attachments: (1) Vicinity Map
(2) Figure Identifying Existing Facilities

[] The US Environmental Protection Agency has reviewed the enclosed proposal and has no comments.

Signature

BILLINGS

6780 Trade Center Ave.
Billings, MT 59101
406.652.5000 ▪ Fax 406.248.1363
www.greatwesteng.com



April 7, 2020

US Fish and Wildlife Service
Ecological Services
585 Shepherd Way
Helena, MT 59601

RE: Water System Improvements-Red Lodge, MT

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Amy Carter

Amy Carter, PE
Project Engineer

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Signature

BILLINGS

6780 Trade Center Ave.
Billings, MT 59101
406.652.5000 ▪ Fax 406.248.1363
www.greatwesteng.com



April 7, 2020

US Forest Service
Region 1
26 Fort Missoula RD
Missoula, MT 59804-7203

RE: Water System Improvements-Red Lodge, MT

Dear Reviewer:

The City of Red Lodge is in the process of evaluation and improving their water system. In order to determine needed improvements, the City completed a Preliminary Engineering Report (PER) for the water system. The project will take place in Sections 22, 27, and 34 of Township 07 South and Range 20 East. A map indicating the project location and surrounding area is attached.

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Please take a few moments to review the site and the proposed projects. Please provide a written response detailing any comments you may have regarding the project and any potential environmental impacts that should be considered in the project design, avoidance, or mitigation measures.

If you have no comment on this project, please check the box below and countersign the bottom of this letter and return to me at the address listed below.

Please return your written comments to acarter@greatwesteng.com or the following address:

Amy Carter, PE
Great West Engineering
6780 Trade Center Ave.
Billings, MT 59101

BOISE

3050 N. Lakeharbor Ln.
Suite 201
Boise, ID 83703
208.576.6646

HELENA

2501 Belt View Dr.
PO Box 4817
Helena, MT 59604
406.449.8627

GREAT FALLS

702 2nd Street South #2
Great Falls, MT 59405
406.952.1109

SPOKANE

9221 N. Division St.,
Suite F
Spokane, WA 99218
509.413.1430



We would greatly appreciate your reply as soon as possible. If you have any questions you may call (406) 652-5000. Thank you.

Sincerely,

Great West Engineering, Inc.

Amy Carter

Amy Carter, PE
Project Engineer

Attachments: (1) Vicinity Map
(2) Figure Identifying Existing Facilities

[] The US Forest Service has reviewed the enclosed proposal and has no comments.

Signature

BILLINGS

6780 Trade Center Ave.
Billings, MT 59101
406.652.5000 ▪ Fax 406.248.1363
www.greatwesteng.com



April 7, 2020

US Army Corps of Engineers
10 West 15th Street
Suite 2200
Helena, MT 59626

RE: Water System Improvements-Red Lodge, MT

Dear Reviewer:

The City of Red Lodge is in the process of evaluation and improving their water system. In order to determine needed improvements, the City completed a Preliminary Engineering Report (PER) for the water system. The project will take place in Sections 22, 27, and 34 of Township 07 South and Range 20 East. A map indicating the project location and surrounding area is attached.

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Sincerely,

Great West Engineering, Inc.

Amy Carter

Amy Carter, PE
Project Engineer

Attachments: (1) Vicinity Map
(2) Figure Identifying Existing Facilities

[] The US Army Corps of Engineers has reviewed the enclosed proposal and has no comments.

Signature

BILLINGS

6780 Trade Center Ave.
Billings, MT 59101
406.652.5000 ▪ Fax 406.248.1363
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April 7, 2020

National Park Service
PO Box 25287
Denver, CO 80225-0287

RE: Water System Improvements-Red Lodge, MT

Dear Reviewer:

The City of Red Lodge is in the process of evaluation and improving their water system. In order to determine needed improvements, the City completed a Preliminary Engineering Report (PER) for the water system. The project will take place in Sections 22, 27, and 34 of Township 07 South and Range 20 East. A map indicating the project location and surrounding area is attached.

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Sincerely,

Great West Engineering, Inc.

Amy Carter

Amy Carter, PE
Project Engineer

Attachments: (1) Vicinity Map
(2) Figure Identifying Existing Facilities

[] The National Park Service has reviewed the enclosed proposal and has no comments.

Signature

BILLINGS

6780 Trade Center Ave.
Billings, MT 59101
406.652.5000 ▪ Fax 406.248.1363
www.greatwesteng.com



April 7, 2020

Federal Aviation Administration
2725 Skyway Drive
Suite 2
Helena, MT 59602

RE: Water System Improvements-Red Lodge, MT

Dear Reviewer:

The City of Red Lodge is in the process of evaluation and improving their water system. In order to determine needed improvements, the City completed a Preliminary Engineering Report (PER) for the water system. The project will take place in Sections 22, 27, and 34 of Township 07 South and Range 20 East. A map indicating the project location and surrounding area is attached.

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Sincerely,

Great West Engineering, Inc.

Amy Carter

Amy Carter, PE
Project Engineer

Attachments: (1) Vicinity Map
(2) Figure Identifying Existing Facilities

[] The Federal Aviation Administration has reviewed the enclosed proposal and has no comments.

Signature

BILLINGS

6780 Trade Center Ave.
Billings, MT 59101
406.652.5000 ▪ Fax 406.248.1363
www.greatwesteng.com



April 7, 2020

Bureau of Land Management
5001 Southgate Drive
Billings, MT 59101

RE: Water System Improvements-Red Lodge, MT

Dear Reviewer:

The City of Red Lodge is in the process of evaluation and improving their water system. In order to determine needed improvements, the City completed a Preliminary Engineering Report (PER) for the water system. The project will take place in Sections 22, 27, and 34 of Township 07 South and Range 20 East. A map indicating the project location and surrounding area is attached.

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Sincerely,

Great West Engineering, Inc.

Amy Carter

Amy Carter, PE
Project Engineer

Attachments: (1) Vicinity Map
(2) Figure Identifying Existing Facilities

[] The Bureau of Land Management has reviewed the enclosed proposal and has no comments.

Signature

BILLINGS

6780 Trade Center Ave.
Billings, MT 59101
406.652.5000 ▪ Fax 406.248.1363
www.greatwesteng.com



April 7, 2020

Bureau of Indian Affairs
2021 4th Ave N.
Billings, MT 59101

RE: Water System Improvements-Red Lodge, MT

Dear Reviewer:

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Sincerely,

Great West Engineering, Inc.

Amy Carter

Amy Carter, PE
Project Engineer

Attachments: (1) Vicinity Map
(2) Figure Identifying Existing Facilities

[] The Bureau of Indian Affairs has reviewed the enclosed proposal and has no comments.

Signature

BILLINGS

6780 Trade Center Ave.
Billings, MT 59101
406.652.5000 ▪ Fax 406.248.1363
www.greatwesteng.com



April 7, 2020

Natural Resource Conservation Service
10 E. Babcock St.
Bozeman, MT 59771

RE: Water System Improvements-Red Lodge, MT

Dear Reviewer:

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Sincerely,

Great West Engineering, Inc.

Amy Carter

Amy Carter, PE
Project Engineer

Attachments: (1) Vicinity Map
(2) Figure Identifying Existing Facilities

- [] The Natural Resource Conservation Service has reviewed the enclosed proposal and has no comments.

Signature

BILLINGS

6780 Trade Center Ave.
Billings, MT 59101
406.652.5000 ▪ Fax 406.248.1363
www.greatwesteng.com



April 7, 2020

Occupational Safety and Health Administration
2900 4th Ave. N
Billings, MT 59101

RE: Water System Improvements-Red Lodge, MT

Dear Reviewer:

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Sincerely,

Great West Engineering, Inc.

Amy Carter

Amy Carter, PE
Project Engineer

Attachments: (1) Vicinity Map
(2) Figure Identifying Existing Facilities

[] The Occupational Safety and Health Administration has reviewed the enclosed proposal and has no comments.

Signature

BILLINGS

6780 Trade Center Ave.
Billings, MT 59101
406.652.5000 ▪ Fax 406.248.1363
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April 7, 2020

US Department of Transportation
585 Shephard Way
Helena, MT 59601

RE: Water System Improvements-Red Lodge, MT

Dear Reviewer:

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Great West Engineering, Inc.

Amy Carter

Amy Carter, PE
Project Engineer

Attachments: (1) Vicinity Map
(2) Figure Identifying Existing Facilities

- [] The US Department of Transportation has reviewed the enclosed proposal and has no comments.

Signature

From: [Martin, Jacob](#)
To: [Amy Carter](#)
Cc: [Davies, Jess J](#)
Subject: Water System Improvements-Red Lodge, MT
Date: Thursday, April 23, 2020 3:15:22 PM

Dear Ms. Carter:

Thank you for your April 7, 2020, letter requesting U.S. Fish and Wildlife Service comment on the proposed subject project PER in Red-Lodge, Montana.

This email represents our official response to your inquiry for your records.

The U.S. Fish and Wildlife Service reviewed your letter and has no comments regarding federally-listed or proposed threatened or endangered species or other trust species. Additional information may be obtained using the IPaC project-planning tool, which streamlines the USFWS environmental review process at <https://ecos.fws.gov/ipac/>.

Thank you for the opportunity to comment. If you have any questions or comments about this correspondence please contact Jess Davies at jess_davies@fws.gov or 406-449-5225, extension 214.

Sincerely,

Jacob M. (Jake) Martin
Assistant Field Supervisor
Montana Ecological Services Office
585 Shephard Way, Suite 1
Helena, Montana 59601
(406) 449-5225x215
jacob_martin@fws.gov

Big Sky. Big Land. Big History.

Montana Historical Society

Montana State Historic Preservation Office

1301 E. Lockey Ave, PO Box 201202

Helena, MT 59620-1202

(406)444-7715

montanahistoricalsociety.org

FILE SEARCH INVOICE

DATE: 17-Apr-20

SHPO Invoice #: 2020041704

Bill To:

Contact Name: Amy Carter

Organization: Great West Engineering

Address: 6780 Trade Center Ave.

City/State/Zip: Billings MT 59101

File Search Fee Structure

\$25 / Section

For questions contact:

Damon Murdo

dmurdo@mt.gov

406-444-7767

Total Cost:

\$75.00

Project Name:

RED LODGE - WATER SYSTEM
IMPROVEMENTS

Total sections searched for SHPO Project #: 2020041704

3

Please make all checks payable to:

Montana Historical Society

PO Box 201201

Helena, MT 59620

[PAY ONLINE HERE](#)

Due upon receipt. Please pay within 30 days.



STATE HISTORIC PRESERVATION OFFICE Montana Cultural Resource Database

CRABS Township, Range, Section Results

Report Date: 4/17/2020

Township: 7 S Range: 20 E Section: 34

LOENDORF LAWRENCE L., ET AL.

7/15/1985 FIELD REPORT 24CB452

CRABS Document Number: CB 6 1615 Agency Document Number:

Township: 7 S Range: 20 E Section: 27

ANDERSON PAUL

5/6/1983 CULTURAL RESOURCE INVENTORY AND EVALUATION RED LODGE EAST BENCH - WASHOE - HIGHWAY - BURNS - SMITH MINES

CRABS Document Number: CB 5 1597 Agency Document Number:

Township: 7 S Range: 20 E Section: 34

LOENDORF LAWRENCE L.

1/1/1967 A PRELIMINARY ARCHAEOLOGICAL SURVEY OF THE CLARK FORK RIVER, CARBON COUNTY, MONTANA

CRABS Document Number: CB 6 1601 Agency Document Number:

Township: 7 S Range: 20 E Section: 22

THOMPSON R. WAYNE, ET AL.

2/28/1997 REPORT OF A CULTURAL RESOURCES INVENTORY OF THE RED LODGE - NORTH CORRIDOR, ALONG HIGHWAY 212 IN CARBON COUNTY, MONTANA

CRABS Document Number: CB 4 18835 Agency Document Number: STPP 28-2(19)70

Township: 7 S Range: 20 E Section: 27

JENSEN ARDYCE

6/24/1997 ASSISTED LIVING FACILITY, RED LODGE, CB CO. MT

CRABS Document Number: CB 6 18922 Agency Document Number:

Township: 7 S Range: 20 E Section: 34

BEERY DEREK

11/1/1999 CULTURAL RESOURCE SURVEY OF THE ROCK CREEK BRIDGE REPLACEMENT AT RED LODGE, CARBON COUNTY, MONTANA

CRABS Document Number: CB 4 22459 Agency Document Number:

Township: 7 S Range: 20 E Section: 22

BROWNELL JOAN L.

2/1/2003 HISTORIC INVENTORY OF RED LODGE NORTH PROJECT, CARBON COUNTY MONTANA

CRABS Document Number: CB 4 25834 Agency Document Number: STPP28-2(25)70

Township: 7 S Range: 20 E Section: 27

BROWNELL JOAN L.

2/1/2003 HISTORIC INVENTORY OF RED LODGE NORTH PROJECT, CARBON COUNTY MONTANA

CRABS Document Number: CB 4 25834 Agency Document Number: STPP28-2(25)70

Township: 7 S Range: 20 E Section: 34

LA POINT HALCYON AND MIKE W. BERGSTROM

3/1/2004 CUSTER NATIONAL FOREST ANNUAL SUMMARY FOR THE MONTANA PROGRAMMATIC AGREEMENT - REPORT YEAR 2003 MONTANA

CRABS Document Number: ZZ 1 27063 Agency Document Number:

Township: 7 S Range: 20 E Section: 34

BERGSTROM MICHAEL W. AND HALCYON LAPOINT

3/8/2005 A CULTURAL RESOURCE INVENTORY FOR THE CUSTER NATIONAL FOREST ANNUAL SUMMARY FOR THE MONTANA PROGRAMMATIC AGREEMENT - REPORT YEAR 2004

CRABS Document Number: ZZ 1 27925 Agency Document Number:

Township: 7 S Range: 20 E Section: 34

LA POINT HALCYON AND MIKE W. BERGSTROM

2/28/2007 CUSTER NATIONAL FOREST ANNUAL SUMMARY FOR THE MONTANA PROGRAMMATIC AGREEMENT - REPORT YEAR 2006

CRABS Document Number: ZZ 1 29472 Agency Document Number:

Township: 7 S Range: 20 E Section: 22

HARTY JENNIFER L

7/27/2007 RED LODGE - NORTH (AMENDMENT)

CRABS Document Number: CB 4 29547 Agency Document Number: STPP 28-2(25)70



STATE HISTORIC PRESERVATION OFFICE Montana Cultural Resource Database

CRABS Township, Range, Section Results

Report Date: 4/17/2020

Township: 7 S Range: 20 E Section: 27

HARTY JENNIFER L

7/27/2007 RED LODGE - NORTH (AMENDMENT)

CRABS Document Number: CB 4 29547 Agency Document Number: STPP 28-2(25)70

Township: 7 S Range: 20 E Section: 22

WAGERS SCOTT J

9/1/2008 A CLASS III CULTURAL RESOURCE INVENTORY OF 5.1 MILES OF MONTANA HIGHWAY 78 NORTHWEST OF RED LODGE, CARBON COUNTY, MONTANA

CRABS Document Number: CB 4 30369 Agency Document Number: STPP 78-1(8) CONTROL #4890

Township: 7 S Range: 20 E Section: 27

WAGERS SCOTT J

9/1/2008 A CLASS III CULTURAL RESOURCE INVENTORY OF 5.1 MILES OF MONTANA HIGHWAY 78 NORTHWEST OF RED LODGE, CARBON COUNTY, MONTANA

CRABS Document Number: CB 4 30369 Agency Document Number: STPP 78-1(8) CONTROL #4890

Township: 7 S Range: 20 E Section: 34

GREISER T. WEBER ET AL.

12/1/2006 CULTURAL RESOURCE INVENTORY OF THE WEST FORK ROAD AND SKI RUN ROAD, CARBON COUNTY, MONTANA

CRABS Document Number: CB 6 30599 Agency Document Number: MT EM 2005(1)

Township: 7 S Range: 20 E Section: 34

LA POINT HALCYON AND MIKE W. BERGSTROM

3/2/2009 CUSTER NATIONAL FOREST ANNUAL SUMMARY FOR THE MONTANA PROGRAMMATIC AGREEMENT-REPORT YEAR 2008

CRABS Document Number: ZZ 1 30969 Agency Document Number:

Township: 7 S Range: 20 E Section: 34

WOOD GARVEY C.

7/27/2015 PILATI WASTE AREAS: NORTH AND SOUTH

CRABS Document Number: CB 4 37927 Agency Document Number:

Township: 7 S Range: 20 E Section: 22

FANDRICH BLAIN

6/5/2019 RED LODGE TO TWO MILE BRIDGE ROAD: A CLASS III CULTURAL RESOURCE INVENTORY ALONG 1.3 MILES OF US HIGHWAY 212 NORTH OF RED LODGE, CARBON COUNTY, MONTANA.

CRABS Document Number: CB 4 40008 Agency Document Number: STPP-28-2(50)71. UPN 4375006

From: [Murdo, Damon](#)
To: [Amy Carter](#)
Subject: RED LODGE - WATER SYSTEM IMPROVEMENTS
Date: Friday, April 17, 2020 3:55:31 PM
Attachments: [Reports.pdf](#)
[Sites.pdf](#)
[2020041704.pdf](#)



April 17, 2020

Amy Carter
Great West Engineering
6780 Trade Center Ave.
Billings MT 59101

RE: RED LODGE - WATER SYSTEM IMPROVEMENTS. SHPO Project #: 2020041704

Dear Amy:

I have conducted a cultural resource file search for the above-cited project located in Sections 22, 27, 34 T7S R20E. According to our records there have been several previously recorded sites within the designated search locales. In addition to the sites there have been a few previously conducted cultural resource inventories done in the areas. I've attached a list of these sites and reports. If you would like any further information regarding these sites or reports, you may contact me at the number listed below.

It is SHPO's position that any structure over fifty years of age is considered historic and is potentially eligible for listing on the National Register of Historic Places. If any structures are to be altered and are over fifty years old, we would recommend that they be recorded, and a determination of their eligibility be made prior to any disturbance taking place.

As long as disturbance will be kept to existing disturbed roadways or ground, we feel that there is a low likelihood cultural properties will be impacted. We, therefore, feel that a recommendation for a cultural resource inventory is unwarranted at this time. However, should the projects need to occur within previously undisturbed ground, if structures need to be altered, or if cultural materials be inadvertently discovered during this project, we would ask that our office be contacted, and the site investigated.

If you have any further questions or comments, you may contact me at (406) 444-7767 or by e-mail at dmurdo@mt.gov. I have attached an invoice for the file search. Thank you for consulting with us.

Sincerely,

Damon Murdo

Cultural Records Manager
State Historic Preservation Office

File: DEQ/AWW/2020



STATE HISTORIC PRESERVATION OFFICE

Cultural Resource Information Systems

CRIS Township, Range, Section Report

Report Date:4/17/2020

| Site # | Twp | Rng | Sec | Qs | Site Type 1 | Site Type 2 | Time Period | Owner | NR Status |
|----------|-----|-----|-----|------|---------------------------------|-----------------------|-------------------------------|-------------|---------------|
| 24CB0145 | 7S | 20E | 27 | | Historic Site | | Historic Period | Combination | NR Listed |
| 24CB0193 | 7S | 20E | 22 | Comb | Historic Mining | | Historic Period | Private | Eligible |
| 24CB0193 | 7S | 20E | 27 | SE | Historic Mining | | Historic Period | Private | Eligible |
| 24CB0249 | 7S | 20E | 34 | SW | Historic Irrigation System | | 1890-1899 | Private | Undetermined* |
| 24CB0452 | 7S | 20E | 34 | SW | Lithic Material Concentration | | No Indication of Time | No Data | Undetermined* |
| 24CB0714 | 7S | 20E | 34 | NE | Historic Vehicular/Foot Bridge | | Historic More Than One Decade | State Owned | Undetermined* |
| 24CB0716 | 7S | 20E | 27 | SE | Historic Commercial Development | | Historic More Than One Decade | Private | Undetermined* |
| 24CB1028 | 7S | 20E | 27 | | Historic Commercial Development | | 1900-1909 | Private | NR Listed |
| 24CB1030 | 7S | 20E | 27 | NW | Historic District | | Historic More Than One Decade | Combination | NR Listed |
| 24CB1083 | 7S | 20E | 27 | SE | Historic Religion | Historic Church | 1890-1899 | Private | Undetermined* |
| 24CB1084 | 7S | 20E | 27 | SE | Historic Religion | Historic Church | 1900-1909 | Private | NR Listed |
| 24CB1250 | 7S | 20E | 27 | comb | Historic Cemetery/Grave | | Historic More Than One Decade | Private | NR Listed |
| 24CB1283 | 7S | 20E | 22 | | Historic Railroad | | 1890-1899 | Private | Eligible |
| 24CB1283 | 7S | 20E | 27 | NW | Historic Railroad | | 1890-1899 | Private | Eligible |
| 24CB1283 | 7S | 20E | 22 | NE | Historic Railroad | | 1890-1899 | Private | Eligible |
| 24CB1516 | 7S | 20E | 34 | NW | Historic Agriculture | | Historic More Than One Decade | Private | Ineligible |
| 24CB1517 | 7S | 20E | 34 | SW | Historic Commercial Development | | Historic More Than One Decade | Private | Eligible |
| 24CB1518 | 7S | 20E | 34 | SW | Historic Railroad Bridge | | Historic More Than One Decade | Other | Unresolved |
| 24CB1695 | 7S | 20E | 22 | comb | Historic Irrigation System | | Historic More Than One Decade | Combination | Eligible |
| 24CB1695 | 7S | 20E | 27 | comb | Historic Irrigation System | | Historic More Than One Decade | Combination | Eligible |
| 24CB1819 | 7S | 20E | 27 | NE | Historic Residence | Historic Outbuildings | Historic More Than One Decade | Private | Eligible |
| 24CB1820 | 7S | 20E | 27 | NE | Historic Residence | | Historic More Than One Decade | Private | Eligible |
| 24CB1821 | 7S | 20E | 27 | NE | Historic Residence | Historic Outbuildings | Historic More Than One Decade | Private | Eligible |
| 24CB1822 | 7S | 20E | 27 | NE | Historic Residence | | Historic More Than One Decade | Private | Eligible |
| 24CB1823 | 7S | 20E | 27 | NE | Historic Residence | | Historic More Than One Decade | Private | Ineligible |
| 24CB1824 | 7S | 20E | 27 | NE | Historic Commercial Development | | 1950-1959 | Private | Ineligible |
| 24CB1825 | 7S | 20E | 27 | NE | Historic Residence | Historic Outbuildings | Historic More Than One Decade | Private | Ineligible |
| 24CB1826 | 7S | 20E | 27 | NE | Historic Residence | Historic Outbuildings | Historic More Than One Decade | Private | Ineligible |
| 24CB1827 | 7S | 20E | 27 | NE | Historic Residence | Historic Outbuildings | Historic More Than One Decade | Private | Eligible |
| 24CB1828 | 7S | 20E | 27 | NE | Historic Residence | | Historic More Than One Decade | Private | Ineligible |
| 24CB1829 | 7S | 20E | 27 | NE | Historic Commercial Development | | Historic More Than One Decade | Private | Ineligible |
| 24CB1830 | 7S | 20E | 27 | NE | Historic Grain Elevator | | Historic More Than One Decade | Private | Eligible |
| 24CB1833 | 7S | 20E | 27 | NE | Historic Commercial Development | | Historic More Than One Decade | Private | Eligible |
| 24CB1834 | 7S | 20E | 27 | NE | Historic Outbuildings | | Historic More Than One Decade | Private | Ineligible |
| 24CB1835 | 7S | 20E | 27 | NE | Historic Residence | | Historic More Than One Decade | Private | Ineligible |



STATE HISTORIC PRESERVATION OFFICE Cultural Resource Information Systems

CRIS Township, Range, Section Report

Report Date:4/17/2020

| | | | | | | | | |
|----------|----|-----|----|------|---------------------------------|-------------------------------|-------------|---------------|
| 24CB1836 | 7S | 20E | 22 | SE | Historic Residence | Historic More Than One Decade | Private | Undetermined* |
| 24CB1837 | 7S | 20E | 22 | SE | Historic Outbuildings | Historic More Than One Decade | Private | Ineligible |
| 24CB1838 | 7S | 20E | 22 | SE | Historic Hotel/Motel | Historic More Than One Decade | Private | Ineligible |
| 24CB1975 | 7S | 20E | 22 | NW | Historic Irrigation System | Historic More Than One Decade | Combination | Eligible |
| 24CB2040 | 7S | 20E | 34 | SW | Historic Log Structure | 1950-1959 | MDOT Other | Ineligible |
| 24CB2044 | 7S | 20E | 22 | comb | Historic Irrigation System | Historic More Than One Decade | Private | Eligible |
| 24CB2044 | 7S | 20E | 27 | NW | Historic Irrigation System | Historic More Than One Decade | Private | Eligible |
| 24CB2098 | 7S | 20E | 27 | NW | Historic Commercial Development | Historic More Than One Decade | Private | NR Listed |
| 24CB2131 | 7S | 20E | 27 | NW | Historic Irrigation System | Historic More Than One Decade | Other | Unresolved |
| 24CB2207 | 7S | 20E | 34 | NE | Historic Commercial Development | Historic Period | Private | NR Listed |

Underground Storage Tanks

Layer Last Updated: 1/12/2018

Active Tanks (12)

Facility ID: 509748
Facility Name: CIRCLE 17
Facility Address: 1022 S Adams Ave, RED LODGE
Operating Permit Expiration: 3/5/2021
Tribal Owned: No
[View Detailed Report](#)
Facility Tank ID: 05
Tank Tag #: 3390
Installation Date: 7/1/1996
Use Status: Currently in Use
Substance: Gasoline
Capacity (gal): 4000
[Select](#) or [Zoom To](#)

Facility Tank ID: 04
Tank Tag #: 3389
Installation Date: 7/1/1996
Use Status: Currently in Use
Substance: Gasoline
Capacity (gal): 8000
[Select](#) or [Zoom To](#)

Facility ID: 509926
Facility Name: 6 ASSISTED LLC
Facility Address: 600 21st St W, RED LODGE
Operating Permit Expiration: 11/5/2013
Tribal Owned: No
[View Detailed Report](#)
Facility Tank ID: 02
Tank Tag #: 3103
Installation Date: 10/8/1998
Use Status: Temporarily Out of Use
Substance: Diesel
Capacity (gal): 1000
[Select](#) or [Zoom To](#)

Facility ID: 5613935
Facility Name: CENEX ZIP TRIP 74
Facility Address: 902 N Broadway Ave, RED LODGE
Operating Permit Expiration: 11/30/2019
Tribal Owned: No
[View Detailed Report](#)
Facility Tank ID: 05
Tank Tag #: 5566
Installation Date: 4/10/2015
Use Status: Currently in Use
Substance: Gasoline
Capacity (gal): 15000
[Select](#) or [Zoom To](#)

Facility Tank ID: 06
Tank Tag #: 5567
Installation Date: 4/10/2015
Use Status: Currently in Use
Substance: Diesel
Capacity (gal): 8000
[Select](#) or [Zoom To](#)

Facility Tank ID: 07
Tank Tag #: 5568
Installation Date: 4/10/2015
Use Status: Currently in Use

Substance: Gasoline
Capacity (gal): 7000
[Select](#) or [Zoom To](#)

Facility Tank ID: 08
Tank Tag #: 5569
Installation Date: 4/10/2015
Use Status: Currently in Use
Substance: Diesel
Capacity (gal): 4000
[Select](#) or [Zoom To](#)

Facility ID: 6015212
Facility Name: TOWN PUMP OF RED LODGE
Facility Address: 710 N Broadway, RED LODGE
Operating Permit Expiration: 7/29/2019
Tribal Owned: No
[View Detailed Report](#)
Facility Tank ID: 05
Tank Tag #: 5381
Installation Date: 1/16/2013
Use Status: Currently in Use
Substance: Diesel
Capacity (gal): 8000
[Select](#) or [Zoom To](#)

Facility Tank ID: 04
Tank Tag #: 5380
Installation Date: 1/16/2013
Use Status: Currently in Use
Substance: Diesel
Capacity (gal): 12000
[Select](#) or [Zoom To](#)

Facility Tank ID: 03
Tank Tag #: 5379
Installation Date: 1/16/2013
Use Status: Currently in Use
Substance: Diesel
Capacity (gal): 6000
[Select](#) or [Zoom To](#)

Facility Tank ID: 02
Tank Tag #: 5378
Installation Date: 1/16/2013
Use Status: Currently in Use
Substance: Gasoline
Capacity (gal): 14000
[Select](#) or [Zoom To](#)

Facility Tank ID: 01
Tank Tag #: 5377
Installation Date: 1/16/2013
Use Status: Currently in Use
Substance: Gasoline
Capacity (gal): 20000
[Select](#) or [Zoom To](#)

Closed Tanks (7)

Facility ID: 505655

Facility Name: RAY JUDD FORD INC

Facility Address: 120 N Broadway Ave, RED LODGE

Operating Permit Expiration: 2/19/2018

Tribal Owned: No

[View Detailed Report](#)

Facility Tank ID: 03

Tank Tag #: 1835

Installation Date: 4/19/1983

Use Status: Permanently Out of Use

Substance: Diesel

Capacity (gal): 6000

[Select](#) or [Zoom To](#)

Facility Tank ID: 02

Tank Tag #: 1834

Installation Date: 4/19/1983

Use Status: Permanently Out of Use

Substance: Diesel

Capacity (gal): 6000

[Select](#) or [Zoom To](#)

Facility Tank ID: 01

Tank Tag #: 1833

Installation Date: 4/19/1983

Use Status: Permanently Out of Use

Substance: Gasoline

Capacity (gal): 6000

[Select](#) or [Zoom To](#)

Facility ID: 5613935

Facility Name: CENEX ZIP TRIP 74

Facility Address: 902 N Broadway Ave, RED LODGE

Operating Permit Expiration: 11/30/2019

Tribal Owned: No

[View Detailed Report](#)

Facility Tank ID: 01

Tank Tag #: 4056

Installation Date: 8/1/1999

Use Status: Permanently Out of Use

Substance: Gasoline

Capacity (gal): 15000

[Select](#) or [Zoom To](#)

Facility Tank ID: 02

Tank Tag #: 4057

Installation Date: 8/1/1999

Use Status: Permanently Out of Use

Substance: Gasoline

Capacity (gal): 9000

[Select](#) or [Zoom To](#)

Facility Tank ID: 04

Tank Tag #: 4059

Installation Date: 8/1/1999

Use Status: Permanently Out of Use

Substance: Diesel

Capacity (gal): 2000

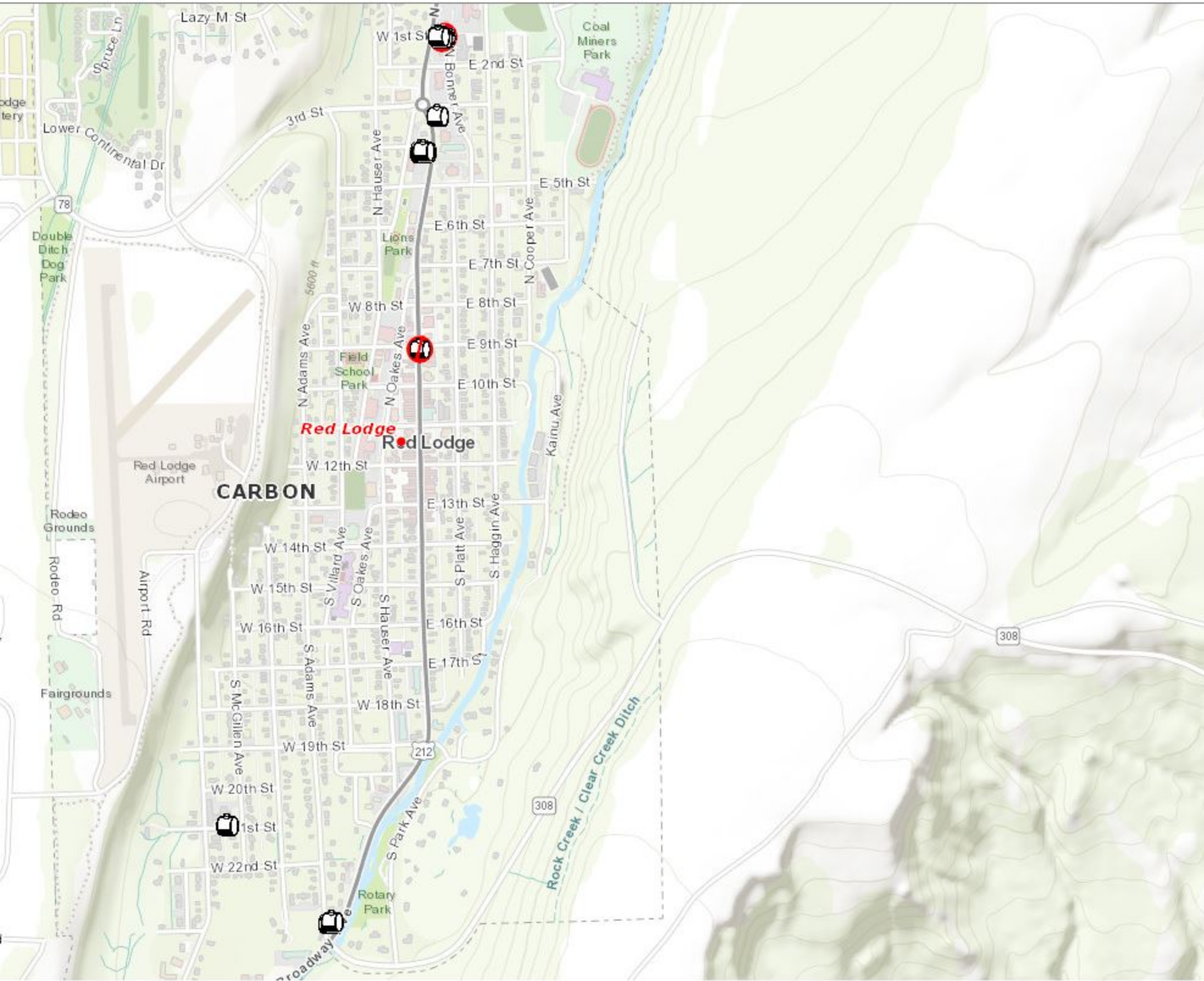
[Select](#) or [Zoom To](#)

Facility Tank ID: 03

Tank Tag #: 4058

Installation Date: 8/1/1999

Use Status: Permanently Out of Use
Substance: Diesel
Capacity (gal): 4000
[Select](#) or [Zoom To](#)



▼ Map Layers (hide/show)

Montana DEQ Layers

- Hazardous Waste Handlers
- Hazardous Substance Releases
- Petroleum Fund Claims
- Underground Storage Tanks**
 - Active Tanks
 - Closed Tanks
- Opencut Mines
- Source Water Assessments
- Water Quality Monitoring Sites
- Water Quality Assessment Units
- TMDL Planning Areas
- 30yr Average Annual Precipitation

Reference Layers

- Towns**
- Well Logs
- Counties**
- Sage Grouse EO
- Indian Reservations**
- PLSS Divisions
- Legislative Dist.
- Conservation Districts
- Water
- Watersheds



Montana Natural Heritage - SOC Report

Animal Species of Concern

Species List Last Updated **10/31/2019**

17 Species of Concern

Filtered by the following criteria:

Township = 007S020E (based on mapped Species Occurrences)

[Expand All](#) | [Collapse All](#)

Introduction

Species of Concern

| |
|--|
| Species of Concern 17 Species Filtered by the following criteria: Township = 007S020E (based on mapped Species Occurrences) |
|--|



A program of the Montana State Library's
 Natural Resource Information System
 operated by the University of Montana.

| MAMMALS (MAMMALIA) | | | | | | | | | | 4 SPECIES |
|---|--|---|------------|------------|---|------------|----------|----------------------------------|--------------------------------|---|
| | | | | | | | | | | TOWNSHIP = 007S020E (based on mapped Species Occurrences) |
| SCIENTIFIC NAME COMMON NAME TAXA SORT | FAMILY (SCIENTIFIC) FAMILY (COMMON) | GLOBAL RANK | STATE RANK | USFWS | USFS | BLM | FWP SWAP | % OF GLOBAL BREEDING RANGE IN MT | % OF MT THAT IS BREEDING RANGE | HABITAT |
| Gulo gulo Wolverine | Mustelidae Weasels | G4 | S3 | P | Proposed on Forests (BD, BRT, CG, HLC, KOOT, LOLO) | SENSITIVE | SGCN3 | 0% | 37% | Boreal Forest and Alpine Habitats |
| | | Species Occurrences verified in these Counties: Beaverhead, Broadwater, Carbon, Cascade, Deer Lodge, Flathead, Gallatin, Glacier, Granite, Jefferson, Judith Basin, Lake, Lewis and Clark, Lincoln, Madison, Meagher, Mineral, Missoula, Park, Pondera, Powell, Ravalli, Sanders, Silver Bow, Stillwater, Sweet Grass, Teton, Wheatland | | | | | | | | |
| Lasiurus cinereus Hoary Bat | Vespertilionidae Bats | G3G4 | S3 | | | | SGCN3 | 2% | 100% | Riparian and forest |
| | | Species Occurrences verified in these Counties: Beaverhead, Big Horn, Blaine, Broadwater, Carbon, Carter, Cascade, Chouteau, Custer, Daniels, Dawson, Deer Lodge, Fallon, Fergus, Flathead, Gallatin, Garfield, Glacier, Golden Valley, Granite, Hill, Jefferson, Judith Basin, Lake, Lewis and Clark, Liberty, Lincoln, Madison, McCone, Meagher, Mineral, Missoula, Musselshell, Park, Petroleum, Phillips, Pondera, Powder River, Powell, Prairie, Ravalli, Richland, Roosevelt, Rosebud, Sanders, Sheridan, Silver Bow, Stillwater, Sweet Grass, Teton, Toole, Treasure, Valley, Wheatland, Wibaux, Yellowstone | | | | | | | | |
| Lynx canadensis Canada Lynx | Felidae Cats | G5 | S3 | LT; CH | Threatened on Forests (BD, BRT) Threatened, Critical Habitat on Forests (CG, HLC, KOOT, LOLO) | THREATENED | SGCN3 | 1% | 40% | Subalpine conifer forest |
| | | Species Occurrences verified in these Counties: Carbon, Flathead, Gallatin, Glacier, Granite, Lake, Lewis and Clark, Lincoln, Missoula, Park, Pondera, Powell, Stillwater, Sweet Grass, Teton | | | | | | | | |
| Ursus arctos Grizzly Bear | Ursidae Bears | G4 | S2S3 | PS: LT; XN | Threatened on Forests (BD, CG, HLC, KOOT, LOLO) | THREATENED | SGCN2-3 | 1% | 22% | Conifer forest |
| | | Species Occurrences verified in these Counties: Beaverhead, Carbon, Cascade, Chouteau, Deer Lodge, Flathead, Gallatin, Glacier, Granite, Jefferson, Lake, Lewis and Clark, Liberty, Lincoln, Madison, Mineral, Missoula, Park, Pondera, Powell, Ravalli, Sanders, Silver Bow, Stillwater, Sweet Grass, Teton, Toole | | | | | | | | |

| BIRDS (AVES) | | | | | | | | | | 11 SPECIES | |
|---|--|---|------------|-------|--|-----------|----------|----------------------------------|--------------------------------|---|--|
| | | | | | | | | | | TOWNSHIP = 007S020E (based on mapped Species Occurrences) | |
| SCIENTIFIC NAME COMMON NAME TAXA SORT | FAMILY (SCIENTIFIC) FAMILY (COMMON) | GLOBAL RANK | STATE RANK | USFWS | USFS | BLM | FWP SWAP | % OF GLOBAL BREEDING RANGE IN MT | % OF MT THAT IS BREEDING RANGE | HABITAT | |
| Accipiter gentilis Northern Goshawk | Accipitridae Hawks / Kites / Eagles | G5 | S3 | MBTA | | | SGCN3 | 2% | 68% | Mixed conifer forests | |
| | | Species Occurrences verified in these Counties: Beaverhead, Big Horn, Broadwater, Carbon, Carter, Cascade, Deer Lodge, Fergus, Flathead, Gallatin, Glacier, Granite, Jefferson, Judith Basin, Lake, Lewis and Clark, Liberty, Lincoln, Madison, Meagher, Mineral, Missoula, Park, Pondera, Powder River, Powell, Ravalli, Rosebud, Sanders, Silver Bow, Stillwater, Sweet Grass, Teton, Wheatland | | | | | | | | | |
| Ardea herodias Great Blue Heron | Ardeidae Bitterns / Egrets / Herons / Night-Herons | G5 | S3 | MBTA | | | SGCN3 | 3% | 100% | Riparian forest | |
| | | Species Occurrences verified in these Counties: Beaverhead, Big Horn, Blaine, Broadwater, Carbon, Carter, Cascade, Chouteau, Custer, Dawson, Deer Lodge, Fallon, Fergus, Flathead, Gallatin, Garfield, Glacier, Golden Valley, Granite, Hill, Jefferson, Judith Basin, Lake, Lewis and Clark, Liberty, Lincoln, Madison, McCone, Meagher, Mineral, Missoula, Musselshell, Park, Petroleum, Phillips, Pondera, Powder River, Powell, Prairie, Ravalli, Richland, Roosevelt, Rosebud, Sanders, Sheridan, Silver Bow, Stillwater, Sweet Grass, Teton, Treasure, Valley, Wheatland, Wibaux, Yellowstone | | | | | | | | | |
| | | State Rank Reason: Small breeding population size, evidence of recent declines, and declining regeneration of riparian cottonwood forests due to altered hydrology and grazing. | | | | | | | | | |
| Catharus fuscescens Veery | Turdidae Thrushes | G5 | S3B | MBTA | | SENSITIVE | SGCN3 | 6% | 100% | Riparian forest | |
| | | Species Occurrences verified in these Counties: Beaverhead, Big Horn, Blaine, Broadwater, Carbon, Cascade, Chouteau, Custer, Deer Lodge, Fergus, Flathead, Gallatin, Glacier, Granite, Hill, Jefferson, Lake, Lewis and Clark, Liberty, Lincoln, Madison, McCone, Meagher, Mineral, Missoula, Musselshell, Park, Petroleum, Phillips, Pondera, Powder River, Powell, Ravalli, Richland, Roosevelt, Rosebud, Sanders, Silver Bow, Stillwater, Sweet Grass, Teton, Wheatland, Yellowstone | | | | | | | | | |
| Centrocercus urophasianus Greater Sage-Grouse | Phasianidae Upland Game Birds | G3G4 | S2 | | Sensitive - Known on Forests (BD) Sensitive - Suspected on Forests (CG, HLC) | SENSITIVE | SGCN2 | 17% | 75% | Sagebrush | |
| | | Species Occurrences verified in these Counties: Beaverhead, Big Horn, Blaine, Broadwater, Carbon, Carter, Chouteau, Custer, Dawson, Deer Lodge, Fallon, Fergus, Gallatin, Garfield, Golden Valley, Hill, Madison, McCone, Meagher, Musselshell, Park, Petroleum, Phillips, Powder River, Prairie, Rosebud, Silver Bow, Stillwater, Sweet Grass, Treasure, Valley, Wheatland, Wibaux, Yellowstone | | | | | | | | | |
| Certhia americana Brown Creeper | Certhiidae Creepers | G5 | S3 | MBTA | | | SGCN3 | 4% | 53% | Moist conifer forests | |
| | | | | | | | | | | | |

| | | | | | | | | | | |
|---|--|--|-----|-------------------------------|---|-----------|-------|-----|------|----------------------|
| | | Species Occurrences verified in these Counties: Beaverhead, Broadwater, Carbon, Carter, Cascade, Chouteau, Deer Lodge, Fergus, Flathead, Gallatin, Glacier, Golden Valley, Granite, Jefferson, Judith Basin, Lake, Lewis and Clark, Lincoln, Madison, Meagher, Mineral, Missoula, Park, Powder River, Powell, Ravalli, Rosebud, Sanders, Silver Bow, Stillwater, Sweet Grass, Teton, Wheatland | | | | | | | | |
| Falco peregrinus Peregrine Falcon | Falconidae Falcons | G4 | S3 | DM; MBTA; BCC10; BCC11; BCC17 | Sensitive - Known on Forests (BD, BRT, CG, HLC, KOOT, LOLO) | SENSITIVE | SGCN3 | 2% | 100% | Cliffs / canyons |
| | | Species Occurrences verified in these Counties: Beaverhead, Big Horn, Blaine, Broadwater, Carbon, Cascade, Chouteau, Deer Lodge, Flathead, Gallatin, Glacier, Granite, Jefferson, Lake, Lewis and Clark, Lincoln, Madison, Meagher, Mineral, Missoula, Park, Pondera, Powell, Prairie, Ravalli, Sanders, Silver Bow, Stillwater, Sweet Grass, Teton, Toole, Treasure, Yellowstone | | | | | | | | |
| Haemorhous cassinii Cassin's Finch | Fringillidae Finches | G5 | S3 | MBTA; BCC10 | | | SGCN3 | 11% | 62% | Drier conifer forest |
| | | Species Occurrences verified in these Counties: Beaverhead, Big Horn, Broadwater, Carbon, Cascade, Chouteau, Custer, Deer Lodge, Fergus, Flathead, Gallatin, Glacier, Golden Valley, Granite, Jefferson, Judith Basin, Lake, Lewis and Clark, Lincoln, Madison, Meagher, Mineral, Missoula, Musselshell, Park, Petroleum, Phillips, Powder River, Powell, Ravalli, Rosebud, Sanders, Silver Bow, Stillwater, Sweet Grass, Teton, Wheatland, Yellowstone | | | | | | | | |
| | | State Rank Reason: Data show recent short-term declines in population for this species | | | | | | | | |
| Nucifraga columbiana Clark's Nutcracker | Corvidae Jays / Crows / Magpies | G5 | S3 | MBTA | Species of Conservation Concern on Forests (FLAT) | | SGCN3 | 9% | 84% | Conifer forest |
| | | Species Occurrences verified in these Counties: Beaverhead, Big Horn, Broadwater, Carbon, Carter, Cascade, Chouteau, Custer, Deer Lodge, Fergus, Flathead, Gallatin, Glacier, Golden Valley, Granite, Jefferson, Judith Basin, Lake, Lewis and Clark, Liberty, Lincoln, Madison, Meagher, Mineral, Missoula, Musselshell, Park, Petroleum, Phillips, Pondera, Powder River, Powell, Ravalli, Sanders, Silver Bow, Stillwater, Sweet Grass, Teton, Toole, Wheatland, Yellowstone | | | | | | | | |
| Numenius americanus Long-billed Curlew | Scolopacidae Sandpipers | G5 | S3B | MBTA; BCC10; BCC11; BCC17 | | SENSITIVE | SGCN3 | 19% | 100% | Grasslands |
| | | Species Occurrences verified in these Counties: Beaverhead, Big Horn, Blaine, Broadwater, Carbon, Carter, Cascade, Chouteau, Custer, Daniels, Dawson, Deer Lodge, Fallon, Fergus, Flathead, Gallatin, Garfield, Glacier, Golden Valley, Granite, Hill, Jefferson, Judith Basin, Lake, Lewis and Clark, Liberty, Madison, Mccone, Meagher, Missoula, Musselshell, Park, Petroleum, Phillips, Pondera, Powder River, Powell, Prairie, Ravalli, Richland, Roosevelt, Rosebud, Sanders, Sheridan, Stillwater, Sweet Grass, Teton, Toole, Treasure, Valley, Wheatland, Wibaux, Yellowstone | | | | | | | | |
| Pipilo chlorurus Green-tailed Towhee | Passerellidae New World Sparrows | G5 | S3B | MBTA | | | SGCN3 | 3% | 60% | Shrub woodland |
| | | Species Occurrences verified in these Counties: Beaverhead, Big Horn, Blaine, Broadwater, Carbon, Chouteau, Custer, Deer Lodge, Fergus, Gallatin, Garfield, Granite, Jefferson, Judith Basin, Lewis and Clark, Madison, Meagher, Musselshell, Park, Petroleum, Phillips, Powder River, Silver Bow, Stillwater, Sweet Grass, Valley, Wheatland, Yellowstone | | | | | | | | |
| | | State Rank Reason: Populations in Montana and across the Northern Rockies have undergone recent declines. | | | | | | | | |
| Spizella breweri Brewer's Sparrow | Passerellidae New World Sparrows | G5 | S3B | MBTA; BCC10; BCC17 | | SENSITIVE | SGCN3 | 12% | 100% | Sagebrush |
| | | Species Occurrences verified in these Counties: Beaverhead, Big Horn, Blaine, Broadwater, Carbon, Carter, Chouteau, Custer, Dawson, Deer Lodge, Fallon, Fergus, Flathead, Gallatin, Garfield, Glacier, Golden Valley, Granite, Hill, Jefferson, Lake, Lewis and Clark, Liberty, Lincoln, Madison, Mccone, Meagher, Missoula, Musselshell, Park, Petroleum, Phillips, Pondera, Powder River, Powell, Prairie, Ravalli, Richland, Roosevelt, Rosebud, Sanders, Sheridan, Silver Bow, Stillwater, Sweet Grass, Teton, Toole, Treasure, Valley, Wheatland, Wibaux, Yellowstone | | | | | | | | |
| | | State Rank Reason: Species faces threats from loss of sagebrush habitats it is dependent on as a result of habitat conversion for agriculture and increased frequency of fire as a result of weed encroachment and drought. | | | | | | | | |

| REPTILES (REPTILIA) | | | | | | | | | | 1 SPECIES |
|---|--|-------------|------------|-------|-----------------------------------|-----------|----------|----------------------------------|--------------------------------|---------------|
| TOWNSHIP = 0075020E (based on mapped Species Occurrences) | | | | | | | | | | |
| SCIENTIFIC NAME COMMON NAME TAXA SORT | FAMILY (SCIENTIFIC) FAMILY (COMMON) | GLOBAL RANK | STATE RANK | USFWS | USFS | BLM | FWP SWAP | % OF GLOBAL BREEDING RANGE IN MT | % OF MT THAT IS BREEDING RANGE | HABITAT |
| Lampropeltis gentilis Western Milksnake | Colubridae Colubrid Snakes | G5 | S2 | | Sensitive - Known on Forests (CG) | SENSITIVE | SGCN2 | 2% | 51% | Rock outcrops |
| Species Occurrences verified in these Counties: Big Horn, Blaine, Carbon, Custer, Dawson, Fergus, Garfield, Musselshell, Petroleum, Phillips, Powder River, Rosebud, Stillwater, Yellowstone | | | | | | | | | | |

| FISH (ACTINOPTERYGII) | | | | | | | | | | 1 SPECIES |
|--|--|-------------|------------|-------|-----------------------------------|-----------|----------|----------------------------------|--------------------------------|---------------------------------|
| TOWNSHIP = 0075020E (based on mapped Species Occurrences) | | | | | | | | | | |
| SCIENTIFIC NAME COMMON NAME TAXA SORT | FAMILY (SCIENTIFIC) FAMILY (COMMON) | GLOBAL RANK | STATE RANK | USFWS | USFS | BLM | FWP SWAP | % OF GLOBAL BREEDING RANGE IN MT | % OF MT THAT IS BREEDING RANGE | HABITAT |
| Oncorhynchus clarkii bouvieri Yellowstone Cutthroat Trout | Salmonidae Trout | G5T4 | S2 | | Sensitive - Known on Forests (CG) | SENSITIVE | SGCN2 | | 12% | Mountain streams, rivers, lakes |
| Species Occurrences verified in these Counties: Big Horn, Carbon, Gallatin, Meagher, Park, Stillwater, Sweet Grass, Yellowstone | | | | | | | | | | |
| State Rank Reason: The Yellowstone Cutthroat trout is currently ranked "S2" in Montana because it is at risk because of very limited and/or potentially declining population numbers, range and/or habitat, making it vulnerable to extirpation in the state. | | | | | | | | | | |

- Potential Species of Concern
- Special Status Species
- Additions To Statewide List
- Species Removed From Statewide List
- Species of Greatest Inventory Need

Citation for data on this website:
Montana Animal Species of Concern Report. Montana Natural Heritage Program and Montana Fish, Wildlife and Parks. Retrieved on 1/31/2020, from <http://mtnhp.org/SpeciesOfConcern/?AorP=a>

Montana Natural Heritage - SOC Report Plant Species of Concern

Species List Last Updated **10/31/2019**

2 Species of Concern

Filtered by the following criteria:

Township = 007S020E (based on mapped Species Occurrences)

[Expand All](#) | [Collapse All](#)

Introduction

Species of Concern

| |
|---|
| Species of Concern 2 Species Filtered by the following criteria: Township = 007S020E (based on mapped Species Occurrences) |
|---|

| FLOWERING PLANTS - DICOTS (MAGNOLIOPSIDA) | | | | | | | | | |
|--|-------------|--|-------------|------------|-------|------|-----|----------------------|--------------------------------|
| | | | | | | | | | 1 SPECIES |
| TOWNSHIP = 007S020E (based on mapped Species Occurrences) | | | | | | | | | |
| SCIENTIFIC NAME COMMON NAME TAXA SORT | OTHER NAMES | FAMILY (SCIENTIFIC) FAMILY (COMMON) | GLOBAL RANK | STATE RANK | USFWS | USFS | BLM | MNPS THREAT CATEGORY | HABITAT |
| Erigeron formosissimus Beautiful Fleabane | | Asteraceae Aster/Sunflowers | G5 | S1S3 | | | | | Meadows (Montane/subalpine) |
| Species Occurrences verified in these Counties: Beaverhead, Carbon, Madison, Park State Rank Reason: Species has been documented for southern Montana from a few collections. Additional data are needed for this species to more precisely determine its conservation status and need. | | | | | | | | | |

| FLOWERING PLANTS - MONOCOTS (LILIOPSIDA) | | | | | | | | | |
|--|-------------|--|-------------|------------|-------|------|-----|----------------------|-----------|
| | | | | | | | | | 1 SPECIES |
| TOWNSHIP = 007S020E (based on mapped Species Occurrences) | | | | | | | | | |
| SCIENTIFIC NAME COMMON NAME TAXA SORT | OTHER NAMES | FAMILY (SCIENTIFIC) FAMILY (COMMON) | GLOBAL RANK | STATE RANK | USFWS | USFS | BLM | MNPS THREAT CATEGORY | HABITAT |
| Lilium philadelphicum Wood Lily | | Liliaceae Lillies | G5 | S3 | | | | | |
| Species Occurrences verified in these Counties: Carbon, Carter, Fergus, Lewis and Clark, Lincoln, Pondera, Powder River, Stillwater, Sweet Grass, Teton State Rank Reason: Lilium philadelphicum has a patchy, but wide distribution in Montana, and is often found in specialized habitats. Observations in eastern Montana have not been made since the 1930's and 1940's. This species is vulnerable to extirpation in Montana because of its attractiveness, potential to be over-collected, and habitat requirements. Native lillies have rarely survived in gardens. Current information on known locations, especially in the eastern counties, is greatly needed. | | | | | | | | | |

Potential Species of Concern

Special Status Species

Additions To Statewide List

Species Removed From Statewide List

Citation for data on this website:
 Montana Plant Species of Concern Report. Montana Natural Heritage Program. Retrieved on 1/31/2020, from <http://mtnhp.org/SpeciesOfConcern/?AorP=p>



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Back to:



NOTE:

To print data frame (right side), click on right frame before printing.

1981 - 2010

- [Daily Temp. & Precip.](#)
- [Daily Tabular data \(~23 KB\)](#)
- [Monthly Tabular data \(~1 KB\)](#)
- [NCDC 1981-2010 Normals \(~3 KB\)](#)

1971 - 2000

- [Daily Temp. & Precip.](#)
- [Daily Tabular data \(~23 KB\)](#)
- [Monthly Tabular data \(~1 KB\)](#)
- [NCDC 1971-2000 Normals \(~3 KB\)](#)

1961 - 1990

- [Daily Temp. & Precip.](#)
- [Daily Tabular data \(~23 KB\)](#)
- [Monthly Tabular data \(~1 KB\)](#)
- [NCDC 1961-1990 Normals \(~3 KB\)](#)

Period of Record

- [Station Metadata](#)
- [Station Metadata Graphics](#)

RED LODGE, MONTANA (246918)

Period of Record Monthly Climate Summary

Period of Record : 03/01/1894 to 06/10/2016

| | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | Annual |
|-----------------------------------|------|------|------|------|------|------|------|------|------|------|------|------|--------|
| Average Max. Temperature (F) | 32.9 | 35.2 | 41.1 | 51.2 | 60.5 | 69.4 | 78.4 | 77.2 | 66.5 | 55.5 | 42.3 | 35.1 | 53.8 |
| Average Min. Temperature (F) | 10.8 | 12.9 | 18.2 | 27.8 | 36.2 | 43.5 | 49.7 | 48.1 | 39.8 | 31.4 | 20.8 | 14.0 | 29.4 |
| Average Total Precipitation (in.) | 0.98 | 0.88 | 1.83 | 2.81 | 3.64 | 2.73 | 1.41 | 1.23 | 1.98 | 1.76 | 1.17 | 0.88 | 21.31 |
| Average Total SnowFall (in.) | | | | | | | No | Data | | | | | |
| Average Snow Depth (in.) | | | | | | | No | Data | | | | | |

Percent of possible observations for period of record.

Max. Temp.: 93.8% Min. Temp.: 93.6% Precipitation: 93.5% Snowfall: 93.2% Snow Depth: 87%

Check [Station Metadata](#) or [Metadata graphics](#) for more detail about data completeness.

Western Regional Climate Center, wrcc@dri.edu

Appendix B:

Miscellaneous Maps

**GEOLOGIC MAP OF THE
RED LODGE AREA,
CARBON COUNTY, MONTANA**

by

David A. Lopez

Montana Bureau of Mines and Geology

Open-File Report MBMG 524

2005

This map has been reviewed for conformity with technical and editorial standards of the Montana Bureau of Mines and Geology.

Partial support has been provided by the STATEMAP component of the National Cooperative Geologic Mapping Program of the U.S. Geological Survey under Contract Number 04HQAG0079.

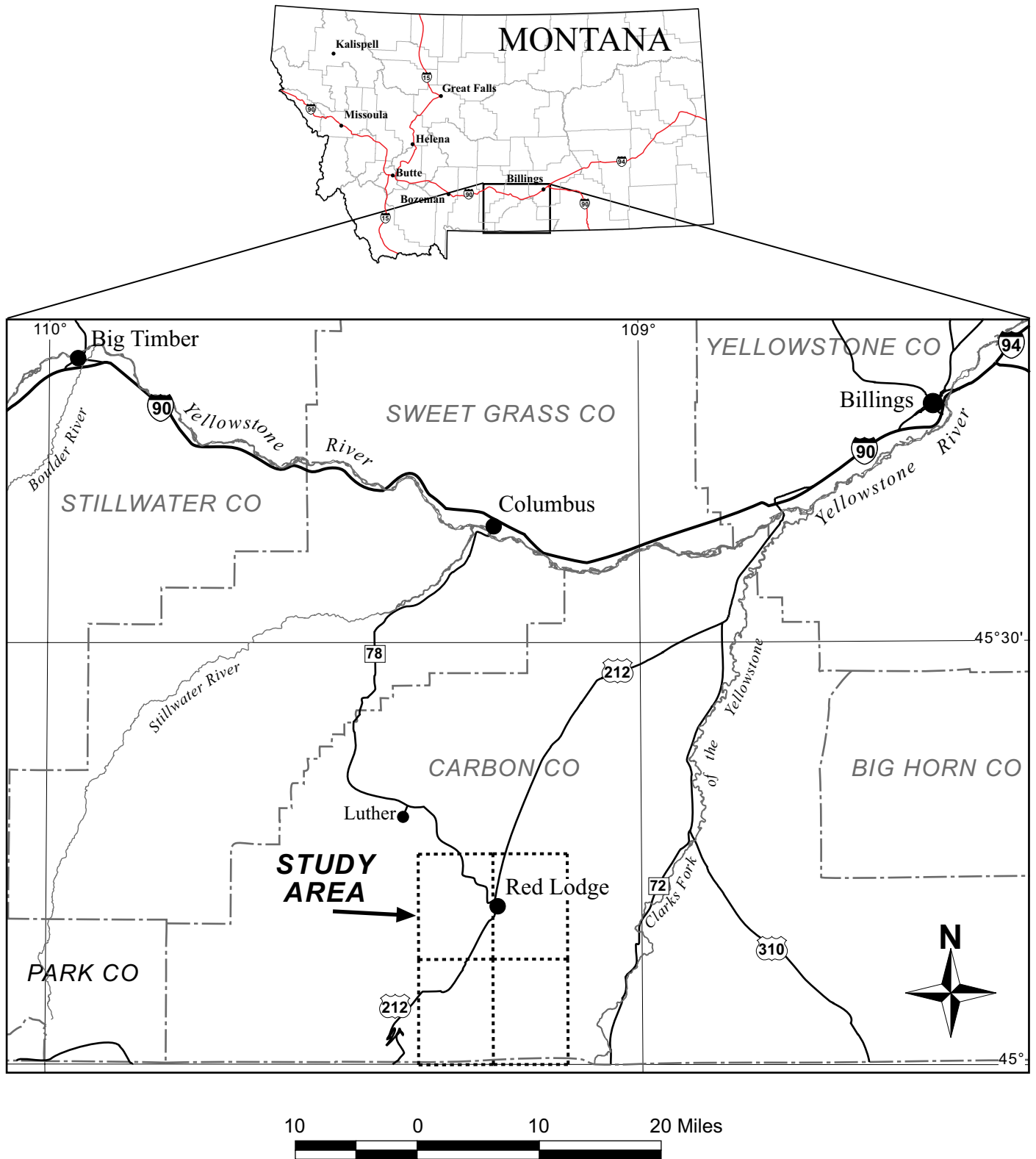
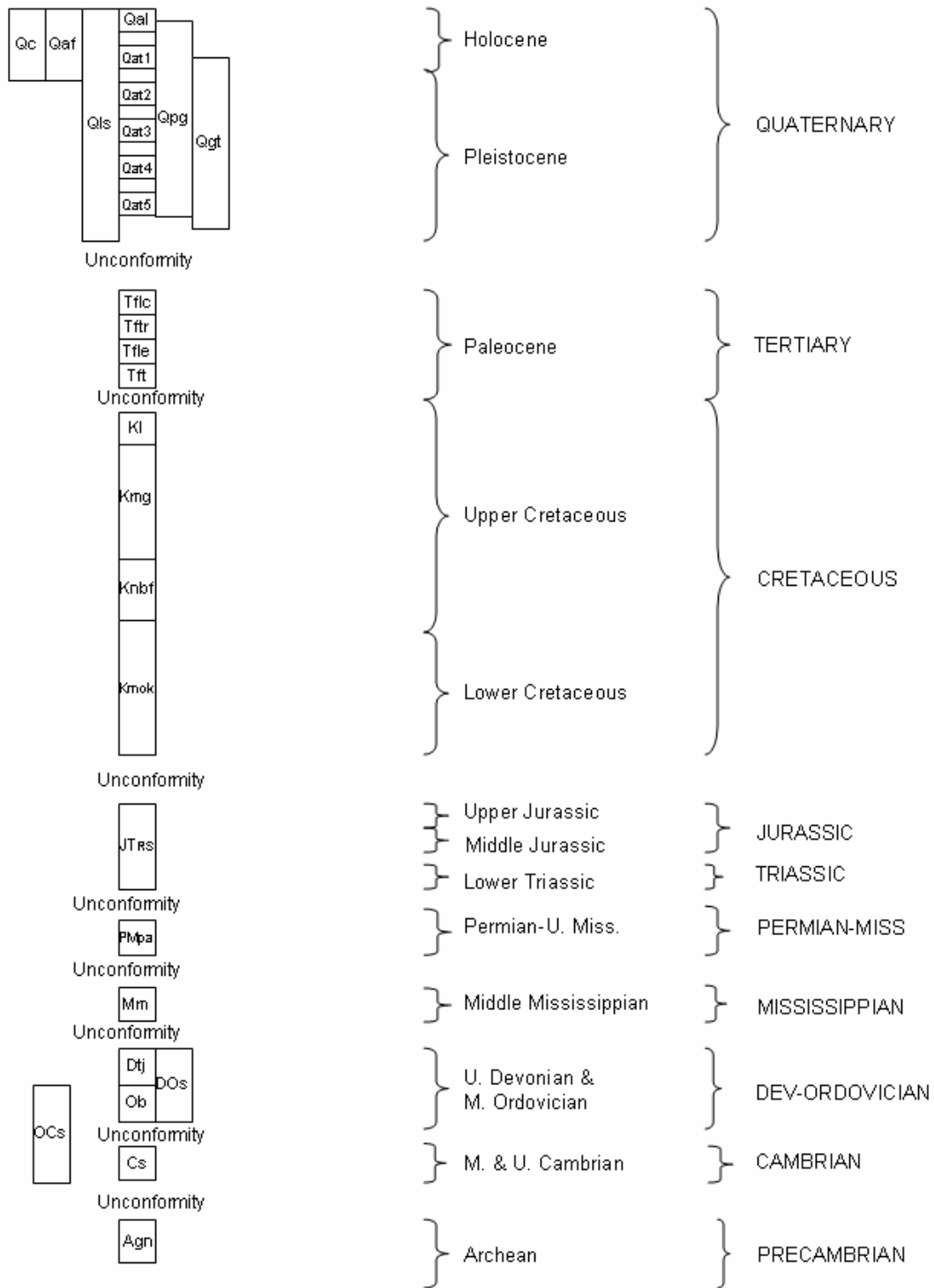


Figure 1. Location map of the study area.

CORRELATION OF MAP UNITS



DESCRIPTION OF MAP UNITS

SURFICIAL DEPOSITS

- af Artificial fill**—Mine tailings and fill in the Rock Creek valley in northern part of the town of Red Lodge.
- Qal Alluvium (Holocene)**—Gravel, sand, silt, and clay along active stream channels.
- Qc Colluvium (Holocene and Pleistocene)**—Locally derived slope-wash deposits mainly of sand, silt, and clay. Typically thin veneer concealing bedrock, but locally as thick as 30 ft (9 m). Commonly grades into Qal. Locally contains well-rounded cobbles derived from alluvial terrace gravel. May also contain glacial lake deposits behind end moraines.
- Qaf Alluvial fan deposits (Holocene and Pleistocene)**—Gravel, sand, silt, and clay deposited in fans being formed by modern streams along major valley margins. Display characteristic fan-shaped map pattern and convex upward profile. Typically grade upstream into Qal. Thickness ranges from very thin at toe to as much as 50 ft (15 m) at heads of fans.
- Qls Landslide deposits (Holocene and Pleistocene)**—Unconsolidated mixture of soil and blocks of bedrock transported down steep slopes by mass wasting. Characteristic hummocky surface with concentric swales and ridges near down-slope limits. Common along steep slopes below resistant rocks but can occur where steep slopes and moisture content produce unstable conditions. Large landslides are common in glacial moraines along the Beartooth mountain front.
- Qpg Pediment gravel deposits (Holocene and Pleistocene?)**—Angular and subangular, coarse gravel derived from local bedrock; gravel deposits occur beneath smooth, concave-upward, pediment surfaces sloping away from the Beartooth Mountains. About 10 ft (3 m) thick.

Qgt **Glacial deposits, undivided (Holocene and Pleistocene)**—Unsorted clay- to boulder-size material transported and deposited by glaciers. Characteristic hummocky surface. Occur in valleys along the mountain front. Clasts are predominantly Archean metamorphic rocks with lesser amounts of quartzite, igneous rocks, dolomite, and limestone.

ALLUVIAL TERRACE GRAVELS

Qat1 **Alluvial gravel, terrace level 1 (Holocene)**—Gravel underlying terraces 10 to 20 ft (3-6 m) above altitude of Qal (present altitude of rivers). Mostly cobbles and pebbles with minor amounts of sand and silt. Clasts are mainly granitic igneous rocks, granitic gneiss, schist, and quartzite, with much less limestone and sandstone. Ten to 40 ft (3-12 m) thick.

Qat2 **Alluvial gravel, terrace level 2 (Pleistocene)**—Gravel underlying terraces 20 to 40 ft (6-12 m) above Qal. Mostly cobbles and pebbles with minor amounts of sand and silt. Clasts mainly granitic igneous rocks, granitic gneiss, schist, and quartzite, with much less limestone and sandstone. Ten to 40 ft (3-12 m) thick.

Qat3 **Alluvial gravel, terrace level 3 (Pleistocene)**—Gravel underlying terraces 50 to 90 ft (15-27 m) above present altitude of rivers. Mostly cobbles and pebbles and minor amounts of sand and silt. Clasts are mainly granitic igneous rocks, granitic gneiss, schist, and quartzite, with much less limestone and sandstone. Ten to 30 ft (3-9 m) thick.

Qat4 **Alluvial gravel, terrace level 4 (Pleistocene)**—Gravel underlying terraces 200 to 300 ft (60-90 m) above present altitude of rivers. Cobble- and pebble-size clasts are mainly granite, granitic gneiss, schist, and quartzite. Thickness as much as 20 ft (6 m).

Qat5 Alluvial gravel, terrace level 5 (Pleistocene)—Gravel underlying terraces 400 to 600 ft (120-185 m) above present altitude of rivers. Occurs mainly as small discontinuous erosional remnants. Cobble- and pebble-size clasts are mainly granite, granitic gneiss, schist, and quartzite. Calcite cement locally present, especially at base. Thickness from a very thin remnant to about 20 ft (6 m).

BEDROCK MAP UNITS

Tflc Linley Conglomerate Member, Fort Union Formation (Paleocene?)—Unit named by Calvert (1916) after exposures near the community of Linley (Linley no longer exists but was about 1 mile east-southeast of Luther). These rocks occur along the northern mountain front of the Beartooth Uplift (Calvert, 1916; Jobling, 1974; DeCelles and others, 1991) and are considered to be Laramide synorogenic deposits. Similar rocks occur along the eastern front of the Beartooth Uplift (Laramide synorogenic deposits of Flueckinger (1970) and Beartooth Conglomerate of DeCelles and others (1991)), and are included here with the Linley Conglomerate. Unconformably overlies the Tongue River Member of the Fort Union Formation, but also overlies an erosional unconformity cut into Upper Cretaceous rocks just south of the map area in Wyoming (DeCelles and others, 1991). The unit consists of mainly reddish-brown to gray-brown, interbedded conglomerate, coarse-grained sandstone, siltstone, and mudstone; the coarsest facies is generally nearest the mountain front. Conglomerate cobbles are mostly less than 6 inches in diameter and composed mainly of limestone, andesite porphyry, black chert, metamorphic rocks, and granitic rocks. Paleontologic data indicate the deposits are Paleocene (Flueckinger, 1970; Jobling, 1974; DeCelles and others, 1991). Changes in clast composition in the conglomerates record the unroofing of the Beartooth Uplift; clasts of younger stratigraphic units generally occur near the base and clasts of older rocks occur higher in the section (Flueckinger, 1970; Jobling, 1974; DeCelles and others, 1991). Thickness is about 600 ft (185 m) along the north front of the Beartooth

Uplift (Jobling, 1974). Flueckinger (1970) reports a total thickness of the section along the east front, including exposures in Wyoming, of about 4,200 ft (1,280 m), but exposures in the Red Lodge area and just to the west appear to be about 2,000 ft (610 m) thick. DeCelles and others (1991) report a thickness of more than 2,300 ft (700 m).

Tftr Tongue River Member, Fort Union Formation (Paleocene)—Gray to grayish-yellow, fine- to medium-grained sandstone, cross-bedded. Interbedded with brownish-gray carbonaceous shale and siltstone and coal beds. Sandstones ledge-forming, commonly support growths of pine trees. Thickness is variable but is as much as 2,800 ft (850 m) (Rawlins, 1986).

Tfle Lebo Member, Fort Union Formation (Paleocene)—Predominantly dark-gray to olive shale, and thin, interbedded, yellowish-gray sandstone and siltstone, locally includes yellowish-gray claystone. Typically forms smooth grassy slopes below the Tongue River Member. Thickness 200 to 500 ft (60-150 m).

Tfft Tullock Member, Fort Union Formation (Paleocene)—Yellowish-gray, fine- to medium-grained, ledge-forming sandstone, cross-bedded in part. Interbedded with gray to greenish-gray claystone, siltstone, and minor carbonaceous shale. Supports growths of pine trees. Thickness is variable; from about 400 ft (120 m) to as much as 1,500 ft (460 m) in the Bear Creek area (Rawlins, 1986).

TKi Intermediate and felsic intrusive rocks (Tertiary or Late Cretaceous)—Laccoliths, plugs, dikes, sills and irregular-shaped bodies of fine-grained and porphyritic rhyolite, dacite, quartz latite, andesite, and diorite (Van Gosen and others, 2000).

KI Lance Formation (Upper Cretaceous)—Interbedded light-brownish-gray, cliff- and ledge-forming, fine-grained, thick-bedded to massive sandstone, and medium-gray, fissile shale. Sandstone beds are much thicker and more

continuous than sandstone beds in the Hell Creek. Sandstone beds support growths of pine trees. Occurs only in the southeast part of the quadrangle, interfingers with and changes facies into Hell Creek lithologies in the Joliet area; the name Lance is used in the Red Lodge area. Total thickness of the formation is about 350 ft (105 m).

Kmg Montana Group (Upper Cretaceous)—Bearpaw Shale, Judith River Formation, Claggett Shale, Eagle Sandstone, and Telegraph Creek Formation. Shown only on cross section.

Knbf Niobrara, Carlile, Greenhorn, and Belle Fourche Formations, undivided (Upper Cretaceous)—Shown only on cross section.

Kmok Mowry Shale, Thermopolis Shale, Fall River Sandstone, and Kootenai Formation, undivided (Upper and Lower Cretaceous)—Shown only on cross section.

JTrs Sedimentary rocks, undivided (Jurassic and Triassic)—Includes Morrison Formation, Ellis Group, and Chugwater Formation.

PMpa Phosphoria, Tensleep, and Amsden Formations, undivided (Permian, Pennsylvanian, and Upper Mississippian)—Formations not mapped separately because of narrow outcrop width. Phosphoria is light-gray limestone, sandstone and quartzite, commonly grayish-pink, cherty; thickness is 50 to 75 ft (15-23 m). The Tensleep Sandstone is light-brown to very pale-orange sandstone, fine-grained, well sorted, well rounded, cross-bedded. Locally contains thin limestone beds, locally cherty near the top, and locally silicified to form quartzite; about 250 ft (75 m) thick. The Amsden Formation is interbedded grayish-pink to light-red mudstone, limestone, and siltstone. Limestones are commonly cherty. Unconformably overlies karst surface developed on limestone of the Madison Group. Characteristically produces pink stain on underlying cliffs of Madison Group; thickness about 200 ft (60 m) but locally tectonically thinned

to only a few feet along mountain front. Total thickness of lumped unit is about 500 ft (150 m).

Mm Madison Group, undivided (Middle Mississippian)—Limestone and dolomitic limestone, light-gray to light-brownish-gray. Thick-bedded to massive in the upper part (Mission Canyon Limestone) and thin-bedded to thick-bedded in the lower part (Lodgepole Limestone). Also contains thin, interbedded, gray shales. Fossiliferous and cherty beds are present throughout. Collapse features and caves are common at the upper karst surface. Thickness of the Madison is 800 to 1,000 ft (240-305 m).

Dtj Three Forks and Jefferson Formations, undivided (Upper Devonian)—The Jefferson is dolomitic limestone, light-brownish-gray, fetid, poorly exposed; locally occurs as float only. The Three Forks is mainly yellowish-weathering, argillaceous limestone and medium-gray shale, very poorly exposed.

DOs Sedimentary rocks, undivided (Upper Devonian and Ordovician)—Includes Jefferson and Three Forks Formations, and Big Horn Dolomite. The Jefferson and Three Forks Formations as described above. The Big Horn Dolomite is cliff-forming dolomite and dolomitic limestone, very light gray to very pale orange, lower part massive, thin- to thick-bedded in upper part. Has characteristic pock-marked surface due to differential weathering. Total thickness of this interval is about 600 ft (185 m).

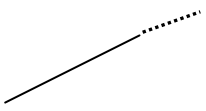
OEs Sedimentary rocks, undivided (Ordovician and Cambrian)

Ob Bighorn Dolomite (Middle Ordovician)—Cliff-forming dolomite and dolomitic limestone, very light gray to very pale orange, lower part massive, thin- to thick-bedded in upper part. Has characteristic pock-marked surface due to differential weathering. Thickness about 400 ft (120 m).

Es Sedimentary rocks, undivided (Middle and Upper Cambrian)—Light-reddish sandstone and quartzite, greenish-gray shale and sandy shale, gray, thin-bedded limestone, and greenish-gray flat-pebble limestone conglomerate. Includes the Flathead, Wolsey, Meagher, Park, and Pilgrim Formations. Thickness is 600 to 800 ft (180-245 m).

Agn Gneissic rocks (Archean)--Predominantly granitic gneiss and migmatite; commonly consists of alternating bands of more felsic and more mafic gneiss; contains inclusions of metasedimentary rocks (granitic gneiss of Van Gosen and others, 2000).

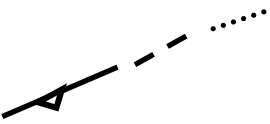
MAP SYMBOLS



Contact—Dotted where concealed.



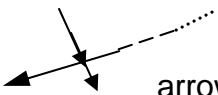
Fault—Dotted where concealed. Bar and ball on down-thrown side, where known.



Reverse Fault—Dashed where approximately located; dotted where concealed. Teeth on upper plate or up-thrown block.



Strike slip fault--Dashed where approximately located; dotted where concealed. Arrows indicate relative sense of movement.



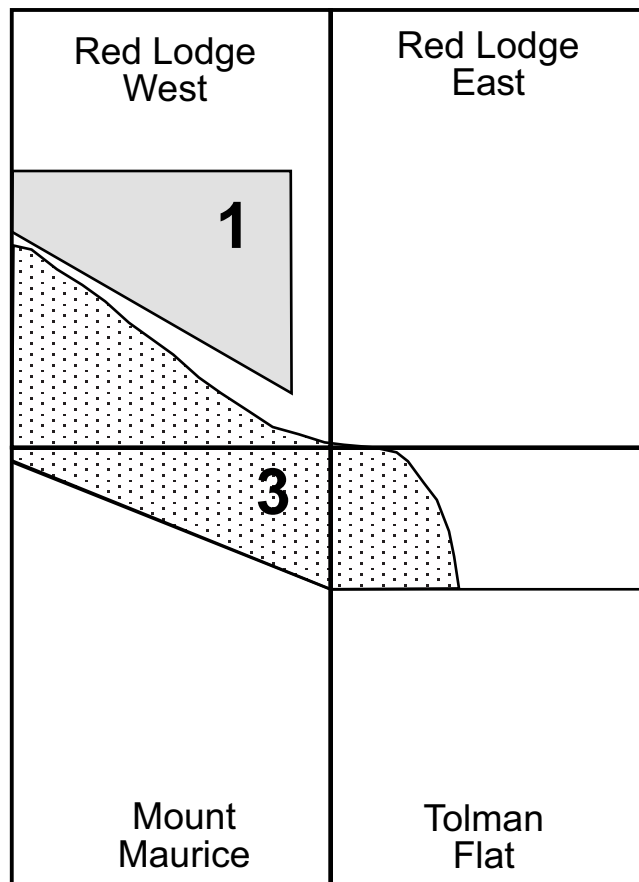
Monocline—Showing trace of axial plane and direction of plunge; longest arrow indicates steepest limb of monocline; dashed where approximately located; dotted where concealed.



Strike and dip of beds



Strike and dip of overturned beds



SOURCES OF GEOLOGIC MAPPING

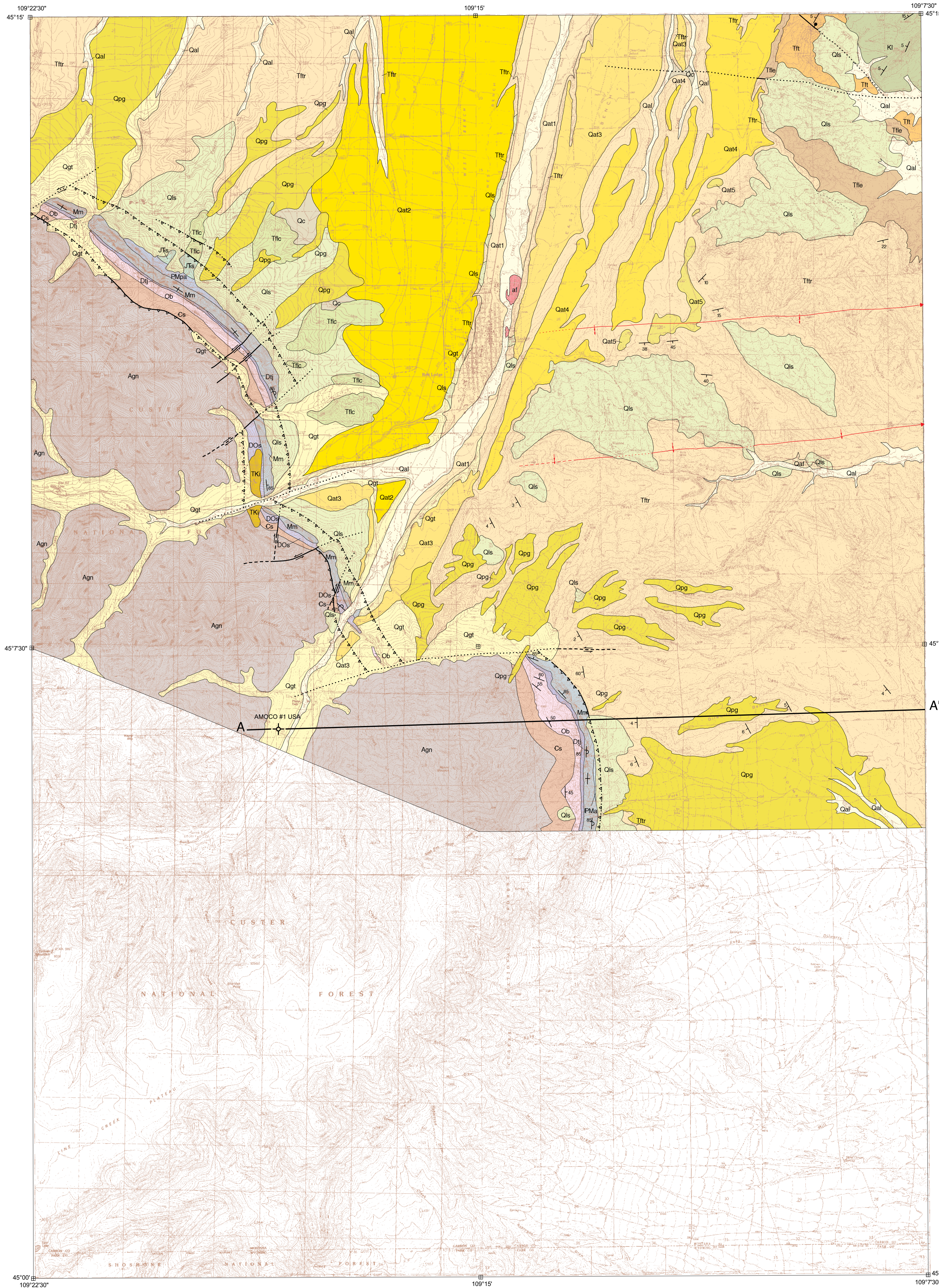
1. Flueckinger, L.A., 1970, Stratigraphy, petrography, and origin of Tertiary sediments off the front of the Beartooth Mountains, Montana-Wyoming: State College, Pennsylvania State University, Ph.D. dissertation, 249 p. Plate 1, scale 1:62,500.
2. Lopez, D.A., 2001, Geologic map of the Red Lodge 30' x 60' quadrangle, south-central Montana: Montana Bureau of Mines and Geology Open File Report MBMG-423, scale 1:100,000. (**Covers entire map area**)
3. Van Gosen, B.S., Elliott, J.E., LaRock, E.J., duBray, E.A., Carlson, R.R., and Zientek, M.L., 2000, Generalized geologic map of the Absaroka-Beartooth study area, south-central Montana: U.S. Geological Survey Miscellaneous Field Studies Map MF-2338, scale 1:126,720.

OTHER GEOLOGIC REFERENCES

- Bucher, W.H., Chamberlin, R.T., and Thom, W.T., Jr., 1933, Results of structural research work in Beartooth-Bighorn region, Montana and Wyoming: American Association of Petroleum Geologists Bulletin, v. 17, p. 680-693.
- Calvert, W.R., 1916, Geology of the upper Stillwater basin, Stillwater and Carbon Counties, Montana: U. S. Geological Survey Bulletin 641-G, p. 199-214; plate 1, scale 1:145,000.
- Casella, C.J., 1964, Geologic evolution of the Beartooth Mountains, Montana and Wyoming. Part 4. Relationship between Precambrian and Laramide structures in the Line Creek area: Geological Society of America Bulletin, v. 75, p. 969-986.
- DeCelles, P.G., Gray, M.B., Ridgeway, K.D., Cole, R.B., Srivastava, P., Pequera, N., and Pivnik, D. A., 1991, Kinematic history of a foreland uplift from Paleocene synorogenic conglomerate, Beartooth Range, Wyoming and Montana: Geological Society of America Bulletin, v. 103, p. 1458-1475.
- DeCelles, P.G., Gray, M.B., Ridgeway, K.D., Cole, R.B., Pivnik, D.A., Pequera, N., and Srivastava, P., 1991, Controls on synorogenic alluvial-fan architecture, Beartooth Conglomerate (Paleocene), Wyoming and Montana: Sedimentology, v. 38, p. 567-590.
- Du Bray, E.A., and Harlan, S.S., 1993, Geology and preliminary $^{40}\text{Ar}/^{39}\text{Ar}$ geochronology of the Sliderock Mountain volcano, south-central Montana: Geological Society of America Abstracts with Programs, v. 25, no. 5, p. 32.
- Foose, R.M., Wise, D.U., and Garbarini, G.S., 1961, Structural geology of the Beartooth Mountains, Montana and Wyoming: Geological Society of America Bulletin, v. 72, p. 1143-1172, 3 plates.
- Jobling, J.L., 1974, Stratigraphy, petrography, and structure of the Laramide(Paleocene) sediments marginal to the Beartooth Mountains, Montana: State College, Pennsylvania State University, Ph.D. dissertation, 102 p. plate 1, scale 1:31680.

- Lopez, D.A., 2000, Geologic map of the Big Timber 30' x 60' quadrangle, south-central Montana: Montana Bureau of Mines and Geology Open-File Report MBMG-405, scale 1:100,000.
- Mueller, P.A., 1979, Age of deformation in the Hellroaring Plateau area, eastern Beartooth Mountains, Montana: Canadian Journal of Earth Science, v. 16, p. 1124-1129.
- Mueller, P.A., Wooden, J.L., Henry, D.J., and Bowes, D.R., 1985, Archean crustal evolution of the eastern Beartooth Mountains, Montana and Wyoming, *in* Czamanske, G.K., and Zientek, M.L., eds. The Stillwater Complex, Montana: Geology and Guide: Montana Bureau of Mines and Geology Special Publication 92, p. 9-20.
- Omar, G.I., Lutz, T.M., and Giegengack, Robert, 1994, Apatite fission-track evidence for Laramide and post-Laramide uplift and anomalous thermal regime at the Beartooth overthrust, Montana-Wyoming: Geological Society of America Bulletin, v. 106, p. 74-85.
- Parsons, W.H., 1942, Origin and structure of the Livingston igneous rocks, Montana: Geological Society of America Bulletin, v. 53, p. 1175-1186.
- Perry, E.L., 1935, Flaws and tear faults: American Journal of Science, v. 29, p. 112-124.
- Prinz, Martin, 1964, Geologic evolution of the Beartooth Mountains, Montana and Wyoming. Part 5. Mafic dike swarms of the southern Beartooth Mountains: Geological Society of America Bulletin, v. 75, p. 1217-1248.
- Prinz, Martin, 1963, Structural relationships of mafic dikes in the Beartooth Mountains, Montana-Wyoming: Journal of Geology, v. 73, p. 165-174.
- Rawlins, J.H., 1986, Bear Creek Coal Field: Montana Geological Society and Yellowstone-Bighorn Research Association Joint Field Conference Guidebook, p. 253-255.

- Ritter, D.F., 1967, Terrace development along the front of the Beartooth Mountains, southern Montana: Geological Society of America Bulletin, v. 78, p. 467-484.
- Ritter, D.F., 1975, New information concerning the geomorphic evolution of the Bighorn Basin: Wyoming Geological Association Guidebook, 27th Annual Field Conference, p. 37-44.
- Rouse, J.T., Hess, H.H., Foote, Freeman, Vhay, J.S., and Wilson, K.P., 1937, Petrology, structure, and relation to tectonics of porphyry intrusions in the Beartooth Mountains, Montana: Journal of Geology, v. 45, no. 7, p. 717-740.
- Wilson, C.W., 1936, Geology of the Nye-Bowler Lineament, Stillwater and Carbon Counties, Montana: American Association of Petroleum Geologists Bulletin, v. 20, p. 1161-1188.
- Wise, D.U., 1997, Pseudo-tear faults at Red Lodge, MT: Clues to late-stage basin understuffing and tectonics of the greater Beartooth Block: Yellowstone-Bighorn Research Association, Wyoming Geological Association, and Montana Geological Society Guidebook, Bighorn Basin: 50 years on the frontier, 1997 Field Trip and Symposium, p. 71-99.
- Wise, D.U., 2000, Laramide structures in basement and cover of the Beartooth Uplift near Red Lodge, Montana: American Association of Petroleum Geologists Bulletin, v. 84, p. 360-375.

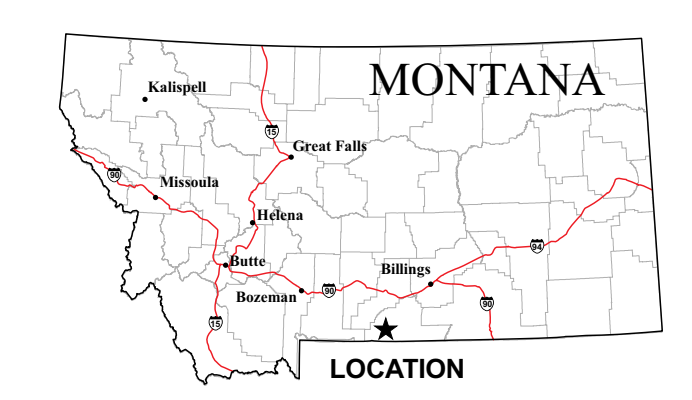


MAP UNITS

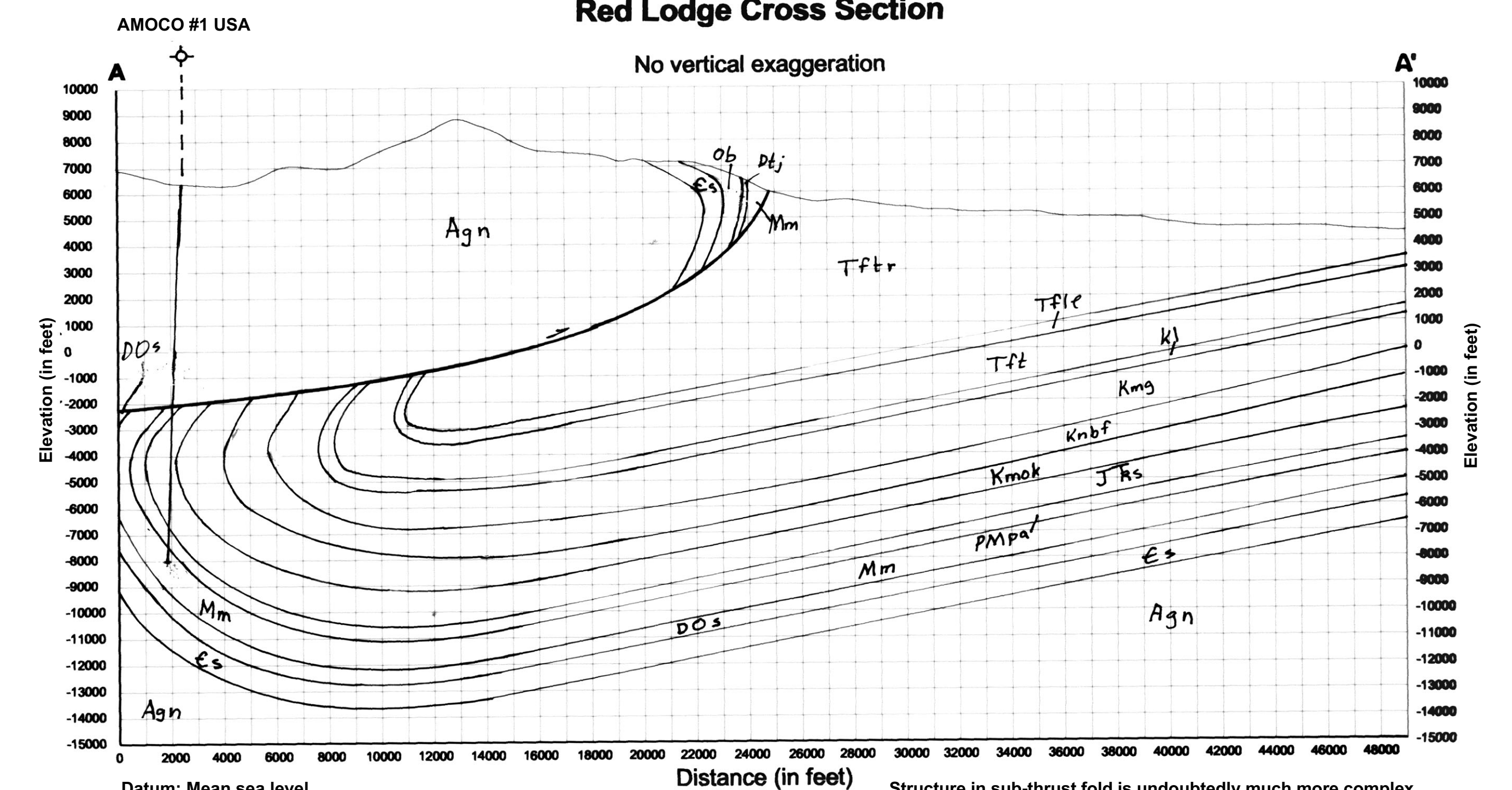
| | |
|------|---|
| Qal | Alluvium of modern channels and flood plains |
| Qc | Colluvium |
| Qaf | Alluvial fan deposit |
| Qls | Landslide deposit |
| Qpg | Piedmont gravel deposit |
| Qat1 | Alluvium of youngest alluvial terrace |
| Qat2 | Alluvium of second youngest alluvial terrace |
| Qat3 | Alluvium of third youngest alluvial terrace |
| Qat4 | Alluvium of fourth youngest alluvial terrace |
| Qat5 | Alluvium of fifth youngest alluvial terrace, oldest |
| Ttr | Lingle Conglomerate Member of Fort Union Formation |
| Tt | Tongue River Member of Fort Union Formation |
| Tle | Tullock Member of Fort Union Formation |
| TKI | Lebo Member of Fort Union Formation |
| Jts | Intrusive rocks, undivided |
| PMPa | Lance Formation |
| PLa | Sedimentary rocks, undivided |
| Mm | Phosphoria, Quadant, and Amsden Formations, undivided |
| Df | Amsden Formation |
| Dcs | Three Forks and Jefferson Formations, undivided |
| Cs | Sedimentary rocks, undivided |
| Agn | Sedimentary rocks, undivided |
| af | Artificial fill - mine tailings |

MAP SYMBOLS

| | |
|--|--|
| | Contact: dotted where concealed |
| | Fault: dotted where concealed; bar and ball on downthrown side where known |
| | Reverse fault: dashed where approximately located; dotted where concealed; teeth on upper plate or upthrown block |
| | Strike slip fault: dashed where approximately located; dotted where concealed |
| | Monocline: Showing axial plane and direction of plunge; dashed where approximately located, dotted where concealed; longest arrow indicates steepest limb of monocline |
| | Strike and dip of beds |
| | Strike and dip of overturned beds |



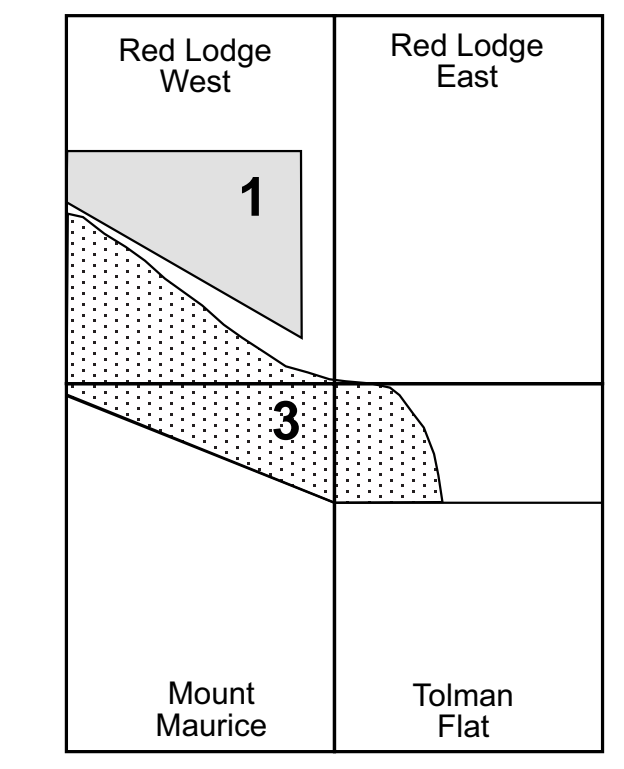
Red Lodge Cross Section



Datum: Mean sea level
Surficial deposits are not shown
Amoco #1 USA was not drilled straight; trace of well bore on profile is approximate and penetrations of formation are shown at approximately true depths.

Structure in sub-thrust fold is undoubtedly much more complex than shown, but data are not sufficient to identify other smaller faults and structures. Approximate elevation of stratigraphic units interpreted from data from Amoco well shown (Compare with Wise, 1957).
Archean rocks in upper plate are characterized by brittle deformation along numerous small faults and fractures; these rocks are not folded like the overlying Paleozoic stratigraphic section.

SOURCES OF GEOLOGIC MAPPING



- Flueckinger, L.A., 1970, Stratigraphy, petrography, and origin of Tertiary sediments off the front of the Beartooth Mountains, Montana-Wyoming; State College, Pennsylvania State University, Ph.D. dissertation, 249 p. Plate 1, scale 1:62,500.
- Lopez, D.A., 2001, Geologic map of the Red Lodge 30' x 60' quadrangle, south-central Montana; Montana Bureau of Mines and Geology Open File Report MBMG-423, scale 1:100,000. (Covers entire map area)
- Van Gosen, B.S., Elliott, J.E., LaRock, E.J., duBray, E.A., Carlson, R.R., and Zientek, M.L., 2000, Generalized geologic map of the Absaroka-Beartooth study area, south-central Montana; U.S. Geological Survey Miscellaneous Field Studies Map MF-2338, scale 1:126,720.

Base map from USGS 7.5' quadrangles
1:24,000 scale reduced by 50% to 1:48,000 scale:
Red Lodge East 7.5' topographic quadrangle
Map date: 1969, revised 1985
Projection: polyconic
UTM zone 12; 1927 NAD
Red Lodge West 7.5' topographic quadrangle
Map date: 1986
Projection: Lambert Conformal Conic
UTM zone 12; 1927 NAD
Tolman Flat 7.5' topographic quadrangle
Map date: 1969, revised 1985
Projection: polyconic
UTM zone 12; 1927 NAD
Mount Maurice 7.5' topographic quadrangle
Map date: 1986
Projection: Lambert Conformal Conic
UTM zone 12; 1927 NAD

Partial support has been provided by the STATEMAP component of the National Cooperative Geologic Mapping Program of the U.S. Geological Survey under Contract Number 04HQAG0079.
GIS production: Ken Sandau and Paul Thale, MBMG Map layout: Susan Smith, MBMG

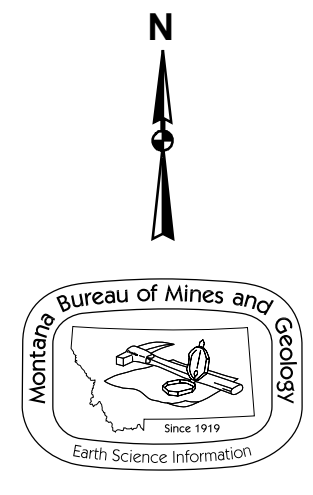
MBMG Open File 524

Geologic Map of the
Red Lodge Area
Carbon County, Montana

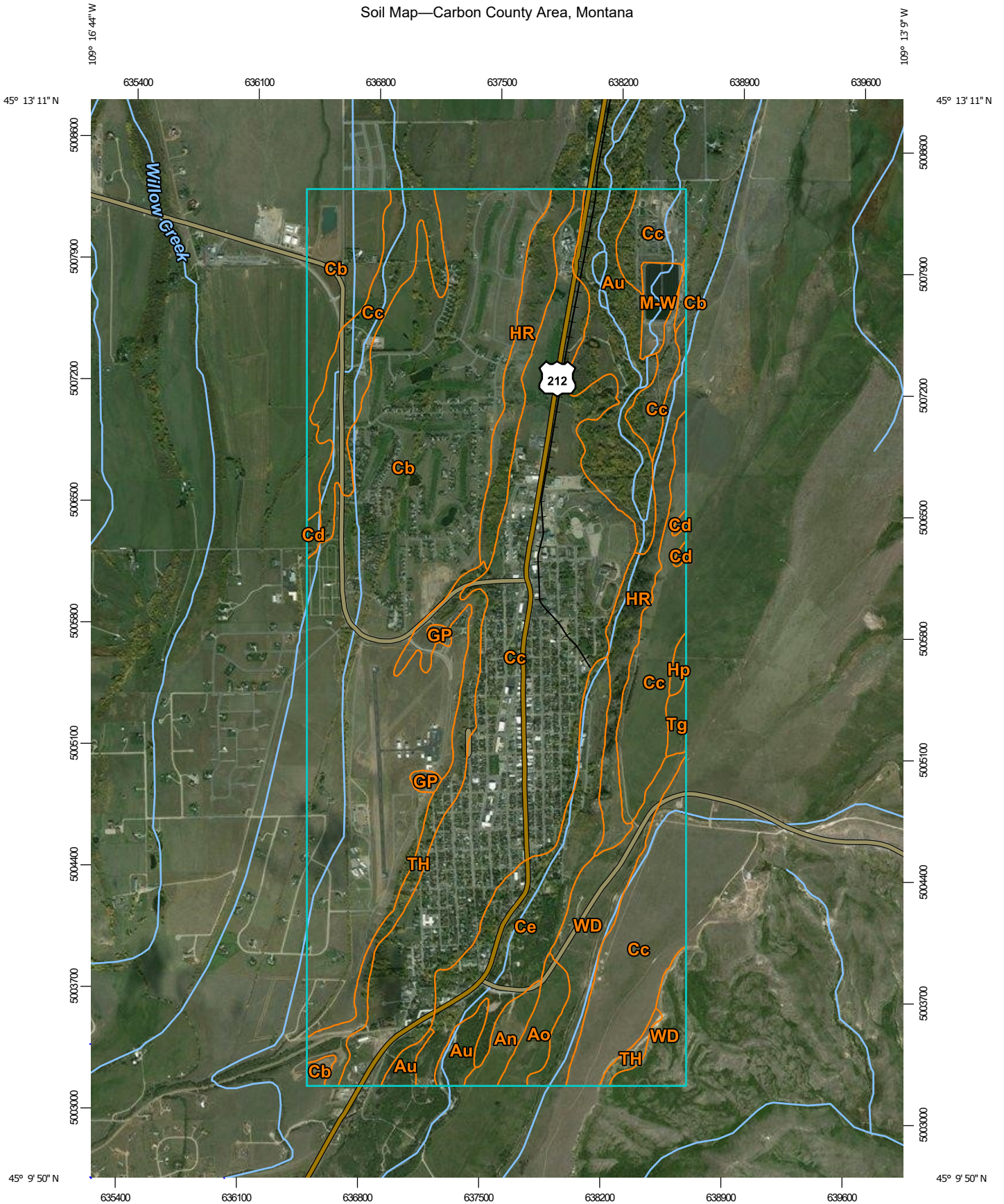
David A. Lopez

2005

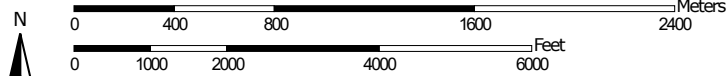
Maps may be obtained from: Publications Office
Montana Bureau of Mines and Geology
1300 West Park Street
Butte, Montana 59701-8997
Phone: (406) 496-4167
Fax: (406) 496-4451
http://www.mbrmg.mtech.edu



Soil Map—Carbon County Area, Montana



Map Scale: 1:30,200 if printed on A portrait (8.5" x 11") sheet.



Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 12N WGS84



MAP LEGEND

Area of Interest (AOI)

 Area of Interest (AOI)

Soils

 Soil Map Unit Polygons

 Soil Map Unit Lines

 Soil Map Unit Points

Special Point Features



Blowout



Borrow Pit



Clay Spot



Closed Depression



Gravel Pit



Gravelly Spot



Landfill



Lava Flow



Marsh or swamp



Mine or Quarry



Miscellaneous Water



Perennial Water



Rock Outcrop



Saline Spot



Sandy Spot



Severely Eroded Spot



Sinkhole



Slide or Slip



Sodic Spot



Spoil Area



Stony Spot



Very Stony Spot



Wet Spot



Other



Special Line Features

Water Features



Streams and Canals

Transportation



Rails



Interstate Highways



US Routes



Major Roads



Local Roads

Background



Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service

Web Soil Survey URL:

Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Carbon County Area, Montana

Survey Area Data: Version 15, Sep 16, 2019

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

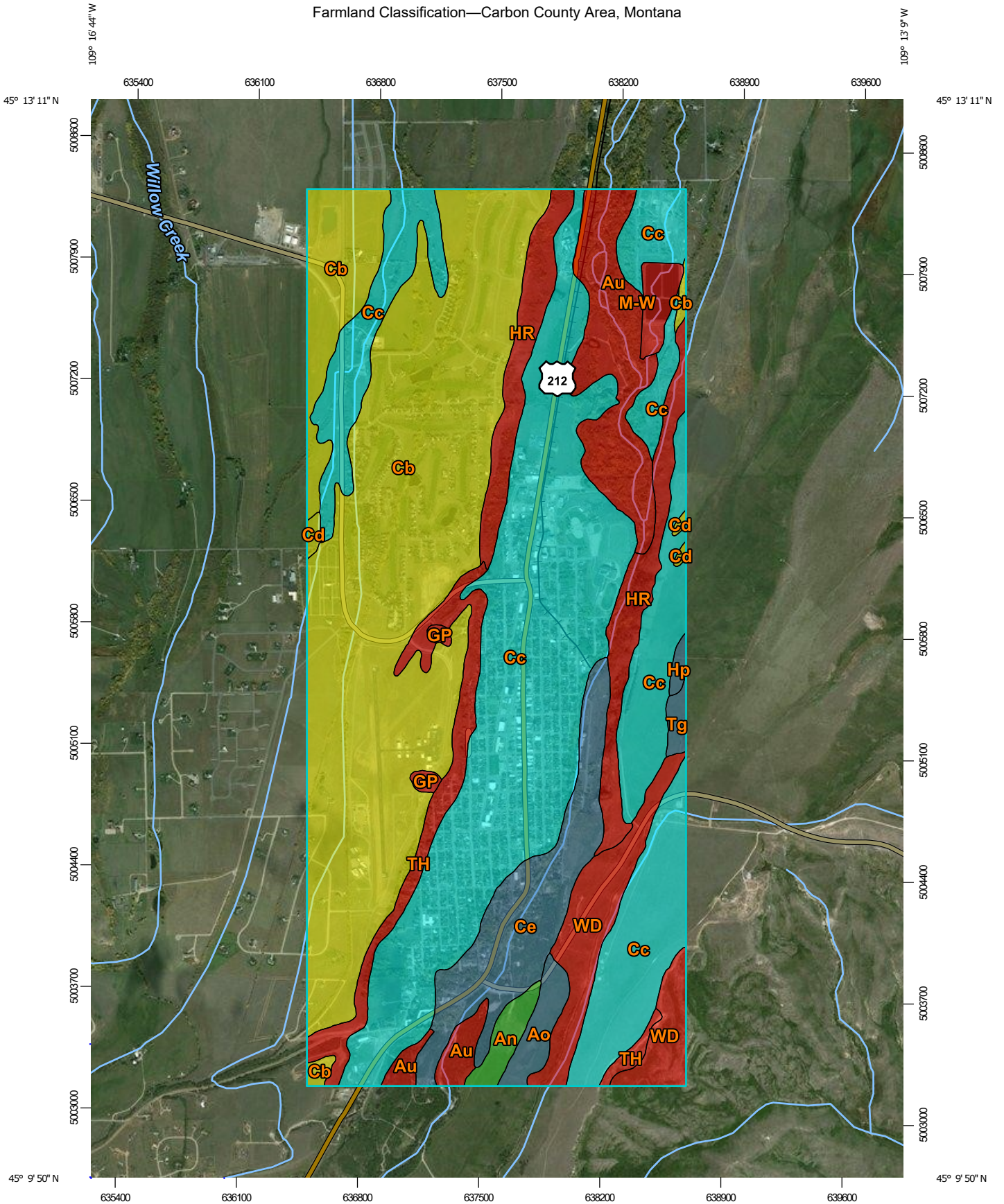
Date(s) aerial images were photographed: Apr 26, 2011—Oct 25, 2016

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

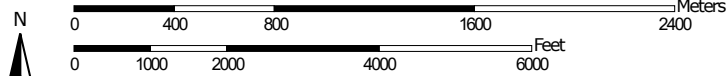
Map Unit Legend

| Map Unit Symbol | Map Unit Name | Acres in AOI | Percent of AOI |
|------------------------------------|---|----------------|----------------|
| An | Adel silty clay loam, 0 to 4 percent slopes | 23.5 | 0.8% |
| Ao | Adel silty clay loam, 4 to 8 percent slopes | 30.4 | 1.1% |
| Au | Alluvial land | 173.9 | 6.2% |
| Cb | Charlos loam, 0 to 2 percent slopes | 946.4 | 33.7% |
| Cc | Charlos loam, 2 to 8 percent slopes | 1,032.7 | 36.8% |
| Cd | Charlos loam, wet, 0 to 2 percent slopes | 7.0 | 0.2% |
| Ce | Charlos stony loam, 0 to 4 percent slopes | 170.7 | 6.1% |
| GP | Gravel pits | 7.3 | 0.3% |
| Hp | Heath clay loam, 8 to 15 percent slopes | 5.7 | 0.2% |
| HR | Heath-Bynum association, steep | 152.5 | 5.4% |
| M-W | Miscellaneous water | 22.6 | 0.8% |
| Tg | Thiel cobbly clay loam, 4 to 8 percent slopes | 9.8 | 0.3% |
| TH | Thiel-Bynum association, steep | 95.1 | 3.4% |
| WD | Wayden-Castner association, steep | 128.9 | 4.6% |
| Totals for Area of Interest | | 2,806.7 | 100.0% |

Farmland Classification—Carbon County Area, Montana



Map Scale: 1:30,200 if printed on A portrait (8.5" x 11") sheet.



Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 12N WGS84




Natural Resources Conservation Service

Web Soil Survey National Cooperative Soil Survey

1/29/2020 Page 1 of 5









MAP LEGEND








Area of Interest (AOI)






-  Area of Interest (AOI)








Soils



Soil Rating Polygons

-  Not prime farmland
-  All areas are prime farmland
-  Prime farmland if drained
-  Prime farmland if protected from flooding or not frequently flooded during the growing season
-  Prime farmland if irrigated
-  Prime farmland if drained and either protected from flooding or not frequently flooded during the growing season
-  Prime farmland if irrigated and drained
-  Prime farmland if irrigated and either protected from flooding or not frequently flooded during the growing season









-  Prime farmland if subsoiled, completely removing the root inhibiting soil layer
-  Prime farmland if irrigated and the product of I (soil erodibility) x C (climate factor) does not exceed 60
-  Prime farmland if irrigated and reclaimed of excess salts and sodium
-  Farmland of statewide importance
-  Farmland of statewide importance, if drained
-  Farmland of statewide importance, if protected from flooding or not frequently flooded during the growing season
-  Farmland of statewide importance, if irrigated

-  Farmland of statewide importance, if drained and either protected from flooding or not frequently flooded during the growing season
-  Farmland of statewide importance, if irrigated and drained
-  Farmland of statewide importance, if irrigated and either protected from flooding or not frequently flooded during the growing season
-  Farmland of statewide importance, if subsoiled, completely removing the root inhibiting soil layer
-  Farmland of statewide importance, if irrigated and the product of I (soil erodibility) x C (climate factor) does not exceed 60




































-  Farmland of statewide importance, if irrigated and reclaimed of excess salts and sodium
-  Farmland of statewide importance, if drained or either protected from flooding or not frequently flooded during the growing season
-  Farmland of statewide importance, if warm enough, and either drained or either protected from flooding or not frequently flooded during the growing season
-  Farmland of statewide importance, if warm enough
-  Farmland of statewide importance, if thawed
-  Farmland of local importance
-  Farmland of local importance, if irrigated

-  Farmland of unique importance
-  Not rated or not available

Soil Rating Lines

-  Not prime farmland
-  All areas are prime farmland
-  Prime farmland if drained
-  Prime farmland if protected from flooding or not frequently flooded during the growing season
-  Prime farmland if irrigated
-  Prime farmland if drained and either protected from flooding or not frequently flooded during the growing season
-  Prime farmland if irrigated and drained
-  Prime farmland if irrigated and either protected from flooding or not frequently flooded during the growing season

Farmland Classification—Carbon County Area, Montana

| | | | | | | | | | |
|---|--|---|---|---|--|---|--|---|--|
|  | Prime farmland if subsoiled, completely removing the root inhibiting soil layer |  | Farmland of statewide importance, if drained and either protected from flooding or not frequently flooded during the growing season |  | Farmland of statewide importance, if irrigated and reclaimed of excess salts and sodium |  | Farmland of unique importance |  | Prime farmland if subsoiled, completely removing the root inhibiting soil layer |
|  | Prime farmland if irrigated and the product of I (soil erodibility) x C (climate factor) does not exceed 60 |  | Farmland of statewide importance, if irrigated and drained |  | Farmland of statewide importance, if drained or either protected from flooding or not frequently flooded during the growing season | Soil Rating Points | |  | Prime farmland if irrigated and the product of I (soil erodibility) x C (climate factor) does not exceed 60 |
|  | Prime farmland if irrigated and reclaimed of excess salts and sodium |  | Farmland of statewide importance, if irrigated and either protected from flooding or not frequently flooded during the growing season |  | Farmland of statewide importance, if warm enough, and either drained or either protected from flooding or not frequently flooded during the growing season |  | Not prime farmland |  | Prime farmland if irrigated and reclaimed of excess salts and sodium |
|  | Farmland of statewide importance | | | | |  | Prime farmland if drained |  | Farmland of statewide importance |
|  | Farmland of statewide importance, if drained |  | Farmland of statewide importance, if subsoiled, completely removing the root inhibiting soil layer | | |  | Prime farmland if protected from flooding or not frequently flooded during the growing season |  | Farmland of statewide importance, if drained |
|  | Farmland of statewide importance, if protected from flooding or not frequently flooded during the growing season |  | Farmland of statewide importance, if irrigated and the product of I (soil erodibility) x C (climate factor) does not exceed 60 |  | Farmland of statewide importance, if warm enough |  | Prime farmland if irrigated |  | Farmland of statewide importance, if protected from flooding or not frequently flooded during the growing season |
|  | Farmland of statewide importance, if irrigated | | |  | Farmland of statewide importance, if thawed |  | Prime farmland if drained and either protected from flooding or not frequently flooded during the growing season |  | Farmland of statewide importance, if protected from flooding or not frequently flooded during the growing season |
| | | | |  | Farmland of local importance |  | Prime farmland if irrigated and drained |  | Farmland of statewide importance, if irrigated |
| | | | |  | Farmland of local importance, if irrigated |  | Prime farmland if irrigated and either protected from flooding or not frequently flooded during the growing season | | |
| | | | | | | | | | |

Farmland Classification—Carbon County Area, Montana

| | | | |
|--|--|---|---|
| <p> Farmland of statewide importance, if drained and either protected from flooding or not frequently flooded during the growing season</p> <p> Farmland of statewide importance, if irrigated and drained</p> <p> Farmland of statewide importance, if irrigated and either protected from flooding or not frequently flooded during the growing season</p> <p> Farmland of statewide importance, if subsoiled, completely removing the root inhibiting soil layer</p> <p> Farmland of statewide importance, if irrigated and the product of I (soil erodibility) x C (climate factor) does not exceed 60</p> | <p> Farmland of statewide importance, if irrigated and reclaimed of excess salts and sodium</p> <p> Farmland of statewide importance, if drained or either protected from flooding or not frequently flooded during the growing season</p> <p> Farmland of statewide importance, if warm enough, and either drained or either protected from flooding or not frequently flooded during the growing season</p> <p> Farmland of statewide importance, if warm enough</p> <p> Farmland of statewide importance, if thawed</p> <p> Farmland of local importance</p> <p> Farmland of local importance, if irrigated</p> | <p> Farmland of unique importance</p> <p> Not rated or not available</p> <p>Water Features</p> <p> Streams and Canals</p> <p>Transportation</p> <p> Rails</p> <p> Interstate Highways</p> <p> US Routes</p> <p> Major Roads</p> <p> Local Roads</p> <p>Background</p> <p> Aerial Photography</p> | <p>The soil surveys that comprise your AOI were mapped at 1:24,000.</p> <p>Please rely on the bar scale on each map sheet for map measurements.</p> <p>Source of Map: Natural Resources Conservation Service Web Soil Survey URL: Coordinate System: Web Mercator (EPSG:3857)</p> <p>Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.</p> <p>This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.</p> <p>Soil Survey Area: Carbon County Area, Montana Survey Area Data: Version 15, Sep 16, 2019</p> <p>Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.</p> <p>Date(s) aerial images were photographed: Apr 26, 2011—Oct 25, 2016</p> <p>The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.</p> |
|--|--|---|---|

Farmland Classification

| Map unit symbol | Map unit name | Rating | Acres in AOI | Percent of AOI |
|------------------------------------|---|----------------------------------|----------------|----------------|
| An | Adel silty clay loam, 0 to 4 percent slopes | All areas are prime farmland | 23.5 | 0.8% |
| Ao | Adel silty clay loam, 4 to 8 percent slopes | Farmland of local importance | 30.4 | 1.1% |
| Au | Alluvial land | Not prime farmland | 173.9 | 6.2% |
| Cb | Charlos loam, 0 to 2 percent slopes | Prime farmland if irrigated | 946.4 | 33.7% |
| Cc | Charlos loam, 2 to 8 percent slopes | Farmland of statewide importance | 1,032.7 | 36.8% |
| Cd | Charlos loam, wet, 0 to 2 percent slopes | Prime farmland if irrigated | 7.0 | 0.2% |
| Ce | Charlos stony loam, 0 to 4 percent slopes | Farmland of local importance | 170.7 | 6.1% |
| GP | Gravel pits | Not prime farmland | 7.3 | 0.3% |
| Hp | Heath clay loam, 8 to 15 percent slopes | Farmland of local importance | 5.7 | 0.2% |
| HR | Heath-Bynum association, steep | Not prime farmland | 152.5 | 5.4% |
| M-W | Miscellaneous water | Not prime farmland | 22.6 | 0.8% |
| Tg | Thiel cobbly clay loam, 4 to 8 percent slopes | Farmland of local importance | 9.8 | 0.3% |
| TH | Thiel-Bynum association, steep | Not prime farmland | 95.1 | 3.4% |
| WD | Wayden-Castner association, steep | Not prime farmland | 128.9 | 4.6% |
| Totals for Area of Interest | | | 2,806.7 | 100.0% |

Description

Farmland classification identifies map units as prime farmland, farmland of statewide importance, farmland of local importance, or unique farmland. It identifies the location and extent of the soils that are best suited to food, feed, fiber, forage, and oilseed crops. NRCS policy and procedures on prime and unique farmlands are published in the "Federal Register," Vol. 43, No. 21, January 31, 1978.

Rating Options

Aggregation Method: No Aggregation Necessary

Tie-break Rule: Lower



Engineering Properties

This table gives the engineering classifications and the range of engineering properties for the layers of each soil in the survey area.

Hydrologic soil group is a group of soils having similar runoff potential under similar storm and cover conditions. The criteria for determining Hydrologic soil group is found in the National Engineering Handbook, Chapter 7 issued May 2007(<http://directives.sc.egov.usda.gov/OpenNonWebContent.aspx?content=17757.wba>). Listing HSGs by soil map unit component and not by soil series is a new concept for the engineers. Past engineering references contained lists of HSGs by soil series. Soil series are continually being defined and redefined, and the list of soil series names changes so frequently as to make the task of maintaining a single national list virtually impossible. Therefore, the criteria is now used to calculate the HSG using the component soil properties and no such national series lists will be maintained. All such references are obsolete and their use should be discontinued. Soil properties that influence runoff potential are those that influence the minimum rate of infiltration for a bare soil after prolonged wetting and when not frozen. These properties are depth to a seasonal high water table, saturated hydraulic conductivity after prolonged wetting, and depth to a layer with a very slow water transmission rate. Changes in soil properties caused by land management or climate changes also cause the hydrologic soil group to change. The influence of ground cover is treated independently. There are four hydrologic soil groups, A, B, C, and D, and three dual groups, A/D, B/D, and C/D. In the dual groups, the first letter is for drained areas and the second letter is for undrained areas.

The four hydrologic soil groups are described in the following paragraphs:

Group A. Soils having a high infiltration rate (low runoff potential) when thoroughly wet. These consist mainly of deep, well drained to excessively drained sands or gravelly sands. These soils have a high rate of water transmission.

Group B. Soils having a moderate infiltration rate when thoroughly wet. These consist chiefly of moderately deep or deep, moderately well drained or well drained soils that have moderately fine texture to moderately coarse texture. These soils have a moderate rate of water transmission.

Group C. Soils having a slow infiltration rate when thoroughly wet. These consist chiefly of soils having a layer that impedes the downward movement of water or soils of moderately fine texture or fine texture. These soils have a slow rate of water transmission.

Group D. Soils having a very slow infiltration rate (high runoff potential) when thoroughly wet. These consist chiefly of clays that have a high shrink-swell potential, soils that have a high water table, soils that have a claypan or clay layer at or near the surface, and soils that are shallow over nearly impervious material. These soils have a very slow rate of water transmission.

Depth to the upper and lower boundaries of each layer is indicated.

Texture is given in the standard terms used by the U.S. Department of Agriculture. These terms are defined according to percentages of sand, silt, and clay in the fraction of the soil that is less than 2 millimeters in diameter. "Loam," for example, is soil that is 7 to 27 percent clay, 28 to 50 percent silt, and less than 52 percent sand. If the content of particles coarser than sand is 15 percent or more, an appropriate modifier is added, for example, "gravelly."

Classification of the soils is determined according to the Unified soil classification system (ASTM, 2005) and the system adopted by the American Association of State Highway and Transportation Officials (AASHTO, 2004).

The Unified system classifies soils according to properties that affect their use as construction material. Soils are classified according to particle-size distribution of the fraction less than 3 inches in diameter and according to plasticity index, liquid limit, and organic matter content. Sandy and gravelly soils are identified as GW, GP, GM, GC, SW, SP, SM, and SC; silty and clayey soils as ML, CL, OL, MH, CH, and OH; and highly organic soils as PT. Soils exhibiting engineering properties of two groups can have a dual classification, for example, CL-ML.

The AASHTO system classifies soils according to those properties that affect roadway construction and maintenance. In this system, the fraction of a mineral soil that is less than 3 inches in diameter is classified in one of seven groups from A-1 through A-7 on the basis of particle-size distribution, liquid limit, and plasticity index. Soils in group A-1 are coarse grained and low in content of fines (silt and clay). At the other extreme, soils in group A-7 are fine grained. Highly organic soils are classified in group A-8 on the basis of visual inspection.

If laboratory data are available, the A-1, A-2, and A-7 groups are further classified as A-1-a, A-1-b, A-2-4, A-2-5, A-2-6, A-2-7, A-7-5, or A-7-6. As an additional refinement, the suitability of a soil as subgrade material can be indicated by a group index number. Group index numbers range from 0 for the best subgrade material to 20 or higher for the poorest.

Percentage of rock fragments larger than 10 inches in diameter and 3 to 10 inches in diameter are indicated as a percentage of the total soil on a dry-weight basis. The percentages are estimates determined mainly by converting volume percentage in the field to weight percentage. Three values are provided to identify the expected Low (L), Representative Value (R), and High (H).

Percentage (of soil particles) passing designated sieves is the percentage of the soil fraction less than 3 inches in diameter based on an oven-dry weight. The sieves, numbers 4, 10, 40, and 200 (USA Standard Series), have openings of 4.76, 2.00, 0.420, and 0.074 millimeters, respectively. Estimates are based on laboratory tests of soils sampled in the survey area and in nearby areas and on estimates made in the field. Three values are provided to identify the expected Low (L), Representative Value (R), and High (H).

Liquid limit and plasticity index (Atterberg limits) indicate the plasticity characteristics of a soil. The estimates are based on test data from the survey area or from nearby areas and on field examination. Three values are provided to identify the expected Low (L), Representative Value (R), and High (H).

References:

American Association of State Highway and Transportation Officials (AASHTO). 2004. Standard specifications for transportation materials and methods of sampling and testing. 24th edition.

American Society for Testing and Materials (ASTM). 2005. Standard classification of soils for engineering purposes. ASTM Standard D2487-00.



Report—Engineering Properties

Absence of an entry indicates that the data were not estimated. The asterisk "*" denotes the representative texture; other possible textures follow the dash. The criteria for determining the hydrologic soil group for individual soil components is found in the National Engineering Handbook, Chapter 7 issued May 2007(<http://directives.sc.egov.usda.gov/OpenNonWebContent.aspx?content=17757.wba>). Three values are provided to identify the expected Low (L), Representative Value (R), and High (H).

| Engineering Properties—Carbon County Area, Montana | | | | | | | | | | | | | | |
|--|------------------|------------------|-----------|---|-------------------------|----------|---------------|--------------|----------------------------------|--------------|--------------|--------------|--------------|------------------|
| Map unit symbol and soil name | Pct. of map unit | Hydrologic group | Depth | USDA texture | Classification | | Pct Fragments | | Percentage passing sieve number— | | | | Liquid limit | Plasticity index |
| | | | | | Unified | AASHTO | >10 inches | 3-10 inches | 4 | 10 | 40 | 200 | | |
| | | | <i>In</i> | | | | <i>L-R-H</i> | <i>L-R-H</i> | <i>L-R-H</i> | <i>L-R-H</i> | <i>L-R-H</i> | <i>L-R-H</i> | <i>L-R-H</i> | |
| An—Adel silty clay loam, 0 to 4 percent slopes | | | | | | | | | | | | | | |
| Adel | 95 | B | 0-18 | Silty clay loam | CL, CL-ML | A-4, A-6 | 0- 0- 0 | 0- 3- 5 | 85-93-100 | 80-90-100 | 75-88-100 | 70-80-90 | 25-30-35 | 5-10-15 |
| | | | 18-31 | Loam, clay loam | CL, CL-ML | A-4, A-6 | 0- 0- 0 | 0- 3- 5 | 85-93-100 | 80-90-100 | 65-80-95 | 55-68-80 | 25-30-35 | 5-10-15 |
| | | | 31-60 | Clay loam, channery loam, gravelly loam | SC-SM, CL, CL-ML, GC-GM | A-4, A-6 | 0- 0- 0 | 0- 5- 10 | 70-85-100 | 60-75-90 | 55-70-85 | 40-58-75 | 25-30-35 | 5-10-15 |
| Ao—Adel silty clay loam, 4 to 8 percent slopes | | | | | | | | | | | | | | |
| Adel | 85 | B | 0-18 | Silty clay loam | CL, CL-ML | A-4, A-6 | 0- 0- 0 | 0- 3- 5 | 85-93-100 | 80-90-100 | 75-88-100 | 70-80-90 | 25-30-35 | 5-10-15 |
| | | | 18-31 | Loam, clay loam | CL, CL-ML | A-4, A-6 | 0- 0- 0 | 0- 3- 5 | 85-93-100 | 80-90-100 | 65-80-95 | 55-68-80 | 25-30-35 | 5-10-15 |
| | | | 31-60 | Clay loam, channery loam, gravelly loam | CL, CL-ML, GC-GM, SC-SM | A-4, A-6 | 0- 0- 0 | 0- 5- 10 | 70-85-100 | 60-75-90 | 55-70-85 | 40-58-75 | 25-30-35 | 5-10-15 |



| Engineering Properties--Carbon County Area, Montana | | | | | | | | | | | | | | |
|---|------------------|------------------|-----------|--|----------------|---------------|---------------|--------------|-----------------------------------|--------------|--------------|--------------|--------------|------------------|
| Map unit symbol and soil name | Pct. of map unit | Hydrologic group | Depth | USDA texture | Classification | | Pct Fragments | | Percentage passing sieve number-- | | | | Liquid limit | Plasticity index |
| | | | | | Unified | AASHTO | >10 inches | 3-10 inches | 4 | 10 | 40 | 200 | | |
| | | | <i>In</i> | | | | <i>L-R-H</i> | <i>L-R-H</i> | <i>L-R-H</i> | <i>L-R-H</i> | <i>L-R-H</i> | <i>L-R-H</i> | <i>L-R-H</i> | <i>L-R-H</i> |
| Au--Alluvial land | | | | | | | | | | | | | | |
| Alluvial land | 80 | A/D | 0-8 | Gravelly sandy loam | SM | A-1, A-2 | 0- 0- 0 | 0- 8- 15 | 65-73-80 | 60-68-75 | 40-50-60 | 20-28-35 | 20-23-25 | NP-3 -5 |
| | | | 8-60 | Very gravelly loamy coarse sand, extremely gravelly sand, very gravelly sand | GP, GP-GM | A-1 | 0- 0- 0 | 15-23-30 | 25-40-55 | 15-30-45 | 5-15- 25 | 0- 5- 10 | — | NP |
| Lallie | 20 | C/D | 0-2 | Silty clay | CH, CL | A-7 | 0- 0- 0 | 0- 0- 0 | 100-100-100 | 95-98-100 | 90-95-100 | 85-93-100 | 40-68-95 | 20-40-60 |
| | | | 2-60 | Silty clay loam, silty clay | CH, CL | A-7 | 0- 0- 0 | 0- 0- 0 | 100-100-100 | 95-98-100 | 90-95-100 | 85-93-100 | 40-68-95 | 20-40-60 |
| Cb--Charlos loam, 0 to 2 percent slopes | | | | | | | | | | | | | | |
| Charlos | 95 | B | 0-6 | Loam | CL-ML, ML | A-4 | 0- 0- 0 | 0- 3- 5 | 90-95-100 | 90-93-95 | 85-90-95 | 60-68-75 | 20-25-30 | NP-5 -10 |
| | | | 6-17 | Clay loam, sandy clay loam, coarse sandy loam | CL, CL-ML | A-4, A-6 | 0- 0- 0 | 0- 3- 5 | 90-95-100 | 90-93-95 | 80-88-95 | 50-63-75 | 25-30-35 | 5-10-15 |
| | | | 17-30 | Very gravelly clay loam, very gravelly sandy clay loam, very gravelly sandy loam | GC, GC-GM | A-2, A-4, A-6 | 0- 0- 0 | 15-23-30 | 40-53-65 | 35-48-60 | 35-45-55 | 20-33-45 | 25-30-35 | 5-10-15 |
| | | | 30-60 | Very gravelly sand, very gravelly loamy sand | GM, GP, SM, SP | A-1 | 0- 0- 0 | 15-23-30 | 40-53-65 | 35-48-60 | 25-33-40 | 0- 8- 15 | — | NP |

| Engineering Properties--Carbon County Area, Montana | | | | | | | | | | | | | | |
|---|------------------|------------------|-----------|--|----------------------|---------------|---------------|--------------|-----------------------------------|--------------|--------------|--------------|--------------|------------------|
| Map unit symbol and soil name | Pct. of map unit | Hydrologic group | Depth | USDA texture | Classification | | Pct Fragments | | Percentage passing sieve number-- | | | | Liquid limit | Plasticity index |
| | | | | | Unified | AASHTO | >10 inches | 3-10 inches | 4 | 10 | 40 | 200 | | |
| | | | <i>In</i> | | | | <i>L-R-H</i> | <i>L-R-H</i> | <i>L-R-H</i> | <i>L-R-H</i> | <i>L-R-H</i> | <i>L-R-H</i> | <i>L-R-H</i> | <i>L-R-H</i> |
| Cc--Charlos loam, 2 to 8 percent slopes | | | | | | | | | | | | | | |
| Charlos | 85 | B | 0-6 | Loam | CL-ML, ML | A-4 | 0- 0- 0 | 0- 3- 5 | 90-95-100 | 90-93-95 | 85-90-95 | 60-68-75 | 20-25-30 | NP-5-10 |
| | | | 6-17 | Clay loam, sandy clay loam, coarse sandy loam | CL, CL-ML | A-4, A-6 | 0- 0- 0 | 0- 3- 5 | 90-95-100 | 90-93-95 | 80-88-95 | 50-63-75 | 25-30-35 | 5-10-15 |
| | | | 17-30 | Very gravelly clay loam, very gravelly sandy clay loam, very gravelly sandy loam | GC, GC-GM | A-2, A-4, A-6 | 0- 0- 0 | 15-23-30 | 40-53-65 | 35-48-60 | 35-45-55 | 20-33-45 | 25-30-35 | 5-10-15 |
| | | | 30-60 | Very gravelly sand, very gravelly loamy sand | GM, GP, SM, SP | A-1 | 0- 0- 0 | 15-23-30 | 40-53-65 | 35-48-60 | 25-33-40 | 0- 8- 15 | — | NP |
| Cd--Charlos loam, wet, 0 to 2 percent slopes | | | | | | | | | | | | | | |
| Charlos, wet | 85 | B | 0-6 | Loam | CL-ML, ML | A-4 | 0- 0- 0 | 0- 3- 5 | 90-95-100 | 90-93-95 | 85-90-95 | 60-68-75 | 20-25-30 | NP-5-10 |
| | | | 6-17 | Clay loam, sandy clay loam | CL, CL-ML | A-4, A-6 | 0- 0- 0 | 0- 3- 5 | 90-95-100 | 90-93-95 | 80-88-95 | 50-63-75 | 25-30-35 | 5-10-15 |
| | | | 17-30 | Very gravelly clay loam, very gravelly sandy clay loam | GC, GC-GM | A-2, A-4, A-6 | 0- 0- 0 | 15-25-35 | 50-58-65 | 45-53-60 | 35-45-55 | 20-33-45 | 25-30-35 | 5-10-15 |
| | | | 30-60 | Very gravelly sand | GP, GP-GM, SP, SP-SM | A-1 | 0- 0- 0 | 15-25-35 | 50-58-65 | 45-53-60 | 25-33-40 | 0- 5- 10 | — | NP |

| Engineering Properties--Carbon County Area, Montana | | | | | | | | | | | | | | |
|---|------------------|------------------|-----------|--|----------------------|---------------|---------------|--------------|-----------------------------------|--------------|--------------|--------------|--------------|------------------|
| Map unit symbol and soil name | Pct. of map unit | Hydrologic group | Depth | USDA texture | Classification | | Pct Fragments | | Percentage passing sieve number-- | | | | Liquid limit | Plasticity index |
| | | | | | Unified | AASHTO | >10 inches | 3-10 inches | 4 | 10 | 40 | 200 | | |
| | | | <i>In</i> | | | | <i>L-R-H</i> | <i>L-R-H</i> | <i>L-R-H</i> | <i>L-R-H</i> | <i>L-R-H</i> | <i>L-R-H</i> | <i>L-R-H</i> | <i>L-R-H</i> |
| Ce---Charlos stony loam, 0 to 4 percent slopes | | | | | | | | | | | | | | |
| Charlos | 85 | B | 0-6 | Stony loam | CL-ML, ML, SC-SM, SM | A-4 | 0- 0- 0 | 15-23-30 | 75-85-95 | 65-75-85 | 55-68-80 | 40-53-65 | 20-25-30 | NP-5-10 |
| | | | 6-17 | Clay loam, sandy clay loam, coarse sandy loam | CL, CL-ML | A-4, A-6 | 0- 0- 0 | 0- 3- 5 | 90-95-100 | 90-93-95 | 80-88-95 | 50-63-75 | 25-30-35 | 5-10-15 |
| | | | 17-30 | Very gravelly clay loam, very gravelly sandy clay loam, very gravelly sandy loam | GC, GC-GM | A-2, A-4, A-6 | 0- 0- 0 | 15-23-30 | 40-53-65 | 35-48-60 | 35-45-55 | 20-33-45 | 25-30-35 | 5-10-15 |
| | | | 30-60 | Very gravelly sand, very gravelly loamy sand | GM, GP, SM, SP | A-1 | 0- 0- 0 | 15-23-30 | 40-53-65 | 35-48-60 | 25-33-40 | 0- 8- 15 | — | NP |
| Hp---Heath clay loam, 8 to 15 percent slopes | | | | | | | | | | | | | | |
| Heath | 90 | C | 0-3 | Clay loam | CL, CL-ML | A-6, A-4 | 0- 0- 0 | 0- 3- 5 | 85-93-100 | 80-90-100 | 75-85-95 | 70-80-90 | 25-30-35 | 5-10-15 |
| | | | 3-16 | Clay, clay loam, silty clay | CH, CL | A-7 | 0- 0- 0 | 0- 5- 10 | 90-95-100 | 85-93-100 | 70-83-95 | 65-78-90 | 40-48-55 | 15-23-30 |
| | | | 16-62 | Clay, clay loam, silty clay | CL | A-6, A-7 | 0- 0- 0 | 0- 5- 10 | 90-95-100 | 85-93-100 | 70-83-95 | 65-78-90 | 35-43-50 | 15-20-25 |



| Engineering Properties--Carbon County Area, Montana | | | | | | | | | | | | | | |
|---|------------------|------------------|-----------|--|----------------|---------------|---------------|--------------|-----------------------------------|--------------|--------------|--------------|--------------|------------------|
| Map unit symbol and soil name | Pct. of map unit | Hydrologic group | Depth | USDA texture | Classification | | Pct Fragments | | Percentage passing sieve number-- | | | | Liquid limit | Plasticity index |
| | | | | | Unified | AASHTO | >10 inches | 3-10 inches | 4 | 10 | 40 | 200 | | |
| | | | <i>In</i> | | | | <i>L-R-H</i> | <i>L-R-H</i> | <i>L-R-H</i> | <i>L-R-H</i> | <i>L-R-H</i> | <i>L-R-H</i> | <i>L-R-H</i> | <i>L-R-H</i> |
| HR--Heath-Bynum association, steep | | | | | | | | | | | | | | |
| Heath | 75 | C | 0-3 | Clay loam | CL-ML, CL | A-4, A-6 | 0- 0- 0 | 0- 3- 5 | 85-93-100 | 80-90-100 | 75-85-95 | 70-80-90 | 25-30-35 | 5-10-15 |
| | | | 3-16 | Clay, clay loam, silty clay | CH, CL | A-7 | 0- 0- 0 | 0- 5- 10 | 90-95-100 | 85-93-100 | 70-83-95 | 65-78-90 | 40-48-55 | 15-23-30 |
| | | | 16-32 | Clay, clay loam, silty clay | CL | A-6, A-7 | 0- 0- 0 | 0- 5- 10 | 90-95-100 | 85-93-100 | 70-83-95 | 65-78-90 | 35-43-50 | 15-20-25 |
| Bynum | 20 | C | 0-17 | Sandy clay loam | CL | A-6 | 0- 0- 0 | 0- 5- 10 | 85-93-100 | 80-90-100 | 65-78-90 | 50-63-75 | 30-33-35 | 10-13-15 |
| | | | 17-30 | Silty clay loam, clay loam, loam | CL, CL-ML | A-4, A-6 | 0- 0- 0 | 0- 5- 10 | 85-93-100 | 80-90-100 | 65-78-90 | 50-68-85 | 20-28-35 | 5-10-15 |
| | | | 30-60 | Weathered bedrock | — | — | — | — | — | — | — | — | — | — |
| Tg--Thiel cobbly clay loam, 4 to 8 percent slopes | | | | | | | | | | | | | | |
| Thiel | 95 | B | 0-3 | Cobbly clay loam | CL-ML | A-4 | 0- 0- 0 | 25-30-35 | 80-83-85 | 75-78-80 | 70-73-75 | 50-55-60 | 25-28-30 | 5-8 -10 |
| | | | 3-20 | Very cobbly clay loam, very cobbly sandy clay loam, extremely cobbly clay loam | GC, GC-GM | A-2, A-4, A-6 | 0- 0- 0 | 30-40-50 | 50-63-75 | 40-55-70 | 35-50-65 | 25-38-50 | 25-30-35 | 5-10-15 |
| | | | 20-60 | Very cobbly sand | GP, SP | A-1 | 0- 0- 0 | 10-20-30 | 35-48-60 | 25-38-50 | 15-25-35 | 0- 3- 5 | — | NP |

| Engineering Properties--Carbon County Area, Montana | | | | | | | | | | | | | | |
|---|------------------|------------------|-----------|--|----------------|---------------|---------------|--------------|-----------------------------------|--------------|--------------|--------------|--------------|------------------|
| Map unit symbol and soil name | Pct. of map unit | Hydrologic group | Depth | USDA texture | Classification | | Pct Fragments | | Percentage passing sieve number-- | | | | Liquid limit | Plasticity index |
| | | | | | Unified | AASHTO | >10 inches | 3-10 inches | 4 | 10 | 40 | 200 | | |
| | | | <i>In</i> | | | | <i>L-R-H</i> | <i>L-R-H</i> | <i>L-R-H</i> | <i>L-R-H</i> | <i>L-R-H</i> | <i>L-R-H</i> | <i>L-R-H</i> | <i>L-R-H</i> |
| TH--Thiel-Bynum association, steep | | | | | | | | | | | | | | |
| Thiel | 70 | B | 0-3 | Very cobbly clay loam | CL-ML, GC-GM | A-4 | 0- 0- 0 | 30-43-55 | 50-63-75 | 50-60-70 | 45-55-65 | 35-45-55 | 25-28-30 | 5-8 -10 |
| | | | 3-20 | Very cobbly clay loam, very cobbly sandy clay loam, extremely cobbly clay loam | GC, GC-GM | A-2, A-4, A-6 | 0- 0- 0 | 30-40-50 | 50-63-75 | 40-55-70 | 35-50-65 | 25-38-50 | 25-30-35 | 5-10-15 |
| | | | 20-60 | Very cobbly sand | GP, SP | A-1 | 0- 0- 0 | 10-20-30 | 35-48-60 | 25-38-50 | 15-25-35 | 0- 3- 5 | — | NP |
| Bynum | 25 | C | 0-17 | Clay loam | CL | A-6 | 0- 0- 0 | 0- 5- 10 | 85-93-100 | 80-90-100 | 65-78-90 | 50-63-75 | 30-33-35 | 10-13-15 |
| | | | 17-30 | Silty clay loam, clay loam, loam | CL, CL-ML | A-4, A-6 | 0- 0- 0 | 0- 5- 10 | 85-93-100 | 80-90-100 | 65-78-90 | 50-68-85 | 20-28-35 | 5-10-15 |
| | | | 30-60 | Weathered bedrock | — | — | — | — | — | — | — | — | — | — |

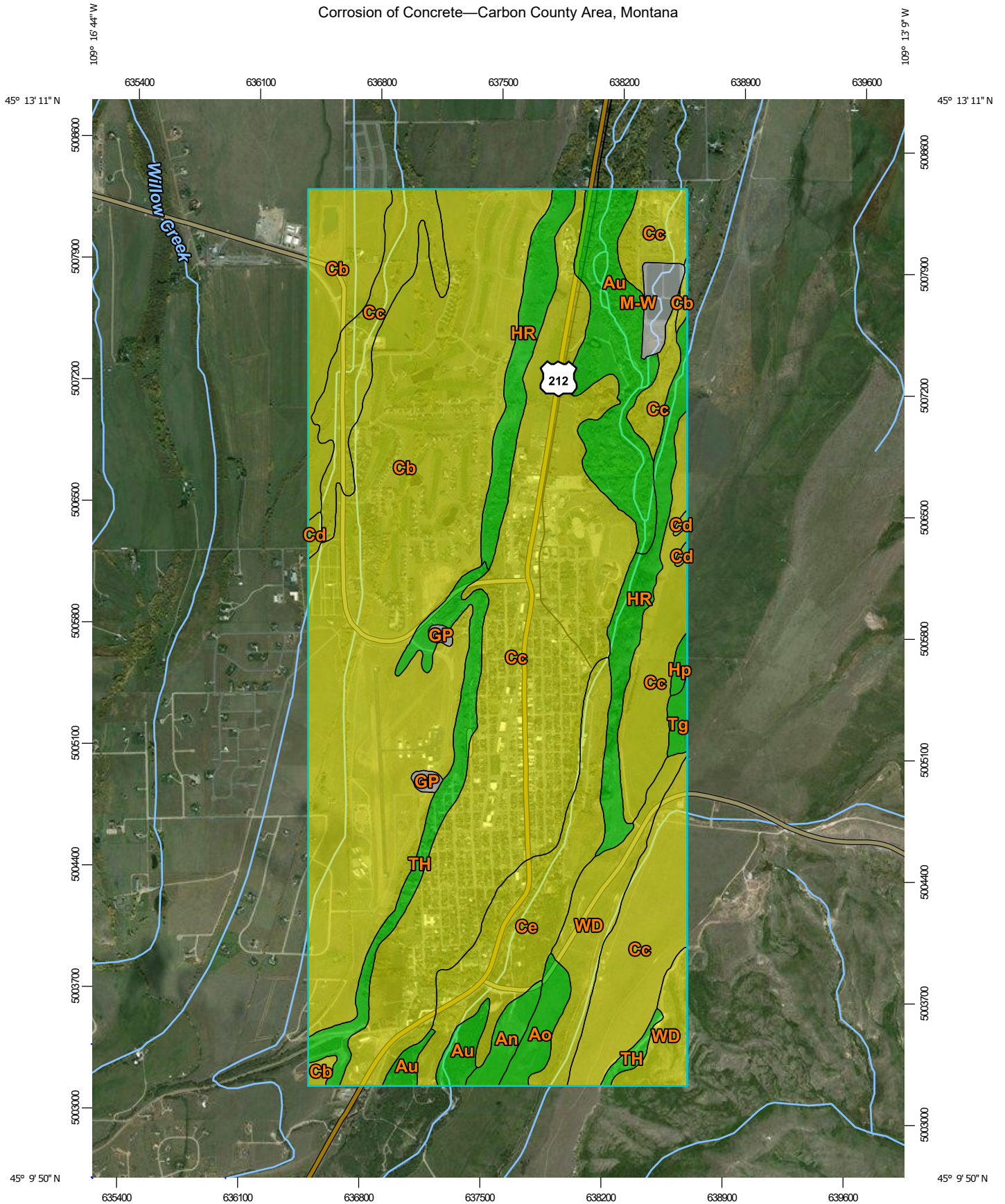


| Engineering Properties--Carbon County Area, Montana | | | | | | | | | | | | | | |
|---|------------------|------------------|-----------|---|-------------------|----------|---------------|--------------|-----------------------------------|--------------|--------------|--------------|--------------|------------------|
| Map unit symbol and soil name | Pct. of map unit | Hydrologic group | Depth | USDA texture | Classification | | Pct Fragments | | Percentage passing sieve number-- | | | | Liquid limit | Plasticity index |
| | | | | | Unified | AASHTO | >10 inches | 3-10 inches | 4 | 10 | 40 | 200 | | |
| | | | <i>In</i> | | | | <i>L-R-H</i> | <i>L-R-H</i> | <i>L-R-H</i> | <i>L-R-H</i> | <i>L-R-H</i> | <i>L-R-H</i> | <i>L-R-H</i> | <i>L-R-H</i> |
| WD--Wayden-Castner association, steep | | | | | | | | | | | | | | |
| Wayden | 70 | D | 0-6 | Clay loam | CL | A-6, A-7 | 0- 0- 0 | 0- 0- 0 | 100-100-100 | 100-100-100 | 90-95-100 | 75-80-85 | 35-40-45 | 15-20-25 |
| | | | 6-14 | Clay loam, silty clay, silty clay loam | CH, CL | A-6, A-7 | 0- 0- 0 | 0- 0- 0 | 100-100-100 | 100-100-100 | 90-95-100 | 80-88-95 | 35-48-60 | 15-25-35 |
| | | | 14-60 | Weathered bedrock | — | — | — | — | — | — | — | — | — | — |
| Castner | 25 | D | 0-8 | Channery loam | CL-ML, GM, ML, SM | A-4 | 0- 0- 0 | 0- 8- 15 | 60-75-90 | 50-65-80 | 40-55-70 | 35-48-60 | 20-25-30 | NP-5-10 |
| | | | 8-18 | Extremely channery loam, very channery sandy loam, very flaggy loam | GC-GM, GM, GP-GM | A-1, A-2 | 0- 0- 0 | 25-33-40 | 25-43-60 | 15-33-50 | 10-25-40 | 5-20-35 | 20-25-30 | NP-5-10 |
| | | | 18-60 | Unweathered bedrock | — | — | — | — | — | — | — | — | — | — |

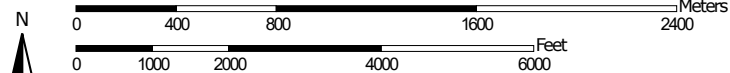
Data Source Information

Soil Survey Area: Carbon County Area, Montana
 Survey Area Data: Version 15, Sep 16, 2019

Corrosion of Concrete—Carbon County Area, Montana



Map Scale: 1:30,200 if printed on A portrait (8.5" x 11") sheet.



Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 12N WGS84























Natural Resources
Conservation Service

Web Soil Survey
National Cooperative Soil Survey

1/29/2020
Page 1 of 4

MAP LEGEND

- Area of Interest (AOI)**
 -  Area of Interest (AOI)
- Background**
 -  Aerial Photography
- Soils**
 - Soil Rating Polygons**
 -  High
 -  Moderate
 -  Low
 -  Not rated or not available
 - Soil Rating Lines**
 -  High
 -  Moderate
 -  Low
 -  Not rated or not available
 - Soil Rating Points**
 -  High
 -  Moderate
 -  Low
 -  Not rated or not available
- Water Features**
 -  Streams and Canals
- Transportation**
 -  Rails
 -  Interstate Highways
 -  US Routes
 -  Major Roads
 -  Local Roads

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
 Web Soil Survey URL:
 Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Carbon County Area, Montana
 Survey Area Data: Version 15, Sep 16, 2019

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Apr 26, 2011—Oct 25, 2016

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Corrosion of Concrete

| Map unit symbol | Map unit name | Rating | Acres in AOI | Percent of AOI |
|------------------------------------|---|----------|----------------|----------------|
| An | Adel silty clay loam, 0 to 4 percent slopes | Low | 23.5 | 0.8% |
| Ao | Adel silty clay loam, 4 to 8 percent slopes | Low | 30.4 | 1.1% |
| Au | Alluvial land | Low | 173.9 | 6.2% |
| Cb | Charlos loam, 0 to 2 percent slopes | Moderate | 946.4 | 33.7% |
| Cc | Charlos loam, 2 to 8 percent slopes | Moderate | 1,032.7 | 36.8% |
| Cd | Charlos loam, wet, 0 to 2 percent slopes | Moderate | 7.0 | 0.2% |
| Ce | Charlos stony loam, 0 to 4 percent slopes | Moderate | 170.7 | 6.1% |
| GP | Gravel pits | | 7.3 | 0.3% |
| Hp | Heath clay loam, 8 to 15 percent slopes | Low | 5.7 | 0.2% |
| HR | Heath-Bynum association, steep | Low | 152.5 | 5.4% |
| M-W | Miscellaneous water | | 22.6 | 0.8% |
| Tg | Thiel cobbly clay loam, 4 to 8 percent slopes | Low | 9.8 | 0.3% |
| TH | Thiel-Bynum association, steep | Low | 95.1 | 3.4% |
| WD | Wayden-Castner association, steep | Moderate | 128.9 | 4.6% |
| Totals for Area of Interest | | | 2,806.7 | 100.0% |

Description

"Risk of corrosion" pertains to potential soil-induced electrochemical or chemical action that corrodes or weakens concrete. The rate of corrosion of concrete is based mainly on the sulfate and sodium content, texture, moisture content, and acidity of the soil. Special site examination and design may be needed if the combination of factors results in a severe hazard of corrosion. The concrete in installations that intersect soil boundaries or soil layers is more susceptible to corrosion than the concrete in installations that are entirely within one kind of soil or within one soil layer.

The risk of corrosion is expressed as "low," "moderate," or "high."

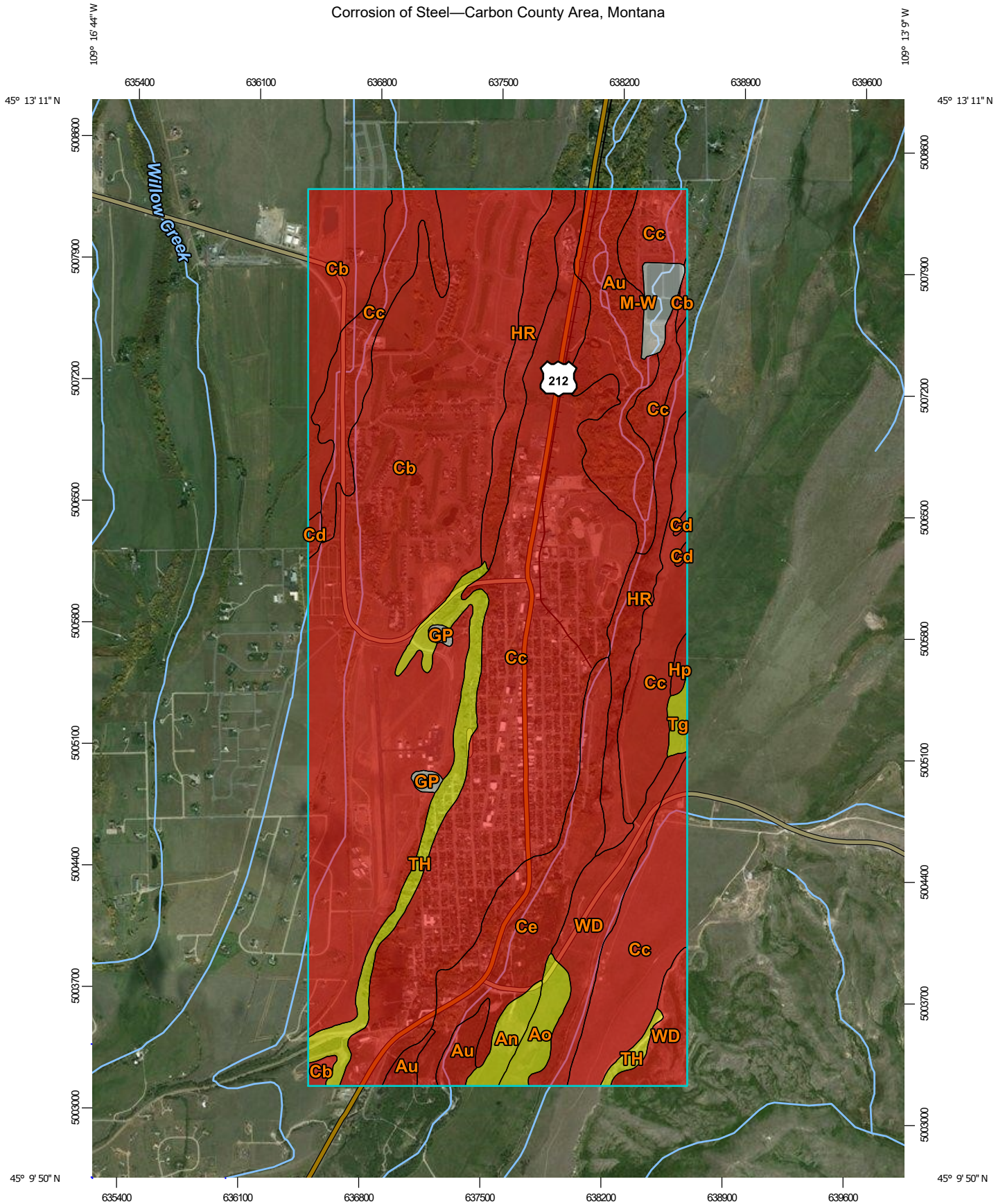
Rating Options

Aggregation Method: Dominant Condition

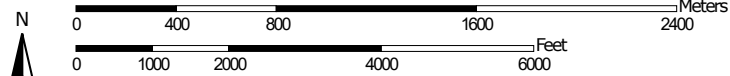
Component Percent Cutoff: None Specified

Tie-break Rule: Higher

Corrosion of Steel—Carbon County Area, Montana



Map Scale: 1:30,200 if printed on A portrait (8.5" x 11") sheet.



Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 12N WGS84























Natural Resources Conservation Service

Web Soil Survey
National Cooperative Soil Survey

1/29/2020
Page 1 of 4

MAP LEGEND

- Area of Interest (AOI)**
 Area of Interest (AOI)
- Background**
 Aerial Photography
- Soils**
- Soil Rating Polygons**
-  High
 -  Moderate
 -  Low
 -  Not rated or not available
- Soil Rating Lines**
-  High
 -  Moderate
 -  Low
 -  Not rated or not available
- Soil Rating Points**
-  High
 -  Moderate
 -  Low
 -  Not rated or not available
- Water Features**
-  Streams and Canals
- Transportation**
-  Rails
 -  Interstate Highways
 -  US Routes
 -  Major Roads
 -  Local Roads

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
 Web Soil Survey URL:
 Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Carbon County Area, Montana
 Survey Area Data: Version 15, Sep 16, 2019

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Apr 26, 2011—Oct 25, 2016

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Corrosion of Steel

| Map unit symbol | Map unit name | Rating | Acres in AOI | Percent of AOI |
|------------------------------------|---|----------|----------------|----------------|
| An | Adel silty clay loam, 0 to 4 percent slopes | Moderate | 23.5 | 0.8% |
| Ao | Adel silty clay loam, 4 to 8 percent slopes | Moderate | 30.4 | 1.1% |
| Au | Alluvial land | High | 173.9 | 6.2% |
| Cb | Charlos loam, 0 to 2 percent slopes | High | 946.4 | 33.7% |
| Cc | Charlos loam, 2 to 8 percent slopes | High | 1,032.7 | 36.8% |
| Cd | Charlos loam, wet, 0 to 2 percent slopes | High | 7.0 | 0.2% |
| Ce | Charlos stony loam, 0 to 4 percent slopes | High | 170.7 | 6.1% |
| GP | Gravel pits | | 7.3 | 0.3% |
| Hp | Heath clay loam, 8 to 15 percent slopes | High | 5.7 | 0.2% |
| HR | Heath-Bynum association, steep | High | 152.5 | 5.4% |
| M-W | Miscellaneous water | | 22.6 | 0.8% |
| Tg | Thiel cobbly clay loam, 4 to 8 percent slopes | Moderate | 9.8 | 0.3% |
| TH | Thiel-Bynum association, steep | Moderate | 95.1 | 3.4% |
| WD | Wayden-Castner association, steep | High | 128.9 | 4.6% |
| Totals for Area of Interest | | | 2,806.7 | 100.0% |

Description

"Risk of corrosion" pertains to potential soil-induced electrochemical or chemical action that corrodes or weakens uncoated steel. The rate of corrosion of uncoated steel is related to such factors as soil moisture, particle-size distribution, acidity, and electrical conductivity of the soil. Special site examination and design may be needed if the combination of factors results in a severe hazard of corrosion. The steel in installations that intersect soil boundaries or soil layers is more susceptible to corrosion than the steel in installations that are entirely within one kind of soil or within one soil layer.

The risk of corrosion is expressed as "low," "moderate," or "high."

Rating Options

Aggregation Method: Dominant Condition

Aggregation is the process by which a set of component attribute values is reduced to a single value that represents the map unit as a whole.

A map unit is typically composed of one or more "components". A component is either some type of soil or some nonsoil entity, e.g., rock outcrop. For the attribute being aggregated, the first step of the aggregation process is to derive one attribute value for each of a map unit's components. From this set of component attributes, the next step of the aggregation process derives a single value that represents the map unit as a whole. Once a single value for each map unit is derived, a thematic map for soil map units can be rendered. Aggregation must be done because, on any soil map, map units are delineated but components are not.

For each of a map unit's components, a corresponding percent composition is recorded. A percent composition of 60 indicates that the corresponding component typically makes up approximately 60% of the map unit. Percent composition is a critical factor in some, but not all, aggregation methods.

The aggregation method "Dominant Condition" first groups like attribute values for the components in a map unit. For each group, percent composition is set to the sum of the percent composition of all components participating in that group. These groups now represent "conditions" rather than components. The attribute value associated with the group with the highest cumulative percent composition is returned. If more than one group shares the highest cumulative percent composition, the corresponding "tie-break" rule determines which value should be returned. The "tie-break" rule indicates whether the lower or higher group value should be returned in the case of a percent composition tie. The result returned by this aggregation method represents the dominant condition throughout the map unit only when no tie has occurred.

Component Percent Cutoff: None Specified

Components whose percent composition is below the cutoff value will not be considered. If no cutoff value is specified, all components in the database will be considered. The data for some contrasting soils of minor extent may not be in the database, and therefore are not considered.

Tie-break Rule: Higher

The tie-break rule indicates which value should be selected from a set of multiple candidate values, or which value should be selected in the event of a percent composition tie.

Map Unit Description

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions in this report, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named, soils that are similar to the named components, and some minor components that differ in use and management from the major soils.

Most of the soils similar to the major components have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Some minor components, however, have properties and behavior characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. If included in the database for a given area, the contrasting minor components are identified in the map unit descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however, onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives important soil properties and qualities.

Soils that have profiles that are almost alike make up a *soil series*. All the soils of a series have major horizons that are similar in composition, thickness, and arrangement. Soils of a given series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Alpha silt loam, 0 to 2 percent slopes, is a phase of the Alpha series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, or undifferentiated groups.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Alpha-Beta complex, 0 to 6 percent slopes, is an example.

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Alpha-Beta association, 0 to 2 percent slopes, is an example.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Alpha and Beta soils, 0 to 2 percent slopes, is an example.

Some surveys include *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Rock outcrop is an example.

Additional information about the map units described in this report is available in other soil reports, which give properties of the soils and the limitations, capabilities, and potentials for many uses. Also, the narratives that accompany the soil reports define some of the properties included in the map unit descriptions.

Report—Map Unit Description

Carbon County Area, Montana

An—Adel silty clay loam, 0 to 4 percent slopes

Map Unit Setting

National map unit symbol: cn3h

Elevation: 4,500 to 10,000 feet

Mean annual precipitation: 15 to 22 inches
Mean annual air temperature: 34 to 45 degrees F
Frost-free period: 60 to 110 days
Farmland classification: All areas are prime farmland

Map Unit Composition

Adel and similar soils: 95 percent
Minor components: 5 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Adel

Setting

Landform: Alluvial fans, hills
Landform position (two-dimensional): Footslope
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Clayey alluvium

Typical profile

A - 0 to 18 inches: silty clay loam
C1 - 18 to 31 inches: loam
C2 - 31 to 60 inches: clay loam

Properties and qualities

Slope: 0 to 4 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat):
Moderately high to high (0.57 to 1.98 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum in profile: 5 percent
Available water storage in profile: High (about 9.6 inches)

Interpretive groups

Land capability classification (irrigated): 6e
Land capability classification (nonirrigated): 6e
Hydrologic Soil Group: B
Ecological site: Draft Clayey (Cy) RRU 46-S 13-19" p.z.
(R046XS105MT), Upland Shrubland (R043BP820MT)
Hydric soil rating: No

Minor Components

Bynum

Percent of map unit: 5 percent
Landform: Hills on plains
Down-slope shape: Linear
Across-slope shape: Linear
Ecological site: Draft Clayey (Cy) RRU 46-S 13-19" p.z.
(R046XS105MT)

Hydric soil rating: No

Ao—Adel silty clay loam, 4 to 8 percent slopes

Map Unit Setting

National map unit symbol: cn3j
Elevation: 4,500 to 10,000 feet
Mean annual precipitation: 15 to 22 inches
Mean annual air temperature: 34 to 45 degrees F
Frost-free period: 60 to 110 days
Farmland classification: Farmland of local importance

Map Unit Composition

Adel and similar soils: 85 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Adel

Setting

Landform: Alluvial fans, hills
Landform position (two-dimensional): Footslope
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Clayey alluvium

Typical profile

A - 0 to 18 inches: silty clay loam
C1 - 18 to 31 inches: loam
C2 - 31 to 60 inches: clay loam

Properties and qualities

Slope: 4 to 8 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat):
Moderately high to high (0.57 to 1.98 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum in profile: 5 percent
Available water storage in profile: High (about 9.6 inches)

Interpretive groups

Land capability classification (irrigated): 6e
Land capability classification (nonirrigated): 6e
Hydrologic Soil Group: B
Ecological site: Draft Clayey (Cy) RRU 46-S 13-19" p.z.
(R046XS105MT), Upland Grassland (R043BP818MT)
Hydric soil rating: No

Minor Components

Bynum

Percent of map unit: 10 percent

Landform: Hills on plains

Down-slope shape: Linear

Across-slope shape: Linear

Ecological site: Draft Clayey (Cy) RRU 46-S 13-19" p.z.
(R046XS105MT)

Hydric soil rating: No

Au—Alluvial land

Map Unit Setting

National map unit symbol: cn3n

Elevation: 900 to 6,000 feet

Mean annual precipitation: 10 to 14 inches

Mean annual air temperature: 34 to 45 degrees F

Frost-free period: 110 to 120 days

Farmland classification: Not prime farmland

Map Unit Composition

Alluvial land and similar soils: 80 percent

Lallie and similar soils: 20 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Alluvial Land

Typical profile

H2 - 8 to 60 inches: very gravelly loamy coarse sand

Properties and qualities

Slope: 0 to 4 percent

Depth to restrictive feature: More than 80 inches

Natural drainage class: Well drained

Capacity of the most limiting layer to transmit water (Ksat): High
(1.98 to 5.95 in/hr)

Depth to water table: About 0 to 42 inches

Frequency of flooding: Occasional

Frequency of ponding: None

Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)

Available water storage in profile: Very low (about 1.6 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 4w

Hydrologic Soil Group: A/D

Ecological site: Draft Shallow to Gravel (SwGr) RRU 46-S 13-19"
p.z. (R046XS113MT)

Hydric soil rating: No

Description of Lallie

Setting

Landform: Flood plains
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Clayey alluvium

Typical profile

A - 0 to 2 inches: silty clay
C - 2 to 60 inches: silty clay

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Poorly drained
Capacity of the most limiting layer to transmit water (Ksat):
Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: About 0 to 12 inches
Frequency of flooding: Frequent
Frequency of ponding: None
Calcium carbonate, maximum in profile: 10 percent
Gypsum, maximum in profile: 5 percent
Salinity, maximum in profile: Nonsaline to moderately saline (0.0 to 8.0 mmhos/cm)
Available water storage in profile: High (about 10.8 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3w
Hydrologic Soil Group: C/D
Ecological site: Draft Wet Meadow (WM) RRU 46-S 15-19" p.z.
(R046XS107MT)
Hydric soil rating: Yes

Cb—Charlos loam, 0 to 2 percent slopes

Map Unit Setting

National map unit symbol: cn3x
Elevation: 4,500 to 8,000 feet
Mean annual precipitation: 10 to 24 inches
Mean annual air temperature: 37 to 45 degrees F
Frost-free period: 90 to 120 days
Farmland classification: Prime farmland if irrigated

Map Unit Composition

Charlos and similar soils: 95 percent
Minor components: 5 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Charlos

Setting

Landform: Terraces
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Sandy and gravelly alluvium

Typical profile

A - 0 to 6 inches: loam
Bt - 6 to 17 inches: clay loam
C1 - 17 to 30 inches: very gravelly clay loam
2C2 - 30 to 60 inches: very gravelly sand

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat):
Moderately high to high (0.57 to 1.98 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water storage in profile: Low (about 5.1 inches)

Interpretive groups

Land capability classification (irrigated): 4e
Land capability classification (nonirrigated): 4e
Hydrologic Soil Group: B
Ecological site: Draft Silty (Si) RRU 46-S 13-19" p.z.
(R046XS104MT)
Hydric soil rating: No

Minor Components

Thiel

Percent of map unit: 3 percent
Landform: Outwash terraces
Down-slope shape: Linear
Across-slope shape: Linear
Ecological site: Draft Silty (Si) RRU 46-S 13-19" p.z.
(R046XS104MT)
Hydric soil rating: No

Heath

Percent of map unit: 2 percent
Landform: Plains
Down-slope shape: Linear
Across-slope shape: Linear
Ecological site: Clayey (Cy) 20"+ p.z. NOT KNOWN
(R043BS636MT)
Hydric soil rating: No

Cc—Charlos loam, 2 to 8 percent slopes

Map Unit Setting

National map unit symbol: cn3y
Elevation: 4,500 to 8,000 feet
Mean annual precipitation: 10 to 24 inches
Mean annual air temperature: 37 to 45 degrees F
Frost-free period: 90 to 120 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

Charlos and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Charlos

Setting

Landform: Terraces
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Sandy and gravelly alluvium

Typical profile

A - 0 to 6 inches: loam
Bt - 6 to 17 inches: clay loam
C1 - 17 to 30 inches: very gravelly clay loam
2C2 - 30 to 60 inches: very gravelly sand

Properties and qualities

Slope: 2 to 8 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat):
Moderately high to high (0.57 to 1.98 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water storage in profile: Low (about 5.1 inches)

Interpretive groups

Land capability classification (irrigated): 4e
Land capability classification (nonirrigated): 4e
Hydrologic Soil Group: B
Ecological site: Draft Silty (Si) RRU 46-S 13-19" p.z.
(R046XS104MT), Upland Grassland (R043BP818MT)
Hydric soil rating: No

Minor Components

Thiel

Percent of map unit: 8 percent
Landform: Outwash terraces
Down-slope shape: Linear
Across-slope shape: Linear
Ecological site: Draft Silty (Si) RRU 46-S 13-19" p.z.
(R046XS104MT)
Hydric soil rating: No

Heath

Percent of map unit: 7 percent
Landform: Plains
Down-slope shape: Linear
Across-slope shape: Linear
Ecological site: Clayey (Cy) 20"+ p.z. NOT KNOWN
(R043BS636MT)
Hydric soil rating: No

Cd—Charlos loam, wet, 0 to 2 percent slopes

Map Unit Setting

National map unit symbol: cn3z
Elevation: 4,500 to 8,000 feet
Mean annual precipitation: 10 to 24 inches
Mean annual air temperature: 37 to 45 degrees F
Frost-free period: 90 to 120 days
Farmland classification: Prime farmland if irrigated

Map Unit Composition

Charlos, wet, and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Charlos, Wet

Setting

Landform: Terraces
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Sandy and gravelly alluvium

Typical profile

A - 0 to 6 inches: loam
Bt - 6 to 17 inches: clay loam
C1 - 17 to 30 inches: very gravelly clay loam
2C2 - 30 to 60 inches: very gravelly sand

Properties and qualities

Slope: 0 to 2 percent

Depth to restrictive feature: More than 80 inches
Natural drainage class: Somewhat poorly drained
Capacity of the most limiting layer to transmit water (Ksat):
Moderately high to high (0.57 to 1.98 in/hr)
Depth to water table: About 24 to 60 inches
Frequency of flooding: None
Frequency of ponding: None
Available water storage in profile: Low (about 4.8 inches)

Interpretive groups

Land capability classification (irrigated): 4w
Land capability classification (nonirrigated): 4w
Hydrologic Soil Group: B
Ecological site: Draft Subirrigated (Sb) RRU 46-S 15-19" p.z.
(R046XS108MT)
Hydric soil rating: No

Minor Components

Thiel

Percent of map unit: 8 percent
Landform: Outwash terraces
Down-slope shape: Linear
Across-slope shape: Linear
Ecological site: Draft Silty (Si) RRU 46-S 13-19" p.z.
(R046XS104MT)
Hydric soil rating: No

Heath

Percent of map unit: 7 percent
Landform: Plains
Down-slope shape: Linear
Across-slope shape: Linear
Ecological site: Clayey (Cy) 20"+ p.z. NOT KNOWN
(R043BS636MT)
Hydric soil rating: No

Ce—Charlos stony loam, 0 to 4 percent slopes

Map Unit Setting

National map unit symbol: cn40
Elevation: 4,500 to 8,000 feet
Mean annual precipitation: 10 to 24 inches
Mean annual air temperature: 37 to 45 degrees F
Frost-free period: 90 to 120 days
Farmland classification: Farmland of local importance

Map Unit Composition

Charlos and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Charlos

Setting

Landform: Terraces
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Sandy and gravelly alluvium

Typical profile

A - 0 to 6 inches: stony loam
Bt - 6 to 17 inches: clay loam
C1 - 17 to 30 inches: very gravelly clay loam
2C2 - 30 to 60 inches: very gravelly sand

Properties and qualities

Slope: 0 to 4 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat):
Moderately high to high (0.57 to 1.98 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water storage in profile: Low (about 4.9 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6s
Hydrologic Soil Group: B
Ecological site: Draft Silty (Si) RRU 46-S 13-19" p.z.
(R046XS104MT), Upland Sagebrush Shrubland
(R043BP819MT)
Hydric soil rating: No

Minor Components

Thiel

Percent of map unit: 8 percent
Landform: Outwash terraces
Down-slope shape: Linear
Across-slope shape: Linear
Ecological site: Draft Silty (Si) RRU 46-S 13-19" p.z.
(R046XS104MT)
Hydric soil rating: No

Heath

Percent of map unit: 7 percent
Landform: Plains
Down-slope shape: Linear
Across-slope shape: Linear
Ecological site: Clayey (Cy) 20"+ p.z. NOT KNOWN
(R043BS636MT)
Hydric soil rating: No

GP—Gravel pits

Map Unit Composition

Pits, gravel: 100 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

Hp—Heath clay loam, 8 to 15 percent slopes

Map Unit Setting

National map unit symbol: cn4r

Elevation: 3,500 to 11,500 feet

Mean annual precipitation: 10 to 25 inches

Mean annual air temperature: 34 to 45 degrees F

Frost-free period: 50 to 120 days

Farmland classification: Farmland of local importance

Map Unit Composition

Heath and similar soils: 90 percent

Minor components: 10 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Heath

Setting

Landform: Plains

Down-slope shape: Linear

Across-slope shape: Linear

Parent material: Residuum weathered from shale and siltstone

Typical profile

A - 0 to 3 inches: clay loam

Bt - 3 to 16 inches: clay loam

Bk - 16 to 62 inches: clay loam

Properties and qualities

Slope: 8 to 15 percent

Depth to restrictive feature: More than 80 inches

Natural drainage class: Well drained

Capacity of the most limiting layer to transmit water (Ksat):

Moderately low to moderately high (0.06 to 0.20 in/hr)

Depth to water table: More than 80 inches

Frequency of flooding: None

Frequency of ponding: None

Calcium carbonate, maximum in profile: 15 percent

Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)

Available water storage in profile: High (about 9.6 inches)

Interpretive groups

Land capability classification (irrigated): 4e
Land capability classification (nonirrigated): 4e
Hydrologic Soil Group: C
Ecological site: Clayey (Cy) 20"+ p.z. NOT KNOWN
(R043BS636MT)
Hydric soil rating: No

Minor Components

Bynum

Percent of map unit: 4 percent
Landform: Hills on plains
Down-slope shape: Linear
Across-slope shape: Linear
Ecological site: Draft Clayey (Cy) RRU 46-S 13-19" p.z.
(R046XS105MT)
Hydric soil rating: No

Woodrock

Percent of map unit: 3 percent
Landform: Hills
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

Charlos

Percent of map unit: 3 percent
Landform: Terraces
Down-slope shape: Linear
Across-slope shape: Linear
Ecological site: Draft Silty (Si) RRU 46-S 13-19" p.z.
(R046XS104MT)
Hydric soil rating: No

HR—Heath-Bynum association, steep

Map Unit Setting

National map unit symbol: cn4s
Elevation: 4,500 to 10,000 feet
Mean annual precipitation: 10 to 24 inches
Mean annual air temperature: 34 to 45 degrees F
Frost-free period: 40 to 120 days
Farmland classification: Not prime farmland

Map Unit Composition

Heath and similar soils: 75 percent
Bynum and similar soils: 20 percent
Minor components: 5 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Heath

Setting

Landform: Hills

Down-slope shape: Linear

Across-slope shape: Linear

Parent material: Residuum weathered from shale and siltstone

Typical profile

A - 0 to 3 inches: clay loam

Bt - 3 to 16 inches: clay loam

Bk - 16 to 32 inches: clay loam

Properties and qualities

Slope: 25 to 45 percent

Depth to restrictive feature: More than 80 inches

Natural drainage class: Well drained

Capacity of the most limiting layer to transmit water (Ksat):

Moderately low to moderately high (0.06 to 0.20 in/hr)

Depth to water table: More than 80 inches

Frequency of flooding: None

Frequency of ponding: None

Calcium carbonate, maximum in profile: 15 percent

Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)

Available water storage in profile: Low (about 5.2 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 7e

Hydrologic Soil Group: C

Ecological site: Clayey (Cy) 20"+ p.z. NOT KNOWN
(R043BS636MT)

Hydric soil rating: No

Description of Bynum

Setting

Landform: Hills on plains

Down-slope shape: Linear

Across-slope shape: Linear

Parent material: Residuum weathered from shale

Typical profile

A - 0 to 17 inches: sandy clay loam

Bw - 17 to 30 inches: clay loam

Cr - 30 to 60 inches: weathered bedrock

Properties and qualities

Slope: 25 to 45 percent

Depth to restrictive feature: 20 to 40 inches to paralithic bedrock

Natural drainage class: Well drained

Capacity of the most limiting layer to transmit water (Ksat):

Moderately high to high (0.57 to 1.98 in/hr)

Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water storage in profile: Low (about 4.8 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7e
Hydrologic Soil Group: C
Ecological site: Draft Silty (Si) RRU 46-S 13-19" p.z.
(R046XS104MT)
Hydric soil rating: No

Minor Components

Adel

Percent of map unit: 2 percent
Landform: Alluvial fans, hills
Landform position (two-dimensional): Footslope
Down-slope shape: Linear
Across-slope shape: Linear
Ecological site: Draft Clayey (Cy) RRU 46-S 13-19" p.z.
(R046XS105MT)
Hydric soil rating: No

Charlos

Percent of map unit: 2 percent
Landform: Terraces
Down-slope shape: Linear
Across-slope shape: Linear
Ecological site: Draft Silty (Si) RRU 46-S 13-19" p.z.
(R046XS104MT)
Hydric soil rating: No

Hanson

Percent of map unit: 1 percent
Landform: Hills, alluvial fans
Landform position (two-dimensional): Footslope
Down-slope shape: Linear
Across-slope shape: Linear
Ecological site: Draft Clayey (Cy) RRU 46-S 13-19" p.z.
(R046XS105MT)
Hydric soil rating: No

M-W—Miscellaneous water

Map Unit Composition

Water, miscellaneous: 100 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Water, Miscellaneous

Interpretive groups

Land capability classification (irrigated): 8

Hydric soil rating: Unranked

Tg—Thiel cobbly clay loam, 4 to 8 percent slopes

Map Unit Setting

National map unit symbol: cn7p

Elevation: 4,500 to 8,000 feet

Mean annual precipitation: 10 to 22 inches

Mean annual air temperature: 34 to 43 degrees F

Frost-free period: 70 to 120 days

Farmland classification: Farmland of local importance

Map Unit Composition

Thiel and similar soils: 95 percent

Minor components: 5 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Thiel

Setting

Landform: Outwash terraces

Down-slope shape: Linear

Across-slope shape: Linear

Parent material: Glacial outwash

Typical profile

A - 0 to 3 inches: cobbly clay loam

Bt - 3 to 20 inches: very cobbly clay loam

2C - 20 to 60 inches: very cobbly sand

Properties and qualities

Slope: 4 to 8 percent

Depth to restrictive feature: More than 80 inches

Natural drainage class: Well drained

Capacity of the most limiting layer to transmit water (Ksat):

Moderately high to high (0.57 to 1.98 in/hr)

Depth to water table: More than 80 inches

Frequency of flooding: None

Frequency of ponding: None

Calcium carbonate, maximum in profile: 20 percent

Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)

Available water storage in profile: Very low (about 2.6 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 6s

Hydrologic Soil Group: B
Ecological site: Draft Silty (Si) RRU 46-S 13-19" p.z.
(R046XS104MT)
Hydric soil rating: No

Minor Components

Bynum

Percent of map unit: 3 percent
Landform: Hills on plains
Down-slope shape: Linear
Across-slope shape: Linear
Ecological site: Draft Clayey (Cy) RRU 46-S 13-19" p.z.
(R046XS105MT)
Hydric soil rating: No

Charlos

Percent of map unit: 2 percent
Landform: Terraces
Down-slope shape: Linear
Across-slope shape: Linear
Ecological site: Draft Silty (Si) RRU 46-S 13-19" p.z.
(R046XS104MT)
Hydric soil rating: No

TH—Thiel-Bynum association, steep

Map Unit Setting

National map unit symbol: cn7q
Elevation: 4,500 to 8,000 feet
Mean annual precipitation: 10 to 22 inches
Mean annual air temperature: 34 to 43 degrees F
Frost-free period: 70 to 120 days
Farmland classification: Not prime farmland

Map Unit Composition

Thiel and similar soils: 70 percent
Bynum and similar soils: 25 percent
Minor components: 5 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Thiel

Setting

Landform: Outwash terraces
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Glacial outwash

Typical profile

A - 0 to 3 inches: very cobbly clay loam
Bt - 3 to 20 inches: very cobbly clay loam

2C - 20 to 60 inches: very cobbly sand

Properties and qualities

Slope: 25 to 45 percent

Depth to restrictive feature: More than 80 inches

Natural drainage class: Well drained

Capacity of the most limiting layer to transmit water (Ksat):

Moderately high to high (0.57 to 1.98 in/hr)

Depth to water table: More than 80 inches

Frequency of flooding: None

Frequency of ponding: None

Calcium carbonate, maximum in profile: 20 percent

Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)

Available water storage in profile: Very low (about 2.4 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 7e

Hydrologic Soil Group: B

Ecological site: Draft Silty (Si) RRU 46-S 13-19" p.z.

(R046XS104MT), Upland Grassland (R043BP818MT)

Hydric soil rating: No

Description of Bynum

Setting

Landform: Hills on plains

Down-slope shape: Linear

Across-slope shape: Linear

Parent material: Residuum weathered from shale

Typical profile

A - 0 to 17 inches: clay loam

Bw - 17 to 30 inches: clay loam

Cr - 30 to 60 inches: weathered bedrock

Properties and qualities

Slope: 25 to 45 percent

Depth to restrictive feature: 20 to 40 inches to paralithic bedrock

Natural drainage class: Well drained

Capacity of the most limiting layer to transmit water (Ksat):

Moderately high to high (0.57 to 1.98 in/hr)

Depth to water table: More than 80 inches

Frequency of flooding: None

Frequency of ponding: None

Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)

Available water storage in profile: Low (about 4.8 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 7e

Hydrologic Soil Group: C

Ecological site: Draft Silty (Si) RRU 46-S 13-19" p.z.
(R046XS104MT), Upland Grassland (R043BP818MT)
Hydric soil rating: No

Minor Components

Charlos

Percent of map unit: 5 percent
Landform: Terraces
Down-slope shape: Linear
Across-slope shape: Linear
Ecological site: Draft Silty (Si) RRU 46-S 13-19" p.z.
(R046XS104MT)
Hydric soil rating: No

WD—Wayden-Castner association, steep

Map Unit Setting

National map unit symbol: cn8g
Elevation: 2,400 to 6,500 feet
Mean annual precipitation: 10 to 19 inches
Mean annual air temperature: 39 to 45 degrees F
Frost-free period: 90 to 120 days
Farmland classification: Not prime farmland

Map Unit Composition

Wayden and similar soils: 70 percent
Castner and similar soils: 25 percent
Minor components: 5 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Wayden

Setting

Landform: Hills
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Residuum weathered from shale

Typical profile

A - 0 to 6 inches: clay loam
C - 6 to 14 inches: clay loam
Cr - 14 to 60 inches: weathered bedrock

Properties and qualities

Slope: 25 to 45 percent
Depth to restrictive feature: 10 to 20 inches to paralithic bedrock
Natural drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat):
Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None

Frequency of ponding: None
Calcium carbonate, maximum in profile: 10 percent
Salinity, maximum in profile: Nonsaline to moderately saline (0.0 to 8.0 mmhos/cm)
Available water storage in profile: Very low (about 2.3 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7e
Hydrologic Soil Group: D
Ecological site: Draft Shallow (Sw) RRU 46-S 13-19" p.z. (R046XS114MT)
Hydric soil rating: No

Description of Castner

Setting

Landform: Hills
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Residuum weathered from sandstone

Typical profile

A - 0 to 8 inches: channery loam
Bk - 8 to 18 inches: very channery sandy loam
R - 18 to 60 inches: unweathered bedrock

Properties and qualities

Slope: 25 to 45 percent
Depth to restrictive feature: 10 to 20 inches to lithic bedrock
Natural drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 5.95 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum in profile: 15 percent
Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water storage in profile: Very low (about 1.7 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7e
Hydrologic Soil Group: D
Ecological site: Draft Shallow (Sw) RRU 46-S 13-19" p.z. (R046XS114MT)
Hydric soil rating: No

Minor Components

Absarokee

Percent of map unit: 2 percent
Landform: Hills, plains

Down-slope shape: Linear
Across-slope shape: Linear
Ecological site: Draft Silty-Steep (SiStp) RRU 46-C 13-19" p.z.
(R046XC516MT)
Hydric soil rating: No

Rentsac

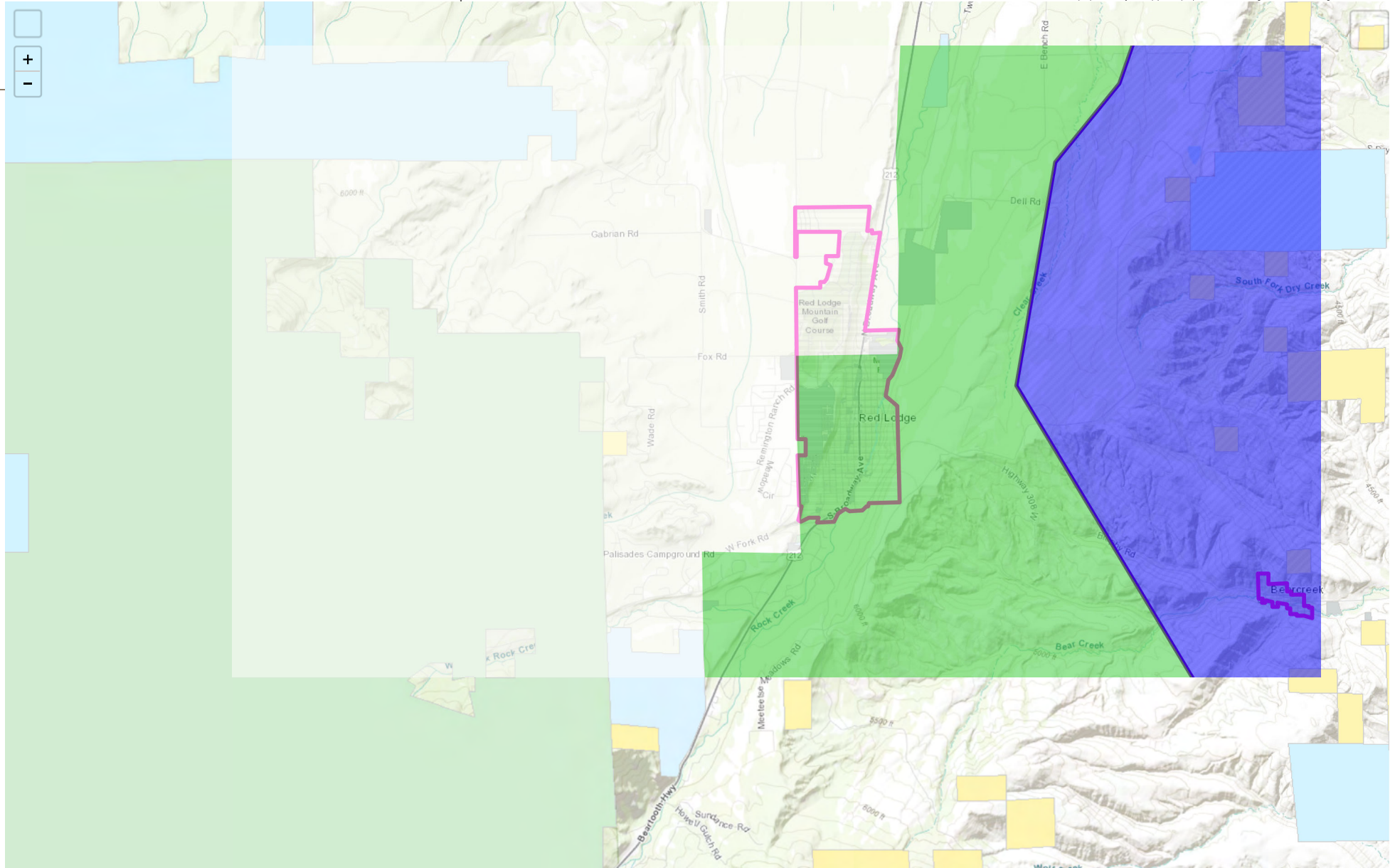
Percent of map unit: 2 percent
Landform: Hills
Down-slope shape: Linear
Across-slope shape: Linear
Ecological site: Shallow (Sw) 9-14" p.z. NOT KNOWN
(R043BS291MT)
Hydric soil rating: No

Rock outcrop, sandstone

Percent of map unit: 1 percent
Hydric soil rating: No

Data Source Information

Soil Survey Area: Carbon County Area, Montana
Survey Area Data: Version 15, Sep 16, 2019



NOTES TO USERS

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Boundaries of the floodways were computed at cross sections and interpolated between cross sections. The floodways were based on hydraulic considerations with regard to restatements of the National Flood Insurance Program. Floodway widths and other pertinent floodway data are provided in the Flood Insurance Study report for this jurisdiction.

Certain areas not in Special Flood Hazard Areas may be protected by flood control structures. Refer to Section 2.4 "Flood Protection Measures" of the Flood Insurance Study report for information on flood control structures for this jurisdiction.

The projection used in the preparation of this map was Universal Transverse Mercator (UTM) zone 12. The horizontal datum was NAD83, GRS1980 spheroid. Differences in datum, spheroid, projection or UTM zones used in the production of FIRMs for adjacent jurisdictions may result in slight positional differences in map features across jurisdiction boundaries. These differences do not affect the accuracy of this FIRM.

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NGS Information Services
NOAA, NNGS12
National Geodetic Survey
SSMC-3, #9202
1315 East-West Highway
Silver Spring, Maryland 20910-3282
(301) 713-3242

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NOTE: MAP AREA SHOWN ON THIS PANEL IS LOCATED WITHIN TOWNSHIP 7 SOUTH, RANGE 20 EAST AND TOWNSHIP 8 SOUTH, RANGE 20 EAST.

LEGEND

SPECIAL FLOOD HAZARD AREAS SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD

The 1% annual chance flood (100-year flood), also known as the base flood, is the flood that has a 1% chance of being equaled or exceeded in any given year. The Special Flood Hazard Area is the area subject to flooding by the 1% annual chance flood. Areas of Special Flood Hazard include Zones A, AE, AH, AO, AR, A99, V, and VE. The Base Flood Elevation is the water-surface elevation of the 1% annual chance flood.

ZONE A No Base Flood Elevations determined.

ZONE AE Base Flood Elevations determined.

ZONE AH Flood depths of 1 to 3 feet (usually areas of ponding); Base Flood Elevations determined.

ZONE AO Flood depths of 1 to 3 feet (usually sheet flow on sloping terrain); average depths determined. For areas of alluvial fan flooding, velocities also determined.

ZONE AR Special Flood Hazard Area formerly protected from the 1% annual chance flood by a flood control system that was subsequently decertified. Zone AR indicates that the former flood control system is being restored to provide protection from the 1% annual chance or greater flood.

ZONE A99 Areas to be protected from 1% annual chance flood event by a Federal flood protection system under construction; no Base Flood Elevations determined.

ZONE V Coastal flood zone with velocity hazard (wave action); no Base Flood Elevations determined.

ZONE VE Coastal flood zone with velocity hazard (wave action); Base Flood Elevations determined.

FLOODWAY AREAS IN ZONE AE

The floodway is the channel of a stream plus any adjacent floodplain areas that must be kept free of encroachment so that the 1% annual chance flood can be carried without substantial increases in flood heights.

OTHER FLOOD AREAS

ZONE X Areas of 0.2% annual chance flood; areas of 1% annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 1% annual chance flood.

OTHER AREAS

ZONE X Areas determined to be outside the 0.2% annual chance floodplain.

ZONE D Areas in which flood hazards are undetermined, but possible.

COASTAL BARRIER RESOURCES SYSTEM (CBRS) AREAS

OTHERWISE PROTECTED AREAS (OPAs)

CBRS areas and OPAs are normally located within or adjacent to Special Flood Hazard Areas.

1% annual chance floodplain boundary
0.2% annual chance floodplain boundary
Floodway boundary
Zone D boundary
CBRS and OPA boundary
Boundary dividing Special Flood Hazard Area Zones and boundary dividing Special Flood Hazard Areas of different Base Flood Elevations, flood depths, or flood velocities
Base Flood Elevation line and value; elevation in feet*
Base Flood Elevation value where uniform within zone; elevation in feet*

* Referenced to the North American Vertical Datum of 1988

97°07'30", 32°22'30" Transverse line
47°50'00"E Geographic coordinates referenced to the North American Datum of 1983 (NAD 83), Western Hemisphere
6000000 FT 1000-meter Universal Transverse Mercator grid ticks, zone 12
DX5510 5000-foot grid values: Montana State Plane coordinate system (FIPSZONE = 2500), Lambert projection
M1.5 Bench mark (see explanation in Notes to Users section of this FIRM panel)
River Mile

MAP REPOSITORIES
Refer to Map Repositories List on Map Index

EFFECTIVE DATE OF COUNTYWIDE FLOOD INSURANCE RATE MAP
December 4, 2012

EFFECTIVE DATE(S) OF REVISION(S) TO THIS PANEL

For community map revision history prior to countywide mapping, refer to the Community Map History table located in the Flood Insurance Study report for this jurisdiction.

To determine if flood insurance is available in this community, contact your insurance agent or call the National Flood Insurance Program at 1-800-638-6620.

MAP SCALE 1" = 500'

250 0 250 500 750 1,000 FEET
150 0 150 300 METERS

NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0692D

FIRM
FLOOD INSURANCE RATE MAP
CARBON COUNTY,
MONTANA
AND INCORPORATED AREAS

PANEL 692 OF 1500
(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

| COMMUNITY | NUMBER | PANEL SUFFIX |
|--------------------|--------|--------------|
| CARBON COUNTY | 300139 | 0692 D |
| RED LODGE, CITY OF | 300007 | 0692 D |

Notice to User: The Map Number shown below should be used when placing map orders. The Community Number shown above should be used on insurance applications for the subject community.

MAP NUMBER
30009C0692D

EFFECTIVE DATE
DECEMBER 4, 2012

Federal Emergency Management Agency

NOTES TO USERS

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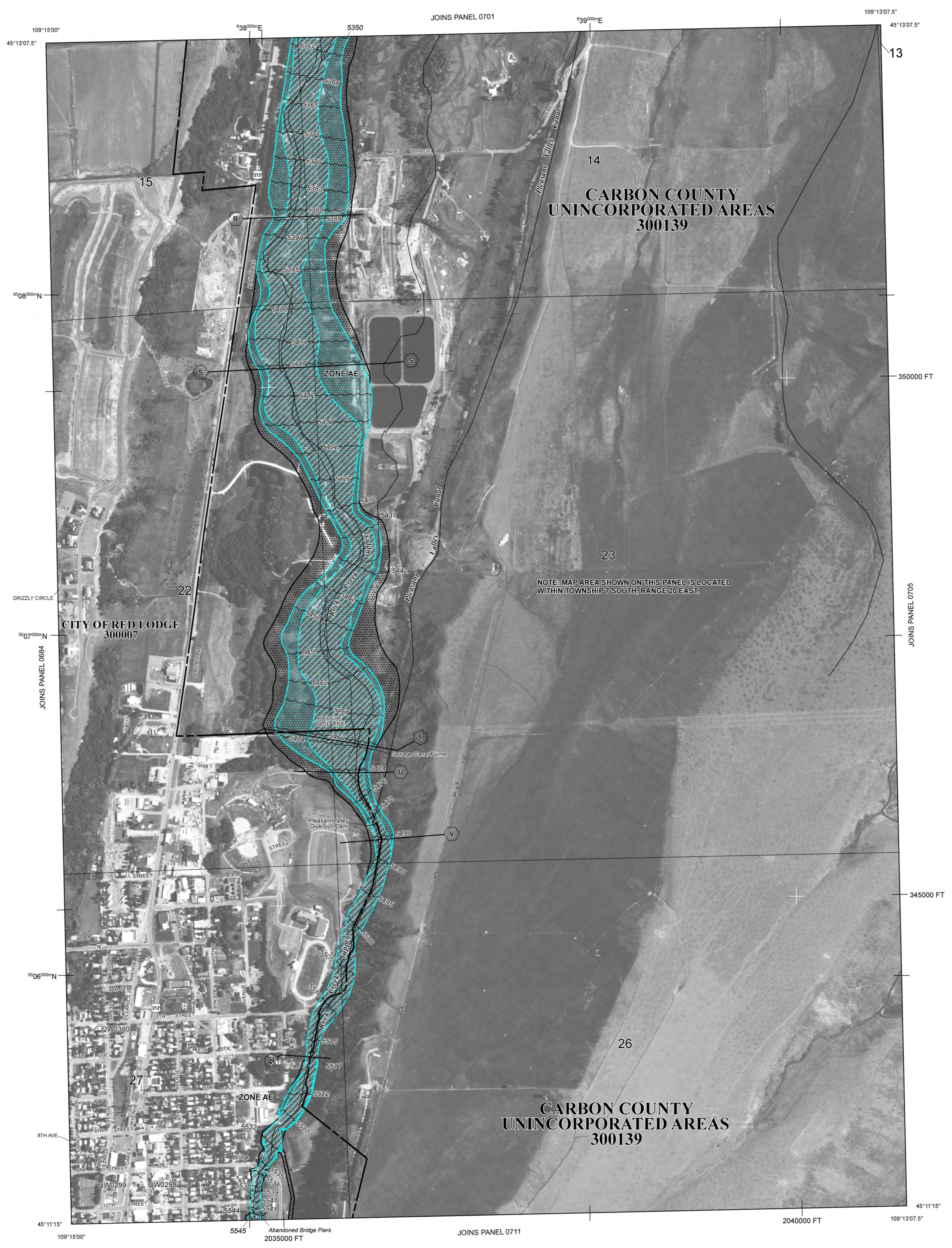
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LEGEND

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ZONE A No Base Flood Elevations determined.

ZONE AE Base Flood Elevations determined.

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ZONE AR Special Flood Hazard Area formerly protected from the 1% annual chance flood by a flood control system that was subsequently decertified. Zone AR indicates that the former flood control system is being restored to provide protection from the 1% annual chance or greater flood.

ZONE A99 Areas to be protected from 1% annual chance flood event by a Federal flood protection system under construction; no Base Flood Elevations determined.

ZONE V Coastal flood zone with velocity hazard (wave action); no Base Flood Elevations determined.

ZONE VE Coastal flood zone with velocity hazard (wave action); Base Flood Elevations determined.

FLOODWAY AREAS IN ZONE AE

The floodway is the channel of a stream plus any adjacent floodplain areas that must be kept free of encroachment so that the 1% annual chance flood can be carried without substantial increases in flood heights.

OTHER FLOOD AREAS

ZONE X Areas of 0.2% annual chance flood; areas of 1% annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 1% annual chance flood.

OTHER AREAS

ZONE X Areas determined to be outside the 0.2% annual chance floodplain.

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- 1% annual chance floodplain boundary
- 0.2% annual chance floodplain boundary
- Floodway boundary
- Zone D boundary
- CBRS and OPA boundary
- Boundary dividing Special Flood Hazard Area Zones and boundary dividing Special Flood Hazard Areas of different Base Flood Elevations, flood depths, or flood velocities
- Base Flood Elevation line and value; elevation in feet* (EL 987)
- Base Flood Elevation value where uniform within zone; elevation in feet*

* Referenced to the North American Vertical Datum of 1988

MAP REPOSITORIES
Refer to Map Repositories List on Map Index

EFFECTIVE DATE OF COUNTYWIDE FLOOD INSURANCE RATE MAP
December 4, 2012

EFFECTIVE DATE(S) OF REVISION(S) TO THIS PANEL

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NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0703D

FIRM
FLOOD INSURANCE RATE MAP
CARBON COUNTY,
MONTANA
AND INCORPORATED AREAS

PANEL 703 OF 1500
(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

| COMMUNITY | NUMBER | PANEL SUFFIX |
|--------------------|--------|--------------|
| CARBON COUNTY | 300139 | 0703 D |
| RED LODGE, CITY OF | 300007 | 0703 D |

MAP NUMBER
30009C0703D

EFFECTIVE DATE
DECEMBER 4, 2012

Federal Emergency Management Agency

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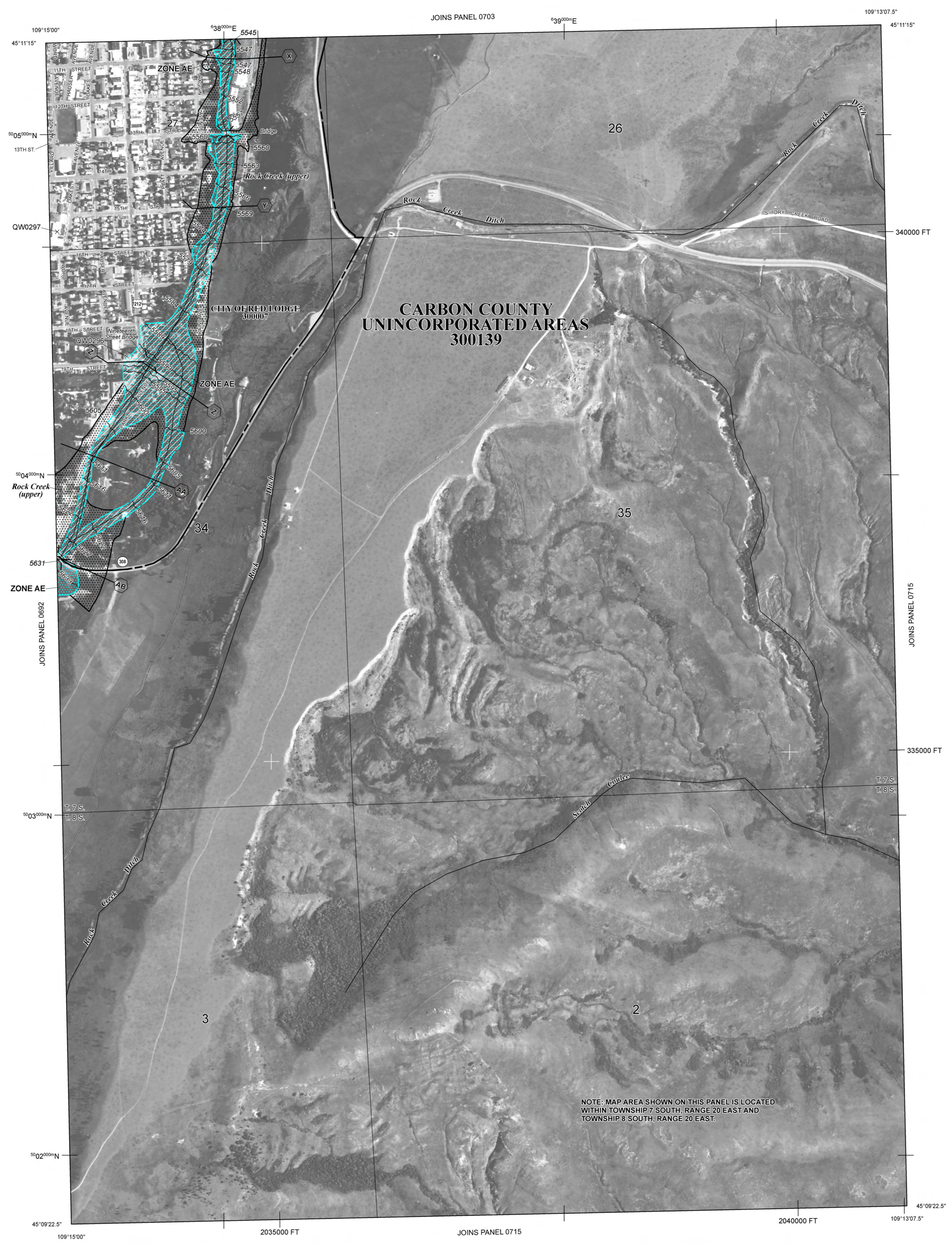
This map reflects more detailed and up-to-date stream channel configurations than those shown on the previous FIRM for this jurisdiction. The floodplains and floodways that were transferred from the previous FIRM may have been adjusted to conform to these new stream channel configurations. As a result, the Flood Profiles and Floodway Data tables in the Flood Insurance Study report (which contains authoritative hydraulic data) may reflect stream channel distances that differ from what is shown on this map.

Corporate limits shown on this map are based on the best data available at the time of publication. Because changes due to annexations or de-annexations may have occurred after this map was published, map users should contact appropriate community officials to verify current corporate limit locations.

Please refer to the separately printed Map Index for an overview map of the county showing the layout of map panels; community map repository addresses; and a Listing of Communities table containing National Flood Insurance Program dates for each community as well as a listing of the panels on which each community is located.

Contact the FEMA Map Service Center at 1-877-FEMA-MAP (1-877-336-2627) for information on available products associated with this FIRM. Available products may include previously issued Letters of Map Change, a Flood Insurance Study report, and/or digital versions of this map. The FEMA Map Service Center may also be reached by Fax at 1-800-358-9620 and its website at <http://msc.fema.gov>.

For information and questions about this map, available products associated with this FIRM including historic versions of this FIRM, how to order products or the National Flood Insurance Program in general, please call the FEMA Map Information eXchange at 1-877-FEMA-MAP (1-877-336-2627) or visit the FEMA Map Service Center website at <http://msc.fema.gov>. Available products may include previously issued Letters of Map Change, a Flood Insurance Study Report, and/or digital versions of this map. Many of these products can be ordered or obtained directly from the website. Users may determine the current map date for each FIRM panel by visiting the FEMA Map Service Center website or by calling the FEMA Map Information eXchange.



NOTE: MAP AREA SHOWN ON THIS PANEL IS LOCATED WITHIN TOWNSHIP 7 SOUTH, RANGE 20 EAST AND TOWNSHIP 8 SOUTH, RANGE 20 EAST.

LEGEND

SPECIAL FLOOD HAZARD AREAS SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD

The 1% annual chance flood (100-year flood), also known as the base flood, is the flood that has a 1% chance of being equaled or exceeded in any given year. The Special Flood Hazard Area is the area subject to flooding by the 1% annual chance flood. Areas of Special Flood Hazard include Zones A, AE, AH, AO, AR, A99, V, and VE. The Base Flood Elevation is the water-surface elevation of the 1% annual chance flood.

ZONE A No Base Flood Elevations determined.

ZONE AE Base Flood Elevations determined.

ZONE AH Flood depths of 1 to 3 feet (usually areas of ponding); Base Flood Elevations determined.

ZONE AO Flood depths of 1 to 3 feet (usually sheet flow on sloping terrain); average depths determined. For areas of alluvial fan flooding, velocities also determined.

ZONE AR Special Flood Hazard Area formerly protected from the 1% annual chance flood by a flood control system that was subsequently decertified. Zone AR indicates that the former flood control system is being restored to provide protection from the 1% annual chance or greater flood.

ZONE A99 Areas to be protected from 1% annual chance flood event by a Federal flood protection system under construction; no Base Flood Elevations determined.

ZONE V Coastal flood zone with velocity hazard (wave action); no Base Flood Elevations determined.

ZONE VE Coastal flood zone with velocity hazard (wave action); Base Flood Elevations determined.

FLOODWAY AREAS IN ZONE AE

The floodway is the channel of a stream plus any adjacent floodplain areas that must be kept free of encroachment so that the 1% annual chance flood can be carried without substantial increases in flood heights.

OTHER FLOOD AREAS

ZONE X Areas of 0.2% annual chance flood; areas of 1% annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 1% annual chance flood.

OTHER AREAS

ZONE X Areas determined to be outside the 0.2% annual chance floodplain.

ZONE D Areas in which flood hazards are undetermined, but possible.

COASTAL BARRIER RESOURCES SYSTEM (CBRS) AREAS

OTHERWISE PROTECTED AREAS (OPAs)

CBRS areas and OPAs are normally located within or adjacent to Special Flood Hazard Areas.

1% annual chance floodplain boundary
0.2% annual chance floodplain boundary
Floodway boundary
Zone D boundary
CBRS and OPA boundary
Boundary dividing Special Flood Hazard Area Zones and boundary dividing Special Flood Hazard Areas of different Base Flood Elevations, flood depths, or flood velocities
Base Flood Elevation line and value; elevation in feet*
Base Flood Elevation value where uniform within zone; elevation in feet*
* Referenced to the North American Vertical Datum of 1988

Transsect line
Geographic coordinates referenced to the North American Datum of 1983 (NAD 83), Western Hemisphere
1000-meter Universal Transverse Mercator grid ticks, zone 12
5000-foot grid values: Montana State Plane coordinate system (FIPSZONE = 2500), Lambert projection
Bench mark (see explanation in Notes to Users section of this FIRM panel)
River Mile

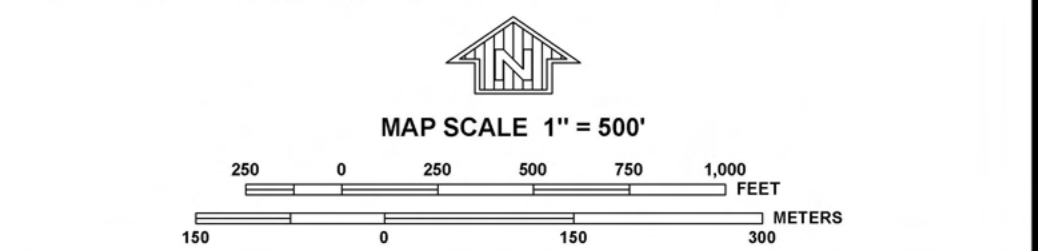
MAP REPOSITORIES
Refer to Map Repositories List on Map Index

EFFECTIVE DATE OF COUNTYWIDE FLOOD INSURANCE RATE MAP
December 4, 2012

EFFECTIVE DATE(S) OF REVISION(S) TO THIS PANEL

For community map revision history prior to countywide mapping, refer to the Community Map History table located in the Flood Insurance Study report for this jurisdiction.

To determine if flood insurance is available in this community, contact your insurance agent or call the National Flood Insurance Program at 1-800-638-6620.



NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0711D

FIRM

FLOOD INSURANCE RATE MAP

CARBON COUNTY, MONTANA

AND INCORPORATED AREAS

PANEL 711 OF 1500

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

| COMMUNITY | NUMBER | PANEL SUFFIX |
|--------------------|--------|--------------|
| CARBON COUNTY | 300139 | 0711 D |
| RED LODGE, CITY OF | 300007 | 0711 D |

Notice to User: The Map Number shown below should be used when placing map orders. The Community Number shown above should be used on insurance applications for the subject community.

MAP NUMBER
30009C0711D

EFFECTIVE DATE
DECEMBER 4, 2012

Federal Emergency Management Agency



Ground Water Information Center | MBMG Data Center
 Montana Bureau of Mines and Geology
 Montana Technological University
 1300 West Park Street - Natural Resources Building Room 329
 Butte Montana 59701-8997
 Ph: (406) 496-4336 Fx: (406) 496-4343

You are currently signed in. | 1/30/2020
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Menus: | [Main](#) | [SWL](#) | [GWCP](#) | [Projects](#) | [Coal](#) | [Coal Quality](#) | [Geothermal](#)

GWIC Data > Well Construction Data > Township: 07S Range: 20E Sec: 15, 14, 21, 22, 23, 28, 27, 26, 33, 34, 35

The following data were returned from the GWIC databases for the area you requested. For a more detailed description of the data view the [GWIC Metadata report](#). If you notice data entry errors or have questions please let us know by sending us an Email at GWIC@mtech.edu. If you wish to view a one page report for a particular site, click the hyperlinked **Gwic Id** for that well. All data displayed on the screen may not show up when printed.

| Field | Retrieval Statistics* | | |
|-------------------------|-----------------------|------|-------|
| | Max | Min | Avg |
| Total Depth (ft) | 330.00 | 6.00 | 53.58 |
| Static Water Level (ft) | 160.00 | 2.00 | 19.69 |
| Yield (gpm) | 900.00 | 1.00 | 53.81 |

* These statistics do not take any geographic, topographic, or geologic factors into consideration. Negative swl values are reported for water levels that are above land surface.

Did you know about...

Other GWIC data
GWIC has 43 water quality sample(s) for this area.
GWIC has 87 field visit(s) for this request area.
GWIC has 338351 water level(s) for this request area.

Thanks, Just take me back to the menu.

Other MBMG data
MBMG has 394 publications available for CARBON county.
MBMG has 3 abandoned mine record(s) for this request area.

| Gwic id | PDF | DNRC WR | Site Name | Tw | Rng | Sec | Q Sec | Ver? | Type | Td | Swl | Pwl | Rwl | Yield | Test | Date | Use |
|------------------------|-----|------------|--|-----|-----|-----|-------|------|------|--------|-------|--------|-------|--------|--------|------------|------------|
| 282590 | | | BAILEY, BEN & LAURA | 07S | 20E | 14 | | No | WELL | 39.00 | 21.00 | | 21.00 | 40.00 | AIR | 5/6/2015 | DOMESTIC |
| 277361 | | | WHITNEY, RICH AND DEBBIE | 07S | 20E | 14 | | No | WELL | 38.50 | 5.00 | | 5.00 | 100.00 | AIR | 4/21/2014 | DOMESTIC |
| 206260 | | | SPERO BOB | 07S | 20E | 14 | AAB | No | WELL | 50.00 | 14.00 | | 14.00 | 40.00 | AIR | 8/17/2003 | DOMESTIC |
| 199495 | | | NICHOLS, KEVIN | 07S | 20E | 14 | AABC | Yes | WELL | 70.00 | | | | 45.00 | AIR | 12/16/2001 | DOMESTIC |
| 243798 | | | HENSON DENISE | 07S | 20E | 14 | AC | No | WELL | 300.00 | 85.00 | | 85.00 | 10.00 | AIR | 1/31/2008 | DOMESTIC |
| 223137 | | | PRATER JEAN | 07S | 20E | 14 | AC | No | WELL | 160.00 | 15.00 | | 15.00 | 50.00 | AIR | 7/7/2005 | DOMESTIC |
| 189951 | | | CITY OF RED LODGE * EAST BENCH MONITORING WELL | 07S | 20E | 14 | ACDC | Yes | WELL | 21.00 | 16.00 | | 16.00 | 1.00 | AIR | 6/14/2001 | MONITORING |
| 170623 | | | GREET RICK | 07S | 20E | 14 | AD | No | WELL | 160.00 | | 160.00 | 80.00 | 30.00 | AIR | 7/3/1998 | DOMESTIC |
| 157947 | | C099306-00 | HENRY TOM & LYNN | 07S | 20E | 14 | AD | No | WELL | 70.00 | 16.00 | 70.00 | 16.00 | 30.00 | AIR | 6/11/1996 | DOMESTIC |
| 172595 | | | MCGREGOR JAMES | 07S | 20E | 14 | ADC | No | WELL | 200.00 | 58.00 | | 58.00 | 12.00 | AIR | 6/23/1998 | DOMESTIC |
| 247584 | | | BROWN BILL AND AMY | 07S | 20E | 14 | ADD | No | WELL | 39.00 | 5.00 | | 5.00 | 80.00 | AIR | 7/14/2008 | DOMESTIC |
| 104667 | | | HOFFMAN JIM | 07S | 20E | 14 | BA | No | WELL | 42.00 | 22.00 | 25.00 | | 40.00 | BAILER | 5/25/1974 | DOMESTIC |
| 253524 | | | VON ROHR DAVID | 07S | 20E | 14 | BAC | No | WELL | 39.00 | 5.50 | | 5.50 | 60.00 | AIR | 8/4/2009 | DOMESTIC |
| 183506 | | C30043615 | STENSONT, RAYNOLD/RUZICH, PATRICIA | 07S | 20E | 14 | BAD | No | WELL | 40.00 | 24.00 | | 24.00 | 30.00 | AIR | 5/22/2000 | DOMESTIC |
| 144949 | | | BESEL ALEX | 07S | 20E | 14 | BB | No | WELL | 38.00 | 5.00 | 35.00 | 5.00 | 40.00 | AIR | 8/5/1991 | DOMESTIC |
| 209851 | | | LASFLEN ALBERT | 07S | 20E | 14 | BB | No | WELL | 40.00 | 10.00 | | 9.00 | 40.00 | AIR | 9/15/2003 | DOMESTIC |
| 241639 | | | MARYOTT JOHN R. | 07S | 20E | 14 | BB | No | WELL | 60.00 | 3.00 | | 3.00 | 80.00 | AIR | 8/2/2003 | DOMESTIC |
| 189160 | | C116882-00 | DOOM WALT | 07S | 20E | 14 | BBA | No | WELL | 36.00 | 26.00 | | 26.00 | 40.00 | AIR | 4/4/2001 | DOMESTIC |
| 104668 | | | KASTELITZ TOM | 07S | 20E | 14 | BBBB | No | WELL | 38.00 | 11.00 | 20.00 | | 30.00 | AIR | 9/24/1979 | STOCKWATER |
| 144250 | | | KUCHERA LOUIS | 07S | 20E | 14 | BBD | No | WELL | 29.00 | 9.50 | 22.00 | 10.00 | 30.00 | PUMP | 10/14/1991 | DOMESTIC |
| 214213 | | | DOWNING DAVID | 07S | 20E | 14 | BC | No | WELL | 40.00 | 12.00 | | 12.00 | 70.00 | AIR | 7/26/2004 | DOMESTIC |
| 161393 | | | MEGERTH MARK A. | 07S | 20E | 14 | BC | No | WELL | 38.00 | 9.00 | | 9.00 | 70.00 | AIR | 4/4/1996 | DOMESTIC |
| 104670 | | | MILLER WILLIAM | 07S | 20E | 14 | BC | No | WELL | 62.00 | 10.00 | 60.00 | | 40.00 | AIR | 7/6/1979 | DOMESTIC |
| 104669 | | | REPAC-GREENLEAF | 07S | 20E | 14 | BC | No | WELL | 24.00 | | | | 20.00 | PUMP | 8/12/1974 | DOMESTIC |
| 216384 | | | MARANCIK JOHN | 07S | 20E | 14 | BCA | No | WELL | 39.00 | 17.00 | | 17.00 | 40.00 | AIR | 10/27/2004 | DOMESTIC |
| 302488 | | | MORGAN, ED | 07S | 20E | 14 | BCA | No | WELL | 39.00 | 10.50 | | 10.50 | 100.00 | AIR | 7/29/2019 | DOMESTIC |
| 104673 | | | FRIZE RONALD L. | 07S | 20E | 14 | BCB | No | WELL | 29.00 | 12.00 | | 12.00 | 30.00 | PUMP | 7/30/1988 | DOMESTIC |
| 169882 | | C105943-00 | GATHJE DAN | 07S | 20E | 14 | BCB | No | WELL | 76.00 | 13.00 | | | 100.00 | AIR | 9/1/1998 | DOMESTIC |
| 104671 | | C016774-00 | KENT, ARMAS | 07S | 20E | 14 | BCB | No | WELL | 25.00 | 4.00 | 22.00 | | 25.00 | OTHER | 10/21/1977 | DOMESTIC |
| 161392 | | | MCDONNELL SHANE | 07S | 20E | 14 | BCC | No | WELL | 25.00 | 4.50 | 25.00 | 4.50 | 30.00 | AIR | 8/3/1994 | DOMESTIC |
| 302490 | | | MORGAN, ED | 07S | 20E | 14 | BCC | No | WELL | 39.00 | 10.50 | | 10.50 | 100.00 | AIR | 7/30/2019 | DOMESTIC |

| | | | | | | | | | | | | | | | | |
|------------------------|------------|---|-----|-----|----|------|-----|--------|--------|--------|--------|--------|--------|--------|------------|----------------------|
| 192982 | | CLENNEY CLANCY | 07S | 20E | 14 | BCD | No | WELL | 80.00 | 16.00 | | 16.00 | 100.00 | AIR | 9/24/2001 | DOMESTIC |
| 162796 | C101451-00 | HENSON DENISE | 07S | 20E | 14 | BDDA | Yes | WELL | 180.00 | 122.00 | 175.00 | 122.00 | 16.00 | AIR | 5/7/1997 | DOMESTIC |
| 282588 | | SPERO, BOB | 07S | 20E | 14 | C | No | WELL | 39.00 | 18.00 | | 18.00 | 60.00 | AIR | 5/5/2015 | DOMESTIC |
| 205957 | 30007536 | BECKER GARY | 07S | 20E | 14 | CB | No | WELL | 40.00 | 8.00 | | 8.00 | 85.00 | AIR | 5/30/2003 | DOMESTIC |
| 205956 | C30007537 | BECKER GARY* WELL #2 | 07S | 20E | 14 | CB | No | WELL | 40.00 | 8.00 | | 8.00 | 70.00 | AIR | 5/30/2003 | DOMESTIC |
| 161380 | | DICKHAUSEN MARK | 07S | 20E | 14 | CBA | No | WELL | 38.00 | 7.00 | 35.00 | 7.00 | 60.00 | AIR | 10/30/1996 | DOMESTIC |
| 126440 | | DORSETT JAMES H | 07S | 20E | 14 | CBC | No | WELL | 140.00 | 9.00 | 135.00 | 9.00 | 18.00 | AIR | 9/25/1991 | DOMESTIC |
| 214216 | | IRISH RUSSEL | 07S | 20E | 14 | CC | No | WELL | 40.00 | 16.00 | | 16.00 | 30.00 | AIR | 9/7/2004 | DOMESTIC |
| 268462 | | RONNING, KELLY WAYNE | 07S | 20E | 14 | CC | No | WELL | 40.00 | 12.00 | | 12.00 | 30.00 | AIR | 12/16/2010 | DOMESTIC |
| 258562 | | STOUT DICK | 07S | 20E | 14 | CC | No | WELL | 40.00 | 10.00 | | 10.00 | 40.00 | AIR | 11/1/2009 | DOMESTIC |
| 275617 | | STOUT, DICK | 07S | 20E | 14 | CC | No | WELL | 40.00 | 12.00 | | 12.00 | 30.00 | AIR | 1/31/2013 | DOMESTIC |
| 283041 | | STOUT, DICK | 07S | 20E | 14 | CC | No | WELL | 39.00 | 11.50 | | 11.50 | 60.00 | AIR | 6/15/2015 | DOMESTIC |
| 258486 | | WOODLANDS ON ROCK CREEK LLC | 07S | 20E | 14 | CC | No | WELL | 31.00 | 5.00 | | 5.00 | 100.00 | AIR | 7/14/2009 | DOMESTIC |
| 104674 | | SCHENK GALE | 07S | 20E | 14 | CCB | No | WELL | 41.00 | 9.00 | 20.00 | | 50.00 | BAILER | 8/25/1975 | DOMESTIC |
| 285347 | | STOUT, DICK | 07S | 20E | 14 | CCB | No | WELL | 39.00 | 15.00 | | 15.00 | 100.00 | AIR | 11/2/2015 | DOMESTIC |
| 285348 | | STOUT, DICK | 07S | 20E | 14 | CCB | No | WELL | 39.00 | 13.00 | | 13.00 | 100.00 | AIR | 11/2/2015 | DOMESTIC |
| 289166 | | STOUT, DICK | 07S | 20E | 14 | CCB | No | WELL | 39.00 | 14.50 | | 14.50 | 100.00 | AIR | 9/21/2016 | DOMESTIC |
| 242555 | | MCDOWELL AARON AND TAM | 07S | 20E | 14 | CCC | No | WELL | 40.00 | 17.00 | | 17.00 | 60.00 | AIR | 3/4/2008 | DOMESTIC |
| 283314 | | SPERO, BOB | 07S | 20E | 14 | CCC | No | WELL | 38.50 | 8.00 | | 8.00 | 100.00 | AIR | 7/9/2015 | DOMESTIC |
| 192983 | | THE CITY OF RED LODGE | 07S | 20E | 14 | CCC | No | WELL | 60.00 | 9.00 | 10.00 | 9.00 | 30.00 | PUMP | 8/10/2001 | OTHER |
| 268454 | | STOUT, RICHARD O | 07S | 20E | 14 | CD | No | WELL | 40.00 | 10.00 | | 10.00 | 30.00 | AIR | 12/13/2010 | DOMESTIC |
| 268463 | | STOUT, RICHARD O. | 07S | 20E | 14 | CD | No | WELL | 40.00 | 10.00 | | 10.00 | 30.00 | AIR | 12/13/2010 | DOMESTIC |
| 104675 | | SANQUIST LLOYD R. | 07S | 20E | 14 | DABB | No | WELL | 25.00 | | | | 5.00 | OTHER | 7/15/1944 | DOMESTIC |
| 276659 | | DELONO, TEDDY BONLEY | 07S | 20E | 15 | | No | WELL | 25.00 | 4.00 | | 4.00 | 15.00 | AIR | 5/27/2003 | DOMESTIC |
| 167891 | C101341-00 | ROUND BARN RESTAURANT | 07S | 20E | 15 | ADCD | No | WELL | 81.00 | 2.00 | 18.00 | 2.00 | 25.00 | PUMP | 6/17/1995 | PUBLIC WATER SUPPLY |
| 142585 | | LUOMA RON | 07S | 20E | 15 | BB | No | WELL | 58.00 | 9.00 | 55.00 | 9.00 | 50.00 | AIR | 10/12/1993 | DOMESTIC |
| 192984 | | WHITE ARNIE | 07S | 20E | 15 | BBD | No | WELL | 37.00 | 9.00 | | 9.00 | 30.00 | AIR | 8/21/2001 | DOMESTIC |
| 201846 | | LANTTA CARL D | 07S | 20E | 15 | BCD | No | WELL | 38.00 | 10.00 | | 10.00 | 50.00 | AIR | 11/14/2002 | DOMESTIC |
| 295911 | | CARROL, DON/TRAUTE, PARRIE | 07S | 20E | 15 | CBD | No | WELL | 39.00 | 11.00 | | 11.00 | 50.00 | AIR | 1/30/2018 | DOMESTIC |
| 144251 | | WALTERS TOM | 07S | 20E | 15 | CCC | No | WELL | 20.00 | 2.00 | 15.00 | | 25.00 | AIR | 7/31/1984 | DOMESTIC |
| 104676 | | PRATHER JACK | 07S | 20E | 15 | CCCC | Yes | WELL | 59.00 | 3.00 | 59.00 | | 50.00 | AIR | 5/22/1981 | |
| 285099 | | BEARTOOTH BILLINGS CLINIC SPRING | 07S | 20E | 15 | CDD | Yes | SPRING | | | | | | | | |
| 241057 | | GRIZZLY PEAK ANIMAL HOSPITAL | 07S | 20E | 15 | D | No | WELL | 60.00 | 24.00 | | 24.00 | 20.00 | AIR | 11/5/2007 | DOMESTIC |
| 252443 | | GRIZZLY PEAK ANIMAL HOSPITAL MOUNTAIN LLC | 07S | 20E | 15 | D | No | WELL | 60.00 | 24.00 | | 16.00 | 25.00 | AIR | 11/5/2007 | DOMESTIC |
| 136039 | | FOX GREGORY M. | 07S | 20E | 15 | DA | No | WELL | 34.00 | 5.00 | 30.00 | 5.00 | 60.00 | AIR | 6/21/1993 | DOMESTIC |
| 142586 | | WRIGHT HARRY | 07S | 20E | 15 | DA | No | WELL | 70.00 | 6.00 | 65.00 | 6.00 | 40.00 | AIR | 12/16/1993 | DOMESTIC |
| 140287 | | FAVID FRED | 07S | 20E | 15 | DAA | No | WELL | 29.00 | 9.00 | 29.00 | 9.00 | 25.00 | AIR | 5/28/1993 | DOMESTIC |
| 161375 | | MARYOTT MANFRED & MARY LOU | 07S | 20E | 15 | DAC | No | WELL | 31.00 | 13.00 | 31.00 | 13.00 | 20.00 | AIR | 9/4/1995 | DOMESTIC |
| 298648 | | RUE, DENNY & MARIE | 07S | 20E | 15 | DAC | No | WELL | 38.00 | 6.00 | | 6.00 | 100.00 | AIR | 9/13/2018 | DOMESTIC |
| 104678 | | FANSHAWE JOHN R. | 07S | 20E | 15 | DAD | No | WELL | 30.00 | 5.00 | 9.00 | | 40.00 | BAILER | 6/3/1974 | DOMESTIC |
| 282862 | | GRAY, ROBERT | 07S | 20E | 15 | DC | No | WELL | 45.00 | 27.00 | | 27.00 | 50.00 | AIR | 6/3/2015 | DOMESTIC |
| 253500 | | BEARTOOTH HOSPITAL AND HEALTH CENTER | 07S | 20E | 15 | DCA | No | WELL | 29.50 | 17.70 | | 17.70 | 30.00 | AIR | 9/17/2009 | GEOTHERMAL-INJECTION |
| 253503 | | BEARTOOTH HOSPITAL AND HEALTH CENTER | 07S | 20E | 15 | DCA | No | WELL | 32.50 | 18.00 | | 18.00 | 60.00 | AIR | 9/15/2009 | GEOTHERMAL-INJECTION |
| 258203 | | BEARTOOTH HOSPITAL AND HEALTH CENTER | 07S | 20E | 15 | DCA | No | WELL | 34.00 | 13.00 | | 13.00 | 80.00 | AIR | 6/2/2010 | IRRIGATION |
| 293843 | | MYERS, DEAN | 07S | 20E | 15 | DCB | No | WELL | 39.00 | 20.00 | | 20.00 | 35.00 | AIR | 8/16/2017 | IRRIGATION |
| 283964 | | TYPOLT, TY AND JEAN | 07S | 20E | 15 | DCC | No | WELL | 42.00 | 26.00 | | 26.00 | 40.00 | AIR | 8/12/2015 | DOMESTIC |
| 104679 | | PATES SEABROOK | 07S | 20E | 15 | DD | No | WELL | 28.00 | 5.50 | | 5.50 | 35.00 | PUMP | 10/4/1988 | DOMESTIC |
| 240135 | | TETRA TECH | 07S | 20E | 15 | DD | No | WELL | 44.00 | 13.67 | | 13.67 | 40.00 | AIR | 11/9/2007 | OTHER |

| | | | | | | | | | | | | | | | | | |
|------------------------|--|------------|--------------------------------------|-----|-----|----|------|-----|------|-------|-------|-------|-------|--------|--------|------------|-----------------------|
| 136038 | | | KUNGAS PATRICIA | 07S | 20E | 15 | DDA | No | WELL | 90.00 | 33.00 | 85.00 | 15.00 | 15.00 | AIR | 6/18/1993 | DOMESTIC |
| 253502 | | | BEARTOOTH HOSPITAL AND HEALTH CENTER | 07S | 20E | 15 | DDB | No | WELL | 33.00 | 14.50 | | 14.50 | 100.00 | AIR | 9/18/2009 | GEOTHERMAL-INJECTION |
| 274823 | | | BEARTOOTH BILLINGS CLINIC - HOSPITAL | 07S | 20E | 15 | DDBC | No | WELL | 38.00 | 13.00 | | 13.00 | 60.00 | AIR | 9/3/2013 | IRRIGATION |
| 104681 | | | FANSHAWE JOHN R. | 07S | 20E | 15 | DDD | No | WELL | 38.00 | 4.00 | 35.00 | | 35.00 | AIR | 8/27/1985 | DOMESTIC |
| 104680 | | | FANSHAWE JOHN R. | 07S | 20E | 15 | DDD | No | WELL | 30.00 | 5.00 | 10.00 | | 40.00 | BAILER | 6/4/1974 | DOMESTIC |
| 104716 | | | FRANK JOHN G | 07S | 20E | 21 | | No | WELL | 30.00 | 28.00 | | | 10.00 | OTHER | 1/1/1928 | DOMESTIC |
| 104717 | | | FRANK JOHN G | 07S | 20E | 21 | | No | WELL | 30.00 | | | | 10.00 | OTHER | | DOMESTIC |
| 290187 | | | BEUG, JOHN | 07S | 20E | 21 | AAC | No | WELL | 60.00 | 13.00 | | 13.00 | 64.00 | AIR | 3/29/2002 | STOCKWATER |
| 196857 | | | ROE TK | 07S | 20E | 21 | ADA | No | WELL | 60.00 | 21.00 | | 21.00 | 60.00 | AIR | 3/28/2002 | IRRIGATION |
| 290017 | | | BRATTON, NEIL A. | 07S | 20E | 21 | BAA | No | WELL | 50.00 | 8.00 | | 8.00 | 60.00 | AIR | 5/25/2000 | DOMESTIC |
| 172603 | | | FLECK KURT | 07S | 20E | 21 | BAA | No | WELL | 30.00 | | 28.00 | | 20.00 | AIR | 5/15/1998 | IRRIGATION |
| 251314 | | | BILL AND MARGERT KARAS RC-14 | 07S | 20E | 21 | BBCD | Yes | WELL | 41.00 | 12.00 | | 12.00 | 50.00 | PUMP | 7/15/2009 | MONITORING |
| 241618 | | | MARTINS KIM | 07S | 20E | 21 | CA | No | WELL | 60.00 | 10.00 | | 10.00 | 25.00 | AIR | 11/29/2007 | IRRIGATION |
| 290059 | | | RATTIN, HUGO | 07S | 20E | 21 | CA | No | WELL | 40.00 | 7.00 | | 6.00 | 75.00 | AIR | 6/24/2000 | DOMESTIC |
| 104718 | | 15389 | RANCH KARAS | 07S | 20E | 21 | CBB | No | WELL | 40.00 | 20.00 | 40.00 | | 50.00 | AIR | 1/1/1977 | STOCKWATER |
| 104719 | | | KINGMAN HENRY AND MARILYN | 07S | 20E | 21 | DBCD | Yes | WELL | 37.00 | 9.00 | 20.00 | | 40.00 | BAILER | 1/1/1966 | DOMESTIC |
| 253817 | | | DRAPES RANCH CO. | 07S | 20E | 21 | DDA | No | WELL | 50.00 | 10.53 | | | | | 10/23/2009 | MONITORING |
| 290094 | | | LINDKE, BOB | 07S | 20E | 22 | | No | WELL | 60.00 | 6.00 | | | | | 8/7/2001 | DOMESTIC |
| 247364 | | | NIENABER FRANK | 07S | 20E | 22 | | No | WELL | 49.00 | 40.00 | | | | | 1/15/2008 | IRRIGATION |
| 290076 | | | SMITH, ROD | 07S | 20E | 22 | | No | WELL | 60.00 | 18.00 | | 18.00 | 100.00 | AIR | 5/24/2001 | IRRIGATION |
| 290092 | | | WALMSLEY, JOHN | 07S | 20E | 22 | | No | WELL | 60.00 | 24.00 | | 24.00 | 30.00 | AIR | 8/9/2001 | DOMESTIC |
| 274822 | | | BEARTOOTH BILLINGS CLINIC - WILLOWS | 07S | 20E | 22 | AAB | No | WELL | 39.00 | 17.00 | | 17.00 | 60.00 | AIR | 9/3/2013 | IRRIGATION |
| 253501 | | | BEARTOOTH HOSPITAL AND HEALTH CENTER | 07S | 20E | 22 | AAB | No | WELL | 63.00 | 13.60 | | 13.60 | 300.00 | AIR | 9/9/2009 | GEOTHERMAL-EXTRACTION |
| 253499 | | | BEARTOOTH HOSPITAL AND HEALTH CENTER | 07S | 20E | 22 | AAB | No | WELL | 63.00 | 15.00 | | 15.00 | 300.00 | AIR | 9/9/2009 | GEOTHERMAL-EXTRACTION |
| 104720 | | | AVERILL TOM | 07S | 20E | 22 | AAC | No | WELL | 30.00 | 10.00 | 29.00 | | 30.00 | AIR | 1/30/1978 | DOMESTIC |
| 101607 | | | AVERILL, TOM | 07S | 20E | 22 | AAC | No | WELL | 30.00 | 12.00 | 29.00 | | 35.00 | AIR | 2/3/1978 | DOMESTIC |
| 204597 | | | ROSE ELLON | 07S | 20E | 22 | ABC | No | WELL | 45.00 | 18.00 | | 18.00 | 50.00 | AIR | 6/23/2003 | DOMESTIC |
| 290122 | | | HAAR, JIM | 07S | 20E | 22 | ABCB | No | WELL | 60.00 | 19.00 | | 19.00 | 60.00 | AIR | 5/4/2001 | DOMESTIC |
| 243799 | | | JACKSON GENE | 07S | 20E | 22 | AC | No | WELL | 57.00 | 22.00 | | 22.00 | 25.00 | AIR | 3/17/2008 | IRRIGATION |
| 237227 | | | OLDS WALLY | 07S | 20E | 22 | AC | No | WELL | 50.00 | 18.00 | | 18.00 | 30.00 | AIR | 2/23/2007 | IRRIGATION |
| 293845 | | | BERNHART, GORDON | 07S | 20E | 22 | ACC | No | WELL | 46.00 | 22.00 | | 22.00 | 20.00 | AIR | 8/16/2017 | IRRIGATION |
| 218534 | | | NORBY ALLEN | 07S | 20E | 22 | ACCB | No | WELL | 55.00 | 35.00 | | 35.00 | 25.00 | AIR | 2/16/2005 | IRRIGATION |
| 171073 | | | MOORE MARK | 07S | 20E | 22 | ACD | No | WELL | 33.00 | 11.00 | | 11.00 | 80.00 | AIR | 9/29/1997 | DOMESTIC |
| 104721 | | | CASTAGNE BROS. | 07S | 20E | 22 | AD | No | WELL | 10.00 | 7.00 | | | 5.00 | OTHER | 1/1/1910 | DOMESTIC |
| 172605 | | | REITZ TOM | 07S | 20E | 22 | ADD | No | WELL | 25.00 | 10.00 | 22.00 | 10.00 | 15.00 | AIR | 11/12/1998 | DOMESTIC |
| 221842 | | | LANGLAS HOMES | 07S | 20E | 22 | B | No | WELL | 52.00 | 4.00 | | 4.00 | 50.00 | AIR | 6/1/2005 | IRRIGATION |
| 234572 | | | RICHARDS COURT | 07S | 20E | 22 | BA | No | WELL | 40.00 | 6.00 | | 6.00 | 50.00 | AIR | 6/29/2006 | IRRIGATION |
| 268082 | | | NEIBAUER, JEREMY | 07S | 20E | 22 | BAB | No | WELL | 44.00 | 15.00 | | 15.00 | 50.00 | AIR | 6/8/2012 | DOMESTIC |
| 172606 | | | URBAN ART | 07S | 20E | 22 | BAB | No | WELL | 28.50 | 5.00 | | 5.00 | 60.00 | AIR | 10/30/1998 | DOMESTIC |
| 298001 | | | WYSS, CURT | 07S | 20E | 22 | BAC | No | WELL | 39.00 | 9.00 | | 9.00 | 60.00 | AIR | 7/30/2018 | IRRIGATION |
| 164281 | | 102151 | EVANS LEWY JR | 07S | 20E | 22 | BACD | Yes | WELL | 38.50 | 9.00 | | | 60.00 | AIR | 9/10/1997 | IRRIGATION |
| 301954 | | | LORD, RUSSELL | 07S | 20E | 22 | BAD | No | WELL | 38.50 | 21.00 | | 21.00 | 40.00 | AIR | 7/2/2019 | DOMESTIC |
| 240136 | | | TETRA TECH INC. | 07S | 20E | 22 | BB | No | WELL | 43.50 | 20.00 | | 20.00 | 40.00 | AIR | 11/8/2007 | OTHER |
| 274271 | | | CRELLIN, RANDY AND LEE | 07S | 20E | 22 | BBB | No | WELL | 39.00 | 18.00 | | 18.00 | 25.00 | AIR | 4/4/2013 | DOMESTIC |
| 274266 | | | MACKAY, HELEN | 07S | 20E | 22 | BBB | No | WELL | 39.00 | 18.00 | | 18.00 | 25.00 | AIR | 4/4/2013 | DOMESTIC |
| 274265 | | | LINDE, BRIAN | 07S | 20E | 22 | BBC | No | WELL | 39.00 | 21.00 | | 21.00 | 25.00 | AIR | 4/4/2013 | DOMESTIC |
| 104722 | | C021752-00 | URBAN, ARTHUR | 07S | 20E | 22 | BBC | No | WELL | 32.00 | 6.00 | 32.00 | | 20.00 | AIR | 9/16/1978 | DOMESTIC |
| 243800 | | | CANHAM BILL | 07S | 20E | 22 | BC | No | WELL | 57.00 | 20.00 | | 20.00 | 25.00 | AIR | 3/18/2008 | IRRIGATION |
| 226427 | | | GOLDBERG CLYDE | 07S | 20E | 22 | BC | No | WELL | 44.00 | 8.00 | | | 35.00 | AIR | 11/2/2005 | DOMESTIC |
| 201848 | | C30007510 | ROE TK | 07S | 20E | 22 | BC | No | WELL | 60.00 | 21.00 | | | 60.00 | AIR | 3/28/2002 | IRRIGATION |

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|------------------------|--|--|-----|-----|----|------|-----|------|-------|-------|-------|--------|-----|-----------|------------|
| 298647 | | PETERSON, DEAN | 07S | 20E | 22 | BCA | No | WELL | 39.00 | 5.00 | 5.00 | 100.00 | AIR | 9/12/2018 | IRRIGATION |
| 284684 | | WILLIAMS, KAY | 07S | 20E | 22 | BCA | No | WELL | 39.00 | 5.50 | 5.50 | 100.00 | AIR | 10/1/2015 | DOMESTIC |
| 196635 | | SACKS BARBARA L. | 07S | 20E | 22 | BCB | No | WELL | 38.00 | 8.00 | 8.00 | 60.00 | AIR | 6/13/2002 | DOMESTIC |
| 196858 | | C30003036 BEUG JOHN | 07S | 20E | 22 | BCBB | Yes | WELL | 60.00 | 13.00 | 13.00 | 64.00 | AIR | 4/3/2008 | STOCKWATER |
| 172607 | | C108084-00 CREEKSIDE TOWNHOMES ASSN | 07S | 20E | 22 | BCC | No | WELL | 48.00 | 8.00 | 8.00 | 50.00 | AIR | 7/15/1997 | IRRIGATION |
| 301699 | | SOUDERS, CAROL | 07S | 20E | 22 | BCC | No | WELL | 39.00 | 9.00 | 9.00 | 100.00 | AIR | 6/14/2019 | DOMESTIC |
| 290077 | | ECKHOF, LINDA | 07S | 20E | 22 | BD | No | WELL | 60.00 | 12.00 | 12.00 | 40.00 | AIR | 6/6/2001 | DOMESTIC |
| 201849 | | KELLY DARCY | 07S | 20E | 22 | BD | No | WELL | 60.00 | 14.00 | 14.00 | 45.00 | AIR | 6/25/2002 | IRRIGATION |
| 251943 | | KICKNESS RD | 07S | 20E | 22 | BD | No | WELL | 50.00 | 20.00 | 20.00 | 20.00 | AIR | 4/24/2008 | IRRIGATION |
| 258398 | | LANGLAS STEVE | 07S | 20E | 22 | BD | No | WELL | 40.00 | 4.00 | 4.00 | 40.00 | AIR | 9/14/2010 | IRRIGATION |
| 243770 | | LINDALL JUDY | 07S | 20E | 22 | BD | No | WELL | 53.00 | 25.00 | 25.00 | 25.00 | AIR | 4/30/2008 | IRRIGATION |
| 258255 | | RONGLAS STEVE | 07S | 20E | 22 | BD | No | WELL | 40.00 | 4.00 | 4.00 | 40.00 | AIR | 9/14/2010 | IRRIGATION |
| 243755 | | STREET JUDY | 07S | 20E | 22 | BD | No | WELL | 56.00 | 10.00 | 10.00 | 30.00 | AIR | 2/11/2008 | IRRIGATION |
| 285873 | | JOHNSON, JASEN | 07S | 20E | 22 | BDA | No | WELL | 39.00 | 25.00 | 20.00 | 20.00 | AIR | 1/22/2016 | DOMESTIC |
| 295912 | | MONAHAN, BRIAN | 07S | 20E | 22 | BDC | No | WELL | 39.00 | 22.00 | 22.00 | 30.00 | AIR | 1/30/2018 | DOMESTIC |
| 247574 | | SMITH PEGGY | 07S | 20E | 22 | BDD | No | WELL | 47.00 | 23.00 | 23.00 | 25.00 | AIR | 8/6/2008 | IRRIGATION |
| 289851 | | WALTER, KELLY | 07S | 20E | 22 | BDD | No | WELL | 40.00 | 16.00 | 16.00 | 40.00 | AIR | 8/22/2000 | IRRIGATION |
| 246936 | | KEEFE WILLIAM AND CALLIE | 07S | 20E | 22 | BDDD | No | WELL | 60.00 | 28.00 | 28.00 | 40.00 | AIR | 2/18/2004 | DOMESTIC |
| 278349 | | FIVELAND, TERRILL | 07S | 20E | 22 | C | No | WELL | 39.00 | 17.00 | 17.00 | 40.00 | AIR | 6/5/2014 | DOMESTIC |
| 234554 | | HAAR JIM | 07S | 20E | 22 | CA | No | WELL | 60.00 | 8.00 | 8.00 | 60.00 | AIR | 6/8/2006 | IRRIGATION |
| 249848 | | JACKSON GENE | 07S | 20E | 22 | CA | No | WELL | 57.00 | 22.00 | 22.00 | 75.00 | AIR | 3/17/2008 | IRRIGATION |
| 258594 | | LANGLAS DAVE | 07S | 20E | 22 | CA | No | WELL | 60.00 | 10.00 | 10.00 | 60.00 | AIR | 7/7/2010 | IRRIGATION |
| 241654 | | LINTON BUD | 07S | 20E | 22 | CA | No | WELL | 60.00 | 10.00 | 10.00 | 40.00 | AIR | 1/7/2008 | IRRIGATION |
| 241655 | | LOHMEYER/PILATI | 07S | 20E | 22 | CA | No | WELL | 60.00 | 10.00 | 10.00 | 40.00 | AIR | 1/3/2007 | IRRIGATION |
| 275618 | | OKIMOTO, MYRON | 07S | 20E | 22 | CA | No | WELL | 52.00 | 31.00 | 31.00 | 20.00 | AIR | 8/22/2013 | IRRIGATION |
| 201850 | | RESELAND JO | 07S | 20E | 22 | CA | No | WELL | 60.00 | 8.50 | 8.50 | 85.00 | AIR | 7/18/2002 | IRRIGATION |
| 243756 | | WALLENDER JUDY | 07S | 20E | 22 | CA | No | WELL | 60.00 | 10.00 | 10.00 | 30.00 | AIR | 2/12/2008 | IRRIGATION |
| 247649 | | BRINKER MARY | 07S | 20E | 22 | CAA | No | WELL | 47.00 | 25.00 | 25.00 | 40.00 | AIR | 6/20/2008 | DOMESTIC |
| 207483 | | COTLER IAN | 07S | 20E | 22 | CAA | No | WELL | 38.00 | 8.00 | 8.00 | 60.00 | AIR | 9/24/2003 | DOMESTIC |
| 204264 | | OSTLAND SCOTT AND TRACI | 07S | 20E | 22 | CAA | No | WELL | 51.00 | 11.00 | 11.00 | 70.00 | AIR | 6/25/2003 | IRRIGATION |
| 239554 | | ROLLER DAN AND KATHY | 07S | 20E | 22 | CAA | No | WELL | 39.00 | 19.00 | 19.00 | 40.00 | AIR | 8/6/2007 | DOMESTIC |
| 252237 | | SZCZUTKOWSKI, PEGGY | 07S | 20E | 22 | CAA | No | WELL | 50.00 | 32.00 | 32.00 | 25.00 | AIR | 8/20/2009 | DOMESTIC |
| 258210 | | CHRISTENSEN JODIE, JUDY, BRYCE AND CHRISTINE | 07S | 20E | 22 | CAB | No | WELL | 39.00 | 16.00 | 16.00 | 40.00 | AIR | 7/12/2010 | DOMESTIC |
| 212666 | | HEINESS JIM AND KAREN | 07S | 20E | 22 | CAB | No | WELL | 35.00 | 16.00 | 16.00 | 50.00 | AIR | 5/26/2004 | DOMESTIC |
| 274287 | | JOHNSON, JOE | 07S | 20E | 22 | CAB | No | WELL | 39.00 | 8.50 | 8.50 | 40.00 | AIR | 6/28/2013 | DOMESTIC |
| 284686 | | MINER, BOB | 07S | 20E | 22 | CAB | No | WELL | 39.00 | 17.00 | 17.00 | 40.00 | AIR | 10/6/2015 | DOMESTIC |
| 302487 | | PETERSON, ROY | 07S | 20E | 22 | CAB | No | WELL | 39.00 | 11.50 | 11.50 | 60.00 | AIR | 7/29/2019 | DOMESTIC |
| 258233 | | RICHARDS JAMES | 07S | 20E | 22 | CAB | No | WELL | 39.00 | 18.00 | 18.00 | 40.00 | AIR | 5/18/2010 | DOMESTIC |
| 297942 | | SMITH, RHETT | 07S | 20E | 22 | CAC | No | WELL | 39.00 | 13.00 | 13.00 | 40.00 | AIR | 7/26/2018 | IRRIGATION |
| 291457 | | WESTWOOD, DAVID E. | 07S | 20E | 22 | CAC | No | WELL | 39.00 | 28.00 | 28.00 | 20.00 | AIR | 3/3/2017 | DOMESTIC |
| 291456 | | ZWIENER, TERRY | 07S | 20E | 22 | CAC | No | WELL | 39.00 | 27.00 | 27.00 | 20.00 | AIR | 3/2/2017 | DOMESTIC |
| 258208 | | ANDERSON WALLY | 07S | 20E | 22 | CAD | No | WELL | 50.00 | 34.00 | 34.00 | 30.00 | AIR | 7/26/2010 | DOMESTIC |
| 242570 | | BAIRD JIM | 07S | 20E | 22 | CAD | No | WELL | 50.00 | 34.00 | 34.00 | 20.00 | AIR | 3/3/2008 | DOMESTIC |
| 242535 | | FLAHERTY TOM | 07S | 20E | 22 | CAD | No | WELL | 52.00 | 34.00 | 34.00 | 30.00 | AIR | 2/29/2008 | DOMESTIC |
| 286182 | | GRAY, LONNA | 07S | 20E | 22 | CAD | No | WELL | 53.00 | 40.00 | 40.00 | 20.00 | AIR | 2/16/2016 | DOMESTIC |
| 283426 | | HOSSNER, LLOYD | 07S | 20E | 22 | CAD | No | WELL | 39.00 | 24.00 | 24.00 | 20.00 | AIR | 7/24/2017 | IRRIGATION |
| 242556 | | KANE GARY S. | 07S | 20E | 22 | CAD | No | WELL | 50.00 | 36.50 | 36.50 | 20.00 | AIR | 3/5/2008 | DOMESTIC |
| 223110 | | ALEKSICH SKIP | 07S | 20E | 22 | CB | No | WELL | 60.00 | 8.00 | 8.00 | 60.00 | AIR | 9/20/2005 | IRRIGATION |
| 243757 | | BOOTH, MAUREEN | 07S | 20E | 22 | CB | No | WELL | 60.00 | 10.00 | 10.00 | 30.00 | AIR | 2/14/2008 | IRRIGATION |

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|------------------------|--|------------|--------------------------------------|-----|-----|----|------|-----|------|-------|-------|-------|--------|-------|------------|------------|------------|
| 226255 | | | DILLON DEVELOPMENT | 07S | 20E | 22 | CB | No | WELL | 60.00 | 10.00 | 10.00 | 60.00 | AIR | 9/20/2005 | DOMESTIC | |
| 243772 | | C30042946 | KOSKOVICH, JERRY | 07S | 20E | 22 | CB | No | WELL | 60.00 | 20.00 | 20.00 | 30.00 | AIR | 4/28/2008 | IRRIGATION | |
| 243763 | | | MILLER WARD | 07S | 20E | 22 | CB | No | WELL | 60.00 | 10.00 | 10.00 | 35.00 | AIR | 2/5/2008 | IRRIGATION | |
| 243759 | | | SPIRES @ RED LODGE HOME OWNERS ASSOC | 07S | 20E | 22 | CB | No | WELL | 60.00 | 10.00 | 10.00 | 40.00 | AIR | 2/4/2008 | IRRIGATION | |
| 104723 | | | CANFIELD TINY | 07S | 20E | 22 | CBB | No | WELL | 35.00 | 20.00 | 35.00 | 25.00 | OTHER | 1/1/1978 | UNKNOWN | |
| 265694 | | | MARTIN, LARRY AND RUTH | 07S | 20E | 22 | CBC | No | WELL | 39.00 | 23.00 | 23.00 | 25.00 | AIR | 2/17/2012 | DOMESTIC | |
| 247538 | | | ELK PARK I / ANDERSON, CATHY | 07S | 20E | 22 | CBD | No | WELL | 40.00 | 5.00 | 5.00 | 60.00 | AIR | 7/12/2008 | DOMESTIC | |
| 104724 | | | BARANKO LEON | 07S | 20E | 22 | CC | No | WELL | 38.00 | 8.00 | 38.00 | 30.00 | AIR | 6/29/1983 | DOMESTIC | |
| 131620 | | | BLANCH TED | 07S | 20E | 22 | CC | No | WELL | 45.00 | 20.00 | 20.00 | 50.00 | AIR | 5/17/1989 | IRRIGATION | |
| 268903 | | | WYSS, DIANNE | 07S | 20E | 22 | CCA | No | WELL | 39.00 | 8.00 | 8.00 | 40.00 | AIR | 8/17/2012 | DOMESTIC | |
| 258234 | | | BLAIR LESLIE | 07S | 20E | 22 | CCB | No | WELL | 39.00 | 10.00 | 10.00 | 60.00 | AIR | 6/2/2010 | DOMESTIC | |
| 176386 | | C108067-00 | COFFMAN WILLIS M | 07S | 20E | 22 | CCB | No | WELL | 40.00 | 30.00 | 32.00 | 32.00 | 20.00 | AIR | 5/6/1999 | IRRIGATION |
| 244778 | | | DANIEL DREW | 07S | 20E | 22 | CCB | No | WELL | 40.00 | 14.00 | 14.00 | 60.00 | AIR | 5/29/2008 | DOMESTIC | |
| 250706 | | | NEFF DENNIS B. | 07S | 20E | 22 | CCB | No | WELL | 39.00 | 13.00 | 13.00 | 50.00 | AIR | 5/26/2009 | DOMESTIC | |
| 244790 | | C30042943 | SORENSEN CAROL LYN | 07S | 20E | 22 | CCB | No | WELL | 40.00 | 20.00 | 20.00 | 25.00 | AIR | 5/20/2008 | DOMESTIC | |
| 290101 | | | NORDSTROM, TIM | 07S | 20E | 22 | CCBB | No | WELL | 58.00 | 16.00 | 16.00 | 60.00 | AIR | 7/12/2001 | DOMESTIC | |
| 247576 | | | CLARK JIM AND MARTIE | 07S | 20E | 22 | CCC | No | WELL | 39.00 | 7.50 | 7.50 | 100.00 | AIR | 7/23/2008 | DOMESTIC | |
| 245396 | | | CLEPPER JAMES W | 07S | 20E | 22 | CCC | No | WELL | 40.00 | 9.00 | 9.00 | 30.00 | AIR | 2/27/2008 | DOMESTIC | |
| 242573 | | | CLEPPER JAMES, AND JIM CLARK | 07S | 20E | 22 | CCC | No | WELL | 40.00 | 9.00 | 9.00 | 30.00 | AIR | 2/27/2008 | DOMESTIC | |
| 248966 | | | CLUTTER VAUGHN & MARIE | 07S | 20E | 22 | CCC | No | WELL | 40.00 | 8.00 | 8.00 | 40.00 | AIR | 6/20/2008 | DOMESTIC | |
| 242537 | | C30042930 | EXLEY, JACK/OSMUN, CATHIE | 07S | 20E | 22 | CCC | No | WELL | 40.00 | 19.00 | 19.00 | 30.00 | AIR | 2/27/2008 | DOMESTIC | |
| 255018 | | | STANAWAY DON F. | 07S | 20E | 22 | CCC | No | WELL | 40.00 | 19.00 | 19.00 | 40.00 | AIR | 1/18/2010 | DOMESTIC | |
| 250701 | | | STEVENS MAC | 07S | 20E | 22 | CCC | No | WELL | 39.00 | 12.00 | 12.00 | 40.00 | AIR | 5/27/2009 | DOMESTIC | |
| 269651 | | | TATE, WALLY | 07S | 20E | 22 | CCD | No | WELL | 45.00 | 23.00 | 23.00 | 30.00 | AIR | 9/25/2012 | DOMESTIC | |
| 212140 | | | WALTER DELBERT | 07S | 20E | 22 | CCD | No | WELL | 60.00 | 34.00 | 34.00 | 50.00 | AIR | 5/13/2004 | IRRIGATION | |
| 201852 | | | BEAUMONT TRACY | 07S | 20E | 22 | CD | No | WELL | 60.00 | 19.50 | 19.50 | 100.00 | AIR | 6/21/2002 | IRRIGATION | |
| 268436 | | | CLAQUE, MARTY | 07S | 20E | 22 | CD | No | WELL | 60.00 | 34.00 | 34.00 | 60.00 | AIR | 6/17/2011 | STOCKWATER | |
| 243802 | | | ELK PARK TOWN HOMES | 07S | 20E | 22 | CD | No | WELL | 60.00 | 10.00 | 10.00 | 30.00 | AIR | 2/15/2008 | IRRIGATION | |
| 243774 | | | KIRK NANCY | 07S | 20E | 22 | CD | No | WELL | 60.00 | 15.00 | 15.00 | 25.00 | AIR | 3/26/2008 | IRRIGATION | |
| 209852 | | | L AND L BUILDERS | 07S | 20E | 22 | CD | No | WELL | 50.00 | 25.00 | 15.00 | 20.00 | AIR | 2/25/2004 | IRRIGATION | |
| 268425 | | | MCCLUSKEY, TODD AND DONNA | 07S | 20E | 22 | CD | No | WELL | 60.00 | 22.00 | 22.00 | 60.00 | AIR | 8/3/2011 | IRRIGATION | |
| 289774 | | | MCQUILLAN, JIM | 07S | 20E | 22 | CD | No | WELL | 40.00 | 12.00 | 12.00 | 30.00 | AIR | 11/22/1999 | DOMESTIC | |
| 243795 | | | OCHILTREE JIM | 07S | 20E | 22 | CD | No | WELL | 60.00 | 25.00 | 25.00 | 20.00 | AIR | 3/16/2008 | IRRIGATION | |
| 243775 | | C30043169 | POTTER WENDY | 07S | 20E | 22 | CD | No | WELL | 60.00 | 30.00 | 30.00 | 20.00 | AIR | 3/27/2008 | IRRIGATION | |
| 251938 | | | RED LODGE HOME OWNERS | 07S | 20E | 22 | CD | No | WELL | 60.00 | 15.00 | 15.00 | 40.00 | AIR | 4/25/2008 | IRRIGATION | |
| 268418 | | | ROI, STEVEN | 07S | 20E | 22 | CD | No | WELL | 60.00 | 37.00 | 37.00 | 25.00 | AIR | 9/6/2011 | IRRIGATION | |
| 268422 | | | SHUCK, MIKE | 07S | 20E | 22 | CD | No | WELL | 60.00 | 22.00 | 22.00 | 60.00 | AIR | 9/3/2011 | IRRIGATION | |
| 242552 | | | COLLINS JENNIFER | 07S | 20E | 22 | CDA | No | WELL | 48.00 | 36.00 | 36.00 | 25.00 | AIR | 3/7/2008 | DOMESTIC | |
| 242536 | | C30042929 | ERKENS JAMES A. | 07S | 20E | 22 | CDA | No | WELL | 50.00 | 36.00 | 36.00 | 20.00 | AIR | 2/28/2008 | DOMESTIC | |
| 247664 | | C300431580 | PETRY GEORGE | 07S | 20E | 22 | CDA | No | WELL | 50.00 | 39.00 | 39.00 | 20.00 | AIR | 4/3/2008 | DOMESTIC | |
| 242505 | | | PETRY GEORGE | 07S | 20E | 22 | CDA | No | WELL | 50.00 | 39.00 | 39.00 | 20.00 | AIR | 4/3/2008 | DOMESTIC | |
| 242504 | | C30043148 | PETRY, GEORGE | 07S | 20E | 22 | CDA | No | WELL | 53.00 | 41.00 | 41.00 | 20.00 | AIR | 4/4/2008 | DOMESTIC | |
| 289804 | | | MOORE, JERRY | 07S | 20E | 22 | CDB | No | WELL | 40.00 | 23.00 | 20.00 | 20.00 | AIR | 5/5/1999 | DOMESTIC | |
| 216758 | | | RUFFIERS EMILE AND LUTITIA | 07S | 20E | 22 | CDBB | Yes | WELL | 55.00 | 31.66 | | | OTHER | 4/3/2008 | COMMERCIAL | |
| 268886 | | | BROWN, JIM AND DIANE | 07S | 20E | 22 | CDC | No | WELL | 39.00 | 15.00 | 15.00 | 50.00 | AIR | 8/17/2012 | DOMESTIC | |
| 291455 | | | HASH, CRAIG AND DENISE | 07S | 20E | 22 | CDC | No | WELL | 39.00 | 30.00 | 30.00 | 15.00 | AIR | 3/1/2017 | DOMESTIC | |
| 247552 | | | WILLIAMS, EDWARD / HEBERT, HOWARD | 07S | 20E | 22 | CDC | No | WELL | 46.00 | 17.00 | 17.00 | 60.00 | AIR | 7/11/2008 | DOMESTIC | |
| 250704 | | | AREND DAVE | 07S | 20E | 22 | CDD | No | WELL | 56.00 | 37.00 | 37.00 | 30.00 | AIR | 5/26/2009 | COMMERCIAL | |
| 244800 | | | FISHER JIM | 07S | 20E | 22 | CDD | No | WELL | 49.00 | 37.00 | 37.00 | 30.00 | AIR | 5/21/2008 | DOMESTIC | |

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|------------------------|-----------|--|-----|-----|----|------|-----|---------|--------|-------|-------|-------|--------|--------|------------|---------------------|
| 283696 | | ROI, STEVE | 07S | 20E | 22 | CDD | No | WELL | 60.00 | 33.00 | | 33.00 | 40.00 | AIR | 7/27/2015 | DOMESTIC |
| 248942 | | SMITH TIM & MARLA | 07S | 20E | 22 | CDD | No | WELL | 48.00 | 29.00 | | 26.00 | 40.00 | AIR | 11/26/2008 | DOMESTIC |
| 156962 | 99193 | KANE GARY | 07S | 20E | 22 | D | No | WELL | 45.00 | 26.00 | 45.00 | 26.00 | 40.00 | AIR | 8/28/1995 | IRRIGATION |
| 104725 | 11525 | COBETTI FRANK | 07S | 20E | 22 | DA | No | WELL | 31.00 | 6.00 | 10.00 | | 20.00 | BAILER | 1/20/1977 | DOMESTIC |
| 223223 | | HICKS TIM | 07S | 20E | 22 | DA | No | WELL | 40.00 | 6.00 | | 6.00 | 30.00 | AIR | 11/22/2005 | DOMESTIC |
| 205959 | | HICKS TIM | 07S | 20E | 22 | DA | No | WELL | 40.00 | 5.00 | | 5.00 | 105.00 | AIR | 5/29/2003 | DOMESTIC |
| 290225 | | LEGNINI, ROBERT | 07S | 20E | 22 | DA | No | WELL | 40.00 | 5.00 | | 5.00 | 105.00 | AIR | 5/29/2003 | DOMESTIC |
| 258573 | | CADWELL LINDSEY | 07S | 20E | 22 | DB | No | WELL | 20.00 | 10.00 | | 10.00 | 30.00 | AIR | 4/22/2010 | IRRIGATION |
| 226240 | | CLINE MIKE | 07S | 20E | 22 | DB | No | WELL | 60.00 | 38.00 | | 38.00 | 30.00 | AIR | 5/18/2006 | IRRIGATION |
| 131622 | | CVC JOINT VENTURE * HANK CANNING TRAILER | 07S | 20E | 22 | DB | No | WELL | 40.00 | 7.00 | 38.00 | | 35.00 | AIR | 8/28/1986 | DOMESTIC |
| 131621 | | CVC JOINT VENTURE * SKIPS WELL | 07S | 20E | 22 | DB | No | WELL | 40.00 | 4.00 | 38.00 | | 35.00 | AIR | 6/28/1986 | DOMESTIC |
| 158423 | 99930 | STEVENSON MEL | 07S | 20E | 22 | DBC | No | WELL | 41.00 | 24.00 | 35.00 | | 40.00 | AIR | 9/5/1996 | DOMESTIC |
| 204556 | | CRAWFORD, BRIAN AND JENNIFER | 07S | 20E | 22 | DBC | Yes | WELL | 44.00 | 28.00 | | 28.00 | 31.00 | AIR | 3/31/2000 | DOMESTIC |
| 163127 | | HUNTINGDON * TRL-7 | 07S | 20E | 22 | DC | No | WELL | 19.20 | | | | | OTHER | 12/5/1996 | MONITORING |
| 163129 | | HUNTINGDON * TRL-8 | 07S | 20E | 22 | DC | No | WELL | 18.90 | | | | | OTHER | 12/5/1996 | MONITORING |
| 163128 | | HUNTINGDON * TRL-9 | 07S | 20E | 22 | DC | No | WELL | 19.00 | | | | | OTHER | 12/5/1996 | MONITORING |
| 268424 | | LACKMAN, MARC | 07S | 20E | 22 | DC | No | WELL | 50.00 | 36.00 | | 36.00 | 5.00 | AIR | 4/19/2011 | IRRIGATION |
| 104728 | | MARTIN, CHARLES A. | 07S | 20E | 22 | DC | No | WELL | 39.00 | 9.00 | 12.00 | | 50.00 | AIR | 5/24/1985 | DOMESTIC |
| 144253 | | METZSCH ROBERT | 07S | 20E | 22 | DC | No | WELL | 30.00 | 5.00 | 25.00 | 5.00 | 50.00 | AIR | 9/16/1992 | DOMESTIC |
| 104726 | | MEYER DONALD E. | 07S | 20E | 22 | DC | No | WELL | 13.00 | 7.00 | 12.00 | | 29.00 | OTHER | 1/1/1972 | DOMESTIC |
| 104727 | 14744 | MOORE, MARK | 07S | 20E | 22 | DC | No | WELL | 28.00 | 7.00 | | | 70.00 | AIR | 5/25/1977 | UNKNOWN |
| 247663 | C30043164 | MOOS, GARY | 07S | 20E | 22 | DC | No | WELL | 60.00 | 35.00 | | 35.00 | 20.00 | AIR | 4/4/2008 | IRRIGATION |
| 149924 | | BREWER FRED & PEGGY | 07S | 20E | 22 | DCC | No | WELL | 35.00 | 9.00 | 25.00 | 9.00 | 40.00 | AIR | 10/21/1993 | DOMESTIC |
| 204140 | C30007590 | DIANE K MEYER TRUST | 07S | 20E | 22 | DCC | No | WELL | 38.50 | 12.00 | | 12.00 | 80.00 | AIR | 6/4/2003 | DOMESTIC |
| 204141 | | YOUNG LARRY AND PATRICA | 07S | 20E | 22 | DCC | No | WELL | 38.50 | 11.00 | | 11.00 | 80.00 | AIR | 6/3/2003 | DOMESTIC |
| 291994 | | HAUGE PROPERTIES LLC | 07S | 20E | 22 | DCD | No | WELL | 39.00 | 13.00 | | 13.00 | 100.00 | AIR | 4/14/2017 | IRRIGATION |
| 172608 | | JOHN LADVOHA ENTERPRISES | 07S | 20E | 22 | DCD | No | WELL | 37.00 | 13.00 | | 13.00 | 60.00 | AIR | 5/18/1998 | DOMESTIC |
| 132631 | 82777 | MEYER DON*WELL #1 | 07S | 20E | 22 | DCD | No | WELL | 41.00 | 11.00 | 39.00 | | 60.00 | AIR | 10/10/1992 | COMMERCIAL |
| 132670 | 82777 | MEYER DON*WELL #2 | 07S | 20E | 22 | DCD | No | WELL | 40.00 | 10.00 | 39.00 | 10.00 | 40.00 | AIR | 10/9/1992 | DOMESTIC |
| 218535 | | BEARTOOTH HOSPITAL | 07S | 20E | 22 | DD | No | WELL | 20.00 | 6.00 | 6.00 | 6.00 | 12.00 | PUMP | 2/11/2005 | MONITORING |
| 104729 | | CITY OF RED LODGE | 07S | 20E | 22 | DD | No | WELL | 77.00 | 25.00 | | 25.00 | 100.00 | PUMP | 8/1/1989 | IRRIGATION |
| 161371 | | CITY OF RED LODGE | 07S | 20E | 22 | DDC | No | WELL | 78.00 | 25.00 | 75.00 | 25.00 | 100.00 | AIR | 6/7/1994 | IRRIGATION |
| 290119 | | DOUGLAS, JEFF | 07S | 20E | 22 | DDDD | No | WELL | 40.00 | 13.00 | | | | | 5/16/2001 | IRRIGATION |
| 104730 | | YOUNG RALPH | 07S | 20E | 23 | ADBA | No | WELL | 16.00 | 4.00 | | | 450.00 | OTHER | 1/1/1890 | DOMESTIC |
| 898366 | | BARKR OCLOT-FOARD234 | 07S | 20E | 23 | BBAC | No | PETWELL | | | | | | | | |
| 179776 | | CITY OF RED LODGE * MW14 | 07S | 20E | 23 | BBB | No | WELL | 36.50 | 26.50 | 26.80 | 26.50 | 20.00 | PUMP | 12/10/1999 | MONITORING |
| 179777 | | CITY OF RED LODGE * MW15 | 07S | 20E | 23 | BBB | No | WELL | 40.00 | 28.00 | | | | PUMP | 12/10/1999 | MONITORING |
| 179778 | | CITY OF RED LODGE * MW12 | 07S | 20E | 23 | BBB | No | WELL | 40.00 | 29.00 | 29.30 | 29.00 | 20.00 | PUMP | 12/10/1999 | MONITORING |
| 179779 | | CITY OF RED LODGE * MW13 | 07S | 20E | 23 | BBB | No | WELL | 40.00 | 26.00 | 26.30 | | 20.00 | PUMP | 12/10/1999 | MONITORING |
| 258519 | | WOLF RON | 07S | 20E | 26 | CC | No | WELL | 120.00 | 36.00 | | 34.00 | 8.00 | AIR | 10/21/2009 | DOMESTIC |
| 104744 | | ANDERSON GEORGE | 07S | 20E | 27 | | No | WELL | 39.00 | 7.00 | 35.00 | | 60.00 | AIR | 1/1/1985 | DOMESTIC |
| 253497 | | BEARTOOTH HOSPITAL AND HEALTH CENTER | 07S | 20E | 27 | | No | WELL | 63.50 | 15.00 | | 15.00 | 300.00 | AIR | 9/11/2009 | GEOHERMAL-INJECTION |
| 104732 | | CITY OF RED LODGE | 07S | 20E | 27 | | No | WELL | 74.00 | | | | 760.00 | OTHER | 1/1/1961 | PUBLIC WATER SUPPLY |
| 301918 | | CITY OF RED LODGE | 07S | 20E | 27 | | No | WELL | 59.00 | 28.00 | | 28.00 | 100.00 | AIR | 6/28/2019 | DOMESTIC |
| 104741 | | CITY OF RED LODGE | 07S | 20E | 27 | | No | WELL | 74.00 | | | | | OTHER | 1/1/1961 | DOMESTIC |
| 104731 | | DUKE JAMES | 07S | 20E | 27 | | No | WELL | 37.00 | 22.00 | 30.00 | | 35.00 | BAILER | 1/1/1962 | DOMESTIC |
| 104738 | | GERONDALE JACK | 07S | 20E | 27 | | No | WELL | 45.00 | 9.00 | 30.00 | | 30.00 | BAILER | 1/1/1960 | INDUSTRIAL |
| 290091 | | GOSS, MATT | 07S | 20E | 27 | | No | WELL | 40.00 | 12.00 | | 12.00 | 100.00 | AIR | 9/25/2001 | IRRIGATION |

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|------------------------|--|--------------------------------|-----|-----|----|------|------|-------|-------|-------|--------|--------|-----------|------------|------------|---------------------|
| 104743 | | HANSON HILMAR | 07S | 20E | 27 | No | WELL | 58.00 | 28.00 | 58.00 | 30.00 | AIR | 1/1/1983 | DOMESTIC | | |
| 104745 | | HILL DOROTHY H | 07S | 20E | 27 | No | WELL | 39.00 | 12.00 | 35.00 | 50.00 | AIR | 1/1/1984 | IRRIGATION | | |
| 104742 | | KANE JAMES | 07S | 20E | 27 | No | WELL | 35.00 | 20.00 | | 25.00 | AIR | 1/1/1977 | DOMESTIC | | |
| 104735 | | KANE JAMES J. | 07S | 20E | 27 | No | WELL | 29.00 | 29.00 | | 100.00 | OTHER | 1/1/1954 | DOMESTIC | | |
| 187959 | | KIELY CONSTRUCTION * MW-1 | 07S | 20E | 27 | No | WELL | 15.20 | 9.27 | | | OTHER | 9/26/1997 | MONITORING | | |
| 187950 | | KIELY CONSTRUCTION * MW-2 | 07S | 20E | 27 | No | WELL | 15.50 | 11.04 | | 10.00 | BAILER | 9/26/1997 | MONITORING | | |
| 187951 | | KIELY CONSTRUCTION * MW-3 | 07S | 20E | 27 | No | WELL | 15.50 | 9.75 | | 10.00 | BAILER | 9/26/1997 | MONITORING | | |
| 104733 | | LONG SAM JOSEPH | 07S | 20E | 27 | No | WELL | | | | 25.00 | OTHER | 1/1/1900 | DOMESTIC | | |
| 104737 | | LOUMA BEN | 07S | 20E | 27 | No | WELL | 60.00 | 13.00 | 48.00 | 15.00 | BAILER | 1/1/1960 | DOMESTIC | | |
| 104747 | | PASQUEN LUE M | 07S | 20E | 27 | No | WELL | 30.00 | 10.00 | 30.00 | 25.00 | AIR | 1/1/1980 | UNKNOWN | | |
| 104739 | | PITCHER BOB | 07S | 20E | 27 | No | WELL | 98.00 | 48.00 | 80.00 | 8.00 | OTHER | 1/1/1972 | DOMESTIC | | |
| 104746 | | RED LODGE LAUNDRY | 07S | 20E | 27 | No | WELL | 60.00 | 20.00 | 50.00 | 60.00 | AIR | 1/1/1985 | DOMESTIC | | |
| 144254 | | REPACD JOE | 07S | 20E | 27 | No | WELL | 39.00 | 14.00 | 35.00 | 50.00 | AIR | 5/31/1985 | IRRIGATION | | |
| 145199 | | RICHARDSON JOSEPHINE | 07S | 20E | 27 | No | WELL | 31.00 | 10.00 | | 12.00 | 35.00 | PUMP | 9/22/1989 | DOMESTIC | |
| 104748 | | SANDRETTO BRENT | 07S | 20E | 27 | No | WELL | 38.00 | 7.00 | 35.00 | 50.00 | AIR | 1/1/1985 | DOMESTIC | | |
| 104749 | | SANDRETTO LARRY | 07S | 20E | 27 | No | WELL | 50.00 | 20.00 | 50.00 | 40.00 | AIR | 1/1/1985 | DOMESTIC | | |
| 104734 | | STRINGARI JOE | 07S | 20E | 27 | No | WELL | 20.00 | | | 15.00 | OTHER | | DOMESTIC | | |
| 104736 | | TRUNER JESS | 07S | 20E | 27 | No | WELL | 75.00 | 26.00 | 65.00 | 6.00 | BAILER | 1/1/1964 | DOMESTIC | | |
| 104740 | | WYER STEPHEN C | 07S | 20E | 27 | No | WELL | 86.00 | 25.00 | 75.00 | 6.00 | BAILER | 1/1/1971 | DOMESTIC | | |
| 157948 | | RED LODGE SCHOOL DISTRICT NO 1 | 07S | 20E | 27 | No | WELL | 60.00 | | | | OTHER | 8/14/1996 | | | |
| 104750 | | ANDERSON DAVID B. | 07S | 20E | 27 | A | No | WELL | 39.00 | 7.00 | | 50.00 | OTHER | 1/1/1982 | DOMESTIC | |
| 144255 | | RED LODGE LIONS CLUB | 07S | 20E | 27 | A | No | WELL | 38.00 | | 35.00 | 35.00 | AIR | 6/19/1992 | IRRIGATION | |
| 231524 | | BEARTOOTH NATURE CENTER | 07S | 20E | 27 | AAA | No | WELL | 88.00 | 33.00 | | 33.00 | 125.00 | AIR | 9/14/2006 | DOMESTIC |
| 266255 | | RED LODGE PUBLIC SCHOOL | 07S | 20E | 27 | AAA | No | WELL | 59.00 | 35.00 | | 35.00 | 100.00 | AIR | 5/4/2012 | IRRIGATION |
| 290111 | | RONNING, JERRY | 07S | 20E | 27 | AAAA | No | WELL | 40.00 | 9.00 | | 9.00 | 60.00 | AIR | 5/8/2001 | IRRIGATION |
| 247582 | | CITY OF RED LODGE | 07S | 20E | 27 | AAB | No | WELL | 49.00 | 21.00 | | 21.00 | 80.00 | AIR | 7/14/2008 | PUBLIC WATER SUPPLY |
| 291293 | | LYALL, SUSAN | 07S | 20E | 27 | AAC | No | WELL | 34.00 | 7.50 | | 7.50 | 100.00 | AIR | 2/14/2017 | DOMESTIC |
| 290118 | | DIMICH, LES | 07S | 20E | 27 | AACD | No | WELL | 40.00 | 12.00 | | 12.00 | 100.00 | AIR | 5/22/2001 | IRRIGATION |
| 247545 | | RED LODGE PUBLIC SCHOOL | 07S | 20E | 27 | AAD | No | WELL | 65.00 | 25.00 | | 25.00 | 300.00 | AIR | 7/12/2008 | DOMESTIC |
| 294028 | | RED LODGE SCHOOLS | 07S | 20E | 27 | AAD | No | WELL | 49.00 | 30.00 | | 30.00 | 30.00 | AIR | 8/31/2017 | DOMESTIC |
| 131623 | | COUTTS DON | 07S | 20E | 27 | AB | No | WELL | 18.00 | 4.00 | 15.00 | 4.00 | 25.00 | AIR | 10/10/1990 | STOCKWATER |
| 104751 | | CRANS JAMES L | 07S | 20E | 27 | AB | No | WELL | 26.00 | 12.00 | 21.00 | 20.00 | PUMP | 1/1/1984 | IRRIGATION | |
| 219544 | | GM PETROLEUM * MW-01 | 07S | 20E | 27 | AB | No | WELL | 20.00 | 9.50 | | | | | 6/8/2005 | MONITORING |
| 262833 | | GM PETROLEUM * MW-01 | 07S | 20E | 27 | AB | No | WELL | | | | | | | 8/8/2006 | UNUSED |
| 219545 | | GM PETROLEUM * MW-02 | 07S | 20E | 27 | AB | No | WELL | 20.00 | 10.00 | | | | | 6/6/2005 | MONITORING |
| 262834 | | GM PETROLEUM * MW-02 | 07S | 20E | 27 | AB | No | WELL | | | | | | | 8/8/2006 | UNUSED |
| 219546 | | GM PETROLEUM * MW-03 | 07S | 20E | 27 | AB | No | WELL | 20.00 | 9.00 | | | | | 6/6/2005 | MONITORING |
| 262835 | | GM PETROLEUM * MW-03 | 07S | 20E | 27 | AB | No | WELL | | | | | | | 8/8/2006 | UNUSED |
| 262836 | | GM PETROLEUM * MW-04 | 07S | 20E | 27 | AB | No | WELL | | | | | | | 8/8/2006 | UNUSED |
| 219547 | | GM PETROLEUM * MW-04 | 07S | 20E | 27 | AB | No | WELL | 20.00 | 10.50 | | | | | 6/6/2005 | MONITORING |
| 234513 | | PALMER BILL | 07S | 20E | 27 | AB | No | WELL | 40.00 | 8.00 | | 8.00 | 60.00 | AIR | 10/4/2006 | IRRIGATION |
| 201855 | | RED LODGE CHEVROLET | 07S | 20E | 27 | AB | No | WELL | 40.00 | 10.00 | | 10.00 | 45.00 | AIR | 8/26/2002 | IRRIGATION |
| 289776 | | RONNING, JERRY | 07S | 20E | 27 | AB | No | WELL | 40.00 | 12.00 | | 12.00 | 30.00 | AIR | 11/19/1999 | IRRIGATION |
| 212293 | | BEAM CRAIG | 07S | 20E | 27 | ABD | No | WELL | 32.00 | 10.00 | | 10.00 | 35.00 | AIR | 3/31/2004 | IRRIGATION |
| 161370 | | COLEMAN MERV | 07S | 20E | 27 | ABD | No | WELL | 38.50 | 12.00 | 38.00 | 12.00 | 60.00 | AIR | 6/8/1994 | IRRIGATION |
| 289800 | | DIMICH, LESLIE | 07S | 20E | 27 | ABD | No | WELL | 25.00 | 15.00 | | 12.00 | 20.00 | AIR | 5/15/1999 | DOMESTIC |
| 247533 | | MOLLRING TOM | 07S | 20E | 27 | ABD | No | WELL | 32.00 | 7.50 | | 7.50 | 50.00 | AIR | 7/10/2008 | DOMESTIC |
| 161381 | | UNITED STATES NATIONAL BANK | 07S | 20E | 27 | ABD | No | WELL | 37.00 | 13.00 | 37.00 | 10.00 | 45.00 | AIR | 10/22/1996 | IRRIGATION |
| 243781 | | C30043791 ALISON GARY | 07S | 20E | 27 | AC | No | WELL | 40.00 | 15.00 | | 15.00 | 30.00 | AIR | 4/30/2008 | IRRIGATION |

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| 212024 | | COPY MARLYNN | 07S | 20E | 27 | AC | No | WELL | 40.00 | 12.00 | 12.00 | 80.00 | AIR | 6/5/2004 | DOMESTIC | |
| 919946 | | DIAMOND DRILL-1 | 07S | 20E | 27 | AC | No | PETWELL | | | | | | | | |
| 247570 | | KINNE, SCOTT | 07S | 20E | 27 | AC | No | WELL | 18.00 | 11.80 | | | | 9/18/2008 | MONITORING | |
| 201856 | | C30006275 NEIL, ALBERT/CARVER, ALICE | 07S | 20E | 27 | AC | No | WELL | 40.00 | 10.00 | 10.00 | 45.00 | AIR | 10/5/2002 | IRRIGATION | |
| 243803 | | O'NIEL GREG | 07S | 20E | 27 | AC | No | WELL | 60.00 | 30.00 | 30.00 | 10.00 | AIR | 12/5/2007 | UNKNOWN | |
| 195811 | | MODEL BOB | 07S | 20E | 27 | ACB | No | WELL | 40.00 | 14.00 | 14.00 | 75.00 | AIR | 4/10/2002 | IRRIGATION | |
| 142587 | | CRTALIC WILLIAM | 07S | 20E | 27 | ACC | No | WELL | 40.00 | 18.00 | 35.00 | 18.00 | 50.00 | AIR | 12/31/1993 | IRRIGATION |
| 104752 | | GRADDOCK AL | 07S | 20E | 27 | ACC | No | WELL | 40.00 | | 35.00 | 40.00 | BAILER | 1/1/1983 | DOMESTIC | |
| 161384 | | WISE JEFF | 07S | 20E | 27 | ACC | No | WELL | 38.00 | 10.00 | 35.00 | 10.00 | 50.00 | AIR | 9/25/1996 | IRRIGATION |
| 104763 | | ADAMS, JOEL * NEXT TO STAIRS | 07S | 20E | 27 | ACCA | Yes | WELL | 38.00 | 13.00 | 35.00 | | 50.00 | AIR | 1/1/1985 | DOMESTIC |
| 295913 | | ANDERSON, SUSAN & DONALD MUELLER | 07S | 20E | 27 | ACD | No | WELL | 39.00 | 10.50 | 10.50 | 50.00 | AIR | 1/30/2018 | DOMESTIC | |
| 164282 | | 102176 DAVEY GERALDINE L | 07S | 20E | 27 | ACD | No | WELL | 28.00 | 12.00 | | 12.00 | AIR | 9/26/1997 | IRRIGATION | |
| 296047 | | WHITCOMB, DAVID | 07S | 20E | 27 | ACD | No | WELL | 32.00 | 13.00 | 13.00 | 40.00 | AIR | 2/14/2018 | DOMESTIC | |
| 104754 | | BEAR CREEK LAND | 07S | 20E | 27 | AD | No | WELL | 101.00 | 48.00 | 48.00 | | 5.00 | BAILER | 1/1/1979 | DOMESTIC |
| 144138 | | MARVIN MARY | 07S | 20E | 27 | AD | No | WELL | 38.00 | 6.00 | 35.00 | 6.00 | 50.00 | AIR | 8/22/1991 | IRRIGATION |
| 104753 | | PALMER, BILL BEAR CK | 07S | 20E | 27 | AD | No | WELL | 101.00 | 35.00 | 70.00 | | 50.00 | BAILER | 1/1/1979 | DOMESTIC |
| 144140 | | THAYER BETTY | 07S | 20E | 27 | AD | No | WELL | 30.00 | 14.00 | 25.00 | 14.00 | 40.00 | AIR | 8/3/1991 | IRRIGATION |
| 274627 | | 30067309 KILBANE, JIM | 07S | 20E | 27 | ADA | No | WELL | 39.00 | 14.00 | 14.00 | 35.00 | AIR | 8/14/2013 | DOMESTIC | |
| 288020 | | BROKAW, GORDON | 07S | 20E | 27 | ADB | No | WELL | 26.50 | 9.00 | 9.00 | 30.00 | AIR | 6/27/2016 | IRRIGATION | |
| 302492 | | KILBANE, JIM | 07S | 20E | 27 | ADB | No | WELL | 29.00 | 8.67 | 8.67 | 60.00 | AIR | 7/31/2019 | DOMESTIC | |
| 302491 | | KILBANE, JIM | 07S | 20E | 27 | ADB | No | WELL | 29.00 | 7.00 | 29.00 | 60.00 | AIR | 7/31/2019 | DOMESTIC | |
| 289829 | | WOLF, DON | 07S | 20E | 27 | ADC | No | WELL | 40.00 | 6.00 | 6.00 | 100.00 | AIR | 9/25/2000 | IRRIGATION | |
| 104755 | | PATTEN J H | 07S | 20E | 27 | B | No | WELL | 38.00 | 9.00 | 38.00 | | 50.00 | AIR | 1/1/1983 | DOMESTIC |
| 219732 | | PARKER DAVE *PILATI MIKE | 07S | 20E | 27 | BA | No | WELL | 60.00 | 26.00 | 26.00 | 25.00 | AIR | 6/10/2005 | IRRIGATION | |
| 290032 | | JENKINS, JIM | 07S | 20E | 27 | BAA | No | WELL | 48.00 | 14.00 | 12.00 | 100.00 | AIR | 9/29/2000 | IRRIGATION | |
| 274286 | | MONTGOMERY, BOB | 07S | 20E | 27 | BAA | No | WELL | 44.00 | 23.50 | 23.50 | 40.00 | AIR | 7/13/2013 | DOMESTIC | |
| 242554 | | BARTHEL BOB | 07S | 20E | 27 | BAB | No | WELL | 48.00 | 36.00 | 36.00 | 20.00 | AIR | 3/6/2008 | DOMESTIC | |
| 212300 | | BRISHAN MIKE | 07S | 20E | 27 | BAB | No | WELL | 60.00 | 42.00 | 42.00 | 60.00 | AIR | 4/21/2004 | IRRIGATION | |
| 278350 | | ZIMMERMAN, LYLE AND LEITA | 07S | 20E | 27 | BB | No | WELL | 53.00 | 38.00 | 38.00 | 25.00 | AIR | 6/6/2014 | DOMESTIC | |
| 161386 | | 101450 JANSSEN ROY | 07S | 20E | 27 | BBA | No | WELL | 57.00 | 26.00 | 55.00 | 26.00 | 60.00 | AIR | 9/30/1996 | IRRIGATION |
| 157348 | | 97609 MATRIARCH CONSTRUCTION | 07S | 20E | 27 | BBC | No | WELL | 58.00 | 34.00 | 55.00 | 34.00 | 60.00 | AIR | 4/19/1996 | STOCKWATER |
| 293923 | | QUINN, DAVE | 07S | 20E | 27 | BBD | No | WELL | 59.00 | 30.00 | 30.00 | 30.00 | AIR | 8/25/2017 | IRRIGATION | |
| 189163 | | DILLION MANG. AND CONST. INC | 07S | 20E | 27 | BCB | No | WELL | 58.00 | 40.00 | 40.00 | 40.00 | AIR | 5/4/2001 | IRRIGATION | |
| 192987 | | C30003594 PINE RIDGE CREEK OWNERS ASSOC | 07S | 20E | 27 | BCB | No | WELL | 58.00 | 7.00 | 7.00 | 75.00 | AIR | 9/19/2001 | IRRIGATION | |
| 104756 | | BISCHOFF W.H.&FHELMA | 07S | 20E | 27 | BD | No | WELL | 40.00 | 15.00 | 40.00 | | 30.00 | AIR | 1/1/1980 | UNKNOWN |
| 251767 | | BUENING, NANCY | 07S | 20E | 27 | BD | No | WELL | 40.00 | 10.00 | 10.00 | 30.00 | AIR | 1/6/2009 | IRRIGATION | |
| 251951 | | OWENS, JACK | 07S | 20E | 27 | BD | No | WELL | 40.00 | | | 40.00 | AIR | 7/15/2008 | IRRIGATION | |
| 237202 | | SPERRY NANNETTE | 07S | 20E | 27 | BD | No | WELL | 39.00 | 10.00 | 10.00 | 60.00 | AIR | 7/10/2007 | IRRIGATION | |
| 228261 | | ANDERSON DAVID | 07S | 20E | 27 | BDA | No | WELL | 39.00 | 17.50 | 17.50 | 100.00 | AIR | 7/14/2006 | OTHER | |
| 228341 | | ANDERSON DAVID | 07S | 20E | 27 | BDA | No | WELL | 39.00 | 18.50 | 18.50 | 100.00 | AIR | 7/14/2006 | OTHER | |
| 171661 | | MTN VIEW APTS/CHARECTA BUILDERS INC | 07S | 20E | 27 | BDA | No | WELL | 58.00 | 41.00 | 41.00 | 60.00 | AIR | 5/3/1999 | IRRIGATION | |
| 149925 | | GAVIN INTERESTS LLC * ROCK WELL | 07S | 20E | 27 | BDAB | Yes | WELL | 150.00 | 68.00 | 145.00 | 68.00 | 12.00 | AIR | 6/22/1993 | DOMESTIC |
| 176387 | | GAVIN INTERESTS LLC * SPRUCE LODGE -NEAR ROAD | 07S | 20E | 27 | BDBA | Yes | WELL | 59.00 | 35.00 | 35.00 | 60.00 | AIR | 7/26/1999 | IRRIGATION | |
| 294678 | | LYMAN, TOM | 07S | 20E | 27 | BDD | No | WELL | 39.00 | 25.00 | 25.00 | 20.00 | AIR | 10/14/2017 | IRRIGATION | |
| 196636 | | C3002662 NEWMAN ROGER AND BERYL | 07S | 20E | 27 | BDD | No | WELL | 39.00 | 21.00 | 21.00 | 40.00 | AIR | 6/19/2002 | DOMESTIC | |
| 104757 | | HUDAK MIKE | 07S | 20E | 27 | C | No | WELL | 6.00 | 6.00 | | 20.00 | OTHER | 1/1/1968 | DOMESTIC | |
| 196856 | | TRUE VALUE (KEN) | 07S | 20E | 27 | CAAD | No | WELL | 40.00 | 21.00 | 21.00 | 60.00 | AIR | 3/27/2002 | IRRIGATION | |
| 126441 | | YURKOVICH MRS FRANK | 07S | 20E | 27 | CAD | No | WELL | 58.00 | 34.00 | 55.00 | 34.00 | 50.00 | AIR | 8/9/1991 | IRRIGATION |
| 239934 | | FISHER KEN | 07S | 20E | 27 | CB | No | WELL | 51.00 | 20.00 | 20.00 | 35.00 | AIR | 4/24/2007 | IRRIGATION | |

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|------------------------|--|---|-----|-----|----|------|-----|---------|--------|--------|--------|--------|-------|----------|------------|---------------------|
| 104759 | | RINTALA TOIVO * WELL #3 | 07S | 20E | 27 | CB | No | WELL | 16.00 | 6.00 | | 500.00 | OTHER | 1/1/1925 | STOCKWATER | |
| 104760 | | RINTALA TOIVO * WELL 1 | 07S | 20E | 27 | CB | No | WELL | 6.00 | | | 500.00 | OTHER | 1/1/1925 | STOCKWATER | |
| 104758 | | RINTALA TOIVO * WELL 1 | 07S | 20E | 27 | CB | No | WELL | 16.00 | 6.00 | | 500.00 | OTHER | 1/1/1925 | DOMESTIC | |
| 161382 | | HICKS JASON F. | 07S | 20E | 27 | CBD | No | WELL | 75.00 | 51.00 | 70.00 | 51.00 | 60.00 | AIR | 10/2/1996 | DOMESTIC |
| 211973 | | ZOOK WALLY | 07S | 20E | 27 | CBDC | Yes | WELL | 104.00 | 74.00 | | 74.00 | 15.00 | AIR | 5/5/2004 | DOMESTIC |
| 205961 | | BEARTOOTH FLIGHT CENTER | 07S | 20E | 27 | CC | No | WELL | 240.00 | 98.00 | | 93.00 | 18.00 | AIR | 7/23/2003 | DOMESTIC |
| 124988 | | MICHELIC JOHN | 07S | 20E | 27 | CC | No | WELL | 35.00 | 22.50 | 29.00 | 23.00 | 38.00 | PUMP | 6/14/1991 | IRRIGATION |
| 219735 | | RED LODGE RODEO ASSOCIATION | 07S | 20E | 27 | CC | No | WELL | 94.00 | 45.00 | | | | OTHER | 6/7/2005 | DOMESTIC |
| 138848 | | JARDINE JOHN | 07S | 20E | 27 | CCA | No | WELL | 80.00 | 57.00 | 80.00 | 57.00 | 50.00 | AIR | 6/24/1993 | DOMESTIC |
| 144141 | | RED LODGE RODEO ASSOC. | 07S | 20E | 27 | CCC | No | WELL | 60.00 | 19.00 | 55.00 | 19.00 | 50.00 | AIR | 6/8/1992 | DOMESTIC |
| 104761 | | YURKOVICH FRANK | 07S | 20E | 27 | CCC | No | WELL | 58.00 | 30.00 | 58.00 | | 30.00 | AIR | 1/1/1981 | DOMESTIC |
| 290116 | | ANDERSON, DAVID | 07S | 20E | 27 | CCCB | No | WELL | 40.00 | 7.00 | | 7.00 | 60.00 | AIR | 5/10/2001 | DOMESTIC |
| 289875 | | FARGO, KENNETH | 07S | 20E | 27 | CDA | No | WELL | 40.00 | 8.00 | | 8.00 | 50.00 | AIR | 8/25/2000 | DOMESTIC |
| 158424 | | C052343-00 RED LODGE SCHOOL DISTRICT | 07S | 20E | 27 | CDA | No | WELL | 58.00 | 20.00 | 55.00 | 20.00 | 50.00 | AIR | 8/23/1996 | IRRIGATION |
| 104762 | | CLARK AMOS | 07S | 20E | 27 | CDB | No | WELL | 220.00 | 60.00 | 220.00 | | 8.00 | AIR | 1/1/1978 | DOMESTIC |
| 289798 | | KENNEY, DON | 07S | 20E | 27 | CDB | No | WELL | 200.00 | 160.00 | | 23.00 | 7.00 | AIR | 3/28/1999 | DOMESTIC |
| 298012 | | BANONIS, JOHN | 07S | 20E | 27 | CDC | No | WELL | 50.00 | 27.00 | | 27.00 | 40.00 | AIR | 8/3/2018 | IRRIGATION |
| 290073 | | DEBOURG, JOHN | 07S | 20E | 27 | CDD | No | WELL | 40.00 | 19.00 | | 19.00 | 60.00 | AIR | 5/24/2001 | DOMESTIC |
| 196859 | | GROUP REGIS | 07S | 20E | 27 | CDD | No | WELL | 40.00 | 2.00 | | 2.00 | 80.00 | AIR | 5/14/2002 | IRRIGATION |
| 247579 | | RED LODGE PUBLIC SCHOOL | 07S | 20E | 27 | CDD | No | WELL | 44.00 | 22.00 | | 22.00 | 50.00 | AIR | 8/4/2008 | PUBLIC WATER SUPPLY |
| 252187 | | RUTHERFORD, CHARLES AND LINDA | 07S | 20E | 27 | CDD | No | WELL | 43.00 | 23.00 | | 23.00 | 50.00 | AIR | 5/27/2009 | DOMESTIC |
| 124989 | | RILEY MRS. JACK | 07S | 20E | 27 | D | No | WELL | 60.00 | 17.00 | 55.00 | 17.00 | 15.00 | AIR | 8/6/1991 | IRRIGATION |
| 251765 | | DANE, ELIZABETH | 07S | 20E | 27 | DA | No | WELL | 40.00 | 9.00 | | 9.00 | 30.00 | AIR | 1/8/2009 | IRRIGATION |
| 124980 | | JARVI TAIMI | 07S | 20E | 27 | DA | No | WELL | 30.00 | 11.00 | 25.00 | 11.00 | 40.00 | AIR | 8/12/1991 | IRRIGATION |
| 919820 | | DIAMOND DRILL -2 | 07S | 20E | 27 | DAC | No | PETWELL | | | | | | | | |
| 211966 | | BERTRAM KELLY | 07S | 20E | 27 | DB | No | WELL | 40.00 | 22.00 | | 22.00 | 60.00 | OTHER | 5/3/2004 | DOMESTIC |
| 131624 | | HOINES EVERETT | 07S | 20E | 27 | DB | No | WELL | 40.00 | 9.00 | 37.00 | | 50.00 | AIR | 6/6/1986 | IRRIGATION |
| 122490 | | KANE JAMES | 07S | 20E | 27 | DB | No | WELL | 35.00 | 20.00 | | | 25.00 | AIR | 5/27/1977 | DOMESTIC |
| 279956 | | KILBANE, PAT | 07S | 20E | 27 | DB | No | WELL | 29.00 | 12.00 | | 12.00 | 40.00 | AIR | 9/24/2014 | DOMESTIC |
| 124991 | | MALLIN RICHARD | 07S | 20E | 27 | DB | No | WELL | 30.00 | 15.00 | 25.00 | 15.00 | 50.00 | AIR | 8/7/1991 | IRRIGATION |
| 258565 | | MILLARD, JULIE | 07S | 20E | 27 | DB | No | WELL | 40.00 | 10.00 | | 10.00 | 30.00 | AIR | 12/15/2009 | IRRIGATION |
| 275605 | | MOUNTAIN SPRINGS LIVING | 07S | 20E | 27 | DB | No | WELL | 40.00 | 10.00 | | 10.00 | 60.00 | AIR | 5/30/2013 | IRRIGATION |
| 223129 | | SALLADE CHARLES | 07S | 20E | 27 | DB | No | WELL | 40.00 | 26.00 | | 26.00 | 30.00 | AIR | 11/22/2005 | IRRIGATION |
| 189953 | | RAY JUDD FORD INC | 07S | 20E | 27 | DBB | No | WELL | 20.00 | 15.00 | | | | OTHER | 4/26/2001 | MONITORING |
| 244817 | | PORTH ARCHITECTS | 07S | 20E | 27 | DBC | No | WELL | 40.00 | 20.00 | | 20.00 | 60.00 | AIR | 5/28/2008 | DOMESTIC |
| 244816 | | PORTH ARCHITECTS | 07S | 20E | 27 | DBD | No | WELL | 40.00 | 20.00 | | 20.00 | 60.00 | AIR | 5/28/2008 | DOMESTIC |
| 122491 | | 60328 ANDERSON GEORGE | 07S | 20E | 27 | DC | No | WELL | 39.00 | 20.00 | 35.00 | | 30.00 | AIR | 5/31/1985 | IRRIGATION |
| 243779 | | JORDAN LINDA | 07S | 20E | 27 | DC | No | WELL | 40.00 | 15.00 | | 15.00 | 20.00 | AIR | 3/31/2008 | IRRIGATION |
| 243777 | | JORDEN LINDA | 07S | 20E | 27 | DC | No | WELL | 37.00 | 10.00 | | 10.00 | 30.00 | AIR | 3/31/2008 | IRRIGATION |
| 104764 | | RED LODGE SCHOOL DISTRICT NO 1 | 07S | 20E | 27 | DC | No | WELL | 60.00 | 22.00 | 40.00 | | 90.00 | PUMP | 1/1/1983 | IRRIGATION |
| 201857 | | RONNING TRACY | 07S | 20E | 27 | DC | No | WELL | 40.00 | 6.00 | | 6.00 | 40.00 | AIR | 12/6/2002 | IRRIGATION |
| 251942 | | SCHUBERT, DIANA | 07S | 20E | 27 | DC | No | WELL | 40.00 | 12.00 | | 12.00 | 25.00 | AIR | 4/8/2008 | IRRIGATION |
| 275602 | | SCHWIN, THOMAS J. | 07S | 20E | 27 | DC | No | WELL | 60.00 | 12.00 | | 12.00 | 20.00 | AIR | 5/28/2013 | IRRIGATION |
| 104765 | | UZELAC MARY & D | 07S | 20E | 27 | DC | No | WELL | 40.00 | 9.00 | 38.00 | | 50.00 | AIR | 1/1/1986 | IRRIGATION |
| 251952 | | WEBINGER DRAKE | 07S | 20E | 27 | DC | No | WELL | 60.00 | 22.00 | | 22.00 | 35.00 | AIR | 7/14/2008 | IRRIGATION |
| 253522 | | GREER RICK | 07S | 20E | 27 | DCC | No | WELL | 40.00 | 18.00 | | 18.00 | 50.00 | AIR | 10/20/2009 | GEOTECH |
| 252183 | | GREER, RICK | 07S | 20E | 27 | DCC | No | WELL | 39.00 | 17.00 | | 17.00 | 50.00 | AIR | 5/28/2009 | DOMESTIC |
| 104766 | | LOCKRIDGE DORIS M. | 07S | 20E | 27 | DCC | No | WELL | 38.00 | 9.00 | 38.00 | | 50.00 | AIR | 1/1/1983 | UNKNOWN |
| 226280 | | MICHEAL JEFF | 07S | 20E | 27 | DCD | No | WELL | 19.00 | 9.00 | | 9.00 | 30.00 | AIR | 5/11/2006 | DOMESTIC |

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|------------------------|--|-----------------------------------|-----|-----|----|------|-----|------|--------|-------|-------|-------|--------|-------|------------|------------|
| 104767 | | LAUDON CLARENCE | 07S | 20E | 27 | DDC | No | WELL | 38.00 | 6.00 | 38.00 | | 30.00 | OTHER | 1/1/1982 | DOMESTIC |
| 247616 | | SWENSON RANDY | 07S | 20E | 27 | DDC | No | WELL | 22.00 | 7.00 | | 7.00 | 25.00 | AIR | 7/10/2008 | DOMESTIC |
| 172609 | | BEARTOOTH NATURE CENTER | 07S | 20E | 27 | DDCB | Yes | WELL | 39.00 | 26.00 | | 26.00 | 40.00 | AIR | 5/9/1998 | OTHER |
| 290115 | | LADVALA, JOHN | 07S | 20E | 27 | DDDA | No | WELL | 40.00 | 8.00 | | 8.00 | 20.00 | AIR | 5/9/2001 | IRRIGATION |
| 290110 | | RONNING, JERRY | 07S | 20E | 27 | DDDA | No | WELL | 40.00 | 12.00 | | 12.00 | 60.00 | AIR | 5/8/2001 | IRRIGATION |
| 252419 | | TERRY ROB AND KATHY | 07S | 20E | 28 | | No | WELL | 60.00 | 16.00 | | 16.00 | 50.00 | AIR | 5/19/2009 | DOMESTIC |
| 268423 | | GOSS, STEVE | 07S | 20E | 28 | AA | No | WELL | 60.00 | 4.00 | | 4.00 | 60.00 | AIR | 8/3/2011 | DOMESTIC |
| 216522 | | HENRY RON | 07S | 20E | 28 | AA | No | WELL | 60.00 | 6.00 | | 6.00 | 65.00 | AIR | 11/10/2004 | DOMESTIC |
| 212189 | | MONTANA LEGEND | 07S | 20E | 28 | AAB | No | WELL | 38.00 | 17.00 | | 17.00 | 50.00 | AIR | 5/6/2004 | OTHER |
| 164283 | | C102182-00 RED LODGE BEVERAGES | 07S | 20E | 28 | AAB | No | WELL | 53.00 | 8.00 | 45.00 | | 50.00 | AIR | 5/22/1997 | DOMESTIC |
| 170571 | | C105059-00 KINGS CUPBOARD | 07S | 20E | 28 | AACB | Yes | WELL | 58.00 | 6.00 | 53.00 | | 75.00 | AIR | 9/3/1997 | DOMESTIC |
| 241647 | | JEROME KLIN & HAZEL L | 07S | 20E | 28 | AB | No | WELL | 60.00 | 6.00 | | 6.00 | 40.00 | AIR | 1/8/2007 | DOMESTIC |
| 241648 | | KLIN JERRY | 07S | 20E | 28 | AB | No | WELL | 60.00 | 6.00 | | 6.00 | 40.00 | AIR | 1/8/2007 | DOMESTIC |
| 241652 | | ROAT PAUL | 07S | 20E | 28 | AB | No | WELL | 60.00 | 6.00 | | 10.00 | 40.00 | AIR | 1/9/2008 | DOMESTIC |
| 144142 | | WEST GRANT | 07S | 20E | 28 | AB | No | WELL | 35.00 | 7.00 | 30.00 | | 50.00 | AIR | 3/25/1987 | DOMESTIC |
| 293852 | | RLB HOLDINGS INC | 07S | 20E | 28 | ABA | No | WELL | 36.50 | 6.00 | | 6.00 | 100.00 | AIR | 8/18/2017 | DOMESTIC |
| 216176 | | KOHLEY KAREN | 07S | 20E | 28 | ABBB | Yes | WELL | 37.00 | 11.15 | | | | OTHER | 4/3/2008 | |
| 258517 | | BECK SHIRLEY | 07S | 20E | 28 | AC | No | WELL | 60.00 | 15.00 | | 15.00 | 40.00 | AIR | 9/17/2009 | DOMESTIC |
| 237200 | | CANTWELL, BILL | 07S | 20E | 28 | AC | No | WELL | 60.00 | 20.00 | | 20.00 | 40.00 | AIR | 4/22/2007 | DOMESTIC |
| 234514 | | COUNTZ VICKIE | 07S | 20E | 28 | AC | No | WELL | 60.00 | 12.00 | | 12.00 | 60.00 | AIR | 10/25/2006 | DOMESTIC |
| 216521 | | HENERY RON | 07S | 20E | 28 | AC | No | WELL | 60.00 | 8.00 | | 8.00 | 25.00 | AIR | 11/10/2004 | DOMESTIC |
| 218536 | | HENRY RON | 07S | 20E | 28 | AC | No | WELL | 102.00 | 35.00 | 35.00 | 35.00 | 350.00 | PUMP | 3/8/2005 | DOMESTIC |
| 223900 | | LACAPA DICK | 07S | 20E | 28 | AC | No | WELL | 60.00 | 17.00 | | 17.00 | 40.00 | AIR | 11/29/2005 | DOMESTIC |
| 282967 | | THEADE, COBEY | 07S | 20E | 28 | AC | No | WELL | 44.00 | 22.00 | | 22.00 | 60.00 | AIR | 6/12/2015 | DOMESTIC |
| 282965 | | THEADE, COBEY | 07S | 20E | 28 | AC | No | WELL | 44.00 | 21.00 | | 21.00 | 40.00 | AIR | 6/12/2015 | DOMESTIC |
| 282966 | | THEADE, COBEY | 07S | 20E | 28 | AC | No | WELL | 44.00 | 21.00 | | 21.00 | 60.00 | AIR | 6/12/2015 | DOMESTIC |
| 223133 | | TUCKER, MARK | 07S | 20E | 28 | AC | No | WELL | 60.00 | 17.00 | | 17.00 | 40.00 | AIR | 11/28/2005 | DOMESTIC |
| 304714 | | HERMAN, JAY | 07S | 20E | 28 | ACA | No | WELL | 39.00 | 15.00 | | 15.00 | 60.00 | AIR | 1/8/2020 | DOMESTIC |
| 239553 | | SULLIVAN MIKE AND DIANE | 07S | 20E | 28 | ACA | No | WELL | 39.00 | 5.50 | | 5.50 | 75.00 | AIR | 8/6/2007 | DOMESTIC |
| 219341 | | HENRY LOT 74N | 07S | 20E | 28 | ACAC | Yes | WELL | 68.00 | | | | | OTHER | | MONITORING |
| 304659 | | ANDERSON, KEVIN | 07S | 20E | 28 | ACB | No | WELL | 39.00 | 13.00 | | 13.00 | 60.00 | AIR | 1/8/2020 | DOMESTIC |
| 283958 | | LAMASTUS, LES AND SUSAN | 07S | 20E | 28 | ACB | No | WELL | 39.00 | 8.00 | | 8.00 | 100.00 | AIR | 8/12/2015 | DOMESTIC |
| 303526 | | ZUMPANO, PATRICIA LYNN | 07S | 20E | 28 | ACB | No | WELL | 39.00 | 7.00 | | 7.00 | 100.00 | AIR | 10/4/2019 | DOMESTIC |
| 279965 | | HANSEN, LISA | 07S | 20E | 28 | ACD | No | WELL | 39.00 | 10.00 | | 10.00 | 60.00 | AIR | 9/23/2014 | DOMESTIC |
| 225273 | | WACASER TODD | 07S | 20E | 28 | ACD | No | WELL | 40.00 | 19.00 | | 19.00 | 40.00 | AIR | 12/28/2005 | DOMESTIC |
| 157950 | | RED LODGE WEST LLP | 07S | 20E | 28 | ACDA | Yes | WELL | 41.00 | 20.00 | 35.00 | 20.00 | 60.00 | AIR | 5/8/1996 | MONITORING |
| 157949 | | RED LODGE WEST LLP | 07S | 20E | 28 | ACDA | Yes | WELL | 67.00 | 11.00 | 29.00 | 11.00 | 340.00 | PUMP | 6/20/1996 | TEST WELL |
| 231962 | | HUNT JOEL | 07S | 20E | 28 | AD | No | WELL | 100.00 | 9.00 | | 9.00 | 20.00 | AIR | 6/2/2006 | DOMESTIC |
| 283965 | | HERDT, BARRY | 07S | 20E | 28 | ADB | No | WELL | 39.00 | 7.50 | | 7.50 | 100.00 | AIR | 8/13/2015 | DOMESTIC |
| 238079 | | SPERO BOB | 07S | 20E | 28 | ADC | No | WELL | 39.00 | 10.00 | | 10.00 | 60.00 | AIR | 6/2/2007 | DOMESTIC |
| 223184 | | C30042927 SPERO BOB | 07S | 20E | 28 | ADC | No | WELL | 40.00 | 7.00 | | 7.00 | 60.00 | AIR | 9/17/2005 | DOMESTIC |
| 222522 | | SPERO BOB | 07S | 20E | 28 | ADC | No | WELL | 40.00 | 15.00 | | 15.00 | 60.00 | AIR | 6/29/2005 | DOMESTIC |
| 223227 | | SPERO BOB | 07S | 20E | 28 | ADC | No | WELL | 40.00 | 8.00 | | 7.00 | 60.00 | AIR | 9/26/2005 | DOMESTIC |
| 157349 | | C099129-00 OLSON TRUDIE | 07S | 20E | 28 | BAA | No | WELL | 39.00 | 10.00 | 38.00 | 10.00 | 30.00 | AIR | 11/1/1994 | DOMESTIC |
| 188452 | | FOX JAKE *WELL #1 | 07S | 20E | 28 | BABB | No | WELL | 55.00 | 15.25 | | | 10.00 | OTHER | 1/1/1926 | DOMESTIC |
| 188453 | | FOX JAKE *WELL #2 | 07S | 20E | 28 | BABB | No | WELL | 25.00 | 14.00 | | | 20.00 | OTHER | 12/15/1961 | DOMESTIC |
| 231471 | | GOLDBERG BRUCE | 07S | 20E | 28 | BAD | No | WELL | 60.00 | 6.50 | | 6.50 | 125.00 | AIR | 9/13/2006 | DOMESTIC |
| 268470 | | GAMIL, RON | 07S | 20E | 28 | BB | No | WELL | 120.00 | 8.00 | | 8.00 | 22.00 | AIR | 8/15/2006 | DOMESTIC |
| 201858 | | JOHNSON ROBERT | 07S | 20E | 28 | BB | No | WELL | 130.00 | 27.00 | | 27.00 | 9.00 | AIR | 7/19/2002 | DOMESTIC |

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|------------------------|--|-----------------------------------|-----|-----|----|------|-----|------|--------|-------|--------|-------|--------|-------|------------|------------|
| 138850 | | NEARPASS BRENT & MARJORIE | 07S | 20E | 28 | BB | No | WELL | 60.00 | 26.00 | 55.00 | 26.00 | 12.00 | AIR | 4/7/1993 | UNKNOWN |
| 138849 | | FOX JAKE | 07S | 20E | 28 | BBAA | Yes | WELL | 120.00 | 15.00 | 115.00 | 15.00 | 12.00 | AIR | 6/17/1993 | DOMESTIC |
| 212584 | | NEARPASS BRENT | 07S | 20E | 28 | BBC | No | WELL | 90.00 | 33.00 | | 33.00 | 15.00 | AIR | 6/4/2004 | DOMESTIC |
| 152468 | | C094686-00 GEORGE DR. WILLIAM | 07S | 20E | 28 | BC | No | WELL | 160.00 | 23.00 | 155.00 | 23.00 | 8.00 | AIR | 12/21/1993 | DOMESTIC |
| 289773 | | BECK, PAUL | 07S | 20E | 28 | BD | No | WELL | 35.00 | 4.50 | | 4.50 | 100.00 | AIR | 11/5/1998 | DOMESTIC |
| 277123 | | COHELL, JACQUELIN | 07S | 20E | 28 | BD | No | WELL | 60.00 | 17.00 | | 17.00 | 40.00 | AIR | 1/8/2014 | DOMESTIC |
| 251837 | | JAEGER, GALEN AND KAY | 07S | 20E | 28 | BD | No | WELL | 60.00 | 18.00 | | 18.00 | 40.00 | AIR | 7/15/2009 | DOMESTIC |
| 301950 | | HARTMAN, EMANUEL IV | 07S | 20E | 28 | BDA | No | WELL | 39.00 | 6.50 | | 6.50 | 100.00 | AIR | 7/1/2019 | DOMESTIC |
| 298682 | | PROPP, THOMAS | 07S | 20E | 28 | BDA | No | WELL | 39.00 | 11.00 | | 11.00 | 100.00 | AIR | 9/11/2018 | DOMESTIC |
| 170967 | | C106504-00 BECK PAUL | 07S | 20E | 28 | BDBD | Yes | WELL | 38.00 | 5.00 | 35.00 | 5.00 | 50.00 | AIR | 10/14/1997 | DOMESTIC |
| 204552 | | ZANDT GEORGE | 07S | 20E | 28 | BDBD | Yes | WELL | 35.00 | | | | | OTHER | | |
| 298645 | | LEVEAUX, RENE | 07S | 20E | 28 | BDD | No | WELL | 40.00 | 11.00 | | 11.00 | 100.00 | AIR | 9/11/2018 | DOMESTIC |
| 241653 | | CHADWICH TOM | 07S | 20E | 28 | CA | No | WELL | 60.00 | 18.00 | | 18.00 | 30.00 | AIR | 8/28/2007 | DOMESTIC |
| 241622 | | HEMON SCOTT | 07S | 20E | 28 | CA | No | WELL | 60.00 | 12.00 | | 12.00 | 60.00 | AIR | 8/30/2007 | DOMESTIC |
| 201861 | | SUKIT GLEN | 07S | 20E | 28 | CA | No | WELL | 140.00 | 39.00 | | 39.00 | 8.00 | AIR | 3/26/2002 | DOMESTIC |
| 301951 | | GILLESPIE, DARRELL | 07S | 20E | 28 | CAA | No | WELL | 39.00 | 16.83 | | 16.83 | 100.00 | AIR | 7/1/2019 | DOMESTIC |
| 176388 | | MCNAMARA MIKE AND ANNIE | 07S | 20E | 28 | CABB | Yes | WELL | 50.00 | 2.00 | | 2.00 | 24.00 | AIR | 7/22/1999 | DOMESTIC |
| 302484 | | O'NEIL, THOMAS | 07S | 20E | 28 | CAD | No | WELL | 49.00 | 18.00 | | 18.00 | 100.00 | AIR | 7/29/2019 | DOMESTIC |
| 240059 | | ROLLMAN JOHN AND DONNA | 07S | 20E | 28 | CB | No | WELL | 60.00 | | | | 50.00 | AIR | 9/26/2007 | DOMESTIC |
| 301613 | | LARR, ANN | 07S | 20E | 28 | CBA | No | WELL | 39.00 | 20.50 | | 20.50 | 50.00 | AIR | 6/7/2019 | DOMESTIC |
| 150239 | | C094687-00 GEORGE DR. WILLIAM | 07S | 20E | 28 | CBBB | Yes | WELL | 330.00 | 40.00 | 325.00 | 40.00 | 5.00 | AIR | 7/1/1994 | DOMESTIC |
| 201859 | | GAMILL RON | 07S | 20E | 28 | CBC | No | WELL | 97.00 | 6.50 | | 6.50 | 30.00 | AIR | 10/21/2002 | DOMESTIC |
| 290178 | | GAMMILL, RON | 07S | 20E | 28 | CBC | No | WELL | 50.00 | 18.00 | | 18.00 | 15.00 | AIR | 5/23/2002 | DOMESTIC |
| 282285 | | SMED, MARK | 07S | 20E | 28 | CBC | No | WELL | 59.00 | 39.00 | | 39.00 | 40.00 | AIR | 4/14/2015 | DOMESTIC |
| 192989 | | RICHARD COURTNEY R. AND KATHERINE | 07S | 20E | 28 | CC | No | WELL | 90.00 | 10.00 | | 10.00 | 25.00 | AIR | 8/13/2001 | DOMESTIC |
| 177460 | | TUELL HANK LINDA | 07S | 20E | 28 | CC | No | WELL | 118.00 | 11.00 | | 11.00 | 15.00 | AIR | 9/15/1999 | DOMESTIC |
| 197262 | | LEMOINE, DAVID | 07S | 20E | 28 | CCDB | Yes | WELL | 80.00 | 12.00 | | 12.00 | 35.00 | AIR | 7/10/2002 | DOMESTIC |
| 223139 | | KNUTSON MARVIN * L&L BUILDERS | 07S | 20E | 28 | CD | No | WELL | 100.00 | 36.00 | | 36.00 | 20.00 | AIR | 7/11/2005 | DOMESTIC |
| 204142 | | DISSSEL LANCE AND MARY KAY | 07S | 20E | 28 | CDB | No | WELL | 28.00 | 8.00 | | 8.00 | 25.00 | AIR | 6/4/2003 | DOMESTIC |
| 201860 | | ALEX LAKE AND ANDREA MOHAMMADI | 07S | 20E | 28 | CDDB | Yes | WELL | 80.00 | 32.00 | | 32.00 | 65.00 | AIR | 11/22/2002 | DOMESTIC |
| 290014 | | HARTER, HERSCHEL | 07S | 20E | 28 | D | No | WELL | 62.00 | 40.00 | | 40.00 | 25.00 | AIR | 4/17/2000 | DOMESTIC |
| 201862 | | GILDEHAUS JEFF | 07S | 20E | 28 | DA | No | WELL | 85.00 | 35.00 | | 35.00 | 40.00 | AIR | 11/20/2002 | DOMESTIC |
| 247330 | | JEFF JUNKERT CONSTRUCTION | 07S | 20E | 28 | DA | No | WELL | 67.00 | 17.00 | | 17.00 | 35.00 | AIR | 10/28/2007 | DOMESTIC |
| 247331 | | JEFF JUNKERT CONSTRUCTION | 07S | 20E | 28 | DA | No | WELL | 80.00 | 17.00 | | 17.00 | 35.00 | AIR | 10/30/2007 | DOMESTIC |
| 218537 | | HENRY RON | 07S | 20E | 28 | DB | No | WELL | 105.00 | 32.00 | | 32.00 | 100.00 | AIR | 3/15/2005 | DOMESTIC |
| 234515 | | HENRY RON | 07S | 20E | 28 | DB | No | WELL | 60.00 | 8.00 | | 8.00 | 50.00 | AIR | 8/21/2006 | IRRIGATION |
| 301611 | | GIOVETTI, JOSEPH AND SARAH | 07S | 20E | 28 | DBA | No | WELL | 39.00 | 21.00 | | 21.00 | 50.00 | AIR | 6/7/2019 | DOMESTIC |
| 298424 | | WEAMER, TIM | 07S | 20E | 28 | DBA | No | WELL | 44.00 | 11.00 | | 11.00 | 70.00 | AIR | 8/30/2018 | DOMESTIC |
| 283968 | | KOSTAL, HANS | 07S | 20E | 28 | DBB | No | WELL | 47.00 | 18.00 | | 18.00 | 80.00 | AIR | 8/14/2015 | DOMESTIC |
| 282866 | | MCCARTNEY, MANDY | 07S | 20E | 28 | DBB | No | WELL | 44.00 | 23.00 | | 23.00 | 60.00 | AIR | 6/5/2015 | DOMESTIC |
| 293850 | | DEWITT, DENNIS | 07S | 20E | 28 | DBC | No | WELL | 52.00 | 21.00 | | 21.00 | 100.00 | AIR | 8/17/2017 | DOMESTIC |
| 301210 | | MATZENBACHER, KELLY | 07S | 20E | 28 | DBC | No | WELL | 59.00 | 34.50 | | 34.50 | 50.00 | AIR | 5/7/2019 | DOMESTIC |
| 304657 | | MIKE, ALYSON | 07S | 20E | 28 | DBC | No | WELL | 59.00 | 33.00 | | 33.00 | 40.00 | AIR | 1/6/2020 | DOMESTIC |
| 304658 | | MIKE, ALYSON | 07S | 20E | 28 | DBC | No | WELL | 59.00 | 33.00 | | 33.00 | 40.00 | AIR | 1/7/2020 | DOMESTIC |
| 219340 | | HENRY LOT 38 | 07S | 20E | 28 | DBCD | Yes | WELL | 104.00 | | | | | OTHER | | MONITORING |
| 298423 | | HAYNES, JR., LYNDEN | 07S | 20E | 28 | DBD | No | WELL | 53.00 | 12.00 | | 12.00 | 70.00 | AIR | 8/30/2018 | DOMESTIC |
| 282865 | | MCCARTNEY, JUDY | 07S | 20E | 28 | DBD | No | WELL | 59.00 | 35.00 | | 35.00 | 40.00 | AIR | 6/4/2015 | DOMESTIC |
| 282864 | | MCCARTNEY, JUDY | 07S | 20E | 28 | DBD | No | WELL | 59.00 | 37.00 | | 37.00 | 40.00 | AIR | 6/3/2015 | DOMESTIC |
| 161388 | | RED LODGE WEST LLP | 07S | 20E | 28 | DBD | No | WELL | 250.00 | 35.00 | | | | PUMP | 6/27/1996 | DOMESTIC |
| 223122 | | AL & VICKIE | 07S | 20E | 28 | DC | No | WELL | 80.00 | 24.00 | | 24.00 | 40.00 | AIR | 8/4/2005 | DOMESTIC |
| 252172 | | JAEGER, GALEN AND KAY * WELL 2 | 07S | 20E | 28 | DC | No | WELL | 60.00 | 18.00 | | 18.00 | 40.00 | AIR | 8/20/2009 | DOMESTIC |

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|------------------------|--|--|-----|-----|----|------|-----|------|--------|-------|-------|-------|--------|--------|------------|-----------------|
| 297315 | | PAULSON, TIM * GRANITE PEAK BUILDERS LLC | 07S | 20E | 28 | DC | No | WELL | 65.00 | 51.00 | | 51.00 | 15.00 | AIR | 3/10/2018 | DOMESTIC |
| 297315 | | PAULSON, TIM * GRANITE PEAK BUILDERS LLC | 07S | 20E | 28 | DC | No | WELL | 65.00 | 51.00 | | 51.00 | 15.00 | PUMP | 3/10/2018 | DOMESTIC |
| 301209 | | BRIGGS, BILL | 07S | 20E | 28 | DCB | No | WELL | 65.00 | 44.00 | | 44.00 | 50.00 | AIR | 5/6/2019 | DOMESTIC |
| 298328 | | DAVIS, KYLE | 07S | 20E | 28 | DCB | No | WELL | 59.00 | 22.50 | | 22.50 | 100.00 | AIR | 8/24/2018 | DOMESTIC |
| 301957 | | POLINKO, TOM | 07S | 20E | 28 | DCC | No | WELL | 79.00 | 30.00 | | 30.00 | 100.00 | AIR | 7/3/2019 | DOMESTIC |
| 182773 | | GLENNON | 07S | 20E | 28 | DDCD | Yes | WELL | 60.00 | 45.84 | | 18.00 | 38.00 | AIR | 9/11/1999 | DOMESTIC |
| 122492 | | LARSON E.F. | 07S | 20E | 33 | | No | WELL | 39.00 | 18.00 | 39.00 | | 50.00 | AIR | 6/13/1983 | DOMESTIC |
| 258596 | | U.S. FOREST SERVICE * BEARTOOTH DIST. | 07S | 20E | 33 | AA | No | WELL | 80.00 | 18.00 | | 18.00 | 80.00 | AIR | 7/15/2009 | IRRIGATION |
| 297028 | | QUICK, SAM | 07S | 20E | 33 | AAB | No | WELL | 130.00 | 45.00 | | 45.00 | 22.00 | AIR | 5/30/2018 | DOMESTIC |
| 157951 | | RED LODGE WEST LLP | 07S | 20E | 33 | AAC | No | WELL | 85.00 | 60.00 | 70.00 | 60.00 | 40.00 | PUMP | 6/27/1996 | TEST WELL |
| 211964 | | HENRY RON | 07S | 20E | 33 | AB | No | WELL | 125.00 | 68.00 | | 62.00 | 100.00 | AIR | 4/24/2004 | IRRIGATION |
| 218538 | | MCKAY DOUG | 07S | 20E | 33 | AB | No | WELL | 100.00 | 53.00 | | | 40.00 | AIR | 12/9/2004 | DOMESTIC |
| 296644 | | THOMAS, BOB | 07S | 20E | 33 | ABA | No | WELL | 85.00 | 50.00 | | 50.00 | 100.00 | AIR | 4/18/2018 | DOMESTIC |
| 187234 | | RED LODGE WEST LLP * PALMER BILL | 07S | 20E | 33 | ABB | No | WELL | 79.00 | 52.00 | | 52.00 | 35.00 | AIR | 1/18/2001 | FIRE PROTECTION |
| 247578 | | BERES ANDY | 07S | 20E | 33 | ABD | No | WELL | 79.00 | 21.00 | | 21.00 | 75.00 | AIR | 8/5/2008 | DOMESTIC |
| 297032 | | WILHELM, ANTON & KATHRYN | 07S | 20E | 33 | ABD | No | WELL | 83.00 | 53.00 | | 53.00 | 35.00 | AIR | 5/31/2018 | DOMESTIC |
| 198119 | | C117926-00 TISHAMMER JOHN | 07S | 20E | 33 | ABDD | No | WELL | 80.00 | 35.00 | | 35.00 | 60.00 | AIR | 8/20/2001 | DOMESTIC |
| 247577 | | BULLOCK RICHARD | 07S | 20E | 33 | ACA | No | WELL | 79.00 | 20.00 | | 20.00 | 75.00 | AIR | 8/6/2008 | DOMESTIC |
| 274274 | | PRATAER, JEFF | 07S | 20E | 33 | ACB | No | WELL | 290.00 | 77.00 | | 77.00 | 18.00 | AIR | 5/13/2013 | DOMESTIC |
| 187236 | | SHELDON JERRY | 07S | 20E | 33 | ACB | No | WELL | 79.00 | 53.00 | | 53.00 | 35.00 | AIR | 1/16/2001 | DOMESTIC |
| 284685 | | PIRTZ, NATE | 07S | 20E | 33 | ACC | No | WELL | 99.00 | 48.00 | | 48.00 | 80.00 | AIR | 10/1/2015 | DOMESTIC |
| 191002 | | C116119-00 DEHIO, PETER AND KELLY | 07S | 20E | 33 | ACCA | Yes | WELL | 105.00 | 45.00 | | 45.00 | 40.00 | AIR | 4/12/2001 | DOMESTIC |
| 298488 | | CRUZ, DAVID | 07S | 20E | 33 | ACD | No | WELL | 100.00 | 42.00 | | 42.00 | 60.00 | AIR | 8/29/2018 | DOMESTIC |
| 263999 | | HERTZ, CHRIS | 07S | 20E | 33 | ADC | No | WELL | 130.00 | 52.00 | | 52.00 | 17.00 | AIR | 9/15/2011 | DOMESTIC |
| 171061 | | LEGNINI ROBERT | 07S | 20E | 33 | ADC | Yes | WELL | 95.00 | 60.00 | 85.00 | 60.00 | 50.00 | AIR | 5/12/1997 | DOMESTIC |
| 255013 | | MATTER BOB | 07S | 20E | 33 | ADD | No | WELL | 121.00 | 90.00 | | 90.00 | 25.00 | AIR | 1/21/2010 | DOMESTIC |
| 252178 | | MATTER, BOB | 07S | 20E | 33 | ADD | No | WELL | 93.00 | 64.00 | | 64.00 | 50.00 | AIR | 7/7/2009 | DOMESTIC |
| 216386 | | RUSSELL GARY | 07S | 20E | 33 | ADD | No | WELL | 80.00 | 44.00 | | 44.00 | 25.00 | AIR | 10/25/2004 | DOMESTIC |
| 104802 | | JORGENSON GLORIA E. | 07S | 20E | 33 | B | No | WELL | 52.00 | 30.00 | 42.00 | | 30.00 | BAILER | 7/13/1965 | DOMESTIC |
| 231470 | | ABESSIO JOE AND ANNE MARIE | 07S | 20E | 33 | BAA | No | WELL | 38.50 | 28.00 | | 28.00 | 60.00 | AIR | 8/29/2006 | DOMESTIC |
| 291378 | | VOMUND, MARK | 07S | 20E | 33 | BAA | No | WELL | 79.00 | 52.00 | | 79.00 | 25.00 | AIR | 2/15/2017 | DOMESTIC |
| 219737 | | MCCONE PAUL | 07S | 20E | 33 | BAAD | Yes | WELL | 76.00 | 34.00 | | 34.00 | 50.00 | AIR | 6/10/2005 | DOMESTIC |
| 290160 | | SUKIT, GLEN | 07S | 20E | 33 | BABA | No | WELL | 105.00 | 45.00 | | 45.00 | 40.00 | AIR | 4/12/2001 | DOMESTIC |
| 290160 | | SUKIT, GLEN | 07S | 20E | 33 | BABA | No | WELL | 105.00 | 45.00 | | 45.00 | 40.00 | AIR | 4/12/2001 | DOMESTIC |
| 201870 | | CARPENTER ANDY | 07S | 20E | 33 | BAD | No | WELL | 83.00 | 31.00 | | 31.00 | 30.00 | AIR | 6/11/2002 | DOMESTIC |
| 231519 | | LINDALL DON AND LINDA | 07S | 20E | 33 | BBA | No | WELL | 70.00 | 23.00 | | 23.00 | 25.00 | AIR | 11/26/2006 | DOMESTIC |
| 165328 | | C102224-00 LINDALL DON | 07S | 20E | 33 | BBAA | Yes | WELL | 72.00 | 12.00 | 34.00 | 12.00 | 12.00 | PUMP | 7/25/1997 | DOMESTIC |
| 188455 | | CASTAGNE BROS. INC. | 07S | 20E | 33 | BBDA | No | WELL | 39.00 | 23.00 | | | 5.00 | OTHER | 1/1/1953 | DOMESTIC |
| 138852 | | FARLEY MIKE & SHIRLEE | 07S | 20E | 33 | BBDD | Yes | WELL | 50.00 | 21.00 | 35.00 | 21.00 | 36.00 | AIR | 4/28/1993 | DOMESTIC |
| 243744 | | DODDY TOM (DON WOLF) | 07S | 20E | 33 | BC | No | WELL | 160.00 | 32.00 | | 32.00 | 10.00 | AIR | 6/27/2005 | DOMESTIC |
| 241644 | | PHILIPSBORN ANITA | 07S | 20E | 33 | BC | No | WELL | 60.00 | 15.00 | | 15.00 | 30.00 | AIR | 8/15/2006 | DOMESTIC |
| 290075 | | HENERY, RON | 07S | 20E | 33 | BD | No | WELL | 80.00 | 38.00 | | 38.00 | 60.00 | AIR | 8/13/2001 | DOMESTIC |
| 228338 | | TIPTON RON | 07S | 20E | 33 | BDC | No | WELL | 90.00 | 50.00 | | 50.00 | 60.00 | AIR | 6/16/2006 | DOMESTIC |
| 104803 | | CROSS MICHAEL | 07S | 20E | 33 | CCA | No | WELL | 100.00 | 15.00 | 85.00 | | 13.00 | BAILER | 8/11/1983 | DOMESTIC |
| 172613 | | KRAFT DOUG | 07S | 20E | 33 | CCA | No | WELL | 90.00 | 3.00 | 85.00 | 3.00 | 5.00 | AIR | 12/30/1998 | DOMESTIC |
| 226239 | | TINNES GARY | 07S | 20E | 33 | CD | No | WELL | 84.00 | 58.00 | | 50.00 | 20.00 | AIR | 5/3/2006 | DOMESTIC |
| 263109 | | LAMBERT, PHIL | 07S | 20E | 33 | DAB | No | WELL | 102.00 | 50.00 | | 50.00 | 40.00 | AIR | 6/29/2011 | DOMESTIC |
| 204265 | | RUSSELL | 07S | 20E | 33 | DABC | Yes | WELL | 83.00 | 48.00 | | 48.00 | 36.00 | AIR | 6/23/2003 | DOMESTIC |
| 176391 | | C109233-00 KAISER PETER | 07S | 20E | 33 | DAC | No | WELL | 110.00 | 62.00 | | | 12.00 | AIR | 5/21/1999 | DOMESTIC |

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|------------------------|--|------------|------------------------------|-----|-----|----|------|-----|------|--------|-------|--------|-------|--------|--------|------------|------------|
| 216387 | | | KOVACH STEVE | 07S | 20E | 33 | DAC | No | WELL | 95.00 | 61.00 | | 61.00 | 20.00 | AIR | 10/21/2004 | DOMESTIC |
| 153455 | | C096473-00 | DANIELS PATRICA AND ROBERT | 07S | 20E | 33 | DACA | Yes | WELL | 105.00 | 60.00 | 105.00 | 60.00 | 40.00 | AIR | 7/20/1995 | DOMESTIC |
| 298425 | | | ERICKSON, CASEY | 07S | 20E | 33 | DAD | No | WELL | 103.00 | 72.00 | | 72.00 | 40.00 | AIR | 8/31/2018 | DOMESTIC |
| 201871 | | | HUSKINS GARY | 07S | 20E | 33 | DB | No | WELL | 60.00 | 12.00 | | 12.00 | 180.00 | AIR | 12/1/2002 | DOMESTIC |
| 295000 | | | WHITAMORE, BYRON & DENA | 07S | 20E | 33 | DBD | No | WELL | 96.00 | 51.00 | | 51.00 | 60.00 | AIR | 10/25/2017 | DOMESTIC |
| 161389 | | | PILATI MICHAEL | 07S | 20E | 33 | DCC | No | WELL | 98.00 | 45.00 | 95.00 | 45.00 | 60.00 | AIR | 10/3/1996 | DOMESTIC |
| 104804 | | | PILATI RICHARD | 07S | 20E | 33 | DD | No | WELL | 50.00 | 9.00 | 15.00 | | 40.00 | BAILER | 10/20/1965 | DOMESTIC |
| 289853 | | | PILATI, JULIUS | 07S | 20E | 33 | DDB | No | WELL | 57.00 | | | | 30.00 | AIR | 9/27/2000 | DOMESTIC |
| 172610 | | C108078-00 | GILLETTE RUSSELL | 07S | 20E | 33 | DDC | No | WELL | 78.00 | 17.00 | | 17.00 | 75.00 | AIR | 9/16/1998 | DOMESTIC |
| 284601 | | | LEACH AUTO AND CYCLE | 07S | 20E | 33 | DDD | No | WELL | 54.00 | 32.00 | | 32.00 | 45.00 | AIR | 9/30/2015 | DOMESTIC |
| 219742 | | | LEFEBVRE JOE | 07S | 20E | 34 | | No | WELL | 40.00 | | | | 60.00 | AIR | 6/2/2005 | IRRIGATION |
| 290097 | | | ZUPAN, TONY | 07S | 20E | 34 | | No | WELL | 40.00 | 12.00 | | 12.00 | 60.00 | AIR | 7/7/2001 | IRRIGATION |
| 104805 | | | CASTOGNE VIC | 07S | 20E | 34 | | No | WELL | 38.00 | 9.00 | 38.00 | | 50.00 | AIR | 5/6/1983 | UNKNOWN |
| 104806 | | | MARTIN CHUCK | 07S | 20E | 34 | | No | WELL | 38.00 | 11.00 | 38.00 | | 50.00 | AIR | 5/5/1983 | DOMESTIC |
| 142588 | | | STEWERT SHAWN | 07S | 20E | 34 | AA | No | WELL | 100.00 | 10.00 | 95.00 | 10.00 | 12.00 | AIR | 10/27/1993 | DOMESTIC |
| 173021 | | | RAUMER FRED | 07S | 20E | 34 | AAA | No | WELL | 110.00 | 45.00 | 110.00 | 45.00 | 10.00 | AIR | 10/23/1997 | DOMESTIC |
| 290109 | | | SIDDLE FAMILY TRUST | 07S | 20E | 34 | AAC | No | WELL | 31.00 | 2.00 | | 2.00 | 35.00 | AIR | 7/27/2001 | DOMESTIC |
| 183960 | | | THE SIDDLE FAMILY TRUST | 07S | 20E | 34 | AAC | No | WELL | 35.00 | 4.00 | | 4.00 | 75.00 | AIR | 9/24/1999 | DOMESTIC |
| 183961 | | | THE SIDDLE FAMILY TRUST | 07S | 20E | 34 | AAC | No | WELL | 34.00 | 6.00 | | 6.00 | 75.00 | AIR | 9/26/1999 | DOMESTIC |
| 251736 | | | ARNDT, GRETCHEN | 07S | 20E | 34 | AB | No | WELL | 40.00 | 5.00 | | 5.00 | 30.00 | AIR | 5/26/2008 | IRRIGATION |
| 220605 | | | CLARKS BUS SERVICE *WELL 1 | 07S | 20E | 34 | AB | No | WELL | 8.00 | 5.00 | | | | OTHER | 6/2/2005 | OTHER |
| 219740 | | | CLARKS BUS SERVICE *WELL 1 | 07S | 20E | 34 | AB | No | WELL | 8.00 | 5.00 | | | | OTHER | 6/2/2005 | TEST WELL |
| 219745 | | | CLARKS BUS SERVICE *WELL 2 | 07S | 20E | 34 | AB | No | WELL | 8.00 | 5.00 | | | | OTHER | 6/2/2005 | MONITORING |
| 219747 | | | CLARKS BUS SERVICE *WELL 3 | 07S | 20E | 34 | AB | No | WELL | 8.00 | 4.00 | | | | OTHER | 6/2/2005 | MONITORING |
| 240541 | | | COOPER RUSSEL | 07S | 20E | 34 | AB | No | WELL | 40.00 | 15.00 | | 15.00 | 22.00 | AIR | 11/1/2007 | IRRIGATION |
| 219749 | | | FINSTAD, ERIC/PILATI, MIKE | 07S | 20E | 34 | AB | No | WELL | 40.00 | | | | 38.00 | AIR | 6/5/2005 | IRRIGATION |
| 104807 | | | FOUNTAIN PARK | 07S | 20E | 34 | AB | No | WELL | 58.00 | 7.00 | 20.00 | | 70.00 | PUMP | 6/2/1984 | IRRIGATION |
| 149927 | | | NORBY, H. LEE | 07S | 20E | 34 | AB | No | WELL | 80.00 | 10.00 | 75.00 | 10.00 | 20.00 | AIR | 10/29/1993 | DOMESTIC |
| 216524 | | | SOMMERFELD ANTHONY | 07S | 20E | 34 | AB | No | WELL | 60.00 | 10.00 | | 10.00 | 20.00 | AIR | 11/2/2004 | DOMESTIC |
| 104808 | | | AMUNDSON DUKE | 07S | 20E | 34 | ABA | No | WELL | 45.00 | 17.00 | 25.00 | | 17.00 | BAILER | 9/13/1974 | DOMESTIC |
| 173022 | | | BROWN, VERNETTA | 07S | 20E | 34 | ABA | No | WELL | 25.00 | 7.00 | | 7.00 | 60.00 | AIR | 8/6/1996 | IRRIGATION |
| 239572 | | | COLT COMMUNICATIONS L.L.P. | 07S | 20E | 34 | ABA | No | WELL | 40.00 | 6.00 | | 6.00 | 75.00 | AIR | 8/8/2007 | DOMESTIC |
| 164284 | | C102172-00 | JARVI, CLARA T. | 07S | 20E | 34 | ABA | No | WELL | 25.00 | 6.00 | | 6.00 | 6.00 | AIR | 8/5/1997 | IRRIGATION |
| 183507 | | | MOUNTAIN LOG Y SEDOR | 07S | 20E | 34 | ABA | No | WELL | 50.00 | 14.50 | | | 11.00 | AIR | 5/27/2000 | DOMESTIC |
| 104809 | | | SCHUBERT, JACK | 07S | 20E | 34 | ABA | No | WELL | 110.00 | 10.00 | 100.00 | | 10.00 | BAILER | 9/7/1984 | DOMESTIC |
| 104810 | | | LAMPI, HUGO | 07S | 20E | 34 | ABB | No | WELL | 39.00 | 12.00 | 38.00 | | 100.00 | AIR | 1/15/1983 | DOMESTIC |
| 128247 | | | SLANTZ, RUSSELL | 07S | 20E | 34 | ABB | No | WELL | 28.50 | 11.00 | 28.00 | 11.50 | 30.00 | AIR | 10/7/1991 | DOMESTIC |
| 173023 | | C109238-00 | MARTIN, DON | 07S | 20E | 34 | ABD | No | WELL | 100.00 | 14.00 | | 14.00 | 18.00 | AIR | 7/16/1998 | DOMESTIC |
| 155748 | | C097579-00 | BRIEN, JIM | 07S | 20E | 34 | ABDA | Yes | WELL | 180.00 | 62.00 | 140.00 | 62.00 | 10.00 | PUMP | 10/18/1995 | DOMESTIC |
| 203331 | | | BULLOCK BILL | 07S | 20E | 34 | ABDD | Yes | WELL | 101.00 | | | | | OTHER | | |
| 241643 | | | DOEDEN KATHY | 07S | 20E | 34 | AC | No | WELL | 40.00 | 10.00 | | 10.00 | 30.00 | AIR | 1/2/2008 | IRRIGATION |
| 104811 | | | KARAS, BENJAMIN K. | 07S | 20E | 34 | AC | No | WELL | 30.00 | 8.00 | | | 200.00 | OTHER | 8/1/1959 | DOMESTIC |
| 231468 | | | COLT COMMUNICATIONS LLC MPPP | 07S | 20E | 34 | ACA | No | WELL | 25.00 | 6.00 | | 6.00 | 60.00 | AIR | 9/11/2006 | DOMESTIC |
| 289797 | | | BEAUMONT, SCOTT | 07S | 20E | 34 | ACB | No | WELL | 29.00 | 8.00 | | 8.00 | 12.00 | AIR | 8/30/1999 | DOMESTIC |
| 126442 | | | WHITTEN, R.P. | 07S | 20E | 34 | ACB | No | WELL | 28.00 | 11.00 | 28.00 | 11.00 | 20.00 | AIR | 10/4/1991 | DOMESTIC |
| 274621 | | | WILLIAMS, HAL | 07S | 20E | 34 | ACCA | No | WELL | 38.00 | 6.00 | | 6.00 | 100.00 | AIR | 8/5/2013 | DOMESTIC |
| 282592 | | | CARBON COUNTY FAIR BOARD | 07S | 20E | 34 | B | No | WELL | 210.00 | 83.00 | | 83.00 | 15.00 | AIR | 5/7/2015 | DOMESTIC |
| 258484 | | | GRANT SUSAN | 07S | 20E | 34 | BA | No | WELL | 40.00 | 12.00 | | 12.00 | 40.00 | AIR | 9/2/2009 | IRRIGATION |
| 142744 | | | JUDD, DAVE | 07S | 20E | 34 | BA | No | WELL | 38.00 | 19.00 | 35.00 | 19.00 | 50.00 | AIR | 12/30/1993 | IRRIGATION |

| | | | | | | | | | | | | | | | | | |
|------------------------|--|------------|-------------------------------------|-----|-----|----|-------|----|------|--------|-------|--------|--------|-------|------------|---------------------|------------|
| 275510 | | | WRIGHT, DARYL | 07S | 20E | 34 | BA | No | WELL | 40.00 | 10.00 | 10.00 | 40.00 | AIR | 12/14/2012 | IRRIGATION | |
| 189170 | | | BREMER, DARREH | 07S | 20E | 34 | BAA | No | WELL | 39.00 | 21.00 | 21.00 | 40.00 | AIR | 5/17/2001 | DOMESTIC | |
| 164285 | | C102171-00 | TIMONEN, SIGRID S. | 07S | 20E | 34 | BAA | No | WELL | 24.00 | 6.00 | 6.00 | 40.00 | AIR | 8/5/1997 | IRRIGATION | |
| 132671 | | W045736-00 | CITY OF RED LODGE - WELL 1 SOURCE 2 | 07S | 20E | 34 | BAACC | No | WELL | 74.00 | 20.00 | | 900.00 | OTHER | 9/17/1961 | PUBLIC WATER SUPPLY | |
| 298649 | | | GIOVETTI, MARIE | 07S | 20E | 34 | BAB | No | WELL | 44.00 | 31.00 | 31.00 | 40.00 | AIR | 9/14/2018 | IRRIGATION | |
| 155408 | | C097573-00 | HUDAK EXCAVATION & CONSTRUCTION | 07S | 20E | 34 | BAB | No | WELL | 180.00 | 57.00 | 175.00 | 57.00 | 8.00 | AIR | 4/1/1996 | DOMESTIC |
| 132672 | | | NOGLICH, MIKE VIRGINIA K. & PATRICK | 07S | 20E | 34 | BAB | No | WELL | 39.00 | 18.00 | 39.00 | 18.00 | 35.00 | AIR | 9/1/1992 | IRRIGATION |
| 161390 | | | PILATI, MICHAEL | 07S | 20E | 34 | BAB | No | WELL | 38.00 | 17.00 | 35.00 | 17.00 | 40.00 | AIR | 10/1/1996 | IRRIGATION |
| 301610 | | | POORE, JOHN | 07S | 20E | 34 | BAB | No | WELL | 39.00 | 19.00 | 19.00 | 40.00 | AIR | 6/6/2019 | DOMESTIC | |
| 207153 | | | WISE, JEFF | 07S | 20E | 34 | BAB | No | WELL | 48.00 | 29.00 | 29.00 | 36.00 | AIR | 9/5/2003 | DOMESTIC | |
| 293427 | | | BRAME, JEFF | 07S | 20E | 34 | BAC | No | WELL | 39.00 | 19.00 | 19.00 | 40.00 | AIR | 7/26/2017 | IRRIGATION | |
| 187237 | | | ENGLER, ED | 07S | 20E | 34 | BAC | No | WELL | 58.00 | 18.00 | | 18.00 | 75.00 | AIR | 12/6/2000 | IRRIGATION |
| 158425 | | C099249-00 | JURKOVICK, RAY | 07S | 20E | 34 | BAC | No | WELL | 38.00 | 27.00 | 30.00 | 18.00 | AIR | 9/23/1996 | DOMESTIC | |
| 187291 | | C112916-00 | MARCHELLO, GUIDO/ MARY | 07S | 20E | 34 | BAC | No | WELL | 33.00 | 14.00 | 33.00 | 12.00 | 30.00 | AIR | 8/11/1999 | IRRIGATION |
| 189172 | | | MCBRIDE, BARBRA | 07S | 20E | 34 | BAC | No | WELL | 40.00 | 22.00 | | 22.00 | AIR | 4/25/2001 | IRRIGATION | |
| 176392 | | C109271-00 | THORMATTLEN, WALLACE | 07S | 20E | 34 | BAC | No | WELL | 40.00 | 14.00 | 38.00 | 14.00 | 30.00 | AIR | 8/5/1999 | IRRIGATION |
| 161385 | | | WISE JEFF | 07S | 20E | 34 | BAC | No | WELL | 40.00 | 25.00 | 35.00 | 15.00 | PUMP | 8/21/1996 | DOMESTIC | |
| 104812 | | | BECKL RANDY | 07S | 20E | 34 | BAD | No | WELL | 39.00 | 18.00 | 38.00 | 25.00 | AIR | 4/9/1985 | DOMESTIC | |
| 192991 | | | EDWARDS KEITH | 07S | 20E | 34 | BAD | No | WELL | 38.00 | 14.00 | 14.00 | 100.00 | AIR | 6/15/2001 | IRRIGATION | |
| 212138 | | | JAQUITH, PHILLIP | 07S | 20E | 34 | BAD | No | WELL | 40.00 | 20.00 | 20.00 | 50.00 | AIR | 5/14/2004 | IRRIGATION | |
| 158426 | | C099934-00 | THOKE, WILLIAM P. | 07S | 20E | 34 | BAD | No | WELL | 38.00 | 16.00 | 35.00 | 16.00 | 40.00 | AIR | 10/1/1996 | IRRIGATION |
| 284586 | | | TOMICICH, WAYNE | 07S | 20E | 34 | BAD | No | WELL | 39.00 | 21.50 | 21.50 | 40.00 | AIR | 9/25/2015 | DOMESTIC | |
| 192990 | | | WESTER MIKE AND NANCY | 07S | 20E | 34 | BAD | No | WELL | 38.00 | 12.00 | 14.00 | 100.00 | AIR | 6/15/2001 | IRRIGATION | |
| 212018 | | | RUDSTROM BOB | 07S | 20E | 34 | BB | No | WELL | 40.00 | 10.00 | 10.00 | 60.00 | AIR | 6/28/2004 | IRRIGATION | |
| 184621 | | C103525-00 | JADWIN GENE W | 07S | 20E | 34 | BBA | No | WELL | 160.00 | 50.00 | 50.00 | 8.00 | AIR | 1/14/1998 | DOMESTIC | |
| 268428 | | | JADWIN, GENE | 07S | 20E | 34 | BBD | No | WELL | 102.00 | 41.00 | 41.00 | 15.00 | AIR | 6/30/2011 | DOMESTIC | |
| 297155 | | | JADWIN, GENE W. | 07S | 20E | 34 | BBD | No | WELL | 70.00 | 42.00 | 42.00 | 7.50 | AIR | 6/4/2018 | DOMESTIC | |
| 268453 | | | CARBON COUNTY | 07S | 20E | 34 | BC | No | WELL | 60.00 | 22.00 | 22.00 | 100.00 | AIR | 9/24/2010 | OTHER | |
| 268451 | | | CARBON COUNTY | 07S | 20E | 34 | BC | No | WELL | 60.00 | 22.00 | 22.00 | 50.00 | AIR | 9/24/2010 | OTHER | |
| 205963 | | | PILATI PAUL | 07S | 20E | 34 | BC | No | WELL | 40.00 | 22.00 | 22.00 | 30.00 | AIR | 5/27/2003 | IRRIGATION | |
| 228262 | | | CARBON COUNTRY FAIR BOARD | 07S | 20E | 34 | BCB | No | WELL | 83.00 | 59.00 | 59.00 | 30.00 | AIR | 5/25/2006 | DOMESTIC | |
| 104813 | | | MACKAY WILLIAM SR. | 07S | 20E | 34 | BCCD | No | WELL | 38.00 | 14.00 | 35.00 | 50.00 | AIR | 9/19/1984 | DOMESTIC | |
| 167905 | | C104929-00 | OREDNIK RICHARD | 07S | 20E | 34 | BCCD | No | WELL | 38.00 | 16.00 | 35.00 | 16.00 | 50.00 | AIR | 10/13/1997 | IRRIGATION |
| 104814 | | | PILATI RICHARD L. | 07S | 20E | 34 | BCD | No | WELL | 39.00 | 14.00 | 35.00 | 50.00 | OTHER | 9/17/1984 | DOMESTIC | |
| 258470 | | | BRYNGELSON MARY | 07S | 20E | 34 | BD | No | WELL | 40.00 | 6.00 | 6.00 | 40.00 | AIR | 7/29/2009 | IRRIGATION | |
| 214190 | | | DOWNING GALE | 07S | 20E | 34 | BD | No | WELL | 40.00 | 6.00 | 6.00 | 60.00 | AIR | 7/23/2002 | IRRIGATION | |
| 144956 | | | FRONTIER COMMUNITIES INC. | 07S | 20E | 34 | BD | No | WELL | 33.00 | 13.00 | 30.00 | 13.00 | 50.00 | AIR | 8/27/1992 | IRRIGATION |
| 144958 | | | FRONTIER COMMUNITIES INC. | 07S | 20E | 34 | BD | No | WELL | 37.00 | 13.00 | 35.00 | 13.00 | 50.00 | AIR | 8/27/1992 | IRRIGATION |
| 211991 | | | GRIBBLE KANDACE | 07S | 20E | 34 | BD | No | WELL | 40.00 | 23.00 | 23.00 | 45.00 | AIR | 4/7/2004 | IRRIGATION | |
| 144954 | | | HAUGE LEE | 07S | 20E | 34 | BD | No | WELL | 35.00 | 15.00 | 30.00 | 15.00 | 35.00 | AIR | 6/15/1992 | IRRIGATION |
| 124992 | | | KLESSONS DAVE | 07S | 20E | 34 | BD | No | WELL | 40.00 | 6.00 | 36.00 | 6.00 | 40.00 | AIR | 10/9/1990 | IRRIGATION |
| 243804 | | | KYNER JAMES | 07S | 20E | 34 | BD | No | WELL | 40.00 | 8.00 | 8.00 | 20.00 | AIR | 8/25/2006 | IRRIGATION | |
| 275624 | | | LADVALA, MATT | 07S | 20E | 34 | BD | No | WELL | 40.00 | 15.00 | 15.00 | 60.00 | AIR | 8/30/2013 | IRRIGATION | |
| 275663 | | | LADVALA, MATT | 07S | 20E | 34 | BD | No | WELL | 40.00 | 15.00 | 15.00 | 60.00 | AIR | 8/30/2013 | IRRIGATION | |
| 201872 | | | LUOMA OLIVER | 07S | 20E | 34 | BD | No | WELL | 40.00 | 6.00 | 6.00 | 90.00 | AIR | 7/10/2002 | IRRIGATION | |
| 201873 | | | NEARPASS BAYARD | 07S | 20E | 34 | BD | No | WELL | 40.00 | 6.00 | 6.00 | 40.00 | AIR | 7/9/2002 | IRRIGATION | |
| 292687 | | | ROCKIN J INC. * MW-1 | 07S | 20E | 34 | BD | No | WELL | 15.00 | 8.00 | | | | 5/23/2017 | MONITORING | |
| 292689 | | | ROCKIN J INC. * MW-2 | 07S | 20E | 34 | BD | No | WELL | 15.00 | 8.00 | | | | 5/23/2017 | MONITORING | |
| 292688 | | | ROCKIN J INC. - MW3 * MW-3 | 07S | 20E | 34 | BD | No | WELL | 15.00 | 8.00 | | | | 5/22/2017 | MONITORING | |

| | | | | | | | | | | | | | | | | | |
|------------------------|--|------------|------------------------------|-----|-----|----|------|-----|---------|--------|-------|-------|-------|--------|-------|------------|-----------------------|
| 104816 | | | SPENCER VER | 07S | 20E | 34 | BD | No | WELL | 38.00 | 8.00 | 35.00 | | 50.00 | AIR | 5/14/1987 | IRRIGATION |
| 128248 | | | WILLIAMS DONALD E. | 07S | 20E | 34 | BD | No | WELL | 38.00 | 18.00 | 35.00 | 18.00 | 35.00 | AIR | 6/11/1992 | IRRIGATION |
| 104815 | | | ZUMBRUN LLOYD & GLADYS | 07S | 20E | 34 | BD | No | WELL | 30.00 | 5.00 | | 5.00 | 50.00 | AIR | 6/2/1988 | IRRIGATION |
| 268080 | | | BECKER, CAMRON | 07S | 20E | 34 | BDA | No | WELL | 39.00 | 15.00 | | 15.00 | 60.00 | AIR | 7/7/2012 | DOMESTIC |
| 268073 | | | EWTON, DAVID | 07S | 20E | 34 | BDA | No | WELL | 39.00 | 19.50 | | 19.50 | 60.00 | AIR | 7/6/2012 | DOMESTIC |
| 124993 | | C049523-00 | FORMANACK ROBERT W. | 07S | 20E | 34 | BDA | No | WELL | 39.00 | 12.00 | 38.00 | | 50.00 | AIR | 1/20/1983 | DOMESTIC |
| 120251 | | | KLEPICH GEORGE | 07S | 20E | 34 | BDA | No | WELL | 39.00 | 13.00 | 35.00 | | 50.00 | AIR | 5/24/1985 | DOMESTIC |
| 222195 | | | MEIER RYAN AND JONI | 07S | 20E | 34 | BDA | No | WELL | 77.00 | 41.00 | | 41.00 | 20.00 | AIR | 8/8/2005 | DOMESTIC |
| 173024 | | | PARK BRETTNER | 07S | 20E | 34 | BDA | No | WELL | 38.00 | 9.00 | | 9.00 | 70.00 | AIR | 9/23/1998 | DOMESTIC |
| 292529 | | 30111556 | MAJERUS, MARY | 07S | 20E | 34 | BDC | No | WELL | 39.00 | 16.00 | | 39.00 | 50.00 | AIR | 5/30/2017 | IRRIGATION |
| 195848 | | | OLSON ED | 07S | 20E | 34 | BDC | No | WELL | 38.00 | 21.00 | | 21.00 | 50.00 | AIR | 5/15/2002 | IRRIGATION |
| 128249 | | | THOMPSON JANET | 07S | 20E | 34 | BDC | No | WELL | 30.00 | 17.00 | 25.00 | 17.00 | 20.00 | AIR | 6/2/1992 | IRRIGATION |
| 212289 | | | DOUTHIT BERT | 07S | 20E | 34 | BDD | No | WELL | 40.00 | 12.00 | | 12.00 | 60.00 | AIR | 4/26/2004 | IRRIGATION |
| 104817 | | | NOE JAMES A. | 07S | 20E | 34 | BDD | No | WELL | 38.00 | 9.00 | | | 50.00 | AIR | 6/23/1988 | IRRIGATION |
| 293424 | | | YATES, JOHN | 07S | 20E | 34 | BDD | No | WELL | 39.00 | 9.00 | | 9.00 | 80.00 | AIR | 7/24/2017 | IRRIGATION |
| 104819 | | | CLARK AMOS | 07S | 20E | 34 | CA | No | WELL | 32.00 | 15.00 | 30.00 | | 30.00 | AIR | 3/15/1985 | DOMESTIC |
| 104818 | | | WOLFE RON | 07S | 20E | 34 | CA | No | WELL | 35.00 | | 35.00 | | 20.00 | AIR | 10/9/1984 | DOMESTIC |
| 179782 | | C109687-00 | WOLFE RONALD A. | 07S | 20E | 34 | CAA | No | WELL | 41.00 | 10.00 | | 10.00 | 40.00 | AIR | 9/2/1999 | DOMESTIC |
| 154735 | | C096594-00 | BEARTOOTH MOUNTAIN GUIDES | 07S | 20E | 34 | CAB | No | WELL | 39.00 | | 39.00 | | 40.00 | AIR | 11/3/1995 | DOMESTIC |
| 253520 | | | FERGUSON MIKE | 07S | 20E | 34 | CAB | No | WELL | 40.00 | 17.00 | | 17.00 | 60.00 | AIR | 9/20/2009 | DOMESTIC |
| 253519 | | | FERGUSON MIKE | 07S | 20E | 34 | CAB | No | WELL | 40.00 | 18.00 | | 18.00 | 50.00 | AIR | 10/20/2009 | GEOTHERMAL-EXTRACTION |
| 203330 | | | CRAZY CREEK CHAIRS | 07S | 20E | 34 | CABB | Yes | WELL | 32.00 | | | | | OTHER | | |
| 274628 | | | SALLADE, CHUCK | 07S | 20E | 34 | CB | No | WELL | 39.00 | 18.00 | | 18.00 | 40.00 | AIR | 8/14/2013 | DOMESTIC |
| 161379 | | | KLEIN GAYLEN & JO ANN | 07S | 20E | 34 | CBA | No | WELL | 39.00 | 15.00 | 39.00 | 39.00 | 45.00 | AIR | 8/23/1996 | IRRIGATION |
| 231467 | | | BRENNE KURT AND MARTHA | 07S | 20E | 34 | CBD | No | WELL | 39.00 | 21.00 | | 21.00 | 40.00 | AIR | 9/1/2006 | DOMESTIC |
| 104820 | | C035709-00 | HEREM AL | 07S | 20E | 34 | CBD | No | WELL | 39.00 | 11.00 | 30.00 | | 25.00 | AIR | 9/1/1981 | DOMESTIC |
| 225274 | | | LDS CHURCH | 07S | 20E | 34 | CBD | No | WELL | | | | | | OTHER | 4/2/2006 | DOMESTIC |
| 225392 | | | LDS CHURCH | 07S | 20E | 34 | CBD | No | WELL | 58.00 | 28.30 | | | | OTHER | 4/2/2006 | IRRIGATION |
| 104821 | | | HAMLIN CONSTRUCTION | 07S | 20E | 34 | CBDB | No | WELL | 59.00 | 22.00 | 58.00 | | 75.00 | AIR | 10/29/1981 | |
| 104822 | | | MCALPINE WILLIAM | 07S | 20E | 34 | CCA | No | WELL | 30.00 | 4.00 | | 4.50 | 25.00 | AIR | 5/29/1988 | DOMESTIC |
| 278679 | | | SHANK, GREG | 07S | 20E | 34 | CCC | No | WELL | 39.00 | 15.00 | | 15.00 | 60.00 | AIR | 6/25/2014 | DOMESTIC |
| 173027 | | | UNCLE MILTYS DRIVE-IN *MW-1 | 07S | 20E | 34 | DB | No | WELL | 10.00 | | | | | OTHER | 9/23/1997 | MONITORING |
| 173025 | | | UNCLE MILTYS DRIVE-IN *MW-2 | 07S | 20E | 34 | DB | No | WELL | 6.00 | | | | | OTHER | 9/24/1997 | MONITORING |
| 173026 | | | UNCLE MILTYS DRIVE-IN *MW-3 | 07S | 20E | 34 | DB | No | WELL | 6.00 | | | | | OTHER | 9/24/1997 | MONITORING |
| 231464 | | | COLT COMMUNICATIONS LLC MPPP | 07S | 20E | 34 | DBA | No | WELL | 130.00 | 43.00 | | 43.00 | 11.00 | AIR | 9/8/2006 | DOMESTIC |
| 104823 | | C016122-00 | KANE JAMES | 07S | 20E | 34 | DBA | No | WELL | 27.00 | 4.00 | 27.00 | | 100.00 | AIR | 8/4/1977 | DOMESTIC |
| 104824 | | C033647-00 | CHAPMAN ALLEN | 07S | 20E | 34 | DBC | No | WELL | 38.00 | 7.00 | 12.00 | | 30.00 | AIR | 4/1/1981 | |
| 104827 | | | HYVONEN ONNI | 07S | 20E | 35 | BB | No | WELL | 35.00 | 20.00 | | | 15.00 | OTHER | 2/10/1957 | DOMESTIC |
| 104825 | | | HYVONEN ONNI | 07S | 20E | 35 | BB | No | WELL | | 20.00 | | | | OTHER | 1/1/1905 | DOMESTIC |
| 104826 | | | HYVONEN ONNI | 07S | 20E | 35 | BB | No | WELL | 40.00 | 20.00 | | | 800.00 | OTHER | 11/8/1947 | IRRIGATION |
| 258518 | | | WOLF RON | 07S | 20E | 35 | BB | No | WELL | 37.00 | 34.00 | | 34.00 | 1.00 | AIR | 10/20/2009 | IRRIGATION |
| 258560 | | | WOLF RON * 03 | 07S | 20E | 35 | BB | No | WELL | 240.00 | 32.00 | | 32.00 | 30.00 | AIR | 10/23/2009 | DOMESTIC |
| 919972 | | | DIAMOND DRILL -3 | 07S | 20E | 35 | DDD | No | PETWELL | | | | | | | | |

End of Report.
712 record(s) listed.






Items of Note:

- ¹This report is restricted to site types of WELL, BOREHOLE, SPRING, COAL BED METHANE WELL, PETWELL, PIEZOMETER.
- ²A single well record (a distinct GWIC Id) may be represented by more than one line in this report if more than one performance test was conducted on the well at the time of drilling.

Explanation of Columns:

GWIC Id = Key field for the GWIC database. Links to one page reports.

PDF = Are scanned documents available through the Document Manager?

-  = Yes, click on the icon to download the PDF file.
-  = No, well was submitted electronically. No paper record exists.
-  = No, record does have a known well log but it is not scanned yet.
-  = No, record may or may not have a document to scan. Metadata is unclear.
-  = No, record was created from a source other than a well log. No paper record exists.

DNRC WR = Water right number assigned to this site by Department of Natural Resources and Conservation.

Site Name = Current owner name assigned to GWIC record.

Location = Location of site in Montana township, range, section, and quarter-section coordinates.

Ver? = Has this location been verified by field staff?

Type = Type of site assigned to GWIC record.

Td = Total depth of well in feet below ground.

Swl = Static water level in feet above/below ground - Negative values are reported for water levels that are above land surface.

Pwl = Pumping water level in feet below ground.

Rwl = Recovery water level in feet below ground.

Yield = Yield in gallons per minute.

Test = Type of performance test reported.

Date = Completion date of well/borehole.

Use = Reported use of water.

Disclaimer:

The preceding materials represent the contents of the GWIC databases at the Montana Bureau of Mines and Geology at the time and date of the retrieval. The information is considered unpublished and is subject to correction and review on a daily basis. The Bureau warrants the accurate transmission of the data to the original end user at the time and date of the retrieval [1/30/2020 7:51:05 AM]. Retransmission of the data to other users is discouraged and the Bureau claims no responsibility if the material is retransmitted. There may be wells in the request area that are not recorded at the Information Center.

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Welcome

Welcome to the online web mapping application of the Montana Bureau of Mines and Geology.

Layers

Basemap Layers

Current Basemap: Streets

Map Layers

- GWIC Sites
- MBMG Statewide Monitoring
- HUC Boundary
- Streams

Legend/Tools

Geology: The geology portrayed in the mapper is the 1:500,000 scale geologic geodatabase maintained by the MBMG. Click [here](#) to download a free copy of GM 62D, an information booklet that explains formation names and codes portrayed in the mapper. Note: The geologic map was originally drawn to match different base maps than those currently served on the MBMG mappers. Therefore disagreements between the geologic map and landforms will become apparent at scales larger than 1:500,000.

Geology Transparency

GWIC Sites

-

MBMG Statewide Monitoring

- ▲

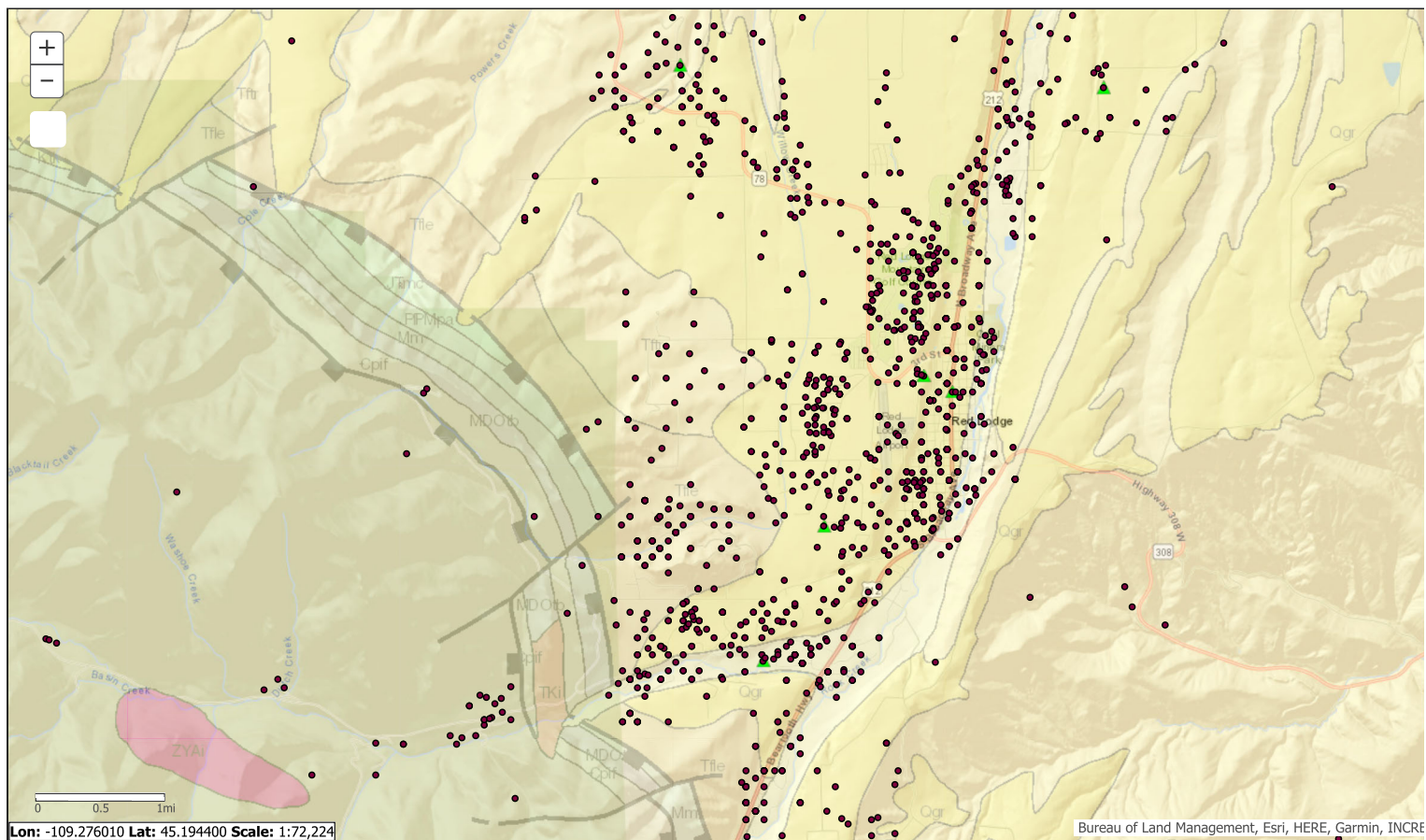
Streams

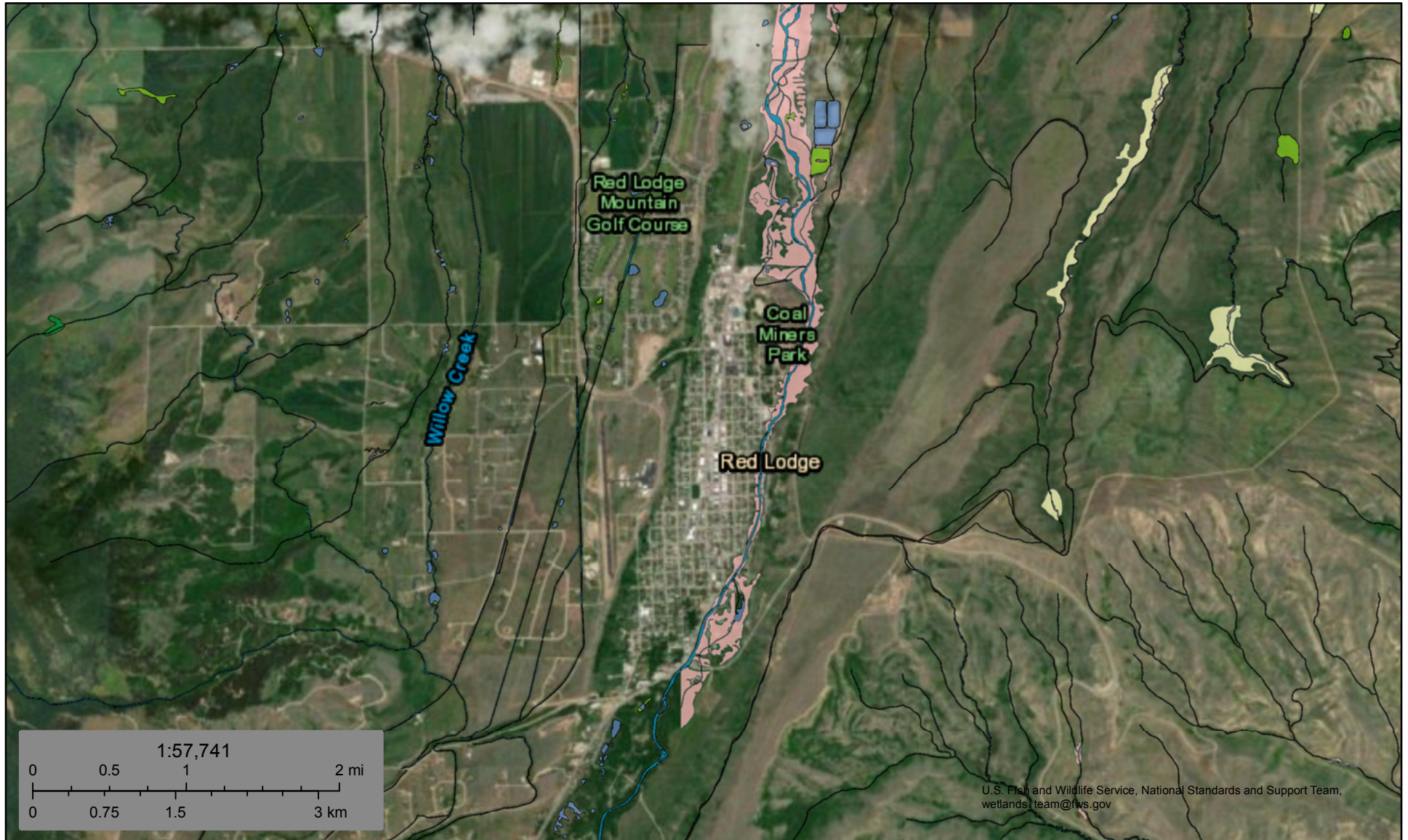
Original data layers

- Streams —

0 0.5 1mi

Lon: -109.276010 Lat: 45.194400 Scale: 1:72,224





January 29, 2020

Wetlands

- | | | |
|--------------------------------|-----------------------------------|----------|
| Estuarine and Marine Deepwater | Freshwater Emergent Wetland | Lake |
| Estuarine and Marine Wetland | Freshwater Forested/Shrub Wetland | Other |
| | Freshwater Pond | Riverine |

This map is for general reference only. The US Fish and Wildlife Service is not responsible for the accuracy or currentness of the base data shown on this map. All wetlands related data should be used in accordance with the layer metadata found on the Wetlands Mapper web site.

Appendix C:

Water Use Data



July 16, 2019

RED LODGE WATER DEPT
ATTN: JIM BUSHNELL
PO BOX 9
RED LODGE MT 59068

CARBON COUNTY

RE: Sanitary Survey-Red Lodge Water Dept. PWSID#MT0000314

Dear system owners:

On July 11, 2019 with the assistance of Eric Bottorff I, and my colleague Rebecca Landewe conducted a routine sanitary survey inspection of the Red Lodge Public Water Supply System, PWSID # MT0000314. Sanitary Surveys are required in the Administrative Rules of Montana (ARM), section 17.38.231 to ensure adequate protection of public health through proper construction and maintenance of Public Water Supplies (PWS). In addition, it allows the PWS system owners/operators to be informed of current regulatory requirements. I would like to thank Eric for his time, assistance and the tour of the entire system.

Red Lodge is the county seat of Carbon County and was established as a coal-mining community to fuel Northern Pacific Railroad locomotives after 1883. Today the town supports the local agricultural community and tourism based industries. The public water supply is classified as Community due to the nature of the population served.

The following report contains descriptions of each of the sections of the water system; any deficiencies and/or recommendations are numbered at the end of this report.

Sources:

(WL002) Well 1 1961 Grant Well GWIC 132671 was drilled in 1961 to a total depth of 74 ft. The well had a static water level of 20 ft. at the time of completion. Little information is available regarding the construction of the well. A copy of the well log is included in this report. See recommendations regarding the well and activity over the zone of influence at the end of this report.

(WL003) Well 2 1999 RLPWSW#1 GWIC 179787 was rotary drilled December 31 of 1999 to a total depth of 67 ft. The well is cased the entire depth and developed with a screen from 40-65 ft. The 12 Inch steel casing was grouted to 20 ft. with bentonite. Static water level at the time of completion was 8 ft. A copy of the well log has been included in this report.

(WL004) Well 3 2005 RLPWSW#2 GWIC 223132 was rotary drilled November 7 of 2005 to a total depth of 61 ft. The well is located 150 ft. north of Well 2 1999. The well is cased the entire depth and developed with a screen from 46-61 ft. The 12 Inch steel casing was grouted to 26 ft. with bentonite. Static water level at the time of completion was 13 ft. A copy of the well log has been included in this report.

The well sources have been classified as groundwater.



Source Water:

Red Lodge is located within the Upper Yellowstone Watershed in the Rock Creek Valley. The Rock Creek Valley is approximately ½ mile wide at Red Lodge. Rock Creek's West Fork valley is about ¼ mile wide near the confluence with the main stem and narrows as it approaches the Beartooth Mountain Front. The aquifer serving the Red Lodge wells is interpreted to be unconfined, based on well logs information for the area. Ground-water recharge to the aquifer beneath the West Fork's valley comes from a combination of precipitation, snowmelt runoff, leakage from the West Fork of Rock Creek, and at least one irrigation canal that crosses the valley about a half mile above the confluence with the main stem of Rock Creek. The timing and pattern of recharge to this aquifer is very likely similar to that of the Red Lodge Bench. Some component of recharge may also come from bedrock beneath the gravel deposits. Snowmelt runoff coming down the West Fork valley, and beneath the valley within the aquifer, is probably the dominant source of recharge for the aquifer used by the city of Red Lodge wells. According to the Source Water Protection Program criteria, an unconfined aquifer is considered highly sensitive to potential sources of contamination (Montana DEQ, 1999). *(Excerpts from source water delineation 2003)*

Treatment:

Treatment of the groundwater sources consists of disinfection with liquid sodium hypochlorite. (TP002) Treatment plant for well 1 Grant consists of a peristaltic pump utilizing twin 160-gallon batch tanks with spill containment injecting the neat chlorine prior to the water leaving the pumphouse.

(TP003) Treatment plant for wells 2, 3 at the SWTP site consists of a peristaltic pump utilizing twin 260-gallon batch tanks with spill containment injecting the neat chlorine into carriage water that then is injected into the water line from the common header of the wells as it enters the clearwell.

See recommendations at the end of this report regarding the treatment installations.

Distribution System:

The distribution system was only briefly discussed during this inspection and partially toured. According to previous inspections the majority of the system is Ductile Iron pipe in 6, 8 and 12 Inch sizes along with some existing 4 and 6 Inch old Cast Iron. The newer subdivisions along the bench are all PVC pipe. A large-scale project replaced piping down the main street of Broadway with 12 Inch Ductile Iron; another is ongoing. The pressure regulating valve controlling town pressure and the airport storage tank level was visited and discussed. The system maintains approximately 250 fire hydrants and flushes them twice per year, upgrades are being completed on the hydrants. The entire distribution system is metered

Finished Water Storage Reservoirs:

(CW001) Clearwell contact basin at SWTP consists of the original clearwell underneath the idle surface water treatment plant. Capacity is noted as 150,000 gallons. The tank is buried concrete and the top of the tank comprises the floor of the plant. The clearwell hatch is inside the building and sealed and locked and the vent is downward facing, also inside the building and screened properly. A pressure transducer is located near the effluent meter and controls the wells based on levels of the clearwell. The well pumps could alternate automatically when the clearwell calls for water however only one well is used.

(ST002) Storage tank 2 at SWTP consists of a buried concrete tank located alongside the idle SWTP with capacity of 250,000 gallons. The single tank hatch is sealed and locked and the vent is downward facing and screened properly. Storage tank 2 delivers water to storage tank 3.

(ST002) Storage tank 3 at SWTP consists of a buried concrete tank constructed alongside tank 2. The hatches are Bilco brand and had questionable seals. The system had corrected this situation by fabricating



Finished Water Storage Reservoirs continued:

covers placed over the top of the hatches enclosing them from weather. The vent is downward facing and screened properly. From this storage tank water enters the main and flows by gravity to town. A building near the outlet of this tank houses discharge piping, meters, meter bypass piping and chlorine and old turbidity monitoring equipment. See recommendations at the end of this report regarding the hatch seals.

The storage tanks at the SWTP have drain or overflow lines that manifold into one in a manhole near tank 3. The common discharge pipe was properly screened and protected from contamination. The discharge is located a short distance from the tanks and directed down the valley with heavy rocks as a splash-way.

Pumps, Pump Facilities and Controls:

All pumps and controls were adequately protected and appeared to be in good condition. A telemetry or SCADA system is used by the system and allows complete control and access.

Monitoring/Reporting/Data Verification:

A two-year review of the database indicated two violations of the Chlorine reporting rule. Both violations have achieved compliance, and none are outstanding. Chlorine monitoring was discussed at length due to the review of the monthly reporting form and single decimal point reporting. See recommendations at the end of this report regarding chlorine monitoring for Community systems.

Maintenance/Management/Operator Compliance/Safety:

The system appears very well maintained and certified operators are retained as required. The operators are commended for their service to the system as several have long tenure and all obvious dedication. The system had been working with Rural Water to update their source water protection plans. Backflow prevention programs were discussed, and it is important to note that security fencing around the storage tank site in town is underway.

Recommendations/Minor Deficiencies:

1. The Grant well location and protection area around the well was scrutinized and discussed during this inspection. This well is relatively shallow and already would likely not meet current design standards of sanitary construction and/or separation distances to surrounding sources of potential contamination. The system is cautioned against continuing to allow the gardening and enrichment of surface soils and fertilization that is currently visible overtop of the wells zone of influence. The practice should cease and desist, and the area be seeded to ground cover.
2. The disinfection with liquid sodium hypochlorite should be installed with redundant pumping capability as it is for protection of public health. A spare pump on the floor in the box is not redundant pumping. Take measures to install redundant pumps, lines, and appurtenances to ensure disinfection can be immediately continued in the event of a pump failure. In addition, maintenance is reduced as a second pump can be immediately put into service while one is being repaired. Feeding neat chlorine at 12% strength demands adequate protection for operators and safety. Eyewash stations should be installed in an easily accessible area. Take measures to obtain and install self-contained eyewash stations where the chlorine is in use and provide gloves and goggles for operator safety. The eyewash station of the old SWTP is not accessible to the chlorine room and is not recognized as adequate for where the chlorine pump is now housed.



Recommendations/Minor Deficiencies continued:

3. It is recommended that the Bilco hatches that are now under overlapping lids at the old SWTP site be given more attention. The overlapping lids are held down with heavy rocks and adequately keep rain and water away from the questionable lids underneath, but it was noted that insects and things are still able to access the openings around the old hatch covers. The hatches underneath could simply be fixed with some sealing tape or the overlapping lids fitted with some weather-stripping that would compress, ensuring a better seal. In addition, the seal is degrading on Tank 1 and in need of replacement.
4. It was noted that daily chlorine residual monitoring was being collected and read with a comparator in the distribution system. Take measures to use the digital kit for all monitoring for reporting. Chlorine measurement devices in MT Standards have been updated. DEQ, Circular 1, Standards for Water Works 4.4.4 Testing equipment, states:

a. Chlorine residual test equipment, recognized in the latest edition of "Standard Methods for Examination of Water and Wastewater," must be provided and must be capable of measuring residuals to the nearest 0.01 mg/L in the range below 1.0 mg/L, to the nearest 0.1 mg/L between 1.0 mg/L and 2.5 mg/L, and to the nearest 0.2 mg/L above 2.5 mg/L. All systems must use an instrument with a digital readout or amperometric titration. -

Significant Deficiencies:

Important note: Significant deficiencies can be defined as a defective water supply component(s) having or likely to have an adverse influence on public health. Significant deficiencies require immediate corrective action in efforts to protect consumers. Documentation of the corrective action is required i.e.; photos of the correction and a letter signed by the operator in responsible charge. Future monitoring waivers will not be issued and current-monitoring waivers can be revoked if significant deficiencies are not corrected and documentation is not received by the inspector.

No significant deficiencies noted.

In conclusion, the water system for the town of Red Lodge appears to be in good condition.

If you have any questions, comments, or corrections regarding this report, please feel free to contact me at 247-4444.

Sincerely,

Karl Carlson
Water Quality Specialist
MT. Dept. of Environmental Quality
Billings Regional Office
(406) 247-4444
kcarlson2@mt.gov

Attachments: Sanitary Survey Form w/Aerial-Map
Well Logs
System Photos

Cc: Carbon County Sanitarian
Billings PWS File
Sanitary Survey File (Helena)

SANITARY SURVEY FORM - INVENTORY

1/2016

| | |
|------------------------|---|
| PWSID MT0000314 | SYSTEM NAME Red Lodge Water Department |
|------------------------|---|

| | | |
|---------------------------------|----------------------|---|
| DATE OF SURVEY 7/11/2019 | COUNTY Carbon | SURVEYOR NAME Karl Carlson <i>Karl Carlson</i> |
|---------------------------------|----------------------|---|

| | |
|---|---|
| (SYSTEM REPRESENTATIVE) Jim Bushnell | (OTHER REPRESENTATIVE) City of Red Lodge |
|---|---|

| | |
|--|---|
| <p style="text-align: center; font-size: small;">SYSTEM ADDRESS - ADMINISTRATIVE CONTACT</p> <p>Addressee <u>Jim Bushnell</u></p> <p style="text-align: center; font-size: x-small;">Primary Address</p> <p>Street <u>PO BOX 9</u></p> <p>City <u>Red Lodge</u> State <u>MT</u> Zip <u>59068</u></p> <p>System Phone <u>(406)446-1606</u> Fax (____) _____</p> | <p style="text-align: center; font-size: small;">SYSTEM OWNER</p> <p>Addressee <u>City of Red Lodge</u></p> <p style="text-align: center; font-size: x-small;">Owners Address</p> <p>Street <u>PO BOX 9</u></p> <p>City <u>Red Lodge</u> State <u>MT</u> Zip <u>59068</u></p> <p>Owner Phone <u>(406) 446-3008</u> Fax (____) _____</p> |
|--|---|

| | |
|--|--|
| <p style="text-align: center; font-size: x-small;">LOCATION OF SYSTEM</p> <p>Nearest City <u>Red Lodge MT</u> Description or Physical Address <u>Highway 212, Red Lodge MT</u></p> | <input type="checkbox"/> seasonal operation dates: _____ to _____ <input checked="" type="checkbox"/> year round operation |
|--|--|

| | |
|---|---|
| <p style="text-align: center; font-size: x-small;">OPERATOR OF SYSTEM</p> <p>Name <u>Eric Bottoroff</u></p> <p>Certified Operator? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Not required</p> <p>Copy of Certificate? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Certification # <u>not observed</u></p> <p>Phone # <u>(406) 446-1606</u> Cell Phone # <u>(406)425-4356</u></p> <p>Fax # (____) _____</p> | <p style="text-align: center; font-size: x-small;">ALTERNATE OPERATOR OF SYSTEM</p> <p>Name <u>Loni Hanson-6703, Jeff Warner-7186, Bruce Steffan-3840</u></p> <p>Certified Operator? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Not required</p> <p>Copy of Certificate? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Certification # _____</p> <p>Phone # <u>(406) 446-1606</u> Cell Phone # (____) _____</p> |
|---|---|

| | |
|---|---|
| <p style="text-align: center; font-size: x-small;">SYSTEM STATUS</p> <p><input checked="" type="checkbox"/> A = Active <input type="checkbox"/> P = Proposed (Add New System)</p> <p><input type="checkbox"/> I = Inactive</p> | <p style="text-align: center; font-size: x-small;">SYSTEM CLASS</p> <p><input checked="" type="checkbox"/> C = Community <input type="checkbox"/> NTNC = Non-Transient Non-Community</p> <p><input type="checkbox"/> TNC = Transient Non-Community</p> |
|---|---|

| | |
|--|---|
| <p>Total Service Connections: Residential / Non-Transient: <u>1690</u></p> <p style="padding-left: 150px;">Transient: _____</p> <p>Total Active Connections: Residential / Non-Transient: <u>1690</u></p> <p style="padding-left: 150px;">Transient: _____</p> <p>Service Connections Metered? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No</p> <p style="padding-left: 100px;">Percent Metered <u>99.9 %</u></p> | <p>Resident Population <u>2000</u></p> <p style="font-size: x-small;">(Number of permanent residents utilizing PWS daily)</p> <p>Non-Transient Population _____</p> <p style="font-size: x-small;">(Maximum number of non-transient persons utilizing PWS daily)</p> <p>Transient Population _____</p> <p style="font-size: x-small;">(Maximum number of transient persons served by PWS daily)</p> |
|--|---|

| | |
|--|--|
| <p style="text-align: center; font-size: x-small;">OWNER TYPE</p> <p><input type="checkbox"/> 1 Federal Government</p> <p><input type="checkbox"/> 2 Private Subdivision, Investor, Trust, Cooperative, Water Association, etc.</p> <p><input type="checkbox"/> 3 State Government</p> | <p><input checked="" type="checkbox"/> 4 Local Government Authority, Commission, District, Municipality, City, etc.</p> <p><input type="checkbox"/> 5 Mixed Public/Private</p> <p><input type="checkbox"/> 6 Native American</p> |
|--|--|

| | | | |
|---|---|--|---|
| <p style="text-align: center; font-size: x-small;">SERVICE AREA CHARACTERISTICS LIST</p> <table style="width:100%; border: none;"> <tr> <td style="width:50%; border: none; vertical-align: top;"> <input type="checkbox"/> BR Bar <input type="checkbox"/> DC Day Care Center <input type="checkbox"/> DI Dispenser <input type="checkbox"/> HS Head Start <input type="checkbox"/> HA Homeowners Assoc. <input type="checkbox"/> HM Hotel/Motel <input type="checkbox"/> HR Highway Rest Area <input type="checkbox"/> IA Industrial/Agricultural <input type="checkbox"/> IC Interstate Carrier <input type="checkbox"/> IN Institution <input type="checkbox"/> MF Medical Facility <input type="checkbox"/> MH Mobile Home Park <input checked="" type="checkbox"/> MU Municipality <input type="checkbox"/> OA Other Area <input type="checkbox"/> ON Other Non-Transient Area (____ Average Daily Visitors TNC) <input type="checkbox"/> OR Other Residential Area <input type="checkbox"/> OT Other Transient Area </td> <td style="width:50%; border: none; vertical-align: top;"> <input type="checkbox"/> PA Recreation Areas <input type="checkbox"/> RA Residential Area <input type="checkbox"/> RE Retail Employees <input type="checkbox"/> RS Restaurant <input type="checkbox"/> RV RV Park <input type="checkbox"/> SC School <input type="checkbox"/> SI Sanitary Improvement District <input type="checkbox"/> SK Summer Camp <input type="checkbox"/> SR Secondary Residences <input type="checkbox"/> SS Service Station <input type="checkbox"/> SU Subdivision <input type="checkbox"/> WB Water Bottler <input type="checkbox"/> WH Wholesaler (Sells Water) </td> </tr> </table> <p>Service Category Description <u>Municipality</u></p> | <input type="checkbox"/> BR Bar <input type="checkbox"/> DC Day Care Center <input type="checkbox"/> DI Dispenser <input type="checkbox"/> HS Head Start <input type="checkbox"/> HA Homeowners Assoc. <input type="checkbox"/> HM Hotel/Motel <input type="checkbox"/> HR Highway Rest Area <input type="checkbox"/> IA Industrial/Agricultural <input type="checkbox"/> IC Interstate Carrier <input type="checkbox"/> IN Institution <input type="checkbox"/> MF Medical Facility <input type="checkbox"/> MH Mobile Home Park <input checked="" type="checkbox"/> MU Municipality <input type="checkbox"/> OA Other Area <input type="checkbox"/> ON Other Non-Transient Area (____ Average Daily Visitors TNC) <input type="checkbox"/> OR Other Residential Area <input type="checkbox"/> OT Other Transient Area | <input type="checkbox"/> PA Recreation Areas <input type="checkbox"/> RA Residential Area <input type="checkbox"/> RE Retail Employees <input type="checkbox"/> RS Restaurant <input type="checkbox"/> RV RV Park <input type="checkbox"/> SC School <input type="checkbox"/> SI Sanitary Improvement District <input type="checkbox"/> SK Summer Camp <input type="checkbox"/> SR Secondary Residences <input type="checkbox"/> SS Service Station <input type="checkbox"/> SU Subdivision <input type="checkbox"/> WB Water Bottler <input type="checkbox"/> WH Wholesaler (Sells Water) | <p>Comments: <u>Red Lodge is the county seat of Carbon County and was established as a coal-mining community. Today the town supports the local agricultural community and tourism based industries. The public water supply is classified as Community due to the nature of the population served.</u></p> |
| <input type="checkbox"/> BR Bar <input type="checkbox"/> DC Day Care Center <input type="checkbox"/> DI Dispenser <input type="checkbox"/> HS Head Start <input type="checkbox"/> HA Homeowners Assoc. <input type="checkbox"/> HM Hotel/Motel <input type="checkbox"/> HR Highway Rest Area <input type="checkbox"/> IA Industrial/Agricultural <input type="checkbox"/> IC Interstate Carrier <input type="checkbox"/> IN Institution <input type="checkbox"/> MF Medical Facility <input type="checkbox"/> MH Mobile Home Park <input checked="" type="checkbox"/> MU Municipality <input type="checkbox"/> OA Other Area <input type="checkbox"/> ON Other Non-Transient Area (____ Average Daily Visitors TNC) <input type="checkbox"/> OR Other Residential Area <input type="checkbox"/> OT Other Transient Area | <input type="checkbox"/> PA Recreation Areas <input type="checkbox"/> RA Residential Area <input type="checkbox"/> RE Retail Employees <input type="checkbox"/> RS Restaurant <input type="checkbox"/> RV RV Park <input type="checkbox"/> SC School <input type="checkbox"/> SI Sanitary Improvement District <input type="checkbox"/> SK Summer Camp <input type="checkbox"/> SR Secondary Residences <input type="checkbox"/> SS Service Station <input type="checkbox"/> SU Subdivision <input type="checkbox"/> WB Water Bottler <input type="checkbox"/> WH Wholesaler (Sells Water) | | |

SANITARY SURVEY FORM – WATER SYSTEM FACILITIES

PWSID **MT0000314**

SYSTEM NAME **Red Lodge Water Department**

Water System Facilities (WSF) numbers are WSF Type Codes plus an assigned number. (i.e. source facility numbering starts with 002 and all non-source facilities start with 001). See instruction sheet for a list of WSF Type Codes. When a source is operational it is considered **Active**, this includes systems that are seasonal. **Inactive** sources are those which are shut down but can return to active status, such as a system out of business. **Proposed** sources are those that have been identified through the Plan Review process, but are not connected to the water system.

A water source facility is a well, spring, intake, infiltration gallery or consecutive connections from which a system draws or purchases water:

Total Number of Source Facilities 4

WATER SYSTEM FACILITIES SUMMARY (WSF)

| WSF ID | Facility Name | Water Type Code | Purchased | Seller PWSID | Activity Status* |
|--------|---------------------------------------|-----------------|---|--------------|------------------|
| IN002 | Intake Rock Creek | SW | <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No | | I |
| TP001 | SWTP Rock Creek Inactive | SW | <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No | | I |
| WL002 | Well 1 1961 Grant | GW | <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No | | A |
| TP002 | Treatment plant for well 1 Grant | | <input type="checkbox"/> Yes <input type="checkbox"/> No | | A |
| WL003 | Well 2 1999 RLPWSW1 | GW | <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No | | A |
| WL004 | Well 3 2005 RLPWSW2 | GW | <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No | | A |
| CH001 | Common Header wells 2, 3 | | <input type="checkbox"/> Yes <input type="checkbox"/> No | | A |
| TP003 | Treatment plant wells 2, 3 | | <input type="checkbox"/> Yes <input type="checkbox"/> No | | A |
| CW001 | Clearwell contact basin 150,000 | | <input type="checkbox"/> Yes <input type="checkbox"/> No | | A |
| ST002 | Storage tank 2 at SWTP 250,000 | | <input type="checkbox"/> Yes <input type="checkbox"/> No | | A |
| ST003 | Storage tank 3 at SWTP 500,000 | | <input type="checkbox"/> Yes <input type="checkbox"/> No | | A |
| DS001 | Distribution system | | <input type="checkbox"/> Yes <input type="checkbox"/> No | | A |
| ST001 | Storage tank 1 Airport tank 750,000 | | <input type="checkbox"/> Yes <input type="checkbox"/> No | | A |
| PF001 | Country Club Estates Booster | | <input type="checkbox"/> Yes <input type="checkbox"/> No | | A |
| PC001 | Pressure control Country Club Estates | | <input type="checkbox"/> Yes <input type="checkbox"/> No | | A |
| | | | <input type="checkbox"/> Yes <input type="checkbox"/> No | | |
| | | | <input type="checkbox"/> Yes <input type="checkbox"/> No | | |
| | | | <input type="checkbox"/> Yes <input type="checkbox"/> No | | |
| | | | <input type="checkbox"/> Yes <input type="checkbox"/> No | | |
| | | | <input type="checkbox"/> Yes <input type="checkbox"/> No | | |
| | | | <input type="checkbox"/> Yes <input type="checkbox"/> No | | |

Description of Water System Facility flow: (WL002) Well 1 1961 Grant to (TP002) Treatment plant for well 1 to (ST001) Storage Tank 1 Airport 750,000 to (DS001) Distribution----(WL003) Well 2 1999 RLPWSW#1 and (WL004) Well 3 2005 RLPWSW#2 to (CH001) Common Header wells 2, 3 to (TP003) Treatment plant wells 2, 3 to (CW001) Clearwell contact basin 150,000 to (ST002) Storage tank 2 at SWTP250,000 to (ST003) Storage tank 3 at SWTP 500,000 to (DS001) Distribution system to (ST001) Storage tank 1 Airport tank 750,000 (DS001) Distribution system to (PF001) Pump facility Country Club Booster to (PC001) Pressure control to (DS001) Distribution system

(Example: WL002 and WL003 > CH001 > TP001 > ST001 > PC001 > DS001)

*(A)Active, (I)Inactive, (P)Proposed

EMERGENCY POWER

Does the system have emergency power? Yes No

If yes, what type: portable and fixed at SWTP

Frequency of testing: regular

Record of primary power failures: _____ in last year

Switchover: Automatic Manual

Comments: New large propane fired generator capable of all operation

SANITARY SURVEY FORM – WELLS & WELL PUMPS

PWSID **MT0000314**

SYSTEM NAME **Red Lodge Water Department**

(Please copy this sheet for additional wells & pumps)

COMPLETE ONE PAGE FOR EACH SOURCE

STATUS OF SOURCE (A)ctive (I)nactive (P)roposed

WSF ID WL002 *Entry Point ID* 503
These are State assigned identification numbers

Source Name Well 1 1961 Grant GWIC 132671 GWIC 132671
Example: Well 1 or South well, etc.

Location of Water Source (TRS or street address) **T7S R20E Section 34**

Entry Point Name EP for TP well 1
Example: EP for North Well 1 & South Well 2

Entry Point is at WSF ID P002
EP is at the first water system facility with finished water.

Available Perm Emerg Interim Seasonal Other
If seasonal: _____ to _____

GWUDISW PA Completed with this inspection? Yes No

Log Available? Yes No

Average Production N/A indicate units

Maximum Production N/A indicate units

Date Drilled 9/17/1961 if well... date drilled

Casing Size unknown size of casing installed in well

Case Depth unknown depth of casing installed in well

Well Depth 74 depth of well expressed in feet

Grout Depth unknown depth of grout used to seal well walls

Log SWL 20
(static) expressed in feet below ground elevation

Log PWL N/A
(pumping) expressed in feet below ground elevation

Test Pump Rate 900
expressed in gallons per min

Intake Type unknown
example: screen, slots, perforations, open

Screened Interval unknown
expressed in feet below ground elevation

Well Yield 900
pump tested in gallons per minute

Latitude 45.18216^o
in decimal degrees

Longitude 109.25219^o
in decimal degrees

WELLS

PUMPS

| | |
|---|--|
| | Yes No Unk N/A |
| Is well metered? | <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> |
| Is well site protected from flooding? | <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> |
| Is well protected from potential sources of pollution (includes: surface water, known chemical spills, agricultural use, etc.)? | <input type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> |
| If no... explain <u>garden overtop of protection and zone of influence</u> | |
| Does casing extend at least | |
| <input type="checkbox"/> 18 inches above outside ground level; | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/> |
| <input type="checkbox"/> 12 inches above finished floor inside well house; and | <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> |
| <input type="checkbox"/> 3 feet above 100 year flood elevation? | <input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/> |
| <small>(Check for appropriate distance)</small> | |
| Is top of the well casing properly sealed? (sanitary seal) | <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> |
| Is well vented? | <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> |
| Is well vent properly screened and terminated in a downward position? | <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> |
| Does well have suitable sampling tap? | |
| Raw Water | <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> |
| Treated | <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> |
| Are check valves, blow-off valves and water meters maintained and operating properly? | <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> |
| Is upper termination of well protected (housed or fenced)? | <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> |
| Is intake located below the maximum drawdown? | <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> |

Type verticle turbine
(example: 30 hp line shaft turbine)

Rated Capacity 60 HP VFD motor

| | |
|--|--|
| | Yes No Unk N/A |
| Are pumps operable? | <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> |
| How frequently are pump(s) replaced? <u>as needed</u> | |
| Are backup pumps/motors provided? | <input type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> |
| Are controls functioning properly and adequately protected? | <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> |
| Do underground compartments have a drain? | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/> |
| Is facility properly protected against trespassing and vandalism? | <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> |
| Are pump records maintained (amp, drawdown, discharge, pressure, maintenance schedule, manuals, etc.)? | <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> |
| Is the plumbing adequately painted to prevent excessive corrosion? | <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> |
| Are adequate heating, lighting, and ventilation provided? | <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> |
| Is a preventive maintenance program in operation? | <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> |
| Are recommended spare parts on hand? | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/> |
| Cross connection protection provided? | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/> |

Comment: Water is disinfected and pumped via a line that is dedicated to the tank

Explain Controls: controlled by pressure transducer at tank and scada system

Comment: _____

SANITARY SURVEY FORM – WELLS & WELL PUMPS

PWSID **MT0000314**

SYSTEM NAME **Red Lodge Water Department**

(Please copy this sheet for additional wells & pumps)

COMPLETE ONE PAGE FOR EACH SOURCE

STATUS OF SOURCE (A)ctive (I)nactive (P)roposed

WSF ID **WL003** *Entry Point ID* **504**
These are State assigned identification numbers

Source Name Well 2 1999 RLPWSW#1 GWIC 179787 GWIC 179787
Example: Well 1 or South well, etc.

Location of Water Source (TRS or street address) **T8S R20E Section 4**

Entry Point Name EP for TP wells 2, 3
Example: EP for North Well 1 & South Well 2

Entry Point is at WSF ID **IP003**
EP is at the first water system facility with finished water.

Available Perm Emerg Interim Seasonal Other
If seasonal: _____ to _____

GWUDISW PA Completed with this inspection? Yes No

Log Available? Yes No

Average Production N/A indicate units

Maximum Production N/A indicate units

Date Drilled 12/31/1999 if well... date drilled

Casing Size 12 size of casing installed in well

Case Depth 65 depth of casing installed in well

Well Depth 67 depth of well expressed in feet

Grout Depth 20 depth of grout used to seal well walls

Log SWL 8
(static) expressed in feet below ground elevation

Log PWL N/A
(pumping) expressed in feet below ground elevation

Test Pump Rate 1040
expressed in gallons per min

Intake Type screen
example: screen, slots, perforations, open

Screened Interval 40-65
expressed in feet below ground elevation

Well Yield 1040 for 20hrs
pump tested in gallons per minute

Latitude 45.15874^o
in decimal degrees

Longitude 109.27931^o
in decimal degrees

WELLS

PUMPS

| | |
|---|--|
| Is well metered? | Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Unk <input type="checkbox"/> N/A <input type="checkbox"/> |
| Is well site protected from flooding? | <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> |
| Is well protected from potential sources of pollution (includes: surface water, known chemical spills, agricultural use, etc.)? | <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> |
| If no... explain _____ | |
| Does casing extend at least | |
| <input type="checkbox"/> 18 inches above outside ground level; | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/> |
| <input type="checkbox"/> 12 inches above finished floor inside well house; and | <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> |
| <input type="checkbox"/> 3 feet above 100 year flood elevation? | <input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/> |
| <small>(Check for appropriate distance)</small> | |
| Is top of the well casing properly sealed? (sanitary seal) | <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> |
| Is well vented? | <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> |
| Is well vent properly screened and terminated in a downward position? | <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> |
| Does well have suitable sampling tap? | Raw Water <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> Treated <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> |
| Are check valves, blow-off valves and water meters maintained and operating properly? | <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> |
| Is upper termination of well protected (housed or fenced)? | <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> |
| Is intake located below the maximum drawdown? | <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> |

Type submersible
(example: 30 hp line shaft turbine)

Rated Capacity 30 HP motor

| | |
|--|---|
| Are pumps operable? | Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Unk <input type="checkbox"/> N/A <input type="checkbox"/> |
| How frequently are pump(s) replaced? <u>as needed</u> | |
| Are backup pumps/motors provided? | <input type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> |
| Are controls functioning properly and adequately protected? | <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> |
| Do underground compartments have a drain? | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/> |
| Is facility properly protected against trespassing and vandalism? | <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> |
| Are pump records maintained (amp, drawdown, discharge, pressure, maintenance schedule, manuals, etc.)? | <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> |
| Is the plumbing adequately painted to prevent excessive corrosion? | <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> |
| Are adequate heating, lighting, and ventilation provided? | <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> |
| Is a preventive maintenance program in operation? | <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> |
| Are recommended spare parts on hand? | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/> |
| Cross connection protection provided? | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/> |

Comment: well casing termination could have silicone added

This well pumps into common header, treatment plant and into clearwell and storage tanks south of town

Explain Controls: controlled by scada system and level of clearwell and storage tanks at this site, auto-alternates with well 3 RLPWSW#2, PRV valve controls gravity flow from this side of the system

Comment: _____

SANITARY SURVEY FORM – WELLS & WELL PUMPS

PWSID **MT0000314**

SYSTEM NAME **Red Lodge Water Department**

(Please copy this sheet for additional wells & pumps)

COMPLETE ONE PAGE FOR EACH SOURCE

STATUS OF SOURCE **(A)active** **(I)inactive** **(P)roposed**

WSF ID WL004 *Entry Point ID* 504
These are State assigned identification numbers

Source Name Well 3 2005 RLPWSW#2 GWIC 223132 GWIC 223132
Example: Well 1 or South well, etc.

Location of Water Source (TRS or street address) **T8S R20E Section 5**

Entry Point Name EP for TP wells 2, 3
Example: EP for North Well 1 & South Well 2

Entry Point is at WSF ID IP003
EP is at the first water system facility with finished water.

Available Perm Emerg Interim Seasonal Other
If seasonal: _____ to _____

GWUDISW PA Completed with this inspection? Yes No

Log Available? Yes No

Average Production N/A indicate units

Maximum Production N/A indicate units

Date Drilled 11/7/2005 if well... date drilled

Casing Size 12 size of casing installed in well

Case Depth 61 depth of casing installed in well

Well Depth 61 depth of well expressed in feet

Grout Depth 26 depth of grout used to seal well walls

Log SWL 13
(static) expressed in feet below ground elevation

Log PWL N/A
(pumping) expressed in feet below ground elevation

Test Pump Rate 500
expressed in gallons per min

Intake Type screen
example: screen, slots, perforations, open

Screened Interval 46-61
expressed in feet below ground elevation

Well Yield 500 for 32 hrs
pump tested in gallons per minute

Latitude 45.15930^o
in decimal degrees

Longitude 109.27966^o
in decimal degrees

WELLS

PUMPS

| | | | | |
|---|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|
| Is well metered? | Yes | No | Unk | N/A |
| | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Is well site protected from flooding? | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Is well protected from potential sources of pollution (includes: surface water, known chemical spills, agricultural use, etc.)? | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| If no... explain _____ | | | | |
| Does casing extend at least | | | | |
| <input type="checkbox"/> 18 inches above outside ground level; | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| <input type="checkbox"/> 12 inches above finished floor inside well house; and | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| <input type="checkbox"/> 3 feet above 100 year flood elevation? | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| <small>(Check for appropriate distance)</small> | | | | |
| Is top of the well casing properly sealed? (sanitary seal) | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Is well vented? | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Is well vent properly screened and terminated in a downward position? | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Does well have suitable sampling tap? | | | | |
| Raw Water | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Treated | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Are check valves, blow-off valves and water meters maintained and operating properly? | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Is upper termination of well protected (housed or fenced)? | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Is intake located below the maximum drawdown? | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

Type submersible
(example: 30 hp line shaft turbine)

Rated Capacity 30 HP motor

| | | | | |
|--|-------------------------------------|-------------------------------------|--------------------------|-------------------------------------|
| Are pumps operable? | Yes | No | Unk | N/A |
| | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| How frequently are pump(s) replaced? <u>as needed</u> | | | | |
| Are backup pumps/motors provided? | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Are controls functioning properly and adequately protected? | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Do underground compartments have a drain? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| Is facility properly protected against trespassing and vandalism? | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Are pump records maintained (amp, drawdown, discharge, pressure, maintenance schedule, manuals, etc.)? | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Is the plumbing adequately painted to prevent excessive corrosion? | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Are adequate heating, lighting, and ventilation provided? | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Is a preventive maintenance program in operation? | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Are recommended spare parts on hand? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| Cross connection protection provided? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |

Comment:

-the well was not being used at the time of this inspection

Explain Controls: controlled by scada system and level of clearwell and storage tanks at this site, auto-alternates with well 2 RLPWSW#1, PRV valve controls gravity flow from this side of the system

Comment: _____

SANITARY SURVEY FORM - TREATMENT

PWSID **MT0000314**

SYSTEM NAME **Red Lodge Water Department**

Treatment Objective

- B** = Disinfection Byproduct Control
- C** = Corrosion Control
- D** = Disinfection
- E** = Dechlorination
- F** = Iron Removal
- I** = Inorganics Removal
- M** = Manganese Removal
- O** = Organics Removal
- P** = Particulate Removal
- R** = Radionuclides Removal
- S** = Softening (Hardness Removal)
- T** = Taste / Odor Control
- Z** = Other _____

WATER TREATMENT FACILITIES

| WSF ID | Treatment Plant Name | Treatment Objectives and Code |
|--------|--|-------------------------------|
| TP001 | Rock Creek SWTP Inactive | _____ |
| TP002 | Treatment plant well 1 Grant | D421 |
| TP003 | Treatment plant wells 2, 3 RLPWSW#1 and #2 | D421 |
| | | |
| | | |
| | | |

| WSF ID | Location | Record in decimal degrees |
|--------|---------------------------------------|---|
| TP001 | Latitude <u>45.15969</u> [°] | Longitude <u>109.27819</u> [°] |
| | Latitude _____ [°] | Longitude _____ [°] |
| TP002 | Latitude <u>45.18216</u> [°] | Longitude <u>109.25219</u> [°] |
| | Latitude _____ [°] | Longitude _____ [°] |
| TP003 | Latitude <u>45.15969</u> [°] | Longitude <u>109.27819</u> [°] |

Treatment plant description: (TP001)Rock Creek SWTP Inactive A 1.4 MGD Neptune Microfloc package plant sets idle and is inactive.--- (TP002)Treatment plant well 1 Grant A peristaltic pump is injecting liquid sodium hypochlorite from two 160 gallon batch tanks.--- (TP003)Treatment plant wells 2, 3 RLPWSW#1 and #2 The wells 2 and 3 (Red Lodge's 1 and 2) pump directly into the clearwell of the plant. A pump set into the clearwell is used to obtain a sidestream of water and a peristaltic pump inject liquid sodium hypochlorite from two 260 gallon batch tanks back into the stream of the common header where it enters the clearwell.

FOR SYSTEMS EMPLOYING FULL-TIME DISINFECTION

| | Yes | No | Unk | N/A |
|--|-------------------------------------|--------------------------|-------------------------------------|--------------------------|
| What disinfectant is used? <u>Liquid Sodium Hypochlorite</u> | | | | |
| Is the disinfectant used NSF approved? | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Is the amount of disinfectant used recorded? If Yes, amount used: _____lbs/day <u>XX</u> ppm _____ other | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Is the amount of disinfectant used compared to water pumped to verify concentration? | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Is chemical storage adequate and safe? If No, explain _____ | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Is disinfectant residual being monitored daily? | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Are residual reports submitted monthly? | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Is 4-log removal (D361) required? (D361) Minimum free chlorine residual concentration = _____mg/L | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| Is minimum free chlorine residual maintained? | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| Is the disinfection equipment being operated and maintained properly? | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Is operational standby equipment provided? | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| If not, are critical spare parts on hand? | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Has disinfection system been free from failure during the past year – no interruption? If No, give dates of interruptions _____ | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Describe provisions for providing contact time between disinfection point and the first point of use: <u>contact in tanks and piping prior to distribution</u> | | | | |

IF USING GAS CHLORINATION

| | Yes | No | Unk | N/A |
|---|--------------------------|--------------------------|--------------------------|--------------------------|
| Is a manifold provided to allow feeding gas from more than one cylinder? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Is there automatic switchover from cylinder to cylinder? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Are scales provided for weighing of containers? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Are chlorine storage and use areas isolated from other work areas? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Are stored cylinders capped and labeled? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Is room vented to the outdoors with suction located no more than 6 inches above the floor level? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Is vent inlet near the ceiling? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Is room containing chlorination treatment labeled sufficiently (DANGER signs, etc.)? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Is a view port provided into the room storing chlorine? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Is a means of leak detection provided? Type? <u>sensor</u> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Is a self-contained breathing apparatus available for use during repair of leaks? Where? <u>ERP at fire dept</u> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Are personnel trained to use apparatus? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Are all doors hinged outward and equipped with panic bars? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Are all gas cylinders restrained near the top and about half way down by chaining to wall or by other means? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

Comment: Redundant pumps are required where disinfection is for protection of public health-Latest design approved showed redundant capabilities-spare pumps are not redundant capability

SANITARY SURVEY FORM - STORAGE

PWSID **MT0000314**

SYSTEM NAME **Red Lodge Water Department**

COMPLETE ONE SECTION FOR EACH STORAGE FACILITY

Total storage provided? 1.65 MG gallons

Total treated storage provided 1.65 MG gallons

Storage provides 2-3 days of water reserve

STORAGE FACILITY

WSF ID ST001

Location Above town site at airport property

Description buried concrete

Latitude: 45.18227^o in decimal degrees

Longitude: 109.25623^o in decimal degrees

Storage Volume? 750,000 gallons

Year constructed: unknown

Condition: Good Fair Poor Not accessible

Yes No Unk N/A

Does surface runoff and underground drainage drain away?

Is the site protected against flooding?

Is the site protected against trespass/vandalism?

Ladders caged and locked?

Are overflow lines, air vents, drainage lines or clean out pipes turned downward or covered, screened and terminated a minimum of 3 diameters above the ground or storage tank surface?

Overflow pad?

Is access hatch sealed properly and locked?

Are surface coatings in contact with water ANSI / NSF approved?

Is tank protected against icing and corrosion?

Can tank be isolated from system?

Is all treated water storage covered?

Are tanks disinfected after repairs are made?

What is cleaning frequency for tanks? routinely

Is tank inspected every 5 years by a structural engineer for structural integrity?

2016? Liquid eng

Date of last inspection

By whom

Comments: This tank rides the distribution system pressure downstream of the PRV valve in the system that "controls" the gravity side

STORAGE FACILITY

WSF ID CW001

Location At SWTP underneath original plant

Description Clearwell contact basin 150,000 gallon capacity concrete structure is hatched and vented into plant

Latitude: 45.15969^o in decimal degrees

Longitude: 109.27819^o in decimal degrees

Storage Volume? 150,000 gallons

Year constructed: unknown

Condition: Good Fair Poor Not accessible

Yes No Unk N/A

Does surface runoff and underground drainage drain away?

Is the site protected against flooding?

Is the site protected against trespass/vandalism?

Ladders caged and locked?

Are overflow lines, air vents, drainage lines or clean out pipes turned downward or covered, screened and terminated a minimum of 3 diameters above the ground or storage tank surface?

Overflow pad?

Is access hatch sealed properly and locked?

Are surface coatings in contact with water ANSI / NSF approved?

Is tank protected against icing and corrosion?

Can tank be isolated from system?

Is all treated water storage covered?

Are tanks disinfected after repairs are made?

What is cleaning frequency for tanks? routinely

Is tank inspected every 5 years by a structural engineer for structural integrity?

2016? Liquid eng

Date of last inspection

By whom

Comments: Clearwell was original for the SWTP, vent is screened hatch is secure. Water is metered out of clearwell to storage tanks and then gravity to town.

SANITARY SURVEY FORM - STORAGE

PWSID **MT0000314**

SYSTEM NAME **Red Lodge Water Department**

COMPLETE ONE SECTION FOR EACH STORAGE FACILITY

Total storage provided? 1.65 MG gallons

Total treated storage provided 1.65 MG gallons

Storage provides 2-3 days of water reserve

STORAGE FACILITY

WSF ID ST002

Location alongside idle SWTP at SWTP site

Description buried concrete

Latitude: 45.15957^o in decimal degrees

Longitude: 109.27785^o in decimal degrees

Storage Volume? 250,000 gallons

Year constructed: unknown likely with plant

Condition: Good Fair Poor Not accessible

Yes No Unk N/A

Does surface runoff and underground drainage drain away?

Is the site protected against flooding?

Is the site protected against trespass/vandalism?

Ladders caged and locked?

Are overflow lines, air vents, drainage lines or clean out pipes turned downward or covered, screened and terminated a minimum of 3 diameters above the ground or storage tank surface?

Overflow pad?

Is access hatch sealed properly and locked?

Are surface coatings in contact with water ANSI / NSF approved?

Is tank protected against icing and corrosion?

Can tank be isolated from system?

Is all treated water storage covered?

Are tanks disinfected after repairs are made?

What is cleaning frequency for tanks? routinely

Is tank inspected every 5 years by a structural engineer for structural integrity?

2016? Liquid eng
Date of last inspection By whom

Comments: degraded weatherstrip could be replaced

STORAGE FACILITY

WSF ID ST003

Location alongside storage tank 2 at SWTP site

Description buried concrete

Latitude: 45.15964^o in decimal degrees

Longitude: 109.27768^o in decimal degrees

Storage Volume? 500,000 gallons

Year constructed: 2008

Condition: Good Fair Poor Not accessible

Yes No Unk N/A

Does surface runoff and underground drainage drain away?

Is the site protected against flooding?

Is the site protected against trespass/vandalism?

Ladders caged and locked?

Are overflow lines, air vents, drainage lines or clean out pipes turned downward or covered, screened and terminated a minimum of 3 diameters above the ground or storage tank surface?

Overflow pad?

Is access hatch sealed properly and locked?

Are surface coatings in contact with water ANSI / NSF approved?

Is tank protected against icing and corrosion?

Can tank be isolated from system?

Is all treated water storage covered?

Are tanks disinfected after repairs are made?

What is cleaning frequency for tanks? routinely

Is tank inspected every 5 years by a structural engineer for structural integrity?

2016? Liquid eng
Date of last inspection By whom

Comments: both hatches of this tank are bilco and are now covered with enclosures, recommended taping up to seal lid underneath

SANITARY SURVEY FORM - PUMPING FACILITIES

PWSID **MT0000314**

SYSTEM NAME **Red Lodge Water Department**

WSF ID PF001

Latitude 45.192305^o in decimal degrees

Longitude -109.256077^o in decimal degrees

Type centrifugal pumps
(example: 30 hp line shaft turbine)

Rated Capacity 28-55psi booster

How frequently are pump(s) replaced? as needed

Yes No Unk N/A

Is redundancy provided?

Are backup pumps/motors provided?

Is there a pressure relief valve?

Does each pump have compound gauge on suction side?

Is there automatic cutoff for low suction pressure?

Does each pump have standard pressure gauge on discharge side?

Does low pressure level provide adequate pressure?

Are controls functioning properly and adequately protected?

Do underground compartments have a drain?

Is facility properly protected against trespassing and vandalism?

Are pump records maintained (amp, discharge, pressure, maintenance schedule, manuals, etc.)?

Is the plumbing adequately painted to prevent excessive corrosion?

Is adequate heating, lighting, and ventilation provided?

Is a preventive maintenance program in operation?

Are recommended spare parts on hand?

Describe components and controls: two 15 hp centrifugal pumps with pressure control equalization basin (PC001)

Comments: maintains pressure for homes on distribution above storage elevation

WSF ID _____

Latitude _____^o in decimal degrees

Longitude _____^o in decimal degrees

Type _____
(example: 30 hp line shaft turbine)

Rated Capacity _____

How frequently are pump(s) replaced? _____

Yes No Unk N/A

Is redundancy provided?

Are backup pumps/motors provided?

Is there a pressure relief valve?

Does each pump have compound gauge on suction side?

Is there automatic cutoff for low suction pressure?

Does each pump have standard pressure gauge on discharge side?

Does low pressure level provide adequate pressure?

Are controls functioning properly and adequately protected?

Do underground compartments have a drain?

Is facility properly protected against trespassing and vandalism?

Are pump records maintained (amp, discharge, pressure, maintenance schedule, manuals, etc.)?

Is the plumbing adequately painted to prevent excessive corrosion?

Is adequate heating, lighting, and ventilation provided?

Is a preventive maintenance program in operation?

Are recommended spare parts on hand?

Describe components and controls: _____

Comments: _____

SANITARY SURVEY FORM - MISCELLANEOUS

PWSID **MT0000314**

SYSTEM NAME **Red Lodge Water Department**

DISTRIBUTION SYSTEM EVALUATION

WSF ID DS001

- | | Yes | No | Unk | N/A |
|---|-------------------------------------|-------------------------------------|--------------------------|--------------------------|
| System drawings available? | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Accurate As-Built drawing(s) on-site? | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Lines adequately sized? | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Adequate pressure maintained? | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Mains protected from freezing? | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Distribution system free of leaks? | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Asbestos concrete pipe used? | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Fire hydrants? | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Dead end lines minimized by looping mains? | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Flushing program? | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Pressure reducing stations? Number <u>1</u> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Booster stations? Number <u> </u> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Are individual booster pumps on any service lines? (see DEQ-1 6.4.4) | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Were cross connections observed? | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

Describe distribution: Distribution system is a mixture of mostly ductile iron, pvc, and some old cast iron piping-recent project placed new 12 Inch ductile iron down roadway which is the main street-system is upgrading hydrants and switching meters to auto radio read

Comments: _____

SAFETY

Were confined spaces observed? Yes No Unk N/A

Describe any confined spaces observed valve pits etc

Confined space safety adequate?

Fall risks adequately mitigated?

Note all safety deficiencies (consider items such as ladders, tank supports, guards on rotating electrical equipment, lightning protection for pumps, etc.)

MONITORING AND RECORDKEEPING EVALUATION

- | | Yes | No | Unk | N/A |
|--|-------------------------------------|--------------------------|--------------------------|--------------------------|
| Does the system have a current Monitoring Schedule? | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Bacti monitoring records maintained? (5 years) | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Bacti Sample Site Plan submitted? | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Familiar with repeat sampling? | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Chemical monitoring records maintained? (10 years) | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| System specific records / plans maintained? (DBP, PB/CU, treatments, waivers, violations, etc.) | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Familiar with Public Notice requirements? | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

Did Surveyor take a bacteriological sample?

If Yes, date of Sample: _____ Time of Sample: _____

Comments: _____

MANAGEMENT

- | | Yes | No | Unk | N/A |
|---|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|
| Are there sufficient personnel? | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Are operators properly certified? | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Are personnel adequately trained? | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Is there a current O&M manual on-site? | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Is an emergency plan on-site and workable? | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Has system addressed concerns from previous sanitary survey(s) or technical visit(s)? | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Budget exists? | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Does system maintain an emergency fund? | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| Does system contribute to facility replacement fund? | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| Are abandoned wells present? | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Do abandoned wells appear to be properly abandoned? (see ARM 36.21.670) | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |

Comments: Groundwater monitoring wells are kept around the production wells and monitored.

PWSID MT0000314

SYSTEM NAME Red Lodge Water Department

The State, or an authorized agent, must conduct sanitary surveys for all public water supply systems in Montana. DEQ believes that periodic sanitary surveys, along with appropriate corrective actions, are indispensable for assuring the long-term quality and safety of drinking water. When properly conducted, sanitary surveys can provide important information on a water system's design and operations and can identify minor and significant deficiencies for correction before they become major problems.

Minor deficiencies do not pose serious health threats. However, corrective action of minor deficiencies can be critical in the long-term operation and safety of a public water system. Minor deficiencies are generally described as suggested or recommended corrections in the letter to system owner(s).

Significant deficiencies can be defined as a defective water supply component(s) having or likely to have an adverse influence on public health. Significant deficiencies require immediate corrective action in efforts to protect consumers.

EPA and ASDWA guidance identifies eight broad components that should be covered in a sanitary survey. Using these eight broad components as a guide, minor and significant deficiencies should be described in the letter to system owner(s).

- | | |
|---------------------------|--|
| 1) Source | 5) Pumps, pump facilities, and controls |
| 2) Treatment | 6) Monitoring and reporting, and data verification |
| 3) Distribution system | 7) System management and operation |
| 4) Finished water storage | 8) Operator compliance with State requirements |

With consideration that significant deficiencies may influence regulatory decisions and monitoring requirements, please list all significant deficiencies observed and corrective action(s) taken below.

Comments:

No significant deficiencies noted

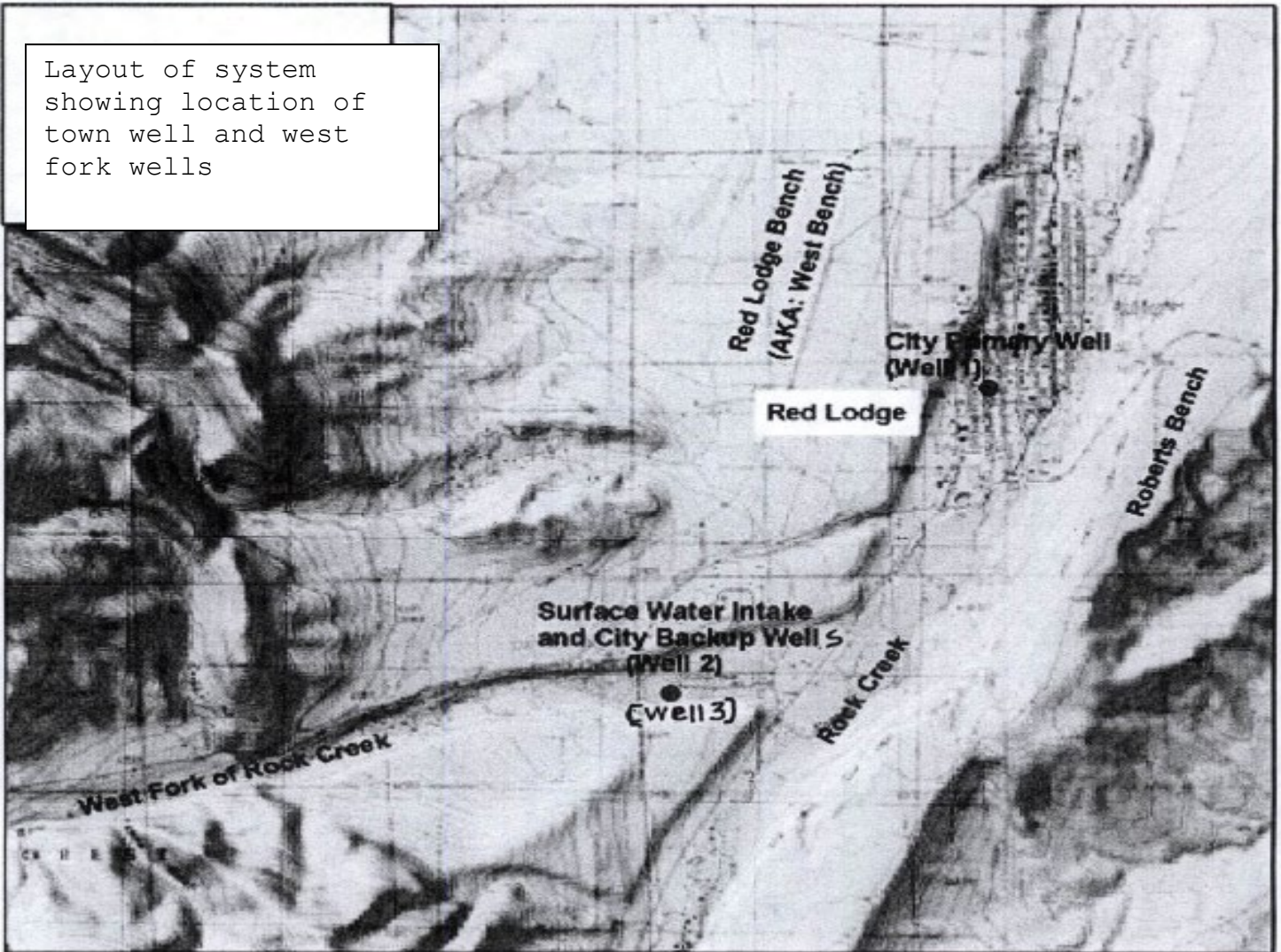
SANITARY SURVEY FORM - DIAGRAMS

PWSID **MT0000314**

SYSTEM NAME **Red Lodge Water Department**

Please insert schematics, diagrams and maps as needed. Additional sheets may be added.

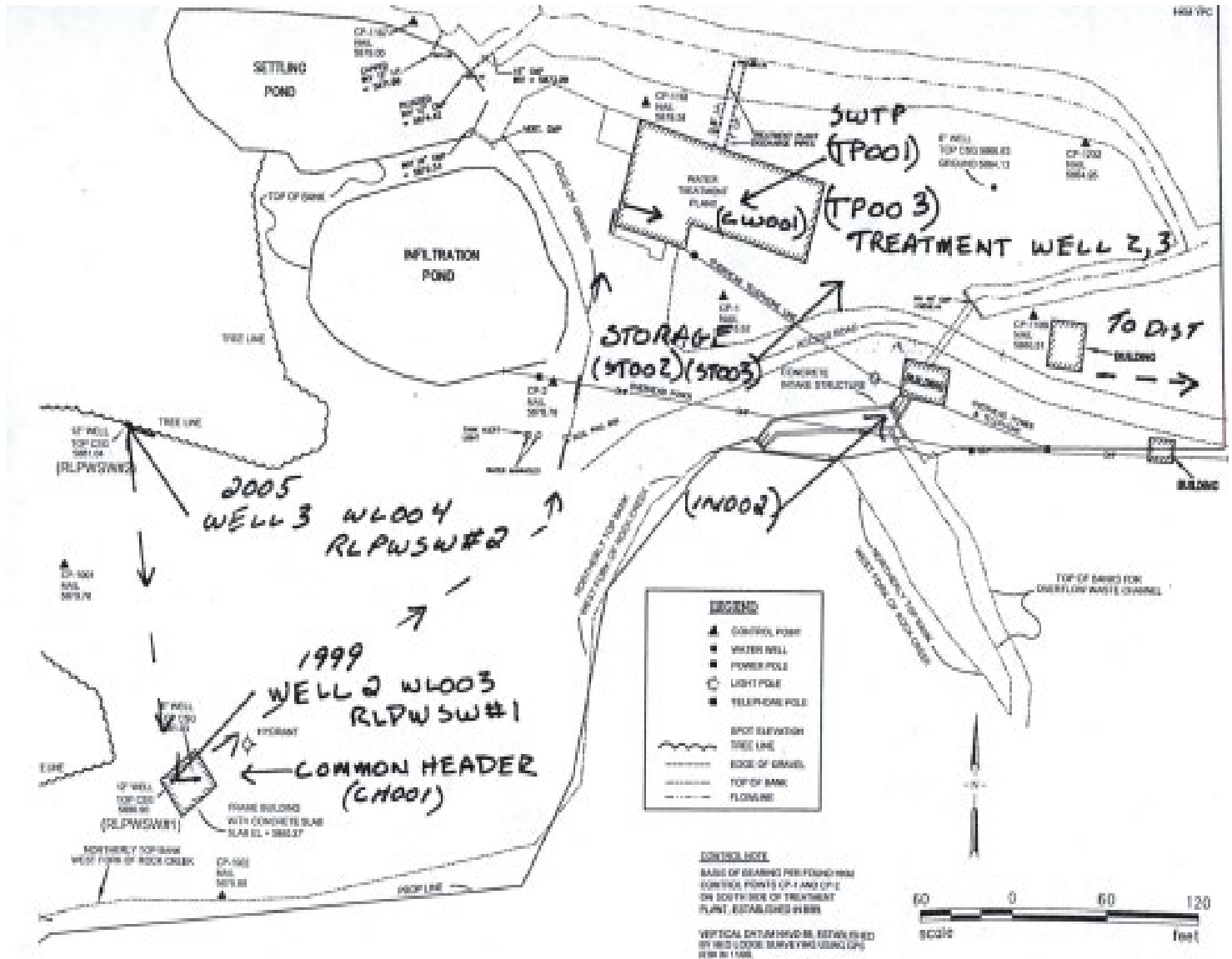
Layout of system showing location of town well and west fork wells



PWSID **MT0000314**

SYSTEM NAME **Red Lodge Water Department**

Please insert schematics, diagrams and maps as needed. Additional sheets may be added.



MONTANA WELL LOG REPORT

Other Options

This well log reports the activities of a licensed Montana well driller, serves as the official record of work done within the borehole and casing, and describes the amount of water encountered. This report is compiled electronically from the contents of the Ground Water Information Center (GWIC) database for this site. Acquiring water rights is the well owner's responsibility and is NOT accomplished by the filing of this report.

[Return to menu](#)
[Plot this site on a topographic map](#)
[View scanned well log \(7/7/2010 10:45:20 AM\)](#)

Site Name: CITY OF RED LODGE - WELL 1 SOURCE 2 Section 7: Well Test Data

GWIC Id: 132671

DNRC Water Right: W045736-00

Total Depth: 74

Static Water Level: 20

Water Temperature:

Section 1: Well Owner(s)

1) CITY OF RED LODGE (MAIL)

Unknown Test Method *

RED LODGE MT 59088 [09/17/1961]

Yield 000 gpm.Pumping water level feet.Time of recovery hours.Recovery water level feet.**Section 2: Location**

| Township | Range | Section | Quarter Sections | | | | |
|-------------------------|-----------|-----------|------------------|------|-----|-----|-----|
| 07S | 20E | 34 | SW¼ | SW¼ | NE¼ | NE¼ | NW¼ |
| County | | | Geocode | | | | |
| CARBON | | | | | | | |
| Latitude | Longitude | Geomethod | Datum | | | | |
| 45.18 | 109.2513 | MAP | NAD27 | | | | |
| Ground Surface Altitude | | Method | Datum | Date | | | |
| | | | | | | | |
| Addition | Block | Lot | | | | | |
| HYPER | 64 | 3 | | | | | |

* During the well test the discharge rate shall be as uniform as possible. This rate may or may not be the sustainable yield of the well. Sustainable yield does not include the reservoir of the well casing.

Section 3: Proposed Use of Water

PUBLIC WATER SUPPLY (1)

Section 8: Remarks**Section 4: Type of Work**

Drilling Method:

Section 9: Well Log**Geologic Source**

Unassigned

Lithology Data

Section 5: Well Completion Date

Date well completed: Sunday, September 17, 1961

There are no lithologic details assigned to this well.

Driller Certification

All work performed and reported in this well log is in compliance with the Montana well construction standards. This report is true to the best of my knowledge.

Section 6: Well Construction Details

There are no borehole dimensions assigned to this well.

There are no casing strings assigned to this well.

There are no completion records assigned to this well.

Annular Space (Seal/Grout/Packer)

There are no annular space records assigned to this well.

Name:
 Company:
 License No:-
 Date: 9/17/1961
 Completed:

MONTANA WELL LOG REPORT

Other Options

This well log reports the activities of a licensed Montana well driller, serves as the official record of work done within the borehole and casing, and describes the amount of water encountered. This report is compiled electronically from the contents of the Ground Water Information Center (GWIC) database for this site. Acquiring water rights is the well owner's responsibility and is NOT accomplished by the filing of this report.

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Site Name: CITY OF RED LODGE
GWIC Id: 179787

Section 7: Well Test Data

Total Depth: 67
Static Water Level: 8
Water Temperature:

Section 1: Well Owner(s)

1) CITY OF RED LODGE (MAIL)
1 S PLATT
RED LODGE MT 59088 [12/31/1999]

Air Test *

Section 2: Location

| Township | Range | Section | Quarter Sections |
|----------|-------|---------|------------------|
| 08S | 20E | 4 | SE¼ NW¼ |
| County | | Geocode | |

1040 gpm with drill stem set at 40 feet for 20 hours.
Time of recovery 5 hours.
Recovery water level feet.
Pumping water level feet.

CARBON

| Latitude | Longitude | Geomethod | Datum | |
|-------------------------|------------|-----------|-------|------|
| 45.161364 | 109.273605 | TRS-SEC | NAD83 | |
| Ground Surface Altitude | | Method | Datum | Date |

* During the well test the discharge rate shall be as uniform as possible. This rate may or may not be the sustainable yield of the well. Sustainable yield does not include the reservoir of the well casing.

| Addition | Block | Lot |
|----------|-------|-----|
|----------|-------|-----|

Section 3: Proposed Use of Water

DOMESTIC (1)

Section 8: Remarks

Section 4: Type of Work

Drilling Method: ROTARY

Section 9: Well Log

Geologic Source

Unassigned

Section 5: Well Completion Date

Date well completed: Friday, December 31, 1999

| From | To | Description |
|------|----|-----------------------------|
| 0 | 64 | BLACK/WHITE/GRAVEL/BOULDERS |
| 64 | 67 | TAN/CONGLOMERATE/DECOMP |
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Section 6: Well Construction Details

Borehole dimensions

| From | To | Diameter |
|------|----|----------|
| 0 | 20 | 17.5 |
| 20 | 67 | 14 |

Casing

| From | To | Diameter | Wall Thickness | Pressure Rating | Joint | Type |
|------|----|----------|----------------|-----------------|--------|-------|
| -2 | 40 | 12 | 0.375 | | WELDED | STEEL |

Completion (Perf/Screen)

| From | To | Diameter | # of Openings | Size of Openings | Description |
|------|----|----------|---------------|------------------|-------------------------|
| 40 | 65 | 12 | | | SCREEN-CONTINUOUS-STEEL |

Annular Space (Seal/Grout/Packer)

| From | To | Description | Cont. Fed? |
|------|----|-------------|------------|
| 0 | 20 | BENTONITE | |
| 21 | 21 | RUBBER | |
| 22 | 22 | RUBBER | |
| 23 | 23 | RUBBER | |

Driller Certification

All work performed and reported in this well log is in compliance with the Montana well construction standards. This report is true to the best of my knowledge.

Name: TOM HUMSAKER
Company: ROCK CREEK DRILLING INC
License No: WWC-104
Date Completed: 12/31/1999

MONTANA WELL LOG REPORT

Other Options

This well log reports the activities of a licensed Montana well driller, serves as the official record of work done within the borehole and casing, and describes the amount of water encountered. This report is compiled electronically from the contents of the Ground Water Information Center (GWIC) database for this site. Acquiring water rights is the well owner's responsibility and is NOT accomplished by the filing of this report.

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Site Name: CITY OF RED LODGE
 GWIC Id: 223132

Section 1: Well Owner(s)

1) CITY OF RED LODGE (MAIL)
 P.O. BOX 0
 RED LODGE MT 59068 [11/07/2005]

Section 2: Location

| Township | Range | Section | Quarter Sections | |
|-------------------------|------------|-----------|------------------|------|
| 08S | 20E | 5 | SE¼ NE¼ | |
| County | | | Geocode | |
| CARBON | | | | |
| Latitude | Longitude | Geomethod | Datum | |
| 45.161397 | 109.283963 | TRS-SEC | NAD83 | |
| Ground Surface Altitude | | Method | Datum | Date |
| | | | | |
| Address | Block | Lot | | |
| | | | | |

Section 3: Proposed Use of Water

PUBLIC WATER SUPPLY (1)

Section 4: Type of Work

Drilling Method: ROTARY

Section 5: Well Completion Date

Date well completed: Monday, November 07, 2005

Section 6: Well Construction Details

Borehole dimensions

| From | To | Diameter |
|------|----|----------|
| -3 | 61 | 12 |
| 0 | 22 | 16 |

Casing

| From | To | Diameter | Wall Thickness | Pressure Rating | Joint | Type |
|------|----|----------|----------------|-----------------|--------|-------|
| -3 | 61 | 12 | 0.375 | | WELDED | STEEL |

Completion (Perv/Screen)

| From | To | Diameter | # of Openings | Size of Openings | Description |
|------|----|----------|---------------|------------------|-----------------------------|
| 46 | 61 | 12 | | 0.125 | SCREEN-CONTINUOUS-STAINLESS |

Annular Space (Seal/Grout/Packer)

| From | To | Description | Cont. Fed? |
|------|----|-------------|------------|
| 0 | 26 | BENTONITE | |
| 26 | 43 | 3/8 GRAVEL | |

Section 7: Well Test Data

Total Depth: 61
 Static Water Level: 13
 Water Temperature:

Air Test *

500 gpm with drill stem set at 61 feet for 32 hours.
 Time of recovery 0.72 hours.
 Recovery water level 13 feet.
 Pumping water level feet.

* During the well test the discharge rate shall be as uniform as possible. This rate may or may not be the sustainable yield of the well. Sustainable yield does not include the reservoir of the well casing.

Section 8: Remarks

Section 9: Well Log

Geologic Source

Unassigned

| From | To | Description |
|------|----|---------------------------|
| 0 | 1 | BROWN TOPSOIL |
| 1 | 58 | GRAY BOULDERS & SAND |
| 58 | 61 | TAN GRAY CLAY WITH GRAVEL |
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Driller Certification

All work performed and reported in this well log is in compliance with the Montana well construction standards. This report is true to the best of my knowledge.

Name: BRET DOUGLAS
 Company: DOUGLAS DRILLING
 License No: WWC-591
 Date Completed: 11/7/2005

Sanitary Survey Pictures
Red Lodge Water Dept 7/11/2019
PWSIDMT#0000314



Red Lodge



(TP002) TP for well 1 Grant



(WL002) Well 1 1961 Grant GWIC 132671



(TP002) TP for well 1 Grant



Reconditioned and rebuilt-VFD



Zone of influence behind well house

Sanitary Survey Pictures
Red Lodge Water Dept 7/11/2019
PWSIDMT#0000314



(WL003) Well 2 RLPWSW1 GWIC 179787-
Building



(WL004) Well 3 RLPWSW2 GWIC 223132
-This well is not being used



(WL003) Well 2 RLPWS1 GWIC 179787



(TP003) Treatment plant well 2, 3



(CH001) Common Header Wells 2, 3



(TP003) exists inside surface water plant as
water enters clearwell

Sanitary Survey Pictures
Red Lodge Water Dept 7/11/2019
PWSIDMT#0000314



(CW001) Clearwell acts a storage and contact



Water then leaves the clearwell headed for storage tanks



Submersibles provide carriage water for chlorination from the clearwell



(ST002) Storage tank 2-250,000-single hatch and screened vent



A transducer calls for the well(s) by clearwell level

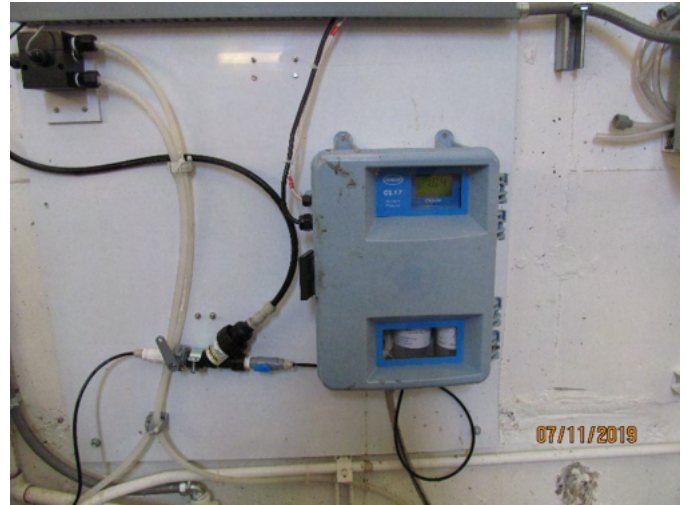


(ST003) Storage tank 3-500,00 gallons-two hatches (bilco), screened vent

Sanitary Survey Pictures
Red Lodge Water Dept 7/11/2019
PWSIDMT#0000314



Tanks share common overflow-fixed with flap gate screen



Chlorine analyzer is in service



Water leaving the campus for town is via this building



No access to public on water treatment property



Water leaving is metered and a...



Water on 12 Inch main to town and tank is controlled via this 6 Inch PRV that tank level of Airport (ST001) 750,000 gallon controls

Sanitary Survey Pictures
Red Lodge Water Dept 7/11/2019
PWSIDMT#0000314



(ST001) Storage tank airport-single hatch and vent-750,000



Overflow has a flap gate



Hatch weather stripping needs attention



(PF001) Country Club Estates Booster-2 15 HP peerless pumps, 28-55psi booster with pressure equalization basin (PC001)



Vent is screened



Pump(s) operates 24 hrs a day

BRUCE

WATER AND WASTEWATER REPORT

DATE: OCTOBER 2019

WASTE WATER:

INFLUENT: 29,366,313 GAL 656,978 GPD 456 GPM

LOWEST GPD 504,940

HIGHEST GPD 767,852

EFFLUENT: 19,659,209 GAL 634,168 GPD 440 GPM

LOWEST GPD 539,820

HIGHEST GPD 726,458

C.C.E. LIFT PUMPED - 916,564 GAL.
4% OF
INFLUENT TOTAL 29,567 GPD
10/31/19
(4u)

WATER:

WELL (713 S. GRANT) 1,088,508 GAL

WELL (723 WWR) 1,094,000 GAL

TOTAL 1,203,508 GAL

LOWEST GPD 287,000

HIGHEST GPD 466,000

AVERAGE GPD 388,274

METERED 5,789,621 GAL

VALTROLL - 10,000

P.R.V. - 10,000

5,809,621

UNACCOUNTED 6,226,887 GAL

BRUCE

WATER AND WASTEWATER REPORT

DATE: AUGUST 2019

WASTE WATER:

INFLUENT: 22,435,582 GAL 723,728 GPD 503 GPM

LOWEST GPD 505,192

HIGHEST GPD 1,229,439

EFFLUENT: 19,569,680 GAL 631,280 GPD 438 GPM

LOWEST GPD 517,268

HIGHEST GPD 745,423

C.C.E. LIFT PUMPED - 1,783,316 GAL.

8% OF INFLUENT

TOTAL

57,526 GPD

9/3/19 (4W)

WATER:

WELL (713 S. GRANT) 2,407,843 GAL

WELL (723 WWR) 1,894,700 GAL

TOTAL 2,155,543 GAL

LOWEST GPD 564,000

HIGHEST GPD 788,000

AVERAGE GPD 685,350

METERED 1,829,444 GAL

Vac Truck 15,000

Hydrameters

P.R.V 10,000

} 1,832,444

UNACCOUNTED 323,439 GAL

BRUCE

WATER AND WASTEWATER REPORT

DATE: July 2019

WASTE WATER:

INFLUENT: 32,766,590 GAL 1,056,987 GPD 734 GPM

LOWEST GPD 840,900

HIGHEST GPD 1,589,445

C.C.E. LIFT PUMPED
2,631,559 GALLONS
8% OF INFLUENT TOTAL

EFFLUENT: 28,471,094 GAL 918,422 GPD 638 GPM

LOWEST GPD 698,530

HIGHEST GPD 1,147,583

8/12/19 (f)

WATER:

WELL (713 S. GRANT) 4,166,243 GAL

WELL (723 WWR) 1,776,900 GAL

TOTAL 18,235,243 GAL

LOWEST GPD 495,000

HIGHEST GPD 739,000

AVERAGE GPD 1,078,411

METERED 8,888,126 GAL

VAC TRUCK 10,000
P.R.V 10,000 = 8,908,126

UNACCOUNTED 9,327,117 GAL

BRUCE

WATER AND WASTEWATER REPORT

DATE: JUNE 2019

WASTEWATER:

INFLUENT: 33,192,441 GAL 1,106,415 GPD 768 GPM

LOWEST GPD 886,915

HIGHEST GPD 1,720,970

EFFLUENT: 28,327,988 GAL 944,266 GPD 656 GPM

LOWEST GPD 730,793

HIGHEST GPD 1,355,321

C.C.E LIFT PUMPED 1,326,125 GAL.

7/2/19 4% OF INFLUENT TOTAL

(4W)

WATER:

WELL (713 S. GRANT) 1,382,922 GAL

WELL (723 WWR) 1,410,000 GAL

TOTAL 1,605,292 GAL

LOWEST GPD 393,000

HIGHEST GPD 839,000

AVERAGE GPD 577,836

METERED 1,706,233 GAL

P.R.V. 10,000

VALVE/CURB 10,000

1,708,233

UNACCOUNTED 1,094,100 GAL

BRUCE

WATER AND WASTEWATER REPORT

DATE: MAY 2019

WASTE WATER:

INFLUENT: 26,070,662 GAL 840,989 GPD 584 GPM

LOWEST GPD 464,044

HIGHEST GPD 1,377,745

EFFLUENT: 22,236,078 GAL 717,293 GPD 498 GPM

LOWEST GPD 329,330

HIGHEST GPD 1,581,581

C.C.E. LIFT PUMPED 1,110,805
5% OF INFLUENT TOTAL

6/3/19 (4w)

WATER:

WELL (713 S. GRANT) 2,358,736 GAL

WELL (723 WWR) 1,162,300 GAL

TOTAL 13,981,736 GAL

LOWEST GPD 306,000

HIGHEST GPD 610,000

AVERAGE GPD 451,023

METERED 4,818,003 GAL

YAC TRUCK 9,000 }
P.R.V. 10,000 } 483,1003

UNACCOUNTED 9,144,733 GAL

558122

WATER AND WASTEWATER REPORT

BRUCE
4/30/19

DATE: APRIL 2019

WASTE WATER:

INFLUENT: 21,912,145 GAL 730,405 GPD 507 GPM

LOWEST GPD 578,052

HIGHEST GPD 1,064,249

C.C.E. WFT
PUMPED 970,885 GAL
4% OF INFLUENT TOTAL

EFFLUENT: 19,068,575 GAL 635,619 GPD 441 GPM

LOWEST GPD 490,000

HIGHEST GPD 870,000

4/30/19 AW

WATER:

WELL (713 S. GRANT) 2,268,145 GAL

WELL (723 WWR) 16,175,145 GAL

TOTAL 18,443,290 GAL

LOWEST GPD 288,884

HIGHEST GPD 636,000

AVERAGE GPD 594,944

METERED 5,717,804 GAL

VAC TRUCK - 5,000

P.R.V. - 10,000

5,732,804

UNACCOUNTED 12,710,486 GAL

CITY HALL
BRUCE'S
COPY

WATER AND WASTEWATER REPORT

DATE: MARCH 2019

WASTE WATER:

INFLUENT: 14,429,979 GAL 465,483 GPD 323 GPM

LOWEST GPD 381,283

HIGHEST GPD 770,000

EFFLUENT: 13,151,000 GAL 424,226 GPD 295 GPM

LOWEST GPD 256,000

HIGHEST GPD 670,000

C.I.E LIFT - 1,183,605 GAL

8% OF INFLUENT TOTAL

(40) 4/1/19

WATER:

WELL (713 S. GRANT) 19,394,998 GAL

WELL (723 WWR) 10,738,000 GAL

TOTAL 12,677,498 GAL

LOWEST GPD 336,000

HIGHEST GPD 620,540

AVERAGE GPD 452,768

VAC TRUCK - 8000 }
P.I.V. 10,000 } 18,000

METERED 5,533,913 GAL

UNACCOUNTED 716,1575 GAL

WATER AND WASTEWATER REPORT

DATE: FEBRUARY 2019

WASTE WATER:

INFLUENT: 17,170,000 GAL 613,214 GPD 426 GPM

LOWEST GPD 450,000

HIGHEST GPD 729,000

C.C.E. LIFT PUMPED - 762,577 GAL.
4% OF INFLUENT TOTAL

EFFLUENT: 8,736,000 GAL 312,000 GPD 217 GPM

LOWEST GPD 246,000

HIGHEST GPD 413,000

2/28/19
(AW)

WATER:

WELL (713 S. GRANT) 1054353 GAL

WELL (723 WWR) 11489000 GAL

TOTAL 12543353 GAL

LOWEST GPD 300,000

HIGHEST GPD 504000

AVERAGE GPD 404624

METERED 5071816 GAL

Val Truck - 5,000
P.R.V. - 15,000 = 5091816

UNACCOUNTED 7451537 GAL

WATER AND WASTEWATER REPORT

DATE: JANUARY 2019

WASTE WATER:

INFLUENT: 17,010,000 GAL 548,710 GPD 381 GPM

LOWEST GPD 427,000

HIGHEST GPD 690,000

EFFLUENT: 11,682,000 GAL 376,839 GPD 262 GPM

LOWEST GPD 259,000

HIGHEST GPD 485,000

C.C.E. LIFT - 761,706
PUMPED
4.5% OF INFLUENT TOTAL

11/31/19 (40)

WATER:

WELL (713 S. GRANT) 1,801,246 GAL

WELL (723 WWR) 1,289,600 GAL

TOTAL 1,469,724 GAL

LOWEST GPD 27,300

HIGHEST GPD 601,344

AVERAGE GPD 459,298

5,918,637

METERED 5,918,637 GAL

P.R.V. + 7,000

VAL TRUCK + 5,000 = 5,930,637

UNACCOUNTED 8,766,609 GAL

WATER AND WASTEWATER REPORT

DATE: DECEMBER 2018

WASTE WATER:

INFLUENT: 18,590,000 GAL 599,677 GPD 416 GPM

LOWEST GPD 515,000

HIGHEST GPD 817,000

C.L.F. LIFT PUMPED 832,003 GAL,
49% OF TOTAL INFLUENT

EFFLUENT: 11,337,000 GAL 365,710 GPD 254 GPM

LOWEST GPD 319,000

HIGHEST GPD 444,000

(416)

WATER:

WELL (713 S. GRANT) 976,140 GAL

WELL (723 WWR) 11362000 GAL

TOTAL 12338140 GAL

LOWEST GPD 299,000

HIGHEST GPD 654741

AVERAGE GPD 398021

METERED 4530505 GAL

Ice Skating rink - 70,600
P.R.V. - 10,000
Vac truck - 1,500 } 82,100 = 4612605

UNACCOUNTED 7726335 GAL

WATER AND WASTEWATER REPORT

DATE: NOVEMBER 2018

WASTE WATER:

INFLUENT: 18,511,000 GAL 617,033 GPD 428 GPM

LOWEST GPD 435,000


HIGHEST GPD 739,000

C.C.E. LIFT - 720,818
PUMPED 4% OF INFLUENT TOTAL

EFFLUENT: 13,340,000 GAL 444,667 GPD 309 GPM

LOWEST GPD 378,000

HIGHEST GPD 646,000

11/30/18 

WATER:

WELL (713 S. GRANT) 996070 GAL

WELL (723 WWR) 10051000 GAL

TOTAL 11,047070 GAL

LOWEST GPD 264,000

HIGHEST GPD 517,000

AVERAGE GPD 394,538

METERED 4670400 GAL

P.R.V. - 12,000

Y. Truck. 0,000 = 4688400

UNACCOUNTED 6358670 GAL

WATER AND WASTEWATER REPORT

DATE: OCTOBER 2018

WASTE WATER:

INFLUENT: 22,308,000 GAL 719,581 GPD 500 GPM

LOWEST GPD 482,000

HIGHEST GPD 938,000

EFFLUENT: 18,308,000 GAL 590,581 GPD 410 GPM

LOWEST GPD 430,000

HIGHEST GPD 718,000

C.C.E. LIFT
PUMPED.

- 755,314 GAL.
3% OF INFLUENT
TOTAL

10/31/18
(4W)

WATER:

WELL (713 S. GRANT) 899682 GAL

WELL (723 WWR) 1730000 GAL

TOTAL 18,219,682 GAL

LOWEST GPD 402,000

HIGHEST GPD 733,000

AVERAGE GPD 535,873

METERED 6,777,960 GAL

Vac Truck - 3,000

P.R.V - 10,000

UNACCOUNTED 11,428,782 GAL

WATER AND WASTEWATER REPORT

DATE: SEPTEMBER 2018

WASTE WATER:

INFLUENT: 19,896,000 GAL 663,200 GPD 460 GPM

LOWEST GPD 538,000

HIGHEST GPD 890,000

EFFLUENT: 17,118,000 GAL 570,600 GPD 396 GPM

LOWEST GPD 501,000

HIGHEST GPD 704,000

C.L.E. LIFT pumps - 1,109,296.
1d/118 (4w) 0.56% OF INFLUENT TOTAL

WATER:

WELL (713 S. GRANT) 1,091,586 GAL

WELL (723 WWR) 1,890,200 GAL

TOTAL 1,999,354 GAL

LOWEST GPD 58,400

HIGHEST GPD 773,000

AVERAGE GPD 6,449.54

METERED 10,865,600 GAL

P.R.V. 10,000
VAC TRUCK 5,000 > 15,000 = 10,865,600

UNACCOUNTED 9,112,996 GAL

WATER AND WASTEWATER REPORT

DATE: AUGUST 2018

WASTE WATER:

INFLUENT: 24,570,000 GAL 7,927,581 GPD 550 GPM

LOWEST GPD 570,000

HIGHEST GPD 1,070,000

EFFLUENT: 20,280,000 GAL 654,193 GPD 454 GPM

LOWEST GPD 530,000

HIGHEST GPD 865,000

CCE LIFT PUMPER - 1,675,669

6% OF INFLUENT TOTAL

9/2/18 (TW)

WATER:

WELL (713 S. GRANT) 436,9611 GAL

WELL (723 WWR) 181,73000 GAL

TOTAL 2,254,2611 GAL

LOWEST GPD 551,000

HIGHEST GPD 1,118,000

AVERAGE GPD 727,181

METERED 14,170,653 GAL

P.R.V - 7,500

VAL TRUCK - 10,000

14,188,153

UNACCOUNTED 8,354,458 GAL

WATER AND WASTEWATER REPORT

DATE: July 2018

WASTE WATER:

INFLUENT: 33,111,000 GAL 1,084,226,000 GPD 753 GPM

LOWEST GPD 720,000

HIGHEST GPD 1,626,000

EFFLUENT: 26,779,000 GAL 863,839 GPD 600 GPM

LOWEST GPD 660,000

HIGHEST GPD 1,085,000

C.C.E LIFT PUMPED = 2,234,183 GAL.
6.6% OF TOTAL INFLUENT 8/13/18 (40)

WATER:

WELL (713 S. GRANT) 1928324 GAL

WELL (723 WWR) 21535000 GAL

TOTAL 23463324 GAL

LOWEST GPD 500,000

HIGHEST GPD 993371

AVERAGE GPD 756881.4

METERED 13026342 GAL

P.R.V. - 10,000
Vac. Truck - 10,000
Swimming pool - 185,000 } 205,000

UNACCOUNTED 10231982 GAL

WATER AND WASTEWATER REPORT

DATE: JUNE 2018

WASTE WATER:

INFLUENT: 43,181,000 GAL 1,439,367 GPD 999 GPM

LOWEST GPD 929,000

HIGHEST GPD 1,940,000

EFFLUENT: 36,717,000 GAL 1,223,900 GPD 850 GPM

LOWEST GPD 895

HIGHEST GPD 1,882,000

6/30/18

(fw)

C.C.E. LIFT PUMPED - 1,676,172
4.5% OF TOTAL

WATER:

WELL (713 S. GRANT) 133442 GAL

WELL (723 WWR) 15865000 GAL

TOTAL 15998442 GAL

LOWEST GPD 373,000

HIGHEST GPD 469,000

AVERAGE GPD 533,281

METERED 10,200,666 + GAL

Swimming pool - 180,000

Vac TRUCK - 3,000

P.R.V - 21,000

= 204,000 = 10,324,666

UNACCOUNTED 5,674,376 GAL

WATER AND WASTEWATER REPORT

DATE: MAY 2018

WASTE WATER:

INFLUENT: 37,927,000 GAL 1,223,452 GPD 850 GPM

LOWEST GPD 827,000

HIGHEST GPD 2,009,000

EFFLUENT: 29,704,000 GAL 958,194 GPD 665 GPM

LOWEST GPD 567,000

HIGHEST GPD 1,747,000

6/1/18 (fw)

WATER:

WELL (713 S. GRANT) 0 GAL

WELL (723 WWR) 12,388,000 GAL

TOTAL 12,388,000 GAL

LOWEST GPD 312,000

HIGHEST GPD 499,000

AVERAGE GPD 399,614

METERED 5,379,464 GAL

County - 3,000

vac TRUCK 3,000

P.F.V - 21,000 = 27,000 = 5,356,464

UNACCOUNTED 703,536 GAL

WATER AND WASTEWATER REPORT

DATE: APRIL 2018

WASTE WATER:

INFLUENT: 26,424,000 GAL 880,800 GPD 612 GPM

LOWEST GPD 727,000

HIGHEST GPD 1,137,000

EFFLUENT: 17,340,000 GAL 578,000 GPD 401 GPM

LOWEST GPD 395,000

HIGHEST GPD 845,000

4/30/18
4W

WATER:

WELL (713 S. GRANT) 0 GAL

WELL (723 WWR) 10777,000 GAL

TOTAL 10777,000 GAL

LOWEST GPD 278,000

HIGHEST GPD 471,000

AVERAGE GPD 359,233

METERED 6,175,948 GAL

P.R.V. - 22,000

VAL TRUCK - 0

UNACCOUNTED 4,579,052 GAL

WATER AND WASTEWATER REPORT - MARCH 2018

DATE: March 2018

WASTE WATER:

INFLUENT: 23,797,000 GAL 767,645 GPD 533 GPM

LOWEST GPD 583,000

HIGHEST GPD 1,094,000

EFFLUENT: 13,557,000 GAL 437,322 GPD 304 GPM

LOWEST GPD 685,000

HIGHEST GPD 292,000

4/2/18 (4w)

WATER:

WELL (713 S. GRANT) 0 GAL

WELL (723 WWR) 11,847,000 GAL

TOTAL 11,847,000 GAL

LOWEST GPD 239,000

HIGHEST GPD 467,000

AVERAGE GPD 423,107

METERED 5693409 + GAL

PNV - 19,850

VAL TRUCK - 1,000 = 20750 = 5714259

UNACCOUNTED 6132741 GAL

WATER AND WASTEWATER REPORT

DATE: FEBRUARY 2018

WASTE WATER:

INFLUENT: 18,744,000 GAL 669,428 GPD 465 GPM

LOWEST GPD 609,000

HIGHEST GPD 740,000

EFFLUENT: 9,870,000 GAL 352,500 GPD 245 GPM

LOWEST GPD 290,000

HIGHEST GPD 451,000

(4w) 2/28/18

WATER:

WELL (713 S. GRANT) 0 GAL

WELL (723 WWR) 11,357,000 GAL

TOTAL 11,357,000 GAL

LOWEST GPD 239,000

HIGHEST GPD 467,000

AVERAGE GPD 37,250

METERED 5,125,757 GAL

Van Truck - 2,000
P.R.V - 22,000
5,149,757

UNACCOUNTED 6,207,243 GAL

WATER AND WASTEWATER REPORT

DATE: Jan 2018

WASTE WATER:

INFLUENT: 21,761,000 GAL 6,926,613 GPD 474.0 GPM

LOWEST GPD 582,000

HIGHEST GPD 911,000

EFFLUENT: 12,173,000 GAL 3,926,677 GPD 272 GPM

LOWEST GPD 310,000

HIGHEST GPD 482,000

WATER:

WELL (713 S. GRANT) 0 GAL

WELL (723 WWR) 12,286,000 GAL

TOTAL 12,286,000 GAL

LOWEST GPD 257,000

HIGHEST GPD 483,000

AVERAGE GPD 383,937.5

METERED 7,334,319 GAL

22,000 prv
3,000 flush 2nd st - 25,000
0 ✓ Truck
7,359,319

UNACCOUNTED 4,926,681 GAL

WATER AND WASTEWATER REPORT

DATE: Dec 2017

WASTE WATER:

INFLUENT: 22,687,000 GAL 7,318,39 GPD 507 GPM

LOWEST GPD 598,000

HIGHEST GPD 892,000

EFFLUENT: 12,325,000 GAL 3,975,71 GPD 276 GPM

LOWEST GPD 316,000

HIGHEST GPD 517,000

WATER:

WELL (713 S. GRANT) 4,045,19 GAL

WELL (723 WWR) 1,052,2519 GAL

TOTAL 1,092,7038 GAL

LOWEST GPD 265,000

HIGHEST GPD 425,000

AVERAGE GPD 352,485

METERED 47,002,09 GAL

Vac Truck - 4,000

Ice Skating rink - 58,000

P.R.V. 2,2000 = 84,000 = 48842,09 accounted for.

UNACCOUNTED 6,042,729 GAL

WATER AND WASTEWATER REPORT

DATE: Nov 2017

WASTE WATER:

INFLUENT: 2,370,200 GAL 1,920,67 GPD 550 GPM

LOWEST GPD 704,000

HIGHEST GPD 957,000

EFFLUENT: 1,378,700 GAL 459,567 GPD 319 GPM

LOWEST GPD 372,000

HIGHEST GPD 626,000

WATER:

WELL (713 S. GRANT) 832,861 GAL

WELL (723 WWR) 887,000 GAL

TOTAL 970,861 GAL

LOWEST GPD 211,000

HIGHEST GPD 452,000

AVERAGE GPD 295,900

METERED 5,107,452 GAL

Val Truck - 5,000 gal.

PTV - 22,000

Flushing 500

27,500

= 5,134,952

UNACCOUNTED 4,574,909 GAL

WATER AND WASTEWATER REPORT

DATE: Oct 2017

WASTE WATER:

INFLUENT: 24,83000 GAL 780096 GPD 541.7 GPM

LOWEST GPD 664,000

HIGHEST GPD 936000

EFFLUENT: 14,04000 GAL 454,000 GPD 315.9 GPM

LOWEST GPD 382,000

HIGHEST GPD 672,000

WATER:

WELL (713 S. GRANT) 1,718,766 GAL

WELL (723 WWR) 986,700 GAL

TOTAL 11,585,766 GAL

LOWEST GPD 232,000

HIGHEST GPD 599,000

AVERAGE GPD 373,734

METERED 5678459 GAL

PRV 22,000
Flushing 7,500
✓ TRUCK 5,000
Fire Dept. 5,000
} 39,500 = 5717959

UNACCOUNTED 586,7907 GAL

WATER AND WASTEWATER REPORT

DATE: Sept 2017

WASTE WATER:

INFLUENT: 25,572,000 GAL 852,400 GPD 592 GPM

LOWEST GPD 527,000

HIGHEST GPD 1,308,000

EFFLUENT: 17,015,000 GAL 567,167 GPD 394 GPM

LOWEST GPD 359,000

HIGHEST GPD 1,158,000

WATER:

WELL (713 S. GRANT) 3,205,848 GAL

WELL (723 WWR) 16,124,000 GAL

TOTAL 19,329,848 GAL

LOWEST GPD 297,000

HIGHEST GPD 780,074

AVERAGE GPD 623,543

METERED 12,589,497 GAL

10,000 - (2481 ush) Hydrant 2nd & Bonner.

22,000 - P.R.V usage.

2,000 - Van Truck

+ 40,000 = 12,629,497 - Accounted for

UNACCOUNTED 4,700,351 GAL

WATER AND WASTEWATER REPORT

DATE: August 2017

WASTE WATER:

INFLUENT: 2,567,400 GAL 827,193 GPD 575 GPM

LOWEST GPD 670,000

HIGHEST GPD 1,040,000

EFFLUENT: 1,570,400 GAL 506,580 GPD 352 GPM

LOWEST GPD 431,000

HIGHEST GPD 607,000

WATER:

WELL (713 S. GRANT) 880,842 GAL

WELL (723 WWR) 1,968,000 GAL

TOTAL 2,848,842 GAL

LOWEST GPD 560,000

HIGHEST GPD 762,000

AVERAGE GPD 663,511

METERED 14,248,107 GAL

P.R.V - 22,000

Vac Truck - 10,000

Flushing - 5,000

14,285,107

UNACCOUNTED 6,283,735 GAL

WATER AND WASTEWATER REPORT

DATE: July 2017

WASTE WATER:

INFLUENT: 31,103,000 GAL 1,003,322 GPD 697 GPM

LOWEST GPD 667,000

HIGHEST GPD 1,250,000

EFFLUENT: 22,136,000 GAL 730,193 GPD 507 GPM

LOWEST GPD 573,000

HIGHEST GPD 1,023,000

WATER:

WELL (713 S. GRANT) 24,781,645 GAL

WELL (723 WWR) 17,793,000 GAL

TOTAL 20,271,645 GAL

LOWEST GPD 481,000

HIGHEST GPD 891,000

AVERAGE GPD 1,539,24

METERED 13,840,834 GAL

21,000 - P.R.V

8,000 - Vac Truck

13,867,834

UNACCOUNTED 6,401,811 GAL

WATER AND WASTEWATER REPORT

June

DATE: 2017

WASTE WATER:

INFLUENT: 3,705,000 GAL 12,350,000 GPD 0.857 GPM

LOWEST GPD 843,000

HIGHEST GPD 1,744,000

EFFLUENT: 2,388,000 GAL 795,100 GPD 552 GPM

LOWEST GPD 517

HIGHEST GPD 1,175,000

WATER:

WELL (713 S. GRANT) 2,187,019 GAL

WELL (723 WWR) 1,340,000 GAL

TOTAL 1,559,3019 GAL

LOWEST GPD 297,000

HIGHEST GPD 749,000

AVERAGE GPD 4,872,82

METERED 9,066,203 GAL

*Swimming Pool - 175,000 fill & clean off Hydrant.
9,241,203*

UNACCOUNTED 6,351,816 GAL

WATER AND WASTEWATER REPORT

DATE: June
July 2017

WASTE WATER:

INFLUENT: 3,705,000 GAL 12,350,000 GPD 0.857 GPM

LOWEST GPD 843,000

HIGHEST GPD 1,744,000

EFFLUENT: 2,388,000 GAL 795,100 GPD 552 GPM

LOWEST GPD 517

HIGHEST GPD 1,175,000

WATER:

WELL (713 S. GRANT) 2,187,019 GAL

WELL (723 WWR) 1,340,000 GAL

TOTAL 1,559,3019 GAL

LOWEST GPD 297,000

HIGHEST GPD 749,000

AVERAGE GPD 4,872,82

METERED 9,066,203 GAL

Swimming Pool - 175,000 fill & clean off Hydrant.
9,241,203

UNACCOUNTED 6,351,816 GAL

WATER AND WASTEWATER REPORT

DATE: May 2017

WASTE WATER:

INFLUENT: 28,439,000 GAL 917,387 GPD 637 GPM

LOWEST GPD 630,000

HIGHEST GPD 2,353,000

EFFLUENT: 17,279,000 GAL 557,387 GPD 387 GPM

LOWEST GPD 317,000

HIGHEST GPD 1,289,000

WATER:

WELL (713 S. GRANT) 1,201,110 GAL

WELL (723 WWR) 984,400 GAL

TOTAL 11,045,110 GAL

LOWEST GPD 227,000

HIGHEST GPD 460,000

AVERAGE GPD 356,294

METERED 5,301,368 GAL

FIRE TRAINING - 10,000 gal.

SPRINK FLUSH - 7,800 gal.

VAC TRUCK - 2,000 gal. 5,321,168

UNACCOUNTED 5,723,942 GAL

WATER AND WASTEWATER REPORT

DATE: April 2017

WASTE WATER:

INFLUENT: 2,177,000 GAL 1,259,67 GPD 504 GPM

LOWEST GPD 557,000

HIGHEST GPD 1,158,000

EFFLUENT: 1,111,000 GAL 370,333 GPD 257.2 GPM

LOWEST GPD 725,000

HIGHEST GPD 722,000

WATER:

WELL (713 S. GRANT) 1,724,397 GAL

WELL (723 WWR) 888,300 GAL

TOTAL 1,060,737 GAL

LOWEST GPD 2,255.70

HIGHEST GPD 4,47,000

AVERAGE GPD 35,358.0

METERED 5,124,705 GAL

4,000 County
2,000 VAC TRUCK

UNACCOUNTED 5,476,672 GAL

Copied
5/17/17

WATER AND WASTEWATER REPORT

DATE: MARCH 2017

WASTE WATER:

INFLUENT: 22,944,000 GAL 711,097 GPD 494 GPM

LOWEST GPD 583,000

HIGHEST GPD 862,000

EFFLUENT: 10,800,000 GAL 348,581 GPD 242 GPM

LOWEST GPD 277,000

HIGHEST GPD 486,000

WATER:

WELL (713 S. GRANT) 1653374 GAL

WELL (723 WWR) 7948,000 GAL

TOTAL 9601374 GAL

LOWEST GPD 252,000

HIGHEST GPD 423,000

AVERAGE GPD 309,722

METERED 4979853 GAL

UNACCOUNTED 4621521 GAL

WATER AND WASTEWATER REPORT

DATE: Feb 2017

WASTE WATER:

INFLUENT: 20359000 GAL 727107 GPD 505 GPM

LOWEST GPD 502,000

HIGHEST GPD 1161,000

EFFLUENT: 10,179,000 GAL 363,536 GPD 252 GPM

LOWEST GPD 195,000

HIGHEST GPD 519,000

WATER:

WELL (713 S. GRANT) 2605054 GAL

WELL (723 WWR) 7088,000 GAL

TOTAL 9693054 GAL

89 days

LOWEST GPD 245,000

HIGHEST GPD 456,000

AVERAGE GPD 334243

METERED 4644752 GAL

UNACCOUNTED 5048302 GAL

WATER AND WASTEWATER REPORT

DATE: Jan. 2017

WASTEWATER:

INFLUENT: 20,905,000 GAL 674,355 GPD 468.3 GPM

LOWEST GPD 545,000

HIGHEST GPD 849,000

EFFLUENT: 10,397,000 GAL 335,387 GPD 232.9 GPM

LOWEST GPD 247,000

HIGHEST GPD 438,000

WATER:

WELL (713 S. GRANT) 813,050/275,008 GAL - 1088058

WELL (723 WWR) 5,697,000/3966,000 GAL - 9663,000

TOTAL 10,751,058 GAL

LOWEST GPD 259,000

HIGHEST GPD 503,812

AVERAGE GPD 346,908

METERED 5,855,409 GAL

UNACCOUNTED 4,895,649 GAL

WATER AND WASTEWATER REPORT

DATE: Dec. 2016

WASTE WATER:

INFLUENT: 30,463,000 GAL 982,677 GPD 682 GPM

LOWEST GPD 679,000

HIGHEST GPD 1,547,000

EFFLUENT: 12,221,000 GAL 394,226 GPD 274 GPM

LOWEST GPD 279,000

HIGHEST GPD 500,000

WATER:

WELL (713 S. GRANT) 1,433,577 GAL

WELL (723 WWR) 884,700 GAL

TOTAL 1,028,057 GAL

LOWEST GPD 200,000

HIGHEST GPD 438,754

AVERAGE GPD 331,631

METERED 5,267,105 GAL

30,000 - Ice skating rink
5,297,105

UNACCOUNTED 4,985,473 GAL

WATER AND WASTEWATER REPORT

DATE: Nov 2010

WASTE WATER:

INFLUENT: 28,925,000 GAL 904,167 GPD 669.6 GPM

LOWEST GPD 1074,000

HIGHEST GPD 1,300,000

EFFLUENT: 13,434,000 GAL 447,800 GPD 310.9 GPM

LOWEST GPD 316,000

HIGHEST GPD 1,670,000

WATER:

WELL (713 S. GRANT) 1,480,427 GAL

WELL (723 WWR) 862,000 GAL

TOTAL 10,101,427 GAL

LOWEST GPD 2,340,000

HIGHEST GPD 494,000

AVERAGE GPD 336,714.2

METERED 4,977,157 GAL

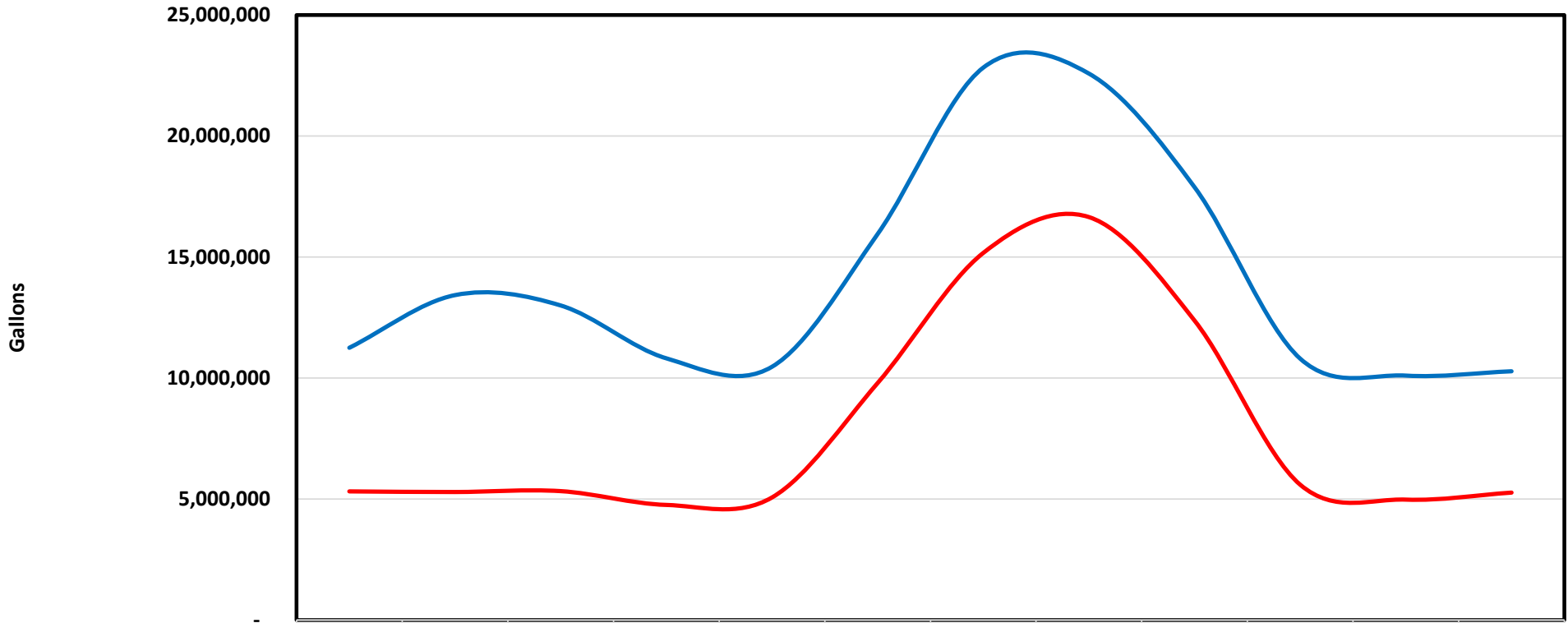
UNACCOUNTED 5,124,270 GAL

2016

Red Lodge
Water**WATER AUDIT**

| MONTH | WATER PROD OR PURCH | GALS SOLD | METERED FREE | UNMETERED ESTIMATED | COST PER THOUSAND | WW FLOWS | PRECIP INCHES | ACCOUNTED FOR WATER | GALS LOST | % LOSS | TOTAL \$ LOSS | \$ ABOVE 15% |
|----------------|---------------------|-------------------|--------------|---------------------|-------------------|--------------------|---------------|---------------------|-------------------|------------|---------------------|----------------|
| JAN | 11,251,000 | 5,317,154 | | | \$ 7.65 | 21,026,000 | | 5,317,154 | 5,933,846 | 53% | \$45,393.92 | \$ 32,483 |
| FEB | 13,427,000 | 5,291,452 | | 12,000 | \$ 7.65 | 17,752,000 | | 5,303,452 | 8,123,548 | 61% | \$62,145.14 | \$ 46,738 |
| MAR | 13,000,000 | 5,327,804 | | | \$ 7.65 | 19,155,000 | | 5,327,804 | 7,672,196 | 59% | \$58,692.30 | \$ 43,775 |
| APR | 10,815,800 | 4,758,001 | | | \$ 7.65 | 22,121,000 | | 4,758,001 | 6,057,799 | 56% | \$46,342.16 | \$ 33,931 |
| MAY | 10,465,466 | 5,064,953 | | | \$ 7.65 | 27,158,000 | | 5,064,953 | 5,400,513 | 52% | \$41,313.92 | \$ 29,305 |
| JUN | 15,949,267 | 9,792,460 | | | \$ 7.65 | 42,835,000 | | 9,792,460 | 6,156,807 | 39% | \$47,099.57 | \$ 28,798 |
| JUL | 22,826,632 | 15,169,942 | | 235,000 | \$ 7.65 | 37,084,000 | | 15,404,942 | 7,421,690 | 33% | \$56,775.93 | \$ 30,582 |
| AUG | 22,580,944 | 16,651,520 | | | \$ 7.65 | 14,365,000 | | 16,651,520 | 5,929,424 | 26% | \$45,360.09 | \$ 19,448 |
| SEP | 17,884,951 | 12,373,414 | | 16,000 | \$ 7.65 | 34,545,000 | | 12,389,414 | 5,495,537 | 31% | \$42,040.86 | \$ 21,518 |
| OCT | 10,800,429 | 5,592,654 | | | \$ 7.65 | 35,132,000 | | 5,592,654 | 5,207,775 | 48% | \$39,839.48 | \$ 27,446 |
| NOV | 10,101,427 | 4,977,157 | | | \$ 7.65 | 28,925,000 | | 4,977,157 | 5,124,270 | 51% | \$39,200.67 | \$ 27,609 |
| DEC | 10,280,578 | 5,267,105 | | 30,000 | \$ 7.65 | 30,463,000 | | 5,297,105 | 4,983,473 | 48% | \$38,123.57 | \$ 26,327 |
| TOTAL | 169,383,494 | 95,583,616 | - | 293,000 | - | 330,561,000 | - | 95,876,616 | 73,506,878 | - | \$562,327.62 | 367,960 |
| AVERAGE | 14,115,291 | 7,965,301 | | 73,250 | \$ 7.65 | 27,546,750 | | 7,989,718 | 6,125,573 | 46% | \$46,860.63 | 30,663 |

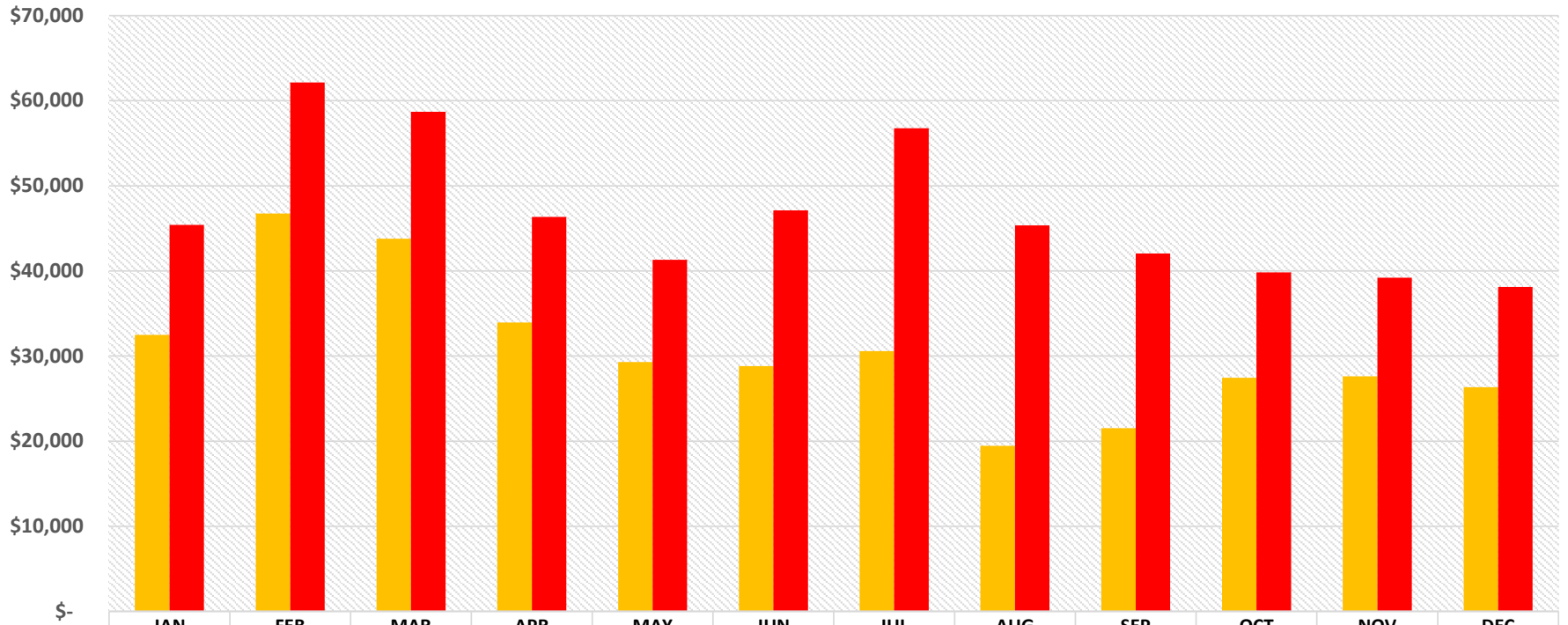
Water Pumped Compared to Water Sold



| | JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP | OCT | NOV | DEC |
|-----------------------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|
| Water Produced or Purchased | 11,251,000 | 13,427,000 | 13,000,000 | 10,815,800 | 10,465,466 | 15,949,267 | 22,826,632 | 22,580,944 | 17,884,951 | 10,800,429 | 10,101,427 | 10,280,578 |
| Water Sold | 5,317,154 | 5,291,452 | 5,327,804 | 4,758,001 | 5,064,953 | 9,792,460 | 15,169,942 | 16,651,520 | 12,373,414 | 5,592,654 | 4,977,157 | 5,267,105 |

COST OF WATER LOSS

■ COST OF LOSSES >15%
 ■ COST OF ALL LOSSES



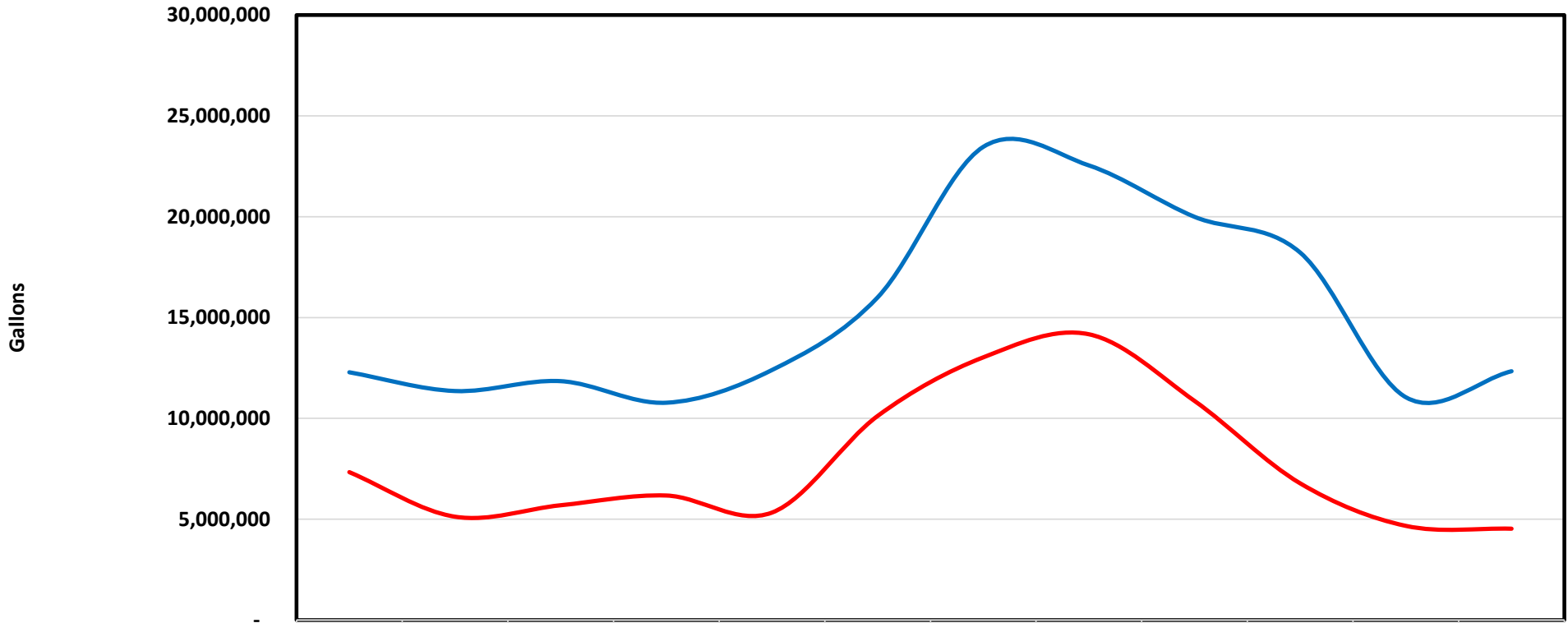
| | JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP | OCT | NOV | DEC |
|---|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
| ■ COST OF LOSSES >15% | \$32,483 | \$46,738 | \$43,775 | \$33,931 | \$29,305 | \$28,798 | \$30,582 | \$19,448 | \$21,518 | \$27,446 | \$27,609 | \$26,327 |
| ■ COST OF ALL LOSSES | \$45,393.92 | \$62,145.14 | \$58,692.30 | \$46,342.16 | \$41,313.92 | \$47,099.57 | \$56,775.93 | \$45,360.09 | \$42,040.86 | \$39,839.48 | \$39,200.67 | \$38,123.57 |

2018

Red Lodge
Water**WATER AUDIT**

| MONTH | WATER PROD OR PURCH | GALS SOLD | METERED FREE | UNMETERED ESTIMATED | COST PER THOUSAND | WW FLOWS | PRECIP INCHES | ACCOUNTED FOR WATER | GALS LOST | % LOSS | TOTAL \$ LOSS | \$ ABOVE 15% |
|----------------|---------------------|-------------------|--------------|---------------------|-------------------|--------------------|---------------|---------------------|-------------------|------------|---------------------|----------------|
| JAN | 12,286,000 | 7,334,319 | | 25,000 | \$ 7.65 | 21,161,000 | | 7,359,319 | 4,926,681 | 40% | \$37,689.11 | \$ 23,591 |
| FEB | 11,357,000 | 5,125,757 | | 24,000 | \$ 7.65 | 18,744,000 | | 5,149,757 | 6,207,243 | 55% | \$47,485.41 | \$ 34,453 |
| MAR | 11,847,000 | 5,693,409 | | 20,750 | \$ 7.65 | 23,797,000 | | 5,714,159 | 6,132,841 | 52% | \$46,916.23 | \$ 33,322 |
| APR | 10,777,000 | 6,175,948 | | 22,000 | \$ 7.65 | 26,424,000 | | 6,197,948 | 4,579,052 | 42% | \$35,029.75 | \$ 22,663 |
| MAY | 12,398,000 | 5,329,464 | | 27,000 | \$ 7.65 | 37,927,000 | | 5,356,464 | 7,041,536 | 57% | \$53,867.75 | \$ 39,641 |
| JUN | 15,998,442 | 10,120,066 | | 204,000 | \$ 7.65 | 43,181,000 | | 10,324,066 | 5,674,376 | 35% | \$43,408.98 | \$ 25,051 |
| JUL | 23,463,324 | 13,026,342 | | 205,000 | \$ 7.65 | 33,111,000 | | 13,231,342 | 10,231,982 | 44% | \$78,274.66 | \$ 51,350 |
| AUG | 22,542,611 | 14,170,653 | | 17,500 | \$ 7.65 | 24,570,000 | | 14,188,153 | 8,354,458 | 37% | \$63,911.60 | \$ 38,044 |
| SEP | 19,993,586 | 10,865,000 | | 15,000 | \$ 7.65 | 19,896,000 | | 10,880,000 | 9,113,586 | 46% | \$69,718.93 | \$ 46,776 |
| OCT | 18,219,682 | 6,777,900 | | 13,000 | \$ 7.65 | 22,308,000 | | 6,790,900 | 11,428,782 | 63% | \$87,430.18 | \$ 66,523 |
| NOV | 11,047,070 | 4,670,400 | | 18,000 | \$ 7.65 | 18,511,000 | | 4,688,400 | 6,358,670 | 58% | \$48,643.83 | \$ 35,967 |
| DEC | 12,338,640 | 4,530,505 | | 82,100 | \$ 7.65 | 18,590,000 | | 4,612,605 | 7,726,035 | 63% | \$59,104.17 | \$ 44,946 |
| TOTAL | 182,268,355 | 93,819,763 | - | 673,350 | - | 308,220,000 | - | 94,493,113 | 87,775,242 | - | \$671,480.60 | 462,328 |
| AVERAGE | 15,189,030 | 7,818,314 | | 56,113 | \$ 7.65 | 25,685,000 | | 7,874,426 | 7,314,604 | 49% | \$55,956.72 | 38,527 |

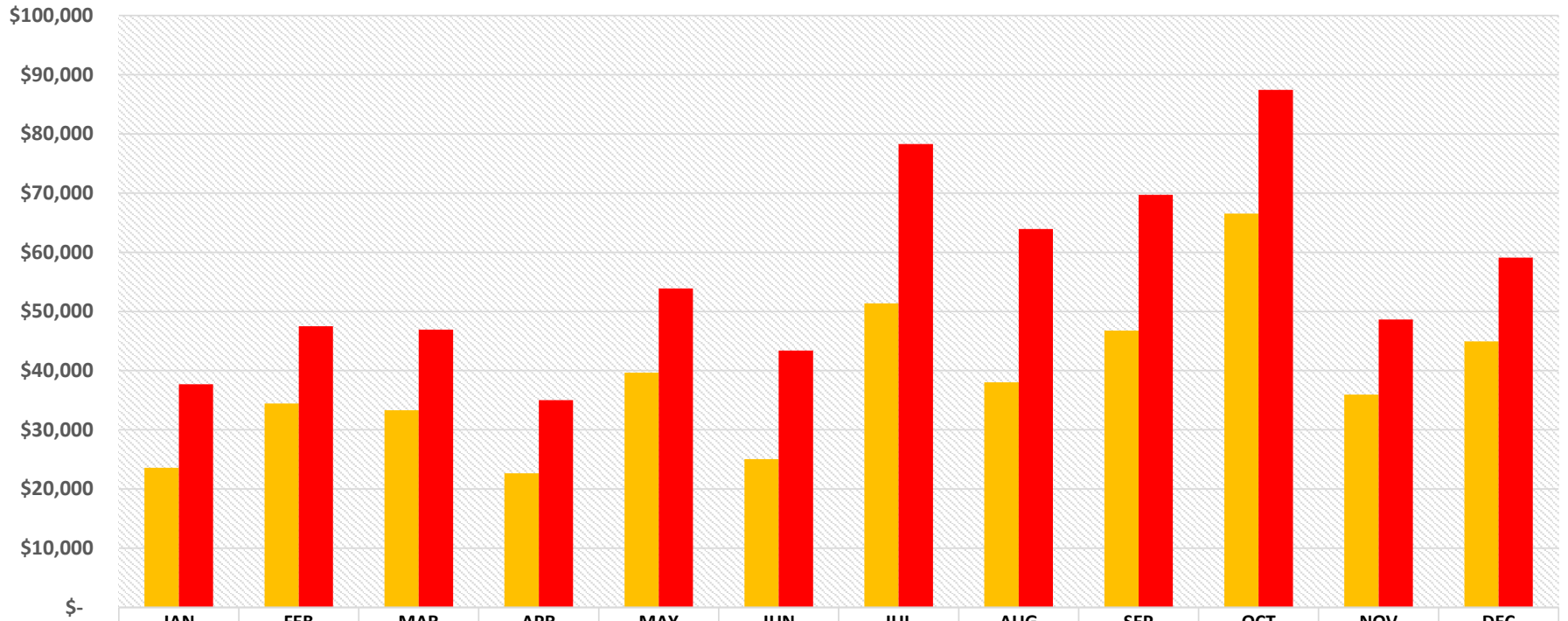
Water Pumped Compared to Water Sold



| | JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP | OCT | NOV | DEC |
|-----------------------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|
| Water Produced or Purchased | 12,286,000 | 11,357,000 | 11,847,000 | 10,777,000 | 12,398,000 | 15,998,442 | 23,463,324 | 22,542,611 | 19,993,586 | 18,219,682 | 11,047,070 | 12,338,640 |
| Water Sold | 7,334,319 | 5,125,757 | 5,693,409 | 6,175,948 | 5,329,464 | 10,120,066 | 13,026,342 | 14,170,653 | 10,865,000 | 6,777,900 | 4,670,400 | 4,530,505 |

COST OF WATER LOSS

■ COST OF LOSSES >15% ■ COST OF ALL LOSSES



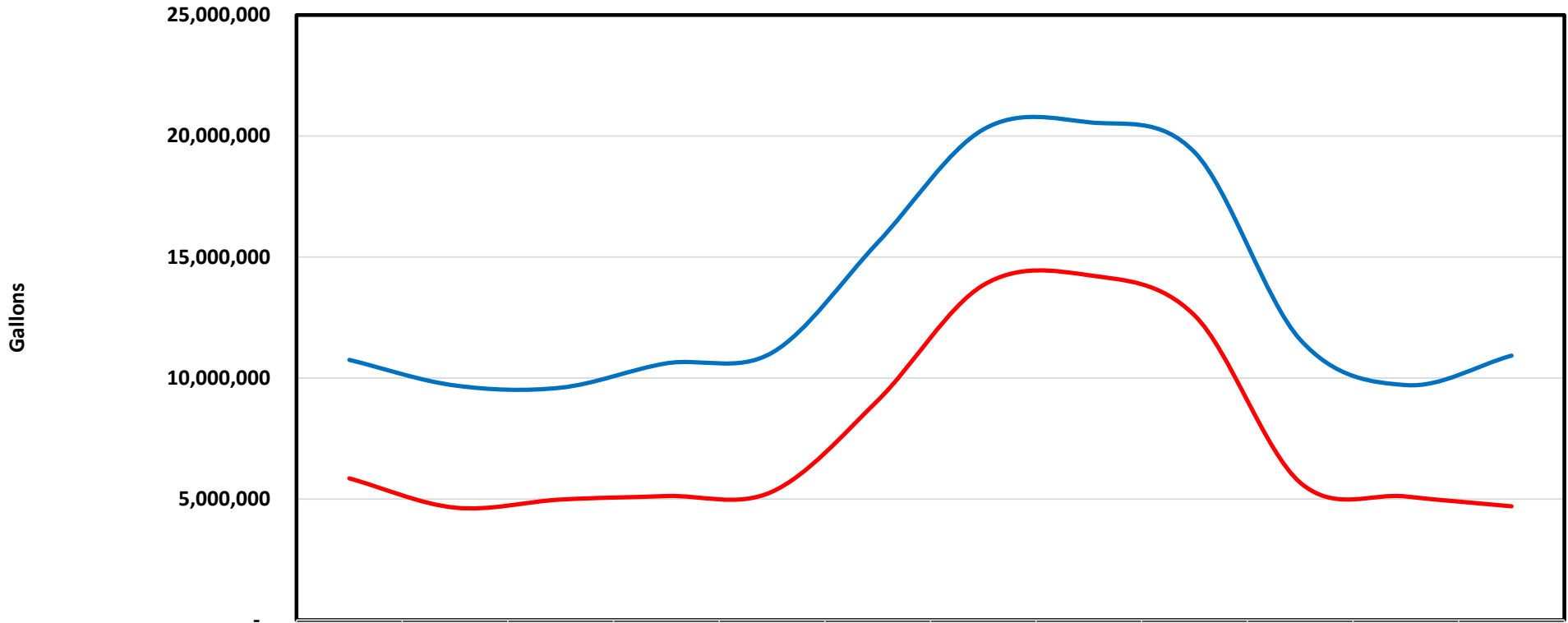
| | JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP | OCT | NOV | DEC |
|---|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
| ■ COST OF LOSSES >15% | \$23,591 | \$34,453 | \$33,322 | \$22,663 | \$39,641 | \$25,051 | \$51,350 | \$38,044 | \$46,776 | \$66,523 | \$35,967 | \$44,946 |
| ■ COST OF ALL LOSSES | \$37,689.11 | \$47,485.41 | \$46,916.23 | \$35,029.75 | \$53,867.75 | \$43,408.98 | \$78,274.66 | \$63,911.60 | \$69,718.93 | \$87,430.18 | \$48,643.83 | \$59,104.17 |

2017

Red Lodge
Water**WATER AUDIT**

| MONTH | WATER PROD OR PURCH | GALS SOLD | METERED FREE | UNMETERED ESTIMATED | COST PER THOUSAND | WW FLOWS | PRECIP INCHES | ACCOUNTED FOR WATER | GALS LOST | % LOSS | TOTAL \$ LOSS | \$ ABOVE 15% |
|----------------|---------------------|-------------------|--------------|---------------------|-------------------|--------------------|---------------|---------------------|-------------------|------------|---------------------|----------------|
| JAN | 10,751,058 | 5,855,409 | | | \$ 7.65 | 20,905,000 | | 5,855,409 | 4,895,649 | 46% | \$37,451.71 | \$ 25,115 |
| FEB | 9,693,054 | 4,644,752 | | | \$ 7.65 | 20,359,000 | | 4,644,752 | 5,048,302 | 52% | \$38,619.51 | \$ 27,497 |
| MAR | 9,601,374 | 4,979,853 | | | \$ 7.65 | 22,044,000 | | 4,979,853 | 4,621,521 | 48% | \$35,354.64 | \$ 24,337 |
| APR | 10,607,397 | 5,124,705 | | 6,000 | \$ 7.65 | 21,779,000 | | 5,130,705 | 5,476,692 | 52% | \$41,896.69 | \$ 29,725 |
| MAY | 11,045,110 | 5,301,368 | | 19,800 | \$ 7.65 | 28,439,000 | | 5,321,168 | 5,723,942 | 52% | \$43,788.16 | \$ 31,114 |
| JUN | 15,593,019 | 9,066,203 | | 125,000 | \$ 7.65 | 37,052,000 | | 9,191,203 | 6,401,816 | 41% | \$48,973.89 | \$ 31,081 |
| JUL | 20,271,645 | 13,840,834 | | 297,000 | \$ 7.65 | 31,103,000 | | 14,137,834 | 6,133,811 | 30% | \$46,923.65 | \$ 23,662 |
| AUG | 20,568,842 | 14,248,107 | | 37,000 | \$ 7.65 | 25,674,000 | | 14,285,107 | 6,283,735 | 31% | \$48,070.57 | \$ 24,468 |
| SEP | 19,329,848 | 12,589,497 | | 39,000 | \$ 7.65 | 25,572,000 | | 12,628,497 | 6,701,351 | 35% | \$51,265.34 | \$ 29,084 |
| OCT | 11,585,766 | 5,678,459 | | 39,500 | \$ 7.65 | 24,183,000 | | 5,717,959 | 5,867,807 | 51% | \$44,888.72 | \$ 31,594 |
| NOV | 9,709,861 | 5,107,452 | | 27,500 | \$ 7.65 | 2,376,200 | | 5,134,952 | 4,574,909 | 47% | \$34,998.05 | \$ 23,856 |
| DEC | 10,927,038 | 4,700,209 | | 84,000 | \$ 7.65 | 22,687,000 | | 4,784,209 | 6,142,829 | 56% | \$46,992.64 | \$ 34,454 |
| TOTAL | 159,684,012 | 91,136,848 | - | 674,800 | - | 282,173,200 | - | 91,811,648 | 67,872,364 | - | \$519,223.58 | 335,986 |
| AVERAGE | 13,307,001 | 7,594,737 | | 74,978 | \$ 7.65 | 23,514,433 | | 7,650,971 | 5,656,030 | 45% | \$43,268.63 | 27,999 |

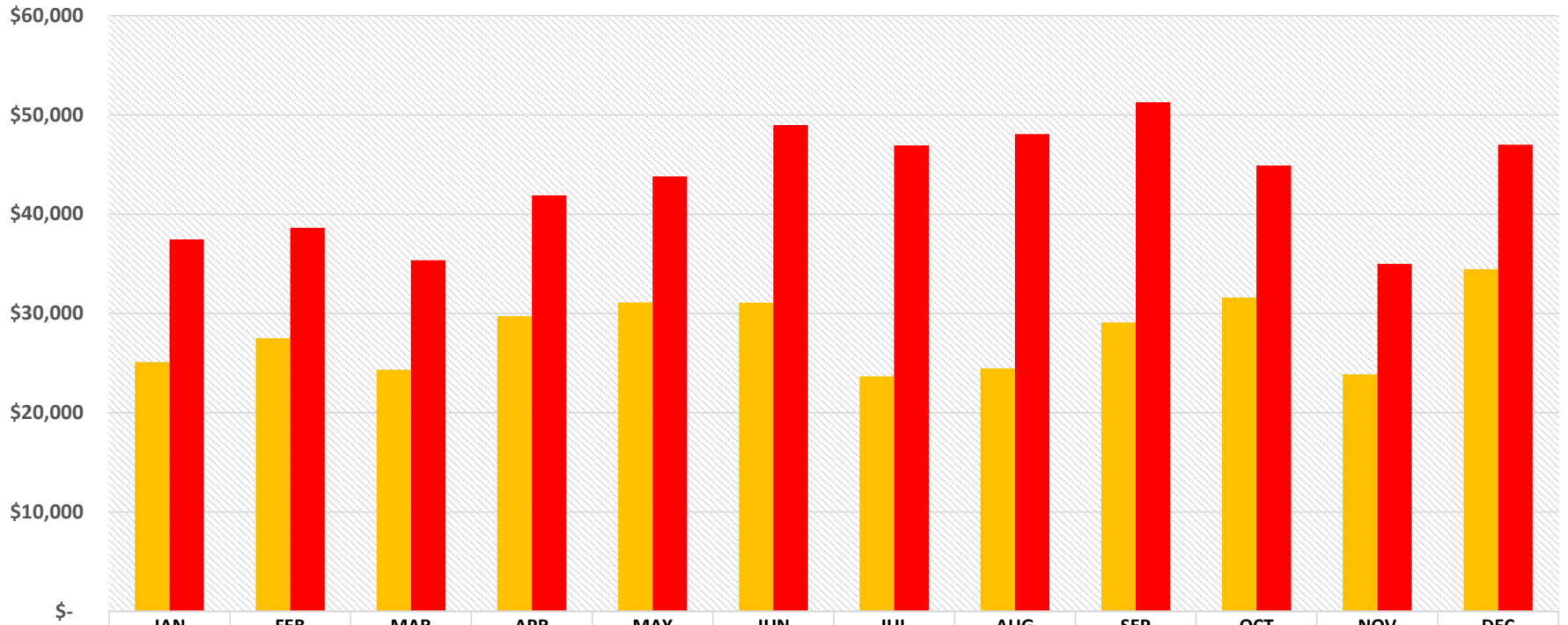
Water Pumped Compared to Water Sold



| | JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP | OCT | NOV | DEC |
|-----------------------------|------------|-----------|-----------|------------|------------|------------|------------|------------|------------|------------|-----------|------------|
| Water Produced or Purchased | 10,751,058 | 9,693,054 | 9,601,374 | 10,607,397 | 11,045,110 | 15,593,019 | 20,271,645 | 20,568,842 | 19,329,848 | 11,585,766 | 9,709,861 | 10,927,038 |
| Water Sold | 5,855,409 | 4,644,752 | 4,979,853 | 5,124,705 | 5,301,368 | 9,066,203 | 13,840,834 | 14,248,107 | 12,589,497 | 5,678,459 | 5,107,452 | 4,700,209 |

COST OF WATER LOSS

■ COST OF LOSSES >15%
 ■ COST OF ALL LOSSES



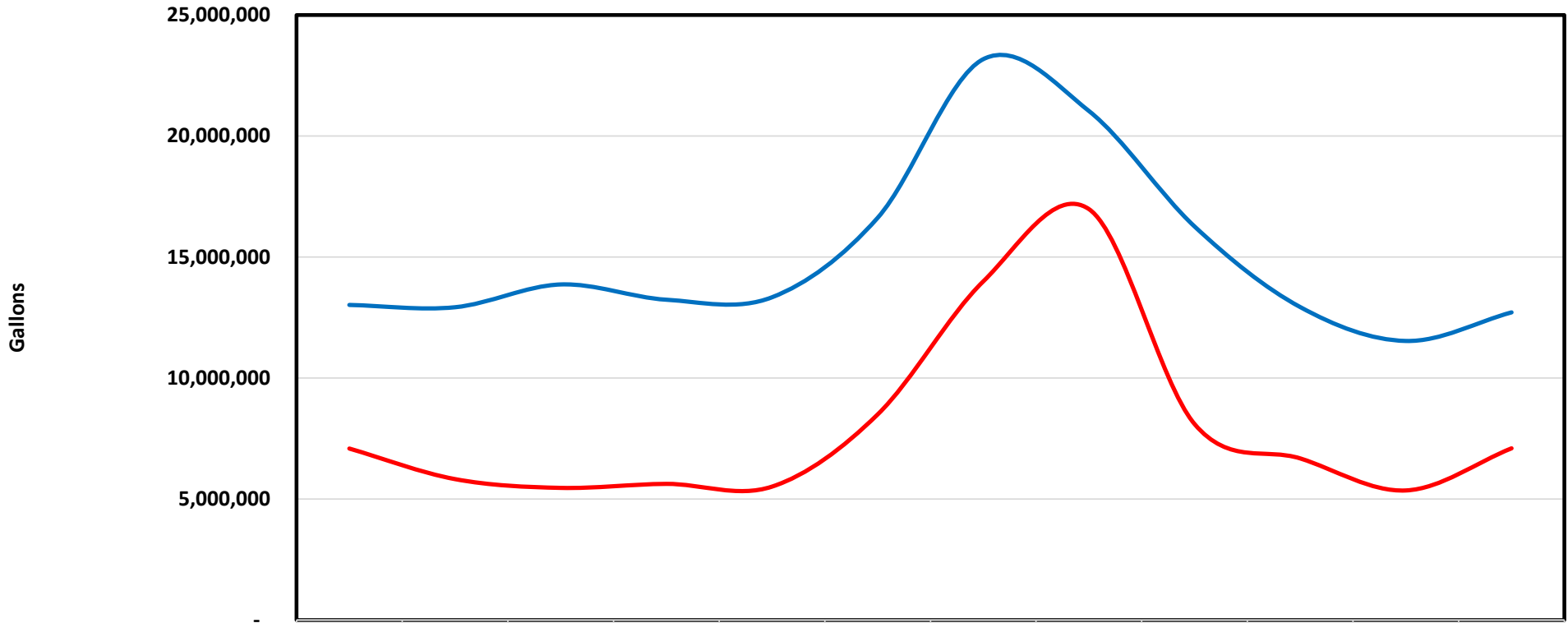
| | JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP | OCT | NOV | DEC |
|-----------------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
| ■ COST OF LOSSES >15% | \$25,115 | \$27,497 | \$24,337 | \$29,725 | \$31,114 | \$31,081 | \$23,662 | \$24,468 | \$29,084 | \$31,594 | \$23,856 | \$34,454 |
| ■ COST OF ALL LOSSES | \$37,451.71 | \$38,619.51 | \$35,354.64 | \$41,896.69 | \$43,788.16 | \$48,973.89 | \$46,923.65 | \$48,070.57 | \$51,265.34 | \$44,888.72 | \$34,998.05 | \$46,992.64 |

2014

Red Lodge
Water**WATER AUDIT**

| MONTH | WATER PROD OR PURCH | GALS SOLD | METERED FREE | UNMETERED ESTIMATED | COST PER THOUSAND | WW FLOWS | PRECIP INCHES | ACCOUNTED FOR WATER | GALS LOST | % LOSS | TOTAL \$ LOSS | \$ ABOVE 15% |
|----------------|---------------------|-------------------|--------------|---------------------|-------------------|--------------------|---------------|---------------------|-------------------|------------|---------------------|----------------|
| JAN | 13,021,000 | 7,087,105 | | | \$ 7.65 | 19,501,000 | 1.65 | 7,087,105 | 5,933,895 | 46% | \$45,394.30 | \$ 30,453 |
| FEB | 12,926,000 | 5,824,506 | | | \$ 7.65 | 19,407,000 | 1.43 | 5,824,506 | 7,101,494 | 55% | \$54,326.43 | \$ 39,494 |
| MAR | 13,868,000 | 5,461,906 | | | \$ 7.65 | 26,297,000 | 3.28 | 5,461,906 | 8,406,094 | 61% | \$64,306.62 | \$ 48,393 |
| APR | 13,237,000 | 5,627,609 | | | \$ 7.65 | 42,537,000 | 2.69 | 5,627,609 | 7,609,391 | 57% | \$58,211.84 | \$ 43,022 |
| MAY | 13,337,000 | 5,513,606 | | 186,120 | \$ 7.65 | 37,838,000 | 2.33 | 5,699,726 | 7,637,274 | 57% | \$58,425.15 | \$ 43,121 |
| JUN | 16,618,000 | 8,494,113 | | 186,120 | \$ 7.65 | 35,727,000 | 1.19 | 8,680,233 | 7,937,767 | 48% | \$60,723.92 | \$ 41,655 |
| JUL | 23,176,000 | 13,993,873 | | 186,120 | \$ 7.65 | 34,534,000 | 0.41 | 14,179,993 | 8,996,007 | 39% | \$68,819.45 | \$ 42,225 |
| AUG | 21,035,000 | 16,981,177 | | 186,120 | \$ 7.65 | 29,241,000 | 2.18 | 17,167,297 | 3,867,703 | 18% | \$29,587.93 | \$ 5,450 |
| SEP | 16,262,000 | 8,098,856 | | 186,120 | \$ 7.65 | 31,846,000 | 0.98 | 8,284,976 | 7,977,024 | 49% | \$61,024.23 | \$ 42,364 |
| OCT | 12,933,000 | 6,679,606 | | | \$ 7.65 | 25,488,000 | 0.14 | 6,679,606 | 6,253,394 | 48% | \$47,838.46 | \$ 32,998 |
| NOV | 11,533,000 | 5,355,954 | | | \$ 7.65 | 14,034,000 | 2.93 | 5,355,954 | 6,177,046 | 54% | \$47,254.40 | \$ 34,020 |
| DEC | 12,714,000 | 7,096,415 | | | \$ 7.65 | 22,638,000 | 1.38 | 7,096,415 | 5,617,585 | 44% | \$42,974.53 | \$ 28,385 |
| TOTAL | 180,660,000 | 96,214,726 | - | 930,600 | - | 339,088,000 | 20.59 | 97,145,326 | 83,514,674 | - | \$638,887.26 | 431,580 |
| AVERAGE | 15,055,000 | 8,017,894 | | 186,120 | \$ 7.65 | 28,257,333 | 1.72 | 8,095,444 | 6,959,556 | 48% | \$53,240.60 | 35,965 |

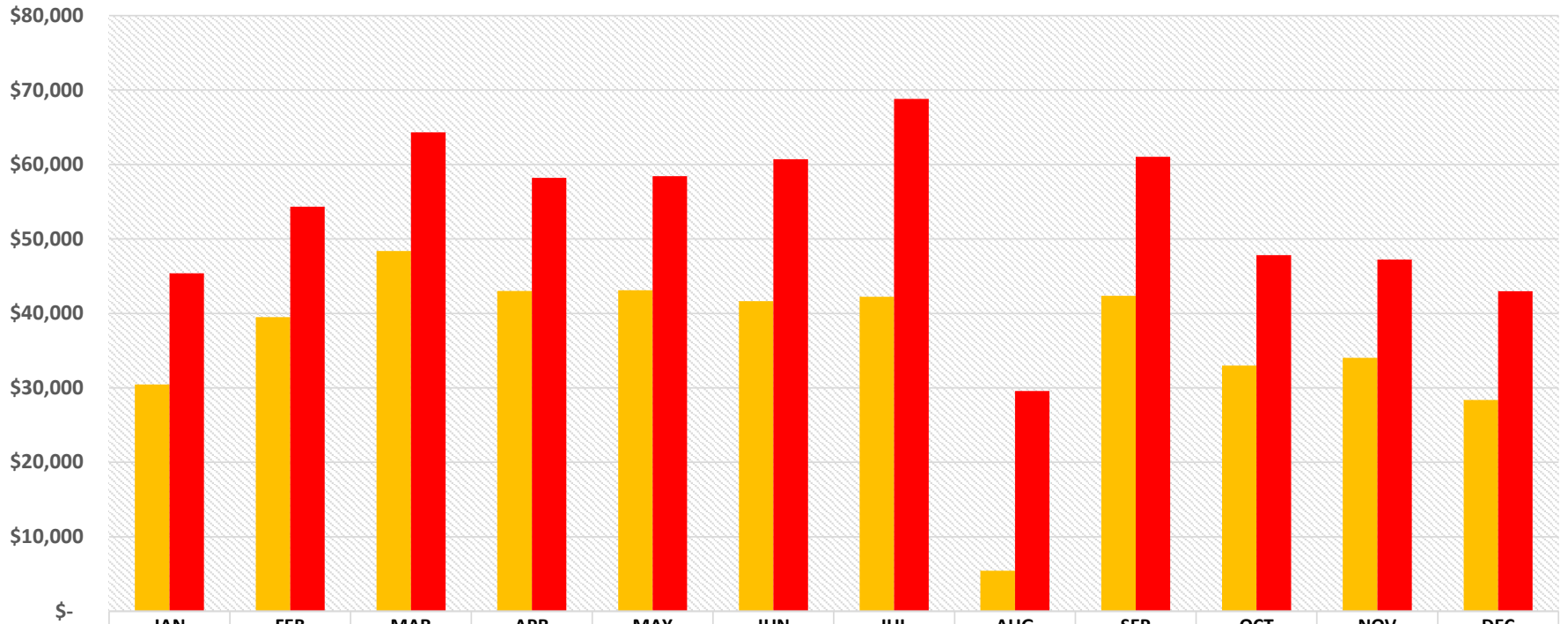
Water Pumped Compared to Water Sold



| | JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP | OCT | NOV | DEC |
|-----------------------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|
| Water Produced or Purchased | 13,021,000 | 12,926,000 | 13,868,000 | 13,237,000 | 13,337,000 | 16,618,000 | 23,176,000 | 21,035,000 | 16,262,000 | 12,933,000 | 11,533,000 | 12,714,000 |
| Water Sold | 7,087,105 | 5,824,506 | 5,461,906 | 5,627,609 | 5,513,606 | 8,494,113 | 13,993,873 | 16,981,177 | 8,098,856 | 6,679,606 | 5,355,954 | 7,096,415 |

COST OF WATER LOSS

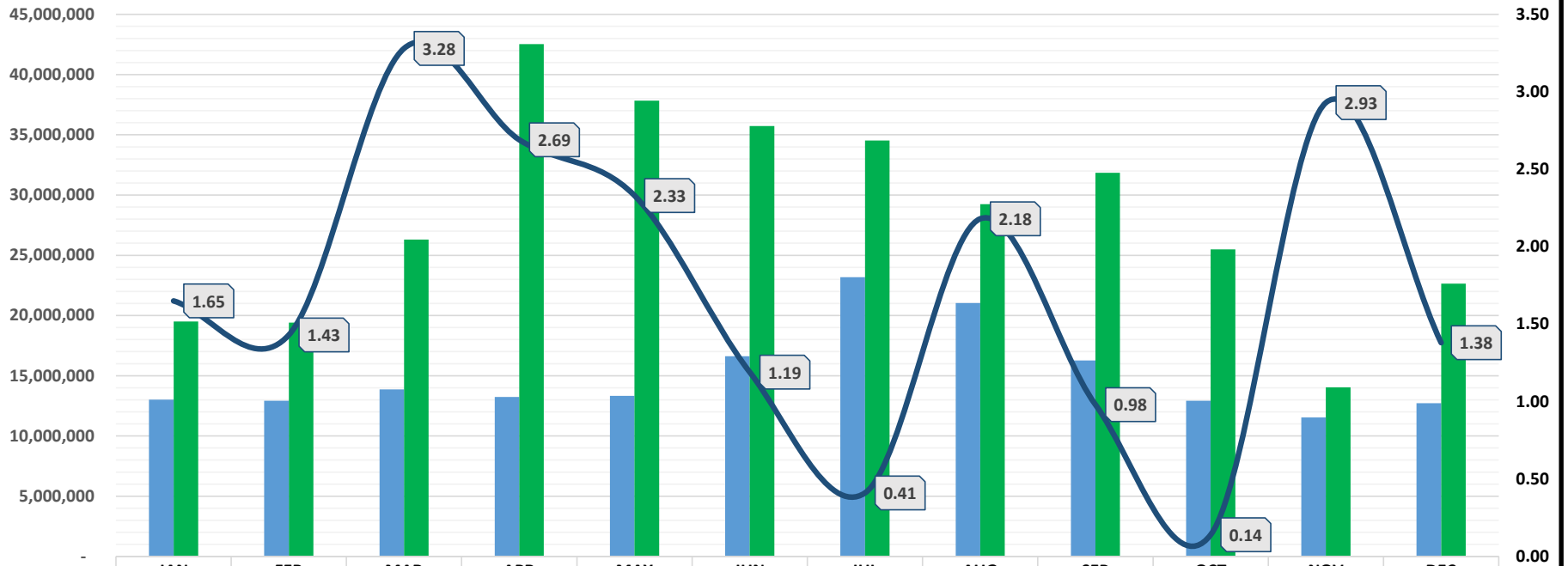
■ COST OF LOSSES >15%
 ■ COST OF ALL LOSSES



| | JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP | OCT | NOV | DEC |
|---|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
| ■ COST OF LOSSES >15% | \$30,453 | \$39,494 | \$48,393 | \$43,022 | \$43,121 | \$41,655 | \$42,225 | \$5,450 | \$42,364 | \$32,998 | \$34,020 | \$28,385 |
| ■ COST OF ALL LOSSES | \$45,394.30 | \$54,326.43 | \$64,306.62 | \$58,211.84 | \$58,425.15 | \$60,723.92 | \$68,819.45 | \$29,587.93 | \$61,024.23 | \$47,838.46 | \$47,254.40 | \$42,974.53 |

INFLOW & INFILTRATION

■ WATER FLOWS
 ■ WW FLOWS
 — PRECIPITATION



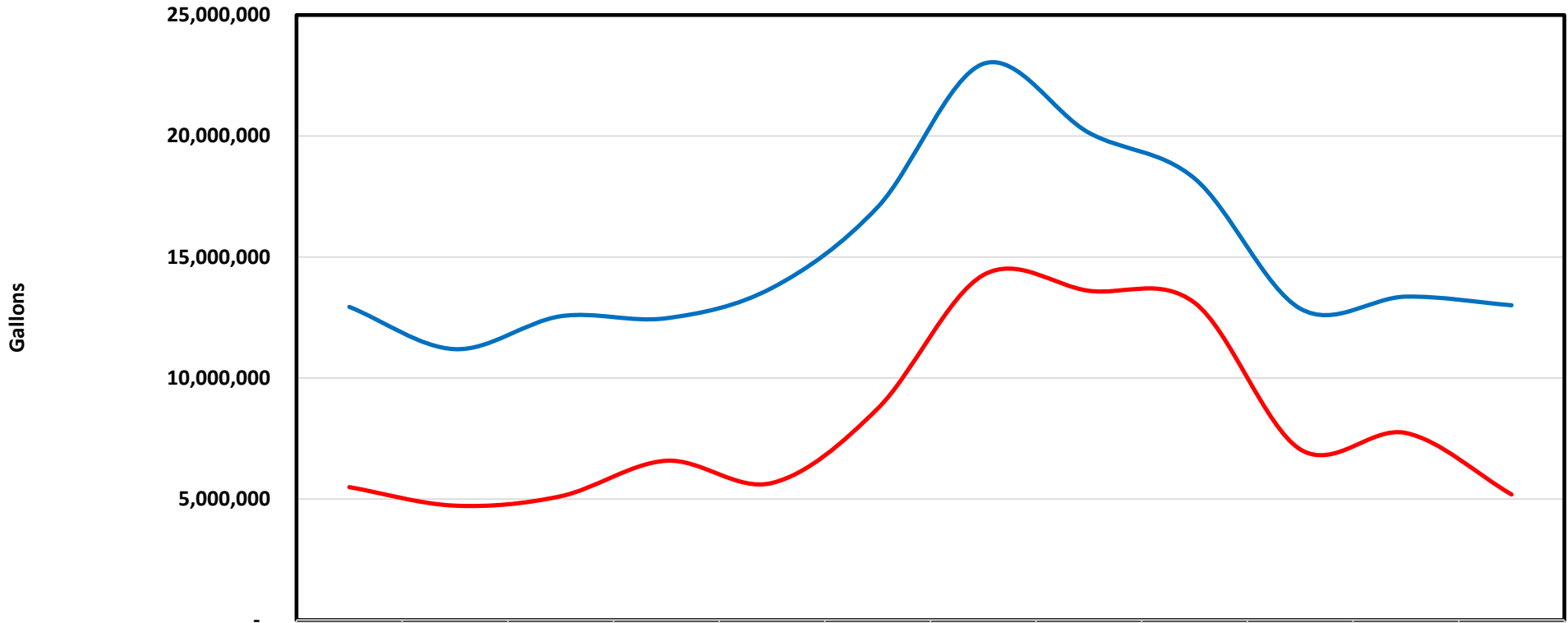
| | JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP | OCT | NOV | DEC |
|---|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|
| ■ WATER FLOWS | 13,021,000 | 12,926,000 | 13,868,000 | 13,237,000 | 13,337,000 | 16,618,000 | 23,176,000 | 21,035,000 | 16,262,000 | 12,933,000 | 11,533,000 | 12,714,000 |
| ■ WW FLOWS | 19,501,000 | 19,407,000 | 26,297,000 | 42,537,000 | 37,838,000 | 35,727,000 | 34,534,000 | 29,241,000 | 31,846,000 | 25,488,000 | 14,034,000 | 22,638,000 |
| — PRECIPITATION | 1.65 | 1.43 | 3.28 | 2.69 | 2.33 | 1.19 | 0.41 | 2.18 | 0.98 | 0.14 | 2.93 | 1.38 |

2015

Red Lodge
Water**WATER AUDIT**

| MONTH | WATER PROD OR PURCH | GALS SOLD | METERED FREE | UNMETERED ESTIMATED | COST PER THOUSAND | WW FLOWS | PRECIP INCHES | ACCOUNTED FOR WATER | GALS LOST | % LOSS | TOTAL \$ LOSS | \$ ABOVE 15% |
|----------------|---------------------|------------------|--------------|---------------------|-------------------|--------------------|---------------|---------------------|-------------------|------------|---------------------|----------------|
| JAN | 12,941,000 | 5,493,063 | | | \$ 7.65 | 23,493,000 | 0.70 | 5,493,063 | 7,447,937 | 58% | \$56,976.72 | \$ 42,127 |
| FEB | 11,194,000 | 4,727,463 | | | \$ 7.65 | 21,400,000 | 2.14 | 4,727,463 | 6,466,537 | 58% | \$49,469.01 | \$ 36,624 |
| MAR | 12,554,000 | 5,115,907 | | | \$ 7.65 | 23,674,000 | 0.51 | 5,115,907 | 7,438,093 | 59% | \$56,901.41 | \$ 42,496 |
| APR | 12,472,000 | 6,582,590 | | | \$ 7.65 | 20,362,000 | 1.91 | 6,582,590 | 5,889,410 | 47% | \$45,053.99 | \$ 30,742 |
| MAY | 13,723,000 | 5,663,859 | | 18,500 | \$ 7.65 | 29,236,000 | 2.05 | 5,682,359 | 8,040,641 | 59% | \$61,510.90 | \$ 45,764 |
| JUN | 17,061,000 | 8,734,861 | | 8,000 | \$ 7.65 | 36,877,000 | 2.23 | 8,742,861 | 8,318,139 | 49% | \$63,633.76 | \$ 44,056 |
| JUL | 22,985,000 | 14,255,510 | | | \$ 7.65 | 30,531,000 | 1.38 | 14,255,510 | 8,729,490 | 38% | \$66,780.60 | \$ 40,405 |
| AUG | 20,135,000 | 13,606,192 | | 12,000 | \$ 7.65 | 27,883,000 | 1.39 | 13,618,192 | 6,516,808 | 32% | \$49,853.58 | \$ 26,749 |
| SEP | 18,247,000 | 13,112,755 | | 38,500 | \$ 7.65 | 22,537,000 | 0.16 | 13,151,255 | 5,095,745 | 28% | \$38,982.45 | \$ 18,044 |
| OCT | 12,869,000 | 7,055,071 | | 60,000 | \$ 7.65 | 23,154,000 | 2.03 | 7,115,071 | 5,753,929 | 45% | \$44,017.56 | \$ 29,250 |
| NOV | 13,365,000 | 7,730,801 | | 89,000 | \$ 7.65 | 22,896,000 | 0.48 | 7,819,801 | 5,545,199 | 41% | \$42,420.77 | \$ 27,084 |
| DEC | 13,008,000 | 5,189,352 | | 225,000 | \$ 7.65 | 22,240,000 | | 5,414,352 | 7,593,648 | 58% | \$58,091.41 | \$ 43,165 |
| TOTAL | 180,554,000 | | - | 451,000 | - | 304,283,000 | 14.98 | 97,718,424 | 82,835,576 | - | \$633,692.16 | 426,506 |
| AVERAGE | 15,046,167 | 8,105,619 | | 64,429 | \$ 7.65 | 25,356,917 | 1.36 | 8,143,202 | 6,902,965 | 48% | \$52,807.68 | 35,542 |

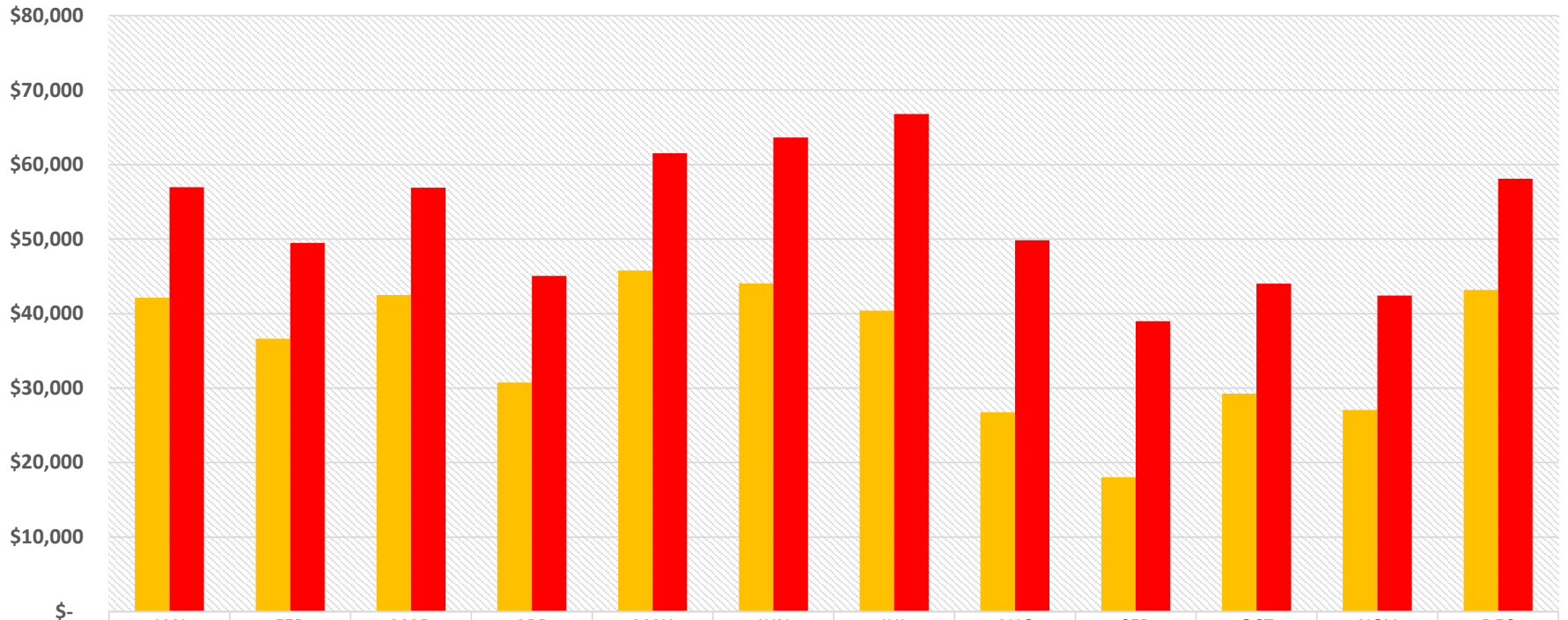
Water Pumped Compared to Water Sold



| | JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP | OCT | NOV | DEC |
|-----------------------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|
| Water Produced or Purchased | 12,941,000 | 11,194,000 | 12,554,000 | 12,472,000 | 13,723,000 | 17,061,000 | 22,985,000 | 20,135,000 | 18,247,000 | 12,869,000 | 13,365,000 | 13,008,000 |
| Water Sold | 5,493,063 | 4,727,463 | 5,115,907 | 6,582,590 | 5,663,859 | 8,734,861 | 14,255,510 | 13,606,192 | 13,112,755 | 7,055,071 | 7,730,801 | 5,189,352 |

COST OF WATER LOSS

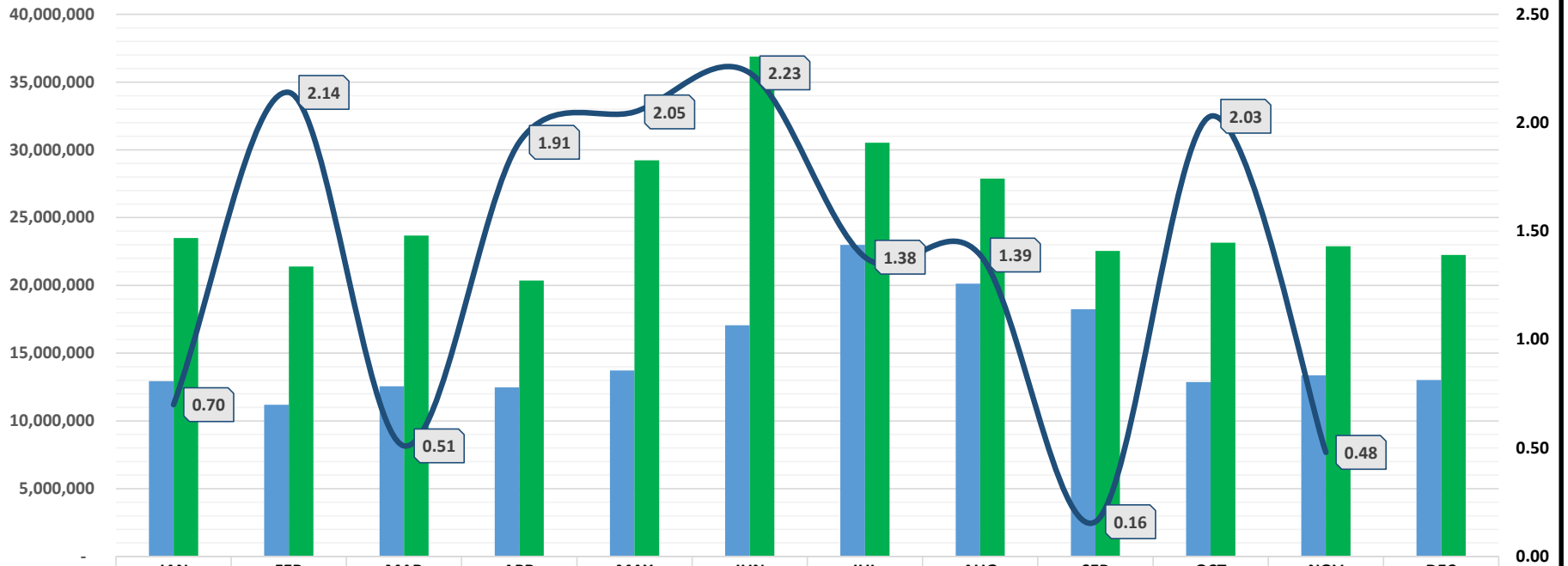
■ COST OF LOSSES >15%
 ■ COST OF ALL LOSSES



| | JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP | OCT | NOV | DEC |
|---|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
| ■ COST OF LOSSES >15% | \$42,127 | \$36,624 | \$42,496 | \$30,742 | \$45,764 | \$44,056 | \$40,405 | \$26,749 | \$18,044 | \$29,250 | \$27,084 | \$43,165 |
| ■ COST OF ALL LOSSES | \$56,976.72 | \$49,469.01 | \$56,901.41 | \$45,053.99 | \$61,510.90 | \$63,633.76 | \$66,780.60 | \$49,853.58 | \$38,982.45 | \$44,017.56 | \$42,420.77 | \$58,091.41 |

INFLOW & INFILTRATION

■ WATER FLOWS
 ■ WW FLOWS
 — PRECIPITATION



| | | | | | | | | | | | | | |
|---|----------------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|
| ■ | WATER FLOWS | 12,941,000 | 11,194,000 | 12,554,000 | 12,472,000 | 13,723,000 | 17,061,000 | 22,985,000 | 20,135,000 | 18,247,000 | 12,869,000 | 13,365,000 | 13,008,000 |
| ■ | WW FLOWS | 23,493,000 | 21,400,000 | 23,674,000 | 20,362,000 | 29,236,000 | 36,877,000 | 30,531,000 | 27,883,000 | 22,537,000 | 23,154,000 | 22,896,000 | 22,240,000 |
| — | PRECIPITATION | 0.70 | 2.14 | 0.51 | 1.91 | 2.05 | 2.23 | 1.38 | 1.39 | 0.16 | 2.03 | 0.48 | |

Appendix D:

Population & Census Data



COMMUNITY DEVELOPMENT DIVISION



Census and Target Rate 2010 Info

For 2018 application submissions for TSEP or CDBG, please see the [2015 American Community Survey](#) data.

Search below for 2010 American Communities Survey data used to calculate target rates when applying to the **Treasure State Endowment Program** and **Community Development Block Group Grant Program**.

Select a Location:

City/Designated location or County

| | |
|--|----------------|
| City | Red Lodge city |
| County | Carbon County |
| Total Population | 2,125 |
| Total Households | 1,082 |
| Median Household Income | \$50,352 |
| Low & Moderate Income Percent | 37.94% |
| Percent Poverty | 18.2 % |

Target Rates

| | |
|--------------------------------|---------|
| Water & Waste Water | \$96.51 |
| Water Only | \$58.74 |
| WasteWater Only | \$37.76 |
| Solid Waste Only | \$12.59 |

Amounts are computed using the 2010 census and target percentage rationale reviewed biennially by Commerce. The target percentages are:

- 2.3% combined (water and wastewater)
- 1.4% for water alone
- 0.9% for wastewater alone
- 0.3% for solid waste

For example: Community median household income is \$25,000 and the residents pay both water and wastewater rates, the calculation would be: \$25,000 times 2.3% divided by 12 equals monthly target rate of \$47.92. $(25,000 \times 2.3\%) / 12 = \47.92

Having trouble finding data for your community? Some communities may not be listed in the resources above because the American Community Survey (ACS) did not provide 2010 MHI data for those areas. Additionally, some 2000 Census Designated Place areas have updated boundaries in the 2010 ACS data. Please contact us at (406) 841-2770 or email [TSEP](#) or [CDBG](#) if you have any questions about this information.

Mapping

To see maps of the City/Town/CDP or County in which you are interested, please go to <http://ceic.mt.gov/>. For more information about the maps or tools available, please contact the Census and Economic Information Bureau at (406) 841-2713 or email ceic@mt.gov.

Contacts

| | |
|--|--------------|
| Treasure State Endowment Program (TSEP) | 406 841-2770 |
| Community Development Block Grant Program (CDBG) | 406 841-2770 |
| Census & Economic Information Center | 406 841-2740 |

Definitions

Census Designated Place (CDP): Census designated places (CDPs) have been created for each decennial census as the statistical counterparts of incorporated places. CDPs are delineated to provide census data for concentrations of population, housing, and commercial structures that are identifiable by name but are not within an incorporated place. CDP boundaries usually are defined in cooperation with state, local, and tribal officials. These boundaries, which usually coincide with visible features or the boundary of an adjacent incorporated place or other legal entity boundary, have no legal status, nor do these places have officials elected to serve traditional municipal functions.

Household: A household includes all the people who occupy a housing unit as their usual place of residence.

Income of households: This includes the income of the householder and all other individuals 15 years old and over in the household, whether they are related to the householder or not.

Low and Moderate Income Percent: Low and Moderate Income Percent is calculated by U.S. Housing and Urban Development (HUD) using data from the U.S. Census Bureau's Decennial Census, specifically for the Community Development Block Grant Program (CDBG). LMI families are defined as those families whose income does not exceed 80% of the county median income for the previous year or 80% of the median income of the entire non-metropolitan area of the State of Montana, whichever is higher.

Median income: The median income divides the income distribution into two equal groups, one having incomes above the median, and other having incomes below the median.

Notes: Total Population and Total Households are from Summary File (SF) 1, 100% data. Poverty Rates and Median Household Income are from Summary File (SF) 3, Sample data. Low and Moderate Income Percentage was developed by HUD using Census 2010 data.

Sources: U.S. Census Bureau & HUD

Median Household Income

Census Bureau, American Community Survey 2006 - 2010 Estimates

Total Population & Households

U.S. Census Bureau, 2010 Census - Summary File 1 (SF1) 100% Data

Low to Moderate Income Percent

HUD 2014 Low and Moderate Income Data

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COMMUNITY DEVELOPMENT DIVISION



Census and Target Rate 2015 Info

CDD Target Rate Calculation Resource

The Community Development Division (CDD) has updated the U.S. Census Bureau's American Communities Survey (ACS) data set 2011-2015 for the calculation of local government target rates. The Treasure State Endowment Program (TSEP) and Community Development Block Grant (CDBG) programs use ACS information as the base data set to calculate applicant target rates for community infrastructure systems.

These calculated rates, along with other demographic information, are components of the review and analysis of applications submitted to the programs for funding requests. Applications to be submitted in 2018 or later for TSEP or CDBG programs must use the 2015 ACS data for the calculation of target rates for an applicant.

Search below for 2015 American Communities Survey data used to calculate target rates when applying to the **Treasure State Endowment Program** and **Community Development Block Group Grant Program**.

Select a Location:

City/Designated location or County

| | |
|-------------------------------|----------------|
| City | Red Lodge city |
| County | Carbon County |
| Total Population | 2,236 |
| Total Households | 1,038 |
| Median Household Income | \$42,500 |
| Low & Moderate Income Percent | 48.97% |
| Percent Poverty | 20.6 % |

Target Rates

| | |
|---------------------|---------|
| Water & Waste Water | \$81.46 |
| Water Only | \$49.58 |
| WasteWater Only | \$31.88 |
| Solid Waste Only | \$10.63 |

Amounts are computed using the 2015 census and target percentage rationale reviewed biennially by Commerce. The target percentages are:

- 2.3% combined (water and wastewater)
- 1.4% for water alone
- 0.9% for wastewater alone
- 0.3% for solid waste

For example: Community median household income is \$25,000 and the residents pay both water and wastewater rates, the calculation would be: \$25,000 times 2.3% divided by 12 equals monthly target rate of \$47.92. $(25,000 \times 2.3\%) / 12 = \47.92

Having trouble finding data for your community? Some communities may not be listed in the resources above because the American Community Survey (ACS) did not provide 2015 MHI data for those areas. Please contact us at (406) 841-2770 or email TSEP or CDBG if you have any questions about this information.

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Low and Moderate Income Percent: Low and Moderate Income Percent is calculated by U.S. Housing and Urban Development (HUD) using data from the U.S. Census Bureau's Decennial Census, specifically for the Community Development Block Grant Program (CDBG). LMI families are defined as those families whose income does not exceed 80% of the county median income for the previous year or 80% of the median income of the entire non-metropolitan area of the State of Montana, whichever is higher.

Median income: The median income divides the income distribution into two equal groups, one having incomes above the median, and other having incomes below the median.

Notes: Total Population and Total Households are from Summary File (SF) 1, 100% data. Poverty Rates and Median Household Income are from Summary File (SF) 3, Sample data. Low and Moderate Income Percentage was developed by HUD using Census 2010 data.

Sources: U.S. Census Bureau & HUD
Median Household Income
Census Bureau, American Community Survey 2011 - 2015 Estimates

Total Population & Households
U.S. Census Bureau, 2015 Census - Summary File 1 (SF1) 100% Data

Low to Moderate Income Percent
HUD 2015 Low and Moderate Income Data

Target Rates for 2010 Census Data

[View 2010 Census data rates](#) for comparison purposes.

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>
 Red Lodge, Montana

Red Lodge, Montana Population: Census 2010 and 2000 Interactive Map, Demographics, Statistics, Quick Facts



Compare population statistics about Red Lodge, MT by race, age, gender, Latino/Hispanic origin etc. [CensusViewer](#) delivers detailed demographics and population statistics from the 2010 Census, 2000 Census, American Community Survey (ACS), registered voter files, commercial data sources and more.

Experience breakthrough technology for census data discovery, population analysis and visualization over Bing Maps. Visually "fly over" a state, viewing in great detail the census blocks, census tracts, cities, counties and various political districts in your selection or "zoom down" to the street level to get demographic statistics and information about the population in an individual census block or census tract.

Click on any map link to see our blazing-fast data visualization over Bing Maps in action. [Read more](#) about the unprecedented demographic insight and analytical power of CensusViewer interactive maps.

[CensusViewer maps, data and statistics pages for all states, counties and cities.](#)

| Red Lodge, Montana - Overview | 2010 Census | | 2000 Census | | 2000-2010 Change | |
|--|-------------|-------------|-------------|-------------|------------------|-------------|
| | Counts | Percentages | Counts | Percentages | Change | Percentages |
| Total Population | 2,125 | 100.00% | 2,177 | 100.00% | -52 | -2.39% |
| Population by Race | | | | | | |
| American Indian and Alaska native alone | 13 | 0.61% | 24 | 1.10% | -11 | -45.83% |
| Asian alone | 6 | 0.28% | 10 | 0.46% | -4 | -40.00% |
| Black or African American alone | 9 | 0.42% | 9 | 0.41% | 0 | 0% |
| Native Hawaiian and Other Pacific native alone | 2 | 0.09% | 0 | 0% | 0 | 0% |
| Some other race alone | 13 | 0.61% | 10 | 0.46% | 3 | 30.00% |
| Two or more races | 35 | 1.65% | 31 | 1.42% | 4 | 12.90% |
| White alone | 2,047 | 96.33% | 2,093 | 96.14% | -46 | -2.20% |
| Population by Hispanic or Latino Origin (of any race) | | | | | | |
| Persons Not of Hispanic or Latino Origin | 2,085 | 98.12% | 2,134 | 98.02% | -49 | -2.30% |
| Persons of Hispanic or Latino Origin | 40 | 1.88% | 43 | 1.98% | -3 | -6.98% |

Population by Gender

| | | | | | | |
|--------|-------|--------|-------|--------|-----|--------|
| Female | 1,075 | 50.59% | 1,125 | 51.68% | -50 | -4.44% |
| Male | 1,050 | 49.41% | 1,052 | 48.32% | -2 | -0.19% |

Population by Age

| | | | | | | |
|---------------------------|-------|--------|-------|--------|-----|---------|
| Persons 0 to 4 years | 63 | 2.96% | 96 | 4.41% | -33 | -34.38% |
| Persons 5 to 17 years | 294 | 13.84% | 343 | 15.76% | -49 | -14.29% |
| Persons 18 to 64 years | 1,347 | 63.39% | 1,316 | 60.45% | 31 | 2.36% |
| Persons 65 years and over | 421 | 19.81% | 422 | 19.38% | -1 | -0.24% |

[Red Lodge, Montana Registered Voters - Overview Statistics and Quick Facts](#)

[CensusViewer - Graphs & Tables: Race by Age](#)

[CensusViewer - Graphs & Tables: Hispanic/Latino Origin](#)

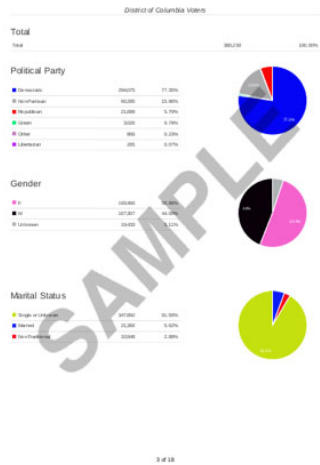
X
Download Reports for Red Lodge, Montana



[Click here to download a sample Census 2010/2000 Race PDF.](#)



[Click here to download a sample Census 2010/2000 Latino PDF.](#)



[Click here to download a sample Voter PDF.](#)

Here's what you get...

PDF Reports for:

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2. Census 2010/2000 Latino for Red Lodge, Montana [\[SAMPLE\]](#)
3. Voter for Red Lodge, Montana [\[SAMPLE\]](#)

CSV Files for:

1. Census 2010 Race for Red Lodge, Montana
2. Census 2010 Latino for Red Lodge, Montana
3. Census 2000 Race for Red Lodge, Montana
4. Census 2000 Latino for Red Lodge, Montana
5. Montana Voters for Red Lodge, Montana

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QuickFacts

Montana; Carbon County, Montana

QuickFacts provides statistics for all states and counties, and for cities and towns with a *population of 5,000 or more*.

Table

| All Topics | Montana | Carbon County, Montana |
|---|-----------|---------------------------|
| Population per square mile, 2010 | 6.8 | 4.9 |
|  PEOPLE | | |
| Population | | |
| Population estimates, July 1, 2017, (V2017) | 1,050,493 | NA |
| Population estimates, July 1, 2016, (V2016) | 1,042,520 | 10,460 |
| Population estimates base, April 1, 2010, (V2017) | 989,414 | NA |
| Population estimates base, April 1, 2010, (V2016) | 989,414 | 10,078 |
| Population, percent change - April 1, 2010 (estimates base) to July 1, 2017, (V2017) | 6.2% | NA |
| Population, percent change - April 1, 2010 (estimates base) to July 1, 2016, (V2016) | 5.4% | 3.8% |
| Population, Census, April 1, 2010 | 989,415 | 10,078 |
| Age and Sex | | |
| Persons under 5 years, percent, July 1, 2016, (V2016) | 6.0% | 3.7% |
| Persons under 5 years, percent, April 1, 2010 | 6.3% | 4.1% |
| Persons under 18 years, percent, July 1, 2016, (V2016) | 21.8% | 17.9% |
| Persons under 18 years, percent, April 1, 2010 | 22.6% | 19.7% |
| Persons 65 years and over, percent, July 1, 2016, (V2016) | 17.7% | 24.0% |
| Persons 65 years and over, percent, April 1, 2010 | 14.8% | 18.8% |
| Female persons, percent, July 1, 2016, (V2016) | 49.7% | 49.1% |
| Female persons, percent, April 1, 2010 | 49.8% | 49.3% |
| Race and Hispanic Origin | | |
| White alone, percent, July 1, 2016, (V2016) (a) | 89.2% | 96.5% |
| Black or African American alone, percent, July 1, 2016, (V2016) (a) | 0.6% | 0.6% |
| American Indian and Alaska Native alone, percent, July 1, 2016, (V2016) (a) | 6.6% | 1.3% |
| Asian alone, percent, July 1, 2016, (V2016) (a) | 0.8% | 0.4% |
| Native Hawaiian and Other Pacific Islander alone, percent, July 1, 2016, (V2016) (a) | 0.1% | Z |
| Two or More Races, percent, July 1, 2016, (V2016) | 2.7% | 1.2% |
| Hispanic or Latino, percent, July 1, 2016, (V2016) (b) | 3.6% | 2.6% |
| White alone, not Hispanic or Latino, percent, July 1, 2016, (V2016) | 86.5% | 94.2% |
| Population Characteristics | | |
| Veterans, 2012-2016 | 87,936 | 1,131 |
| Foreign born persons, percent, 2012-2016 | 2.0% | 1.3% |
| Housing | | |
| Housing units, July 1, 2016, (V2016) | 497,756 | 6,439 |
| Housing units, April 1, 2010 | 482,825 | 6,441 |
| Owner-occupied housing unit rate, 2012-2016 | 67.2% | 78.0% |
| Median value of owner-occupied housing units, 2012-2016 | \$199,700 | \$217,700 |
| Median selected monthly owner costs -with a mortgage, 2012-2016 | \$1,307 | \$1,241 |
| Median selected monthly owner costs -without a mortgage, 2012-2016 | \$392 | \$395 |
| Median gross rent, 2012-2016 | \$732 | \$770 |
| Building permits, 2016 | 4,781 | 8 |
| Families & Living Arrangements | | |
| Households, 2012-2016 | 412,653 | 4,385 |
| Persons per household, 2012-2016 | 2.41 | 2.34 |
| Living in same house 1 year ago, percent of persons age 1 year+, 2012-2016 | 83.5% | 89.0% |
| Language other than English spoken at home, percent of persons age 5 years+, 2012-2016 | 3.9% | 4.7% |
| Education | | |
| High school graduate or higher, percent of persons age 25 years+, 2012-2016 | 92.9% | 93.9% |
| Bachelor's degree or higher, percent of persons age 25 years+, 2012-2016 | 29.9% | 29.2% |
| Health | | |
| With a disability, under age 65 years, percent, 2012-2016 | 9.3% | 10.5% |

Persons without health insurance, under age 65 years, percent ▲ 9.8% ▲ 15.0%

Economy

| | | |
|---|------------|--------|
| In civilian labor force, total, percent of population age 16 years+, 2012-2016 | 63.2% | 60.4% |
| In civilian labor force, female, percent of population age 16 years+, 2012-2016 | 59.4% | 56.8% |
| Total accommodation and food services sales, 2012 (\$1,000) (c) | 2,420,455 | 24,815 |
| Total health care and social assistance receipts/revenue, 2012 (\$1,000) (c) | 6,469,475 | D |
| Total manufacturers shipments, 2012 (\$1,000) (c) | 11,535,236 | D |
| Total merchant wholesaler sales, 2012 (\$1,000) (c) | 12,645,824 | D |
| Total retail sales, 2012 (\$1,000) (c) | 15,623,573 | D |
| Total retail sales per capita, 2012 (c) | \$15,544 | NA |

Transportation

| | | |
|--|------|------|
| Mean travel time to work (minutes), workers age 16 years+, 2012-2016 | 17.9 | 28.2 |
|--|------|------|

Income & Poverty

| | | |
|--|----------|----------|
| Median household income (in 2016 dollars), 2012-2016 | \$48,380 | \$52,869 |
| Per capita income in past 12 months (in 2016 dollars), 2012-2016 | \$27,309 | \$30,461 |
| Persons in poverty, percent | ▲ 13.3% | ▲ 10.3% |

BUSINESSES

Businesses

| | | |
|---|-------------------------|--------|
| Total employer establishments, 2015 | 37,270 ¹ | 415 |
| Total employment, 2015 | 375,041 ¹ | 2,211 |
| Total annual payroll, 2015 (\$1,000) | 14,227,065 ¹ | 59,716 |
| Total employment, percent change, 2014-2015 | 3.1% ¹ | 2.5% |
| Total nonemployer establishments, 2015 | 86,969 | 1,126 |
| All firms, 2012 | 112,419 | 1,780 |
| Men-owned firms, 2012 | 55,913 | 647 |
| Women-owned firms, 2012 | 35,449 | 515 |
| Minority-owned firms, 2012 | 5,578 | 34 |
| Nonminority-owned firms, 2012 | 102,746 | 1,676 |
| Veteran-owned firms, 2012 | 11,486 | 99 |
| Nonveteran-owned firms, 2012 | 93,393 | 1,408 |


GEOGRAPHY


Geography

| | | |
|---|------------|------------|
| Population per square mile, 2010 | 6.8 | 4.9 |
| Land area in square miles, 2010 | 145,545.80 | 2,048.79 |
| FIPS Code | 30 | 30009 |

Value Notes

1. Includes data not distributed by county.

 This geographic level of poverty and health estimates is not comparable to other geographic levels of these estimates

Some estimates presented here come from sample data, and thus have sampling errors that may render some apparent differences between geographies statistically indistinguishable. Click the Quick Info  icon to the left of each TABLE view to learn about sampling error.

The vintage year (e.g., V2017) refers to the final year of the series (2010 thru 2017). *Different vintage years of estimates are not comparable.*

Fact Notes

- (a) Includes persons reporting only one race
- (b) Hispanics may be of any race, so also are included in applicable race categories
- (c) Economic Census - Puerto Rico data are not comparable to U.S. Economic Census data

Value Flags

- Either no or too few sample observations were available to compute an estimate, or a ratio of medians cannot be calculated because one or both of the median estimates falls in the lowest or upper interval of distribution.
- D** Suppressed to avoid disclosure of confidential information
- F** Fewer than 25 firms
- FN** Footnote on this item in place of data
- NA** Not available
- S** Suppressed; does not meet publication standards
- X** Not applicable
- Z** Value greater than zero but less than half unit of measure shown

QuickFacts data are derived from: Population Estimates, American Community Survey, Census of Population and Housing, Current Population Survey, Small Area Health Insurance Estimates, Small Area Income and Poverty State and County Housing Unit Estimates, County Business Patterns, Nonemployer Statistics, Economic Census, Survey of Business Owners, Building Permits.

1 result is available, use up and down arrow keys to navigate.

Appendix E:

Water Rights

MONTANA WELL LOG REPORT

Other Options

This well log reports the activities of a licensed Montana well driller, serves as the official record of work done within the borehole and casing, and describes the amount of water encountered. This report is compiled electronically from the contents of the Ground Water Information Center (GWIC) database for this site. Acquiring water rights is the well owner's responsibility and is NOT accomplished by the filing of this report.

- [Go to GWIC website](#)
- [Plot this site in State Library Digital Atlas](#)
- [Plot this site in Google Maps](#)
- [View hydrograph for this site](#)
- [View field visits for this site](#)
- [View water quality for this site](#)
- [View scanned well log \(7/7/2010 7:33:21 AM\)](#)

Site Name: RED LODGE TREATMENT PLANT
 GWIC Id: 17303

Section 7: Well Test Data

Total Depth: 60
 Static Water Level:
 Water Temperature:

Section 1: Well Owner(s)

1) WATER TREATMENT PLANT, BRUCE STEFEN (MAIL)
 PO BOX 9
 RED LODGE MT 59068 01/26/2016

Unknown Test Method *

Yield _ gpm.
 Pumping water level _ feet.
 Time of recovery _ hours.
 Recovery water level _ feet.

Section 2: Location

| To Township | Range | Section | Quarter | Sections |
|--------------------------|-----------------------|-------------------|--------------|----------|
| 08S | 20E | 4 | SW SE SW NW | |
| County | | Geocode | | |
| CARBON | | 10027204301020000 | | |
| Latitude | Longitude | Geomethod | Datum | |
| 45.159655 | -109.27738 | NAV-GPS | NAD83 | |
| Ground Surface Altitude | Ground Surface Method | Datum | Date | |
| 5864.56 | SUR-GPS | NAVD88 | 10/15/2002 | |
| Measuring Point Altitude | MP Method | Datum | Date Applies | |
| 5866.83 | SUR-GPS | NAVD88 | 10/15/2002 | |
| Addition | Block | Lot | | |

* During the well test the discharge rate shall be as uniform as possible. This rate may or may not be the sustainable yield of the well. Sustainable yield does not include the reservoir of the well casing.

Section 3: Proposed Use of Water

TEST WELL (1)

Section 8: Remarks

10/15/02 - 6 IN. STEEL CASING WITH BOLT-ON CAP. NO PUMP OR POWER. WELL DRILLED FOR MONITORING PURPOSES.

Section 4: Type of Work

Drilling Method: ROTAR
 Status: NEW WELL

Section 9: Well Log

Geologic Source
 110SNGR - SAND AND GRAVEL (QUATERNAR)
 112OTSH - GLACIAL OUTWASH (PLEISTOCENE)

Section 5: Well Completion Date

Date well completed: Saturday, August 15, 1998

| From | To | Description |
|------|----|-------------------------|
| 0 | 72 | BOULDERS SAND & GRAVEL |
| 72 | 80 | DECOMPOSED CONGLOMERATE |
| | | |
| | | |
| | | |
| | | |
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| | | |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |

Section 6: Well Construction Details

Borehole dimensions

| From | To | Diameter |
|------|----|----------|
| 0 | 80 | 6 |

Casing

| From | To | Diameter | Wall Thickness | Pressure Rating | Joint | Type |
|------|----|----------|----------------|-----------------|--------|------------|
| -2 | 60 | 6 | 0.25 | | WELDED | A53B STEEL |

Completion (Perf Screen)

| From | To | Diameter | Number of Openings | Size of Openings | Description |
|------|----|----------|--------------------|------------------|---------------------------|
| 60 | 75 | 6 | | | 80 SLOT SS JOHNSON SCREEN |

Annular Space (Seal Grout Packer)

| From | To | Description | Cont. Fed. |
|------|----|-------------|------------|
| 0 | 20 | BENTONITE | |

Driller Certification

All work performed and reported in this well log is in compliance with the Montana well construction standards. This report is true to the best of my knowledge.

| |
|---------------------------|
| Name: ROBERT B. MURPH |
| Company: H & H DRILLING |
| License No: WWC-309 |
| Date Completed: 8/15/1998 |

MONTANA WELL LOG REPORT

Other Options

This well log reports the activities of a licensed Montana well driller, serves as the official record of work done within the borehole and casing, and describes the amount of water encountered. This report is compiled electronically from the contents of the Ground Water Information Center (GWIC) database for this site. Acquiring water rights is the well owner's responsibility and is NOT accomplished by the filing of this report.

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[ie_scanned_well log \(7 7 2010 10:4 :20 AM\)](#)

Site Name: CIT OF RED LODGE - WELL 1 SOURCE 2
GWIC Id: 132671
DNRC Water Right: W04 736-00

Section 7: Well Test Data

Total Depth: 74
 Static Water Level: 20
 Water Temperature:

Unknown Test Method *

Yield 900 gpm.
 Pumping water level feet.
 Time of recovery hours.
 Recovery water level feet.

** During the well test the discharge rate shall be as uniform as possible. This rate may or may not be the sustainable yield of the well. Sustainable yield does not include the reservoir of the well casing.*

Section 1: Well Owner(s)

1) CIT OF RED LODGE (MAIL)
 N/A
 RED LODGE MT 59068 09/17/1961

Section 2: Location

| To Township | Range | Section | Quarter Sections |
|-------------|-------|---------|------------------|
| 07S | 20E | 34 | SW SW NE NE NW |
| County | | Geocode | |

| Latitude | Longitude | Geomethod | Datum |
|-------------------------|-----------------------|-----------|-------|
| 45.18 | -109.2513 | MAP | NAD27 |
| Ground Surface Altitude | Ground Surface Method | Datum | Date |

| Addition | Block | Lot |
|----------|-------|-----|
| H PER | 64 | 3 |

Section 8: Remarks

Section : Well Log

Geologic Source
 110ALVM - ALLUVIUM (QUATERNAR)
 Lithology Data

There are no lithologic details assigned to this well.

Driller Certification

All work performed and reported in this well log is in compliance with the Montana well construction standards. This report is true to the best of my knowledge.

| |
|--|
| <p>Name: Company: License No: - Date Completed: 9/17/1961</p> |
|--|

Section 3: Proposed Use of Water

PUBLIC WATER SUPPL (1)

Section 4: Type of Work

Drilling Method:
 Status: NEW WELL

Section : Well Completion Date

Date well completed: Sunday, September 17, 1961

Section 6: Well Construction Details

There are no borehole dimensions assigned to this well.
 There are no casing strings assigned to this well.
 There are no completion records assigned to this well.

Annular Space (Seal Grout Packer)

There are no annular space records assigned to this well.

MONTANA WELL LOG REPORT

Other Options

This well log reports the activities of a licensed Montana well driller, serves as the official record of work done within the borehole and casing, and describes the amount of water encountered. This report is compiled electronically from the contents of the Ground Water Information Center (GWIC) database for this site. Acquiring water rights is the well owner's responsibility and is NOT accomplished by the filing of this report.

[Go to GWIC Website](#)
[Plot this site in State Library Digital Atlas](#)
[Plot this site in Google Maps](#)
[View scanned well log \(7/7/2010 7:34:11 AM\)](#)

Site Name: CIT OF RED LODGE
GWIC Id: 17 787

Section 7: Well Test Data

Section 1: Well Owner(s)
 1) CIT OF RED LODGE (MAIL)
 1 S PLATT
 RED LODGE MT 59068 12/31/1999

Total Depth: 67
 Static Water Level: 8
 Water Temperature:

Section 2: Location

| To Township | Range | Section | Quarter Sections |
|-------------------------|-----------------------|-----------|------------------|
| 08S | 20E | 4 | SE NW |
| County | | Geocode | |
| CARBON | | | |
| Latitude | Longitude | Geomethod | Datum |
| 45.161364 | -109.273605 | TRS-SEC | NAD83 |
| Ground Surface Altitude | Ground Surface Method | Datum | Date |
| | | | |

Air Test *
 1040 gpm with drill stem set at 40 feet for 20 hours.
 Time of recovery 5 hours.
 Recovery water level _ feet.
 Pumping water level _ feet.

** During the well test the discharge rate shall be as uniform as possible. This rate may or may not be the sustainable yield of the well. Sustainable yield does not include the reservoir of the well casing.*

| Addition | Block | Lot |
|----------|-------|-----|
| | | |

Section 8: Remarks

Section 3: Proposed Use of Water
 DOMESTIC (1)

Section 4: Type of Work
 Drilling Method: ROTAR
 Status: NEW WELL

Section : Well Completion Date
 Date well completed: Friday, December 31, 1999

Section 6: Well Construction Details

Borehole dimensions

| From | To | Diameter |
|------|----|----------|
| 0 | 20 | 17.5 |
| 20 | 67 | 14 |

Casing

| From | To | Diameter | Wall Thickness | Pressure Rating | Joint | Type |
|------|----|----------|----------------|-----------------|--------|-------|
| -2 | 40 | 12 | 0.375 | | WELDED | STEEL |

Completion (Perf Screen)

| From | To | Diameter | Number of Openings | Size of Openings | Description |
|------|----|----------|--------------------|------------------|-------------------------|
| 40 | 65 | 12 | | | SCREEN-CONTINUOUS-STEEL |

Annular Space (Seal Grout Packer)

| From | To | Description | Cont. Fed |
|------|----|-------------|-----------|
| 0 | 20 | BENTONITE | |
| 21 | 21 | RUBBER | |
| 22 | 22 | RUBBER | |
| 23 | 23 | RUBBER | |

Section : Well Log

Geologic Source
 110ALVM - ALLUVIUM (QUATERNAR)

| From | To | Description |
|------|----|-----------------------------|
| 0 | 64 | BLACK/WHITE/GRAVEL/BOULDERS |
| 64 | 67 | TAN/CONGLOMERATE/DECOMP |
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Driller Certification

All work performed and reported in this well log is in compliance with the Montana well construction standards. This report is true to the best of my knowledge.

Name: TOM HUMSAKER
Company: ROCK CREEK DRILLING INC
License No: WWC-104
Date Completed: 12/31/1999

MONTANA WELL LOG REPORT

Other Options

This well log reports the activities of a licensed Montana well driller, serves as the official record of work done within the borehole and casing, and describes the amount of water encountered. This report is compiled electronically from the contents of the Ground Water Information Center (GWIC) database for this site. Acquiring water rights is the well owner's responsibility and is NOT accomplished by the filing of this report.

- [Return to menu](#)
- [Plot this site in State Library Digital Atlas](#)
- [Plot this site in Google Maps](#)
- [ie scanned well log \(7/7/2010 8:08:30 AM\)](#)

Site Name: CIT OF RED LODGE
GWIC id: 223132

Section 7: Well Test Data

Section 1: Well Owner(s)

1) CIT OF RED LODGE (MAIL)
P.O. BOX 9
RED LODGE MT 59068 11/07/2005

Total Depth: 61
Static Water Level: 13
Water Temperature:

Air Test *

500 gpm with drill stem set at 61 feet for 32 hours.
Time of recovery 0.72 hours.
Recovery water level 13 feet.
Pumping water level _ feet.

Section 2: Location

| Township | Range | Section | Quarter Sections |
|----------|-------|---------|------------------|
| 08S | 20E | 5 | SE NE |
| County | | Geocode | |

| Latitude | Longitude | Geomethod | Datum |
|-------------------------|-------------|-----------------------|------------|
| 45.161397 | -109.283963 | TRS-SEC | NAD83 |
| Ground Surface Altitude | | Ground Surface Method | Datum Date |

* During the well test the discharge rate shall be as uniform as possible. This rate may or may not be the sustainable yield of the well. Sustainable yield does not include the reservoir of the well casing.

| Addition | Block | Lot |
|----------|-------|-----|
|----------|-------|-----|

Section 8: Remarks

Section 3: Proposed Use of Water

PUBLIC WATER SUPPLY (1)

Section 4: Type of Work

Drilling Method: ROTAR
Status: NEW WELL

Section 5: Well Completion Date

Date well completed: Monday, November 7, 2005

Section 6: Well Construction Details

Borehole dimensions

| From | To | Diameter |
|------|----|----------|
| -3 | 61 | 12 |
| 0 | 22 | 16 |

Casing

| From | To | Diameter | Wall Thickness | Pressure Rating | Joint | Type |
|------|----|----------|----------------|-----------------|--------|-------|
| -3 | 61 | 12 | 0.375 | | WELDED | STEEL |

Completion (Perf Screen)

| From | To | Diameter | # of Openings | Size of Openings | Description |
|------|----|----------|---------------|------------------|-----------------------------|
| 46 | 61 | 12 | | 0.125 | SCREEN-CONTINUOUS-STAINLESS |

Annular Space (Seal Grout Packer)

| From | To | Description | Cont. Fed |
|------|----|-------------|-----------|
| 0 | 26 | BENTONITE | |
| 26 | 43 | 3/8 GRAVEL | |

Section 9: Well Log

Geologic Source

110ALVM - ALLUVIUM (QUATERNARY)

| From | To | Description |
|------|----|--------------------------|
| 0 | 1 | BROWN TOPSOIL |
| 1 | 58 | GRA BOULDERS & SAND |
| 58 | 61 | TAN GRA CLAY WITH GRAVEL |
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Driller Certification

All work performed and reported in this well log is in compliance with the Montana well construction standards. This report is true to the best of my knowledge.

Name: BRETT DOUGLAS
Company: DOUGLAS DRILLING
License No: WWC-591
Date Completed: 11/7/2005

STATE OF MONTANA
DEPARTMENT OF NATURAL RESOURCES AND CONSERVATION
1424 9TH AVENUE P.O.BOX 201601 HELENA, MONTANA 59620-1601

GENERAL ABSTRACT

Water Right Number: 43D 43377-00 STATEMENT OF CLAIM
Version: 3 -- REEXAMINED

Version Status: ACTIVE

Owners: RED LODGE, CITY OF
1 SOUTH PLATT
PO BOX 9
RED LODGE, MT 59068

Priority Date: JUNE 20, 1895

Enforceable Priority Date: JUNE 20, 1895

Type of Historical Right: DECREED

Purpose (use): MUNICIPAL

Maximum Flow Rate: 2.50 CFS

Maximum Volume: 1,272.00 AC-FT

Source Name: ROCK CREEK, WEST FORK

Source Type: SURFACE WATER

Point of Diversion and Means of Diversion:

| <u>ID</u> | <u>Govt Lot</u> | <u>Qtr Sec</u> | <u>Sec</u> | <u>Twp</u> | <u>Rge</u> | <u>County</u> |
|-----------|-----------------|----------------|------------|------------|------------|---------------|
| 1 | | NWNWSW | 4 | 8S | 20E | CARBON |

Period of Diversion: JANUARY 1 TO DECEMBER 31

Diversion Means: HEADGATE

Ditch Name: CITY PIPELINE

| | | | | | | |
|---|--|--------|---|----|-----|--------|
| 2 | | NWNWSW | 4 | 8S | 20E | CARBON |
|---|--|--------|---|----|-----|--------|

Period of Diversion: JANUARY 1 TO DECEMBER 31

Diversion Means: HEADGATE

Ditch Name: CITY DITCH

POINT OF DIVERSION 01 IS LOCATED NEAR THE LINE DIVIDING THE SW OF SEC 4 AND THE NW OF SEC 4 AND DIVERTS WATER DIRECTLY TO THE CITY'S SCREEN PLANT.

POINT OF DIVERSION 02 IS A HEADGATE THAT DIVERTS WATER TO SETTLING PONDS AND AN INFILTRATION GALLERY.

Period of Use: JANUARY 1 to DECEMBER 31

Place of Use:

| <u>ID</u> | <u>Acres</u> | <u>Govt Lot</u> | <u>Qtr Sec</u> | <u>Sec</u> | <u>Twp</u> | <u>Rge</u> | <u>County</u> |
|-----------|--------------|-----------------|----------------|------------|------------|------------|---------------|
| 1 | | | | 22 | 7S | 20E | CARBON |
| 2 | | | W2 | 23 | 7S | 20E | CARBON |
| 3 | | | W2W2 | 26 | 7S | 20E | CARBON |
| 4 | | | | 27 | 7S | 20E | CARBON |
| 5 | | | E2 | 28 | 7S | 20E | CARBON |
| 6 | | | NE | 33 | 7S | 20E | CARBON |
| 7 | | | S2 | 33 | 7S | 20E | CARBON |
| 8 | | | | 34 | 7S | 20E | CARBON |
| 9 | | | NW | 35 | 7S | 20E | CARBON |
| 10 | | | W2 | 3 | 8S | 20E | CARBON |
| 11 | | | | 4 | 8S | 20E | CARBON |
| 12 | | | | 5 | 8S | 20E | CARBON |
| 13 | | | N2 | 8 | 8S | 20E | CARBON |
| 14 | | | N2S2 | 8 | 8S | 20E | CARBON |
| 15 | | | NENE | 9 | 8S | 20E | CARBON |
| 16 | | | W2NE | 9 | 8S | 20E | CARBON |
| 17 | | | NW | 9 | 8S | 20E | CARBON |
| 18 | | | NWSE | 9 | 8S | 20E | CARBON |
| 19 | | | N2SW | 9 | 8S | 20E | CARBON |

Remarks:

Remarks:

STARTING IN 2008, PERIOD OF DIVERSION WAS ADDED TO MOST CLAIM ABSTRACTS, INCLUDING THIS ONE.

WHENEVER THE WATER RIGHTS FOLLOWING THIS STATEMENT ARE COMBINED TO SUPPLY WATER FOR THE CLAIMED PURPOSE, EACH IS LIMITED TO THE HISTORICAL FLOW RATE AND PLACE OF USE OF THAT INDIVIDUAL RIGHT. THE SUM TOTAL VOLUME OF THESE WATER RIGHTS SHALL NOT EXCEED THE AMOUNT PUT TO HISTORICAL AND BENEFICIAL USE. 43D 43377-00, 43D 43378-00, 43D 45736-00, 43D 45737-00.



Water Right Number:
43D 43377 00NULL

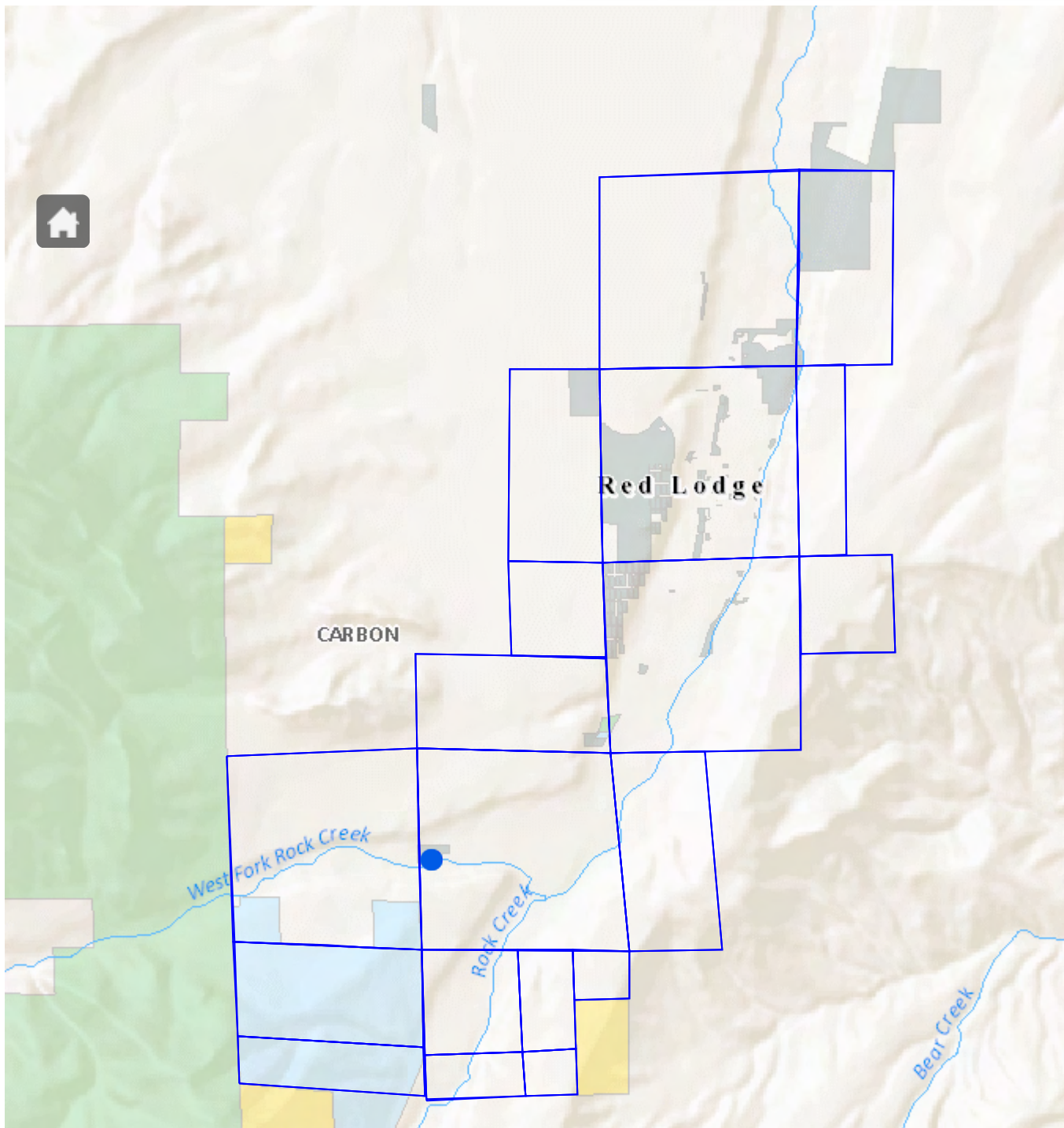
Print Map

Legend

- Diversion Count:
 - Surface water diversion.
 - Ground water diversion.
- Adjacent Diversions
 - Surface water diversion.
 - Ground water diversion.
- Place of Use Legal Land Descriptions
 - Adjacent POUs
 - Cadastral ?
 - PLSS Detail ?

Note:
 Contact DNRC if you have any questions or if the mapped information appears incorrect.

The points of diversion (PODs) and places of use (POUs) are derived from water right legal land descriptions. PODs are placed at the center of their legal land description, not at their true geographic location. POUs are drawn as polygons of the entire legal land description.





UPDATE TO FILE



STATEMENT OF CLAIM



***43D ***



43377



00

Current File Location: NEW STORAGE

As of: 2/8/2017

Box Bar Code _____

File Bar Code _____

Date/Initials _____

Series: ADJ

**PRELIMINARY DECREE
CLARKS FORK YELLOWSTONE RIVER
BASIN 43D
ABSTRACT OF WATER RIGHT CLAIM**

IMPORTANT NOTICE

YOUR WATER RIGHT AS SHOWN ON THIS ABSTRACT MAY HAVE CHANGES FROM YOUR WATER RIGHT AS CLAIMED OR AMENDED. AN ASTERISK (*) HAS BEEN PLACED NEXT TO EACH ITEM CHANGED BY THE MONTANA WATER COURT AFTER ISSUANCE OF THE TEMPORARY PRELIMINARY DECREE OR BY THE DEPARTMENT OF NATURAL RESOURCES AND CONSERVATION (DNRC) DURING THE PREPARATION OF THIS PRELIMINARY DECREE. THESE CHANGES ARE AUTHORIZED BY THE MONTANA SUPREME COURT WATER RIGHT CLAIMS EXAMINATION RULES OR BY ORDER OF THE WATER COURT.

OBJECTIONS MAY BE FILED ACCORDING TO THE PROCEDURES OUTLINED IN THE DOCUMENT ENTITLED "NOTICE OF ENTRY OF PRELIMINARY DECREE AND NOTICE OF AVAILABILITY."

Water Right Number: 43D 43377-00 STATEMENT OF CLAIM

Version: 3 -- REEXAMINED

Status: ACTIVE

Owners: RED LODGE, CITY OF
1 SOUTH PLATT
PO BOX 9
RED LODGE, MT 59068

Priority Date: JUNE 20, 1895

Type of Historical Right: DECREED

Purpose(use): MUNICIPAL

Flow Rate: 2.50 CFS

Volume: 1,272.00 AC-FT

Source Name: ROCK CREEK, WEST FORK

Source Type: SURFACE WATER

Point of Diversion and Means of Diversion:

| <u>ID</u> | <u>Govt Lot</u> | <u>Qtr</u> | <u>Sec</u> | <u>Sec</u> | <u>Twp</u> | <u>Rge</u> | <u>County</u> |
|-----------|-----------------|------------|------------|------------|------------|------------|---------------|
| 1 | | NWN | SW | 4 | 8S | 20E | CARBON |

Period of Diversion: JANUARY 1 TO DECEMBER 31

Diversion Means: HEADGATE

Ditch Name: CITY PIPELINE

| | | | | | | | |
|---|--|-----|----|---|----|-----|--------|
| 2 | | NWN | SW | 4 | 8S | 20E | CARBON |
|---|--|-----|----|---|----|-----|--------|

Period of Diversion: JANUARY 1 TO DECEMBER 31

Diversion Means: HEADGATE

Ditch Name: CITY DITCH

POINT OF DIVERSION 01 IS LOCATED NEAR THE LINE DIVIDING THE SW OF SEC 4 AND THE NW OF SEC 4 AND DIVERTS WATER DIRECTLY TO THE CITY'S SCREEN PLANT

POINT OF DIVERSION 02 IS A HEADGATE THAT DIVERTS WATER TO SETTLING PONDS AND AN INFILTRATION GALLERY

Period of Use: JANUARY 1 TO DECEMBER 31

Place of Use:

| <u>ID</u> | <u>Acres</u> | <u>Govt Lot</u> | <u>Qtr Sec</u> | <u>Sec</u> | <u>Twp</u> | <u>Rge</u> | <u>County</u> |
|-----------|--------------|-----------------|----------------|------------|------------|------------|---------------|
| 1 | | | | 22 | 7S | 20E | CARBON |
| 2 | | | W2 | 23 | 7S | 20E | CARBON |
| 3 | | | W2W2 | 26 | 7S | 20E | CARBON |
| 4 | | | | 27 | 7S | 20E | CARBON |
| 5 | | | E2 | 28 | 7S | 20E | CARBON |
| 6 | | | NE | 33 | 7S | 20E | CARBON |
| 7 | | | S2 | 33 | 7S | 20E | CARBON |
| 8 | | | | 34 | 7S | 20E | CARBON |
| 9 | | | NW | 35 | 7S | 20E | CARBON |
| 10 | | | W2 | 3 | 8S | 20E | CARBON |
| 11 | | | | 4 | 8S | 20E | CARBON |
| 12 | | | | 5 | 8S | 20E | CARBON |
| 13 | | | N2 | 8 | 8S | 20E | CARBON |
| 14 | | | N2S2 | 8 | 8S | 20E | CARBON |
| 15 | | | NENE | 9 | 8S | 20E | CARBON |
| 16 | | | W2NE | 9 | 8S | 20E | CARBON |
| 17 | | | NW | 9 | 8S | 20E | CARBON |
| 18 | | | NWSE | 9 | 8S | 20E | CARBON |
| 19 | | | N2SW | 9 | 8S | 20E | CARBON |

Remarks:

STARTING IN 2008, PERIOD OF DIVERSION WAS ADDED TO MOST CLAIM ABSTRACTS, INCLUDING THIS ONE

WHENEVER THE WATER RIGHTS FOLLOWING THIS STATEMENT ARE COMBINED TO SUPPLY WATER FOR THE CLAIMED PURPOSE, EACH IS LIMITED TO THE HISTORICAL FLOW RATE AND PLACE OF USE OF THAT INDIVIDUAL RIGHT THE SUM TOTAL VOLUME OF THESE WATER RIGHTS SHALL NOT EXCEED THE AMOUNT PUT TO HISTORICAL AND BENEFICIAL USE 43D 43377-00, 43D 43378-00, 43D 45736-00, 43D 45737-00

THE DNRC EXAMINATION OF THIS CLAIM FOUND NO SIGNIFICANT FACTS, DATA, OR ISSUES TO REPORT TO THE WATER COURT.

A BETTER UNDERSTANDING OF YOUR CLAIMED WATER RIGHT CAN BE OBTAINED BY COMPARING YOUR RIGHT WITH OTHER CLAIMS IN THE BASIN. FOR EXAMPLE, COMPARE PRIORITY DATES, FLOW RATES, VOLUMES, OR ACRES IRRIGATED. ALSO, YOUR WATER RIGHT MAY BE SUBJECT TO WATER RIGHTS IN ADJOINING SUBBASINS OR BASINS AS WELL AS BEING SUBJECT TO OTHER RIGHTS ON YOUR SOURCE OF SUPPLY. FINALLY, YOUR WATER RIGHT MAY BE SUBJECT TO INDIAN RESERVED AND FEDERAL RESERVED WATER RIGHTS.

COMPLETE DETAILS REGARDING THE DNRC PREPARATION OF THIS PRELIMINARY DECREE AND RELATED MATERIALS CAN BE REVIEWED AT THE OFFICE LOCATIONS IDENTIFIED IN THE DOCUMENT ENTITLED "NOTICE OF ENTRY OF PRELIMINARY DECREE AND NOTICE OF AVAILABILITY."

SEE GENERAL FINDINGS OF FACT AND CONCLUSIONS OF LAW FOR FURTHER EXPLANATION OF YOUR CLAIMED WATER RIGHT. THESE FINDINGS CAN BE FOUND AS INDICATED IN THE DOCUMENT ENTITLED "NOTICE OF ENTRY OF PRELIMINARY DECREE AND NOTICE OF AVAILABILITY." IF YOU NEED OBJECTION FORMS, OR HAVE QUESTIONS ABOUT WATER COURT PROCEDURES OR CHANGES TO YOUR RIGHT, YOU CAN CONTACT THE WATER COURT BY CALLING 1-800-624-3270 (WITHIN MONTANA ONLY) OR 1-406-586-4364, OR BY WRITING TO P.O. BOX 1389, BOZEMAN, MT 59771-1389.

STATE OF MONTANA
DEPARTMENT OF NATURAL RESOURCES AND CONSERVATION
1424 9TH AVENUE P.O.BOX 201601 HELENA, MONTANA 59620-1601

GENERAL ABSTRACT

Water Right Number: 43D 43378-00 STATEMENT OF CLAIM
Version: 3 -- REEXAMINED

Version Status: ACTIVE

Owners: RED LODGE, CITY OF
1 SOUTH PLATT
PO BOX 9
RED LODGE, MT 59068

Priority Date: JUNE 1, 1886

Enforceable Priority Date: JUNE 1, 1886

Type of Historical Right: DECREED

Purpose (use): MUNICIPAL

Maximum Flow Rate: 1.25 CFS

Maximum Volume: 903.00 AC-FT

Source Name: ROCK CREEK, WEST FORK

Source Type: SURFACE WATER

Point of Diversion and Means of Diversion:

| <u>ID</u> | <u>Govt Lot</u> | <u>Qtr Sec</u> | <u>Sec</u> | <u>Twp</u> | <u>Rge</u> | <u>County</u> |
|-----------|-----------------|----------------|------------|------------|------------|---------------|
| 1 | | NWNWSW | 4 | 8S | 20E | CARBON |

Period of Diversion: JANUARY 1 TO DECEMBER 31

Diversion Means: HEADGATE

Ditch Name: CITY PIPELINE

| | | | | | | |
|---|--|--------|---|----|-----|--------|
| 2 | | NWNWSW | 4 | 8S | 20E | CARBON |
|---|--|--------|---|----|-----|--------|

Period of Diversion: JANUARY 1 TO DECEMBER 31

Diversion Means: HEADGATE

Ditch Name: CITY DITCH

POINT OF DIVERSION 02 IS A HEADGATE THAT DIVERTS WATER TO SETTLING PONDS AND AN INFILTRATION GALLERY.

POINT OF DIVERSION 01 IS LOCATED NEAR THE LINE DIVIDING THE SW OF SECTION 4 AND THE NW OF SECTION 4 AND DIVERTS WATER DIRECTLY TO THE CITY'S SCREEN PLANT.

Period of Use: JANUARY 1 to DECEMBER 31

Place of Use:

| <u>ID</u> | <u>Acres</u> | <u>Govt Lot</u> | <u>Qtr Sec</u> | <u>Sec</u> | <u>Twp</u> | <u>Rge</u> | <u>County</u> |
|-----------|--------------|-----------------|----------------|------------|------------|------------|---------------|
| 1 | | | | 22 | 7S | 20E | CARBON |
| 2 | | | W2 | 23 | 7S | 20E | CARBON |
| 3 | | | W2W2 | 26 | 7S | 20E | CARBON |
| 4 | | | | 27 | 7S | 20E | CARBON |
| 5 | | | E2 | 28 | 7S | 20E | CARBON |
| 6 | | | NE | 33 | 7S | 20E | CARBON |
| 7 | | | S2 | 33 | 7S | 20E | CARBON |
| 8 | | | | 34 | 7S | 20E | CARBON |
| 9 | | | NW | 35 | 7S | 20E | CARBON |
| 10 | | | W2 | 3 | 8S | 20E | CARBON |
| 11 | | | | 4 | 8S | 20E | CARBON |
| 12 | | | | 5 | 8S | 20E | CARBON |
| 13 | | | N2 | 8 | 8S | 20E | CARBON |
| 14 | | | N2S2 | 8 | 8S | 20E | CARBON |
| 15 | | | NENE | 9 | 8S | 20E | CARBON |
| 16 | | | W2NE | 9 | 8S | 20E | CARBON |
| 17 | | | NW | 9 | 8S | 20E | CARBON |
| 18 | | | NWSE | 9 | 8S | 20E | CARBON |
| 19 | | | N2SW | 9 | 8S | 20E | CARBON |

Remarks:

Remarks:

STARTING IN 2008, PERIOD OF DIVERSION WAS ADDED TO MOST CLAIM ABSTRACTS, INCLUDING THIS ONE.

WHENEVER THE WATER RIGHTS FOLLOWING THIS STATEMENT ARE COMBINED TO SUPPLY WATER FOR THE CLAIMED PURPOSE, EACH IS LIMITED TO THE HISTORICAL FLOW RATE AND PLACE OF USE OF THAT INDIVIDUAL RIGHT. THE SUM TOTAL VOLUME OF THESE WATER RIGHTS SHALL NOT EXCEED THE AMOUNT PUT TO HISTORICAL AND BENEFICIAL USE. 43D 43377-00, 43D 43378-00, 43D 45736-00, 43D 45737-00.



Water Right Number:
43D 4337 00NULL

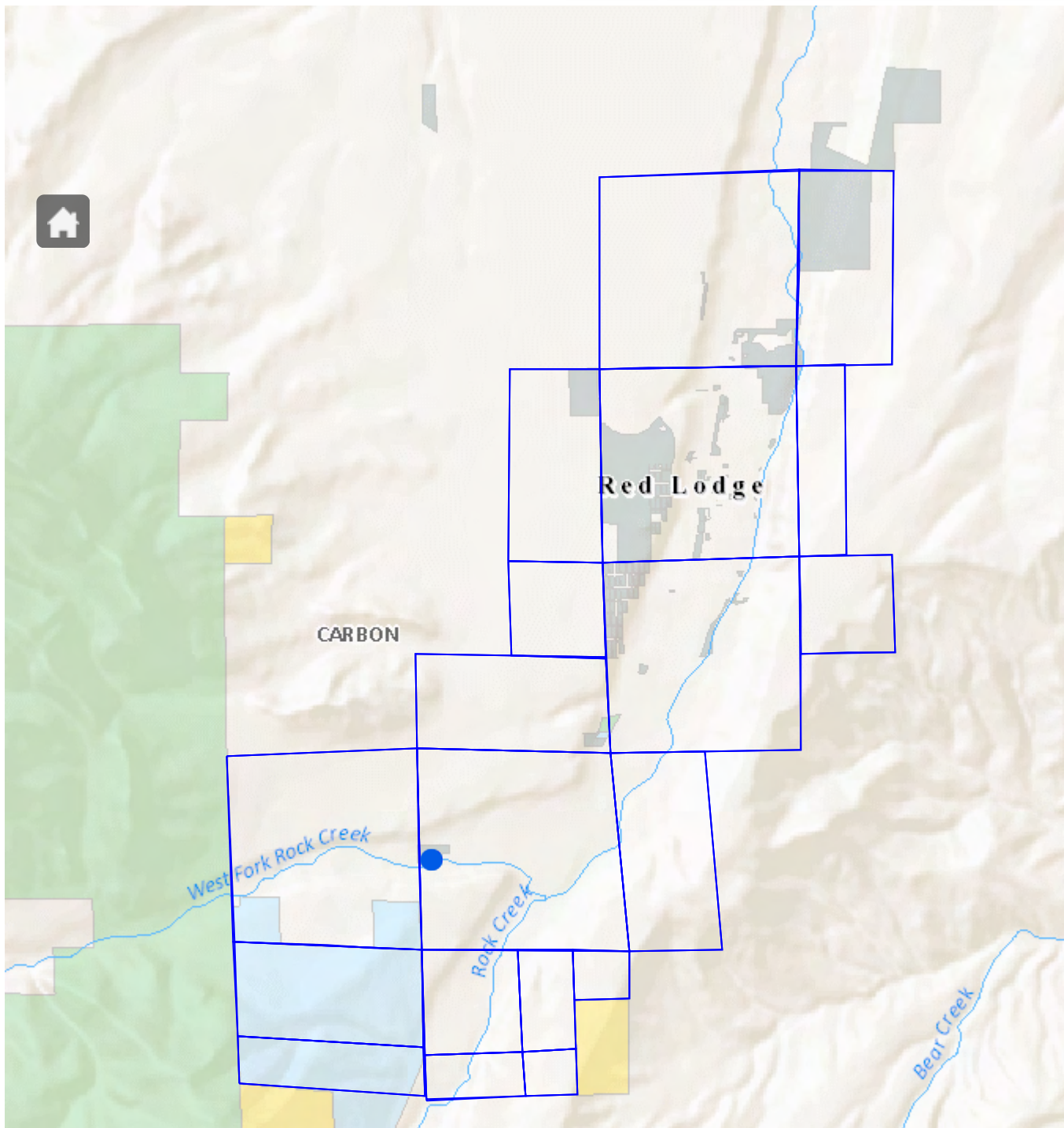
Print Map

Legend

- Diversion Count:
 - Surface water diversion.
 - Ground water diversion.
- Adjacent Diversions
 - Surface water diversion.
 - Ground water diversion.
- Place of Use Legal Land Descriptions
 - Adjacent POUs
 - Cadastral ?
 - PLSS Detail ?

Note:
 Contact DNRC if you have any questions or if the mapped information appears incorrect.

The points of diversion (PODs) and places of use (POUs) are derived from water right legal land descriptions. PODs are placed at the center of their legal land description, not at their true geographic location. POUs are drawn as polygons of the entire legal land description.





UPDATE TO FILE



STATEMENT OF CLAIM



***43D ***



43378



00

Current File Location: NEW STORAGE

As of. 2/8/2017

Box Bar Code _____

File Bar Code _____

Date/Initials _____

Series: ADJ

**PRELIMINARY DECREE
CLARKS FORK YELLOWSTONE RIVER
BASIN 43D
ABSTRACT OF WATER RIGHT CLAIM
IMPORTANT NOTICE**

YOUR WATER RIGHT AS SHOWN ON THIS ABSTRACT MAY HAVE CHANGES FROM YOUR WATER RIGHT AS CLAIMED OR AMENDED. AN ASTERISK (*) HAS BEEN PLACED NEXT TO EACH ITEM CHANGED BY THE MONTANA WATER COURT AFTER ISSUANCE OF THE TEMPORARY PRELIMINARY DECREE OR BY THE DEPARTMENT OF NATURAL RESOURCES AND CONSERVATION (DNRC) DURING THE PREPARATION OF THIS PRELIMINARY DECREE. THESE CHANGES ARE AUTHORIZED BY THE MONTANA SUPREME COURT WATER RIGHT CLAIMS EXAMINATION RULES OR BY ORDER OF THE WATER COURT.

OBJECTIONS MAY BE FILED ACCORDING TO THE PROCEDURES OUTLINED IN THE DOCUMENT ENTITLED "NOTICE OF ENTRY OF PRELIMINARY DECREE AND NOTICE OF AVAILABILITY."

Water Right Number: 43D 43378-00 STATEMENT OF CLAIM
Version: 3 -- REEXAMINED
Status: ACTIVE

Owners: RED LODGE, CITY OF
1 SOUTH PLATT
PO BOX 9
RED LODGE, MT 59068

Priority Date: JUNE 1, 1886

Type of Historical Right: DECREED

Purpose(use): MUNICIPAL

Flow Rate: 1.25 CFS

Volume: 903.00 AC-FT

Source Name: ROCK CREEK, WEST FORK
Source Type: SURFACE WATER

Point of Diversion and Means of Diversion:

| <u>ID</u> | <u>Govt Lot</u> | <u>Qtr</u> | <u>Sec</u> | <u>Twp</u> | <u>Rge</u> | <u>County</u> |
|-----------|-----------------|------------|------------|------------|------------|---------------|
| 1 | | NWN | SW 4 | 8S | 20E | CARBON |

Period of Diversion: JANUARY 1 TO DECEMBER 31

Diversion Means: HEADGATE

Ditch Name: CITY PIPELINE

| | | | | | | |
|---|--|-----|------|----|-----|--------|
| 2 | | NWN | SW 4 | 8S | 20E | CARBON |
|---|--|-----|------|----|-----|--------|

Period of Diversion: JANUARY 1 TO DECEMBER 31

Diversion Means: HEADGATE

Ditch Name: CITY DITCH

POINT OF DIVERSION 02 IS A HEADGATE THAT DIVERTS WATER TO SETTLING PONDS AND AN INFILTRATION GALLERY

POINT OF DIVERSION 01 IS LOCATED NEAR THE LINE DIVIDING THE SW OF SECTION 4 AND THE NW OF SECTION 4 AND DIVERTS WATER DIRECTLY TO THE CITY'S SCREEN PLANT

Period of Use: JANUARY 1 TO DECEMBER 31

Place of Use:

| <u>ID</u> | <u>Acres</u> | <u>Govt Lot</u> | <u>Qtr Sec</u> | <u>Sec</u> | <u>Twp</u> | <u>Rge</u> | <u>County</u> |
|-----------|--------------|-----------------|----------------|------------|------------|------------|---------------|
| 1 | | | | 22 | 7S | 20E | CARBON |
| 2 | | | W2 | 23 | 7S | 20E | CARBON |
| 3 | | | W2W2 | 26 | 7S | 20E | CARBON |
| 4 | | | | 27 | 7S | 20E | CARBON |
| 5 | | | E2 | 28 | 7S | 20E | CARBON |
| 6 | | | NE | 33 | 7S | 20E | CARBON |
| 7 | | | S2 | 33 | 7S | 20E | CARBON |
| 8 | | | | 34 | 7S | 20E | CARBON |
| 9 | | | NW | 35 | 7S | 20E | CARBON |
| 10 | | | W2 | 3 | 8S | 20E | CARBON |
| 11 | | | | 4 | 8S | 20E | CARBON |
| 12 | | | | 5 | 8S | 20E | CARBON |
| 13 | | | N2 | 8 | 8S | 20E | CARBON |
| 14 | | | N2S2 | 8 | 8S | 20E | CARBON |
| 15 | | | NENE | 9 | 8S | 20E | CARBON |
| 16 | | | W2NE | 9 | 8S | 20E | CARBON |
| 17 | | | NW | 9 | 8S | 20E | CARBON |
| 18 | | | NWSE | 9 | 8S | 20E | CARBON |
| 19 | | | N2SW | 9 | 8S | 20E | CARBON |

Remarks:

STARTING IN 2008, PERIOD OF DIVERSION WAS ADDED TO MOST CLAIM ABSTRACTS, INCLUDING THIS ONE

WHENEVER THE WATER RIGHTS FOLLOWING THIS STATEMENT ARE COMBINED TO SUPPLY WATER FOR THE CLAIMED PURPOSE, EACH IS LIMITED TO THE HISTORICAL FLOW RATE AND PLACE OF USE OF THAT INDIVIDUAL RIGHT THE SUM TOTAL VOLUME OF THESE WATER RIGHTS SHALL NOT EXCEED THE AMOUNT PUT TO HISTORICAL AND BENEFICIAL USE 43D 43377-00, 43D 43378-00, 43D 45736-00, 43D 45737-00

THE DNRC EXAMINATION OF THIS CLAIM FOUND NO SIGNIFICANT FACTS, DATA, OR ISSUES TO REPORT TO THE WATER COURT.

A BETTER UNDERSTANDING OF YOUR CLAIMED WATER RIGHT CAN BE OBTAINED BY COMPARING YOUR RIGHT WITH OTHER CLAIMS IN THE BASIN. FOR EXAMPLE, COMPARE PRIORITY DATES, FLOW RATES, VOLUMES, OR ACRES IRRIGATED. ALSO, YOUR WATER RIGHT MAY BE SUBJECT TO WATER RIGHTS IN ADJOINING SUBBASINS OR BASINS AS WELL AS BEING SUBJECT TO OTHER RIGHTS ON YOUR SOURCE OF SUPPLY. FINALLY, YOUR WATER RIGHT MAY BE SUBJECT TO INDIAN RESERVED AND FEDERAL RESERVED WATER RIGHTS.

COMPLETE DETAILS REGARDING THE DNRC PREPARATION OF THIS PRELIMINARY DECREE AND RELATED MATERIALS CAN BE REVIEWED AT THE OFFICE LOCATIONS IDENTIFIED IN THE DOCUMENT ENTITLED "NOTICE OF ENTRY OF PRELIMINARY DECREE AND NOTICE OF AVAILABILITY."

SEE GENERAL FINDINGS OF FACT AND CONCLUSIONS OF LAW FOR FURTHER EXPLANATION OF YOUR CLAIMED WATER RIGHT. THESE FINDINGS CAN BE FOUND AS INDICATED IN THE DOCUMENT ENTITLED "NOTICE OF ENTRY OF PRELIMINARY DECREE AND NOTICE OF AVAILABILITY." IF YOU NEED OBJECTION FORMS, OR HAVE QUESTIONS ABOUT WATER COURT PROCEDURES OR CHANGES TO YOUR RIGHT, YOU CAN CONTACT THE WATER COURT BY CALLING 1-800-624-3270 (WITHIN MONTANA ONLY) OR 1-406-586-4364, OR BY WRITING TO P.O. BOX 1389, BOZEMAN, MT 59771-1389.

STATE OF MONTANA
DEPARTMENT OF NATURAL RESOURCES AND CONSERVATION
1424 9TH AVENUE P.O.BOX 201601 HELENA, MONTANA 59620-1601

GENERAL ABSTRACT

Water Right Number: 43D 45736-00 STATEMENT OF CLAIM
Version: 3 -- REEXAMINED

Version Status: ACTIVE

Owners: RED LODGE, CITY OF
1 SOUTH PLATT
PO BOX 9
RED LODGE, MT 59068

Priority Date: MAY 26, 1961

Enforceable Priority Date: MAY 26, 1961

Type of Historical Right: USE

Purpose (use): MUNICIPAL

Maximum Flow Rate: 2.01 CFS

Maximum Volume: 1,450.00 AC-FT

Source Name: GROUNDWATER

Source Type: GROUNDWATER

Point of Diversion and Means of Diversion:

| <u>ID</u> | <u>Govt Lot</u> | <u>Qtr Sec</u> | <u>Sec</u> | <u>Twp</u> | <u>Rge</u> | <u>County</u> |
|-----------|-----------------|----------------|------------|------------|------------|---------------|
| 1 | | NENW | 34 | 7S | 20E | CARBON |

Period of Diversion: JANUARY 1 TO DECEMBER 31

Diversion Means: WELL

Subdivision: HYMER ADD TRACT/LOT: 3 BLOCK: 64

Well Depth: 74.00 FEET

Static Water Level: 20.00 FEET

Period of Use: JANUARY 1 to DECEMBER 31

Place of Use:

| <u>ID</u> | <u>Acres</u> | <u>Govt Lot</u> | <u>Qtr Sec</u> | <u>Sec</u> | <u>Twp</u> | <u>Rge</u> | <u>County</u> |
|-----------|---------------------|-----------------|----------------|------------|------------|------------|---------------|
| 1 | | | | 22 | 7S | 20E | CARBON |
| | Subdivision: | HYMER ADD | | | | | |
| 2 | | | W2 | 23 | 7S | 20E | CARBON |
| | Subdivision: | HYMER ADD | | | | | |
| 3 | | | W2W2 | 26 | 7S | 20E | CARBON |
| | Subdivision: | HYMER ADD | | | | | |
| 4 | | | | 27 | 7S | 20E | CARBON |
| | Subdivision: | HYMER ADD | | | | | |
| 5 | | | E2 | 28 | 7S | 20E | CARBON |
| | Subdivision: | HYMER ADD | | | | | |
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| | Subdivision: | HYMER ADD | | | | | |
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| | Subdivision: | HYMER ADD | | | | | |
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| | Subdivision: | HYMER ADD | | | | | |
| 15 | | | NENE | 9 | 8S | 20E | CARBON |
| | Subdivision: | HYMER ADD | | | | | |
| 16 | | | W2NE | 9 | 8S | 20E | CARBON |
| | Subdivision: | HYMER ADD | | | | | |

Place of Use:

| <u>ID</u> | <u>Acres</u> | <u>Govt Lot</u> | <u>Qtr Sec</u> | <u>Sec</u> | <u>Twp</u> | <u>Rge</u> | <u>County</u> |
|-----------|---------------------|-----------------|----------------|------------|------------|------------|---------------|
| 17 | | | NW | 9 | 8S | 20E | CARBON |
| | Subdivision: | HYMER ADD | | | | | |
| 18 | | | NWSE | 9 | 8S | 20E | CARBON |
| | Subdivision: | HYMER ADD | | | | | |
| 19 | | | N2SW | 9 | 8S | 20E | CARBON |

Remarks:

THIS APPROPRIATION SUPPLEMENTS THE CITY'S USE FROM SURFACE WATER.

STARTING IN 2008, PERIOD OF DIVERSION WAS ADDED TO MOST CLAIM ABSTRACTS, INCLUDING THIS ONE.

WHENEVER THE WATER RIGHTS FOLLOWING THIS STATEMENT ARE COMBINED TO SUPPLY WATER FOR THE CLAIMED PURPOSE, EACH IS LIMITED TO THE HISTORICAL FLOW RATE AND PLACE OF USE OF THAT INDIVIDUAL RIGHT. THE SUM TOTAL VOLUME OF THESE WATER RIGHTS SHALL NOT EXCEED THE AMOUNT PUT TO HISTORICAL AND BENEFICIAL USE. 43D 43377-00, 43D 43378-00, 43D 45736-00, 43D 45737-00.



Water Right Number:
43D 4 73 00NULL

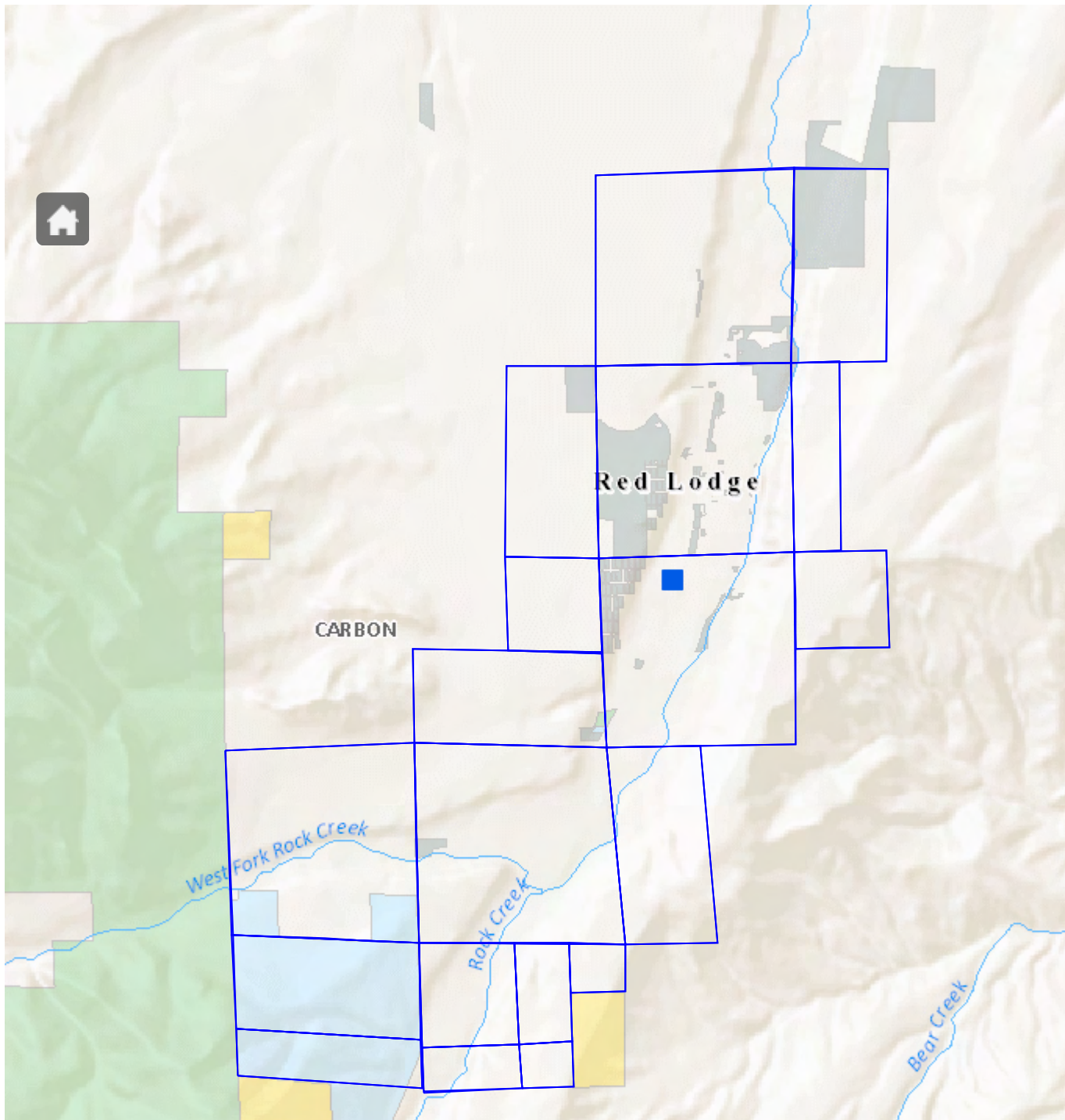
Print Map

Legend

- Diversion Count:
 - Surface water diversion.
 - Ground water diversion.
- Adjacent Diversions
 - Surface water diversion.
 - Ground water diversion.
- Place of Use Legal Land Descriptions
 - Adjacent POUs
 - Cadastral ?
 - PLSS Detail ?

Note:
Contact DNRC if you have any questions or if the mapped information appears incorrect.

The points of diversion (PODs) and places of use (POUs) are derived from water right legal land descriptions. PODs are placed at the center of their legal land description, not at their true geographic location. POUs are drawn as polygons of the entire legal land description.





UPDATE TO FILE



STATEMENT OF CLAIM



***43D ***



45736



00

Current File Location: NEW STORAGE

As of 2/8/2017

Box Bar Code _____

File Bar Code _____

Date/Initials _____

Series: ADJ

**PRELIMINARY DECREE
CLARKS FORK YELLOWSTONE RIVER
BASIN 43D
ABSTRACT OF WATER RIGHT CLAIM**

IMPORTANT NOTICE

YOUR WATER RIGHT AS SHOWN ON THIS ABSTRACT MAY HAVE CHANGES FROM YOUR WATER RIGHT AS CLAIMED OR AMENDED. AN ASTERISK (*) HAS BEEN PLACED NEXT TO EACH ITEM CHANGED BY THE MONTANA WATER COURT AFTER ISSUANCE OF THE TEMPORARY PRELIMINARY DECREE OR BY THE DEPARTMENT OF NATURAL RESOURCES AND CONSERVATION (DNRC) DURING THE PREPARATION OF THIS PRELIMINARY DECREE. THESE CHANGES ARE AUTHORIZED BY THE MONTANA SUPREME COURT WATER RIGHT CLAIMS EXAMINATION RULES OR BY ORDER OF THE WATER COURT.

OBJECTIONS MAY BE FILED ACCORDING TO THE PROCEDURES OUTLINED IN THE DOCUMENT ENTITLED "NOTICE OF ENTRY OF PRELIMINARY DECREE AND NOTICE OF AVAILABILITY."

Water Right Number: 43D 45736-00 STATEMENT OF CLAIM

**Version: 3 -- REEXAMINED
Status: ACTIVE**

**Owners: RED LODGE, CITY OF
1 SOUTH PLATT
PO BOX 9
RED LODGE, MT 59068**

Priority Date: MAY 26, 1961

Type of Historical Right: USE

Purpose(use): MUNICIPAL

Flow Rate: 2.01 CFS

Volume: 1,450.00 AC-FT

Source Name: GROUNDWATER

Source Type: GROUNDWATER

Point of Diversion and Means of Diversion:

| <u>ID</u> | <u>Govt Lot</u> | <u>Qtr</u> | <u>Sec</u> | <u>Twp</u> | <u>Rge</u> | <u>County</u> |
|-----------|-----------------|------------|------------|------------|------------|---------------|
| 1 | | NENW | 34 | 7S | 20E | CARBON |

Period of Diversion: JANUARY 1 TO DECEMBER 31

Diversion Means: WELL

Subdivision: HYMER ADD TRACT/LOT 3 BLOCK 64

Period of Use: JANUARY 1 TO DECEMBER 31

Place of Use:

| <u>ID</u> | <u>Acres</u> | <u>Govt Lot</u> | <u>Qtr</u> | <u>Sec</u> | <u>Twp</u> | <u>Rge</u> | <u>County</u> |
|-----------|--------------|-----------------|------------|------------|------------|------------|---------------|
| 1 | | | | 22 | 7S | 20E | CARBON |
| | Subdivision: | HYMER ADD | | | | | |
| 2 | | | W2 | 23 | 7S | 20E | CARBON |
| | Subdivision: | HYMER ADD | | | | | |
| 3 | | | W2W2 | 26 | 7S | 20E | CARBON |
| | Subdivision: | HYMER ADD | | | | | |
| 4 | | | | 27 | 7S | 20E | CARBON |
| | Subdivision: | HYMER ADD | | | | | |
| 5 | | | E2 | 28 | 7S | 20E | CARBON |
| | Subdivision: | HYMER ADD | | | | | |
| 6 | | | NE | 33 | 7S | 20E | CARBON |
| | Subdivision: | HYMER ADD | | | | | |
| 7 | | | S2 | 33 | 7S | 20E | CARBON |
| | Subdivision: | HYMER ADD | | | | | |
| 8 | | | | 34 | 7S | 20E | CARBON |
| | Subdivision: | HYMER ADD | | | | | |
| 9 | | | NW | 35 | 7S | 20E | CARBON |
| | Subdivision: | HYMER ADD | | | | | |
| 10 | | | W2 | 3 | 8S | 20E | CARBON |
| | Subdivision: | HYMER ADD | | | | | |
| 11 | | | | 4 | 8S | 20E | CARBON |
| | Subdivision: | HYMER ADD | | | | | |
| 12 | | | | 5 | 8S | 20E | CARBON |
| | Subdivision: | HYMER ADD | | | | | |
| 13 | | | N2 | 8 | 8S | 20E | CARBON |
| | Subdivision: | HYMER ADD | | | | | |
| 14 | | | N2S2 | 8 | 8S | 20E | CARBON |
| | Subdivision: | HYMER ADD | | | | | |
| 15 | | | NENE | 9 | 8S | 20E | CARBON |
| | Subdivision: | HYMER ADD | | | | | |
| 16 | | | W2NE | 9 | 8S | 20E | CARBON |
| | Subdivision: | HYMER ADD | | | | | |
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| | Subdivision: | HYMER ADD | | | | | |
| 18 | | | NWSE | 9 | 8S | 20E | CARBON |
| | Subdivision: | HYMER ADD | | | | | |
| 19 | | | N2SW | 9 | 8S | 20E | CARBON |

Remarks:

THIS APPROPRIATION SUPPLEMENTS THE CITY'S USE FROM SURFACE WATER

STARTING IN 2008, PERIOD OF DIVERSION WAS ADDED TO MOST CLAIM ABSTRACTS, INCLUDING THIS ONE

WHENEVER THE WATER RIGHTS FOLLOWING THIS STATEMENT ARE COMBINED TO SUPPLY WATER FOR THE CLAIMED PURPOSE, EACH IS LIMITED TO THE HISTORICAL FLOW RATE AND PLACE OF USE OF THAT INDIVIDUAL RIGHT THE SUM TOTAL VOLUME OF THESE WATER RIGHTS SHALL NOT EXCEED THE AMOUNT PUT TO HISTORICAL AND BENEFICIAL USE 43D 43377-00, 43D 43378-00, 43D 45736-00, 43D 45737-00

THE DNRC EXAMINATION OF THIS CLAIM FOUND NO SIGNIFICANT FACTS, DATA, OR ISSUES TO REPORT TO THE WATER COURT.

A BETTER UNDERSTANDING OF YOUR CLAIMED WATER RIGHT CAN BE OBTAINED BY COMPARING YOUR RIGHT WITH OTHER CLAIMS IN THE BASIN. FOR EXAMPLE, COMPARE PRIORITY DATES, FLOW RATES, VOLUMES, OR ACRES IRRIGATED. ALSO, YOUR WATER RIGHT MAY BE SUBJECT TO WATER RIGHTS IN ADJOINING SUBBASINS OR BASINS AS WELL AS BEING SUBJECT TO OTHER RIGHTS ON YOUR SOURCE OF SUPPLY. FINALLY, YOUR WATER RIGHT MAY BE SUBJECT TO INDIAN RESERVED AND FEDERAL RESERVED WATER RIGHTS.

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STATE OF MONTANA
DEPARTMENT OF NATURAL RESOURCES AND CONSERVATION
1424 9TH AVENUE P.O.BOX 201601 HELENA, MONTANA 59620-1601

GENERAL ABSTRACT

Water Right Number: 43D 45737-00 STATEMENT OF CLAIM
Version: 3 -- REEXAMINED
Version Status: ACTIVE

Owners: RED LODGE, CITY OF
1 SOUTH PLATT
PO BOX 9
RED LODGE, MT 59068

Priority Date: AUGUST 5, 1899
Enforceable Priority Date: AUGUST 5, 1899

Type of Historical Right: FILED

Purpose (use): MUNICIPAL

Maximum Flow Rate: 1.60 CFS

Maximum Volume: 32.00 AC-FT

Source Name: ROCK CREEK, WEST FORK

Source Type: SURFACE WATER

Point of Diversion and Means of Diversion:

| <u>ID</u> | <u>Govt Lot</u> | <u>Qtr Sec</u> | <u>Sec</u> | <u>Twp</u> | <u>Rge</u> | <u>County</u> |
|-----------|-----------------|----------------|------------|------------|------------|---------------|
| 1 | | NWNWSW | 4 | 8S | 20E | CARBON |

Period of Diversion: JANUARY 1 TO DECEMBER 31

Diversion Means: HEADGATE

Ditch Name: CITY PIPELINE

| | | | | | | |
|---|--|--------|---|----|-----|--------|
| 2 | | NWNWSW | 4 | 8S | 20E | CARBON |
|---|--|--------|---|----|-----|--------|

Period of Diversion: JANUARY 1 TO DECEMBER 31

Diversion Means: HEADGATE

Ditch Name: CITY DITCH

POINT OF DIVERSION 02 IS A HEADGATE THAT DIVERTS WATER TO SETTLING PONDS AND AN INFILTRATION GALLERY.

POINT OF DIVERSION 01 IS LOCATED NEAR THE LINE DIVIDING THE SW OF SECTION 4 AND THE NW OF SECTION 4 AND DIVERTS WATER DIRECTLY TO THE CITY'S SCREEN PLANT.

Period of Use: JANUARY 1 to DECEMBER 31

Place of Use:

| <u>ID</u> | <u>Acres</u> | <u>Govt Lot</u> | <u>Qtr Sec</u> | <u>Sec</u> | <u>Twp</u> | <u>Rge</u> | <u>County</u> |
|-----------|--------------|-----------------|----------------|------------|------------|------------|---------------|
| 1 | | | | 22 | 7S | 20E | CARBON |
| 2 | | | W2 | 23 | 7S | 20E | CARBON |
| 3 | | | W2W2 | 26 | 7S | 20E | CARBON |
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| 5 | | | E2 | 28 | 7S | 20E | CARBON |
| 6 | | | NE | 33 | 7S | 20E | CARBON |
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| 8 | | | | 34 | 7S | 20E | CARBON |
| 9 | | | NW | 35 | 7S | 20E | CARBON |
| 10 | | | W2 | 3 | 8S | 20E | CARBON |
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| 16 | | | W2NE | 9 | 8S | 20E | CARBON |
| 17 | | | NW | 9 | 8S | 20E | CARBON |
| 18 | | | NWSE | 9 | 8S | 20E | CARBON |
| 19 | | | N2SW | 9 | 8S | 20E | CARBON |

Remarks:

Remarks:

STARTING IN 2008, PERIOD OF DIVERSION WAS ADDED TO MOST CLAIM ABSTRACTS, INCLUDING THIS ONE.

WHENEVER THE WATER RIGHTS FOLLOWING THIS STATEMENT ARE COMBINED TO SUPPLY WATER FOR THE CLAIMED PURPOSE, EACH IS LIMITED TO THE HISTORICAL FLOW RATE AND PLACE OF USE OF THAT INDIVIDUAL RIGHT. THE SUM TOTAL VOLUME OF THESE WATER RIGHTS SHALL NOT EXCEED THE AMOUNT PUT TO HISTORICAL AND BENEFICIAL USE. 43D 43377-00, 43D 43378-00, 43D 45736-00, 43D 45737-00.



Water Right Number:
43D 4 737 00NULL

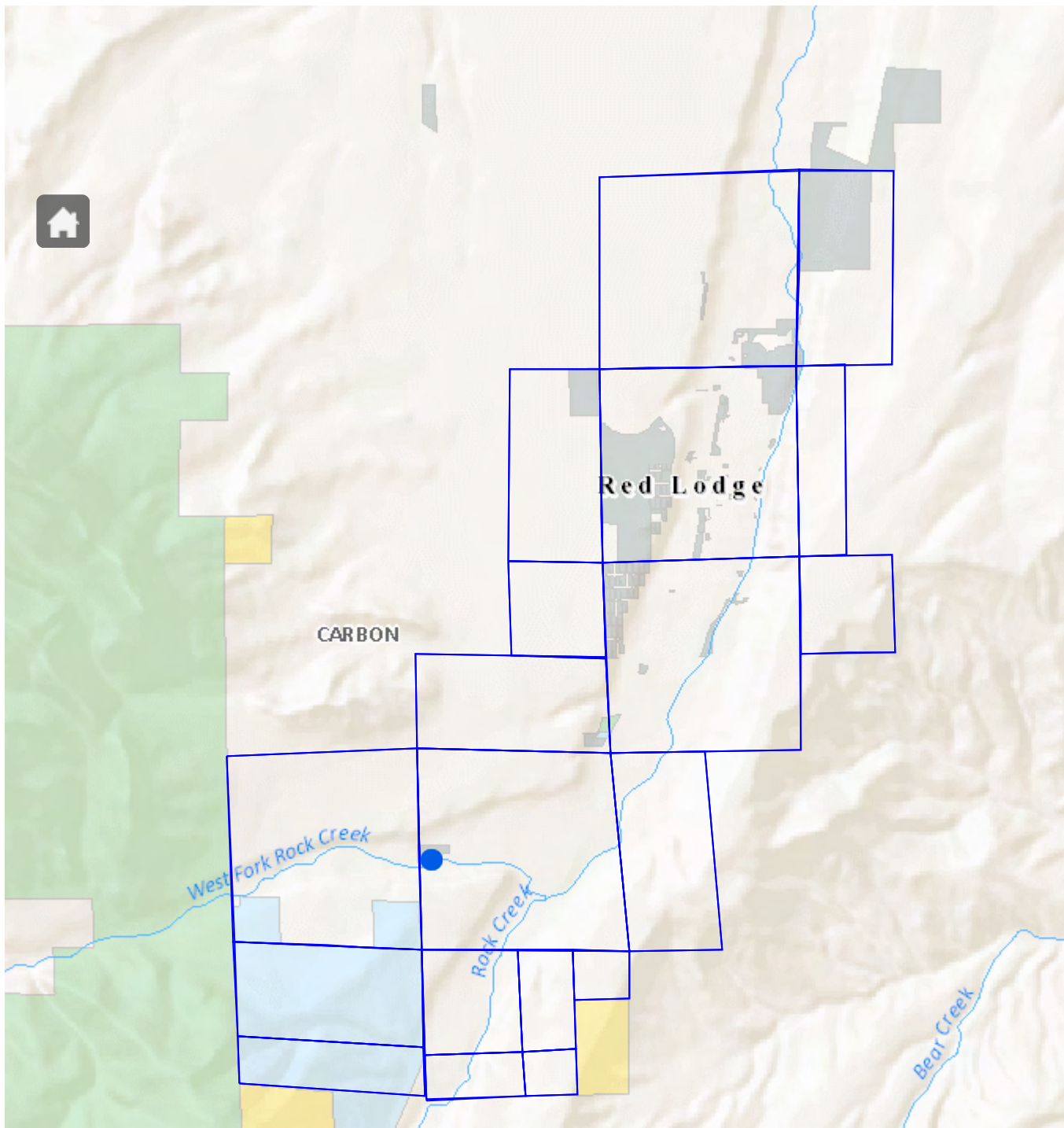
Print Map

Legend

- Diversion Count:
 - Surface water diversion.
 - Ground water diversion.
- Adjacent Diversions
 - Surface water diversion.
 - Ground water diversion.
- Place of Use Legal Land Descriptions
 - Adjacent POUs
 - Cadastral ?
 - PLSS Detail ?

Note:
 Contact DNRC if you have any questions or if the mapped information appears incorrect.

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ADJ



UPDATE TO FILE



STATEMENT OF CLAIM



*43D *



45737



00

Current File Location: **NEW STORAGE**

As of · 2/8/2017

Status: **IN**

Box Bar Code: **115372**

File Bar Code: **729414**

5/4/2017

REVIEW ABSTRACT OF WATER RIGHT CLAIM

IMPORTANT NOTICE

AN ASTERISK (*) HAS BEEN PLACED NEXT TO EACH ITEM CHANGED IN ACCORDANCE WITH THE SUPREME COURT RULES GOVERNING THE EXAMINATION OF THIS CLAIM.

Water Right Number: 43D 45737-00 STATEMENT OF CLAIM
Version: 3 -- REEXAMINED
Status: ACTIVE

Owners: RED LODGE, CITY OF
1 SOUTH PLATT
PO BOX 9
RED LODGE, MT 59068

Priority Date: AUGUST 5, 1899
Enforceable Priority Date: AUGUST 5, 1899

~~THE PRIORITY DATE MAY BE QUESTIONABLE - THIS CLAIM IS FOR A FILED APPROPRIATION ON ROCK CREEK, WEST FORK WITH A PRIORITY DATE PREDATING CASE NO 275, CARBON COUNTY.~~

Type of Historical Right: FILED *Removed the P370 remark per request from Senior Water Master, Anna Stradley during summary report questions. It has already been adjudicated by the water court MAH 03/14/2017*

Purpose (use): MUNICIPAL

Flow Rate: 1 60 CFS

Volume: 32 00 AC-FT

Source Name: ROCK CREEK, WEST FORK

Source Type: SURFACE WATER

Point of Diversion and Means of Diversion:

| ID | Govt Lot | Qtr | Sec | Twp | Rge | County |
|----|----------|-----|-----|-----|-----|--------|
| 1 | | NWN | 4 | 8S | 20E | CARBON |

Period of Diversion: JANUARY 1 TO DECEMBER 31

Diversion Means: HEADGATE

Ditch Name: CITY PIPELINE

| | | | | | | |
|---|--|-----|---|----|-----|--------|
| 2 | | NWN | 4 | 8S | 20E | CARBON |
|---|--|-----|---|----|-----|--------|

Period of Diversion: JANUARY 1 TO DECEMBER 31

Diversion Means: HEADGATE

Ditch Name: CITY DITCH

POINT OF DIVERSION 02 IS A HEADGATE THAT DIVERTS WATER TO SETTLING PONDS AND AN INFILTRATION GALLERY

POINT OF DIVERSION 01 IS LOCATED NEAR THE LINE DIVIDING THE SW OF SECTION 4 AND THE NW OF SECTION 4 AND DIVERTS WATER DIRECTLY TO THE CITY'S SCREEN PLANT

Period of Use: JANUARY 1 to DECEMBER 31

Place of Use:

| <u>ID</u> | <u>Acres</u> | <u>Govt Lot</u> | <u>Qtr</u> | <u>Sec</u> | <u>Twp</u> | <u>Rge</u> | <u>County</u> |
|-----------|--------------|-----------------|------------|------------|------------|------------|---------------|
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| 6 | | | NE | 33 | 7S | 20E | CARBON |
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| 16 | | | W2NE | 9 | 8S | 20E | CARBON |
| 17 | | | NW | 9 | 8S | 20E | CARBON |
| 18 | | | NWSE | 9 | 8S | 20E | CARBON |
| 19 | | | N2SW | 9 | 8S | 20E | CARBON |

WHENEVER THE WATER RIGHTS FOLLOWING THIS STATEMENT ARE COMBINED TO SUPPLY WATER FOR THE CLAIMED PURPOSE, EACH IS LIMITED TO THE HISTORICAL FLOW RATE AND PLACE OF USE OF THAT INDIVIDUAL RIGHT THE SUM TOTAL VOLUME OF THESE WATER RIGHTS SHALL NOT EXCEED THE AMOUNT PUT TO HISTORICAL AND BENEFICIAL USE 43D 43377-00, 43D 43378-00, 43D 45736-00, 43D 45737-00

Remarks:

STARTING IN 2008, PERIOD OF DIVERSION WAS ADDED TO MOST CLAIM ABSTRACTS, INCLUDING THIS ONE

STATE OF MONTANA
DEPARTMENT OF NATURAL RESOURCES AND CONSERVATION
1424 9TH AVENUE P.O.BOX 201601 HELENA, MONTANA 59620-1601

GENERAL ABSTRACT

Water Right Number: 43D 45738-00 STATEMENT OF CLAIM
Version: 3 -- REEXAMINED
Version Status: ACTIVE

Owners: RED LODGE, CITY OF
1 SOUTH PLATT
PO BOX 9
RED LODGE, MT 59068

Priority Date: JUNE 1, 1959

Enforceable Priority Date: JUNE 1, 1959

Type of Historical Right: USE

Purpose (use): MUNICIPAL
IRRIGATION OF CEMETERY

Maximum Flow Rate: 212.00 GPM

Maximum Volume: 26.00 AC-FT

Maximum Acres: 14.50

Source Name: GROUNDWATER

Source Type: GROUNDWATER

Point of Diversion and Means of Diversion:

| <u>ID</u> | <u>Govt Lot</u> | <u>Qtr Sec</u> | <u>Sec</u> | <u>Twp</u> | <u>Rge</u> | <u>County</u> |
|-----------|-----------------|----------------|------------|------------|------------|---------------|
| 1 | | SENE | 28 | 7S | 20E | CARBON |

Period of Diversion: APRIL 1 TO NOVEMBER 1

Diversion Means: WELL

Period of Use: APRIL 1 to NOVEMBER 1

Place of Use:

| <u>ID</u> | <u>Acres</u> | <u>Govt Lot</u> | <u>Qtr Sec</u> | <u>Sec</u> | <u>Twp</u> | <u>Rge</u> | <u>County</u> |
|---------------|--------------|-----------------|----------------|------------|------------|------------|---------------|
| 1 | 14.50 | | NENE | 28 | 7S | 20E | CARBON |
| Total: | 14.50 | | | | | | |

Remarks:

STARTING IN 2008, PERIOD OF DIVERSION WAS ADDED TO MOST CLAIM ABSTRACTS, INCLUDING THIS ONE.



Water Right Number:
43D 4 73 00NULL

Print Map

Legend

- Diversion Count:
 - Surface water diversion.
 - Ground water diversion.
- Adjacent Diversions
 - Surface water diversion.
 - Ground water diversion.
- Place of Use Legal Land Descriptions
 - Adjacent POUs
 - Cadastral ?
 - PLSS Detail ?

Note:
Contact DNRC if you have any questions or if the mapped information appears incorrect.

The points of diversion (PODs) and places of use (POUs) are derived from water right legal land descriptions. PODs are placed at the center of their legal land description, not at their true geographic location. POUs are drawn as polygons of the entire legal land description.





UPDATE TO FILE



STATEMENT OF CLAIM



***43D ***



45738



00

Current File Location: NEW STORAGE

As of: 2/8/2017

Box Bar Code _____

File Bar Code _____

Date/Initials _____

Series: ADJ

PRELIMINARY DECREE
CLARKS FORK YELLOWSTONE RIVER
BASIN 43D
ABSTRACT OF WATER RIGHT CLAIM

IMPORTANT NOTICE

YOUR WATER RIGHT AS SHOWN ON THIS ABSTRACT MAY HAVE CHANGES FROM YOUR WATER RIGHT AS CLAIMED OR AMENDED. AN ASTERISK (*) HAS BEEN PLACED NEXT TO EACH ITEM CHANGED BY THE MONTANA WATER COURT AFTER ISSUANCE OF THE TEMPORARY PRELIMINARY DECREE OR BY THE DEPARTMENT OF NATURAL RESOURCES AND CONSERVATION (DNRC) DURING THE PREPARATION OF THIS PRELIMINARY DECREE. THESE CHANGES ARE AUTHORIZED BY THE MONTANA SUPREME COURT WATER RIGHT CLAIMS EXAMINATION RULES OR BY ORDER OF THE WATER COURT.

OBJECTIONS MAY BE FILED ACCORDING TO THE PROCEDURES OUTLINED IN THE DOCUMENT ENTITLED "NOTICE OF ENTRY OF PRELIMINARY DECREE AND NOTICE OF AVAILABILITY."

Water Right Number: 43D 45738-00 STATEMENT OF CLAIM

Version: 3 -- REEXAMINED

Status: ACTIVE

Owners: RED LODGE, CITY OF
1 SOUTH PLATT
PO BOX 9
RED LODGE, MT 59068

Priority Date: JUNE 1, 1959

Type of Historical Right: USE

Purpose(use): MUNICIPAL
IRRIGATION OF CEMETERY

Flow Rate: 212.00 GPM

Volume: 26 00 AC-FT

Maximum Acres: 14 50

Source Name: GROUNDWATER

Source Type: GROUNDWATER

Point of Diversion and Means of Diversion:

| <u>ID</u> | <u>Govt Lot</u> | <u>Qtr Sec</u> | <u>Sec</u> | <u>Twp</u> | <u>Rge</u> | <u>County</u> |
|-----------|-----------------|----------------|------------|------------|------------|---------------|
| 1 | | SENE | 28 | 7S | 20E | CARBON |

Period of Diversion: APRIL 1 TO NOVEMBER 1

Diversion Means: WELL

Period of Use: APRIL 1 TO NOVEMBER 1

Place of Use:

| <u>ID</u> | <u>Acres</u> | <u>Govt Lot</u> | <u>Qtr Sec</u> | <u>Sec</u> | <u>Twp</u> | <u>Rge</u> | <u>County</u> |
|-----------|--------------|-----------------|----------------|------------|------------|------------|---------------|
| 1 | 14 50 | | NENE | 28 | 7S | 20E | CARBON |

Total: 14 50

Remarks:

STARTING IN 2008, PERIOD OF DIVERSION WAS ADDED TO MOST CLAIM ABSTRACTS, INCLUDING THIS ONE

THE DNRC EXAMINATION OF THIS CLAIM FOUND NO SIGNIFICANT FACTS, DATA, OR ISSUES TO REPORT TO THE WATER COURT.

A BETTER UNDERSTANDING OF YOUR CLAIMED WATER RIGHT CAN BE OBTAINED BY COMPARING YOUR RIGHT WITH OTHER CLAIMS IN THE BASIN. FOR EXAMPLE, COMPARE PRIORITY DATES, FLOW RATES, VOLUMES, OR ACRES IRRIGATED. ALSO, YOUR WATER RIGHT MAY BE SUBJECT TO WATER RIGHTS IN ADJOINING SUBBASINS OR BASINS AS WELL AS BEING SUBJECT TO OTHER RIGHTS ON YOUR SOURCE OF SUPPLY. FINALLY, YOUR WATER RIGHT MAY BE SUBJECT TO INDIAN RESERVED AND FEDERAL RESERVED WATER RIGHTS.

COMPLETE DETAILS REGARDING THE DNRC PREPARATION OF THIS PRELIMINARY DECREE AND RELATED MATERIALS CAN BE REVIEWED AT THE OFFICE LOCATIONS IDENTIFIED IN THE DOCUMENT ENTITLED "NOTICE OF ENTRY OF PRELIMINARY DECREE AND NOTICE OF AVAILABILITY."

SEE GENERAL FINDINGS OF FACT AND CONCLUSIONS OF LAW FOR FURTHER EXPLANATION OF YOUR CLAIMED WATER RIGHT. THESE FINDINGS CAN BE FOUND AS INDICATED IN THE DOCUMENT ENTITLED "NOTICE OF ENTRY OF PRELIMINARY DECREE AND NOTICE OF AVAILABILITY." IF YOU NEED OBJECTION FORMS, OR HAVE QUESTIONS ABOUT WATER COURT PROCEDURES OR CHANGES TO YOUR RIGHT, YOU CAN CONTACT THE WATER COURT BY CALLING 1-800-624-3270 (WITHIN MONTANA ONLY) OR 1-406-586-4364, OR BY WRITING TO P.O. BOX 1389, BOZEMAN, MT 59771-1389.

STATE OF MONTANA
DEPARTMENT OF NATURAL RESOURCES AND CONSERVATION
1424 9TH AVENUE P.O.BOX 201601 HELENA, MONTANA 59620-1601

GENERAL ABSTRACT

Water Right Number: 43D 66358-00 PROVISIONAL PERMIT
Version: 1 -- ORIGINAL RIGHT
Version Status: ACTIVE

Owners: RED LODGE, CITY OF
1 SOUTH PLATT
PO BOX 9
RED LODGE, MT 59068

Priority Date: AUGUST 17, 1987 at 11:41 A.M.
Enforceable Priority Date: AUGUST 17, 1987 at 11:41 A.M.

Purpose (use): COMMERCIAL
IRRIGATION

Maximum Flow Rate: 100.00 GPM

Maximum Volume: 97.11 AC-FT

Maximum Acres: 13.91

Source Name: GROUNDWATER
Source Type: GROUNDWATER

Point of Diversion and Means of Diversion:

| <u>ID</u> | <u>Govt Lot</u> | <u>Qtr Sec</u> | <u>Sec</u> | <u>Twp</u> | <u>Rge</u> | <u>County</u> |
|-----------|-----------------|----------------|------------|------------|------------|---------------|
| 1 | | SESESE | 22 | 7S | 20E | CARBON |

Period of Diversion: JANUARY 1 TO DECEMBER 31
Diversion Means: WELL

Reservoir: OFF STREAM

| <u>Govt Lot</u> | <u>Qtr Sec</u> | <u>Sec</u> | <u>Twp</u> | <u>Rge</u> | <u>County</u> |
|-----------------|----------------|------------|------------|------------|---------------|
| | E2SESE | 22 | 7S | 20E | CARBON |

Current Capacity: 1.40 ACRE-FEET

Purpose (Use): COMMERCIAL
Volume: 7.40 AC-FT
Period of Use: JANUARY 1 to DECEMBER 31

Place of Use:

| <u>ID</u> | <u>Acres</u> | <u>Govt Lot</u> | <u>Qtr Sec</u> | <u>Sec</u> | <u>Twp</u> | <u>Rge</u> | <u>County</u> |
|-----------|--------------|-----------------|----------------|------------|------------|------------|---------------|
| 1 | | | SESE | 22 | 7S | 20E | CARBON |

Purpose (Use): IRRIGATION
Irrigation Type: SPRINKLER
Volume: 89.71 AC-FT
Period of Use: APRIL 1 to OCTOBER 31

Place of Use:

| <u>ID</u> | <u>Acres</u> | <u>Govt Lot</u> | <u>Qtr Sec</u> | <u>Sec</u> | <u>Twp</u> | <u>Rge</u> | <u>County</u> |
|---------------|--------------|-----------------|----------------|------------|------------|------------|---------------|
| 1 | 6.94 | | SESE | 22 | 7S | 20E | CARBON |
| 2 | 0.32 | | SWSWSW | 23 | 7S | 20E | CARBON |
| 3 | 0.36 | | NWNWNW | 26 | 7S | 20E | CARBON |
| 4 | 6.29 | | NENE | 27 | 7S | 20E | CARBON |
| Total: | 13.91 | | | | | | |

Remarks:

Remarks:

GROUNDWATER WASTE & CONTAMINATION

THIS RIGHT IS SUBJECT TO SECTION 85-2-505, MCA, REQUIRING A WELL BE CONSTRUCTED SO IT WILL NOT ALLOW WATER TO BE WASTED OR CONTAMINATE OTHER WATER SUPPLIES OR SOURCES, AND A FLOWING WELL MUST BE CAPPED OR EQUIPPED SO THE FLOW OF THE WATER MAY BE STOPPED WHEN NOT BEING PUT TO BENEFICIAL USE.

GROUNDWATER WELL - ACCESS PORT

THE FINAL COMPLETION OF THE WELL(S) MUST INCLUDE AN ACCESS PORT OF AT LEAST .50 INCH SO THE STATIC LEVEL OF THE WELL MAY BE ACCURATELY MEASURED.

POSSIBLE COMPLAINT RECEIVED

IF AT ANY TIME AFTER THIS RIGHT IS ISSUED, A WRITTEN COMPLAINT IS RECEIVED BY THE DEPARTMENT ALLEGING THAT DIVERTING FROM THIS SOURCE IS ADVERSELY AFFECTING A PRIOR WATER RIGHT, THE DEPARTMENT MAY MAKE A FIELD INVESTIGATION OF THE PROJECT. IF DURING THE FIELD INVESTIGATION THE DEPARTMENT FINDS SUFFICIENT EVIDENCE SUPPORTING THE ALLEGATION, IT MAY CONDUCT A HEARING IN THE MATTER ALLOWING THE APPROPRIATOR TO SHOW CAUSE WHY THE RIGHT SHOULD NOT BE MODIFIED OR REVOKED. THE DEPARTMENT MAY THEN MODIFY OR REVOKE THIS RIGHT TO PROTECT EXISTING RIGHTS OR LEAVE THIS RIGHT UNCHANGED IF THE HEARING OFFICER DETERMINES NO EXISTING WATER RIGHTS ARE BEING ADVERSELY AFFECTED.



Water Right Number:
43D 3 00NULL

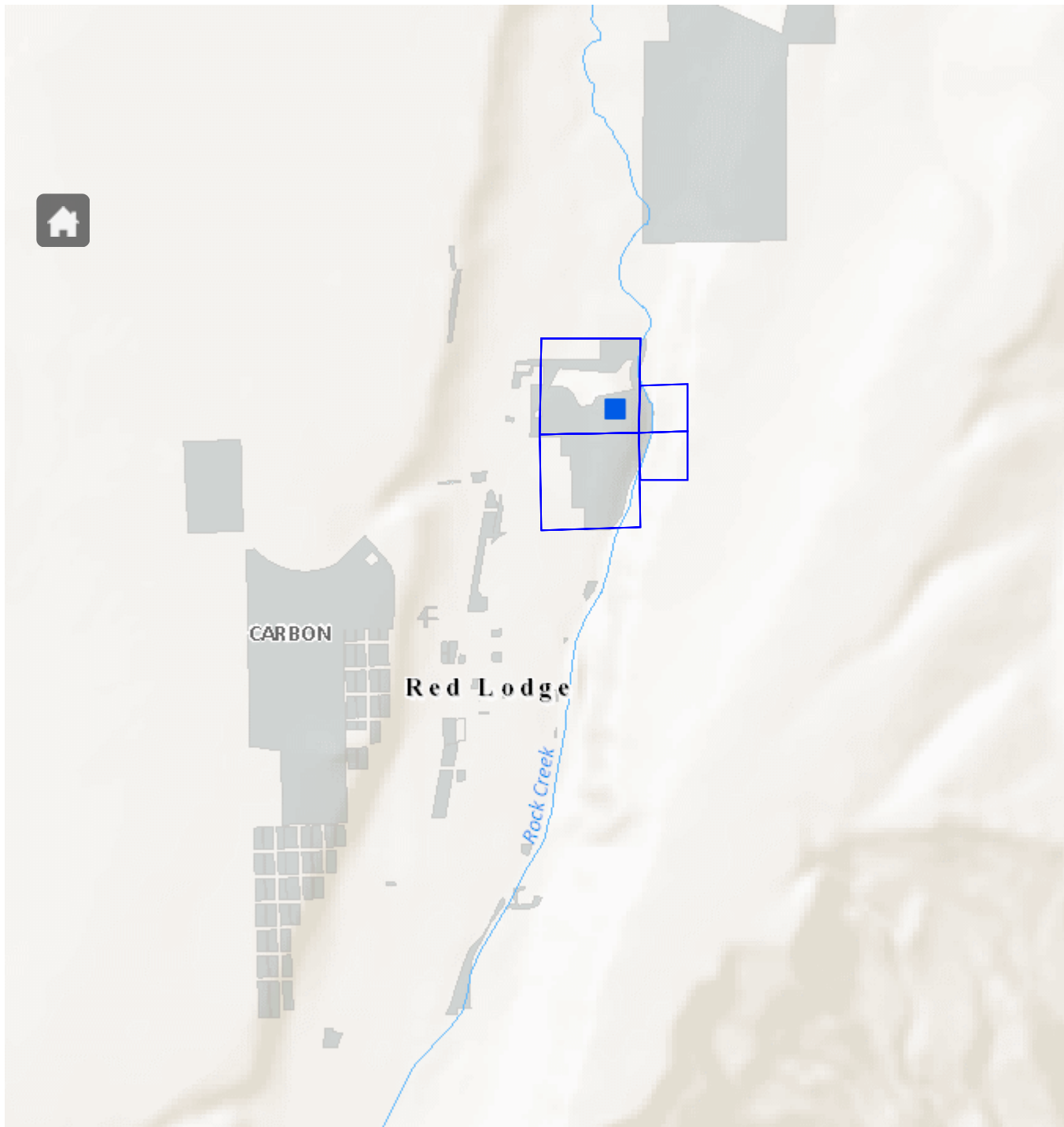
Print Map

Legend

- Diversion Count:
 - Surface water diversion.
 - Ground water diversion.
- Adjacent Diversions
 - Surface water diversion.
 - Ground water diversion.
- Place of Use Legal Land Descriptions
 - Adjacent POUs
 - Cadastral ?
 - PLSS Detail ?

Note:
Contact DNRC if you have any questions or if the mapped information appears incorrect.

The points of diversion (PODs) and places of use (POUs) are derived from water right legal land descriptions. PODs are placed at the center of their legal land description, not at their true geographic location. POUs are drawn as polygons of the entire legal land description.



NA



FILE



PROVISIONAL PERMIT



*43D *



66358



00

Current File Location: **NEW STORAGE**

As of : 3/8/2000

Status: **IN**

Box Bar Code: **95036**

File Bar Code: **291486**

11/25/2013

Certification:

All materials

- Draft certificate or All Purpose Abstract
 - Verifab
- 617/618 Field Report
- Signature attachment
 - Maps
 - Photos
- Measurement Records
 - SCS "As Builts"
 - Well log
- Correspondence

Certification

FILMED

D R A F T
CERTIFICATE OF WATER RIGHT
(FOR PERFECTED PERMIT TO APPROPRIATE WATER)

UPON FINDING THE REQUIREMENTS OF SECTION 85-2-315 MCA,
HAVE BEEN MET, THIS CERTIFICATE OF WATER RIGHT IS ISSUED TO:

RED LODGE, CITY OF
PO BOX 9
RED LODGE MT 59068

CERTIFICATE NUMBER: 66358-43D

PRIORITY DATE: AUGUST 17, 1987 AT 11:41 A.M.

SOURCE: GROUNDWATER

DIVERSION: MEANS: WELL
SESESE SEC. 22 TWP. 07S RGE. 20E CARBON CO

TOTAL FLOW RATE: 100.00 GPM

TOTAL VOLUME: 97.11 ACRE FEET PER YEAR

USE: 5.00 GPM UP TO 7.40 AC-FT
FROM: 01/01-12/31
FOR COMMERCIAL

100.00 GPM UP TO 89.71 AC-FT
FROM: 04/01-10/31
FOR IRRIGATION ON 13.91 ACRES

PLACE OF USE: SESE SEC. 22 TWP. 07S RGE. 20E CARBON CO
FOR COMMERCIAL

SESE SEC. 22 TWP. 07S RGE. 20E CARBON CO
FOR IRRIGATION ON 6.94 ACRES

SWSWSW SEC. 23 TWP. 07S RGE. 20E CARBON CO
FOR IRRIGATION ON .32 ACRES

NWNWNW SEC. 26 TWP. 07S RGE. 20E CARBON CO
FOR IRRIGATION ON .36 ACRES

NENE SEC. 27 TWP. 07S RGE. 20E CARBON CO
FOR IRRIGATION ON 6.29 ACRES

RESERVOIR: OFF STREAM CAPACITY OF 1.4 AC-FT
E2SESE SEC. 22 TWP. 07S RGE. 20E CARBON CO

**** PRIOR RIGHTS:**

THIS RIGHT IS SUBJECT TO ALL PRIOR EXISTING WATER RIGHTS IN THE SOURCE
OF SUPPLY. FURTHER; THIS PERMIT IS SUBJECT TO ANY FINAL DETERMINATION
OF EXISTING WATER RIGHTS, AS PROVIDED BY MONTANA LAW.

**** BACKFLOW PREVENTOR:**

PURSUANT TO SECTION 85-2-505, MCA, TO PREVENT
GROUNDWATER CONTAMINATION, AN OPERATIONAL BACK FLOW
PREVENTOR MUST BE INSTALLED AND MAINTAINED BY THE
APPROPRIATOR IF A CHEMICAL OR FERTILIZER DISTRIBUTION
SYSTEM IS CONNECTED TO THE WELL.

**** GROUNDWATER:**

THIS RIGHT IS SUBJECT TO SECTION 85-2-505, MCA,
REQUIRING A WELL BE CONSTRUCTED SO IT WILL NOT ALLOW
WATER TO BE WASTED OR CONTAMINATE OTHER WATER
SUPPLIES OR SOURCES, AND A FLOWING WELL MUST BE
CAPPED OR EQUIPPED SO THE FLOW OF THE WATER MAY BE
STOPPED WHEN NOT BEING PUT TO BENEFICIAL USE.
THE FINAL COMPLETION OF THE WELL(S) MUST INCLUDE AN
ACCESS PORT OF AT LEAST .50 INCH SO THE STATIC LEVEL
OF THE WELL MAY BE ACCURATELY MEASURED.

**** POSSIBLE COMPLAINT RECEIVED:**

IF AT ANY TIME AFTER THIS RIGHT IS ISSUED, A WRITTEN
COMPLAINT IS RECEIVED BY THE DEPARTMENT ALLEGING THAT
DIVERTING FROM THIS SOURCE IS ADVERSELY AFFECTING A

FILMED

CERTIFICATE NUMBER: 66358-43D

PAGE 3

PRIOR WATER RIGHT, THE DEPARTMENT MAY MAKE A FIELD INVESTIGATION OF THE PROJECT. IF DURING THE FIELD INVESTIGATION THE DEPARTMENT FINDS SUFFICIENT EVIDENCE SUPPORTING THE ALLEGATION, IT MAY CONDUCT A HEARING IN THE MATTER ALLOWING THE APPROPRIATOR TO SHOW CAUSE WHY THE RIGHT SHOULD NOT BE MODIFIED OR REVOKED. THE DEPARTMENT MAY THEN MODIFY OR REVOKE THIS RIGHT TO PROTECT EXISTING RIGHTS OR LEAVE THIS RIGHT UNCHANGED IF THE HEARING OFFICER DETERMINES NO EXISTING WATER RIGHTS ARE BEING ADVERSELY AFFECTED.

**** OWNERSHIP UPDATE:**

IF THE OWNERSHIP CHANGES ON ANY PORTION OF OR ALL OF THIS RIGHT, A WATER RIGHT OWNERSHIP UPDATE, FORM 608, MUST BE FILED WITH THE DEPARTMENT OF NATURAL RESOURCES AND CONSERVATION.

FAILURE TO COMPLY WITH ANY OF THE TERMS AND CONDITIONS MAY RESULT IN THE LOSS OF THE WATER RIGHT GRANTED BY THIS PERMIT.

DATE: FEBRUARY 07, 2000

DEPARTMENT OF NATURAL RESOURCES & CONSERVATION
WATER RIGHTS BUREAU
WATER RIGHT INFORMATION

WATER RIGHT NUMBER: 43D P066358-00

OWNER DATA:

CURRENT OWNER: C RED LODGE, CITY OF
PO BOX 9

RED LODGE MT 59068

WATER RIGHT DATA:

| LIMITS FOR WATER RIGHT | | OPERATING DATES | | MISCELLANEOUS DATA |
|-----------------------------|------------|---|-----------------|--------------------------------|
| SURFACE/GROUND WATER | G | APPLICATION RECEIVED | 8/17/87 | INITIAL ID. |
| TOTAL RATE | 100.00 GPM | PRIORITY DATE | 1141 08/17/1987 | PUBLIC NOTICE WAIVED |
| TOTAL VOLUME (AF) | 97.11 | PROCESSING STATUS | -3-CO-02/05/00 | |
| TOTAL ACRES | 13.91 | CERTIFICATE ISSUED | 02/07/00 | |
| | | PERMIT/AUTHORIZATION ISSUED | 03/08/88 | |
| | | NOTICE OF COMPLETION DUE | 12/31/94 | |
| | | NOTICE OF COMPLETION RECEIVED | 12/24/97 | |
| | | DATE VERIFIED | 02/05/00 | |
| | | REPORT DUE | 11/30/88 | |
| | | | N | |

WELL DATA:

NUMBER: 01
LOCATION: SESESE SEC 22 TWP 07S RGE 20E CARBON CO

DETAILS OF WELL
RATE 100.00 GPM

RESERVOIR DATA:

NUMBER: 01
LOCATION: E2SESE SEC 22 TWP 07S RGE 20E CARBON CO
OFF STREAM

DETAILS OF RESERVOIR
CAPACITY 1.4

USE:

TYPE OF USE: (CM) COMMERCIAL

LIMITS OF USE
PERIOD OF USE JAN 01-DEC 31
RATE 5.00 GPM
VOLUME 7.40

TYPE OF USE: (IR) IRRIGATION
TYPE OF IRRIGATION . . (S) SPRINKLER

LIMITS OF USE
PERIOD OF USE APR 01-OCT 31
RATE 100.00 GPM
VOLUME 89.71
ACRES IRRIGATED 13.91

PLACE OF USE:

| NUMBER | ACRES | LOT | BLOCK | QTR | SEC | SEC | TWP | RGE | COUNTY |
|----------|-------|-----|-------|-----|--------|-----|-----|-----|-----------|
| CM01-001 | | | | | SESE | 22 | 07S | 20E | CARBON CO |
| IR01-001 | 6.94 | | | | SESE | 22 | 07S | 20E | CARBON CO |
| IR01-002 | .32 | | | | SWSWSW | 23 | 07S | 20E | CARBON CO |
| IR01-003 | .36 | | | | NWNWNW | 26 | 07S | 20E | CARBON CO |

IR01-004 6.29 NENE 27 07S 20E CARBON CO

REMARK DATA:

- (CF01) GROUNDWATER WASTE & CONTAMINATION
TEXT: THIS RIGHT IS SUBJECT TO SECTION 85-2-505, MCA,
REQUIRING A WELL BE CONSTRUCTED SO IT WILL NOT ALLOW
WATER TO BE WASTED OR CONTAMINATE OTHER WATER

- (CF02) GROUNDWATER WASTE & CONTAMINATION
TEXT: SUPPLIES OR SOURCES, AND A FLOWING WELL MUST BE
CAPPED OR EQUIPPED SO THE FLOW OF THE WATER MAY BE
STOPPED WHEN NOT BEING PUT TO BENEFICIAL USE.

- (CF04) GROUNDWATER WASTE & CONTAMINATION
TEXT: THE FINAL COMPLETION OF THE WELL(S) MUST INCLUDE AN
ACCESS PORT OF AT LEAST .50 INCH SO THE STATIC LEVEL
OF THE WELL MAY BE ACCURATELY MEASURED.

- (RS01) POSSIBLE COMPLAINT RECEIVED
TEXT: IF AT ANY TIME AFTER THIS RIGHT IS ISSUED, A WRITTEN
COMPLAINT IS RECEIVED BY THE DEPARTMENT ALLEGING THAT
DIVERTING FROM THIS SOURCE IS ADVERSELY AFFECTING A

- (RS02) POSSIBLE COMPLAINT RECEIVED
TEXT: PRIOR WATER RIGHT, THE DEPARTMENT MAY MAKE A FIELD
INVESTIGATION OF THE PROJECT. IF DURING THE FIELD
INVESTIGATION THE DEPARTMENT FINDS SUFFICIENT

- (RS03) POSSIBLE COMPLAINT RECEIVED
TEXT: EVIDENCE SUPPORTING THE ALLEGATION, IT MAY CONDUCT A
HEARING IN THE MATTER ALLOWING THE APPROPRIATOR TO
SHOW CAUSE WHY THE RIGHT SHOULD NOT BE MODIFIED OR

- (RS04) POSSIBLE COMPLAINT RECEIVED
TEXT: REVOKED. THE DEPARTMENT MAY THEN MODIFY OR REVOKE
THIS RIGHT TO PROTECT EXISTING RIGHTS OR LEAVE THIS
RIGHT UNCHANGED IF THE HEARING OFFICER DETERMINES NO

- (RS05) POSSIBLE COMPLAINT RECEIVED
TEXT: EXISTING WATER RIGHTS ARE BEING ADVERSELY AFFECTED.

| PERMITTED DATA | |
|--|--|
| NAME: RED LODGE, CITY OF | |
| PO BOX 9 | |
| RED LODGE MT 59068 | |
| PRIORITY DATE: AUGUST 17, 1987 AT 11:41 A.M. | |
| SOURCE: GROUNDWATER WELL | |
| TOTAL FLOW RATE: ¹⁰⁰ 220.00 GPM | |
| TOTAL VOLUME: 97.11 ACRE FEET PER YEAR | |
| DIVERSION POINT: SESESE SEC. 22 TWP. 07S RGE. 20E CA CO. | |
| MENENE SEC. 27 TWP. 07S RGE. 20E CA CO. | |
| SESESE SEC. 22 TWP. 07S RGE. 20E CA CO. | |
| USE: 5.00 GPM UP TO 7.40 AF (01/01-12/31) | |
| FOR COMMERCIAL | |
| ¹⁰⁰ 215.00 GPM UP TO 89.71 AF (04/01-10/31) | |
| FOR IRRIGATION ON 13.91 ACRES | |
| PLACE OF USE: SESE SEC. 22 TWP. 07S RGE. 20E CA CO. | |
| FOR COMMERCIAL | |
| SESE SEC. 22 TWP. 07S RGE. 20E CA CO. | |
| FOR IRRIGATION ON 6.94 ACRES | |
| SWSWSW SEC. 23 TWP. 07S RGE. 20E CA CO. | |
| FOR IRRIGATION ON .32 ACRES | |
| MWNWNW SEC. 26 TWP. 07S RGE. 20E CA CO. | |
| FOR IRRIGATION ON .36 ACRES | |
| NENE SEC. 27 TWP. 07S RGE. 20E CA CO. | |
| FOR IRRIGATION ON 6.29 ACRES | |

| FINDINGS |
|---|
| ok |
| ↓ |
| ok |
| ok |
| 100 gpm. See item DL NOC |
| ok |
| There is only one well in this description. The well that is in use is ^{the} reworked well. The little well in the NENE of 27 is not used. |
| ok |
| ok |
| 100 gpm See well log dated 6-7-94. ^{Some of the wells drilled in 1989. That well was reworked and cased in and was reworked in 6-7-94} |
| ok actually 16 acres are irrigated. It is within the variance. |
| ok |
| ↓ |

| PERMITTED DATA | FINDINGS |
|--|----------|
| DIVERSION MEANS: | |
| RESERVOIR: CAPACITY OF 1.4 AF E2SESE SEC. 22 TWP. 07S RGE. 20E CA CO. | ok |
| CONDITIONS: CF-CONTAMINATION, FLOWING WELLS | |
| THIS RIGHT IS SUBJECT TO SECTION 85-2-505, MCA, REQUIRING A WELL BE CONSTRUCTED SO IT WILL NOT ALLOW WATER TO BE WASTED OR CONTAMINATE OTHER WATER | |
| CF-CONTAMINATION, FLOWING WELLS SUPPLIES OR SOURCES, AND A FLOWING WELL MUST BE CAPPED OR EQUIPPED SO THE FLOW OF THE WATER MAY BE STOPPED WHEN NOT BEING PUT TO BENEFICIAL USE. | |
| CF-CONTAMINATION, FLOWING WELLS THE FINAL COMPLETION OF THE WELL(S) MUST INCLUDE AN ACCESS PORT OF AT LEAST .50 INCH SO THE STATIC LEVEL OF THE WELL MAY BE ACCURATELY MEASURED. | |
| PG-PROGRESS REPORT REPORTS TO THE WATER RESOURCES REGIONAL OFFICE LISTED BELOW. | |
| PG-PROGRESS REPORT BILLINGS, MT PH: 406-657-2015 FAX: 406-245-2064 | |
| RS-POSSIBLE FURTHER RESTRICTIONS IF AT ANY TIME AFTER THIS RIGHT IS ISSUED, A WRITTEN COMPLAINT IS RECEIVED BY THE DEPARTMENT ALLEGING THAT DIVERTING FROM THIS SOURCE IS ADVERSELY AFFECTING A | |
| RS-POSSIBLE FURTHER RESTRICTIONS PRIOR WATER RIGHT, THE DEPARTMENT MAY MAKE A FIELD | |

| PERMITTED DATA | FINDINGS |
|---|------------------|
| <p>INVESTIGATION OF THE PROJECT. IF DURING THE FIELD INVESTIGATION THE DEPARTMENT FINDS SUFFICIENT RS-POSSIBLE FURTHER RESTRICTIONS EVIDENCE SUPPORTING THE ALLEGATION, IT MAY CONDUCT A HEARING IN THE MATTER ALLOWING THE APPROPRIATOR TO SHOW CAUSE WHY THE RIGHT SHOULD NOT BE MODIFIED OR RS-POSSIBLE FURTHER RESTRICTIONS REVOKED. THE DEPARTMENT MAY THEN MODIFY OR REVOKE THIS RIGHT TO PROTECT EXISTING RIGHTS OR LEAVE THIS RIGHT UNCHANGED IF THE HEARING OFFICER DETERMINES NO RS-POSSIBLE FURTHER RESTRICTIONS EXISTING WATER RIGHTS ARE BEING ADVERSELY AFFECTED.</p> | <p><i>ok</i></p> |

TO BE COMPLETED BY VERIFIER:

ADDITIONAL COMPUTER DATA: WELL: DEPTH-_____ STATIC LEVEL-_____ WELL YIELD-_____ CASING SIZE-_____ PUMP SIZE-_____

RESERVOIR: DAM HEIGHT-_____ SURFACE ACRES-_____ STOCK: ANML UNITS-_____ DOMESTIC: HOUSES-_____ IRRIGATION: TYPE-_____

SUPPLEMENTAL RIGHTS: IF THIS PERMIT IS SUPPLEMENTAL TO ANY OTHER RIGHTS, MEANING THEY HAVE OVERLAPPING PLACES OF USE, LIST THE
WATER RIGHT NUMBERS. _____

MICROFILM CHECK: ALL PERMITS WILL BE REFILMED IN THEIR ENTIRETY. DOES THE FILE RECORD CONTAIN ANY LARGE MAPS THAT HAVE ALREADY
BEEN FILMED? ___YES ___NO

VERIFICATION ATTACHMENTS: (SPECIFY ADDENDUMS, REPORTS, MAPS, PHOTOS, ETC.) _____

VERIFIER'S SIGNATURE: *Jurison Lightizer*

DATE: *2-5-00*

* TO BE COMPLETED BY PERMITTEE: *

* PERMITTEE I AGREE WITH ALL OF THE ABOVE FINDINGS OF THE VERIFIER. *

* (CHECK ONE): I DO NOT AGREE WITH ALL OF THE ABOVE FINDINGS OF THE VERIFIER, AND HEREBY SPECIFY THOSE ITEMS OF DISAGREEMENT *

* _____ *

* _____ *

* _____ *

* PERMITTEE (CHECK ONE): I DO NOT DO REQUEST A HEARING ON THE SPECIFIC ITEM(S) OF DISAGREEMENT LISTED ABOVE. *

* PERMITTEE'S SIGNATURE: _____ DATE: _____ *

* (ONLY ONE PERMITTEE NEED SIGN) *

TO BE COMPLETED REGIONAL OFFICE MANAGER:

CHECK THE PROPER BOX OR SPECIFY THE PROCESSING ACTION NEEDED ON THE PERMIT:

- ISSUE CERTIFICATE OF WATER RIGHT AS PERMITTED (NO CHANGES NEEDED).
- ISSUE CERTIFICATE OF WATER RIGHT WITH VERIFIED CHANGES (SEE PERMITTED DATA SECTION).
- PERMIT MODIFICATION HEARING NECESSARY.
- DO NOT ISSUE A CERTIFICATE. PERMIT IS ABANDONED OR NOT COMPLETE (REVOKE PERMIT).
- OTHER (SPECIFY)

REGIONAL OFFICE MANAGER'S SIGNATURE: _____

DATE: _____

| ADDITIONAL VERIFIED DATA | FINDINGS |
|--------------------------|----------|
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COMMENTS

I spoke with the Public Works Director on 2-5-00. The Notice of Completion confused him. They are using one well at 100 gpm to irrigate 16 acres and have used 5 gallons per minute up to 7.4 acre-feet of ground water for the zoo (commercial)

STATE OF MONTANA
DEPARTMENT OF NATURAL RESOURCES AND CONSERVATION

NOTICE OF COMPLETION
OF PERMITTED WATER DEVELOPMENT
Field Report

RECEIVED
DNRC
DEC 22 1997

Instructions: Use this form to report the completion of a "Permit to Appropriate Water." This form must be filed on or before the deadline date on the permit or authorized extension of time. If the project is not completed, file an Application for Extension of Time 30 days before the permit deadline date; otherwise the permit is void. For complete instructions, read "Instructions for Notice of Completion of Permitted Water Development."

WORK COPY

A. GENERAL INFORMATION

- 1. PERMIT NO. 66358-G439
- 2. Permit Owner City of Red Lodge
Mailing Address P.O. Box 9 Telephone No. (406) 446-1606
City Red Lodge State MT Zip 59068
- 3. Field Examiner Orval Boyer Profession Public Works Director
Mailing Address P.O. Box 9 Telephone No. (406) 446-1681
City Red Lodge State MT Zip 59068
- 4. Field Investigation Date Oct 1, 1997

B. OVERLAPPING WATER RIGHTS

- 1. Other water rights with same place of use: Water Right Number _____
- 2. Other water rights with same point of diversion: Water Right Number _____

C. SOURCE OF WATER

- Well (Attach a copy of the Well Log Report)
- Developed Spring (Describe development) _____
- Lake/Reservoir Name _____ Tributary to _____
- Stream Name _____ Tributary to _____
- Unnamed Source - Tributary to _____
- Closed Basin (A closed basin results when water drains into a depression, lake, etc., from which water escapes only by evaporation.)

D. SYSTEM DESCRIPTION

- 1. Means of Diversion: Pump Headgate/Ditch or pipeline Dike Dam
 Pit Other (Describe) _____
- 2. Pump: Centrifugal Turbine Submersible
Brand name Grundfos GPM Capacity 100
Model # SD 16 Discharge pressure 80 lbs.
Impeller diameter 3 inch No. of Stages / Bowls _____
Lift (in feet) _____
- Motor: Brand Name Franklin HP Rating 10
No. of Phases single RPM 3450
Voltage 230 Service factor (SF) 1.15
Amperage 44
- Engine: Fuel type _____ Displacement _____
Brand name _____ RPM _____
HP rating _____

3. Reservoir: Attach an engineering survey, an "SCS As Built" survey, or complete the formula below with current measurements of the reservoir or pit as it was built.

Dam: Surface Area _____ X Maximum Depth _____ X 0.4 = _____ AC-FT
(acres) (at Dam) (feet) (capacity)

Pit: Surface Area _____ X Maximum Depth _____ X 0.5 = _____ AC-FT

Release Other Than Spillway No Yes, (Describe type and size of any release or drainage device) _____

4. Conveyance Facilities: Pipeline Ditch Natural Carrier
 Describe (pipe material, size, length, top width, bottom width, depth, etc) 3" PVC 500' length

5. Irrigation System:
Flood Contour Ditch Border Dike Spreader Dike
Sprinkler Handline # of Heads 8
 Wheel Line PSI 80
 Big Gun Nozzle size _____
 Nozzle type _____
 Center Pivot (attach a copy of sprinkler chart)
 Other (Describe) _____

WORK COPY

Type of Crop: Alfalfa Pasture Small grains Other Bull field

E. PERIOD OF APPROPRIATION

The time during the year that water is diverted, impounded, or withdrawn from the source.

May 1 to October 1
month/day month/day

F. POINT OF DIVERSION

| IDENT NO | LOT | BLK | GOVT LOT | 1/4 | 1/4 | 1/4 | SEC | TWP N/S | RGE E/W | CNTY |
|----------|-----|-----|----------|-----|-----|-----|-----|---------|---------|--------|
| | | | | SE | SE | SE | 22 | 07 | 20 | Carbon |

Subdivision Name Coal Miner's Memorial Park

G. PLACE OF USE

For Irrigation:

| ACRES | LOT | BLK | 1/4 | 1/4 | 1/4 | SEC | TWP N/S | RGE E/W | CNTY | (N)New / (S)Supp |
|--------------------------|-----|-----|---------------|-----|-----|-----------------------------|---------|---------|--------|------------------|
| <u>6.94</u> <u>+6</u> | | | SE | SE | SE | 22 | 07 | 20 | Carbon | |
| <u>.32</u> | | | SW | SW | SW | 26 ²³ | 07 | 20 | " | |
| <u>.36</u> | | | NW | NW | NW | 26 | 07 | 20 | " | |
| <u>6.29</u> | | | | NE | NE | 27 | 07 | 20 | " | |

13.91

16 TOTAL ACRES

Subdivision Name Coal Miner's Memorial Park

For Non-Irrigation:

If the place of use is the same as the point of diversion, check

| PURPOSE | GOVT LOT | LOT | BLK | 1/4 | 1/4 | 1/4 | SEC | TWP # | RGE # | CNTY |
|------------|----------|-----|-----|-----|-----|-----|-----|-------|-------|------|
| Commercial | | | | | | SE | 22 | 07 | 20 | CA |

Subdivision Name _____

H. FLOW MEASUREMENTS

1. Method of measurement: Meter Weir Flume Float and Stopwatch

Other MIU FLOW FT/SEC 0.5

2. Water Measurement Equipment Statistics:

| Equipment | Type | Make | Model No. | Size |
|-----------|------|------|-----------|------|
| | | | | |
| | | | | |

3. Measurement readings: _____ or, See Field Notes Attached.

WORK COPY

I. VOLUME CALCULATIONS

1. Calculations For Irrigation

Crop Requirement: (Complete A and B, C, OR D)

A. $V_{CR} = \frac{13}{112} \times \frac{6.4}{1.25} = 89.71$ acre-feet/yr

(acres) (irrigation requirement)

Actual Amount Used: (complete B., C., OR D.)

B. $V_{DR} = \text{_____} \times 60 \times \text{_____} \times \text{_____} + 325,851 = \text{_____}$ acre-feet/yr

C. $V_{IN} = \frac{\text{GPM}}{\text{(inches/irrigation)}} \times \frac{\text{hours/day}}{\text{(no. of irrigations)}} \times \frac{\text{days irrigated}}{\text{(acres)}} + 12 = \text{_____}$ acre-feet/yr

D. $V_{MT} = \text{_____}$ acre-feet/yr
(metered volume)

Comparison: If the volume of water indicated in A. above is less than or greater than the amount calculated in B., C., or D., identify any facts that would explain why. _____

2. Calculations For Other Uses (Water Conversion Table, Form No. 615, is available at the Regional Office)

J. BENEFICIAL USE

- Domestic: Number of families
 from _____ to _____ rate _____ GPM/CFS volume _____ acre-feet
month/day month/day
- Lawn & garden: Number of acres
 from _____ to _____ rate _____ GPM/CFS volume _____ acre-feet
month/day month/day
- Stock: Number and type
 from _____ to _____ rate _____ GPM/CFS volume _____ acre-feet
month/day month/day
- Irrigation: Number of acres 16
 from 4/1 to 10/30 rate 14 GPM/CFS volume 20 acre-feet
month/day month/day 100 gpm
- Other Uses: commercial
 from 1/1 to 12/31 rate 5.02 GPM/CFS volume 7.4 acre-feet
month/day month/day telecom 2-4.00

K. PERMIT CONDITIONS OR LIMITATIONS

Explain how each of the conditions of the permit have or have not been met.

Conditions have been met.

WORK COPY

L. MAP AND PHOTOGRAPHS

Attach a copy of aerial photo or USGS Quadrangle showing the following:

- Section Corners and Numbers
- Location of Ditch, Pipeline, etc.
- Township and Range Numbers
- Place of Use (stock tanks, acres irrigated)
- Point of Diversion
- Reservoir Location

Photographs of your diversion and the place of use will help document the completion and operation of your project. If photos are submitted, label them with the following information:

- Permit Number
- Name of photographer
- Date photo taken
- Subject of photo (point of diversion, etc.)

M. CERTIFICATION

The above information is a true statement of the extent the project was developed.

12/16/97
Date

[Signature]
Field Examiner's Signature



Subscribed and sworn before me this 16 day of December, 19 97
 Notary's Signature [Signature]
 Notary for the State of Montana
 Residing at [Address]
 My Commission Expires June 8, 2000

N. PERMIT OWNER (sign only if the person signing the certification is not the permittee)

I have reviewed these findings and submit this notice of completion to the Department.

12-17-97
Date

[Signature]
Signature

SUBMIT THE COMPLETED FORM TO YOUR LOCAL REGIONAL OFFICE LISTED IN THE INSTRUCTIONS

STATE OF MONTANA
DEPARTMENT OF NATURAL RESOURCES AND CONSERVATION

NOTICE OF COMPLETION
OF PERMITTED WATER DEVELOPMENT
Field Report

RECEIVED
DNR
DEC 22 1997

Instructions: Use this form to report the completion of a "Permit to Appropriate Water." This form must be filed on or before the deadline date on the permit or authorized extension of time. If the project is not completed, file an Application for Extension of Time 30 days before the permit deadline date; otherwise the permit is void. For complete instructions, read "Instructions for Notice of Completion of Permitted Water Development."

A. GENERAL INFORMATION

1. PERMIT NO. 66358-6439
2. Permit Owner City of Red Lodge
Mailing Address P.O. Box 9 Telephone No. (406) 446-1606
City Red Lodge State MT Zip 59068
3. Field Examiner Orval Boyer Profession Public Works Director
Mailing Address P.O. Box 9 Telephone No. (406) 446-1681
City Red Lodge State MT Zip 59068
4. Field Investigation Date Oct 1, 1997

B. OVERLAPPING WATER RIGHTS

1. Other water rights with same place of use: Water Right Number _____
2. Other water rights with same point of diversion: Water Right Number _____

C. SOURCE OF WATER

- Well (Attach a copy of the Well Log Report)
 Developed Spring (Describe development) _____
 Lake/Reservoir Name _____ Tributary to _____
 Stream Name _____ Tributary to _____
 Unnamed Source - Tributary to _____
 Closed Basin (A closed basin results when water drains into a depression, lake, etc., from which water escapes only by evaporation.)

D. SYSTEM DESCRIPTION

1. Means of Diversion: Pump Headgate/Ditch or pipeline Dike Dam
 Pit Other (Describe) _____
2. Pump: Centrifugal Turbine Submersible
Brand name Grundfos GPM Capacity 100
Model # SD 16 Discharge pressure 80 lbs.
Impeller diameter 3 inch No. of Stages / Bowls _____
Lift (in feet) _____
- Motor: Brand Name Franklin HP Rating 10
No. of Phases single RPM 3450
Voltage 230 Service factor (SF) 1.15
Amperage 44
- Engine: Fuel type _____ Displacement _____
Brand name _____ RPM _____
HP rating _____

3. Reservoir: Attach a engineering survey, an "SCS As Built" survey, or complete the formula below with current measurements of the reservoir or pit as it was built.

Dam: Surface Area X Maximum Depth X 0.4 = AC-FT
(acres) (at Dam) (feet) (capacity)

Pit: Surface Area X Maximum Depth X 0.5 = AC-FT

Release Other Than Spillway No Yes, (Describe type and size of any release or drainage device)

4. Conveyance Facilities: Pipeline Ditch Natural Carrier
 Describe (pipe material, size, length, top width, bottom width, depth, etc) 3" PVC 500' length

5. Irrigation System:
Flood Contour Ditch Border Dike Spreader Dike
Sprinkler Handline # of Heads 8
 Wheel Line PSI 80
 Big Gun Nozzle size
 Nozzle type
 Center Pivot (attach a copy of sprinkler chart)
 Other (Describe)

Type of Crop: Alfalfa Pasture Small grains Other Ball field

E. PERIOD OF APPROPRIATION

The time during the year that water is diverted, impounded, or withdrawn from the source.

May 1 to October 1
month/day month/day

F. POINT OF DIVERSION

| IDENT NO | LOT | BLK | GOVT LOT | 1/4 | 1/4 | 1/4 | SEC | TWP N/S | RGE E/W | CNTY |
|----------|-----|-----|----------|-----|-----|-----|-----|---------|---------|--------|
| | | | | SE | SE | SE | 22 | 07 | 20 | Carbon |

Subdivision Name Coal Minor's Memorial Park

G. PLACE OF USE

For Irrigation:

| ACRES | LOT | BLK | 1/4 | 1/4 | 1/4 | SEC | TWP N/S | RGE E/W | CNTY | (N) New / (S) Supp |
|-------|-----|-----|-----|-----|-----|-----|---------|---------|--------|--------------------|
| 16 | | | SE | SE | SE | 22 | 07 | 20 | Carbon | |

16 TOTAL ACRES Subdivision Name Coal Minor's Memorial Park

For Non-Irrigation:

If the place of use is the same as the point of diversion, check

| PURPOSE | GOVT LOT | LOT | BLK | 1/4 | 1/4 | 1/4 | SEC | TWP N/S | RGE E/W | CNTY |
|---------|----------|-----|-----|-----|-----|-----|-----|---------|---------|------|
| | | | | | E | SE | | 07 | | |
| | | | | | | SE | | 01 | | |

Subdivision Name _____

H. FLOW MEASUREMENTS

1. Method of measurement: Meter Weir Flume Float and Stopwatch
 Other MIN FLOW FT/SEC C.S.

2. Water Measurement Equipment Statistics:

| Equipment | Type | Make | Model No. | Size |
|-----------|------|------|-----------|------|
| | | | | |
| | | | | |

3. Measurement readings: or, See Field Notes Attached.

I. VOLUME CALCULATIONS

1. Calculations For Irrigation

Crop Requirement: (Complete A and B, C, OR D)

A. $V_{CR} = 110 \text{ (acres)} \times 1.36 \text{ (irrigation requirement)} = 30 \text{ acre-feet/yr}$

Actual Amount Used: (complete B., C., OR D.)

B. $V_{DR} = \text{_____} \times 60 \times \text{_____} \times \text{_____} + 325,851 = \text{_____} \text{ acre-feet/yr}$

C. $V_{IN} = \text{_____} \text{ (inches/irrigation)} \times \text{_____} \text{ (no. of irrigations)} \times \text{_____} \text{ (acres)} \times \text{_____} \text{ (hours/day)} \times \text{_____} \text{ (days irrigated)} + 12 = \text{_____} \text{ acre-feet/yr}$

D. $V_{MT} = \text{_____} \text{ (metered volume)} \text{ acre-feet/yr}$

Comparison: If the volume of water indicated in A. above is less than or greater than the amount calculated in B., C., or D., identify any facts that would explain why. _____

2. Calculations For Other Uses (Water Conversion Table, Form No. 615, is available at the Regional Office)

J. BENEFICIAL USE

- Domestic: Number of families _____
from _____ to _____ rate _____ GPM/CFS volume _____ acre-feet
month/day month/day
- Lawn & garden: Number of acres _____
from _____ to _____ rate _____ GPM/CFS volume _____ acre-feet
month/day month/day
- Stock: Number and type _____
from _____ to _____ rate _____ GPM/CFS volume _____ acre-feet
month/day month/day
- Irrigation: Number of acres 76
from 4/1 to 10/30 rate 14 GPM/CFS volume 20 acre-feet
month/day month/day
- Other Uses; _____
from _____ to _____ rate _____ GPM/CFS volume _____ acre-feet
month/day month/day

K. PERMIT CONDITIONS OR LIMITATIONS

Explain how each of the conditions of the permit have or have not been met.

Conditions have been met.

L. MAP AND PHOTOGRAPHS

Attach a copy of aerial photo or USGS Quadrangle showing the following:

- Section Corners and Numbers
- Location of Ditch, Pipeline, etc.
- Township and Range Numbers
- Place of Use (stock tanks, acres irrigated)
- Point of Diversion
- Reservoir Location

Photographs of your diversion and the place of use will help document the completion and operation of your project. If photos are submitted, label them with the following information:

- Permit Number
- Name of photographer
- Date photo taken
- Subject of photo (point of diversion, etc.)

M. CERTIFICATION

The above information is a true statement of the extent the project was developed.

12/16/97
Date

[Signature]
Field Examiner's Signature



Subscribed and sworn before me this 16 day of December, 19 97
Notary's Signature [Signature]
Notary for the State of Montana
Residing at Red Lodge
My Commission Expires June 8, 2000

N. PERMIT OWNER (sign only if the person signing the certification is not the permittee)

I have reviewed these findings and submit ~~this~~ notice of completion to the Department.

12-17-97
Date

[Signature]
Signature

SUBMIT THE COMPLETED FORM TO YOUR LOCAL REGIONAL OFFICE LISTED IN THE INSTRUCTIONS

DEPARTMENT OF NATURAL
RESOURCES AND CONSERVATION



MARC RACICOT
GOVERNOR

DIRECTOR'S OFFICE (406) 444-2074
TELEFAX NUMBER (406) 444-2684

STATE OF MONTANA

WATER RESOURCES DIVISION (406) 444-6601
TELEFAX NUMBERS (406) 444-0533 / (406) 444-5918

48 NORTH LAST CHANCE GULCH
PO BOX 201601
HELENA, MONTANA 59620-1601

January 19, 2000

City of Red Lodge
Public Works Director
PO Box 9
Red Lodge, MT 59068


RE: Notice of Completion for Permit 43D-P066358

Public Works Director:

On December 22, 1997, the Department received Notice of Completion of Permitted Water Development for Permit 43D-066358. This permit was issued to appropriate 220 gallons per minute up to 97.11 acre-feet per year for commercial and irrigation purposes. The Notice of Completion indicates one well was completed and is used to irrigate 16 acres at a rate of 14 gallons per minute. However, there are three well logs in the file, each completed in the permitted points of diversion. The well completed in 1994 in the SWSESE of Section 22, Township 07 South, Range 20 East, was tested at a rate of 100 + gallons per minute. The well completed near the meter base in 1989 in the SE of said Section 22 was tested at 100 gallons per minute. The well completed in 1986 in the NENE of Section 27, Township 07 South, Range 20 East was tested at 10-12 gallons per minute. Item D on the Notice of Completion shows the 40 horsepower pump used has a capacity of 100 gallons per minute. So you can see why I'm confused. However, if the Notice of Completion is correct and represents a clear picture of the project as completed, just call me at 444-6625. If, however, the Notice of Completion needs to be amended, make any changes on the enclosed copy of the Notice of Completion and return it to us within 30 days of the date of this letter. If we do not hear from you in that time period, we will assume the Notice of Completion is correct and amend the water right to 14 gallons per minute up to 20 acre-feet per year for irrigation.

Enclosed are copies of Permit 43D-P066358, three well logs, and the Notice of Completion.

Sincerely,


Vivian Lighthizer
Water Rights Bureau

WELL LOG REPORT

File No. **430** **P066358-00**

State law requires that the Bureau's copy be filed by the water well driller within 60 days after completion of the well.

| 1. WELL OWNER Name <u>City of Reed Lodge</u> | f) Duration of test: Pumping time <u>4</u> hrs. g) Recovery time <u>1</u> hrs. h) Recovery water level <u>25</u> ft. at <u>1</u> hrs. after pumping stopped. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|---|--|-------------------|--|-----------|------|----|--|---|---|----------|---|----|------------|----|----|-------------------|----|----|---------------|--|--|--|--|--|--|--|--|--|--|--|--|
| 2. CURRENT MAILING ADDRESS <u>P.O. Box 93</u> <u>Reed Lodge, Mo. 59068</u> | Wells intended to yield 100 gpm or more shall be tested for a period of 8 hours or more. The test shall follow the development of the well, and shall be conducted continuously at a constant discharge at least as great as the intended appropriation. In addition to the above information, water level data shall be collected and recorded on the Department's "Aquifer Test Data" form. NOTE: All wells shall be equipped with an access port 1/2 inch minimum or a pressure gauge that will indicate the shut-in pressure of a flowing well. Removable caps are acceptable as access ports. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3. WELL LOCATION <u>SW 1/4 SE 1/4 SE 1/4</u> Section <u>22</u> Township <u>7</u> Range <u>20</u> County <u>Carbon</u> Gov't Lot _____, or Lot _____, Block _____ Subdivision Name _____ Tract Number _____ | 11. WAS WELL PLUGGED OR ABANDONED? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 4. PROPOSED USE: Domestic <input type="checkbox"/> Stock <input type="checkbox"/> Irrigation <input checked="" type="checkbox"/> Other <input type="checkbox"/> specify _____ | 12. WELL LOG <table border="1"> <thead> <tr> <th colspan="2">Depth (ft.)</th> <th>Formation</th> </tr> <tr> <th>From</th> <th>To</th> <th></th> </tr> </thead> <tbody> <tr> <td>0</td> <td>2</td> <td>Top soil</td> </tr> <tr> <td>2</td> <td>30</td> <td>Coal slack</td> </tr> <tr> <td>30</td> <td>30</td> <td>boulders & gravel</td> </tr> <tr> <td>30</td> <td>80</td> <td>sand & gravel</td> </tr> <tr> <td> </td> <td> </td> <td> </td> </tr> <tr> <td> </td> <td> </td> <td> </td> </tr> <tr> <td> </td> <td> </td> <td> </td> </tr> <tr> <td> </td> <td> </td> <td> </td> </tr> </tbody> </table> | Depth (ft.) | | Formation | From | To | | 0 | 2 | Top soil | 2 | 30 | Coal slack | 30 | 30 | boulders & gravel | 30 | 80 | sand & gravel | | | | | | | | | | | | |
| Depth (ft.) | | Formation | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| From | To | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 0 | 2 | Top soil | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2 | 30 | Coal slack | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 30 | 30 | boulders & gravel | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 30 | 80 | sand & gravel | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
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| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 5. TYPE OF WORK: New well <input checked="" type="checkbox"/> Method: Dug <input type="checkbox"/> Bored <input type="checkbox"/> Deepened <input type="checkbox"/> Cable <input type="checkbox"/> Driven <input type="checkbox"/> Reconditioned <input type="checkbox"/> Rotary <input checked="" type="checkbox"/> Jetted <input type="checkbox"/> | <h1 style="border: 2px solid black; padding: 10px; display: inline-block;">FILMED</h1> | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 6. DIMENSIONS: Diameter of Hole | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Dia. <u>6</u> in. from <u>0</u> ft. to <u>80</u> ft. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Dia. _____ in. from _____ ft. to _____ ft. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Dia. _____ in. from _____ ft. to _____ ft. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 7. CONSTRUCTION DETAILS: Casing; Steel Dia. <u>6 5/8</u> from <u>+2</u> ft. to <u>78</u> ft. Threaded <input type="checkbox"/> Welded <input checked="" type="checkbox"/> Dia. _____ from _____ ft. to _____ ft. Type <u>A53B</u> Wall Thickness <u>.250</u> Casing; Plastic Dia. _____ from _____ ft. to _____ ft. Weight _____ Dia. _____ from _____ ft. to _____ ft. PERFORATIONS: Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Type of perforator used _____ Size of perforations _____ in. by _____ in. _____ perforations from _____ ft. to _____ ft. _____ perforations from _____ ft. to _____ ft. _____ perforations from _____ ft. to _____ ft. SCREENS: Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Manufacturer's Name _____ Type _____ Model No. _____ Dia. _____ Slot size _____ from _____ ft. to _____ ft. Dia. _____ Slot size _____ from _____ ft. to _____ ft. GRAVEL PACKED: Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Size of gravel _____ Gravel placed from _____ ft. to _____ ft. ROUTED: To what depth? <u>Continuous</u> ft. Material used in grouting <u>bentonite</u> | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 8. WELL HEAD COMPLETION: Pitless Adapter <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 9. PUMP (if installed) Manufacturer's name _____ Type _____ Model No. _____ HP _____ | ATTACH ADDITIONAL SHEETS IF NECESSARY | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 10. WELL TEST DATA The information requested in this section is required for all wells. All depth measurements shall be from the top of the well casing. All wells under 100 gpm must be tested for a minimum of one hour and provide the following information: a) Air <input checked="" type="checkbox"/> Pump _____ Bailer _____ b) Static water level immediately before testing <u>25</u> ft. If flowing; closed-in pressure _____ psi. _____ gpm. Flow controlled by: _____ valve, _____ reducers, other, (specify) _____ c) Depth at which pump is set for test <u>75</u> d) The pumping rate: <u>100+</u> gpm. e) Pumping water level <u>75</u> ft. at <u>4</u> hrs. after pumping began. | 13. DATE COMPLETED <u>6-7-94</u> 14. DRILLER/CONTRACTOR'S CERTIFICATION This well was drilled under my jurisdiction and this report is true to the best of my knowledge. <u>6-7-94</u> Date <u>B+H Drilling</u> Firm Name <u>Fishtail, Mo 59028</u> Address <u>Robert O Murphy</u> Signature <u>309</u> License No. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

MONTANA DEPARTMENT OF NATURAL RESOURCES & CONSERVATION
1520 EAST SIXTH AVENUE HELENA, MONTANA 59620-2301 444-6610

DNRC

DEPARTMENT COPY
DRILLER: Please give this copy to the well owner to complete reverse side.
OWNER: Complete reverse side and send to DNRC when the well is completed and the water has been used beneficially for the intended purpose.

B6 3 084

RECEIVED

JUN 30 1994

DNRC

FOR DEPARTMENT USE ONLY

Form No. 802 (11/82)
NOTICE OF COMPLETION OF GROUNDWATER DEVELOPMENT
 For groundwater developments with a maximum use of 35 GPM not to exceed 10 AC-FT per year
GROUNDWATER IS DEFINED AS ANY WATER BENEATH THE GROUND SURFACE.
 (Use Form 600, Application for Beneficial Water Use Permit for appropriations in excess of 35 GPM or 10 AC-FT per year.)

Notice No. 090704 Basin 43D
 Priority Date 6-30-94
 Time 9:13 AM PM
 Rec'd By CT
 Fee Rec'd \$ 25.00
 Check No. 8796
 Transmittal No. 94245
 Refund \$ _____ Date _____

IMPORTANT
 State law requires this form be filed by the appropriator within 60 days after the water has been put to use. Your priority is determined by the date of filing.
 Complete the notice and attach an aerial photo, survey, or other map showing the location of your development. Submit it with the \$25.00 filing fee, payable to DNRC, to the appropriate Water Resources Regional Office. This form will be returned if any of the pertinent information is incomplete or incorrect.

(Please type or print in ink.)

1. NAME Red Lodge City of
 MAILING ADDRESS Box 9
 CITY Red Lodge STATE Montana ZIP 59068
 HOME PHONE 446-7076 OTHER PHONE 446-1606

2. SOURCE OF GROUNDWATER SUPPLY Well Developed Spring (Excavation performed at spring location)
 Pit Other

3. ACTUAL PUMPING RATE 120 GPM Pump: HP Rating 7hp Installation Depth 45 FT. Ft.

4. DATE WATER PUT TO BENEFICIAL USE (Water must be used prior to this filing) June 10, 1994
 Month / Day / Year

5. DOES THIS WELL REPLACE AN EXISTING WELL? Yes No
 Old Well Depth 80 Ft. Old Well GPM 120 Date Old Well Drilled or Dug Aug 1, 1988
 Month / Day / Year

6. WILL THIS DEVELOPMENT be used in combination with another well or spring? Yes No
 If yes, list the water numbers and explain how they are used.

7. POINT OF DIVERSION Describe the location to the nearest 10 acres (i.e.: to the 1/4 1/4 1/4). Legal land descriptions may be obtained from your county records.
 1/4 1/4 1/4 Section _____ Twp _____ N/S Rge _____ E/W County _____
 Lot _____ Block _____ Tract No. _____ Subdivision Name _____
 Government Lot _____

8. PURPOSE AND PLACE OF USE
 Purpose of Use _____ If same as Point of Diversion, Check
SW 1/4 SE 1/4 SE 1/4 Section 22 Twp 7 N/S Rge 20 E/W County Carbon
 Lot _____ Block _____ Tract No. _____ Subdivision Name _____
 Government Lot _____

Purpose of Use _____ If same as Point of Diversion, Check
 1/4 1/4 1/4 Section _____ Twp _____ N/S Rge _____ E/W County _____
 Lot _____ Block _____ Tract No. _____ Subdivision Name _____
 Government Lot _____

9. PURPOSE AND PERIOD OF USE

| | |
|---|--|
| DOMESTIC | Number of Households Currently Using Water From This Development _____ Year-round Use? Yes <input type="checkbox"/> No <input type="checkbox"/> If no, From _____ Month / Day to _____ Month / Day, Inclusive of Each Year. If lawn and / or garden exceeds 1/4 acre, list total size below. |
| LAWN AND / GARDEN | Total Size of Lawn and / or Garden _____ (Length x Width + 43560 = Acres) Acres Period of Use: From _____ Month / Day to _____ Month / Day, Inclusive of Each Year. |
| STOCK | Number and Type _____ Year-round Use? Yes <input type="checkbox"/> No <input type="checkbox"/> If no, From _____ Month / Day to _____ Month / Day, Inclusive of Each Year. |
| IRRIGATION (Other than Lawn and Garden) | Shelterbelt or Type of Crop <u>Shelterbelt & pasture</u> Total Acres Irrigated <u>8</u> Period of Use: From <u>May 1</u> Month / Day to <u>Oct 31</u> Month / Day, Inclusive of Each Year. |
| OTHER | Describe the Purpose of Use _____ Amount of Water Used _____ Gallons Per Day Year-round Use? Yes <input type="checkbox"/> No <input type="checkbox"/> If no, From _____ Month / Day to _____ Month / Day, Inclusive of Each Year. |

10. REMARKS (Use this space for additional information.)

11. AFFIDAVIT OF OWNERSHIP OR WRITTEN CONSENT
 I certify the statements appearing here are to the best of my knowledge true and correct. I also certify I have possessory interest in the property where the water is to be put to beneficial use and exclusive property rights in the groundwater development or the written consent of the person with those property rights.

Appropriator's Signature City of Red Lodge Date June 9, 1994
 Date: _____

Subscribed and sworn before me this 9 day of June, 1994

Notary's Signature Debra J. Domocik
 Notary for the State of Montana
 Residing at Red Lodge
 My commission expires June 8, 1996

FILMED

SEP 22 1989

File No. _____

MONT. DEPT. of NATURAL RESOURCES & CONSERVATION

WELL LOG REPORT

State law requires that this form be filed by the water well driller within 60 days after completion of the well.

| | | | | | |
|--|----|--|---|---|-----------------|
| 1. WELL OWNER Name <u>City of Red Lodge</u> | | 7. WELL CONSTRUCTION AND COMPLETION | | | |
| 2. CURRENT MAILING ADDRESS <u>P.O. Box 93 Red Lodge, Montana</u> <u>59068</u> | | Size of drilled hole 11" | Size and PSI Rating of casing 6" steel | From (feet) 1.5 | To (feet) 77 |
| 3. WELL LOCATION County _____ Township <u>4</u> <u>NS</u> Range <u>20</u> <u>EW</u> <u>SE</u> Section <u>22</u> Lot _____ Block _____ Subdivision <u>Near meter base</u> Tract Number <u>Irrigation well</u> | | 0-20" .280" wall | | Perforations <u>XXXXXX</u> and/or Screen _____ | |
| 4. PROPOSED USE Domestic <input type="checkbox"/> Stock <input type="checkbox"/> Irrigation <input checked="" type="checkbox"/> Other <input type="checkbox"/> specify _____ | | Was casing left open end? <u>XXXX</u> Yes _____ No | | Kind Size From (feet) To (feet) 1/8" 57 77 slots Holte air perforator | |
| 5. DRILLING METHOD _____ cable, <u>XXXXXX</u> air rotary, _____ <u>XXXX</u> forward rotary, _____ reverse rotary, _____ jetted, _____ other (specify) _____ | | Was a packer or seal used? _____ Yes _____ No If so, what material _____ | | | |
| 6. WELL LOG Depth (ft.) From To Formation | | Was the well gravel packed? _____ Yes <u>XXXX</u> No | | To what depth was the well grouted? <u>20,</u> _____ ft | |
| 0 | 1 | Topsoil | | Material used in grouting <u>cement</u> | |
| 1 | 19 | coal slack | | Well head completion: Pitless adapter _____ Yes _____ <u>XX</u> No | |
| 19 | 30 | large boulders and grave | | Top casing 18 in. or greater above grade _____ <u>XXX</u> Yes _____ No | |
| 30 | 77 | gravel and sand-boulders water from 25' | | 8. WELL TEST DATA The pump test information request in this section is required for all wells. All depth measurements shall be from the top of the well casing unless otherwise specified. All wells under 100 gpm must be tested for a minimum of one hour and provide the following information: a) Air _____ Pump <u>XXX</u> Bailer _____ b) Static water level immediately before testing <u>25'</u> ft. if flowing; closed-in pressure _____ psi _____ gpm Controlled by: _____ valve, _____ reducers, _____ other, (specify) _____ c) Depth at which pump is set for test <u>63'</u> d) The pumping rate and means of discharge (i.e., bailing, airlift, pumping) <u>100</u> gpm e) Maximum drawdown during the test <u>2' to 27'</u> ft f) Duration of test: Pumping time <u>24</u> hrs Recovery time <u>1</u> hrs g) Recovery water level <u>25'</u> ft Amount of time after pumping recovery level water data was taken <u>1</u> hrs Wells intended to yield 100 gpm or more shall be tested for a period of 8 hours or more. The test shall follow the development of the well, and shall be conducted continuously at a constant discharge at least as great as the intended appropriation. In addition to the above information, water level data shall be collected and recorded on the Department's "Aquifer Test Data" form included in each packet of well logs. NOTE: All wells shall be equipped with an access port 1/2 inch minimum or a pressure gauge that will indicate the shut-in pressure of a flowing well. Removable caps are acceptable as access ports. | |
| ATTACH ADDITIONAL SHEETS IF NECESSARY | | 9. WAS WELL PLUGGED OR ABANDONED? _____ Yes <u>XX</u> No If yes, how? _____ | | 10. DATE COMPLETED <u>Aug. 1 1989</u> | |
| | | 11. DRILLER/CONTRACTOR'S CERTIFICATION This well was drilled under my jurisdiction and this report is true to the best of my knowledge. <u>August 17, 1989</u> Date <u>DeBuff Drilling Co. Inc.</u> Firm Name <u>Gilt Edge Rte. Lewistown, Montana</u> Address <i>[Signature]</i> 346 Signature License No. | | | |

MONTANA DEPARTMENT OF NATURAL RESOURCES & CONSERVATION

1520 EAST SIXTH AVENUE

HELENA, MONTANA 59620-2301

444-6610

DNRC

DEPARTMENT COPY

DRILLER: Please give this copy to the well owner to complete reverse side
OWNER: Complete reverse side and send to DNRC when the well is completed and the water has been used beneficially for the intended purpose

RECEIVED

SEP 22 1989

Form No. 602 R6/87

NOTICE OF COMPLETION OF GROUND-WATER DEVELOPMENT

For ground-water developments with a maximum use of less than 100 gpm (Use Form 600, Application for Beneficial Water Use Permit for undeveloped springs or appropriations of 100 gpm or more.)

MONT. DEPT. of NATURAL RESOURCES & CONSERVATION

FOR DEPARTMENT USE ONLY

IMPORTANT

The right to the use of ground water is not automatic. Your priority will be determined by the date of filing this form. STATE LAW REQUIRES THAT THIS FORM BE FILED BY THE WELL OWNER WITHIN 60 DAYS AFTER THE WATER HAS BEEN PUT TO BENEFICIAL USE. Attach the required \$10.00 filing fee, payable to the Department of Natural Resources and Conservation and submit to your area water rights field office as listed on the reverse side.

Notice No. _____ Basin _____
Date Received 9-22-89
Time 10:37 (A.M./P.M.)
Transmittal No. _____
Fee Received \$ 10.00
Received By [Signature]
Refund Made [Signature]

(Please type or print in ink)

1. NAME(S) City of Red Lodge
MAILING ADDRESS PO Box 507
CITY Red Lodge STATE Montana ZIP 59068
HOME PHONE _____ OTHER PHONE 446-1606

2. SOURCE OF GROUND WATER SUPPLY WELL DEVELOPED SPRING (excavation performed)
 PIT OTHER (describe) _____

3. ACTUAL PUMPING RATE: 100 GALLONS PER MINUTE
Horse power rating of pump installed in well 10 Depth of installation 63' ft.

4. DATE WATER PUT TO BENEFICIAL USE: August 10, 1989
Does this well replace an existing well? Yes No
If Yes, complete the following information pertaining to the existing (old) well.
Depth _____ ft. Gallons Per Minute _____ Date Drilled _____ month/day/year

If Yes, contact your area field office as you may be able to file a change in point of diversion and retain the priority date of the old well.
Will this well be used in combination with another well? Yes No
If Yes, what is the combined appropriation? _____ Gallons Per Minute

5. POINT OF DIVERSION: (Your legal land description may be obtained from your deed, county assessor, or clerk and recorder. Complete the following and attach an aerial photo or survey map, if available, showing the location of your well or development and your place of use.)
1/4 1/4 SE 1/4 Section 22, Township 7 N, Range 20 EW, Carbon County.
(and when applicable)
Government Lot _____, or Lot _____, Block _____, Subdivision Name _____
Tract Number _____

6. PLACE OF USE: (If more than two places of use, attach additional sheets. If same as the point of diversion, CHECK)
1/4 1/4 SE 1/4 Section 22, Township 7 N, Range 20 EW, Carbon County.
1/4 1/4 1/4 Section _____, Township _____, Range _____ EW, _____ County.
(and when applicable)
Government Lot _____, or Lot _____, Block _____, Subdivision Name _____
Tract Number _____

7. PURPOSE AND PERIOD OF USE:
 DOMESTIC: No. of homes currently supplied _____ (includes house and up to 1/4 acre lawn and garden)
from _____ month/day to _____ month/day inclusive, of each year
 STOCK: Approximate maximum number and type of livestock _____
from _____ month/day to _____ month/day inclusive, of each year
 IRRIGATION: Lawn and garden irrigated in excess of 1/4 acre _____ No. of Acres _____
Other; type of crop; _____ No. of Acres _____
from _____ month/day to _____ month/day inclusive, of each year
 OTHER: Describe purpose of use Irrigation of ball fields and native grass park.
Amount of water used up to 15,000 Gal/day
from April 20 month/day to October 10 month/day inclusive, of each year

8. REMARKS: (Use this space for additional information, if needed, to describe development.) area = 2.08 Acres
in Coal Miner's Park, City of Red Lodge

9. AFFIDAVIT OF OWNERSHIP OR WRITTEN CONSENT:

The Appropriator hereby certifies that he (she) has exclusive property rights in the groundwater development or has obtained written permission for use of the development from the property owner.

Appropriator's Signature: James Riberson Mayor Date: Sep. 20, 1989
Date: _____

Subscribed and sworn before me this 21 day of September, 1989
Debra L. Karmick
Notary for the State of Montana
Residing at Red Lodge
My commission expires June 8, 1990

WELL LOG REPORT

State law requires that this form be filed by the water well driller within 60 days after completion of the well.

1. WELL OWNER CITY OF RED LODGE
 Name RED LODGE ZOOLOGICAL SOCIETY

2. CURRENT MAILING ADDRESS
P.O. BOX 675
RED LODGE, MT 59068

3. WELL LOCATION
 County CARBON
 Township 7 N16 Range 20 E4
1/4 NE 1/4 NE 1/4 Section 27
 Lot _____ Block _____
 Subdivision _____

4. PROPOSED USE Domestic Stock Irrigation
 Other specify _____

5. DRILLING METHOD _____ cable, _____ bored,
 forward rotary, _____ reverse rotary, _____ jetted,
 other (specify) _____

6. WELL CONSTRUCTION AND COMPLETION

| Size of drilled hole | Size and weight of casing | From (feet) | To (feet) | Perforations <input checked="" type="checkbox"/> and/or Screen | | |
|----------------------|---------------------------|-------------|-----------|--|-------------|-----------|
| | | | | Kind | From (feet) | To (feet) |
| 8 3/4 | 6 1/8 | 0 | 34' | | | |
| 6 3/4 | 4 1/2 | 160' | PSY | | | |
| | | 0 | 44' | 1/8" | 34' | 44' |

Was casing left open end? Yes _____ No
 Was a packer or seal used? Yes _____ No _____
 If so, what material CEMENT
 Was the well gravel packed? Yes _____ No
 Was the well grouted? Yes No _____
 To what depth? 34'
 Material used in grouting CEMENT
 Well head completion: Pitless adapter Yes _____ No _____
 Top of casing 12 in. or greater above grade Yes _____ No _____

7. WHAT IS THE TEMPERATURE OF THE WATER?
45° Degrees Fahrenheit
 Measured Estimated

8. WATER LEVEL
 Static water level 30' feet below land surface
 If flowing; closed-in pressure _____ psi
 _____ gpm
 Controlled by: _____ valve, _____ reducers,
 other, (specify) _____

9. WELL TEST DATA _____ pump _____ bailer
 other, (specify) AIR PUMP
 Pumping water level below land surface:
34 ft. after 1 hrs. pumping 10-12 gpm
34 ft. after 4 hrs. pumping 10-12 gpm

10. WAS WELL PLUGGED OR ABANDONED? Yes _____ No
 If yes, how? _____

11. DATE COMPLETED _____

12. WELL LOG

| Depth (ft.) | | Formation |
|-------------|----|-------------------|
| From | To | |
| 0 | 22 | COAL SLAB |
| 22 | 34 | CON SLAB & GRAVEL |
| 34 | 48 | SAND AND GRAVEL |

RECEIVED

MAY 16 1986

DEPT. OF NATURAL RESOURCES
 AND CONSERVATION
 BILLINGS OFFICE

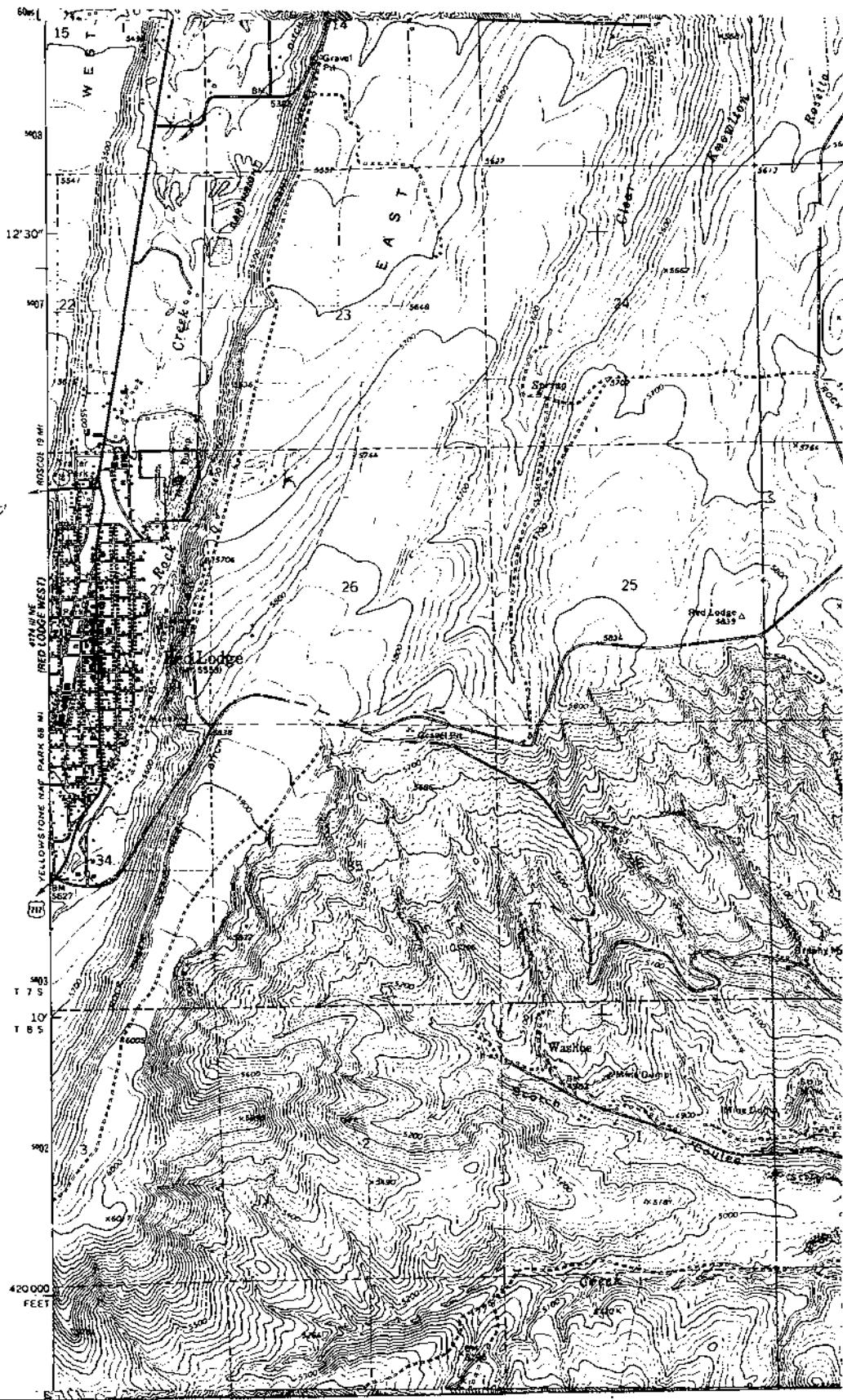
(use separate sheet if necessary)

13. DRILLER'S CERTIFICATION
 This well was drilled under my jurisdiction and this report is true to the best of my knowledge.
 Date 5/14/86
SWEETWATER DRILLING
 Firm Name
BOX 123 BILLINGS, MT 59103
 Address
Ted Williams
 Signature License No. _____

MONTANA DEPARTMENT OF NATURAL RESOURCES & CONSERVATION

32 SOUTH EWING HELENA, MONTANA 59620 444-6610 **DNR**

68.7
3.000 100



**TO SEE THE
LARGE MAP
ATTACHED TO
THIS FILE,
PLEASE PULL
THE ORIGINAL
FILE.**

Permit/Authorization:

- Permit
- Authorization,
with final order
if applicable

**Permit/
Authorization**

STATE OF MONTANA
DEPARTMENT OF NATURAL RESOURCES AND CONSERVATION
1520 EAST SIXTH AVENUE HELENA, MONTANA 59620



Permit to Appropriate Water

THIS PROVISIONAL PERMIT TO APPROPRIATE WATER IS HEREBY ISSUED TO:

RED LODGE, CITY OF
PO BOX 507
RED LODGE MT 59068

UPON FINDING THAT THE REQUIREMENTS OF SECTION 85-2-311 MCA
HAVE BEEN MET.

PERMIT NUMBER: 66358-643D

PRIORITY DATE: AUGUST 17, 1987 AT 11:41 A.M.

SOURCE: GROUNDWATER WELL

TOTAL FLOW RATE: 220.00 GPM

TOTAL VOLUME: 97.11 ACRE FEET PER YEAR

DIVERSION POINT: SESESE SEC. 22 TWP. 07S RGE. 20E CARBON CO
NENENE SEC. 27 TWP. 07S RGE. 20E CARBON CO
SESESE SEC. 22 TWP. 07S RGE. 20E CARBON CO

USE: 5.00 GPM UP TO 7.40 AC-FT (JAN 01 - DEC 31)
FOR COMMERCIAL

215.00 GPM UP TO 89.71 AC-FT (APR 01 - OCT 31)
FOR IRRIGATION ON

13.91 ACRES

PLACE OF USE: SESE SEC. 22 TWP. 07S RGE. 20E CARBON CO
FOR COMMERCIAL

SESE SEC. 22 TWP. 07S RGE. 20E CARBON CO
FOR IRRIGATION ON

6.94 ACRES

SWSWSW SEC. 23 TWP. 07S RGE. 20E CARBON CO
FOR IRRIGATION ON

.32 ACRES

NWNWNW SEC. 26 TWP. 07S RGE. 20E CARBON CO
FOR IRRIGATION ON

.36 ACRES

NENE SEC. 27 TWP. 07S RGE. 20E CARBON CO
FOR IRRIGATION ON

6.29 ACRES

DIVERSION MEANS: PUMP

RESERVOIR: OFF STREAM CAPACITY OF 1.42 AC-FT
E2SESE SEC. 22 TWP. 07S RGE. 20E CARBON CO

**** REQUIREMENTS FOR PERMIT HOLDER:**

THE DEADLINE FOR COMPLETION OF THIS PERMIT, AND FILING OF THE NOTICE OF COMPLETION OF PERMITTED WATER DEVELOPMENT (FORM 617) SHALL BE NOVEMBER 30, 1994; VERIFYING THAT THE APPROPRIATION OF WATER HAS BEEN COMPLETED AS PERMITTED.

**** PRIOR RIGHTS:**

THIS PERMIT IS SUBJECT TO ALL PRIOR EXISTING WATER RIGHTS IN THE SOURCE OF SUPPLY. FURTHER; THIS PERMIT IS SUBJECT TO ANY FINAL DETERMINATION OF EXISTING WATER RIGHTS, AS PROVIDED BY MONTANA LAW.

**** PROGRESS REPORT:**

THIS PERMIT IS SUBJECT TO THE PERMITTEE SUBMITTING A PROGRESS REPORT OF THE WORK COMPLETED UNDER THIS PERMIT BY NOVEMBER 30 OF EACH YEAR TO THE WATER RIGHTS BUREAU FIELD OFFICE, 1537 AVENUE D, SUITE 352, BILLINGS MT 59102.

**** POSSIBLE FURTHER RESTRICTIONS:**

IF AT ANY TIME AFTER THIS PERMIT IS ISSUED, A WRITTEN COMPLAINT IS RECEIVED BY THE DEPARTMENT ALLEGING THAT DIVERTING FROM THIS SOURCE IS ADVERSELY AFFECTING A PRIOR WATER RIGHT, THE DEPARTMENT MAY MAKE A FIELD INVESTIGATION OF THE PROJECT. IF DURING THE FIELD INVESTIGATION THE DEPARTMENT FINDS SUFFICIENT EVIDENCE SUPPORTING THE ALLEGATION, IT MAY CONDUCT A HEARING IN THE MATTER ALLOWING THE PERMITTEE TO SHOW CAUSE WHY THE PERMIT SHOULD NOT BE MODIFIED OR REVOKED. THE DEPARTMENT MAY MODIFY OR REVOKE THE PERMIT TO PROTECT EXISTING RIGHTS OR ALLOW THE PERMIT TO CONTINUE UNCHANGED IF THE HEARINGS OFFICER DETERMINES THAT NO EXISTING WATER RIGHTS ARE BEING ADVERSELY AFFECTED.

STATE OF MONTANA
 DEPARTMENT OF NATURAL RESOURCES AND CONSERVATION
 1820 EAST SIXTH AVENUE HELENA, MONTANA 59620



Permit to Appropriate Water

PERMIT NUMBER: 66358-G43D

PAGE 2

**** CONTAMINATION, FLOWING WELLS:**

THIS PERMIT IS SUBJECT TO SECTION 85-2-505, MCA, REQUIRING THAT ALL WELLS BE CONSTRUCTED SO THEY WILL NOT ALLOW WATER TO BE WASTED, OR CONTAMINATE OTHER WATER SUPPLIES OR SOURCES, AND ALL FLOWING WELLS SHALL BE CAPPED OR EQUIPPED SO THE FLOW OF WATER MAY BE STOPPED WHEN NOT BEING PUT TO BENEFICIAL USE.

THE FINAL COMPLETION OF THE WELL MUST INCLUDE AN ACCESS PORT OF AT LEAST .50 INCH SO THAT THE STATIC LEVEL OF THE WELL MAY BE ACCURATELY MEASURED.

FAILURE TO COMPLY WITH ANY TERMS AND CONDITIONS HEREIN MAY RESULT IN THE LOSS OF THE WATER RIGHT GRANTED BY THIS PERMIT.

**** TRANSFER OF OWNERSHIP:**

UPON A CHANGE IN OWNERSHIP OF ALL OR ANY PORTION OF THIS PERMIT, THE PARTIES TO THE TRANSFER SHALL FILE WITH THE DEPARTMENT OF NATURAL RESOURCES AND CONSERVATION A WATER RIGHT TRANSFER CERTIFICATE, FORM 608, PURSUANT TO SECTION 85-2-424, MCA.

Lou A. Kunnarf
 WITNESS

Ronald J. Guse
 ADMINISTRATIVE ASST: RONALD J GUSE

DATE: MARCH 08, 1988 WATER RIGHTS BUREAU, WATER RESOURCES DIVISION

APPLICATION FOR BENEFICIAL WATER USE PERMIT

(for groundwater of 100 gpm or more, and all surface water)

INSTRUCTIONS

Use one application for each source of supply or each development. Check all appropriate boxes and fill in each blank. If in your case any question is not applicable, enter NA (not applicable). If more space is needed, attach additional sheets.

A map must accompany this application as instructed under item 12.

Complete the application and submit it with the appropriate filing fee to the Water Rights Bureau field office nearest you. Their locations are listed on the last page. The form will be returned if any of the pertinent information is incomplete.

FOR DEPARTMENT USE ONLY

Application No. 66358-430

Date Rec'd. _____, 19__

Time _____ am/pm

Rec'd. By _____

Fee Rec'd. _____

Check No. _____

Transmittal No. _____

Refund _____

(Please type or print in ink)

1. NAME OF APPLICANT City of Red Lodge

Mailing Address _____

City or Town _____ State _____ Zip _____

Home Phone _____ Other Phone _____

2. Source of Water Supply: Check any or complete any source below.

Well

Lake Name _____ Tributary to _____

Stream Name _____ Unnamed Source
Tributary to _____

Spring Name, if any _____
Tributary to _____

Closed Basin (A closed basin results when water drains into a depression, lake, etc. from which water escapes only by evaporation.)

3. Point of Diversion (Describe the location down to the nearest 10 acres):

#1 SE 1/4 SE 1/4 SE 1/4 Section 22, Township 07 NS Range 20 EW, CARBON County.
(and when applicable)

Government Lot _____, or Lot _____, Block _____, Subdivision Name _____

Additional Point of Diversion: (Also use Item 13, Remarks, for additional points of diversion):

____ 1/4 ____ 1/4 ____ 1/4 Section _____, Township _____ N/S, Range _____ EW, _____ County
(and when applicable)

Government Lot _____, or Lot _____, Block _____, Subdivision Name _____

#3 SE SE SE SECTION 22, T 07 S, R. 20 E, CARBON COUNTY.

MONTANA DEPARTMENT OF NATURAL RESOURCES & CONSERVATION

DNRC

32 SOUTH EWING

HELENA, MONTANA 59620

444-6610

Corrected as per instructed by enclosed letter dated 9-2-87.

WORK COPY

Added P.O.D. for existing 20 gpm well as per instructed by letter dated 9-17-87.

The water will be discharged to same source, if not consumed.

Yes No If no, explain and give the complete land description at the point of discharge.

1/4 1/4 1/4 Section _____, Township _____ N/S, Range _____ EW, _____ County,
(and when applicable)
Government Lot _____, or Lot _____, Block _____, Subdivision Name _____

4. Means of Diversion

- Pump Well: _____ Depth (in feet)
- _____ Rated Capacity (gpm, ghp, cfs) Developed Spring
- _____ Horsepower Dikes
- _____ Lift (in feet)

Headgate/Ditch or Pipeline

If other, describe: _____

WORK COPY

5. Reservoir (impoundment by dam or pit). See formulas below for computing volume.

- a. Capacity of existing (old) reservoir: _____ acre-feet.
 - b. Capacity of proposed (new) reservoir or ~~enlarged reservoir~~ 1.425 acre-feet.
 - c. Would a permanent drainage device be installed? _____ Yes _____ No
 - d. Reservoir will be located off-stream (away from source) X Yes _____ No
- If yes, give location: _____ 1/4 _____ 1/4 _____ 1/4 Section _____, Township _____ N/S, Range _____ EW, _____ County

Total volume of pit 1.425 Compute as follows:

Surface area $\frac{325}{\text{acres}}$ x maximum depth $\frac{8.77}{\text{feet}}$ x 0.5 = $\frac{1.425}{\text{volume}}$ acre-feet.

Total volume of reservoir _____ Compute as follows:

Surface area _____ acres x 0.4 x maximum depth in feet at dam _____ = _____ volume acre feet.

6. Period of Appropriation: _____ to _____ inclusive each year.
(month/day) (month/day)

(The period during the year when the water will be diverted, impounded or withdrawn from the source of supply.)

7. Description of Proposed Beneficial Uses:

Stock: Estimated maximum number and type of livestock _____

Domestic: Number of families to be supplied _____

Other (Describe) _____

Irrigation

a. Method of Irrigation

- Sprinkler Spreader Dike Border Dike
- Contour Ditch Other (Describe) _____

figures transferred from attachment submitted with Application

- b. Type of crops to be grown _____
- c. Number of irrigations per season: _____
- d. If the purpose of this appropriation is to provide additional water to lands which are already irrigated, then the acreage that receives the additional water is considered **supplemental**. If this application involves supplemental irrigation indicate the basis of the **existing water right** that is being supplemented.
- Claim No. _____ Permit No. _____ Certificate No. _____
- Other _____

8. Place of Use

Irrigation: List the acreages to be irrigated and their location by legal land description. Also indicate in the extreme right-hand column the number of acres to be receiving additional water with an "S" for supplemental, and the acres to be irrigated for the first time with an "N" for new.

| County | Subdivision Name | New (N) or Supplemental (S) | | | | | |
|-----------------------------|------------------|-----------------------------|----------------|------------------------|--------------|-------------------|--------------------------------------|
| Acres, Lot | Block | 1/4 | 1/4 | 1/4 Section | T | N/S, R | EW |
| Acres, Lot | Block | 1/4 | 1/4 | 1/4 Section | T | N/S, R | EW |
| Acres, Lot | Block | 1/4 | 1/4 | 1/4 Section | T | N/S, R | EW |
| Acres, Lot | Block | 1/4 | 1/4 | 1/4 Section | T | N/S, R | EW |
| Acres, Lot | Block | 1/4 | 1/4 | 1/4 Section | T | N/S, R | EW |
| Acres, Lot | Block | 1/4 | 1/4 | 1/4 Section | T | N/S, R | EW |
| D. 92 Acres, Lot | Block | 1/4 | 1/4 | 1/4 Section | T | N/S, R | EW |
| C.1. 32 Acres, Lot | Block | SW 1/4 | SW 1/4 | SW 1/4 Section | 23 | T 7 | N/S, R 20 EW N |
| C.2. 36 Acres, Lot | Block | NW 1/4 | NW 1/4 | NW 1/4 Section | 26 | T 7 | N/S, R 20 EW N |

Legal description corrected to match maps.

Nonirrigation: If the place of use of the water will be the same as point of diversion (Item 3), check . If not, give the location of use:

1/4 SE 1/4 SE 1/4 Section 22, Township 7 N, Range 20 E, Carbon County, (and when applicable)

Government Lot _____, or Lot _____, Block _____, Subdivision Name _____

9. Amount of water, use to which it will be applied (irrigation, stock, domestic, other) and period of use:

cfs _____ gpm up to _____ for _____ use from _____ to _____ (mo./day) (mo./day)

acre-feet _____

cfs _____ gpm up to _____ for _____ use from _____ to _____ (mo./day) (mo./day)

acre-feet _____

cfs _____ gpm up to _____ for _____ use from _____ to _____ (mo./day) (mo./day)

acre-feet _____

Total amount requested _____ cfs gpm up to _____ acre-feet per year.

WORK COPY

10. Proposed Construction:

What is the amount of time needed to complete the development after permit is received? (Note: Construction should not begin until permit is received.)

11. Ownership:

- a. Property owner at the point of diversion _____
- b. Property owner at the place of use _____
- c. If you are not the owner at (a) or (b) above, it is your responsibility to obtain the necessary easements and right-of-way. If state or federal lands are involved, contact the appropriate agency since the water right may need to be applied for by them.

12. Location Map:

A map showing the following items must accompany this application. Failure to supply an accurate map constitutes an incomplete application and the application will be returned for completion. An ASCS aerial photo or USGS topographic map may be used.

Items to be shown on the map:

- a. Township and range numbers
- b. Section corners and number.
- c. Point of diversion
- d. Location of conveyance ditch, pipeline etc.
- e. Place of use (irrigated acres: new and supplemental, location of stock tanks)
- f. Applicant's signature or name of person preparing map

13. Remarks: Provide any additional information that would help in explaining the proposed appropriation.

14. The applicant certifies that the statements appearing here are to the best of his/her knowledge true and correct.

| | |
|-----------|------|
| Signature | Date |
| Signature | Date |

SUBMIT THE COMPLETED APPLICATION AND PROPER FILING FEE TO THE APPROPRIATE FIELD OFFICE NEAREST YOU. FIELD OFFICES ARE LOCATED IN: HELENA, MISSOULA, KALISPELL, HAVRE, GLASGOW, MILES CITY, BILLINGS, LEWISTOWN AND BOZEMAN. (Check your local telephone directory for addresses and telephone numbers.)

| FEE SCHEDULE | |
|--|-------|
| A) Fee charge based on the following rate schedule: For consumptive uses: | |
| 0 - less than 25 acre-feet per year | \$ 50 |
| 25 - less than 100 acre-feet per year | \$100 |
| 100 - less than 500 acre-feet per year | \$150 |
| 500 - less than 1,000 acre-feet per year | \$200 |
| 1,000 - or more acre-feet per year | \$250 |
| B) For Applications for non-consumptive uses: Fee charge based on following rate schedule: | |
| 0 - less than 1,000 acre-feet per year | \$ 50 |
| 1,000 - less than 10,000 acre-feet per year | \$100 |
| 10,000 - or more acre-feet per year | \$200 |
| For any Application with a combination of consumptive and non-consumptive uses the rate schedule shown in (A) above shall apply. | |
| C) For any request for an Interim Permit to drill and test only; there shall be a fee of \$10.00 in addition to the rate schedules shown in (A) or (B) above. | |

RECEIVED

AUG 17 1987

DEPT. OF NATURAL RESOURCES
AND CONSERVATION
BILLINGS OFFICE
FOR DEPARTMENT USE ONLY

**APPLICATION FOR BENEFICIAL
WATER USE PERMIT**

(for groundwater of 100 gpm or more, and all surface water)

INSTRUCTIONS

Use one application for each source of supply or each development. Check all appropriate boxes and fill in each blank. If in your case any question is not applicable, enter NA (not applicable). If more space is needed, attach additional sheets.

A map must accompany this application as instructed under Item 12.

Complete the application and submit it with the appropriate filing fee to the Water Rights Bureau field office nearest you. Their locations are listed on the last page. The form will be returned if any of the pertinent information is incomplete.

Application No. 66358-g430
Date Rec'd. 8/19
Time 11:41 am
Rec'd. By D. Riddle
Fee Rec'd. \$100.00
Check No. 2929
Transmittal No. 03-006-01-01
Refund _____

(Please type or print in ink)

1. **NAME OF APPLICANT** City of Red Lodge

Mailing Address P.O. Box 507

City or Town Red Lodge State Montana Zip 59068

Home Phone (406) 446-1606 Other Phone (406) 446-3312

2. **Source of Water Supply:** Check and/or complete one source below.

Well - 2 proposed wells @ 100gpm each and 1 @ 20 gpm

Lake Name _____ Tributary to _____

Stream Name _____ Unnamed Source
Tributary to _____

Spring Name, if any _____
Tributary to _____

Closed Basin (A closed basin results when water drains into a depression, lake, etc. from which water escapes only by evaporation.)

3. **Point of Diversion** (Describe the location down to the nearest 10 acres):

SW 1/4 SE 1/4 SE 1/4 Section 22, Township 7 N Range 20 E, Carbon _____ County.
(and when applicable)

Government Lot _____, or Lot _____, Block _____, Subdivision Name _____

Additional Point of Diversion: (Also use Item 13, Remarks, for additional points of diversion):

NE 1/4 NE 1/4 NE 1/4 Section 27, Township 7 N Range 20 E, Carbon _____ County.
(and when applicable)

Government Lot _____, or Lot _____, Block _____, Subdivision Name _____

The water will be discharged to same source, if not consumed.

Yes No If no, explain and give the complete land description at the point of discharge.

1/4 Section _____, Township _____ N/S, Range _____ EW, _____ County,
(and when applicable)
Government Lot _____, or Lot _____, Block _____, Subdivision Name _____

4. Means of Diversion

Pump
2@100gpm
1@ 20gpm Rated Capacity (gpm, ghp, cfs)
7 1/2 hp@100gpm
1 hp@ 20gpm Horsepower
+92 Lift (in feet)

Well: 40-50 Depth (in feet)
 Developed Spring
 Dikes

Headgate/Ditch or Pipeline

If other, describe: _____

5. Reservoir (impoundment by dam or pit). See formulas below for computing volume.

a. Capacity of existing (old) reservoir _____ NA _____ acre-feet.
b. Capacity of proposed (new) reservoir or ~~enlarged reservoir~~ (see note attached) _____ acre-feet.
c. Would a permanent drainage device be installed? Yes _____ No
d. Reservoir will be located off-stream (away from source) _____ Yes No
If yes, give location: E 1/2 SE 1/4 SE 1/4 Section 22, Township 7 N, S1 Range 20 EW, Carbon _____ County

Total volume of pit 1.43 acre feet Compute as follows:

Surface area _____ x maximum depth _____ x 0.5 = _____ acre-feet.
acres feet volume

} see attached computation

Total volume of reservoir _____ NA _____ Compute as follows:

Surface area _____ x 0.4 x maximum depth in feet at dam _____ = _____ acre feet.
acres volume

6. Period of Appropriation: Jan. 1 to Dec. 31 inclusive each year.
(month/day) (month/day)

(The period during the year when the water will be diverted, impounded or withdrawn from the source of supply.)

7. Description of Proposed Beneficial Uses:

Stock: Estimated maximum number and type of livestock see attached letter from Red Lodge Zoological Society

Domestic: Number of families to be supplied Park concession/public restrooms/water hydrants

Other (Describe) +64 acres of public parkland & related recreational facilities

Irrigation

a. Method of Irrigation

Sprinkler Playfields & Picnic area turf
 Contour Ditch

Spreader Dike

Border Dike

Other (Describe) Drip irrigation for planting of native trees and shrubs for revegetation

- b. Type of crops to be grown: Turf areas for playfields and picnic areas
Park development landscaping w/native trees, shrubs & grasses
- c. Number of irrigations per season: Frequent and light applications via programmed automatic irrigation system controllers
- d. If the purpose of this appropriation is to provide additional water to lands which are already irrigated, then the acreage that receives the additional water is considered **supplemental**. If this application involves supplemental irrigation indicate the basis of the **existing water** right that is being supplemented.

Claim No. NA Permit No. _____ Certificate No. _____
 Other _____

8. Place of Use

Irrigation: List the acreages to be irrigated and their location by legal land description. Also indicate in the extreme right-hand column the number of acres to be receiving additional water with an "S" for supplemental, and the acres to be irrigated for the first time with an "N" for new.

| County | Acreage | Lot | Block | Subdivision Name | Section | T | R | Supplemental (S) | New (N) or |
|--------------|---------|-----|-------|------------------------|---------|---|----|------------------|------------|
| Ballfields | 4.7 | | | Coal Miner's Mem. Park | 22 | 7 | 20 | N/S | EW N |
| Zoo | 1.41 | | | | 22 | 7 | 20 | N/S | EW N |
| Multi-use | 4.0 | | | | 27 | 7 | 20 | N/S | EW N |
| Picnic Areas | | | | | | | | N/S | EW |
| B | 83 | | | | 22 | 7 | 20 | N/S | EW N |
| C | 68 | | | | 23 | 7 | 20 | N/S | EW N |
| D | 92 | | | | 27 | 7 | 20 | N/S | EW N |
| E | 1.37 | | | | 27 | 7 | 20 | N/S | EW N |
| | | | | | | | | N/S | EW |
| | | | | | | | | N/S | EW |

Revegetated areas w/ drip irrigation cover portions of sections 22, 23, 26 and 27 T7S, R20E, N

Nonirrigation: If the place of use of the water will be the same as point of diversion (Item 3), check . If not, give the location of use:

_____ 1/4 _____ 1/4 _____ 1/4 Section _____, Township _____ N/S, Range _____ EW, _____ County, (and when applicable)
 Government Lot _____, or Lot _____, Block _____, Subdivision Name _____

9. Amount of water, use to which it will be applied (irrigation, stock, domestic, other) and period of use:

| gpm | gpm up to | acre-feet | for | use | from | to |
|------------------------|-----------|-----------|-----------------|-------|---------------------|-----------|
| 5 | 7.40 | | Zoo waterscape | | Jan 1 | Dec. 31 |
| | | | | | (mo./day) | (mo./day) |
| 184 | 62.00 | | Turf Irrigation | | April 1 | Oct. 30 |
| | | | | | (mo./day) | (mo./day) |
| 31 | 27.71 | | Drip Irrigation | | April 1 | Oct. 30 |
| | | | | | (mo./day) | (mo./day) |
| Total amount requested | | 220 | gpm up to | 97.11 | acre-feet per year. | |

10. Proposed Construction:

What is the amount of time needed to complete the development after permit is received? (Note: Construction should not begin until permit is received.)

Phase 1 projected for June 30, 1988 completion, future phases projected over an additional four to six years. Yearly progress reports to be forwarded.

11. Ownership:

- a. Property owner at the point of diversion City of Red Lodge
- b. Property owner at the place of use City of Red Lodge
- c. If you are not the owner at (a) or (b) above, it is your responsibility to obtain the necessary easements and right-of-way. If state or federal lands are involved, contact the appropriate agency since the water right may need to be applied for by them.

12. Location Map:

A map showing the following items **must** accompany this application. Failure to supply an accurate map constitutes an incomplete application and the application will be returned for completion. An ASCS aerial photo or USGS topographic map may be used.

Refer to 1" = 100' General Design Plan with 2' contour intervals & 1"=100' Property Items to be shown on the map: Survey

- a. Township and range numbers
- b. Section corners and number.
- c. Point of diversion
- d. Location of conveyance ditch, pipeline etc.
- e. Place of use (irrigated acres: new and supplemental, location of stock tanks)
- f. Applicant's signature or name of person preparing map

13. Remarks: Provide any additional information that would help in explaining the proposed appropriation.

Water user's agreement by Rocky Fork Decreed Users, Inc., demonstrates their general acceptance of this project's water requirement and its minimal impact upon Rock Creek.

Project funded by DNRC/Water Development Bureau

14. The applicant certifies that the statements appearing here are to the best of his/her knowledge true and correct.

James Redenour - Mayor
Signature

13 August 1987
Date

Janette [Signature]
Signature

Aug 13, 1987
Date

SUBMIT THE COMPLETED APPLICATION AND PROPER FILING FEE TO THE APPROPRIATE FIELD OFFICE NEAREST YOU. FIELD OFFICES ARE LOCATED IN: HELENA, MISSOULA, KALISPELL, HAVRE, GLASGOW, MILES CITY, BILLINGS, LEWISTOWN AND BOZEMAN. (Check your local telephone directory for addresses and telephone numbers.)

| FEE SCHEDULE | |
|---|--------|
| A) Fee charge based on the following rate schedule: For consumptive uses: | |
| 0 - less than 25 acre-feet per year | \$ 50 |
| 25 - less than 100 acre-feet per year | \$100* |
| 100 - less than 500 acre-feet per year | \$150 |
| 500 - less than 1,000 acre-feet per year | \$200 |
| 1,000 - or more acre-feet per year | \$250 |
| B) For Applications for non-consumptive uses: Fee charge based on following rate schedule: | |
| 0 - less than 1,000 acre-feet per year | \$ 50 |
| 1,000 - less than 10,000 acre-feet per year | \$100 |
| 10,000 - or more acre-feet per year | \$200 |
| For any Application with a combination of consumptive and non-consumptive uses the rate schedule shown in (A) above shall apply. | |
| C) For any request for an Interim Permit to drill and test only; there shall be a fee of \$10.00 in addition to the rate schedules shown in (A) or (B) above. | |

| | |
|------------------------------|--------------------------|
| A DEPARTMENT USE ONLY | |
| Application No. | <u>6635B</u> |
| Applicant's Name | <u>City of Red Lodge</u> |

SUPPLEMENT TO APPLICATION FOR BENEFICIAL WATER USE PERMIT

Criteria for Issuance of Permit

Section 85-2-311(1), MCA, provides the Department shall approve a water use permit if the applicant proves by substantial credible evidence that the following criteria are met. In response to the items listed below, provide credible, relevant, and factual information upon which the Department may rely to support the issuance of a water use permit.

- 1) What facts or information exist to show that water is available in the source of supply in the amount you requested and throughout the period you seek to use it?

Proposed demand arrived at based upon discussions with the City of Red Lodge, Red Lodge Zoological Society and residents participating in development of the Red Lodge Zoo/Coal Miner's Memorial Park. Many of these participants are familiar with the water resources on and around the park site. Also, confirmed with local well drillers familiar with the area the expected depth to ground water and nature of gravel bearing, sub-surface conditions. Drill log for existing well on park site is attached for reference.

- 2) What information leads you to believe that the rights of prior water users will not be adversely affected if your permit is granted?

As based upon agreement reached between the Rocky Fork Decreed User's, Inc., and the City of Red Lodge(April 2, 1987) relative to waters of Rock Creek and associated ground water.

Refer to attached GENERAL DESIGN PLAN and Agreement

- 3) Describe the proposed means of ¹diversion, ²construction, and ³operation of the diversion works you intend to use and provide information to show that the appropriation works are adequate to divert, transport, and put the water applied for to use.

- 1. Wells
- 2. Buried irrigation system of main lines & distribution laterals; Application via pop-up spray heads & drip emitters
- 3. Operated/controlled by automatic irrigation system controller(s); Domestic & zoo needs under operational control of zoological society staff. Overall maintenance/operation by City of Red Lodge

- 4) Describe the purpose for which the water will be used.

For maintenance & operation of recreational facilities associated with proposed development of Coal Miner's Memorial Park & Red Lodge Zoo.

Park: Restrooms/turf irrigation/revegetation irrigation.

Zoo: Concession/restrooms/stock & animal needs/waterscape feature.

- 5) Provide facts or information showing the proposed use will not interfere unreasonably with other planned uses or developments for which a permit has been issued or for which water has been reserved.

Volume of water proposed to be used is relatively small i.e. 97.11 acre feet/year, to be applied efficiently via drip irrigation for native, drought tolerant plants and via spray irrigation in small, controlled areas through automatic, programmed controllers.

Park and Zoo project planned to serve a public need and is being designed to fulfill state requirements to maintain and enhance reclamation work already undertaken on the park site. Agreement with Rocky Fork Decreed Users, Inc. shows their general support to the proposed recreational and public uses and agreement to the volume of water needed to maintain these improvements.

PROJECT PLAN

A general project plan is required (Section 85-2-310(4)) for appropriations if less than 4,000 AF and 5.5 CFS of water a year. The plan should include the following information: starting date of construction, a general time line for purchasing and installing equipment, and anticipated completion date. The completion date is the date by which the diversion works will be operating and the permitted water will be in use to the extent planned. In the space provided below, describe your project plan. Attach additional sheets if necessary.

See attachments:

*1"=100' General Design Plan * Agreement w/ Rocky Fork Decreed Users, Inc.

*1"=100' Property Survey

Starting Date: Fall 1987

Estimated Completion Date for Phase I June 30, 1988; additional phases of construction projected for next four to six years.

The applicant hereby affirms that the statements appearing herein, on the application, and on any attachments are to the best of his/her knowledge true and correct.

Mayor of City of Red Lodge

Applicant's Signature: James Rideman Date: 13 August 1987

Date: _____

Subscribed and sworn before me this 13 day of August, 19 87

Jeanette Gushovich

James Rideman - Mayor, City of Red Lodge

Notary for the State of Montana

Residing at Red Lodge

My commission expires Sept. 29, 1989

NOTICE

Additional information will be required (Section 85-2-310(4) and 85-2-311) if the proposed appropriation exceeds 4,000 acre-feet of water a year and 5.5 cubic feet per second of water or if the appropriation of water is for withdrawal and transportation for use outside the state. Application supplements for these additional uses are available at the Water Rights Bureau field offices listed on the back page of the application.

5B. Proposed reservoir located at proposed Red Lodge ZOO property is a decorative waterscape. It is planned to be a self contained recirculating system for aesthetic and recreational use. Reservoir will consist of a "creek" with waterfalls and rapids routed through three small ponds. Proposed reservoir will be lined with a 60 mil vinyl membrane containing water supplied by a well. Water will be recirculated by pump(s) and filtered with water lost to evaporation replenished by well. Drains will be installed to facilitate yearly draining and maintenance.

5D. Also, small pond at SE 1/4 SE 1/4 SE 1/4, Section 22, Township 7S, Range 20E, Carbon County

STREAM

Average 2' depth x 4600sf

$$\text{Surface Area} \frac{.105 \text{ acres} \times \text{max. depth } 2'-0" \times 0.5 \text{ feet}}{\text{volume}} = .105 \text{ acre feet}$$

PONDS

Average 12' depth x 9600 sf

$$\text{Surface Area} \frac{.22 \text{ acres} \times \text{max. depth } 12'-0" \times 0.5 \text{ feet}}{\text{volume}} = 1.32 \text{ acre feet}$$

TOTAL: 1.425 acre feet

DEPARTMENT OF NATURAL RESOURCES
AND CONSERVATION



TED SCHWINDEN, GOVERNOR

1520 EAST SIXTH AVENUE

STATE OF MONTANA

DIRECTOR'S OFFICE (406) 444-6699

HELENA, MONTANA 59620-2301

February 22, 1988

CERTIFIED NO. P 652 905 225

City of Red Lodge
P.O. Box 507
Red Lodge, MT 59068

Dear Sirs:

This is in reference to your Application for Beneficial Water Use Permit No. 66358-g43D to appropriate waters from a groundwater well. The Department has determined that the attached conditions to your permit are necessary for the protection of prior existing water rights.

Please review the conditions on the notice. If you do not agree with the conditions you have 30 days from the date of this notice to request a hearing.

If you are in agreement with the proposed conditions and do not request a hearing, you may facilitate the issuance of your permit by so indicating on the notice and returning it immediately.

However, in either event, if no response is received from you within 30 days of the date of this notice it will be assumed no hearing is requested. Your application will be modified to include the conditions and the permit will be issued accordingly.

Sincerely,

Handwritten signature of Allan Kuser in cursive.

Allan Kuser
Processing Unit Supervisor
Water Rights Bureau

AK/pm
Enclosure
c: Billings Field Office

CENTRALIZED SERVICES
DIVISION
(406) 444-6700

CONSERVATION DISTRICTS
DIVISION
(406) 444-6667

ENERGY
DIVISION
(406) 444-6697

OIL AND GAS
DIVISION
(406) 444-6575

WATER RESOURCES
DIVISION
(406) 444-6637

**TO SEE
CERTIFIED MAIL
RECEIPTS FOR
THIS WATER
RIGHT, PLEASE
REVIEW THE
ORIGINAL FILE**

MAR 01 1988

NOTICE AND STATEMENT OF OPINION

MONT. DEPT. of NATURAL RESOURCES & CONSERVATION

The Department hereby proposes the following action on your Application for Beneficial Water Use Permit, Application for Change of Appropriation Water Right, or Application to Sever or Sell Appropriation Water Right No. 66358-g43D City of Red Lodge

[] For the protection of prior existing water rights, the following condition(s) would be placed on your permit or authorization if approved after advertising your application. If objections are received or a hearing is held further condition(s) may be necessary. We will notify you later of any objections received or necessary modifications.

[X] To issue your permit or authorization subject to the following condition(s), for the protection of prior existing water rights.

1) This permit is subject to Section 85-2-505, MCA, requiring that all wells be constructed so they will not allow water to be wasted or contaminate other water supplies or sources, and all flowing wells shall be capped or equipped so the flow of water may be stopped when not being put to beneficial use.

The final completion of the well must include an access port of at least .50 inch so that the static level of the well may be accurately measured.

2) This permit is subject to the permittee submitting a progress report of the work completed under this permit by November 30th of each year to the Water Rights Bureau Field Office, 1537 Avenue D, Suite 105, Billings, MT 59102.

3) If, at any time after this permit is issued, a written complaint is received by the Department alleging that diverting from this source is adversely affecting a prior water right, the Department may make a field investigation of the project. If, during the field investigation, the Department finds sufficient evidence supporting the allegation, it may conduct a hearing in the matter allowing the applicant to show cause why the permit should not be modified or revoked. The Department may then modify or revoke the permit to protect existing rights or allow the permit to continue unchanged if the Hearings Officer determines that no existing water rights are being adversely affected.

NOTICE

SECTION 85-2-310, MCA, PROVIDES THAT A PERSON AGGRIEVED BY AN OPINION OF THE DEPARTMENT IS ENTITLED TO A HEARING BEFORE THE DEPARTMENT. A REQUEST FOR A HEARING MUST BE MADE WITHIN THIRTY (30) DAYS AFTER THIS NOTICE IS MAILED. THE SPECIFIED ACTION WILL BE TAKEN UNLESS A HEARING IS REQUESTED.

[Signature] 2/22/88
Administrative Officer Date
Water Rights Bureau
Water Resources Division

[X] I (We) accept the above condition(s) and do not request a hearing.

I (We) do not accept the above condition(s) and do request a hearing.

[Signature] Mayor - City of Red Lodge
Applicant Signature February 25, 1988 Date

Sign and return to:

MONTANA DEPARTMENT OF NATURAL RESOURCES & CONSERVATION DNRRC
1520 EAST SIXTH AVENUE HELENA, MONTANA 59620 444-6610



November 20, 1987

Mr. Don Riddle
Department of Natural Resources and Conservation
Water Development Bureau
1537 Avenue D
Billings, Montana 59102

re: Coal Miner's Memorial Park/Red Lodge Zoo

Dear Don:

As requested on November 20th, I have enclosed the additional information regarding **Place of Use, item # 8** of our current Beneficial Water Use Permit Application. As discussed over the phone, the area in question was Picnic Area C, totalling .68 acres of spray irrigated lawn area. Our current application describes this lawn area as only being in Section 23, while in fact, its proposed location also includes a small portion of Section 26. Both sections are located in Township 7 South, Range 20 East. Therefore, Picnic area C should now be distinguished in the following manner relative to **Place of Use**:

C-1 .32 acres SW1/4, SW1/4, SW1/4, Section 23, T7S, R20E
C-2 .36 acres NW1/4, NW1/4, NW1/4, Section 26, T7S, R20E

Also, we discussed the fact that areas to be drip irrigated were not broken down on a sectional basis. The original application notes that all proposed drip irrigation covers portions of sections 22, 23, 26, and 27 which are all located in T7S and R20E. A more detailed breakdown of this type of irrigation was not provided for two reasons. First, this type of irrigation constitutes a very small amount of the total water budget programmed for this project. Second, because of the schematic nature of the General Design Plan on which this application is based, it is impossible to accurately predict the exact location and total acreage of all proposed drip irrigation until the revegetation plan is finalized.

However, to assist in your review of our application, I have estimated, as accurately as can be determined at this time, the acreages for the project's drip irrigated areas. This information should satisfy your request that I further illustrate the **Place of Use** requirement of this application relative to drip irrigation. Please note the following:

Mr. Don Riddle
November 20, 1987
Page 2

Place of Use

Drip Irrigation

Estimate based upon the assumption that 50% of the plant's root zone is irrigated, therefore the irrigated area of each proposed plant type is as follows:


| Plant type | root zone | x | quantity | = area |
|------------------|-----------|---|----------|---|
| Evergreen Trees | 88 sf | x | 200 = | 17600 sf |
| Canopy Trees | 481sf | x | 225 = | 108225 sf |
| Accent Trees | 157 sf | x | 125 = | 19625 sf |
| Evergreen Shrubs | 25 sf | x | 300 = | 7500 sf |
| Deciduous Shrubs | 14 sf | x | 800 = | 11200 sf |
| Total | | | | 164150 sf or 3.77 acres of drip irrigated area |

The estimated acreage of drip irrigated area for each section is:

| | | |
|---------------|-------------|--------------|
| Section 22: | 1.85 | acres |
| Section 23: | .23 | acres |
| Section 26: | .21 | acres |
| Section 27: | 1.48 | acres |
| Total: | 3.77 | acres |

Please contact me if you have any additional questions or concerns.

Sincerely yours;



Douglas H. Geiner, ASLA
Landscape Architect

Encl.

cc Mr. Richard Clower, Chairman, Red Lodge Parks Department
Mr. Les Pederson, Water Development Bureau, Helena, Mt.



September 17, 1987

Mr. Don Riddle
Department of Natural Resources and Conservation
Water Development Bureau
1537 Avenue D
Billings, Montana 59102

RECEIVED

SEP 17 1987

DEPT. OF NATURAL RESOURCES
AND CONSERVATION
BILLINGS OFFICE

re: Coal Miner's Memorial Park/Red Lodge Zoo

Dear Don:

As requested on September 14th, I have enclosed a Point of Diversion description for the existing well located southwest of the Zoo administration buildings that has been designated as the 20 gpm well in our current Beneficial Water Use Permit application. As discussed over the phone, we still hope to utilize this well even though a minor water quality problem has been discovered. Until more information is obtained on the status of this well, it is impossible to advise you whether it will be abandoned and another 20 gpm well location will be determined.

Point of Diversion for 20 gpm well:

SE 1/4, SE 1/4, SE 1/4; Section 22, Township 7 S, Range 20 E, Carbon County

Also, noted on the attached illustration are estimated distances and bearings from the Section 22 corner monument to the 20 gpm well and the proposed 100 gpm well with similar point of diversion locations based on quarter sections.

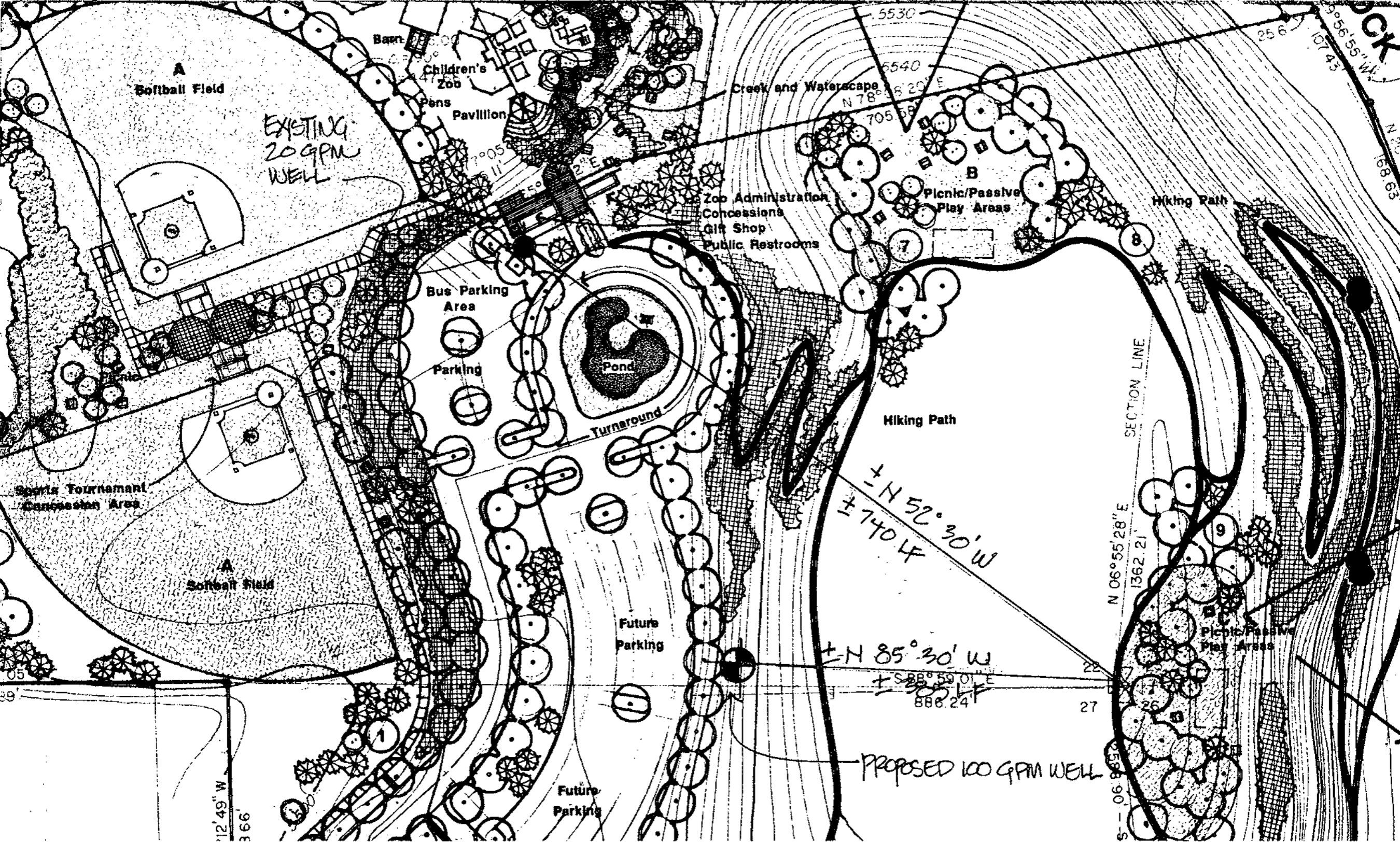
Please call if additional information is needed.

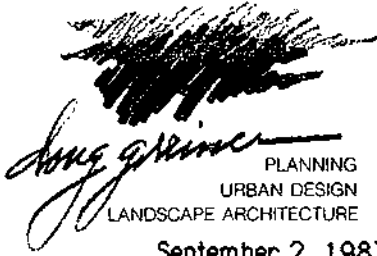
Sincerely yours;

Douglas H. Greiner, ASLA
Landscape Architect

Encl.

cc Ms. Edrie Vinson, Carbon County Preservation Office
Mr. Walt House, President, Red Lodge Zoological Society
Mr. Les Pederson, Water Development Bureau, Helena, Mt.




PLANNING
URBAN DESIGN
LANDSCAPE ARCHITECTURE

September 2, 1987

Mr. Don Riddle
Department of Natural Resources and Conservation
Water Development Bureau
1537 Avenue D
Billings, Montana 59102

RECEIVED

SEP - 4 1987

DEPT. OF NATURAL RESOURCES
AND CONSERVATION
BILLINGS OFFICE

re: Coal Miner's Memorial Park/Red Lodge Zoo

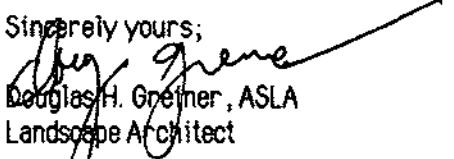
Dear Don:

Since informing you late last month of what appears to be a water quality problem with the existing well at the Red Lodge Zoo, I have learned nothing new regarding the status of that well. Attention has focused upon the effect of an old garbage dump at the northwest corner of the park which is suspected as the source of the problem. Also, some questions have been raised as to how the well was grouted relative to the depth and thickness of the garbage dump.

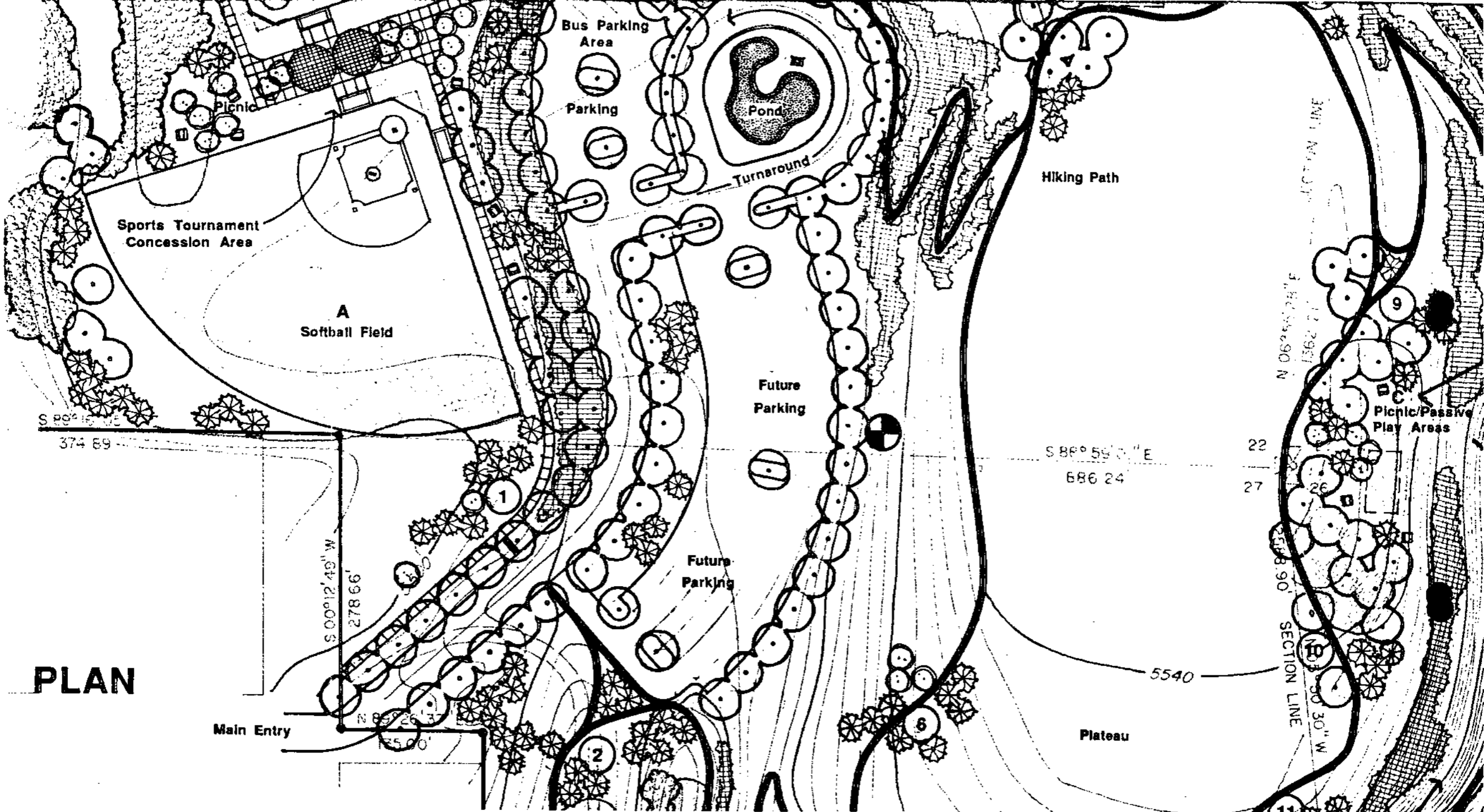
Because of these concerns, we have relocated one of the proposed 100 gpm wells in the General Design Plan for the Park and Zoo complex. Its has been moved from its original location just west of the softball fields to the east side of the future parking lot, south of the Zoo administration buildings. We predict this new well site will be unaffected by the subsurface conditions speculated to exist at the old garbage dump site.

Attached is a xerox copy illustrating the revised well site relative to the General Design Plan recently prepared for the Park and Zoo complex. Also, included is a description of its new location (i.e. Point of Diversion) in terms of Section, Township, and Range as required on page 1, Item 3, of our pending Beneficial Water Use Permit.

Please call if additional information is needed. Also, I will keep you informed as to the status of the existing well as to whether it will be abandoned, drilled deeper, recased or regouted to control what appears to be an infiltration of contaminated water from the adjoining, subsurface garbage dump.

Sincerely yours;

Douglas H. Greiner, ASLA
Landscape Architect

Encl.
cc Ms. Edrie Vinson, Carbon County Preservation Office
Mr. Walt House, President, Red Lodge Zoological Society
Mr. Les Pederson, Water Development Bureau, Helena, Mt.



PLAN

Amended Point of Diversion:

SE 1/4, SE 1/4, SE 1/4, Section 22, Township 7 S, Range 20 E, Carbon County

WELL LOG REPORT

State law requires that this form be filed by the water well driller within 60 days after completion of the well.

| <p>1. WELL OWNER <u>CITY OF RED LODGE</u> Name <u>RED LODGE ZOOLOGICAL SOCIETY</u></p> | <p>8. WATER LEVEL Static water level <u>30'</u> feet below land surface if flowing; closed-in pressure _____ psi Controlled by: _____ valve, _____ reducers, _____ other, (specify) _____</p> | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|--|--|---------------------------|-------------|-------------|--|-------------|-----------|--|-------------|-----------|--------------|--------------|----------|-----------|--|--|--|--------------|--------------|------------|------------|--|--|--|--|--|----------|-----------|-------------|------------|------------|---|
| <p>2. CURRENT MAILING ADDRESS <u>P.O. BOX 675</u> <u>RED LODGE, MT 59068</u></p> | <p>9. WELL TEST DATA _____ pump _____ bailer other, (specify) <u>AIR PUMP</u> Pumping water level below land surface: <u>34</u> ft. after <u>1</u> hrs. pumping <u>10-12</u> gpm <u>34</u> ft. after <u>4</u> hrs. pumping <u>10-12</u> gpm</p> | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| <p>3. WELL LOCATION County <u>CARBON</u> Township <u>7 N/S</u> Range <u>20 E/W</u> <u>1/4 NE 1/4 NE 1/4</u> Section <u>27</u> Lot _____ Block _____ Subdivision _____</p> | <p>10. WAS WELL PLUGGED OR ABANDONED? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> If yes, how? _____</p> | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| <p>4. PROPOSED USE Domestic <input checked="" type="checkbox"/> Stock <input checked="" type="checkbox"/> Irrigation <input type="checkbox"/> Other <input type="checkbox"/> specify _____</p> | <p>11. DATE COMPLETED _____</p> | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| <p>5. DRILLING METHOD _____ cable, _____ bored, <input checked="" type="checkbox"/> forward rotary, _____ reverse rotary, _____ jetted, _____ other (specify) _____</p> | <p>12. WELL LOG Depth (ft.) From To Formation <u>0</u> <u>22</u> <u>COAL SLAB</u> <u>22</u> <u>34</u> <u>COAL SLAB & GRAVEL</u> <u>34</u> <u>48</u> <u>SAND AND GR. VEL</u></p> | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| <p>6. WELL CONSTRUCTION AND COMPLETION</p> <table border="1" style="width: 100%; border-collapse: collapse; font-size: small;"> <thead> <tr> <th rowspan="2">Size of drilled hole</th> <th rowspan="2">Size and weight of casing</th> <th rowspan="2">From (feet)</th> <th rowspan="2">To (feet)</th> <th colspan="3">Perforations Screen <input checked="" type="checkbox"/> and/or</th> </tr> <tr> <th>Kind Size</th> <th>From (feet)</th> <th>To (feet)</th> </tr> </thead> <tbody> <tr> <td><u>8 3/4</u></td> <td><u>6 5/8</u></td> <td><u>0</u></td> <td><u>34</u></td> <td></td> <td></td> <td></td> </tr> <tr> <td><u>6 3/4</u></td> <td><u>4 1/2</u></td> <td><u>160</u></td> <td><u>PSX</u></td> <td></td> <td></td> <td></td> </tr> <tr> <td></td> <td></td> <td><u>0</u></td> <td><u>44</u></td> <td><u>1/8"</u></td> <td><u>34'</u></td> <td><u>44'</u></td> </tr> </tbody> </table> | Size of drilled hole | Size and weight of casing | From (feet) | To (feet) | Perforations Screen <input checked="" type="checkbox"/> and/or | | | Kind Size | From (feet) | To (feet) | <u>8 3/4</u> | <u>6 5/8</u> | <u>0</u> | <u>34</u> | | | | <u>6 3/4</u> | <u>4 1/2</u> | <u>160</u> | <u>PSX</u> | | | | | | <u>0</u> | <u>44</u> | <u>1/8"</u> | <u>34'</u> | <u>44'</u> | <div style="text-align: center; border: 2px solid black; padding: 10px; margin: 10px auto; width: 80%;"> <p>RECEIVED</p> <p>MAY 16 1986</p> <p>DEPT. OF NATURAL RESOURCES AND CONSERVATION BILLINGS OFFICE</p> </div> <p style="text-align: center; font-size: x-small;">(use separate sheet if necessary)</p> |
| Size of drilled hole | | | | | Size and weight of casing | From (feet) | To (feet) | Perforations Screen <input checked="" type="checkbox"/> and/or | | | | | | | | | | | | | | | | | | | | | | | | |
| | Kind Size | From (feet) | To (feet) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| <u>8 3/4</u> | <u>6 5/8</u> | <u>0</u> | <u>34</u> | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| <u>6 3/4</u> | <u>4 1/2</u> | <u>160</u> | <u>PSX</u> | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | <u>0</u> | <u>44</u> | <u>1/8"</u> | <u>34'</u> | <u>44'</u> | | | | | | | | | | | | | | | | | | | | | | | | | | |
| <p>Was casing left open end? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Was a packer or seal used? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No If so, what material <u>CEMENT</u> Was the well gravel packed? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Was the well grouted? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No To what depth? <u>34'</u> Material used in grouting <u>CEMENT</u> Well head completion: Pitless adapter <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Top of casing 12 in. or greater above grade <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No</p> | <p>13. DRILLER'S CERTIFICATION This well was drilled under my jurisdiction and this report is true to the best of my knowledge. Date <u>5/14/86</u> <u>SWEETWATER DRILLING</u> Firm Name <u>BOX 123 BILLINGS, MT 59103</u> Address <u>Ted Williams</u> Signature License No. _____</p> | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| <p>7. WHAT IS THE TEMPERATURE OF THE WATER? <u>45°</u> Degrees Fahrenheit <input type="checkbox"/> Measured <input checked="" type="checkbox"/> Estimated</p> | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

MONTANA DEPARTMENT OF NATURAL RESOURCES & CONSERVATION

32 SOUTH EWING
HELENA, MONTANA 59620
444-6610

DNR

AGREEMENT

This Agreement made and entered into this 2nd day of April, 1987, by and between Rocky Fork Decreed Users, Inc., the City of Red Lodge, Montana, the Red Lodge Zoological Society and Coal Miners' Memorial Park Foundation, witnesseth:

The Rocky Fork Decreed Users, Inc., do hereby waive any and all objections and protests to the installation and use of three water wells on that certain real property consisting of sixty-four (64) acres, more or less, owned by the City of Red Lodge, Montana, and commonly known as Coal Miners' Memorial Park, including lands set aside for the Red Lodge Zoological Society, being lands situated in the Southeast Quarter (SE 1/4) of Section Twenty-two (22) and the Northeast Quarter (NE 1/4) of Section Twenty-seven (27), Township Seven (7) South, Range Twenty (20) East, M.P.M. and all of the other parties hereto do agree to the following terms and conditions:

1. The existing well shall have a pumping capacity not to exceed twenty (20) gallons per minute.
2. The two new wells shall have pumping capacities not to exceed one hundred (100) gallons per minute each.
3. No further wells shall be drilled, installed or operated on said property without the express written consent of Rocky Fork Decreed Users, Inc.
4. The water commissioner shall have the right to inspect said wells and pumps at any reasonable time.
5. The appropriation of water by the wells is subject to prior water rights and if it is shown that they have an adverse effect on prior rights including surface rights, their use will be modified to minimize such impact.

Dated this 2nd day of April, 1987.

ROCKY FORK DECREEED USERS, INC.

BY Tonia Heath
Its President

ATTEST:

Aldred D. Zumbun
Secretary

CITY OF RED LODGE, MONTANA

BY James Rideman
Its Mayor

ATTEST:

Jeanette Furbush
City Clerk

RED LODGE ZOOLOGICAL SOCIETY

BY Walter S. Horne
Its President

ATTEST:

Richard S. Ahl
Secretary

COAL MINERS' MEMORIAL
PARK FOUNDATION

BY Marion A. Coleman
Its President

ATTEST:

Richard S. Ahl
Secretary



P. O. Box 675
Red Lodge, Montana 59068
(406) 446-3473

July 15, 1987

Doug Greiner, Architecture Designs
Creekside 1, Suite 113
1001 So. 24th St. West
Billings, Montana, 59102

Dear Doug,

As you requested, we have compiled a list of animals that we plan to maintain at our zoo upon completion. The actual animal population will vary from time to time, but not to a degree that would significantly affect water consumption. The list is attached. Water consumption by these animals is estimated to be less than one gallon per minute averaged over 24 hours.

Other consumptive water uses at the zoo excluding irrigation, will include animal habitat cleaning, sanitary facilities in the visitor's center and the concession kitchen facilities. The total consumption from these uses is estimated to be less than 3 GPM averaged over a 24 hour period of time.

Hopefully this will answer the questions you have. If I can be of further assistance please contact me.

Sincerely,

Walter House
Walter House, President

WH/kl

Red Lodge Zoo Planned Animal Inventory

July 15, 1987

Children's Zoo

12 Rabbits
20 Chickens
3 Peacocks
4 Geese
15 Ducks
4 Pigs
10 Goats
10 Sheep
2 Calves
2 Ponies

Native Animal Zoo

| | | | |
|----|---------------|----|----------------|
| 2 | Black Bears | 2 | Foxes |
| 2 | Grizzly Bears | 5 | Beavers |
| 10 | Deer | 20 | Small Mammuels |
| 5 | Elk | 20 | Birds |
| 3 | Bison | 20 | Reptiles |
| 1 | Mountain Lion | | |
| 2 | Bob Cats | | |
| 2 | Coyotes | | |

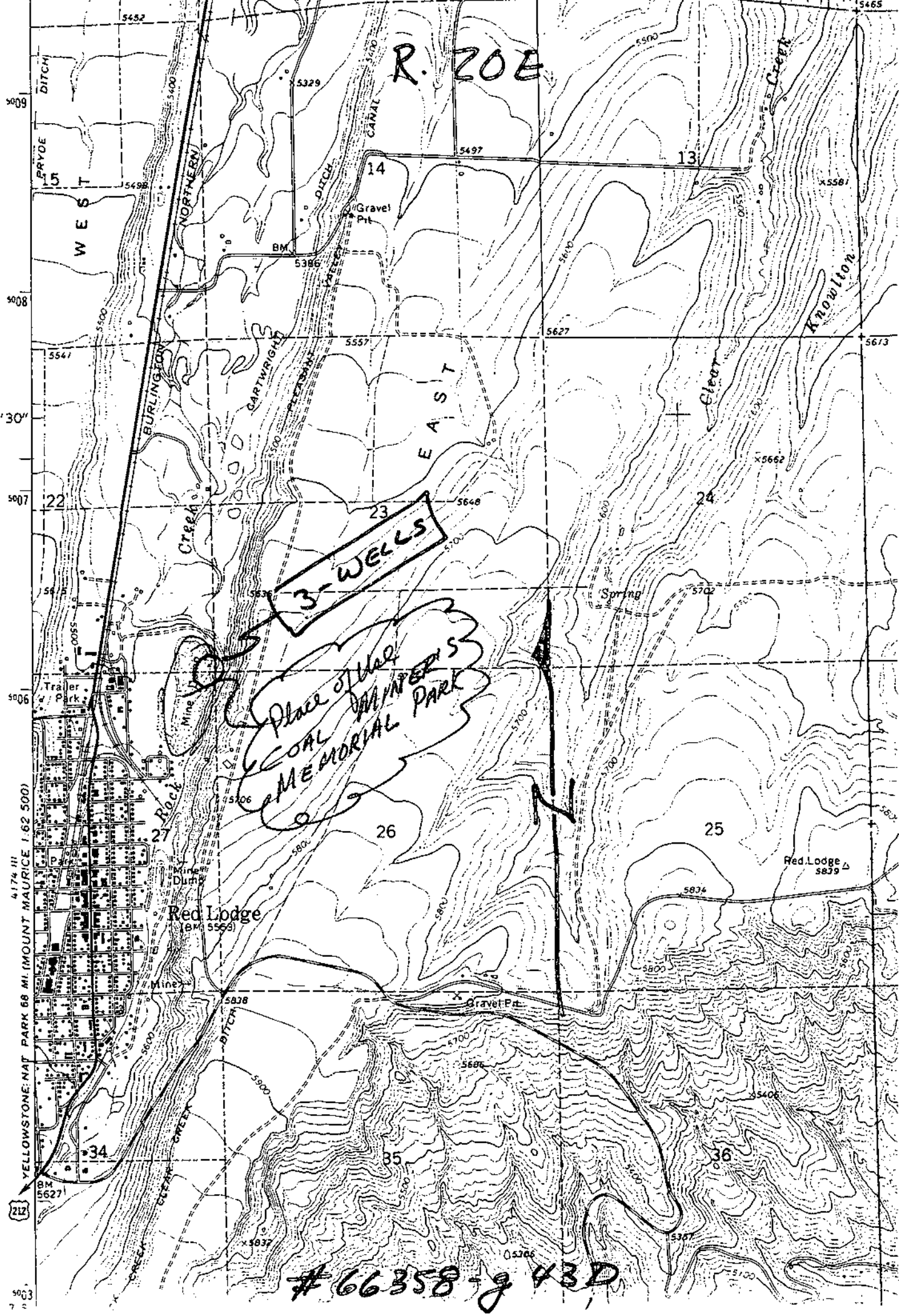
U.S.F.

R. ZOE

3 WELLS

Place of the
COAL MINER'S
MEMORIAL PARK

#66358-g 43D



DEPARTMENT OF NATURAL
RESOURCES AND CONSERVATION
BILLINGS WATER RIGHTS FIELD OFFICE

18



STAN STEPHENS, GOVERNOR

1537 AVENUE D — SUITE 105

STATE OF MONTANA

(406) 657-2105

BILLINGS, MONTANA 59102

November 2, 1989

City of Red Lodge
P.O. Box 507
Red Lodge, MT 59068

Water Right No. 43D-P066358

Dear Permitholder:

This letter is sent as a reminder to you that your Provisional Permit to appropriate water issued by this Department on April 1, 1988 is subject to the permittee submitting a yearly progress report of the work completed under this permit.

This report must be submitted to the Water Rights Bureau Field Office at 1537 Avenue D, Suite 105, Billings, MT 59102 by November 30th of each year.

Sincerely,

A handwritten signature in black ink that reads "Tim Kuehn".

Tim Kuehn
New Appropriations Specialist

TK/kb

DEPARTMENT OF NATURAL RESOURCES
AND CONSERVATION



TED SCHWINDEN, GOVERNOR

1520 EAST SIXTH AVENUE

STATE OF MONTANA

DIRECTOR'S OFFICE (406) 444-6699

HELENA, MONTANA 59620-2301

February 22, 1988

RECEIVED
FEB 24 1988
DEPT. OF NATURAL RESOURCES
AND CONSERVATION
BILLINGS OFFICE

CERTIFIED NO. P 652 905 225

City of Red Lodge
P.O. Box 507
Red Lodge, MT 59068

Dear Sirs:

This is in reference to your Application for Beneficial Water Use Permit No. 66358-g43D to appropriate waters from a groundwater well. The Department has determined that the attached conditions to your permit are necessary for the protection of prior existing water rights.

Please review the conditions on the notice. If you do not agree with the conditions you have 30 days from the date of this notice to request a hearing.

If you are in agreement with the proposed conditions and do not request a hearing, you may facilitate the issuance of your permit by so indicating on the notice and returning it immediately.

However, in either event, if no response is received from you within 30 days of the date of this notice it will be assumed no hearing is requested. Your application will be modified to include the conditions and the permit will be issued accordingly.

Sincerely,

A handwritten signature in cursive script that reads "Allan Kuser".

Allan Kuser
Processing Unit Supervisor
Water Rights Bureau

AK/pm
Enclosure
c: Billings Field Office

CENTRALIZED SERVICES
DIVISION
(406) 444-6700

CONSERVATION DISTRICTS
DIVISION
(406) 444-6607

ENERGY
DIVISION
(406) 444-6697

OIL AND GAS
DIVISION
(406) 444-6675

WATER RESOURCES
DIVISION
(406) 444-6637

NOTICE AND STATEMENT OF OPINION

The Department hereby proposes the following action on your Application for Beneficial Water Use Permit, Application for Change of Appropriation Water Right, or Application to Sever or Sell Appropriation Water Right No. 66358-g43D City of Red Lodge

For the protection of prior existing water rights, the following condition(s) would be placed on your permit or authorization if approved after advertising your application. If objections are received or a hearing is held further condition(s) may be necessary. We will notify you later of any objections received or necessary modifications.

To issue your permit or authorization subject to the following condition(s), for the protection of prior existing water rights.

1) This permit is subject to Section 85-2-505, MCA, requiring that all wells be constructed so they will not allow water to be wasted or contaminate other water supplies or sources, and all flowing wells shall be capped or equipped so the flow of water may be stopped when not being put to beneficial use.

The final completion of the well must include an access port of at least .50 inch so that the static level of the well may be accurately measured.

2) This permit is subject to the permittee submitting a progress report of the work completed under this permit by November 30th of each year to the Water Rights Bureau Field Office, 1537 Avenue D, Suite 105, Billings, MT 59102.

3) If, at any time after this permit is issued, a written complaint is received by the Department alleging that diverting from this source is adversely affecting a prior water right, the Department may make a field investigation of the project. If, during the field investigation, the Department finds sufficient evidence supporting the allegation, it may conduct a hearing in the matter allowing the applicant to show cause why the permit should not be modified or revoked. The Department may then modify or revoke the permit to protect existing rights or allow the permit to continue unchanged if the Hearings Officer determines that no existing water rights are being adversely affected.

NOTICE

SECTION 85-2-310, MCA, PROVIDES THAT A PERSON AGGRIEVED BY AN OPINION OF THE DEPARTMENT IS ENTITLED TO A HEARING BEFORE THE DEPARTMENT. A REQUEST FOR A HEARING MUST BE MADE WITHIN THIRTY (30) DAYS AFTER THIS NOTICE IS MAILED. THE SPECIFIED ACTION WILL BE TAKEN UNLESS A HEARING IS REQUESTED.

Donald J. Luse 2/22/88
Administrative Officer Date
Water Rights Bureau
Water Resources Division

_____ I (We) accept the above condition(s) and do not request a hearing.

_____ I (We) do not accept the above condition(s) and do request a hearing.

Applicant Signature Date

Sign and return to:

MONTANA DEPARTMENT OF NATURAL RESOURCES & CONSERVATION **DNRG**
1520 EAST SIXTH AVENUE HELENA, MONTANA 59620 444-6610

P U B L I C N O T I C E

NOTICE TO WATER USERS
(PURSUANT TO SECTION 85-2-307, MCA)

NOTICE IS HEREBY GIVEN THAT THE FOLLOWING APPLICATION HAS BEEN
SUBMITTED FOR PERMIT TO APPROPRIATE WATER IN THE STATE OF MONTANA:

APPLICATION NO. 66358-G43D

RED LODGE, CITY OF
PO BOX 507
RED LODGE, MT 59068

SOURCE: GROUNDWATER WELL

TOTAL FLOW RATE: 220.00 GPM

TOTAL VOLUME: 97.11 ACRE FEET PER YEAR

DATE FILED: 8/17/87

DIVERSION POINT: SESESE, SEC. 22, TWP. 07S, RGE. 20E, CARBON COUNTY
NENENE, SEC. 27, TWP. 07S, RGE. 20E, CARBON COUNTY
SESESE, SEC. 22, TWP. 07S, RGE. 20E, CARBON COUNTY

USE: 5.00 GPM UP TO 7.40 AC-FT (01/01 - 12/31) FOR COMMERCIAL

215.00 GPM UP TO 89.71 AC-FT (04/01 - 10/31) FOR IRRIGATION ON
13.91 ACRES

PLACE OF USE: SESE, SEC. 22, TWP. 07S, RGE. 20E, CARBON COUNTY FOR
COMMERCIAL
SESE, SEC. 22, TWP. 07S, RGE. 20E, CARBON COUNTY FOR
IRRIGATION ON 6.94 ACRES
SWSWSW, SEC. 23, TWP. 07S, RGE. 20E, CARBON COUNTY FOR
IRRIGATION ON .32 ACRES
NWNWNW, SEC. 26, TWP. 07S, RGE. 20E, CARBON COUNTY FOR
IRRIGATION ON .36 ACRES
NENE, SEC. 27, TWP. 07S, RGE. 20E, CARBON COUNTY FOR
IRRIGATION ON 6.29 ACRES

DIVERSION MEANS: PUMP

RESERVOIR: PROPOSED OFF STREAM CAPACITY OF 1.4 AC-FT
E2SESE, SEC. 22, TWP 07S, RGE. 20E, CARBON COUNTY

REMARKS: IF ISSUED, THE PERMIT WILL BE SUBJECT TO PRIOR EXISTING
WATER RIGHTS.

WATER SUPPLY FOR COAL MINERS MEMERIAL PARK.

OBJECTIONS TO THE ISSUANCE OF A PERMIT UNDER THIS APPLICATION,
WITH REASONS THEREFORE, MUST BE FILED WITH THE DEPARTMENT OF NATURAL
RESOURCES AND CONSERVATION, NATURAL RESOURCES BUILDING, 1520 E 6TH AVE,
HELENA, MT 59620-2301, OR POSTMARKED ON OR BEFORE JANUARY 4, 1988.
OBJECTION TO APPLICATION (FORM 611) IS AVAILABLE AT THE OFFICE OF THE
COUNTY CLERK AND RECORDER, OR FROM THIS DEPARTMENT UPON REQUEST.
ASSISTANCE OR QUESTIONS REGARDING THIS APPLICATION SHOULD BE DIRECTED
TO THE LOCAL OFFICE : BILLINGS AREA OFFICE SUPERVISOR
1537 AVE. D, SUITE 105
BILLINGS, MT 59102 PH: 657-2105

PUBLISHED IN: CARBON COUNTY NEWS ON 12-17-87

DEPARTMENT OF NATURAL RESOURCES
AND CONSERVATION



TED SCHWINDEN, GOVERNOR

1520 EAST SIXTH AVENUE

STATE OF MONTANA

DIRECTOR'S OFFICE (406) 444-6699

HELENA, MONTANA 59620

November 27, 1987

City of Red Lodge
PO Box 507
Red Lodge, MT 59068

Dear Applicant:

Please review the enclosed copy of the Notice to Water Users which will be published in the newspaper(s) and on the date indicated at the bottom of the Public Notice. If there is an error, please call the Citizens' Advocate office immediately TOLL FREE at 1-800-332-2272 and leave your name, water application number and telephone number. If you are out of state, call 1-406-444-6610. A staff member of the Water Rights Bureau will return your call.

On the date of publication, please review the newspaper publication with this copy. If there is an error or the paper fails to publish the Notice, please call us at the above numbers. An uncorrected error in the Notice may require the application to be readvertised.

Sincerely,

A handwritten signature in cursive script that reads "Allan Kuser".

Allan Kuser
Processing Unit Supervisor
Water Rights Bureau
Water Resources Division

AK:jg
Enclosure

DEPARTMENT OF NATURAL RESOURCES
AND CONSERVATION



TED SCHWINDEN, GOVERNOR

1520 EAST SIXTH AVENUE

STATE OF MONTANA

DIRECTOR'S OFFICE (406) 444-6699

HELENA, MONTANA 59620

November 30, 1987

LEGAL NOTICE DEPARTMENT
CARBON COUNTY NEWS
7 NORTH BROADWAY
RED LODGE, MT 59068

To The Editor:

Re: Application for Beneficial Water Use Permit and/or Application to
Change Appropriation Water Right

Application No(s): 66358-43D

As required by law, you are authorized to publish the enclosed
notice(s) on December 10, 1987.

17

Within 30 days after publication, forward to this Department the
notarized certification and affidavit of publication. Your statement of
cost in triplicate should be attached to the affidavit and submitted to
this Department for payment.

If you have any questions, please call Jan Gerke at (406)444-6626.

Sincerely,

Allan Kuser

Allan Kuser
Processing Unit Supervisor
Water Rights Bureau
Water Resources Division

AK:jg
Enclosure

PLEASE NOTE: If the Notice(s) cannot be published on the date indicated,
please call. It is important that the Notice(s) be advertised on this date.

THE
CARBON
COUNTY

NEWS

RECEIVED

DEC 11 1987

PRINTING • ADVERTISING MONT. DEPT. of NATURAL
Box 970, Red Lodge, Montana 59068 RESOURCES & CONSERVATION
446-2222

Date December 10, 1987

Dept. of Natural Resources & Conservation

1520 E. Sixth Avenue

Helena, MT 59620

| Merchandise Sold | | | Rec'd on Account | | Paid Out | For |
|---|-------|--------|------------------|------|----------|--------|
| Cash | Check | Charge | Check | Cash | | |
| | | XX | | | | |
| Description | | | | | | Amount |
| Public Notice-Red Lodge 1 Publication Affidevit enclosed 4 folios <i>66358</i> | | | | | | 24.00 |
| <div style="border: 1px solid black; border-radius: 50%; padding: 10px; display: inline-block;"> Re-running on December 17, due to changes from your office. </div> | | | | | | |

Affidavit of Publication

State of Montana)
County of Carbon)

ss.

I, James E. Moore II, being duly sworn, upon oath, say: That I am over the age of twenty-one years, and a citizen of the United States of America; that I am not a party to, nor in anywise interested in the matter referred to in the attached notice; that I am now, and at all times hereinafter referred to as the publisher of the Carbon County News, a weekly newspaper of general circulation, printed and published in the City of Red Lodge, County of Carbon, State of Montana.

That the annexed printed notice,

Public Notice

is a true copy (in identical terms and format) which was printed and published in full in the regular and entire issue of said newspaper (and not in any supplement thereof) on each of the following days, to wit:

December 10, 1987.

James E. Moore II

Subscribed and sworn to before me this 10th day
of December, A.D., 19 87.

Samuel J. Prose

Notary Public for the State of Montana.
Residing at Red Lodge, Montana. My
commission expires March 15, 19 88

PUBLIC NOTICE

NOTICE TO WATER USERS
(Pursuant to Section 85-2-307, MCA)
Notice is hereby given that the following application has been submitted for permit to appropriate water in the State of Montana:

APPLICATION NO. 86358-G43D

Red Lodge, City of
P.O. Box 507

Red Lodge, MT 59068

Source: Groundwater Well

Total Flow Rate: 220.00 GPM

Total Volume: 97.11 Acre Feet Per Year

Date Filed: 8/17/1987

Diversion Point: SESESE Sec. 22 Twp. 07S Rge. 20E Carbon Co.

NENENE Sec. 27 Twp. 07S Rge. 20E Carbon Co.

SESESE Sec. 22 Twp. 07S Rge. 20E Carbon Co.

Use: 5.00 GPM up to 7.40 Ac-Ft (01/01-12/31) for commercial

215.00 GPM up to 89.71 Ac-Ft (04/01-10/31) for irrigation on 13.91 acres

Place of Use: SESE Sec. 22 Twp. 07S Rge. 20E Carbon Co. for commercial

SESE Sec. 22 Twp. 07S Rge. 20E Carbon Co. for irrigation on 6.94 acres

SWSWSW Sec. 23 Twp. 07S Rge. 20E Carbon Co. for irrigation on .32 acres

NWNWNW Sec. 26 Twp. 07S Rge. 20E Carbon Co. for irrigation on .36 acres

NENE Sec. 27 Twp. 07S Rge. 20E Carbon Co. for irrigation on 6.29 acres

Diversion Means: Pump

Reservoir: Proposed off stream capacity of 14.2 Ac-Ft E1/2SESE Sec. 22 Twp. 07S Rge. 20E Carbon Co.

Remarks: If issued, the permit will be subject to prior existing water rights. Water supply for Coal Miners Memorial Park

Objections to the issuance of a permit under this application, with reasons therefore, must be filed with the Department of Natural Resources and Conservation, Natural Resources Building, 1520 East Sixth Avenue, Helena, MT 59620-2301, or postmarked on or before December 28, 1987. Objection to application (Form 611) is available at the office of the County Clerk and Recorder, or from this Department upon request.

Assistance or questions regarding this application should be directed to the local office: Billings Area Office Supv.; 1537 Avenue D, Suite 105; Billings, MT 59102; Ph.: 657-2105.

(Publish Dec. 10, 1987)

No. _____

**IN DISTRICT COURT
THIRTEENTH JUDICIAL DISTRICT
COUNTY OF CARBON
STATE OF MONTANA**

Plaintiff

versus

Defendant

AFFIDAVIT OF PUBLICATION OF

Filed this _____ day of _____

A. D., 19_____.

Clerk

By _____

Deputy Clerk

THE CARBON COUNTY NEWS

PRINTING • ADVERTISING
 Box 970, Red Lodge, Montana 59068
 446-2222

Date December 17, 1987

Dept. of Natural Resources

1520 E. 6th Avenue

Helena, MT 59620

RECEIVED

DEC 18 1987

MONT. DEPT. of NATURAL
 RESOURCES & CON. PRESERVATION

| Merchandise Sold | | | Rec'd on Account | | Paid Out | For |
|---|-------|--------|------------------|------|----------|--------|
| Cash | Check | Charge | Check | Cash | | |
| | | XX | | | | |
| Description | | | | | | Amount |
| Application: Water Use Permit City of Red Lodge 1 Publication-Corrected Affidavit enclosed <i>66358</i> | | | | | | 24.00 |

Affidavit of [redacted]ication

State of Montana)

County of Carbon)

ss.

I, James E. Moore II, being duly sworn, upon oath, say: That I am over the age of twenty-one years, and a citizen of the United States of America; that I am not a party to, nor in anywise interested in the matter referred to in the attached notice; that I am now, and at all times hereinafter referred to as the publisher of the Carbon County News, a weekly newspaper of general circulation, printed and published in the City of Red Lodge, County of Carbon, State of Montana.

That the annexed printed notice,

Application: Water Use Permit-City of Red Lodge

is a true copy (in identical terms and format) which was printed and published in full in the regular and entire issue of said newspaper (and not in any supplement thereof) on each of the following days, to wit:

December 17, 1987.

James E. Moore II

Subscribed and sworn to before me this 17th day of December, A.D., 19 87.

Samuel S. Moore

Notary Public for the State of Montana.
Residing at Red Lodge, Montana. My
commission expires March 15, 1988

PUBLIC NOTICE
NOTICE TO WATER USERS
(Pursuant to Section 85-2-307, MCA)
Notice is hereby given that the following application has been submitted for permit to appropriate water in the State of Montana:
APPLICATION NO. 66358-G43D
Red Lodge, City of
P.O. Box 507
Red Lodge, MT 59068
Source: Groundwater Well
Total Flow Rate: 220.00 GPM
Total Volume: 97.11 Acre Feet Per Year
Date Filed: 8/17/1987
Diversion Point: SESESE Sec. 22 Twp. 07S Rge. 20E Carbon Co.
NENENE Sec. 27 Twp. 07S Rge. 20E Carbon Co.
SESESE Sec. 22 Twp. 07S Rge. 20E Carbon Co.
Use: 5.00 GPM up to 7.40 Ac-Ft (01/01-12/31) for commercial
215.00 GPM up to 89.71 Ac-Ft (04/01-10/31) for irrigation on 13.91 acres
Place of Use: SESE Sec. 22 Twp. 07S Rge. 20E Carbon Co. for commercial
SESE Sec. 22 Twp. 07S Rge. 20E Carbon Co. for irrigation on 8.94 acres
SWSWSW Sec. 23 Twp. 07S Rge. 20E Carbon Co. for irrigation on 32 acres
NWNWNW Sec. 26 Twp. 07S Rge. 20E Carbon Co. for irrigation on 36 acres
NENE Sec. 27 Twp. 07S Rge. 20E Carbon Co. for irrigation on 6.29 acres
Diversion Means: Pump
Reservoir: Proposed off stream capacity of 1.4 Ac-Ft E1/2SESE Sec. 22 Twp. 07S Rge. 20E Carbon Co.
Remarks: If issued, the permit will be subject to prior existing water rights. Water supply for Coal Miners Memorial Park
Objections to the issuance of a permit under this application, with reasons therefore, must be filed with the Department of Natural Resources and Conservation, Natural Resources Building, 1520 East Sixth Avenue, Helena, MT 59620-2301, or postmarked on or before January 4, 1988. Objection to application (Form 611) is available at the office of the County Clerk and Recorder, or from this Department upon request.
Assistance or questions regarding this application should be directed to the local office: Billings Area Office Supv.; 1537 Avenue D, Suite 105; Billings, MT 59102; Ph.: 657-2105.
(Publish Dec. 17, 1987)

No. _____

**IN DISTRICT COURT
THIRTEENTH JUDICIAL DISTRICT
COUNTY OF CARBON
STATE OF MONTANA**

Plaintiff

versus

Defendant

AFFIDAVIT OF PUBLICATION OF

Filed this _____ day of _____

A. D., 19_____.

Clerk

By _____

Deputy Clerk



DEPARTMENT OF NATURAL RESOURCES AND CONSERVATION
AFFIDAVIT OF SERVICE

State of Montana)
County of Lewis & Clark) ss.

Jan Gerke, an employee of the Montana Department of Natural Resources and Conservation, being duly sworn in oath, deposes and says; That, pursuant to the requirements of Section 85-2-307, MCA, on December 8, 19 87, there was deposited in the United States mail, "first class," a Notice to Water Users of an application for water use permit, addressed to each of the attached parties.

DEPARTMENT OF NATURAL RESOURCES AND CONSERVATION

STATE OF MONTANA)
County of Lewis & Clark) ss.

BY Jan Gerke

On this 14th day of December, 19 87, before me, a Notary Public in and for said state, personally appeared Jan Gerke, known to me to be the Administrative Clerk of the Department that executed this instrument or the persons who executed the instrument on behalf of said Department, and acknowledged to me that such Department executed the same.

IN WITNESS WHEREOF, I have hereunto set my hand and affixed my official seal, the day and year in this certificate first above written.

Ann P. Gilman
NOTARY PUBLIC for the State of Montana
Residing at Helena, Montana
My Commission Expires January 21, 1990

APPLICATION NUMBER: 43D IO66358-00

| WATER RIGHT NUMBER | OWNER NAME AND ADDRESS | LOT | BLK | QTR-SCTN | SC | TWP | RGE | CN | UNNM TRIB | SOURCE |
|--------------------|--|-----|-----|----------|----|--------|-----|-----|-----------|------------------|
| 43D IO66358-00 | RED LODGE, CITY OF PO BOX 507 RED LODGE MT 59068 | | | | | SESESE | 22 | 07S | 20E CA | GROUNDWATER WELL |
| 43D PO13357-00 | PLEASANT VALLEY CANAL CO 2930 WALDON PL BILLINGS MT 59102 | | | | | SWSW | 23 | 07S | 20E CA | ROCK CREEK |
| 43D W036539-00 | MARION W ALBERI RT 2 BOX 43 RED LODGE MT 59068 PLEASANT VALLEY CANAL CO 2930 WALDON PL BILLINGS MT 59102 JOSEPH T ALBERI BOX 3215 RT 2 RED LODGE MT 59068 | | | | | SWSWSW | 23 | 07S | 20E CA | ROCK CREEK |
| 43D W036541-00 | PAUL O & HELEN P NEES 751 RIDGE RD LEWISTON NY 14092 PLEASANT VALLEY CANAL CO 2930 WALDON PL BILLINGS MT 59102 | | | | | SWSWSW | 23 | 07S | 20E CA | ROCK CREEK |
| 43D W195988-00 | TOM O MCDOWALL BOX 172C RT 1 JOLIET MT 59041 | | | | | SWSWSW | 23 | 07S | 20E CA | ROCK CREEK |
| 43D W206821-00 | WALTER R DOOM RT 1 BOX 46 ROBERTS MT 59070 | | | | | SWNWSW | 23 | 07S | 20E CA | ROCK CREEK |
| 43D W039264-00 | ROBERT P MACK 5800 TWIN LAKE TERRACE MINNEAPOLIS MN 55429 | | | | | SESENE | 22 | 07S | 20E CA | ROCK CREEK |
| 43D W114737-00 | SEABROOK & ELIZABETH PATES 1931 MULBERRY DR BILLINGS MT 59102 | | | | | NESESE | 15 | 07S | 20E CA | ROCK CREEK |
| 43D W195937-00 | KEITH G & GLENN A IVERSON 1117 30TH ST W BILLINGS MT 59102 | | | | | SWNWNW | 14 | 07S | 20E CA | ROCK CREEK |
| 43D PO18836-00 | BAILEY DITCH CO % ARTHUR DEVRIES | | | | | SWSWSW | 11 | 07S | 20E CA | ROCK CREEK |

APPLICATION NUMBER: 43D 1066358-00

| WATER RIGHT NUMBER | OWNER NAME AND ADDRESS | POINT OF DIVERSION LOT BLK QTR-SCTN SC TWP RGE CN | UNNM TRIB | SOURCE |
|--------------------|---|--|--------------|------------------|
| | RT 1 BOX 81 ROBERTS MT 59070 | | | |
| 43D P018837-00 | CLEAR CREEK DITCH CO BOX 76 ROBERTS MT 59070 | SENENW 11 07S 20E CA | | ROCK CREEK |
| 43D P016346-00 | CONSOLIDATED DITCH INC BOX 18A ROBERTS MT 59070 | SENWNE 02 07S 20E CA | | ROCK CREEK |
| 43D C011525-00 | FRANK J COBETTO BOX 525 RED LODGE MT 59068 | NESE 22 07S 20E CA | | GROUNDWATER WELL |
| 43D C060340-00 | CHARLES A & GLENDA L MARTIN BOX 753 RED LODGE MT 59068 | SWSE 22 07S 20E CA | | GROUNDWATER WELL |
| 43D W017012-00 | DIANE K & DONALD E MEYER 1ST W BOX 818 RED LODGE MT 59068 | SWSE 22 07S 20E CA | | GROUNDWATER WELL |
| 43D W031247-00 | BEAR CREEK LAND & CATTLE CO PO BOX 2209 RED LODGE MT 59068 WILLIAM R PALMER PO BOX 2209 RED LODGE MT 59068 | NWSNW 26 07S 20E CA | | GROUNDWATER WELL |
| 43D C044017-00 | DAVID B ANDERSON BOX 11 RED LODGE MT 59068 | 4 43 NE 27 07S 20E CA | | GROUNDWATER WELL |
| 43D C030811-00 | LUE M PASQUAN 402 SOUTH PLATT RED LODGE MT 59068 | NWNE 27 07S 20E CA | | GROUNDWATER WELL |
| 43D C060324-00 | BRENT SANDRETTO BOX 353 RED LODGE MT 59068 | 70 NWNE 27 07S 20E CA | | GROUNDWATER WELL |
| 43D W015044-00 | CARBON COUNTY CREAMERY 423 N HAGGIN BOX 1058 RED LODGE MT 59068 | 002 055 NESWNE 27 07S 20E CA | | GROUNDWATER WELL |
| 43D C054076-00 | A L & REGINA CRADDOCK PO DRAWER 10 RED LODGE MT 59068 | 6 8 SWSWNE 27 07S 20E CA | | GROUNDWATER WELL |

APPLICATION NUMBER: 43D I066358-00

WATER RIGHT
NUMBER

OWNER NAME AND ADDRESS

POINT OF DIVERSION
LOT BLK QTR-SCTN SC TWP RGE CN UNNM
TRIB

SOURCE

HOWARD E JOHNSON
ENVIRONMENTAL QUALITY COUNCIL
STATE CAPITOL
HELENA, MT 59620

DEPT OF NATURAL RESOURCES & CONSERVATION
WATER DEVELOPMENT BUREAU
1520 EAST SIXTH AVENUE
HELENA, MT 59620

DEPT OF HEALTH & ENVIRON SCIENCES
WATER QUALITY BUREAU
ATTN: STEVEN L PILCHER
ROOM A-206, COGSWELL BLDG
HELENA, MT 59620

MONTANA POWER COMPANY
ATTN: MIKE ZIMMERMAN
40 E BROADWAY
BUTTE, MT 59701

WATER RIGHTS BUREAU
BILLINGS FIELD OFFICE
1537 AVE D, SUITE 105
BILLINGS, MT 59102

ROCK CREEK WATER USER ASSOC
% CLARA JARVI
PO BOX 393
RED LODGE, MT 59068

ROCKY FORK DECREED WATER USERS ASSOC
% GLADYS ZUMBRON
RT 2 BOX ~~3260~~
RED LODGE, MT 59068

BILLINGS AREA DIRECTOR
BUREAU OF INDIAN AFFAIRS
ATTN: BRANCH OF WATER RESOURCES
310 NORTH 26TH STREET
BILLINGS, MT 59101

FORM 600 ENVIRONMENTAL ASSESSMENT CHECKLIST

1. Will the diversion be for more than 15 cfs or 10,000 acre feet?
Yes _____ No
2. If the permit is granted will future diversions from the water source likely be precluded?
Yes _____ No
3. Is there evidence of controversy regarding the proposed diversion (other than that involving rights of prior appropriator)?
Yes _____ No
4. Is the point of diversion, conveyance or place of use near a special use area (e.g., wild, scenic or recreational river, wilderness area, wildlife management area, recreational site)?
Yes _____ No
5. Is the diversion of water from a blue ribbon stream or water source with a similarly important fishery resource?
Yes _____ No
6. Will the diversion, conveyance or place of use be on or near an important area for terrestrial wildlife (e.g., nesting site, winter range)?
Yes _____ No
7. Is saline seep a present or projected problem in the vicinity of the place of use?
Yes _____ No
8. Will the proposed diversion require a substantial expenditure of funds in order to put it to beneficial use?
Yes _____ No
9. Are there any known sites of historic or prehistoric importance near the proposed diversion, conveyance or place of use?
Yes _____ No
10. Are there any present land uses that would be limited or precluded if the proposed diversion is put to beneficial use?
Yes _____ No

In consideration of the above responses, particularly those in the affirmative, note any environmental, social or economic impacts which may be attributed to issuance of the permit.

None

Recommendation concerning the preparation of a PER or EIS.

Yes _____ (PER) No _____

Yes _____ (EIS)

Uncertain, request further review by _____

Reviewer _____

Date _____

APPLICATION NO. 66358-g 43D COUNTY CARBON

APPLICANTS NAME(S) City of Red Lodge

DECREE YES NO

INDIAN RESERVATION YES NO

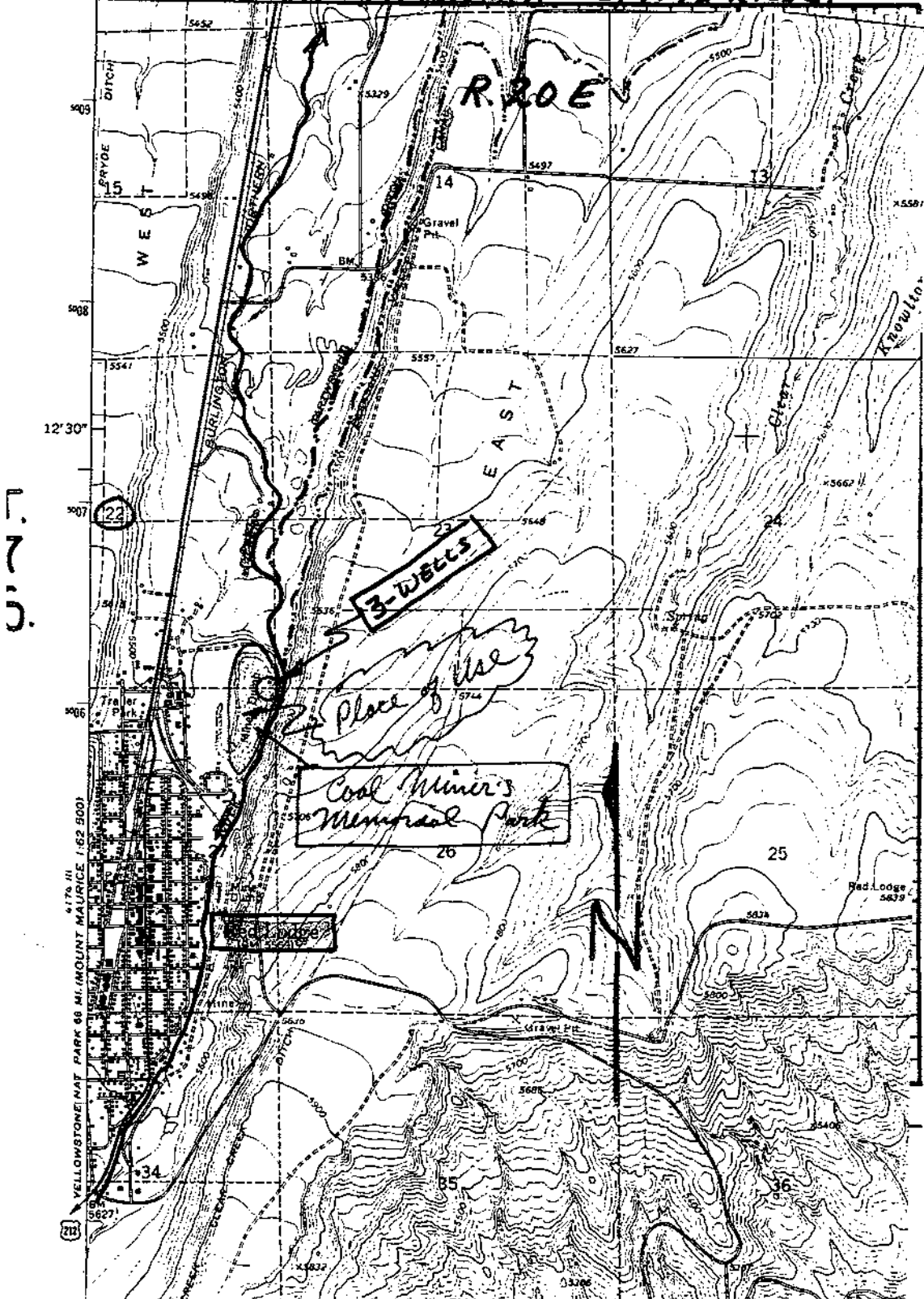
IRRIGATION DISTRICT YES NO

FORMATION OR SOURCE Groundwater (3 wells) (Manifolded)

LAND DESCRIPTION OF P.O.D. #1 SE 1/4 SE 1/4 SE 1/4 SE 1/4 Sect. 22, T. 7S.-R. 20E.

#2 NE 1/4 NE 1/4 NE 1/4 Section 27, T. 7S-R. 20E

#3 SE 1/4 SE 1/4 SE 1/4 SE 1/4 Sect. 22, T. 7S-R. 20E.



T. 7 S.

APOL. No. 66358-g 43D

Permit or
Claim No.

Name

Permit or
Claim No.

Name

P013357 Pleasant Valley Canal Co ✓

W036539 J. T. Alberi ✓

W036541 P. O. Nunn ✓

W195988 T. O. McDowell ✓

W206821 W. R. Doorn ✓

W039264 R. P. Mack ✓

W114737 Seabrook Pates ✓

W195937 K. G. Iverson ✓

P018836 Bailey Ditch Co ✓

P018837 Clear Creek Ditch Co ✓

P016346 Consolidated Ditch Assoc ✓

C011525 F. J. Cobetto ✓

C060340 C. A. Martin ✓

W017012 D. E. Meyer ✓

C014944 M. M. Moore ✓

W031247 W. R. Palmer ✓

C044017 D. B. Anderson ✓

C030811 L. M. Pasquani ✓

C060324 B. Sandretto ✓

W05044 Carbon County Creamery ✓

C054096 A. L. Craddock ✓

1 ERC ✓

1 WD ✓

1 WOB ✓

1 MPC ✓

3 BLG ✓

3 RCK ✓

3 RKY ✓

1 BIA ✓

29

FORM 600 CHECK LIST

66358
Application No.

G
S/G

43D
Basin

8-17-87
Received Date

FEE CHECK:

Fee Required \$100.⁰⁰ Fee Received \$100.⁰⁰ Transmittal No. 03-006-01-01
Refund Made Yes, Amount _____ Date _____

FORM CHECK LIST:

| | OK | NOK | REMARKS |
|-----|-------------------------------------|-------------------------------------|---|
| 1. | <input checked="" type="checkbox"/> | <input type="checkbox"/> | |
| 2. | <input checked="" type="checkbox"/> | <input type="checkbox"/> | |
| 3. | <input type="checkbox"/> | <input checked="" type="checkbox"/> | add P.O.D. for existing well. |
| 4. | <input checked="" type="checkbox"/> | <input type="checkbox"/> | |
| 5. | <input checked="" type="checkbox"/> | <input type="checkbox"/> | |
| 6. | <input checked="" type="checkbox"/> | <input type="checkbox"/> | |
| 7. | <input checked="" type="checkbox"/> | <input type="checkbox"/> | |
| 8. | <input checked="" type="checkbox"/> | <input type="checkbox"/> | |
| 9. | <input checked="" type="checkbox"/> | <input type="checkbox"/> | (Can the volume requested be produced with the given flow rate in the requested diversion period? Yes (<input checked="" type="checkbox"/>) No (<input type="checkbox"/>) |
| 10. | <input checked="" type="checkbox"/> | <input type="checkbox"/> | |
| 11. | <input checked="" type="checkbox"/> | <input type="checkbox"/> | |
| 12. | <input checked="" type="checkbox"/> | <input type="checkbox"/> | |
| 13. | <input checked="" type="checkbox"/> | <input type="checkbox"/> | |
| 14. | <input checked="" type="checkbox"/> | <input type="checkbox"/> | Does the application exceed 5.5 cfs and 4000 acre-feet per year? Yes (<input type="checkbox"/>) No (<input checked="" type="checkbox"/>) |

DEFICIENT/RETURNED:

Certified No. _____ 30 Day Deadline (up to 6 mo.) _____
Application Corrected _____ (date) Priority Date Changed Yes, _____ (date)

PROCESSING CHECK:

| YES | NO | |
|-------------------------------------|-------------------------------------|--|
| <input checked="" type="checkbox"/> | <input type="checkbox"/> | 1. Supplemental map (Quad, Aerial or GLO). |
| <input type="checkbox"/> | <input checked="" type="checkbox"/> | 2. Field investigation needed: _____ (date). |
| <input type="checkbox"/> | <input checked="" type="checkbox"/> | 3. Irrigation Requirements Worksheet. |
| <input type="checkbox"/> | <input checked="" type="checkbox"/> | 4. Copy of Supplemental Water Right(s) enclosed. |
| <input type="checkbox"/> | <input type="checkbox"/> | 5. Environmental Assessment enclosed. |
| <input checked="" type="checkbox"/> | <input type="checkbox"/> | 6. PER/EIS needed, 90 day deadline _____. |
| <input checked="" type="checkbox"/> | <input type="checkbox"/> | 7. Affected Ownership map and list _____. |
| <input checked="" type="checkbox"/> | <input type="checkbox"/> | 8. Affidavit of Certification and Publication. |
| <input type="checkbox"/> | <input checked="" type="checkbox"/> | 9. Ground-water application exceeds 3000 acre-feet per year (85-2-317, MCA). |
| <input type="checkbox"/> | <input checked="" type="checkbox"/> | 10. Waive Notice checklist. |
| <input type="checkbox"/> | <input checked="" type="checkbox"/> | 11. 612 in file. |
| <input type="checkbox"/> | <input checked="" type="checkbox"/> | 12. 612 due from applicant by: _____ (date). |
| <input checked="" type="checkbox"/> | <input type="checkbox"/> | 13. Code sheet enclosed. |

ACTION NEEDED -- HELENA:

1. Process refund (claim payment enclosed).
2. Review for PER/EIS _____ (Bur. Chief, Prog. Mgr., etc.).
3. Review by Water Sciences Bureau _____.
4. Run Affidavit of Service per ownership list.
5. Prepare Groundwater Ownership.
6. Publish per enclosed affidavit.
7. Set objection period; two weeks, other _____.
8. Issue Permit (notice waived).
9. Use completion due date _____.

REMARKS/TERMS OR CONDITIONS RECOMMENDED: STANDARD CONDITIONS:

W-2, PG, R.S.

ANALYST'S SIGNATURE

[Signature]

DATE:

9-16-87

STATE OF MONTANA
DEPARTMENT OF NATURAL RESOURCES AND CONSERVATION
1424 9TH AVENUE P.O.BOX 201601 HELENA, MONTANA 59620-1601

GENERAL ABSTRACT

Water Right Number: 43D 30001172 PROVISIONAL PERMIT
Version: 1 -- ORIGINAL RIGHT
Version Status: ACTIVE

Owners: RED LODGE, CITY OF
1 SOUTH PLATT
PO BOX 9
RED LODGE, MT 59068

Priority Date: MARCH 7, 2002 at 11:30 A.M.

Enforceable Priority Date: MARCH 7, 2002 at 11:30 A.M.

Purpose (use): MUNICIPAL
Maximum Flow Rate: 1,200.00 GPM
Maximum Volume: 968.00 AC-FT

Source Name: GROUNDWATER
Source Type: GROUNDWATER

Point of Diversion and Means of Diversion:

| <u>ID</u> | <u>Govt Lot</u> | <u>Qtr Sec</u> | <u>Sec</u> | <u>Twp</u> | <u>Rge</u> | <u>County</u> |
|-----------|-----------------|----------------|------------|------------|------------|---------------|
| 1 | | NWNWSW | 4 | 8S | 20E | CARBON |

Period of Diversion: JANUARY 1 TO DECEMBER 31
Diversion Means: WELL
Well Depth: 67.00 FEET
Static Water Level: 8.00 FEET
Casing Diameter: 12.00 INCHES

| | | | | | | |
|---|--|--------|---|----|-----|--------|
| 2 | | NWNWSW | 4 | 8S | 20E | CARBON |
|---|--|--------|---|----|-----|--------|

Period of Diversion: JANUARY 1 TO DECEMBER 31
Diversion Means: WELL

THIS APPLICATION INCLUDES TWO WELLS WITH A COMBINED FLOW RATE OF 1200 GALLONS PER MINUTE.

Purpose (Use): MUNICIPAL
Volume: 968.00 AC-FT
Period of Use: JANUARY 1 to DECEMBER 31

Place of Use:

| <u>ID</u> | <u>Acres</u> | <u>Govt Lot</u> | <u>Qtr Sec</u> | <u>Sec</u> | <u>Twp</u> | <u>Rge</u> | <u>County</u> |
|-----------|--------------|-----------------|----------------|------------|------------|------------|---------------|
| 1 | | | | 21 | 7S | 20E | CARBON |
| 2 | | | | 22 | 7S | 20E | CARBON |
| 3 | | | | 23 | 7S | 20E | CARBON |
| 4 | | | | 26 | 7S | 20E | CARBON |
| 5 | | | | 27 | 7S | 20E | CARBON |
| 6 | | | | 28 | 7S | 20E | CARBON |
| 7 | | | | 33 | 7S | 20E | CARBON |
| 8 | | | | 34 | 7S | 20E | CARBON |
| 9 | | | NW | 35 | 7S | 20E | CARBON |
| 10 | | | | 3 | 8S | 20E | CARBON |
| 11 | | | | 4 | 8S | 20E | CARBON |
| 12 | | | | 5 | 8S | 20E | CARBON |
| 13 | | | | 8 | 8S | 20E | CARBON |
| 14 | | | | 9 | 8S | 20E | CARBON |

THE PLACE OF USE INCLUDES ALL LAND WITHIN THE MUNICIPAL WATER SERVICE AREA FOR THE CITY OF RED LODGE.

Remarks:

Remarks:

GROUNDWATER WASTE & CONTAMINATION

THIS RIGHT IS SUBJECT TO SECTION 85-2-505, MCA, REQUIRING ALL WELLS BE CONSTRUCTED SO THEY WILL NOT ALLOW WATER TO BE WASTED OR CONTAMINATE OTHER WATER SUPPLIES OR SOURCES, AND ALL FLOWING WELLS SHALL BE CAPPED OR EQUIPPED SO THE FLOW OF THE WATER MAY BE STOPPED WHEN NOT BEING PUT TO BENEFICIAL USE.

GROUNDWATER WELL - ACCESS PORT

THE FINAL COMPLETION OF THE WELL(S) MUST INCLUDE AN ACCESS PORT OF AT LEAST .50 INCH SO THE STATIC LEVEL OF THE WELL MAY BE ACCURATELY MEASURED.

WATER MEASUREMENT- FUTURE MEASURING DEVICE REQUIREMENT

ANYTIME AFTER THIS RIGHT IS ISSUED AND COMPETITION FOR WATER ON THE SOURCE BECOMES AN ISSUE, THE DEPARTMENT MAY REQUIRE THE APPROPRIATOR TO INSTALL A WATER USE MEASURING DEVICE AND SUBMIT THE RECORDS OF THE FLOW RATE OR VOLUME OR BOTH OF ALL WATER DIVERTED.

POSSIBLE COMPLAINT RECEIVED

IF AT ANY TIME AFTER THIS RIGHT IS ISSUED, A WRITTEN COMPLAINT IS RECEIVED BY THE DEPARTMENT ALLEGING THAT DIVERTING WATER FROM THIS SOURCE IS ADVERSELY AFFECTING A PRIOR WATER RIGHT, THE DEPARTMENT MAY MAKE A FIELD INVESTIGATION OF THE PROJECT. IF DURING THE FIELD INVESTIGATION THE DEPARTMENT FINDS SUFFICIENT EVIDENCE SUPPORTING THE ALLEGATION, IT MAY CONDUCT A HEARING IN THE MATTER ALLOWING THE APPROPRIATOR TO SHOW CAUSE WHY THE RIGHT SHOULD NOT BE MODIFIED OR REVOKED. THE DEPARTMENT MAY THEN MODIFY OR REVOKE THIS RIGHT TO PROTECT EXISTING RIGHTS OR LEAVE THIS RIGHT UNCHANGED IF THE HEARING OFFICER DETERMINES NO EXISTING WATER RIGHTS ARE BEING ADVERSELY AFFECTED.



Water Right Number:
43D 30001172NULL

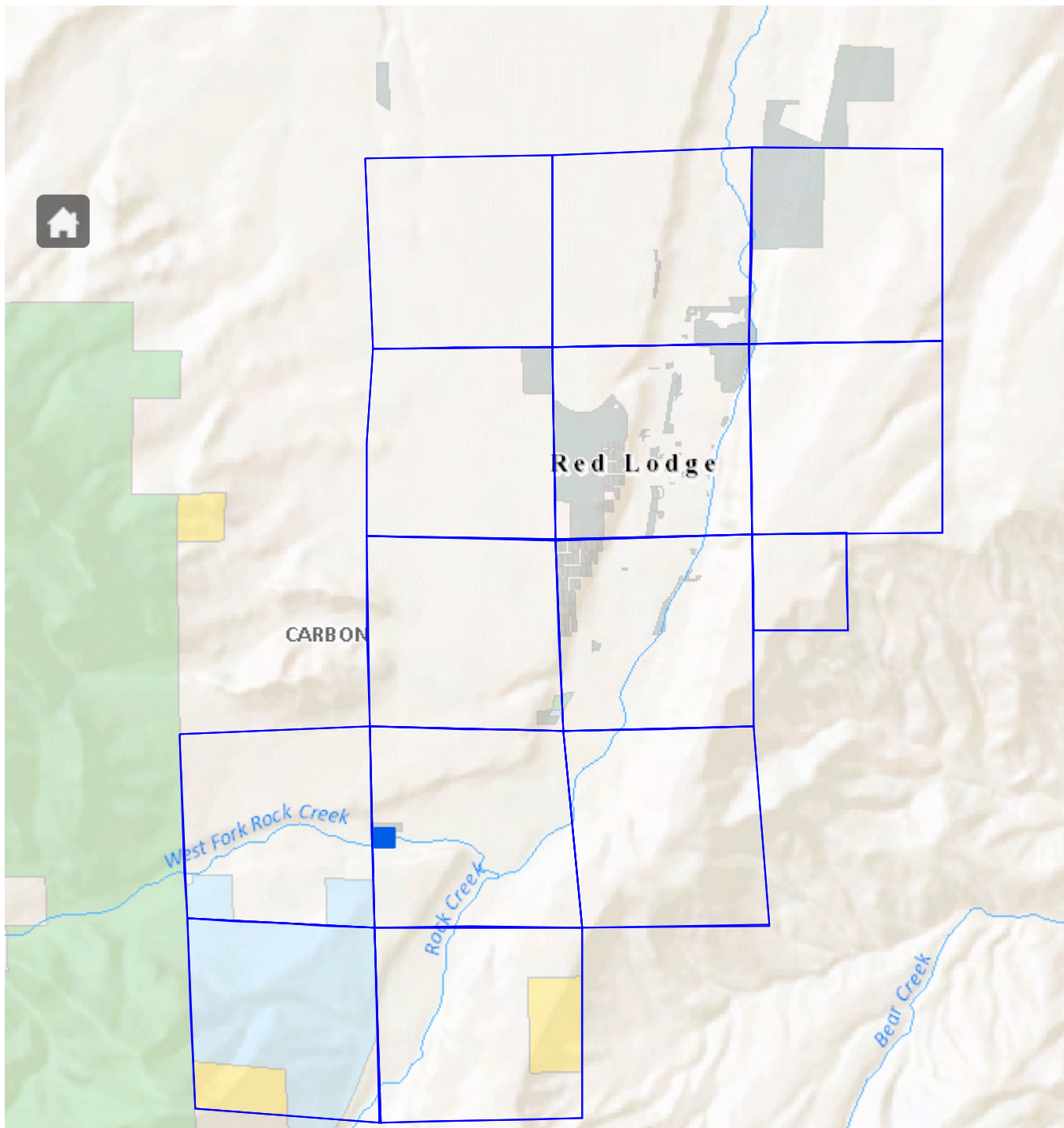
Print Map

Legend

- Diversion Count:
 - Surface water diversion.
 - Ground water diversion.
- Adjacent Diversions
 - Surface water diversion.
 - Ground water diversion.
- Place of Use Legal Land Descriptions
 - Adjacent POUs
 - Cadastral ?
 - PLSS Detail ?

Note:
Contact DNRC if you have any questions or if the mapped information appears incorrect.

The points of diversion (PODs) and places of use (POUs) are derived from water right legal land descriptions. PODs are placed at the center of their legal land description, not at their true geographic location. POUs are drawn as polygons of the entire legal land description.



NA



FILE



PROVISIONAL PERMIT



*43D *



30001172

Current File Location: **BILLINGS REGIONAL OFFICE**

As of : 12/1/2004

Status:

Box Bar Code:

File Bar Code:

10/19/2015

Permit/Authorization:

- Permit
- Authorization,
with final order
if applicable

**Permit/
Authorization**

REPLATED

STATE OF MONTANA
DEPARTMENT OF NATURAL RESOURCES AND CONSERVATION
1424 9TH AVENUE P.O. BOX 201601 HELENA, MONTANA 59620-1601

PERMIT TO APPROPRIATE WATER

UPON FINDING THE REQUIREMENTS OF SECTION 85-2-311, MCA, HAVE BEEN MET, THIS PROVISIONAL PERMIT IS GRANTED.

Water Right Number: 43D 30001172 PROVISIONAL PERMIT
Version: 1 – ORIGINAL RIGHT
Status: ACTIVE

Owners: RED LODGE, CITY OF
1 SOUTH PLATT
PO BOX 9
RED LODGE, MT 59068

Priority Date: MARCH 7, 2002 at 11:30 A.M.

Purpose (use): MUNICIPAL

Maximum Flow Rate: 1,200.00 GPM

Maximum Volume: 968.00 AC-FT

Source:

Source Name: GROUNDWATER

Point of Diversion and Means of Diversion:

| ID | Govt Lot | Qtr Sec | Sec | Twp | Rge | County |
|----|----------|---------|-----|-----|-----|--------|
| 1 | | NWNWSW | 4 | 8S | 20E | CARBON |

Diversion Means: WELL

Well Depth: 67.00 FEET

Static Water Level: 8.00 FEET

Casing Diameter: 12.00 INCHES

| | | | | | | |
|---|--|--------|---|----|-----|--------|
| 2 | | NWNWSW | 4 | 8S | 20E | CARBON |
|---|--|--------|---|----|-----|--------|

Diversion Means: WELL

THIS APPLICATION INCLUDES TWO WELLS WITH A COMBINED FLOW RATE OF 1200 GALLONS PER MINUTE.

Period of Diversion: JANUARY 1 to DECEMBER 31

Purpose (Use): MUNICIPAL

Volume: 968.00 AC-FT

Period of Use: JANUARY 1 to DECEMBER 31

Place of Use:

| ID | Acres | Govt Lot | Qtr Sec | Sec | Twp | Rge | County |
|----|-------|----------|---------|-----|-----|-----|--------|
| 1 | | | | 21 | 7S | 20E | CARBON |
| 2 | | | | 22 | 7S | 20E | CARBON |
| 3 | | | | 23 | 7S | 20E | CARBON |
| 4 | | | | 26 | 7S | 20E | CARBON |
| 5 | | | | 27 | 7S | 20E | CARBON |
| 6 | | | | 28 | 7S | 20E | CARBON |
| 7 | | | | 33 | 7S | 20E | CARBON |
| 8 | | | | 34 | 7S | 20E | CARBON |
| 9 | | | NW | 35 | 7S | 20E | CARBON |
| 10 | | | | 3 | 8S | 20E | CARBON |
| 11 | | | | 4 | 8S | 20E | CARBON |
| 12 | | | | 5 | 8S | 20E | CARBON |
| 13 | | | | 8 | 8S | 20E | CARBON |
| 14 | | | | 9 | 8S | 20E | CARBON |

THE PLACE OF USE INCLUDES ALL LAND WITHIN THE MUNICIPAL WATER SERVICE AREA FOR THE CITY OF RED LODGE.

COMPLETION DEADLINE

THE DEADLINE TO COMPLETE THIS PERMIT AND FILE A PROJECT COMPLETION NOTICE (FORM 617) IS **DECEMBER 31, 2024**. IF YOU CANNOT MEET THE DEADLINE, FILE A FORM 607, APPLICATION FOR EXTENSION OF TIME, BY **DECEMBER 31, 2024**. OTHERWISE, THE PERMIT IS VOID.

GROUNDWATER WASTE & CONTAMINATION

THIS RIGHT IS SUBJECT TO SECTION 85-2-505, MCA, REQUIRING ALL WELLS BE CONSTRUCTED SO THEY WILL NOT ALLOW WATER TO BE WASTED OR CONTAMINATE OTHER WATER SUPPLIES OR SOURCES, AND ALL FLOWING WELLS SHALL BE CAPPED OR EQUIPPED SO THE FLOW OF THE WATER MAY BE STOPPED WHEN NOT BEING PUT TO BENEFICIAL USE.

GROUNDWATER WELL - ACCESS PORT

THE FINAL COMPLETION OF THE WELL(S) MUST INCLUDE AN ACCESS PORT OF AT LEAST .50 INCH SO THE STATIC LEVEL OF THE WELL MAY BE ACCURATELY MEASURED.

WATER MEASUREMENT- FUTURE MEASURING DEVICE REQUIREMENT

ANYTIME AFTER THIS RIGHT IS ISSUED AND COMPETITION FOR WATER ON THE SOURCE BECOMES AN ISSUE, THE DEPARTMENT MAY REQUIRE THE APPROPRIATOR TO INSTALL A WATER USE MEASURING DEVICE AND SUBMIT THE RECORDS OF THE FLOW RATE OR VOLUME OR BOTH OF ALL WATER DIVERTED.

POSSIBLE COMPLAINT RECEIVED

IF AT ANY TIME AFTER THIS RIGHT IS ISSUED, A WRITTEN COMPLAINT IS RECEIVED BY THE DEPARTMENT ALLEGING THAT DIVERTING WATER FROM THIS SOURCE IS ADVERSELY AFFECTING A PRIOR WATER RIGHT, THE DEPARTMENT MAY MAKE A FIELD INVESTIGATION OF THE PROJECT. IF DURING THE FIELD INVESTIGATION THE DEPARTMENT FINDS SUFFICIENT EVIDENCE SUPPORTING THE ALLEGATION, IT MAY CONDUCT A HEARING IN THE MATTER ALLOWING THE APPROPRIATOR TO SHOW CAUSE WHY THE RIGHT SHOULD NOT BE MODIFIED OR REVOKED. THE DEPARTMENT MAY THEN MODIFY OR REVOKE THIS RIGHT TO PROTECT EXISTING RIGHTS OR LEAVE THIS RIGHT UNCHANGED IF THE HEARING OFFICER DETERMINES NO EXISTING WATER RIGHTS ARE BEING ADVERSELY AFFECTED.


BACKFLOW PREVENTOR

PURSUANT TO SECTION 85-2-505, MCA, TO PREVENT GROUND WATER CONTAMINATION, AN OPERATIONAL BACKFLOW PREVENTOR MUST BE INSTALLED AND MAINTAINED BY THE APPROPRIATOR IF A CHEMICAL OR FERTILIZER DISTRIBUTION SYSTEM IS CONNECTED TO THE WELL.

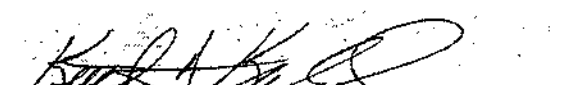
IF THE OWNERSHIP CHANGES ON ANY PORTION OF OR ALL OF THIS RIGHT, A WATER RIGHT OWNERSHIP UPDATE, FORM #608, MUST BE FILED WITH THE DEPARTMENT OF NATURAL RESOURCES AND CONSERVATION.

THIS PROVISIONAL PERMIT IS SUBJECT TO ALL PRIOR EXISTING WATER RIGHTS IN THE SOURCE OF SUPPLY. FURTHER, THIS PERMIT IS SUBJECT TO ANY FINAL DETERMINATION OF EXISTING WATER RIGHTS, AS PROVIDED BY MONTANA LAW.

FAILURE TO COMPLY WITH ANY OF THESE TERMS AND CONDITIONS MAY RESULT IN THE LOSS OF THIS PROVISIONAL PERMIT.



Witness Signature



Water Resources Division

DATE ISSUED: OCTOBER 21, 2004

CRITERIA ASSESSMENT REVIEW

Application No. 43d-30001172 (City of Red Lodge)

Preliminary Analysis: By: Marty Van Gleave

Date: February 5, 2003

Adopted as Final Findings: By: 

Date: 11/22/04

INSTRUCTIONS:

Analyze the applicant's criteria based on all information available to you. Do not answer the questions with only Yes or No. In narrative form, document whether the applicant submitted information to support permit issuance. Complete a preliminary analysis prior to public notice or waiver. Before permit issuance conduct a final review. If further documentation is needed, date the additional information. If the file is being forwarded to the Hearing Unit to schedule a hearing, do not conduct a final analysis.

1. Did the applicant prove the amount of water he is requesting is physically available at the proposed point of diversion and that the water is reasonably legally available during the period he will appropriate the water? *The applicant must identify physical water availability and existing legal demands on the source within the area of potential impact. The applicant must then compare the physical water available with existing legal demands and document his findings to show water is physically and legally available.*

This application is for two wells with a proposed flow rate of 600 gpm from each. One well is in place and has been tested. The second is planned in the same aquifer at a distance of approximately 200 feet northwest of the first well. The well that is in place was pump tested several times with the most recent one being April 2000. The test was run for 72 hours at an average production rate of 920 gpm. The second well would be almost identical to the first well. There is information to show that a similar flow could be attained from the second well. The applicant has shown that a flow rate of 600 gpm from each well is likely. The consultant for the city has demonstrated that the volume the city wished to use is legally available for use. His analysis indicated that the volume needed to satisfy the needs of this application and those with water rights in the affected area is 1,028 af/yr. He has shown that the estimated average annual underflow in the alluvium in this area is 1,246 to 1,713 af/yr. It appears the water is physically and legally available in the amount applied for.

2. Did the applicant prove the proposed use will not adversely affect the water rights of prior water appropriators under an existing water right, a certificate, a permit, or a state water reservation? *To determine no adverse effect will occur, the applicant's plan for the exercise of the permit must demonstrate his water use will be controlled so water rights of prior appropriators will be satisfied.*

The consultant for the city has indicated that water taken from this aquifer will affect the groundwater and surface water in the area. His analysis indicated that there should be no adverse impact to other groundwater users in the area. He indicated that the drawdown from pumping at 600 gpm from each well would be approximately 4.5 feet at 1000 feet and 2.0 feet at 3000 feet. It appears there should be little impact on other groundwater users in the area. He did indicate there may be some wells in the area that do not fully penetrate the aquifer. These could be deepened and completed to maintain or increase production. The impact on surface water flows in the area is not expected to be significant.

3. Did the applicant prove the proposed means of diversion, construction, and operation of the diversion works is adequate? Is the information provided enough to allow us to determine the design of the project including diversion and conveyance facilities are reasonable and feasible? If the applicant will be incorporating features which will reduce or prevent adverse affect, was information given about those features?

The wells are to be drilled by a licensed driller experienced with well construction according to Montana Board of Water Well Contractor rules. The water from the wells will be connected to the city water supply under the direction of a qualified consultant and according to Montana Department of Environmental Quality standards. The proposed means of diversion, construction, and operation of the diversion works appears adequate.

4. Did the applicant prove the proposed use is a beneficial use of water and the flow rate and volume are needed for the purpose?

Municipal water use is a beneficial use of water. The flow rate and volume applied for appears reasonable for the proposed use.

5. **YES** Does the applicant affirm possessory interest or the written consent of the person with possessory interest in the proposed place of use?

YES Does the applicant have exclusive property rights in the groundwater development or written consent from the person with those rights?

6. **NO** Did the applicant receive a valid water quality objection? If yes, did the applicant prove the water quality of an appropriator will not be adversely affected?
-

PROJECT TIME LINE: The applicant must state when they will begin construction. They must provide a general timeline for purchasing and installing equipment, the anticipated completion date, and a description of when and how much water will be put to beneficial use.

YES Did the applicant provide an adequate timeline?

YES Is the timeline reasonable for the type and size of the project?

Application materials:

- Application
- Work copy
- Final letter
- Supplement
- Independent evidence
 - Well log

**Application
Materials**

FILMED

THE LAW FIRM

MOORE, O'CONNELL & REFLING

A PROFESSIONAL CORPORATION

PERRY J. MOORE
BARRY G. O'CONNELL
MARK D. REFLING
WM. RUSSELL McELYEA
CINDY E. YOUNKIN
ALLAN H. BARIS
MICHAEL J. L. CUSICK
JENNIFER L. FARVE

BART L. RICKENBAUGH (1966-2002)

LIFE OF MONTANA BUILDING, SUITE 10
601 HAGGERTY LANE
BOZEMAN, MONTANA 59715
Reply to
P.O. BOX 1288
BOZEMAN, MONTANA 59771-1288
TELEPHONE: (406) 587-5511
FAX: (406) 587-9079
E-MAIL: morlaw@qwest.net

NOV 19 2004
DEPT. OF NATURAL RESOURCES
AND CONSERVATION
BILLINGS

November 17, 2004

Keith Kerbel
Dept. of Natural Resources and Conservation
Billings Water Resources Regional Office
1371 Rimtop Drive
Billings, MT 59105-1978

RE: Permit Authorization for City of Red Lodge 43D-30001172
Our file no: 20042\023

Dear Keith:

This letter is a follow up of our telephone conversation of November 10, 2004 concerning issuance of a provisional permit authorization for the City of Red Lodge's municipal wells, 43D-30001172. You indicated that the Department takes the position that Mont. Code Ann. Section 85-2-315 requires a permittee to apply the full amount of water authorized in a permit to beneficial use before the notice of completion is filed. As a result, a permittee that files a notice of completion after the diversion works have been constructed, but before the full amount of water requested has actually been used, may be subject to having the permit reduced by the Department.

In its original application, the City requested a completion period of five years from the date that the permit is authorized. This five year period was based on the understanding that notice of completion could be filed as soon as both wells were operational with no risk of reduction in the total volume applied for. Based on our conversation, I am requesting that the Department extend the proposed completion period to 20 years from the date the permit is authorized. Because a primary purpose of the permit is to meet future water demand, this 20 year period may be necessary to allow for that increased demand to occur and for the City to actually use the 968 acre feet requested in the application.

November 17, 2004

Page 2

According to page 13 of the application criteria addendum submitted by the City, the two wells applied for should be able to provide the capacity to meet the peak instantaneous demand of the City through about 2000 and 2003. Combined with the City's Grant Avenue well (900 gallons per minute) located within the City of Red Lodge, the projected peak demand of the City should be satisfied beyond 2020 by groundwater produced from all three wells. The volume of 968 acre feet per year from the two wells should satisfy the City's projected average daily demand through about 2012. The two wells combined with the City's Grant Avenue well should also satisfy the City's average daily demand beyond 2020. I have attached a copy of page 13 of the criteria addendum for your convenience.

Western water law and the prior appropriation doctrine recognize that municipalities are entitled to appropriate more water than they can beneficially use at the time of appropriation. This rule, known as the "great and growing city's doctrine" was first set forth in *City and County of Denver v. Sheriff*, 105 Colo. 193, 96 P.2d 836 (1939). The purpose of the doctrine is to enable cities to secure reliable supplies of water to meet their reasonably foreseeable needs. The doctrine states that when appropriations are made for a growing city, regards should be given to its reasonably anticipated requirements. *City of Thornton v. Bijou Irrigating Co.*, 926 P.2d 1, 38 (Colo. 1996). In Montana, the unique water requirements of municipalities have been recognized legislatively. Mont. Code Ann. § 85-2-227(4) recognizes a preference for municipalities by creating a presumption that claims for municipal rights from certain types of sources are not abandoned by mere non-use. The statute sets forth several factors for consideration in protecting such municipal claims from abandonment, including whether there has been a formal study with a specific assessment "that the amount of water is reasonable for foreseeable future needs".

The City of Red Lodge requests that the completion period for the permit be extended from 5 to 20 years to allow for the increased growth and water demand that will result in maximum utilization of the permit. The 20 year period should be sufficient for the City to fully use the total volume requested based on the City's projected average daily demand. However, this request for an extension should not be construed to mean that the City agrees with the Department's position concerning the timing of a notice of completion. Appropriation by municipalities are unique and as a practical matter municipalities must be able to appropriate water prospectively to satisfy projected growth. It is the City's position that appropriating water for future growth is a beneficial use at the time the appropriation is made, since without the water the growth cannot occur.

November 17, 2004

Page 3

I suggest that the Department's policies and rules should be revised to accommodate the unique requirements of municipalities with regard to appropriation of water. I would appreciate it if you could bring this issue to the attention of the water bureau. In the meantime, the City will request an extension of time from 5 to 20 years to complete the permit.

Please let me know if further information is necessary concerning this request for extension. Thank you for your assistance with this matter.

Sincerely,



MICHAEL J. L. SUSICK

MJLC/smk

cc: Jim McGill (w/o encl.)
Skip Boyer (w/o encl.)
Mayor Richard Gessling (w/o encl.)

Enc.

SK8070.WPD

CRITERIA #4 -BENEFICIAL USE OF WATER PROOF
(MDNRC FORM NO. 600A R6/95)

The beneficial use of water from RLPWS #1 and RLPWS #2 will be for the City of Red Lodge public water system. The two wells should be able to provide the capacity to meet the peak instantaneous demand through about 2002 or 2003. Combined with the City's Grant Avenue Well (900 gpm) located within Red Lodge, the projected peak demand of the City should be able to be satisfied beyond 2020 by ground water produced from all three wells.

The volume of 968 af/yr from RLPWS #1 and RLPWS #2 should satisfy the City's projected average daily demand through about 2012. The two wells combined with the City's Grant Avenue Well (1,450 af/yr) should be able to satisfy City's average daily demand beyond 2020.

CRITERIA #5 - STATEMENT OF POSSESSORY INTEREST
(MDNRC FORM NO. 600A R6/95)

RLPWS #1 and RLPWS #2 and property on which the wells would be located are owned by the City of Red Lodge. The City also owns the treatment, water transmission and distribution system to deliver water to the residents and businesses in Red Lodge.

PROJECT PLAN & TIME LINE (MDNRC FORM NO. 600A R6/95)

This is a two-phase project. RLPWS #1 has been drilled, completed and some testing has been performed. Additional test pumping of this well is on going. RLPWS #1 will be put into service as soon as possible.

RLPWS #2 will be drilled, completed, developed, test pumped and put into service (including required engineering) within five years. The City of Red Lodge desires to have this well in service as soon as possible.

APPLICATION FOR BENEFICIAL WATER USE PERMIT

Use for groundwater in excess of 35 GPM or 10 Acre-Feet
per year and all surface water.

INSTRUCTIONS

Use one application for each source of supply or each development. Check all appropriate boxes and fill in each blank. If any question is not applicable, enter NA. If more space is needed, attach additional sheets. The information required in the Form 600 A or B Criteria Addendum must be submitted with this application.

A MAP MUST ACCOMPANY THIS APPLICATION AS INSTRUCTED UNDER ITEM 11.

Complete the application and submit it with the appropriate filing fee to the Water Resources Regional Office nearest you. Their addresses are listed on the back. The form will be returned if any of the pertinent information is incomplete. 210 days is the estimated processing time after an application is correct and complete.

FILING FEE: \$200.00

FOR DEPARTMENT USE ONLY

Application No. 30001172 Basin 43D
 Priority Date 3/07/2002, 19____
 Time 11:30 AM PM
 Rec'd By CD
 Fee Rec'd 200.00
 Check No. 198(a)
 Transmittal No. 037633
 Refund _____

1. **NAME OF APPLICANT** City of Red Lodge
 Mailing address 1 South Platt PO BOX 9 STD BY CHRIS
 City Red Lodge State MT Zip 59068
 Home Phone (406) 446-1606 Other Phone (406) 446-1681

2. **SOURCE OF WATER SUPPLY:**

- Well (Two)
- Developed Spring
- Lake Name _____ Tributary to _____
- Stream Name _____ Tributary to _____
- Unnamed Source - Tributary to _____
- Closed Basin (A closed basin results when water drains into a depression, lake, etc. from which water escapes only by evaporation.)

WORK COPY

3. **POINT OF DIVERSION** (Describe the location to the nearest 10 acres) See Figure 1.0, POD Exhibit
NW 1/4 NW 1/4 SW 1/4 Section 4 Township 8 NS Range 20 EW County Carbon
2 wells
IN SAME POD
 Lot _____ Block _____ Tract No _____ Subdivision Name _____
 Government Lot _____
12/28/02
102
 Lot _____ Block _____ Tract No _____ Subdivision Name _____
 Government Lot _____

4. **MEANS OF DIVERSION:**

- Headgate
- Pump
- Well 2 @ 65 Depth in Feet 2 @ 600 Rated Capacity (GPM or CFS)
- Pipeline _____ Size 2 @ 25 to 30/pump Horsepower
- Dam 100 (TDH) per pump Lift in Feet
- Pit
- Other _____



5. RESERVOIR (See formulas below for computing capacity)

- Drainage device will be installed
- Existing Reservoir Capacity _____ acre-feet
- Proposed New or Enlarged Reservoir Capacity _____ acre-feet
- Reservoir will be located away from source

Location: _____ 1/4 _____ 1/4 _____ 1/4 Section _____ TWP _____ NS RGE _____ E/W

PIT: Surface Area _____ Acres x Maximum Depth _____ Feet x 0.5 = _____ Capacity _____ Acre-Feet

DAM: Surface Area _____ Acres x Maximum Depth _____ Feet x 0.5 = _____ Capacity _____ Acre-Feet

6. PERIOD OF APPROPRIATION (The period during the year when the water will be diverted, impounded, or withdrawn from the source.)

_____ Jan. 1 _____ to _____ Dec. 31 _____ Inclusive Each Year
Month / Day Month / Day

7. PROPOSED BENEFICIAL USE

- Domestic: Number of Families to be Supplied _____
- Stock: Maximum Number and Type _____
- Other: Municipal (see attached service area boundary map)
- Irrigation: Sprinkler - Type _____ Contour Ditch Other _____
- Border Dike Waterspreading/Spreader Dike

Crops to be grown: _____

If this water will be used on land already irrigated, indicate the water rights applicable to the existing irrigation.

Claim No. W-043377 W-043378 W-045736 W-045737

Permit No. _____

Certificate No. _____ Other _____

WORK COPY

8. PLACE OF USE

County Carbon Subdivision Name Town of Red Lodge

SEE ENCLOSED LISTING OF POUL LAND DESCRIPTIONS New (N) or Supplemental (S) S

| | | | | | | | | | |
|-------------|-----------|-------------|-----------|-----------|-------------------|-----------|--------------|-----------|----|
| _____ Acres | Lot _____ | Block _____ | _____ 1/4 | _____ 1/4 | 1/4 Section _____ | TWP _____ | NS RGE _____ | E/W _____ | NS |
| _____ Acres | Lot _____ | Block _____ | _____ 1/4 | _____ 1/4 | 1/4 Section _____ | TWP _____ | NS RGE _____ | E/W _____ | NS |
| _____ Acres | Lot _____ | Block _____ | _____ 1/4 | _____ 1/4 | 1/4 Section _____ | TWP _____ | NS RGE _____ | E/W _____ | NS |
| _____ Acres | Lot _____ | Block _____ | _____ 1/4 | _____ 1/4 | 1/4 Section _____ | TWP _____ | NS RGE _____ | E/W _____ | NS |
| _____ Acres | Lot _____ | Block _____ | _____ 1/4 | _____ 1/4 | 1/4 Section _____ | TWP _____ | NS RGE _____ | E/W _____ | NS |
| _____ Acres | Lot _____ | Block _____ | _____ 1/4 | _____ 1/4 | 1/4 Section _____ | TWP _____ | NS RGE _____ | E/W _____ | NS |
| _____ Acres | Lot _____ | Block _____ | _____ 1/4 | _____ 1/4 | 1/4 Section _____ | TWP _____ | NS RGE _____ | E/W _____ | NS |

_____ N/A TOTAL ACRES

Non-Irrigation: See attached Figure 1.1, Service Area Boundary Exhibit

Purpose of use Municipal _____ if same as Point of Diversion, CHECK

_____ 1/4 _____ 1/4 _____ 1/4 Section _____ TWP _____ NS RGE _____ E/W County _____

Lot _____ Block _____ Tract No. _____ Government Lot _____

Purpose of use _____ if same as Point of Diversion, CHECK

_____ 1/4 _____ 1/4 _____ 1/4 Section _____ TWP _____ NS RGE _____ E/W County _____

Lot _____ Block _____ Tract No. _____ Government Lot _____

9. AMOUNT OF WATER, PURPOSE OF USE (IRRIGATION, STOCK, DOMESTIC, OTHER), AND PERIOD OF USE

1200 CFS GPM up to 968 for _____ from Jan. 1 to Dec. 31
Acres-Feet Use Month/Day Month/Day

_____ CFS GPM up to _____ for _____ from _____ to _____
Acres-Feet Use Month/Day Month/Day

_____ CFS GPM up to _____ for _____ from _____ to _____
Acres-Feet Use Month/Day Month/Day

TOTAL AMOUNT REQUESTED 1200 CFS GPM UP TO 968 ACRE-FEET PER YEAR.

10. PROPOSED COMPLETION PERIOD

ADDED PAR LETTER OF 11/17/04 mvr

5 20 Years How many years will be needed to complete the project and put the water to use after the permit is received?
 (NOTE: The water use must not begin until a permit is received.)

11. LOCATION MAP

A map showing the following items must accompany this application. An ASCS aerial photo or USGS topographic map may be used.

- a) Section Corners and Numbers
- b) Township and Range Numbers
- c) Point of Diversion
- d) Place of Use (Irrigated Acres, Stock Tanks, etc.)
- e) Location of Conveyance Ditch, Pipeline, etc.

12. REMARKS (Provide any additional information to explain the proposed appropriation.)

This will be a two -phase project. Well #1 will be put to use as soon as possible.
Some test pumping has been performed. Additional test pumping is required. Well #2
will be implemented within five years.

WORK COPY

13. ARE YOU REPRESENTED BY COUNSEL?

YES (complete the following) NO (go on to no. 14)

NAME OF COUNSEL Moore O'Connell & Reffling, PC
 Mailing address P.O. Box 1288
 City Bozeman State MT Zip 59711-1288
 Phone (406) 587-4078

14. AFFIDAVIT

I affirm that statements appearing here are to the best of my knowledge true and correct. I also affirm I have possessory interest in the property where the water is to be put to beneficial use and if applicable, exclusive property rights in the groundwater development or the written consent of the person with those rights.

Applicant's Signature [Signature] Date 1-29-02

Subscribed and sworn before me this 29th day of January, 2002



Notary's Signature [Signature]
 Notary for the State of Montana
 Residing at Red Lodge
 My commission expires June 8, 2004

Place of Use:

| ID | Qtr | Sec | Sec Twp | Rge | County |
|----|-----|-----|---------|-----|--------|
| 1 | | 21 | 7S | 20E | CARBON |
| 2 | | 22 | 7S | 20E | CARBON |
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WORK COPY

THE PLACE OF USE INCLUDES ALL LAND WITHIN THE MUNICIPAL WATER SERVICE AREA FOR THE CITY OF RED LODGE.

WORK COPY

DEPARTMENT OF NATURAL
RESOURCES AND CONSERVATION
BILLINGS WATER RESOURCES REGIONAL OFFICE



JUDY MARTZ, GOVERNOR

AIRPORT BUSINESS PARK
1371 RIMTOP DRIVE

STATE OF MONTANA

(406) 247-4415
(406) 247-4416 (FAX)

BILLINGS, MONTANA 59105-1978

Memorandum

To: Bill Uthman, Hydrogeologist
From: Marty Van Cleave, Water Resources Specialist, Billings *MVC*
Date: 4/2/2002
Re: Groundwater Analysis for Application No. 43D-30001172(City of Red Lodge)

Hello Bill,

Here is an application from the City of Red Lodge for using groundwater to supplement the city water supply. They are presently taking water from the West Fork of Rock Creek and Rock Creek.

I wondered if you or Russ could take a look at this and answer a few questions I have about water use from this aquifer.

1. Have they shown that the aquifer is capable of producing the flow and volume they wish to appropriate?
2. Is there enough information to show that their use of water will not adversely affect the water rights of other users in the area?
3. Will there be a direct influence on the surface water of the West Fork of Rock Creek or Rock Creek from this proposed use?
4. If this application goes to public notice, what would be the appropriate area of potential impact for the notice?

I would also appreciate any other information you come up with that you feel should be a part of the analysis of this application. I know this one could take awhile, but I feel its important to make sure we have as much information as possible before this goes to public notice. As you may know, the Rock Creek Basin is a surface water closure area, so many people are concerned about any water use within the basin.

Please call me at 247-4422 if you have any questions or need any additional information. If you are interested in visiting the area, I'm sure that would not be a problem.

DEPARTMENT OF NATURAL
RESOURCES AND CONSERVATION
BILLINGS WATER RESOURCES REGIONAL OFFICE

AIRPORT BUSINESS PARK
1371 RIMTOP DRIVE

JUDY MARTZ, GOVERNOR

STATE OF MONTANA

(406) 247-4415
(406) 247-4416 (FAX)

BILLINGS, MONTANA 59105-1978



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From: Marty Van Cleave, Water Resources Specialist, Billings *mv*
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4. If this application goes to public notice, what would be the appropriate area of potential impact for the notice?

I would also appreciate any other information you come up with that you feel should be a part of the analysis of this application. I know this one could take awhile, but I feel its important to make sure we have as much information as possible before this goes to public notice. As you may know, the Rock Creek Basin is a surface water closure area, so many people are concerned about any water use within the basin.

Please call me at 247-4422 if you have any questions or need any additional information. If you are interested in visiting the area, I'm sure that would not be a problem.

DEPARTMENT OF NATURAL
RESOURCES AND CONSERVATION



JUDY MARTZ
GOVERNOR

DIRECTOR'S OFFICE (406) 444-2074
TELEFAX NUMBER (406) 444-2684

STATE OF MONTANA

WATER RESOURCES DIVISION (406) 444-6601
TELEFAX NUMBERS (406) 444-0533 / (406) 444-5918

48 NORTH LAST CHANCE GULCH
PO BOX 201601
HELENA, MONTANA 59620-1601

To: Marty VanCleave, Water Resource Specialist
Billings Water Resources Regional Office

From: Bill Uthman, Hydrogeologist
Water Management Bureau

Date: May 13, 2002

Re: City of Red Lodge Application 43D-30001172 for Water Use Permit

RECEIVED

MAY 15 2002

**DEPT. OF NATURAL RESOURCES
AND CONSERVATION
BILLINGS OFFICE**

Introduction

The applicant, the City of Red Lodge, has applied for a Beneficial Water Use Permit to appropriate groundwater at the rate of 1,200 gallons per minute (gpm), and up to 968 acre-feet (ac-ft), from January 1 to December 31, inclusive each year. The proposed groundwater appropriation will be obtained from two 600-gallon per minute (gpm) manifold wells on the City of Red Lodge Water Treatment Plant property in the West Fork Rock Creek valley south of Red Lodge in Section 4 of Township 8 South, Range 20 East of Carbon County.

Discussion

The Billings Water Resources Regional Office (BWRRO) has requested assistance in evaluating some questions and concerns regarding this application. These questions and other relevant information addressing the criteria of physical and legal availability of water and impacts to senior water users are discussed herein.

1) Has the applicant shown that the aquifer is capable of producing the flow and volume requested in the application?

The proposed groundwater appropriation requested in the application would be obtained from two 600-gallon per minute (gpm) manifold wells. However, only one well, referred to as public water supply well (PWS) #1, was drilled and put into operation. The Criteria Addendum asserts that the physical availability of water has been fully demonstrated in the amount of 1,200 gpm and 968 acre/year (af/yr) requested in the application. This assertion is unfounded because there is no information presented in either the Criteria Addendum or Drilling and Completion Report that substantiates this claim. PWS #1 was pumped at

a maximum rate of 1,097 gpm for a short time interval during a step-drawdown test. This pumping rate, however, was not sustained during a longer-term constant-rate aquifer test, according to the information submitted. The discharge rate during the second 72-hour aquifer test conducted in PWS #1 averaged 920 gpm. Thus, a sustained discharge of 1,200 gpm was neither demonstrated from the applicant's only existing well, PWS #1, nor from any combination of wells. Furthermore, the total volume of water pumped by PWS #1 in 2001 amounted to about 620 ac-ft.

Simply because PWS #1 briefly attained a pumping rate of 1,097 gpm or pumped more than half of the requested volume per year does not imply that the full rate and volume requested in the application will be physically available. If the applicant requests a water use permit for a 1,200-gpm discharge, it is therefore expected that the applicant demonstrate by a preponderance of evidence, as stipulated at Montana Codes Annotated (MCA), 85-2-311, that the water is physically available in the amount the applicant seeks to appropriate. In this case, a discharge of 1,200 gpm should have been attained and also sustained for a period of at least 72 hours of pumping.

In summary, the applicant has applied for a groundwater appropriation of 1,200 gpm from two manifold wells, but has only demonstrated physical availability of water for their single existing well, PWS #1. An average pumping rate of 920 gpm was produced from PWS #1 during a 72-hour aquifer test; however, it is unclear whether this rate was sustained or whether it declined during the test. A discharge rate of 1,097 gpm was reached during a step-drawdown test in PWS #1, but was not sustained during a prolonged period of pumping. A sustained discharge of 1,200 gpm requested in the application was not attained in either PWS #1 or from a combination of municipal wells. According to Montana water law, the applicant is required to prove that water is physically available at the proposed point of diversion in the amount to be appropriated.

2) Is there sufficient information to show that the applicant's use of water will not adversely affect the water rights of other users in the area?

After PWS #1 was drilled and tested in 2000, the applicant continued to "test-pump" throughout the remainder of 2000 and 2001 and monitor groundwater levels in PWS #1 and test wells #2 and #3 on the Water Treatment Plant property. The hydrographs of Figure 2.3 of the Criteria Addendum document the groundwater levels observed in PWS #1 and the two test wells during the 15-month period when PWS #1 was pumping.

The applicant claims that groundwater levels in test well #3 "fluctuated, but generally showed no change in water level after pumping for one year". Groundwater levels were measured too infrequently to definitively make this conclusion. The only valid interpretation that can be made is that the groundwater-level measurements collected in 2001 illustrate that a groundwater-level decline of about 3 feet occurred between June and July in test well #3, located about 632 feet northeast of PWS #1, that may be attributed to drawdown from the pumping of PWS #1. A recovery of about equal magnitude occurred in August and was again followed by another groundwater-level decline during September, that may be the result of irrigation ditches along the valley margins shutting down. The only

interpretation offered for the hydrograph of test well #2 is that groundwater levels in that well basically mirrored the drawdown in PWS #1. The hydrographs simply suggest that groundwater-level fluctuations were minor, but do not clearly demonstrate the complete range of groundwater-level fluctuations that may have occurred.

To predict the impacts of pumping PWS #1 at offsite wells, the applicant calculated drawdown using the Theis equation (Theis, 1935). Drawdown impacts were projected, using the aquifer properties determined from the aquifer testing, to be about 4½ feet at a distance of 1,000 feet, and about 2 feet at a distance of 3,000 feet after one year of continuous pumping at a rate of 600 gpm. Furthermore, the Theis equation would have predicted a drawdown of about 6 feet at test well #3 after one year of pumping from PWS #1. If drawdown projections had been provided for both wells pumping at 600 gpm each, the Theis equation would have predicted a drawdown of about 9 feet at a radial distance of 1,000 feet and about 4 feet at a radial distance of 3,000 feet. If PWS #2 is drilled and operated at a proposed discharge of 600 gpm, additional drawdown will be created. Drawdown impacts from each of the two municipal wells are additive, and will be greater than projections offered in the Criteria Addendum for one well. Last, to provide more credibility to the drawdown projections, a drawdown projection at test well #3 should have been calculated for a 72-hour period to compare with the observed drawdown at well #3 at 72 hours.

The drawdown-recovery curves of Figure 2.0 and 2.1, from the aquifer tests conducted in February and April of 2000, illustrate the actual, observable drawdown created by the pumping of PWS #1. These curves show that test well #3, located at a distance of about 632 feet from PWS #1, was impacted by about 3 feet of drawdown from the pumping of PWS #1. An important implication of these observations is that the small drawdown impact observed at test well #3 will be even smaller, and perhaps not noticeable, at offsite domestic wells, located further up- and downgradient from PWS #1. Impacts from the pumping of the proposed well PWS #2 are impossible to evaluate, but however, would be additive to drawdown created by PWS #1.

In summary, PWS #1 pumped almost continuously from mid-September, 2000 to December, 2001, but the applicant did not convincingly demonstrate that groundwater levels fluctuated by the amount claimed because measuring frequency was inadequate and there were long time periods in which no measurements were collected. Nevertheless, the applicant has reasonably demonstrated through aquifer testing and by intermittent groundwater-level monitoring that about 3 feet of drawdown occurred in test well #3 as PWS #1 pumped continuously between June and July, 2001. Offsite domestic wells located further than test well #3 from PWS #1 would not be noticeably impacted by drawdown from PWS #1. However, the applicant has not physically demonstrated the impacts from a 1,200-gpm discharge from the two manifold wells. Drawdown from two pumping wells are additive and will be greater than that produced from one well. The applicant is required to prove a lack of adverse impact, as listed at MCA, 85-2-311.

3) Will there be a direct influence on the surface water of the West Fork of Rock Creek or Rock Creek from this proposed use?

According to the Criteria Addendum, the City of Red Lodge has a senior surface water right, dated 1886, for 1¼ cubic feet per second (i.e. 560 gpm) from the West Fork Rock Creek. Nevertheless, the City experiences chronic problems in satisfying its surface water right because of low streamflow and seven junior surface water diversions above the City's diversion from the stream. A groundwater appropriation would provide a more efficient and reliable water diversion than the surface water diversion.

The Rock Creek Basin is closed to new appropriations of surface water for consumptive use between June 1 and September 30 of each year under DNRC Administrative Rule because there is no unappropriated water in the source of supply during certain times. The applicant recognizes the hydrologic connection of groundwater in the alluvium with the surface water of the West Fork Rock Creek. PWS #1 is located within 100 feet of the West Fork Rock Creek, and PWS #2 will be sited within 300 feet of that stream, according to both Figure 1.0 of the Criteria Addendum and the Drilling and Completion Report. According to Figure 1.0, test well #2 also appears to be located within 100 feet of PWS #1. During aquifer testing, test well #2 was impacted by about 18 feet of drawdown from PWS #1. Thus, it is anticipated that a similar amount of drawdown from PWS #1 will also radiate to the West Fork Rock Creek, located within 100 feet of PWS #1.

The West Fork Rock Creek is interpreted to be a losing stream in the proximity of the Water Treatment Plant property. This interpretation is based on the projection of the groundwater table beneath the West Fork Rock Creek, as illustrated in Figure 1.2 of the Criteria Addendum. Furthermore, the Criteria Addendum states that groundwater "ranged from 8 to 11 feet below ground surface during the 2000 field season", which suggests that the groundwater table lies beneath the streambed rather than above it. The West Fork Rock Creek and PWS #1 are apparently at similar elevations, according to Appendix 1.2 of the Drilling and Completion Report. It is unknown if the sediments beneath the streambed are saturated or unsaturated. Assuming that materials beneath the West Fork Rock Creek are saturated, drawdown from PWS #1 will induce increased infiltration from that stream. PWS #1 will also intercept groundwater that would otherwise seep into gaining reaches of West Fork Rock Creek further downstream.

The applicant has not adequately addressed the potential impact to streamflow in the West Fork Rock Creek from drawdown from nearby PWS #1. The applicant simply states that about 30 percent of the well discharge may have been contributed by induced infiltration from the West Fork Rock Creek after three hours of pumping. If this is the case, then what might induced streambed infiltration contribute to well discharge during the period from June 1 to September 30 when no new surface water appropriations can be made? It may be possible that, after a prolonged period of pumping, virtually all of the well discharge may constitute induced infiltration from the West Fork Rock Creek.

Groundwater withdrawals from an area close to a stream can deplete streamflow more rapidly than groundwater in aquifer storage (Jenkins, 1968; Winter and others, 1998). Groundwater levels near a stream are lowered by pumping, and the increased hydraulic gradient induces an increasingly larger amount of surface water to infiltrate into the aquifer and toward the pumping well. It would be difficult to fully develop available groundwater near a stream, because the pumping of groundwater close to a stream would normally result in a rapid depletion of streamflow equal to the rate pumped, rather than diminishment of aquifer storage (Ineson and Downing, 1964). Over a long period of time, streamflow depletion may approach or equal the quantity of groundwater withdrawn by a well (Theis, 1941; Taylor, 1978; Winter and others, 1998).

The applicant suggested that the Jenkins Streamflow Depletion model, referred to in their streamflow depletion estimate, was inappropriate because it over-estimated the streamflow depletion impact. The applicant needs to re-examine in greater detail the streamflow depletion potential at the West Fork Rock Creek. Transient well discharge-streamflow depletion scenarios may be evaluated, for example, by constructing a numerical groundwater-flow model (e.g. MODFLOW) or perhaps by applying an appropriate analytical model, such as the Butler Streamflow Depletion model (Butler and others, 2001). This analytical model accounts for streams, such as the West Fork Rock Creek, that partially penetrate the aquifer or may have a low-permeability streambed. In particular, the applicant needs to determine streamflow depletion impacts that may occur from 1) pumping PWS #1 continuously at 600 gpm during the June 1-September 30 period, and 2) pumping both PWS #1 and PWS #2 continuously at a total of 1,200 gpm during the June 1-September 30 period. The applicant also needs to consider the advantages and disadvantages of transferal of their surface water right to PWS #1 (i.e. change of point of diversion from surface water to groundwater).

In summary, the Rock Creek Basin is closed by DNRC Administrative Rule to new surface water appropriations for consumptive use from June 1 to September 30 of each year because there is no unappropriated water in the source of supply during certain times of the year. PWS #1 is sited within 100 feet of the West Fork Rock Creek, and drawdown from the pumping of PWS #1 will radiate to the stream to induce increased infiltration from that stream. The potential for induced streambed infiltration from two municipal wells sited near the West Fork Rock Creek is greater than for one well. These wells will also intercept groundwater that will seep into gaining reaches of the West Fork Rock Creek further downstream. The applicant has not demonstrated that streamflow in the West Fork Rock Creek will not be impacted by drawdown from PWS #1 or the proposed PWS #2.

4) What would be the appropriate area of notice for potential impacts?

The area of notice should include any groundwater users in the West Fork Rock Creek valley and on the adjacent terraces within 2,500 radial feet from the existing and proposed wells, and any surface water users downstream of the proposed groundwater diversions.

Conclusions

The applicant has sufficiently demonstrated the MCA, 85-2-311 criteria for the existing well, PWS #1, regarding water availability and lack of adverse impact to other groundwater users. However, the issuance of a new water use permit for PWS #1 may not be possible because surface water is closed to new appropriations, and the applicant has not proven that PWS #1 will not impact streamflow in the West Fork Rock Creek and surface water users on that source. The BWRRO may consider a transfer of the applicant's senior surface water right to the groundwater appropriation at PWS #1 to legitimize the continuing use of this well. Otherwise, the applicant is required to cease pumping PWS #1 because it is not evident that additional investigations are proceeding to clarify the groundwater-surface water interactions that are occurring between the West Fork Rock Creek and PWS #1. The pumping of PWS #1 cannot continue under the guise of testing if new hydrological information is not being collected; and thus, PWS #1 represents an unpermitted appropriation of groundwater.

The BWRRO also needs to consider modifying the application to include only the existing well, PWS #1, at 600 gpm because the applicant's second well, PWS #2, is not constructed and remains a proposed well; thus, it is impossible for the applicant to prove the MCA, 85-2-311 criteria for this well. If PWS #2 is constructed in the future, the applicant will be required to conduct testing and submit an application for a new water right. However, a second well is expected to also impact streamflow in the West Fork Rock Creek, and a permit may be difficult, if not impossible, to issue unless the applicant has other surface water rights on the West Fork Rock Creek that may be transferred to the new groundwater appropriation.

References

- Butler, J.J., Zlotnik, V.A., and Tsou, M., 2001. Drawdown and Stream Depletion Produced by Pumping in the Vicinity of a Partially Penetrating Stream. *Ground Water*, v. 39, No. 5, p. 651-659.
- Ineson, J., and Downing R.A., 1964. The Ground-Water Component of River Discharge and its Relationship to Hydrogeology. *Jrn. Inst. Water Eng.*, v. 18, No. 7, p. 519-541.
- Jenkins, C.T., 1968. Computation of Rate and Volume of Stream Depletion by Wells, *in* Techniques of Water-Resources Investigations of the United States Geological Survey, Chapter D-1, p. 1-17.
- Taylor, O.J., 1978. Summary Appraisals of the Nation's Ground-Water Resources-Missouri Basin Region. U.S. Geological Survey Prof. Paper 813-Q, p. Q1-Q41.
- Theis, C.V., 1935. The Relation between the Lowering of the Potentiometric Surface and the Rate and Duration of Discharge of a Well Using Groundwater Storage. *Amer. Geophys. Union Trans.*, v.16, p. 519-524.

_____ 1941. The Effect of a Well on the Flow of a Nearby Stream. Amer. Geophys. Union Trans., v.22, p. 734-738.

Winter, T.C., Harvey, J.W. Franke, O.L., and Alley, W.M., 1998. Ground Water and Surface Water, A Single Resource. U.S. Geological Survey Circular 1139, 79 p.

DEPARTMENT OF NATURAL
RESOURCES AND CONSERVATION
BILLINGS WATER RESOURCES REGIONAL OFFICE

AIRPORT BUSINESS PARK
1371 RIMTOP DRIVE

JUDY MARTZ, GOVERNOR

STATE OF MONTANA

(406) 247-4415
(406) 247-4416 (FAX)

BILLINGS, MONTANA 59105-1978



August 8, 2002

Mike Cusik
Moore O'Connell & Refling, PC
PO Box 1288
Bozeman MT 59771-1288

Re: City of Red Lodge Application For Beneficial Water Use No. 43D-30001172

Dear Mike;

We are proceeding with the processing of the City of Red Lodge's application for two municipal water wells to public notice. You will receive a copy of this notice which includes the objection deadline.

Enclosed is a copy of a memo I sent to our Department Hydrogeologist and a copy of his response. Since this memo and the hydrogeologist's report are now a part of the file, we felt you should be made aware of these documents and copies be made available to you.

If you have any questions, please feel free to call me at (406) 247-4422 or Keith Kerbel at (406) 247-4425. I will try to keep you informed on the progress of this application.

Sincerely,

A handwritten signature in cursive script that reads "Marty Van Cleave".

Marty Van Cleave
Water Resources Specialist

Cc: Keith Kerbel

THE LAW FIRM
MOORE, O'CONNELL & REFLING

A PROFESSIONAL CORPORATION

PERRY J. MOORE
BARRY G. O'CONNELL
MARK D. REFLING
WM. RUSSELL McELYEA
CINDY E. YOUNKIN
ALLAN H. BARIS
MICHAEL J. L. CUSICK

BART L. RICKENBAUGH (1966-2002)

August 15, 2002

RECEIVED

AUG 16 2002

**DEPT. OF NATURAL RESOURCES
AND CONSERVATION
BILLINGS OFFICE**

601 HAGGERTY LANE
SUITE 10, LIFE OF MONTANA BUILDING

Reply to
P.O. BOX 1288
BOZEMAN, MONTANA 59771-1288
TELEPHONE: (406) 587-5511
FAX: (406) 587-9079
E-MAIL: morlaw@qwest.net

Marty Van Cleave, Water Resources Specialist
Dept. of Natural Resources and Conservation
Billings Water Resources Regional Office
Airport Business Park
1371 Rintop Drive
Billings, MT 59105-1978

RE: City of Red Lodge Application for Beneficial Water
Use No. 43D-30001172
Our File No. 20042\023

Dear Marty:


This letter is intended to confirm our telephone conversation of August 13, 2002.

I received your letter of August 8, 2002, and the memorandum from Bill Uthman of the Water Management Bureau in Helena attached thereto. As we discussed, the city would like an opportunity to respond to Mr. Uthman's comments before this application proceeds to public notice.

Therefore, the city requests that DNRC delay public notice of the application until the city has had an opportunity to respond to Mr. Uthman's memorandum. I would appreciate it if you could provide written confirmation of the city's opportunity to respond.

Thank you in advance for your cooperation.

Sincerely,


MICHAEL J. L. CUSICK
MJLC/mlk

cc: James R. McGill, PG, CGWP
Ralph Saunders
Mayor Brian Roat
Gary R. Thomas, Esq.
MEL5939.WPD

DEPARTMENT OF NATURAL
RESOURCES AND CONSERVATION
BILLINGS WATER RESOURCES REGIONAL OFFICE



JUDY MARTZ, GOVERNOR

AIRPORT BUSINESS PARK
1371 RIMTOP DRIVE

STATE OF MONTANA

(406) 247-4415
(406) 247-4416 (FAX)

BILLINGS, MONTANA 59105-1978

September 9, 2002

Michael J. L. Cusick
Moore, O'Connell & Reffing
PO Box 1288
Bozeman MT 59771-1288

Re: City of Red Lodge Application for Beneficial Water Use No. 43D-30001172

Dear Mike;

You sent me a letter August 15, 2002 requesting we delay public notice of this application until the City of Red Lodge has an opportunity to respond to the memorandum from Mr. Uthman. This is to let you know that we will wait for your response. We request that the response be done in a timely fashion so we may proceed with the processing of this application.

If you have questions, please call me at (406) 247-4422.

Sincerely,

A handwritten signature in cursive script that reads "Marty Van Cleave".

Marty Van Cleave
Water Resources Specialist

THE LAW FIRM
MOORE, O'CONNELL & REFLING

A PROFESSIONAL CORPORATION

PERRY J. MOORE
BARRY G. O'CONNELL
MARK D. REFLING
WM. RUSSELL McELYEA
CINDY E. YOUNKIN
ALLAN H. BARIS
MICHAEL J. L. CUSICK

BART L. RICKENBAUGH (1966-2002)

RECEIVED

JAN 06 2003

**DEPT. OF NATURAL RESOURCES
AND CONSERVATION
BILLINGS OFFICE**

601 HAGGERTY LANE
SUITE 10, LIFE OF MONTANA BUILDING

Reply to

P.O. BOX 1288
BOZEMAN, MONTANA 59771-1288
TELEPHONE: (406) 587-5311
FAX: (406) 587-9079
E-MAIL: morlaw@qwest.net

January 3, 2003

Marty Van Cleave, Water Resources Specialist
Dept. of Natural Resources and Conservation
Billings Water Resources Regional Office
Airport Business Park
1371 Rintop Drive
Billings, MT 59105-1978

RE: City of Red Lodge Application for Beneficial Water
Use No. 43D-30001172
Our File No. 20042\023

Dear Marty:

As we discussed, the City of Red Lodge is enclosing its response to the May 13, 2002 memorandum of Bill Uthman, hydrologist with Department of Natural Resources and Conservation's (DNRC) Water Management Bureau (WMB), regarding the City of Red Lodge's Application 43D-30001172 for a water use permit for groundwater appropriated at the City's water treatment plant.

The questions addressed in Mr. Uthman's memorandum are as follows:

- (1) Has the applicant shown that the aquifer is capable of producing the flow and volume requested in the application?
- (2) Is there sufficient information to show that the applicant's use of water will not adversely affect the water rights of other users in the area?
- (3) Will there be a direct influence on the surface water of the West Fork of Rock Creek or Rock Creek from this proposed use?
- (4) What would be the appropriate area of notice for potential impacts?

Marty Van Cleave, Water Resources Specialist
Dept. of Natural Resources and Conservation
January 3, 2003
Page 2

The City's response pertains to the WMB's discussion of the first three questions identified above and consists of two parts. First, James R. McGill of HKM Engineering has provided a technical response to the memorandum based on data compiled in the Drilling and Completion Report, the previously submitted criteria addendum and a potentiometric surface map submitted with this response. The second part of the City's response is a legal analysis of the City's burden of proof for this application under the Rock Creek Basin surface water closure, A.R.M. 36.12.1013. The second part of the City's response follows below.

**THE WATER PROPOSED FOR DIVERSION UNDER THE CITY'S
APPLICATION IS NOT A PART OF THE SURFACE FLOWS
IN THE WEST FORK OF ROCK CREEK**

In the May 13, 2002 memorandum, WMB's hydrologist concludes that the groundwater appropriated under this application will have a direct influence on surface flows in the West Fork of Rock Creek. In making this conclusion, the analysis misconstrues the City's burden of proof under the Rock Creek Basin closure.

The memorandum incorrectly applies the criteria of the statutory basin closures in the Upper Missouri River Basin and other western drainage basins in the state. The statutory basin closures provide for a complete closure of all appropriations with limited exceptions. The exceptions to the closure include non-tributary groundwater. The basin closure statutes provide that groundwater means water that is beneath the land surface or beneath the bed of a stream, lake, reservoir, or other body of surface water and "that is not immediately or directly connected to surface water."

On the other hand, the Rock Creek Basin closure only applies to permits for surface water within the Rock Creek basin for diversions for consumptive uses during the period from June 1 through September 30. The definition of surface water in the Rock Creek Basin closure includes all water occurring at the surface of the ground "and any subsurface water which is a part of the surface flows." The intended result of this definition is that the Rock Creek Basin closure is less restrictive on groundwater appropriations than other statutory basin closures. Under the Rock Creek Basin closure rule, the City does not need to demonstrate that the groundwater is not immediately or directly connected to surface water as would be necessary in a statutorily closed basin. Rather, the City must demonstrate that it is not appropriating surface water, i.e., it is not appropriating subsurface water that is part of the surface flows.

Marty Van Cleave, Water Resources Specialist
Dept. of Natural Resources and Conservation
January 3, 2003
Page 3

The City's data indicates that the West Fork of Rock Creek is a losing stream from approximately the location of the Harra Ditch diversion upstream of the City's water treatment plant to its junction with the main stem of Rock Creek below the City's facility. Surface water flowing in the West Fork of Rock Creek in this reach is lost through the bottom of the stream bed. The groundwater appurtenant in this area is not physically part of the surface flows.

Since groundwater in this reach of the West Fork is not tributary to surface flows, it is not "part of the surface flows" so as to prohibit its appropriation under A.R.M. 36.12.1013. Furthermore, as noted by James McGill in the attached response, surface flows in the West Fork of Rock Creek are typically nonexistent or negligible during the time period from June 1 to September 30 so that pumping of the City's proposed wells can have no effect on surface flows in the creek. The City's wells cannot induce infiltration from surface water if surface water is not there. The City's proposed appropriation of groundwater from this aquifer does not violate the basin closure set forth in A.R.M. 36.12.1013.

**THE PROPOSED APPROPRIATION WILL NOT ADVERSELY
AFFECT OTHER WATER RIGHTS**

Mont. Code Ann. § 85-2-401(1) provides as follows:

As between appropriators, the first in time is the first in right. Priority of appropriation does not include the right to prevent changes by later appropriators in the condition of water occurrence, such as the increase or decrease of streamflow or the lowering of a water table, artesian pressure, or water level, if the prior appropriator can reasonably exercise the water right under the changed conditions. [Emphasis added]

Under this statute, the fact that the City's water supply well may lower the water table in the area does not automatically lead to the conclusion that other water right holders will be adversely affected. If other water right holders can still reasonably exercise their water rights (by deepening shallow wells, for example), then there is no adverse impact. The purpose of this statute is to protect existing rights and at the same time allow for maximum utilization of the groundwater resource.

The City's application has demonstrated by a preponderance of the evidence that draw-down in the wells in the area will be minimal. The

Marty Van Cleave, Water Resources Specialist
Dept. of Natural Resources and Conservation
January 3, 2003
Page 4

minimal draw-down effects that might be caused by the City's proposed diversions are allowed under the Water Use Act.

**THE APPLICATION HAS DEMONSTRATED THAT WATER IS
AVAILABLE FOR THE PROPOSED APPROPRIATIONS**

Mont. Code Ann. § 85-2-311 provides that the DNRC shall issue a permit if the applicant proves by a preponderance of the evidence that (1) there is water available at the proposed point of diversion; (2) the water rights of a prior appropriator will not be adversely affected; (3) the proposed means of diversion, construction and operation of appropriation works are adequate; and (4) the proposed use of water is a beneficial use. A preponderance of evidence means that the evidence on one side outweighs the evidence on the other. Lewis v. New York Life Ins. Co., 113 Mont. 151, 124 P.2d 579 (1942). A preponderance of the evidence is a lower standard than clear and convincing evidence and the criminal standard of beyond a reasonable doubt. Wareing v. Schreckendust, 280 Mont. 196, 930 P.2d 37 (1996).

The May 13, 2002 memorandum applies the wrong burden of proof in this matter. The memorandum concludes that the City cannot prove that water is available in the amount requested unless the City drills and tests both of the proposed public supply wells. The memorandum essentially requires the City to provide conclusive proof that the water is available. Conclusive proof is far beyond the "preponderance of the evidence" required by the statutes.

The City has provided sufficient evidence using well established and scientifically accepted hydrologic techniques in support of its application. This evidence proves by a preponderance of the evidence that the water proposed for diversion is available. Requiring the City to drill and complete both proposed wells prior to the application is unnecessary and is based on an incorrect interpretation of the applicant's burden of proof under Montana law.

CONCLUSION

In conclusion, the applicant has met all the criteria of the statute and has complied with the basin closure. The application is ready for public notice.

Jim McGill's Response Memorandum is enclosed. Also enclosed is a revised copy of Figure 1.0 of Appendix 1.0 of the Criteria Addendum. Figure 1.0 was also attached to the original application. The revised Figure 1.0 reflects the surveyed location of the proposed second well and contains minor editorial corrections. Revised Figure 1.0 should now

Marty Van Cleave, Water Resources Specialist
Dept. of Natural Resources and Conservation
January 3, 2003
Page 5

be consistent with Figure 2.0 of the Response Memorandum. If you have any questions about this additional information, please contact me or Jim McGill.

The City appreciates the opportunity to respond to the May 13, 2002 memorandum from the Water Management Bureau. The City requests that the DNRC now complete processing of the City's application by sending the application to public notice.

Thank you for your consideration.

Sincerely,



MICHAEL J. L. CUSICK

MJLC/mlk

Encs.

cc: Mayor Brian Roat (w/o encls.)
Gary R. Thomas, Esq. (w/o encls.)
James R. McGill, PG, CGWP (w/o encls.)

MEL6556.WPD

MEMORANDUM

TO: Montana Department of Natural Resources And Conservation Application No. 43D-30001172 File (City of Red Lodge)

FROM: Jim McGill

DATE: December 17, 2002
\\INTRANET1\DATA\06\060149\bumdnrcresp.doc

RE: Response to May 13, 2002 Bill Uhtman (Water Management Bureau, Montana Department of Natural Resources And Conservation, Helena, Montana) Review of City of Red Lodge Application 43D-30001172 for Water Use Permit

INTRODUCTION

The City of Red Lodge has filed for the use of 1,200 gpm and not to exceed 968 acre-feet per year (af/yr) of ground water from two 12.75 inch O.D. wells for a Public Water Supply for the Red Lodge Water Treatment Plant Improvements Project. The two wells will be located in the NW1/4 NW1/4 SW1/4 Section 4, T.8S., R.20 E., in Carbon County, on the City of Red Lodge water treatment plant property.

The 1,200 gpm will be provided by two wells each producing 600 gpm for a maximum of 24 hours continuous operation. The 968 af/yr will be provided by operating both of the wells year round (January 1 – December 31) in a combination optimal to the operation of the water system, at a total combined rate not to exceed 600 gpm 24 hours per day for the two wells.

The Permit Application accompanied by supporting information consisting of a Drilling and Completion Report (DC&R) and Criteria Addendum (CA) were submitted to the Billings Water Resources Regional Office (BWRRO) of the Montana Department of Natural Resources And Conservation (MDNRC) March 5, 2002. The BWRRO subsequently requested a review of the permit application and supporting data by the Water Management Bureau (WMB) of MDNRC in Helena Montana with respect to four questions April 2, 2002.

The WMB responded to the BWRRO request May 13, 2002. The BWRRO subsequently made a copy of the WMB review memorandum available to the applicant's legal counsel August 8, 2002. The applicant's counsel requested an opportunity to respond to comments in the May 13, 2002 WMB memorandum August 15, 2002 prior to sending the application to public notice.

This memorandum is a response to the first three questions discussed in the WMB May 13, 2002 memorandum. It is understood that this memorandum will be included in the final response to the WMB memorandum that will be prepared by the City's legal Counsel.

QUESTION 1: HAS THE APPLICANT SHOWN THAT THE AQUIFER IS CAPABLE OF PRODUCING THE FLOW AND VOLUME REQUESTED IN THE APPLICATION?

The applicant disagrees with the WMB assertion that there is no information presented in the CA and the DC&R that substantiate the physical availability of water in the alluvial aquifer system on the Red Lodge water treatment plant property in the amount requested. It is believed that information submitted in the DC&R and CA, when applied with hydrogeologic observations and judgement, support the amount of water requested in the permit application as alluded to herein.

The amount of water applied for will not exceed a combined total of 1200 gallons per minute (gpm) from the two wells (600 gpm/well) for a maximum of twenty four hours continuous operation. The volume of 968 acre feet per year (af/yr) will be provided by operating both of the wells year round in a combination optimal to the operation of the water system, but at a total combined rate not to exceed 600 gpm for both wells.

The test pumping performed in RLPWS #1 in April 2000 at an average rate of 920 gpm was approximately 1.5 times the design rate of RLPWS #1 (600 gpm). The tested rate was also about 1.5 times the average rate (600 gpm) required to produce the requested volume of 968 af/yr from two wells. This demonstrates the capability of the aquifer to produce sufficient water to satisfy the requested volume from two properly designed, completed and developed wells.

The location of proposed RLPWS #2 is shown on Figure 1.2 of Appendix 1.0 of the CA. The cross section was constructed using selected data from references listed on Figure 1.0 (Place of Diversion Exhibit) of Appendix 1.0 of the CA. The projected total depth of RLPWS #2 as shown on the section was about 65 feet below ground surface (bgs) with an estimated saturated thickness in the alluvium of about 50 feet. The total projected depth of RLPWS #2 assumed 5 feet of tail space in underlying bed rock.

The three wells on the water treatment plant property and data from the Ground water Information Center (GWIC) of the Montana Bureau of Mines and Geology (MBMG) presented in Appendix 3.0, indicated that the above projections and assumptions are reasonable.

The test pumping data presented in the DC&R, and GWIC data, indicated that the specific capacity (yield in gallons per minute per foot of drawdown (gpm/ft)) of a properly designed, completed and developed well could be expected to be similar to RLPWS #1. Assuming a similar specific capacity as RLPWS #1, indicated that a drawdown of 22 feet could be expected from 600 gpm production in RLPWS #2. Allowing for the projected draw down affects of RLPWS #1 (also pumping at 600 gpm) of about 6 feet (Figure 2.2 of Appendix 2.0 of the CA), indicated the total projected drawdown in RLPWS #2 could be about 28 feet after 24 hours of pumping. This would be about 70% of the drawdown available above the well screen in RLPWS #2, assuming a static water level of about 10 feet below ground surface and that the well pump would be set at or near the top of the screen (50 feet bgs). This indicated that there still could be about 12 feet of water in the well above the pump.

As previously reported in the CA, the average annual (minimum) underflow in the alluvium of the West Fork of Rock Creek (WFRC) through the water treatment plant property was estimated to range from 1,246 af/yr to 1,713 af/yr. The total volume of ground water required to satisfy the permit application and downgradient users of ground water from the alluvium was estimated to be 1,028 af/yr. The 1,028 af/yr was less than the estimated average annual (minimum) underflow in the alluvium and demonstrated the availability of the requested volume of water for the permit application.

Summary

It is agreed that actual production capability of the second well (RLPWS # 2) cannot be determined until the well is actually drilled, completed and tested. It is believed however, that the applicant has provided reasonable evidence to support its claim.

Test pumping of RLPWS #2 will be performed when it is constructed. Originally, it was intended to perform test pumping of RLPWS #2 in a similar manner as that performed on RLPWS #1 with the exception of a 72 hour test. It was planned to perform test pumping to satisfy testing requirements of the Montana Department of Environmental Quality (MDEQ) for a public water supply well (MDEQ, 1999). As originally planned, test pumping of RLPWS #2 would consist of an 8-hour step draw down test, followed by a 24-hour constant discharge test at a rate selected from the step drawdown test. The constant discharge test would be followed by a recovery test of appropriate duration until the water levels in RLPWS #2 had at least achieved 95% recovery.

It was not planned to conduct another 72 hour test on RLPWS #2 as the applicant was satisfied by previous testing on RLPWS #1 of the capability of the aquifer to support two 600 gpm wells. The applicant will however, perform any additional testing deemed necessary by MDNRC to satisfy conditions of a water use permit when RLPWS #2 is constructed.

It appears to be unreasonable for the applicant to have to go through the expense of siting and constructing a second well to public water supply standards prior to issuance of a water use permit given the amount of information that was obtained from the first well. The applicant recognizes and accepts the fact and associated risk that production of water from the two wells on the water treatment plant property will be conditional on what the wells will actually produce.

QUESTION 2: IS THERE SUFFICIENT INFORMATION TO SHOW THAT THE APPLICANT'S USE OF WATER WILL NOT ADVERSELY AFFECT WATER RIGHTS OF OTHER USERS IN THE AREA?

The applicant disagrees with the WMB assertion that the ground water levels were measured too infrequently in Test Well #3 between December 2000 and December 2001 to "definitively make the conclusion" as claimed in the CA that the ground water levels in Test Well #3 "fluctuated but generally showed no change after test pumping for one year". Irregardless of the frequency of measurements in the above time period, ground water levels in December 2001 were as much as 0.35 feet higher in Test Well #3 than in December 2000. This suggests that recharge exceeded discharge from the aquifer after one year of test pumping during which about 620 af/yr (average discharge of 384 gpm) was produced from RLPWS #1.

Test pumping data collection is in progress and has been on going since the permit application was submitted in March 2002. As of August 2002, there were about fifteen months of continuous ground water level data available for the three wells on the property. Table 1.0 and Figure 1.0 attached herein, present information for the period of January 2002 through August 20, 2002 (period of additional record available when the applicant received the WMB memorandum). Table 1.0 presents a summary of production from RLPWS #1 for the 2002 period through August 20, 2002. Table 1.0 supplements Tables 2.1 and 2.2 of Appendix 2.0 of the CA. Figure 1.0 is a revised and expanded version of Figure 2.3 of the CA and includes ground water level measurements made in the three wells during the period of January through August 20, 2002.

In July of 2001, ground water levels declined about three feet in Test Well #3 that might be attributed to pumping from RLPWS #1 (maximum, minimum and average discharge of 766, 191 and 603 gpm respectively). Ground water levels in Test Well #3 rose slightly in August 2001 with a slight decrease in pumping from RLPWS #1 (maximum, minimum and average discharge of 834, 409 and 566 gpm respectively). Ground water levels in Test Well #3 rose about three feet through September during which the average discharge from RLPWS #1 was 432 gpm (maximum and minimum discharge of 568 and 349 gpm respectively).

Water levels in Test Well #3 again declined in October 2001 until near the end of the month when levels again rose. Pumping from RLPWS #1 during this period ranged from 105 to 542 gpm and averaged 326 gpm. The rise in water levels in late October may have reflected the decline in diversions for irrigation as the irrigation ditches were

reported to be off November 6, 2001 during the City's monitoring. Ground water levels in Test Well #3 continued to rise through December 2001.

In January 2002, water levels in Test Well #3 fluctuated with a net decline in February, which may have been a reflection of pumping from RLPWS #1 (maximum, minimum and average discharge of 613, 238 and 339 gpm respectively). The water levels appeared to stabilize in March 2002 and started rising in April and May, possibly as a result of increased precipitation and runoff in WFRC.

The water levels in Test Well #3 rose and peaked in June of 2002, during which time the irrigation ditches were reported to be diverting for the 2002 season (ditches reported to be diverting June 14, 2002 during City's monitoring). The peak in ground water levels measured in Test Well #3 may have reflected increased runoff in WFRC during June. Water levels in Test Well #3 subsequently declined and appeared to slightly raise in August of 2002 to a level approximately one foot higher than that recorded in August of 2001 (maximum, minimum and average discharge of 683, 464 and 390 gpm respectively - pumping from RLPWS #1 for the period August 1 through 21, 2002).

Water level measurements made since December 2001 supports the applicant's statement in the CA that ground water levels in Test Well #3 "fluctuated, but generally showed no change in water level after pumping for one year" (December 2000 – December 2001). Production from RLPWS #1 from August 22, 2001 through August 21, 2002 ranged from 79,000 gallons per day ((gpd) (55 gpm)) to 1,311,000 gpd (910 gpm). Total volume of water produced in the above period was 213,518,000 gallons (approximately 655 acre feet or an average of about 406 gpm). The hydrograph for Test Well #3 showed an increase of about one foot in water level in the aquifer in the above time frame after test pumping for one year as described above. The hydrograph indicated that the aquifer may have received recharge that exceeded the 655 acre feet of ground water produced from RLPWS #1 during the above period.

The two wells (RLPWS #1 and RLPWS #2) will not be producing a combined total of 1200 gpm year round as inferred by WMB. The 968 af/yr in the permit application will be provided by operating both of the wells year round (January 1 – December 31) in a combination optimal to the operation of the water system by the City, at a total combined rate not to exceed an average of 600 gpm 24 hours per day for the two wells. An average of 600 gpm year round continuous production is the basis of the volume of 968 af/yr in the permit application. A continuous rate of 1200 gpm would amount to a volume of approximately 1936 af/yr which is about twice the volume requested in the permit application.

Drawdown projections using the Theis equation were estimated in Test Well #3 for both the April 2000, 72-hour test (average 920 gpm), and one year of test pumping (620 af/yr average of 384 gpm) of RLPWS #1. Results of the former (920 gpm (72-hours)) were not reported in the CA. Results of the latter analysis (620 af/yr (384 gpm)) were reported in the CA. The 620 af/yr was the volume of water produced from RLPWS #1 in one year of test pumping (December 2000 – December 2001) as reported in the CA.

Predicted drawdown in Test Well #3 using the Theis equation at the end of 72-hours of test pumping RLPWS #1 in April 2000 at an average rate of 920 gpm was 0.68 feet. This compared to an actual measured drawdown of about 2.08 feet. Predicted drawdown in Test Well #3 at the end of one year of test pumping RLPWS #1 at an average rate of 384 gpm (620 af/yr) was 3.6 feet as compared to an actual rise of ground water levels in Test Well #3 of about 0.35 feet. The results of the latter analysis were the basis for the applicant's statements in the CA, "Results of the 2001 extended testing, however, indicated that the Theis nonequilibrium equation exaggerated estimated drawdowns to offsite wells resulting from the production of 968 af/yr from RLPWS #1 and RLPWS #2".

Summary

Ground water level measurements made in Test Well #3 since December 2001, substantiate the claim made in the CA that the aquifer may have received recharge that exceeded the 620 acre feet of ground water produced from RLPWS #1 during 2001. The hydrograph for Test Well #3 and the estimates of underflow in the aquifer demonstrate both the physical availability of the requested volume of ground water in the aquifer, and the ability of the water to be produced from the aquifer without adverse impacts on existing ground water users.

The 1200 gpm will be provided by RLPWS #1 and RLPWS #2 each producing 600 gpm for a maximum of twenty four hours of continuous operation. The intent of the 1200 gpm instantaneous rate in the permit application is to assist in satisfying the City's annual peak daily demands only. The two wells (RLPWS #1 and RLPWS #2) will not be producing a combined total of 1200 gpm year round as inferred by WMB.

Existing RLPWS #1 was pumped at an average rate of 920 gpm for 72 hours in the April 2000 test pumping. The 920 gpm is approximately 77% of the requested instantaneous rate of 1200 gpm. Drawdown in Test Well #3 at the end of the pumping portion of the April 2000 test was 2.08 feet. An important implication of these observations is that the relatively small drawdown impacts observed at Test Well #3 suggest that drawdown impacts to offsite wells may be minimal due to the 1200 gpm production for 24 hours from RLPWS #1 and RLPWS #2.

3) WILL THERE BE A DIRECT INFLUENCE ON THE SURFACE WATER OF THE WEST FORK OF ROCK CREEK OR ROCK CREEK FROM THIS PROPOSED USE?

Additional field surveying was performed in August and September 2002 to establish the exact location of proposed RLPWS #2. The field survey established the relative elevation of the thalweg of WFCR immediately south of and with respect to RLPWS #1. The relative elevation of the northerly bank of WFCR on the water treatment plant property was also established by the survey.

RLPWS #1 is located approximately 65 feet north of the WFRC. The actual location of proposed RLPWS #2 will be approximately 411 feet north of WFRC and about 347 feet north west of RLPWS #1. Test well #2 is located about 16 feet east of RLPWS #1 and about 66 feet north of WFRC.

The August and September 2002 survey data and water level measurements in RLPWS #1 and Test Well #2 suggested that the water table might be from 2 to 9 feet below the WFRC adjacent to the water treatment plant property. Data from a potentiometric surface map (Figure 2.0) originally constructed as a working map for the permit application (but not submitted with the application), inferred that WFRC is generally a losing stream at least from below the point of diversion of the Harra Ditch above the water treatment plant property downstream to the confluence with Rock Creek. In addition, the water quality data obtained during test pumping in 2000 shows ground and surface water to be almost identical in chemical character.

No flow was observed in the WFRC at the water treatment plant property during an August 22, 2002 field review of the WFRC. All available water was observed being diverted from the Creek to irrigation ditches above the water treatment plant property during the field review. Pools of standing water observed in the rocks of WFRC at the water treatment plant property during the field review may have been indicative of the sediments underlying WFRC being saturated.

It was reported that there was insufficient flow in WFRC starting about June 10, 2002 to pass an adequate amount of water down to the water treatment plant property to satisfy the applicant's senior right (1.25 cubic feet per second (cfs)). The Creek was reported to be essentially dry at the water treatment plant property since June 10, 2002. (Boyer, 2002)

Typically, due to the losing nature of the WFRC, more water than the applicant's senior right has to be passed by junior upstream irrigation diversions in order to insure that the applicant's right is satisfied. Historically, the applicant generally starts working with the Water Commissioner and upstream irrigation water users between June 15 and July 1 to adjust headgates to maintain sufficient flow in WFRC to satisfy the applicant's senior right but minimize impact to the irrigation ditches. (Boyer, 2002)

The conditions observed August 22, 2002 were reported as historically typical of summer months for the WFRC. The main difference in 2002 was that the peak runoff and no flow conditions at the water treatment plant property occurred earlier (May 25, 2002 and June 10, 2002 respectively). Historically, WFRC reportedly peaks between June 15 and 20 on a yearly basis with the no flow situation typically starting between June 15 and July 1, and ending about October 15, when irrigation diversions on the Creek shut down. The earlier peak and no flow situation in 2002 were attributed to drought conditions. (Boyer, 2002)

Accordingly, historically and practically speaking, based on the applicant's experience, there generally is no water in the WFRC from which infiltration can be induced directly from the Creek by operation of RLPWS #1 and RLPWS #2 during low flow periods of June 1 through October 1. Further, because WFRC is typically dry during this period all the way downstream to the mouth, the potential for impact to other water users is minimal.

Summary

The applicant did not make a call on WFRC in 2002 for the applicant's senior right, due to insufficient water in the Creek. This allowed upstream users to cooperatively use what water was available. As previously noted, the test pumping of RLPWS #1 showed minimal impact on the hydrologic system of the WFRC as water levels in the aquifer between August, 2001 and August, 2002 rose about one foot.

The experience of the summer 2002 graphically demonstrates the practicality and the benefit to all water users of the proposed use of ground water by the applicant. The availability of water produced from RLPWS #1 and RLPWS #2 without negatively impacting either surface water or ground water users has been demonstrated by the on-going test pumping.

As previously noted, there was insufficient water in WFRC in the critical period in 2002 (after June 10, 2002) to satisfy the applicant's senior right even by historically cooperative management efforts by water users in the WFRC drainage. The WFRC was essentially dry at the water treatment plant property beginning June 10, 2002.

WFRC from the water treatment plant property downstream to the mouth is typically dry from about the middle or end of June through the middle of October. Induced infiltration from the stream will therefore, not occur during this period. In addition, there are no downstream diversions on the WFRC (no flow available for diversion) to be impacted.

REFERENCES

Boyer, Skip. August 22, 2002. Personal Conversation. City of Red Lodge Superintendent of Public Works. Red Lodge, Montana.

Boyer, Skip. November 18, 2002. Telephone Conversation. City of Red Lodge Superintendent of Public Works. Red Lodge, Montana.

Montana Department of Environmental Quality. October 4, 1999. Circular DEQ 1, Standards For Water Works. Montana Department of Environmental Quality. Helena, Montana.

APPLICATION FOR BENEFICIAL WATER USE PERMIT

Use for groundwater in excess of 35 GPM or 10 Acre-Feet per year and all surface water.

INSTRUCTIONS

Use one application for each source of supply or each development. Check all appropriate boxes and fill in each blank. If any question is not applicable, enter NA. If more space is needed, attach additional sheets. The information required in the Form 600 A or B Criteria Addendum must be submitted with this application.

A MAP MUST ACCOMPANY THIS APPLICATION AS INSTRUCTED UNDER ITEM 11.

Complete the application and submit it with the appropriate filing fee to the Water Resources Regional Office nearest you. Their addresses are listed on the back. The form will be returned if any of the pertinent information is incomplete. 210 days is the estimated processing time after an application is correct and complete.

FILING FEE: \$200.00

RECEIVED

MAR - 7 2002

DEPT. OF NATURAL RESOURCES
AND CONSERVATION
FOR DEPARTMENT USE ONLY
BILLINGS OFFICE

Application No. 30001172 Basin 43D
Priority Date 3/07/2002, 19
Time 11:30 AM PM
Rec'd By CO
Fee Rec'd 200.00
Check No. 198(a)
Transmittal No. 03-633
Refund _____

1. NAME OF APPLICANT City of Red Lodge

Mailing address 1 South Platt

City Red Lodge State MT Zip 59068

Home Phone (406) 446-1606 Other Phone (406) 446-1681

2. SOURCE OF WATER SUPPLY:

- Well (Two)
- Developed Spring
- Lake Name _____ Tributary to _____
- Stream Name _____ Tributary to _____
- Unnamed Source - Tributary to _____
- Closed Basin (A closed basin results when water drains into a depression, lake, etc. from which water escapes only by evaporation.)

3. POINT OF DIVERSION (Describe the location to the nearest 10 acres) See Figure 1.0, POD Exhibit

NW 1/4 NW 1/4 SW 1/4 Section 4 Township 8 N/S Range 20 E/W Carbon County

Lot _____ Block _____ Tract No. _____ Subdivision Name _____

Government Lot _____

1/4 1/4 1/4 Section _____ Township _____ N/S Range E/W _____ County

Lot _____ Block _____ Tract No. _____ Subdivision Name _____

Government Lot _____

4. MEANS OF DIVERSION:

- Headgate
- Well 2 @ 65 Depth in Feet 2 @ 600 Rated Capacity (GPM) or CFS
- Pipeline _____ Size 2 @ 25 to 30/pump Horsepower
- Dam 100 (TDH) per pump Lift in Feet
- Pit
- Other _____

MONTANA DEPARTMENT OF NATURAL RESOURCES AND CONSERVATION

48 N. LAST CHANCE GULCH P.O. BOX 201601 HELENA, MT 59620-1601 444-6610

WEBSITE <http://www.dnrc.mt.gov/wrd/home.htm>



5. RESERVOIR (See formulas below for computing capacity)

- Drainage device will be installed
- Existing Reservoir
- Proposed New or Enlarged Reservoir
- Reservoir will be located away from source

Capacity _____ acre-feet
 Capacity _____ acre-feet

Location: _____ 1/4 _____ 1/4 _____ 1/4 Section _____ TWP _____ NS RGE _____ EW

PIT: Surface Area _____ Acres x Maximum Depth _____ Feet x 0.5 = _____ Capacity Acre-Feet

DAM: Surface Area _____ Acres x Maximum Depth _____ Feet x 0.5 = _____ Capacity Acre-Feet

6. PERIOD OF APPROPRIATION (The period during the year when the water will be diverted, impounded, or withdrawn from the source.)

_____ Jan. 1 _____ to _____ Dec. 31 _____ Inclusive Each Year
Month / Day Month / Day

7. PROPOSED BENEFICIAL USE

- Domestic: Number of Families to be Supplied _____
- Stock: Maximum Number and Type _____
- Other: Municipal (see attached service area boundary map)
- Irrigation:
 - Sprinkler - Type _____
 - Contour Ditch
 - Other _____
 - Border Dike
 - Waterspreading/Spreader Dike

Crops to be grown: _____

If this water will be used on land already irrigated, indicate the water rights applicable to the existing irrigation.

Claim No. W-043377 W-043378 W-045736 W-045737

Permit No. _____

Certificate No. _____ Other _____

8. PLACE OF USE

County Carbon Subdivision Name Town of Red Lodge

| | | | | | | | New (N) or Supplemental (S) | | | |
|-------------|-----------|-------------|-----------|-----------|-------------------|-----------|-----------------------------|-----------|----------|----------|
| _____ Acres | _____ Lot | _____ Block | _____ 1/4 | _____ 1/4 | _____ 1/4 Section | _____ TWP | _____ NS | _____ RGE | _____ EW | _____ NS |
| _____ Acres | _____ Lot | _____ Block | _____ 1/4 | _____ 1/4 | _____ 1/4 Section | _____ TWP | _____ NS | _____ RGE | _____ EW | _____ NS |
| _____ Acres | _____ Lot | _____ Block | _____ 1/4 | _____ 1/4 | _____ 1/4 Section | _____ TWP | _____ NS | _____ RGE | _____ EW | _____ NS |
| _____ Acres | _____ Lot | _____ Block | _____ 1/4 | _____ 1/4 | _____ 1/4 Section | _____ TWP | _____ NS | _____ RGE | _____ EW | _____ NS |
| _____ Acres | _____ Lot | _____ Block | _____ 1/4 | _____ 1/4 | _____ 1/4 Section | _____ TWP | _____ NS | _____ RGE | _____ EW | _____ NS |
| _____ Acres | _____ Lot | _____ Block | _____ 1/4 | _____ 1/4 | _____ 1/4 Section | _____ TWP | _____ NS | _____ RGE | _____ EW | _____ NS |
| _____ Acres | _____ Lot | _____ Block | _____ 1/4 | _____ 1/4 | _____ 1/4 Section | _____ TWP | _____ NS | _____ RGE | _____ EW | _____ NS |

N/A TOTAL ACRES

Non - Irrigation : See attached Figure 1.1, Service Area Boundary Exhibit

Purpose of use Municipal if same as Point of Diversion, CHECK

_____ 1/4 _____ 1/4 _____ 1/4 Section _____ TWP _____ NS RGE _____ EW County _____

Lot _____ Block _____ Tract No. _____ Government Lot _____

Purpose of use _____ if same as Point of Diversion, CHECK

_____ 1/4 _____ 1/4 _____ 1/4 Section _____ TWP _____ NS RGE _____ EW County _____

Lot _____ Block _____ Tract No. _____ Government Lot _____

9. AMOUNT OF WATER, PURPOSE OF USE (IRRIGATION, STOCK, DOMESTIC, OTHER), AND PERIOD OF USE

1200 ^{CFS} ~~GPM~~ up to 968 for _____ from Jan. 1 to Dec. 31
Acre-Foot Use Month/Day Month/Day
 _____ ^{CFS} ~~GPM~~ up to _____ for _____ from _____ to _____
Acre-Foot Use Month/Day Month/Day
 _____ ^{CFS} ~~GPM~~ up to _____ for _____ from _____ to _____
Acre-Foot Use Month/Day Month/Day
 TOTAL AMOUNT REQUESTED 1200 ^{CFS} ~~GPM~~ UP TO 968 ACRE-FEET PER YEAR.

10. PROPOSED COMPLETION PERIOD

5 Years How many years will be needed to complete the project and put the water to use after the permit is received?
 (NOTE: The water use must not begin until a permit is received.)

11. LOCATION MAP

A map showing the following items must accompany this application. An ASCS aerial photo or USGS topographic map may be used.

- a) Section Corners and Numbers
- b) Township and Range Numbers
- c) Point of Diversion
- d) Place of Use (Irrigated Acres, Stock Tanks, etc.)
- e) Location of Conveyance Ditch, Pipeline, etc.

12. REMARKS (Provide any additional information to explain the proposed appropriation.)

This will be a two -phase project. Well #1 will be put to use as soon as possible.
Some test pumping has been performed. Additional test pumping is required. Well #2
will be implemented within five years.

13. ARE YOU REPRESENTED BY COUNSEL? YES (complete the following) NO (go on to no. 14)

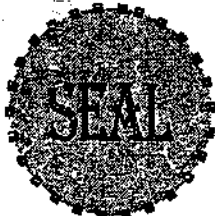
NAME OF COUNSEL Moore O'Connell & Reffing, PC
 Mailing address P.O. Box 1288
 City Bozeman State MT Zip 59771-1288
 Phone (406) 587-4078

14. AFFIDAVIT

I affirm that statements appearing here are to the best of my knowledge true and correct. I also affirm I have possessory interest in the property where the water is to be put to beneficial use and if applicable, exclusive property rights in the groundwater development or the written consent of the person with those rights.

Applicant's Signature [Signature] Date 1-29-02

Subscribed and sworn before me this 29th day of January, 2002



Notary's Signature [Signature]
 Notary for the State of Montana
 Residing at Red Lodge
 My commission expires June 8, 2004

WATER RESOURCES REGIONAL OFFICES

Billings

Airport Industrial Park
1371 Rimtop Drive
Billings, MT 59105-1978
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Fax: 406-247-4416
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Rosebud, Stillwater, Sweet Grass,
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March 5, 2002
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HKM
ENGINEERING
222 N. 32nd Street
Suite 700
P.O. Box 31318
Billings, MT 59107.1318
Phone: 406.656.6399
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www.hkminc.com

Mr. Marty Van Cleave
Billings Water Resources Regional Office
Airport Industrial Park
1371 Rimtop Drive
Billings, Montana 59105-1978

RE: Application For Beneficial Water Use Permit (1200 gpm and 968 ac-ft/yr of Groundwater), Red Lodge, Montana

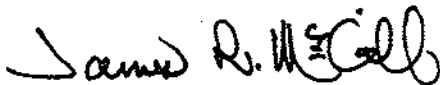
Dear Mr. Van Cleave:

Enclosed are a completed Form 600 and a Criteria Addendum Report for the subject Permit Application. Also enclosed as a supporting document is one copy of the Drilling and Completion Report (working draft), Red Lodge 12.75 Inch O.D. Test Public Water Supply Well, Red Lodge, Montana.

A check for \$200.00 is included to cover the filing fee for the Permit Application.

Sincerely,

HKM ENGINEERING INC.



James R. McGill, P.G.

Enclosures: Form 600
Criteria Addendum Report
Drilling and Completion Report

cc: Mayor Brian Roat, City of Red Lodge
Skip Boyer, City of Red Lodge
Michael J.L. Cusick, Moore, O'Connel & Refling P.C.

Place of Use:

| ID | Qtr | Sec | Twp | Rge | County |
|----|-----|-----|-----|-----|--------|
| 1 | | 21 | 7S | 20E | CARBON |
| 2 | | 22 | 7S | 20E | CARBON |
| 3 | | 23 | 7S | 20E | CARBON |
| 4 | | 26 | 7S | 20E | CARBON |
| 5 | | 27 | 7S | 20E | CARBON |
| 6 | | 28 | 7S | 20E | CARBON |
| 7 | | 33 | 7S | 20E | CARBON |
| 8 | | 34 | 7S | 20E | CARBON |
| 9 | NW | 35 | 7S | 20E | CARBON |
| 10 | | 3 | 8S | 20E | CARBON |
| 11 | | 4 | 8S | 20E | CARBON |
| 12 | | 5 | 8S | 20E | CARBON |
| 13 | | 8 | 8S | 20E | CARBON |
| 14 | | 9 | 8S | 20E | CARBON |

THE PLACE OF USE INCLUDES ALL LAND WITHIN THE MUNICIPAL WATER SERVICE AREA FOR THE CITY OF RED LODGE.



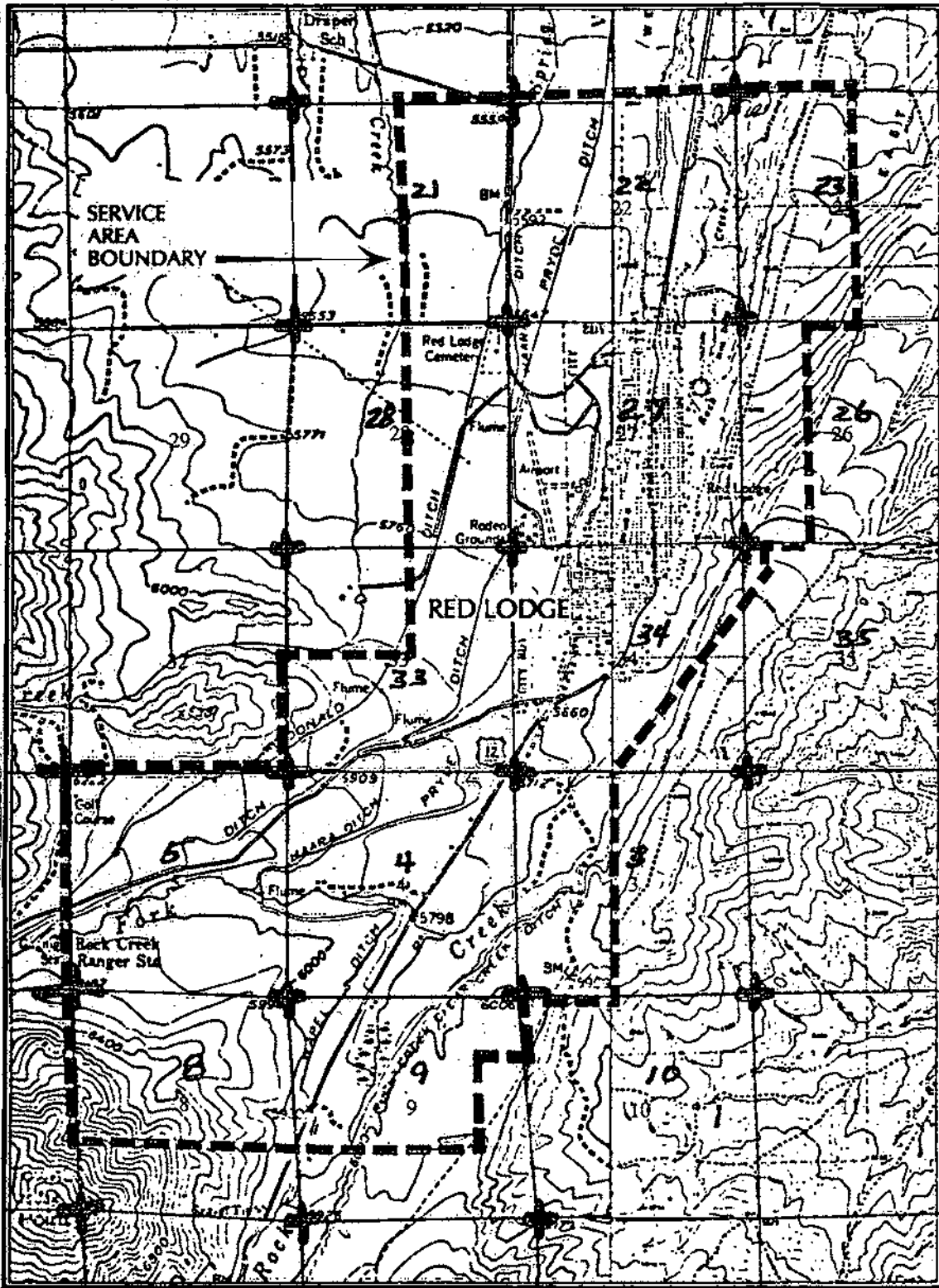
Maps:

Any and all maps—
excluding ownership

Maps

FILM

RED LODGE, MONTANA



R 20 E

Q:\1051M\0147\drccad\casnccp.dwg BJ May 2001 PRELIMINARY DRAFT

APPLICATION FOR BENEFICIAL WATER USE PERMIT
 SERVICE AREA BOUNDARY EXHIBIT
 RED LODGE, MONTANA

FIGURE
 1.1



HOM Engineering Inc.
 Granite Tower Building
 222 N. 32nd St., Suite 700
 P.O. Box 31318
 Billings, MT 59107-1318
 (406) 656-6399, FAX (406) 656-6398

TO REVIEW THE
LARGE MAP
ATTACHED TO THIS
WATER RIGHT,
PLEASE PULL THE
ORIGINAL FILE

B



Objections/correspondence:

Reverse chronological order—

- 612 (if objections to file)
 - Withdrawal forms
 - Objection log sheet
 - Standard letters
 - Objection form

**Objections/
Correspondence**

FILMED

OBJECTOR LIST

| | | |
|---------------------------|------------------------|-------------|
| Application Number | Regional Office | Date |
| 43D-30001172 | BILLINGS | 4/4/2003 |

APPLICANT

| | |
|---|--|
| Name/Address/Phone # | Counsel/Consultant - Name/Address/Phone # |
| CITY OF RED LODGE 1 SOUTH PLATT RED LODGE, MT 59068 | MOORE O'CONNEL & REFLING, PC PO BOX 1288 <i>Mike Casick</i> BOZEMAN MT 59771-1288 406-587- 4878 <i>5511 ext. 316</i> |

OBJECTORS

| Obj. # | Name/Address/Phone # | Counsel/Consultant - Name/Address/Phone # |
|--------|--|---|
| 462 | CHARLES DAPPLES PO BOX 387 RED LODGE MT 59068 406- 535 -4989 <i>698-4989</i> | C88811 ✓ |
| 461 | JODIE AND JUDY CHRISTENSEN PO BOX 1202 RED LODGE MT 59068 406-446-3093 406-446-1784 | C88843 ✓ |
| 458 | CAROLE MARLENE TETRAIT BOX 2271 RED LODGE MT 59068 406-4461708 | C109707 <i>HAVE AGREEMENT</i> ✓ |
| 457 | JIM AND LOUISE GRAFF 1008 POLY DRIVE, A3 BILLINGS, MT 59102 406- 459 -4626 <i>259-4626</i> 406-446-3418 | C92939 <i>HAVE AGREEMENT</i> ✓ |

*Cont. Rm - City Council Chamber,
City Hall Bldg*

June 4th 1:30 (Wed) 2003

HKM - M.G. 11

DEPARTMENT OF NATURAL
RESOURCES AND CONSERVATION



JUDY MARTZ
GOVERNOR

DIRECTOR'S OFFICE (406) 444-2074
TELEFAX NUMBER (406) 444-2684

STATE OF MONTANA

WATER RESOURCES DIVISION (406) 444-6601
TELEFAX NUMBERS (406) 444-0533 / (406) 444-5918
<http://www.dnrc.state.mt.us/wrd/home.htm>

48 NORTH LAST CHANCE GULCH
PO BOX 201601
HELENA, MONTANA 59620-1601

April 4, 2003

CHARLES DAPPLES
PO BOX 387
RED LODGE MT 59068

JODIE AND JUDY CHRISTENSEN
PO BOX 1202
RED LODGE MT 59068

CAROLE MARLENE TETRALT
BOX 2271
RED LODGE MT 59068

JIM AND LOUISE GRAFF
1008 POLY DRIVE, A3
BILLINGS, MT 59102

Dear Objector,

This is in reference to your objection to Application No. 43D-30001172 by City of Red Lodge. Your objection is correct and complete. There were no valid water quality issues raised in your objection. Therefore, water quality can not be an issue during the objection mitigation phase or the hearings process.

We may contact you to set up a meeting to discuss the issues and give all parties an opportunity to reach a settlement. If a meeting is not held, each party will be contacted individually.

If it is determined an administrative hearing is necessary, the application will be placed on the hearings docket, and a hearings examiner will be appointed to the case. You will be given at least 30-60 days' advance notice of the scheduled hearing date. Enclosed is information regarding the hearings procedure and burden of proof requirements. It will be important for you to familiarize yourself with this material to be adequately prepared to present your case.

If you have any questions, please contact the DNRC Billings Regional Office, Airport Business Park, 1371 Rintop Drive, Billings, MT 59105-1978, 406-247-4415

Sincerely,


Jill Wilkinson
Hearings Assistant
Water Rights Bureau
406-444-6615

Enclosures: Hearings Information
Attorney Notice
Change Criteria

STATE WATER PROJECTS
BUREAU
(406) 444-6646

WATER MANAGEMENT
BUREAU
(406) 444-6637

WATER OPERATIONS
BUREAU
(406) 444-0860

WATER RIGHTS
BUREAU
(406) 444-6610

DEPARTMENT OF NATURAL
RESOURCES AND CONSERVATION



JUDY MARTZ
GOVERNOR

DIRECTOR'S OFFICE (406) 444-2074
TELEFAX NUMBER (406) 444-2684

STATE OF MONTANA

WATER RESOURCES DIVISION (406) 444-6601
TELEFAX NUMBERS (406) 444-0533 / (406) 444-5918
<http://www.dnrc.state.mt.us/wrd/home.htm>

48 NORTH LAST CHANCE GULCH
PO BOX 201601
HELENA, MONTANA 59620-1601

April 4, 2003

MOORE O'CONNEL & REFLING, PC
PO BOX 1288
BOZEMAN MT 59771-1288

Dear Counsel,

The deadline for filing objections to your client's Application No. 43D-30001172 has expired. Your client received 4 objections.

We may contact you to set up a meeting to discuss issues and give all parties an opportunity to reach a settlement. If a meeting is not held, each party will be contacted individually.

If it is determined an administrative hearing is necessary, the application will be placed on the hearings docket, and a hearings examiner will be appointed to the case. You will be given at least 30-60 days' advance notice of the scheduled hearing date. Enclosed is information regarding the hearings procedure and burden of proof requirements. It is important for you to familiarize yourself with this material to be adequately prepared to present your case.

If you have any questions, please contact the Department of Natural Resources and Conservation, C Billings Regional Office, Airport Business Park, 1371 Rimtop Drive, Billings, MT 59105-1978, 406-247-4415

Sincerely,

A handwritten signature in cursive script that reads "Jill Wilkinson".

Jill Wilkinson
Hearings Unit
Water Rights Bureau
406-444-6615

Enclosures: Objection Copies
 Hearings Information
 Permit Criteria

DEPARTMENT OF NATURAL
RESOURCES AND CONSERVATION
BILLINGS WATER RESOURCES REGIONAL OFFICE



JUDY MARTZ, GOVERNOR

AIRPORT BUSINESS PARK
1371 RIMTOP DRIVE

STATE OF MONTANA

(406) 247-4415
(406) 247-4416 (FAX)

BILLINGS, MONTANA 59105-1978

May 30, 2003

Michael Cusick, Attorney at Law
Moore, O'Connell & Refling, PC
P.O. Box 1288
Bozeman, Mt. 59771

Dear Mike:

This is in reference to your client's application for a beneficial water use permit No. 43D - 30001172 for the City of Red Lodge. I have contacted all the parties and we have agreement on a time when we can all get together. The meeting is on Wednesday, June 4th at 1:30 P.M., City Hall, the city council chamber's conference room, and the address is 1 South Platt in Red Lodge. The meeting is with all four objectors, and the applicant, City of Red Lodge, and their attorney Mike Cusick of Moore, O'Connell & Refling and HKM Engineering.

We will be discussing the city's proposed project, and the next steps in this application process addressing the objections we received. We will also discuss with everyone to see if there is some agreement for the DNRC to issue a water use permit to the applicant with possible conditions.

If you have any questions about this process prior to this meeting, please feel free to contact me at 247-4415.

Sincerely,

A handwritten signature in black ink, appearing to read "Keith Kerbel".

Keith Kerbel
Regional Manager
DNRC / Billings Water Resources

C: City of Red Lodge
HKM Engineering,
Jim McGill
Ralph Saunders

DEPARTMENT OF NATURAL
RESOURCES AND CONSERVATION
BILLINGS WATER RESOURCES REGIONAL OFFICE



JUDY MARTZ, GOVERNOR

AIRPORT BUSINESS PARK
1371 RIMTOP DRIVE

STATE OF MONTANA

(406) 247-4415
(406) 247-4416 (FAX)

BILLINGS, MONTANA 59105-1978

May 30, 2003

Jim & Louise Graff
1008 Poly
Billings, Mt. 59102

Dear Mr. & Mrs. Graff:

This is in reference to your objection to an application for a beneficial water use permit No. 43D - 30001172 by the City of Red Lodge. I have contacted all the parties and we have agreement on a time when we can all get together. The meeting is on Wednesday, June 4th at 1:30 P.M., City Hall, the city council chamber's conference room, and the address is 1 South Platt in Red Lodge. The meeting is with all four objectors, and the applicant, City of Red Lodge, and their attorney Mike Cusick of Moore, O'Connel & Refling and HKM Engineering.

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If you have any questions about this process prior to this meeting, please feel free to contact me at 247-4415.

Sincerely,

A handwritten signature in black ink, appearing to read "Keith Kerbel".

Keith Kerbel
Regional Manager
DNRC / Billings Water Resources

DEPARTMENT OF NATURAL
RESOURCES AND CONSERVATION
BILLINGS WATER RESOURCES REGIONAL OFFICE



JUDY MARTZ, GOVERNOR

AIRPORT BUSINESS PARK
1371 RIMTOP DRIVE

STATE OF MONTANA

(406) 247-4415
(406) 247-4416 (FAX)

BILLINGS, MONTANA 59105-1978

May 30, 2003

Carole Tetralt
Box 1202
Red Lodge, Mt. 59068

Dear Ms. Tetralt:

This is in reference to your objection to an application for a beneficial water use permit No. 43D - 30001172 by the City of Red Lodge. I have contacted all the parties and we have agreement on a time when we can all get together. The meeting is on Wednesday, June 4th at 1:30 P.M., City Hall, the city council chamber's conference room, and the address is 1 South Platt in Red Lodge. The meeting is with all four objectors, and the applicant, City of Red Lodge, and their attorney Mike Cusick of Moore, O'Connel & Refling and HKM Engineering.

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If you have any questions about this process prior to this meeting, please feel free to contact me at 247-4415.

Sincerely,

A handwritten signature in black ink, appearing to read "Keith Kerbel".

Keith Kerbel
Regional Manager
DNRC / Billings Water Resources

DEPARTMENT OF NATURAL
RESOURCES AND CONSERVATION
BILLINGS WATER RESOURCES REGIONAL OFFICE



JUDY MARTZ, GOVERNOR

AIRPORT BUSINESS PARK
1371 RIMTOP DRIVE

STATE OF MONTANA

(406) 247-4415
(406) 247-4416 (FAX)

BILLINGS, MONTANA 59105-1978

May 30, 2003

Jodie & Judy Christensen
P.O. Box 1202
Red Lodge, Mt. 59068

Dear Mr. & Mrs. Christensen:

This is in reference to your objection to an application for a beneficial water use permit No. 43D - 30001172 by the City of Red Lodge. I have contacted all the parties and we have agreement on a time when we can all get together. The meeting is on Wednesday, June 4th at 1:30 P.M., City Hall, the city council chamber's conference room, and the address is 1 South Platt in Red Lodge. The meeting is with all four objectors, and the applicant, City of Red Lodge, and their attorney Mike Cusick of Moore, O'Connel & Refling and HKM Engineering.

We will be discussing the city's proposed project, and the next steps in this application process addressing the objections we received. We will also discuss with everyone to see if there is some agreement for the DNRC to issue a water use permit to the applicant with possible conditions.

If you have any questions about this process prior to this meeting, please feel free to contact me at 247-4415.

Sincerely,

A handwritten signature in black ink, appearing to read "Keith Kerbel".

Keith Kerbel
Regional Manager
DNRC / Billings Water Resources

DEPARTMENT OF NATURAL
RESOURCES AND CONSERVATION
BILLINGS WATER RESOURCES REGIONAL OFFICE



JUDY MARTZ, GOVERNOR

AIRPORT BUSINESS PARK
1371 RIMTOP DRIVE

STATE OF MONTANA

(406) 247-4415
(406) 247-4416 (FAX)

BILLINGS, MONTANA 59105-1978

May 30, 2003

Charles Dapples
P.O. Box 387
Red Lodge, Mt. 59068

Dear Mr. Dapples:

This is in reference to your objection to an application for a beneficial water use permit No. 43D - 30001172 by the City of Red Lodge. I have contacted all the parties and we have agreement on a time when we can all get together. The meeting is on Wednesday, June 4th at 1:30 P.M., City Hall, the city council chamber's conference room, and the address is 1 South Platt in Red Lodge. The meeting is with all four objectors, and the applicant, City of Red Lodge, and their attorney Mike Cusick of Moore, O'Connel & Refling and HKM Engineering.

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If you have any questions about this process prior to this meeting, please feel free to contact me at 247-4415.

Sincerely,

A handwritten signature in black ink, appearing to read "Keith Kerbel".

Keith Kerbel
Regional Manager
DNRC / Billings Water Resources

THE LAW FIRM
MOORE, O'CONNELL & REFLING

A PROFESSIONAL CORPORATION

PERRY J. MOORE
BARRY G. O'CONNELL
MARK D. REFLING
WM. RUSSELL McELYEA
CINDY E. YOUNKIN
ALLAN H. BARIS
MICHAEL J. L. CUSICK

BART L. RICKENBAUGH (1966-2002)

601 HAGGERTY LANE
SUITE 10, LIFE OF MONTANA BUILDING

Reply to
P.O. BOX 1288
BOZEMAN, MONTANA 59771-1288
TELEPHONE: (406) 587-5511
FAX: (406) 587-9079
E-MAIL: morlaw@qwest.net

August 13, 2003

RECEIVED

AUG 14 2003

DEPT. OF NATURAL RESOURCES
ADMINISTRATIVE SERVICES
BILLING CLERK

Montana Department of Natural Resources & Conservation
Water Resources Division/Water Rights Bureau
1371 Rintop Drive
Billings, MT 59105-1978

RE: Withdrawals of Objections - City of Red Lodge/Application No.
43D-30001172

Our file no: 20042-023 Well Application/City of R. Lodge

Dear Ladies & Gentlemen:

Enclosed, please find the original and one copy of a Withdrawal of Objection signed by Carole Tetrault and Jim and Louise Graff with regard to the City of Red Lodge's beneficial water use permit application no. 43D-30001172. Please return a filed or conformed copy to our office in the enclosed envelope. Thank you.

Sincerely,


JILL A. TRESSLER

Paralegal to Michael J.L. Cusick

JT/jat

cc: Larry Schuster/Mayor Roat w/out encls.

Carole Tetrault w/out encls.

Jim & Louise Graff w/out encls.

Encs. (2-Withdrawal of Objection - Graff, Tetrault)
J2938.WPD

THE LAW FIRM
MOORE, O'CONNELL & REFLING

A PROFESSIONAL CORPORATION

PERRY J. MOORE
BARRY G. O'CONNELL
MARK D. REFLING
WM. RUSSELL McELYEA
CINDY E. YOUNKIN
ALLAN H. BARIS
MICHAEL J. L. CUSICK
JENNIFER L. FARVE

BART L. RICKENBAUGH (1966-2002)

LIFE OF MONTANA BUILDING, SUITE 10
601 HAGGERTY LANE
BOZEMAN, MONTANA 59715
Reply to
P.O. BOX 1288
BOZEMAN, MONTANA 59771-1288
TELEPHONE: (406) 587-5511
FAX: (406) 587-9079
E-MAIL: morlaw@qwest.net

September 8, 2004

Marty Van Cleave
Keith Kerbel
Department of Natural Resources
& Conservation
Airport Industrial Park
1371 Rimtop Drive
Billings, MT 59105

RECEIVED

SEP 09 2004

DEPT. OF NATURAL RESOURCES
AND CONSERVATION
BILLINGS OFFICE

RE: Dapples' Withdrawal of Objection
to City's Permit Application
Our file no: 20042\023

Dear Keith and Marty:

Enclosed is a Withdrawal of Objection signed by Charles Dapples concerning his objection to the City of Red Lodge's beneficial water use permit application no. 43D-30001172.

I would appreciate it if you would file the Withdrawal in the permit application file. Thank you for your assistance.

Sincerely,



MICHAEL J. L. CUSICK

MJLC/smk
cc: City of Red Lodge (w/encl.)
Enc.
SK7594.WPD

THE LAW FIRM
MOORE, O'CONNELL & REFLING
A PROFESSIONAL CORPORATION

PERRY J. MOORE
BARRY G. O'CONNELL
MARK D. REFLING
WM. RUSSELL McFLYEA
CINDY E. YOUNKIN
ALLAN H. BARIS
MICHAEL J. L. CUSICK

BART L. RICKENBAUGH (1966-2002)

601 HAGGERTY LANE
SUITE 10, LIFE OF MONTANA BUILDING

Reply to
P.O. BOX 1288
BOZEMAN, MONTANA 59771-1288
TELEPHONE: (406) 587-5511
FAX: (406) 587-9079
E-MAIL: morlaw@owest.net

September 28, 2004

Marty Van Cleave and Keith Kerbel
Dept. of Natural Resources and Conservation
Billings Water Resources Regional Office
Airport Business Park
1371 Rintop Drive
Billings, MT 59105-1978

RE: City of Red Lodge Application for Beneficial Water
Use No. 43D-30001172
Our File No. 20042\023

Dear Marty and Keith:

Enclosed, please find an Original executed Withdrawal of Objection signed by Jodie and Judy Christensen regarding the City of Red Lodge's application for a beneficial water use permit as referenced above. Please file this document and return a conformed copy to my office as soon as possible.

You should now have withdrawals from each objector on this application. If you do not, please let me know. Since the objections have all been withdrawn, DNRC can now issue the permit. I would appreciate it if you would let me know how long it will take to complete this process.

Should you have any further questions, please let me know.

Sincerely,



MICHAEL J. L. CUSICK

MJLC/jat

Enc. (1)

cc: Mayor Gessling w/enc.
Larry Schuster w/enc.
Kent Young w/out enc.

J3970.WPD

RECEIVED

SEP 29 2004

**DEPT. OF NATURAL RESOURCES
AND CONSERVATION
BILLINGS OFFICE**

RECEIVED

AUG 14 2003

BEFORE THE DEPARTMENT OF
OF NATURAL RESOURCES AND CONSERVATION
OF THE STATE OF MONTANA

DEPT. OF NATURAL RESOURCES
GENERAL OFFICE

Client _____

File No. _____

Subfile REC'D JUL 30 2003

Date _____

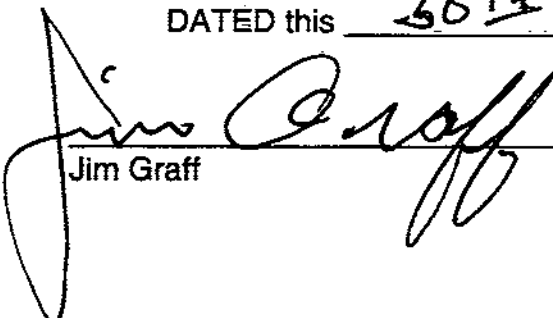
IN THE MATTER OF THE APPLICATION)
FOR BENEFICIAL WATER USE PERMIT)
43D-30001172)

WITHDRAWAL OF OBJECTION

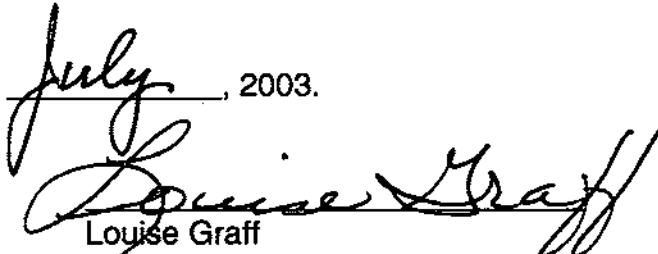
COMES NOW, **JIM GRAFF and LOUISE GRAFF**, and withdraw their Objection to the City of Red Lodge's beneficial water use permit application no. 43D-30001172.

It is no longer necessary to have a hearing before the Department of Natural Resources and Conservation regarding the Objector's objections to the above listed application.

DATED this 30th day of July, 2003.



Jim Graff



Louise Graff

ORIGINAL

RECEIVED

AUG 14 2003

BEFORE THE DEPARTMENT OF
OF NATURAL RESOURCES AND CONSERVATION
OF THE STATE OF MONTANA

DEPT. OF NATURAL RESOURCES
AND CONSERVATION
Client: RED LODGE
File No. _____
Subfile: RE: JUL 30 2003
Date _____

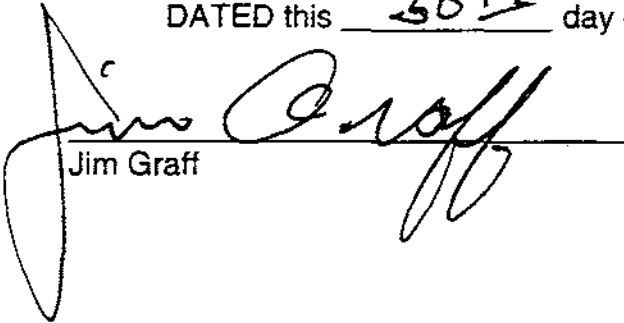
IN THE MATTER OF THE APPLICATION)
FOR BENEFICIAL WATER USE PERMIT)
43D-30001172)

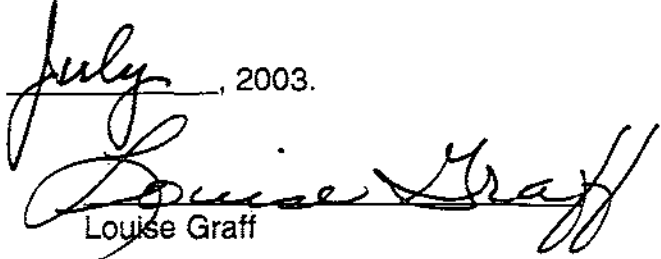
WITHDRAWAL OF OBJECTION

COMES NOW, **JIM GRAFF and LOUISE GRAFF**, and withdraw their Objection to the City of Red Lodge's beneficial water use permit application no. 43D-30001172.

It is no longer necessary to have a hearing before the Department of Natural Resources and Conservation regarding the Objector's objections to the above listed application.

DATED this 30th day of July, 2003.


Jim Graff


Louise Graff

COPY

RECEIVED

AUG 14 2003

BEFORE THE DEPARTMENT OF
OF NATURAL RESOURCES AND CONSERVATION DEPT. OF NATURAL RESOURCES
OF THE STATE OF MONTANA AND
BENEFICIAL USE

IN THE MATTER OF THE APPLICATION)
FOR BENEFICIAL WATER USE PERMIT)
43D-30001172)
)

WITHDRAWAL OF OBJECTION

COMES NOW, **CAROLE MARLENE TETRAULT**, and withdraws her Objection to the City of Red Lodge's beneficial water use permit application no. 43D-30001172.

It is no longer necessary to have a hearing before the Department of Natural Resources and Conservation regarding this Objector's objections to the above listed application.

DATED this 14th day of August, 2003.

Carole Marlene Tetrault
Carole Marlene Tetrault

ORIGINAL

BEFORE THE DEPARTMENT OF
OF NATURAL RESOURCES AND CONSERVATION
OF THE STATE OF MONTANA

RECEIVED

AUG 14 2003

DEPT. OF NATURAL RESOURCES
AND CONSERVATION
BUTTE MONTANA

IN THE MATTER OF THE APPLICATION)
FOR BENEFICIAL WATER USE PERMIT)
43D-30001172)

WITHDRAWAL OF OBJECTION

COMES NOW, **CAROLE MARLENE TETRAULT**, and withdraws her Objection to the City of Red Lodge's beneficial water use permit application no. 43D-30001172.

It is no longer necessary to have a hearing before the Department of Natural Resources and Conservation regarding this Objector's objections to the above listed application.

DATED this 4th day of August, 2003.

Carole Marlene Tetrault
Carole Marlene Tetrault

COPY

BEFORE THE DEPARTMENT OF
OF NATURAL RESOURCES AND CONSERVATION
OF THE STATE OF MONTANA

IN THE MATTER OF THE APPLICATION)
FOR BENEFICIAL WATER USE PERMIT)
43D-30001172)
)

WITHDRAWAL OF OBJECTION

COMES NOW, **CHARLES DAPPLES**, and withdraws his Objection to the City of Red Lodge's beneficial water use permit application no. 43D-30001172.

It is no longer necessary to have a hearing before the Department of Natural Resources and Conservation regarding this Objector's objections to the above listed application.

DATED this 19th day of Aug, 2004.



Charles Dapples

Client _____
File No. _____
Subfile _____
Date REC'D SEP 29 2004

BEFORE THE DEPARTMENT OF
OF NATURAL RESOURCES AND CONSERVATION
OF THE STATE OF MONTANA

IN THE MATTER OF THE APPLICATION)
FOR BENEFICIAL WATER USE PERMIT)
43D-30001172)
)

WITHDRAWAL OF OBJECTION

COME NOW, **JODIE CHRISTENSEN** and **JUDY CHRISTENSEN**, and withdraw their Objection to the City of Red Lodge's beneficial water use permit application no. 43D-30001172.

It is no longer necessary to have a hearing before the Department of Natural Resources and Conservation regarding this Objector's objections to the above listed application.

DATED this 24TH day of AUGUST, 2004.

Jodie W. Christensen
Jodie Christensen

Judy Christensen
Judy Christensen

RECEIVED

SEP 29 2004

DEPT. OF NATURAL RESOURCES
AND CONSERVATION
BILLINGS OFFICE

PERMIT OBJECTION DETERMINATION

Objection # 457 Application No. 43D-30001172 Objector Name Craff

CORRECT AND COMPLETE DETERMINATION

- Yes No Is the objection postmarked or received on or before the objection deadline?
- Yes No Is the correct filing fee paid?
- Yes No Is the name and address of the objector provided?
- Yes No Is the form signed?

All of the above and one of the following must be checked yes for the objection to be correct/complete.

- Yes No Did the objector provide information indicating why the applicant cannot prove water is physically available at the proposed point of diversion in the amount needed?

There is water physically available at the proposed point of diversion in the amount that the applicant seeks to appropriate; and water can reasonably be considered legally available during the period in which the applicant seeks to appropriate, in the amount requested, based on the records of the department and other evidence provided to the department. Legal availability is determined using an analysis involving the following factors: identification of physical water availability; identification of existing legal demands on the source of supply throughout the area of potential impact by the proposed use; and analysis of the evidence on physical water availability and the existing legal demands, including but not limited to a comparison of the physical water supply of water.

- Yes No Did the objector provide information indicating why water rights of prior appropriators will be adversely affected, or why the applicant cannot exercise and control the project to ensure prior appropriators water right will be satisfied.

The water rights of a prior appropriation under an existing water right, a certificate, a permit, or a state water reservation will not be adversely affected. In this subsection, (1)(b), adverse effect must be determined based on a consideration of an applicant's plan for the exercise of the permit that demonstrates that the applicant's use of the water will be controlled so the water right of a prior appropriator will be satisfied.

- Yes No Did the objector provide information indicating why the applicants proposed means of diversion, construction, or operating of the diversion works is not adequate?

- Yes No Did the objector provide information indicating why the applicant's use cannot be considered beneficial or that the flow and volume requested is not reasonable?

- Yes No Did the objector provide information indicating information showing why we could not believe the applicant has possessory interest or written consent of the person with possessory interest in the property?

- Yes No Did the objector provide substantial credible information to show that one of the following criteria may not be met?

- Water Quality Issue 85-2-311(f)
- Effect on classification of water 75-5-301(1) and 85-2-311(g)
- Effect on effluent limitations of a discharge permit holder 85-2-311(h)

OBJECTION VALIDITY

To be valid, both of the following must be checked yes.

- Yes No The objector filed a correct and complete objection. (timely, name & address; fee)
- Yes No The objector has property, water rights, or interests that would be adversely affected by the proposed appropriation.

And one or both of the following must be checked yes.

- Yes No The objector filed a valid standard criteria objection. (85-2-311(1)a-e)
- Yes No The objector filed a valid water quality criteria objection. (85-2-311(1)f-h)

- Yes No IS OBJECTION VALID?

If No, date deficiency letter sent: _____

If No, date deficiency response received: _____

Reviewed By: _____

Jan Range

Date: 3/27/03

OBJECTION TO APPLICATION
INSTRUCTIONS

Use this form when objecting to an application for a water use permit, change authorization or reservation of water. Use one form for each application.

A person has standing to file an objection if his or her property, water rights, or interests would be adversely affected by the proposed appropriation. Individual water right owners must file separate objections.

A CORRECT AND COMPLETE OBJECTION FORM MUST BE RECEIVED OR POSTMARKED ON OR BEFORE THE DEADLINE SPECIFIED IN THE PUBLIC NOTICE.

FILING FEE: \$25.00 (Enclosed)

RECEIVED

MAR 11 2003

D.N.R.C.

457

FOR DEPARTMENT USE ONLY

Postmarked Date 3-10-03
Date Received 3-11-03
Rec'd By PG
Fee Rec'd 25.00
Check No. 364
Transmittal No. _____
Refund _____

1. NAME OF OBJECTOR JIM + LOUISE GRAFF
Mailing Address 1008 POLY DRIVE, A3
City BILLINGS State MT Zip 59102
Home Phone 259-4626 Other Phone 446-3418 Red Lodge

2. APPLICATION BEING OBJECTED TO: Number 43 D 3000172
Applicant Name: CITY OF RED LODGE

3. STATE THE FACTUAL BASIS OF YOUR OBJECTION
- a) OBJECTION TO PERMIT APPLICATION must provide facts tending to show one or more of the criteria in Section 85-2-311, MCA are not met.
 - b) OBJECTION TO CHANGE APPLICATION must provide facts tending to show one or more of the criteria in Section 85-2-402, MCA are not met.

NOTE: Water quality objections must contain substantial credible information establishing to the satisfaction of the department that the water quality criteria cannot be met by the applicant.

A home without water is unliveable & unseparable. Our ground water well is 29 ft. deep. It has provided us with consistant flow & quality water for 20 yrs. It lies down stream miles a short distance from the current city well and the two city proposed large wells that possibly could pump every minute of every day. This could pump our ground water dry. Especially in our drought cycle years. WMB Hydrologist Bill Witman reports that the city has not proven that the 2 wells will NOT impact nearby wells negatively. (Report Attached)



4. STATE THE BASIS OF YOUR WATER RIGHT, if you are claiming your water right will be affected.

- (W) Statement of Claim No. _____
- (P) Permit to Appropriate Water No. _____
- (C) Certificate of Water Right No. 92939-430 (ATTACHED)
- (D) Final Decree No. _____
- (M/R) Reservation of Water No. _____
- (E) Exempt Existing Water Right (no claim filed; complete items below)

THIS INFORMATION ONLY REQUIRED FOR EXEMPT RIGHTS.

Date of First Use: _____
 Name of Appropriator: _____
 Type of Use: Stock Domestic
 Amount Used: _____ Flow Rate: _____ Gallons Per Minute: _____ Volume: _____ Acre-Feet
 Point of Diversion: _____
 1/4 1/4 1/4 Section _____ Twp _____ N/S, Rge _____ E/W _____ County _____
 Lot _____ Block _____ Tract No. _____ Subdivision Name _____

5. STATE ANY CONDITIONS OR MODIFICATIONS UNDER WHICH YOU WOULD AGREE TO THE ISSUANCE OF THE PERMIT OR AUTHORIZATION TO CHANGE.

EITHER MY WELL IS DEEPEINED TO ASSURE US OF ACCEPTABLE WATER FLOW & QUALITY BY THE CITY OF RED LODGE - OR THAT CITY PAYS ALL COSTS TO HOOK US UP TO ITS WATER LINE AND CHARGES US NOTHING FOR ITS WATER (OUR WATER, NOW, IS FREE)

6. OBJECTOR'S SIGNATURE [Signature] DATE 3/9/2003

7. ARE YOU REPRESENTED BY COUNSEL? YES NO

8. PERSON PREPARING THIS FORM, if different from objector

9. COUNSEL, if any

Name _____ Mailing Address _____ City, State, Zip _____ Phone _____

WATER RESOURCES REGIONAL OFFICES

- Billings**
 Airport Business Park
 1371 Rintop Drive
 Billings, MT 59105-1978
 Phone: 406-247-4415
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- Glasgow**
 222 6th Street South
 P.O. Box 1269
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 Fax: 406-442-9315
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 109 Cooperative Way, Suite 110
 Kalispell, MT 59901-2387
 Phone: 406-752-2288
 Fax: 406-752-2843
 Serving: Flathead, Lake, Lincoln, and Sanders Counties
- Lewistown**
 613 NE Main Street, Suite E
 Lewistown, MT 59457-2020
 Phone: 406-538-7459
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- Missoula**
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 1610 South 3rd Street West, Suite 103
 P.O. Box 5004
 Missoula, MT 59806-5004
 Phone: 406-721-4284
 Fax: 406-542-1496
 Serving: Granite, Mineral, Missoula, and Ravalli Counties

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PERMIT OBJECTION DETERMINATION

Objection # 48

Application No. 430-30001172

Objector Name Tetraalt

CORRECT AND COMPLETE DETERMINATION

- Yes No Is the objection postmarked or received on or before the objection deadline?
- Yes No Is the correct filing fee paid?
- Yes No Is the name and address of the objector provided?
- Yes No Is the form signed?

All of the above and one of the following must be checked yes for the objection to be correct/complete.

- Yes No Did the objector provide information indicating why the applicant cannot prove water is physically available at the proposed point of diversion in the amount needed?

There is water physically available at the proposed point of diversion in the amount that the applicant seeks to appropriate; and water can reasonably be considered legally available during the period in which the applicant seeks to appropriate, in the amount requested, based on the records of the department and other evidence provided to the department. Legal availability is determined using an analysis involving the following factors: identification of physical water availability; identification of existing legal demands on the source of supply throughout the area of potential impact by the proposed use; and analysis of the evidence on physical water availability and the existing legal demands, including but not limited to a comparison of the physical water supply of water.

- Yes No Did the objector provide information indicating why water rights of prior appropriators will be adversely affected, or why the applicant cannot exercise and control the project to ensure prior appropriators water right will be satisfied.

The water rights of a prior appropriation under an existing water right, a certificate, a permit, or a state water reservation will not be adversely affected. In this subsection, (1)(b), adverse effect must be determined based on a consideration of an applicant's plan for the exercise of the permit that demonstrates that the applicant's use of the water will be controlled so the water right of a prior appropriator will be satisfied.

- Yes No Did the objector provide information indicating why the applicants proposed means of diversion, construction, or operating of the diversion works is not adequate?

- Yes No Did the objector provide information indicating why the applicant's use cannot be considered beneficial or that the flow and volume requested is not reasonable?

- Yes No Did the objector provide information indicating information showing why we could not believe the applicant has possessory interest or written consent of the person with possessory interest in the property?

- Yes No Did the objector provide substantial credible information to show that one of the following criteria may not be met?

- Water Quality Issue 85-2-311(f)
- Effect on classification of water 75-5-301(1) and 85-2-311(g)
- Effect on effluent limitations of a discharge permit holder 85-2-311(h)

OBJECTION VALIDITY

To be valid, both of the following must be checked yes.

- Yes No The objector filed a correct and complete objection. (timely; name & address; fee)
- Yes No The objector has property, water rights, or interests that would be adversely affected by the proposed appropriation.

And one or both of the following must be checked yes.

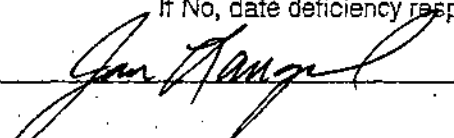
- Yes No The objector filed a valid standard criteria objection. (85-2-311(1)a-e)
- Yes No The objector filed a valid water quality criteria objection. (85-2-311(1)f-h)

- Yes No IS OBJECTION VALID?

If No, date deficiency letter sent: _____

If No, date deficiency response received: _____

Reviewed By: _____



Date: 3/27/03

OBJECTION TO APPLICATION

INSTRUCTIONS

Use this form when objecting to an application for a water use permit, change authorization or reservation of water. Use one form for each application.

A person has standing to file an objection if his or her property, water rights, or interests would be adversely affected by the proposed appropriation. Individual water right owners must file separate objections.

A CORRECT AND COMPLETE OBJECTION FORM MUST BE RECEIVED OR POSTMARKED ON OR BEFORE THE DEADLINE SPECIFIED IN THE PUBLIC NOTICE.

FILING FEE: \$25.00

RECEIVED
MAR 24 2003
D.N.R.C. 458

FOR DEPARTMENT USE ONLY

Postmarked Date 3/11/03
Date Received 3-24-03
Rec'd By 25.0
Fee Rec'd _____
Check No. 1899
Refund _____

1. **NAME OF OBJECTOR** Carole Marlene Tetrault
Mailing Address Box 2271
City Red Lodge State MT Zip 59068
Home Phone 406 440-1708 Other Phone _____

2. **APPLICATION BEING OBJECTED TO:** Number 43 D 30001172
Applicant Name: City of Red Lodge

3. STATE THE FACTUAL BASIS OF YOUR OBJECTION

- a) OBJECTION TO PERMIT APPLICATION must provide facts tending to show one or more of the criteria in Section 85-2-311, MCA are not met.
- b) OBJECTION TO CHANGE APPLICATION must provide facts tending to show one or more of the criteria in Section 85-2-402, MCA are not met.

NOTE: Water quality objections must contain substantial credible information establishing to the satisfaction of the department that the water quality criteria cannot be met by the applicant.

My concern is that the proposed well will draw down the ground water table in my area to a depth below the bottom of my well, which I use for drinking water, etc. Thus my well would no longer be useable for its present purposes. Also, I'm concerned that the proposed well will adversely affect the stream flowing across my property and devalue my property.



36049

4. STATE THE BASIS OF YOUR WATER RIGHT, if you are claiming your water right will be affected.

- (W) Statement of Claim
- (P) Permit to Appropriate Water No. Lot 1 Aspen Hollow Subdivision
- (C) Certificate of Water Right No. Red Lodge, MT
- (D) Final Decree No. _____
- (M/R) Reservation of Water No. Well No. 43 D-C 109707
- (E) Exempt Existing Water Right (no claim filed; complete items below)

THIS INFORMATION ONLY REQUIRED FOR EXEMPT RIGHTS.



5. STATE ANY CONDITIONS OR MODIFICATIONS UNDER WHICH YOU WOULD AGREE TO THE ISSUANCE OF THE PERMIT OR AUTHORIZATION TO CHANGE.

Assurance that the proposed well will not affect the ground water table in my area nor the proper functioning of my drinking-water well. Also, assurance that there will be no adverse affect on the stream flowing across my property.

6. ARE YOU REPRESENTED BY COUNSEL? YES NO 7. PERSON PREPARING THIS FORM, if different from objector

Name _____ Mailing Address _____ City, State, Zip _____ Phone _____

Name _____ Mailing Address _____ City, State, Zip _____ Phone _____

8. OBJECTOR'S SIGNATURE Candee Marlene Tetrault DATE 3/21/03

WATER RESOURCES REGIONAL OFFICES

- Billings**
Airport Business Park
1371 Rimtop Drive
Billings, MT 59105-1978
Phone: 406-247-4415
Fax: 406-247-4416
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P.O. Box 1269
Glasgow, MT 59230-1269
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Kalispell, MT 59901-2387
Phone: 406-752-2288
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Lewistown, MT 59457-2020
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1610 South 3rd Street West, Suite 103
P.O. Box 5004
Missoula, MT 59806-5004
Phone: 406-721-4284
Fax: 406-542-1496
Serving: Granite, Mineral, Missoula, and Ravalli Counties

For Mailing, Use Post Office Box Number.

PERMIT OBJECTION DETERMINATION

Objection # 462

Application No. 430-300511 92

Objector Name Dapples

CORRECT AND COMPLETE DETERMINATION

- Yes No Is the objection postmarked or received on or before the objection deadline?
- Yes No Is the correct filing fee paid?
- Yes No Is the name and address of the objector provided?
- Yes No Is the form signed?

All of the above and one of the following must be checked yes for the objection to be correct/complete.

- Yes No Did the objector provide information indicating why the applicant cannot prove water is physically available at the proposed point of diversion in the amount needed?

There is water physically available at the proposed point of diversion in the amount that the applicant seeks to appropriate; and water can reasonably be considered legally available during the period in which the applicant seeks to appropriate, in the amount requested, based on the records of the department and other evidence provided to the department. Legal availability is determined using an analysis involving the following factors: identification of physical water availability; identification of existing legal demands on the source of supply throughout the area of potential impact by the proposed use; and analysis of the evidence on physical water availability and the existing legal demands, including but not limited to a comparison of the physical water supply of water.

- Yes No Did the objector provide information indicating why water rights of prior appropriators will be adversely affected, or why the applicant cannot exercise and control the project to ensure prior appropriators water right will be satisfied.

The water rights of a prior appropriation under an existing water right, a certificate, a permit, or a state water reservation will not be adversely affected. In this subsection, (1)(b), adverse effect must be determined based on a consideration of an applicant's plan for the exercise of the permit that demonstrates that the applicant's use of the water will be controlled so the water right of a prior appropriator will be satisfied.

- Yes No Did the objector provide information indicating why the applicants proposed means of diversion, construction, or operating of the diversion works is not adequate?

- Yes No Did the objector provide information indicating why the applicant's use cannot be considered beneficial or that the flow and volume requested is not reasonable?

- Yes No Did the objector provide information indicating information showing why we could not believe the applicant has possessory interest or written consent of the person with possessory interest in the property?

- Yes No Did the objector provide substantial credible information to show that one of the following criteria may not be met?

- Water Quality Issue 85-2-311(f)
- Effect on classification of water 75-5-301(1) and 85-2-311(g)
- Effect on effluent limitations of a discharge permit holder 85-2-311(h)

OBJECTION VALIDITY

To be valid, both of the following must be checked yes.

- Yes No The objector filed a correct and complete objection. (timely; name & address; fee)
- Yes No The objector has property, water rights, or interests that would be adversely affected by the proposed appropriation.

And one or both of the following must be checked yes.

- Yes No The objector filed a valid standard criteria objection. (85-2-311(1)a-e)
- Yes No The objector filed a valid water quality criteria objection. (85-2-311(1)f-h)

- Yes No IS OBJECTION VALID?

If No, date deficiency letter sent: _____

If No, date deficiency response received: _____

Reviewed By: _____

Jim Overcast

Date: 3/31/03

OBJECTION TO APPLICATION

INSTRUCTIONS

Use this form when objecting to an application for a water use permit, change authorization or reservation of water. Use one form for each application.

A person has standing to file an objection if his or her property, water rights, or interests would be adversely affected by the proposed appropriation. Individual water right owners must file separate objections.

A CORRECT AND COMPLETE OBJECTION FORM MUST BE RECEIVED OR POSTMARKED ON OR BEFORE THE DEADLINE SPECIFIED IN THE PUBLIC NOTICE.

FILING FEE: \$25.00

RECEIVED

MAR 21 2003

D.N.R.C. 462

FOR DEPARTMENT USE ONLY

Postmarked Date 3-20-03
 Date Received 3-21-03
 Rec'd By PG
 Fee Rec'd \$25.00
 Check No. 1416
 Refund _____

1. NAME OF OBJECTOR Charles Dapples
 Mailing Address PO Box 387
 City Red Lodge State MT Zip 59068
 Home Phone 406-698-4989 Other Phone _____

2. APPLICATION BEING OBJECTED TO: Number 43D 30001172
 Applicant Name: Red Lodge, City of

3. STATE THE FACTUAL BASIS OF YOUR OBJECTION

- (a) OBJECTION TO PERMIT APPLICATION must provide facts tending to show one or more of the criteria in Section 85-2-311, MCA are not met.
- b) OBJECTION TO CHANGE APPLICATION must provide facts tending to show one or more of the criteria in Section 85-2-402, MCA are not met.

NOTE: Water quality objections must contain substantial credible information establishing to the satisfaction of the department that the water quality criteria cannot be met by the applicant.

I believe these wells will lower the water table to the extent that my well will be adversely affected, to the point that I will lose the use of my well.



4. STATE THE BASIS OF YOUR WATER RIGHT, if you are claiming your water right will be affected.

- (W) Statement of Claim No. _____
- (P) Permit to Appropriate Water No. _____
- (C) Certificate of Water Right No. 88811-643D
- (D) Final Decree No. _____
- (M/R) Reservation of Water No. _____
- (E) Exempt Existing Water Right (no claim filed; complete items below)

THIS
INFORMATION
ONLY REQUIRED
FOR
EXEMPT RIGHTS.

→ Date of First Use: _____

Name of Appropriator: _____

Type of Use: Stock Domestic

Amount Used: Flow Rate _____ Gallons Per Minute; Volume _____ Acre-Feet

Point of Diversion: _____

_____ 1/4 _____ 1/4 _____ 1/4 Section _____ Twp _____ N/S, Rge _____ E/W, _____ County

→ Lot _____ Block _____ Tract No. _____ Subdivision Name _____

5. STATE ANY CONDITIONS OR MODIFICATIONS UNDER WHICH YOU WOULD AGREE TO THE ISSUANCE OF THE PERMIT OR AUTHORIZATION TO CHANGE.

City would provide water at no expense for the future time as long as the water right certificate is in effect.

6. ARE YOU REPRESENTED BY COUNSEL? YES NO 7. PERSON PREPARING THIS FORM, if different from objector

Name _____ Mailing Address _____ City, State, Zip _____ Phone _____

Name Charles Apple Mailing Address _____ City, State, Zip _____ Phone _____

8. OBJECTOR'S SIGNATURE Charles Apple DATE 3/20/03

WATER RESOURCES REGIONAL OFFICES

Billings

Airport Business Park
1371 Rimtop Drive
Billings, MT 59105-1978
Phone: 406-247-4415
Fax: 406-247-4416
Serving: Big Horn, Carbon, Carter, Custer, Fallon, Powder River, Prairie, Rosebud, Stillwater, Sweet Grass, Treasure, and Yellowstone Counties

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210 6th Avenue
P.O. Box 1828
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Helena, MT 59620-1601
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Town and Country Shopping Center
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222 6th Street South
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OBJECTION TO APPLICATION

INSTRUCTIONS

Use this form when objecting to an application for a water use permit, change authorization or reservation of water. Use one form for each application.

A person has standing to file an objection if his or her property, water rights, or interests would be adversely affected by the proposed appropriation. Individual water right owners must file separate objections.

A CORRECT AND COMPLETE OBJECTION FORM MUST BE RECEIVED OR POSTMARKED ON OR BEFORE THE DEADLINE SPECIFIED IN THE PUBLIC NOTICE.

FILING FEE: \$25.00

RECEIVED

MAR 20 2003

D.N.R.C. 461

FOR DEPARTMENT USE ONLY

Postmarked Date 3-19-2003

Date Received see above date stamp

Rec'd By PG

Fee Rec'd 25.00

Check No. 5122

Refund _____

1. NAME OF OBJECTOR JODIE + JUDY CHRISTENSEN

Mailing Address P.O. Box 1202

City Red Lodge State MT. Zip 59068

Home Phone 406-446-3093 Other Phone 406-446-1784

2. APPLICATION BEING OBJECTED TO: Number 43D 3000172

Applicant Name: CITY OF RED LODGE

3. **STATE THE FACTUAL BASIS OF YOUR OBJECTION**

- a) OBJECTION TO PERMIT APPLICATION must provide facts tending to show one or more of the criteria in Section 85-2-311, MCA are not met.
- b) OBJECTION TO CHANGE APPLICATION must provide facts tending to show one or more of the criteria in Section 85-2-402, MCA are not met.

NOTE: Water quality objections must contain substantial credible information establishing to the satisfaction of the department that the water quality criteria cannot be met by the applicant.

OUR PROPERTY DIRECTLY ADJOINS THE CITY WATER WORKS. WE INSTALLED OUR WELL IN OCT 1993. THE WELL IS 28' DEEP. AQUA DRILLING DUG THE WELL AND WAS HAPPY WITH THE 35 G.P.M. THEY WERE COMFORTABLE WITH THE DEPTH AS WE WERE TOO. WE NEVER DREAMED THE CITY WOULD BE PUTTING IN A WELL TO SUPPLY THE TOWN WITH WATER WE ARE CONCERNED ABOUT THE OPERATION OF THE CITY WELL AS WE ARE NOT SURE IF WE ARE IN THE SAME AQUIFER AS THEY ARE. WE HAVE CONCERNS IT COULD ADVERSELY AFFECT OUR WELL. WE CERTAINLY DONT WANT TO DENY THE CITY WATER. WE FEEL WE SHOULD NOT BE DENIED WATER EITHER.



THANK YOU

4. STATE THE BASIS OF YOUR WATER RIGHT, if you are claiming your water right will be affected.

- (W) Statement of Claim No. _____
- (P) Permit to Appropriate Water No. _____
- (C) Certificate of Water Right No. 430 C 088843-00
- (D) Final Decree No. _____
- (M/R) Reservation of Water No. _____
- (E) Exempt Existing Water Right (no claim filed; complete items below)

| | |
|--|---|
| THIS INFORMATION ONLY REQUIRED FOR EXEMPT RIGHTS. | Date of First Use: _____ |
| | Name of Appropriator: _____ |
| | Type of Use: Stock <input type="checkbox"/> Domestic <input type="checkbox"/> |
| | Amount Used: Flow Rate _____ Gallons Per Minute; Volume _____ Acre-Feet |
| | Point of Diversion: _____ |
| | _____ 1/4 _____ 1/4 _____ 1/4 Section _____, Twp _____ N/S, Rge _____ E/W, _____ County |
| Lot _____ Block _____ Tract No. _____ Subdivision Name _____ | |

5. STATE ANY CONDITIONS OR MODIFICATIONS UNDER WHICH YOU WOULD AGREE TO THE ISSUANCE OF THE PERMIT OR AUTHORIZATION TO CHANGE.

TOUGH QUESTION. ULTIMATELY, WE HOPE WE ARE NOT AFFECTED AS WE HAVE LANDSCAPED OVER THE YEARS AND ARE CONTENT WITH OUR PROPERTY. WE WOULD NOT BE HAPPY DIGGING A NEW WELL. MAYBE IF THE CITY WOULD AGREE TO HELP WITH THE COST IF OUR WELL IS AFFECTED.

6. ARE YOU REPRESENTED BY COUNSEL? YES NO 7. PERSON PREPARING THIS FORM, if different from objector

| | |
|------------------------|------------------------|
| Name _____ | Name _____ |
| Mailing Address _____ | Mailing Address _____ |
| City, State, Zip _____ | City, State, Zip _____ |
| Phone _____ | Phone _____ |

8. OBJECTOR'S SIGNATURE Judy Christensen DATE 3-19-03

WATER RESOURCES REGIONAL OFFICES

- | | | |
|---|--|--|
| <p>Billings Airport Business Park 1371 Rimtop Drive Billings, MT 59105-1978 Phone: 406-247-4415 Fax: 406-247-4416 Serving: Big Horn, Carbon, Carter, Custer, Fallon, Powder River, Prairie, Rosebud, Stillwater, Sweet Grass, Treasure, and Yellowstone Counties</p> | <p>Havre 210 8th Avenue P.O. Box 1828 Havre, MT 59501-1828 Phone: 406-265-5516 Fax: 406-265-2225 Serving: Blaine, Chouteau, Glacier, Hill, Liberty, Pondera, Teton, and Toole Counties</p> | <p>Lewistown 613 NE Main Street, Suite E Lewistown, MT 59457-2020 Phone: 406-538-7459 Fax: 406-538-7089 Serving: Cascade, Fergus, Golden Valley, Judith Basin, Meagher, Musselshell, Petroleum, and Wheatland Counties</p> |
| <p>Bozeman 151 Evergreen Drive, Suite C Bozeman, MT 59715 Phone: 406-585-3136 Fax: 406-587-9728 Serving: Gallatin, Madison, and Park Counties</p> | <p>Helena 21 North Last Chance Gulch P.O. Box 201801 Helena, MT 59620-1601 Phone: 406-449-0944 Fax: 406-442-9315 Serving: Beaverhead, Broadwater, Deer Lodge, Jefferson, Lewis and Clark, Powell, and Silver Bow Counties</p> | <p>Missoula Town and Country Shopping Center 1610 South 3rd Street West, Suite 103 P.O. Box 5004 Missoula, MT 59806-5004 Phone: 406-721-4284 Fax: 406-542-1496 Serving: Grant, Mineral, Missoula, and Ravalli Counties</p> |
| <p>Glasgow 222 6th Street South P.O. Box 1268 Glasgow, MT 59230-1269 Phone: 406-228-2561 Fax: 406-228-8706 Serving: Daniels, Dawson, Garfield, McCone, Phillips, Richland, Roosevelt, Sheridan, Valley, and Wibaux Counties</p> | <p>Kalispell 109 Cooperative Way, Suite 110 Kalispell, MT 59901-2387 Phone: 406-752-2288 Fax: 406-752-2843 Serving: Flathead, Lake, Lincoln, and Sanders Counties</p> | |

For Mailing, Use Post Office Box Number.

DEPARTMENT OF NATURAL
RESOURCES AND CONSERVATION



JUDY MARTZ
GOVERNOR

DIRECTOR'S OFFICE (406) 444-2074
TELEFAX NUMBER (406) 444-2684

STATE OF MONTANA

WATER RESOURCES DIVISION (406) 444-6601
TELEFAX NUMBERS (406) 444-0533 / (406) 444-5918
<http://www.dnrc.state.mt.us/wrd/home.htm>

48 NORTH LAST CHANCE GULCH
PO BOX 201601
HELENA, MONTANA 59620-1601

March 27, 2003

Sally E. Hill
PO Box 2011
Red Lodge MT 59068

Dear Ms Hill,

This is in reference to your untimely objection to Application No. 43D-30001172 by City of Red Lodge. Your objection is untimely because it was postmarked or received by this Department after the deadline specified in the public notice.

Untimely objectors may not invoke an administrative hearing, however, the information contained in your objection is considered by this Department when making a determination on issuance of the water right.

In the event a hearing is held, the hearing examiner may allow you to note your appearance at the hearing, allow you to give testimony or submit exhibits, or question a witness. No untimely objector can become a party (having full rights and responsibility of a timely objector) or deemed to have become a party by reason of such participation. Untimely objectors offering testimony or exhibits may participate by being questioned by parties to the proceeding.

If you have any questions, please contact me.

Sincerely,

A handwritten signature in cursive script that reads "Jill Wilkinson".

Jill Wilkinson
Hearings Unit
Water Rights Bureau
406.444.6615

Providing Your "Home On The Range" Since 1979

12674 U.S. Hwy 26
P.O. Box 1850
Riverton, Wyoming 82501



24 Hours: 307-856-9761
Fax: 307-856-7916

1-800-850-9761

Sally Hill
Pres.

To the Dept of Natural
Resources Office - Helena

I received the objection form
(enclosed) on Friday the 21st
from my neighbor in Red
Lodge. I hope you will
still accept my filing.

Thank you,
Sally E. Hill

We Guarantee All Services

OBJECTION TO APPLICATION

INSTRUCTIONS

Use this form when objecting to an application for a water use permit, change authorization or reservation of water. Use one form for each application.

A person has standing to file an objection if his or her property, water rights, or interests would be adversely affected by the proposed appropriation. Individual water right owners must file separate objections.

A CORRECT AND COMPLETE OBJECTION FORM MUST BE RECEIVED OR POSTMARKED ON OR BEFORE THE DEADLINE SPECIFIED IN THE PUBLIC NOTICE.

FILING FEE: \$25.00

Deadline
3/2/03

RECEIVED

MAR 26 2003

D.N.R.C.

FOR DEPARTMENT USE ONLY

Postmarked Date 3/24/03
Date Received 3/24/03
Rec'd By DK
Fee Rec'd 25-
Check No. 1064
Transmittal No. _____
Refund _____

1. NAME OF OBJECTOR Sally E. Hill

Mailing Address P.O. Box 2011

City Red Lodge State MT Zip 59068

Home Phone (406) 446-4602 Other Phone (307) 856-9878

2. APPLICATION BEING OBJECTED TO: Number 43D30001172

Applicant Name: City of Red Lodge

3. STATE THE FACTUAL BASIS OF YOUR OBJECTION

- a) OBJECTION TO PERMIT APPLICATION must provide facts tending to show one or more of the criteria in Section 85-2-311, MCA are not met.
- b) OBJECTION TO CHANGE APPLICATION must provide facts tending to show one or more of the criteria in Section 85-2-402, MCA are not met.

NOTE: Water quality objections must contain substantial credible information establishing to the satisfaction of the department that the water quality criteria cannot be met by the applicant.

My objection is that, because of the close proximity to my home & water well it could dry up my well (water source to my home) A home without water is a home without value.



4. STATE THE BASIS OF YOUR WATER RIGHT, if you are claiming your water right will be affected.

- (W) Statement of Claim No. _____
- (P) Permit to Appropriate Water No. _____
- (C) Certificate of Water Right No. I don't have a copy.
- (D) Final Decree No. _____
- (M/R) Reservation of Water No. _____
- (E) Exempt Existing Water Right (no claim filed; complete items below)

THIS INFORMATION ONLY REQUIRED FOR EXEMPT RIGHTS.

→ Date of First Use: _____

Name of Appropriator: _____

Type of Use: Stock Domestic

Amount Used: _____ Flow Rate: _____ Gallons Per Minute: _____ Volume: _____ Acre-Feet: _____

Point of Diversion: _____

1/4 1/4 1/4 Section Twp. N/S, Rge. E/W. County

→ Lot _____ Block _____ Tract No. _____ Subdivision Name _____

5. STATE ANY CONDITIONS OR MODIFICATIONS UNDER WHICH YOU WOULD AGREE TO THE ISSUANCE OF THE PERMIT OR AUTHORIZATION TO CHANGE.

If my well dries up, that the city of Red Lodge would agree to hook me up to the City Water Line without charge to me.

6. OBJECTOR'S SIGNATURE *[Signature]* DATE 3/21/03

7. ARE YOU REPRESENTED BY COUNSEL? YES NO

8. PERSON PREPARING THIS FORM, if different from objector

Name _____ Mailing Address _____ City, State, Zip _____ Phone _____

9. COUNSEL, if any

Name _____ Mailing Address _____ City, State, Zip _____ Phone _____

WATER RESOURCES REGIONAL OFFICES

Billings

Airport Business Park
1371 Rimtop Drive
Billings, MT 59105-1978
Phone: 406-247-4415
Fax: 406-247-4416
Serving: Big Horn, Carbon, Carter, Custer, Fallon, Powder River, Prairie, Rosebud, Stillwater, Sweet Grass, Treasure, and Yellowstone Counties

Havre

210 6th Avenue
P.O. Box 1828
Havre, MT 59501-1828
Phone: 406-265-5516
Fax: 406-265-2225
Serving: Blaine, Chouteau, Glacier, Hill, Liberty, Pondera, Teton, and Toole Counties

Lewistown

613 NE Main Street, Suite E
Lewistown, MT 59457-2020
Phone: 406-538-7459
Fax: 406-538-7089
Serving: Cascade, Fergus, Golden Valley, Judith Basin, Meagher, Musselshell, Petroleum, and Wheatland Counties

Bozeman

151 Evergreen Drive, Suite C
Bozeman, MT 59715
Phone: 406-586-3136
Fax: 406-587-9726
Serving: Gallatin, Madison, and Park Counties

Helena

21 North Last Chance Gulch
P.O. Box 201601
Helena, MT 59620-1601
Phone: 406-449-0944
Fax: 406-442-9315
Serving: Beaverhead, Broadwater, Deer Lodge, Jefferson, Lewis and Clark, Powell, and Silver Bow Counties

Missoula

Town and Country Shopping Center
1610 South 3rd Street West, Suite 103
P.O. Box 5004
Missoula, MT 59806-5004
Phone: 406-721-4284
Fax: 406-542-1496
Serving: Granite, Mineral, Missoula, and Ravalli Counties

Glasgow

222 6th Street South
P.O. Box 1269
Glasgow, MT 59230-1269
Phone: 406-228-2561
Fax: 406-228-8706
Serving: Daniels, Dawson, Garfield, McCone, Phillips, Richland, Roosevelt, Sheridan, Valley, and Wibaux Counties

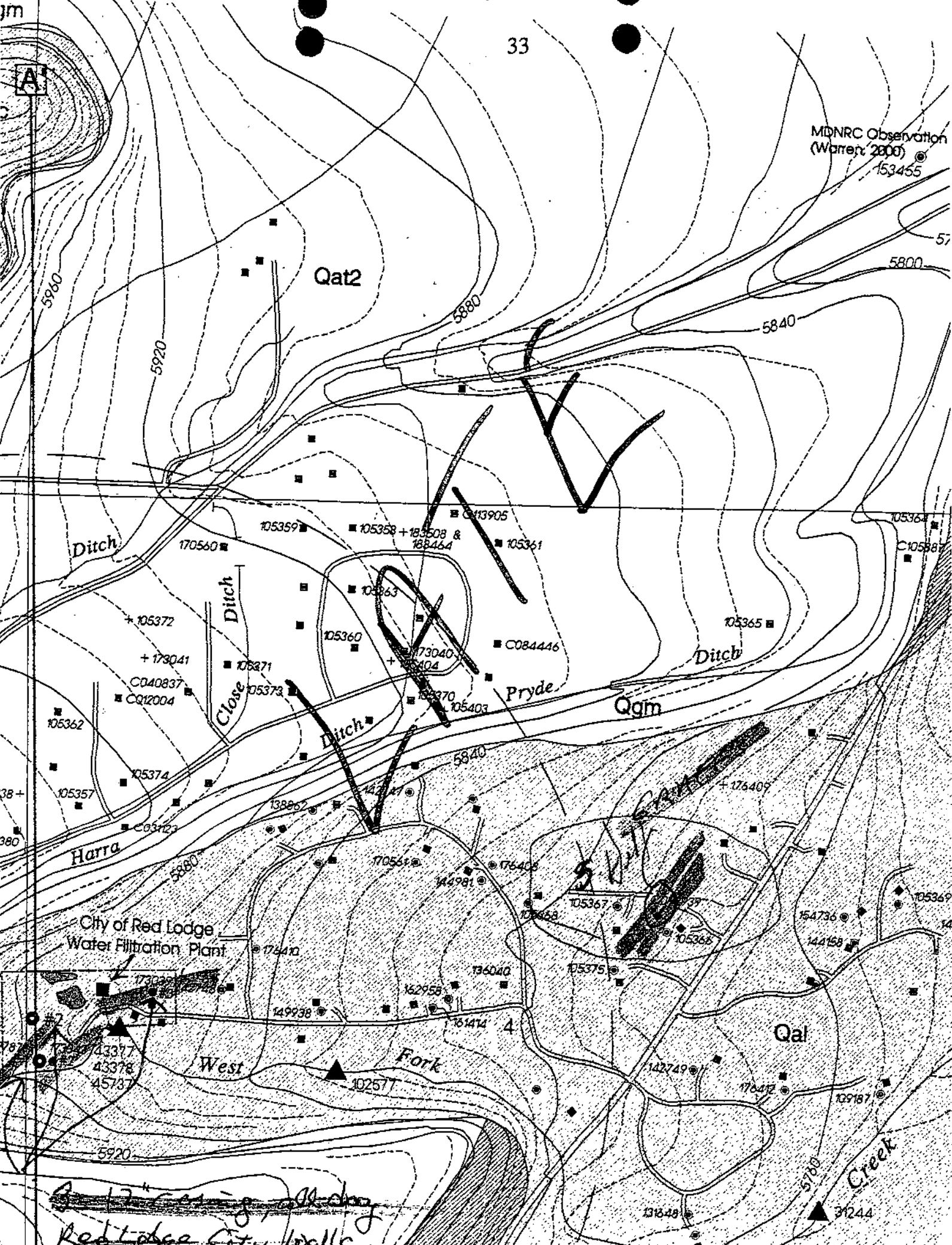
Kalispell

109 Cooperative Way, Suite 110
Kalispell, MT 59901-2387
Phone: 406-752-2288
Fax: 406-752-2843
Serving: Flathead, Lake, Lincoln, and Sanders Counties

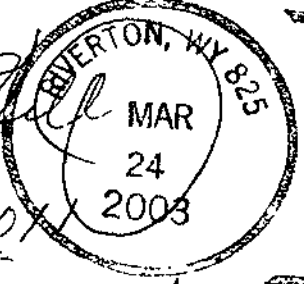
For Mailing, Use Post Office Box Number.

MDNRC Observation
(Warren 2000) ●
153455

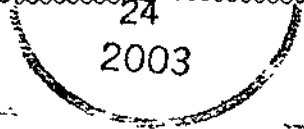
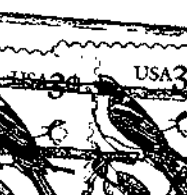
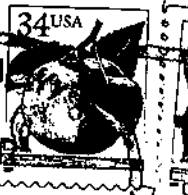
Qat2



17" casing, 10' deep
Red Lodge City Wells



Patly G Hill
P.O. Box 201
Red Lodge, Mt. 59068



Department of Natural Resources & Conservation
P.O. Box 201601
Helena, Mt. 59620-1601

Processing Forms/Public Notice:

- Waiver
- 612 (if no objections)
 - Public Notice
 - Ownership map
 - Form checklist
 - E. A. checklist
- Irrigation requirements worksheet
 - PN - letter to editor
 - PN - letter to applicant
 - PN - invoice and tear sheet

Processing Forms/ Public Notice

FILMED

PUBLIC NOTICE
NOTICE TO WATER RIGHT USERS
(Pursuant to Section 85-2-307 MCA)

The following application has been submitted to appropriate water in the State of Montana.

Application Number: 43D 30001172
Owners: RED LODGE, CITY OF
1 SOUTH PLATT
PO BOX 9
RED LODGE, MT 59068
Priority Date: MARCH 7, 2002 at 11:30 A.M.
Purpose (use): MUNICIPAL
Maximum Flow Rate: 1,200.00 GPM
Maximum Volume: 968.00 AC-FT

Source:

Source Name: GROUNDWATER

Point of Diversion and Means of Diversion:

| <u>ID</u> | <u>Govt Lot</u> | <u>Qtr Sec</u> | <u>Sec</u> | <u>Twp</u> | <u>Rge</u> | <u>County</u> |
|--------------------------------------|-----------------|----------------|------------|------------|------------|---------------|
| 1 | | NWNWSW | 4 | 8S | 20E | CARBON |
| Diversion Means: WELL | | | | | | |
| Well Depth: 67.00 FEET | | | | | | |
| Static Water Level: 8.00 FEET | | | | | | |
| Casing Diameter: 12.00 INCHES | | | | | | |
| 2 | | NWNWSW | 4 | 8S | 20E | CARBON |
| Diversion Means: WELL | | | | | | |

THIS APPLICATION INCLUDES TWO WELLS WITH A COMBINED FLOW RATE OF 1200 GALLONS PER MINUTE.

Period of Diversion: JANUARY 1 to DECEMBER 31

Purpose (Use): MUNICIPAL
Volume: 968.00 AC-FT
Period of Use: JANUARY 1 to DECEMBER 31
Place of Use:

| <u>ID</u> | <u>Acres</u> | <u>Govt Lot</u> | <u>Qtr Sec</u> | <u>Sec</u> | <u>Twp</u> | <u>Rge</u> | <u>County</u> |
|-----------|--------------|-----------------|----------------|------------|------------|------------|---------------|
| 1 | | | | 21 | 7S | 20E | CARBON |
| 2 | | | | 22 | 7S | 20E | CARBON |
| 3 | | | | 23 | 7S | 20E | CARBON |
| 4 | | | | 26 | 7S | 20E | CARBON |
| 5 | | | | 27 | 7S | 20E | CARBON |
| 6 | | | | 28 | 7S | 20E | CARBON |
| 7 | | | | 33 | 7S | 20E | CARBON |
| 8 | | | | 34 | 7S | 20E | CARBON |
| 9 | | | NW | 35 | 7S | 20E | CARBON |
| 10 | | | | 3 | 8S | 20E | CARBON |
| 11 | | | | 4 | 8S | 20E | CARBON |
| 12 | | | | 5 | 8S | 20E | CARBON |
| 13 | | | | 8 | 8S | 20E | CARBON |
| 14 | | | | 9 | 8S | 20E | CARBON |

THE PLACE OF USE INCLUDES ALL LAND WITHIN THE MUNICIPAL WATER SERVICE AREA FOR THE CITY OF RED LODGE.

IF ISSUED, THE RIGHT WILL BE SUBJECT TO PRIOR EXISTING WATER RIGHTS.

OBJECTIONS TO THIS APPLICATION MUST BE FILED ON AN OBJECTION TO APPLICATION, FORM NO. 611. MAIL THE COMPLETED OBJECTION FORM AND \$25.00 FILING FEE TO THE DEPARTMENT OF NATURAL RESOURCES AND CONSERVATION, PO BOX 201601, HELENA, MT 59620-1601. **OBJECTIONS MUST BE POSTMARKED ON OR BEFORE MARCH 21, 2003.**

THE OBJECTION TO APPLICATION FORM, FORM NO. 611 IS AVAILABLE FROM THIS DEPARTMENT OR ON THE DNRC WEBSITE AT <http://www.dnrc.state.mt.us/wrd/home.htm>. DIRECT ANY QUESTIONS REGARDING THIS APPLICATION TO THE WATER RESOURCES REGIONAL OFFICE, 1371 RIMTOP DRIVE, BILLINGS, MT 59105 - 1978 PHONE: 406-247-4415 FAX: 406-247-4416

AN ENVIRONMENTAL ASSESSMENT HAS BEEN COMPLETED AND IS AVAILABLE FOR VIEWING AT THE REGIONAL OFFICE OR ON THE DNRC WEBSITE AT <http://www.dnrc.state.mt.us/wrd/home.htm>.

PUBLISHED IN: CARBON COUNTY NEWS, FEBRUARY 20, 2003

OCTOBER 2002 BILLINGS REGIONAL OFFICE - INDEX BY POINT OF DIVERSTION(ALL)

| WRTE | S | BSN | W R | FLOW | UNT | PRIORITY | POD | # | TW | P | RN | G | SC | QTR | SEC | SOURCE | OWNER |
|------|---|-----|--------|------|-----|----------|------------|---|----|---|----|---|----|-----|-------|-----------------------------------|---------------------------|
| GWCT | G | 43D | 99987 | DM | 4 | GPM | 1996-11-20 | 1 | 7 | S | 20 | E | 29 | SWS | ESW | GROUNDWATER | ABBOTT, WADE |
| GWCT | G | 43D | 99987 | LG | 4 | GPM | 1996-11-20 | 1 | 7 | S | 20 | E | 29 | SWS | ESW | GROUNDWATER | ABBOTT, WADE |
| GWCT | G | 43D | 102224 | ST | 20 | GPM | 1997-11-12 | 1 | 7 | S | 20 | E | 29 | S | ESE | GROUNDWATER | LANGLAS MOUNTAIN STABLES |
| GWCT | G | 43D | 109656 | DM | 18 | GPM | 1999-09-10 | 1 | 7 | S | 20 | E | 29 | N | ENESW | GROUNDWATER | SELVEY, ANN |
| GWCT | G | 43D | 109656 | DM | 18 | GPM | 1999-09-10 | 1 | 7 | S | 20 | E | 29 | N | ENESW | GROUNDWATER | SELVEY, C JEFF |
| GWCT | G | 43D | 109656 | LG | 18 | GPM | 1999-09-10 | 1 | 7 | S | 20 | E | 29 | N | ENESW | GROUNDWATER | SELVEY, ANN |
| GWCT | G | 43D | 109656 | LG | 18 | GPM | 1999-09-10 | 1 | 7 | S | 20 | E | 29 | N | ENESW | GROUNDWATER | SELVEY, C JEFF |
| GWCT | G | 43D | 111992 | DM | 20 | GPM | 2000-09-21 | 1 | 7 | S | 20 | E | 29 | S | SSESW | GROUNDWATER | NELSON, MARSHA |
| GWCT | G | 43D | 111992 | DM | 20 | GPM | 2000-09-21 | 1 | 7 | S | 20 | E | 29 | S | SSESW | GROUNDWATER | NELSON, GARY K |
| GWCT | G | 43D | 110559 | DM | 2 | GPM | 2000-01-04 | 1 | 7 | S | 20 | E | 30 | N | ESE | GROUNDWATER | SOUDERS, CAROL A |
| GWCT | G | 43D | 110559 | DM | 2 | GPM | 2000-01-04 | 1 | 7 | S | 20 | E | 30 | N | ESE | GROUNDWATER | SOUDERS, STEVE W |
| GWCT | G | 43D | 405 | DM | 4 | GPM | 1973-09-19 | 1 | 7 | S | 20 | E | 32 | | | GROUNDWATER | JOHNSON, DAVID L |
| GWCT | G | 43D | 405 | DM | 4 | GPM | 1973-09-19 | 1 | 7 | S | 20 | E | 32 | | | GROUNDWATER | JOHNSON, JUDITH S |
| STOC | S | 43D | 4921 | IR | 340 | GPM | 1892-08-15 | 1 | 7 | S | 20 | E | 32 | N | WSWNE | WILLOW CREEK | SANS PAREIL |
| STOC | S | 43D | 4921 | IR | 340 | GPM | 1892-08-15 | 1 | 7 | S | 20 | E | 32 | N | WSWNE | WILLOW CREEK | VANDE VERGAETE, CAROL S |
| STOC | S | 43D | 4921 | IR | 340 | GPM | 1892-08-15 | 1 | 7 | S | 20 | E | 32 | N | WSWNE | WILLOW CREEK | VANDE VERGAETE, RICHARD I |
| GWCT | G | 43D | 9071 | DM | 2 | GPM | 1976-08-02 | 1 | 7 | S | 20 | E | 32 | E | E2 | GROUNDWATER | MULLIN, JACKIE |
| GWCT | G | 43D | 9071 | DM | 2 | GPM | 1976-08-02 | 1 | 7 | S | 20 | E | 32 | E | E2 | GROUNDWATER | MULLIN, MICHAEL |
| GWCT | G | 43D | 9223 | DM | 8 | GPM | 1976-08-17 | 1 | 7 | S | 20 | E | 32 | N | ESENW | GROUNDWATER | HOYER, PAUL V |
| GWCT | G | 43D | 9223 | DM | 8 | GPM | 1976-08-17 | 1 | 7 | S | 20 | E | 32 | N | ESENW | GROUNDWATER | HOYER, FREDRIKKE W |
| GWCT | G | 43D | 10447 | DM | 2 | GPM | 1976-11-18 | 1 | 7 | S | 20 | E | 32 | | | GROUNDWATER | BELCHER, ZACK |
| GWCT | G | 43D | 17924 | DM | 15 | GPM | 1978-03-13 | 1 | 7 | S | 20 | E | 32 | | | GROUNDWATER | BAKER, DAVID H |
| GWCT | G | 43D | 17924 | DM | 15 | GPM | 1978-03-13 | 1 | 7 | S | 20 | E | 32 | | | GROUNDWATER | BAKER, LORNE A |
| GWCT | G | 43D | 17986 | DM | 15 | GPM | 1978-03-21 | 1 | 7 | S | 20 | E | 32 | S | WNE | GROUNDWATER | RAWLINGS, JAMES A |
| GWCT | G | 43D | 17986 | TR | 15 | GPM | 1978-03-21 | 1 | 7 | S | 20 | E | 32 | S | WNE | GROUNDWATER | RAWLINGS, PATRICIA A |
| GWCT | G | 43D | 17986 | IR | 15 | GPM | 1978-03-21 | 1 | 7 | S | 20 | E | 32 | S | WNE | GROUNDWATER | RAWLINGS, JAMES A |
| GWCT | G | 43D | 17986 | DM | 15 | GPM | 1978-03-21 | 1 | 7 | S | 20 | E | 32 | S | WNE | GROUNDWATER | RAWLINGS, PATRICIA A |
| GWCT | G | 43D | 18825 | DM | 3 | GPM | 1978-05-26 | 1 | 7 | S | 20 | E | 32 | | | GROUNDWATER | GRIFFIN, PHILLIP E |
| GWCT | G | 43D | 25485 | DM | 10 | GPM | 1979-11-16 | 1 | 7 | S | 20 | E | 32 | S | WNE | GROUNDWATER | KREIMAN, CLINTON F TRUST |
| GWCT | G | 43D | 25485 | DM | 10 | GPM | 1979-11-16 | 1 | 7 | S | 20 | E | 32 | S | WNE | GROUNDWATER | MCDERMOTT, JOHN K |
| STOC | S | 43D | 29356 | LG | 50 | GPM | 1973-06-08 | 1 | 7 | S | 20 | E | 32 | N | WSWNE | UNNAMED TRIBUTARY OF WILLOW CREEK | LOHOF, ANNE MARIE |
| STOC | S | 43D | 29356 | LG | 50 | GPM | 1973-06-08 | 1 | 7 | S | 20 | E | 32 | N | WSWNE | UNNAMED TRIBUTARY OF WILLOW CREEK | LOHOF, BRUCE A |
| STOC | S | 43D | 29357 | LG | 30 | GPM | 1972-06-05 | 1 | 7 | S | 20 | E | 32 | N | WNWSE | WILLOW CREEK | LOHOF, ANNE MARIE |
| STOC | S | 43D | 29357 | LG | 30 | GPM | 1972-06-05 | 1 | 7 | S | 20 | E | 32 | N | WNWSE | WILLOW CREEK | LOHOF, BRUCE A |
| GWCT | G | 43D | 31323 | DM | 25 | GPM | 1981-01-22 | 1 | 7 | S | 20 | E | 32 | S | WNE | GROUNDWATER | ROTHROCK, JAMES H |
| GWCT | G | 43D | 31323 | DM | 25 | GPM | 1981-01-22 | 1 | 7 | S | 20 | E | 32 | S | WNE | GROUNDWATER | ROTHROCK, MADINE O |
| GWCT | G | 43D | 39032 | DM | 7 | GPM | 1981-11-30 | 1 | 7 | S | 20 | E | 32 | S | WNW | GROUNDWATER | MORRISON, ROBERT C |
| GWCT | G | 43D | 39032 | DM | 7 | GPM | 1981-11-30 | 1 | 7 | S | 20 | E | 32 | S | WNW | GROUNDWATER | MORRISON, BERTA M |
| GWCT | G | 43D | 47332 | DM | 2 | GPM | 1982-06-29 | 1 | 7 | S | 20 | E | 32 | S | WNE | GROUNDWATER | JACOBSON, TOM |
| GWCT | G | 43D | 47332 | DM | 2 | GPM | 1982-06-29 | 1 | 7 | S | 20 | E | 32 | S | WNE | GROUNDWATER | JACOBSON, JULIE |
| GWCT | G | 43D | 52380 | DM | 13 | GPM | 1983-08-16 | 1 | 7 | S | 20 | E | 32 | S | WNE | GROUNDWATER | CROSS, MICHAEL |
| GWCT | G | 43D | 60404 | DM | 3 | GPM | 1985-09-16 | 1 | 7 | S | 20 | E | 32 | S | WNESW | GROUNDWATER | ZAWADA, JACQUELINE J |
| GWCT | G | 43D | 60404 | DM | 3 | GPM | 1985-09-16 | 1 | 7 | S | 20 | E | 32 | S | WNESW | GROUNDWATER | DUNCAN, PATRICK G |
| GWCT | G | 43D | 60404 | DM | 3 | GPM | 1985-09-16 | 1 | 7 | S | 20 | E | 32 | S | WNESW | GROUNDWATER | DUNCAN, MICHAEL R |
| GWCT | G | 43D | 60404 | DM | 3 | GPM | 1985-09-16 | 1 | 7 | S | 20 | E | 32 | S | WNESW | GROUNDWATER | DUNCAN, E JAMES |
| GWCT | G | 43D | 60463 | DM | 8 | GPM | 1985-12-03 | 1 | 7 | S | 20 | E | 32 | S | E | GROUNDWATER | FULTON, MARJORIE T |
| GWCT | G | 43D | 60463 | DM | 8 | GPM | 1985-12-03 | 1 | 7 | S | 20 | E | 32 | S | E | GROUNDWATER | BRITTAIN, GREGORY K |

1934 (1) 2575

GROUND WATER

OCTOBER 2002 BILLINGS REGIONAL OFFICE - INDEX BY POINT OF DIVERSION (ALL)

| WRTE | S | BSN | W R | | FLOW RATE | UNT | PRIORITY | POD | | | | SOURCE | OWNER | | |
|------|---|-----|------------|-------|-----------|------------|----------|-----|----|----|----|--------|---------|-----------------------------------|----------------------|
| | | | NUMBER | V USE | | | | # | TW | P | RN | | | G | SC |
| GWCT | G | 43D | 60463 | LG | 8 GPM | 1985-12-03 | 1 | 7 | S | 20 | E | 32 | SE | GROUNDWATER | BRITTAIN, GREGORY K |
| GWCT | G | 43D | 60463 | LG | 8 GPM | 1985-12-03 | 1 | 7 | S | 20 | E | 32 | SE | GROUNDWATER | FULTON, MARJORIE T |
| GWCT | G | 43D | 64369 | DM | 1 GPM | 1986-11-20 | 1 | 7 | S | 20 | E | 32 | SWNE | GROUNDWATER | CARPENTER, VINCENT W |
| GWCT | G | 43D | 82032 | DM | 3 GPM | 1992-07-21 | 1 | 7 | S | 20 | E | 32 | SENESEW | GROUNDWATER | LINDENBERG, DUANE G |
| GWCT | G | 43D | 82032 | DM | 3 GPM | 1992-07-21 | 1 | 7 | S | 20 | E | 32 | SENESEW | GROUNDWATER | LINDENBERG, MARY E |
| GWCT | G | 43D | 82032 | LG | 3 GPM | 1992-07-21 | 1 | 7 | S | 20 | E | 32 | SENESEW | GROUNDWATER | LINDENBERG, MARY E |
| GWCT | G | 43D | 82032 | LG | 3 GPM | 1992-07-21 | 1 | 7 | S | 20 | E | 32 | SENESEW | GROUNDWATER | LINDENBERG, DUANE G |
| GWCT | G | 431 | 87363 | DM | 10 GPM | 1993-09-14 | 1 | 7 | S | 20 | E | 32 | NWNESEW | GROUNDWATER | SELOVER, GEORGE H |
| GWCT | G | 43D | 87363 | LG | 10 GPM | 1993-09-14 | 1 | 7 | S | 20 | E | 32 | NWNESEW | GROUNDWATER | SELOVER, PATRICIA W |
| GWCT | G | 43D | 87363 | LG | 10 GPM | 1993-09-14 | 1 | 7 | S | 20 | E | 32 | NWNESEW | GROUNDWATER | SELOVER, GEORGE H |
| GWCT | G | 43D | 87363 | DM | 10 GPM | 1993-09-14 | 1 | 7 | S | 20 | E | 32 | NWNESEW | GROUNDWATER | SELOVER, PATRICIA W |
| GWCT | G | 43D | 97566 | DM | 12 GPM | 1996-04-22 | 1 | 7 | S | 20 | E | 32 | SWNE | GROUNDWATER | POTZMAN, BARBARA O |
| GWCT | G | 43D | 101361 | DM | 6 GPM | 1997-04-08 | 1 | 7 | S | 20 | E | 32 | NESESEW | GROUNDWATER | WHEELER, ROBERT A |
| GWCT | G | 431 | 102143 | DM | 10 GPM | 1997-09-09 | 1 | 7 | S | 20 | E | 32 | NESESEW | GROUNDWATER | MARCO PROPERTIES LP |
| GWCT | G | 43D | 103476 | DM | 20 GPM | 1998-02-19 | 1 | 7 | S | 20 | E | 32 | SWSENE | GROUNDWATER | SMITH, EDWIN R |
| GWCT | G | 43D | 103476 | DM | 20 GPM | 1998-02-19 | 1 | 7 | S | 20 | E | 32 | SWSENE | GROUNDWATER | SMITH, DEBORAH J |
| GWCT | G | 431 | ②-105036 | DM | 6 GPM | 1998-08-24 | 1 | 7 | S | 20 | E | 32 | NESESE | GROUNDWATER | BISHOP, JULIE E |
| GWCT | G | 43D | 105036 | DM | 6 GPM | 1998-08-24 | 1 | 7 | S | 20 | E | 32 | NESESE | GROUNDWATER | BISHOP, RANDY |
| GWCT | G | 43D | 105932 | DM | 15 GPM | 1998-10-22 | 1 | 7 | S | 20 | E | 32 | NESESE | GROUNDWATER | MCNEELY, BEVERLY J |
| GWCT | G | 43D | 105932 | DM | 15 GPM | 1998-10-22 | 1 | 7 | S | 20 | E | 32 | NESESE | GROUNDWATER | MCNEELY, THOMAS M |
| GWCT | G | 43D | ③-111053 | DM | 6 GPM | 2000-04-24 | 1 | 7 | S | 20 | E | 32 | NESE | GROUNDWATER | SCHILLING, DAVID |
| GWCT | G | 43D | 111053 | DM | 6 GPM | 2000-04-24 | 1 | 7 | S | 20 | E | 32 | NESE | GROUNDWATER | SCHILLING, KATHLEEN |
| GWCT | G | 43D | 115295 | DM | 5 GPM | 2001-05-07 | 1 | 7 | S | 20 | E | 32 | NWSW | GROUNDWATER | KRAFT, TERESA A |
| GWCT | G | 43D | 115295 | DM | 5 GPM | 2001-05-07 | 1 | 7 | S | 20 | E | 32 | NWSW | GROUNDWATER | KRAFT, DOUGLAS P |
| STOC | S | 43D | 117884 | DM | 5 GPM | 1963-07-15 | 1 | 7 | S | 20 | E | 32 | NESESEW | WILLOW CREEK | SELOVER, GEORGE H |
| STOC | S | 43D | 117884 | DM | 5 GPM | 1963-07-15 | 1 | 7 | S | 20 | E | 32 | NESESEW | WILLOW CREEK | SELOVER, PATRICIA W |
| STOC | S | 43D | 117885 | DM | 3 GPM | 1963-07-15 | 1 | 7 | S | 20 | E | 32 | NESESEW | UNNAMED TRIBUTARY OF WILLOW CREEK | SELOVER, GEORGE H |
| STOC | S | 43D | 117885 | DM | 3 GPM | 1963-07-15 | 1 | 7 | S | 20 | E | 32 | NESESEW | UNNAMED TRIBUTARY OF WILLOW CREEK | SELOVER, PATRICIA W |
| STOC | G | 43D | 117886 | DM | 10 GPM | 1961-07-01 | 1 | 7 | S | 20 | E | 32 | NESESEW | GROUNDWATER | SELOVER, GEORGE H |
| STOC | G | 43D | 117886 | DM | 10 GPM | 1961-07-01 | 1 | 7 | S | 20 | E | 32 | NESESEW | GROUNDWATER | SELOVER, PATRICIA W |
| STOC | S | 43D | 195931 | ST | | 1922-06-30 | 1 | 7 | S | 20 | E | 32 | NWNESEW | UNNAMED TRIBUTARY OF WILLOW CREEK | LEE, RICHARD E |
| STOC | S | 43D | 195931 | ST | | 1922-06-30 | 1 | 7 | S | 20 | E | 32 | NWNESEW | UNNAMED TRIBUTARY OF WILLOW CREEK | LEE, DONALD R |
| STOC | S | 43D | 195932 | ST | | 1922-06-30 | 1 | 7 | S | 20 | E | 32 | NWNESEW | UNNAMED TRIBUTARY OF WILLOW CREEK | LEE, RICHARD E |
| STOC | S | 43D | 195932 | ST | | 1922-06-30 | 1 | 7 | S | 20 | E | 32 | NWNESEW | UNNAMED TRIBUTARY OF WILLOW CREEK | LEE, DONALD R |
| STOC | S | 43D | 200038 | DM | 8 GPM | 1964-08-03 | 1 | 7 | S | 20 | E | 32 | SENEW | UNNAMED TRIBUTARY OF WILLOW CREEK | MORRISON, ROBERT C |
| STOC | S | 43D | 200038 | DM | 8 GPM | 1964-08-03 | 1 | 7 | S | 20 | E | 32 | SENEW | UNNAMED TRIBUTARY OF WILLOW CREEK | MORRISON, BERTA M |
| GWCT | G | 43D | ④-20002435 | DM | 12 GPM | 2002-06-12 | 1 | 7 | S | 20 | E | 32 | SENESEW | GROUNDWATER | HENRY, STEVEN R |
| GWCT | G | 43D | 20002435 | DM | 12 GPM | 2002-06-12 | 1 | 7 | S | 20 | E | 32 | SENESEW | GROUNDWATER | HENRY, JUDY KAY |
| STOC | G | 43D | ⑤-6522 | DM | 15 GPM | 1965-07-14 | 1 | 7 | S | 20 | E | 33 | SESESEW | GROUNDWATER | JORGENSEN, NORMAN C |
| STOC | G | 43D | 6522 | DM | 15 GPM | 1965-07-14 | 1 | 7 | S | 20 | E | 33 | SESESEW | GROUNDWATER | JORGENSEN, GLORIA E |
| STOC | G | 43D | 6522 | DM | 15 GPM | 1965-07-14 | 1 | 7 | S | 20 | E | 33 | SESESEW | GROUNDWATER | JORGENSEN, ROY E |
| STOC | G | 43D | 6522 | DM | 15 GPM | 1965-07-14 | 1 | 7 | S | 20 | E | 33 | SESESEW | GROUNDWATER | JORGENSEN, PHILIP CE |
| STOC | S | 43D | 10266 | TR | 10 CFS | 1886-05-01 | 1 | 7 | S | 20 | E | 33 | NWSENEW | WILLOW CREEK | NORBY, ALFRED |
| STOC | S | 43D | 10266 | TR | 10 CFS | 1886-05-01 | 1 | 7 | S | 20 | E | 33 | NWSENEW | WILLOW CREEK | PODKONJAK, MECHELLE |
| STOC | S | 43D | 10266 | TR | 10 CFS | 1886-05-01 | 1 | 7 | S | 20 | E | 33 | NWSENEW | WILLOW CREEK | PODKONJAK, KENNETH R |
| STOC | S | 43D | 10266 | TR | 10 CFS | 1886-05-01 | 1 | 7 | S | 20 | E | 33 | NWSENEW | WILLOW CREEK | SWANSON, JR, ALVIN L |
| STOC | S | 43D | 10266 | TR | 10 CFS | 1886-05-01 | 1 | 7 | S | 20 | E | 33 | NWSENEW | WILLOW CREEK | MCCAMPBELL, JOHN D |

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| WRTE | S | HSN | W R | | FLOW | | PRIORITY | POD | | | | SOURCE | OWNER | | | |
|------|---|-----|----------|----|------|-----|------------|-----|----|---|----|--------|-------|--------|---|------------------------|
| | | | NUMBER | V | RATE | UNT | | # | TW | P | RN | | | G | SC | QTR |
| STOC | S | 43D | 10266 | IR | 10 | CFS | 1886-05-01 | 1 | 7 | S | 20 | E | 33 | NWSENW | WILLOW CREEK | REMINGTON MONTANA CO |
| STOC | S | 43D | 10266 | IR | 10 | CFS | 1886-05-01 | 1 | 7 | S | 20 | E | 33 | NWSENW | WILLOW CREEK | RED LODGE WEST LLP |
| STOC | S | 43D | 10266 | IR | 10 | CFS | 1886-05-01 | 1 | 7 | S | 20 | E | 33 | NWSENW | WILLOW CREEK | LAMAR RANCHING CO |
| STOC | S | 43D | 10266 | IR | 10 | CFS | 1886-05-01 | 1 | 7 | S | 20 | E | 33 | NWSENW | WILLOW CREEK | MCCAMPBELL, DIXIE |
| STOC | S | 43D | 10266 | IR | 10 | CFS | 1886-05-01 | 1 | 7 | S | 20 | E | 33 | NWSENW | WILLOW CREEK | LANGLAS, RUTH HELEN |
| STOC | S | 43D | 10266 | IR | 10 | CFS | 1886-05-01 | 1 | 7 | S | 20 | E | 33 | NWSENW | WILLOW CREEK | CLARK, JOHN W |
| STOC | S | 43D | 10266 | IR | 10 | CFS | 1886-05-01 | 1 | 7 | S | 20 | E | 33 | NWSENW | WILLOW CREEK | NORBY, H L |
| STOC | S | 43D | 10269 | FW | | | 1889-06-01 | 1 | 7 | S | 20 | E | 33 | SWNEW | WILLOW CREEK | NORBY, ALFRED |
| STOC | S | 43D | 10269 | FW | | | 1889-06-01 | 1 | 7 | S | 20 | E | 33 | SWNEW | WILLOW CREEK | NORBY, H L |
| STOC | S | 43D | 10269 | FW | | | 1889-06-01 | 1 | 7 | S | 20 | E | 33 | SWNEW | WILLOW CREEK | REMINGTON MONTANA CO |
| GWCT | G | 43D | 13479 | DM | 15 | GPM | 1977-06-20 | 1 | 7 | S | 20 | E | 33 | SWSES | GROUNDWATER | WILKINS, DONOVAN M |
| GWCT | G | 43D | 13479 | DM | 15 | GPM | 1977-06-20 | 1 | 7 | S | 20 | E | 33 | SWSES | GROUNDWATER | WILKINS, SHARON |
| GWCT | G | 43D | 23551 | DM | 5 | GPM | 1979-07-11 | 1 | 7 | S | 20 | E | 33 | NWNW | GROUNDWATER | NORBY, ALFRED |
| GWCT | G | 43D | 23551 | DM | 5 | GPM | 1979-07-11 | 1 | 7 | S | 20 | E | 33 | NWNW | GROUNDWATER | REMINGTON MONTANA CO |
| STOC | S | 43D | 39535 | IR | 663 | GPM | 1960-07-08 | 1 | 7 | S | 20 | E | 33 | N2SE | UNNAMED TRIBUTARY OF ROCK CREEK | POLLARI, DIANA L |
| STOC | S | 43D | 39535 | IR | 663 | GPM | 1960-07-08 | 1 | 7 | S | 20 | E | 33 | N2SE | UNNAMED TRIBUTARY OF ROCK CREEK | POLLARI, JACK O |
| STOC | S | 43D | 39537 | IR | 85 | GPM | 1944-05-01 | 1 | 7 | S | 20 | E | 33 | SENESE | CLOSE CREEK | POLLARI, DIANA L |
| STOC | S | 43D | 39537 | IR | 85 | GPM | 1944-05-01 | 1 | 7 | S | 20 | E | 33 | SENESE | CLOSE CREEK | POLLARI, JACK O |
| GWCT | G | 43D | 86253 | DM | 35 | GPM | 1993-06-25 | 1 | 7 | S | 20 | E | 33 | NESWNW | GROUNDWATER | REMINGTON MONTANA CO |
| GWCT | G | 43D | 86253 | DM | 35 | GPM | 1993-06-25 | 1 | 7 | S | 20 | E | 33 | NESWNW | GROUNDWATER | REMINGTON MONTANA CO |
| GWCT | G | 43D | 86253 | LG | 35 | GPM | 1993-06-25 | 1 | 7 | S | 20 | E | 33 | NESWNW | GROUNDWATER | REMINGTON MONTANA CO |
| GWCT | G | 43D | 96473 | DM | 14 | GPM | 1995-12-13 | 1 | 7 | S | 20 | E | 33 | SWNESE | GROUNDWATER | DANIELS, PATRICIA L |
| GWCT | G | 43D | 96473 | LG | 14 | GPM | 1995-12-13 | 1 | 7 | S | 20 | E | 33 | SWNESE | GROUNDWATER | DANIELS, PATRICIA L |
| GWCT | G | 43D | 96473 | LG | 14 | GPM | 1995-12-13 | 1 | 7 | S | 20 | E | 33 | SWNESE | GROUNDWATER | DANIELS, ROBERT W |
| GWCT | G | 43D | 96473 | DM | 14 | GPM | 1995-12-13 | 1 | 7 | S | 20 | E | 33 | SWNESE | GROUNDWATER | DANIELS, ROBERT W |
| PRPM | S | 43D | 102271 | FW | 100 | GPM | 1997-09-11 | 1 | 7 | S | 20 | E | 33 | NWNEW | WILLOW CREEK | SWANSON, JR, ALVIN L |
| PRPM | S | 43D | 102271 | FW | 100 | GPM | 1997-09-11 | 1 | 7 | S | 20 | E | 33 | NWNEW | WILLOW CREEK | LAMAR RANCHING CO |
| GWCT | G | 43D | 108078 | DM | 8 | GPM | 1999-06-02 | 1 | 7 | S | 20 | E | 33 | SWSESE | GROUNDWATER | GILLETTE, RUSSELL |
| GWCT | G | 43D | 109233 | DM | 12 | GPM | 1999-07-29 | 1 | 7 | S | 20 | E | 33 | SWNESE | GROUNDWATER | KAISER, PETER |
| GWCT | G | 43D | 116119 | DM | 15 | GPM | 2001-05-23 | 1 | 7 | S | 20 | E | 33 | NEMWNE | GROUNDWATER | DEHYO, PETER M |
| STOC | S | 43D | 197550 | IR | 3 | CFS | 1902-05-17 | 1 | 7 | S | 20 | E | 33 | NWNESE | UNNAMED TRIBUTARY OF WEST FORK ROCK CREEK | PILATI, JULIUS L |
| STOC | S | 43D | 197550 | IR | 3 | CFS | 1902-05-17 | 1 | 7 | S | 20 | E | 33 | NWNESE | UNNAMED TRIBUTARY OF WEST FORK ROCK CREEK | PILATI, PAUL A |
| GWCT | G | 43D | 30002581 | DM | 18 | GPM | 2002-06-13 | 1 | 7 | S | 20 | E | 33 | NWSWNE | GROUNDWATER | SHELDON, JERRY |
| GWCT | G | 43D | 30002581 | LG | 18 | GPM | 2002-06-13 | 1 | 7 | S | 20 | E | 33 | NWSWNE | GROUNDWATER | SHELDON, JERRY |
| STOC | G | 43D | 228 | DM | 35 | GPM | 1954-12-31 | 1 | 7 | S | 20 | E | 34 | NENWSE | GROUNDWATER | KANE, JAMES J |
| PRPM | S | 43D | 5847 | IR | 40 | GPM | 1975-06-26 | 1 | 7 | S | 20 | E | 34 | SWNW | UNNAMED TRIBUTARY OF ROCK CREEK | ZUPAN, SHIRLEY L |
| PRPM | S | 43D | 5847 | IR | 40 | GPM | 1975-06-26 | 1 | 7 | S | 20 | E | 34 | SWNW | UNNAMED TRIBUTARY OF ROCK CREEK | ZUPAN, TONY F |
| STOC | S | 43D | 6013 | IR | 34 | GPM | 1931-06-17 | 1 | 7 | S | 20 | E | 34 | | UNNAMED TRIBUTARY OF ROCK CREEK | PAPEZ, MARY |
| GWCT | G | 43D | 16122 | DM | 60 | GPM | 1977-11-04 | 1 | 7 | S | 20 | E | 34 | NENWSE | GROUNDWATER | KANE, JAMES J |
| STOC | S | 43D | 20206 | DM | 10 | GPM | 1943-01-28 | 1 | 7 | S | 20 | E | 34 | NWSENW | UNNAMED TRIBUTARY OF ROCK CREEK | HUNTER, LAVERNE D |
| STOC | S | 43D | 20206 | DM | 10 | GPM | 1943-01-28 | 1 | 7 | S | 20 | E | 34 | NWSENW | UNNAMED TRIBUTARY OF ROCK CREEK | HUNTER, BONNIE I. |
| STOC | S | 43D | 20216 | LG | 168 | GPM | 1890-12-31 | 1 | 7 | S | 20 | E | 34 | NWSWNW | UNNAMED TRIBUTARY OF ROCK CREEK | KLEPICH, GEORGE R |
| PRPM | S | 43D | 23508 | LG | 15 | GPM | 1979-07-09 | 1 | 7 | S | 20 | E | 34 | SENW | UNNAMED TRIBUTARY OF ROCK CREEK | JONES, LAWRENCE B |
| STOC | S | 43D | 25561 | IR | 68 | GPM | 1964-06-01 | 1 | 7 | S | 20 | E | 34 | NESWSW | ROCK CREEK | NASH, KANE H ESTATE OF |
| STOC | S | 43D | 25561 | IR | 68 | GPM | 1964-06-01 | 1 | 7 | S | 20 | E | 34 | NESWSW | ROCK CREEK | HANLY, FRANK |
| STOC | S | 43D | 25561 | IR | 68 | GPM | 1964-06-01 | 1 | 7 | S | 20 | E | 34 | NESWSW | ROCK CREEK | MUELLER, JERRY |
| STOC | S | 43D | 27181 | DM | 30 | GPM | 1900-12-31 | 1 | 7 | S | 20 | E | 34 | SWNESW | UNNAMED TRIBUTARY OF ROCK CREEK | ZIMMERMAN, CHRISTINE |

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| WRITE | S | USN | W R NUMBER | V | USE | FLOW | | POD | | | | | | | | | | SOURCE | OWNER |
|-------|---|-----|---------------|---|-----|------|-----|------------|---|----|---|----|---|----|--------|---------------------------------|----------------------------|--------|-------|
| | | | | | | RATE | UNT | PRIORITY | # | TW | P | RN | G | SC | QTR | SEC | | | |
| EXEX | S | 43D | 88864 | | ST | | | 1945-12-31 | 4 | 8 | S | 20 | E | 3 | SE | BEAR CREEK | MOUNTAIN LION LLC | | |
| EXEX | S | 43D | 88865 | | ST | | | 1945-12-31 | 3 | 8 | S | 20 | E | 3 | E2NE | SCOTCH COULER | MOUNTAIN LION LLC | | |
| STOC | S | 43D | 197646 | | TR | 9 | CFS | 1904-01-01 | 1 | 8 | S | 20 | E | 3 | SWSWNW | ROCK CREEK | WOLFE, RONALD A | | |
| STOC | S | 43D | 197649 | | TR | 283 | GPM | 1942-08-08 | 1 | 8 | S | 20 | E | 3 | SESWNW | UNNAMED TRIBUTARY OF ROCK CREEK | WOLFE, RONALD A | | |
| STOC | S | 43D | 197649 | | TR | 283 | GPM | 1942-08-08 | 2 | 8 | S | 20 | E | 3 | NWSENW | UNNAMED TRIBUTARY OF ROCK CREEK | WOLFE, RONALD A | | |
| GWCT | G | 43D | 6959 | | DM | 8 | GPM | 1975-11-25 | 1 | 8 | S | 20 | E | 4 | N2 | GROUNDWATER | LAW, HEN A | | |
| STOC | S | 43D | 10214 | | TR | 4 | GPM | 1970-01-01 | 1 | 8 | S | 20 | E | 4 | NESESW | UNNAMED TRIBUTARY OF ROCK CREEK | REISS, DIANE | | |
| STOC | S | 43D | 10214 | | TR | 4 | GPM | 1970-01-01 | 1 | 8 | S | 20 | E | 4 | NESESW | UNNAMED TRIBUTARY OF ROCK CREEK | REISS, JOHN | | |
| STOC | S | 43D | 10215 | | FW | | | 1928-01-01 | 1 | 8 | S | 20 | E | 4 | NWSWSE | ROCK CREEK | REISS, DIANE | | |
| STOC | S | 43D | 10215 | | FW | | | 1928-01-01 | 1 | 8 | S | 20 | E | 4 | NWSWSE | ROCK CREEK | REISS, JOHN | | |
| GWCT | G | 43D | 12004 | | DM | 10 | GPM | 1977-03-31 | 1 | 8 | S | 20 | E | 4 | NWNW | GROUNDWATER | TOCI, GERALD | | |
| GWCT | G | 43D | 12004 | | DM | 10 | GPM | 1977-03-31 | 1 | 8 | S | 20 | E | 4 | NWNW | GROUNDWATER | TURNER, ROBERT I. | | |
| GWCT | G | 43D | 12004 | | DM | 10 | GPM | 1977-03-31 | 1 | 8 | S | 20 | E | 4 | NWNW | GROUNDWATER | JAMES, ROBERT P | | |
| GWCT | G | 43D | 19979 | | DM | 10 | GPM | 1978-08-21 | 1 | 8 | S | 20 | E | 4 | SWSWNE | GROUNDWATER | CUSKER, ORIAN J | | |
| GWCT | G | 43D | 23656 | | TR | 90 | GPM | 1979-07-17 | 1 | 8 | S | 20 | E | 4 | SWNE | GROUNDWATER | BOLMEIER, W B | | |
| GWCT | G | 43D | 23656 | | TR | 90 | GPM | 1979-07-17 | 1 | 8 | S | 20 | E | 4 | SWNE | GROUNDWATER | OLDS, W J | | |
| GWCT | G | 43D | 29630 | | DM | 20 | GPM | 1980-04-23 | 1 | 8 | S | 20 | E | 4 | NWNENW | GROUNDWATER | KYRO, RICHARD M | | |
| GWCT | G | 43D | 31123 | | DM | 10 | GPM | 1981-01-07 | 1 | 8 | S | 20 | E | 4 | NWSWNW | GROUNDWATER | GOPPERT, CLAYTON | | |
| GWCT | G | 43D | 31151 | | DM | 25 | GPM | 1981-01-12 | 1 | 8 | S | 20 | E | 4 | NENW | GROUNDWATER | BURNSIDE, BARRIE C | | |
| STOC | S | 43D | 31244 | | FW | | | 1942-04-21 | 1 | 8 | S | 20 | E | 4 | SWNESE | ROCK CREEK | BEARCREEK LAND & CATTLE CO | | |
| STOC | S | 43D | 31244 | | FW | | | 1942-04-21 | 1 | 8 | S | 20 | E | 4 | SWNESE | ROCK CREEK | FALMER, WILLIAM R | | |
| GWCT | G | 43D | 31279 | | DM | 25 | GPM | 1981-01-19 | 1 | 8 | S | 20 | E | 4 | NENW | GROUNDWATER | THOMPSON, NORMA | | |
| GWCT | G | 43D | 31279 | | DM | 25 | GPM | 1981-01-19 | 1 | 8 | S | 20 | E | 4 | NENW | GROUNDWATER | THOMPSON, LEONARD | | |
| GWCT | G | 43D | 33155 | | DM | 30 | GPM | 1981-04-22 | 1 | 8 | S | 20 | E | 4 | NENE | GROUNDWATER | BROWN, LAWRENCE E | | |
| GWCT | G | 43D | 33155 | | ST | 30 | GPM | 1981-04-22 | 1 | 8 | S | 20 | E | 4 | NENE | GROUNDWATER | BROWN, LAWRENCE E | | |
| GWCT | G | 43D | 40837 | | DM | 20 | GPM | 1982-01-12 | 1 | 8 | S | 20 | E | 4 | SENWNW | GROUNDWATER | COREY, HOWARD D | | |
| GWCT | G | 43D | 40837 | | DM | 20 | GPM | 1982-01-12 | 1 | 8 | S | 20 | E | 4 | SENWNW | GROUNDWATER | COREY, VERDA M | | |
| GWCT | G | 43D | 58065 | | DM | 40 | GPM | 1984-11-08 | 1 | 8 | S | 20 | E | 4 | NWNW | GROUNDWATER | SANDBURG, LAMAR E | | |
| GWCT | G | 43D | 58065 | | DM | 40 | GPM | 1984-11-08 | 1 | 8 | S | 20 | E | 4 | NWNW | GROUNDWATER | ACHERMANN, EDITH | | |
| GWCT | G | 43D | 67235 | | DM | 10 | GPM | 1988-05-20 | 1 | 8 | S | 20 | E | 4 | SENE | GROUNDWATER | OWEN, WILLIAM F | | |
| GWCT | G | 43D | 70839 | | DM | 10 | GPM | 1989-05-15 | 1 | 8 | S | 20 | E | 4 | NENW | GROUNDWATER | COX, RICHARD L | | |
| GWCT | G | 43D | 73407 | | DM | 25 | GPM | 1989-12-14 | 1 | 8 | S | 20 | E | 4 | NENW | GROUNDWATER | PLEWINSKI, FRANCIS L | | |
| GWCT | G | 43D | 73407 | | DM | 25 | GPM | 1989-12-14 | 1 | 8 | S | 20 | E | 4 | NENW | GROUNDWATER | PLEWINSKI, LILLIAN A | | |
| GWCT | G | 43D | 73458 | | DM | 30 | GPM | 1990-03-12 | 1 | 8 | S | 20 | E | 4 | NESWNW | GROUNDWATER | THOMPSEN, DAVID A | | |
| GWCT | G | 43D | 77086 | | DM | 35 | GPM | 1990-12-11 | 1 | 8 | S | 20 | E | 4 | NESE | GROUNDWATER | FERGUSON, GARY | | |
| GWCT | G | 43D | 77086 | | DM | 35 | GPM | 1990-12-11 | 1 | 8 | S | 20 | E | 4 | NESE | GROUNDWATER | FERGUSON, JANE | | |
| GWCT | G | 43D | 84446 | | DM | 10 | GPM | 1993-02-08 | 1 | 8 | S | 20 | E | 4 | NENW | GROUNDWATER | ROBBINS, STEPHEN | | |
| PRPM | S | 43D | 85418 | | FS | 450 | GPM | 1993-05-05 | 1 | 8 | S | 20 | E | 4 | SWSWSE | UNNAMED TRIBUTARY OF ROCK CREEK | WOLFE, RONALD A | | |
| PRPM | S | 43D | 85418 | | FW | 450 | GPM | 1993-05-05 | 1 | 8 | S | 20 | E | 4 | SWSWSE | UNNAMED TRIBUTARY OF ROCK CREEK | WOLFE, RONALD A | | |
| PRPM | S | 43D | 85418 | | FS | 450 | GPM | 1993-05-05 | 2 | 8 | S | 20 | E | 4 | SWSWSE | UNNAMED TRIBUTARY OF ROCK CREEK | WOLFE, RONALD A | | |
| PRPM | S | 43D | 85418 | | FW | 450 | GPM | 1993-05-05 | 2 | 8 | S | 20 | E | 4 | SWSWSE | UNNAMED TRIBUTARY OF ROCK CREEK | WOLFE, RONALD A | | |
| PRPM | S | 43D | 85451 | | FS | 450 | GPM | 1993-05-19 | 2 | 8 | S | 20 | E | 4 | NESWSE | UNNAMED TRIBUTARY OF ROCK CREEK | WOLFE, RONALD A | | |
| PRPM | S | 43D | 85451 | | FW | 450 | GPM | 1993-05-19 | 2 | 8 | S | 20 | E | 4 | NESWSE | UNNAMED TRIBUTARY OF ROCK CREEK | WOLFE, RONALD A | | |
| PRPM | S | 43D | 85451 | | FS | 450 | GPM | 1993-05-19 | 3 | 8 | S | 20 | E | 4 | NWSWSE | UNNAMED TRIBUTARY OF ROCK CREEK | WOLFE, RONALD A | | |
| PRPM | S | 43D | 85451 | | FW | 450 | GPM | 1993-05-19 | 3 | 8 | S | 20 | E | 4 | NWSWSE | UNNAMED TRIBUTARY OF ROCK CREEK | WOLFE, RONALD A | | |
| PRPM | S | 43D | 85451 | | FS | 450 | GPM | 1993-05-19 | 4 | 8 | S | 20 | E | 4 | SENESE | UNNAMED TRIBUTARY OF ROCK CREEK | WOLFE, RONALD A | | |
| PRPM | S | 43D | 85451 | | FW | 450 | GPM | 1993-05-19 | 4 | 8 | S | 20 | E | 4 | SENESE | UNNAMED TRIBUTARY OF ROCK CREEK | WOLFE, RONALD A | | |

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| WRTE | S | BSN | W R NUMBER | V USE | FLOW RATE | UNT | PRIORITY | POD | H | TW | P | RN | G | SC | QTR | SEC | SOURCE | OWNER |
|------|---|-----|------------|-------|-----------|-----|------------|-----|---|----|----|----|---|------|-----|---------------------------------|-----------------------|-------|
| GWCT | G | 43D | 21-86332 | DM | 15 GPM | | 1993-08-09 | 1 | 8 | S | 20 | E | 4 | SESE | NW | GROUNDWATER | WIDDICOMBE, CHARLES W | |
| GWCT | G | 43D | 86332 | LG | 15 GPM | | 1993-08-09 | 1 | 8 | S | 20 | E | 4 | SESE | NW | GROUNDWATER | WIDDICOMBE, CHARLES W | |
| GWCT | G | 43D | 21-97422 | DM | 25 GPM | | 1993-10-29 | 1 | 8 | S | 20 | E | 4 | NWSW | NW | GROUNDWATER | TOSTRUD, MILT | |
| GWCT | G | 43D | 23-88811 | DM | 12 GPM | | 1994-05-24 | 1 | 8 | S | 20 | E | 4 | SESW | NW | GROUNDWATER | DAPPLES, BIRDEEN C | |
| GWCT | G | 43D | 88811 | DM | 12 GPM | | 1994-05-24 | 1 | 8 | S | 20 | E | 4 | SESW | NW | GROUNDWATER | DAPPLES, CHARLES C | |
| GWCT | G | 43D | 21-88843 | DM | 35 GPM | | 1994-03-17 | 1 | 8 | S | 20 | E | 4 | NWNW | SW | GROUNDWATER | CHRISTENSEN, JODIE W | |
| GWCT | G | 43D | 88843 | DM | 35 GPM | | 1994-03-17 | 1 | 8 | S | 20 | E | 4 | NWNW | SW | GROUNDWATER | CHRISTENSEN, JUDY A | |
| GWCT | G | 43D | 25-90898 | MD | 20 GPM | | 1994-07-25 | 1 | 8 | S | 20 | E | 4 | NENW | SE | GROUNDWATER | ADAMS, AMON | |
| PRPM | S | 43D | 90928 | FW | 150 GPM | | 1994-08-09 | 1 | 8 | S | 20 | E | 4 | NENW | SE | UNNAMED TRIBUTARY OF ROCK CREEK | PITCHER, RUTH | |
| GWCT | G | 43D | 90981 | DM | 15 GPM | | 1994-09-09 | 1 | 8 | S | 20 | E | 4 | SENE | | GROUNDWATER | KOLSTAD, RAY | |
| GWCT | G | 43D | 90981 | DM | 15 GPM | | 1994-09-09 | 1 | 8 | S | 20 | E | 4 | SENE | | GROUNDWATER | KOLSTAD, DON | |
| GWCT | G | 43D | 91688 | DM | 22 GPM | | 1994-09-21 | 1 | 8 | S | 20 | E | 4 | NWNE | SE | GROUNDWATER | MC LEAN, KAREN | |
| GWCT | G | 43D | 91688 | DM | 22 GPM | | 1994-09-21 | 1 | 8 | S | 20 | E | 4 | NWNE | SE | GROUNDWATER | MC LEAN, RAY | |
| GWCT | G | 43D | 26-91691 | DM | 25 GPM | | 1994-09-16 | 1 | 8 | S | 20 | E | 4 | SWSW | NW | GROUNDWATER | PENDERGPAFT, RANDY S | |
| GWCT | G | 43D | 23-92939 | DM | 30 GPM | | 1995-03-21 | 1 | 8 | S | 20 | E | 4 | SWSW | NW | GROUNDWATER | GRAFF, A LOUISE | |
| GWCT | G | 43D | 92939 | DM | 30 GPM | | 1995-03-21 | 1 | 8 | S | 20 | E | 4 | SWSW | NW | GROUNDWATER | GRAFF, JAMES R | |
| GWCT | G | 43F | 92976 | DM | 30 GPM | | 1995-05-10 | 1 | 8 | S | 20 | E | 4 | NENE | SE | GROUNDWATER | OWEN, CHARLES B | |
| GWCT | G | 43D | 28-96593 | DM | 25 GPM | | 1996-03-12 | 1 | 8 | S | 20 | E | 4 | S2SW | NE | GROUNDWATER | ZAVALA, JEFFREY | |
| GWCT | G | 43D | 96593 | LG | 25 GPM | | 1996-03-12 | 1 | 8 | S | 20 | E | 4 | S2SW | NE | GROUNDWATER | ZAVALA, LYNN | |
| GWCT | G | 43D | 96593 | LG | 25 GPM | | 1996-03-12 | 1 | 8 | S | 20 | E | 4 | S2SW | NE | GROUNDWATER | ZAVALA, JEFFREY | |
| GWCT | G | 43D | 96593 | DM | 25 GPM | | 1996-03-12 | 1 | 8 | S | 20 | E | 4 | S2SW | NE | GROUNDWATER | ZAVALA, LYNN | |
| GWCT | G | 43 | 101373 | DM | 12 GPM | | 1997-04-14 | 1 | 8 | S | 20 | E | 4 | NESE | | GROUNDWATER | PORTH, ANDREW | |
| GWCT | G | 43D | 29-102113 | LG | 25 GPM | | 1997-08-19 | 1 | 8 | S | 20 | E | 4 | SENE | | GROUNDWATER | GRIFFITH, W S | |
| GWCT | G | 43D | 102113 | LG | 25 GPM | | 1997-08-19 | 1 | 8 | S | 20 | E | 4 | SENE | | GROUNDWATER | GRIFFITH, BETTY J | |
| GWCT | G | 43D | 30-102114 | DM | 16 GPM | | 1997-08-20 | 1 | 8 | S | 20 | E | 4 | SESE | NW | GROUNDWATER | MAMAYEK, PHYLLIS G | |
| GWCT | G | 43D | 102114 | DM | 16 GPM | | 1997-08-20 | 1 | 8 | S | 20 | E | 4 | SESE | NW | GROUNDWATER | MAMAYEK, ROBERT D | |
| STOC | S | 43D | 102577 | IR | 45 GPM | | 1900-09-15 | 1 | 8 | S | 20 | E | 4 | NWNE | SW | WEST FORK ROCK CREEK | ENRICO, EUGENE | |
| GWCT | G | 43 | 103474 | DM | 15 GPM | | 1998-02-12 | 1 | 8 | S | 20 | E | 4 | SENE | | GROUNDWATER | TURNER, JOE | |
| GWCT | G | 43D | 103474 | LG | 15 GPM | | 1998-02-12 | 1 | 8 | S | 20 | E | 4 | SENE | | GROUNDWATER | TURNER, JOE | |
| GWCT | G | 43 | 31-105034 | LG | 10 GPM | | 1998-08-18 | 1 | 8 | S | 20 | E | 4 | SWNW | NW | GROUNDWATER | WALTER, ELVA M | |
| GWCT | G | 43D | 105034 | LG | 10 GPM | | 1998-08-18 | 1 | 8 | S | 20 | E | 4 | SWNW | NW | GROUNDWATER | WALTER, RON | |
| GWCT | G | 43D | 22-105039 | DM | 9 GPM | | 1998-08-31 | 1 | 8 | S | 20 | E | 4 | NENW | NW | GROUNDWATER | YOUNG, HOWARD A | |
| GWCT | G | 43D | 105039 | LG | 9 GPM | | 1998-08-31 | 1 | 8 | S | 20 | E | 4 | NENW | NW | GROUNDWATER | YOUNG, HOWARD A | |
| GWCT | G | 43D | 105039 | LG | 9 GPM | | 1998-08-31 | 1 | 8 | S | 20 | E | 4 | NENW | NW | GROUNDWATER | YOUNG, KAREN | |
| GWCT | G | 43F | 105039 | DM | 9 GPM | | 1998-08-31 | 1 | 8 | S | 20 | E | 4 | NENW | NW | GROUNDWATER | YOUNG, KAREN | |
| GWCT | G | 43 | 105887 | DM | 5 GPM | | 1998-09-22 | 1 | 8 | S | 20 | E | 4 | NWNE | SE | GROUNDWATER | BROWN, WALBURGA A | |
| GWCT | G | 43D | 105887 | LG | 5 GPM | | 1998-09-22 | 1 | 8 | S | 20 | E | 4 | NWNE | SE | GROUNDWATER | BROWN, WALBURGA A | |
| GWCT | G | 43D | 27-105909 | DM | 15 GPM | | 1998-10-07 | 1 | 8 | S | 20 | E | 4 | SESE | NW | GROUNDWATER | ELSBERG, JOHN | |
| GWCT | G | 43D | 105909 | DM | 15 GPM | | 1998-10-07 | 1 | 8 | S | 20 | E | 4 | SESE | NW | GROUNDWATER | ELSBERG, KIMBERLY F | |
| GWCT | G | 43 | 34-105966 | DM | 10 GPM | | 1998-11-09 | 1 | 8 | S | 20 | E | 4 | SWNW | SE | GROUNDWATER | WAGNER, MIKE A | |
| GWCT | G | 43D | 25-107235 | DM | 30 GPM | | 1999-09-29 | 1 | 8 | S | 20 | E | 4 | SENE | NW | GROUNDWATER | CHRISTIANSEN, LEE | |
| GWCT | G | 43D | 25-109218 | DM | 20 GPM | | 1999-07-22 | 1 | 8 | S | 20 | E | 4 | SWSE | | GROUNDWATER | ALLEN, VIRGINIA L | |
| GWCT | G | 43D | 25-109707 | DM | 10 GPM | | 1999-09-15 | 1 | 8 | S | 20 | E | 4 | SWSW | NW | GROUNDWATER | TETRAULT, MARLENE | |
| GWCT | G | 43D | 25-110427 | LG | 20 GPM | | 1999-11-04 | 1 | 8 | S | 20 | E | 4 | NWSE | NE | GROUNDWATER | LO, CHIA-WEI | |
| GWCT | G | 43F | 110427 | LG | 20 GPM | | 1999-11-04 | 1 | 8 | S | 20 | E | 4 | NWSE | NE | GROUNDWATER | LO, LIN-LIN | |
| GWCT | G | 43D | 28-112052 | DM | 15 GPM | | 2000-11-24 | 1 | 8 | S | 20 | E | 4 | NENW | NW | GROUNDWATER | COLLAR, MARIAN C | |
| GWCT | G | 43D | 112052 | DM | 15 GPM | | 2000-11-24 | 1 | 8 | S | 20 | E | 4 | NENW | NW | GROUNDWATER | COLLAR, RICHARD I | |

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| WRTE | S | BSN | W R | USE | FLOW | UNT | PRIORITY | POD | # | TW | P | RN | G | SC | QTR | SEC | SOURCE | OWNER |
|------|---|-----|-----|----------|------|-------|----------|------------|---|----|---|----|---|----|--------|-----|---------------------------------|------------------------------|
| GWCT | G | 43 | 37 | 113905 | DM | 6 | GPM | 2001-01-31 | 1 | 8 | S | 20 | E | 4 | NENW | | GROUNDWATER | BADAME-FOY, SHIRLEY A |
| GWCT | G | 43 | | 113905 | DM | 6 | GPM | 2001-01-31 | 1 | 8 | S | 20 | E | 4 | NENW | | GROUNDWATER | FOY, STANFORD T |
| STOC | S | 43D | | 197556 | IR | | | 1889-02-20 | 1 | 8 | S | 20 | E | 4 | SWNE | | UNNAMED TRIBUTARY OF ROCK CREEK | PITCHER, ROBERT G |
| STOC | S | 43 | | 197556 | IR | | | 1889-02-20 | 1 | 8 | S | 20 | E | 4 | SWNE | | UNNAMED TRIBUTARY OF ROCK CREEK | PITCHER, RUTH L |
| GWCT | G | 4 | 40 | 30003495 | DM | 14 | GPM | 2002-07-29 | 1 | 8 | S | 20 | E | 4 | NWSNW | | GROUNDWATER | VIG, PAULINE H |
| GWCT | G | 43D | | 30003495 | LG | 14 | GPM | 2002-07-29 | 1 | 8 | S | 20 | E | 4 | NWSNW | | GROUNDWATER | VIG, PAULINE H |
| STOC | S | 43D | | 153 | IR | 4 | CFS | 1894-06-23 | 1 | 8 | S | 20 | E | 5 | SESWE | | WEST FORK ROCK CREEK | ALDRIDGE, J C |
| STOC | S | 43D | | 3273 | IR | 3 | CFS | 1894-06-23 | 1 | 8 | S | 20 | E | 5 | SESWE | | WEST FORK ROCK CREEK | DRAPER RANCH CO INC |
| STOC | S | 43D | | 3273 | IR | 3 | CFS | 1894-06-23 | 1 | 8 | S | 20 | E | 5 | SESWE | | WEST FORK ROCK CREEK | KINGMAN JR, HENRY S TRUST |
| STOC | S | 43D | | 3273 | IR | 3 | CFS | 1894-06-23 | 1 | 8 | S | 20 | E | 5 | SESWE | | WEST FORK ROCK CREEK | KINGMAN JR, HENRY S TRUST |
| STOC | S | 43D | | 3273 | IR | 3 | CFS | 1894-06-23 | 1 | 8 | S | 20 | E | 5 | SESWE | | WEST FORK ROCK CREEK | KINGMAN JR, HENRY S TRUST |
| GWCT | G | 43D | | 3301 | DM | 10 | GPM | 1974-08-12 | 1 | 8 | S | 20 | E | 5 | NESNW | | GROUNDWATER | AGNEW, COLVIN |
| STOC | S | 43D | | 3994 | IR | 112 | GPM | 1894-06-23 | 1 | 8 | S | 20 | E | 5 | SESWE | | WEST FORK ROCK CREEK | URBAN, ARTHUR L |
| STOC | S | 42D | | 3994 | IR | 112 | GPM | 1894-06-23 | 1 | 8 | S | 20 | E | 5 | SESWE | | WEST FORK ROCK CREEK | URBAN, RUTH B |
| GWCT | G | 43D | | 9334 | DM | 12 | GPM | 1976-08-30 | 1 | 8 | S | 20 | E | 5 | SENWSW | | GROUNDWATER | THOMAS, GARY R |
| STOC | S | 43D | | 10233 | IR | 15 | CFS | 1901-06-28 | 1 | 8 | S | 20 | E | 5 | SWSWE | | WEST FORK ROCK CREEK | HAARA DITCH CO |
| STOC | S | 43D | | 10234 | IR | 15 | CFS | 1900-06-15 | 1 | 8 | S | 20 | E | 5 | SWSWE | | WEST FORK ROCK CREEK | HAARA DITCH CO |
| STOC | S | 43D | | 10235 | IR | 4 | CFS | 1902-07-31 | 1 | 8 | S | 20 | E | 5 | SWSWE | | WEST FORK ROCK CREEK | HAARA DITCH CO |
| STOC | S | 43D | | 10236 | IR | 2 | CFS | 1895-06-01 | 1 | 8 | S | 20 | E | 5 | SWSWE | | WEST FORK ROCK CREEK | LUOMA, ARTHUR A |
| STOC | S | 43D | | 10236 | IR | 2 | CFS | 1895-06-01 | 1 | 8 | S | 20 | E | 5 | SWSWE | | WEST FORK ROCK CREEK | MOORE, LORETTA J |
| STOC | S | 43D | | 10239 | IR | 4 | CFS | 1894-06-23 | 1 | 8 | S | 20 | E | 5 | SWSWE | | WEST FORK ROCK CREEK | MOORE, MARK M |
| STOC | S | 43D | | 10239 | IR | 4 | CFS | 1894-06-23 | 1 | 8 | S | 20 | E | 5 | SWSWE | | WEST FORK ROCK CREEK | UNDERWOOD, JACK A |
| GWCT | G | 43D | | 10405 | DM | 18 | GPM | 1976-11-15 | 1 | 8 | S | 20 | E | 5 | NWWSW | | GROUNDWATER | UNDERWOOD, MARIANN M |
| PRPM | S | 43D | | 10473 | IR | 20 | CFS | 1976-11-16 | 1 | 8 | S | 20 | E | 5 | SWSWE | | WEST FORK ROCK CREEK | THOMAS, GARY R |
| PRPM | S | 43D | | 12465 | IR | 2,604 | GPM | 1977-04-26 | 1 | 8 | S | 20 | E | 5 | S2NE | | WEST FORK ROCK CREEK | HAARA DITCH CO |
| PRPM | S | 43D | | 12465 | IR | 2,604 | GPM | 1977-04-26 | 1 | 8 | S | 20 | E | 5 | S2NE | | WEST FORK ROCK CREEK | BEUG, JOHN A |
| PRPM | S | 43D | | 13536 | IR | 2,603 | GPM | 1977-04-27 | 2 | 8 | S | 20 | E | 5 | SESWE | | WEST FORK ROCK CREEK | BEUG, SUSANN |
| PRPM | S | 43D | | 13536 | IR | 2,603 | GPM | 1977-04-27 | 2 | 8 | S | 20 | E | 5 | SESWE | | WEST FORK ROCK CREEK | GRAY, JOHN T & ASSOC |
| PRPM | S | 43D | | 14124 | IR | 6,507 | GPM | 1977-06-01 | 1 | 8 | S | 20 | E | 5 | SWSWE | | WEST FORK ROCK CREEK | GRAY, JOHN T |
| PRPM | S | 43D | | 17649 | IR | 2 | CFS | 1977-12-05 | 1 | 8 | S | 20 | E | 5 | NWNESE | | WEST FORK ROCK CREEK | PRYDE DITCH CO |
| PRPM | S | 43D | | 17619 | IR | 2 | CFS | 1977-12-05 | 1 | 8 | S | 20 | E | 5 | NWNESE | | WEST FORK ROCK CREEK | LO, LINLIN |
| GWCT | G | 43 | | 17709 | DM | 30 | GPM | 1978-02-14 | 1 | 8 | S | 20 | E | 5 | NWSW | | GROUNDWATER | LO, CHIA WEI |
| GWCT | G | 43 | 41 | 22114 | DM | 20 | GPM | 1979-03-16 | 1 | 8 | S | 20 | E | 5 | NENE | | GROUNDWATER | RISHBURN, BRUCE R |
| STOC | S | 43 | | 27988 | IR | 1 | CFS | 1895-06-20 | 1 | 8 | S | 20 | E | 5 | SWSWE | | WEST FORK ROCK CREEK | VIKING LAND & INVESTMENT INC |
| STOC | S | 43D | | 27988 | IR | 1 | CFS | 1895-06-20 | 1 | 8 | S | 20 | E | 5 | SWSWE | | WEST FORK ROCK CREEK | JORGENSEN, NORMAN C |
| STOC | S | 43D | | 27988 | IR | 1 | CFS | 1895-06-20 | 1 | 8 | S | 20 | E | 5 | SWSWE | | WEST FORK ROCK CREEK | JORGENSEN, PHILIP CE |
| STOC | S | 43 | | 27988 | IR | 1 | CFS | 1895-06-20 | 1 | 8 | S | 20 | E | 5 | SWSWE | | WEST FORK ROCK CREEK | JORGENSEN, GLORIA R |
| GWCT | G | 4 | | 28148 | DM | 25 | GPM | 1980-07-15 | 1 | 8 | S | 20 | E | 5 | SENWSW | | GROUNDWATER | JORGENSEN, ROY E |
| GWCT | G | 4 | | 28148 | DM | 25 | GPM | 1980-07-15 | 1 | 8 | S | 20 | E | 5 | SENWSW | | GROUNDWATER | TOOMBS, DOUGLAS D |
| STOC | S | 43D | | 29361 | IR | 25 | CFS | 1903-08-22 | 1 | 8 | S | 20 | E | 5 | SESWE | | WEST FORK ROCK CREEK | TOOMBS, MARGERY LOU |
| STOC | S | 43D | | 29362 | IR | 4 | CFS | 1894-06-23 | 1 | 8 | S | 20 | E | 5 | SESWE | | WEST FORK ROCK CREEK | DRAPER RANCH CO INC |
| STOC | S | 43D | | 29363 | IR | 8 | CFS | 1894-07-01 | 1 | 8 | S | 20 | E | 5 | SESWE | | WEST FORK ROCK CREEK | DRAPER RANCH CO INC |
| STOC | S | 43D | | 29364 | IR | 2 | CFS | 1895-06-15 | 1 | 8 | S | 20 | E | 5 | SESWE | | WEST FORK ROCK CREEK | DRAPER RANCH CO INC |
| STOC | S | 43D | | 29365 | IR | 3 | CFS | 1902-06-01 | 1 | 8 | S | 20 | E | 5 | SESWE | | WEST FORK ROCK CREEK | DRAPER RANCH CO INC |
| STOC | S | 43D | | 29366 | IR | 6 | CFS | 1894-07-01 | 1 | 8 | S | 20 | E | 5 | SESWE | | WEST FORK ROCK CREEK | DRAPER RANCH CO INC |
| GWCT | G | 43 | 42 | 35365 | DM | 12 | GPM | 1981-08-20 | 1 | 8 | S | 20 | E | 5 | SWSE | | GROUNDWATER | DRAPER RANCH CO INC |
| GWCT | G | 43D | | 35365 | DM | 12 | GPM | 1981-08-20 | 1 | 8 | S | 20 | E | 5 | SWSE | | GROUNDWATER | DILLON, ROBERT |

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| WRTE | S | BSN | W R NUMBER | V | USE | FLOW RATE | UNT | PRIORITY | POD # | TW | P | RN | G | SC | QTR | SEC | SOURCE | OWNER |
|------|---|-----|------------|---|-----|-----------|-----|------------|-------|----|---|----|---|----|------|-----|----------------------|--------------------------|
| STOC | S | 43D | 43316 | | IR | 2 CFS | | 1896-06-06 | 1 | 8 | S | 20 | E | 5 | SES | WNE | WEST FORK ROCK CREEK | LUOMA, RONALD A |
| STOC | S | 43D | 43316 | | IR | 2 CFS | | 1896-06-06 | 1 | 8 | S | 20 | E | 5 | SES | WNE | WEST FORK ROCK CREEK | LUOMA, DARLENE J |
| STOC | S | 43D | 43317 | | IR | 2 CFS | | 1894-06-23 | 1 | 8 | S | 20 | E | 5 | SES | WNE | WEST FORK ROCK CREEK | LUOMA, RONALD A |
| STOC | S | 43D | 43317 | | IR | 2 CFS | | 1894-06-23 | 1 | 8 | S | 20 | E | 5 | SES | WNE | WEST FORK ROCK CREEK | LUOMA, DARLENE J |
| STOC | S | 43D | 43377 | | MC | 3 CFS | | 1895-06-20 | 1 | 8 | S | 20 | E | 5 | NENE | SE | WEST FORK ROCK CREEK | RED LODGE, CITY OF |
| STOC | S | 43D | 43378 | | MC | 1 CFS | | 1886-06-01 | 1 | 8 | S | 20 | E | 5 | NENE | SE | WEST FORK ROCK CREEK | RED LODGE, CITY OF |
| STOC | S | 43D | 45683 | | LG | 80 GPM | | 1968-08-10 | 1 | 8 | S | 20 | E | 5 | NWS | | WEST FORK ROCK CREEK | THOMAS, GARY R |
| STOC | S | 43D | 45689 | | FW | | | 1968-09-04 | 1 | 8 | S | 20 | E | 5 | SEN | WSW | WEST FORK ROCK CREEK | FISHBURN, BRUCE R |
| STOC | S | 43D | 45689 | | FW | | | 1968-09-04 | 1 | 8 | S | 20 | E | 5 | SEN | WSW | WEST FORK ROCK CREEK | FISHBURN, CAROLE E |
| STOC | S | 43D | 45737 | | MC | 2 CFS | | 1899-08-05 | 1 | 8 | S | 20 | E | 5 | NENE | SE | WEST FORK ROCK CREEK | RED LODGE, CITY OF |
| STOC | S | 43D | 45767 | | FW | 80 GPM | | 1968-10-05 | 1 | 8 | S | 20 | E | 5 | SEN | WSW | WEST FORK ROCK CREEK | ROHRDANZ, MARLA |
| STOC | S | 43F | 45767 | | FW | 80 GPM | | 1968-10-05 | 1 | 8 | S | 20 | E | 5 | SEN | WSW | WEST FORK ROCK CREEK | ROHRDANZ, VAUGHN |
| GWCT | G | 43L | 52296 | | DM | 25 GPM | | 1983-05-26 | 1 | 8 | S | 20 | E | 5 | NWS | | GROUNDWATER | DUBOIS, JERRY L |
| GWCT | G | 43L | 52296 | | DM | 25 GPM | | 1983-05-26 | 1 | 8 | S | 20 | E | 5 | NWS | | GROUNDWATER | DUBOIS, MARYEL |
| GWCT | G | 43D | 52296 | | DM | 25 GPM | | 1983-05-26 | 1 | 8 | S | 20 | E | 5 | NWS | | GROUNDWATER | MCDONNELL, MATTHEW J |
| GWCT | G | 43D | 52296 | | DM | 25 GPM | | 1983-05-26 | 1 | 8 | S | 20 | E | 5 | NWS | | GROUNDWATER | MCDONNELL, SHIRLEY A |
| GWCT | G | 43D | 56215 | | DM | 35 GPM | | 1984-09-14 | 1 | 8 | S | 20 | E | 5 | NWSE | | GROUNDWATER | ARNOLD JR, HARRY E |
| GWCT | G | 43D | 56215 | | DM | 35 GPM | | 1984-09-14 | 1 | 8 | S | 20 | E | 5 | NWSE | | GROUNDWATER | ARNOLD, CLAUDIA |
| GWCT | G | 43D | 56230 | | DM | 12 GPM | | 1984-09-20 | 1 | 8 | S | 20 | E | 5 | SWS | WNE | GROUNDWATER | HOUSE, CONSTANCE H |
| GWCT | G | 43D | 56230 | | DM | 12 GPM | | 1984-09-20 | 1 | 8 | S | 20 | E | 5 | SWS | WNE | GROUNDWATER | HOUSE, WALTER G |
| GWCT | G | 43I | 57929 | | DM | 15 GPM | | 1985-03-19 | 1 | 8 | S | 20 | E | 5 | SEN | WSW | GROUNDWATER | ROHRDANZ, MARLA |
| GWCT | G | 43D | 57929 | | DM | 15 GPM | | 1985-03-19 | 1 | 8 | S | 20 | E | 5 | SEN | WSW | GROUNDWATER | ROHRDANZ, VAUGHN |
| GWCT | G | 43D | 57934 | | DM | 12 GPM | | 1985-03-29 | 1 | 8 | S | 20 | E | 5 | NE | | GROUNDWATER | ADAMS, JOSEPH |
| GWCT | G | 43D | 59389 | | DM | 25 GPM | | 1986-12-19 | 1 | 8 | S | 20 | E | 5 | SESE | | GROUNDWATER | BROMBACHER, ELAINE I |
| PRPM | S | 43D | 68356 | | FS | 1,346 GPM | | 1988-07-13 | 1 | 8 | S | 20 | E | 5 | NWSE | | WEST FORK ROCK CREEK | SCHUESSLER, WILLIAM C |
| GWCT | G | 43D | 73442 | | DM | 25 GPM | | 1990-01-31 | 1 | 8 | S | 20 | E | 5 | SWNE | | GROUNDWATER | WILTSIE, DAVID H |
| GWCT | G | 43D | 73442 | | DM | 25 GPM | | 1990-01-31 | 1 | 8 | S | 20 | E | 5 | SWNE | | GROUNDWATER | WILTSIE, PATRICIA A |
| GWCT | G | 43D | 76322 | | DM | 30 GPM | | 1990-10-25 | 1 | 8 | S | 20 | E | 5 | NENE | | GROUNDWATER | AVERILL, LINDA P |
| GWCT | G | 43I | 78098 | | CM | 30 GPM | | 1991-08-13 | 1 | 8 | S | 20 | E | 5 | SWNW | W | GROUNDWATER | BEARTOOTH GOLF CLUB ASSN |
| GWCT | G | 43D | 78098 | | LG | 30 GPM | | 1991-08-13 | 1 | 8 | S | 20 | E | 5 | SWNW | W | GROUNDWATER | BEARTOOTH GOLF CLUB ASSN |
| GWCT | G | 43D | 85471 | | LG | 15 GPM | | 1993-06-03 | 1 | 8 | S | 20 | E | 5 | SESE | NW | GROUNDWATER | FOSTER, JACK H |
| GWCT | G | 43D | 85471 | | LG | 15 GPM | | 1993-06-03 | 1 | 8 | S | 20 | E | 5 | SESE | NW | GROUNDWATER | FOSTER, JEAN M |
| GWCT | G | 43D | 85471 | | DM | 15 GPM | | 1993-06-03 | 1 | 8 | S | 20 | E | 5 | SESE | NW | GROUNDWATER | FOSTER, JEAN M |
| GWCT | G | 43D | 85471 | | DM | 15 GPM | | 1993-06-03 | 1 | 8 | S | 20 | E | 5 | SESE | NW | GROUNDWATER | FOSTER, JACK H |
| GWCT | G | 43D | 87451 | | DM | 15 GPM | | 1993-11-29 | 1 | 8 | S | 20 | E | 5 | NWS | | GROUNDWATER | FITZSIMMONS, BRADY M |
| GWCT | G | 43D | 87451 | | DM | 15 GPM | | 1993-11-29 | 1 | 8 | S | 20 | E | 5 | NWS | | GROUNDWATER | FITZSIMMONS, KATHERINE |
| GWCT | G | 43D | 87451 | | LG | 15 GPM | | 1993-11-29 | 1 | 8 | S | 20 | E | 5 | NWS | | GROUNDWATER | FITZSIMMONS, KATHERINE |
| GWCT | G | 43D | 87451 | | LG | 15 GPM | | 1993-11-29 | 1 | 8 | S | 20 | E | 5 | NWS | | GROUNDWATER | FITZSIMMONS, BRADY M |
| GWCT | G | 43D | 90666 | | DM | 20 GPM | | 1994-07-21 | 1 | 8 | S | 20 | E | 5 | SEN | WNE | GROUNDWATER | KELLY, FRANK E |
| GWCT | G | 43D | 90666 | | LG | 20 GPM | | 1994-07-21 | 1 | 8 | S | 20 | E | 5 | SEN | WNE | GROUNDWATER | KELLY, FRANK E |
| GWCT | G | 43D | 90953 | | DM | 14 GPM | | 1994-08-29 | 1 | 8 | S | 20 | E | 5 | NWSE | | GROUNDWATER | ERVIN, JACK |
| GWCT | G | 43D | 90953 | | DM | 14 GPM | | 1994-08-29 | 1 | 8 | S | 20 | E | 5 | NWSE | | GROUNDWATER | ERVIN, LAVONNE |
| GWCT | G | 43D | 94785 | | DM | 30 GPM | | 1995-09-18 | 1 | 8 | S | 20 | E | 5 | NNW | SE | GROUNDWATER | HANSEL, JUDITH A |
| GWCT | G | 43D | 94857 | | DM | 12 GPM | | 1995-10-30 | 1 | 8 | S | 20 | E | 5 | NEN | WSW | GROUNDWATER | THOMPSON, LARRY R |
| GWCT | G | 43D | 96533 | | DM | 9 GPM | | 1996-01-30 | 1 | 8 | S | 20 | E | 5 | NESE | | GROUNDWATER | ELTON, ERIC L |
| GWCT | G | 43D | 96533 | | LG | 9 GPM | | 1996-01-30 | 1 | 8 | S | 20 | E | 5 | NESE | | GROUNDWATER | ELTON, ERIC L |
| GWCT | G | 43D | 97627 | | DM | 3 GPM | | 1996-06-05 | 1 | 8 | S | 20 | E | 5 | NWSE | | GROUNDWATER | BUFF, WILLIAM R |

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|---------|-------|------------|-------|------|-----|------------|---|----|---|----|---|----|------|-----|----------------------|--|-------|
| | | | | RATE | UNT | PRI | # | TW | P | RN | G | SC | QTR | SEC | | | |
| GWCT | G 431 | 53-99218 | DM | 30 | GPM | 1996-08-20 | 1 | 8 | S | 20 | E | 5 | SENE | NW | GROUNDWATER | JAHNER, GEORGINA | |
| GWCT | G 431 | 99218 | DM | 30 | GPM | 1996-08-20 | 1 | 8 | S | 20 | E | 5 | SENE | NW | GROUNDWATER | JAHNER, RICHARD | |
| GWCT | G 431 | 99218 | LG | 30 | GPM | 1996-08-20 | 1 | 8 | S | 20 | E | 5 | SENE | NW | GROUNDWATER | JAHNER, RICHARD | |
| GWCT | G 431 | 99218 | LG | 30 | GPM | 1996-08-20 | 1 | 8 | S | 20 | E | 5 | SENE | NW | GROUNDWATER | JAHNER, GEORGINA | |
| GWCT | G 431 | 99302 | DM | 12 | GPM | 1996-10-07 | 1 | 8 | S | 20 | E | 5 | SESW | NW | GROUNDWATER | CULBERTSON, FRANK | |
| GWCT | G 431 | 99302 | LG | 12 | GPM | 1996-10-07 | 1 | 8 | S | 20 | E | 5 | SESW | NW | GROUNDWATER | CULBERTSON, FRANK | |
| GWCT | G 431 | 100018 | DM | 28 | GPM | 1996-12-27 | 1 | 8 | S | 20 | E | 5 | SENE | NW | GROUNDWATER | PRINZ, DAVID C | |
| GWCT | G 431 | 100018 | LG | 28 | GPM | 1996-12-27 | 1 | 8 | S | 20 | E | 5 | SENE | NW | GROUNDWATER | PRINZ, DAVID C | |
| GWCT | G 431 | 109232 | DM | 20 | GPM | 1999-07-29 | 1 | 8 | S | 20 | E | 5 | NESE | NW | GROUNDWATER | VORACHEK, JAMES H | |
| GWCT | G 431 | 109252 | LG | 26 | GPM | 1999-08-06 | 1 | 8 | S | 20 | E | 5 | NESE | NW | GROUNDWATER | KELLEY, FRANK E | |
| GWCT | G 431 | 109252 | DM | 26 | GPM | 1999-08-06 | 1 | 8 | S | 20 | E | 5 | NESE | NW | GROUNDWATER | KELLEY, FRANK E | |
| STOC | S 43D | 112017 | IR | 3 | CFS | 1896-08-27 | 1 | 8 | S | 20 | E | 5 | SESW | NW | WEST FORK ROCK CREEK | RED LODGE GRIZZLY PEAK INC | |
| STOC | S 43D | 112018 | IR | 3 | CFS | 1894-06-23 | 1 | 8 | S | 20 | E | 5 | SESW | NW | WEST FORK ROCK CREEK | RED LODGE GRIZZLY PEAK INC | |
| GWCT | G 43D | 115285 | DM | 8 | GPM | 2001-05-02 | 1 | 8 | S | 20 | E | 5 | NW | NW | GROUNDWATER | WELLS, TERRANCE D | |
| GWCT | G 43D | 115285 | DM | 8 | GPM | 2001-05-02 | 1 | 8 | S | 20 | E | 5 | NW | NW | GROUNDWATER | WELLS, GEORGIA | |
| STOC | S 43D | 197628 | IR | 60 | GPM | 1894-06-23 | 1 | 8 | S | 20 | E | 5 | SESW | NW | WEST FORK ROCK CREEK | BEUG, JOHN A | |
| STOC | S 43D | 197628 | IR | 60 | GPM | 1894-06-23 | 1 | 8 | S | 20 | E | 5 | SESW | NW | WEST FORK ROCK CREEK | BEUG, STEPHANIE S | |
| STOC | S 43D | 197735 | ST | | | 1894-06-23 | 1 | 8 | S | 20 | E | 5 | SESW | NW | WEST FORK ROCK CREEK | RED LODGE GRIZZLY PEAK INC | |
| STOC | S 43D | 197736 | IR | 108 | GPM | 1894-06-23 | 1 | 8 | S | 20 | E | 5 | SESW | NW | WEST FORK ROCK CREEK | RED LODGE GRIZZLY PEAK INC | |
| STOC | S 43D | 198412 | IR | 3 | CFS | 1903-06-13 | 1 | 8 | S | 20 | E | 5 | SESW | NW | WEST FORK ROCK CREEK | RED LODGE GRIZZLY PEAK INC | |
| STOC | S 43D | 198630 | RC | 50 | CFS | 1972-09-29 | 1 | 8 | S | 20 | E | 5 | SE | SW | WEST FORK ROCK CREEK | STEINERT, TERRY L | |
| STOC | S 43D | 200015 | ST | | | 1894-06-23 | 1 | 8 | S | 20 | E | 5 | SESW | NW | WEST FORK ROCK CREEK | PRATHER RANCH FAMILY LIABILITY PARTNERSHIP | |
| STOC | S 43D | 200018 | IR | 3 | CFS | 1956-12-31 | 1 | 8 | S | 20 | E | 5 | SESW | NW | WASTE AND SEEPAGE | PRATHER RANCH FAMILY LIABILITY PARTNERSHIP | |
| STOC | S 43D | 200020 | IR | 422 | GPM | 1894-06-23 | 1 | 8 | S | 20 | E | 5 | SESW | NW | WEST FORK ROCK CREEK | PRATHER, SUSAN L TRUST | |
| STOC | S 43D | 200020 | IR | 422 | GPM | 1894-06-23 | 1 | 8 | S | 20 | E | 5 | SESW | NW | WEST FORK ROCK CREEK | PRATHER RANCH FAMILY LIABILITY PARTNERSHIP | |
| STOC | S 43D | 200057 | IR | 3 | CFS | 1903-06-13 | 1 | 8 | S | 20 | E | 5 | SESW | NW | WEST FORK ROCK CREEK | DRAPER RANCH CO INC | |
| STOC | S 43D | 200078 | IR | 1 | CFS | 1892-06-20 | 1 | 8 | S | 20 | E | 5 | SWS | NW | WEST FORK ROCK CREEK | RIZZOLO, STEVEN J | |
| STOC | S 43D | 200078 | IR | 1 | CFS | 1892-06-20 | 1 | 8 | S | 20 | E | 5 | SWS | NW | WEST FORK ROCK CREEK | PALMER, JOHN S | |
| STOC | S 43D | 200078 | IR | 1 | CFS | 1892-06-20 | 1 | 8 | S | 20 | E | 5 | SWS | NW | WEST FORK ROCK CREEK | RIZZOLO, JENNIFER B | |
| STOC | S 43D | 206404 | IR | 19 | CFS | 1910-12-31 | 1 | 8 | S | 20 | E | 5 | SWS | NW | WEST FORK ROCK CREEK | HAARA DITCH CO | |
| STOC | S 43D | 206823 | IR | 3 | CFS | 1895-06-01 | 1 | 8 | S | 20 | E | 5 | SWS | NW | WEST FORK ROCK CREEK | CONLON, SUZANNE B | |
| STOC | S 43D | 206823 | IR | 3 | CFS | 1895-06-01 | 1 | 8 | S | 20 | E | 5 | SWS | NW | WEST FORK ROCK CREEK | KYRO, DAN | |
| STOC | S 43D | 206823 | IR | 3 | CFS | 1895-06-01 | 1 | 8 | S | 20 | E | 5 | SWS | NW | WEST FORK ROCK CREEK | KYRO, LINDA | |
| STOC | S 43D | 216328 | IR | 126 | GPM | 1896-06-06 | 1 | 8 | S | 20 | E | 5 | SESW | NW | WEST FORK ROCK CREEK | URBAN, ARTHUR L | |
| STOC | S 43D | 216328 | IR | 126 | GPM | 1896-06-06 | 1 | 8 | S | 20 | E | 5 | SESW | NW | WEST FORK ROCK CREEK | URBAN, RUTH B | |
| STOC | S 43D | 216329 | IR | 67 | GPM | 1896-06-06 | 1 | 8 | S | 20 | E | 5 | SESW | NW | WEST FORK ROCK CREEK | BEUG, JOHN A | |
| STOC | S 43D | 216329 | IR | 67 | GPM | 1896-06-06 | 1 | 8 | S | 20 | E | 5 | SESW | NW | WEST FORK ROCK CREEK | BEUG, STEPHANIE S | |
| STOC | S 43D | 216330 | IR | 121 | GPM | 1896-06-06 | 1 | 8 | S | 20 | E | 5 | SESW | NW | WEST FORK ROCK CREEK | RED LODGE GRIZZLY PEAK INC | |
| STOC | S 43D | 216331 | IR | 1 | CFS | 1896-06-06 | 1 | 8 | S | 20 | E | 5 | SESW | NW | WEST FORK ROCK CREEK | PRATHER RANCH FAMILY LIABILITY PARTNERSHIP | |
| GWCT | G 431 | 30000331 | DM | 6 | GPM | 2001-12-07 | 1 | 8 | S | 20 | E | 5 | NE | SE | GROUNDWATER | RUE, DENNIS | |
| GWCT | G 431 | 30000370 | DM | 10 | GPM | 2001-12-18 | 1 | 8 | S | 20 | E | 5 | SE | NW | GROUNDWATER | JACOBSON, LOIS A | |
| GWCT | G 431 | 30000370 | LG | 10 | GPM | 2001-12-18 | 1 | 8 | S | 20 | E | 5 | SE | NW | GROUNDWATER | JACOBSON, LOIS A | |
| GWCT | G 431 | 30002610 | DM | 8 | GPM | 2002-06-25 | 1 | 8 | S | 20 | E | 5 | S | NW | GROUNDWATER | MULLANEY, MARK | |
| GWCT | G 431 | 30002610 | DM | 8 | GPM | 2002-06-25 | 1 | 8 | S | 20 | E | 5 | S | NW | GROUNDWATER | MULLANEY, LEANNE S | |
| STOC | S 43D | 168 | IR | 15 | CFS | 1893-06-25 | 1 | 8 | S | 20 | E | 6 | SE | SE | WEST FORK ROCK CREEK | WEST FORK IRRIGATION CO INC | |
| STOC | S 43D | 169 | IR | 11 | CFS | 1902-07-15 | 1 | 8 | S | 20 | E | 6 | SE | SE | WEST FORK ROCK CREEK | WEST FORK IRRIGATION CO INC | |
| STOC | S 43D | 170 | IR | 12 | CFS | 1894-06-30 | 1 | 8 | S | 20 | E | 6 | SE | SE | WEST FORK ROCK CREEK | WEST FORK IRRIGATION CO INC | |

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|-------|-------|-----|--------|---|-----|-----------|------|-----|------------|-----|----|---|----|---|----|--------|---------------------------------|---------------------------------|--|--------|-------|
| | | | | | | | | | | # | TW | P | RN | G | SC | QTR | SEC | | | | |
| STOC | S 43D | | 197644 | | IR | 145 GPM | | | 1891-10-01 | 1 | 8 | S | 20 | E | 8 | SESESE | ROCK CREEK | GROSSMAN, SCOTT | | | |
| STOC | S 43D | | 197645 | | IR | 145 GPM | | | 1903-07-15 | 1 | 8 | S | 20 | E | 8 | SESESE | ROCK CREEK | WILSON, OVA O | | | |
| STOC | S 43D | | 197645 | | IR | 145 GPM | | | 1903-07-15 | 1 | 8 | S | 20 | E | 8 | SESESE | ROCK CREEK | MENSIK, KATHE S | | | |
| STOC | S 43D | | 197645 | | IR | 145 GPM | | | 1903-07-15 | 1 | 8 | S | 20 | E | 8 | SESESE | ROCK CREEK | MENSIK, ROBERT D | | | |
| STOC | S 43D | | 198684 | | ST | 14 GPM | | | 1942-12-31 | 1 | 8 | S | 20 | E | 8 | NWSESW | UNNAMED TRIBUTARY OF ROCK CREEK | WAPLES PARTNERSHIP | | | |
| STOC | S 42D | | 206559 | | ST | 5 GPM | | | 1891-10-01 | 1 | 8 | S | 20 | E | 8 | NESESE | ROCK CREEK | WAPLES PARTNERSHIP | | | |
| STOC | S 43D | | 206560 | | IR | 85 GPM | | | 1891-10-01 | 1 | 8 | S | 20 | E | 8 | SESESE | ROCK CREEK | WAPLES PARTNERSHIP | | | |
| GWCT | G 43I | | 771 | | DM | 12 GPM | | | 1973-10-23 | 1 | 8 | S | 20 | E | 9 | NWSW | GROUNDWATER | VOGEL, ALEXANDER | | | |
| EXEX | G 43I | | 4118 | | DM | 10 GPM | | | 1962-12-31 | 1 | 8 | S | 20 | E | 9 | NWSW | GROUNDWATER | EATON, ELLIOTT W | | | |
| EXEX | G 43I | | 4118 | | DM | 10 GPM | | | 1962-12-31 | 1 | 8 | S | 20 | E | 9 | NWSW | GROUNDWATER | KEENER, DEBRA MAE | | | |
| EXEX | G 43D | | 4118 | | DM | 10 GPM | | | 1962-12-31 | 1 | 8 | S | 20 | E | 9 | NWSW | GROUNDWATER | DOMPIER, JANICE A | | | |
| EXEX | G 43I | | 4118 | | DM | 10 GPM | | | 1962-12-31 | 1 | 8 | S | 20 | E | 9 | NWSW | GROUNDWATER | MOULTON, JEAN ELLEN | | | |
| STOC | G 43 | | 5441 | | DM | 35 GPM | | | 1970-08-12 | 1 | 8 | S | 20 | E | 9 | NWSESW | GROUNDWATER | JONES, ROBERT H | | | |
| STOC | G 43D | | 5441 | | DM | 35 GPM | | | 1970-08-12 | 1 | 8 | S | 20 | E | 9 | NWSESW | GROUNDWATER | JONES, JAMES A | | | |
| STOC | G 43I | | 6521 | | DM | 30 GPM | | | 1963-08-15 | 1 | 8 | S | 20 | E | 9 | NESWNW | GROUNDWATER | HOWE, JOHN W | | | |
| STOC | S 43I | | 6532 | | IR | 19 CFS | | | 1895-06-01 | 1 | 8 | S | 20 | E | 9 | SENWSW | ROCK CREEK | ROCK CREEK CLEAR CREEK DITCH CO | | | |
| STOC | S 43D | | 6533 | | IR | 19 CFS | | | 1896-06-01 | 1 | 8 | S | 20 | E | 9 | SENWSW | ROCK CREEK | ROCK CREEK CLEAR CREEK DITCH CO | | | |
| STOC | S 43D | | 6534 | | IR | 59 CFS | | | 1892-10-03 | 1 | 8 | S | 20 | E | 9 | SENWSW | ROCK CREEK | ROCK CREEK CLEAR CREEK DITCH CO | | | |
| STOC | S 43D | | 6535 | | IR | 28 CFS | | | 1897-06-01 | 1 | 8 | S | 20 | E | 9 | SENWSW | ROCK CREEK | ROCK CREEK CLEAR CREEK DITCH CO | | | |
| STOC | G 43I | 62 | 7285 | | DM | 30 GPM | | | 1970-10-26 | 1 | 8 | S | 20 | E | 9 | SWNEW | GROUNDWATER | ROBINSON, MARY C | | | |
| STOC | G 43D | | 7285 | | DM | 30 GPM | | | 1970-10-26 | 1 | 8 | S | 20 | E | 9 | SWNEW | GROUNDWATER | ROBINSON, CHARLES A | | | |
| STOC | G 43D | | 10230 | | DM | 30 GPM | | | 1970-10-30 | 1 | 8 | S | 20 | E | 9 | NWSW | GROUNDWATER | VAUGHN, JAMES R | | | |
| STOC | G 43D | | 10230 | | DM | 30 GPM | | | 1970-10-30 | 1 | 8 | S | 20 | E | 9 | NWSW | GROUNDWATER | VAUGHN, JAMES R | | | |
| STOC | G 43I | | 10248 | | DM | 20 GPM | | | 1967-05-17 | 1 | 8 | S | 20 | E | 9 | SESWNW | GROUNDWATER | VAUGHN, LEGENE S | | | |
| STOC | G 43I | | 10248 | | DM | 20 GPM | | | 1967-05-17 | 1 | 8 | S | 20 | E | 9 | SESWNW | GROUNDWATER | GARDING, EDWARD A | | | |
| GWCT | G 43I | 63 | 13106 | | DM | 19 GPM | | | 1977-05-27 | 1 | 8 | S | 20 | E | 9 | NW | GROUNDWATER | GARDING, REBECCA J | | | |
| PPPM | S 43D | | 13903 | | IR | 6,507 GPM | | | 1977-07-07 | 1 | 8 | S | 20 | E | 9 | NWSW | ROCK CREEK | MARTIN, M L | | | |
| GWCT | G 43I | | 18204 | | DM | 20 GPM | | | 1978-04-06 | 1 | 8 | S | 20 | E | 9 | SWSEW | GROUNDWATER | ROCK CREEK CLEAR CREEK DITCH CO | | | |
| GWCT | G 43I | | 18204 | | DM | 20 GPM | | | 1978-04-06 | 1 | 8 | S | 20 | E | 9 | SWSEW | GROUNDWATER | MOSS, LADON | | | |
| GWCT | G 43I | | 21768 | | DM | 4 GPM | | | 1979-02-07 | 1 | 8 | S | 20 | E | 9 | SWSWNW | GROUNDWATER | MOSS, STANLEY R | | | |
| GWCT | G 43D | | 21768 | | DM | 4 GPM | | | 1979-02-07 | 1 | 8 | S | 20 | E | 9 | SWSWNW | GROUNDWATER | ERCKENBRACK, CAROL L | | | |
| GWCT | G 43D | | 25429 | | DM | 5 GPM | | | 1979-11-27 | 1 | 8 | S | 20 | E | 9 | NWNWSW | GROUNDWATER | ERCKENBRACK, NAT E | | | |
| GWCT | G 43D | | 25429 | | DM | 5 GPM | | | 1979-11-27 | 1 | 8 | S | 20 | E | 9 | NWNWSW | GROUNDWATER | WILLIS, OLAN | | | |
| STOC | S 43D | | 25565 | | FW | 26 GPM | | | 1903-07-15 | 2 | 8 | S | 20 | E | 9 | NENWSW | ROCK CREEK | WILLIS, VIOLET | | | |
| STOC | S 43D | | 25565 | | FW | 26 GPM | | | 1903-07-15 | 2 | 8 | S | 20 | E | 9 | NENWSW | ROCK CREEK | HARNISH, JOHN | | | |
| STOC | S 43D | | 25566 | | IR | 426 GPM | | | 1903-07-15 | 2 | 8 | S | 20 | E | 9 | NENWSW | ROCK CREEK | SMITH, RANDOLPH H | | | |
| STOC | S 43D | | 25566 | | IR | 426 GPM | | | 1903-07-15 | 2 | 8 | S | 20 | E | 9 | NENWSW | ROCK CREEK | SMITH, JOHN | | | |
| STOC | S 43D | | 25566 | | IR | 426 GPM | | | 1903-07-15 | 2 | 8 | S | 20 | E | 9 | NENWSW | ROCK CREEK | SMITH, RANDOLPH H | | | |
| GWCT | G 43D | | 28052 | | DM | 6 GPM | | | 1980-07-07 | 1 | 8 | S | 20 | E | 9 | NWSW | GROUNDWATER | SMITH, RANDOLPH H | | | |
| GWCT | G 43I | | 32887 | | DM | 30 GPM | | | 1981-04-30 | 1 | 8 | S | 20 | E | 9 | SWSWNW | GROUNDWATER | BIORN, TERRY | | | |
| GWCT | G 43 | | 32919 | | DM | 30 GPM | | | 1981-05-05 | 1 | 8 | S | 20 | E | 9 | SWSWNW | GROUNDWATER | CORTNER, PHYLLIS J | | | |
| GWCT | G 43 | | 32919 | | DM | 30 GPM | | | 1981-05-05 | 1 | 8 | S | 20 | E | 9 | SWSWNW | GROUNDWATER | SLAVICK, DEIPHE S | | | |
| GWCT | G 43 | | 37029 | | DM | 25 GPM | | | 1981-10-22 | 1 | 8 | S | 20 | E | 9 | NESWNW | GROUNDWATER | SLAVICK, ERVIN J | | | |
| GWCT | G 43I | 64 | 41638 | | DM | 5 GPM | | | 1982-02-04 | 1 | 8 | S | 20 | E | 9 | N2NW | GROUNDWATER | SEBOTA, JOHN C | | | |
| GWCT | G 43I | | 41926 | | DM | 15 GPM | | | 1982-04-15 | 1 | 8 | S | 20 | E | 9 | SWSEW | GROUNDWATER | LANGTON, DELANE H | | | |
| GWCT | G 43I | | 41926 | | DM | 15 GPM | | | 1982-04-15 | 1 | 8 | S | 20 | E | 9 | SWSEW | GROUNDWATER | TRANMER, ALICE M | | | |
| GWCT | G 43I | 65 | 45841 | | DM | 5 GPM | | | 1982-04-19 | 1 | 8 | S | 20 | E | 9 | NW | GROUNDWATER | TRANMER, THOMAS J | | | |
| GWCT | G 43I | | 45841 | | DM | 5 GPM | | | 1982-04-19 | 1 | 8 | S | 20 | E | 9 | NW | GROUNDWATER | SCOTT, JAMES E | | | |
| GWCT | G 43I | | 45841 | | DM | 5 GPM | | | 1982-04-19 | 1 | 8 | S | 20 | E | 9 | NW | GROUNDWATER | SCOTT, JANICE | | | |

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| WRTE | S | RSN | W R NUMBER | V | USE | FLOW RATE | UNT | PRIORITY | # | TW | P | RN | G | SC | QTR | SEC | SOURCE | OWNER |
|------|---|-----|------------|---|-----|------------|-----|------------|---|----|---|----|---|----|--------|-----|---------------------------------|--------------------------------------|
| GWCT | G | 43D | 45841 | | LG | 5 GPM | | 1982-04-19 | 1 | 8 | S | 20 | E | 9 | NW | | GROUNDWATER | SCOTT, JAMES E |
| GWCT | G | 43D | 45841 | | LG | 5 GPM | | 1982-04-19 | 1 | 8 | S | 20 | E | 9 | NW | | GROUNDWATER | SCOTT, JANICE |
| GWCT | G | 43D | 46703 | | DM | 30 GPM | | 1982-04-30 | 1 | 8 | S | 20 | E | 9 | SRWNW | | GROUNDWATER | HARNISH MEADOW PROPERTY OWNERS ASSOC |
| GWCT | G | 43D | 46703 | | DM | 30 GPM | | 1982-04-30 | 1 | 8 | S | 20 | E | 9 | SENWNW | | GROUNDWATER | SMITH, RANDOLPH H |
| GWCT | G | 43D | 47618 | | DM | 10 GPM | | 1982-07-09 | 1 | 8 | S | 20 | E | 9 | W2 | | GROUNDWATER | KOLSTAD, JOHN W |
| GWCT | G | 43D | 47618 | | DM | 10 GPM | | 1982-07-09 | 1 | 8 | S | 20 | E | 9 | W2 | | GROUNDWATER | KOLSTAD, VERA |
| PRPM | S | 43D | 54097 | | PG | 11,220 GPM | | 1983-11-10 | 1 | 8 | S | 20 | E | 9 | SRNWSW | | ROCK CREEK | DIAMOND T BAR RANCH |
| GWCT | G | 43D | 64356 | | DM | 30 GPM | | 1986-10-30 | 1 | 8 | S | 20 | E | 9 | NWNW | | GROUNDWATER | WAPLES, DONALD H |
| GWCT | G | 43D | 64356 | | ST | 30 GPM | | 1986-10-30 | 1 | 8 | S | 20 | E | 9 | NWNW | | GROUNDWATER | WAPLES, DONALD H |
| GWCT | G | 43D | 66395 | | DM | 12 GPM | | 1987-09-18 | 1 | 8 | S | 20 | E | 9 | NWSW | | GROUNDWATER | RITZ, EDDIE M |
| GWCT | G | 43D | 67219 | | DM | 10 GPM | | 1988-04-12 | 1 | 8 | S | 20 | E | 9 | NW | | GROUNDWATER | STRISSEL, BOYD |
| GWCT | G | 43D | 67219 | | DM | 10 GPM | | 1988-04-12 | 1 | 8 | S | 20 | E | 9 | NW | | GROUNDWATER | SILBERNAGEL, FRED J |
| GWCT | G | 43D | 67219 | | DM | 10 GPM | | 1988-04-12 | 1 | 8 | S | 20 | E | 9 | NW | | GROUNDWATER | SILBERNAGEL, RANDOLPH |
| GWCT | G | 43D | 67219 | | DM | 10 GPM | | 1988-04-12 | 1 | 8 | S | 20 | E | 9 | NW | | GROUNDWATER | STRISSEL, JOAN |
| GWCT | G | 43D | 73431 | | DM | 12 GPM | | 1990-01-22 | 1 | 8 | S | 20 | E | 9 | NWSW | | GROUNDWATER | PETERSON, PATRICIA R |
| GWCT | G | 43D | 73431 | | DM | 12 GPM | | 1990-01-22 | 1 | 8 | S | 20 | E | 9 | NWSW | | GROUNDWATER | PETERSON, DONALD A |
| GWCT | G | 43D | 81986 | | DM | 35 GPM | | 1992-06-24 | 1 | 8 | S | 20 | E | 9 | NENESW | | GROUNDWATER | MENSIK, KATHE S |
| GWCT | G | 43D | 81986 | | DM | 35 GPM | | 1992-06-24 | 1 | 8 | S | 20 | E | 9 | NENESW | | GROUNDWATER | MENSIK, ROBERT D |
| PRPM | S | 43D | 85451 | | ES | 450 GPM | | 1993-05-19 | 1 | 8 | S | 20 | E | 9 | E2NENW | | UNNAMED TRIBUTARY OF ROCK CREEK | WOLFE, RONALD A |
| PRPM | S | 43D | 85451 | | WW | 450 GPM | | 1993-05-19 | 1 | 8 | S | 20 | E | 9 | E2NENW | | UNNAMED TRIBUTARY OF ROCK CREEK | WOLFE, RONALD A |
| PRPM | S | 43D | 85458 | | FW | 400 GPM | | 1993-05-24 | 1 | 8 | S | 20 | E | 9 | SWSWSW | | ROCK CREEK | WAPLES, JEANNE |
| GWCT | G | 43D | 86304 | | DM | 10 GPM | | 1993-07-23 | 1 | 8 | S | 20 | E | 9 | SENWSW | | GROUNDWATER | CANTRELL, WILLIAM M |
| GWCT | G | 43D | 86304 | | LG | 10 GPM | | 1993-07-23 | 1 | 8 | S | 20 | E | 9 | SENWSW | | GROUNDWATER | CANTRELL, WILLIAM M |
| GWCT | G | 43D | 86340 | | DM | 12 GPM | | 1993-08-13 | 1 | 8 | S | 20 | E | 9 | SWNW | | GROUNDWATER | BRANICK, BRUCE W |
| GWCT | G | 43D | 86340 | | LG | 12 GPM | | 1993-08-13 | 1 | 8 | S | 20 | E | 9 | SWNW | | GROUNDWATER | BRANICK, BRUCE W |
| GWCT | G | 43D | 99170 | | CM | 35 GPM | | 1996-07-25 | 1 | 8 | S | 20 | E | 9 | SWSWNW | | GROUNDWATER | GOEHRINGER, JANET |
| GWCT | G | 43D | 99170 | | CM | 35 GPM | | 1996-07-25 | 1 | 8 | S | 20 | E | 9 | SWSWNW | | GROUNDWATER | GOEHRINGER, ROBERT |
| GWCT | G | 43D | 99286 | | DM | 30 GPM | | 1996-09-30 | 1 | 8 | S | 20 | E | 9 | NWNWSW | | GROUNDWATER | GOEHRINGER, ELLEN A |
| GWCT | G | 43D | 100055 | | DM | 12 GPM | | 1997-01-13 | 1 | 8 | S | 20 | E | 9 | NWNWSW | | GROUNDWATER | BROWN, MATTHEW J |
| GWCT | G | 43D | 102089 | | DM | 20 GPM | | 1997-08-05 | 1 | 8 | S | 20 | E | 9 | SWSWNW | | GROUNDWATER | WAGNER, KRISTI |
| GWCT | G | 43D | 102089 | | DM | 20 GPM | | 1997-08-05 | 1 | 8 | S | 20 | E | 9 | SWSWNW | | GROUNDWATER | WAGNER, LARRY J |
| GWCT | G | 43D | 102089 | | LG | 20 GPM | | 1997-08-05 | 1 | 8 | S | 20 | E | 9 | SWSWNW | | GROUNDWATER | WAGNER, KRISTI |
| GWCT | G | 43D | 102089 | | LG | 20 GPM | | 1997-08-05 | 1 | 8 | S | 20 | E | 9 | SWSWNW | | GROUNDWATER | WAGNER, LARRY J |
| GWCT | G | 43D | 102098 | | DM | 15 GPM | | 1997-08-07 | 1 | 8 | S | 20 | E | 9 | SENESE | | GROUNDWATER | LIAMPI, ROHNN |
| GWCT | G | 43D | 102183 | | DM | 10 GPM | | 1997-10-06 | 1 | 8 | S | 20 | E | 9 | NWSW | | GROUNDWATER | BARANKO, LEON J |
| GWCT | G | 43D | 102183 | | LG | 10 GPM | | 1997-10-06 | 1 | 8 | S | 20 | E | 9 | NWSW | | GROUNDWATER | BARANKO, LEON J |
| GWCT | G | 43D | 105014 | | DM | 23 GPM | | 1998-08-11 | 1 | 8 | S | 20 | E | 9 | NESWNW | | GROUNDWATER | STOVALL, LYNDA R |
| GWCT | G | 43D | 105014 | | DM | 23 GPM | | 1998-08-11 | 1 | 8 | S | 20 | E | 9 | NESWNW | | GROUNDWATER | STOVALL, P D |
| GWCT | G | 43D | 107143 | | DM | 10 GPM | | 1999-05-26 | 1 | 8 | S | 20 | E | 9 | NWSENW | | GROUNDWATER | CHAUT, MARK A |
| GWCT | G | 43D | 107165 | | DM | 5 GPM | | 1999-06-22 | 1 | 8 | S | 20 | E | 9 | NENESW | | GROUNDWATER | BENTON, CHRISTOPHER |
| GWCT | G | 43D | 107165 | | DM | 5 GPM | | 1999-06-22 | 1 | 8 | S | 20 | E | 9 | NENESW | | GROUNDWATER | BENTON, KATHERINE S |
| GWCT | G | 43D | 107165 | | LG | 5 GPM | | 1999-06-22 | 1 | 8 | S | 20 | E | 9 | NENESW | | GROUNDWATER | BENTON, CHRISTOPHER |
| GWCT | G | 43D | 107165 | | LG | 5 GPM | | 1999-06-22 | 1 | 8 | S | 20 | E | 9 | NENESW | | GROUNDWATER | BENTON, KATHERINE B |
| GWCT | G | 43D | 107166 | | DM | 5 GPM | | 1999-06-22 | 1 | 8 | S | 20 | E | 9 | NENESW | | GROUNDWATER | BENTON, CHRISTOPHER |
| GWCT | G | 43D | 107166 | | LG | 5 GPM | | 1999-06-22 | 1 | 8 | S | 20 | E | 9 | NENESW | | GROUNDWATER | BENTON, CHRISTOPHER |
| GWCT | G | 43D | 107166 | | LG | 5 GPM | | 1999-06-22 | 1 | 8 | S | 20 | E | 9 | NENESW | | GROUNDWATER | BENTON, KATHERINE B |
| GWCT | G | 43D | 107166 | | DM | 5 GPM | | 1999-06-22 | 1 | 8 | S | 20 | E | 9 | NENESW | | GROUNDWATER | BENTON, KATHERINE B |

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| WRFE | S | BSN | W R | | FLOW | | | POD | | | | | | | SOURCE | OWNER |
|------|---|-----|----------|-------|------|-----|------------|-----|----|---|----|---|----|--------|---------------------------------|----------------------------|
| | | | NUMBER | V USE | RATE | UNT | PRIORITY | # | TW | P | RN | G | SC | QTR | | |
| GWCT | G | 430 | 110447 | DM | 4 | GPM | 1999-11-15 | 1 | 8 | S | 20 | E | 9 | SESWSK | GROUNDWATER | BLACK, LOREN |
| GWCT | G | 430 | 116227 | DM | 15 | GPM | 2001-07-17 | 1 | 8 | S | 20 | E | 9 | NESWNW | GROUNDWATER | LEIKAM, LARRY |
| STOC | S | 43D | 195930 | DM | 4 | GPM | 1938-09-01 | 1 | 8 | S | 20 | E | 9 | SESENW | UNNAMED TRIBUTARY OF ROCK CREEK | SIMON, BRUCE T |
| STOC | S | 43D | 195930 | DM | 4 | GPM | 1938-09-01 | 1 | 8 | S | 20 | E | 9 | SESENW | UNNAMED TRIBUTARY OF ROCK CREEK | SIMON, RONALD C |
| STOC | S | 43D | 197650 | IR | 4 | CFS | 1904-01-01 | 1 | 8 | S | 20 | E | 9 | SESENW | ROCK CREEK | WOLFE, RONALD A |
| STOC | G | 43D | 197653 | DM | 12 | GPM | 1972-08-18 | 1 | 8 | S | 20 | E | 9 | NWSWNW | GROUNDWATER | WILSON, OLVA O |
| STOC | G | 43D | 198685 | DM | 10 | GPM | 1946-12-31 | 1 | 8 | S | 20 | E | 9 | SWNWSW | GROUNDWATER | WAPLES PARTNERSHIP |
| STOC | G | 43D | 206853 | CM | 25 | GPM | 1966-08-09 | 1 | 8 | S | 20 | E | 9 | NENW | GROUNDWATER | ROBINSON, AMELIA A |
| GWCT | G | 430 | 30000687 | DM | 30 | GPM | 2001-11-05 | 1 | 8 | S | 20 | E | 9 | NESWNW | GROUNDWATER | WAPLES, FLORA |
| GWCT | G | 430 | 30000687 | DM | 30 | GPM | 2001-11-05 | 1 | 8 | S | 20 | E | 9 | NESWNW | GROUNDWATER | WAPLES, DOMINIQUE |
| GWCT | G | 43D | 30000687 | LG | 30 | GPM | 2001-11-05 | 1 | 8 | S | 20 | E | 9 | NESWNW | GROUNDWATER | WAPLES, FLORA |
| GWCT | G | 43D | 30000687 | LG | 30 | GPM | 2001-11-05 | 1 | 8 | S | 20 | E | 9 | NESWNW | GROUNDWATER | WAPLES, DOMINIQUE |
| GWCT | G | 43D | 30000696 | LG | 20 | GPM | 2001-11-19 | 1 | 8 | S | 20 | E | 9 | NESWSW | GROUNDWATER | WALMSLEY, DORIS W |
| GWCT | G | 43D | 30000696 | LG | 20 | GPM | 2001-11-19 | 1 | 8 | S | 20 | E | 9 | NESWSW | GROUNDWATER | WALMSLEY, JOHN G |
| STOC | S | 43D | 31266 | IR | 3 | CFS | 1890-12-13 | 1 | 8 | S | 20 | E | 10 | SESENW | UNNAMED TRIBUTARY OF BEAR CREEK | SINCLAIR OIL CORP |
| GWCT | G | 43D | 86343 | DM | 7 | GPM | 1993-08-23 | 1 | 8 | S | 20 | E | 10 | SWNWSW | GROUNDWATER | ROSKAM, JR, RICHARD E |
| GWCT | G | 43D | 86343 | LG | 7 | GPM | 1993-08-23 | 1 | 8 | S | 20 | E | 10 | SWNWSW | GROUNDWATER | ROSKAM, JR, RICHARD E |
| EXEX | S | 43D | 88864 | ST | | | 1945-12-31 | 5 | 8 | S | 20 | E | 10 | NWNE | BEAR CREEK | MOUNTAIN LION LLC |
| GWCT | G | 43D | 96482 | ST | 12 | GPM | 1995-12-28 | 1 | 8 | S | 20 | E | 10 | NESWSW | GROUNDWATER | ROSKAM, JR, RICHARD E |
| GWCT | G | 43D | 107070 | DM | 12 | GPM | 1999-03-02 | 1 | 8 | S | 20 | E | 10 | SESWNW | GROUNDWATER | SHELDON, DONALD I |
| GWCT | G | 43D | 107070 | DM | 12 | GPM | 1999-03-02 | 1 | 8 | S | 20 | E | 10 | SESWNW | GROUNDWATER | SHELDON, JEANNA I |
| EXEX | S | 43D | 88864 | ST | | | 1945-12-31 | 6 | 8 | S | 20 | E | 11 | NW | BEAR CREEK | MOUNTAIN LION LLC |
| EXEX | S | 43D | 88864 | ST | | | 1945-12-31 | 7 | 8 | S | 20 | E | 11 | NESW | BEAR CREEK | MOUNTAIN LION LLC |
| EXEX | G | 43D | 88867 | ST | 25 | GPM | 1955-12-31 | 1 | 8 | S | 20 | E | 11 | SWNENW | GROUNDWATER | MOUNTAIN LION LLC |
| STOC | G | 43D | 20225 | MC | 500 | GPM | 1888-08-01 | 1 | 8 | S | 20 | E | 12 | NENWNW | UNNAMED TRIBUTARY OF BEAR CREEK | BEARCREEK, TOWN OF |
| STOC | S | 43D | 31284 | ST | | | 1900-12-31 | 1 | 8 | S | 20 | E | 13 | NENWSW | UNNAMED TRIBUTARY OF WOLF CREEK | SINCLAIR OIL CORP |
| STOC | S | 43D | 31285 | ST | | | 1900-12-31 | 1 | 8 | S | 20 | E | 13 | NENWSE | UNNAMED TRIBUTARY OF WOLF CREEK | SINCLAIR OIL CORP |
| STOC | G | 43D | 20227 | MC | 500 | GPM | 1888-08-01 | 1 | 8 | S | 20 | E | 14 | SWSW | UNNAMED TRIBUTARY OF BEAR CREEK | BEARCREEK, TOWN OF |
| STOC | S | 43D | 31283 | ST | | | 1910-12-31 | 1 | 8 | S | 20 | E | 14 | NESWSW | UNNAMED TRIBUTARY OF BEAR CREEK | SINCLAIR OIL CORP |
| STOC | S | 43D | 31289 | ST | | | 1910-12-31 | 1 | 8 | S | 20 | E | 14 | SWNESW | UNNAMED TRIBUTARY OF BEAR CREEK | SINCLAIR OIL CORP |
| STOC | S | 43D | 31290 | ST | | | 1910-12-31 | 1 | 8 | S | 20 | E | 14 | NENWNE | UNNAMED TRIBUTARY OF BEAR CREEK | SINCLAIR OIL CORP |
| STOC | S | 43D | 31293 | ST | | | 1910-12-31 | 1 | 8 | S | 20 | E | 14 | NENENW | UNNAMED TRIBUTARY OF BEAR CREEK | SINCLAIR OIL CORP |
| STOC | G | 43D | 20227 | MC | 500 | GPM | 1888-08-01 | 2 | 8 | S | 20 | E | 15 | SESE | UNNAMED TRIBUTARY OF BEAR CREEK | BEARCREEK, TOWN OF |
| STOC | S | 43D | 31256 | ST | 103 | GPM | 1902-01-04 | 1 | 8 | S | 20 | E | 15 | SESESE | UNNAMED TRIBUTARY OF BEAR CREEK | SINCLAIR OIL CORP |
| STOC | S | 43D | 31256 | ST | 103 | GPM | 1902-01-04 | 2 | 8 | S | 20 | E | 15 | NWSENW | UNNAMED TRIBUTARY OF BEAR CREEK | SINCLAIR OIL CORP |
| STOC | S | 43D | 31256 | ST | 103 | GPM | 1902-01-04 | 3 | 8 | S | 20 | E | 15 | NWENW | UNNAMED TRIBUTARY OF BEAR CREEK | SINCLAIR OIL CORP |
| STOC | S | 43D | 31256 | ST | 103 | GPM | 1902-01-04 | 4 | 8 | S | 20 | E | 15 | SWSWNE | UNNAMED TRIBUTARY OF BEAR CREEK | SINCLAIR OIL CORP |
| STOC | S | 43D | 31262 | IR | 2 | CFS | 1902-01-04 | 1 | 8 | S | 20 | E | 15 | SESESE | UNNAMED TRIBUTARY OF BEAR CREEK | SINCLAIR OIL CORP |
| STOC | S | 43D | 31262 | IR | 2 | CFS | 1902-01-04 | 2 | 8 | S | 20 | E | 15 | NWENW | UNNAMED TRIBUTARY OF BEAR CREEK | SINCLAIR OIL CORP |
| STOC | S | 43D | 31262 | IR | 2 | CFS | 1902-01-04 | 3 | 8 | S | 20 | E | 15 | NWSWNE | UNNAMED TRIBUTARY OF BEAR CREEK | SINCLAIR OIL CORP |
| STOC | S | 43D | 31262 | IR | 2 | CFS | 1902-01-04 | 4 | 8 | S | 20 | E | 15 | SWSENW | UNNAMED TRIBUTARY OF BEAR CREEK | SINCLAIR OIL CORP |
| STOC | G | 43D | 31246 | CM | 50 | GPM | 1964-05-01 | 1 | 8 | S | 20 | E | 16 | NWSWNW | GROUNDWATER | SUNDANCE ESTATES LLC |
| STOC | S | 43D | 31286 | ST | | | 1910-12-31 | 1 | 8 | S | 20 | E | 16 | SWNESE | UNNAMED TRIBUTARY OF BEAR CREEK | BEARCREEK LAND & CATTLE CO |
| STOC | S | 43D | 31286 | ST | | | 1910-12-31 | 1 | 8 | S | 20 | E | 16 | SWNESE | UNNAMED TRIBUTARY OF BEAR CREEK | PAJMER, WILLIAM R |
| STOC | S | 43D | 31288 | ST | | | 1910-12-31 | 1 | 8 | S | 20 | E | 16 | NENESW | UNNAMED TRIBUTARY OF ROCK CREEK | SUNDANCE ESTATES LLC |
| GWCT | G | 43D | 1842 | DM | 10 | GPM | 1974-03-21 | 1 | 8 | S | 20 | E | 17 | NESWNE | GROUNDWATER | WHITE, GARY W |
| GWCT | G | 43D | 6919 | DM | 10 | GPM | 1975-11-20 | 1 | 8 | S | 20 | E | 17 | SWNE | GROUNDWATER | AMUNDSON, D S |

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| WRTE | S | BSN | W R NUMBER | V USE | FLOW RATE | UNT | PRIORITY | POD # | TW | P | RN | G | SC | QTR | SEC | SOURCE | OWNER |
|------|---|-----|------------|-------|-----------|-----|------------|-------|----|---|----|---|----|--------|-----|------------------------------------|--|
| STOC | S | 43D | 58219 | DM | 4 GPM | | 1947-05-01 | 1 | 8 | S | 19 | E | 36 | SENE | SW | CORRAL CREEK | USA (DEPT OF AGRICULTURE FOREST SERVICE) |
| STOC | S | 43D | 58220 | DM | 4 GPM | | 1947-05-01 | 1 | 8 | S | 19 | E | 36 | SWN | SE | RATINE CREEK | USA (DEPT OF AGRICULTURE FOREST SERVICE) |
| STOC | S | 43D | 58221 | DM | 4 GPM | | 1947-05-01 | 1 | 8 | S | 19 | E | 36 | NWN | SE | RATINE CREEK | USA (DEPT OF AGRICULTURE FOREST SERVICE) |
| STOC | S | 43D | 58222 | DM | 4 GPM | | 1947-05-01 | 1 | 8 | S | 19 | E | 36 | NENE | SW | CORRAL CREEK | USA (DEPT OF AGRICULTURE FOREST SERVICE) |
| STOC | S | 43D | 58223 | DM | 4 GPM | | 1947-05-01 | 1 | 8 | S | 19 | E | 36 | SENE | SW | CORRAL CREEK | USA (DEPT OF AGRICULTURE FOREST SERVICE) |
| STOC | S | 43D | 58224 | DM | 4 GPM | | 1947-05-01 | 1 | 8 | S | 19 | E | 36 | SENE | SW | CORRAL CREEK | USA (DEPT OF AGRICULTURE FOREST SERVICE) |
| STOC | S | 43D | 58225 | DM | 4 GPM | | 1947-05-01 | 1 | 8 | S | 19 | E | 36 | SENE | SW | CORRAL CREEK | USA (DEPT OF AGRICULTURE FOREST SERVICE) |
| STOC | G | 43D | 58278 | IS | 4 GPM | | 1965-05-01 | 1 | 8 | S | 19 | E | 36 | NES | WNE | GROUNDWATER | USA (DEPT OF AGRICULTURE FOREST SERVICE) |
| STOC | G | 43D | 58279 | IS | 4 GPM | | 1965-05-01 | 1 | 8 | S | 19 | E | 36 | NES | WNE | GROUNDWATER | USA (DEPT OF AGRICULTURE FOREST SERVICE) |
| GWCT | G | 43D | 64348 | DM | 50 GPM | | 1986-10-16 | 1 | 8 | S | 19 | E | 36 | NE | | GROUNDWATER | BRADFORD, JOHN W |
| GWCT | G | 43D | 64348 | DM | 50 GPM | | 1986-10-16 | 1 | 8 | S | 19 | E | 36 | NE | | GROUNDWATER | BRADFORD, LAVETTA |
| GWCT | G | 43D | 70800 | DM | 20 GPM | | 1982-04-30 | 1 | 8 | S | 19 | E | 36 | SENE | | GROUNDWATER | MANGIS, GERALDINE J |
| GWCT | G | 43D | 70800 | DM | 20 GPM | | 1982-04-30 | 1 | 8 | S | 19 | E | 36 | SENE | | GROUNDWATER | MANGIS, HERBERT J |
| GWCT | G | 43D | 73417 | DM | 14 GPM | | 1990-01-05 | 1 | 8 | S | 19 | E | 36 | NENE | | GROUNDWATER | GULLARD, KENNETH H |
| GWCT | G | 43D | 82037 | DM | 20 GPM | | 1992-07-23 | 1 | 8 | S | 19 | E | 36 | NENE | | GROUNDWATER | LINTON, ERNA E |
| GWCT | G | 43D | 94844 | DM | 12 GPM | | 1995-10-24 | 1 | 8 | S | 19 | E | 36 | SENE | SW | GROUNDWATER | SHELLER, RUTH H |
| GWCT | G | 43D | 94844 | DM | 12 GPM | | 1995-10-24 | 1 | 8 | S | 19 | E | 36 | SENE | SW | GROUNDWATER | USA (DEPT OF AGRICULTURE FOREST SERVICE) |
| GWCT | G | 43D | 99222 | DM | 10 GPM | | 1996-07-12 | 1 | 8 | S | 19 | E | 36 | SWNE | SW | GROUNDWATER | USA (DEPT OF AGRICULTURE FOREST SERVICE) |
| GWCT | G | 43D | 99264 | DM | 12 GPM | | 1996-09-16 | 1 | 8 | S | 19 | E | 36 | SWN | SW | GROUNDWATER | RYAN, SHIRLEY |
| GWCT | G | 43D | 99264 | DM | 12 GPM | | 1996-09-16 | 1 | 8 | S | 19 | E | 36 | SWN | SW | GROUNDWATER | RYAN, J F |
| STOC | S | 43D | 100916 | DM | 15 GPM | | 1968-07-03 | 1 | 8 | S | 19 | E | 36 | NWSE | NE | ROCK CREEK | GULLARD, KENNETH H |
| STOC | S | 43D | 100916 | DM | 15 GPM | | 1968-07-03 | 1 | 8 | S | 19 | E | 36 | NWSE | NE | ROCK CREEK | GULLARD, BARBARA J |
| STOC | S | 43D | 181264 | DM | 20 GPM | | 1942-01-01 | 1 | 8 | S | 19 | E | 36 | SWNE | | ROCK CREEK | WADDELL, JEAN C |
| STOC | S | 43D | 181264 | DM | 20 GPM | | 1942-01-01 | 1 | 8 | S | 19 | E | 36 | SWNE | | ROCK CREEK | WADDELL, CHARLES G |
| STOC | S | 43D | 182430 | DM | 5 GPM | | 1944-04-01 | 1 | 8 | S | 19 | E | 36 | NENE | | ROCK CREEK | LINTON, ERNA E |
| STOC | S | 43D | 10331 | DM | 3 GPM | | 1937-07-01 | 1 | 8 | S | 20 | E | 1 | NWN | | UNNAMED TRIBUTARY OF SCOTCH COULEE | MOUNTAIN LION LLC |
| STOC | S | 43D | 13893 | DM | 15 GPM | | 1932-04-25 | 1 | 8 | S | 20 | E | 1 | NWN | | UNNAMED TRIBUTARY OF BEAR CREEK | MOUNTAIN LION LLC |
| STOC | S | 43D | 13899 | DM | 3 GPM | | 1950-08-15 | 1 | 8 | S | 20 | E | 1 | SWSE | NE | UNNAMED TRIBUTARY OF BEAR CREEK | WASHINGTON, DENNIS R |
| EXEX | S | 43D | 88864 | ST | | | 1945-12-31 | 1 | 8 | S | 20 | E | 1 | S2S2SW | | BEAR CREEK | MOUNTAIN LION LLC |
| EXEX | S | 43D | 88865 | ST | | | 1945-12-31 | 1 | 8 | S | 20 | E | 1 | NW | | SCOTCH COULEE | MOUNTAIN LION LLC |
| EXEX | G | 43D | 88866 | ST | 25 GPM | | 1955-12-31 | 1 | 8 | S | 20 | E | 1 | SESWN | | GROUNDWATER | MOUNTAIN LION LLC |
| GWCT | G | 43D | 107092 | DM | 8 GPM | | 1999-03-22 | 1 | 8 | S | 20 | E | 1 | NWSE | | GROUNDWATER | HANSON, CINDY |
| GWCT | G | 43D | 107092 | LG | 8 GPM | | 1999-03-22 | 1 | 8 | S | 20 | E | 1 | NWSE | | GROUNDWATER | HANSON, CINDY |
| STOC | G | 43D | 4932 | DM | 35 GPM | | 1963-01-31 | 1 | 8 | S | 20 | E | 2 | NWSE | NE | UNNAMED TRIBUTARY OF BEAR CREEK | HALLOCK, DANIEL L |
| STOC | G | 43D | 4932 | DM | 35 GPM | | 1963-01-31 | 1 | 8 | S | 20 | E | 2 | NWSE | NE | UNNAMED TRIBUTARY OF BEAR CREEK | DEVILLE, LUNDON |
| STOC | G | 43D | 4932 | DM | 35 GPM | | 1963-01-31 | 1 | 8 | S | 20 | E | 2 | NWSE | NE | UNNAMED TRIBUTARY OF BEAR CREEK | DEVILLE, RICHARD |
| EXEX | S | 43D | 88864 | ST | | | 1945-12-31 | 2 | 8 | S | 20 | E | 2 | SW | | BEAR CREEK | MOUNTAIN LION LLC |
| EXEX | S | 43D | 88864 | ST | | | 1945-12-31 | 3 | 8 | S | 20 | E | 2 | SESESE | | BEAR CREEK | MOUNTAIN LION LLC |
| EXEX | S | 43D | 88865 | ST | | | 1945-12-31 | 2 | 8 | S | 20 | E | 2 | N2 | | SCOTCH COULEE | MOUNTAIN LION LLC |
| EXEX | G | 43D | 88868 | ST | 25 GPM | | 1955-12-31 | 1 | 8 | S | 20 | E | 2 | NENWN | | GROUNDWATER | MOUNTAIN LION LLC |
| STOC | S | 43D | 31269 | IR | 255 GPM | | 1938-01-01 | 1 | 8 | S | 20 | E | 3 | SWSWN | | ROCK CREEK | PALMER, WILLIAM R |
| STOC | S | 43D | 31269 | IR | 255 GPM | | 1938-01-01 | 1 | 8 | S | 20 | E | 3 | SWSWN | | ROCK CREEK | BEARCREEK LAND & CATTLE CO |
| STOC | S | 43D | 31269 | IR | 255 GPM | | 1938-01-01 | 1 | 8 | S | 20 | E | 3 | SWSWN | | ROCK CREEK | WOLFE, RONALD A |
| STOC | G | 43D | 33068 | DM | 25 GPM | | 1942-07-01 | 1 | 8 | S | 20 | E | 3 | NWN | SW | GROUNDWATER | BISCHOFF, HYRUM D |
| STOC | G | 43D | 33068 | DM | 25 GPM | | 1942-07-01 | 1 | 8 | S | 20 | E | 3 | NWN | SW | GROUNDWATER | BISCHOFF, LORETTA |
| GWCT | G | 43D | 72278 | DM | 14 GPM | | 1989-09-20 | 1 | 8 | S | 20 | E | 3 | NWN | WN | GROUNDWATER | TOWLER, WILLIAM |
| PRPM | S | 43D | 72866 | FW | 450 GPM | | 1989-10-26 | 1 | 8 | S | 20 | E | 3 | NWN | WN | UNNAMED TRIBUTARY OF ROCK CREEK | TOWLER, WILLIAM |

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SURFACE WATER

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| WRTE | S | BSN | W R NUMBER | V USE | FLOW RATE | UNT | PRIORITY | POD # | TW | P | RN | G | SC | QTR | SEC | SOURCE | OWNER |
|------|---|-----|------------|-------|-----------|-----|------------|-------|----|---|----|---|----|--------|-----|---------------------------------|----------------------------|
| EXEX | S | 43D | 88864 | ST | | | 1945-12-31 | 4 | 8 | S | 20 | E | 3 | SE | | BEAR CREEK | MOUNTAIN LION LLC |
| EXEX | S | 43D | 88865 | ST | | | 1945-12-31 | 3 | 8 | S | 20 | E | 3 | E2NE | | SCOTCH COULEE | MOUNTAIN LION LLC |
| STOC | S | 43D | 197646 | IR | 9 | CFS | 1904-01-01 | 1 | 8 | S | 20 | E | 3 | SWSWNW | | ROCK CREEK | WOLFE, RONALD A |
| STOC | S | 43D | 197649 | IR | 283 | GPM | 1942-08-08 | 1 | 8 | S | 20 | E | 3 | SESWNW | | UNNAMED TRIBUTARY OF ROCK CREEK | WOLFE, RONALD A |
| STOC | S | 43D | 197649 | IR | 283 | GPM | 1942-08-08 | 2 | 8 | S | 20 | E | 3 | NWSENW | | UNNAMED TRIBUTARY OF ROCK CREEK | WOLFE, RONALD A |
| GWCT | G | 43D | 6959 | DM | 8 | GPM | 1975-11-25 | 1 | 8 | S | 20 | E | 4 | N2 | | GROUNDWATER | LAWS, BEN A |
| STOC | S | 43D | 10214 | IR | 4 | GPM | 1970-01-01 | 1 | 8 | S | 20 | E | 4 | NESESW | | UNNAMED TRIBUTARY OF ROCK CREEK | REISS, DIANE |
| STOC | S | 43D | 10214 | IR | 4 | GPM | 1970-01-01 | 1 | 8 | S | 20 | E | 4 | NESESW | | UNNAMED TRIBUTARY OF ROCK CREEK | REISS, JOHN |
| STOC | S | 43D | 10215 | FW | | | 1928-01-01 | 1 | 8 | S | 20 | E | 4 | NWSWSE | | ROCK CREEK | REISS, DIANE |
| STOC | S | 43D | 10215 | FW | | | 1928-01-01 | 1 | 8 | S | 20 | E | 4 | NWSWSE | | ROCK CREEK | REISS, JOHN |
| GWCT | G | 43D | 12004 | DM | 10 | GPM | 1977-03-31 | 1 | 8 | S | 20 | E | 4 | NWNW | | GROUNDWATER | TOCI, GERALD |
| GWCT | G | 43D | 12004 | DM | 10 | GPM | 1977-03-31 | 1 | 8 | S | 20 | E | 4 | NWNW | | GROUNDWATER | TURNER, ROBERT L |
| GWCT | G | 43D | 12004 | DM | 10 | GPM | 1977-03-31 | 1 | 8 | S | 20 | E | 4 | NWNW | | GROUNDWATER | JAMES, ROBERT P |
| GWCT | G | 43D | 19979 | DM | 10 | GPM | 1978-08-21 | 1 | 8 | S | 20 | E | 4 | SWSWNE | | GROUNDWATER | CUSKER, ORIAN J |
| GWCT | G | 43D | 23656 | IR | 90 | GPM | 1979-07-17 | 1 | 8 | S | 20 | E | 4 | SWNE | | GROUNDWATER | BOLMEIER, W B |
| GWCT | G | 43D | 23656 | IR | 90 | GPM | 1979-07-17 | 1 | 8 | S | 20 | E | 4 | SWNE | | GROUNDWATER | OLDS, W J |
| GWCT | G | 43D | 29630 | DM | 20 | GPM | 1980-04-23 | 1 | 8 | S | 20 | E | 4 | NWNENW | | GROUNDWATER | KYRO, RICHARD M |
| GWCT | G | 43D | 31123 | DM | 10 | GPM | 1981-01-07 | 1 | 8 | S | 20 | E | 4 | NWSWNW | | GROUNDWATER | GOPPERT, CLAYTON |
| GWCT | G | 43D | 31151 | DM | 25 | GPM | 1981-01-12 | 1 | 8 | S | 20 | E | 4 | NENW | | GROUNDWATER | BURNSIDE, BARRIE C |
| STOC | S | 43D | 31244 | FW | | | 1942-04-21 | 1 | 8 | S | 20 | E | 4 | SWNESE | | ROCK CREEK | BEARCREEK LAND & CATTLE CO |
| STOC | S | 43D | 31244 | FW | | | 1942-04-21 | 1 | 8 | S | 20 | E | 4 | SWNESE | | ROCK CREEK | PALMER, WILLIAM R |
| GWCT | G | 43D | 31279 | DM | 25 | GPM | 1981-01-19 | 1 | 8 | S | 20 | E | 4 | NENW | | GROUNDWATER | THOMPSON, NORMA |
| GWCT | G | 43D | 31279 | DM | 25 | GPM | 1981-01-19 | 1 | 8 | S | 20 | E | 4 | NENW | | GROUNDWATER | THOMPSON, LEONARD |
| GWCT | G | 43D | 33155 | DM | 30 | GPM | 1981-04-22 | 1 | 8 | S | 20 | E | 4 | NENE | | GROUNDWATER | BROWN, LAWRENCE E |
| GWCT | G | 43D | 33155 | ST | 30 | GPM | 1981-04-22 | 1 | 8 | S | 20 | E | 4 | NENE | | GROUNDWATER | BROWN, LAWRENCE E |
| GWCT | G | 43D | 40837 | DM | 20 | GPM | 1982-01-12 | 1 | 8 | S | 20 | E | 4 | SENWNW | | GROUNDWATER | COREY, HOWARD D |
| GWCT | G | 43D | 40837 | DM | 20 | GPM | 1982-01-12 | 1 | 8 | S | 20 | E | 4 | SENWNW | | GROUNDWATER | COREY, VERDA M |
| GWCT | G | 43D | 58065 | DM | 40 | GPM | 1984-11-08 | 1 | 8 | S | 20 | E | 4 | NWNW | | GROUNDWATER | SANDBURG, LAMAR E |
| GWCT | G | 43D | 58065 | DM | 40 | GPM | 1984-11-08 | 1 | 8 | S | 20 | E | 4 | NWNW | | GROUNDWATER | ACHERMANN, EDITH |
| GWCT | G | 43D | 67235 | DM | 10 | GPM | 1988-05-20 | 1 | 8 | S | 20 | E | 4 | SENE | | GROUNDWATER | OWEN, WILLIAM F |
| GWCT | G | 43D | 70839 | DM | 10 | GPM | 1989-05-15 | 1 | 8 | S | 20 | E | 4 | NENW | | GROUNDWATER | COX, RICHARD L |
| GWCT | G | 43D | 73407 | DM | 25 | GPM | 1989-12-14 | 1 | 8 | S | 20 | E | 4 | NENW | | GROUNDWATER | PLEWINSKI, FRANCIS L |
| GWCT | G | 43D | 73407 | DM | 25 | GPM | 1989-12-14 | 1 | 8 | S | 20 | E | 4 | NENW | | GROUNDWATER | PLEWINSKI, LILLIAN A |
| GWCT | G | 43D | 73458 | DM | 30 | GPM | 1990-03-12 | 1 | 8 | S | 20 | E | 4 | NESWNW | | GROUNDWATER | THOMPSEN, DAVID A |
| GWCT | G | 43D | 77086 | DM | 35 | GPM | 1990-12-11 | 1 | 8 | S | 20 | E | 4 | NESE | | GROUNDWATER | FERGUSON, GARY |
| GWCT | G | 43D | 77086 | DM | 35 | GPM | 1990-12-11 | 1 | 8 | S | 20 | E | 4 | NESE | | GROUNDWATER | FERGUSON, JANE |
| GWCT | G | 43D | 84446 | DM | 10 | GPM | 1993-02-08 | 1 | 8 | S | 20 | E | 4 | NENW | | GROUNDWATER | ROBBINS, STEPHEN |
| PRPM | S | 43D | 85418 | FS | 450 | GPM | 1993-05-05 | 1 | 8 | S | 20 | E | 4 | SWSWSE | | UNNAMED TRIBUTARY OF ROCK CREEK | WOLFE, RONALD A |
| PRPM | S | 43D | 85418 | WW | 450 | GPM | 1993-05-05 | 1 | 8 | S | 20 | E | 4 | SWSWSE | | UNNAMED TRIBUTARY OF ROCK CREEK | WOLFE, RONALD A |
| PRPM | S | 43D | 85418 | FS | 450 | GPM | 1993-05-05 | 2 | 8 | S | 20 | E | 4 | SWSWSE | | UNNAMED TRIBUTARY OF ROCK CREEK | WOLFE, RONALD A |
| PRPM | S | 43D | 85418 | WW | 450 | GPM | 1993-05-05 | 2 | 8 | S | 20 | E | 4 | SWSWSE | | UNNAMED TRIBUTARY OF ROCK CREEK | WOLFE, RONALD A |
| PRPM | S | 43D | 85451 | FS | 450 | GPM | 1993-05-19 | 2 | 8 | S | 20 | E | 4 | NESWSE | | UNNAMED TRIBUTARY OF ROCK CREEK | WOLFE, RONALD A |
| PRPM | S | 43D | 85451 | WW | 450 | GPM | 1993-05-19 | 2 | 8 | S | 20 | E | 4 | NESWSE | | UNNAMED TRIBUTARY OF ROCK CREEK | WOLFE, RONALD A |
| PRPM | S | 43D | 85451 | FS | 450 | GPM | 1993-05-19 | 3 | 8 | S | 20 | E | 4 | NWSESE | | UNNAMED TRIBUTARY OF ROCK CREEK | WOLFE, RONALD A |
| PRPM | S | 43D | 85451 | WW | 450 | GPM | 1993-05-19 | 3 | 8 | S | 20 | E | 4 | NWSESE | | UNNAMED TRIBUTARY OF ROCK CREEK | WOLFE, RONALD A |
| PRPM | S | 43D | 85451 | FS | 450 | GPM | 1993-05-19 | 4 | 8 | S | 20 | E | 4 | SENESE | | UNNAMED TRIBUTARY OF ROCK CREEK | WOLFE, RONALD A |
| PRPM | S | 43D | 85451 | WW | 450 | GPM | 1993-05-19 | 4 | 8 | S | 20 | E | 4 | SENESE | | UNNAMED TRIBUTARY OF ROCK CREEK | WOLFE, RONALD A |

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| WRTE | S | BSN | W R NUMBER | V USE | FLOW RATE | UNT | PRIORITY | # | TW | P | RW | G | SC | QTR | SEC | SOURCE | OWNER |
|------|---|-----|------------|-------|-----------|------------|----------|---|----|----|----|---|--------|-----|-----|---------------------------------|-----------------------|
| GWCT | G | 43D | 86332 | DM | 15 GPM | 1993-08-09 | 1 | 8 | S | 20 | E | 4 | SESENW | | | GROUNDWATER | WIDDICOMBE, CHARLES W |
| GWCT | G | 43D | 86332 | LG | 15 GPM | 1993-08-09 | 1 | 8 | S | 20 | E | 4 | SESENW | | | GROUNDWATER | WIDDICOMBE, CHARLES W |
| GWCT | G | 43D | 87422 | DM | 25 GPM | 1993-10-29 | 1 | 8 | S | 20 | E | 4 | NWSWNW | | | GROUNDWATER | TOSTRUD, MILT |
| GWCT | G | 43D | 88811 | DM | 12 GPM | 1994-05-24 | 1 | 8 | S | 20 | E | 4 | SESWNW | | | GROUNDWATER | DAPPLES, BIRDEENA C |
| GWCT | G | 43D | 88811 | DM | 12 GPM | 1994-05-24 | 1 | 8 | S | 20 | E | 4 | SESWNW | | | GROUNDWATER | DAPPLES, CHARLES C |
| GWCT | G | 43D | 88843 | DM | 35 GPM | 1994-03-17 | 1 | 8 | S | 20 | E | 4 | NWNWSW | | | GROUNDWATER | CHRISTENSEN, JODIE W |
| GWCT | G | 43D | 88843 | DM | 35 GPM | 1994-03-17 | 1 | 8 | S | 20 | E | 4 | NWNWSW | | | GROUNDWATER | CHRISTENSEN, JUDY A |
| GWCT | G | 43D | 90898 | MD | 20 GPM | 1994-07-25 | 1 | 8 | S | 20 | E | 4 | NENWSE | | | GROUNDWATER | ADAMS, AMON |
| PRPM | S | 43D | 90928 | FW | 150 GPM | 1994-08-09 | 1 | 8 | S | 20 | E | 4 | NENENE | | | UNNAMED TRIBUTARY OF ROCK CREEK | PITCHER, RUTH |
| GWCT | G | 43D | 90981 | DM | 15 GPM | 1994-09-09 | 1 | 8 | S | 20 | E | 4 | SENE | | | GROUNDWATER | KOLSTAD, RAY |
| GWCT | G | 43D | 90981 | DM | 15 GPM | 1994-09-09 | 1 | 8 | S | 20 | E | 4 | SENE | | | GROUNDWATER | KOLSTAD, DON |
| GWCT | G | 43D | 91688 | DM | 22 GPM | 1994-09-21 | 1 | 8 | S | 20 | E | 4 | NWNESE | | | GROUNDWATER | MC LEAN, KAREN |
| GWCT | G | 43D | 91688 | DM | 22 GPM | 1994-09-21 | 1 | 8 | S | 20 | E | 4 | NWNESE | | | GROUNDWATER | MC LEAN, RAY |
| GWCT | G | 43D | 91691 | DM | 25 GPM | 1994-09-16 | 1 | 8 | S | 20 | E | 4 | SWSENW | | | GROUNDWATER | PENDERGRAFT, RANDY S |
| GWCT | G | 43D | 92939 | DM | 30 GPM | 1995-03-21 | 1 | 8 | S | 20 | E | 4 | SWSWNE | | | GROUNDWATER | GRAFF, A LOUISE |
| GWCT | G | 43D | 92939 | DM | 30 GPM | 1995-03-21 | 1 | 8 | S | 20 | E | 4 | SWSWNE | | | GROUNDWATER | GRAFF, JAMES P |
| GWCT | G | 43D | 92976 | DM | 30 GPM | 1995-05-10 | 1 | 8 | S | 20 | E | 4 | NENESE | | | GROUNDWATER | OWEN, CHARLES B |
| GWCT | G | 43D | 96593 | DM | 25 GPM | 1996-03-12 | 1 | 8 | S | 20 | E | 4 | S2SWNE | | | GROUNDWATER | ZAVALA, JEFFREY |
| GWCT | G | 43D | 96593 | LG | 25 GPM | 1996-03-12 | 1 | 8 | S | 20 | E | 4 | S2SWNE | | | GROUNDWATER | ZAVALA, LYNN |
| GWCT | G | 43D | 96593 | DM | 25 GPM | 1996-03-12 | 1 | 8 | S | 20 | E | 4 | S2SWNE | | | GROUNDWATER | ZAVALA, JEFFREY |
| GWCT | G | 43D | 96593 | DM | 25 GPM | 1996-03-12 | 1 | 8 | S | 20 | E | 4 | S2SWNE | | | GROUNDWATER | ZAVALA, LYNN |
| GWCT | G | 43D | 101373 | DM | 12 GPM | 1997-04-14 | 1 | 8 | S | 20 | E | 4 | NESE | | | GROUNDWATER | PORTH, ANDREW |
| GWCT | G | 43D | 102113 | LG | 25 GPM | 1997-08-19 | 1 | 8 | S | 20 | E | 4 | SENW | | | GROUNDWATER | GRIFFITH, W S |
| GWCT | G | 43D | 102113 | LG | 25 GPM | 1997-08-19 | 1 | 8 | S | 20 | E | 4 | SENW | | | GROUNDWATER | GRIFFITH, BETTY J |
| GWCT | G | 43D | 102114 | DM | 16 GPM | 1997-08-20 | 1 | 8 | S | 20 | E | 4 | SESENW | | | GROUNDWATER | MAMAYEK, PHYLLIS J |
| GWCT | G | 43D | 102114 | DM | 16 GPM | 1997-08-20 | 1 | 8 | S | 20 | E | 4 | SESENW | | | GROUNDWATER | MAMAYEK, ROBERT D |
| POC | S | 43D | 102577 | IR | 45 GPM | 1900-09-15 | 1 | 8 | S | 20 | E | 4 | NWNESW | | | WEST FORK ROCK CREEK | ENRICO, EUGENE |
| GWCT | G | 43D | 103474 | DM | 15 GPM | 1998-02-12 | 1 | 8 | S | 20 | E | 4 | SENE | | | GROUNDWATER | TURNER, JOE |
| GWCT | G | 43D | 103474 | LG | 15 GPM | 1998-02-12 | 1 | 8 | S | 20 | E | 4 | SENE | | | GROUNDWATER | TURNER, JOE |
| GWCT | G | 43D | 105034 | LG | 10 GPM | 1998-08-18 | 1 | 8 | S | 20 | E | 4 | SWNENW | | | GROUNDWATER | WALTER, ELVA M |
| GWCT | G | 43D | 105034 | LG | 10 GPM | 1998-08-18 | 1 | 8 | S | 20 | E | 4 | SWNENW | | | GROUNDWATER | WALTER, RON |
| GWCT | G | 43D | 105039 | DM | 9 GPM | 1998-08-31 | 1 | 8 | S | 20 | E | 4 | NENWNW | | | GROUNDWATER | YOUNG, HOWARD A |
| GWCT | G | 43D | 105039 | LG | 9 GPM | 1998-08-31 | 1 | 8 | S | 20 | E | 4 | NENWNW | | | GROUNDWATER | YOUNG, HOWARD A |
| GWCT | G | 43D | 105039 | LG | 9 GPM | 1998-08-31 | 1 | 8 | S | 20 | E | 4 | NENWNW | | | GROUNDWATER | YOUNG, KAREN |
| GWCT | G | 43D | 105039 | DM | 9 GPM | 1998-08-31 | 1 | 8 | S | 20 | E | 4 | NENWNW | | | GROUNDWATER | YOUNG, KAREN |
| GWCT | G | 43D | 105887 | DM | 5 GPM | 1998-09-22 | 1 | 8 | S | 20 | E | 4 | NWNENE | | | GROUNDWATER | BROWN, WALBURGA A |
| GWCT | G | 43D | 105887 | LG | 5 GPM | 1998-09-22 | 1 | 8 | S | 20 | E | 4 | NWNENE | | | GROUNDWATER | BROWN, WALBURGA A |
| GWCT | G | 43D | 105909 | DM | 15 GPM | 1998-10-07 | 1 | 8 | S | 20 | E | 4 | SESENW | | | GROUNDWATER | ELSBERRY, JOHN |
| GWCT | G | 43D | 105909 | DM | 15 GPM | 1998-10-07 | 1 | 8 | S | 20 | E | 4 | SESENW | | | GROUNDWATER | ELSBERRY, KIMBERLY K |
| GWCT | G | 43D | 105966 | DM | 10 GPM | 1998-11-09 | 1 | 8 | S | 20 | E | 4 | SWNWSW | | | GROUNDWATER | WAGNER, MIKE A |
| GWCT | G | 43D | 107235 | DM | 30 GPM | 1999-09-29 | 1 | 8 | S | 20 | E | 4 | SENWNW | | | GROUNDWATER | CHRISTIANSEN, LEE |
| GWCT | G | 43D | 109218 | DM | 20 GPM | 1999-07-22 | 1 | 8 | S | 20 | E | 4 | SWSE | | | GROUNDWATER | ALLEN, VIRGINIA L |
| GWCT | G | 43D | 109707 | DM | 10 GPM | 1999-09-15 | 1 | 8 | S | 20 | E | 4 | SWSWNW | | | GROUNDWATER | TETRAULT, MARLENE |
| GWCT | G | 43D | 110427 | LG | 20 GPM | 1999-11-04 | 1 | 8 | S | 20 | E | 4 | NWSENE | | | GROUNDWATER | LO, CHIA WEI |
| GWCT | G | 43D | 110427 | LG | 20 GPM | 1999-11-04 | 1 | 8 | S | 20 | E | 4 | NWSENE | | | GROUNDWATER | LO, LIN-LIN |
| GWCT | G | 43D | 112052 | DM | 15 GPM | 2000-11-24 | 1 | 8 | S | 20 | E | 4 | NENENW | | | GROUNDWATER | COLLAR, MARIAN C |
| GWCT | G | 43D | 112052 | DM | 15 GPM | 2000-11-24 | 1 | 8 | S | 20 | E | 4 | NENENW | | | GROUNDWATER | COLLAR, RICHARD L |

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| WRTE | S | BSN | W R | NUMBER | V | USE | FLOW | | POD | # | TW | P | RN | G | SC | QTR | SEC | SOURCE | OWNER |
|------|---|-----|-----|--------|---|-----|-------|-----|------------|---|----|---|----|---|----|-------------------|----------------------------------|----------------------------|-------|
| | | | | | | | RATE | UNT | | | | | | | | | | | |
| STOC | S | 43D | 76 | 206821 | | IR | 3 | CFS | 1888-06-15 | 1 | 7 | S | 20 | E | 22 | NENESE | ROCK CREEK | DOOM, WALTER R | |
| STOC | S | 43D | | 206821 | | IR | 3 | CFS | 1888-06-15 | 1 | 7 | S | 20 | E | 22 | NENESE | ROCK CREEK | LITTLE, ERIK L | |
| STOC | S | 43D | | 206857 | | DM | 10 | GPM | 1972-07-13 | 1 | 7 | S | 20 | E | 22 | NWSWSE | UNNAMED TRIBUTARY OF ROCK CREEK | MICHELICIC, MIGNON | |
| STOC | S | 43D | | 206857 | | DM | 10 | GPM | 1972-07-13 | 1 | 7 | S | 20 | E | 22 | NWSWSE | UNNAMED TRIBUTARY OF ROCK CREEK | MICHELICIC, RUSSELL J | |
| STOC | G | 43D | | 208790 | | DM | 10 | GPM | 1958-10-31 | 1 | 7 | S | 20 | E | 22 | NWSWSE | UNNAMED TRIBUTARY OF ROCK CREEK | RICE, CHARLOTTE M | |
| STOC | S | 43D | | 4787 | | IR | 14 | CFS | 1894-06-21 | 1 | 7 | S | 20 | E | 23 | SWSWSW | ROCK CREEK | PLEASANT VALLEY CANAL CO | |
| STOC | S | 43D | 17 | 4788 | | IR | 19 | CFS | 1895-06-21 | 1 | 7 | S | 20 | E | 23 | SWSWSW | ROCK CREEK | PLEASANT VALLEY CANAL CO | |
| STOC | S | 43D | | 4789 | | IR | 11 | CFS | 1893-07-04 | 1 | 7 | S | 20 | E | 23 | SWSWSW | ROCK CREEK | PLEASANT VALLEY CANAL CO | |
| STOC | S | 43D | | 4790 | | IR | 3 | CFS | 1896-08-10 | 1 | 7 | S | 20 | E | 23 | SWSWSW | ROCK CREEK | PLEASANT VALLEY CANAL CO | |
| PRFM | S | 43D | | 13357 | | IR | 6,507 | GPM | 1977-06-10 | 1 | 7 | S | 20 | E | 23 | SWSW | ROCK CREEK | PLEASANT VALLEY CANAL CO | |
| STOC | S | 43D | 76 | 195988 | | IR | 1 | CFS | 1899-05-20 | 1 | 7 | S | 20 | E | 23 | SWSWSW | ROCK CREEK | MCDOWALL, TOM O | |
| STOC | S | 43D | | 198703 | | ST | | | 1901-06-08 | 1 | 7 | S | 20 | E | 23 | SENE | UNNAMED TRIBUTARY OF CLEAR CREEK | YOUNG, MINNIE B | |
| STOC | S | 43D | | 212566 | | IR | 3 | CFS | 1895-06-20 | 1 | 7 | S | 20 | E | 23 | SWSWSW | ROCK CREEK | PLEASANT VALLEY CANAL CO | |
| STOC | S | 43D | | 6920 | | IR | 1 | CFS | 1902-07-24 | 1 | 7 | S | 20 | E | 24 | NWNESE | KNOWLTON CREEK | PAPEZ, JOHN | |
| STOC | S | 43D | | 6920 | | IR | 1 | CFS | 1902-07-24 | 2 | 7 | S | 20 | E | 24 | SESWNE | KNOWLTON CREEK | PAPEZ, JOHN | |
| STOC | G | 43D | | 31247 | | DM | 30 | GPM | 1948-01-01 | 1 | 7 | S | 20 | E | 26 | NWSWNW | GROUNDWATER | BEARCREEK LAND & CATTLE CO | |
| STOC | G | 43D | | 31247 | | DM | 30 | GPM | 1948-01-01 | 1 | 7 | S | 20 | E | 26 | NWSWNW | GROUNDWATER | PALMER, WILLIAM R | |
| STOC | S | 43D | | 13752 | | DM | 10 | GPM | 1899-08-19 | 1 | 7 | S | 20 | E | 27 | SESENW | UNNAMED TRIBUTARY OF ROCK CREEK | WELLINGTON, LINWOOD W | |
| STOC | S | 43D | | 13752 | | DM | 10 | GPM | 1899-08-19 | 1 | 7 | S | 20 | E | 27 | SESENW | UNNAMED TRIBUTARY OF ROCK CREEK | WELLINGTON, BEVERLY R | |
| STOC | G | 43D | | 14622 | | DM | 30 | GPM | 1977-08-11 | 1 | 7 | S | 20 | E | 27 | NWSE | GROUNDWATER | KANE, JAMES J | |
| STOC | G | 43D | | 15044 | | CM | 125 | GPM | 1960-11-30 | 1 | 7 | S | 20 | E | 27 | NESWNE | GROUNDWATER | CARBON COUNTY CREAMERY | |
| STOC | S | 43D | | 25562 | | IR | 175 | GPM | 1952-06-13 | 1 | 7 | S | 20 | E | 27 | NENENW | UNNAMED TRIBUTARY OF ROCK CREEK | WOLFE, RONALD A | |
| STOC | S | 43D | | 29354 | | DM | 10 | GPM | 1921-12-31 | 1 | 7 | S | 20 | E | 27 | NENENW | UNNAMED TRIBUTARY OF ROCK CREEK | ROBINSON, NANCY B | |
| STOC | S | 43D | | 29355 | | IR | 136 | GPM | 1921-12-31 | 1 | 7 | S | 20 | E | 27 | NENENW | UNNAMED TRIBUTARY OF ROCK CREEK | ROBINSON, NANCY B | |
| GWCT | G | 43D | | 30811 | | DM | 20 | GPM | 1980-12-17 | 1 | 7 | S | 20 | E | 27 | SESWSE | GROUNDWATER | BISCHOFF, THELMA | |
| STOC | G | 43D | | 31248 | | DM | 30 | GPM | 1948-01-01 | 1 | 7 | S | 20 | E | 27 | SESENE | GROUNDWATER | PALMER, WILLIAM R | |
| STOC | G | 43D | | 31248 | | DM | 30 | GPM | 1948-01-01 | 1 | 7 | S | 20 | E | 27 | SESENE | GROUNDWATER | BEARCREEK LAND & CATTLE CO | |
| STOC | S | 43D | | 43323 | | FW | | | 1961-07-25 | 1 | 7 | S | 20 | E | 27 | SENEENW | UNNAMED TRIBUTARY OF ROCK CREEK | DAVIS, LORI J | |
| STOC | S | 43D | | 43323 | | FW | | | 1961-07-25 | 1 | 7 | S | 20 | E | 27 | SENEENW | UNNAMED TRIBUTARY OF ROCK CREEK | DAVIS, MARK J | |
| GWCT | G | 43D | | 44017 | | DM | 25 | GPM | 1982-04-21 | 1 | 7 | S | 20 | E | 27 | NE | GROUNDWATER | ANDERSON, DAVID B | |
| GWCT | G | 43D | | 49406 | | LG | 30 | GPM | 1982-10-12 | 1 | 7 | S | 20 | E | 27 | SESWSE | GROUNDWATER | LAUDON, CLARENCE J | |
| GWCT | G | 43D | | 49435 | | DM | 10 | GPM | 1982-10-29 | 1 | 7 | S | 20 | E | 27 | NESWSW | GROUNDWATER | NORTHCUTT, CHRISTIE S | |
| GWCT | G | 43D | | 49435 | | DM | 10 | GPM | 1982-10-29 | 1 | 7 | S | 20 | E | 27 | NESWSW | GROUNDWATER | NORTHCUTT, JAMES E | |
| GWCT | G | 43D | | 52301 | | DM | 15 | GPM | 1983-06-06 | 1 | 7 | S | 20 | E | 27 | SWSWSE | GROUNDWATER | LOCHRIDGE, DORIS M | |
| GWCT | G | 43D | | 52307 | | DM | 15 | GPM | 1983-06-20 | 1 | 7 | S | 20 | E | 27 | NWSE | GROUNDWATER | PATTEN, JOHN H | |
| GWCT | G | 43D | | 52307 | | DM | 15 | GPM | 1983-06-20 | 1 | 7 | S | 20 | E | 27 | NWSE | GROUNDWATER | PATTEN, DORIS E | |
| GWCT | G | 43D | | 52343 | | IR | 95 | GPM | 1983-07-19 | 1 | 7 | S | 20 | E | 27 | NWSWSE | GROUNDWATER | RED LODGE PUBLIC SCHOOLS | |
| GWCT | G | 43D | | 52346 | | DM | 15 | GPM | 1983-06-30 | 1 | 7 | S | 20 | E | 27 | E2SW | GROUNDWATER | BRACE, SUE | |
| GWCT | G | 43D | | 52346 | | DM | 15 | GPM | 1983-06-30 | 1 | 7 | S | 20 | E | 27 | E2SW | GROUNDWATER | BRACE, WILLIAM E | |
| GWCT | G | 43D | | 54076 | | DM | 30 | GPM | 1983-10-24 | 1 | 7 | S | 20 | E | 27 | SWSWNE | GROUNDWATER | CRADDOCK, A L | |
| GWCT | G | 43D | | 54076 | | DM | 30 | GPM | 1983-10-24 | 1 | 7 | S | 20 | E | 27 | SWSWNE | GROUNDWATER | CRADDOCK, REGINA | |
| EXEX | G | 43D | | 56139 | | DM | 2 | GPM | 1900-12-31 | 1 | 7 | S | 20 | E | 27 | SWNENW | GROUNDWATER | SHELLER, JAMES W | |
| EXEX | G | 43D | | 56139 | | ST | 2 | GPM | 1900-12-31 | 1 | 7 | S | 20 | E | 27 | SWNENW | GROUNDWATER | SHELLER, RUTH H | |
| EXEX | G | 43D | | 56139 | | LG | 2 | GPM | 1900-12-31 | 1 | 7 | S | 20 | E | 27 | SWNENW | GROUNDWATER | SHELLER, JAMES W | |
| EXEX | G | 43D | | 56139 | | DM | 2 | GPM | 1900-12-31 | 1 | 7 | S | 20 | E | 27 | SWNENW | GROUNDWATER | SHELLER, RUTH H | |

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| | | | NUMBER | V USE | RATE | UNT | PRIORITY | # | TW | P | RN | G | SC | QTR | | |
| GWCT | G | 43D | 60320 | CM | 25 | GPM | 1985-07-09 | 1 | 7 | S | 20 | E | 27 | SWSE | GROUNDWATER | GOLDBERG, ALAN H |
| GWCT | G | 43D | 60320 | CM | 25 | GPM | 1985-07-09 | 1 | 7 | S | 20 | E | 27 | SWSE | GROUNDWATER | GOLDBERG, TRACY R |
| GWCT | G | 43D | 60324 | LG | 7 | GPM | 1985-07-08 | 1 | 7 | S | 20 | E | 27 | NWNE | GROUNDWATER | SANDRETTO, BRENT |
| GWCT | G | 43D | 60328 | LG | 30 | GPM | 1985-07-09 | 1 | 7 | S | 20 | E | 27 | SWSE | GROUNDWATER | ANDERSON, GEORGE |
| GWCT | G | 43D | 60336 | DM | 12 | GPM | 1985-07-16 | 1 | 7 | S | 20 | E | 27 | SENWSE | GROUNDWATER | KANE, MICHAEL G |
| GWCT | G | 43D | 60336 | LG | 12 | GPM | 1985-07-16 | 1 | 7 | S | 20 | E | 27 | SENWSE | GROUNDWATER | KANE, MICHAEL G |
| GWCT | G | 43D | 64375 | LG | 35 | GPM | 1986-11-28 | 1 | 7 | S | 20 | E | 27 | SWSE | GROUNDWATER | UZELAC, DOROTHY |
| GWCT | G | 43D | 64375 | LG | 35 | GPM | 1986-11-28 | 1 | 7 | S | 20 | E | 27 | SWSE | GROUNDWATER | UZELAC, MARY |
| GWCT | G | 43D | 78048 | LG | 20 | GPM | 1991-06-28 | 1 | 7 | S | 20 | E | 27 | SWSW | GROUNDWATER | MICHELICIC, JOHN L |
| GWCT | G | 43D | 79198 | LG | 20 | GPM | 1991-10-08 | 1 | 7 | S | 20 | E | 27 | NWSE | GROUNDWATER | MALLIN, RICHARD R |
| GWCT | G | 43D | 79199 | LG | 15 | GPM | 1991-10-08 | 1 | 7 | S | 20 | E | 27 | S2SE | GROUNDWATER | RILEY, MARY I |
| GWCT | G | 43D | 79789 | LG | 10 | GPM | 1991-10-15 | 1 | 7 | S | 20 | E | 27 | NESE | GROUNDWATER | JARVI, TAIMI V |
| GWCT | G | 43D | 79790 | LG | 10 | GPM | 1991-10-11 | 1 | 7 | S | 20 | E | 27 | SWNESE | GROUNDWATER | MARVIN, MARY B |
| GWCT | G | 43D | 79791 | LG | 10 | GPM | 1991-10-11 | 1 | 7 | S | 20 | E | 27 | SENESE | GROUNDWATER | YURKOVICH, ALMA |
| GWCT | G | 43D | 79795 | LG | 10 | GPM | 1991-10-21 | 1 | 7 | S | 20 | E | 27 | NWSE | GROUNDWATER | ADAMS, ROBERT |
| PRPM | S | 43D | 85417 | FS | 75 | GPM | 1993-05-05 | 1 | 7 | S | 20 | E | 27 | NESESE | UNNAMED TRIBUTARY OF ROCK CREEK | WOLFE, RONALD A |
| PRPM | S | 43D | 85417 | WW | 75 | GPM | 1993-05-05 | 1 | 7 | S | 20 | E | 27 | NESESE | UNNAMED TRIBUTARY OF ROCK CREEK | WOLFE, RONALD A |
| PRPM | S | 43D | 85420 | FS | 75 | GPM | 1993-05-05 | 1 | 7 | S | 20 | E | 27 | N2SESE | UNNAMED TRIBUTARY OF ROCK CREEK | WOLFE, RONALD A |
| PRPM | S | 43D | 85420 | WW | 75 | GPM | 1993-05-05 | 1 | 7 | S | 20 | E | 27 | N2SESE | UNNAMED TRIBUTARY OF ROCK CREEK | WOLFE, RONALD A |
| GWCT | G | 43D | 87361 | CM | 25 | GPM | 1993-09-03 | 1 | 7 | S | 20 | E | 27 | NESWSW | GROUNDWATER | JARDINE, JOHN H |
| GWCT | G | 43D | 87361 | DM | 25 | GPM | 1993-09-03 | 1 | 7 | S | 20 | E | 27 | NESWSW | GROUNDWATER | JARDINE, MARY LOU |
| GWCT | G | 43D | 87361 | DM | 25 | GPM | 1993-09-03 | 1 | 7 | S | 20 | E | 27 | NESWSW | GROUNDWATER | JARDINE, JOHN H |
| GWCT | G | 43D | 87361 | CM | 25 | GPM | 1993-09-03 | 1 | 7 | S | 20 | E | 27 | NESWSW | GROUNDWATER | JARDINE, MARY LOU |
| GWCT | G | 43D | 87361 | LG | 25 | GPM | 1993-09-03 | 1 | 7 | S | 20 | E | 27 | NESWSW | GROUNDWATER | JARDINE, JOHN H |
| GWCT | G | 43D | 87361 | LG | 25 | GPM | 1993-09-03 | 1 | 7 | S | 20 | E | 27 | NESWSW | GROUNDWATER | JARDINE, MARY LOU |
| GWCT | G | 43D | 90664 | DM | 30 | GPM | 1994-06-08 | 1 | 7 | S | 20 | E | 27 | SWSWNE | GROUNDWATER | CRTALIC, WILLIAM |
| GWCT | G | 43D | 90693 | LG | 19 | GPM | 1994-06-29 | 1 | 7 | S | 20 | E | 27 | SENWNE | GROUNDWATER | RED LODGE CHAMBER OF COMMERCE |
| PRPM | S | 43D | 93036 | RC | 10 | GPM | 1995-06-30 | 1 | 7 | S | 20 | E | 27 | SWNWNE | UNNAMED TRIBUTARY OF ROCK CREEK | ART, JOAN OF |
| PRPM | S | 43D | 93036 | WW | 10 | GPM | 1995-06-30 | 1 | 7 | S | 20 | E | 27 | SWNWNE | UNNAMED TRIBUTARY OF ROCK CREEK | ART, JOAN OF |
| GWCT | G | 43D | 97609 | LG | 30 | GPM | 1996-05-22 | 1 | 7 | S | 20 | E | 27 | SWNWNW | GROUNDWATER | MEADOWS PATIO HOMES |
| GWCT | G | 43D | 101450 | LG | 18 | GPM | 1997-05-30 | 1 | 7 | S | 20 | E | 27 | NENWNW | GROUNDWATER | JANSSEN, ROY A |
| GWCT | G | 43D | 101504 | LG | 35 | GPM | 1997-07-01 | 1 | 7 | S | 20 | E | 27 | SENWNE | GROUNDWATER | US NATIONAL BANK OF RED LODGE |
| GWCT | G | 43D | 102176 | LG | 22 | GPM | 1997-10-08 | 1 | 7 | S | 20 | E | 27 | NENWSE | GROUNDWATER | DAVEY, GERALDINE L |
| GWCT | G | 43D | 109239 | LG | 25 | GPM | 1999-07-29 | 1 | 7 | S | 20 | E | 27 | NESENW | GROUNDWATER | MOUNTAIN VIEW APARTMENTS LP |
| GWCT | G | 43D | 109724 | LG | 20 | GPM | 1999-09-24 | 1 | 7 | S | 20 | E | 27 | NESENW | GROUNDWATER | RANSDELL, JAMES |
| GWCT | G | 43D | 109724 | ST | 20 | GPM | 1999-09-24 | 1 | 7 | S | 20 | E | 27 | NESENW | GROUNDWATER | RANSDELL, JAMES |
| GWCT | G | 43D | 115412 | LG | 15 | GPM | 2001-07-09 | 1 | 7 | S | 20 | E | 27 | SESWSW | GROUNDWATER | LADVALA, JOHN T |
| GWCT | G | 43D | 115412 | LG | 15 | GPM | 2001-07-09 | 1 | 7 | S | 20 | E | 27 | SESWSW | GROUNDWATER | LADVALA, LINDA M |
| GWCT | G | 43D | 117636 | LG | 35 | GPM | 2001-10-03 | 1 | 7 | S | 20 | E | 27 | NWSWNW | GROUNDWATER | MOUNTAIN VIEW VILLAS HOMEOWNERS ASSN |
| STOC | S | 43D | 179956 | IR | 3 | CFS | 1889-07-25 | 1 | 7 | S | 20 | E | 27 | SWNWNW | SPRING CREEK | RED LODGE GRIZZLY PEAK INC |
| STOC | S | 43D | 182407 | DM | 20 | GPM | 1970-09-15 | 1 | 7 | S | 20 | E | 27 | SESWSW | ROCK CREEK | WILLIAMS, ROBERT W |
| STOC | S | 43D | 197631 | ST | | | 1883-10-01 | 1 | 7 | S | 20 | E | 27 | NESENE | ROCK CREEK | COAKLEY, BEVERLY A |
| STOC | S | 43D | 197631 | ST | | | 1883-10-01 | 1 | 7 | S | 20 | E | 27 | NESENE | ROCK CREEK | COAKLEY, DANIEL J |
| STOC | S | 43D | 198644 | LG | 22 | GPM | 1972-07-13 | 1 | 7 | S | 20 | E | 27 | SWNENW | UNNAMED TRIBUTARY OF ROCK CREEK | MICHELICIC, MIGNON |
| STOC | S | 43D | 198644 | LG | 22 | GPM | 1972-07-13 | 1 | 7 | S | 20 | E | 27 | SWNENW | UNNAMED TRIBUTARY OF ROCK CREEK | MICHELICIC, RUSSELL J |
| STOC | S | 43D | 198660 | LG | 20 | GPM | 1921-12-31 | 1 | 7 | S | 20 | E | 27 | NENENW | UNNAMED TRIBUTARY OF ROCK CREEK | RICE, CHARLOTTE M |
| STOC | S | 43D | 198682 | DM | 10 | GPM | 1902-09-26 | 1 | 7 | S | 20 | E | 27 | SWSWNW | UNNAMED TRIBUTARY OF ROCK CREEK | ANDERSON, JEFFREY B |

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| | | | NUMBER | V USE | | | | # | TW | P | RN | | | G | SC | QTR |
| STOC | S | 43D | 10266 | IR | 10 CFS | | 1886-05-01 | 1 | 7 | S | 20 | E | 33 | NWSENW | WILLOW CREEK | REMINGTON MONTANA CO |
| STOC | S | 43D | 10266 | IR | 10 CFS | | 1886-05-01 | 1 | 7 | S | 20 | E | 33 | NWSENW | WILLOW CREEK | RED LODGE WEST LLP |
| STOC | S | 43D | 10266 | IR | 10 CFS | | 1886-05-01 | 1 | 7 | S | 20 | E | 33 | NWSENW | WILLOW CREEK | LAMAR RANCHING CO |
| STOC | S | 43D | 10266 | IR | 10 CFS | | 1886-05-01 | 1 | 7 | S | 20 | E | 33 | NWSENW | WILLOW CREEK | MCCAMPBELL, DIXIE |
| STOC | S | 43D | 10266 | IR | 10 CFS | | 1886-05-01 | 1 | 7 | S | 20 | E | 33 | NWSENW | WILLOW CREEK | LANGLAS, RUTH HELEN |
| STOC | S | 43D | 10266 | IR | 10 CFS | | 1886-05-01 | 1 | 7 | S | 20 | E | 33 | NWSENW | WILLOW CREEK | CLARK, JOHN W |
| STOC | S | 43D | 10266 | IR | 10 CFS | | 1886-05-01 | 1 | 7 | S | 20 | E | 33 | NWSENW | WILLOW CREEK | NORBY, H L |
| STOC | S | 43D | 10269 | FW | | | 1889-06-01 | 1 | 7 | S | 20 | E | 33 | SWNENW | WILLOW CREEK | NORBY, ALFRED |
| STOC | S | 43D | 10269 | FW | | | 1889-06-01 | 1 | 7 | S | 20 | E | 33 | SWNENW | WILLOW CREEK | NORBY, H L |
| STOC | S | 43D | 10269 | FW | | | 1889-06-01 | 1 | 7 | S | 20 | E | 33 | SWNENW | WILLOW CREEK | REMINGTON MONTANA CO |
| GWCT | G | 43D | 13479 | DM | 15 GPM | | 1977-06-20 | 1 | 7 | S | 20 | E | 33 | SWSESW | GROUNDWATER | WILKINS, DONOVAN M |
| GWCT | G | 43D | 13479 | DM | 15 GPM | | 1977-06-20 | 1 | 7 | S | 20 | E | 33 | SWSESW | GROUNDWATER | WILKINS, SHARON |
| GWCT | G | 43D | 23551 | DM | 5 GPM | | 1979-07-11 | 1 | 7 | S | 20 | E | 33 | NWNW | GROUNDWATER | NORBY, ALFRED |
| GWCT | G | 43D | 23551 | DM | 5 GPM | | 1979-07-11 | 1 | 7 | S | 20 | E | 33 | NWNW | GROUNDWATER | REMINGTON MONTANA CO |
| STOC | S | 43D | 39535 | IR | 663 GPM | | 1960-07-08 | 1 | 7 | S | 20 | E | 33 | N2SE | UNNAMED TRIBUTARY OF ROCK CREEK | POLLARI, DIANA L |
| STOC | S | 43D | 39535 | IR | 663 GPM | | 1960-07-08 | 1 | 7 | S | 20 | E | 33 | N2SE | UNNAMED TRIBUTARY OF ROCK CREEK | POLLARI, JACK O |
| STOC | S | 43D | 39537 | IR | 85 GPM | | 1944-05-01 | 1 | 7 | S | 20 | E | 33 | SENESE | CLOSE CREEK | POLLARI, DIANA L |
| STOC | S | 43D | 39537 | IR | 85 GPM | | 1944-05-01 | 1 | 7 | S | 20 | E | 33 | SENESE | CLOSE CREEK | POLLARI, JACK O |
| STOC | G | 43D | 86253 | DM | 35 GPM | | 1993-06-25 | 1 | 7 | S | 20 | E | 33 | NESWNW | GROUNDWATER | REMINGTON MONTANA CO |
| STOC | G | 43D | 86253 | ST | 35 GPM | | 1993-06-25 | 1 | 7 | S | 20 | E | 33 | NESWNW | GROUNDWATER | REMINGTON MONTANA CO |
| GWCT | G | 43D | 86253 | LG | 35 GPM | | 1993-06-25 | 1 | 7 | S | 20 | E | 33 | NESWNW | GROUNDWATER | REMINGTON MONTANA CO |
| GWCT | G | 43D | 96473 | DM | 14 GPM | | 1995-12-13 | 1 | 7 | S | 20 | E | 33 | SWNESE | GROUNDWATER | DANIELS, PATRICIA L |
| GWCT | G | 43D | 96473 | LG | 14 GPM | | 1995-12-13 | 1 | 7 | S | 20 | E | 33 | SWNESE | GROUNDWATER | DANIELS, PATRICIA L |
| GWCT | G | 43D | 96473 | LG | 14 GPM | | 1995-12-13 | 1 | 7 | S | 20 | E | 33 | SWNESE | GROUNDWATER | DANIELS, ROBERT W |
| GWCT | G | 43D | 96473 | DM | 14 GPM | | 1995-12-13 | 1 | 7 | S | 20 | E | 33 | SWNESE | GROUNDWATER | DANIELS, ROBERT W |
| PRPM | S | 43D | 102271 | FW | 100 GPM | | 1997-09-11 | 1 | 7 | S | 20 | E | 33 | NWNEW | WILLOW CREEK | SWANSON, JR, ALVIN L |
| PRPM | S | 43D | 102271 | FW | 100 GPM | | 1997-09-11 | 1 | 7 | S | 20 | E | 33 | NWNEW | WILLOW CREEK | LAMAR RANCHING CO |
| GWCT | G | 43D | 108078 | DM | 8 GPM | | 1999-06-03 | 1 | 7 | S | 20 | E | 33 | SWSESE | GROUNDWATER | GILLETTE, RUSSELL |
| GWCT | G | 43D | 109233 | DM | 12 GPM | | 1999-07-29 | 1 | 7 | S | 20 | E | 33 | SWNESE | GROUNDWATER | KAISER, PETER |
| GWCT | G | 43D | 116119 | DM | 15 GPM | | 2001-05-23 | 1 | 7 | S | 20 | E | 33 | NENWNE | GROUNDWATER | DEHIO, PETER M |
| STOC | S | 43D | 197550 | IR | 3 CFS | | 1902-05-17 | 1 | 7 | S | 20 | E | 33 | NWNESE | UNNAMED TRIBUTARY OF WEST FORK ROCK CREEK | PILATI, JULIUS L |
| STOC | S | 43D | 197550 | IR | 3 CFS | | 1902-05-17 | 1 | 7 | S | 20 | E | 33 | NWNESE | UNNAMED TRIBUTARY OF WEST FORK ROCK CREEK | PILATI, PAUL A |
| GWCT | G | 43D | 30002581 | DM | 18 GPM | | 2002-06-13 | 1 | 7 | S | 20 | E | 33 | NWSWNE | GROUNDWATER | SHELDON, JERRY |
| GWCT | G | 43D | 30002581 | LG | 18 GPM | | 2002-06-13 | 1 | 7 | S | 20 | E | 33 | NWSWNE | GROUNDWATER | SHELDON, JERRY |
| STOC | G | 43D | 228 | DM | 35 GPM | | 1954-12-31 | 1 | 7 | S | 20 | E | 34 | NENWSE | GROUNDWATER | KANE, JAMES J |
| PRPM | S | 43D | 5847 | IR | 40 GPM | | 1975-06-26 | 1 | 7 | S | 20 | E | 34 | SNNW | UNNAMED TRIBUTARY OF ROCK CREEK | ZUPAN, SHIRLEY L |
| PRPM | S | 43D | 5847 | IR | 40 GPM | | 1975-06-26 | 1 | 7 | S | 20 | E | 34 | SNNW | UNNAMED TRIBUTARY OF ROCK CREEK | ZUPAN, TONY F |
| STOC | S | 43D | 6013 | IR | 34 GPM | | 1931-06-17 | 1 | 7 | S | 20 | E | 34 | | UNNAMED TRIBUTARY OF ROCK CREEK | PAPEZ, MARY |
| GWCT | G | 43D | 16122 | DM | 60 GPM | | 1977-11-04 | 1 | 7 | S | 20 | E | 34 | NENWSE | GROUNDWATER | KANE, JAMES J |
| STOC | S | 43D | 20206 | DM | 10 GPM | | 1943-01-28 | 1 | 7 | S | 20 | E | 34 | NWSENW | UNNAMED TRIBUTARY OF ROCK CREEK | HUNTER, LAVERNE D |
| STOC | S | 43D | 20206 | DM | 10 GPM | | 1943-01-28 | 1 | 7 | S | 20 | E | 34 | NWSENW | UNNAMED TRIBUTARY OF ROCK CREEK | HUNTER, BONNIE L |
| STOC | S | 43D | 20216 | LG | 168 GPM | | 1890-12-31 | 1 | 7 | S | 20 | E | 34 | NWSWNW | UNNAMED TRIBUTARY OF ROCK CREEK | KLEPICH, GEORGE R |
| PRPM | S | 43D | 23508 | LG | 15 GPM | | 1979-07-09 | 1 | 7 | S | 20 | E | 34 | SENW | UNNAMED TRIBUTARY OF ROCK CREEK | JONES, LAWRENCE B |
| STOC | S | 43D | 25561 | IR | 68 GPM | | 1964-06-01 | 1 | 7 | S | 20 | E | 34 | NESWSW | ROCK CREEK | NASH, KANE H ESTATE OF |
| STOC | S | 43D | 25561 | IR | 68 GPM | | 1964-06-01 | 1 | 7 | S | 20 | E | 34 | NESWSW | ROCK CREEK | HANLY, FRANK |
| STOC | S | 43D | 25561 | IR | 68 GPM | | 1964-06-01 | 1 | 7 | S | 20 | E | 34 | NESWSW | ROCK CREEK | MUELLER, JERRY |
| STOC | S | 43D | 27181 | DM | 30 GPM | | 1900-12-31 | 1 | 7 | S | 20 | E | 34 | SWNESW | UNNAMED TRIBUTARY OF ROCK CREEK | ZIMMERMAN, CHRISTINE |

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| | | | NUMBER | V USE | RATE | UNT | PRIORITY | # | TW | P | RN | G | SC | QTR | | SEC |
| PRPM | S | 43D | 58014 | LG | 20 | GPM | 1985-06-04 | 1 | 7 | S | 20 | E | 34 | NWNW | UNNAMED TRIBUTARY OF ROCK CREEK | JURKOVICH, RAYMOND |
| GWCT | G | 43D | 58062 | DM | 10 | GPM | 1984-11-05 | 1 | 7 | S | 20 | E | 34 | NENWNE | GROUNDWATER | SCHUBERT, JACK |
| GWCT | G | 43D | 60319 | DM | 15 | GPM | 1985-07-09 | 1 | 7 | S | 20 | E | 34 | NENW | GROUNDWATER | SANDRETTO, LARRY |
| GWCT | G | 43D | 60323 | LG | 60 | GPM | 1985-07-09 | 1 | 7 | S | 20 | E | 34 | NENW | GROUNDWATER | CASE, LINDA |
| GWCT | G | 43D | 60372 | LG | 70 | GPM | 1985-08-05 | 1 | 7 | S | 20 | E | 34 | NWNW | GROUNDWATER | HILL, DOROTHY |
| GWCT | G | 43D | 64337 | DM | 12 | GPM | 1986-10-01 | 1 | 7 | S | 20 | E | 34 | NWNE | GROUNDWATER | KINNAMON, HAROLD |
| GWCT | G | 43D | 64337 | DM | 12 | GPM | 1986-10-01 | 1 | 7 | S | 20 | E | 34 | NWNE | GROUNDWATER | KINNAMON, SYLVIA |
| GWCT | G | 43D | 64347 | LG | 45 | GPM | 1986-10-16 | 1 | 7 | S | 20 | E | 34 | NWNE | GROUNDWATER | REPAC, GLORIA |
| GWCT | G | 43D | 64347 | LG | 45 | GPM | 1986-10-16 | 1 | 7 | S | 20 | E | 34 | NWNE | GROUNDWATER | REPAC, WAYNE |
| GWCT | G | 43D | 66360 | LG | 50 | GPM | 1987-08-13 | 1 | 7 | S | 20 | E | 34 | S2E2 | GROUNDWATER | SPENCER, VEVA LEE |
| GWCT | G | 43D | 68340 | DM | 25 | GPM | 1988-07-01 | 1 | 7 | S | 20 | E | 34 | NESWSW | GROUNDWATER | MCALPINE, ROSEMARY |
| GWCT | G | 43D | 68340 | DM | 25 | GPM | 1988-07-01 | 1 | 7 | S | 20 | E | 34 | NESWSW | GROUNDWATER | MCALPINE, WILLIAM E |
| GWCT | G | 43D | 68379 | LG | 30 | GPM | 1988-07-28 | 1 | 7 | S | 20 | E | 34 | SESENW | GROUNDWATER | NOE, JAMES A |
| GWCT | G | 43D | 68379 | LG | 30 | GPM | 1988-07-28 | 1 | 7 | S | 20 | E | 34 | SESENW | GROUNDWATER | NOE, MARY E |
| GWCT | G | 43D | 69529 | LG | 35 | GPM | 1988-11-14 | 1 | 7 | S | 20 | E | 34 | SENW | GROUNDWATER | ZUMBRUN, JR, LLOYD L |
| GWCT | G | 43D | 74727 | DM | 25 | GPM | 1990-06-12 | 1 | 7 | S | 20 | E | 34 | NESENW | GROUNDWATER | KLEPICH, GEORGE R |
| GWCT | G | 43D | 74727 | DM | 25 | GPM | 1990-06-12 | 1 | 7 | S | 20 | E | 34 | NESENW | GROUNDWATER | KLEPICH, GEORGE R |
| GWCT | G | 43D | 78085 | LG | 10 | GPM | 1991-07-25 | 1 | 7 | S | 20 | E | 34 | SENW | GROUNDWATER | KLESSENS, CHERYL |
| GWCT | G | 43D | 78085 | DM | 10 | GPM | 1991-07-25 | 1 | 7 | S | 20 | E | 34 | SENW | GROUNDWATER | KLESSENS, DAVE |
| GWCT | G | 43D | 79787 | LG | 20 | GPM | 1991-12-18 | 1 | 7 | S | 20 | E | 34 | NWSWNE | GROUNDWATER | WHITTEN, R P |
| GWCT | G | 43D | 80898 | DM | 20 | GPM | 1992-06-12 | 1 | 7 | S | 20 | E | 34 | NWNWNE | GROUNDWATER | GLANTZ, RUSSEL TRUST |
| GWCT | G | 43D | 80898 | LG | 20 | GPM | 1992-06-12 | 1 | 7 | S | 20 | E | 34 | NWNWNE | GROUNDWATER | GLANTZ, RUSSEL TRUST |
| GWCT | G | 43D | 80905 | LG | 10 | GPM | 1992-06-16 | 1 | 7 | S | 20 | E | 34 | SWSSENW | GROUNDWATER | THOMPSON, JANET M |
| GWCT | G | 43D | 82003 | LG | 10 | GPM | 1992-06-26 | 1 | 7 | S | 20 | E | 34 | SWNENW | GROUNDWATER | WILLIAMS, JANIS A |
| GWCT | G | 43D | 82003 | LG | 10 | GPM | 1992-06-26 | 1 | 7 | S | 20 | E | 34 | SWNENW | GROUNDWATER | WILLIAMS, DONALD E |
| GWCT | G | 43D | 82011 | LG | 35 | GPM | 1992-07-06 | 1 | 7 | S | 20 | E | 34 | NWSSENW | GROUNDWATER | HAUGE, LEE |
| GWCT | G | 43D | 82802 | LG | 35 | GPM | 1992-11-17 | 1 | 7 | S | 20 | E | 34 | NWNENW | GROUNDWATER | NAGLICH, MICHAEL M |
| GWCT | G | 43D | 82802 | LG | 35 | GPM | 1992-11-17 | 1 | 7 | S | 20 | E | 34 | NWNENW | GROUNDWATER | NAGLICH, VIRGINIA K |
| PRPM | S | 43D | 84405 | FS | 720 | GPM | 1993-04-22 | 1 | 7 | S | 20 | E | 34 | SWSESW | ROCK CREEK | WOLFE, RONALD A |
| PRPM | S | 43D | 85419 | FS | 250 | GPM | 1993-05-05 | 1 | 7 | S | 20 | E | 34 | SWSWSW | UNNAMED TRIBUTARY OF ROCK CREEK | WOLFE, RONALD A |
| PRPM | S | 43D | 85419 | WW | 250 | GPM | 1993-05-05 | 1 | 7 | S | 20 | E | 34 | SWSWSW | UNNAMED TRIBUTARY OF ROCK CREEK | WOLFE, RONALD A |
| GWCT | G | 43D | 87377 | LG | 20 | GPM | 1993-09-23 | 1 | 7 | S | 20 | E | 34 | NWNE | GROUNDWATER | FURBER, HOLLY |
| GWCT | G | 43D | 87377 | LG | 20 | GPM | 1993-09-23 | 1 | 7 | S | 20 | E | 34 | NWNE | GROUNDWATER | FURBER, RICHARD |
| GWCT | G | 43D | 88872 | DM | 12 | GPM | 1994-04-04 | 1 | 7 | S | 20 | E | 34 | NENE | GROUNDWATER | STEWART, SHAWN T |
| GWCT | G | 43D | 90707 | LG | 10 | GPM | 1994-07-07 | 1 | 7 | S | 20 | E | 34 | NENW | GROUNDWATER | JUDD, DAVID |
| GWCT | G | 43D | 90707 | LG | 10 | GPM | 1994-07-07 | 1 | 7 | S | 20 | E | 34 | NENW | GROUNDWATER | JUDD, LAURI W |
| GWCT | G | 43D | 92862 | LG | 22 | GPM | 1994-12-27 | 1 | 7 | S | 20 | E | 34 | SWSWNE | GROUNDWATER | KRINER, NANCY A |
| GWCT | G | 43D | 92862 | LG | 22 | GPM | 1994-12-27 | 1 | 7 | S | 20 | E | 34 | SWSWNE | GROUNDWATER | KOLBERT, BARRY H |
| GWCT | G | 43D | 96594 | OP | 19 | GPM | 1996-03-15 | 1 | 7 | S | 20 | E | 34 | NWNESW | GROUNDWATER | BEARTOOTH MOUNTAIN GUIDES |
| GWCT | G | 43D | 97573 | CM | 8 | GPM | 1996-04-25 | 1 | 7 | S | 20 | E | 34 | NWNENW | GROUNDWATER | HUDAK, VINCENT P |
| GWCT | G | 43D | 97579 | DM | 10 | GPM | 1996-05-02 | 1 | 7 | S | 20 | E | 34 | NWSENE | GROUNDWATER | CHANNELL, MARY L TRUST |
| GWCT | G | 43D | 97701 | LG | 12 | GPM | 1996-07-01 | 1 | 7 | S | 20 | E | 34 | SENW | GROUNDWATER | FRONTIER COMMUNITIES INC |
| GWCT | G | 43D | 97702 | LG | 12 | GPM | 1996-07-01 | 1 | 7 | S | 20 | E | 34 | SENW | GROUNDWATER | FRONTIER COMMUNITIES INC |
| GWCT | G | 43D | 99249 | LG | 18 | GPM | 1996-10-09 | 1 | 7 | S | 20 | E | 34 | SWNENW | GROUNDWATER | JURKOVICH, JEANETTE |
| GWCT | G | 43D | 99249 | LG | 18 | GPM | 1996-10-09 | 1 | 7 | S | 20 | E | 34 | SWNENW | GROUNDWATER | JURKOVICH, RAYMOND |
| GWCT | G | 43D | 99934 | LG | 18 | GPM | 1996-10-30 | 1 | 7 | S | 20 | E | 34 | SENEENW | GROUNDWATER | THAKE, WILLIAM P |
| GWCT | G | 43D | 101488 | DM | 15 | GPM | 1997-06-24 | 1 | 7 | S | 20 | E | 34 | SWNENW | GROUNDWATER | WISE, JEFFREY A |

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SHIRLEY A BADAME-FOY
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FRANK E KELLY
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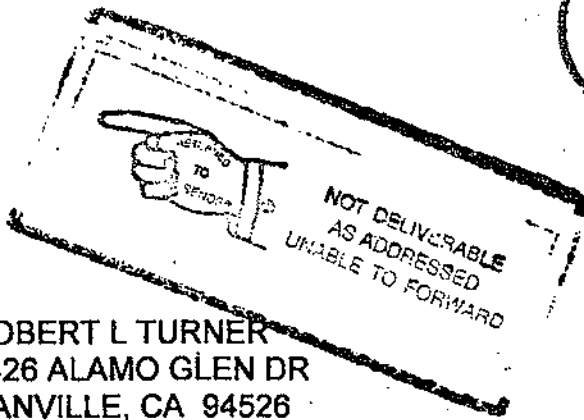
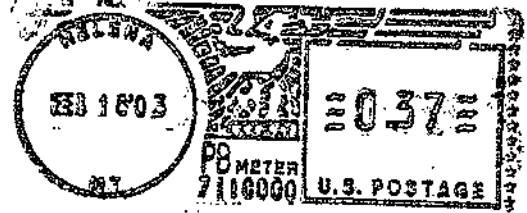
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ROBERT L TURNER
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DANVILLE, CA 94526

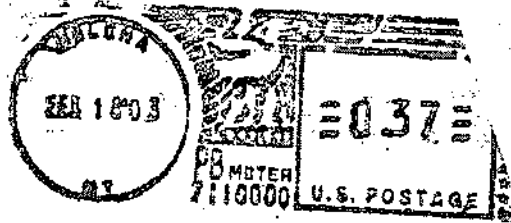
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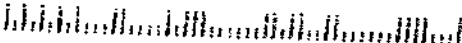


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DICKINSON, ND 58601

NIXIE 2027 1 08 02/25/03

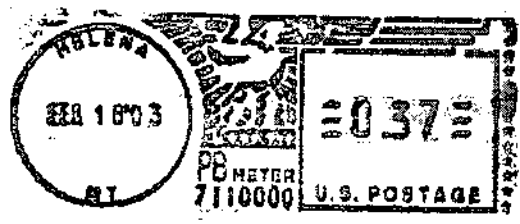
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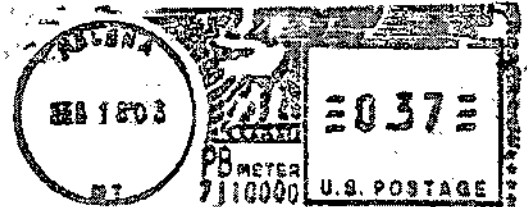
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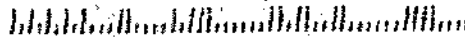


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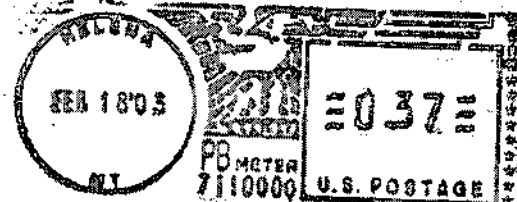
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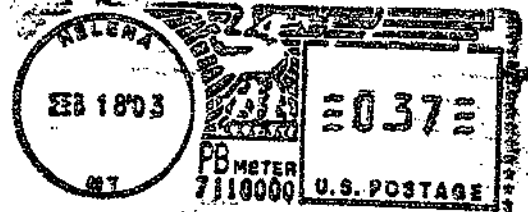
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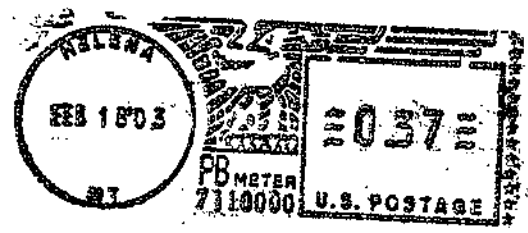
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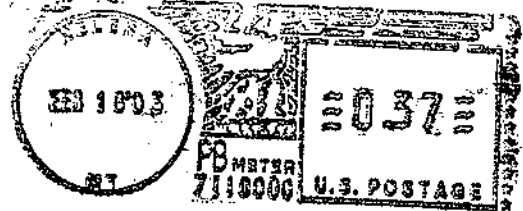


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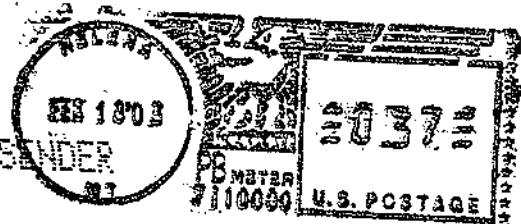
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ELAINE I BROMBACHER
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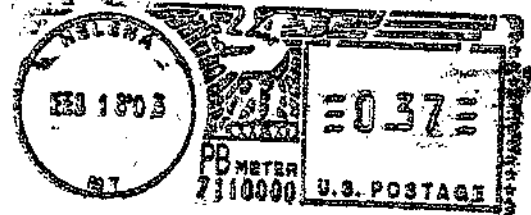
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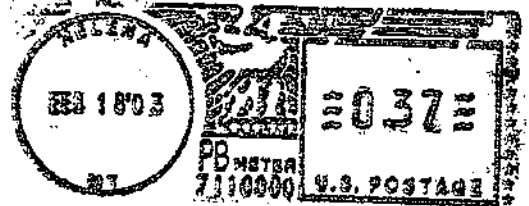
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ORIAN J CUSKER
PO BOX 2153
RED LODGE, MT 59068



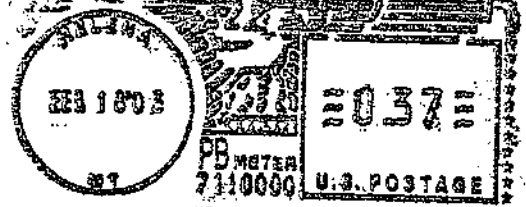
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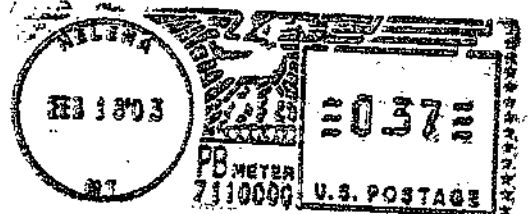
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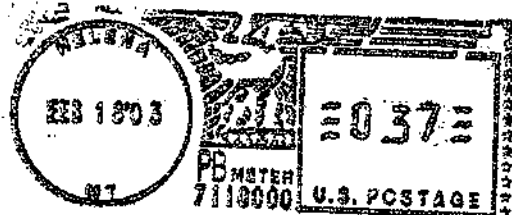
M L MARTIN
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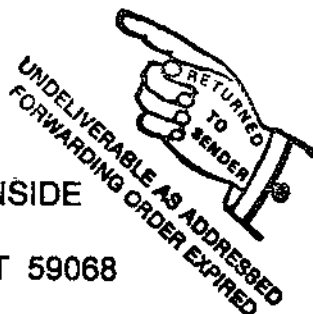
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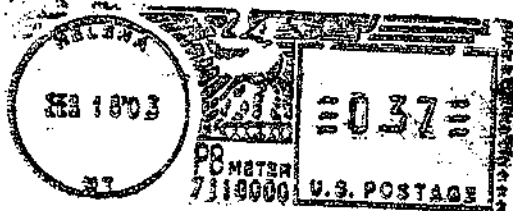
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RED LODGE, MT 59068



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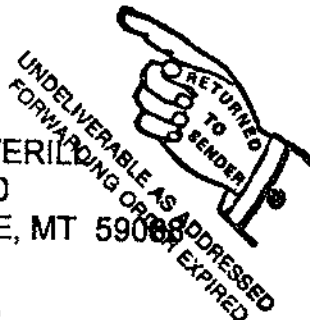
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RED LODGE, MT 59068



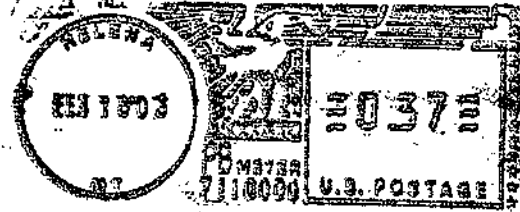
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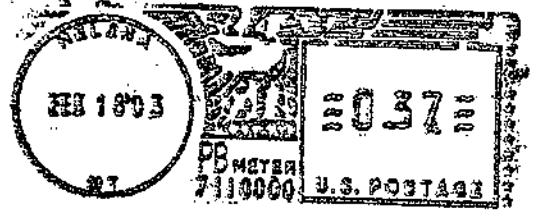
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HC 49 BOX 3685
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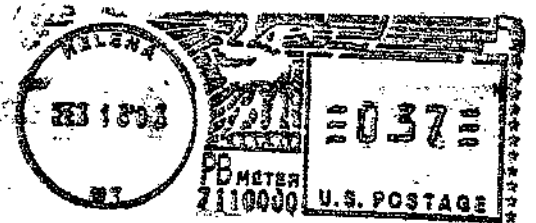
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FORWARDING ORDER EXPIRED**
DAVID H & PATRICIA WILTSIE
PO BOX 1167
RED LODGE, MT 59068

PUBLIC NOTICE RETURN MAIL
FILE NUMBER _____

DEPARTMENT OF NATURAL
RESOURCES AND CONSERVATION

STATE OF MONTANA

48 NORTH LAST CHANCE GULCH
PO BOX 201601
HELENA, MONTANA 59620-1601



PN-43D-30001172

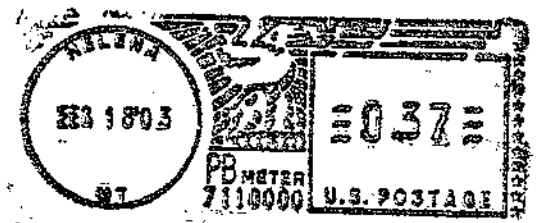
NASH, KANSAS ESTATE OF
% JAMES AND MARIE R. ENOUR
PO BOX 204
RED LODGE, MT 59068

NOT DELIVERABLE
AS ADDRESSED -
UNABLE TO FORWARD

DEPARTMENT OF NATURAL
RESOURCES AND CONSERVATION

STATE OF MONTANA

48 NORTH LAST CHANCE GULCH
PO BOX 201601
HELENA, MONTANA 59620-1601



PN-43D-30001172

GLORIA E & NORMAN C JORGENSEN
RT 2 BOX 3710
RED LODGE, MT 59068

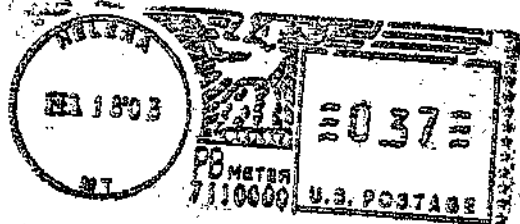
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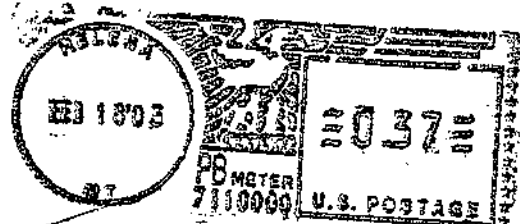
PN-43D-30001172

HARNISH MEADOW PROPERTY OWNERS ASSOC
RED LODGE, MT 59068

DEPARTMENT OF NATURAL
RESOURCES AND CONSERVATION

STATE OF MONTANA

48 NORTH LAST CHANCE GULCH
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HELENA, MONTANA 59620-1601




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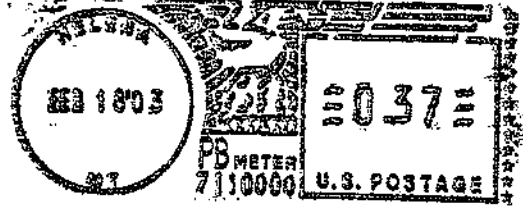
DONOVAN M & SHARON WILKINS
PO BOX 1726
RED LODGE, MT 59068

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RESOURCES AND CONSERVATION

STATE OF MONTANA

48 NORTH LAST CHANCE GULCH
PO BOX 201601
HELENA, MONTANA 59620-1601



PN-43D-30001172

JUDITH A HANSEL
PO BOX 425
RED LODGE, MT 59068

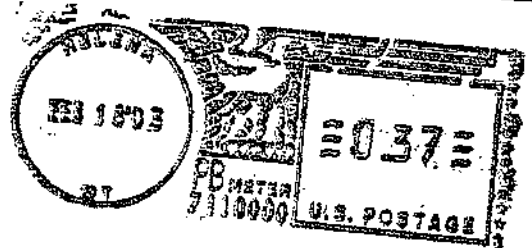
HANS425 590682035 1901 07 02/20/03
FORWARD TIME EXP RTN TO SEND
HANSEL
2657 PASTURE WAY
MINDEN NV 89423-8876

RETURN TO SENDER

DEPARTMENT OF NATURAL
RESOURCES AND CONSERVATION

STATE OF MONTANA

48 NORTH LAST CHANCE GULCH
PO BOX 201601
HELENA, MONTANA 59620-1601



PN-43D-30001172

WILLIAM B RUFF
PO BOX 1211
RED LODGE, MT 59068

RUFF211 590682035 1802 07 02/20/03
RETURN TO SENDER
RUFF WILLIAM
BOX CLOSED
UNABLE TO FORWARD
RETURN TO SENDER

59068X1211 8018

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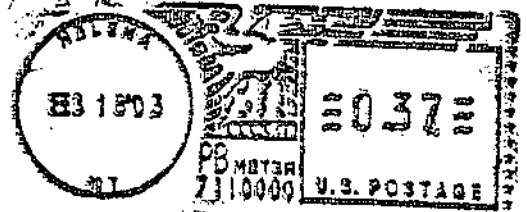
STATE OF MONTANA

48 NORTH LAST CHANCE GULCH
PO BOX 201601
HELENA, MONTANA 59620-1601

PN-43D-30001172

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CLAYTON GOPPERT
PO BOX 2127
RED LODGE, MT 59068



DEPARTMENT OF NATURAL
RESOURCES AND CONSERVATION

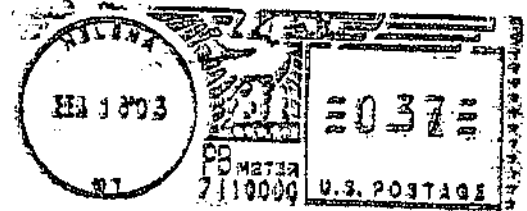
STATE OF MONTANA

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PN-43D-30001172

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AMON ADAMS
PO BOX 131
RED LODGE, MT 59068

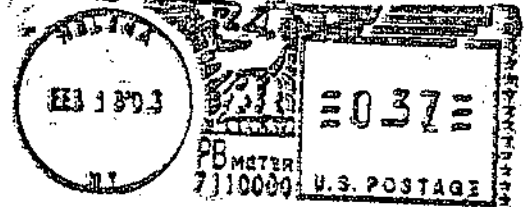


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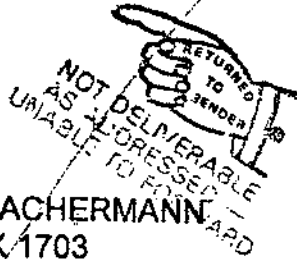
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STATE OF MONTANA

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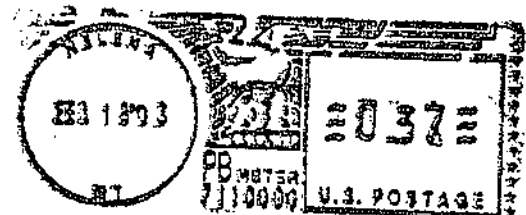
EDITH ACHERMANN
PO BOX 1703
RED LODGE, MT 59068

59068-1703

DEPARTMENT OF NATURAL
RESOURCES AND CONSERVATION

STATE OF MONTANA

48 NORTH LAST CHANCE GULCH
PO BOX 201601
HELENA, MONTANA 59620-1601



PN-43D-30001172

-
- Not Deliverable As Addressed
Unable To Forward
 - Insufficient Address
 - Moved, Left No Address
 - Unclaimed Refused
 - Attempted-Not Known
 - No Such Street Number
 - Vacant Illegible
 - No Mail Receptacle
 - Box Closed-No Order
 - Return to Better Address
 - Postage Due _____

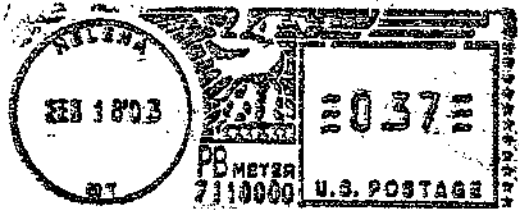
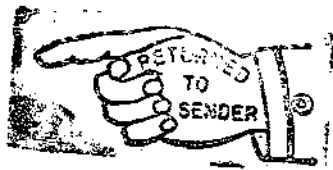
JACK & LAVONNE ERVIN
PO BOX 1137
COLSTRIP, MT

59068-1137

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FILE NUMBER 43D-30001172

DEPARTMENT OF NATURAL
RESOURCES AND CONSERVATION
STATE OF MONTANA
48 NORTH LAST CHANCE GULCH
PO BOX 201601
HELENA, MONTANA 59620-1601



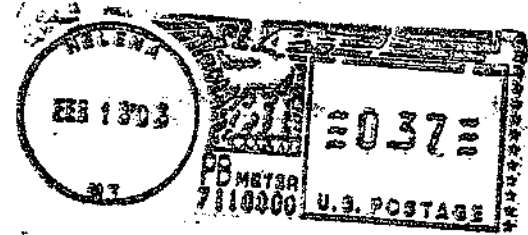
PN-43D-30001172

TOM O MCDOWALL
RT 1 BOX 2047
ROBERTS, MT 59070

NOT DELIVERABLE AS ADDRESSEE
UNABLE TO FORWARD



DEPARTMENT OF NATURAL
RESOURCES AND CONSERVATION
STATE OF MONTANA
48 NORTH LAST CHANCE GULCH
PO BOX 201601
HELENA, MONTANA 59620-1601

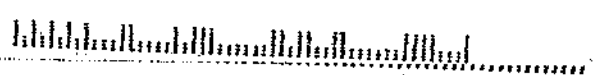


PN-43D-30001172

DIANE & JOHN REISS
3410 POLY DR
BILLINGS, MT 59102

REISS410 591022035 1801 08 02/20/03
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REISS
2561 MAGNOLIA PL
BILLINGS MT 59102-1610
RETURN TO SENDER

591022035-209801



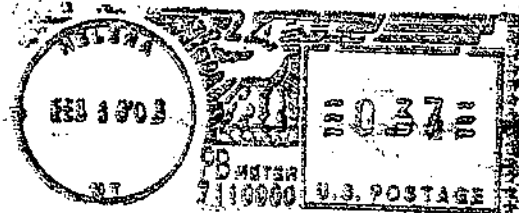
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FILE NUMBER _____

DEPARTMENT OF NATURAL
RESOURCES AND CONSERVATION

STATE OF MONTANA

48 NORTH LAST CHANCE GULCH
PO BOX 201601

HELENA, MONTANA 59620-1601



PN-43D-30001172

AMELIA A ROBINSON
2032 OLD HARDIN RD
BILLINGS, MT 59101

ROBI032* 591012032 1402 08 02/20/03
RETURN TO SENDER
ROBINSON
MOVED LEFT NO ADDRESS
UNABLE TO FORWARD
RETURN TO SENDER

591012032 1402 08 02/20/03



FORM 600 CHECKLIST

43D 30001172 CITY OF RED LODGE mwr
 Basin Application No. Applicant's Name Reviewed By

Yes No Is the application in a basin closure area? If yes, which one? ROCK CREEK

FORM CHECK

- | | OK | NOK | |
|-----|-------------------------------------|--------------------------|------------------|
| 1. | <input checked="" type="checkbox"/> | <input type="checkbox"/> | |
| 2. | <input checked="" type="checkbox"/> | <input type="checkbox"/> | |
| 3. | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <u>TWO WELLS</u> |
| 4. | <input checked="" type="checkbox"/> | <input type="checkbox"/> | |
| 5. | <input type="checkbox"/> | <input type="checkbox"/> | <u>NA</u> |
| 6. | <input checked="" type="checkbox"/> | <input type="checkbox"/> | |
| 7. | <input checked="" type="checkbox"/> | <input type="checkbox"/> | |
| 8. | <input checked="" type="checkbox"/> | <input type="checkbox"/> | |
| 9. | <input checked="" type="checkbox"/> | <input type="checkbox"/> | |
| 10. | <input checked="" type="checkbox"/> | <input type="checkbox"/> | |
| 11. | <input checked="" type="checkbox"/> | <input type="checkbox"/> | |
| 12. | <input checked="" type="checkbox"/> | <input type="checkbox"/> | |
| 13. | <input checked="" type="checkbox"/> | <input type="checkbox"/> | |
| 14. | <input checked="" type="checkbox"/> | <input type="checkbox"/> | |

PROCESSING CHECK

- | OK | NA | |
|-------------------------------------|--------------------------|--|
| <input checked="" type="checkbox"/> | <input type="checkbox"/> | 600 APPLICATION FEE |
| <input checked="" type="checkbox"/> | <input type="checkbox"/> | OWNER NAME/ADDRESS STANDARDIZED |
| <input type="checkbox"/> | <input type="checkbox"/> | ASSOCIATED RIGHTS -- COPIES IN FILE/FLAGS PREPARED/REMARKS CODED |
| <input checked="" type="checkbox"/> | <input type="checkbox"/> | NOTICE AREA MAP COMPLETED |
| <input checked="" type="checkbox"/> | <input type="checkbox"/> | EA COMPLETED AND EMAILED TO EQC AND JIM BOND |

ACTION TAKEN

- | YES | NO | NA | | |
|-------------------------------------|--------------------------|--------------------------|---|---|
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 612 | SENT _____ <input type="checkbox"/> IN FILE |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | DEFICIENCY LETTER SENT? | DATE _____ |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | DEFICIENCY LETTER RESPONSE RECEIVED? | DATE _____ |
| <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | APPLICATION FOUND CORRECT & COMPLETE? | DATE <u>12/28/02</u> |
| <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | PRELIMINARY CRITERIA ASSESSMENT COMPLETED | |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | FILE REVIEWED BY WATER MANAGEMENT BUREAU | |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | PUBLIC NOTICE WAIVED -- PERMIT ISSUED | |
| <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | APPLICATION PUBLISHED | |

CORRECT & COMPLETE CRITERIA CHECK:

Criteria 1: *THERE IS WATER PHYSICALLY AVAILABLE AT THE PROPOSED POINT OF DIVERSION IN THE AMOUNT THAT THE APPLICANT SEEKS TO APPROPRIATE; AND WATER CAN REASONABLY BE CONSIDERED LEGALLY AVAILABLE DURING THE PERIOD IN WHICH THE APPLICANT SEEKS TO APPROPRIATE, IN THE AMOUNT REQUESTED, BASED ON THE RECORDS OF THE DEPARTMENT AND OTHER EVIDENCE PROVIDED TO THE DEPARTMENT. LEGAL AVAILABILITY IS DETERMINED USING AN ANALYSIS INVOLVING THE FOLLOWING FACTORS: (A) IDENTIFICATION OF PHYSICAL WATER AVAILABILITY; (B) IDENTIFICATION OF EXISTING LEGAL DEMANDS ON THE SOURCE OF SUPPLY THROUGHOUT THE AREA OF POTENTIAL IMPACT BY THE PROPOSED USE; AND (C) ANALYSIS OF THE EVIDENCE ON PHYSICAL WATER AVAILABILITY AND THE EXISTING LEGAL DEMANDS, INCLUDING BUT NOT LIMITED TO A COMPARISON OF THE PHYSICAL WATER SUPPLY AT THE PROPOSED POINT OF DIVERSION WITH THE EXISTING LEGAL DEMANDS ON THE SUPPLY OF WATER.*

- The applicant provided information discussing physical water availability at the proposed point of diversion in the amount needed?
- The applicant identified existing legal demands on the source?
- The applicant provided a discussion comparing the physical water availability and the legal demands?

Criteria 2: *THE WATER RIGHTS OF A PRIOR APPROPRIATOR UNDER AN EXISTING WATER RIGHT, A CERTIFICATE, A PERMIT, OR A STATE WATER RESERVATION WILL NOT BE ADVERSELY AFFECTED. IN THIS SUBSECTION, ADVERSE EFFECT MUST BE DETERMINED BASED ON A CONSIDERATION OF AN APPLICANT'S PLAN FOR THE EXERCISE OF THE PERMIT THAT DEMONSTRATES THAT THE APPLICANT'S USE OF THE WATER WILL BE CONTROLLED SO THE WATER RIGHT OF A PRIOR APPROPRIATOR WILL BE SATISFIED.*

- The applicant provided information showing how he can exercise and control the project to ensure prior appropriators will be satisfied

Criteria 3: *THE PROPOSED MEANS OF DIVERSION, CONSTRUCTION, AND OPERATION OF THE APPROPRIATION WORKS ARE ADEQUATE.*

- The applicant provided information on the proposed means of diversion, construction, and operation of the diversion works.

Criteria 4: *THE PROPOSED USE OF WATER IS A BENEFICIAL USE.*

- The applicant provided information and data showing the proposed use is a beneficial and the flow rate and volume requested are reasonable.

Criteria 5: *THE APPLICANT HAS A POSSESSORY INTEREST, OR THE WRITTEN CONSENT OF THE PERSON WITH THE POSSESSORY INTEREST, IN THE PROPERTY WHERE THE WATER IS TO BE PUT TO BENEFICIAL USE.*

- The applicant signed the statement on the application form, section 14.

COMMENTS

Montana Department of Natural Resources and Conservation
Water Resources Division
Water Rights Bureau

ENVIRONMENTAL ASSESSMENT
For Routine Actions with Limited Environmental Impact

Part I. Proposed Action Description

1. *Applicant/Contact name and address:* City of Red Lodge
1 South Platt
Red Lodge MT 59068
2. *Type of action:* Application for Beneficial Water Use No. 43D-30001172
3. *Water source name:* Wells
4. *Location affected by action:* Section 4, Township 8 South, Range 20 East, Carbon County.
5. *Narrative summary of the proposed project, purpose, action to be taken, and benefits:*
This is to be two wells to supply municipal water to the City of Red Lodge. The application is for a flow rate of 1200 gallons per minute and an annual volume of 968 acre-feet. DNRC will issue a provisional water use permit if all criteria for issuance under MCA 85-2-311 are met
6. *Agencies consulted during preparation of the Environmental Assessment:*
(include agencies with overlapping jurisdiction)

Montana Natural Heritage Program
Montana Historical Preservation Office
Montana Department of Fish Wildlife & Parks (MFWP)
Montana Department of Environmental Quality (MDEQ)
Carbon County Planning Office

Part II. Environmental Review

1. Environmental Impact Checklist:

PHYSICAL ENVIRONMENT

WATER QUANTITY, QUALITY AND DISTRIBUTION

Water quantity - Assess whether the source of supply is identified as a chronically or periodically dewatered stream by DFWP. Assess whether the proposed use will worsen the already dewatered condition.

Determination: Rock Creek from Red Lodge to the mouth is on the DFWP list of chronically or periodically dewatered streams. This is to be water use from 2 wells. These wells are located above the City of Red Lodge. There is a possibility that these wells may have some influence on surface water supplies in the area, but the impact is not expected to be significant.

Water quality - *Assess whether the stream is listed as water quality impaired or threatened by DEQ, and whether the proposed project will affect water quality.*

Determination: Rock Creek in this area is on the MDEQ list of water quality impaired or threatened streams. This is to be water use from 2 wells. There is a possibility that these wells may have some influence on surface water supplies in the area, but this proposed use of water is not expected to have any significant impact on water quality issues in the area.

Groundwater - *Assess if the proposed project impacts ground water quality or supply. If this is a groundwater appropriation, assess if it could impact adjacent surface water flows.*

Determination: There are several domestic wells in the area of this proposed development. The analysis made by the consultant for the City of Red Lodge indicated that there should be no long-term adverse effect to existing water users in the area. The information indicates there should be no significant impact on surface or groundwater supplies in the area.

DIVERSION WORKS - *Assess whether the means of diversion, construction and operation of the appropriation works of the proposed project will impact any of the following: channel impacts, flow modifications, barriers, riparian areas, dams, well construction.*

Determination: This is to be use from two new 12.75 O.D. wells. The outlet works for the wells is to be connected to the present city water supply system. The wells and connection to the city water system will be under the direction of a qualified engineer. The proposed diversion works appears to be adequate and there should be no significant impacts on riparian areas or the West Fork of Rock Creek stream channel from this proposed use.

UNIQUE, ENDANGERED, FRAGILE OR LIMITED ENVIRONMENTAL RESOURCES

Endangered and threatened species - *Assess whether the proposed project will impact any threatened or endangered fish, wildlife, plants or aquatic species or any "species of special concern," or create a barrier to the migration or movement of fish or wildlife. For groundwater, assess whether the proposed project, including impacts on adjacent surface flows, would impact any threatened or endangered species or "species of special concern."*

Determination: The Montana Natural Heritage Program identified four species of special concern in this area. These are the Preble's Shrew, White-tailed Prairie Dog, Lynx, and the Beautiful Fleabane. This development is in the area of the present water intake and treatment plant for the City of Red Lodge. This proposed use should have no significant impact on any species of special concern in the area.

Wetlands - *Consult and assess whether the apparent wetland is a functional wetland (according to COE definitions), and whether the wetland resource would be impacted.*

Determination: The area of these proposed wells does not appear to be in a wetland area. There should be no significant impact on wetland resources in the area.

GEOLOGY/SOIL QUALITY, STABILITY AND MOISTURE - *Assess whether there will be degradation of soil quality, alteration of soil stability, or moisture content. Assess whether the soils are heavy in salts that could cause saline seep.*

Determination: The wells are to be situated in an area of mostly gravel and large cobble. There is very little topsoil in this area. This proposed water use for the municipal area for the City of Red Lodge should not degrade soil quality or cause saline seep problems.

VEGETATION COVER, QUANTITY AND QUALITY/NOXIOUS WEEDS - *Assess impacts to existing vegetative cover. Assess whether the proposed project would result in the establishment or spread of noxious weeds.*

Determination: There will be some disturbance of soil and gravels during construction of these wells and connection to the city water supply. There is presently some Spotted Knapweed established in the area of these proposed well. It is expected that the City of Red Lodge will take precautions against the spread of noxious weeds and will minimize impacts on existing vegetative cover during construction. There should be no significant impact on existing vegetative cover or the spread of noxious weeds from this proposed use of water.

AIR QUALITY - *Assess whether there will be a deterioration of air quality or adverse effects on vegetation due to increased air pollutants.*

Determination: There should be no deterioration of air quality or adverse effects on vegetation due to increased air pollutants from this proposed project.

HISTORICAL AND ARCHEOLOGICAL SITES - *Assess whether there will be degradation of unique archeological or historical sites in the vicinity of the proposed project.*

Determination: The Montana Historical Preservation Office did not identify any previously recorded historical or archeological sites in this area. This proposed use of water from two wells is not expected to have any significant impact on any historical or archeological sites in the area.

DEMANDS ON ENVIRONMENTAL RESOURCES OF LAND, WATER, AND ENERGY - *Assess any other impacts on environmental resources of land, water and energy not already addressed.*

Determination: There should be no significant impacts on other environmental resources of land, energy, and water from this proposed use.

| |
|--------------------------|
| HUMAN ENVIRONMENT |
|--------------------------|

LOCALLY ADOPTED ENVIRONMENTAL PLANS AND GOALS - Assess whether the proposed project is inconsistent with any locally adopted environmental plans and goals.

Determination: This proposed use is not inconsistent with any locally adopted environmental plans and goals for Carbon County.

ACCESS TO AND QUALITY OF RECREATIONAL AND WILDERNESS ACTIVITIES - Assess whether the proposed project will impact access to or the quality of recreational and wilderness activities.

Determination: There should be no significant impacts on recreational or wilderness activities from this proposed use.

HUMAN HEALTH - Assess whether the proposed project impacts on human health.

Determination: There should be no significant impact on human health from this proposed use.

PRIVATE PROPERTY - Assess whether there are any government regulatory impacts on private property rights.

Yes ___ No X. If yes, analyze any alternatives considered that could reduce, minimize, or eliminate the regulation of private property rights.

OTHER HUMAN ENVIRONMENTAL ISSUES - For routine actions of limited environmental impact, the following may be addressed in a checklist fashion.

Impacts on:

- (a) Cultural uniqueness and diversity? No significant impact
- (b) Local and state tax base and tax revenues? No significant impact
- (c) Existing land uses? No significant impact
- (d) Quantity and distribution of employment? No significant impact
- (e) Distribution and density of population and housing? No significant impact
- (f) Demands for government services? No significant impact
- (g) Industrial and commercial activity? No significant impact
- (h) Utilities? There will be new utilities needed for pumping from the new wells.
- (i) Transportation? No significant impact
- (j) Safety? No significant impact

(k) *Other appropriate social and economic circumstances?* This use is intended to make a more reliable source of water for the City of Red Lodge. This may result in an expanded population or an expansion of the present municipal service area.

2. ***Secondary and cumulative impacts on the physical environment and human population:*** The use of this alluvial groundwater may cause some impacts to surface flows of the West Fork of Rock Creek and Rock Creek and some impacts to groundwater supplies in the area. The impacts are not expected to be significant. The secondary and cumulative impacts are not expected to be significant.
3. ***Describe any mitigation/stipulation measures:*** If the use of this water causes an adverse impact on another water right holder in the area, the City of Red Lodge would be required to cease pumping until the rights of the affected party were satisfied.
4. ***Description and analysis of reasonable alternatives to the proposed action, including the no action alternative, if an alternative is reasonably available and prudent to consider:*** . The City of Red Lodge could purchase water rights from the West Fork of Rock Creek or Rock Creek to supplement the present surface supply of water. These water rights would only be available during the irrigation season. It would be very difficult find appropriate water rights to purchase and would be difficult to ensure that the water from the purchased rights was conveyed to the City of Red Lodge water intake facility.

The no action alternative would not allow the City of Red Lodge to use groundwater for the municipal water supply and would make it difficult for the city to expand its services.

PART III. Conclusion

Based on the significance criteria evaluated in this EA, is an EIS required? No

If an EIS is not required, explain why the EA is the appropriate level of analysis for this proposed action: No significant adverse environmental impacts were identified. No EIS is required.

Name of person(s) responsible for preparation of EA:

Name: Marty Van Cleave

Title: Water Resources Specialist

Date: February 4, 2003

552712/27/02

STATE HISTORIC PRESERVATION OFFICE

1410 8th Ave., P.O. Box 201202, Helena, MT 59620-1202
 Phone: (406)-444-7767 - Fax: (406)-444-6575 - e-mail: dmurdo@state.mt.us
 Attn: Damon Murdo

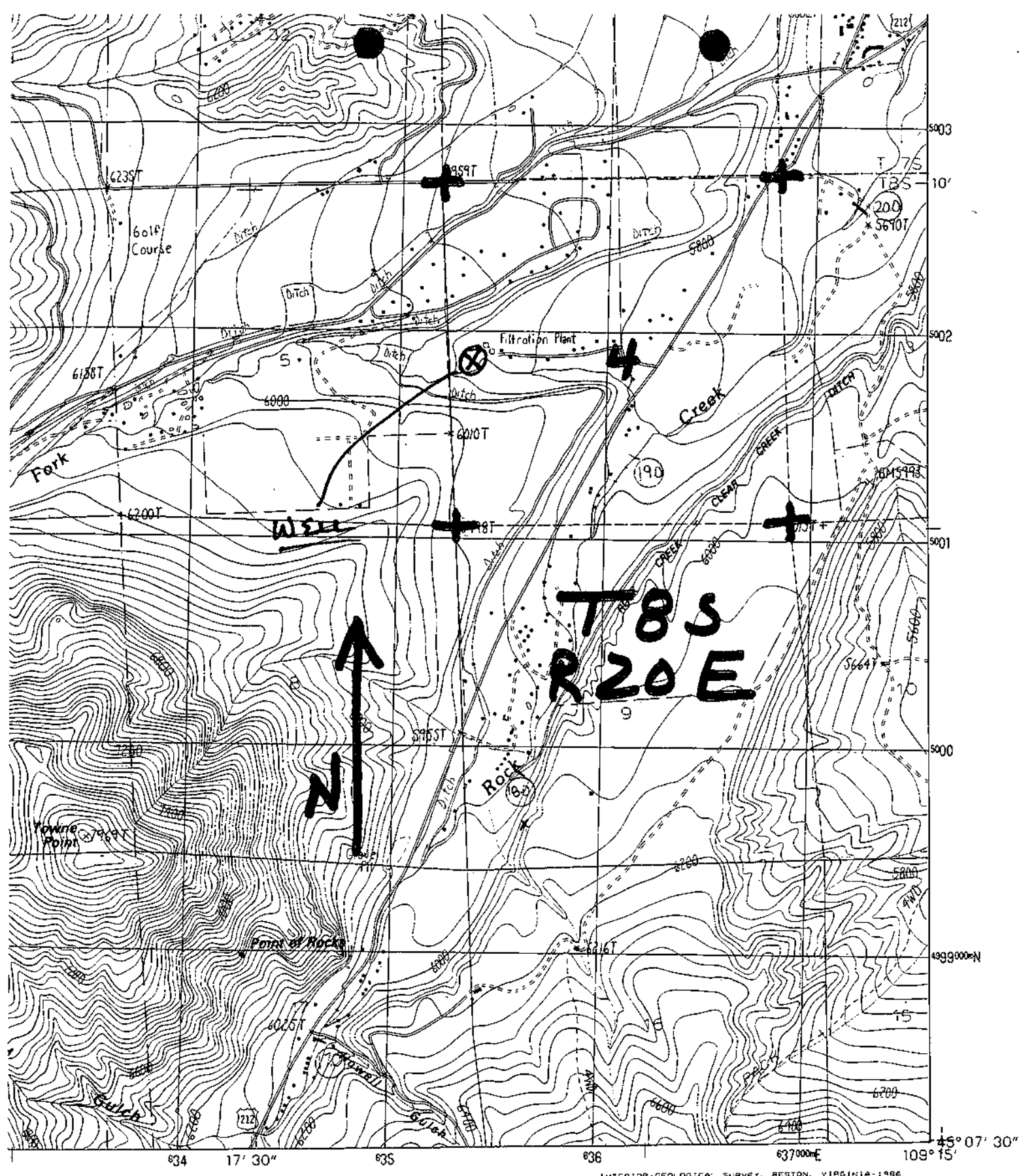
File Search Request Form

Please complete this form and attach a copy of the appropriate USGS Quad showing the project location. All fields must be completed in order for your file search request to be processed. The form and accompanying map can be returned to the address above, faxed, or brought directly to the office.

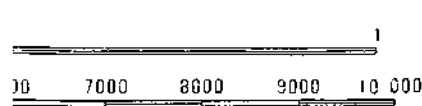
| | | | | | |
|---|--|--------|----------------|------|------------|
| Individuals Name | Marty Van Cleave | | | | |
| Organization (Agency/Company) | Billings Water Resources Regional Office | | | | |
| Street | 1371 Rimtop Drive | | | | |
| City | Billings | State: | MT | Zip: | 59105-1978 |
| Telephone # | (406) 247-4422 | Fax #: | (406) 247-4416 | | |
| Project Name | City of Red Lodge-30001172 | | | | |
| Government Agency Involved | Montana Department of Natural Resources and Conservation | | | | |
| Describe the project. Please identify any work that will involve disturbance of the ground, or the demolition and modification of existing buildings. If none of these are to occur, please indicate. | The City of Red Lodge is planning to drill two wells to provide a new water supply for the city. There will be some new disturbance of ground in the new well areas. | | | | |
| Describe any previous disturbance and the current land use. | The current land use is open land. | | | | |
| Approximate date of proposed project initiation. | May 2003 | | | | |
| Land Ownership (Private, State, Federal, etc.) | City of Red Lodge | | | | |
| Remarks/ Special Requests | Any information on historical sites or areas of special interest in the area. | | | | |

Project Area Location Information (add on back if necessary) Projects in cities also require TRS.

| TOWNSHIP | RANGE | SECTIONS | COUNTY |
|----------|---------|-----------|--------|
| 8 South | 20 East | Section 4 | Carbon |
| | | | |
| | | | |



INTERIOR GEOLOGICAL SURVEY, RESTON, VIRGINIA-1986



QUADRANGLE LOCATION

ROAD LEGEND

- Improved Road
- Unimproved Road
- Trail
- Interstate Route ◻ U.S. Route ○ State Route

| | | | |
|---|---|---|-------------------------|
| 1 | 2 | 3 | 1 Roscoe |
| | | | 2 Castagne |
| | | | 3 Roberts |
| | | | 4 Bare Mountain |
| 4 | | 5 | 5 Red Lodge East |
| | | | 6 Black Powder Mountain |

RED LODGE WEST, MONTANA



MONTANA HISTORICAL SOCIETY

225 North Roberts ♦ P.O. Box 201201 ♦ Helena, MT 59620-1201
♦ (406) 444-2694 ♦ FAX (406) 444-2696 ♦ www.montanahistoricalsociety.org ♦

December 31, 2002

Marty Van Cleave
NRCS
1371 Rintop Drive
Billings, MT 59105-1978

RECEIVED

JAN 02 2003

**DEPT. OF CULTURAL RESOURCES
AND CONSERVATION
BILLINGS OFFICE**

RE: BILLINGS: NRCS PROJECTS. SHPO Project #'s: 2002122707-2002122716

Dear Mr. Van Cleave:

Below you will find the results from the ten file search requests that were sent to me.

RE: BILLINGS: BELFRY CEMETERY. SHPO Project #: 2002122707

I have conducted a cultural resource file search for the above-cited project located in Section 22, T8S, R22E. According to our records there have been no previously recorded historic or archaeological sites within the designated search locales. Thank you for consulting with us.

RE: BILLINGS: TOWN OF EKALAKA. SHPO Project #: 2002122708

I have conducted a cultural resource file search for the above-cited project located in Section 32, T2N, R58E. According to our records there have been no previously recorded historic or archaeological sites within the designated search locales. Thank you for consulting with us.

RE: BILLINGS: CHARLES SIDDLE. SHPO Project #: 2002122709

I have conducted a cultural resource file search for the above-cited project located in Section 34, T7S, R20E. According to our records there have been no previously recorded historic or archaeological sites within the designated search locales. Thank you for consulting with us.

RE: BILLINGS: STILLWATER MINING CO. SHPO Project #: 2002122710

I have conducted a cultural resource file search for the above-cited project located in Sections 28,29, T4S, R13E. According to our records there have been two previously recorded sites within the designated search locale. Site 24SW0146 is the Brown Lee Head Site, and Site 24SW0148 is a lithic scatter. Both sites are located in the NW ¼ of Section 28. Thank you for consulting with us.



MONTANA HISTORICAL SOCIETY

225 North Roberts ♦ P.O. Box 201201 ♦ Helena, MT 59620-1201
♦ (406) 444-2694 ♦ FAX (406) 444-2696 ♦ www.montanahistoricalsociety.org ♦

RE: BILLINGS: CENEX PIPELINE, LLC. SHPO Project #: 2002122711

I have conducted a cultural resource file search for the above-cited project located in Section 27, T13N, R52E. According to our records there have been two previously recorded sites within the designated search locale. Site 24PE0072 is a lithic scatter, and Site 24PE0618 is the Yellowstone River Bridge. Both sites are located in the NE ¼ of Section 27. Thank you for consulting with us.

RE: BILLINGS: OFTEDAL CONSTRUCTION. SHPO Project #: 2002122712

I have conducted a cultural resource file search for the above-cited project located in Sections 21, 28, T5S, R52E. According to our records there have been no previously recorded historic or archaeological sites within the designated search locales. Thank you for consulting with us.

RE: BILLINGS: OFTEDAL CONSTRUCTION. SHPO Project #: 2002122713

I have conducted a cultural resource file search for the above-cited project located in Section 3, T5S, R51E. According to our records there has been one previously recorded site within the designated search locale. Site 24PR0269 is the Powder River Bridge Site located in the NE ¼ of Section 3 right at the POD. Thank you for consulting with us.

RE: BILLINGS: CITY OF BILLINGS. SHPO Project #: 2002122714

I have conducted a cultural resource file search for the above-cited project located in Section 5, T1S, R26E. According to our records there have been no previously recorded historic or archaeological sites within the designated search locales. Thank you for consulting with us.

RE: BILLINGS: CITY OF RED LODGE. SHPO Project #: 2002122715

I have conducted a cultural resource file search for the above-cited project located in Section 4, T8S, R20E. According to our records there have been no previously recorded historic or archaeological sites within the designated search locales. Thank you for consulting with us.

RE: BILLINGS: YELLOWSTONE ENERGY LTD PARTNERSHIP. SHPO Project #:
2002122716

I have conducted a cultural resource file search for the above-cited project located in Section 25, T8S, R25E. According to our records there have been no previously recorded historic or archaeological sites within the designated search locales. Thank you for consulting with us.





MONTANA HISTORICAL SOCIETY

225 North Roberts ♦ P.O. Box 201201 ♦ Helena, MT 59620-1201
♦ (406) 444-2694 ♦ FAX (406) 444-2696 ♦ www.montanahistoricalsociety.org ♦

If you have any further questions or comments you may contact me at (406) 444-7767 or by e-mail at dmurdo@state.mt.us.

Thanks.

Damon Murdo
Cultural Records Manager

File: NRCS/2002



STATE HISTORIC PRESERVATION OFFICE ♦ 1410 8th Ave ♦ P.O. Box 201202 ♦ Helena, MT 59620-1202
♦ (406) 444-7715 ♦ FAX (406) 444-6575

VanCleave, Marty

From: Murdo, Damon
Sent: Wednesday, August 14, 2002 11:34 AM
To: VanCleave, Marty
Subject: RE: Historical request

August 14, 2002

Marty Van Cleave
Billings Water Resources
1371 Rintop Drive
Billings, MT 59105-1978

RE: CITY OF RED LODGE MUNICIPAL WATER SUPPLY. SHPO Project #: 2002081401

Dear Mr. Van Cleave:

I have conducted a cultural resource file search for the above-cited project located in Section 4, T8S, R20E. According to our records there have been no previously recorded historic or archaeological sites within the designated search locale. The absence of cultural properties in the area does not mean that they do not exist but rather may reflect the absence of any previous cultural resource inventory in the area, as our records indicated none.

Based on the lack of previous inventory and the ground disturbance required by this undertaking we feel that this project has the potential to impact cultural properties. We, therefore, recommend that a cultural resource inventory be conducted in order to determine whether or not sites exist and if they will be impacted. Thank you for consulting with us.

If you have any further questions or comments you may contact me at (406) 444-7767 or by e-mail at dmurdo@state.mt.us.

Sincerely,

Damon Murdo
Cultural Records Manager

File: DNRC/WATER

-----Original Message-----

From: VanCleave, Marty
Sent: Wednesday, August 14, 2002 8:44 AM
To: Murdo, Damon
Subject: Historical request

<< File: Hist.req.rtf >>

Thank You

This is the information you sent to the Montana Natural Heritage Program:

The following message was submitted from the Montana Natural Heritage Program request form at <http://nhp.nris.state.mt.us/requests/request.html> on 12/26/2002 at 3:52:39 PM Mountain time by mvancleave@state.mt.us.

name: Marty Van Cleave-DNRC

address1: 1371 Rimtop Drive

city: Billings

state: MT

zipcode: 59105-1978

phone: (406) 247-4422

email: mvancleave@state.mt.us

infotype: Any information on endangered plant and animal species or species of special concern within the proposed project area.

searcharea: Section 4, Township 8 South, Range 20 East, Carbon County

reason: This project is to provide a groundwater source of water for the City of Red Lodge.

Your mail has been sent!

[Return to the Heritage Program Home Page](#)



P.O. Box 201800 • 1515 East Sixth Avenue • Helena, MT 59620-1800 • fax 406.444.0581 • tel 406.444.3009 • <http://nris.state.mt.us>

January 10, 2003

Marty Van Cleave
Montana DNRC
1371 Rimtop Drive
Billings, Montana 59105-1978

Dear Marty,

I am writing in response to your request for information on species of special concern in the vicinity of the City of Red Lodge, Section 4, T08S, R20E, Carbon County. We checked our databases for information in this general area and have enclosed 4 species of concern reports and 1 map.

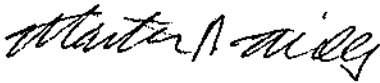
Please keep in mind the following when using and interpreting the enclosed information and maps:

- (1) These materials are the result of a search of our database for species of concern that occur in an area defined by the requested township, range and section with an additional one-mile buffer surrounding the requested area. This is done to provide you with a more inclusive set of records and to capture records that may be immediately adjacent to the requested area.
- (2) In the report, the term "precision" reflects the quality of the location information. S (second) precision is used when the location of the collection/observation is known within a three-second radius (approximately 10 acres); M (minute) precision is used when the location of the collection /observation is known within a one minute radius (approximately 1.5 miles); and G (general) precision is used when the location of the record/collection is known within a 5 mile radius or to a place name only. Some species locations outside the selection area have imprecisely-known locations and may actually occur within the selection area.
- (3) Location information for animals represents occupied breeding habitat; location information for plants represents known occurrences of plant species, and, like animals, has an implied range that may not be fully conveyed by the mapped data. Most locations are depicted as points, but some, especially those that cover large area, are depicted as polygons on the map. The approximate boundaries of these polygons are color-coded to help differentiate vertebrate classes and plants.
- (4) This report may include sensitive data, and is not intended for general distribution, publication or for use outside of your agency. In particular, public release of specific location information may jeopardize the welfare of threatened, endangered, or sensitive species or communities.
- (5) The accompanying map(s) display management status, which may differ from ownership. Also, this report may include data from privately owned lands, and approval by the landowner is advisable if specific location information is considered for distribution. Features shown on this map do not imply public access to any lands.
- (6) Additional biological data for the search area(s) may be available from other sources. We suggest you contact the U.S. Fish and Wildlife Service for any additional information on threatened and endangered species (406-449-5225). Also, significant gaps exist in the Heritage Program's fisheries data, and we suggest you contact the Montana Rivers Information System for information related to your area of interest (406-444-3345).

(7) The results of a data search by the Montana Natural Heritage Program reflect the current status of our data collection efforts. These results are not intended as a final statement on sensitive species within a given area, or as a substitute for on-site surveys, which may be required for environmental assessments.

I hope the enclosed information is helpful to you. Please feel free to contact me at (406)-444-3290 or via my e-mail address, below, should you have any questions or require additional information.

Sincerely,



Martin P. Miller, Data Assistant
Montana Natural Heritage Program
(martinm@state.mt.us)

1/10/2003

Montana Natural Heritage Program
Species of Concern
City of Red Lodge

Scientific Name: SOREX PREBLEI

Common Name: PREBLE'S SHREW

Global Rank: G4

State Rank: S3

Forest Service Status:

USFWS Endangered Species Act:

BLM Status: SPECIAL STATUS

Occurrence Type:

Species occurrence data:

ONE MALE AND ONE FEMALE COLLECTED.

Last observation: 1968-06-27

Size (acres):

General site description:

Land owner/manager:

CUSTER NATIONAL FOREST, BEARTOOTH RANGER DISTRICT; PRIVATELY OWNED LAND (INDIVIDUAL OR CORPORATE)

Comments:

RECORD BASED ON SPECIMEN COLLECTED BY K. W. HALLER.

Information source:

ZOOLOGIST, MONTANA NATURAL HERITAGE PROGRAM, 1515 EAST SIXTH AVENUE, P.O. BOX 210800,
HELENA, MT 59620-1800. 406/444-3009.

Survey site name: GRIZZLY PEAK

County: CARBON

USGS quadrangle: RED LODGE WEST

Precision: G

Elevation (ft): 8200

Location:

FOUR MILES WEST OF RED LODGE.

Township\Range:

007S019E

Section:

26

TRS comments:

1/10/2003

Montana Natural Heritage Program
Species of Concern
City of Red Lodge

Scientific Name: CYNOMYS LEUCURUS

Common Name: WHITE-TAILED PRAIRIE DOG

Forest Service Status: SENSITIVE

Global Rank: G4

USFWS Endangered Species Act:

State Rank: S1

BLM Status: SPECIAL STATUS

Occurrence Type:

Species occurrence data:

5-10 ACRES ON PRIVATE LAND. 1995: NO EVIDENCE OF COLONY; AREA BEING DEVELOPED WITH HOMES.

Last observation: 1977-

Size (acres): 10

General site description:

ISOLATED SITE SURROUNDED BY FOREST ON 3 SIDES.

Land owner/manager:

PRIVATELY OWNED LAND (INDIVIDUAL OR CORPORATE)

Comments:

SITE MAY FALL W/IN PHYS-PROV=MR

Information source:

FLATH, DENNIS L. MONTANA DEPARTMENT OF FISH, WILDLIFE AND PARKS, WILDLIFE RESEARCH BUREAU, FWP BUILDING, MONTANA STATE UNIVERSITY CAMPUS, 1400 SOUTH 19TH STREET, BOZEMAN, MT 59717-0001. 406/944-6354.

Survey site name: WEST FORK-COLONY #1

County: CARBON

USGS quadrangle: RED LODGE WEST

Precision: M

Elevation (ft): 6400

Location:

APPROX. 4.5 MI. WSW OF RED LODGE ON WEST FORK ROAD. ON N SIDE ROAD ACROSS FROM TOWNE GULCH.

Township\Range:

008S019E

Section:

1

TRS comments:

SE4

1/10/2003

Montana Natural Heritage Program
Species of Concern
City of Red Lodge

Scientific Name: FELIS LYNX

Common Name: LYNX

Global Rank: G5

State Rank: S3

Forest Service Status:

USFWS Endangered Species Act: (PS:LT)

BLM Status:

Occurrence Type:

Species occurrence data:

POTENTIAL HABITAT. THIS OCCURRENCE RECORD CONSISTS OF LARGE CONTIGUOUS AREAS THAT WERE GENERALIZED FROM SPECIFIC HABITATS IDENTIFIED BY THE WILDLIFE SPATIAL ANALYSIS LAB AT THE UNIVERSITY OF MONTANA AS BEING POTENTIAL LYNX HABITAT.

Last observation: 1999

Size (acres):

General site description:

DENSE, MATURE OR OLD-GROWTH LODGEPOLE PINE, DOUGLAS-FIR, ENGELMANN SPRUCE AND SUBALPINE FIR FORESTS. WELL-DEVELOPED UNDERSTORY IMPORTANT.

Land owner/manager:

Comments:

ALL HABITAT POLYGONS IN THE STATE ARE INCLUDED IN THIS OCCURRENCE RECORD. SOURCE DATA INCLUDES CAVEAT THAT SUITABLE HABITAT MAY BE OVERESTIMATED. SPRUCE-FIR FORESTS ABOVE 3500 FEET ELEVATION ARE PREFERRED HABITAT. LYNX NUMBERS CYCLE WITH NUMBERS OF SNOWSHOE HARE AND MAY BE VERY LOW FOR SEVERAL YEARS EVEN IN PREFERRED HABITAT. FOR THE ABOVE REASONS AND THE PRELIMINARY NATURE OF THE HABITAT MAPPING, THIS OCCURRENCE IS NOT DISPLAYED ON STANDARD MAPS OF ELEMENT OCCURRENCES.

Information source:

HART, M. M., W. A. WILLIAMS, P. C. THORNTON, K. P. MCLAUGHLIN, C. M. TOBALSKE, B. A. MAXELL, D. P. HENDRICKS, C. R. PETERSON, AND R. L. REDMOND. 1998. MONTANA ATLAS OF TERRESTRIAL VERTEBRATES. UNPUBLISHED REPORT. MONTANA COOPERATIVE WILDLIFE RESEARCH UNIT, THE UNIVERSITY OF MONTANA, MISSOULA. VII + 1302 PP.

Survey site name: STATEWIDE

County: BEAVERHEAD; CARBON; CASCADE; DEER LODGE; FLATHEAD; GALLATIN; GLACIER; GRANITE; JEFFERSON; JUDITH BASIN; LAKE; LEWIS AND CLARK; LINCOLN; MADISON; MEAGHER; MINERAL; MISSOULA; PARK; PONDERA; POWELL; RAVALLI; SANDERS; SILVER BOW; STILLWATER; SWEET GRASS; TETO

USGS quadrangle: (EXTENDS OVER MULTIPLE QUADS)

Precision: G

Elevation (ft):

Location:

INCLUDES MUCH OF WESTERN & SOUTH CENTRAL MONTANA

Township\Range:

Section:

TRS comments:

1/10/2003

Montana Natural Heritage Program
Species of Concern
City of Red Lodge

Scientific Name: ERIGERON FORMOSISSIMUS VAR VISCIDUS

Common Name: BEAUTIFUL FLEABANE

Forest Service Status:

Global Rank: G5T4

USFWS Endangered Species Act:

State Rank: S1

BLM Status: WATCH

Occurrence Type:

Species occurrence data:

IN FLOWER.

Last observation: 1919-07-22

Size (acres): 0

General site description:

UNKNOWN.

Land owner/manager:

PRIVATELY OWNED LAND (INDIVIDUAL OR CORPORATE)

Comments:

NONE.

Information source:

BOTANIST, MONTANA NATURAL HERITAGE PROGRAM, 1515 EAST SIXTH AVENUE, HELENA, MT
59620-1800.

Survey site name: RED LODGE

County: CARBON

USGS quadrangle: RED LODGE EAST

Precision: G

Elevation (ft): 5760

Location:

RED LODGE.

Township\Range:

007S020E

Section:

26

TRS comments:

Montana Species of Concern City of Red Lodge

Biological Data

- ▲ Animal
- Plant
- ◇ Other

Animal

- ▨ Bird
- ▩ Mammal
- Search Area

Land Status

- BLM
- BOR (BuRec)
- CoE & other DoD
- NPS
- USFS
- Other USDA
- USFWS
- BIA Trust
- Tribal
- State Trust
- DFWP
- University & Institutions
- County & City
- Plum Creek
- Private Conservation
- Other private
- Water



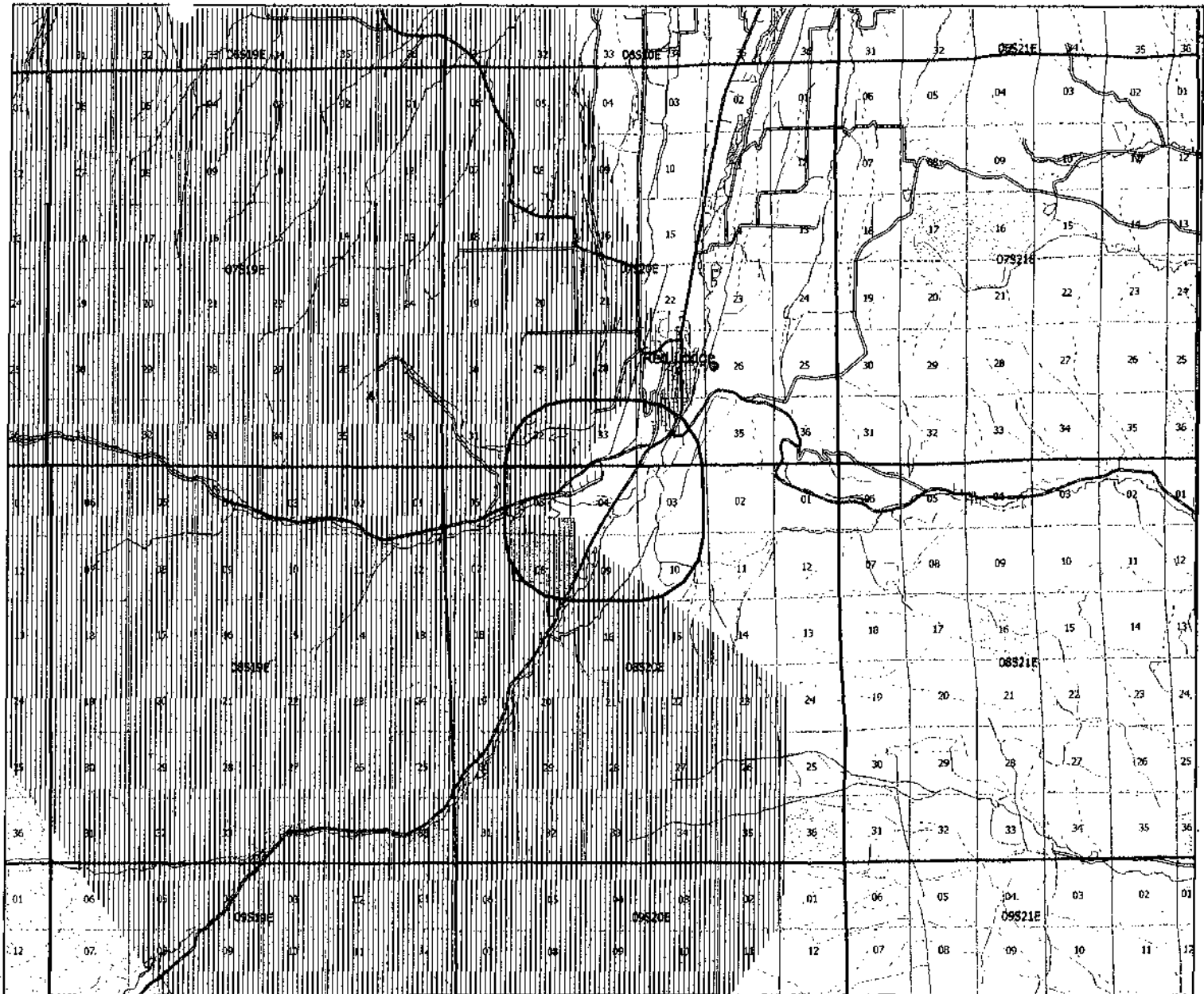
Species locations depicted outside the search area have imprecisely known locations and may actually occur within the search area.

Not all legend items may occur on map.

Features shown on this map do not imply public access to any lands.

This map displays management status, which may differ from ownership.

Refer to accompanying documentation for full explanation of map features.



Natural Resources Information System
Montana State Library
PO Box 201637
Helena, MT 59620-1600
(406) 444-3008 mnhp@montana.gov

January 10 2003
03dnrc104

0.8 0 0.8 1.6 2.4 3.2 4 Miles

DEPARTMENT OF NATURAL
RESOURCES AND CONSERVATION



JUDY MARTZ
GOVERNOR

DIRECTOR'S OFFICE (406) 444-2074
TELEFAX NUMBER (406) 444-2684

STATE OF MONTANA

WATER RESOURCES DIVISION (406) 444-6601
TELEFAX NUMBERS (406) 444-0533 / (406) 444-5918
<http://www.dnrc.state.mt.us/wrd/home.htm>

48 NORTH LAST CHANCE GULCH
PO BOX 201601
HELENA, MONTANA 59620-1601

2/10/2003

Carbon County News
PO Box 970
Red Lodge, MT 59068-0970

RE: Public Notice for Application No. 43D-30001172

Dear Editor:

As required by law, you are authorized to publish the enclosed Public Notice on 02/20/2003.

PLEASE NOTE: It is important the notice be advertised on the date specified. If it can't be published on the date indicated, please call.

Within 14 days after publication, please submit a notarized Affidavit and Certification of Publication with tear sheet and statement of cost based on folios. The basis of folio measure is to be on a word count of 100 words of any fraction thereof: i.e., 299 words = 3 folios, 301 words = 4 folios, etc. with the heading and date of publication included in the word count. (Actual word count for this notice is: 393)

If you have any questions, please call me at 406-444-6626.

Sincerely,

A handwritten signature in cursive script that reads "Anne Marie Lowney".

Anne Marie Lowney
Administrative Support
Water Rights Bureau

Enclosures: Public Notice
Affidavit and Certificate of Publication

DEPARTMENT OF NATURAL
RESOURCES AND CONSERVATION



JUDY MARTZ
GOVERNOR

DIRECTOR'S OFFICE (406) 444-2074
TELEFAX NUMBER (406) 444-2684

STATE OF MONTANA

WATER RESOURCES DIVISION (406) 444-6601
TELEFAX NUMBERS (406) 444-0533 / (406) 444-5918
<http://www.dnrc.state.mt.us/wrd/home.htm>

48 NORTH LAST CHANCE GULCH
PO BOX 201601
HELENA, MONTANA 59620-1601

2/10/2003

RE: Public Notice of Application No. 43D-30001172

Dear Applicant/Consultant,

Please review the enclosed Public Notice to Water Users. It will be published in the newspaper on the date indicated. If you find an error, please call the Citizens Advocate Office immediately. Their TOLL FREE number is 1-800-332-2272. Leave your name, water right application number, and a telephone number. If you are out of the state, call 1-406-444-6626. A staff member of the Water Rights Bureau will return your call.

On the date of publication, please review the newspaper publication with the notice. If there is an error, or the paper fails to publish the notice, please call us. An uncorrected error may require the application to be re-advertised.

Sincerely,

Anne Marie Lowney

Anne Marie Lowney
Administrative Support
Water Rights Bureau

Enclosure: Public Notice

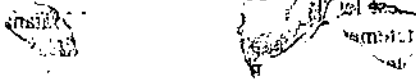
*1 App
1 Cons.*

AFFIDAVIT OF PUBLICATION

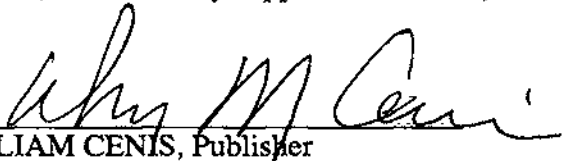
State of Montana
County of Carbon

I, William Cenis, being duly sworn, upon oath, say: That I am over the age of twenty-one years, and a citizen of the United States of America; that I am not a party to, nor in anywise interested in the matter referred to in the attached notice; that I am now Publisher of the Carbon County News.

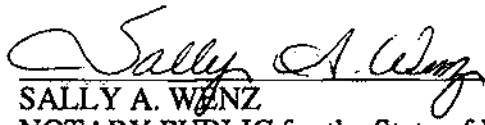
That the annexed printed notice,



is a true copy (in identical terms and format) which was printed and published in full in the regular and entire issue of said newspaper (and not in any supplement thereof) on **Feb. 20, 2003**


WILLIAM CENIS, Publisher
Carbon County News

SUBSCRIBED AND SWORN to me this 24th day of February,
2003.


SALLY A. WENZ
NOTARY PUBLIC for the State of Montana,
residing at Red Lodge.
My commission expires: 11/10/2004

PUBLIC NOTICE

Notice to Water Right Users
(Pursuant to Section 85-2-307
MCA)

The following application has been submitted to appropriate water in the State of Montana.

Application Number: 43D 30001172

Owners: Red Lodge, City of
1 South Platt
PO Box 9

• Red Lodge, MT 59068

Priority Date: March 7, 2002 at 11:30 A.M.

Purpose (use): Municipal

Maximum Flow Rate: 1,200.00 GPM

Maximum volume: 968.00 AC-FT

Source:

Source Name: Groundwater

Point of Diversion and Means of Diversion: ID: 1, Govt. Lot, Qtr. Sec. NWNWSW, Sec. 4, Twp. 8S, Rge., 20E, County, Carbon.

Diversion Means: Well

Well Depth: 67.00 Feet

Static Water Level: 8.00 Feet

Casing Diameter: 12.00 Inches

ID: 2, Govt. Lot, Qtr. Sec. NWNWSW, Sec. 4, Twp. 8S, Rge. 20E, County, Carbon

Diversion Means: Well

THIS APPLICATION INCLUDES TWO WELLS WITH A COMBINED FLOW RATE OF 1200 GALLONS PER MINUTE.

Period of Diversion: January 1 to December 31

Purpose (Use): Municipal

Volume: 968.00 AC-FT

Period of Use: January 1 to December 31

Place of Use: ID 1, Acres, Govt Lot, Qtr Sec, Sec 21, Twp 7S, Rge 20E, County Carbon.

ID 2, Acres, Govt Lot, Qtr Sec, Sec 22, Twp 7S, Rge 20E, County Carbon.

ID 3, Acres, Govt Lot, Qtr Sec, Sec 23, Twp 7S, Rge 20E, County Carbon.

ID 4, Acres, Govt Lot, Qtr Sec, Sec 26, Twp 7S, Rge 20E, County Carbon.

ID 5, Acres, Govt Lot, Qtr Sec, Sec 27, Twp 7S, Rge 20E, County Carbon.

ID 6, Acres, Govt Lot, Qtr Sec, Sec 28, Twp 7S, Rge 20E, County Carbon.

ID 7, Acres, Govt Lot, Qtr Sec, Sec

33, Twp 7S, Rge 20E, County Carbon.

ID 8, Acres, Govt Lot, Qtr Sec, Sec 34, Twp 7S, Rge 20E, County Carbon.

ID 9, Acres, Govt Lot, Qtr Sec NW, Sec 35, Twp 7S, Rge 20E, County Carbon.

ID 10, Acres, Govt Lot, Qtr Sec, Sec 3, Twp 8S, Rge 20E, County Carbon.

ID 11, Acres, Govt Lot, Qtr Sec, Sec 4, Twp 8S, Rge 20E, County Carbon.

ID 12, Acres, Govt Lot, Qtr Sec, Sec 5, Twp 8S, Rge 20E, County Carbon.

ID 13, Acres, Govt Lot, Qtr Sec, Sec 8, Twp 8S, Rge 20E, County Carbon.

ID 14, Acres, Govt Lot, Qtr Sec, Sec 9, Twp 8S, Rge 20E, County Carbon.

The place of use includes all land within the municipal water service area for the City of Red Lodge.

If issued, the right will be subject to prior existing water rights appli

cation, Form No. 611. Mail the completed objection form and \$25.00 filing fee to the Department of Natural Resources and Conservation, PO Box 201601, Helena, MT 59620-1601. **Objections must be postmarked on or before March 21, 2003.**

The objection to application form, Form No. 611 is available from this Department or on the DNRC website at: <http://www.dnrc.state.mt.us/wrd/home.htm> Direct any questions regarding this application to the Water Resources Regional office, 1371 Rimtop Drive, Billings, MT 59105-1978. Phone (406) 247-4415. Fax (406) 247-4416.

An environmental assessment has been completed and is available for viewing at the Regional Office or on the DNRC website at <http://www.dnrc.state.mt.us/wrd/home.htm>

Published in: Carbon County News,
February 20, 2003.

.....

Appendix F:

Source Water Protection

Source Water Delineation and Assessment Report

City of Red Lodge

PWSID MT0000314

Report Date: March 14, 2003

Revised: April 11, 2003

Certified Operator:

Wayne Tominich,

406-446-1606

Owner:

City of Red Lodge

PO BOX 45

Red Lodge, Mt. 59007

406-446-1606

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INTRODUCTION

This Source Water Delineation and Assessment Report, also known as a SWDAR, was completed by Jim Stimson, Hydrogeologist with Montana Department of Environmental Quality (DEQ).

Purpose

This report is intended to meet the technical requirements for completion of the delineation and assessment report as required by the Montana Source Water Protection Program (DEQ, 1999) and the federal Safe Drinking Water Act (SDWA) Amendments of 1996 (P.L. 104-182).

The Montana Source Water Protection Program is intended to be a practical and cost-effective approach to protect public drinking water supplies from contamination. A major component of the Montana Source Water Protection Program is “delineation and assessment.” Delineation is a process whereby areas that contribute water to aquifers or surface water bodies that are used to supply drinking water are identified on a map. These areas are called source water protection areas. Assessment involves identifying locations in the delineated areas where contaminants may be generated, stored, or transported, and then determining the relative potential for contamination of drinking water by these sources. The primary purpose of this source water delineation and assessment report is to provide information that helps Red Lodge protect their drinking water source.

Limitations

This report was prepared to assess threats to the Red Lodge public water system and is based on published information and information obtained from local residents familiar with the community. The terms “drinking water supply” or “drinking water source” refer specifically to the source of the Red Lodge public water system and not any other public or private water system. Also, not all of the potential or existing sources of ground water or surface water contamination in the area are identified. Only potential sources of contamination in areas that contribute water to Red Lodge public water system wells are considered.

The term “contaminant” is used in this report to refer to constituents for which Maximum Contaminant Levels (MCLs) have been specified under the national primary drinking water standards and to certain constituents that do not have MCLs but are considered to be significant health threats.

CHAPTER 1 - BACKGROUND

The Community

Red Lodge is located in Carbon County near the Beartooth Mountains, and about 60 miles southwest of Billings, Montana. The town has a population of about 2,278 (Census and Economic Information Center, 2002), and represents the seat of Carbon County. Carbon County has a population of about 9,552. There are 15 public water supplies (PWSs) in the Red Lodge area (Figure 3 and 11). Three of the PWSs are classified as community systems that serve 25 or more year round residences and the remainder are non-community transient PWSs that serve a transient population. Table 1 below lists the PWSs and the source of water they use.

Table 1 – Public Water Supplies in the Red Lodge Area.

| PWSID | CLASS | PRIMRYNAME | SOURCENAME |
|-----------|-------|----------------------------------|--------------------------------|
| MT0000063 | C | Bearcreek Municipal Water System | Spring |
| MT0000314 | C | City Of Red Lodge | West Fork Rock Creek & 2 Wells |
| MT0003429 | C | Crystal Springs Ice and Water | Spring |
| MT0062235 | N | Basin Campground | Well #1 |
| MT0062235 | N | Basin Campground | Well #2 |
| MT0004139 | N | Beartooth IGA - Sparkling Pure | Red Lodge, City of |
| MT0003582 | N | LDS Church | Well #1 |
| MT0002030 | N | Red Lodge KOA | Well # 1 |
| MT0002030 | N | Red Lodge KOA | Well # 2 |
| MT0002504 | N | Red Lodge Mtn, Main Lodge | Spring |
| MT0002505 | N | Red Lodge Mtn, Midway Lodge | Spring |
| MT0000004 | N | Rock Creek Resort | New Well #1 |
| MT0000004 | N | Rock Creek Resort | Old Well #2 |
| MT0002506 | N | Round Barn Restaurant | Artesian SW Well #1 |
| MT0002507 | N | Timbercrest Girl Scout Camp | Well # 1 |

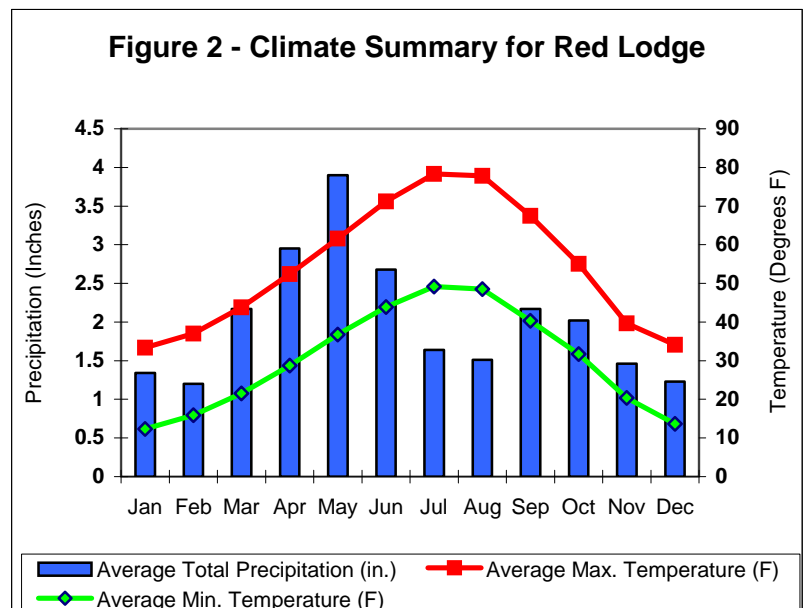
Geographic Setting

Red Lodge is located in the Rock Creek Valley at 45.1858 latitude and -109.2468 longitude (decimal degrees). This location is about 5,627 feet above sea level and is within the Upper Yellowstone Watershed (HUC # 10070006). The Rock Creek Valley is approximately ½ mile wide at Red Lodge. Rock Creek’s West Fork valley is about ¼ mile wide near the confluence with the main stem and narrows as it approaches the Beartooth Mountain Front. Mountain peaks within the Beartooth Range rise above 10,000 feet above sea level and relief between the peaks and valley floor is on the order of 5,000 feet.

The average daily high and low temperatures at Red Lodge are 78°F and 49°F in July and 33°F and 12°F in January (Figure 2). Precipitation averaging 24.27inches annually is heaviest in April and May. Average annual snowfall is 125.0 inches with the largest average accumulation coming in April (Western Regional Climate Center).

General Surface- and Ground-water Setting

Red Lodge obtains part of its public water supply from a surface water intake located on the West Fork of Rock Creek. The



intake is located about one half-mile up-stream from the West Fork's confluence with main stem of Rock Creek ([Figure 3](#)). Red Lodge also uses two wells. The city's primary well (Well 1) is located in town and the backup well (Well 2) is located within the West Fork drainage approximately ¼ mile up stream from the surface water intake ([Figures 1](#) and [3](#)). Well 1 is 74 feet deep and is used as the primary supply well. Well 2 is 67 feet deep and is used as a backup well. Both wells are completed in coarse gravel beds that are part of the Pinedale age glacial outwash deposits in the West Fork and main stem valleys. The aquifer serving the two Red Lodge wells is interpreted to be unconfined, based on well logs information for the area. According to the Source Water Protection Program criteria, an unconfined aquifer is considered highly sensitive to potential sources of contamination (Montana DEQ, 1999). Surface water is also considered to be highly sensitive.

The Public Water Supply

Information on a public water supply's individual sources, system layout, and water treatment is normally obtained from sanitary surveys that are completed every three to five years for community public water supplies. No sanitary surveys are on record at the DEQ for the city of Red Lodge and as a result no information is available for the public water supply to include in this SWDAR. No information is available indicating if the city of Red Lodge treats water from the two supply wells or the surface water intake. Information will be added to this report when it becomes available either from the DEQ or city of Red Lodge.

Water Quality

Data are not available for either Rock Creek or its West Fork.

Monitoring and Enforcement Actions

Red Lodge routinely monitors its water for compliance with drinking water standards. Bacteriological monitoring occurs monthly. There were no positive detects for bacteria during the last five years of monitoring. Compliance with other drinking water standards is based on additional sampling on a variety of schedules depending on system classification and population served. There were no detects of regulated contaminants for any of Red Lodge's sources during the past five years with the exception of nitrate. Nitrate can come from human or animal wastes but also occurs naturally. The highest level detected in Red Lodge's water in the last five years was 1.28 mg/l, considerably below the maximum concentration level of 10 mg/l set by the U.S. Environmental Protection Agency (EPA). Water quality monitoring results for inorganic constituents and for bacteria for the last five years are included in Appendix D.

CHAPTER 2 - DELINEATION

The source water protection areas for the Red Lodge public water system are delineated in this chapter. The purpose of delineation is to map the source of the water supply's drinking water and to define areas within which to prioritize source water protection efforts. Four types of management regions are mapped; they are the control zone, inventory region, recharge region for the city's water supply wells, and a spill response region for the surface water intake.

The goal of management in the control zone is to avoid introducing contaminants directly into the water supply's well or immediate surrounding areas. The inventory region should be managed to prevent contaminants from reaching the well before natural processes reduce their concentrations. The goal of management in the recharge region and the surface water buffer is to maintain and improve water quality over long periods of time or increased usage.

Hydrogeologic Conditions

Geologic Setting:

Red Lodge is located within the Rock Creek Valley near the Beartooth Mountain front ([Figure 1](#)). The Beartooth Mountains are composed of a large uplifted block of Precambrian metamorphic rocks (Reheis, 1987), and most of the rocks have a chemical composition similar to granite. Uplift of the Beartooth block is thought to have taken place sometime between 55 and 34 Million Years Before Present (MYBP). This interpretation comes from the observation that the Fort Union Formation, which is Paleocene in age (65 to 55 MYBP), was folded during the uplift of the Beartooth range, and other mountain ranges in southwestern Montana, while younger formations deposited during Eocene time (approximately 55 to 34 MYBP) were not folded (Alt and Hyndman, 1995). The uplift of the Beartooth block had a strong influence on the development of alpine glaciers, patterns of erosion and the subsequent distribution of sedimentary deposits in the Red Lodge vicinity that are now used to supply ground water. [Figure 8](#) shows the geology in the vicinity of Red Lodge.

The area around Red Lodge can be subdivided into four geographical areas with distinct geology, geologic structure, and hydrologic characteristics (Feltis, 1987). Geographic areas include the 1) Alpine area, 2) Beartooth Front, 3) Upland Plains, and 4) Stream Drainage Valleys. The Precambrian metamorphic rocks of the Beartooth Mountains represents the Alpine area. Younger Paleozoic sedimentary limestone and sandstone formations flank the Alpine area. The formations are steeply dipping and form a band of hills that are referred to as *cuestas* and *hogbacks*. This area makes up the Beartooth Front and it is between 1 and 3 miles wide. The Paleozoic rocks are thought to have been present on top of the Beartooth block (Alpine area) at one time but were removed by erosion during and after the uplift took place. Beyond the mountain front there is an area of rolling hills composed of flat to steeply dipping Mesozoic and Cenozoic sedimentary rocks. This represents an Upland Plains area and it includes prominent glacial terrace deposits adjacent major streams. The Fort Union Formation is exposed at the land surface in the Upland Plains area. Streams have eroded down through the terrace deposits, and in some cases have reworked the terrace sediments into relatively thin deposits of alluvium adjacent the streams. The present day stream systems and alluvial deposits make up the Stream Drainage Valleys area as described by Feltis (1987). Feltis (1987) used these geographic areas to help describe the variety of settings in which ground water occurs in the Boulder and Stillwater river basins northwest of Red Lodge. The geographic areas will also be used in this report to discuss the ground water resources in the Rock Creek drainage and the source water used by the city of Red Lodge.

The Beartooth Mountains were heavily glaciated during the last ice age in the Pleistocene Epoch. Three separate episodes of glacial advance are recognized in this area and, from oldest to youngest, are referred to

as the Buffalo, Bull Lake, and Pinedale (Ritter, 1967). Deposited of poorly sorted boulders, gravel, sand, and clay were left behind when the glaciers retreated. The deposits are referred to as glacial till or as a glacial moraine. Lateral moraines are present flanking the main stem of Rock Creek and the upper reaches of the West Fork (Figure 8). During multiple episodes of glacial retreat, melt water from the alpine glaciers eroded and reworked the till to produce terrace deposits consisting primarily of gravel with some lenses of sand and clay. These deposits are sometimes referred to as glaciofluvial deposits because they result from the action of glaciers and glacial melt water. There are at least five terrace surfaces at different elevations above the valley floor in the Rock Creek drainage near Red Lodge (Ritter, 1967). Studies of the glacial deposits in the Red Lodge area also show that soils developed on the glacial tills during periods of glacial retreat. Soils are generally characterized by horizons of decomposed rock, increased red coloration, increased silt and clay content, and higher calcium carbonate content than non-soil horizons. (Reheis, 1987). The increased silt, clay, and calcium carbonate in the paleo-soils reduce their porosity and their ability to transport water.

The Occurrence of Ground Water:

Although wells encounter ground water in all of the geographic areas described above, wells completed in the gravel and sands deposits within the terraces of the Upland area and within the Stream Drainage Valley areas often encounter more productive aquifers than wells completed in the other geographic settings. The city of Red Lodge obtains its source water directly from the West Fork of Rock Creek and from wells completed in the glaciofluvial deposits located beneath the West Fork's valley. Discussion of Red Lodge's source water will focus on the Red Lodge Bench, also known as the West Bench, which is a glacial terrace deposit immediately north of the West Fork of Rock Creek and on glaciofluvial deposits mapped as Pinedale Bench gravels that lie beneath the West Fork's valley (Figures 1 and 3).

Red Lodge Bench: The Red Lodge Bench is a prominent terrace deposit that extends east-northeast from the mountain front out on to the plains beyond the city of Red Lodge (Figures 1, 3, and 8). The terrace is composed primarily of sorted gravel with lesser amounts of sand and clay that form discontinuous lenses (Ritter, 1967). Ritter (1967) showed that the Red Lodge Bench gravel is on the order of 115 feet thick near the mountain front and thins to 15 feet about 17 miles from the mountain front. Reheis (1987) described soil development on this bench with the B-horizon (where iron, carbonate, and clay accumulate) ranging in thickness between 5 feet near the mountain front and 1.5 feet near its distal end. Elevation on the Red Lodge Bench ranges from about 6,220 feet above seal level (ft. asl) near the mountain front to 5,760 ft. ASL at the base of the terrace scarp near Red Lodge (Figures 1 and 3). The scarp typically rises 40 to 100 feet above the valley floor.



Figure 4. Stream Hydrograph for Rock Creek near Red

Ground-water recharge to the bench comes from a combination of precipitation, snowmelt runoff, irrigation return flows, and leakage from Willow Creek and irrigation canals. There are at least 5 diversion canals flowing on top of the bench and one other canal flows along the terrace's southern edge (Figures 1 and 3). An indication that the bench aquifer receives recharge from surface water sources is apparent by comparing a hydrograph from Rock Creek and a hydrograph from a monitoring well in the area. Figure 4 shows the stream hydrograph for the period September 1976 through October 1980. The hydrograph shows a consistent pattern of increasing streamflow during spring runoff, a maximum flow near the end of June, a

steady decline through the winter, and a minimum flow in March or April. Figure 5 is a hydrograph for the Remington Ranch Well showing changes in water level within the well over a 16-month period (Warren, 2000). This well, and other wells on the Red Lodge Bench, indicates that water level in the bench aquifer increase from May to early July and then decrease from mid-July to April. The pattern is very similar to the stream hydrograph and shows the bench aquifer receives recharge from naturally flowing, and diverted, surface water runoff.

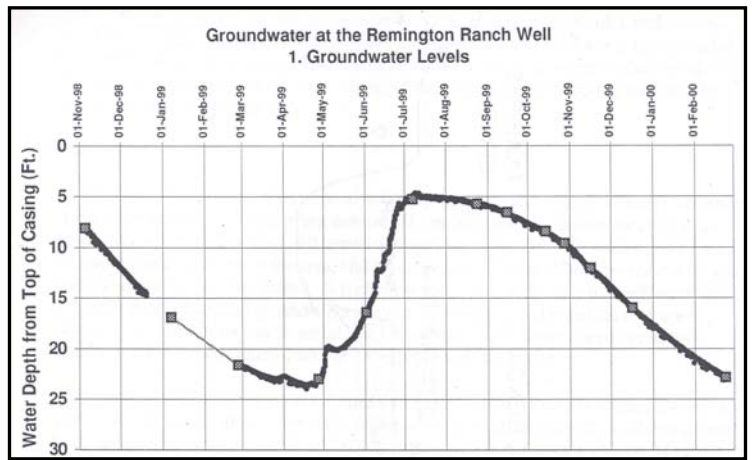


Figure 5. Well Hydrograph.

A short-term study by Warren (2000) suggests that ground water flow is generally from the southern end of the Red Lodge Bench to the north. Contours of the water table surface are approximately parallel to the topographic contours and ground water flow is directed perpendicular to the contours (See Figure 5 of Warren’s report: Appendix F). Warren’s Figure 5 also shows a steep gradient on the water table near the southern edge of the bench just north of the city of Red Lodge. The lower part of the bench scarp in this area is fairly heavily vegetated. Both the steep gradient and the vegetation suggest that some volume of ground water flows from the bench aquifer into the upper part of the aquifers that are present beneath the valleys of Rock Creek and its West Fork.

Well information for 124 wells located on the Red Lodge Bench was retrieved from the Ground Water Information Center (GWIC) at the Montana Bureau of Mines and Geology (MBMG) for this report on January 8, 2003. Figure 6 shows a frequency distribution of total depth of wells on the bench. Figure 6 indicates that the majority of wells on the bench are relatively shallow, ranging between 30 and 60 feet deep. The 60 wells that are between 30 and 60 feet deep represent 48% of the 124 wells on the bench. Average depth for the bench wells is 91 ft. below land surface (ft. bls) and the maximum depth is 505 ft. BLS. Average static water level for wells on the bench is 24 ft. BLS. Pumping water level average is 53 ft. BLS and average yield for wells in this area is 42 gallons per minute (gpm) with a maximum yield listed at 500 gpm. Well logs show that the majority of the wells are completed in gravel deposits. Results from pumping tests in this area are sparse but Warren (2000) presented transmissivity and pumping rates from several ground water studies on the bench. Transmissivity values ranging from 77,000 to 94,000 gallons per day per foot (gpd/ft) and pumping rates of 300 to 400 gpm.

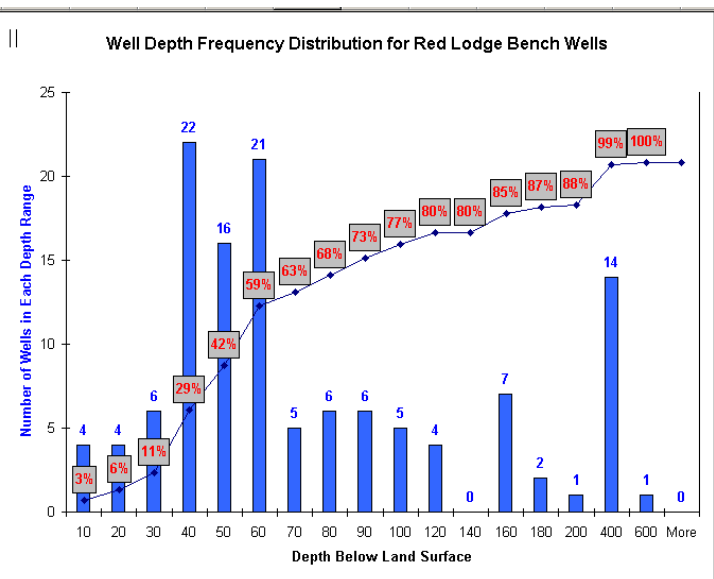


Figure 6. Histogram for Wells on the Red Lodge Bench.

Warren also states that nearby wells were not adversely affected by sustained pumping in the ranged mentioned. Several well logs on the bench indicate the presence of a red clay horizon between 40 and 50 feet bls that does not transmit water as readily as the rest of the terrace gravel. As mentioned above, these clay horizons could act as confining units between the shallow and deeper aquifers within the terrace gravel deposits.

West Fork of Rock Creek Valley: Rock Creek and its West Fork have cut down through the terrace gravel deposits to form conspicuous valleys (Figures 1, 3, and 8). The West Fork joins the main stem of Rock Creek about 1.5 miles southwest of Red Lodge and its valley extends southwest to the Beartooth Front and beyond into the core of the mountain range. Material beneath the valley floor is composed dominantly of gravel and sand, and appears to be in on the order of 100 to 130 feet thick in the lower part of the West Fork’s valley. Sandstones and coal beds that are likely part of the Fort Union Formation are penetrated by some wells in the valley at depths on the order of 100 feet. Studies of ground water and the terrace deposits all mention that the depth to bedrock is variable throughout this area (Ritter, 1967, Reheis, 1987, and Feltis, 1987).

Ground-water recharge to the aquifer beneath the West Fork’s valley comes from a combination of precipitation, snowmelt runoff, leakage from the West Fork of Rock Creek, and at least one irrigation canal that crosses the valley about a half mile above the confluence with the main stem of Rock Creek. The timing and pattern of recharge to this aquifer is very likely similar to that of the Red Lodge Bench discussed above. Some component of recharge may also come from bedrock beneath the gravel deposits. Snowmelt runoff coming down the West Fork valley, and beneath the valley within the aquifer, is probably the dominant source of recharge for the aquifer used by the city of Red Lodge wells.

Well information for the West Fork valley for about 31 wells was retrieved from the GWIC database at the Montana Bureau of Mines and Geology (MBMG) for this report on January 8, 2003. Figure 7 (West Fork Histogram) shows a frequency distribution of total depth for wells tapping the aquifer beneath the West Fork valley. About 75 percent of the wells in this area are between 10 and 120 feet deep. Average depth is 116 ft. below land surface (ft. bls) and the maximum depth is 310 ft. BLS. Average static water level for wells in the West Fork Valley is 51 ft. BLS. Pumping water level average is 64 ft. BLS and average yield for wells in this area is 92 gallons per minute (gpm) with a maximum yield listed at 1,040 gpm. Gravels appear to be the most common aquifer material for this area. Red clay or shale beds do not appear to be present in this gravel deposit beneath the West Fork’s valley. No pumping test result could be located for wells in this area so the transmissivity range is unknown.

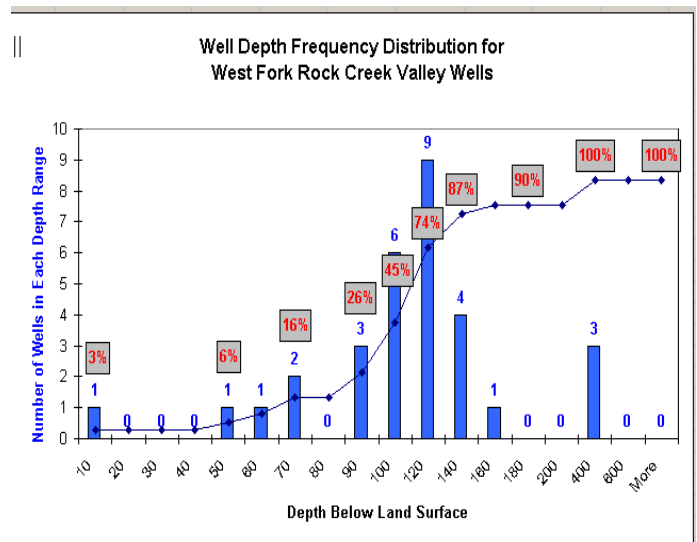


Figure 7. Histogram for Wells in the West Fork’s

Conceptual Model

The terrace gravel deposits that form the Red Lodge Bench hosts an aquifer that is used by a substantial number of wells that encounter the aquifer between 30 and 60 feet below the land surface. The aquifer is interpreted to be unconfined. Recharge originates from leakage from 5 or more irrigation canals flowing on top of the bench and from irrigation return flow.

The aquifer used by most wells in the West Fork of Rock Creek valley ranges between 10 and 120 feet below the valley floor and is interpreted to be distinct from the shallow aquifer on the Red Lodge Bench. The aquifer present in Rock Creeks main stem valley and in the West Fork appears to be unconfined. Rock Creek and its West Fork are the dominant sources of recharge to this aquifer. Some component of recharge within the West Fork comes from an irrigation ditch that diverts water from the main stem of Rock Creek and crosses the West Fork valley in route to the Red Lodge Bench (Figure 3). Some recharge to the valley aquifer comes from the flank of the Red Lodge Bench immediately north of the West Fork Valley. Figure

3 shows the general direction of ground water flow within the West Fork valley and on the Red Lodge Bench. The largest component of the ground water is flowing to the north-northeast within the Red Lodge Bench and the gravel deposits beneath the West Fork valley. Near the edge of the Red Lodge Bench there is a component of ground water flow from the bench into the upper part of the aquifer beneath the West Fork valley (Figure 3).

Surface Water Intake and Wells

Red Lodge’s surface water intake is located on the West Fork of Rock Creek fairly near the confluence with the main stem (Figures 1 and 3). Red Lodge’s primary supply well (Well 1) is reported as 74 feet deep, has a static water level of 20 feet below the land surface and a reported yield of 900 gallons per minute (gpm), see Appendix A. This well is located at 713 S. Grant Street. Well 2, the city’s backup well, is located near the surface water intake southwest of town and is listed as 67 feet deep with a static water level of 8 feet below land surface. The well log shows a yield of 1,040 gpm during a 5 hour pumping test (Appendix A). This well is screened between 40 and 65 feet below the land surface. Well construction information is summarized in Table 2.

Table 2. Information from drillers logs from wells near the city of Red Lodge.

| MBMG # | Well # 1 (M13267) | Well # 2 (M179787) |
|----------------------------------|------------------------------|-------------------------------|
| Location | 07S 20E 34 BA ACC | 08S20E04 BD |
| Date Completed | 9/17/1961 | 12/31/1999 |
| Depth (ft. bgs*) | 74 | 67 |
| Screened Interval (ft) | NA | 40 to 65 |
| SWL Depth (ft bgs) | 20 | 8 |
| PWL Depth (ft bgs) | NA | NA |
| Drawdown (ft bgs) | NA | NA |
| Test Pumping Rate (gpm**) | 900 | 1,040 |
| Specific Capacity (gpm/ft dd***) | NA | NA |

*Feet below ground surface; ** Gallons per minute; *** Gallons per minute per foot of drawdown.

Delineation

Methods and criteria for delineating source water protection areas are specified in the Montana Source Water Protection Program (DEQ, 1999). Source water protection areas delineated for Red Lodge include a spill response region for the surface water intake; controls zones for each well, a common inventory region for the wells based on hydrogeologic mapping of the West Fork Valley, and a recharge region based on the 11 digit hydrologic unit 10070006140.

Control Zones - 100-foot radius control zones are delineated for the wells; all sources of potential contaminants should be excluded in this region. All potential contaminant sources are identified within the control zone (Figure 3).

Inventory Region – A common inventory region is delineated for the wells based on hydrogeologic mapping of the aquifer beneath Rock Creek’s main stem and West Fork’s valley. The inventory region outlines a portion of the aquifer that is interpreted to provide water to the Red Lodge public water supply wells. The

region extends from a position down gradient from Well 1 in Red Lodge to the main stem and West Fork's valley margins, and up-valley to the Beartooth Front where both stream valleys become narrow ([Figure 3](#)). The upper boundary of the Inventory Region is about 1 mile upstream from Well 2 and about 4 miles upstream from Well 1 ([Figure 3](#)). The inventory region encompasses the area from which water or contaminants can flow into Red Lodge's ground water source over a period of months to years. All potential contaminant sources are identified within the Inventory Region.

Spill Response Region - This region extends one half mile from each bank of the West Fork of Rock Creek ([Figure 10](#)). The region also extends one half mile below the surface water intake and ten miles upstream from the intake. All potential contaminant sources are identified within the Spill Response Region.

Table 3. Note: Time-Of-Travel Calculations are not used, therefore Table 4 is not included.

CHAPTER 3 – INVENTORY

An inventory of potential contaminant sources was conducted to assess the susceptibility of Red Lodge’s wells and the west spring to contamination and to provide a foundation for source water protection planning. The inventory for the park focuses on facilities that generate, use, or store potential contaminants and certain land uses in the inventory region delineated in the previous section. Sources of all primary drinking water contaminants and cryptosporidium are identified, although only potential sources of contaminants that are the greatest threat to human health were selected for detailed inventory. The contaminants of greatest concern to Red Lodge are nitrate, microbial contaminants, and agricultural chemicals including fertilizers and pesticides (SOCs).

Inventory Method

Databases were searched to identify businesses and land uses that are potential sources of regulated contaminants. The following steps were followed:

Step 1: Land cover is identified from the National Land Cover Dataset compiled by the U.S. Geological Survey and U.S. Environmental Protection Agency (USGS, 2000). Land cover types in this dataset were mapped from satellite imagery at 30-meter resolution using a variety of supporting information.

Step 2: EPA’s Envirofacts System was queried to identify EPA regulated facilities. This system accesses the following databases: Resource Conservation and Recovery Information System (RCRIS), Biennial Reporting System (BRS), Toxic Release Inventory (TRI), Permit Compliance System (PCS), and Comprehensive Environmental Response Compensation and Liability Information System (CERCLIS). The available reports were browsed for facility information including the Handler/Facility Classification to be used in assessing whether a facility is a significant potential contaminant source.

Step 3: DEQ databases were queried to identify underground storage tanks (UST), hazardous waste contaminated sites, landfills, and abandoned mines.

Step 4: A business phone directory was consulted to identify businesses that generate, use, or store chemicals in the inventory region. Equipment manufacturing and/or repair facilities, printing or photographic shops, dry cleaners, farm chemical suppliers, and wholesale fuel suppliers were targeted by SIC code.

Step 5: Major road and rail transportation routes were identified.

Step 6: All significant potential contaminant sources were identified in the inventory region, sources of nitrate and microbial contaminants were identified in the surface water buffer, and land uses and facilities that generate, store, or use large quantities of hazardous materials were identified within the recharge region.

Potential contaminant sources are designated as significant if they fall into one of the following categories:

- 1) Large quantity hazardous waste generators
- 2) Landfills
- 3) Hazardous waste contaminated sites
- 4) Underground storage tanks
- 5) Major roads or rail transportation routes
- 6) Cultivated cropland
- 7) Animal feeding operations
- 8) Wastewater lagoons or spray irrigation
- 9) Septic systems
- 10) Sewered residential areas
- 11) Storm runoff
- 12) Floor drains, sumps, or dry wells

Inventory Results/Control Zones

Land within the control zone of Well 1 includes city streets, several buildings, and municipal sewer lines ([Figure 3](#)). It is not known what businesses currently occupy these building or if hazardous materials are used, stored, or transported near the Well 1. The location of Well 1 within the city means municipal sewer lines and other potential contaminant sources surround the well. Potential contaminant sources in such close proximity to the well within the control zone represent a high hazard to Well 1. The control zone for Well 2 is largely undeveloped ([Figure 3](#)). Structures present in the area appear to be related to the surface water filtration plant. It is not known if the wellhead is fenced and locked. It is also not known if any hazardous materials are stored on site or if herbicides are used for weed control in and around the immediate area.

Inventory Results/Inventory Regions

Land cover in the inventory region is 57 percent grassland, 32 percent forestland and 5 percent commercial or industrial. [Figure 3](#) shows a pie chart with the land cover percentages and [Figure 9](#) shows the land cover is distributed within the inventory region and spill response region. With the exception of the commercial – industrial land cover, these land cover types are not considered to be potential sources of contamination, and therefore, they do not pose a threat to city’s source water. The commercial – industrial land cover is of concern even though it represents a relatively small area within the inventory region because is in such close proximity to Well 1. Potential contaminant sources within this area include storm water drains, Class V injection wells (floor drains or French drains), and municipal sewer lines. Spraying for weed and pest control near streets, or in some cases within buildings would also represent a potential threat to the well. The commercial – industrial land cover represents a high hazard to Well 1.

There are three underground fuel storage tanks directly up-gradient from Well 1 ([Figure 3](#)). Two of the sites have leak histories. There is also a small area of high septic density located directly up-gradient from the Well 1. Well 2, on the other hand is located up-gradient from Red Lodge and the potential sources of contamination that are located there. (Figures [3](#) and [10](#)). Individual septic systems are considered a potential contaminant source for Well 2. Most of the land area near and up-gradient from the two city wells has a low septic density (<50 systems per square mile). One area within the inventory region and north of Well 2 has a moderate septic density (between 50 and 300 systems per square mile) and another area down-gradient of the wells with a high septic density (>300 systems per square mile. Due to the relatively limited aerial extent of the moderate septic density and the fact that it is located north of the creek, septic systems in the area would likely not pose a threat to the ground water and Well 2. Septic systems in the high density area also appear to pose no threat due to the fact that the area is down-gradient from Well 2. However, if subdivision and growth continues in the area around the water treatment plant, wells, and surface water intake, the septic density could exceed a threshold so as to compromise water quality. Increasing nitrate load in particular would be a concern, as would pathogens originating from the septic system effluent.

Herbicides used for weed control by the Carbon County or the city is considered a potential contaminant source. Spraying along roads near the wells, or around the water treatment facility itself, is of particular concern. Herbicide application should be kept away from the wells and up-stream areas near the surface water intake.

No major highways or railroad corridors are present in the inventory region. The road to the ski area northwest of Red Lodge is the only road that would periodically carry a significant volume of traffic. Because of its location and the nature of vehicular travel on this road, it is not considered to pose a threat to the public water supply.

No businesses that use or generate hazardous chemicals were identified in the inventory region.

Table 3. Significant potential contaminant sources in the inventory region of Red Lodge public water system wells.

| Source | Contaminants of Concern |
|----------------------------------|--|
| Underground Storage Tanks (USTs) | Fuels, hydrocarbons, VOCs |
| Municipal Sewer Lines | Nitrate, pathogens, VOCs, and SOCs, and others |
| Storm water drains | Nitrate, pathogens, VOCs, and SOCs, and others |
| Individual Septic Systems | Microbial contaminants and nitrate |
| Class V Injection Wells | Nitrate, pathogens, VOCs, and SOCs, and others |

Inventory Result/Spill Response Region and Recharge Region

Land cover in the Spill Response Region is 78 percent forestland, 20 percent grassland, 1 percent agricultural land, and 1 percent wetland (Figure 9). Within the recharge or watershed region (HUC 10070006140) land cover is 51 percent is forestland, 34 percent grassland and shrubland, 9 percent perennial ice and snow, and 6 percent bare rock (Figure 11). Septic density throughout the recharge region and surface water buffer zone is low, with the exception of the two areas of moderate and high density mentioned previously in the section on the Inventory Region. As mentioned above, forest and grasslands are not considered potential contaminant sources. Agricultural land is considered a potential contaminant sources due to the use of fertilizers, pesticides and herbicides. The concern here is the potential for mismanagement or over- application of fertilizers and/or pesticides on the agricultural lands that could result in SOCs entering the West Fork up-stream from the city’s intake, and the aquifer up-gradient of the wells. However, the percent of agricultural land in the area is small and is not considered to pose a threat to the city’s source water.

Inventory Update

The certified water system operator will update the inventory for his records every year. Changes in land uses or potential contaminant sources will be noted and additions made as needed. The complete inventory will be submitted to DEQ every five years.

Inventory Limitations

The potential sources of contaminants described above are identified from readily available information. Consequently, unregulated activities or unreported contaminant releases may have been overlooked. The use of multiple sources of information, however, should ensure that the major threats to the source water for Red Lodge have been identified.

CHAPTER 4 - SUSCEPTIBILITY ASSESSMENT

The susceptibility of Red Lodge’s wells and the surface water intake to contamination is assessed in this chapter. Susceptibility is determined by considering the hazard rating for each potential contaminant source and the existence of barriers that decrease the likelihood that contaminated water will reach the PWS’s source water. The proximity of a potential contaminant source to the source water or the density of non-point potential contaminant sources determines the threat of contamination, referred to here as hazard (Table 4). Time-of-travel (TOT) calculations are not used to assign hazard to potential contaminant sources in the Red Lodge area.

For the wells, hazard is based on whether a potential contaminant source is located within the inventory region, its size and proximity to the wells, and on the toxicity of the hazardous material handled or used at the site. For the surface water intake, the hazard presented by point sources of contaminants depends on whether they are located within the spill response region and the contaminants can discharge directly into the West Fork of Rock Creek or its tributaries. Point source hazard is also dependent on the health affects associated with potential contaminants. Hazard ratings for point and nonpoint sources are assigned based on criteria listed in Table 5.

Barriers can be anything that decreases the likelihood that contaminated water will reach the Red Lodge wells or surface water intake. For wells barriers can be engineered structures, management actions or natural conditions. Examples of engineered barriers are spill catchment structures for industrial facilities and leak detection for underground storage tanks. Emergency planning and best management practices can be considered management barriers. Thick clay-rich soils, a deep water table or a thick saturated zone above the well intake can be natural barriers. For a surface water intake examples of barriers include: a vegetated riparian area, protective forest management practices, and dilution. Table 6 shows how barriers are used to reduce the susceptibility rating applied to a given potential contaminant source.

Table 4. Hazard of Potential Contaminant Sources, Determination of For Surface Water Sources

| Potential Contaminant Sources | High Hazard Rating | Moderate Hazard Rating | Low Hazard Rating |
|--|--|---|---|
| Point Sources of Nitrates or Pathogens | Potential for direct discharge to surface water | Potential for discharge to groundwater hydraulically connected to surface water | Potential contaminant sources in the watershed region |
| Point Sources of VOCs, SOCs, or Metals | Potential for direct discharge of large quantities from roads, rails, or pipelines | Potential for direct discharge of small quantities to surface water | Potential for discharge to groundwater hydraulically connected to surface water |
| Septic Systems (density) | More than 300 per sq. mi. | 50 – 300 per sq. mi. | Less than 50 per sq. mi. |
| Municipal Sanitary Sewer (percent land use) | More than 50 percent of region | 20 to 50 percent of region | Less than 20 percent of region |
| Cropped Agricultural Land (percent land use) | More than 50 percent of region | 20 to 50 percent of region | Less than 20 percent of region |

Table 5. Hazard of potential contaminant sources for PWSs using ground water.

| Potential Contaminant Source | High Hazard | Moderate Hazard | Low Hazard |
|--|--------------------------------|----------------------------|--------------------------------|
| Point Sources | Within 1 year TOT | Between 1 to 3 years TOT | Over 3 years TOT |
| Septic Systems | More than 300 per sq. mi. | 50 – 300 per sq. mi. | Less than 50 per sq. mi. |
| Municipal Sanitary Sewer (percent land use) | More than 50 percent of region | 20 to 50 percent of region | Less than 20 percent of region |
| Cropped Agricultural Land (percent land use) | More than 50 percent of region | 20 to 50 percent of region | Less than 20 percent of region |

Table 6. Susceptibility to potential contaminant sources based on hazard and the presence of barriers.

| | High Hazard | Moderate Hazard | Low Hazard |
|-------------------|--------------------------|-------------------------|-------------------------|
| No Barriers | Very High Susceptibility | High Susceptibility | Moderate Susceptibility |
| One Barrier | High Susceptibility | Moderate Susceptibility | Low Susceptibility |
| Multiple Barriers | Moderate Susceptibility | Low Susceptibility | Very Low Susceptibility |

Red Lodge’s public water supply Well 2 and the surface water intake are located up gradient and up-stream from the town and the majority of identified potential contaminant sources (Figures 1, 3, and 9). Those potential contaminant sources outside of the immediate Red Lodge area are either outside the West Fork drainage or located substantial distances from the intake and well field so as to not represent a threat to the city’s public water supply. In addition, most of the land in the watershed above the Well 2 and the intake is undeveloped forestland and wilderness (Figures 9 and 10). As a consequence, none of the potential contaminant sources identified in and around Red Lodge are considered to represent a threat to the source water originating from the surface water intake or Well 2. However, it is worth noting that septic density on the Red Lodge Bench just north of the West Fork of Rock Creek and within a portion of the West Fork valley changed from low to moderate sometime during the period 1990 to 2000. As noted previously, a relatively small area of moderate septic density occurs within the inventory region a little over a half-mile up-stream from the water supply wells (Figure 3). Septic systems are considered a potential contaminant source and could pose a threat to the source water if development becomes more wide spread in the West Fork valley.

City Well 1 on the other hand is susceptible to the multiple potential contaminant sources in the southern part of the City of Red Lodge. The well’s location is surrounded by city streets, city services infrastructure like the municipal sewer lines, and several businesses that are considered to be potential contaminant sources. Table 7 summarizes the potential contaminant sources for the City of Red Lodge, ranks the hazard for each source, lists identified barriers, and shows the final susceptibility rating.

Susceptibility Assessment Results

Table 7. Susceptibility Assessment for Significant Potential Contaminant Sources in the Inventory, Spill Response, and Watershed Regions for the Red Lodge Public Water Supply.

| Source | ID Number on Map in Figure 3 | Contaminant | Hazard | Hazard Rating | Barriers | Susceptibility | Management |
|---|--|--|---|----------------|---|------------------|--|
| Municipal Sewer Lines & Storm water drains | 1 | Nitrate, pathogens, VOCs, and SOCs, and others | Leaks in sewer mains to groundwater, which may reach surface water | High | None | Very High | Ongoing testing and maintenance of lines and system, replacement of old lines, compliance with current regulations for discharges - Educational workshops provided to the general public by the city, county, or state promote safe handling and proper storage, transport, use, and disposal of hazardous materials. |
| Underground Storage Tanks (USTs) | 2 through 4 | Fuels, hydrocarbons, VOCs | Spills, leaks impacting groundwater and/or reaching surface water | High | - Modern construction, spill detection, spill containment and monitoring, - Remediation for historic leaks | High | Continue monitoring and encourage state and local officials to proceed to have leaking sites mitigated. |
| Individual Septic Systems | 5 through 7 | Microbial contaminants and nitrate | Infiltration into shallow ground water and possible discharge to surface water. | Low | - Stream represents hydrologic barrier for shallow ground water - Relatively small area of moderate septic density within the inventory region | Low | - Manage development in the West Fork valley up-stream of the intake and supply wells.. |
| Class V Injection Wells | Not Numbered on the map | Nitrate, pathogens, VOCs, and SOCs, and others | Infiltration of contaminants into aquifer | Unknown | None | Unknown | Inventory; Provide educational information, materials and resources to business owners and the public on proper waste disposal and recycling |

Management Option:

Municipal Sewer System – The potential hazard imposed by pathogens and nitrate originating from the city’s municipal sewer and storm water mains located near Well 1 is high. Other potential contaminants like household hazardous wastes including solvents and cleansers, pesticides, and herbicides (VOCs and SOCs) are also of concern. Due to the fact that Well 1 is located in the city and in close proximity to the mains, there are no barriers exist to prevent leaks from entering the aquifer near the well. A completed well log is not available for Well 1 and therefore it is not known if the well is properly sealed. Susceptibility to leaks from the mains is rated very high.

UST/LUSTs- The potential hazard imposed by VOCs and hydrocarbons is high for three tank sites, two with leak histories, within the Inventory Region ([Figure 3](#)). Overall, the susceptibility is rated as high due to the presence of several barriers including spill prevention and remediation (removal of leaking tanks).

Septic Systems – Areas of high and moderate septic density are located within the Inventory and Spill Response Regions ([Figure 3](#)). The high density area is relatively small and likely does not pose a threat to any of the city’s water supply sources. The moderate density area that lies up-stream from the surface water intake and up-gradient from Well 2 is relatively small and is not likely to pose a threat to the public water supply. However as noted above, continued growth and subdivision in the West Fork drainage could reach a threshold where septic systems could have a negative impact on the shallow ground water and surface water. It may be advisable to encourage future development and subdivision to areas outside of the West Fork valley, and away from the Red Lodge Bench’s southern-most edge above the public water supply wells and surface water intake. Hazard is low and susceptibility to pathogens and nitrate from septic systems is rated as low.

Assorted Businesses in Town- Appendix C lists various businesses in town that are considered to represent non-significant potential contaminant sources based on the criteria within the Source Water Protection Guidelines (DEQ, 1999). Based on their location with respect to the public water supply Well 2 and the surface water intake, these businesses are not considered to pose a threat to the Red Lodge Public Water Supply. Some of the sites may represent significant potential contaminant sources for Well 1 and other public water supplies in and around Red Lodge. A positive and proactive step to reducing the risk of unnecessary contamination in the community from these potential sources is to provide educational information and resources to business owners and the public on proper waste disposal and recycling.

Class V Injection Wells – The potential hazard imposed by VOCs, SOCs, pathogens, nitrate, and other contaminants originating from the class V injection wells cannot be determined due to the fact that no inventory of Class V well is complete for most of Montana or the current inventory is inadequate. The susceptibility of the intake to contaminants originating from this source is unknown.

Management Recommendations

It should be noted that even small releases of some chemicals in close proximity to a public supply well or surface water intake can have significant negative impact on water quality, and is therefore a significant threat to the public water supply. Steps can be taken to reduce the likelihood of releases in the source water for the PWS or in the vicinity of the sources. Some of these steps (considered management recommendations) are listed below.

Some management recommendations are also included in the susceptibility table for the Red Lodge PWS (Table 7). If these, and other, management recommendations are implemented, they may be considered additional barriers that will reduce the susceptibility of the intake to specific sources and contaminants.

Management recommendations fall into the following categories:

- Retiring Well 1 and using Well 2 and other city wells in the West Fork Valley as primary water supply wells.
- Sewer maintenance and leak detection
- Municipal sewer extension
- Agricultural best management practices
- Stormwater management
- Proper disposal and monitoring of oil and gas production wastewater
- Education
- Emergency Response Planning

Retiring Well 1 - This option may have already been considered and deemed unfeasible for a variety of reasons. However, from a Source Water Protection stand point, removing Well 1 from the Red Lodge public water supply system would reduce the susceptibility of the city's source water to several potential contaminant sources, namely, the municipal sewer lines and the underground fuel storage tank sites. By utilizing the surface water intake, Well 2, and possibly other city wells in the West Fork Valley, the city's source water would originate from an area up-stream and up-gradient from all of the potential contaminant sources located in and around the city. If development in the West Fork Valley remain at or near the current level, susceptibility to septic systems in the West Fork Valley should not pose a threat to the public water supply.

Sewer Maintenance and leak detection – Early warning of leaks and scheduled replacement of aging sewer lines may reduce the susceptibility of the City's PWS to contamination from municipal septic wastes, and could also benefit other public water supplies in the Glendive area.

Sewer Extension – Installation of advanced septic treatment systems such as sand filters can limit contamination from new rural residential development, however, annexation and extension of sewers is the only way to reduce contamination from existing unsewered developments.

Agricultural and silvicultural best management practices (BMPs) – BMPs that address application and mixing of fertilizer and pesticides are a viable alternative to prohibition of their use. BMPs may also be utilized to minimize surface runoff and soil erosion on cultivated fields. Erosion control, selective logging, and other silvicultural practices (essentially BMPs) should be considered on a county-wide basis. BMPs are generally voluntary but their implementation can be encouraged through education and technical assistance. County planning can help promote the implementation of BMP on lands that are outside city limits but indirectly affect the city PWS.

Education - Educational workshops provided to the general public by the city, county, or state promote safe handling and proper storage, transport, use, and disposal of hazardous materials. Ongoing training provided to designated emergency personnel will promote the efficiency and effectiveness of emergency responses to hazardous material spills. Likewise, educational workshops provided to rural homeowners will promote the proper maintenance and replacement of residential septic systems. The EPA and the State of Montana can provide educational materials on these topics.

Hazardous Materials Collection Days – Several counties in the state that have vulnerable water supplies have implemented scheduled days for the collection of hazardous wastes from the public. These vary in the inclusiveness of what materials are collected, how the materials are handled, and how they are disposed of,

but they all act to reduce the amount of unauthorized or improper disposal of these wastes. Used motor oil collection station could be established and available to the public on a regular basis.

Emergency Response Plan – Several counties have compiled Emergency Response Plans that were then adopted by the local communities. The usefulness and effectiveness of a response plan are maximized if it contains a clear listing of all emergency contacts, emergency numbers, and resources available within the county to respond to an emergency situation, such as a hazardous material spill. Emergency plans are not difficult to develop or distribute, but have a significant benefit to the citizens and municipalities within the county.

The City's public water supply operators, the city administration, and the Carbon County administration can consider these management recommendations along with their ongoing efforts to protect the public water supply. Should contamination reach the town's intake, the City and County will likely need to work cooperatively to address remediation or relocation of the intake.

CHAPTER 5 - MONITORING WAIVERS

Waiver Recommendation:

Currently, the city of Red Lodge has a water quality monitoring waiver for Phase 2 Inorganic constituents that includes Barium, Cadmium, Chromium, Fluoride, Mercury, Selenium. However, based on past monitoring results and the susceptibility assessment of the wells and surface water intake, the Red Lodge PWS may be eligible for additional monitoring waivers. In particular, the Phase 5 waiver may be applicable and includes Antimony, Thallium, Beryllium, and Nickel. Prior to requesting additional waivers, the PWS Operators would be encouraged to carefully review the following section on Monitoring Waiver Requirements. If after reviewing this section it is determined that an additional waiver is feasible, the Red Lodge PWS should submit a letter with the proper documentation to DEQ requesting monitoring waivers. Table 9 shows how identified potential contaminant sources effects the eligibility for monitoring waivers. The PWS also needs to provide additional information to DEQ regarding chemical use within the inventory region.

Table 9. Susceptibility Assessment as it relates to waiver eligibility for significant potential contaminant sources in the Spill Response Region Glendive PWS surface water intakes.

| Source | Contaminant | Susceptibility | Waiver Eligibility |
|--|--|---|---|
| Municipal Sewer and Storm Water Mains | Nitrate, pathogens, VOCs, and SOCs, and others | Very High | Waivers are not available for pathogens and nitrate |
| UST/LUST Sites | VOCs, fuels, petroleum products | High | The number of sources in the Red Lodge likely precludes a waiver |
| Septic Systems | Pathogens, nitrate | Low | Waivers are not available for pathogens and nitrate |
| Assorted Businesses in Town | VOCs, SOCs, petroleum hydrocarbons, metals, pathogens, nitrate | Low, except when located near Well 1 | Chemical use likely precludes waivers for some chemicals Waivers are not available for pathogens and nitrate |
| Class V Injection Wells | VOCs, SOCs, pathogens, nitrate | Unknown | Waivers are not available for pathogens and nitrate |

Monitoring Waiver Requirements:

The 1986 Amendments to the Safe Drinking Water Act require that community and non-community PWSs sample drinking water sources for the presence of volatile organic chemicals (VOCs) and synthetic organic chemicals (SOCs). The US EPA has authorized states to issue monitoring waivers for the organic chemicals to systems that have completed an approved waiver application and review process. All PWSs in the State of Montana are eligible for consideration of monitoring waivers for several organic chemicals. The chemicals diquat, endothall, glyphosate, dioxins, ethylene dibromide (EDB), dibromochloropropane (DBCP), and polychlorinated biphenyls are excluded from monitoring requirements by statewide waivers.

Use Waivers

A Use Waiver can be allowed if through a vulnerability assessment, it is determined that specific organic chemicals were not used, manufactured, or stored in the area of a water source (or source area). If certain organic chemicals have been used, or if the use is unknown, the system would be determined to be vulnerable to organic chemical contamination and ineligible for a Use Waiver for those particular contaminants.

Susceptibility Waivers

If a Use Waiver is not granted, a system may still be eligible for a Susceptibility Waiver, if through a vulnerability assessment it is demonstrated that the water source would not be susceptible to contamination. Susceptibility is based on prior analytical or vulnerability assessment results, environmental persistence, and transport of the contaminants, natural protection of the source, wellhead protection program efforts, and the level of susceptibility indicators (such as nitrate and coliform bacteria). The vulnerability assessment of a surface water source must consider the watershed area above the source, or a minimum fixed radius of 1.5 miles upgradient of the surface water intake. PWSs developed in unconfined aquifers should use a minimum fixed radius of 1.0 mile as an area of investigation for the use of organic chemicals. Vulnerability assessment of spring water sources should use a minimum fixed radius of 1.0 mile as an area of investigation for the use of organic chemicals. Shallow groundwater sources under the direct influence of surface water (GWUDISW) should use the same area of investigation as surface water systems; that is, the watershed area above the source, or a minimum fixed radius of 1.5 miles upgradient of the point of diversion. The purpose of the vulnerability assessment procedures outlined in this section is to determine which of the organic chemical contaminants are in the area of investigation.

Given the wide range of landforms, land uses, and the diversity of groundwater and surface water sources across the state, additional information is often required during the review of a waiver application. Additional information may include well logs, pump test data, or water quality monitoring data from surrounding public water systems; delineation of zones of influence and contribution to a well; Time-of-Travel or attenuation studies; vulnerability mapping; and the use of computerized groundwater flow and transport models. DEQ's PWS Section and DEQ's Source Water Protection Program will conduct review of an organic chemical monitoring waiver application. Other state agencies may be asked for assistance.

Susceptibility Waiver for Confined Aquifers

Confined groundwater is isolated from overlying material by relatively impermeable geologic formations. A confined aquifer is subject to pressures higher than atmospheric pressure that would exist at the top of the aquifer if the aquifer were not geologically confined. A well that is drilled through the impervious layer into a confined aquifer will enable the water to rise in the borehole to a level that is proportional to the water pressure (hydrostatic head) that exists at the top of a confined aquifer.

The susceptibility of a confined aquifer relates to the probability of an introduced contaminant to travel from the source of contamination to the aquifer. Susceptibility of an aquifer to contamination will be influenced by the hydrogeologic characteristics of the soil, vadose zone (the unsaturated geologic materials between the ground surface and the aquifer), and confining layers. Important hydrogeologic controls include the thickness of the soil, the depth of the aquifer, the permeability of the soil and vadose zones, the thickness and uniformity of low permeability and confining layers between the surface and the aquifer, and hydrostatic head of the aquifer. These factors will control how readily a contaminant will infiltrate and percolate toward the groundwater.

The Susceptibility waiver has the objective of assessing the potential of contaminants reaching the groundwater used by the PWS. A groundwater source that appears to be confined from surface infiltration in the immediate area of the wellhead may eventually be affected by contaminated groundwater flow from elsewhere in the recharge area. Contaminants could also enter the confined aquifer through improper well construction or abandonment where the well provides a hydraulic connection from the surface to the confined aquifer. The extent of confinement of an aquifer is critical to limiting susceptibility to organic chemical contamination. Regional conditions that define the confinement of a groundwater source must be demonstrated by the PWS in order to be considered for a confined aquifer susceptibility waiver. Confinement of an aquifer can be demonstrated by pump test data (storage coefficient), geologic mapping, and well logs. Site specific information is required to sufficiently represent the recharge area of the aquifer and the zone of contribution to the PWS well. The following information should be provided:

- Abandoned wells in the region (zone of contribution to the well),
- Other wells in the region (zone of contribution to the well),
- Nitrate/Coliform bacteria analytical history of the PWS well,
- Organic chemical analytical history of the PWS well,

Susceptibility Waiver for Unconfined Aquifers

Unconfined aquifers are the most common source of usable groundwater. Unconfined aquifers differ from confined aquifers in that the groundwater is not regionally contained within relatively impervious geologic strata. As a result, the upper groundwater surface or water table in an unconfined aquifer is not under pressure that produces hydrostatic head common to confined aquifers.

Unconfined aquifers are usually locally recharged from surface water or precipitation. In general, groundwater flow gradients in unconfined aquifers reflect surface topography, and the residence time of water in the aquifer is comparatively shorter than for water in confined aquifers. Similar water chemistry often exists between unconfined groundwater and area surface water, and physical parameters and dissolved constituents can be an indicator of the hydraulic connection between groundwater and surface water. Consequently, unconfined aquifers can be susceptible to contamination by organic chemicals migrating from the ground surface to groundwater.

The objective of the susceptibility waiver application is to assess the potential of organic chemical migration from the surface to the unconfined aquifer. The general procedures make use of a combination of site specific information pertaining to the location and construction of the source development, monitoring history of the source, geologic characteristics of the unsaturated soil and vadose zones, and chemical characteristics of the organic chemicals pertaining to their mobility and persistence in the environment. The zone of contribution of the unconfined groundwater source must be defined and plotted. This should describe the groundwater flow directions, gradients, and a 3-year time-of-travel. All surface bodies within 1,000 feet of the PWS well(s) must be plotted. Analytical monitoring history of the PWS well and those nearby should be provided as well.

REFERENCES

- Census and Economic Information Center, 2002, Year 2000 Census Data Population Estimates for **Red Lodge**, Montana. Montana Department of Commerce.
- Feltis, R. D. and Litke, D. W., 1987, Appraisal of Water Resources of the Boulder and Stillwater River Basins, Including the Stillwater Complex, South-Central Montana: Montana Bureau of Mines and Geology Memoir 60, p120.
- Reheis, M. C., 1987, Soils in Granitic Alluvium in Humid and Semiarid Climates along Rock Creek, Carbon County Montana, USGS Bulletin 1590-D.
- Ritter, Dale F., 1967, Terrace Development along the Front of the Beartooth Mountains, Southern, Montana. Geological Society of America Bulletin, V. 78, p. 467-484.
- Montana DEQ, 1999. Montana Source Water Protection Program, Approved by EPA in November 1999.
- Uthman, Bill, 2002, An Evaluation of the Potential for Adverse Impacts from the Development of Ground Water by the City of Red Lodge, Carbon County, Montana. Montana Department of Natural Resources and Conservation file: City of Red Lodge Application 43D-30001172 for Water Use Permit.
- U.S. Geological Survey, 2000. National Landcover Dataset, Montana. 30-meter electronic digital landcover dataset interpreted from satellite imagery.
- Warren, Kirk, 2000, Groundwater Levels at the South End of the Red Lodge Bench near Red Lodge, Montana. Limited-Scope Investigation: Montana Department of Natural Resources and Conservation (DNRC), p.20.
- Yuretich, Richard F., and Hicks, Jason F., 1986, Sedimentology and Facies Relationships of the Belfry Member, Fort Union Formation, Northern Bighorn Basin, p. 53-69. Montana Geologic Society – YBRA Field Conference Publication.

FIGURES

Figure 1 – Site Location Map

Figure 2 – Climate Data Summary for Red Lodge – Imbedded in Text page 5.

Figure 3 – Inventory Map with other PWSs in the Red Lodge Area.

Figure 4 – Stream Hydrograph for Rock Creek – Imbedded in text page 8.

Figure 5 – Well Hydrograph – Imbedded in text page 9.

Figure 6 – Well Depth Histogram for the Red Lodge Bench Area Wells – Imbedded in text page 9.

Figure 7 – Well Depth Histogram for West Fork of Rock Creek Wells – Imbedded in text page 10.

Figure 8 – General Geology of the Red Lodge Area (Modified from Lopez, 2001).

Figure 9 – Land Cover in the Spill Response Region

Figure 10 – Land Cover in the Watershed / Recharge Region

APPENDICIES

Appendix A - Well Logs
Primary Well for Red Lodge (AKA: Well 1)
Montana Bureau of Mines and Geology
Ground-Water Information Center Site Report
CITY OF RED LODGE - WELL 1 SOURCE 2

Location Information

| | |
|---|---------------------------|
| GWIC Id: 132671 | Source of Data: LOG |
| Location (TRS): 07S 20E 34 BAACC | Latitude (dd): 45.1800 |
| County (MT): CARBON | Longitude (dd): -109.2513 |
| DNRC Water Right: W045736-00 | Geomethod: MAP |
| PWS Id: 00314003 | Datum: 1927 |
| Block: 64 | Certificate of Survey: |
| Lot: 3 | Type of Site: WELL |
| Addition: HYPER | |
| Site Notes: TRACT LOCATION AND LAT\LONG BASED ON ADDRESS FROM DEQ. 713 SOUTH GRANT. | |

Well Construction and Performance Data

| | |
|--------------------------------|-------------------------------------|
| Total Depth (ft): 74.00 | How Drilled: |
| Static Water Level (ft): 20.00 | Driller's Name: |
| Pumping Water Level (ft): | Driller License: |
| Yield (gpm): 900.00 | Completion Date (m/d/y): 9/17/1961 |
| Test Type: | Special Conditions: |
| Test Duration: | Is Well Flowing?: |
| Drill Stem Setting (ft): | Shut-In Pressure: |
| Recovery Water Level (ft): | Geology/Aquifer: Not Reported |
| Recovery Time (hrs): | Well/Water Use: PUBLIC WATER SUPPLY |
| Well Notes: | |

Hole Diameter Information

No Hole Diameter Records currently in GWIC.

Annular Seal Information

No Seal Records currently in GWIC.

Lithology Information

No Lithology Records currently in GWIC.

Casing Information¹

No Casing Records currently in GWIC.

Completion Information¹

No Completion Records currently in GWIC.

¹ - All diameters reported are **inside** diameter of the casing.

These data represent the contents of the GWIC databases at the Montana Bureau of Mines and Geology at the time and date of the retrieval. The information is considered unpublished and is subject to correction and review on a daily basis. The Bureau warrants the accurate transmission of the data to the original end user. Retransmission of the data to other users is discouraged and the Bureau claims no responsibility if the material is retransmitted. Note: non-reported casing, completion, and lithologic records may exist in paper files at GWIC.

Backup Well for Red Lodge (AKA: Well 2)

Montana Bureau of Mines and Geology
Ground-Water Information Center Site Report
CITY OF RED LODGE

Location Information

GWIC Id: 179787
Location (TRS): 08S 20E 04 BD
County (MT): CARBON
DNRC Water Right:
PWS Id:
Block:
Lot:
Addition:
Site Notes:

Source of Data: LOG
Latitude (dd): 45.1575
Longitude (dd): -109.2693
Geomethod: TRS-TWN
Datum: 1927
Certificate of Survey:
Type of Site: WELL

Well Construction and Performance Data

Total Depth (ft): 67.00
Static Water Level (ft): 8.00
Pumping Water Level (ft):
Yield (gpm): 1040.00
Test Type: AIR
Test Duration: 20.00
Drill Stem Setting (ft): 40.00
Recovery Water Level (ft):
Recovery Time (hrs): 5.00
Well Notes:

How Drilled: ROTARY
Driller's Name: ROCK CREEK
Driller License: WWC104
Completion Date (m/d/y): 12/31/1999
Special Conditions:
Is Well Flowing?:
Shut-In Pressure:
Geology/Aquifer: Not Reported
Well/Water Use: DOMESTIC

Hole Diameter Information

| From | To | Diameter |
|------|------|----------|
| 0.0 | 20.0 | 17.0 |
| 20.0 | 67.0 | 14.0 |

Casing Information¹

| From | To | Dia | Description |
|------|------|------|-------------|
| -2.0 | 65.0 | 12.0 | STEEL |

Annular Seal Information

| From | To | Description |
|------|------|-------------|
| 0.0 | 20.0 | BENTONITE |

Completion Information¹

| From | To | Dia | Description |
|------|------|------|-------------|
| 40.0 | 65.0 | 12.0 | SCREENS |

Lithology Information

| From | To | Description |
|------|------|-----------------------------|
| 0.0 | 64.0 | BLACK/WHITE/GRAVEL/BOULDERS |
| 64.0 | 67.0 | TAN/CONGLOMERATE/DECOMP |

Monitoring Well (near water plant.)

Montana Bureau of Mines and Geology
 Ground-Water Information Center Site Report
 RED LODGE THE CITY OF * RL#1

Location Information

| | |
|---------------------------------|---------------------------|
| GWIC Id: 173039 | Source of Data: |
| Location (TRS): 08S 20E 04 BCDC | Latitude (dd): 45.1596 |
| County (MT): CARBON | Longitude (dd): -109.2766 |
| DNRC Water Right: | Geomethod: NAV-GPS |
| PWS Id: | Datum: 1983 |
| Block: | Certificate of Survey: |
| Lot: | Type of Site: WELL |
| Addition: | |

Site Notes: 10/15/02 - SITE LOCATED AT RED LODGE CITY WATER FILTRATION PLANT. GO SOUTH ON HWY. 212 OUT OF RED LODGE. 1.1 MILE PAST WEST FORK RD. (ROAD TO SKI AREA). GO WEST ON SMALL ASPHALT ROAD (WATER WORKS RD.) APROX. 0.5 MI. TO FILTRATION PLANT. WELL LOCATED 75 YDS. EAST OF LARGE BRICK PLANT BUILDING ON NORTH SIDE OF ROAD. VISIBLE.

Well Construction and Performance Data

| | |
|----------------------------|------------------------------------|
| Total Depth (ft): 60.00 | How Drilled: ROTARY |
| Static Water Level (ft): | Driller's Name: B & H |
| Pumping Water Level (ft): | Driller License: WWC309 |
| Yield (gpm): | Completion Date (m/d/y): 8/15/1998 |
| Test Type: | Special Conditions: |
| Test Duration: | Is Well Flowing?: |
| Drill Stem Setting (ft): | Shut-In Pressure: |
| Recovery Water Level (ft): | Geology/Aquifer: 1120TSH |
| Recovery Time (hrs): | Well/Water Use: TEST WELL |

Well Notes: 10/15/02 - 6 IN. STEEL CASING WITH BOLT-ON CAP. NO PUMP OR POWER. WELL DRILLED FOR MONITORING PURPOSES.

Hole Diameter Information

| From | To | Diameter |
|------|------|----------|
| 0.0 | 80.0 | 6.0 |

Casing Information¹

| From | To | Dia | Description |
|------|------|-----|-------------|
| -2.0 | 60.0 | 6.0 | STEEL |

Annular Seal Information

| From | To | Description |
|------|------|-------------|
| 0.0 | 20.0 | BENTONITE |

Completion Information¹

| From | To | Dia | Description |
|------|------|-----|-------------|
| 60.0 | 75.0 | 5.0 | 80 PERFS |

Lithology Information

| From | To | Description |
|------|------|-------------------------|
| 0.0 | 72.0 | BOULDERS SAND & GRAVEL |
| 72.0 | 80.0 | DECOMPOSED CONGLOMERATE |

Monitoring Well (near water plant.)
Montana Bureau of Mines and Geology
Ground-Water Information Center Site Report
RED LODGE THE CITY OF * RL#2

Location Information

| | |
|--------------------------------|---------------------------|
| GWIC Id: 173042 | Source of Data: LOG |
| Location (TRS): 08S 20E 04 CBB | Latitude (dd): 45.1600 |
| County (MT): CARBON | Longitude (dd): -109.2750 |
| DNRC Water Right: | Geomethod: NAV-GPS |
| PWS Id: | Datum: 1927 |
| Block: | Certificate of Survey: |
| Lot: | Type of Site: WELL |
| Addition: | |
| Site Notes: | |

Well Construction and Performance Data

| | |
|---------------------------------|------------------------------------|
| Total Depth (ft): 69.00 | How Drilled: ROTARY |
| Static Water Level (ft): 9.00 | Driller's Name: B & H |
| Pumping Water Level (ft): | Driller License: WWC309 |
| Yield (gpm): 892.0 | Completion Date (m/d/y): 8/31/1998 |
| Test Type: | Special Conditions: |
| Test Duration: 4.00 | Is Well Flowing?: |
| Drill Stem Setting (ft): | Shut-In Pressure: |
| Recovery Water Level (ft): 9.00 | Geology/Aquifer: Not Reported |
| Recovery Time (hrs): 0.50 | Well/Water Use: TEST WELL |
| Well Notes: | |

Hole Diameter Information

| From | To | Diameter |
|------|------|----------|
| 0.0 | 69.0 | 8.0 |

Casing Information¹

| From | To | Dia | Description |
|------|------|-----|-------------|
| -4.0 | 52.0 | 8.0 | STEEL |
| 65.0 | 69.0 | 7.0 | STEEL |

Annular Seal Information

| From | To | Description |
|------|------|-------------|
| 0.0 | 20.0 | BENTONITE |

Completion Information¹

| From | To | Dia | Description |
|------|------|-----|---------------------|
| 52.0 | 65.0 | 7.0 | 8 TELESCOPE SCREENS |

Lithology Information

| From | To | Description |
|------|------|-------------------------|
| 0.0 | 44.0 | GRAVEL BOULDERS SAND |
| 44.0 | 63.0 | ROCK & GRAVEL |
| 63.0 | 69.0 | DECOMPOSED CONGLOMERATE |

Appendix C - Listing of Potential Contaminant Sources by Standard Industrial Code (SIC).

| Business Name | ID Number on Map (Not Numbered) | Standard Industrial Code Name 1 | Standard Industrial Code Name 2 |
|--------------------------------|--|--|--|
| A Y Supply | | Tire-Dealers-Retail | |
| Adventure Whitewater Inc | | River Trips | Rafts-Dealers |
| Anderson Chevrolet-Pontiac | | Auto & Home Supply Stores | |
| Anderson's Conoco | | Service Stations-Gasoline & Oil | |
| Baldwin's Customized Crtkng | | Landscape Contractors | Mobile Home Dealers |
| Barrett Sprinklers & Landscape | | Mobile Home Dealers | |
| Bearcreek Distributing | | Steam Cleaning Equipment (Wholesale) | |
| Beartooth Grain & Feed | | Feed-Dealers (Wholesale) | |
| Beartooth Hospital & Health | | Hospitals | Nursing & Convalescent Homes |
| Beartooth Iga | | Florists-Retail | Grocers-Retail |
| Beartooth K-9 | | Dog Training | Drug Detection Service & Equipment |
| Beartooth Mini Storage | | Storage-Household & Commercial | |
| Beartooth Motors | | Auto & Home Supply Stores | Auto & Home Supply Stores |
| Beartooth River Trips | | River Trips | Rafts-Dealers |
| Bill Crabtree Training Stables | | Stables | |
| Carbon County Arts Guild | | Art Galleries & Dealers | |
| Carbon County Clerk | | Legislative Bodies | |
| Carbon County Historical Scty | | Historical Places | |
| Chamber Of Commerce | | Labor Unions & Similar Organizations | Information & Referral Svcs |
| Chateau Rouge | | Hotels & Motels | Motels & Hotels Reservations |
| Clark's Bus Svc | | Buses-Charter & Rental | Transit Lines |
| Coleman Gallery | | Photographers-Portrait | Picture Frames-Dealers |
| Common Ground Fine Art Gallery | | Art Galleries & Dealers | |
| Crazy Creek Products | | Furniture-Outdoor-Wholesale | Sporting Goods-Retail |
| Curtiss Jay Fleck Photography | | Photographers-Portrait | Photographers-Commercial |
| D R Meeker & Assoc | | Real Estate Appraisers | Appraisers |
| Dahl Funeral Chapel | | Funeral Directors | Funeral Plans (Pre-Arranged) |
| Dbc-Red Lodge | | Clinics | Hospitals |
| Eagles Nest Motel | | Hotels & Motels | Motels & Hotels Reservations |
| Edge | | Skiing Equipment-Retail | |
| Eisner's Mechanic Shop | | Automobile Repairing & Service | Truck-Repairing & Service |
| Flash's | | Picture Frames-Dealers | Photographers-Commercial |
| Flash's Image Factory | | Photographers-Portrait | |
| Golden Thread | | Gift Shops | Church Supplies |
| Hellroarin' Gallery | | Art Galleries & Dealers | |
| Heritage Saddlery | | Saddlery & Harness | |
| Inner Light Photography | | Photographers-Portrait | |
| J G Interiors | | Interior Decorators Design & Consultants | |
| Lana & Cotone | | Knitting Machines (Wholesale) | Yarn-Retail |
| Langlas Mountain Stables | | Stables | |
| Longhorn Leather & Carts | | Guns & Gunsmiths | |
| Mountain View Elementary Schl | | Schools | |
| Native American Trading | | Indian Goods | Jewelers Findings & Materials |
| Northern Energy | | Gas-Liquefied Petro-Bttld/Bulk (Whol) | |
| Olcott Funeral Chapel | | Funeral Directors | Funeral Plans (Pre-Arranged) |
| Pollard | | Hotels & Motels | Motels & Hotels Reservations |
| Pony Express | | Service Stations-Gasoline & Oil | |
| Ray Judd Ford Inc | | Auto & Home Supply Stores | |
| Red Lodge City Clerk | | Legislative Bodies | |
| Red Lodge Collision Ctr Ltd | | Automobile Body-Repairing & Painting | |
| Red Lodge Fire Dept | | Public Order & Safety Nec | |
| Red Lodge Mountain Golf Course | | Membership Sports & Recreation Clubs | |
| Red Lodge Nordic Ski | | Business Services Nec | |
| Red Lodge School Adm | | Schools | |
| Red Lodge Shuttle | | Refuse Systems | Airport Transportation Service |
| Red Lodge Sr High School | | Schools | |
| Rock Creek Convenience Store | | Convenience Stores | |
| Rock Creek Texaco | | Convenience Stores | |
| Rocky Mountain Tire & Lube Inc | | Automobile Repairing & Service | |
| Ronning Auto Truck & Tractor | | Automobile Repairing & Service | Truck-Repairing & Service |
| Roosevelt Elementary School | | Schools | |
| Roosevelt Jr High School | | Schools | |
| Ruggie's Rocky Mountain Foods | | Mexican Goods | |
| Shoshone Valley Landscaping | | Landscape Contractors | Mobile Home Dealers |
| Ski Station | | Skiing Equipment-Rental | |
| Super 8 Motel | | Hotels & Motels | Motels & Hotels Reservations |
| Superintendent Of Schools | | Schools | |
| U-Haul Co | | Truck Renting & Leasing | Moving Supplies & Equipment-Renting |
| Wild Within | | Grocers-Retail | |
| Yellowstone Troutfitters | | Fishing Tackle-Dealers | |
| Yes Phonics | | Schools-Adult Education | |
| Yodeler Motel | | Hotels & Motels | Motels & Hotels Reservations |

Appendix D - Water Quality Monitoring History from DEQ PWS's Database

Inorganic Water Quality Sampling Results – Red Lodge PWS

| PWS NAME | WATER SOURCE NAME | SOURCE WATER TYPE | SAMPLE POINT LOCATION | ANALYTE NAME | CONCENTRATION | UNITS | COLLECTION END DATE |
|-----------|----------------------|-------------------|-----------------------|-----------------------|---------------|-------|---------------------|
| MT0000314 | RED LODGE WATER DEPT | SW | TP FOR ROCK CREE | 1,1,1-TRICHLOROETHANE | 0 | | 13-Jun-91 |
| MT0000314 | RED LODGE WATER DEPT | SW | TP FOR ROCK CREE | 1,1,1-TRICHLOROETHANE | 0 | | 31-Oct-91 |
| MT0000314 | RED LODGE WATER DEPT | GW | TP FOR WELL 1 | 1,1,1-TRICHLOROETHANE | 0 | | 29-Jun-92 |
| MT0000314 | RED LODGE WATER DEPT | SW | TP FOR ROCK CREE | 1,1,1-TRICHLOROETHANE | 0 | | 07-May-93 |
| MT0000314 | RED LODGE WATER DEPT | SW | TP FOR WELL 1 | 1,1,1-TRICHLOROETHANE | 0 | | 07-May-93 |
| MT0000314 | RED LODGE WATER DEPT | SW | TP FOR ROCK CREE | 1,1,1-TRICHLOROETHANE | 0 | | 08-Jul-96 |
| MT0000314 | RED LODGE WATER DEPT | GW | TP FOR WELL 1 | 1,1,1-TRICHLOROETHANE | 0 | | 08-Jul-96 |
| MT0000314 | RED LODGE WATER DEPT | SW | TP FOR ROCK CREE | 1,1,1-TRICHLOROETHANE | 0 | | 18-Feb-97 |
| MT0000314 | RED LODGE WATER DEPT | GW | TP FOR WELL 1 | 1,1,1-TRICHLOROETHANE | 0 | | 18-Feb-97 |
| MT0000314 | RED LODGE WATER DEPT | SW | TP FOR ROCK CREE | 1,1,1-TRICHLOROETHANE | 0 | | 20-Mar-98 |
| MT0000314 | RED LODGE WATER DEPT | GW | TP FOR WELL 1 | 1,1,1-TRICHLOROETHANE | 0 | | 20-Mar-98 |
| MT0000314 | RED LODGE WATER DEPT | SW | TP FOR ROCK CREE | 1,1,1-TRICHLOROETHANE | 0 | | 16-Feb-99 |
| MT0000314 | RED LODGE WATER DEPT | SW | TP FOR ROCK CREE | 1,1,1-TRICHLOROETHANE | 0 | | 18-Jan-00 |
| MT0000314 | RED LODGE WATER DEPT | GW | BACKUP WELL 2 | 1,1,1-TRICHLOROETHANE | 0 | MG/L | 23-Feb-00 |
| MT0000314 | RED LODGE WATER DEPT | SW | TP FOR ROCK CREE | 1,1,1-TRICHLOROETHANE | 0 | MG/L | 24-Sep-01 |
| MT0000314 | RED LODGE WATER DEPT | GW | TP FOR WELL 1 | 1,1,1-TRICHLOROETHANE | 0 | MG/L | 24-Sep-01 |
| MT0000314 | RED LODGE WATER DEPT | GW | TP FOR WELL 1 | 1,1,1-TRICHLOROETHANE | 0 | MG/L | 15-Jul-02 |
| MT0000314 | RED LODGE WATER DEPT | GW | BACKUP WELL 2 | 1,1,1-TRICHLOROETHANE | 0 | MG/L | 16-Jul-02 |
| MT0000314 | RED LODGE WATER DEPT | SW | TP FOR ROCK CREE | ANTIMONY | 0 | | 07-May-93 |
| MT0000314 | RED LODGE WATER DEPT | GW | TP FOR WELL 1 | ANTIMONY | 0 | | 07-May-93 |
| MT0000314 | RED LODGE WATER DEPT | SW | TP FOR ROCK CREE | ANTIMONY | 0 | | 11-May-94 |
| MT0000314 | RED LODGE WATER DEPT | SW | TP FOR ROCK CREE | ANTIMONY | 0 | | 09-Jun-95 |
| MT0000314 | RED LODGE WATER DEPT | GW | TP FOR WELL 1 | ANTIMONY | 0 | | 12-Mar-96 |
| MT0000314 | RED LODGE WATER DEPT | GW | TP FOR WELL 1 | ANTIMONY | 0 | | 16-Feb-99 |
| MT0000314 | RED LODGE WATER DEPT | GW | BACKUP WELL 2 | ANTIMONY | 0 | MG/L | 23-Feb-00 |
| MT0000314 | RED LODGE WATER DEPT | SW | TP FOR WELL 1 | ANTIMONY | 0 | MG/L | 11-May-02 |
| MT0000314 | RED LODGE WATER DEPT | SW | BACKUP WELL 2 | ANTIMONY | 0 | MG/L | 13-May-02 |
| MT0000314 | RED LODGE WATER DEPT | SW | DISTRIBUTION SYST | ARSENIC | 0 | | 18-May-77 |
| MT0000314 | RED LODGE WATER DEPT | SW | DISTRIBUTION SYST | ARSENIC | 0 | | 12-Dec-78 |
| MT0000314 | RED LODGE WATER DEPT | SW | DISTRIBUTION SYST | ARSENIC | 0 | | 06-Dec-79 |
| MT0000314 | RED LODGE WATER DEPT | SW | DISTRIBUTION SYST | ARSENIC | 0.004 | MG/L | 28-Aug-80 |
| MT0000314 | RED LODGE WATER DEPT | SW | DISTRIBUTION SYST | ARSENIC | 0 | | 24-Mar-81 |
| MT0000314 | RED LODGE WATER DEPT | SW | DISTRIBUTION SYST | ARSENIC | 0 | | 14-Jul-82 |
| MT0000314 | RED LODGE WATER DEPT | SW | DISTRIBUTION SYST | ARSENIC | 0 | | 15-Jun-84 |
| MT0000314 | RED LODGE WATER DEPT | SW | DISTRIBUTION SYST | ARSENIC | 0 | | 31-May-85 |
| MT0000314 | RED LODGE WATER DEPT | SW | DISTRIBUTION SYST | ARSENIC | 0 | | 30-Jun-86 |
| MT0000314 | RED LODGE WATER DEPT | SW | DISTRIBUTION SYST | ARSENIC | 0 | | 13-May-87 |
| MT0000314 | RED LODGE WATER DEPT | SW | DISTRIBUTION SYST | ARSENIC | 0 | | 13-May-87 |
| MT0000314 | RED LODGE WATER DEPT | SW | DISTRIBUTION SYST | ARSENIC | 0 | | 22-Jul-88 |
| MT0000314 | RED LODGE WATER DEPT | SW | DISTRIBUTION SYST | ARSENIC | 0 | | 13-May-92 |
| MT0000314 | RED LODGE WATER DEPT | SW | TP FOR ROCK CREE | ARSENIC | 0 | | 07-May-93 |
| MT0000314 | RED LODGE WATER DEPT | GW | TP FOR WELL 1 | ARSENIC | 0 | | 07-May-93 |
| MT0000314 | RED LODGE WATER DEPT | SW | TP FOR ROCK CREE | ARSENIC | 0 | | 11-May-94 |
| MT0000314 | RED LODGE WATER DEPT | GW | TP FOR WELL 1 | ARSENIC | 0 | | 23-Feb-00 |
| MT0000314 | RED LODGE WATER DEPT | GW | BACKUP WELL 2 | ARSENIC | 0 | MG/L | 13-May-02 |
| MT0000314 | RED LODGE WATER DEPT | SW | TP FOR WELL 1 | ARSENIC | 0 | MG/L | 25-Aug-02 |
| MT0000314 | RED LODGE WATER DEPT | SW | TP FOR ROCK CREE | ARSENIC | 0 | | 07-May-93 |
| MT0000314 | RED LODGE WATER DEPT | SW | TP FOR WELL 1 | ARSENIC | 0 | | 07-May-93 |
| MT0000314 | RED LODGE WATER DEPT | GW | BACKUP WELL 2 | ARSENIC | 0 | MG/L | 23-Feb-00 |
| MT0000314 | RED LODGE WATER DEPT | GW | TP FOR ROCK CREE | ARSENIC | 0 | MG/L | 13-May-02 |
| MT0000314 | RED LODGE WATER DEPT | SW | TP FOR WELL 1 | ARSENIC | 0 | MG/L | 25-Aug-02 |
| MT0000314 | RED LODGE WATER DEPT | SW | TP FOR ROCK CREE | BARLIUM | 0 | | 18-May-77 |
| MT0000314 | RED LODGE WATER DEPT | SW | DISTRIBUTION SYST | BARLIUM | 0 | | 12-Dec-78 |
| MT0000314 | RED LODGE WATER DEPT | SW | DISTRIBUTION SYST | BARLIUM | 0 | | 06-Dec-79 |
| MT0000314 | RED LODGE WATER DEPT | SW | DISTRIBUTION SYST | BARLIUM | 0 | | 28-Aug-80 |
| MT0000314 | RED LODGE WATER DEPT | SW | DISTRIBUTION SYST | BARLIUM | 0 | | 24-Mar-81 |
| MT0000314 | RED LODGE WATER DEPT | SW | DISTRIBUTION SYST | BARLIUM | 0.01 | MG/L | 14-Jul-82 |
| MT0000314 | RED LODGE WATER DEPT | SW | DISTRIBUTION SYST | BARLIUM | 0.01 | MG/L | 15-Jun-84 |
| MT0000314 | RED LODGE WATER DEPT | SW | DISTRIBUTION SYST | BARLIUM | 0.009 | MG/L | 31-May-85 |
| MT0000314 | RED LODGE WATER DEPT | SW | DISTRIBUTION SYST | BARLIUM | 0 | | 30-Jun-86 |
| MT0000314 | RED LODGE WATER DEPT | SW | DISTRIBUTION SYST | BARLIUM | 0.007 | MG/L | 11-May-87 |
| MT0000314 | RED LODGE WATER DEPT | SW | DISTRIBUTION SYST | BARLIUM | 0.01 | MG/L | 22-Jul-88 |
| MT0000314 | RED LODGE WATER DEPT | SW | DISTRIBUTION SYST | BARLIUM | 0.01 | MG/L | 13-May-92 |
| MT0000314 | RED LODGE WATER DEPT | SW | DISTRIBUTION SYST | BARLIUM | 0.01 | MG/L | 21-Apr-89 |
| MT0000314 | RED LODGE WATER DEPT | SW | DISTRIBUTION SYST | BARLIUM | 0.008 | MG/L | 22-Jun-90 |
| MT0000314 | RED LODGE WATER DEPT | SW | DISTRIBUTION SYST | BARLIUM | 0.007 | MG/L | 28-Jun-91 |
| MT0000314 | RED LODGE WATER DEPT | SW | DISTRIBUTION SYST | BARLIUM | 0.007 | MG/L | 13-May-92 |
| MT0000314 | RED LODGE WATER DEPT | GW | TP FOR ROCK CREE | BARLIUM | 0.01 | MG/L | 07-May-93 |
| MT0000314 | RED LODGE WATER DEPT | GW | TP FOR WELL 1 | BARLIUM | 0.023 | MG/L | 07-May-93 |
| MT0000314 | RED LODGE WATER DEPT | SW | TP FOR ROCK CREE | BARLIUM | 0 | | 11-May-94 |
| MT0000314 | RED LODGE WATER DEPT | GW | BACKUP WELL 2 | BARLIUM | 0 | MG/L | 23-Feb-00 |
| MT0000314 | RED LODGE WATER DEPT | GW | BACKUP WELL 2 | BARLIUM | 0 | MG/L | 13-May-02 |
| MT0000314 | RED LODGE WATER DEPT | SW | TP FOR WELL 1 | BARLIUM | 0 | MG/L | 25-Aug-02 |
| MT0000314 | RED LODGE WATER DEPT | SW | TP FOR ROCK CREE | BERYLLIUM | 0 | | 07-May-93 |
| MT0000314 | RED LODGE WATER DEPT | GW | TP FOR WELL 1 | BERYLLIUM | 0 | | 07-May-93 |
| MT0000314 | RED LODGE WATER DEPT | SW | TP FOR ROCK CREE | BERYLLIUM | 0 | | 11-May-94 |
| MT0000314 | RED LODGE WATER DEPT | SW | TP FOR ROCK CREE | BERYLLIUM | 0 | | 09-Jun-95 |
| MT0000314 | RED LODGE WATER DEPT | SW | TP FOR WELL 1 | BERYLLIUM | 0 | | 12-Mar-96 |
| MT0000314 | RED LODGE WATER DEPT | GW | TP FOR WELL 1 | BERYLLIUM | 0 | | 16-Feb-99 |
| MT0000314 | RED LODGE WATER DEPT | GW | BACKUP WELL 2 | BERYLLIUM | 0 | MG/L | 23-Feb-00 |
| MT0000314 | RED LODGE WATER DEPT | SW | TP FOR WELL 1 | BERYLLIUM | 0 | MG/L | 13-May-02 |
| MT0000314 | RED LODGE WATER DEPT | GW | BACKUP WELL 2 | BERYLLIUM | 0 | MG/L | 13-May-02 |
| MT0000314 | RED LODGE WATER DEPT | SW | DISTRIBUTION SYST | CADMIUM | 0 | | 18-May-77 |
| MT0000314 | RED LODGE WATER DEPT | SW | DISTRIBUTION SYST | CADMIUM | 0 | | 12-Dec-78 |
| MT0000314 | RED LODGE WATER DEPT | SW | DISTRIBUTION SYST | CADMIUM | 0 | | 06-Dec-79 |
| MT0000314 | RED LODGE WATER DEPT | SW | DISTRIBUTION SYST | CADMIUM | 0 | | 28-Aug-80 |
| MT0000314 | RED LODGE WATER DEPT | SW | DISTRIBUTION SYST | CADMIUM | 0 | | 24-Mar-81 |
| MT0000314 | RED LODGE WATER DEPT | SW | DISTRIBUTION SYST | CADMIUM | 0 | | 14-Jul-82 |
| MT0000314 | RED LODGE WATER DEPT | SW | DISTRIBUTION SYST | CADMIUM | 0 | | 15-Jun-84 |
| MT0000314 | RED LODGE WATER DEPT | SW | DISTRIBUTION SYST | CADMIUM | 0 | | 31-May-85 |
| MT0000314 | RED LODGE WATER DEPT | SW | DISTRIBUTION SYST | CADMIUM | 0 | | 30-Jun-86 |
| MT0000314 | RED LODGE WATER DEPT | SW | DISTRIBUTION SYST | CADMIUM | 0 | | 11-May-87 |
| MT0000314 | RED LODGE WATER DEPT | SW | DISTRIBUTION SYST | CADMIUM | 0.001 | MG/L | 22-Jul-88 |
| MT0000314 | RED LODGE WATER DEPT | SW | DISTRIBUTION SYST | CADMIUM | 0 | | 21-Apr-89 |
| MT0000314 | RED LODGE WATER DEPT | SW | DISTRIBUTION SYST | CADMIUM | 0 | | 22-Jun-90 |
| MT0000314 | RED LODGE WATER DEPT | SW | DISTRIBUTION SYST | CADMIUM | 0 | | 28-Jun-91 |
| MT0000314 | RED LODGE WATER DEPT | SW | DISTRIBUTION SYST | CADMIUM | 0 | | 13-May-92 |
| MT0000314 | RED LODGE WATER DEPT | SW | TP FOR ROCK CREE | CADMIUM | 0 | | 07-May-93 |
| MT0000314 | RED LODGE WATER DEPT | SW | TP FOR WELL 1 | CADMIUM | 0 | | 07-May-93 |
| MT0000314 | RED LODGE WATER DEPT | SW | TP FOR ROCK CREE | CADMIUM | 0 | | 11-May-94 |
| MT0000314 | RED LODGE WATER DEPT | GW | BACKUP WELL 2 | CADMIUM | 0 | MG/L | 23-Feb-00 |
| MT0000314 | RED LODGE WATER DEPT | GW | BACKUP WELL 2 | CADMIUM | 0 | MG/L | 13-May-02 |
| MT0000314 | RED LODGE WATER DEPT | GW | TP FOR WELL 1 | CADMIUM | 0 | MG/L | 26-Aug-02 |
| MT0000314 | RED LODGE WATER DEPT | SW | DISTRIBUTION SYST | CHROMIUM | 0 | | 18-May-77 |
| MT0000314 | RED LODGE WATER DEPT | SW | DISTRIBUTION SYST | CHROMIUM | 0 | | 12-Dec-78 |
| MT0000314 | RED LODGE WATER DEPT | SW | DISTRIBUTION SYST | CHROMIUM | 0.006 | MG/L | 06-Dec-79 |
| MT0000314 | RED LODGE WATER DEPT | SW | DISTRIBUTION SYST | CHROMIUM | 0 | | 28-Aug-80 |
| MT0000314 | RED LODGE WATER DEPT | SW | DISTRIBUTION SYST | CHROMIUM | 0 | | 24-Mar-81 |
| MT0000314 | RED LODGE WATER DEPT | SW | DISTRIBUTION SYST | CHROMIUM | 0 | | 14-Jul-82 |
| MT0000314 | RED LODGE WATER DEPT | SW | DISTRIBUTION SYST | CHROMIUM | 0 | | 15-Jun-84 |
| MT0000314 | RED LODGE WATER DEPT | SW | DISTRIBUTION SYST | CHROMIUM | 0 | | 31-May-85 |
| MT0000314 | RED LODGE WATER DEPT | SW | DISTRIBUTION SYST | CHROMIUM | 0 | | 30-Jun-86 |
| MT0000314 | RED LODGE WATER DEPT | SW | DISTRIBUTION SYST | CHROMIUM | 0 | | 11-May-87 |
| MT0000314 | RED LODGE WATER DEPT | SW | DISTRIBUTION SYST | CHROMIUM | 0 | | 22-Jul-88 |
| MT0000314 | RED LODGE WATER DEPT | SW | DISTRIBUTION SYST | CHROMIUM | 0 | | 21-Apr-89 |
| MT0000314 | RED LODGE WATER DEPT | SW | DISTRIBUTION SYST | CHROMIUM | 0 | | 22-Jun-90 |
| MT0000314 | RED LODGE WATER DEPT | SW | DISTRIBUTION SYST | CHROMIUM | 0 | | 28-Jun-91 |
| MT0000314 | RED LODGE WATER DEPT | SW | DISTRIBUTION SYST | CHROMIUM | 0 | | 13-May-92 |
| MT0000314 | RED LODGE WATER DEPT | SW | TP FOR ROCK CREE | CHROMIUM | 0 | | 07-May-93 |
| MT0000314 | RED LODGE WATER DEPT | SW | TP FOR WELL 1 | CHROMIUM | 0 | | 07-May-93 |
| MT0000314 | RED LODGE WATER DEPT | SW | TP FOR ROCK CREE | CHROMIUM | 0 | | 11-May-94 |
| MT0000314 | RED LODGE WATER DEPT | GW | BACKUP WELL 2 | CHROMIUM | 0 | MG/L | 23-Feb-00 |
| MT0000314 | RED LODGE WATER DEPT | GW | BACKUP WELL 2 | CHROMIUM | 0 | MG/L | 13-May-02 |
| MT0000314 | RED LODGE WATER DEPT | GW | TP FOR WELL 1 | CHROMIUM | 0 | MG/L | 26-Aug-02 |
| MT0000314 | RED LODGE WATER DEPT | SW | TP FOR ROCK CREE | DINOSEB | 0 | | 07-May-93 |
| MT0000314 | RED LODGE WATER DEPT | SW | TP FOR WELL 1 | DINOSEB | 0 | | 07-May-93 |
| MT0000314 | RED LODGE WATER DEPT | SW | TP FOR ROCK CREE | DINOSEB | 0 | | 08-Jul-96 |
| MT0000314 | RED LODGE WATER DEPT | SW | TP FOR WELL 1 | DINOSEB | 0 | | 08-Jul-96 |
| MT0000314 | RED LODGE WATER DEPT | SW | TP FOR ROCK CREE | DINOSEB | 0 | | 16-Feb-99 |
| MT0000314 | RED LODGE WATER DEPT | SW | TP FOR WELL 1 | DINOSEB | 0 | | 16-Feb-99 |
| MT0000314 | RED LODGE WATER DEPT | GW | BACKUP WELL 2 | DINOSEB | 0 | MG/L | 23-Feb-00 |
| MT0000314 | RED LODGE WATER DEPT | GW | TP FOR WELL 1 | DINOSEB | 0 | MG/L | 15-Jul-02 |
| MT0000314 | RED LODGE WATER DEPT | GW | BACKUP WELL 2 | DINOSEB | 0 | MG/L | 15-Jul-02 |

Appendix F - Concurrence Letter & Other Correspondence

GLOSSARY*

Acute Health Effect. An adverse health effect in which symptoms develop rapidly.

Alkalinity. The capacity of water to neutralize acids.

Aquifer. A water-bearing layer of rock or sediment that will yield water in usable quantity to a well or spring.

Best Management Practices (BMPs). Methods that have been determined to be the most effective, practical means of preventing or reducing pollution from nonpoint sources.

Coliform Bacteria. Bacteria found in the intestinal tracts of animals. Their presence in water is an indicator of pollution and possible contamination by pathogens.

Confined Aquifer. A fully saturated aquifer overlain by a confining unit such as a clay layer. The static water level in a well in a confined aquifer is at an elevation that is equal to or higher than the base of the overlying confining unit.

Confining Unit. A geologic formation that inhibits the flow of water.

Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA). Enacted in 1980. CERCLA provides a Federal “Superfund” to clean up uncontrolled or abandoned hazardous-waste sites as well as accidents, spills, and other emergency releases of pollutants and contaminants into the environment. Through the Act, EPA was given power to seek out those parties responsible for any release and assure their cooperation in the cleanup.

Delineation. A process of mapping source water management areas.

Hardness. Characteristic of water caused by presence of various salts. Hard water may interfere with some industrial processes and prevent soap from lathering.

Hazard. A measure of the potential of a contaminant leaked from a facility to reach a public water system source. Proximity or density of significant potential contaminant sources determines hazard.

Hydraulic Conductivity. A coefficient of proportionality describing the rate at which water can move through an aquifer.

Inventory Region. A source water management area that encompasses the area expected to contribute water to a public water system within a fixed distance or a specified ground water travel time.

Maximum Contaminant Level (MCL). Maximum concentration of a substance in water that is permitted to be delivered to the users of a public water system. Set by EPA under authority of the Safe Drinking Water Act.

Nitrate. An important plant nutrient and type of inorganic fertilizer. In water the major sources of nitrates are septic tanks, feed lots and fertilizers.

Nonpoint-Source. Pollution sources that are diffuse and do not have a single point of origin.

Pathogens. A bacterial organism typically found in the intestinal tracts of mammals, capable of producing

disease.

Point-Source. A stationary location or fixed facility from which pollutants are discharged.

Public Water System. A system that provides piped water for human consumption to at least 15 service connections or regularly serves 25 individuals.

Pumping Water Level. Water level elevation in a well when the pump is operating.

Recharge Region. A source water management region that is generally the entire area that could contribute water to an aquifer used by a public water system. Includes areas that could contribute water over long time periods or under different water usage patterns.

Resource Conservation and Recovery Act (RCRA). Enacted by Congress in 1976. RCRA's primary goals are to protect human health and the environment from the potential hazards of waste disposal, to conserve energy and natural resources, to reduce the amount of waste generated, and to ensure that wastes are managed in an environmentally sound manner.

Section Seven Tracking System (SSTS). SSTS is an automated system EPA uses to track pesticide producing establishments and the amount of pesticides they produce.

Source Water Protection Area. For surface water sources, the land and surface drainage network that contributes water to a stream or reservoir used by a public water system.

Static Water Level (SWL). Water level elevation in a well when the pump is not operating.

Susceptibility (of a PWS). The potential for a PWS to draw water contaminated at concentrations that would pose concern. Susceptibility is evaluated at the point immediately preceding treatment or, if no treatment is provided, at the entry point to the distribution system.

Synthetic Organic Compounds (SOC). Man made organic chemical compounds (e.g. herbicides and pesticides).

Total Dissolved Solids (TDS). The dissolved solids collected after a sample of a known volume of water is passed through a very fine mesh filter.

Transmissivity. The ability of an aquifer to transmit water.

Unconfined Aquifer. An aquifer containing water that is not under pressure. The water table is the top surface of an unconfined aquifer.

Underground Storage Tanks (UST). A tank located at least partially underground and designed to hold gasoline or other petroleum products or chemicals.

Volatile Organic Compounds (VOC). Any organic compound which evaporates readily to the atmosphere.

* Definitions taken from EPA's Glossary of Selected Terms and Abbreviations

Appendix G:

Water Modeling Results

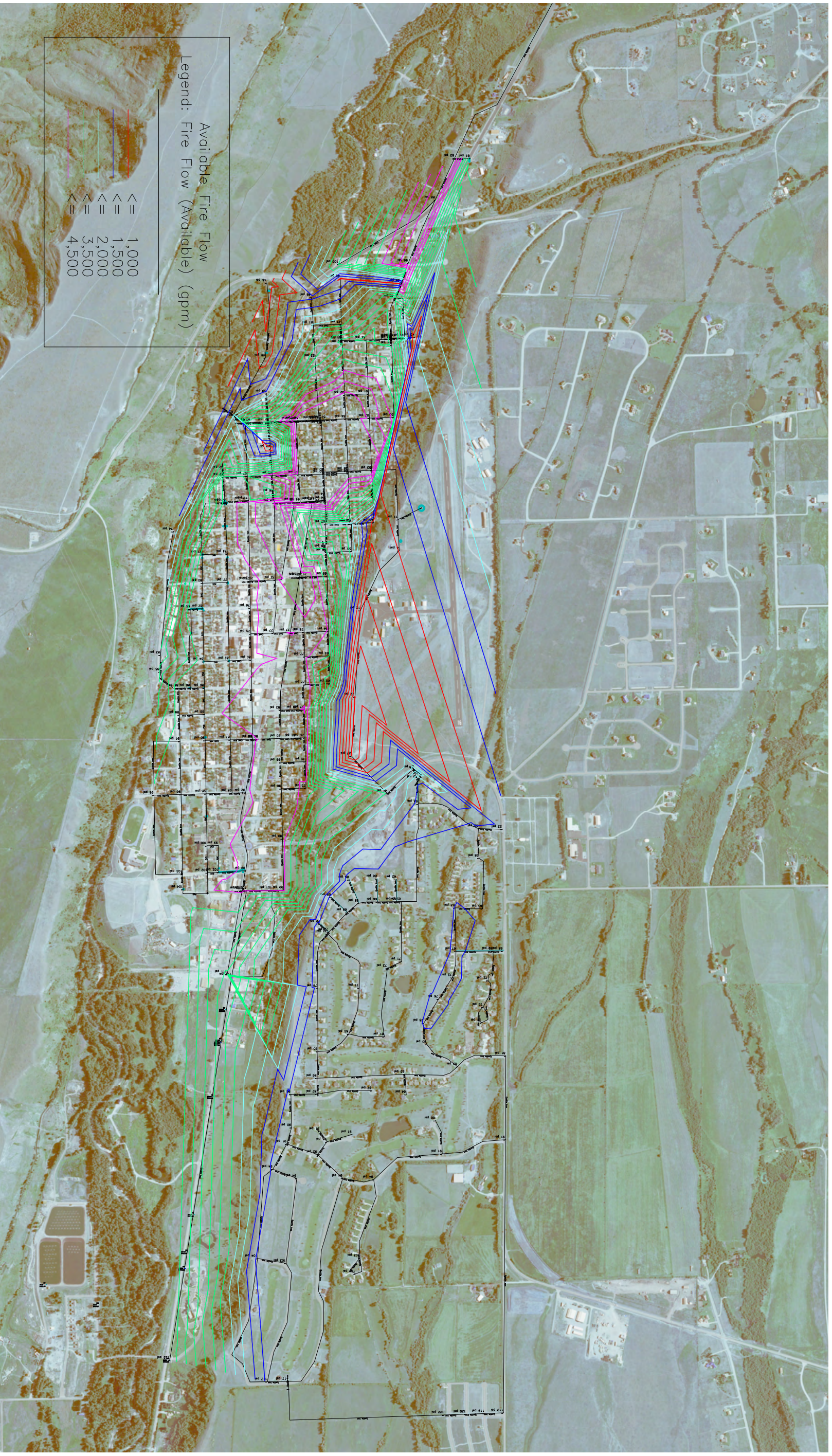


Figure 3:
Available Fire Flow Map

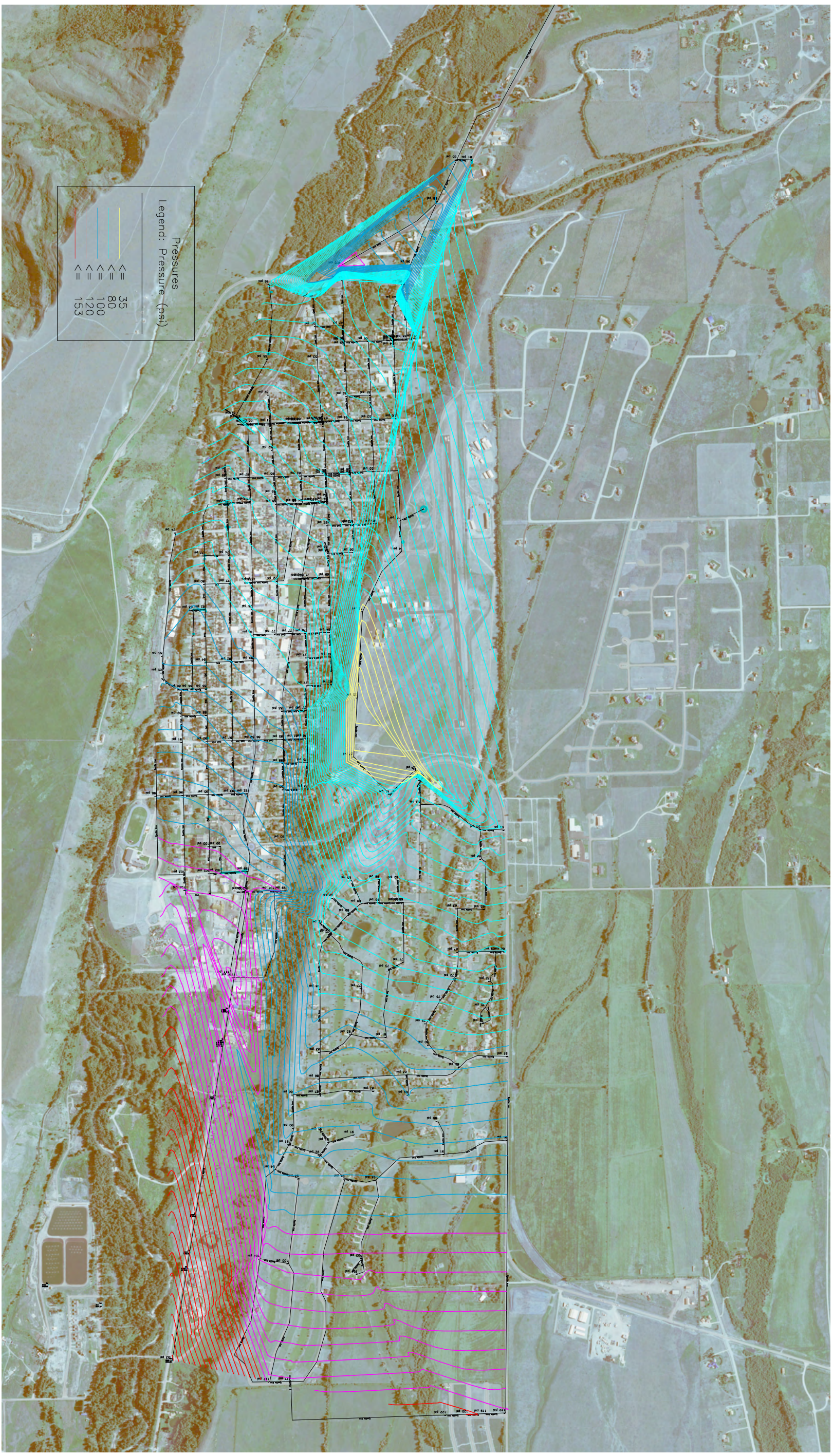


Figure 3:5
Water Main Pressure Map

Scenario: Design Peak Day
Current Time Step: 0.000 h
FlexTable: Junction Table

| ID | Label | Elevation (ft) | Demand (gpm) | Hydraulic Grade (ft) | Pressure (psi) |
|-----|-------|-------------------|-----------------|-------------------------|-------------------|
| 30 | J-1 | 5,869.00 | 0 | 5,882.00 | 6 |
| 31 | J-2 | 5,691.00 | 6 | 5,881.99 | 83 |
| 33 | J-3 | 5,654.00 | 3 | 5,881.99 | 99 |
| 35 | p | 5,654.00 | 1 | 5,746.77 | 40 |
| 37 | J-5 | 5,654.00 | 3 | 5,746.77 | 40 |
| 45 | J-6 | 5,661.00 | 4 | 5,881.99 | 96 |
| 48 | J-7 | 5,695.00 | 0 | 5,881.99 | 81 |
| 50 | J-8 | 5,678.97 | 1 | 5,881.99 | 88 |
| 53 | J-9 | 5,645.00 | 10 | 5,881.99 | 103 |
| 57 | J-10 | 5,799.00 | 0 | 5,882.00 | 36 |
| 60 | J-11 | 5,830.00 | 3 | 5,882.00 | 22 |
| 63 | J-12 | 5,854.50 | 0 | 5,882.00 | 12 |
| 66 | J-13 | 5,646.00 | 2 | 5,746.77 | 44 |
| 67 | J-14 | 5,648.00 | 1 | 5,746.77 | 43 |
| 68 | J-15 | 5,645.00 | 0 | 5,746.77 | 44 |
| 69 | J-16 | 5,645.00 | 4 | 5,746.77 | 44 |
| 70 | J-17 | 5,645.00 | 0 | 5,746.77 | 44 |
| 71 | J-18 | 5,645.00 | 0 | 5,746.77 | 44 |
| 72 | J-19 | 5,640.00 | 5 | 5,746.77 | 46 |
| 81 | J-20 | 5,632.00 | 5 | 5,746.76 | 50 |
| 82 | J-21 | 5,637.00 | 5 | 5,746.74 | 47 |
| 83 | J-22 | 5,640.00 | 4 | 5,746.74 | 46 |
| 84 | J-23 | 5,631.00 | 0 | 5,746.76 | 50 |
| 85 | J-24 | 5,631.00 | 0 | 5,746.76 | 50 |
| 92 | J-26 | 5,645.00 | 0 | 5,746.77 | 44 |
| 94 | J-27 | 5,632.00 | 11 | 5,746.77 | 50 |
| 96 | J-28 | 5,624.00 | 7 | 5,746.78 | 53 |
| 97 | J-29 | 5,628.00 | 5 | 5,746.77 | 51 |
| 101 | J-30 | 5,626.00 | 7 | 5,746.77 | 52 |
| 102 | J-31 | 5,621.00 | 7 | 5,746.78 | 54 |
| 107 | J-32 | 5,615.00 | 0 | 5,746.73 | 57 |
| 108 | J-33 | 5,615.00 | 7 | 5,746.72 | 57 |
| 109 | J-34 | 5,615.00 | 5 | 5,746.72 | 57 |
| 110 | J-35 | 5,615.00 | 0 | 5,746.72 | 57 |
| 111 | J-36 | 5,615.00 | 0 | 5,746.72 | 57 |
| 112 | J-37 | 5,624.00 | 4 | 5,746.72 | 53 |
| 113 | J-38 | 5,630.00 | 5 | 5,746.73 | 51 |
| 122 | J-39 | 5,635.00 | 5 | 5,746.73 | 48 |
| 124 | J-40 | 5,608.00 | 0 | 5,746.46 | 60 |
| 125 | J-41 | 5,608.00 | 5 | 5,746.45 | 60 |
| 126 | J-42 | 5,608.00 | 0 | 5,746.44 | 60 |
| 127 | J-43 | 5,606.00 | 7 | 5,746.22 | 61 |
| 128 | J-44 | 5,606.00 | 0 | 5,746.22 | 61 |
| 129 | J-45 | 5,609.00 | 4 | 5,746.22 | 59 |
| 130 | J-46 | 5,601.00 | 0 | 5,746.08 | 63 |
| 131 | J-47 | 5,601.00 | 7 | 5,746.07 | 63 |
| 132 | J-48 | 5,601.00 | 0 | 5,746.07 | 63 |
| 133 | J-49 | 5,604.00 | 0 | 5,746.07 | 61 |
| 144 | J-50 | 5,619.00 | 5 | 5,746.04 | 55 |
| 145 | J-51 | 5,640.00 | 10 | 5,746.03 | 46 |
| 146 | J-52 | 5,603.00 | 5 | 5,746.06 | 62 |
| 151 | J-53 | 5,722.00 | 0 | 5,747.62 | 11 |
| 153 | J-54 | 5,624.00 | 10 | 5,746.94 | 53 |
| 154 | J-55 | 5,613.00 | 5 | 5,746.80 | 58 |
| 155 | J-56 | 5,608.00 | 5 | 5,746.72 | 60 |
| 162 | J-57 | 5,613.00 | 5 | 5,746.70 | 58 |
| 163 | J-58 | 5,608.00 | 5 | 5,746.69 | 60 |

| | | | | | |
|-----|-------|----------|----|----------|----|
| 164 | J-59 | 5,604.00 | 10 | 5,746.43 | 62 |
| 165 | J-60 | 5,595.00 | 7 | 5,746.25 | 65 |
| 173 | J-62 | 5,602.00 | 4 | 5,746.24 | 62 |
| 177 | J-64 | 5,587.00 | 5 | 5,746.01 | 69 |
| 178 | J-65 | 5,587.00 | 1 | 5,746.01 | 69 |
| 179 | J-66 | 5,591.00 | 10 | 5,746.06 | 67 |
| 185 | J-68 | 5,642.00 | 7 | 5,746.41 | 45 |
| 186 | J-69 | 5,603.00 | 4 | 5,746.27 | 62 |
| 187 | J-70 | 5,603.00 | 4 | 5,746.28 | 62 |
| 188 | J-71 | 5,592.00 | 5 | 5,746.29 | 67 |
| 189 | J-72 | 5,599.00 | 0 | 5,746.52 | 64 |
| 190 | J-73 | 5,599.00 | 0 | 5,746.53 | 64 |
| 191 | J-74 | 5,599.00 | 5 | 5,746.52 | 64 |
| 192 | J-75 | 5,598.00 | 0 | 5,746.50 | 64 |
| 193 | J-76 | 5,597.00 | 5 | 5,746.45 | 65 |
| 203 | J-77 | 5,598.00 | 5 | 5,746.40 | 64 |
| 204 | J-78 | 5,597.00 | 5 | 5,746.36 | 65 |
| 205 | J-79 | 5,590.00 | 5 | 5,746.33 | 68 |
| 206 | J-80 | 5,593.00 | 0 | 5,746.32 | 66 |
| 215 | J-81 | 5,612.00 | 7 | 5,746.18 | 58 |
| 216 | J-82 | 5,590.00 | 7 | 5,746.13 | 68 |
| 217 | J-83 | 5,590.00 | 0 | 5,746.13 | 68 |
| 222 | J-84 | 5,587.00 | 5 | 5,746.10 | 69 |
| 223 | J-85 | 5,582.00 | 0 | 5,746.11 | 71 |
| 224 | J-86 | 5,582.00 | 7 | 5,746.11 | 71 |
| 225 | J-87 | 5,582.00 | 5 | 5,746.11 | 71 |
| 231 | J-88 | 5,583.00 | 5 | 5,746.05 | 71 |
| 232 | J-89 | 5,583.00 | 0 | 5,746.05 | 71 |
| 233 | J-90 | 5,577.00 | 14 | 5,746.02 | 73 |
| 234 | J-91 | 5,577.00 | 0 | 5,746.03 | 73 |
| 235 | J-92 | 5,580.00 | 14 | 5,746.13 | 72 |
| 243 | J-93 | 5,578.00 | 0 | 5,745.96 | 73 |
| 244 | J-94 | 5,578.00 | 7 | 5,745.96 | 73 |
| 248 | J-95 | 5,574.00 | 10 | 5,745.91 | 74 |
| 249 | J-96 | 5,569.00 | 7 | 5,745.90 | 77 |
| 250 | J-97 | 5,556.00 | 7 | 5,745.90 | 82 |
| 251 | J-98 | 5,544.00 | 12 | 5,745.89 | 87 |
| 252 | J-99 | 5,532.00 | 10 | 5,745.89 | 93 |
| 258 | J-100 | 5,567.00 | 12 | 5,745.91 | 77 |
| 261 | J-101 | 5,562.00 | 7 | 5,745.90 | 80 |
| 264 | J-102 | 5,557.00 | 7 | 5,745.88 | 82 |
| 266 | J-103 | 5,552.00 | 10 | 5,745.88 | 84 |
| 269 | J-104 | 5,548.00 | 10 | 5,745.86 | 86 |
| 271 | J-105 | 5,543.00 | 7 | 5,745.86 | 88 |
| 273 | J-106 | 5,538.00 | 7 | 5,745.86 | 90 |
| 276 | J-107 | 5,527.00 | 12 | 5,745.86 | 95 |
| 278 | J-108 | 5,555.00 | 5 | 5,745.87 | 83 |
| 279 | J-109 | 5,547.00 | 2 | 5,745.86 | 86 |
| 283 | J-110 | 5,570.00 | 4 | 5,746.00 | 76 |
| 284 | J-111 | 5,566.00 | 10 | 5,745.99 | 78 |
| 285 | J-112 | 5,560.00 | 7 | 5,745.96 | 80 |
| 286 | J-113 | 5,547.00 | 10 | 5,745.92 | 86 |
| 287 | J-114 | 5,534.00 | 17 | 5,745.89 | 92 |
| 291 | J-115 | 5,547.00 | 5 | 5,745.92 | 86 |
| 299 | J-116 | 5,567.00 | 7 | 5,746.06 | 77 |
| 300 | J-117 | 5,567.00 | 7 | 5,746.05 | 77 |
| 301 | J-118 | 5,570.00 | 7 | 5,746.05 | 76 |
| 302 | J-119 | 5,598.00 | 7 | 5,746.05 | 64 |
| 311 | J-120 | 5,598.00 | 5 | 5,746.04 | 64 |
| 312 | J-121 | 5,569.00 | 5 | 5,746.04 | 77 |
| 313 | J-122 | 5,602.00 | 5 | 5,746.04 | 62 |
| 314 | J-123 | 5,567.00 | 7 | 5,746.00 | 77 |
| 315 | J-124 | 5,567.00 | 5 | 5,745.97 | 77 |
| 316 | J-125 | 5,566.00 | 0 | 5,745.97 | 78 |
| 317 | J-126 | 5,555.00 | 13 | 5,745.96 | 83 |
| 328 | J-127 | 5,550.00 | 7 | 5,745.94 | 85 |
| 329 | J-128 | 5,559.00 | 0 | 5,745.94 | 81 |

| | | | | | |
|-----|-------|----------|----|----------|-----|
| | J-129 | 5,571.00 | 5 | 5,745.94 | 76 |
| 336 | J-130 | 5,542.00 | 7 | 5,745.93 | 88 |
| 337 | J-131 | 5,572.00 | 5 | 5,745.93 | 75 |
| 338 | J-132 | 5,578.00 | 4 | 5,745.92 | 73 |
| 339 | J-133 | 5,537.00 | 5 | 5,745.92 | 90 |
| 346 | J-134 | 5,537.00 | 7 | 5,745.89 | 90 |
| 348 | J-135 | 5,575.00 | 6 | 5,745.86 | 74 |
| 349 | J-136 | 5,549.00 | 1 | 5,745.86 | 85 |
| 350 | J-137 | 5,553.00 | 5 | 5,745.86 | 83 |
| 351 | J-138 | 5,547.00 | 5 | 5,745.86 | 86 |
| 356 | J-139 | 5,539.00 | 5 | 5,745.86 | 89 |
| 357 | J-140 | 5,535.00 | 5 | 5,745.86 | 91 |
| 358 | J-141 | 5,524.00 | 5 | 5,745.86 | 96 |
| 364 | J-142 | 5,524.00 | 7 | 5,745.86 | 96 |
| 367 | J-143 | 5,508.00 | 7 | 5,745.86 | 103 |
| 370 | J-144 | 5,505.00 | 2 | 5,745.86 | 104 |
| 372 | J-145 | 5,509.00 | 4 | 5,745.86 | 102 |
| 374 | J-146 | 5,510.00 | 5 | 5,745.86 | 102 |
| 375 | J-147 | 5,516.00 | 7 | 5,745.86 | 99 |
| 376 | J-148 | 5,515.00 | 10 | 5,745.86 | 100 |
| 377 | J-149 | 5,516.00 | 14 | 5,745.86 | 99 |
| 385 | J-150 | 5,517.00 | 7 | 5,745.86 | 99 |
| 386 | J-151 | 5,512.00 | 7 | 5,745.86 | 101 |
| 387 | J-152 | 5,510.00 | 4 | 5,745.86 | 102 |
| 388 | J-153 | 5,509.00 | 7 | 5,745.86 | 102 |
| 393 | J-154 | 5,490.00 | 12 | 5,745.85 | 111 |
| 396 | J-155 | 5,490.00 | 4 | 5,745.85 | 111 |
| 399 | J-156 | 5,393.00 | 5 | 5,745.85 | 153 |
| 401 | J-157 | 5,738.00 | 1 | 5,747.61 | 4 |
| 402 | J-158 | 5,653.00 | 0 | 5,747.49 | 41 |
| 403 | J-159 | 5,685.00 | 0 | 5,747.48 | 27 |
| 409 | J-160 | 5,685.00 | 0 | 5,799.56 | 50 |
| 413 | J-161 | 5,676.00 | 12 | 5,799.26 | 53 |
| 414 | J-162 | 5,679.00 | 4 | 5,798.96 | 52 |
| 415 | J-163 | 5,676.00 | 0 | 5,798.96 | 53 |
| 416 | J-164 | 5,649.00 | 12 | 5,798.37 | 65 |
| 417 | J-165 | 5,631.00 | 5 | 5,798.34 | 72 |
| 418 | J-166 | 5,606.00 | 12 | 5,798.34 | 83 |
| 419 | J-167 | 5,606.00 | 12 | 5,798.34 | 83 |
| 420 | J-168 | 5,634.00 | 2 | 5,798.35 | 71 |
| 425 | J-169 | 5,648.00 | 0 | 5,798.37 | 65 |
| 426 | J-170 | 5,654.00 | 2 | 5,798.37 | 62 |
| 429 | J-171 | 5,646.00 | 4 | 5,798.36 | 66 |
| 430 | J-172 | 5,645.00 | 2 | 5,798.36 | 66 |
| 431 | J-173 | 5,642.00 | 0 | 5,798.35 | 68 |
| 432 | J-174 | 5,647.00 | 2 | 5,798.35 | 65 |
| 437 | J-175 | 5,639.00 | 4 | 5,798.34 | 69 |
| 438 | J-176 | 5,640.00 | 2 | 5,798.34 | 69 |
| 441 | J-177 | 5,631.00 | 5 | 5,798.34 | 72 |
| 442 | J-178 | 5,631.00 | 2 | 5,798.34 | 72 |
| 446 | J-179 | 5,619.00 | 0 | 5,798.34 | 78 |
| 447 | J-180 | 5,621.00 | 0 | 5,798.34 | 77 |
| 454 | J-181 | 5,630.00 | 2 | 5,798.35 | 73 |
| 455 | J-182 | 5,610.00 | 5 | 5,798.34 | 81 |
| 459 | J-183 | 5,665.00 | 17 | 5,798.83 | 58 |
| 460 | J-184 | 5,654.00 | 12 | 5,798.67 | 63 |
| 461 | J-185 | 5,652.00 | 0 | 5,798.60 | 63 |
| 465 | J-186 | 5,641.00 | 1 | 5,798.49 | 68 |
| 466 | J-187 | 5,643.00 | 5 | 5,798.50 | 67 |
| 467 | J-188 | 5,639.00 | 2 | 5,798.49 | 69 |
| 468 | J-189 | 5,633.00 | 7 | 5,798.49 | 72 |
| 469 | J-190 | 5,626.00 | 0 | 5,798.49 | 75 |
| 470 | J-191 | 5,621.00 | 7 | 5,798.49 | 77 |
| 478 | J-192 | 5,632.00 | 5 | 5,798.46 | 72 |
| 479 | J-193 | 5,623.00 | 4 | 5,798.43 | 76 |
| 480 | J-194 | 5,617.00 | 2 | 5,798.41 | 78 |
| 481 | J-195 | 5,614.00 | 2 | 5,798.39 | 80 |

| | | | | | |
|-----|-------|----------|----|----------|-----|
| 483 | J-196 | 5,609.00 | 10 | 5,798.36 | 82 |
| | J-197 | 5,610.00 | 2 | 5,798.35 | 81 |
| 484 | J-198 | 5,589.00 | 0 | 5,798.35 | 91 |
| 492 | J-199 | 5,600.00 | 4 | 5,798.34 | 86 |
| 493 | J-200 | 5,607.00 | 5 | 5,798.34 | 83 |
| 498 | J-202 | 5,604.00 | 2 | 5,798.34 | 84 |
| 501 | J-204 | 5,686.00 | 2 | 5,747.52 | 27 |
| 504 | J-205 | 5,696.00 | 0 | 5,747.54 | 22 |
| 507 | J-206 | 5,719.00 | 1 | 5,747.58 | 12 |
| 510 | J-207 | 5,597.00 | 5 | 5,798.33 | 87 |
| 511 | J-208 | 5,597.00 | 2 | 5,798.33 | 87 |
| 512 | J-209 | 5,599.00 | 7 | 5,798.33 | 86 |
| 516 | J-210 | 5,591.00 | 0 | 5,798.33 | 90 |
| 517 | J-211 | 5,587.00 | 0 | 5,798.33 | 91 |
| 518 | J-212 | 5,586.00 | 0 | 5,798.34 | 92 |
| 519 | J-213 | 5,588.00 | 0 | 5,798.34 | 91 |
| 520 | J-214 | 5,589.00 | 0 | 5,798.34 | 91 |
| 521 | J-215 | 5,587.00 | 0 | 5,798.34 | 91 |
| 528 | J-216 | 5,580.00 | 0 | 5,798.34 | 94 |
| 529 | J-217 | 5,580.00 | 0 | 5,798.34 | 94 |
| 530 | J-218 | 5,587.00 | 0 | 5,798.34 | 91 |
| 531 | J-219 | 5,596.00 | 0 | 5,798.34 | 88 |
| 537 | J-220 | 5,582.00 | 0 | 5,798.33 | 94 |
| 538 | J-221 | 5,580.00 | 0 | 5,798.33 | 94 |
| 539 | J-222 | 5,558.00 | 2 | 5,798.33 | 104 |
| 540 | J-223 | 5,560.00 | 0 | 5,798.33 | 103 |
| 546 | J-224 | 5,561.00 | 0 | 5,798.34 | 103 |
| 547 | J-225 | 5,559.00 | 0 | 5,798.34 | 104 |
| 551 | J-226 | 5,528.00 | 0 | 5,798.33 | 117 |
| 552 | J-227 | 5,529.00 | 2 | 5,798.33 | 117 |
| 554 | J-228 | 5,517.00 | 1 | 5,691.79 | 76 |
| 555 | J-229 | 5,521.00 | 1 | 5,691.79 | 74 |
| 556 | J-230 | 5,523.00 | 2 | 5,691.79 | 73 |
| 557 | J-231 | 5,524.00 | 0 | 5,798.35 | 119 |

J:\2-17103 - Red Lodge On-Call 2017\TO 14 - Water PER\CADD 2-17103-14\Water Cad\2-17103-TO14 Red Lodge 2019
Water Model.wtg

Scenario: Design Peak Day and Fire Flow
Current Time Step: 0.000 h
Fire Flow Node FlexTable: Fire Flow Report

| Label | Fire Flow Iterations | Satisfies Fire Flow Constraints? | Fire Flow (Needed) (gpm) | Fire Flow (Available) (gpm) | Flow (Total Needed) (gpm) | Flow (Total Available) (gpm) | Pressure (Calculated Residual) (psi) | Pressure (Calculated Zone Lower Limit) (psi) | Is Fire Flow Run Balanced? |
|-------|----------------------|----------------------------------|--------------------------|-----------------------------|---------------------------|------------------------------|--------------------------------------|--|----------------------------|
| J-1 | (N/A) | False | 500 | (N/A) | (N/A) | (N/A) | (N/A) | (N/A) | False |
| J-2 | 2 | True | 500 | 4,500 | 506 | 4,506 | 48 | 21 | True |
| J-3 | 2 | True | 500 | 4,500 | 503 | 4,503 | 56 | 21 | True |
| p | 2 | True | 500 | 1,000 | 501 | 1,001 | 36 | 27 | True |
| J-5 | 4 | True | 500 | 2,858 | 503 | 2,861 | 20 | 20 | True |
| J-6 | 2 | True | 500 | 4,500 | 504 | 4,504 | 54 | 21 | True |
| J-7 | 3 | True | 500 | 2,816 | 500 | 2,816 | 20 | 30 | True |
| J-8 | 2 | True | 500 | 4,500 | 501 | 4,501 | 51 | 21 | True |
| J-9 | 3 | True | 500 | 2,508 | 510 | 2,517 | 20 | 31 | True |
| J-10 | (N/A) | False | 500 | (N/A) | (N/A) | (N/A) | (N/A) | (N/A) | False |
| J-11 | (N/A) | False | 200 | (N/A) | (N/A) | (N/A) | (N/A) | (N/A) | False |
| J-12 | (N/A) | False | 200 | (N/A) | (N/A) | (N/A) | (N/A) | (N/A) | False |
| J-13 | 6 | True | 500 | 2,242 | 502 | 2,244 | 21 | 20 | True |
| J-14 | 3 | True | 500 | 755 | 501 | 756 | 20 | 27 | True |
| J-15 | 6 | True | 500 | 2,937 | 500 | 2,937 | 21 | 20 | True |
| J-16 | 7 | True | 500 | 2,939 | 504 | 2,942 | 24 | 20 | True |
| J-17 | 7 | True | 500 | 2,941 | 500 | 2,941 | 24 | 20 | True |
| J-18 | 7 | True | 500 | 2,942 | 500 | 2,942 | 24 | 20 | True |
| J-19 | 7 | True | 500 | 3,410 | 505 | 3,415 | 21 | 20 | True |
| J-20 | 6 | True | 500 | 3,074 | 505 | 3,079 | 20 | 20 | True |
| J-21 | 6 | True | 500 | 2,165 | 505 | 2,170 | 21 | 20 | True |
| J-22 | 3 | True | 500 | 979 | 504 | 983 | 20 | 27 | True |
| J-23 | 6 | True | 500 | 3,047 | 500 | 3,047 | 21 | 20 | True |
| J-24 | 4 | True | 500 | 2,995 | 500 | 2,995 | 20 | 21 | True |
| J-26 | 7 | True | 500 | 2,956 | 500 | 2,956 | 24 | 20 | True |
| J-27 | 7 | True | 500 | 3,682 | 511 | 3,693 | 27 | 20 | True |
| J-28 | 5 | True | 500 | 4,217 | 507 | 4,224 | 32 | 20 | True |
| J-29 | 6 | True | 500 | 4,125 | 505 | 4,130 | 25 | 20 | True |
| J-30 | 7 | True | 500 | 4,331 | 507 | 4,338 | 22 | 20 | True |
| J-31 | 3 | True | 500 | 4,500 | 507 | 4,507 | 35 | 21 | True |
| J-32 | 3 | True | 500 | 4,500 | 500 | 4,500 | 35 | 22 | True |
| J-33 | 3 | True | 500 | 4,500 | 507 | 4,507 | 35 | 22 | True |
| J-34 | 3 | True | 500 | 4,500 | 505 | 4,505 | 35 | 22 | True |
| J-35 | 3 | True | 500 | 4,500 | 500 | 4,500 | 34 | 22 | True |
| J-36 | 3 | True | 500 | 4,500 | 500 | 4,500 | 35 | 22 | True |
| J-37 | 4 | True | 500 | 2,759 | 504 | 2,763 | 20 | 25 | True |
| J-38 | 6 | True | 500 | 2,023 | 505 | 2,028 | 22 | 20 | True |
| J-39 | 3 | True | 500 | 1,194 | 505 | 1,198 | 20 | 26 | True |
| J-40 | 5 | True | 500 | 4,467 | 500 | 4,467 | 20 | 21 | True |
| J-41 | 5 | True | 500 | 4,500 | 505 | 4,504 | 20 | 20 | True |
| J-42 | 5 | True | 500 | 4,325 | 500 | 4,325 | 20 | 21 | True |
| J-43 | 6 | True | 500 | 3,259 | 507 | 3,266 | 21 | 20 | True |
| J-44 | 4 | True | 500 | 2,690 | 500 | 2,690 | 20 | 25 | True |
| J-45 | 4 | True | 500 | 1,551 | 504 | 1,555 | 20 | 26 | True |
| J-46 | 8 | True | 500 | 3,230 | 500 | 3,230 | 34 | 20 | True |
| J-47 | 8 | True | 500 | 3,177 | 507 | 3,184 | 37 | 20 | True |
| J-48 | 8 | True | 500 | 3,121 | 500 | 3,121 | 37 | 20 | True |
| J-49 | 6 | True | 500 | 2,039 | 500 | 2,039 | 36 | 20 | True |
| J-50 | 5 | True | 500 | 832 | 505 | 837 | 29 | 20 | True |
| J-51 | 3 | True | 500 | 597 | 510 | 606 | 20 | 27 | True |
| J-52 | 6 | True | 500 | 1,726 | 505 | 1,731 | 36 | 20 | True |
| J-53 | (N/A) | False | 500 | (N/A) | (N/A) | (N/A) | (N/A) | (N/A) | False |
| J-54 | 3 | True | 500 | 4,500 | 510 | 4,510 | 38 | 23 | True |
| J-55 | 3 | True | 500 | 4,500 | 505 | 4,505 | 40 | 23 | True |
| J-56 | 3 | True | 500 | 4,500 | 505 | 4,505 | 41 | 23 | True |
| J-57 | 3 | True | 500 | 4,500 | 505 | 4,505 | 23 | 23 | True |
| J-58 | 3 | True | 500 | 4,500 | 505 | 4,505 | 40 | 23 | True |
| J-59 | 5 | True | 500 | 4,438 | 510 | 4,447 | 33 | 20 | True |
| J-60 | 6 | True | 500 | 3,914 | 507 | 3,921 | 34 | 20 | True |
| J-62 | 3 | True | 500 | 780 | 504 | 784 | 20 | 27 | True |
| J-64 | 8 | True | 500 | 3,556 | 505 | 3,561 | 32 | 20 | True |
| J-65 | 4 | True | 500 | 2,891 | 501 | 2,892 | 20 | 25 | True |

| | | | | | | | | | |
|-------|---|------|-----|-------|-----|-------|----|----|------|
| J-66 | 6 | True | 500 | 3,488 | 510 | 3,497 | 41 | 20 | True |
| J-68 | 3 | True | 500 | 852 | 507 | 858 | 20 | 27 | True |
| J-69 | 6 | True | 500 | 1,981 | 504 | 1,985 | 28 | 20 | True |
| J-70 | 6 | True | 500 | 2,114 | 504 | 2,118 | 21 | 20 | True |
| J-71 | 4 | True | 500 | 2,002 | 505 | 2,006 | 20 | 26 | True |
| J-72 | 3 | True | 500 | 4,500 | 500 | 4,500 | 36 | 22 | True |
| J-73 | 3 | True | 500 | 4,500 | 500 | 4,500 | 37 | 22 | True |
| J-74 | 3 | True | 500 | 4,500 | 505 | 4,505 | 37 | 22 | True |
| J-75 | 3 | True | 500 | 4,500 | 500 | 4,500 | 37 | 21 | True |
| J-76 | 3 | True | 500 | 4,500 | 505 | 4,505 | 36 | 21 | True |
| J-77 | 5 | True | 500 | 4,435 | 505 | 4,439 | 34 | 20 | True |
| J-78 | 5 | True | 500 | 4,346 | 505 | 4,351 | 31 | 20 | True |
| J-79 | 7 | True | 500 | 4,258 | 505 | 4,262 | 21 | 20 | True |
| J-80 | 4 | True | 500 | 3,106 | 500 | 3,106 | 20 | 25 | True |
| J-81 | 4 | True | 500 | 2,167 | 507 | 2,174 | 20 | 24 | True |
| J-82 | 6 | True | 500 | 3,006 | 507 | 3,013 | 24 | 20 | True |
| J-83 | 6 | True | 500 | 3,007 | 500 | 3,007 | 24 | 20 | True |
| J-84 | 8 | True | 500 | 3,321 | 505 | 3,326 | 23 | 20 | True |
| J-85 | 7 | True | 500 | 4,174 | 500 | 4,174 | 21 | 20 | True |
| J-86 | 6 | True | 500 | 4,177 | 507 | 4,184 | 27 | 20 | True |
| J-87 | 7 | True | 500 | 4,173 | 505 | 4,177 | 26 | 20 | True |
| J-88 | 6 | True | 500 | 3,539 | 505 | 3,544 | 43 | 20 | True |
| J-89 | 6 | True | 500 | 3,539 | 500 | 3,539 | 40 | 20 | True |
| J-90 | 6 | True | 500 | 3,650 | 514 | 3,665 | 43 | 20 | True |
| J-91 | 6 | True | 500 | 3,679 | 500 | 3,679 | 41 | 20 | True |
| J-92 | 6 | True | 500 | 3,978 | 514 | 3,993 | 34 | 20 | True |
| J-93 | 8 | True | 500 | 3,586 | 500 | 3,586 | 32 | 20 | True |
| J-94 | 8 | True | 500 | 3,586 | 507 | 3,594 | 33 | 20 | True |
| J-95 | 7 | True | 500 | 3,610 | 510 | 3,620 | 30 | 20 | True |
| J-96 | 8 | True | 500 | 3,627 | 507 | 3,634 | 31 | 20 | True |
| J-97 | 6 | True | 500 | 3,674 | 507 | 3,681 | 42 | 20 | True |
| J-98 | 6 | True | 500 | 3,707 | 512 | 3,719 | 44 | 20 | True |
| J-99 | 6 | True | 500 | 3,721 | 510 | 3,731 | 53 | 20 | True |
| J-100 | 8 | True | 500 | 3,614 | 512 | 3,626 | 33 | 20 | True |
| J-101 | 8 | True | 500 | 3,632 | 507 | 3,639 | 37 | 20 | True |
| J-102 | 8 | True | 500 | 3,655 | 507 | 3,662 | 37 | 20 | True |
| J-103 | 7 | True | 500 | 3,672 | 510 | 3,682 | 40 | 20 | True |
| J-104 | 6 | True | 500 | 3,683 | 510 | 3,692 | 42 | 20 | True |
| J-105 | 6 | True | 500 | 3,690 | 507 | 3,697 | 43 | 20 | True |
| J-106 | 6 | True | 500 | 3,697 | 507 | 3,704 | 43 | 20 | True |
| J-107 | 6 | True | 500 | 3,712 | 512 | 3,724 | 54 | 20 | True |
| J-108 | 6 | True | 500 | 3,669 | 505 | 3,674 | 21 | 20 | True |
| J-109 | 7 | True | 500 | 3,683 | 502 | 3,685 | 40 | 20 | True |
| J-110 | 6 | True | 500 | 3,673 | 504 | 3,677 | 46 | 20 | True |
| J-111 | 6 | True | 500 | 3,697 | 510 | 3,706 | 47 | 20 | True |
| J-112 | 6 | True | 500 | 3,703 | 507 | 3,710 | 48 | 20 | True |
| J-113 | 6 | True | 500 | 3,730 | 510 | 3,740 | 51 | 20 | True |
| J-114 | 6 | True | 500 | 3,728 | 517 | 3,745 | 55 | 20 | True |
| J-115 | 6 | True | 500 | 3,752 | 505 | 3,757 | 47 | 20 | True |
| J-116 | 6 | True | 500 | 3,890 | 507 | 3,897 | 36 | 20 | True |
| J-117 | 5 | True | 500 | 4,025 | 507 | 4,032 | 34 | 20 | True |
| J-118 | 7 | True | 500 | 3,937 | 507 | 3,944 | 31 | 20 | True |
| J-119 | 5 | True | 500 | 3,733 | 507 | 3,740 | 20 | 22 | True |
| J-120 | 7 | True | 500 | 3,499 | 505 | 3,503 | 21 | 20 | True |
| J-121 | 7 | True | 500 | 3,802 | 505 | 3,807 | 31 | 20 | True |
| J-122 | 4 | True | 500 | 2,782 | 505 | 2,786 | 20 | 25 | True |
| J-123 | 7 | True | 500 | 3,959 | 507 | 3,966 | 25 | 20 | True |
| J-124 | 7 | True | 500 | 4,008 | 505 | 4,012 | 23 | 20 | True |
| J-125 | 5 | True | 500 | 3,914 | 500 | 3,914 | 20 | 21 | True |
| J-126 | 7 | True | 500 | 3,955 | 513 | 3,968 | 31 | 20 | True |
| J-127 | 6 | True | 500 | 3,913 | 507 | 3,921 | 39 | 20 | True |
| J-128 | 5 | True | 500 | 3,951 | 500 | 3,951 | 20 | 20 | True |
| J-129 | 7 | True | 500 | 3,956 | 505 | 3,961 | 23 | 20 | True |
| J-130 | 6 | True | 500 | 3,911 | 507 | 3,918 | 39 | 20 | True |
| J-131 | 7 | True | 500 | 3,921 | 505 | 3,926 | 24 | 20 | True |
| J-132 | 5 | True | 500 | 3,695 | 504 | 3,698 | 20 | 22 | True |
| J-133 | 7 | True | 500 | 3,894 | 505 | 3,899 | 37 | 20 | True |
| J-134 | 6 | True | 500 | 3,835 | 507 | 3,842 | 23 | 20 | True |
| J-135 | 4 | True | 500 | 1,560 | 506 | 1,566 | 20 | 26 | True |
| J-136 | 6 | True | 500 | 2,887 | 501 | 2,888 | 31 | 20 | True |
| J-137 | 6 | True | 500 | 2,551 | 505 | 2,556 | 30 | 20 | True |
| J-138 | 9 | True | 500 | 3,686 | 505 | 3,690 | 37 | 20 | True |
| J-139 | 6 | True | 500 | 3,691 | 505 | 3,696 | 43 | 20 | True |
| J-140 | 8 | True | 500 | 3,700 | 505 | 3,705 | 40 | 20 | True |
| J-141 | 6 | True | 500 | 3,708 | 505 | 3,712 | 49 | 20 | True |

| | | | | | | | | | |
|-------|-------|-------|-----|-------|-------|-------|-------|-------|-------|
| J-143 | 4 | True | 500 | 3,585 | 507 | 3,592 | 20 | 21 | True |
| J-143 | 7 | True | 500 | 3,716 | 507 | 3,723 | 45 | 20 | True |
| J-144 | 6 | True | 500 | 3,719 | 502 | 3,722 | 46 | 20 | True |
| J-145 | 6 | True | 500 | 3,731 | 504 | 3,734 | 54 | 20 | True |
| J-146 | 6 | True | 500 | 3,735 | 505 | 3,739 | 55 | 20 | True |
| J-147 | 6 | True | 500 | 3,731 | 507 | 3,738 | 49 | 20 | True |
| J-148 | 6 | True | 500 | 3,729 | 510 | 3,739 | 52 | 20 | True |
| J-149 | 6 | True | 500 | 3,758 | 514 | 3,772 | 51 | 20 | True |
| J-150 | 6 | True | 500 | 3,794 | 507 | 3,801 | 33 | 20 | True |
| J-151 | 8 | True | 500 | 3,788 | 507 | 3,795 | 37 | 20 | True |
| J-152 | 7 | True | 500 | 3,781 | 504 | 3,785 | 43 | 20 | True |
| J-153 | 6 | True | 500 | 3,778 | 507 | 3,785 | 45 | 20 | True |
| J-154 | 7 | True | 500 | 3,782 | 512 | 3,794 | 40 | 20 | True |
| J-155 | 4 | True | 500 | 2,703 | 504 | 2,707 | 20 | 25 | True |
| J-156 | 4 | True | 500 | 3,679 | 505 | 3,684 | 20 | 21 | True |
| J-157 | (N/A) | False | 500 | (N/A) | (N/A) | (N/A) | (N/A) | (N/A) | False |
| J-158 | 8 | True | 500 | 2,217 | 500 | 2,217 | 34 | 20 | True |
| J-159 | 4 | True | 500 | 2,097 | 500 | 2,097 | 20 | 34 | True |
| J-160 | 4 | True | 500 | 1,523 | 500 | 1,523 | 20 | 22 | True |
| J-161 | 6 | True | 500 | 1,418 | 512 | 1,430 | 21 | 20 | True |
| J-162 | 4 | True | 500 | 1,212 | 504 | 1,216 | 20 | 21 | True |
| J-163 | 4 | True | 500 | 1,167 | 500 | 1,167 | 20 | 22 | True |
| J-164 | 7 | True | 500 | 1,132 | 512 | 1,144 | 22 | 20 | True |
| J-165 | 6 | True | 500 | 1,144 | 505 | 1,149 | 28 | 20 | True |
| J-166 | 21 | True | 500 | 1,158 | 512 | 1,170 | 39 | 20 | True |
| J-167 | 9 | True | 500 | 1,150 | 512 | 1,162 | 39 | 20 | True |
| J-168 | 16 | True | 500 | 1,139 | 502 | 1,141 | 25 | 20 | True |
| J-169 | 16 | True | 500 | 1,127 | 500 | 1,127 | 23 | 20 | True |
| J-170 | 14 | True | 500 | 1,084 | 502 | 1,086 | 20 | 25 | True |
| J-171 | 16 | True | 500 | 1,133 | 504 | 1,137 | 22 | 20 | True |
| J-172 | 14 | True | 500 | 1,127 | 502 | 1,129 | 20 | 20 | True |
| J-173 | 16 | True | 500 | 1,137 | 500 | 1,137 | 23 | 20 | True |
| J-174 | 14 | True | 500 | 1,105 | 502 | 1,107 | 20 | 22 | True |
| J-175 | 31 | True | 500 | 1,138 | 504 | 1,142 | 24 | 20 | True |
| J-176 | 31 | True | 500 | 1,139 | 502 | 1,141 | 21 | 20 | True |
| J-177 | 6 | True | 500 | 1,144 | 505 | 1,149 | 28 | 20 | True |
| J-178 | 6 | True | 500 | 1,144 | 502 | 1,146 | 26 | 20 | True |
| J-179 | 6 | True | 500 | 1,151 | 500 | 1,151 | 31 | 20 | True |
| J-180 | 7 | True | 500 | 1,149 | 500 | 1,149 | 31 | 20 | True |
| J-181 | 7 | True | 500 | 1,140 | 502 | 1,142 | 27 | 20 | True |
| J-182 | 21 | True | 500 | 1,145 | 505 | 1,150 | 36 | 20 | True |
| J-183 | 6 | True | 500 | 1,226 | 517 | 1,243 | 23 | 20 | True |
| J-184 | 6 | True | 500 | 1,245 | 512 | 1,257 | 22 | 20 | True |
| J-185 | 5 | True | 500 | 1,253 | 500 | 1,253 | 21 | 20 | True |
| J-186 | 4 | True | 500 | 1,189 | 501 | 1,190 | 20 | 22 | True |
| J-187 | 5 | True | 500 | 1,264 | 505 | 1,268 | 22 | 20 | True |
| J-188 | 21 | True | 500 | 1,210 | 502 | 1,212 | 21 | 20 | True |
| J-189 | 5 | True | 500 | 1,191 | 507 | 1,199 | 20 | 21 | True |
| J-190 | 14 | True | 500 | 1,175 | 500 | 1,175 | 20 | 21 | True |
| J-191 | 21 | True | 500 | 1,175 | 507 | 1,182 | 21 | 20 | True |
| J-192 | 7 | True | 500 | 1,270 | 505 | 1,275 | 25 | 20 | True |
| J-193 | 31 | True | 500 | 1,272 | 504 | 1,276 | 27 | 20 | True |
| J-194 | 7 | True | 500 | 1,254 | 502 | 1,256 | 30 | 20 | True |
| J-195 | 5 | True | 500 | 1,239 | 502 | 1,241 | 32 | 20 | True |
| J-196 | 21 | True | 500 | 1,213 | 510 | 1,222 | 35 | 20 | True |
| J-197 | 21 | True | 500 | 1,200 | 502 | 1,203 | 32 | 20 | True |
| J-198 | 21 | True | 500 | 1,197 | 500 | 1,197 | 39 | 20 | True |
| J-199 | 21 | True | 500 | 1,173 | 504 | 1,177 | 40 | 20 | True |
| J-200 | 21 | True | 500 | 1,197 | 505 | 1,202 | 35 | 20 | True |
| J-202 | 8 | True | 500 | 1,198 | 502 | 1,200 | 33 | 20 | True |
| J-204 | 1 | False | 500 | 0 | 502 | 2 | 27 | 4 | True |
| J-205 | 1 | False | 500 | 0 | 500 | 0 | 22 | 4 | True |
| J-206 | (N/A) | False | 500 | (N/A) | (N/A) | (N/A) | (N/A) | (N/A) | False |
| J-207 | 21 | True | 500 | 1,177 | 505 | 1,182 | 40 | 20 | True |
| J-208 | 16 | True | 500 | 1,178 | 502 | 1,180 | 32 | 20 | True |
| J-209 | 21 | True | 500 | 1,182 | 507 | 1,189 | 37 | 20 | True |
| J-210 | 21 | True | 500 | 1,186 | 500 | 1,186 | 39 | 20 | True |
| J-211 | 21 | True | 500 | 1,188 | 500 | 1,188 | 40 | 20 | True |
| J-212 | 21 | True | 500 | 1,189 | 500 | 1,189 | 39 | 20 | True |
| J-213 | 7 | True | 500 | 1,190 | 500 | 1,190 | 32 | 20 | True |
| J-214 | 21 | True | 500 | 1,189 | 500 | 1,189 | 33 | 20 | True |
| J-215 | 21 | True | 500 | 1,189 | 500 | 1,189 | 36 | 20 | True |
| J-216 | 24 | True | 500 | 1,191 | 500 | 1,191 | 42 | 20 | True |
| J-217 | 23 | True | 500 | 1,193 | 500 | 1,193 | 41 | 20 | True |
| J-218 | 7 | True | 500 | 1,196 | 500 | 1,196 | 37 | 20 | True |

| | | | | | | | | | |
|-------|----|------|-----|-------|-----|-------|----|----|------|
| | 6 | True | 500 | 1,196 | 500 | 1,196 | 28 | 20 | True |
| J-220 | 7 | True | 500 | 1,189 | 500 | 1,189 | 39 | 20 | True |
| J-221 | 6 | True | 500 | 1,189 | 500 | 1,189 | 39 | 20 | True |
| J-222 | 21 | True | 500 | 1,189 | 502 | 1,191 | 48 | 20 | True |
| J-223 | 21 | True | 500 | 1,189 | 500 | 1,189 | 47 | 20 | True |
| J-224 | 21 | True | 500 | 1,193 | 500 | 1,193 | 37 | 20 | True |
| J-225 | 7 | True | 500 | 1,194 | 500 | 1,194 | 37 | 20 | True |
| J-226 | 21 | True | 500 | 1,189 | 500 | 1,189 | 60 | 20 | True |
| J-227 | 21 | True | 500 | 1,189 | 502 | 1,191 | 59 | 20 | True |
| J-228 | 7 | True | 500 | 1,189 | 501 | 1,190 | 35 | 20 | True |
| J-229 | 10 | True | 500 | 1,189 | 501 | 1,190 | 30 | 20 | True |
| J-230 | 7 | True | 500 | 1,189 | 502 | 1,192 | 26 | 20 | True |
| J-231 | 21 | True | 500 | 1,196 | 500 | 1,196 | 65 | 20 | True |

J:\2-17103 - Red Lodge On-Call 2017\TO 14 - Water PER\CADD 2-17103-14\Water Cad\2-17103-TO14 Red Lodge 2019 Water Model.wtg

Scenario: Design Peak Day with Fire Flow
Current Time Step: 0.000 h
FlexTable: PRV Table

| ID | Label | Elevation (ft) | Diameter (Valve) (in) | Minor Loss Coefficient (Local) | Hydraulic Grade Setting (Initial) (ft) | Pressure Setting (Initial) (psi) | Flow (gpm) | Hydraulic Grade (From) (ft) | Hydraulic Grade (To) (ft) | Headloss (ft) |
|-----|--------|----------------|-----------------------|--------------------------------|--|----------------------------------|------------|-----------------------------|---------------------------|---------------|
| 39 | PRV-1 | 5,647.00 | 6.0 | 0.000 | 5,753.28 | 46 | 1,036 | 5,875.40 | 5,753.36 | 122.04 |
| 553 | PRV-2 | 5,523.00 | 6.0 | 0.000 | 5,691.67 | 73 | 2 | 5,800.03 | 5,691.79 | 108.24 |
| 587 | PRV-3 | 5,523.95 | 6.0 | 0.000 | 5,692.62 | 73 | 0 | 5,691.79 | 5,800.04 | 0.00 |
| 600 | PRV-5 | 5,684.00 | 6.0 | 0.000 | 5,820.32 | 59 | (N/A) | (N/A) | (N/A) | (N/A) |
| 612 | PRV-6 | 0.00 | 6.0 | 0.000 | 5,755.90 | 48 | (N/A) | (N/A) | (N/A) | (N/A) |
| 653 | PRV-8 | 5,515.55 | 6.0 | 0.000 | 5,621.84 | 46 | (N/A) | (N/A) | (N/A) | (N/A) |
| 672 | PRV-10 | 5,524.45 | 6.0 | 0.000 | 5,621.49 | 42 | (N/A) | (N/A) | (N/A) | (N/A) |

J:\2-17103 - Red Lodge On-Call 2017\TO 14 - Water PER\CADD 2-17103-14\Water Cad\2-17103-TO14 Red Lodge 2019 Water Model.wtg

Scenario: Design Peak Day with Fire Flow
Current Time Step: 0.000 h
FlexTable: Pump Table

| ID | Label | Elevation (ft) | Pump Definition | Status (Initial) | Hydraulic Grade (Suction) (ft) | Hydraulic Grade (Discharge) (ft) | Flow (Total) (gpm) | Pump Head (ft) |
|-----|-------|----------------|---------------------|------------------|--------------------------------|----------------------------------|--------------------|----------------|
| 407 | PMP-1 | 5,687.00 | Pump Definition - 1 | On | 5,748.04 | 5,800.48 | 112 | 52.44 |

J:\2-17103 - Red Lodge On-Call 2017\TO 14 - Water PER\CADD 2-17103-14\Water Cad\2-17103-TO14 Red Lodge 2019 Water Model.wtg

Scenario: Design Peak Day with Fire Flow
Current Time Step: 0.000 h
FlexTable: Tank Table

| ID | Label | Zone | Elevation (Base) (ft) | Elevation (Minimum) (ft) | Elevation (Initial) (ft) | Elevation (Maximum) (ft) | Volume (Inactive) (MG) | Diameter (ft) | Flow (Out net) (gpm) | Hydraulic Grade (ft) |
|-----|-------|---------------|-----------------------|--------------------------|--------------------------|--------------------------|------------------------|---------------|----------------------|----------------------|
| 55 | T-1 | South Zone | 5,866.80 | 5,866.80 | 5,882.00 | 5,890.00 | 0.00 | 100.00 | 1,051 | 5,882.00 |
| 150 | T-2 | Original City | 5,733.00 | 5,733.00 | 5,748.00 | 5,750.00 | 0.00 | 10.00 | -511 | 5,748.00 |

J:\2-17103 - Red Lodge On-Call 2017\TO 14 - Water PER\CADD 2-17103-14\Water Cad\2-17103-TO14 Red Lodge 2019 Water Model.wtg

Scenario: Park Avenue Base
Current Time Step: 0.000 h
Fire Flow Node FlexTable: Fire Flow Report

| Label | Satisfies Fire Flow Constraints? | Fire Flow (Needed) (gpm) | Flow (Total Available) (gpm) | Pressure (Calculated Residual) (psi) | Fire Flow (Available) (gpm) | Pressure (Calculated Zone Lower Limit) (psi) | Junction w/ Minimum Pressure (Zone) | Is Fire Flow Run Balanced? |
|-------|----------------------------------|--------------------------|------------------------------|--------------------------------------|-----------------------------|--|-------------------------------------|----------------------------|
| J-1 | False | 500 | (N/A) | (N/A) | (N/A) | (N/A) | (N/A) | False |
| J-2 | True | 500 | 3,504 | 46 | 3,501 | 20 | J-10 | True |
| J-3 | True | 500 | 3,502 | 54 | 3,500 | 20 | J-10 | True |
| p | True | 500 | 1,001 | 42 | 1,000 | 41 | J-158 | True |
| J-5 | True | 500 | 4,502 | 40 | 4,500 | 40 | p | True |
| J-6 | True | 500 | 3,503 | 52 | 3,501 | 20 | J-10 | True |
| J-7 | True | 500 | 2,501 | 20 | 2,501 | 26 | J-10 | True |
| J-8 | True | 500 | 3,501 | 48 | 3,500 | 20 | J-10 | True |
| J-9 | True | 500 | 2,475 | 20 | 2,469 | 27 | J-10 | True |
| J-10 | False | 500 | (N/A) | (N/A) | (N/A) | (N/A) | (N/A) | False |
| J-11 | False | 200 | (N/A) | (N/A) | (N/A) | (N/A) | (N/A) | False |
| J-12 | False | 200 | (N/A) | (N/A) | (N/A) | (N/A) | (N/A) | False |
| J-13 | True | 500 | 3,522 | 21 | 3,520 | 20 | J-14 | True |
| J-14 | True | 500 | 838 | 20 | 838 | 41 | J-158 | True |
| J-15 | True | 500 | 4,500 | 37 | 4,500 | 37 | J-14 | True |
| J-16 | True | 500 | 4,502 | 43 | 4,500 | 40 | J-5 | True |
| J-17 | True | 500 | 4,500 | 43 | 4,500 | 40 | J-5 | True |
| J-18 | True | 500 | 4,500 | 43 | 4,500 | 40 | J-5 | True |
| J-19 | True | 500 | 4,503 | 34 | 4,500 | 41 | J-20 | True |
| J-20 | True | 500 | 4,503 | 26 | 4,500 | 26 | J-24 | True |
| J-21 | True | 500 | 4,160 | 20 | 4,158 | 39 | J-38 | True |
| J-22 | True | 500 | 3,388 | 20 | 3,386 | 41 | J-158 | True |
| J-23 | True | 500 | 4,500 | 25 | 4,500 | 26 | J-20 | True |
| J-24 | True | 500 | 4,500 | 21 | 4,500 | 26 | J-20 | True |
| J-26 | True | 500 | 4,500 | 42 | 4,500 | 40 | J-5 | True |
| J-27 | True | 500 | 4,506 | 41 | 4,500 | 40 | J-158 | True |
| J-28 | True | 500 | 4,504 | 47 | 4,500 | 40 | J-158 | True |
| J-29 | True | 500 | 4,503 | 40 | 4,500 | 40 | J-158 | True |
| J-30 | True | 500 | 4,504 | 37 | 4,500 | 40 | J-158 | True |
| J-31 | True | 500 | 4,504 | 49 | 4,500 | 40 | J-158 | True |
| J-32 | True | 500 | 4,500 | 49 | 4,500 | 40 | J-158 | True |
| J-33 | True | 500 | 4,504 | 49 | 4,500 | 40 | J-158 | True |
| J-34 | True | 500 | 4,503 | 49 | 4,500 | 40 | J-158 | True |
| J-35 | True | 500 | 4,500 | 48 | 4,500 | 40 | J-158 | True |
| J-36 | True | 500 | 4,500 | 49 | 4,500 | 40 | J-158 | True |
| J-37 | True | 500 | 3,515 | 20 | 3,512 | 40 | J-51 | True |
| J-38 | True | 500 | 3,546 | 20 | 3,544 | 29 | J-39 | True |
| J-39 | True | 500 | 2,502 | 20 | 2,499 | 24 | J-51 | True |
| J-40 | True | 500 | 4,500 | 35 | 4,500 | 36 | J-41 | True |
| J-41 | True | 500 | 4,503 | 36 | 4,500 | 36 | J-42 | True |
| J-42 | True | 500 | 4,500 | 33 | 4,500 | 36 | J-41 | True |
| J-43 | True | 500 | 3,951 | 21 | 3,947 | 20 | J-45 | True |
| J-44 | True | 500 | 3,087 | 20 | 3,087 | 35 | J-45 | True |
| J-45 | True | 500 | 1,669 | 20 | 1,667 | 41 | J-158 | True |
| J-46 | True | 500 | 4,500 | 36 | 4,500 | 33 | J-51 | True |
| J-47 | True | 500 | 4,504 | 40 | 4,500 | 33 | J-51 | True |
| J-48 | True | 500 | 4,500 | 40 | 4,500 | 32 | J-51 | True |
| J-49 | True | 500 | 4,500 | 22 | 4,500 | 21 | J-51 | True |
| J-50 | True | 500 | 3,057 | 22 | 3,055 | 20 | J-51 | True |
| J-51 | True | 500 | 2,421 | 20 | 2,416 | 28 | J-39 | True |
| J-52 | True | 500 | 4,408 | 23 | 4,406 | 20 | J-51 | True |
| J-53 | False | 500 | (N/A) | (N/A) | (N/A) | (N/A) | (N/A) | False |
| J-54 | True | 500 | 4,505 | 49 | 4,500 | 40 | J-158 | True |
| J-55 | True | 500 | 4,503 | 53 | 4,500 | 40 | J-158 | True |
| J-56 | True | 500 | 4,503 | 54 | 4,500 | 40 | J-158 | True |

| | | | | | | | | |
|-------|------|-----|-------|----|-------|----|-------|------|
| J-57 | True | 500 | 4,503 | 44 | 4,500 | 40 | J-158 | True |
| J-58 | True | 500 | 4,503 | 54 | 4,500 | 40 | J-158 | True |
| J-59 | True | 500 | 4,505 | 49 | 4,500 | 39 | J-51 | True |
| J-60 | True | 500 | 4,504 | 43 | 4,500 | 37 | J-51 | True |
| J-62 | True | 500 | 811 | 20 | 809 | 41 | J-158 | True |
| J-64 | True | 500 | 4,503 | 34 | 4,500 | 34 | J-65 | True |
| J-65 | True | 500 | 3,329 | 20 | 3,329 | 40 | J-51 | True |
| J-66 | True | 500 | 4,505 | 48 | 4,500 | 34 | J-51 | True |
| J-68 | True | 500 | 4,504 | 21 | 4,500 | 40 | J-158 | True |
| J-69 | True | 500 | 4,502 | 47 | 4,500 | 33 | J-68 | True |
| J-70 | True | 500 | 4,502 | 47 | 4,500 | 34 | J-68 | True |
| J-71 | True | 500 | 4,503 | 51 | 4,500 | 37 | J-68 | True |
| J-72 | True | 500 | 4,500 | 54 | 4,500 | 39 | J-68 | True |
| J-73 | True | 500 | 4,500 | 55 | 4,500 | 39 | J-68 | True |
| J-74 | True | 500 | 4,503 | 55 | 4,500 | 39 | J-68 | True |
| J-75 | True | 500 | 4,500 | 54 | 4,500 | 39 | J-68 | True |
| J-76 | True | 500 | 4,503 | 54 | 4,500 | 39 | J-68 | True |
| J-77 | True | 500 | 4,503 | 50 | 4,500 | 39 | J-51 | True |
| J-78 | True | 500 | 4,503 | 46 | 4,500 | 39 | J-51 | True |
| J-79 | True | 500 | 4,503 | 33 | 4,500 | 34 | J-80 | True |
| J-80 | True | 500 | 3,565 | 20 | 3,565 | 40 | J-158 | True |
| J-81 | True | 500 | 3,360 | 20 | 3,356 | 40 | J-68 | True |
| J-82 | True | 500 | 4,504 | 43 | 4,500 | 37 | J-68 | True |
| J-83 | True | 500 | 4,500 | 43 | 4,500 | 37 | J-68 | True |
| J-84 | True | 500 | 4,503 | 37 | 4,500 | 38 | J-68 | True |
| J-85 | True | 500 | 4,500 | 36 | 4,500 | 39 | J-51 | True |
| J-86 | True | 500 | 4,504 | 42 | 4,500 | 39 | J-51 | True |
| J-87 | True | 500 | 4,503 | 41 | 4,500 | 39 | J-51 | True |
| J-88 | True | 500 | 4,503 | 50 | 4,500 | 34 | J-51 | True |
| J-89 | True | 500 | 4,500 | 45 | 4,500 | 34 | J-51 | True |
| J-90 | True | 500 | 4,508 | 51 | 4,500 | 35 | J-51 | True |
| J-91 | True | 500 | 4,500 | 48 | 4,500 | 35 | J-51 | True |
| J-92 | True | 500 | 4,508 | 44 | 4,500 | 37 | J-51 | True |
| J-93 | True | 500 | 4,500 | 34 | 4,500 | 34 | J-51 | True |
| J-94 | True | 500 | 4,504 | 36 | 4,500 | 34 | J-51 | True |
| J-95 | True | 500 | 4,505 | 31 | 4,500 | 34 | J-51 | True |
| J-96 | True | 500 | 4,504 | 33 | 4,500 | 34 | J-51 | True |
| J-97 | True | 500 | 4,504 | 47 | 4,500 | 34 | J-51 | True |
| J-98 | True | 500 | 4,507 | 48 | 4,500 | 35 | J-51 | True |
| J-99 | True | 500 | 4,505 | 59 | 4,500 | 35 | J-51 | True |
| J-100 | True | 500 | 4,507 | 34 | 4,500 | 34 | J-51 | True |
| J-101 | True | 500 | 4,504 | 40 | 4,500 | 34 | J-51 | True |
| J-102 | True | 500 | 4,504 | 41 | 4,500 | 34 | J-51 | True |
| J-103 | True | 500 | 4,505 | 45 | 4,500 | 34 | J-51 | True |
| J-104 | True | 500 | 4,505 | 49 | 4,500 | 34 | J-51 | True |
| J-105 | True | 500 | 4,504 | 50 | 4,500 | 34 | J-51 | True |
| J-106 | True | 500 | 4,504 | 47 | 4,500 | 34 | J-51 | True |
| J-107 | True | 500 | 4,507 | 59 | 4,500 | 35 | J-51 | True |
| J-108 | True | 500 | 4,480 | 20 | 4,477 | 34 | J-51 | True |
| J-109 | True | 500 | 4,501 | 48 | 4,500 | 34 | J-51 | True |
| J-110 | True | 500 | 4,502 | 54 | 4,500 | 35 | J-51 | True |
| J-111 | True | 500 | 4,505 | 55 | 4,500 | 35 | J-51 | True |
| J-112 | True | 500 | 4,504 | 57 | 4,500 | 35 | J-51 | True |
| J-113 | True | 500 | 4,505 | 60 | 4,500 | 35 | J-51 | True |
| J-114 | True | 500 | 4,509 | 61 | 4,500 | 35 | J-51 | True |
| J-115 | True | 500 | 4,503 | 55 | 4,500 | 35 | J-51 | True |
| J-116 | True | 500 | 4,504 | 45 | 4,500 | 37 | J-51 | True |
| J-117 | True | 500 | 4,504 | 46 | 4,500 | 38 | J-51 | True |
| J-118 | True | 500 | 4,504 | 43 | 4,500 | 33 | J-122 | True |
| J-119 | True | 500 | 4,504 | 29 | 4,500 | 31 | J-122 | True |
| J-120 | True | 500 | 4,503 | 22 | 4,500 | 21 | J-122 | True |
| J-121 | True | 500 | 4,503 | 39 | 4,500 | 29 | J-122 | True |
| J-122 | True | 500 | 3,320 | 20 | 3,318 | 40 | J-158 | True |
| J-123 | True | 500 | 4,504 | 32 | 4,500 | 32 | J-122 | True |
| J-124 | True | 500 | 4,503 | 29 | 4,500 | 30 | J-125 | True |
| J-125 | True | 500 | 4,500 | 22 | 4,500 | 30 | J-124 | True |
| J-126 | True | 500 | 4,508 | 36 | 4,500 | 38 | J-51 | True |
| J-127 | True | 500 | 4,504 | 43 | 4,500 | 34 | J-132 | True |

| | | | | | | | | |
|-------|-------|-----|-------|-------|-------|-------|-------|-------|
| J-129 | True | 500 | 4,445 | 20 | 4,445 | 26 | J-129 | True |
| J-130 | True | 500 | 4,503 | 23 | 4,500 | 29 | J-132 | True |
| J-131 | True | 500 | 4,504 | 34 | 4,500 | 21 | J-132 | True |
| J-132 | True | 500 | 4,457 | 21 | 4,455 | 20 | J-132 | True |
| J-133 | True | 500 | 3,871 | 20 | 3,868 | 35 | J-131 | True |
| J-134 | True | 500 | 4,150 | 31 | 4,147 | 20 | J-132 | True |
| J-135 | True | 500 | 2,922 | 20 | 2,918 | 41 | J-158 | True |
| J-136 | True | 500 | 3,365 | 20 | 3,362 | 32 | J-237 | True |
| J-137 | True | 500 | 4,501 | 24 | 4,500 | 25 | J-137 | True |
| J-138 | True | 500 | 4,242 | 20 | 4,239 | 34 | J-51 | True |
| J-139 | True | 500 | 4,503 | 47 | 4,500 | 34 | J-51 | True |
| J-140 | True | 500 | 4,503 | 50 | 4,500 | 34 | J-51 | True |
| J-141 | True | 500 | 4,503 | 42 | 4,500 | 34 | J-51 | True |
| J-142 | True | 500 | 4,074 | 52 | 4,500 | 34 | J-51 | True |
| J-143 | True | 500 | 4,074 | 20 | 4,070 | 37 | J-51 | True |
| J-144 | True | 500 | 4,504 | 42 | 4,500 | 35 | J-51 | True |
| J-145 | True | 500 | 4,501 | 43 | 4,500 | 35 | J-51 | True |
| J-146 | True | 500 | 4,502 | 54 | 4,500 | 35 | J-51 | True |
| J-147 | True | 500 | 4,503 | 53 | 4,500 | 35 | J-51 | True |
| J-148 | True | 500 | 4,504 | 47 | 4,500 | 35 | J-51 | True |
| J-149 | True | 500 | 4,505 | 51 | 4,500 | 35 | J-51 | True |
| J-150 | True | 500 | 4,508 | 45 | 4,500 | 35 | J-51 | True |
| J-151 | True | 500 | 3,597 | 20 | 3,593 | 36 | J-151 | True |
| J-152 | True | 500 | 3,974 | 22 | 3,970 | 20 | J-150 | True |
| J-153 | True | 500 | 4,502 | 34 | 4,500 | 31 | J-150 | True |
| J-154 | True | 500 | 4,504 | 43 | 4,500 | 35 | J-51 | True |
| J-155 | True | 500 | 4,507 | 26 | 4,500 | 31 | J-150 | True |
| J-156 | True | 500 | 2,873 | 20 | 2,871 | 41 | J-158 | True |
| J-157 | True | 500 | 3,829 | 20 | 3,826 | 38 | J-51 | True |
| J-158 | False | 500 | (N/A) | (N/A) | (N/A) | (N/A) | (N/A) | False |
| J-159 | True | 500 | 4,500 | 20 | 4,500 | 43 | J-5 | True |
| J-160 | True | 500 | 2,389 | 20 | 2,389 | 43 | J-160 | True |
| J-161 | True | 500 | 1,631 | 20 | 1,631 | 23 | J-162 | True |
| J-162 | True | 500 | 1,531 | 21 | 1,525 | 20 | J-162 | True |
| J-163 | True | 500 | 1,309 | 20 | 1,306 | 21 | J-163 | True |
| J-164 | True | 500 | 1,251 | 20 | 1,251 | 23 | J-162 | True |
| J-165 | True | 500 | 1,221 | 22 | 1,214 | 20 | J-170 | True |
| J-166 | True | 500 | 1,231 | 28 | 1,229 | 20 | J-170 | True |
| J-167 | True | 500 | 1,251 | 39 | 1,244 | 20 | J-170 | True |
| J-168 | True | 500 | 1,242 | 38 | 1,235 | 20 | J-170 | True |
| J-169 | True | 500 | 1,224 | 25 | 1,223 | 20 | J-170 | True |
| J-170 | True | 500 | 1,209 | 23 | 1,209 | 20 | J-170 | True |
| J-171 | True | 500 | 1,162 | 20 | 1,161 | 25 | J-159 | True |
| J-172 | True | 500 | 1,218 | 22 | 1,216 | 20 | J-170 | True |
| J-173 | True | 500 | 1,203 | 20 | 1,202 | 21 | J-170 | True |
| J-174 | True | 500 | 1,221 | 23 | 1,221 | 20 | J-170 | True |
| J-175 | True | 500 | 1,181 | 20 | 1,180 | 23 | J-170 | True |
| J-176 | True | 500 | 1,225 | 24 | 1,223 | 20 | J-170 | True |
| J-177 | True | 500 | 1,224 | 20 | 1,223 | 20 | J-170 | True |
| J-178 | True | 500 | 1,231 | 28 | 1,228 | 20 | J-170 | True |
| J-179 | True | 500 | 1,229 | 26 | 1,228 | 20 | J-170 | True |
| J-180 | True | 500 | 1,236 | 31 | 1,236 | 20 | J-170 | True |
| J-181 | True | 500 | 1,233 | 30 | 1,233 | 20 | J-170 | True |
| J-182 | True | 500 | 1,225 | 26 | 1,224 | 20 | J-170 | True |
| J-183 | True | 500 | 1,232 | 35 | 1,230 | 20 | J-170 | True |
| J-184 | True | 500 | 1,331 | 22 | 1,322 | 20 | J-162 | True |
| J-185 | True | 500 | 1,349 | 22 | 1,342 | 20 | J-162 | True |
| J-186 | True | 500 | 1,350 | 20 | 1,350 | 20 | J-162 | True |
| J-187 | True | 500 | 1,264 | 20 | 1,263 | 23 | J-188 | True |
| J-188 | True | 500 | 1,365 | 21 | 1,363 | 20 | J-188 | True |
| J-189 | True | 500 | 1,288 | 21 | 1,287 | 20 | J-162 | True |
| J-190 | True | 500 | 1,265 | 20 | 1,261 | 22 | J-186 | True |
| J-191 | True | 500 | 1,239 | 20 | 1,239 | 22 | J-186 | True |
| J-192 | True | 500 | 1,243 | 21 | 1,239 | 20 | J-189 | True |
| J-193 | True | 500 | 1,372 | 24 | 1,370 | 20 | J-190 | True |
| J-194 | True | 500 | 1,376 | 26 | 1,374 | 20 | J-162 | True |
| J-195 | True | 500 | 1,353 | 29 | 1,352 | 20 | J-170 | True |
| J-196 | True | 500 | 1,336 | 31 | 1,334 | 20 | J-170 | True |

| | | | | | | | | |
|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| J-197 | False | 2,000 | 1,310 | 35 | 1,304 | 20 | J-170 | True |
| J-197 | True | 500 | 1,294 | 31 | 1,292 | 20 | J-170 | True |
| J-198 | True | 500 | 1,288 | 38 | 1,288 | 20 | J-170 | True |
| J-199 | True | 500 | 1,264 | 40 | 1,262 | 20 | J-170 | True |
| J-200 | True | 500 | 1,291 | 34 | 1,288 | 20 | J-170 | True |
| J-202 | True | 500 | 1,290 | 32 | 1,288 | 20 | J-170 | True |
| J-204 | True | 2,500 | 2,695 | 20 | 2,694 | 3 | J-157 | True |
| J-205 | False | 500 | 0 | 23 | 0 | 4 | J-157 | True |
| J-206 | False | 500 | (N/A) | (N/A) | (N/A) | (N/A) | (N/A) | False |
| J-207 | True | 500 | 1,269 | 40 | 1,266 | 20 | J-170 | True |
| J-208 | True | 500 | 1,267 | 30 | 1,266 | 20 | J-170 | True |
| J-209 | True | 500 | 1,275 | 37 | 1,271 | 20 | J-170 | True |
| J-210 | True | 500 | 1,276 | 38 | 1,276 | 20 | J-170 | True |
| J-211 | True | 500 | 1,278 | 39 | 1,278 | 20 | J-170 | True |
| J-212 | True | 500 | 1,280 | 38 | 1,280 | 20 | J-170 | True |
| J-213 | True | 500 | 1,280 | 30 | 1,280 | 20 | J-170 | True |
| J-214 | True | 500 | 1,280 | 31 | 1,280 | 20 | J-170 | True |
| J-215 | True | 500 | 1,280 | 34 | 1,280 | 20 | J-170 | True |
| J-216 | True | 500 | 1,282 | 40 | 1,282 | 20 | J-170 | True |
| J-217 | True | 500 | 1,284 | 39 | 1,284 | 20 | J-170 | True |
| J-218 | True | 500 | 1,287 | 36 | 1,287 | 20 | J-170 | True |
| J-219 | True | 500 | 1,287 | 26 | 1,287 | 20 | J-170 | True |
| J-220 | True | 500 | 1,279 | 38 | 1,279 | 20 | J-170 | True |
| J-221 | True | 500 | 1,279 | 37 | 1,279 | 20 | J-170 | True |
| J-222 | True | 500 | 1,280 | 46 | 1,279 | 20 | J-170 | True |
| J-223 | True | 500 | 1,279 | 45 | 1,279 | 20 | J-170 | True |
| J-224 | True | 500 | 1,284 | 33 | 1,284 | 20 | J-170 | True |
| J-225 | True | 500 | 1,284 | 33 | 1,284 | 20 | J-170 | True |
| J-226 | True | 500 | 1,279 | 58 | 1,279 | 20 | J-170 | True |
| J-227 | True | 500 | 1,280 | 57 | 1,279 | 20 | J-170 | True |
| J-228 | True | 500 | 1,280 | 29 | 1,279 | 20 | J-170 | True |
| J-229 | True | 500 | 1,280 | 23 | 1,279 | 20 | J-170 | True |
| J-230 | True | 500 | 1,275 | 20 | 1,273 | 20 | J-170 | True |
| J-231 | True | 500 | 1,287 | 63 | 1,287 | 20 | J-170 | True |
| J-233 | False | 500 | (N/A) | (N/A) | (N/A) | (N/A) | (N/A) | False |
| J-234 | False | 500 | (N/A) | (N/A) | (N/A) | (N/A) | (N/A) | False |
| J-235 | False | 500 | (N/A) | (N/A) | (N/A) | (N/A) | (N/A) | False |
| J-236 | False | 500 | (N/A) | (N/A) | (N/A) | (N/A) | (N/A) | False |
| J-237 | True | 500 | 3,437 | 20 | 3,437 | 30 | J-239 | True |
| J-238 | True | 500 | 3,987 | 20 | 3,987 | 22 | J-239 | True |
| J-239 | True | 500 | 3,664 | 20 | 3,664 | 29 | J-238 | True |
| J-241 | False | 500 | (N/A) | (N/A) | (N/A) | (N/A) | (N/A) | False |
| J-242 | False | 500 | (N/A) | (N/A) | (N/A) | (N/A) | (N/A) | False |
| J-244 | False | 500 | (N/A) | (N/A) | (N/A) | (N/A) | (N/A) | False |
| J-245 | False | 500 | (N/A) | (N/A) | (N/A) | (N/A) | (N/A) | False |
| J-246 | False | 500 | (N/A) | (N/A) | (N/A) | (N/A) | (N/A) | False |
| J-247 | False | 500 | (N/A) | (N/A) | (N/A) | (N/A) | (N/A) | False |
| J-249 | False | 500 | (N/A) | (N/A) | (N/A) | (N/A) | (N/A) | False |

J:\2-17103 - Red Lodge On-Call 2017\TO 14 - Water PER\CADD 2-17103-14\Water Cad\2-17103-TO14 Red Lodge 2019 Water Model.wtg

Scenario: Park Avenue Base
Current Time Step: 0.000 h
FlexTable: Junction Table

| ID | Label | Elevation (ft) | Demand (gpm) | Hydraulic Grade (ft) | Pressure (psi) |
|-----|-------|-------------------|-----------------|-------------------------|-------------------|
| 596 | J-234 | 5,724.00 | (N/A) | (N/A) | (N/A) |
| 603 | J-235 | 5,738.00 | (N/A) | (N/A) | (N/A) |
| 606 | J-236 | 5,710.54 | (N/A) | (N/A) | (N/A) |
| 401 | J-157 | 5,738.00 | 1 | 5,748.19 | 4 |
| 30 | J-1 | 5,869.00 | 0 | 5,881.99 | 6 |
| 593 | J-233 | 5,724.15 | 0 | 5,748.19 | 10 |
| 151 | J-53 | 5,722.00 | 0 | 5,748.19 | 11 |
| 63 | J-12 | 5,854.50 | 0 | 5,881.33 | 12 |
| 507 | J-206 | 5,719.00 | 1 | 5,748.18 | 13 |
| 60 | J-11 | 5,830.00 | 2 | 5,880.42 | 22 |
| 504 | J-205 | 5,696.00 | 0 | 5,748.16 | 23 |
| 501 | J-204 | 5,686.00 | 1 | 5,748.16 | 27 |
| 403 | J-159 | 5,685.00 | 0 | 5,748.14 | 27 |
| 57 | J-10 | 5,799.00 | 0 | 5,879.10 | 35 |
| 402 | J-158 | 5,653.00 | 0 | 5,748.15 | 41 |
| 37 | J-5 | 5,654.00 | 2 | 5,752.82 | 43 |
| 35 | p | 5,654.00 | 1 | 5,752.93 | 43 |
| 67 | J-14 | 5,648.00 | 1 | 5,752.60 | 45 |
| 66 | J-13 | 5,646.00 | 1 | 5,752.60 | 46 |
| 185 | J-68 | 5,642.00 | 4 | 5,748.97 | 46 |
| 92 | J-26 | 5,645.00 | 0 | 5,752.50 | 47 |
| 71 | J-18 | 5,645.00 | 0 | 5,752.55 | 47 |
| 70 | J-17 | 5,645.00 | 0 | 5,752.55 | 47 |
| 69 | J-16 | 5,645.00 | 2 | 5,752.56 | 47 |
| 68 | J-15 | 5,645.00 | 0 | 5,752.57 | 47 |
| 145 | J-51 | 5,640.00 | 5 | 5,749.41 | 47 |
| 72 | J-19 | 5,640.00 | 3 | 5,751.66 | 48 |
| 122 | J-39 | 5,635.00 | 3 | 5,749.57 | 50 |
| 82 | J-21 | 5,637.00 | 3 | 5,751.71 | 50 |
| 409 | J-160 | 5,685.00 | 0 | 5,800.53 | 50 |
| 83 | J-22 | 5,640.00 | 2 | 5,755.77 | 50 |
| 94 | J-27 | 5,632.00 | 6 | 5,750.46 | 51 |
| 81 | J-20 | 5,632.00 | 3 | 5,751.66 | 52 |
| 113 | J-38 | 5,630.00 | 3 | 5,750.02 | 52 |
| 85 | J-24 | 5,631.00 | 0 | 5,751.66 | 52 |
| 84 | J-23 | 5,631.00 | 0 | 5,751.66 | 52 |
| 414 | J-162 | 5,679.00 | 2 | 5,800.31 | 52 |
| 97 | J-29 | 5,628.00 | 3 | 5,749.95 | 53 |
| 101 | J-30 | 5,626.00 | 4 | 5,749.70 | 54 |
| 415 | J-163 | 5,676.00 | 0 | 5,800.31 | 54 |
| 413 | J-161 | 5,676.00 | 7 | 5,800.42 | 54 |
| 153 | J-54 | 5,624.00 | 5 | 5,748.93 | 54 |
| 112 | J-37 | 5,624.00 | 2 | 5,749.47 | 54 |
| 96 | J-28 | 5,624.00 | 4 | 5,749.78 | 54 |
| 102 | J-31 | 5,621.00 | 4 | 5,749.30 | 56 |
| 144 | J-50 | 5,619.00 | 3 | 5,749.21 | 56 |
| 111 | J-36 | 5,615.00 | 0 | 5,749.22 | 58 |
| 110 | J-35 | 5,615.00 | 0 | 5,749.22 | 58 |
| 108 | J-33 | 5,615.00 | 4 | 5,749.23 | 58 |
| 109 | J-34 | 5,615.00 | 3 | 5,749.23 | 58 |
| 107 | J-32 | 5,615.00 | 0 | 5,749.23 | 58 |
| 459 | J-183 | 5,665.00 | 9 | 5,800.27 | 59 |
| 162 | J-57 | 5,613.00 | 3 | 5,749.03 | 59 |
| 154 | J-55 | 5,613.00 | 3 | 5,749.04 | 59 |
| 215 | J-81 | 5,612.00 | 4 | 5,748.98 | 59 |
| 129 | J-45 | 5,609.00 | 2 | 5,749.02 | 61 |
| 637 | J-241 | 5,608.00 | 0 | 5,749.01 | 61 |

| | | | | | |
|-----|-------|----------|---|----------|----|
| 163 | J-58 | 5,608.00 | 3 | 5,749.04 | 61 |
| 155 | J-56 | 5,608.00 | 3 | 5,749.04 | 61 |
| 126 | J-42 | 5,608.00 | 0 | 5,749.07 | 61 |
| 125 | J-41 | 5,608.00 | 3 | 5,749.07 | 61 |
| 124 | J-40 | 5,608.00 | 0 | 5,749.07 | 61 |
| 127 | J-43 | 5,606.00 | 4 | 5,749.02 | 62 |
| 128 | J-44 | 5,606.00 | 0 | 5,749.02 | 62 |
| 164 | J-59 | 5,604.00 | 5 | 5,749.02 | 63 |
| 133 | J-49 | 5,604.00 | 0 | 5,749.04 | 63 |
| 186 | J-69 | 5,603.00 | 2 | 5,748.98 | 63 |
| 187 | J-70 | 5,603.00 | 2 | 5,748.99 | 63 |
| 620 | J-238 | 5,603.00 | 0 | 5,749.04 | 63 |
| 146 | J-52 | 5,603.00 | 3 | 5,749.04 | 63 |
| 426 | J-170 | 5,654.00 | 1 | 5,800.11 | 63 |
| 460 | J-184 | 5,654.00 | 7 | 5,800.22 | 63 |
| 313 | J-122 | 5,602.00 | 3 | 5,748.94 | 64 |
| 173 | J-62 | 5,602.00 | 2 | 5,748.99 | 64 |
| 131 | J-47 | 5,601.00 | 4 | 5,749.00 | 64 |
| 132 | J-48 | 5,601.00 | 0 | 5,749.00 | 64 |
| 130 | J-46 | 5,601.00 | 0 | 5,749.00 | 64 |
| 623 | J-239 | 5,601.00 | 0 | 5,749.03 | 64 |
| 461 | J-185 | 5,652.00 | 0 | 5,800.19 | 64 |
| 189 | J-72 | 5,599.00 | 0 | 5,749.01 | 65 |
| 191 | J-74 | 5,599.00 | 3 | 5,749.01 | 65 |
| 640 | J-242 | 5,599.00 | 0 | 5,749.01 | 65 |
| 190 | J-73 | 5,599.00 | 0 | 5,749.01 | 65 |
| 311 | J-120 | 5,598.00 | 3 | 5,748.95 | 65 |
| 302 | J-119 | 5,598.00 | 4 | 5,748.95 | 65 |
| 203 | J-77 | 5,598.00 | 3 | 5,749.00 | 65 |
| 192 | J-75 | 5,598.00 | 0 | 5,749.00 | 65 |
| 416 | J-164 | 5,649.00 | 7 | 5,800.11 | 65 |
| 204 | J-78 | 5,597.00 | 3 | 5,749.00 | 66 |
| 193 | J-76 | 5,597.00 | 3 | 5,749.00 | 66 |
| 425 | J-169 | 5,648.00 | 0 | 5,800.11 | 66 |
| 432 | J-174 | 5,647.00 | 1 | 5,800.11 | 66 |
| 165 | J-60 | 5,595.00 | 4 | 5,748.99 | 67 |
| 429 | J-171 | 5,646.00 | 2 | 5,800.11 | 67 |
| 430 | J-172 | 5,645.00 | 1 | 5,800.11 | 67 |
| 206 | J-80 | 5,593.00 | 0 | 5,748.99 | 67 |
| 188 | J-71 | 5,592.00 | 3 | 5,748.99 | 68 |
| 466 | J-187 | 5,643.00 | 3 | 5,800.16 | 68 |
| 179 | J-66 | 5,591.00 | 5 | 5,748.98 | 68 |
| 431 | J-173 | 5,642.00 | 0 | 5,800.11 | 68 |
| 216 | J-82 | 5,590.00 | 4 | 5,748.98 | 69 |
| 217 | J-83 | 5,590.00 | 0 | 5,748.98 | 69 |
| 205 | J-79 | 5,590.00 | 3 | 5,748.99 | 69 |
| 465 | J-186 | 5,641.00 | 1 | 5,800.16 | 69 |
| 617 | J-237 | 5,589.00 | 0 | 5,749.01 | 69 |
| 438 | J-176 | 5,640.00 | 1 | 5,800.10 | 69 |
| 437 | J-175 | 5,639.00 | 2 | 5,800.10 | 70 |
| 467 | J-188 | 5,639.00 | 1 | 5,800.16 | 70 |
| 177 | J-64 | 5,587.00 | 3 | 5,748.96 | 70 |
| 178 | J-65 | 5,587.00 | 1 | 5,748.96 | 70 |
| 222 | J-84 | 5,587.00 | 3 | 5,748.96 | 70 |
| 231 | J-88 | 5,583.00 | 3 | 5,748.97 | 72 |
| 232 | J-89 | 5,583.00 | 0 | 5,748.97 | 72 |
| 420 | J-168 | 5,634.00 | 1 | 5,800.11 | 72 |
| 223 | J-85 | 5,582.00 | 0 | 5,748.96 | 72 |
| 224 | J-86 | 5,582.00 | 4 | 5,748.96 | 72 |
| 225 | J-87 | 5,582.00 | 3 | 5,748.96 | 72 |
| 468 | J-189 | 5,633.00 | 4 | 5,800.15 | 72 |
| 478 | J-192 | 5,632.00 | 3 | 5,800.15 | 73 |
| 556 | J-230 | 5,523.00 | 1 | 5,691.79 | 73 |
| 235 | J-92 | 5,580.00 | 8 | 5,748.96 | 73 |
| 417 | J-165 | 5,631.00 | 3 | 5,800.10 | 73 |
| 441 | J-177 | 5,631.00 | 3 | 5,800.10 | 73 |
| 442 | J-178 | 5,631.00 | 1 | 5,800.10 | 73 |

| | | | | | |
|-----|-------|----------|---|----------|----|
| | J-181 | 5,630.00 | 1 | 5,800.11 | 74 |
| 555 | J-229 | 5,521.00 | 1 | 5,691.79 | 74 |
| 338 | J-132 | 5,578.00 | 2 | 5,748.93 | 74 |
| 243 | J-93 | 5,578.00 | 0 | 5,748.94 | 74 |
| 244 | J-94 | 5,578.00 | 4 | 5,748.94 | 74 |
| 233 | J-90 | 5,577.00 | 8 | 5,748.95 | 74 |
| 234 | J-91 | 5,577.00 | 0 | 5,748.95 | 74 |
| 348 | J-135 | 5,575.00 | 3 | 5,748.99 | 75 |
| 469 | J-190 | 5,626.00 | 0 | 5,800.15 | 75 |
| 554 | J-228 | 5,517.00 | 1 | 5,691.79 | 76 |
| 248 | J-95 | 5,574.00 | 5 | 5,748.93 | 76 |
| 337 | J-131 | 5,572.00 | 3 | 5,748.93 | 77 |
| 479 | J-193 | 5,623.00 | 2 | 5,800.14 | 77 |
| 330 | J-129 | 5,571.00 | 3 | 5,748.93 | 77 |
| 283 | J-110 | 5,570.00 | 2 | 5,748.95 | 77 |
| 301 | J-118 | 5,570.00 | 4 | 5,748.95 | 77 |
| 447 | J-180 | 5,621.00 | 0 | 5,800.10 | 77 |
| 470 | J-191 | 5,621.00 | 4 | 5,800.15 | 78 |
| 249 | J-96 | 5,569.00 | 4 | 5,748.92 | 78 |
| 312 | J-121 | 5,569.00 | 3 | 5,748.94 | 78 |
| 48 | J-7 | 5,695.00 | 0 | 5,875.27 | 78 |
| 446 | J-179 | 5,619.00 | 0 | 5,800.10 | 78 |
| 258 | J-100 | 5,567.00 | 7 | 5,748.93 | 79 |
| 315 | J-124 | 5,567.00 | 3 | 5,748.93 | 79 |
| 314 | J-123 | 5,567.00 | 4 | 5,748.94 | 79 |
| 300 | J-117 | 5,567.00 | 4 | 5,748.95 | 79 |
| 299 | J-116 | 5,567.00 | 4 | 5,748.95 | 79 |
| 316 | J-125 | 5,566.00 | 0 | 5,748.93 | 79 |
| 284 | J-111 | 5,566.00 | 5 | 5,748.94 | 79 |
| 480 | J-194 | 5,617.00 | 1 | 5,800.13 | 79 |
| 31 | J-2 | 5,691.00 | 4 | 5,875.27 | 80 |
| 481 | J-195 | 5,614.00 | 1 | 5,800.12 | 81 |
| 261 | J-101 | 5,562.00 | 4 | 5,748.92 | 81 |
| 285 | J-112 | 5,560.00 | 4 | 5,748.93 | 82 |
| 329 | J-128 | 5,559.00 | 0 | 5,748.93 | 82 |
| 455 | J-182 | 5,610.00 | 3 | 5,800.10 | 82 |
| 483 | J-197 | 5,610.00 | 1 | 5,800.11 | 82 |
| 482 | J-196 | 5,609.00 | 5 | 5,800.11 | 83 |
| 264 | J-102 | 5,557.00 | 4 | 5,748.92 | 83 |
| 250 | J-97 | 5,556.00 | 4 | 5,748.92 | 83 |
| 493 | J-200 | 5,607.00 | 3 | 5,800.10 | 84 |
| 278 | J-108 | 5,555.00 | 3 | 5,748.92 | 84 |
| 317 | J-126 | 5,555.00 | 8 | 5,748.93 | 84 |
| 418 | J-166 | 5,606.00 | 7 | 5,800.10 | 84 |
| 419 | J-167 | 5,606.00 | 7 | 5,800.10 | 84 |
| 50 | J-8 | 5,678.97 | 1 | 5,874.73 | 85 |
| 350 | J-137 | 5,553.00 | 3 | 5,748.93 | 85 |
| 498 | J-202 | 5,604.00 | 1 | 5,800.10 | 85 |
| 266 | J-103 | 5,552.00 | 5 | 5,748.92 | 85 |
| 328 | J-127 | 5,550.00 | 4 | 5,748.93 | 86 |
| 349 | J-136 | 5,549.00 | 1 | 5,748.93 | 86 |
| 492 | J-199 | 5,600.00 | 2 | 5,800.10 | 87 |
| 269 | J-104 | 5,548.00 | 5 | 5,748.92 | 87 |
| 512 | J-209 | 5,599.00 | 4 | 5,800.10 | 87 |
| 279 | J-109 | 5,547.00 | 1 | 5,748.92 | 87 |
| 351 | J-138 | 5,547.00 | 3 | 5,748.92 | 87 |
| 286 | J-113 | 5,547.00 | 5 | 5,748.92 | 87 |
| 291 | J-115 | 5,547.00 | 3 | 5,748.92 | 87 |
| 510 | J-207 | 5,597.00 | 3 | 5,800.10 | 88 |
| 511 | J-208 | 5,597.00 | 1 | 5,800.10 | 88 |
| 531 | J-219 | 5,596.00 | 0 | 5,800.10 | 88 |
| 251 | J-98 | 5,544.00 | 7 | 5,748.92 | 89 |
| 271 | J-105 | 5,543.00 | 4 | 5,748.91 | 89 |
| 336 | J-130 | 5,542.00 | 4 | 5,748.93 | 90 |
| 516 | J-210 | 5,591.00 | 0 | 5,800.10 | 90 |
| 356 | J-139 | 5,539.00 | 3 | 5,748.91 | 91 |
| 273 | J-106 | 5,538.00 | 4 | 5,748.91 | 91 |

| | | | | | |
|-----|-------|----------|---|----------|-----|
| 484 | J-214 | 5,589.00 | 0 | 5,800.10 | 91 |
| | J-198 | 5,589.00 | 0 | 5,800.11 | 91 |
| 346 | J-134 | 5,537.00 | 4 | 5,748.93 | 92 |
| 339 | J-133 | 5,537.00 | 3 | 5,748.93 | 92 |
| 519 | J-213 | 5,588.00 | 0 | 5,800.10 | 92 |
| 517 | J-211 | 5,587.00 | 0 | 5,800.10 | 92 |
| 521 | J-215 | 5,587.00 | 0 | 5,800.10 | 92 |
| 530 | J-218 | 5,587.00 | 0 | 5,800.10 | 92 |
| 45 | J-6 | 5,661.00 | 2 | 5,874.24 | 92 |
| 357 | J-140 | 5,535.00 | 3 | 5,748.91 | 93 |
| 518 | J-212 | 5,586.00 | 0 | 5,800.10 | 93 |
| 287 | J-114 | 5,534.00 | 9 | 5,748.92 | 93 |
| 252 | J-99 | 5,532.00 | 5 | 5,748.91 | 94 |
| 537 | J-220 | 5,582.00 | 0 | 5,800.10 | 94 |
| 33 | J-3 | 5,654.00 | 2 | 5,874.09 | 95 |
| 538 | J-221 | 5,580.00 | 0 | 5,800.10 | 95 |
| 528 | J-216 | 5,580.00 | 0 | 5,800.10 | 95 |
| 529 | J-217 | 5,580.00 | 0 | 5,800.10 | 95 |
| 276 | J-107 | 5,527.00 | 7 | 5,748.91 | 96 |
| 660 | J-247 | 5,524.78 | 0 | 5,748.93 | 97 |
| 657 | J-246 | 5,524.12 | 0 | 5,748.90 | 97 |
| 364 | J-142 | 5,524.00 | 4 | 5,748.91 | 97 |
| 358 | J-141 | 5,524.00 | 3 | 5,748.91 | 97 |
| 675 | J-249 | 5,521.95 | 0 | 5,748.90 | 98 |
| 53 | J-9 | 5,645.00 | 5 | 5,872.40 | 98 |
| 385 | J-150 | 5,517.00 | 4 | 5,748.90 | 100 |
| 377 | J-149 | 5,516.00 | 8 | 5,748.90 | 101 |
| 375 | J-147 | 5,516.00 | 4 | 5,748.90 | 101 |
| 376 | J-148 | 5,515.00 | 5 | 5,748.90 | 101 |
| 649 | J-245 | 5,514.95 | 0 | 5,748.90 | 101 |
| 386 | J-151 | 5,512.00 | 4 | 5,748.90 | 102 |
| 387 | J-152 | 5,510.00 | 2 | 5,748.90 | 103 |
| 374 | J-146 | 5,510.00 | 3 | 5,748.90 | 103 |
| 546 | J-224 | 5,561.00 | 0 | 5,800.10 | 103 |
| 388 | J-153 | 5,509.00 | 4 | 5,748.90 | 104 |
| 372 | J-145 | 5,509.00 | 2 | 5,748.90 | 104 |
| 540 | J-223 | 5,560.00 | 0 | 5,800.10 | 104 |
| 367 | J-143 | 5,508.00 | 4 | 5,748.91 | 104 |
| 547 | J-225 | 5,559.00 | 0 | 5,800.10 | 104 |
| 539 | J-222 | 5,558.00 | 1 | 5,800.10 | 105 |
| 370 | J-144 | 5,505.00 | 1 | 5,748.91 | 106 |
| 393 | J-154 | 5,490.00 | 7 | 5,748.90 | 112 |
| 396 | J-155 | 5,490.00 | 2 | 5,748.90 | 112 |
| 645 | J-244 | 5,488.97 | 0 | 5,748.90 | 112 |
| 552 | J-227 | 5,529.00 | 1 | 5,800.10 | 117 |
| 551 | J-226 | 5,528.00 | 0 | 5,800.10 | 118 |
| 557 | J-231 | 5,524.00 | 0 | 5,800.11 | 119 |
| 399 | J-156 | 5,393.00 | 3 | 5,748.90 | 154 |

J:\2-17103 - Red Lodge On-Call 2017\TO 14 - Water PER\CADD 2-17103-14\Water Cad\2-17103-TO14 Red Lodge 2019
Water Model.wtg

Scenario: Park Avenue Base
Current Time Step: 0.000 h
FlexTable: Pipe Table

| ID | Label | Length (Scaled) (ft) | Start Node | Stop Node | Diameter (in) | Hazen- Williams C | Flow (gpm) | Velocity (ft/s) |
|-----|--------------|----------------------------|---------------|--------------|------------------|-------------------------|---------------|--------------------|
| 38 | P-4 | 220 | p | J-5 | 16.0 | 130.0 | 906 | 1.45 |
| 40 | P-5 | 9 | J-3 | PRV-1 | 16.0 | 130.0 | 907 | 1.45 |
| 41 | P-6 | 7 | PRV-1 | p | 6.0 | 130.0 | 907 | 10.29 |
| 47 | P-2(2) | 286 | J-6 | J-3 | 16.0 | 130.0 | 908 | 1.45 |
| 49 | P-7 | 212 | J-2 | J-7 | 6.0 | 130.0 | 0 | 0.00 |
| 51 | P-2(1)(1) | 630 | J-2 | J-8 | 16.0 | 130.0 | 1,186 | 1.89 |
| 52 | P-2(1)(2) | 941 | J-8 | J-6 | 16.0 | 130.0 | 911 | 1.45 |
| 54 | P-8 | 1,598 | J-8 | J-9 | 8.0 | 140.0 | 275 | 1.76 |
| 56 | P-9 | 10 | J-1 | T-1 | 16.0 | 130.0 | -1,192 | 1.90 |
| 59 | P-1(2) | 4,445 | J-10 | J-2 | 16.0 | 130.0 | 1,190 | 1.90 |
| 62 | P-1(1)(2) | 1,123 | J-11 | J-10 | 16.0 | 110.0 | 1,190 | 1.90 |
| 64 | P-1(1)(1)(1) | 770 | J-1 | J-12 | 16.0 | 130.0 | 1,192 | 1.90 |
| 65 | P-1(1)(1)(2) | 1,055 | J-12 | J-11 | 16.0 | 130.0 | 1,192 | 1.90 |
| 73 | P-10 | 657 | J-5 | J-13 | 6.0 | 130.0 | 53 | 0.61 |
| 74 | P-11 | 119 | J-13 | J-15 | 6.0 | 130.0 | 51 | 0.58 |
| 75 | P-12 | 59 | J-15 | J-16 | 8.0 | 130.0 | 51 | 0.33 |
| 76 | P-13 | 550 | J-16 | J-5 | 16.0 | 130.0 | -851 | 1.36 |
| 77 | P-14 | 139 | J-13 | J-14 | 4.0 | 130.0 | 1 | 0.01 |
| 78 | P-15 | 16 | J-16 | J-17 | 16.0 | 130.0 | 900 | 1.44 |
| 79 | P-16 | 17 | J-17 | J-18 | 16.0 | 130.0 | 554 | 0.88 |
| 80 | P-17 | 350 | J-17 | J-19 | 8.0 | 130.0 | 346 | 2.21 |
| 86 | P-18 | 329 | J-19 | J-20 | 8.0 | 130.0 | 15 | 0.09 |
| 87 | P-19 | 48 | J-24 | J-20 | 8.0 | 130.0 | -59 | 0.38 |
| 88 | P-20 | 14 | J-20 | J-23 | 8.0 | 130.0 | -47 | 0.30 |
| 89 | P-21 | 208 | J-23 | J-21 | 6.0 | 130.0 | -47 | 0.53 |
| 91 | P-22 | 628 | J-21 | J-22 | 6.0 | 130.0 | -268 | 3.04 |
| 93 | P-23 | 63 | J-18 | J-26 | 12.0 | 130.0 | 554 | 1.57 |
| 95 | P-24 | 988 | J-26 | J-27 | 10.0 | 130.0 | 554 | 2.26 |
| 98 | P-25 | 337 | J-27 | J-28 | 10.0 | 130.0 | 548 | 2.24 |
| 99 | P-26 | 331 | J-28 | J-29 | 8.0 | 130.0 | -147 | 0.94 |
| 100 | P-27 | 739 | J-29 | J-19 | 8.0 | 130.0 | -328 | 2.09 |
| 103 | P-28 | 322 | J-28 | J-31 | 10.0 | 130.0 | 464 | 1.90 |
| 104 | P-29 | 329 | J-31 | J-30 | 8.0 | 130.0 | -234 | 1.49 |
| 105 | P-30 | 325 | J-30 | J-29 | 8.0 | 130.0 | -179 | 1.14 |
| 106 | P-31 | 695 | J-30 | J-24 | 4.0 | 130.0 | -59 | 1.50 |
| 114 | P-32 | 273 | J-31 | J-32 | 10.0 | 130.0 | 173 | 0.71 |
| 115 | P-33 | 65 | J-32 | J-33 | 12.0 | 130.0 | 173 | 0.49 |
| 116 | P-34 | 31 | J-33 | J-34 | 12.0 | 130.0 | -16 | 0.05 |
| 117 | P-35 | 66 | J-34 | J-35 | 12.0 | 130.0 | 88 | 0.25 |
| 118 | P-36 | 67 | J-33 | J-36 | 12.0 | 130.0 | 186 | 0.53 |
| 119 | P-37 | 847 | J-34 | J-37 | 8.0 | 130.0 | -106 | 0.68 |
| 120 | P-38 | 456 | J-37 | J-38 | 6.0 | 130.0 | -108 | 1.23 |
| 121 | P-39 | 383 | J-38 | J-21 | 6.0 | 130.0 | -218 | 2.48 |
| 123 | P-40 | 380 | J-38 | J-39 | 6.0 | 130.0 | 107 | 1.22 |
| 134 | P-41 | 211 | J-35 | J-40 | 6.0 | 140.0 | 88 | 0.99 |
| 135 | P-42 | 33 | J-40 | J-41 | 8.0 | 130.0 | 88 | 0.56 |
| 136 | P-43 | 45 | J-41 | J-42 | 8.0 | 130.0 | 36 | 0.23 |
| 137 | P-44 | 335 | J-42 | J-43 | 6.0 | 140.0 | 36 | 0.41 |
| 138 | P-45 | 246 | J-43 | J-46 | 6.0 | 140.0 | 29 | 0.33 |
| 139 | P-46 | 68 | J-44 | J-43 | 6.0 | 130.0 | -1 | 0.02 |
| 140 | P-47 | 387 | J-45 | J-43 | 6.0 | 130.0 | -2 | 0.02 |
| 141 | P-48 | 72 | J-46 | J-47 | 8.0 | 130.0 | 29 | 0.18 |
| 142 | P-49 | 11 | J-47 | J-48 | 8.0 | 130.0 | -59 | 0.38 |
| 143 | P-50 | 105 | J-48 | J-49 | 6.0 | 130.0 | -59 | 0.67 |
| 147 | P-51 | 81 | J-49 | J-52 | 8.0 | 150.0 | -59 | 0.38 |
| 148 | P-52 | 890 | J-52 | J-50 | 8.0 | 150.0 | -96 | 0.62 |

| | | | | | | | | |
|-----|-------|-------|-------|-------|------|-------|------|------|
| 149 | P-53 | 1,031 | J-50 | J-51 | 8.0 | 150.0 | -99 | 0.63 |
| 152 | P-54 | 357 | T-2 | J-53 | 14.0 | 130.0 | -652 | 1.36 |
| 156 | P-55 | 1,017 | J-53 | J-54 | 14.0 | 130.0 | -765 | 1.59 |
| 157 | P-56 | 320 | J-54 | J-55 | 14.0 | 130.0 | -504 | 1.05 |
| 158 | P-57 | 332 | J-55 | J-56 | 14.0 | 130.0 | -8 | 0.02 |
| 159 | P-58 | 715 | J-54 | J-28 | 8.0 | 130.0 | -227 | 1.45 |
| 160 | P-59 | 716 | J-55 | J-31 | 14.0 | 130.0 | -520 | 1.08 |
| 161 | P-60 | 647 | J-56 | J-36 | 10.0 | 130.0 | -186 | 0.76 |
| 166 | P-61 | 333 | J-57 | J-58 | 8.0 | 130.0 | -28 | 0.18 |
| 167 | P-62 | 344 | J-58 | J-59 | 8.0 | 130.0 | 43 | 0.27 |
| 168 | P-63 | 361 | J-59 | J-60 | 8.0 | 130.0 | 47 | 0.30 |
| 169 | P-64 | 28 | J-58 | J-56 | 10.0 | 130.0 | -175 | 0.71 |
| 171 | P-65 | 32 | J-55 | J-57 | 4.0 | 130.0 | 22 | 0.56 |
| 172 | P-66 | 740 | J-59 | J-41 | 8.0 | 130.0 | -49 | 0.31 |
| 174 | P-67 | 367 | J-60 | J-62 | 4.0 | 130.0 | 1 | 0.02 |
| 175 | P-68 | 301 | J-44 | J-62 | 2.0 | 130.0 | 1 | 0.15 |
| 181 | P-69 | 343 | J-60 | J-66 | 8.0 | 130.0 | 41 | 0.26 |
| 182 | P-70 | 322 | J-66 | J-64 | 8.0 | 130.0 | 44 | 0.28 |
| 183 | P-71 | 98 | J-64 | J-65 | 6.0 | 130.0 | 1 | 0.01 |
| 184 | P-72 | 733 | J-66 | J-47 | 12.0 | 130.0 | -84 | 0.24 |
| 194 | P-73 | 717 | J-54 | J-68 | 8.0 | 130.0 | -39 | 0.25 |
| 195 | P-74 | 307 | J-68 | J-69 | 8.0 | 130.0 | -43 | 0.28 |
| 196 | P-75 | 23 | J-69 | J-70 | 8.0 | 130.0 | -55 | 0.35 |
| 198 | P-77 | 331 | J-70 | J-71 | 8.0 | 130.0 | -12 | 0.08 |
| 199 | P-78 | 285 | J-71 | J-72 | 8.0 | 130.0 | -47 | 0.30 |
| 201 | P-80 | 53 | J-74 | J-73 | 12.0 | 130.0 | -102 | 0.29 |
| 202 | P-81 | 306 | J-73 | J-58 | 10.0 | 130.0 | -102 | 0.42 |
| 207 | P-82 | 145 | J-74 | J-75 | 12.0 | 130.0 | 54 | 0.15 |
| 208 | P-83 | 36 | J-75 | J-76 | 8.0 | 130.0 | 54 | 0.34 |
| 209 | P-84 | 166 | J-76 | J-77 | 8.0 | 130.0 | 13 | 0.08 |
| 210 | P-85 | 79 | J-77 | J-78 | 8.0 | 130.0 | 49 | 0.31 |
| 211 | P-86 | 374 | J-77 | J-59 | 8.0 | 130.0 | -39 | 0.25 |
| 212 | P-87 | 275 | J-78 | J-79 | 8.0 | 130.0 | 16 | 0.10 |
| 213 | P-88 | 133 | J-79 | J-80 | 6.0 | 130.0 | -2 | 0.02 |
| 214 | P-89 | 243 | J-80 | J-60 | 4.0 | 130.0 | -2 | 0.04 |
| 218 | P-90 | 385 | J-69 | J-81 | 6.0 | 130.0 | 10 | 0.11 |
| 219 | P-91 | 344 | J-81 | J-82 | 6.0 | 130.0 | 6 | 0.07 |
| 220 | P-92 | 51 | J-82 | J-83 | 12.0 | 130.0 | -32 | 0.09 |
| 221 | P-93 | 334 | J-83 | J-71 | 8.0 | 130.0 | -32 | 0.21 |
| 226 | P-94 | 329 | J-82 | J-84 | 8.0 | 130.0 | 34 | 0.22 |
| 227 | P-95 | 269 | J-84 | J-85 | 4.0 | 130.0 | 5 | 0.13 |
| 228 | P-96 | 63 | J-85 | J-87 | 8.0 | 130.0 | 5 | 0.03 |
| 229 | P-97 | 44 | J-87 | J-86 | 8.0 | 130.0 | -15 | 0.10 |
| 230 | P-98 | 1,050 | J-86 | J-76 | 8.0 | 130.0 | -38 | 0.24 |
| 236 | P-99 | 1,160 | J-78 | J-92 | 8.0 | 130.0 | 31 | 0.20 |
| 237 | P-100 | 1,056 | J-79 | J-92 | 6.0 | 130.0 | 15 | 0.17 |
| 238 | P-101 | 293 | J-92 | J-91 | 6.0 | 130.0 | 14 | 0.16 |
| 239 | P-102 | 54 | J-91 | J-90 | 8.0 | 130.0 | 14 | 0.09 |
| 240 | P-103 | 332 | J-66 | J-88 | 12.0 | 130.0 | 75 | 0.21 |
| 241 | P-104 | 40 | J-88 | J-89 | 8.0 | 130.0 | 10 | 0.06 |
| 242 | P-105 | 1,101 | J-88 | J-90 | 12.0 | 130.0 | 62 | 0.18 |
| 245 | P-106 | 265 | J-89 | J-93 | 4.0 | 130.0 | 10 | 0.26 |
| 246 | P-107 | 25 | J-93 | J-94 | 8.0 | 130.0 | 10 | 0.06 |
| 247 | P-108 | 352 | J-94 | J-64 | 8.0 | 130.0 | -41 | 0.26 |
| 253 | P-109 | 701 | J-94 | J-95 | 8.0 | 130.0 | 25 | 0.16 |
| 254 | P-110 | 390 | J-95 | J-96 | 8.0 | 130.0 | 16 | 0.10 |
| 255 | P-111 | 1,072 | J-96 | J-97 | 8.0 | 130.0 | 7 | 0.05 |
| 256 | P-112 | 1,081 | J-97 | J-98 | 8.0 | 130.0 | 11 | 0.07 |
| 257 | P-113 | 728 | J-98 | J-99 | 8.0 | 130.0 | 11 | 0.07 |
| 259 | P-114 | 978 | J-94 | J-100 | 8.0 | 130.0 | 22 | 0.14 |
| 260 | P-115 | 344 | J-95 | J-100 | 6.0 | 150.0 | 4 | 0.04 |
| 262 | P-116 | 392 | J-100 | J-101 | 8.0 | 150.0 | 19 | 0.12 |
| 263 | P-117 | 345 | J-96 | J-101 | 6.0 | 150.0 | 4 | 0.05 |
| 265 | P-118 | 348 | J-101 | J-102 | 8.0 | 150.0 | 19 | 0.12 |
| 267 | P-119 | 725 | J-102 | J-103 | 8.0 | 150.0 | 8 | 0.05 |
| 268 | P-120 | 346 | J-103 | J-97 | 6.0 | 150.0 | -9 | 0.10 |
| 270 | P-121 | 361 | J-103 | J-104 | 8.0 | 150.0 | 12 | 0.08 |

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|-----|-------|-------|-------|-------|------|-------|-----|------|
| 274 | P-122 | 362 | J-104 | J-105 | 8.0 | 150.0 | 17 | 0.11 |
| 275 | P-123 | 344 | J-98 | J-106 | 4.0 | 130.0 | 3 | 0.08 |
| 277 | P-124 | 357 | J-105 | J-106 | 8.0 | 150.0 | 13 | 0.08 |
| 280 | P-125 | 729 | J-106 | J-107 | 8.0 | 150.0 | 12 | 0.08 |
| 281 | P-126 | 193 | J-104 | J-109 | 8.0 | 130.0 | -11 | 0.07 |
| 282 | P-127 | 1,093 | J-109 | J-108 | 8.0 | 130.0 | -4 | 0.03 |
| 288 | P-128 | 165 | J-102 | J-108 | 6.0 | 130.0 | 7 | 0.08 |
| 289 | P-129 | 356 | J-107 | J-99 | 8.0 | 130.0 | -19 | 0.12 |
| 290 | P-130 | 185 | J-99 | J-114 | 8.0 | 130.0 | -14 | 0.09 |
| 292 | P-131 | 742 | J-114 | J-113 | 12.0 | 130.0 | -46 | 0.13 |
| 293 | P-132 | 81 | J-115 | J-113 | 8.0 | 130.0 | 9 | 0.05 |
| 294 | P-133 | 306 | J-113 | J-98 | 6.0 | 130.0 | 10 | 0.11 |
| 295 | P-134 | 1,085 | J-113 | J-112 | 12.0 | 130.0 | -53 | 0.15 |
| 296 | P-135 | 303 | J-97 | J-112 | 6.0 | 130.0 | -17 | 0.19 |
| 297 | P-136 | 358 | J-112 | J-111 | 12.0 | 130.0 | -74 | 0.21 |
| 298 | P-137 | 353 | J-111 | J-110 | 12.0 | 130.0 | -66 | 0.19 |
| 303 | P-138 | 369 | J-110 | J-90 | 12.0 | 130.0 | -68 | 0.19 |
| 304 | P-139 | 756 | J-84 | J-119 | 8.0 | 130.0 | 26 | 0.17 |
| 305 | P-140 | 333 | J-119 | J-118 | 8.0 | 130.0 | 5 | 0.03 |
| 306 | P-141 | 756 | J-118 | J-87 | 8.0 | 130.0 | -18 | 0.11 |
| 307 | P-142 | 188 | J-118 | J-117 | 4.0 | 130.0 | 1 | 0.04 |
| 308 | P-143 | 771 | J-86 | J-117 | 8.0 | 130.0 | 19 | 0.12 |
| 309 | P-144 | 230 | J-117 | J-116 | 6.0 | 130.0 | -6 | 0.07 |
| 310 | P-145 | 727 | J-116 | J-92 | 8.0 | 130.0 | -23 | 0.15 |
| 318 | P-146 | 311 | J-116 | J-111 | 6.0 | 130.0 | 13 | 0.15 |
| 319 | P-147 | 334 | J-119 | J-120 | 8.0 | 130.0 | 17 | 0.11 |
| 320 | P-148 | 380 | J-120 | J-122 | 8.0 | 130.0 | 7 | 0.04 |
| 321 | P-149 | 334 | J-122 | J-123 | 4.0 | 130.0 | 4 | 0.10 |
| 322 | P-150 | 336 | J-120 | J-121 | 8.0 | 130.0 | 7 | 0.05 |
| 323 | P-151 | 384 | J-123 | J-121 | 8.0 | 130.0 | -22 | 0.14 |
| 324 | P-152 | 336 | J-121 | J-118 | 8.0 | 130.0 | -18 | 0.11 |
| 325 | P-153 | 1,072 | J-117 | J-126 | 8.0 | 130.0 | 22 | 0.14 |
| 326 | P-154 | 366 | J-123 | J-124 | 8.0 | 130.0 | 22 | 0.14 |
| 327 | P-155 | 94 | J-124 | J-125 | 8.0 | 130.0 | 2 | 0.02 |
| 331 | P-156 | 231 | J-125 | J-126 | 4.0 | 130.0 | 2 | 0.06 |
| 332 | P-157 | 386 | J-124 | J-129 | 8.0 | 130.0 | 17 | 0.11 |
| 333 | P-158 | 126 | J-129 | J-128 | 8.0 | 130.0 | 2 | 0.02 |
| 334 | P-159 | 202 | J-128 | J-127 | 4.0 | 130.0 | 2 | 0.06 |
| 335 | P-160 | 387 | J-127 | J-126 | 8.0 | 130.0 | -17 | 0.11 |
| 340 | P-161 | 308 | J-127 | J-115 | 6.0 | 130.0 | 11 | 0.13 |
| 341 | P-162 | 328 | J-129 | J-131 | 8.0 | 130.0 | 12 | 0.08 |
| 342 | P-163 | 334 | J-131 | J-130 | 8.0 | 130.0 | 4 | 0.03 |
| 343 | P-164 | 329 | J-130 | J-127 | 8.0 | 130.0 | -4 | 0.02 |
| 344 | P-165 | 362 | J-131 | J-132 | 8.0 | 130.0 | 5 | 0.03 |
| 345 | P-166 | 336 | J-132 | J-133 | 8.0 | 130.0 | 3 | 0.02 |
| 347 | P-167 | 359 | J-133 | J-130 | 8.0 | 130.0 | -4 | 0.03 |
| 352 | P-168 | 686 | J-133 | J-134 | 8.0 | 130.0 | 4 | 0.03 |
| 353 | P-169 | 1,702 | J-135 | J-137 | 8.0 | 130.0 | 32 | 0.20 |
| 354 | P-170 | 230 | J-137 | J-136 | 8.0 | 130.0 | 29 | 0.18 |
| 355 | P-171 | 156 | J-109 | J-138 | 8.0 | 130.0 | -8 | 0.05 |
| 359 | P-172 | 378 | J-138 | J-136 | 8.0 | 130.0 | -28 | 0.18 |
| 360 | P-173 | 368 | J-138 | J-139 | 8.0 | 130.0 | 18 | 0.11 |
| 361 | P-174 | 346 | J-139 | J-105 | 8.0 | 130.0 | 0 | 0.00 |
| 362 | P-175 | 361 | J-139 | J-140 | 8.0 | 130.0 | 16 | 0.10 |
| 363 | P-176 | 343 | J-107 | J-141 | 8.0 | 130.0 | 7 | 0.04 |
| 365 | P-177 | 727 | J-141 | J-140 | 8.0 | 130.0 | -9 | 0.06 |
| 366 | P-178 | 370 | J-141 | J-142 | 6.0 | 130.0 | 4 | 0.04 |
| 368 | P-179 | 1,103 | J-140 | J-142 | 6.0 | 130.0 | 4 | 0.04 |
| 369 | P-180 | 1,454 | J-143 | J-142 | 6.0 | 130.0 | -3 | 0.04 |
| 371 | P-181 | 1,088 | J-141 | J-143 | 8.0 | 130.0 | 9 | 0.06 |
| 373 | P-182 | 211 | J-143 | J-144 | 8.0 | 130.0 | 9 | 0.06 |
| 378 | P-183 | 676 | J-144 | J-145 | 8.0 | 150.0 | 8 | 0.05 |
| 379 | P-184 | 154 | J-145 | J-146 | 8.0 | 150.0 | 9 | 0.06 |
| 380 | P-185 | 367 | J-146 | J-147 | 8.0 | 150.0 | -4 | 0.03 |
| 381 | P-186 | 155 | J-147 | J-148 | 8.0 | 150.0 | -8 | 0.05 |
| 382 | P-187 | 370 | J-148 | J-145 | 8.0 | 150.0 | 4 | 0.02 |
| 382 | P-188 | 370 | J-149 | J-146 | 8.0 | 130.0 | -11 | 0.07 |

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|-----|----------------|-------|-------|-------|------|-------|------|------|
| | P-189 | 710 | J-148 | J-107 | 8.0 | 150.0 | -18 | 0.11 |
| 390 | P-192 | 158 | J-150 | J-151 | 8.0 | 130.0 | -4 | 0.03 |
| 391 | P-193 | 350 | J-151 | J-152 | 8.0 | 130.0 | -7 | 0.05 |
| 392 | P-194 | 61 | J-152 | J-153 | 8.0 | 130.0 | -20 | 0.13 |
| 394 | P-195 | 1,639 | J-151 | J-154 | 6.0 | 130.0 | -1 | 0.01 |
| 397 | P-197 | 1,163 | J-153 | J-155 | 8.0 | 130.0 | 2 | 0.01 |
| 398 | P-198 | 1,199 | J-152 | J-154 | 12.0 | 130.0 | 10 | 0.03 |
| 406 | P-202 | 495 | J-158 | J-159 | 16.0 | 130.0 | 112 | 0.18 |
| 408 | P-203 | 114 | J-159 | PMP-1 | 8.0 | 130.0 | 112 | 0.71 |
| 410 | P-204 | 78 | J-160 | PMP-1 | 8.0 | 130.0 | -112 | 0.71 |
| 412 | P-10000 | 146 | J-159 | J-160 | 0.5 | 50.0 | 0 | 0.22 |
| 421 | P-206 | 336 | J-160 | J-161 | 8.0 | 130.0 | 112 | 0.71 |
| 422 | P-207 | 928 | J-161 | J-162 | 8.0 | 130.0 | 64 | 0.41 |
| 423 | P-208 | 327 | J-163 | J-162 | 8.0 | 130.0 | 0 | 0.00 |
| 424 | P-209 | 1,549 | J-161 | J-164 | 6.0 | 130.0 | 41 | 0.46 |
| 427 | P-210 | 63 | J-164 | J-169 | 8.0 | 130.0 | 21 | 0.13 |
| 428 | P-211 | 303 | J-169 | J-170 | 8.0 | 130.0 | 1 | 0.01 |
| 433 | P-212 | 263 | J-169 | J-171 | 8.0 | 130.0 | 20 | 0.13 |
| 434 | P-213 | 317 | J-171 | J-172 | 8.0 | 130.0 | 1 | 0.01 |
| 435 | P-214 | 254 | J-171 | J-173 | 8.0 | 130.0 | 17 | 0.11 |
| 436 | P-215 | 348 | J-173 | J-174 | 8.0 | 130.0 | 1 | 0.01 |
| 439 | P-216 | 206 | J-173 | J-175 | 8.0 | 130.0 | 16 | 0.10 |
| 440 | P-217 | 303 | J-175 | J-176 | 8.0 | 130.0 | 1 | 0.01 |
| 443 | P-218 | 372 | J-175 | J-177 | 8.0 | 130.0 | 12 | 0.08 |
| 444 | P-219 | 27 | J-177 | J-165 | 8.0 | 130.0 | 9 | 0.06 |
| 445 | P-220 | 159 | J-177 | J-178 | 8.0 | 130.0 | 1 | 0.01 |
| 448 | P-221 | 954 | J-165 | J-180 | 8.0 | 130.0 | 3 | 0.02 |
| 449 | P-222 | 655 | J-180 | J-167 | 8.0 | 130.0 | 3 | 0.02 |
| 450 | P-223 | 512 | J-167 | J-166 | 8.0 | 130.0 | 4 | 0.02 |
| 451 | P-224 | 865 | J-166 | J-179 | 8.0 | 130.0 | -3 | 0.02 |
| 452 | P-225 | 788 | J-179 | J-165 | 8.0 | 130.0 | -3 | 0.02 |
| 453 | P-226 | 822 | J-164 | J-168 | 8.0 | 130.0 | 13 | 0.08 |
| 456 | P-227 | 213 | J-168 | J-181 | 8.0 | 130.0 | 12 | 0.08 |
| 457 | P-228 | 946 | J-181 | J-182 | 8.0 | 130.0 | 11 | 0.07 |
| 458 | P-229 | 490 | J-182 | J-167 | 8.0 | 130.0 | 8 | 0.05 |
| 462 | P-230 | 408 | J-162 | J-183 | 8.0 | 130.0 | 62 | 0.39 |
| 463 | P-231 | 723 | J-183 | J-184 | 8.0 | 130.0 | 52 | 0.33 |
| 464 | P-232 | 376 | J-184 | J-185 | 8.0 | 130.0 | 46 | 0.29 |
| 471 | P-233 | 594 | J-185 | J-187 | 8.0 | 130.0 | 46 | 0.29 |
| 472 | P-234 | 505 | J-187 | J-188 | 8.0 | 130.0 | 10 | 0.06 |
| 473 | P-235 | 138 | J-188 | J-186 | 8.0 | 130.0 | 1 | 0.00 |
| 474 | P-236 | 430 | J-188 | J-189 | 8.0 | 130.0 | 8 | 0.05 |
| 475 | P-237 | 400 | J-189 | J-190 | 8.0 | 130.0 | 4 | 0.03 |
| 476 | P-238 | 265 | J-190 | J-191 | 8.0 | 130.0 | 2 | 0.01 |
| 477 | P-239 | 287 | J-191 | J-190 | 8.0 | 130.0 | -2 | 0.01 |
| 485 | P-240 | 365 | J-187 | J-192 | 8.0 | 130.0 | 33 | 0.21 |
| 486 | P-241 | 349 | J-192 | J-193 | 8.0 | 130.0 | 30 | 0.19 |
| 487 | P-242 | 383 | J-193 | J-194 | 8.0 | 130.0 | 28 | 0.18 |
| 488 | P-243 | 304 | J-194 | J-195 | 8.0 | 130.0 | 27 | 0.17 |
| 489 | P-244 | 530 | J-195 | J-196 | 8.0 | 130.0 | 25 | 0.16 |
| 490 | P-245 | 713 | J-196 | J-197 | 8.0 | 130.0 | 8 | 0.05 |
| 491 | P-246 | 1,147 | J-197 | J-198 | 8.0 | 130.0 | 6 | 0.04 |
| 495 | P-247 | 757 | J-196 | J-200 | 8.0 | 130.0 | 12 | 0.08 |
| 496 | P-248 | 1,203 | J-200 | J-199 | 8.0 | 130.0 | 8 | 0.05 |
| 497 | P-249 | 366 | J-199 | J-166 | 8.0 | 130.0 | -1 | 0.00 |
| 499 | P-250 | 276 | J-202 | J-200 | 8.0 | 130.0 | -1 | 0.01 |
| 503 | P-201(2) | 711 | J-204 | J-158 | 16.0 | 130.0 | 112 | 0.18 |
| 506 | P-201(1)(2) | 810 | J-205 | J-204 | 16.0 | 130.0 | 113 | 0.18 |
| 508 | P-201(1)(1)(1) | 990 | J-157 | J-206 | 16.0 | 130.0 | 113 | 0.18 |
| 509 | P-201(1)(1)(2) | 1,183 | J-206 | J-205 | 16.0 | 130.0 | 113 | 0.18 |
| 513 | P-251 | 757 | J-208 | J-207 | 8.0 | 130.0 | -1 | 0.01 |
| 514 | P-252 | 356 | J-207 | J-209 | 8.0 | 130.0 | 3 | 0.02 |
| 515 | P-253 | 216 | J-199 | J-207 | 8.0 | 130.0 | 7 | 0.04 |
| 522 | P-254 | 456 | J-209 | J-210 | 8.0 | 130.0 | -1 | 0.01 |
| 523 | P-255 | 233 | J-210 | J-211 | 8.0 | 130.0 | -1 | 0.01 |
| 524 | P-256 | 443 | J-211 | J-212 | 8.0 | 130.0 | -4 | 0.02 |
| 525 | P-257 | 217 | J-212 | J-215 | 8.0 | 130.0 | 0 | 0.00 |

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|-----|----------------|-------|--------|--------|------|-------|-------|-------|
| 527 | P-258 | 357 | J-215 | J-213 | 8.0 | 130.0 | 0 | 0.00 |
| | P-259 | 173 | J-215 | J-214 | 8.0 | 130.0 | 0 | 0.00 |
| 532 | P-260 | 476 | J-212 | J-216 | 8.0 | 130.0 | -4 | 0.02 |
| 533 | P-261 | 431 | J-216 | J-217 | 8.0 | 130.0 | -6 | 0.04 |
| 534 | P-262 | 1,058 | J-217 | J-218 | 8.0 | 130.0 | -6 | 0.04 |
| 535 | P-263 | 903 | J-218 | J-198 | 8.0 | 130.0 | -6 | 0.04 |
| 536 | P-264 | 477 | J-218 | J-219 | 8.0 | 130.0 | 0 | 0.00 |
| 541 | P-265 | 394 | J-211 | J-220 | 8.0 | 130.0 | 2 | 0.01 |
| 542 | P-266 | 350 | J-220 | J-221 | 8.0 | 130.0 | 1 | 0.00 |
| 543 | P-267 | 1,171 | J-221 | J-223 | 8.0 | 130.0 | 1 | 0.00 |
| 544 | P-268 | 396 | J-223 | J-222 | 8.0 | 130.0 | -1 | 0.00 |
| 545 | P-269 | 1,286 | J-222 | J-220 | 8.0 | 130.0 | -2 | 0.01 |
| 548 | P-270 | 1,117 | J-217 | J-224 | 8.0 | 130.0 | 0 | 0.00 |
| 549 | P-271 | 297 | J-224 | J-225 | 8.0 | 130.0 | 0 | 0.00 |
| 550 | P-272 | 282 | J-224 | J-225 | 8.0 | 130.0 | 0 | 0.00 |
| 558 | P-273 | 3,737 | J-198 | J-231 | 12.0 | 130.0 | 0 | 0.00 |
| 559 | P-274 | 2,079 | J-222 | J-226 | 8.0 | 130.0 | 0 | 0.00 |
| 560 | P-275 | 1,692 | J-226 | J-223 | 8.0 | 130.0 | -1 | 0.01 |
| 561 | P-276 | 3,082 | J-216 | J-227 | 8.0 | 130.0 | 3 | 0.02 |
| 562 | P-277 | 291 | J-227 | J-226 | 8.0 | 130.0 | -1 | 0.01 |
| 563 | P-278 | 108 | J-227 | PRV-2 | 8.0 | 130.0 | 2 | 0.02 |
| 564 | P-279 | 2,535 | PRV-2 | J-228 | 8.0 | 130.0 | 2 | 0.02 |
| 565 | P-280 | 300 | J-228 | J-229 | 8.0 | 130.0 | 2 | 0.01 |
| 566 | P-281 | 253 | J-229 | J-230 | 8.0 | 130.0 | 1 | 0.01 |
| 588 | P-282(1) | 246 | J-230 | PRV-3 | 8.0 | 130.0 | 0 | 0.00 |
| 589 | P-282(2) | 13 | PRV-3 | J-231 | 8.0 | 130.0 | 0 | 0.00 |
| 594 | P-200(1) | 57 | J-53 | J-233 | 16.0 | 130.0 | 114 | 0.18 |
| 595 | P-200(2) | 368 | J-233 | J-157 | 16.0 | 130.0 | 114 | 0.18 |
| 598 | P-286 | 3,357 | J-234 | J-3 | 16.0 | 150.0 | (N/A) | (N/A) |
| 601 | P-287 | 80 | J-159 | PRV-5 | 8.0 | 130.0 | (N/A) | (N/A) |
| 602 | P-288 | 63 | PRV-5 | J-160 | 8.0 | 130.0 | (N/A) | (N/A) |
| 605 | P-290 | 361 | J-235 | J-234 | 16.0 | 130.0 | (N/A) | (N/A) |
| 607 | P-289(1) | 2,011 | J-159 | J-236 | 16.0 | 130.0 | (N/A) | (N/A) |
| 608 | P-289(2) | 2,162 | J-236 | J-235 | 16.0 | 130.0 | (N/A) | (N/A) |
| 613 | P-291 | 66 | J-9 | PRV-6 | 8.0 | 150.0 | 270 | 1.72 |
| 614 | P-292 | 134 | PRV-6 | J-22 | 8.0 | 130.0 | 270 | 1.72 |
| 615 | P-293 | 745 | J-39 | J-51 | 8.0 | 150.0 | 105 | 0.67 |
| 618 | P-294(1) | 967 | J-135 | J-237 | 8.0 | 150.0 | -35 | 0.22 |
| 622 | P-294(2)(2) | 267 | J-238 | J-52 | 8.0 | 150.0 | -35 | 0.22 |
| 624 | P-294(2)(1)(1) | 591 | J-237 | J-239 | 8.0 | 150.0 | -35 | 0.22 |
| 625 | P-294(2)(1)(2) | 270 | J-239 | J-238 | 8.0 | 150.0 | -35 | 0.22 |
| 638 | P-76(1) | 341 | J-70 | J-241 | 8.0 | 130.0 | -45 | 0.29 |
| 639 | P-76(2) | 342 | J-241 | J-57 | 8.0 | 130.0 | -47 | 0.30 |
| 641 | P-79(1) | 68 | J-72 | J-242 | 12.0 | 130.0 | -47 | 0.13 |
| 642 | P-79(2) | 26 | J-242 | J-74 | 12.0 | 130.0 | -45 | 0.13 |
| 643 | P-295 | 326 | J-241 | J-242 | 8.0 | 130.0 | 2 | 0.01 |
| 647 | P-199(2)(2) | 5,258 | J-244 | J-156 | 12.0 | 130.0 | 3 | 0.01 |
| 648 | P-296 | 56 | J-244 | J-154 | 12.0 | 130.0 | -3 | 0.01 |
| 651 | P-196(2) | 236 | J-245 | J-153 | 12.0 | 130.0 | 26 | 0.07 |
| 654 | P-297(1) | 65 | J-245 | PRV-8 | 6.0 | 130.0 | (N/A) | (N/A) |
| 655 | P-297(2) | 48 | PRV-8 | J-149 | 6.0 | 130.0 | (N/A) | (N/A) |
| 656 | P-298 | 41 | J-245 | J-149 | 12.0 | 130.0 | -26 | 0.07 |
| 659 | P-191(2) | 249 | J-246 | J-150 | 8.0 | 130.0 | 0 | 0.00 |
| 661 | P-191(1)(1) | 428 | J-134 | J-247 | 8.0 | 130.0 | 0 | 0.00 |
| 665 | P-300 | 23 | J-246 | J-247 | 6.0 | 130.0 | (N/A) | (N/A) |
| 673 | P-303(1) | 30 | J-247 | PRV-10 | 6.0 | 130.0 | (N/A) | (N/A) |
| 674 | P-303(2) | 31 | PRV-10 | J-246 | 6.0 | 130.0 | (N/A) | (N/A) |
| 676 | P-190(1) | 726 | J-114 | J-249 | 8.0 | 130.0 | 23 | 0.15 |
| 677 | P-190(2) | 358 | J-249 | J-149 | 12.0 | 130.0 | 23 | 0.07 |

J:\2-17103 - Red Lodge On-Call 2017\TO 14 - Water PER\CADD 2-17103-14\Water Cad\2-17103-TO14 Red Lodge 2019 Water Model.wtg

Scenario: Pressure Reducing Base
Current Time Step: 0.000 h
Fire Flow Node FlexTable: Fire Flow Report

| Label | Satisfies Fire Flow Constraints? | Fire Flow (Needed) (gpm) | Flow (Total Available) (gpm) | Pressure (Calculated Residual) (psi) | Fire Flow (Available) (gpm) | Pressure (Calculated Zone Lower Limit) (psi) | Junction w/ Minimum Pressure (Zone) | Is Fire Flow Run Balanced? |
|-------|----------------------------------|--------------------------|------------------------------|--------------------------------------|-----------------------------|--|-------------------------------------|----------------------------|
| J-1 | False | 500 | (N/A) | (N/A) | (N/A) | (N/A) | (N/A) | False |
| J-2 | True | 500 | 3,644 | 46 | 3,641 | 20 | J-10 | True |
| J-3 | True | 500 | 3,642 | 53 | 3,641 | 20 | J-10 | True |
| p | True | 500 | 1,001 | 42 | 1,000 | 41 | J-158 | True |
| J-5 | True | 500 | 4,502 | 39 | 4,500 | 40 | p | True |
| J-6 | True | 500 | 3,643 | 51 | 3,641 | 20 | J-10 | True |
| J-7 | True | 500 | 2,543 | 20 | 2,543 | 26 | J-10 | True |
| J-8 | True | 500 | 3,641 | 48 | 3,641 | 20 | J-10 | True |
| J-9 | True | 500 | 2,477 | 20 | 2,472 | 27 | J-10 | True |
| J-10 | False | 500 | (N/A) | (N/A) | (N/A) | (N/A) | (N/A) | False |
| J-11 | False | 200 | (N/A) | (N/A) | (N/A) | (N/A) | (N/A) | False |
| J-12 | False | 200 | (N/A) | (N/A) | (N/A) | (N/A) | (N/A) | False |
| J-13 | True | 500 | 3,506 | 21 | 3,504 | 20 | J-14 | True |
| J-14 | True | 500 | 836 | 20 | 835 | 41 | J-158 | True |
| J-15 | True | 500 | 4,500 | 36 | 4,500 | 36 | J-14 | True |
| J-16 | True | 500 | 4,502 | 42 | 4,500 | 40 | J-5 | True |
| J-17 | True | 500 | 4,500 | 42 | 4,500 | 40 | J-5 | True |
| J-18 | True | 500 | 4,500 | 42 | 4,500 | 40 | J-5 | True |
| J-19 | True | 500 | 4,503 | 31 | 4,500 | 35 | J-22 | True |
| J-20 | True | 500 | 4,182 | 20 | 4,179 | 20 | J-24 | True |
| J-21 | True | 500 | 2,571 | 21 | 2,569 | 20 | J-22 | True |
| J-22 | True | 500 | 1,050 | 20 | 1,048 | 41 | J-158 | True |
| J-23 | True | 500 | 4,150 | 20 | 4,150 | 21 | J-20 | True |
| J-24 | True | 500 | 3,941 | 20 | 3,941 | 24 | J-20 | True |
| J-26 | True | 500 | 4,500 | 41 | 4,500 | 40 | J-5 | True |
| J-27 | True | 500 | 4,506 | 40 | 4,500 | 40 | J-158 | True |
| J-28 | True | 500 | 4,504 | 47 | 4,500 | 40 | J-158 | True |
| J-29 | True | 500 | 4,503 | 39 | 4,500 | 40 | J-158 | True |
| J-30 | True | 500 | 4,504 | 36 | 4,500 | 40 | J-158 | True |
| J-31 | True | 500 | 4,504 | 49 | 4,500 | 40 | J-158 | True |
| J-32 | True | 500 | 4,500 | 48 | 4,500 | 40 | J-158 | True |
| J-33 | True | 500 | 4,504 | 48 | 4,500 | 40 | J-158 | True |
| J-34 | True | 500 | 4,503 | 48 | 4,500 | 40 | J-158 | True |
| J-35 | True | 500 | 4,500 | 47 | 4,500 | 40 | J-158 | True |
| J-36 | True | 500 | 4,500 | 48 | 4,500 | 40 | J-158 | True |
| J-37 | True | 500 | 3,181 | 20 | 3,179 | 28 | J-39 | True |
| J-38 | True | 500 | 2,299 | 22 | 2,296 | 20 | J-39 | True |
| J-39 | True | 500 | 1,283 | 20 | 1,280 | 41 | J-158 | True |
| J-40 | True | 500 | 4,500 | 33 | 4,500 | 35 | J-41 | True |
| J-41 | True | 500 | 4,503 | 34 | 4,500 | 34 | J-42 | True |
| J-42 | True | 500 | 4,500 | 31 | 4,500 | 34 | J-51 | True |
| J-43 | True | 500 | 3,795 | 21 | 3,791 | 20 | J-45 | True |
| J-44 | True | 500 | 3,007 | 20 | 3,007 | 34 | J-45 | True |
| J-45 | True | 500 | 1,651 | 20 | 1,649 | 41 | J-158 | True |
| J-46 | True | 500 | 4,201 | 32 | 4,201 | 20 | J-51 | True |
| J-47 | True | 500 | 4,106 | 37 | 4,102 | 20 | J-51 | True |
| J-48 | True | 500 | 4,002 | 37 | 4,002 | 20 | J-51 | True |
| J-49 | True | 500 | 2,347 | 36 | 2,347 | 20 | J-51 | True |
| J-50 | True | 500 | 890 | 29 | 887 | 20 | J-51 | True |
| J-51 | True | 500 | 634 | 20 | 629 | 41 | J-158 | True |
| J-52 | True | 500 | 1,944 | 36 | 1,941 | 20 | J-51 | True |
| J-53 | False | 500 | (N/A) | (N/A) | (N/A) | (N/A) | (N/A) | False |
| J-54 | True | 500 | 4,505 | 49 | 4,500 | 40 | J-158 | True |
| J-55 | True | 500 | 4,503 | 53 | 4,500 | 40 | J-158 | True |
| J-56 | True | 500 | 4,503 | 54 | 4,500 | 40 | J-158 | True |

| | | | | | | | | |
|-------|------|-----|-------|----|-------|----|-------|------|
| J-57 | True | 500 | 4,503 | 43 | 4,500 | 39 | J-68 | True |
| J-58 | True | 500 | 4,503 | 53 | 4,500 | 39 | J-51 | True |
| J-59 | True | 500 | 4,505 | 47 | 4,500 | 34 | J-51 | True |
| J-60 | True | 500 | 4,504 | 40 | 4,500 | 29 | J-51 | True |
| J-62 | True | 500 | 809 | 20 | 807 | 41 | J-158 | True |
| J-64 | True | 500 | 4,503 | 29 | 4,500 | 23 | J-51 | True |
| J-65 | True | 500 | 3,222 | 20 | 3,222 | 34 | J-51 | True |
| J-66 | True | 500 | 4,505 | 43 | 4,500 | 22 | J-51 | True |
| J-68 | True | 500 | 4,504 | 20 | 4,500 | 40 | J-158 | True |
| J-69 | True | 500 | 4,502 | 46 | 4,500 | 33 | J-68 | True |
| J-70 | True | 500 | 4,502 | 46 | 4,500 | 33 | J-68 | True |
| J-71 | True | 500 | 4,503 | 50 | 4,500 | 36 | J-68 | True |
| J-72 | True | 500 | 4,500 | 53 | 4,500 | 38 | J-51 | True |
| J-73 | True | 500 | 4,500 | 54 | 4,500 | 38 | J-51 | True |
| J-74 | True | 500 | 4,503 | 54 | 4,500 | 38 | J-51 | True |
| J-75 | True | 500 | 4,500 | 53 | 4,500 | 37 | J-51 | True |
| J-76 | True | 500 | 4,503 | 52 | 4,500 | 36 | J-51 | True |
| J-77 | True | 500 | 4,503 | 48 | 4,500 | 35 | J-51 | True |
| J-78 | True | 500 | 4,503 | 45 | 4,500 | 34 | J-51 | True |
| J-79 | True | 500 | 4,503 | 32 | 4,500 | 32 | J-80 | True |
| J-80 | True | 500 | 3,506 | 20 | 3,506 | 38 | J-51 | True |
| J-81 | True | 500 | 3,327 | 20 | 3,322 | 40 | J-68 | True |
| J-82 | True | 500 | 4,504 | 42 | 4,500 | 36 | J-68 | True |
| J-83 | True | 500 | 4,500 | 42 | 4,500 | 36 | J-68 | True |
| J-84 | True | 500 | 4,503 | 35 | 4,500 | 36 | J-51 | True |
| J-85 | True | 500 | 4,500 | 34 | 4,500 | 34 | J-51 | True |
| J-86 | True | 500 | 4,504 | 41 | 4,500 | 34 | J-51 | True |
| J-87 | True | 500 | 4,503 | 39 | 4,500 | 34 | J-51 | True |
| J-88 | True | 500 | 4,503 | 45 | 4,500 | 23 | J-51 | True |
| J-89 | True | 500 | 4,500 | 41 | 4,500 | 23 | J-51 | True |
| J-90 | True | 500 | 4,508 | 47 | 4,500 | 25 | J-51 | True |
| J-91 | True | 500 | 4,500 | 44 | 4,500 | 26 | J-51 | True |
| J-92 | True | 500 | 4,508 | 42 | 4,500 | 30 | J-51 | True |
| J-93 | True | 500 | 4,500 | 28 | 4,500 | 24 | J-51 | True |
| J-94 | True | 500 | 4,504 | 30 | 4,500 | 24 | J-51 | True |
| J-95 | True | 500 | 4,505 | 25 | 4,500 | 24 | J-51 | True |
| J-96 | True | 500 | 4,504 | 27 | 4,500 | 25 | J-51 | True |
| J-97 | True | 500 | 4,504 | 40 | 4,500 | 25 | J-51 | True |
| J-98 | True | 500 | 4,507 | 42 | 4,500 | 26 | J-51 | True |
| J-99 | True | 500 | 4,505 | 53 | 4,500 | 26 | J-51 | True |
| J-100 | True | 500 | 4,507 | 28 | 4,500 | 24 | J-51 | True |
| J-101 | True | 500 | 4,504 | 33 | 4,500 | 25 | J-51 | True |
| J-102 | True | 500 | 4,504 | 33 | 4,500 | 25 | J-51 | True |
| J-103 | True | 500 | 4,505 | 37 | 4,500 | 25 | J-51 | True |
| J-104 | True | 500 | 4,505 | 39 | 4,500 | 25 | J-51 | True |
| J-105 | True | 500 | 4,504 | 40 | 4,500 | 25 | J-51 | True |
| J-106 | True | 500 | 4,504 | 38 | 4,500 | 25 | J-51 | True |
| J-107 | True | 500 | 4,507 | 51 | 4,500 | 26 | J-51 | True |
| J-108 | True | 500 | 4,160 | 20 | 4,157 | 28 | J-51 | True |
| J-109 | True | 500 | 4,501 | 36 | 4,500 | 25 | J-51 | True |
| J-110 | True | 500 | 4,502 | 49 | 4,500 | 25 | J-51 | True |
| J-111 | True | 500 | 4,505 | 51 | 4,500 | 26 | J-51 | True |
| J-112 | True | 500 | 4,504 | 52 | 4,500 | 26 | J-51 | True |
| J-113 | True | 500 | 4,505 | 54 | 4,500 | 26 | J-51 | True |
| J-114 | True | 500 | 4,509 | 55 | 4,500 | 26 | J-51 | True |
| J-115 | True | 500 | 4,503 | 50 | 4,500 | 27 | J-51 | True |
| J-116 | True | 500 | 4,504 | 42 | 4,500 | 30 | J-51 | True |
| J-117 | True | 500 | 4,504 | 44 | 4,500 | 32 | J-51 | True |
| J-118 | True | 500 | 4,504 | 41 | 4,500 | 31 | J-122 | True |
| J-119 | True | 500 | 4,504 | 27 | 4,500 | 29 | J-122 | True |
| J-120 | True | 500 | 4,443 | 21 | 4,440 | 20 | J-122 | True |
| J-121 | True | 500 | 4,503 | 37 | 4,500 | 27 | J-122 | True |
| J-122 | True | 500 | 3,270 | 20 | 3,267 | 39 | J-51 | True |
| J-123 | True | 500 | 4,504 | 30 | 4,500 | 30 | J-122 | True |
| J-124 | True | 500 | 4,503 | 27 | 4,500 | 28 | J-125 | True |
| J-125 | True | 500 | 4,478 | 20 | 4,478 | 28 | J-124 | True |
| J-126 | True | 500 | 4,508 | 34 | 4,500 | 32 | J-51 | True |
| J-127 | True | 500 | 4,504 | 40 | 4,500 | 31 | J-132 | True |

| | | | | | | | | |
|-------|-------|-----|-------|-------|-------|-------|-------|-------|
| J-129 | True | 500 | 4,348 | 20 | 4,348 | 26 | J-129 | True |
| J-130 | True | 500 | 4,503 | 21 | 4,500 | 26 | J-132 | True |
| J-131 | True | 500 | 4,429 | 33 | 4,425 | 20 | J-132 | True |
| J-132 | True | 500 | 4,341 | 21 | 4,338 | 20 | J-132 | True |
| J-133 | True | 500 | 3,789 | 20 | 3,787 | 35 | J-131 | True |
| J-134 | True | 500 | 4,053 | 31 | 4,050 | 20 | J-132 | True |
| J-135 | True | 500 | 2,892 | 20 | 2,888 | 40 | J-51 | True |
| J-136 | True | 500 | 1,642 | 20 | 1,638 | 41 | J-158 | True |
| J-137 | True | 500 | 3,167 | 31 | 3,167 | 20 | J-135 | True |
| J-138 | True | 500 | 2,767 | 30 | 2,764 | 20 | J-135 | True |
| J-139 | True | 500 | 4,469 | 32 | 4,467 | 20 | J-135 | True |
| J-140 | True | 500 | 4,503 | 39 | 4,500 | 25 | J-51 | True |
| J-141 | True | 500 | 4,503 | 33 | 4,500 | 25 | J-51 | True |
| J-142 | True | 500 | 4,503 | 44 | 4,500 | 26 | J-51 | True |
| J-143 | True | 500 | 3,880 | 20 | 3,876 | 31 | J-51 | True |
| J-144 | True | 500 | 4,504 | 34 | 4,500 | 26 | J-51 | True |
| J-145 | True | 500 | 4,501 | 35 | 4,500 | 26 | J-51 | True |
| J-146 | True | 500 | 4,502 | 46 | 4,500 | 26 | J-51 | True |
| J-147 | True | 500 | 4,503 | 46 | 4,500 | 26 | J-51 | True |
| J-148 | True | 500 | 4,504 | 40 | 4,500 | 26 | J-51 | True |
| J-149 | True | 500 | 4,505 | 44 | 4,500 | 26 | J-51 | True |
| J-150 | True | 500 | 4,508 | 38 | 4,500 | 26 | J-51 | True |
| J-151 | True | 500 | 4,093 | 20 | 4,089 | 26 | J-151 | True |
| J-152 | True | 500 | 4,291 | 20 | 4,287 | 23 | J-150 | True |
| J-153 | True | 500 | 4,502 | 22 | 4,500 | 25 | J-153 | True |
| J-154 | True | 500 | 4,504 | 24 | 4,500 | 26 | J-152 | True |
| J-155 | True | 500 | 4,284 | 20 | 4,277 | 26 | J-152 | True |
| J-156 | True | 500 | 1,970 | 20 | 1,968 | 41 | J-158 | True |
| J-157 | True | 500 | 3,412 | 20 | 3,409 | 35 | J-154 | True |
| J-158 | False | 500 | (N/A) | (N/A) | (N/A) | (N/A) | (N/A) | False |
| J-159 | True | 500 | 4,500 | 20 | 4,500 | 42 | J-5 | True |
| J-160 | True | 500 | 2,376 | 20 | 2,376 | 43 | J-160 | True |
| J-161 | True | 500 | 1,630 | 20 | 1,630 | 23 | J-162 | True |
| J-162 | True | 500 | 1,530 | 21 | 1,524 | 20 | J-162 | True |
| J-163 | True | 500 | 1,308 | 20 | 1,306 | 21 | J-163 | True |
| J-164 | True | 500 | 1,251 | 20 | 1,251 | 23 | J-162 | True |
| J-165 | True | 500 | 1,220 | 22 | 1,213 | 20 | J-170 | True |
| J-166 | True | 500 | 1,231 | 28 | 1,228 | 20 | J-170 | True |
| J-167 | True | 500 | 1,251 | 39 | 1,244 | 20 | J-170 | True |
| J-168 | True | 500 | 1,241 | 38 | 1,235 | 20 | J-170 | True |
| J-169 | True | 500 | 1,224 | 25 | 1,223 | 20 | J-170 | True |
| J-170 | True | 500 | 1,209 | 23 | 1,209 | 20 | J-170 | True |
| J-171 | True | 500 | 1,162 | 20 | 1,161 | 25 | J-159 | True |
| J-172 | True | 500 | 1,218 | 22 | 1,216 | 20 | J-170 | True |
| J-173 | True | 500 | 1,203 | 20 | 1,202 | 21 | J-170 | True |
| J-174 | True | 500 | 1,220 | 23 | 1,220 | 20 | J-170 | True |
| J-175 | True | 500 | 1,181 | 20 | 1,180 | 23 | J-170 | True |
| J-176 | True | 500 | 1,224 | 24 | 1,222 | 20 | J-170 | True |
| J-177 | True | 500 | 1,223 | 20 | 1,222 | 20 | J-170 | True |
| J-178 | True | 500 | 1,230 | 28 | 1,227 | 20 | J-170 | True |
| J-179 | True | 500 | 1,229 | 26 | 1,228 | 20 | J-170 | True |
| J-180 | True | 500 | 1,235 | 31 | 1,235 | 20 | J-170 | True |
| J-181 | True | 500 | 1,233 | 30 | 1,233 | 20 | J-170 | True |
| J-182 | True | 500 | 1,225 | 26 | 1,224 | 20 | J-170 | True |
| J-183 | True | 500 | 1,232 | 35 | 1,229 | 20 | J-170 | True |
| J-184 | True | 500 | 1,330 | 22 | 1,321 | 20 | J-162 | True |
| J-185 | True | 500 | 1,348 | 22 | 1,341 | 20 | J-162 | True |
| J-186 | True | 500 | 1,350 | 20 | 1,350 | 20 | J-162 | True |
| J-187 | True | 500 | 1,263 | 20 | 1,263 | 23 | J-188 | True |
| J-188 | True | 500 | 1,365 | 21 | 1,362 | 20 | J-162 | True |
| J-189 | True | 500 | 1,287 | 21 | 1,286 | 20 | J-186 | True |
| J-190 | True | 500 | 1,265 | 20 | 1,261 | 22 | J-186 | True |
| J-191 | True | 500 | 1,239 | 20 | 1,239 | 22 | J-189 | True |
| J-192 | True | 500 | 1,243 | 21 | 1,239 | 20 | J-190 | True |
| J-193 | True | 500 | 1,371 | 24 | 1,369 | 20 | J-162 | True |
| J-194 | True | 500 | 1,376 | 26 | 1,374 | 20 | J-170 | True |
| J-195 | True | 500 | 1,353 | 29 | 1,351 | 20 | J-170 | True |
| J-196 | True | 500 | 1,335 | 31 | 1,334 | 20 | J-170 | True |

| | | | | | | | | |
|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| J-197 | False | 2,000 | 1,309 | 35 | 1,304 | 20 | J-170 | True |
| J-197 | True | 500 | 1,293 | 31 | 1,292 | 20 | J-170 | True |
| J-198 | True | 500 | 1,287 | 38 | 1,287 | 20 | J-170 | True |
| J-199 | True | 500 | 1,263 | 40 | 1,261 | 20 | J-170 | True |
| J-200 | True | 500 | 1,290 | 34 | 1,288 | 20 | J-170 | True |
| J-202 | True | 500 | 1,289 | 32 | 1,288 | 20 | J-170 | True |
| J-204 | True | 2,500 | 2,677 | 20 | 2,676 | 3 | J-157 | True |
| J-205 | False | 500 | 0 | 23 | 0 | 4 | J-157 | True |
| J-206 | False | 500 | (N/A) | (N/A) | (N/A) | (N/A) | (N/A) | False |
| J-207 | True | 500 | 1,268 | 40 | 1,266 | 20 | J-170 | True |
| J-208 | True | 500 | 1,267 | 30 | 1,266 | 20 | J-170 | True |
| J-209 | True | 500 | 1,275 | 37 | 1,271 | 20 | J-170 | True |
| J-210 | True | 500 | 1,276 | 38 | 1,276 | 20 | J-170 | True |
| J-211 | True | 500 | 1,278 | 39 | 1,278 | 20 | J-170 | True |
| J-212 | True | 500 | 1,279 | 38 | 1,279 | 20 | J-170 | True |
| J-213 | True | 500 | 1,279 | 30 | 1,279 | 20 | J-170 | True |
| J-214 | True | 500 | 1,279 | 31 | 1,279 | 20 | J-170 | True |
| J-215 | True | 500 | 1,279 | 34 | 1,279 | 20 | J-170 | True |
| J-216 | True | 500 | 1,281 | 40 | 1,281 | 20 | J-170 | True |
| J-217 | True | 500 | 1,284 | 39 | 1,284 | 20 | J-170 | True |
| J-218 | True | 500 | 1,286 | 36 | 1,286 | 20 | J-170 | True |
| J-219 | True | 500 | 1,286 | 26 | 1,286 | 20 | J-170 | True |
| J-220 | True | 500 | 1,278 | 38 | 1,278 | 20 | J-170 | True |
| J-221 | True | 500 | 1,278 | 37 | 1,278 | 20 | J-170 | True |
| J-222 | True | 500 | 1,280 | 46 | 1,279 | 20 | J-170 | True |
| J-223 | True | 500 | 1,279 | 45 | 1,279 | 20 | J-170 | True |
| J-224 | True | 500 | 1,284 | 33 | 1,284 | 20 | J-170 | True |
| J-225 | True | 500 | 1,284 | 33 | 1,284 | 20 | J-170 | True |
| J-226 | True | 500 | 1,279 | 58 | 1,279 | 20 | J-170 | True |
| J-227 | True | 500 | 1,280 | 57 | 1,279 | 20 | J-170 | True |
| J-228 | True | 500 | 1,279 | 29 | 1,279 | 20 | J-170 | True |
| J-229 | True | 500 | 1,279 | 23 | 1,279 | 20 | J-170 | True |
| J-230 | True | 500 | 1,274 | 20 | 1,273 | 20 | J-170 | True |
| J-231 | True | 500 | 1,287 | 63 | 1,287 | 20 | J-170 | True |
| J-233 | False | 500 | (N/A) | (N/A) | (N/A) | (N/A) | (N/A) | False |
| J-234 | False | 500 | (N/A) | (N/A) | (N/A) | (N/A) | (N/A) | False |
| J-235 | False | 500 | (N/A) | (N/A) | (N/A) | (N/A) | (N/A) | False |
| J-236 | False | 500 | (N/A) | (N/A) | (N/A) | (N/A) | (N/A) | False |
| J-237 | False | 500 | (N/A) | (N/A) | (N/A) | (N/A) | (N/A) | False |
| J-238 | False | 500 | (N/A) | (N/A) | (N/A) | (N/A) | (N/A) | False |
| J-239 | False | 500 | (N/A) | (N/A) | (N/A) | (N/A) | (N/A) | False |
| J-241 | False | 500 | (N/A) | (N/A) | (N/A) | (N/A) | (N/A) | False |
| J-242 | False | 500 | (N/A) | (N/A) | (N/A) | (N/A) | (N/A) | False |
| J-244 | False | 500 | (N/A) | (N/A) | (N/A) | (N/A) | (N/A) | False |
| J-245 | False | 500 | (N/A) | (N/A) | (N/A) | (N/A) | (N/A) | False |
| J-246 | False | 500 | (N/A) | (N/A) | (N/A) | (N/A) | (N/A) | False |
| J-247 | False | 500 | (N/A) | (N/A) | (N/A) | (N/A) | (N/A) | False |
| J-249 | False | 500 | (N/A) | (N/A) | (N/A) | (N/A) | (N/A) | False |

J:\2-17103 - Red Lodge On-Call 2017\TO 14 - Water PER\CADD 2-17103-14\Water Cad\2-17103-TO14 Red Lodge 2019 Water Model.wtg

Scenario: Pressure Reducing Base
Current Time Step: 0.000 h
FlexTable: Junction Table

| ID | Label | Elevation (ft) | Demand (gpm) | Hydraulic Grade (ft) | Pressure (psi) |
|-----|-------|-------------------|-----------------|-------------------------|-------------------|
| 596 | J-234 | 5,724.00 | (N/A) | (N/A) | (N/A) |
| 603 | J-235 | 5,738.00 | (N/A) | (N/A) | (N/A) |
| 606 | J-236 | 5,710.54 | (N/A) | (N/A) | (N/A) |
| 617 | J-237 | 5,587.93 | (N/A) | (N/A) | (N/A) |
| 620 | J-238 | 5,599.43 | (N/A) | (N/A) | (N/A) |
| 623 | J-239 | 5,595.82 | (N/A) | (N/A) | (N/A) |
| 401 | J-157 | 5,738.00 | 1 | 5,748.12 | 4 |
| 30 | J-1 | 5,869.00 | 0 | 5,881.99 | 6 |
| 593 | J-233 | 5,724.15 | 0 | 5,748.12 | 10 |
| 151 | J-53 | 5,722.00 | 0 | 5,748.12 | 11 |
| 63 | J-12 | 5,854.50 | 0 | 5,881.47 | 12 |
| 507 | J-206 | 5,719.00 | 1 | 5,748.11 | 13 |
| 60 | J-11 | 5,830.00 | 2 | 5,880.74 | 22 |
| 504 | J-205 | 5,696.00 | 0 | 5,748.09 | 23 |
| 501 | J-204 | 5,686.00 | 1 | 5,748.09 | 27 |
| 403 | J-159 | 5,685.00 | 0 | 5,748.07 | 27 |
| 57 | J-10 | 5,799.00 | 0 | 5,879.70 | 35 |
| 402 | J-158 | 5,653.00 | 0 | 5,748.08 | 41 |
| 657 | J-246 | 5,524.12 | 0 | 5,621.90 | 42 |
| 37 | J-5 | 5,654.00 | 2 | 5,752.67 | 43 |
| 35 | p | 5,654.00 | 1 | 5,752.81 | 43 |
| 67 | J-14 | 5,648.00 | 1 | 5,752.39 | 45 |
| 385 | J-150 | 5,517.00 | 4 | 5,621.90 | 45 |
| 66 | J-13 | 5,646.00 | 1 | 5,752.39 | 46 |
| 185 | J-68 | 5,642.00 | 4 | 5,748.63 | 46 |
| 649 | J-245 | 5,514.95 | 0 | 5,621.91 | 46 |
| 92 | J-26 | 5,645.00 | 0 | 5,752.27 | 46 |
| 71 | J-18 | 5,645.00 | 0 | 5,752.32 | 46 |
| 70 | J-17 | 5,645.00 | 0 | 5,752.33 | 46 |
| 69 | J-16 | 5,645.00 | 2 | 5,752.34 | 46 |
| 68 | J-15 | 5,645.00 | 0 | 5,752.34 | 46 |
| 145 | J-51 | 5,640.00 | 5 | 5,748.51 | 47 |
| 386 | J-151 | 5,512.00 | 4 | 5,621.90 | 48 |
| 83 | J-22 | 5,640.00 | 2 | 5,750.26 | 48 |
| 72 | J-19 | 5,640.00 | 3 | 5,750.82 | 48 |
| 387 | J-152 | 5,510.00 | 2 | 5,621.90 | 48 |
| 388 | J-153 | 5,509.00 | 4 | 5,621.90 | 49 |
| 82 | J-21 | 5,637.00 | 3 | 5,750.26 | 49 |
| 122 | J-39 | 5,635.00 | 3 | 5,749.72 | 50 |
| 409 | J-160 | 5,685.00 | 0 | 5,800.46 | 50 |
| 94 | J-27 | 5,632.00 | 6 | 5,750.12 | 51 |
| 81 | J-20 | 5,632.00 | 3 | 5,750.58 | 51 |
| 84 | J-23 | 5,631.00 | 0 | 5,750.58 | 52 |
| 85 | J-24 | 5,631.00 | 0 | 5,750.58 | 52 |
| 113 | J-38 | 5,630.00 | 3 | 5,749.72 | 52 |
| 414 | J-162 | 5,679.00 | 2 | 5,800.25 | 52 |
| 97 | J-29 | 5,628.00 | 3 | 5,749.50 | 53 |
| 101 | J-30 | 5,626.00 | 4 | 5,749.28 | 53 |
| 415 | J-163 | 5,676.00 | 0 | 5,800.25 | 54 |
| 413 | J-161 | 5,676.00 | 7 | 5,800.35 | 54 |
| 153 | J-54 | 5,624.00 | 5 | 5,748.63 | 54 |
| 112 | J-37 | 5,624.00 | 2 | 5,749.13 | 54 |
| 96 | J-28 | 5,624.00 | 4 | 5,749.40 | 54 |
| 102 | J-31 | 5,621.00 | 4 | 5,748.94 | 55 |
| 144 | J-50 | 5,619.00 | 3 | 5,748.52 | 56 |
| 393 | J-154 | 5,490.00 | 7 | 5,621.90 | 57 |
| 396 | J-155 | 5,490.00 | 2 | 5,621.90 | 57 |

| | | | | | |
|-----|-------|----------|---|----------|----|
| 645 | J-244 | 5,488.97 | 0 | 5,621.90 | 58 |
| 111 | J-36 | 5,615.00 | 0 | 5,748.86 | 58 |
| 110 | J-35 | 5,615.00 | 0 | 5,748.87 | 58 |
| 108 | J-33 | 5,615.00 | 4 | 5,748.87 | 58 |
| 109 | J-34 | 5,615.00 | 3 | 5,748.87 | 58 |
| 107 | J-32 | 5,615.00 | 0 | 5,748.88 | 58 |
| 459 | J-183 | 5,665.00 | 9 | 5,800.20 | 58 |
| 162 | J-57 | 5,613.00 | 3 | 5,748.68 | 59 |
| 154 | J-55 | 5,613.00 | 3 | 5,748.71 | 59 |
| 215 | J-81 | 5,612.00 | 4 | 5,748.62 | 59 |
| 129 | J-45 | 5,609.00 | 2 | 5,748.58 | 60 |
| 637 | J-241 | 5,608.00 | 0 | 5,748.65 | 61 |
| 126 | J-42 | 5,608.00 | 0 | 5,748.68 | 61 |
| 125 | J-41 | 5,608.00 | 3 | 5,748.68 | 61 |
| 124 | J-40 | 5,608.00 | 0 | 5,748.69 | 61 |
| 163 | J-58 | 5,608.00 | 3 | 5,748.69 | 61 |
| 155 | J-56 | 5,608.00 | 3 | 5,748.70 | 61 |
| 127 | J-43 | 5,606.00 | 4 | 5,748.58 | 62 |
| 128 | J-44 | 5,606.00 | 0 | 5,748.58 | 62 |
| 133 | J-49 | 5,604.00 | 0 | 5,748.53 | 63 |
| 164 | J-59 | 5,604.00 | 5 | 5,748.64 | 63 |
| 146 | J-52 | 5,603.00 | 3 | 5,748.53 | 63 |
| 186 | J-69 | 5,603.00 | 2 | 5,748.64 | 63 |
| 187 | J-70 | 5,603.00 | 2 | 5,748.64 | 63 |
| 426 | J-170 | 5,654.00 | 1 | 5,800.04 | 63 |
| 460 | J-184 | 5,654.00 | 7 | 5,800.15 | 63 |
| 313 | J-122 | 5,602.00 | 3 | 5,748.55 | 63 |
| 173 | J-62 | 5,602.00 | 2 | 5,748.58 | 63 |
| 131 | J-47 | 5,601.00 | 4 | 5,748.53 | 64 |
| 132 | J-48 | 5,601.00 | 0 | 5,748.53 | 64 |
| 130 | J-46 | 5,601.00 | 0 | 5,748.53 | 64 |
| 461 | J-185 | 5,652.00 | 0 | 5,800.12 | 64 |
| 189 | J-72 | 5,599.00 | 0 | 5,748.65 | 65 |
| 191 | J-74 | 5,599.00 | 3 | 5,748.65 | 65 |
| 640 | J-242 | 5,599.00 | 0 | 5,748.65 | 65 |
| 190 | J-73 | 5,599.00 | 0 | 5,748.65 | 65 |
| 311 | J-120 | 5,598.00 | 3 | 5,748.55 | 65 |
| 302 | J-119 | 5,598.00 | 4 | 5,748.55 | 65 |
| 203 | J-77 | 5,598.00 | 3 | 5,748.63 | 65 |
| 192 | J-75 | 5,598.00 | 0 | 5,748.64 | 65 |
| 416 | J-164 | 5,649.00 | 7 | 5,800.04 | 65 |
| 204 | J-78 | 5,597.00 | 3 | 5,748.61 | 66 |
| 193 | J-76 | 5,597.00 | 3 | 5,748.64 | 66 |
| 425 | J-169 | 5,648.00 | 0 | 5,800.04 | 66 |
| 432 | J-174 | 5,647.00 | 1 | 5,800.04 | 66 |
| 165 | J-60 | 5,595.00 | 4 | 5,748.58 | 66 |
| 429 | J-171 | 5,646.00 | 2 | 5,800.04 | 67 |
| 430 | J-172 | 5,645.00 | 1 | 5,800.04 | 67 |
| 206 | J-80 | 5,593.00 | 0 | 5,748.60 | 67 |
| 188 | J-71 | 5,592.00 | 3 | 5,748.64 | 68 |
| 466 | J-187 | 5,643.00 | 3 | 5,800.09 | 68 |
| 179 | J-66 | 5,591.00 | 5 | 5,748.53 | 68 |
| 431 | J-173 | 5,642.00 | 0 | 5,800.04 | 68 |
| 205 | J-79 | 5,590.00 | 3 | 5,748.60 | 69 |
| 216 | J-82 | 5,590.00 | 4 | 5,748.62 | 69 |
| 217 | J-83 | 5,590.00 | 0 | 5,748.62 | 69 |
| 465 | J-186 | 5,641.00 | 1 | 5,800.09 | 69 |
| 438 | J-176 | 5,640.00 | 1 | 5,800.03 | 69 |
| 437 | J-175 | 5,639.00 | 2 | 5,800.03 | 70 |
| 467 | J-188 | 5,639.00 | 1 | 5,800.09 | 70 |
| 177 | J-64 | 5,587.00 | 3 | 5,748.51 | 70 |
| 178 | J-65 | 5,587.00 | 1 | 5,748.51 | 70 |
| 222 | J-84 | 5,587.00 | 3 | 5,748.59 | 70 |
| 231 | J-88 | 5,583.00 | 3 | 5,748.52 | 72 |
| 232 | J-89 | 5,583.00 | 0 | 5,748.52 | 72 |
| 420 | J-168 | 5,634.00 | 1 | 5,800.04 | 72 |
| 225 | J-87 | 5,582.00 | 3 | 5,748.56 | 72 |

| | | | | | |
|-----|-------|----------|---|----------|----|
| | J-85 | 5,582.00 | 0 | 5,748.56 | 72 |
| 224 | J-86 | 5,582.00 | 4 | 5,748.56 | 72 |
| 468 | J-189 | 5,633.00 | 4 | 5,800.08 | 72 |
| 478 | J-192 | 5,632.00 | 3 | 5,800.08 | 73 |
| 235 | J-92 | 5,580.00 | 8 | 5,748.55 | 73 |
| 556 | J-230 | 5,523.00 | 1 | 5,691.79 | 73 |
| 417 | J-165 | 5,631.00 | 3 | 5,800.03 | 73 |
| 441 | J-177 | 5,631.00 | 3 | 5,800.03 | 73 |
| 442 | J-178 | 5,631.00 | 1 | 5,800.03 | 73 |
| 454 | J-181 | 5,630.00 | 1 | 5,800.04 | 74 |
| 243 | J-93 | 5,578.00 | 0 | 5,748.49 | 74 |
| 244 | J-94 | 5,578.00 | 4 | 5,748.49 | 74 |
| 338 | J-132 | 5,578.00 | 2 | 5,748.51 | 74 |
| 555 | J-229 | 5,521.00 | 1 | 5,691.79 | 74 |
| 233 | J-90 | 5,577.00 | 8 | 5,748.51 | 74 |
| 234 | J-91 | 5,577.00 | 0 | 5,748.51 | 74 |
| 348 | J-135 | 5,575.00 | 3 | 5,748.45 | 75 |
| 469 | J-190 | 5,626.00 | 0 | 5,800.08 | 75 |
| 248 | J-95 | 5,574.00 | 5 | 5,748.47 | 75 |
| 554 | J-228 | 5,517.00 | 1 | 5,691.79 | 76 |
| 337 | J-131 | 5,572.00 | 3 | 5,748.51 | 76 |
| 479 | J-193 | 5,623.00 | 2 | 5,800.07 | 77 |
| 330 | J-129 | 5,571.00 | 3 | 5,748.51 | 77 |
| 283 | J-110 | 5,570.00 | 2 | 5,748.51 | 77 |
| 301 | J-118 | 5,570.00 | 4 | 5,748.55 | 77 |
| 447 | J-180 | 5,621.00 | 0 | 5,800.03 | 77 |
| 470 | J-191 | 5,621.00 | 4 | 5,800.08 | 77 |
| 249 | J-96 | 5,569.00 | 4 | 5,748.47 | 78 |
| 312 | J-121 | 5,569.00 | 3 | 5,748.54 | 78 |
| 446 | J-179 | 5,619.00 | 0 | 5,800.03 | 78 |
| 258 | J-100 | 5,567.00 | 7 | 5,748.47 | 79 |
| 315 | J-124 | 5,567.00 | 3 | 5,748.52 | 79 |
| 314 | J-123 | 5,567.00 | 4 | 5,748.53 | 79 |
| 299 | J-116 | 5,567.00 | 4 | 5,748.54 | 79 |
| 300 | J-117 | 5,567.00 | 4 | 5,748.54 | 79 |
| 48 | J-7 | 5,695.00 | 0 | 5,876.66 | 79 |
| 284 | J-111 | 5,566.00 | 5 | 5,748.50 | 79 |
| 316 | J-125 | 5,566.00 | 0 | 5,748.52 | 79 |
| 480 | J-194 | 5,617.00 | 1 | 5,800.06 | 79 |
| 31 | J-2 | 5,691.00 | 4 | 5,876.66 | 80 |
| 481 | J-195 | 5,614.00 | 1 | 5,800.05 | 80 |
| 261 | J-101 | 5,562.00 | 4 | 5,748.46 | 81 |
| 285 | J-112 | 5,560.00 | 4 | 5,748.49 | 82 |
| 329 | J-128 | 5,559.00 | 0 | 5,748.51 | 82 |
| 455 | J-182 | 5,610.00 | 3 | 5,800.03 | 82 |
| 483 | J-197 | 5,610.00 | 1 | 5,800.04 | 82 |
| 482 | J-196 | 5,609.00 | 5 | 5,800.04 | 83 |
| 264 | J-102 | 5,557.00 | 4 | 5,748.46 | 83 |
| 250 | J-97 | 5,556.00 | 4 | 5,748.47 | 83 |
| 493 | J-200 | 5,607.00 | 3 | 5,800.03 | 84 |
| 278 | J-108 | 5,555.00 | 3 | 5,748.46 | 84 |
| 317 | J-126 | 5,555.00 | 8 | 5,748.51 | 84 |
| 418 | J-166 | 5,606.00 | 7 | 5,800.03 | 84 |
| 419 | J-167 | 5,606.00 | 7 | 5,800.03 | 84 |
| 350 | J-137 | 5,553.00 | 3 | 5,748.45 | 85 |
| 498 | J-202 | 5,604.00 | 1 | 5,800.03 | 85 |
| 266 | J-103 | 5,552.00 | 5 | 5,748.46 | 85 |
| 50 | J-8 | 5,678.97 | 1 | 5,876.24 | 85 |
| 328 | J-127 | 5,550.00 | 4 | 5,748.51 | 86 |
| 349 | J-136 | 5,549.00 | 1 | 5,748.45 | 86 |
| 492 | J-199 | 5,600.00 | 2 | 5,800.03 | 87 |
| 269 | J-104 | 5,548.00 | 5 | 5,748.45 | 87 |
| 512 | J-209 | 5,599.00 | 4 | 5,800.03 | 87 |
| 351 | J-138 | 5,547.00 | 3 | 5,748.45 | 87 |
| 279 | J-109 | 5,547.00 | 1 | 5,748.45 | 87 |
| 286 | J-113 | 5,547.00 | 5 | 5,748.48 | 87 |
| 291 | J-115 | 5,547.00 | 3 | 5,748.48 | 87 |

| | | | | | |
|-----|-------|----------|---|----------|-----|
| 511 | J-207 | 5,597.00 | 3 | 5,800.03 | 88 |
| | J-208 | 5,597.00 | 1 | 5,800.03 | 88 |
| 531 | J-219 | 5,596.00 | 0 | 5,800.03 | 88 |
| 251 | J-98 | 5,544.00 | 7 | 5,748.46 | 88 |
| 271 | J-105 | 5,543.00 | 4 | 5,748.45 | 89 |
| 336 | J-130 | 5,542.00 | 4 | 5,748.51 | 89 |
| 516 | J-210 | 5,591.00 | 0 | 5,800.03 | 90 |
| 356 | J-139 | 5,539.00 | 3 | 5,748.45 | 91 |
| 273 | J-106 | 5,538.00 | 4 | 5,748.45 | 91 |
| 520 | J-214 | 5,589.00 | 0 | 5,800.03 | 91 |
| 484 | J-198 | 5,589.00 | 0 | 5,800.04 | 91 |
| 346 | J-134 | 5,537.00 | 4 | 5,748.51 | 92 |
| 339 | J-133 | 5,537.00 | 3 | 5,748.51 | 92 |
| 519 | J-213 | 5,588.00 | 0 | 5,800.03 | 92 |
| 517 | J-211 | 5,587.00 | 0 | 5,800.03 | 92 |
| 521 | J-215 | 5,587.00 | 0 | 5,800.03 | 92 |
| 530 | J-218 | 5,587.00 | 0 | 5,800.03 | 92 |
| 357 | J-140 | 5,535.00 | 3 | 5,748.45 | 92 |
| 518 | J-212 | 5,586.00 | 0 | 5,800.03 | 93 |
| 287 | J-114 | 5,534.00 | 9 | 5,748.46 | 93 |
| 45 | J-6 | 5,661.00 | 2 | 5,875.60 | 93 |
| 252 | J-99 | 5,532.00 | 5 | 5,748.46 | 94 |
| 537 | J-220 | 5,582.00 | 0 | 5,800.03 | 94 |
| 538 | J-221 | 5,580.00 | 0 | 5,800.03 | 95 |
| 528 | J-216 | 5,580.00 | 0 | 5,800.03 | 95 |
| 529 | J-217 | 5,580.00 | 0 | 5,800.03 | 95 |
| 33 | J-3 | 5,654.00 | 2 | 5,875.41 | 96 |
| 276 | J-107 | 5,527.00 | 7 | 5,748.45 | 96 |
| 660 | J-247 | 5,524.78 | 0 | 5,748.51 | 97 |
| 364 | J-142 | 5,524.00 | 4 | 5,748.45 | 97 |
| 358 | J-141 | 5,524.00 | 3 | 5,748.45 | 97 |
| 675 | J-249 | 5,521.95 | 0 | 5,748.45 | 98 |
| 399 | J-156 | 5,393.00 | 3 | 5,621.90 | 99 |
| 53 | J-9 | 5,645.00 | 5 | 5,876.23 | 100 |
| 377 | J-149 | 5,516.00 | 8 | 5,748.45 | 101 |
| 375 | J-147 | 5,516.00 | 4 | 5,748.45 | 101 |
| 376 | J-148 | 5,515.00 | 5 | 5,748.45 | 101 |
| 374 | J-146 | 5,510.00 | 3 | 5,748.45 | 103 |
| 546 | J-224 | 5,561.00 | 0 | 5,800.03 | 103 |
| 372 | J-145 | 5,509.00 | 2 | 5,748.45 | 104 |
| 540 | J-223 | 5,560.00 | 0 | 5,800.03 | 104 |
| 367 | J-143 | 5,508.00 | 4 | 5,748.45 | 104 |
| 547 | J-225 | 5,559.00 | 0 | 5,800.03 | 104 |
| 539 | J-222 | 5,558.00 | 1 | 5,800.03 | 105 |
| 370 | J-144 | 5,505.00 | 1 | 5,748.45 | 105 |
| 552 | J-227 | 5,529.00 | 1 | 5,800.03 | 117 |
| 551 | J-226 | 5,528.00 | 0 | 5,800.03 | 118 |
| 557 | J-231 | 5,524.00 | 0 | 5,800.04 | 119 |

J:\2-17103 - Red Lodge On-Call 2017\TO 14 - Water PER\CADD 2-17103-14\Water Cad\2-17103-TO14 Red Lodge 2019
Water Model.wtg

Scenario: Pressure Reducing Base
Current Time Step: 0.000 h
FlexTable: Pipe Table

| ID | Label | Length (Scaled) (ft) | Start Node | Stop Node | Diameter (in) | Hazen- Williams C | Flow (gpm) | Velocity (ft/s) |
|-----|--------------|----------------------------|---------------|--------------|------------------|-------------------------|---------------|--------------------|
| 38 | P-4 | 220 | p | J-5 | 16.0 | 130.0 | 1,035 | 1.65 |
| 40 | P-5 | 9 | J-3 | PRV-1 | 16.0 | 130.0 | 1,036 | 1.65 |
| 41 | P-6 | 7 | PRV-1 | p | 6.0 | 130.0 | 1,036 | 11.76 |
| 47 | P-2(2) | 286 | J-6 | J-3 | 16.0 | 130.0 | 1,038 | 1.66 |
| 49 | P-7 | 212 | J-2 | J-7 | 6.0 | 130.0 | 0 | 0.00 |
| 51 | P-2(1)(1) | 630 | J-2 | J-8 | 16.0 | 130.0 | 1,046 | 1.67 |
| 52 | P-2(1)(2) | 941 | J-8 | J-6 | 16.0 | 130.0 | 1,040 | 1.66 |
| 54 | P-8 | 1,598 | J-8 | J-9 | 8.0 | 140.0 | 5 | 0.03 |
| 56 | P-9 | 10 | J-1 | T-1 | 16.0 | 130.0 | -1,051 | 1.68 |
| 59 | P-1(2) | 4,445 | J-10 | J-2 | 16.0 | 130.0 | 1,050 | 1.67 |
| 62 | P-1(1)(2) | 1,123 | J-11 | J-10 | 16.0 | 110.0 | 1,050 | 1.67 |
| 64 | P-1(1)(1)(1) | 770 | J-1 | J-12 | 16.0 | 130.0 | 1,051 | 1.68 |
| 65 | P-1(1)(1)(2) | 1,055 | J-12 | J-11 | 16.0 | 130.0 | 1,051 | 1.68 |
| 73 | P-10 | 657 | J-5 | J-13 | 6.0 | 130.0 | 61 | 0.69 |
| 74 | P-11 | 119 | J-13 | J-15 | 6.0 | 130.0 | 59 | 0.67 |
| 75 | P-12 | 59 | J-15 | J-16 | 8.0 | 130.0 | 59 | 0.38 |
| 76 | P-13 | 550 | J-16 | J-5 | 16.0 | 130.0 | -973 | 1.55 |
| 77 | P-14 | 139 | J-13 | J-14 | 4.0 | 130.0 | 1 | 0.01 |
| 78 | P-15 | 16 | J-16 | J-17 | 16.0 | 130.0 | 1,029 | 1.64 |
| 79 | P-16 | 17 | J-17 | J-18 | 16.0 | 130.0 | 570 | 0.91 |
| 80 | P-17 | 350 | J-17 | J-19 | 8.0 | 130.0 | 459 | 2.93 |
| 86 | P-18 | 329 | J-19 | J-20 | 8.0 | 130.0 | 173 | 1.10 |
| 87 | P-19 | 48 | J-24 | J-20 | 8.0 | 130.0 | -47 | 0.30 |
| 88 | P-20 | 14 | J-20 | J-23 | 8.0 | 130.0 | 123 | 0.78 |
| 89 | P-21 | 208 | J-23 | J-21 | 6.0 | 130.0 | 123 | 1.39 |
| 91 | P-22 | 628 | J-21 | J-22 | 6.0 | 130.0 | 2 | 0.02 |
| 93 | P-23 | 63 | J-18 | J-26 | 12.0 | 130.0 | 570 | 1.62 |
| 95 | P-24 | 988 | J-26 | J-27 | 10.0 | 130.0 | 570 | 2.33 |
| 98 | P-25 | 337 | J-27 | J-28 | 10.0 | 130.0 | 564 | 2.30 |
| 99 | P-26 | 331 | J-28 | J-29 | 8.0 | 130.0 | -112 | 0.71 |
| 100 | P-27 | 739 | J-29 | J-19 | 8.0 | 130.0 | -284 | 1.81 |
| 103 | P-28 | 322 | J-28 | J-31 | 10.0 | 130.0 | 455 | 1.86 |
| 104 | P-29 | 329 | J-31 | J-30 | 8.0 | 130.0 | -213 | 1.36 |
| 105 | P-30 | 325 | J-30 | J-29 | 8.0 | 130.0 | -170 | 1.08 |
| 106 | P-31 | 695 | J-30 | J-24 | 4.0 | 130.0 | -47 | 1.20 |
| 114 | P-32 | 273 | J-31 | J-32 | 10.0 | 130.0 | 169 | 0.69 |
| 115 | P-33 | 65 | J-32 | J-33 | 12.0 | 130.0 | 169 | 0.48 |
| 116 | P-34 | 31 | J-33 | J-34 | 12.0 | 130.0 | -11 | 0.03 |
| 117 | P-35 | 66 | J-34 | J-35 | 12.0 | 130.0 | 97 | 0.27 |
| 118 | P-36 | 67 | J-33 | J-36 | 12.0 | 130.0 | 176 | 0.50 |
| 119 | P-37 | 847 | J-34 | J-37 | 8.0 | 130.0 | -110 | 0.70 |
| 120 | P-38 | 456 | J-37 | J-38 | 6.0 | 130.0 | -112 | 1.28 |
| 121 | P-39 | 383 | J-38 | J-21 | 6.0 | 130.0 | -118 | 1.34 |
| 123 | P-40 | 380 | J-38 | J-39 | 6.0 | 130.0 | 3 | 0.03 |
| 134 | P-41 | 211 | J-35 | J-40 | 6.0 | 140.0 | 97 | 1.10 |
| 135 | P-42 | 33 | J-40 | J-41 | 8.0 | 130.0 | 97 | 0.62 |
| 136 | P-43 | 45 | J-41 | J-42 | 8.0 | 130.0 | 52 | 0.33 |
| 137 | P-44 | 335 | J-42 | J-43 | 6.0 | 140.0 | 52 | 0.59 |
| 138 | P-45 | 246 | J-43 | J-46 | 6.0 | 140.0 | 45 | 0.52 |
| 139 | P-46 | 68 | J-44 | J-43 | 6.0 | 130.0 | 0 | 0.01 |
| 140 | P-47 | 387 | J-45 | J-43 | 6.0 | 130.0 | -2 | 0.02 |
| 141 | P-48 | 72 | J-46 | J-47 | 8.0 | 130.0 | 45 | 0.29 |
| 142 | P-49 | 11 | J-47 | J-48 | 8.0 | 130.0 | 11 | 0.07 |
| 143 | P-50 | 105 | J-48 | J-49 | 6.0 | 130.0 | 11 | 0.12 |
| 147 | P-51 | 81 | J-49 | J-52 | 6.0 | 140.0 | 11 | 0.12 |
| 148 | P-52 | 890 | J-52 | J-50 | 6.0 | 140.0 | 8 | 0.09 |

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|-----|-------|-------|-------|-------|------|-------|------|------|
| 149 | P-53 | 1,031 | J-50 | J-51 | 6.0 | 140.0 | 5 | 0.06 |
| 152 | P-54 | 357 | T-2 | J-53 | 14.0 | 130.0 | -511 | 1.07 |
| 156 | P-55 | 1,017 | J-53 | J-54 | 14.0 | 130.0 | -625 | 1.30 |
| 157 | P-56 | 320 | J-54 | J-55 | 14.0 | 130.0 | -406 | 0.85 |
| 158 | P-57 | 332 | J-55 | J-56 | 14.0 | 130.0 | 58 | 0.12 |
| 159 | P-58 | 715 | J-54 | J-28 | 8.0 | 130.0 | -216 | 1.38 |
| 160 | P-59 | 716 | J-55 | J-31 | 14.0 | 130.0 | -496 | 1.03 |
| 161 | P-60 | 647 | J-56 | J-36 | 10.0 | 130.0 | -176 | 0.72 |
| 166 | P-61 | 333 | J-57 | J-58 | 8.0 | 130.0 | -30 | 0.19 |
| 167 | P-62 | 344 | J-58 | J-59 | 8.0 | 130.0 | 75 | 0.48 |
| 168 | P-63 | 361 | J-59 | J-60 | 8.0 | 130.0 | 76 | 0.49 |
| 169 | P-64 | 28 | J-58 | J-56 | 10.0 | 130.0 | -232 | 0.95 |
| 171 | P-65 | 32 | J-55 | J-57 | 4.0 | 130.0 | 28 | 0.72 |
| 172 | P-66 | 740 | J-59 | J-41 | 8.0 | 130.0 | -42 | 0.27 |
| 174 | P-67 | 367 | J-60 | J-62 | 4.0 | 130.0 | 2 | 0.04 |
| 175 | P-68 | 301 | J-44 | J-62 | 2.0 | 130.0 | 0 | 0.05 |
| 181 | P-69 | 343 | J-60 | J-66 | 8.0 | 130.0 | 79 | 0.51 |
| 182 | P-70 | 322 | J-66 | J-64 | 8.0 | 130.0 | 47 | 0.30 |
| 183 | P-71 | 98 | J-64 | J-65 | 6.0 | 130.0 | 1 | 0.01 |
| 184 | P-72 | 733 | J-66 | J-47 | 12.0 | 130.0 | -31 | 0.09 |
| 194 | P-73 | 717 | J-54 | J-68 | 8.0 | 130.0 | -8 | 0.05 |
| 195 | P-74 | 307 | J-68 | J-69 | 8.0 | 130.0 | -11 | 0.07 |
| 196 | P-75 | 23 | J-69 | J-70 | 8.0 | 130.0 | -29 | 0.19 |
| 198 | P-77 | 331 | J-70 | J-71 | 8.0 | 130.0 | 8 | 0.05 |
| 199 | P-78 | 285 | J-71 | J-72 | 8.0 | 130.0 | -40 | 0.25 |
| 201 | P-80 | 53 | J-74 | J-73 | 12.0 | 130.0 | -124 | 0.35 |
| 202 | P-81 | 306 | J-73 | J-58 | 10.0 | 130.0 | -124 | 0.51 |
| 207 | P-82 | 145 | J-74 | J-75 | 12.0 | 130.0 | 97 | 0.28 |
| 208 | P-83 | 36 | J-75 | J-76 | 8.0 | 130.0 | 97 | 0.62 |
| 209 | P-84 | 166 | J-76 | J-77 | 8.0 | 130.0 | 45 | 0.29 |
| 210 | P-85 | 79 | J-77 | J-78 | 8.0 | 130.0 | 78 | 0.50 |
| 211 | P-86 | 374 | J-77 | J-59 | 8.0 | 130.0 | -35 | 0.23 |
| 212 | P-87 | 275 | J-78 | J-79 | 8.0 | 130.0 | 31 | 0.20 |
| 213 | P-88 | 133 | J-79 | J-80 | 6.0 | 130.0 | 9 | 0.10 |
| 214 | P-89 | 243 | J-80 | J-60 | 4.0 | 130.0 | 9 | 0.22 |
| 218 | P-90 | 385 | J-69 | J-81 | 6.0 | 130.0 | 16 | 0.18 |
| 219 | P-91 | 344 | J-81 | J-82 | 6.0 | 130.0 | 12 | 0.14 |
| 220 | P-92 | 51 | J-82 | J-83 | 12.0 | 130.0 | -45 | 0.13 |
| 221 | P-93 | 334 | J-83 | J-71 | 8.0 | 130.0 | -45 | 0.29 |
| 226 | P-94 | 329 | J-82 | J-84 | 8.0 | 130.0 | 53 | 0.34 |
| 227 | P-95 | 269 | J-84 | J-85 | 4.0 | 130.0 | 10 | 0.25 |
| 228 | P-96 | 63 | J-85 | J-87 | 8.0 | 130.0 | 10 | 0.06 |
| 229 | P-97 | 44 | J-87 | J-86 | 8.0 | 130.0 | -14 | 0.09 |
| 230 | P-98 | 1,050 | J-86 | J-76 | 8.0 | 130.0 | -50 | 0.32 |
| 236 | P-99 | 1,160 | J-78 | J-92 | 8.0 | 130.0 | 44 | 0.28 |
| 237 | P-100 | 1,056 | J-79 | J-92 | 6.0 | 130.0 | 20 | 0.23 |
| 238 | P-101 | 293 | J-92 | J-91 | 6.0 | 130.0 | 31 | 0.35 |
| 239 | P-102 | 54 | J-91 | J-90 | 8.0 | 130.0 | 31 | 0.20 |
| 240 | P-103 | 332 | J-66 | J-88 | 12.0 | 130.0 | 58 | 0.16 |
| 241 | P-104 | 40 | J-88 | J-89 | 8.0 | 130.0 | 11 | 0.07 |
| 242 | P-105 | 1,101 | J-88 | J-90 | 12.0 | 130.0 | 44 | 0.13 |
| 245 | P-106 | 265 | J-89 | J-93 | 4.0 | 130.0 | 11 | 0.29 |
| 246 | P-107 | 25 | J-93 | J-94 | 8.0 | 130.0 | 11 | 0.07 |
| 247 | P-108 | 352 | J-94 | J-64 | 8.0 | 130.0 | -43 | 0.28 |
| 253 | P-109 | 701 | J-94 | J-95 | 8.0 | 130.0 | 27 | 0.17 |
| 254 | P-110 | 390 | J-95 | J-96 | 8.0 | 130.0 | 16 | 0.10 |
| 255 | P-111 | 1,072 | J-96 | J-97 | 8.0 | 130.0 | 4 | 0.02 |
| 256 | P-112 | 1,081 | J-97 | J-98 | 8.0 | 130.0 | 7 | 0.05 |
| 257 | P-113 | 728 | J-98 | J-99 | 8.0 | 130.0 | 11 | 0.07 |
| 259 | P-114 | 978 | J-94 | J-100 | 8.0 | 130.0 | 24 | 0.15 |
| 260 | P-115 | 344 | J-95 | J-100 | 6.0 | 150.0 | 6 | 0.06 |
| 262 | P-116 | 392 | J-100 | J-101 | 8.0 | 150.0 | 22 | 0.14 |
| 263 | P-117 | 345 | J-96 | J-101 | 6.0 | 150.0 | 8 | 0.09 |
| 265 | P-118 | 348 | J-101 | J-102 | 8.0 | 150.0 | 27 | 0.17 |
| 267 | P-119 | 725 | J-102 | J-103 | 8.0 | 150.0 | 11 | 0.07 |
| 268 | P-120 | 346 | J-103 | J-97 | 6.0 | 150.0 | -17 | 0.19 |
| 270 | P-121 | 361 | J-103 | J-104 | 8.0 | 150.0 | 22 | 0.14 |

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|-----|-------|-------|-------|-------|------|-------|-----|------|
| | P-122 | 362 | J-104 | J-105 | 8.0 | 150.0 | 11 | 0.07 |
| 274 | P-123 | 344 | J-98 | J-106 | 4.0 | 130.0 | 6 | 0.15 |
| 275 | P-124 | 357 | J-105 | J-106 | 8.0 | 150.0 | 1 | 0.00 |
| 277 | P-125 | 729 | J-106 | J-107 | 8.0 | 150.0 | 2 | 0.02 |
| 280 | P-126 | 193 | J-104 | J-109 | 8.0 | 130.0 | 6 | 0.04 |
| 281 | P-127 | 1,093 | J-109 | J-108 | 8.0 | 130.0 | -9 | 0.06 |
| 282 | P-128 | 165 | J-102 | J-108 | 6.0 | 130.0 | 12 | 0.14 |
| 288 | P-129 | 356 | J-107 | J-99 | 8.0 | 130.0 | -31 | 0.20 |
| 289 | P-130 | 185 | J-99 | J-114 | 8.0 | 130.0 | -25 | 0.16 |
| 290 | P-131 | 742 | J-114 | J-113 | 12.0 | 130.0 | -63 | 0.18 |
| 292 | P-132 | 81 | J-115 | J-113 | 8.0 | 130.0 | 25 | 0.16 |
| 293 | P-133 | 306 | J-113 | J-98 | 6.0 | 130.0 | 17 | 0.19 |
| 294 | P-134 | 1,085 | J-113 | J-112 | 12.0 | 130.0 | -60 | 0.17 |
| 295 | P-135 | 303 | J-97 | J-112 | 6.0 | 130.0 | -25 | 0.28 |
| 296 | P-136 | 358 | J-112 | J-111 | 12.0 | 130.0 | -89 | 0.25 |
| 297 | P-137 | 353 | J-111 | J-110 | 12.0 | 130.0 | -65 | 0.18 |
| 298 | P-138 | 369 | J-110 | J-90 | 12.0 | 130.0 | -67 | 0.19 |
| 303 | P-139 | 756 | J-84 | J-119 | 8.0 | 130.0 | 41 | 0.26 |
| 304 | P-140 | 333 | J-119 | J-118 | 8.0 | 130.0 | 13 | 0.08 |
| 305 | P-141 | 756 | J-118 | J-87 | 8.0 | 130.0 | -21 | 0.13 |
| 306 | P-142 | 188 | J-118 | J-117 | 4.0 | 130.0 | 8 | 0.20 |
| 307 | P-143 | 771 | J-86 | J-117 | 8.0 | 130.0 | 32 | 0.20 |
| 308 | P-144 | 230 | J-117 | J-116 | 6.0 | 130.0 | 9 | 0.10 |
| 309 | P-145 | 727 | J-116 | J-92 | 8.0 | 130.0 | -25 | 0.16 |
| 310 | P-146 | 311 | J-116 | J-111 | 6.0 | 130.0 | 30 | 0.34 |
| 318 | P-147 | 334 | J-119 | J-120 | 8.0 | 130.0 | 23 | 0.15 |
| 319 | P-148 | 380 | J-120 | J-122 | 8.0 | 130.0 | 8 | 0.05 |
| 320 | P-149 | 334 | J-122 | J-123 | 4.0 | 130.0 | 6 | 0.15 |
| 321 | P-150 | 336 | J-120 | J-121 | 8.0 | 130.0 | 12 | 0.08 |
| 322 | P-151 | 384 | J-123 | J-121 | 8.0 | 130.0 | -32 | 0.20 |
| 323 | P-152 | 336 | J-121 | J-118 | 8.0 | 130.0 | -23 | 0.14 |
| 324 | P-153 | 1,072 | J-117 | J-126 | 8.0 | 130.0 | 27 | 0.17 |
| 325 | P-154 | 366 | J-123 | J-124 | 8.0 | 130.0 | 34 | 0.21 |
| 326 | P-155 | 94 | J-124 | J-125 | 8.0 | 130.0 | 5 | 0.03 |
| 327 | P-156 | 231 | J-125 | J-126 | 4.0 | 130.0 | 5 | 0.12 |
| 331 | P-157 | 386 | J-124 | J-129 | 8.0 | 130.0 | 26 | 0.17 |
| 332 | P-158 | 126 | J-129 | J-128 | 8.0 | 130.0 | 5 | 0.03 |
| 333 | P-159 | 202 | J-128 | J-127 | 4.0 | 130.0 | 5 | 0.12 |
| 334 | P-160 | 387 | J-127 | J-126 | 8.0 | 130.0 | -24 | 0.15 |
| 335 | P-161 | 308 | J-127 | J-115 | 6.0 | 130.0 | 28 | 0.31 |
| 340 | P-162 | 328 | J-129 | J-131 | 8.0 | 130.0 | 19 | 0.12 |
| 341 | P-163 | 334 | J-131 | J-130 | 8.0 | 130.0 | 9 | 0.06 |
| 342 | P-164 | 329 | J-130 | J-127 | 8.0 | 130.0 | 3 | 0.02 |
| 343 | P-165 | 362 | J-131 | J-132 | 8.0 | 130.0 | 7 | 0.05 |
| 344 | P-166 | 336 | J-132 | J-133 | 8.0 | 130.0 | 5 | 0.03 |
| 345 | P-167 | 359 | J-133 | J-130 | 8.0 | 130.0 | -2 | 0.01 |
| 347 | P-168 | 686 | J-133 | J-134 | 8.0 | 130.0 | 4 | 0.03 |
| 352 | P-169 | 1,702 | J-135 | J-137 | 8.0 | 130.0 | -3 | 0.02 |
| 353 | P-170 | 230 | J-137 | J-136 | 8.0 | 130.0 | -6 | 0.04 |
| 354 | P-171 | 156 | J-109 | J-138 | 8.0 | 130.0 | 14 | 0.09 |
| 355 | P-172 | 378 | J-138 | J-136 | 8.0 | 130.0 | 6 | 0.04 |
| 359 | P-173 | 368 | J-138 | J-139 | 8.0 | 130.0 | 5 | 0.03 |
| 360 | P-174 | 346 | J-139 | J-105 | 8.0 | 130.0 | -6 | 0.04 |
| 361 | P-175 | 361 | J-139 | J-140 | 8.0 | 130.0 | 8 | 0.05 |
| 362 | P-176 | 343 | J-107 | J-141 | 8.0 | 130.0 | 11 | 0.07 |
| 363 | P-177 | 727 | J-141 | J-140 | 8.0 | 130.0 | -3 | 0.02 |
| 365 | P-178 | 370 | J-141 | J-142 | 6.0 | 130.0 | 4 | 0.04 |
| 366 | P-179 | 1,103 | J-140 | J-142 | 6.0 | 130.0 | 2 | 0.03 |
| 368 | P-180 | 1,454 | J-143 | J-142 | 6.0 | 130.0 | -2 | 0.03 |
| 369 | P-181 | 1,088 | J-141 | J-143 | 8.0 | 130.0 | 8 | 0.05 |
| 371 | P-182 | 211 | J-143 | J-144 | 8.0 | 130.0 | 6 | 0.04 |
| 373 | P-183 | 676 | J-144 | J-145 | 8.0 | 150.0 | 4 | 0.03 |
| 378 | P-184 | 154 | J-145 | J-146 | 8.0 | 150.0 | 6 | 0.04 |
| 379 | P-185 | 367 | J-146 | J-147 | 8.0 | 150.0 | -3 | 0.02 |
| 380 | P-186 | 155 | J-147 | J-148 | 8.0 | 150.0 | -7 | 0.04 |
| 381 | P-187 | 370 | J-148 | J-145 | 8.0 | 150.0 | 3 | 0.02 |
| 382 | P-188 | 370 | J-149 | J-146 | 8.0 | 130.0 | -6 | 0.04 |

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|-----|----------------|-------|-------|-------|------|-------|------|------|
| | P-189 | 710 | J-148 | J-107 | 8.0 | 150.0 | -16 | 0.10 |
| 390 | P-192 | 158 | J-150 | J-151 | 8.0 | 130.0 | -4 | 0.03 |
| 391 | P-193 | 350 | J-151 | J-152 | 8.0 | 130.0 | -8 | 0.05 |
| 392 | P-194 | 61 | J-152 | J-153 | 8.0 | 130.0 | -20 | 0.13 |
| 394 | P-195 | 1,639 | J-151 | J-154 | 6.0 | 130.0 | -1 | 0.01 |
| 397 | P-197 | 1,163 | J-153 | J-155 | 8.0 | 130.0 | 2 | 0.01 |
| 398 | P-198 | 1,199 | J-152 | J-154 | 12.0 | 130.0 | 10 | 0.03 |
| 406 | P-202 | 495 | J-158 | J-159 | 16.0 | 130.0 | 112 | 0.18 |
| 408 | P-203 | 114 | J-159 | PMP-1 | 8.0 | 130.0 | 112 | 0.71 |
| 410 | P-204 | 78 | J-160 | PMP-1 | 8.0 | 130.0 | -112 | 0.71 |
| 412 | P-10000 | 146 | J-159 | J-160 | 0.5 | 50.0 | 0 | 0.22 |
| 421 | P-206 | 336 | J-160 | J-161 | 8.0 | 130.0 | 112 | 0.71 |
| 422 | P-207 | 928 | J-161 | J-162 | 8.0 | 130.0 | 64 | 0.41 |
| 423 | P-208 | 327 | J-163 | J-162 | 8.0 | 130.0 | 0 | 0.00 |
| 424 | P-209 | 1,549 | J-161 | J-164 | 6.0 | 130.0 | 41 | 0.46 |
| 427 | P-210 | 63 | J-164 | J-169 | 8.0 | 130.0 | 21 | 0.13 |
| 428 | P-211 | 303 | J-169 | J-170 | 8.0 | 130.0 | 1 | 0.01 |
| 433 | P-212 | 263 | J-169 | J-171 | 8.0 | 130.0 | 20 | 0.13 |
| 434 | P-213 | 317 | J-171 | J-172 | 8.0 | 130.0 | 1 | 0.01 |
| 435 | P-214 | 254 | J-171 | J-173 | 8.0 | 130.0 | 17 | 0.11 |
| 436 | P-215 | 348 | J-173 | J-174 | 8.0 | 130.0 | 1 | 0.01 |
| 439 | P-216 | 206 | J-173 | J-175 | 8.0 | 130.0 | 16 | 0.10 |
| 440 | P-217 | 303 | J-175 | J-176 | 8.0 | 130.0 | 1 | 0.01 |
| 443 | P-218 | 372 | J-175 | J-177 | 8.0 | 130.0 | 12 | 0.08 |
| 444 | P-219 | 27 | J-177 | J-165 | 8.0 | 130.0 | 9 | 0.06 |
| 445 | P-220 | 159 | J-177 | J-178 | 8.0 | 130.0 | 1 | 0.01 |
| 448 | P-221 | 954 | J-165 | J-180 | 8.0 | 130.0 | 3 | 0.02 |
| 449 | P-222 | 655 | J-180 | J-167 | 8.0 | 130.0 | 3 | 0.02 |
| 450 | P-223 | 512 | J-167 | J-166 | 8.0 | 130.0 | 4 | 0.02 |
| 451 | P-224 | 865 | J-166 | J-179 | 8.0 | 130.0 | -3 | 0.02 |
| 452 | P-225 | 788 | J-179 | J-165 | 8.0 | 130.0 | -3 | 0.02 |
| 453 | P-226 | 822 | J-164 | J-168 | 8.0 | 130.0 | 13 | 0.08 |
| 456 | P-227 | 213 | J-168 | J-181 | 8.0 | 130.0 | 12 | 0.08 |
| 457 | P-228 | 946 | J-181 | J-182 | 8.0 | 130.0 | 11 | 0.07 |
| 458 | P-229 | 490 | J-182 | J-167 | 8.0 | 130.0 | 8 | 0.05 |
| 462 | P-230 | 408 | J-162 | J-183 | 8.0 | 130.0 | 62 | 0.39 |
| 463 | P-231 | 723 | J-183 | J-184 | 8.0 | 130.0 | 52 | 0.33 |
| 464 | P-232 | 376 | J-184 | J-185 | 8.0 | 130.0 | 46 | 0.29 |
| 471 | P-233 | 594 | J-185 | J-187 | 8.0 | 130.0 | 46 | 0.29 |
| 472 | P-234 | 505 | J-187 | J-188 | 8.0 | 130.0 | 10 | 0.06 |
| 473 | P-235 | 138 | J-188 | J-186 | 8.0 | 130.0 | 1 | 0.00 |
| 474 | P-236 | 430 | J-188 | J-189 | 8.0 | 130.0 | 8 | 0.05 |
| 475 | P-237 | 400 | J-189 | J-190 | 8.0 | 130.0 | 4 | 0.03 |
| 476 | P-238 | 265 | J-190 | J-191 | 8.0 | 130.0 | 2 | 0.01 |
| 477 | P-239 | 287 | J-191 | J-190 | 8.0 | 130.0 | -2 | 0.01 |
| 485 | P-240 | 365 | J-187 | J-192 | 8.0 | 130.0 | 33 | 0.21 |
| 486 | P-241 | 349 | J-192 | J-193 | 8.0 | 130.0 | 30 | 0.19 |
| 487 | P-242 | 383 | J-193 | J-194 | 8.0 | 130.0 | 28 | 0.18 |
| 488 | P-243 | 304 | J-194 | J-195 | 8.0 | 130.0 | 27 | 0.17 |
| 489 | P-244 | 530 | J-195 | J-196 | 8.0 | 130.0 | 25 | 0.16 |
| 490 | P-245 | 713 | J-196 | J-197 | 8.0 | 130.0 | 8 | 0.05 |
| 491 | P-246 | 1,147 | J-197 | J-198 | 8.0 | 130.0 | 6 | 0.04 |
| 495 | P-247 | 757 | J-196 | J-200 | 8.0 | 130.0 | 12 | 0.08 |
| 496 | P-248 | 1,203 | J-200 | J-199 | 8.0 | 130.0 | 8 | 0.05 |
| 497 | P-249 | 366 | J-199 | J-166 | 8.0 | 130.0 | -1 | 0.00 |
| 499 | P-250 | 276 | J-202 | J-200 | 8.0 | 130.0 | -1 | 0.01 |
| 503 | P-201(2) | 711 | J-204 | J-158 | 16.0 | 130.0 | 112 | 0.18 |
| 506 | P-201(1)(2) | 810 | J-205 | J-204 | 16.0 | 130.0 | 113 | 0.18 |
| 508 | P-201(1)(1)(1) | 990 | J-157 | J-206 | 16.0 | 130.0 | 113 | 0.18 |
| 509 | P-201(1)(1)(2) | 1,183 | J-206 | J-205 | 16.0 | 130.0 | 113 | 0.18 |
| 513 | P-251 | 757 | J-208 | J-207 | 8.0 | 130.0 | -1 | 0.01 |
| 514 | P-252 | 356 | J-207 | J-209 | 8.0 | 130.0 | 3 | 0.02 |
| 515 | P-253 | 216 | J-199 | J-207 | 8.0 | 130.0 | 7 | 0.04 |
| 522 | P-254 | 456 | J-209 | J-210 | 8.0 | 130.0 | -1 | 0.01 |
| 523 | P-255 | 233 | J-210 | J-211 | 8.0 | 130.0 | -1 | 0.01 |
| 524 | P-256 | 443 | J-211 | J-212 | 8.0 | 130.0 | -4 | 0.02 |
| 525 | P-257 | 217 | J-212 | J-215 | 8.0 | 130.0 | 0 | 0.00 |

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|-----|----------------|-------|--------|--------|------|-------|-------|-------|
| 527 | P-258 | 357 | J-215 | J-213 | 8.0 | 130.0 | 0 | 0.00 |
| | P-259 | 173 | J-215 | J-214 | 8.0 | 130.0 | 0 | 0.00 |
| 532 | P-260 | 476 | J-212 | J-216 | 8.0 | 130.0 | -4 | 0.02 |
| 533 | P-261 | 431 | J-216 | J-217 | 8.0 | 130.0 | -6 | 0.04 |
| 534 | P-262 | 1,058 | J-217 | J-218 | 8.0 | 130.0 | -6 | 0.04 |
| 535 | P-263 | 903 | J-218 | J-198 | 8.0 | 130.0 | -6 | 0.04 |
| 536 | P-264 | 477 | J-218 | J-219 | 8.0 | 130.0 | 0 | 0.00 |
| 541 | P-265 | 394 | J-211 | J-220 | 8.0 | 130.0 | 2 | 0.02 |
| 542 | P-266 | 350 | J-220 | J-221 | 8.0 | 130.0 | 1 | 0.01 |
| 543 | P-267 | 1,171 | J-221 | J-223 | 8.0 | 130.0 | 1 | 0.01 |
| 544 | P-268 | 396 | J-223 | J-222 | 8.0 | 130.0 | 0 | 0.00 |
| 545 | P-269 | 1,286 | J-222 | J-220 | 8.0 | 130.0 | -1 | 0.01 |
| 548 | P-270 | 1,117 | J-217 | J-224 | 8.0 | 130.0 | 0 | 0.00 |
| 549 | P-271 | 297 | J-224 | J-225 | 8.0 | 130.0 | 0 | 0.00 |
| 550 | P-272 | 282 | J-224 | J-225 | 8.0 | 130.0 | 0 | 0.00 |
| 558 | P-273 | 3,737 | J-198 | J-231 | 12.0 | 130.0 | 0 | 0.00 |
| 559 | P-274 | 2,079 | J-222 | J-226 | 8.0 | 130.0 | 1 | 0.00 |
| 560 | P-275 | 1,692 | J-226 | J-223 | 8.0 | 130.0 | -1 | 0.00 |
| 561 | P-276 | 3,082 | J-216 | J-227 | 8.0 | 130.0 | 2 | 0.02 |
| 562 | P-277 | 291 | J-227 | J-226 | 8.0 | 130.0 | -1 | 0.01 |
| 563 | P-278 | 108 | J-227 | PRV-2 | 8.0 | 130.0 | 2 | 0.02 |
| 564 | P-279 | 2,535 | PRV-2 | J-228 | 8.0 | 130.0 | 2 | 0.02 |
| 565 | P-280 | 300 | J-228 | J-229 | 8.0 | 130.0 | 2 | 0.01 |
| 566 | P-281 | 253 | J-229 | J-230 | 8.0 | 130.0 | 1 | 0.01 |
| 588 | P-282(1) | 246 | J-230 | PRV-3 | 8.0 | 130.0 | 0 | 0.00 |
| 589 | P-282(2) | 13 | PRV-3 | J-231 | 8.0 | 130.0 | 0 | 0.00 |
| 594 | P-200(1) | 57 | J-53 | J-233 | 16.0 | 130.0 | 114 | 0.18 |
| 595 | P-200(2) | 368 | J-233 | J-157 | 16.0 | 130.0 | 114 | 0.18 |
| 598 | P-286 | 3,357 | J-234 | J-3 | 16.0 | 150.0 | (N/A) | (N/A) |
| 601 | P-287 | 80 | J-159 | PRV-5 | 8.0 | 130.0 | (N/A) | (N/A) |
| 602 | P-288 | 63 | PRV-5 | J-160 | 8.0 | 130.0 | (N/A) | (N/A) |
| 605 | P-290 | 361 | J-235 | J-234 | 16.0 | 130.0 | (N/A) | (N/A) |
| 607 | P-289(1) | 2,011 | J-159 | J-236 | 16.0 | 130.0 | (N/A) | (N/A) |
| 608 | P-289(2) | 2,162 | J-236 | J-235 | 16.0 | 130.0 | (N/A) | (N/A) |
| 613 | P-291 | 66 | J-9 | PRV-6 | 6.0 | 130.0 | (N/A) | (N/A) |
| 614 | P-292 | 134 | PRV-6 | J-22 | 6.0 | 130.0 | (N/A) | (N/A) |
| 615 | P-293 | 745 | J-39 | J-51 | 6.0 | 130.0 | (N/A) | (N/A) |
| 618 | P-294(1) | 967 | J-135 | J-237 | 6.0 | 130.0 | (N/A) | (N/A) |
| 622 | P-294(2)(2) | 267 | J-238 | J-52 | 6.0 | 130.0 | (N/A) | (N/A) |
| 624 | P-294(2)(1)(1) | 591 | J-237 | J-239 | 6.0 | 130.0 | (N/A) | (N/A) |
| 625 | P-294(2)(1)(2) | 270 | J-239 | J-238 | 6.0 | 130.0 | (N/A) | (N/A) |
| 638 | P-76(1) | 341 | J-70 | J-241 | 8.0 | 130.0 | -40 | 0.25 |
| 639 | P-76(2) | 342 | J-241 | J-57 | 8.0 | 130.0 | -56 | 0.36 |
| 641 | P-79(1) | 68 | J-72 | J-242 | 12.0 | 130.0 | -40 | 0.11 |
| 642 | P-79(2) | 26 | J-242 | J-74 | 12.0 | 130.0 | -24 | 0.07 |
| 643 | P-295 | 326 | J-241 | J-242 | 8.0 | 130.0 | 16 | 0.10 |
| 647 | P-199(2)(2) | 5,258 | J-244 | J-156 | 12.0 | 130.0 | 3 | 0.01 |
| 648 | P-296 | 56 | J-244 | J-154 | 12.0 | 130.0 | -3 | 0.01 |
| 651 | P-196(2) | 236 | J-245 | J-153 | 8.0 | 130.0 | 26 | 0.17 |
| 654 | P-297(1) | 65 | J-245 | PRV-8 | 6.0 | 130.0 | -26 | 0.29 |
| 655 | P-297(2) | 48 | PRV-8 | J-149 | 6.0 | 130.0 | -26 | 0.29 |
| 656 | P-298 | 41 | J-245 | J-149 | 12.0 | 130.0 | (N/A) | (N/A) |
| 659 | P-191(2) | 249 | J-246 | J-150 | 8.0 | 130.0 | 0 | 0.00 |
| 661 | P-191(1)(1) | 428 | J-134 | J-247 | 8.0 | 130.0 | 0 | 0.00 |
| 665 | P-300 | 23 | J-246 | J-247 | 6.0 | 130.0 | (N/A) | (N/A) |
| 673 | P-303(1) | 30 | J-247 | PRV-10 | 8.0 | 130.0 | 0 | 0.00 |
| 674 | P-303(2) | 31 | PRV-10 | J-246 | 8.0 | 130.0 | 0 | 0.00 |
| 676 | P-190(1) | 726 | J-114 | J-249 | 8.0 | 130.0 | 28 | 0.18 |
| 677 | P-190(2) | 358 | J-249 | J-149 | 12.0 | 130.0 | 28 | 0.08 |

J:\2-17103 - Red Lodge On-Call 2017\TO 14 - Water PER\CADD 2-17103-14\Water Cad\2-17103-TO14 Red Lodge 2019 Water Model.wtg

Scenario: Pressure Reducing Base
Current Time Step: 0.000 h
FlexTable: PRV Table

| ID | Label | Elevation (ft) | Diameter (Valve) (in) | Minor Loss Coefficient (Local) | Hydraulic Grade Setting (Initial) (ft) | Pressure Setting (Initial) (psi) | Flow (gpm) | Hydraulic Grade (From) (ft) | Hydraulic Grade (To) (ft) | Headloss (ft) |
|-----|--------|----------------|-----------------------|--------------------------------|--|----------------------------------|------------|-----------------------------|---------------------------|---------------|
| 39 | PRV-1 | 5,647.00 | 12.0 | 0.000 | 5,753.28 | 46 | 1,036 | 5,875.40 | 5,753.36 | 122.04 |
| 553 | PRV-2 | 5,523.00 | 6.0 | 0.000 | 5,691.67 | 73 | 2 | 5,800.03 | 5,691.79 | 108.24 |
| 587 | PRV-3 | 5,523.95 | 6.0 | 0.000 | 5,692.62 | 73 | 0 | 5,691.79 | 5,800.04 | 0.00 |
| 600 | PRV-5 | 5,684.00 | 6.0 | 0.000 | 5,820.32 | 59 | (N/A) | (N/A) | (N/A) | (N/A) |
| 612 | PRV-6 | 0.00 | 6.0 | 0.000 | 5,755.90 | 48 | (N/A) | (N/A) | (N/A) | (N/A) |
| 653 | PRV-8 | 5,515.55 | 4.0 | 0.000 | 5,621.84 | 46 | 26 | 5,748.44 | 5,621.91 | 126.53 |
| 672 | PRV-10 | 5,524.45 | 4.0 | 0.000 | 5,621.49 | 42 | 0 | 5,748.51 | 5,621.90 | 0.00 |

J:\2-17103 - Red Lodge On-Call 2017\TO 14 - Water PER\CADD 2-17103-14\Water Cad\2-17103-TO14 Red Lodge 2019 Water Model.wtg

Scenario: remove pump base
Current Time Step: 0.000 h
Fire Flow Node FlexTable: Fire Flow Report

| Label | Satisfies Fire Flow Constraints? | Fire Flow (Needed) (gpm) | Flow (Total Available) (gpm) | Pressure (Calculated Residual) (psi) | Fire Flow (Available) (gpm) | Pressure (Calculated Zone Lower Limit) (psi) | Junction w/ Minimum Pressure (Zone) | Is Fire Flow Run Balanced? |
|-------|----------------------------------|--------------------------|------------------------------|--------------------------------------|-----------------------------|--|-------------------------------------|----------------------------|
| J-1 | False | 500 | (N/A) | (N/A) | (N/A) | (N/A) | (N/A) | False |
| J-2 | True | 500 | 3,538 | 46 | 3,535 | 20 | J-10 | True |
| J-3 | True | 500 | 3,536 | 53 | 3,535 | 20 | J-10 | True |
| p | True | 500 | 1,001 | 42 | 1,000 | 42 | J-5 | True |
| J-5 | True | 500 | 4,502 | 39 | 4,500 | 40 | p | True |
| J-6 | True | 500 | 3,537 | 51 | 3,535 | 20 | J-10 | True |
| J-7 | True | 500 | 2,511 | 20 | 2,511 | 26 | J-10 | True |
| J-8 | True | 500 | 3,535 | 48 | 3,534 | 20 | J-10 | True |
| J-9 | True | 500 | 2,454 | 20 | 2,448 | 26 | J-10 | True |
| J-10 | False | 500 | (N/A) | (N/A) | (N/A) | (N/A) | (N/A) | False |
| J-11 | False | 200 | (N/A) | (N/A) | (N/A) | (N/A) | (N/A) | False |
| J-12 | False | 200 | (N/A) | (N/A) | (N/A) | (N/A) | (N/A) | False |
| J-13 | True | 500 | 3,507 | 21 | 3,505 | 20 | J-14 | True |
| J-14 | True | 500 | 836 | 20 | 835 | 42 | J-5 | True |
| J-15 | True | 500 | 4,500 | 36 | 4,500 | 36 | J-14 | True |
| J-16 | True | 500 | 4,502 | 42 | 4,500 | 40 | J-5 | True |
| J-17 | True | 500 | 4,500 | 42 | 4,500 | 40 | J-5 | True |
| J-18 | True | 500 | 4,500 | 42 | 4,500 | 40 | J-5 | True |
| J-19 | True | 500 | 4,503 | 31 | 4,500 | 35 | J-22 | True |
| J-20 | True | 500 | 4,184 | 20 | 4,182 | 20 | J-24 | True |
| J-21 | True | 500 | 2,573 | 21 | 2,570 | 20 | J-22 | True |
| J-22 | True | 500 | 1,050 | 20 | 1,048 | 43 | J-5 | True |
| J-23 | True | 500 | 4,153 | 20 | 4,153 | 21 | J-20 | True |
| J-24 | True | 500 | 3,943 | 20 | 3,943 | 24 | J-20 | True |
| J-26 | True | 500 | 4,500 | 41 | 4,500 | 40 | J-5 | True |
| J-27 | True | 500 | 4,506 | 40 | 4,500 | 41 | J-5 | True |
| J-28 | True | 500 | 4,504 | 47 | 4,500 | 42 | J-5 | True |
| J-29 | True | 500 | 4,503 | 39 | 4,500 | 41 | J-5 | True |
| J-30 | True | 500 | 4,504 | 36 | 4,500 | 42 | J-5 | True |
| J-31 | True | 500 | 4,504 | 49 | 4,500 | 41 | J-68 | True |
| J-32 | True | 500 | 4,500 | 48 | 4,500 | 40 | J-51 | True |
| J-33 | True | 500 | 4,504 | 48 | 4,500 | 40 | J-51 | True |
| J-34 | True | 500 | 4,503 | 48 | 4,500 | 40 | J-51 | True |
| J-35 | True | 500 | 4,500 | 47 | 4,500 | 40 | J-51 | True |
| J-36 | True | 500 | 4,500 | 48 | 4,500 | 40 | J-51 | True |
| J-37 | True | 500 | 3,183 | 20 | 3,181 | 28 | J-39 | True |
| J-38 | True | 500 | 2,300 | 22 | 2,297 | 20 | J-39 | True |
| J-39 | True | 500 | 1,284 | 20 | 1,281 | 42 | J-38 | True |
| J-40 | True | 500 | 4,500 | 34 | 4,500 | 35 | J-41 | True |
| J-41 | True | 500 | 4,503 | 34 | 4,500 | 34 | J-42 | True |
| J-42 | True | 500 | 4,500 | 31 | 4,500 | 34 | J-51 | True |
| J-43 | True | 500 | 3,798 | 21 | 3,794 | 20 | J-45 | True |
| J-44 | True | 500 | 3,009 | 20 | 3,009 | 34 | J-45 | True |
| J-45 | True | 500 | 1,652 | 20 | 1,650 | 43 | J-5 | True |
| J-46 | True | 500 | 4,206 | 32 | 4,206 | 20 | J-51 | True |
| J-47 | True | 500 | 4,111 | 37 | 4,107 | 20 | J-51 | True |
| J-48 | True | 500 | 4,006 | 37 | 4,006 | 20 | J-51 | True |
| J-49 | True | 500 | 2,349 | 36 | 2,349 | 20 | J-51 | True |
| J-50 | True | 500 | 890 | 29 | 888 | 20 | J-51 | True |
| J-51 | True | 500 | 634 | 20 | 629 | 42 | J-50 | True |
| J-52 | True | 500 | 1,945 | 36 | 1,942 | 20 | J-51 | True |
| J-53 | False | 500 | (N/A) | (N/A) | (N/A) | (N/A) | (N/A) | False |
| J-54 | True | 500 | 4,505 | 49 | 4,500 | 41 | J-68 | True |
| J-55 | True | 500 | 4,503 | 53 | 4,500 | 40 | J-68 | True |
| J-56 | True | 500 | 4,503 | 54 | 4,500 | 40 | J-68 | True |

| | | | | | | | | |
|-------|------|-----|-------|----|-------|----|-------|------|
| J-57 | True | 500 | 4,503 | 43 | 4,500 | 39 | J-68 | True |
| J-58 | True | 500 | 4,503 | 53 | 4,500 | 39 | J-51 | True |
| J-59 | True | 500 | 4,505 | 47 | 4,500 | 34 | J-51 | True |
| J-60 | True | 500 | 4,504 | 41 | 4,500 | 29 | J-51 | True |
| J-62 | True | 500 | 809 | 20 | 807 | 43 | J-5 | True |
| J-64 | True | 500 | 4,503 | 29 | 4,500 | 23 | J-51 | True |
| J-65 | True | 500 | 3,224 | 20 | 3,223 | 34 | J-51 | True |
| J-66 | True | 500 | 4,505 | 43 | 4,500 | 22 | J-51 | True |
| J-68 | True | 500 | 4,504 | 20 | 4,500 | 40 | J-51 | True |
| J-69 | True | 500 | 4,502 | 46 | 4,500 | 33 | J-68 | True |
| J-70 | True | 500 | 4,502 | 46 | 4,500 | 33 | J-68 | True |
| J-71 | True | 500 | 4,503 | 50 | 4,500 | 36 | J-68 | True |
| J-72 | True | 500 | 4,500 | 53 | 4,500 | 38 | J-51 | True |
| J-73 | True | 500 | 4,500 | 54 | 4,500 | 38 | J-51 | True |
| J-74 | True | 500 | 4,503 | 54 | 4,500 | 38 | J-51 | True |
| J-75 | True | 500 | 4,500 | 53 | 4,500 | 37 | J-51 | True |
| J-76 | True | 500 | 4,503 | 52 | 4,500 | 36 | J-51 | True |
| J-77 | True | 500 | 4,503 | 48 | 4,500 | 35 | J-51 | True |
| J-78 | True | 500 | 4,503 | 45 | 4,500 | 34 | J-51 | True |
| J-79 | True | 500 | 4,503 | 32 | 4,500 | 32 | J-80 | True |
| J-80 | True | 500 | 3,508 | 20 | 3,508 | 38 | J-51 | True |
| J-81 | True | 500 | 3,329 | 20 | 3,325 | 40 | J-68 | True |
| J-82 | True | 500 | 4,504 | 42 | 4,500 | 37 | J-68 | True |
| J-83 | True | 500 | 4,500 | 42 | 4,500 | 37 | J-68 | True |
| J-84 | True | 500 | 4,503 | 35 | 4,500 | 36 | J-51 | True |
| J-85 | True | 500 | 4,500 | 34 | 4,500 | 34 | J-51 | True |
| J-86 | True | 500 | 4,504 | 41 | 4,500 | 34 | J-51 | True |
| J-87 | True | 500 | 4,503 | 40 | 4,500 | 34 | J-51 | True |
| J-88 | True | 500 | 4,503 | 45 | 4,500 | 23 | J-51 | True |
| J-89 | True | 500 | 4,500 | 41 | 4,500 | 23 | J-51 | True |
| J-90 | True | 500 | 4,508 | 47 | 4,500 | 25 | J-51 | True |
| J-91 | True | 500 | 4,500 | 44 | 4,500 | 26 | J-51 | True |
| J-92 | True | 500 | 4,508 | 42 | 4,500 | 30 | J-51 | True |
| J-93 | True | 500 | 4,500 | 28 | 4,500 | 24 | J-51 | True |
| J-94 | True | 500 | 4,504 | 31 | 4,500 | 24 | J-51 | True |
| J-95 | True | 500 | 4,505 | 25 | 4,500 | 24 | J-51 | True |
| J-96 | True | 500 | 4,504 | 27 | 4,500 | 25 | J-51 | True |
| J-97 | True | 500 | 4,504 | 40 | 4,500 | 25 | J-51 | True |
| J-98 | True | 500 | 4,507 | 42 | 4,500 | 26 | J-51 | True |
| J-99 | True | 500 | 4,505 | 53 | 4,500 | 26 | J-51 | True |
| J-100 | True | 500 | 4,507 | 28 | 4,500 | 24 | J-51 | True |
| J-101 | True | 500 | 4,504 | 33 | 4,500 | 25 | J-51 | True |
| J-102 | True | 500 | 4,504 | 33 | 4,500 | 25 | J-51 | True |
| J-103 | True | 500 | 4,505 | 37 | 4,500 | 25 | J-51 | True |
| J-104 | True | 500 | 4,505 | 39 | 4,500 | 25 | J-51 | True |
| J-105 | True | 500 | 4,504 | 40 | 4,500 | 25 | J-51 | True |
| J-106 | True | 500 | 4,504 | 38 | 4,500 | 26 | J-51 | True |
| J-107 | True | 500 | 4,507 | 51 | 4,500 | 26 | J-51 | True |
| J-108 | True | 500 | 4,162 | 20 | 4,159 | 28 | J-51 | True |
| J-109 | True | 500 | 4,501 | 36 | 4,500 | 25 | J-51 | True |
| J-110 | True | 500 | 4,502 | 49 | 4,500 | 25 | J-51 | True |
| J-111 | True | 500 | 4,505 | 51 | 4,500 | 26 | J-51 | True |
| J-112 | True | 500 | 4,504 | 52 | 4,500 | 26 | J-51 | True |
| J-113 | True | 500 | 4,505 | 54 | 4,500 | 26 | J-51 | True |
| J-114 | True | 500 | 4,509 | 55 | 4,500 | 26 | J-51 | True |
| J-115 | True | 500 | 4,503 | 50 | 4,500 | 27 | J-51 | True |
| J-116 | True | 500 | 4,504 | 42 | 4,500 | 30 | J-51 | True |
| J-117 | True | 500 | 4,504 | 44 | 4,500 | 32 | J-51 | True |
| J-118 | True | 500 | 4,504 | 41 | 4,500 | 31 | J-122 | True |
| J-119 | True | 500 | 4,504 | 27 | 4,500 | 29 | J-122 | True |
| J-120 | True | 500 | 4,446 | 21 | 4,443 | 20 | J-122 | True |
| J-121 | True | 500 | 4,503 | 37 | 4,500 | 27 | J-122 | True |
| J-122 | True | 500 | 3,272 | 20 | 3,269 | 39 | J-51 | True |
| J-123 | True | 500 | 4,504 | 30 | 4,500 | 30 | J-122 | True |
| J-124 | True | 500 | 4,503 | 27 | 4,500 | 28 | J-125 | True |
| J-125 | True | 500 | 4,481 | 20 | 4,481 | 28 | J-124 | True |
| J-126 | True | 500 | 4,508 | 34 | 4,500 | 32 | J-51 | True |
| J-127 | True | 500 | 4,504 | 40 | 4,500 | 31 | J-132 | True |

| | | | | | | | | |
|-------|-------|-----|-------|-------|-------|-------|-------|-------|
| J-129 | True | 500 | 4,351 | 20 | 4,351 | 26 | J-129 | True |
| J-130 | True | 500 | 4,503 | 21 | 4,500 | 26 | J-132 | True |
| J-131 | True | 500 | 4,432 | 33 | 4,428 | 20 | J-132 | True |
| J-132 | True | 500 | 4,344 | 21 | 4,341 | 20 | J-132 | True |
| J-133 | True | 500 | 3,791 | 20 | 3,789 | 35 | J-131 | True |
| J-134 | True | 500 | 4,055 | 31 | 4,053 | 20 | J-132 | True |
| J-135 | True | 500 | 2,893 | 20 | 2,889 | 40 | J-51 | True |
| J-136 | True | 500 | 1,642 | 20 | 1,639 | 43 | J-5 | True |
| J-137 | True | 500 | 3,169 | 31 | 3,168 | 20 | J-135 | True |
| J-138 | True | 500 | 2,768 | 30 | 2,766 | 20 | J-135 | True |
| J-139 | True | 500 | 4,472 | 32 | 4,470 | 20 | J-135 | True |
| J-140 | True | 500 | 4,503 | 39 | 4,500 | 25 | J-51 | True |
| J-141 | True | 500 | 4,503 | 33 | 4,500 | 26 | J-51 | True |
| J-142 | True | 500 | 4,503 | 44 | 4,500 | 26 | J-51 | True |
| J-143 | True | 500 | 3,881 | 20 | 3,877 | 31 | J-51 | True |
| J-144 | True | 500 | 4,504 | 34 | 4,500 | 26 | J-51 | True |
| J-145 | True | 500 | 4,501 | 35 | 4,500 | 26 | J-51 | True |
| J-146 | True | 500 | 4,502 | 46 | 4,500 | 26 | J-51 | True |
| J-147 | True | 500 | 4,503 | 46 | 4,500 | 26 | J-51 | True |
| J-148 | True | 500 | 4,504 | 40 | 4,500 | 26 | J-51 | True |
| J-149 | True | 500 | 4,505 | 44 | 4,500 | 26 | J-51 | True |
| J-150 | True | 500 | 4,508 | 38 | 4,500 | 26 | J-51 | True |
| J-151 | True | 500 | 3,491 | 20 | 3,487 | 34 | J-51 | True |
| J-152 | True | 500 | 3,836 | 22 | 3,832 | 20 | J-150 | True |
| J-153 | True | 500 | 4,502 | 28 | 4,500 | 25 | J-150 | True |
| J-154 | True | 500 | 4,504 | 36 | 4,500 | 26 | J-51 | True |
| J-155 | True | 500 | 4,493 | 20 | 4,486 | 24 | J-150 | True |
| J-156 | True | 500 | 2,822 | 20 | 2,819 | 38 | J-51 | True |
| J-157 | False | 500 | 3,753 | 20 | 3,750 | 32 | J-51 | True |
| J-158 | False | 500 | (N/A) | (N/A) | (N/A) | (N/A) | (N/A) | False |
| J-159 | True | 500 | (N/A) | (N/A) | (N/A) | (N/A) | (N/A) | False |
| J-160 | True | 500 | 2,966 | 34 | 2,966 | 20 | J-235 | True |
| J-161 | True | 500 | 2,965 | 25 | 2,965 | 20 | J-235 | True |
| J-162 | True | 500 | 2,640 | 21 | 2,633 | 20 | J-162 | True |
| J-163 | True | 500 | 2,088 | 20 | 2,086 | 21 | J-163 | True |
| J-164 | True | 500 | 1,935 | 20 | 1,935 | 28 | J-162 | True |
| J-165 | True | 500 | 1,724 | 22 | 1,718 | 20 | J-170 | True |
| J-166 | True | 500 | 1,752 | 25 | 1,749 | 20 | J-170 | True |
| J-167 | True | 500 | 1,784 | 37 | 1,777 | 20 | J-170 | True |
| J-168 | True | 500 | 1,768 | 36 | 1,761 | 20 | J-170 | True |
| J-169 | True | 500 | 1,741 | 22 | 1,740 | 20 | J-170 | True |
| J-170 | True | 500 | 1,707 | 23 | 1,707 | 20 | J-170 | True |
| J-171 | True | 500 | 1,599 | 20 | 1,598 | 28 | J-169 | True |
| J-172 | True | 500 | 1,725 | 21 | 1,723 | 20 | J-170 | True |
| J-173 | True | 500 | 1,637 | 20 | 1,636 | 25 | J-170 | True |
| J-174 | True | 500 | 1,718 | 22 | 1,718 | 20 | J-174 | True |
| J-175 | True | 500 | 1,600 | 20 | 1,599 | 27 | J-170 | True |
| J-176 | True | 500 | 1,738 | 22 | 1,736 | 20 | J-174 | True |
| J-177 | True | 500 | 1,660 | 20 | 1,659 | 24 | J-170 | True |
| J-178 | True | 500 | 1,751 | 25 | 1,748 | 20 | J-170 | True |
| J-179 | True | 500 | 1,750 | 22 | 1,749 | 20 | J-170 | True |
| J-180 | True | 500 | 1,762 | 27 | 1,762 | 20 | J-170 | True |
| J-181 | True | 500 | 1,758 | 27 | 1,758 | 20 | J-170 | True |
| J-182 | True | 500 | 1,743 | 23 | 1,742 | 20 | J-170 | True |
| J-183 | True | 500 | 1,754 | 32 | 1,751 | 20 | J-170 | True |
| J-184 | True | 500 | 2,087 | 20 | 2,078 | 22 | J-162 | True |
| J-185 | True | 500 | 2,011 | 20 | 2,004 | 22 | J-185 | True |
| J-186 | True | 500 | 1,959 | 20 | 1,959 | 25 | J-184 | True |
| J-187 | True | 500 | 1,742 | 20 | 1,741 | 24 | J-188 | True |
| J-188 | True | 500 | 1,946 | 20 | 1,943 | 21 | J-186 | True |
| J-189 | True | 500 | 1,783 | 21 | 1,782 | 20 | J-186 | True |
| J-190 | True | 500 | 1,700 | 20 | 1,696 | 23 | J-190 | True |
| J-191 | True | 500 | 1,621 | 20 | 1,621 | 22 | J-191 | True |
| J-192 | True | 500 | 1,624 | 21 | 1,620 | 20 | J-190 | True |
| J-193 | True | 500 | 1,976 | 20 | 1,973 | 20 | J-187 | True |
| J-194 | True | 500 | 2,002 | 20 | 2,000 | 20 | J-187 | True |
| J-195 | True | 500 | 1,971 | 23 | 1,969 | 20 | J-170 | True |
| J-196 | True | 500 | 1,938 | 25 | 1,937 | 20 | J-170 | True |

| | | | | | | | | |
|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| J-197 | False | 2,000 | 1,889 | 30 | 1,884 | 20 | J-170 | True |
| J-197 | True | 500 | 1,865 | 23 | 1,864 | 20 | J-170 | True |
| J-198 | True | 500 | 1,855 | 28 | 1,855 | 20 | J-170 | True |
| J-199 | True | 500 | 1,810 | 37 | 1,808 | 20 | J-170 | True |
| J-200 | True | 500 | 1,858 | 28 | 1,856 | 20 | J-170 | True |
| J-202 | True | 500 | 1,858 | 22 | 1,856 | 20 | J-170 | True |
| J-204 | False | 2,500 | (N/A) | (N/A) | (N/A) | (N/A) | (N/A) | False |
| J-205 | False | 500 | (N/A) | (N/A) | (N/A) | (N/A) | (N/A) | False |
| J-206 | False | 500 | (N/A) | (N/A) | (N/A) | (N/A) | (N/A) | False |
| J-207 | True | 500 | 1,819 | 35 | 1,816 | 20 | J-170 | True |
| J-208 | True | 500 | 1,787 | 20 | 1,786 | 22 | J-170 | True |
| J-209 | True | 500 | 1,830 | 30 | 1,825 | 20 | J-170 | True |
| J-210 | True | 500 | 1,834 | 29 | 1,834 | 20 | J-170 | True |
| J-211 | True | 500 | 1,838 | 29 | 1,838 | 20 | J-170 | True |
| J-212 | True | 500 | 1,841 | 26 | 1,841 | 20 | J-170 | True |
| J-213 | True | 500 | 1,759 | 20 | 1,759 | 26 | J-170 | True |
| J-214 | True | 500 | 1,797 | 20 | 1,797 | 23 | J-170 | True |
| J-215 | True | 500 | 1,839 | 21 | 1,839 | 20 | J-214 | True |
| J-216 | True | 500 | 1,844 | 29 | 1,844 | 20 | J-170 | True |
| J-217 | True | 500 | 1,848 | 27 | 1,848 | 20 | J-170 | True |
| J-218 | True | 500 | 1,846 | 24 | 1,846 | 20 | J-219 | True |
| J-219 | True | 500 | 1,729 | 20 | 1,729 | 28 | J-170 | True |
| J-220 | True | 500 | 1,839 | 25 | 1,839 | 20 | J-170 | True |
| J-221 | True | 500 | 1,840 | 22 | 1,840 | 20 | J-170 | True |
| J-222 | True | 500 | 1,841 | 31 | 1,840 | 20 | J-170 | True |
| J-223 | True | 500 | 1,839 | 30 | 1,839 | 20 | J-170 | True |
| J-224 | True | 500 | 1,744 | 20 | 1,744 | 21 | J-225 | True |
| J-225 | True | 500 | 1,736 | 20 | 1,736 | 21 | J-224 | True |
| J-226 | True | 500 | 1,840 | 41 | 1,840 | 20 | J-170 | True |
| J-227 | True | 500 | 1,841 | 40 | 1,840 | 20 | J-170 | True |
| J-228 | True | 500 | 1,547 | 23 | 1,546 | 20 | J-230 | True |
| J-229 | True | 500 | 1,507 | 21 | 1,506 | 20 | J-230 | True |
| J-230 | True | 500 | 1,476 | 20 | 1,474 | 25 | J-229 | True |
| J-231 | True | 500 | 1,855 | 50 | 1,855 | 20 | J-170 | True |
| J-233 | False | 500 | (N/A) | (N/A) | (N/A) | (N/A) | (N/A) | False |
| J-234 | False | 500 | (N/A) | (N/A) | (N/A) | (N/A) | (N/A) | False |
| J-235 | True | 500 | 2,966 | 20 | 2,966 | 27 | J-234 | True |
| J-236 | True | 500 | 2,966 | 27 | 2,966 | 20 | J-235 | True |
| J-237 | False | 500 | (N/A) | (N/A) | (N/A) | (N/A) | (N/A) | False |
| J-238 | False | 500 | (N/A) | (N/A) | (N/A) | (N/A) | (N/A) | False |
| J-239 | False | 500 | (N/A) | (N/A) | (N/A) | (N/A) | (N/A) | False |
| J-241 | False | 500 | (N/A) | (N/A) | (N/A) | (N/A) | (N/A) | False |
| J-242 | False | 500 | (N/A) | (N/A) | (N/A) | (N/A) | (N/A) | False |
| J-244 | False | 500 | (N/A) | (N/A) | (N/A) | (N/A) | (N/A) | False |
| J-245 | False | 500 | (N/A) | (N/A) | (N/A) | (N/A) | (N/A) | False |
| J-246 | False | 500 | (N/A) | (N/A) | (N/A) | (N/A) | (N/A) | False |
| J-247 | False | 500 | (N/A) | (N/A) | (N/A) | (N/A) | (N/A) | False |
| J-249 | False | 500 | (N/A) | (N/A) | (N/A) | (N/A) | (N/A) | False |

J:\2-17103 - Red Lodge On-Call 2017\TO 14 - Water PER\CADD 2-17103-14\Water Cad\2-17103-TO14 Red Lodge 2019 Water Model.wtg

Scenario: remove pump base
Current Time Step: 0.000 h
FlexTable: Junction Table

| ID | Label | Elevation (ft) | Demand (gpm) | Hydraulic Grade (ft) | Pressure (psi) |
|-----|-------|-------------------|-----------------|-------------------------|-------------------|
| 401 | J-157 | 5,738.00 | (N/A) | (N/A) | (N/A) |
| 402 | J-158 | 5,653.00 | (N/A) | (N/A) | (N/A) |
| 501 | J-204 | 5,686.00 | (N/A) | (N/A) | (N/A) |
| 504 | J-205 | 5,696.00 | (N/A) | (N/A) | (N/A) |
| 507 | J-206 | 5,719.00 | (N/A) | (N/A) | (N/A) |
| 593 | J-233 | 5,724.15 | (N/A) | (N/A) | (N/A) |
| 617 | J-237 | 5,587.93 | (N/A) | (N/A) | (N/A) |
| 620 | J-238 | 5,599.43 | (N/A) | (N/A) | (N/A) |
| 623 | J-239 | 5,595.82 | (N/A) | (N/A) | (N/A) |
| 30 | J-1 | 5,869.00 | 0 | 5,881.99 | 6 |
| 151 | J-53 | 5,722.00 | 0 | 5,748.18 | 11 |
| 63 | J-12 | 5,854.50 | 0 | 5,881.36 | 12 |
| 60 | J-11 | 5,830.00 | 2 | 5,880.50 | 22 |
| 57 | J-10 | 5,799.00 | 0 | 5,879.25 | 35 |
| 37 | J-5 | 5,654.00 | 2 | 5,752.67 | 43 |
| 35 | p | 5,654.00 | 1 | 5,752.82 | 43 |
| 67 | J-14 | 5,648.00 | 1 | 5,752.40 | 45 |
| 66 | J-13 | 5,646.00 | 1 | 5,752.40 | 46 |
| 185 | J-68 | 5,642.00 | 4 | 5,748.68 | 46 |
| 92 | J-26 | 5,645.00 | 0 | 5,752.28 | 46 |
| 71 | J-18 | 5,645.00 | 0 | 5,752.33 | 46 |
| 70 | J-17 | 5,645.00 | 0 | 5,752.34 | 46 |
| 69 | J-16 | 5,645.00 | 2 | 5,752.35 | 46 |
| 68 | J-15 | 5,645.00 | 0 | 5,752.35 | 46 |
| 145 | J-51 | 5,640.00 | 5 | 5,748.56 | 47 |
| 83 | J-22 | 5,640.00 | 2 | 5,750.29 | 48 |
| 72 | J-19 | 5,640.00 | 3 | 5,750.84 | 48 |
| 82 | J-21 | 5,637.00 | 3 | 5,750.29 | 49 |
| 122 | J-39 | 5,635.00 | 3 | 5,749.75 | 50 |
| 94 | J-27 | 5,632.00 | 6 | 5,750.15 | 51 |
| 81 | J-20 | 5,632.00 | 3 | 5,750.61 | 51 |
| 84 | J-23 | 5,631.00 | 0 | 5,750.60 | 52 |
| 85 | J-24 | 5,631.00 | 0 | 5,750.61 | 52 |
| 113 | J-38 | 5,630.00 | 3 | 5,749.75 | 52 |
| 97 | J-29 | 5,628.00 | 3 | 5,749.54 | 53 |
| 101 | J-30 | 5,626.00 | 4 | 5,749.32 | 53 |
| 153 | J-54 | 5,624.00 | 5 | 5,748.68 | 54 |
| 112 | J-37 | 5,624.00 | 2 | 5,749.17 | 54 |
| 96 | J-28 | 5,624.00 | 4 | 5,749.44 | 54 |
| 102 | J-31 | 5,621.00 | 4 | 5,748.98 | 55 |
| 144 | J-50 | 5,619.00 | 3 | 5,748.56 | 56 |
| 111 | J-36 | 5,615.00 | 0 | 5,748.91 | 58 |
| 110 | J-35 | 5,615.00 | 0 | 5,748.91 | 58 |
| 108 | J-33 | 5,615.00 | 4 | 5,748.91 | 58 |
| 109 | J-34 | 5,615.00 | 3 | 5,748.91 | 58 |
| 107 | J-32 | 5,615.00 | 0 | 5,748.92 | 58 |
| 409 | J-160 | 5,685.00 | 0 | 5,820.40 | 59 |
| 162 | J-57 | 5,613.00 | 3 | 5,748.73 | 59 |
| 154 | J-55 | 5,613.00 | 3 | 5,748.75 | 59 |
| 603 | J-235 | 5,738.00 | 0 | 5,874.09 | 59 |
| 215 | J-81 | 5,612.00 | 4 | 5,748.67 | 59 |
| 129 | J-45 | 5,609.00 | 2 | 5,748.63 | 60 |
| 637 | J-241 | 5,608.00 | 0 | 5,748.70 | 61 |
| 126 | J-42 | 5,608.00 | 0 | 5,748.72 | 61 |
| 125 | J-41 | 5,608.00 | 3 | 5,748.72 | 61 |
| 124 | J-40 | 5,608.00 | 0 | 5,748.73 | 61 |
| 163 | J-58 | 5,608.00 | 3 | 5,748.74 | 61 |

| | | | | | |
|-----|-------|----------|---|----------|----|
| 155 | J-56 | 5,608.00 | 3 | 5,748.75 | 61 |
| 414 | J-162 | 5,679.00 | 2 | 5,820.19 | 61 |
| 127 | J-43 | 5,606.00 | 4 | 5,748.63 | 62 |
| 128 | J-44 | 5,606.00 | 0 | 5,748.63 | 62 |
| 415 | J-163 | 5,676.00 | 0 | 5,820.19 | 62 |
| 413 | J-161 | 5,676.00 | 7 | 5,820.29 | 62 |
| 133 | J-49 | 5,604.00 | 0 | 5,748.57 | 63 |
| 164 | J-59 | 5,604.00 | 5 | 5,748.68 | 63 |
| 146 | J-52 | 5,603.00 | 3 | 5,748.57 | 63 |
| 186 | J-69 | 5,603.00 | 2 | 5,748.68 | 63 |
| 187 | J-70 | 5,603.00 | 2 | 5,748.68 | 63 |
| 313 | J-122 | 5,602.00 | 3 | 5,748.59 | 63 |
| 173 | J-62 | 5,602.00 | 2 | 5,748.63 | 63 |
| 131 | J-47 | 5,601.00 | 4 | 5,748.57 | 64 |
| 132 | J-48 | 5,601.00 | 0 | 5,748.57 | 64 |
| 130 | J-46 | 5,601.00 | 0 | 5,748.58 | 64 |
| 189 | J-72 | 5,599.00 | 0 | 5,748.69 | 65 |
| 191 | J-74 | 5,599.00 | 3 | 5,748.69 | 65 |
| 640 | J-242 | 5,599.00 | 0 | 5,748.69 | 65 |
| 190 | J-73 | 5,599.00 | 0 | 5,748.70 | 65 |
| 596 | J-234 | 5,724.00 | 0 | 5,874.09 | 65 |
| 311 | J-120 | 5,598.00 | 3 | 5,748.59 | 65 |
| 302 | J-119 | 5,598.00 | 4 | 5,748.60 | 65 |
| 203 | J-77 | 5,598.00 | 3 | 5,748.67 | 65 |
| 192 | J-75 | 5,598.00 | 0 | 5,748.69 | 65 |
| 204 | J-78 | 5,597.00 | 3 | 5,748.66 | 66 |
| 193 | J-76 | 5,597.00 | 3 | 5,748.68 | 66 |
| 165 | J-60 | 5,595.00 | 4 | 5,748.63 | 66 |
| 459 | J-183 | 5,665.00 | 9 | 5,820.14 | 67 |
| 206 | J-80 | 5,593.00 | 0 | 5,748.65 | 67 |
| 188 | J-71 | 5,592.00 | 3 | 5,748.68 | 68 |
| 179 | J-66 | 5,591.00 | 5 | 5,748.57 | 68 |
| 205 | J-79 | 5,590.00 | 3 | 5,748.65 | 69 |
| 216 | J-82 | 5,590.00 | 4 | 5,748.66 | 69 |
| 217 | J-83 | 5,590.00 | 0 | 5,748.66 | 69 |
| 177 | J-64 | 5,587.00 | 3 | 5,748.55 | 70 |
| 178 | J-65 | 5,587.00 | 1 | 5,748.55 | 70 |
| 222 | J-84 | 5,587.00 | 3 | 5,748.63 | 70 |
| 606 | J-236 | 5,710.54 | 0 | 5,874.07 | 71 |
| 231 | J-88 | 5,583.00 | 3 | 5,748.57 | 72 |
| 232 | J-89 | 5,583.00 | 0 | 5,748.57 | 72 |
| 426 | J-170 | 5,654.00 | 1 | 5,819.98 | 72 |
| 460 | J-184 | 5,654.00 | 7 | 5,820.09 | 72 |
| 223 | J-85 | 5,582.00 | 0 | 5,748.61 | 72 |
| 224 | J-86 | 5,582.00 | 4 | 5,748.61 | 72 |
| 225 | J-87 | 5,582.00 | 3 | 5,748.61 | 72 |
| 461 | J-185 | 5,652.00 | 0 | 5,820.07 | 73 |
| 235 | J-92 | 5,580.00 | 8 | 5,748.59 | 73 |
| 556 | J-230 | 5,523.00 | 1 | 5,691.79 | 73 |
| 243 | J-93 | 5,578.00 | 0 | 5,748.53 | 74 |
| 244 | J-94 | 5,578.00 | 4 | 5,748.53 | 74 |
| 338 | J-132 | 5,578.00 | 2 | 5,748.55 | 74 |
| 555 | J-229 | 5,521.00 | 1 | 5,691.79 | 74 |
| 416 | J-164 | 5,649.00 | 7 | 5,819.99 | 74 |
| 233 | J-90 | 5,577.00 | 8 | 5,748.56 | 74 |
| 234 | J-91 | 5,577.00 | 0 | 5,748.56 | 74 |
| 425 | J-169 | 5,648.00 | 0 | 5,819.98 | 74 |
| 432 | J-174 | 5,647.00 | 1 | 5,819.98 | 75 |
| 348 | J-135 | 5,575.00 | 3 | 5,748.49 | 75 |
| 429 | J-171 | 5,646.00 | 2 | 5,819.98 | 75 |
| 248 | J-95 | 5,574.00 | 5 | 5,748.51 | 76 |
| 554 | J-228 | 5,517.00 | 1 | 5,691.79 | 76 |
| 430 | J-172 | 5,645.00 | 1 | 5,819.98 | 76 |
| 337 | J-131 | 5,572.00 | 3 | 5,748.55 | 76 |
| 466 | J-187 | 5,643.00 | 3 | 5,820.03 | 77 |
| 330 | J-129 | 5,571.00 | 3 | 5,748.56 | 77 |
| 431 | J-173 | 5,642.00 | 0 | 5,819.98 | 77 |

| | | | | | |
|-----|-------|----------|---|----------|----|
| 301 | J-110 | 5,570.00 | 2 | 5,748.55 | 77 |
| | J-118 | 5,570.00 | 4 | 5,748.59 | 77 |
| 465 | J-186 | 5,641.00 | 1 | 5,820.03 | 77 |
| 249 | J-96 | 5,569.00 | 4 | 5,748.51 | 78 |
| 312 | J-121 | 5,569.00 | 3 | 5,748.59 | 78 |
| 438 | J-176 | 5,640.00 | 1 | 5,819.98 | 78 |
| 48 | J-7 | 5,695.00 | 0 | 5,875.62 | 78 |
| 437 | J-175 | 5,639.00 | 2 | 5,819.98 | 78 |
| 467 | J-188 | 5,639.00 | 1 | 5,820.03 | 78 |
| 258 | J-100 | 5,567.00 | 7 | 5,748.51 | 79 |
| 315 | J-124 | 5,567.00 | 3 | 5,748.56 | 79 |
| 314 | J-123 | 5,567.00 | 4 | 5,748.58 | 79 |
| 299 | J-116 | 5,567.00 | 4 | 5,748.58 | 79 |
| 300 | J-117 | 5,567.00 | 4 | 5,748.58 | 79 |
| 284 | J-111 | 5,566.00 | 5 | 5,748.54 | 79 |
| 316 | J-125 | 5,566.00 | 0 | 5,748.56 | 79 |
| 31 | J-2 | 5,691.00 | 4 | 5,875.62 | 80 |
| 420 | J-168 | 5,634.00 | 1 | 5,819.98 | 80 |
| 261 | J-101 | 5,562.00 | 4 | 5,748.51 | 81 |
| 468 | J-189 | 5,633.00 | 4 | 5,820.03 | 81 |
| 478 | J-192 | 5,632.00 | 3 | 5,820.02 | 81 |
| 285 | J-112 | 5,560.00 | 4 | 5,748.53 | 82 |
| 417 | J-165 | 5,631.00 | 3 | 5,819.97 | 82 |
| 441 | J-177 | 5,631.00 | 3 | 5,819.97 | 82 |
| 442 | J-178 | 5,631.00 | 1 | 5,819.97 | 82 |
| 403 | J-159 | 5,685.00 | 0 | 5,874.05 | 82 |
| 329 | J-128 | 5,559.00 | 0 | 5,748.56 | 82 |
| 454 | J-181 | 5,630.00 | 1 | 5,819.98 | 82 |
| 264 | J-102 | 5,557.00 | 4 | 5,748.50 | 83 |
| 250 | J-97 | 5,556.00 | 4 | 5,748.51 | 83 |
| 278 | J-108 | 5,555.00 | 3 | 5,748.50 | 84 |
| 317 | J-126 | 5,555.00 | 8 | 5,748.56 | 84 |
| 469 | J-190 | 5,626.00 | 0 | 5,820.03 | 84 |
| 350 | J-137 | 5,553.00 | 3 | 5,748.49 | 85 |
| 50 | J-8 | 5,678.97 | 1 | 5,875.11 | 85 |
| 266 | J-103 | 5,552.00 | 5 | 5,748.50 | 85 |
| 479 | J-193 | 5,623.00 | 2 | 5,820.01 | 85 |
| 328 | J-127 | 5,550.00 | 4 | 5,748.55 | 86 |
| 447 | J-180 | 5,621.00 | 0 | 5,819.97 | 86 |
| 470 | J-191 | 5,621.00 | 4 | 5,820.03 | 86 |
| 349 | J-136 | 5,549.00 | 1 | 5,748.49 | 86 |
| 269 | J-104 | 5,548.00 | 5 | 5,748.50 | 87 |
| 446 | J-179 | 5,619.00 | 0 | 5,819.97 | 87 |
| 351 | J-138 | 5,547.00 | 3 | 5,748.49 | 87 |
| 279 | J-109 | 5,547.00 | 1 | 5,748.50 | 87 |
| 286 | J-113 | 5,547.00 | 5 | 5,748.52 | 87 |
| 291 | J-115 | 5,547.00 | 3 | 5,748.52 | 87 |
| 480 | J-194 | 5,617.00 | 1 | 5,820.00 | 88 |
| 251 | J-98 | 5,544.00 | 7 | 5,748.51 | 88 |
| 271 | J-105 | 5,543.00 | 4 | 5,748.49 | 89 |
| 481 | J-195 | 5,614.00 | 1 | 5,819.99 | 89 |
| 336 | J-130 | 5,542.00 | 4 | 5,748.55 | 89 |
| 356 | J-139 | 5,539.00 | 3 | 5,748.49 | 91 |
| 455 | J-182 | 5,610.00 | 3 | 5,819.98 | 91 |
| 483 | J-197 | 5,610.00 | 1 | 5,819.98 | 91 |
| 273 | J-106 | 5,538.00 | 4 | 5,748.49 | 91 |
| 482 | J-196 | 5,609.00 | 5 | 5,819.98 | 91 |
| 346 | J-134 | 5,537.00 | 4 | 5,748.55 | 92 |
| 339 | J-133 | 5,537.00 | 3 | 5,748.55 | 92 |
| 493 | J-200 | 5,607.00 | 3 | 5,819.98 | 92 |
| 45 | J-6 | 5,661.00 | 2 | 5,874.35 | 92 |
| 357 | J-140 | 5,535.00 | 3 | 5,748.49 | 92 |
| 418 | J-166 | 5,606.00 | 7 | 5,819.97 | 93 |
| 419 | J-167 | 5,606.00 | 7 | 5,819.97 | 93 |
| 287 | J-114 | 5,534.00 | 9 | 5,748.51 | 93 |
| 498 | J-202 | 5,604.00 | 1 | 5,819.98 | 93 |
| 252 | J-99 | 5,532.00 | 5 | 5,748.51 | 94 |

| | | | | | |
|-----|-------|----------|---|----------|-----|
| 33 | J-199 | 5,600.00 | 2 | 5,819.97 | 95 |
| | J-3 | 5,654.00 | 2 | 5,874.12 | 95 |
| 512 | J-209 | 5,599.00 | 4 | 5,819.97 | 96 |
| 276 | J-107 | 5,527.00 | 7 | 5,748.49 | 96 |
| 510 | J-207 | 5,597.00 | 3 | 5,819.97 | 96 |
| 511 | J-208 | 5,597.00 | 1 | 5,819.97 | 96 |
| 660 | J-247 | 5,524.78 | 0 | 5,748.55 | 97 |
| 531 | J-219 | 5,596.00 | 0 | 5,819.98 | 97 |
| 657 | J-246 | 5,524.12 | 0 | 5,748.49 | 97 |
| 364 | J-142 | 5,524.00 | 4 | 5,748.49 | 97 |
| 358 | J-141 | 5,524.00 | 3 | 5,748.49 | 97 |
| 675 | J-249 | 5,521.95 | 0 | 5,748.49 | 98 |
| 516 | J-210 | 5,591.00 | 0 | 5,819.97 | 99 |
| 53 | J-9 | 5,645.00 | 5 | 5,875.11 | 100 |
| 520 | J-214 | 5,589.00 | 0 | 5,819.97 | 100 |
| 484 | J-198 | 5,589.00 | 0 | 5,819.98 | 100 |
| 385 | J-150 | 5,517.00 | 4 | 5,748.49 | 100 |
| 519 | J-213 | 5,588.00 | 0 | 5,819.97 | 100 |
| 377 | J-149 | 5,516.00 | 8 | 5,748.49 | 101 |
| 375 | J-147 | 5,516.00 | 4 | 5,748.49 | 101 |
| 517 | J-211 | 5,587.00 | 0 | 5,819.97 | 101 |
| 521 | J-215 | 5,587.00 | 0 | 5,819.97 | 101 |
| 530 | J-218 | 5,587.00 | 0 | 5,819.98 | 101 |
| 376 | J-148 | 5,515.00 | 5 | 5,748.49 | 101 |
| 649 | J-245 | 5,514.95 | 0 | 5,748.49 | 101 |
| 518 | J-212 | 5,586.00 | 0 | 5,819.97 | 101 |
| 386 | J-151 | 5,512.00 | 4 | 5,748.49 | 102 |
| 537 | J-220 | 5,582.00 | 0 | 5,819.97 | 103 |
| 387 | J-152 | 5,510.00 | 2 | 5,748.49 | 103 |
| 374 | J-146 | 5,510.00 | 3 | 5,748.49 | 103 |
| 388 | J-153 | 5,509.00 | 4 | 5,748.49 | 104 |
| 372 | J-145 | 5,509.00 | 2 | 5,748.49 | 104 |
| 528 | J-216 | 5,580.00 | 0 | 5,819.97 | 104 |
| 538 | J-221 | 5,580.00 | 0 | 5,819.97 | 104 |
| 529 | J-217 | 5,580.00 | 0 | 5,819.97 | 104 |
| 367 | J-143 | 5,508.00 | 4 | 5,748.49 | 104 |
| 370 | J-144 | 5,505.00 | 1 | 5,748.49 | 105 |
| 393 | J-154 | 5,490.00 | 7 | 5,748.49 | 112 |
| 396 | J-155 | 5,490.00 | 2 | 5,748.49 | 112 |
| 546 | J-224 | 5,561.00 | 0 | 5,819.97 | 112 |
| 645 | J-244 | 5,488.97 | 0 | 5,748.49 | 112 |
| 540 | J-223 | 5,560.00 | 0 | 5,819.97 | 112 |
| 547 | J-225 | 5,559.00 | 0 | 5,819.97 | 113 |
| 539 | J-222 | 5,558.00 | 1 | 5,819.97 | 113 |
| 552 | J-227 | 5,529.00 | 1 | 5,819.97 | 126 |
| 551 | J-226 | 5,528.00 | 0 | 5,819.97 | 126 |
| 557 | J-231 | 5,524.00 | 0 | 5,819.98 | 128 |
| 399 | J-156 | 5,393.00 | 3 | 5,748.49 | 154 |

J:\2-17103 - Red Lodge On-Call 2017\TO 14 - Water PER\CADD 2-17103-14\Water Cad\2-17103-TO14 Red Lodge 2019
Water Model.wtg

Scenario: remove pump base
Current Time Step: 0.000 h
FlexTable: Pipe Table

| ID | Label | Length (Scaled) (ft) | Start Node | Stop Node | Diameter (in) | Hazen- Williams C | Flow (gpm) | Velocity (ft/s) |
|-----|--------------|----------------------------|---------------|--------------|------------------|-------------------------|---------------|--------------------|
| 38 | P-4 | 220 | p | J-5 | 16.0 | 130.0 | 1,030 | 1.64 |
| 40 | P-5 | 9 | J-3 | PRV-1 | 16.0 | 130.0 | 1,031 | 1.65 |
| 41 | P-6 | 7 | PRV-1 | p | 6.0 | 130.0 | 1,031 | 11.70 |
| 47 | P-2(2) | 286 | J-6 | J-3 | 16.0 | 130.0 | 1,144 | 1.83 |
| 49 | P-7 | 212 | J-2 | J-7 | 6.0 | 130.0 | 0 | 0.00 |
| 51 | P-2(1)(1) | 630 | J-2 | J-8 | 16.0 | 130.0 | 1,152 | 1.84 |
| 52 | P-2(1)(2) | 941 | J-8 | J-6 | 16.0 | 130.0 | 1,147 | 1.83 |
| 54 | P-8 | 1,598 | J-8 | J-9 | 8.0 | 140.0 | 5 | 0.03 |
| 56 | P-9 | 10 | J-1 | T-1 | 16.0 | 130.0 | -1,158 | 1.85 |
| 59 | P-1(2) | 4,445 | J-10 | J-2 | 16.0 | 130.0 | 1,156 | 1.84 |
| 62 | P-1(1)(2) | 1,123 | J-11 | J-10 | 16.0 | 110.0 | 1,156 | 1.84 |
| 64 | P-1(1)(1)(1) | 770 | J-1 | J-12 | 16.0 | 130.0 | 1,158 | 1.85 |
| 65 | P-1(1)(1)(2) | 1,055 | J-12 | J-11 | 16.0 | 130.0 | 1,158 | 1.85 |
| 73 | P-10 | 657 | J-5 | J-13 | 6.0 | 130.0 | 61 | 0.69 |
| 74 | P-11 | 119 | J-13 | J-15 | 6.0 | 130.0 | 59 | 0.67 |
| 75 | P-12 | 59 | J-15 | J-16 | 8.0 | 130.0 | 59 | 0.37 |
| 76 | P-13 | 550 | J-16 | J-5 | 16.0 | 130.0 | -968 | 1.54 |
| 77 | P-14 | 139 | J-13 | J-14 | 4.0 | 130.0 | 1 | 0.01 |
| 78 | P-15 | 16 | J-16 | J-17 | 16.0 | 130.0 | 1,024 | 1.63 |
| 79 | P-16 | 17 | J-17 | J-18 | 16.0 | 130.0 | 567 | 0.91 |
| 80 | P-17 | 350 | J-17 | J-19 | 8.0 | 130.0 | 457 | 2.92 |
| 86 | P-18 | 329 | J-19 | J-20 | 8.0 | 130.0 | 172 | 1.10 |
| 87 | P-19 | 48 | J-24 | J-20 | 8.0 | 130.0 | -47 | 0.30 |
| 88 | P-20 | 14 | J-20 | J-23 | 8.0 | 130.0 | 122 | 0.78 |
| 89 | P-21 | 208 | J-23 | J-21 | 6.0 | 130.0 | 122 | 1.39 |
| 91 | P-22 | 628 | J-21 | J-22 | 6.0 | 130.0 | 2 | 0.02 |
| 93 | P-23 | 63 | J-18 | J-26 | 12.0 | 130.0 | 567 | 1.61 |
| 95 | P-24 | 988 | J-26 | J-27 | 10.0 | 130.0 | 567 | 2.32 |
| 98 | P-25 | 337 | J-27 | J-28 | 10.0 | 130.0 | 561 | 2.29 |
| 99 | P-26 | 331 | J-28 | J-29 | 8.0 | 130.0 | -111 | 0.71 |
| 100 | P-27 | 739 | J-29 | J-19 | 8.0 | 130.0 | -283 | 1.80 |
| 103 | P-28 | 322 | J-28 | J-31 | 10.0 | 130.0 | 453 | 1.85 |
| 104 | P-29 | 329 | J-31 | J-30 | 8.0 | 130.0 | -212 | 1.35 |
| 105 | P-30 | 325 | J-30 | J-29 | 8.0 | 130.0 | -169 | 1.08 |
| 106 | P-31 | 695 | J-30 | J-24 | 4.0 | 130.0 | -47 | 1.20 |
| 114 | P-32 | 273 | J-31 | J-32 | 10.0 | 130.0 | 168 | 0.69 |
| 115 | P-33 | 65 | J-32 | J-33 | 12.0 | 130.0 | 168 | 0.48 |
| 116 | P-34 | 31 | J-33 | J-34 | 12.0 | 130.0 | -10 | 0.03 |
| 117 | P-35 | 66 | J-34 | J-35 | 12.0 | 130.0 | 97 | 0.27 |
| 118 | P-36 | 67 | J-33 | J-36 | 12.0 | 130.0 | 175 | 0.50 |
| 119 | P-37 | 847 | J-34 | J-37 | 8.0 | 130.0 | -110 | 0.70 |
| 120 | P-38 | 456 | J-37 | J-38 | 6.0 | 130.0 | -112 | 1.27 |
| 121 | P-39 | 383 | J-38 | J-21 | 6.0 | 130.0 | -117 | 1.33 |
| 123 | P-40 | 380 | J-38 | J-39 | 6.0 | 130.0 | 3 | 0.03 |
| 134 | P-41 | 211 | J-35 | J-40 | 6.0 | 140.0 | 97 | 1.10 |
| 135 | P-42 | 33 | J-40 | J-41 | 8.0 | 130.0 | 97 | 0.62 |
| 136 | P-43 | 45 | J-41 | J-42 | 8.0 | 130.0 | 52 | 0.33 |
| 137 | P-44 | 335 | J-42 | J-43 | 6.0 | 140.0 | 52 | 0.59 |
| 138 | P-45 | 246 | J-43 | J-46 | 6.0 | 140.0 | 45 | 0.51 |
| 139 | P-46 | 68 | J-44 | J-43 | 6.0 | 130.0 | 0 | 0.01 |
| 140 | P-47 | 387 | J-45 | J-43 | 6.0 | 130.0 | -2 | 0.02 |
| 141 | P-48 | 72 | J-46 | J-47 | 8.0 | 130.0 | 45 | 0.29 |
| 142 | P-49 | 11 | J-47 | J-48 | 8.0 | 130.0 | 11 | 0.07 |
| 143 | P-50 | 105 | J-48 | J-49 | 6.0 | 130.0 | 11 | 0.12 |
| 147 | P-51 | 81 | J-49 | J-52 | 6.0 | 140.0 | 11 | 0.12 |
| 148 | P-52 | 890 | J-52 | J-50 | 6.0 | 140.0 | 8 | 0.09 |

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|-----|-------|-------|-------|-------|------|-------|------|------|
| 149 | P-53 | 1,031 | J-50 | J-51 | 6.0 | 140.0 | 5 | 0.06 |
| 152 | P-54 | 357 | T-2 | J-53 | 14.0 | 130.0 | -620 | 1.29 |
| 156 | P-55 | 1,017 | J-53 | J-54 | 14.0 | 130.0 | -620 | 1.29 |
| 157 | P-56 | 320 | J-54 | J-55 | 14.0 | 130.0 | -403 | 0.84 |
| 158 | P-57 | 332 | J-55 | J-56 | 14.0 | 130.0 | 59 | 0.12 |
| 159 | P-58 | 715 | J-54 | J-28 | 8.0 | 130.0 | -215 | 1.37 |
| 160 | P-59 | 716 | J-55 | J-31 | 14.0 | 130.0 | -493 | 1.03 |
| 161 | P-60 | 647 | J-56 | J-36 | 10.0 | 130.0 | -175 | 0.72 |
| 166 | P-61 | 333 | J-57 | J-58 | 8.0 | 130.0 | -30 | 0.19 |
| 167 | P-62 | 344 | J-58 | J-59 | 8.0 | 130.0 | 75 | 0.48 |
| 168 | P-63 | 361 | J-59 | J-60 | 8.0 | 130.0 | 76 | 0.49 |
| 169 | P-64 | 28 | J-58 | J-56 | 10.0 | 130.0 | -231 | 0.95 |
| 171 | P-65 | 32 | J-55 | J-57 | 4.0 | 130.0 | 28 | 0.72 |
| 172 | P-66 | 740 | J-59 | J-41 | 8.0 | 130.0 | -42 | 0.27 |
| 174 | P-67 | 367 | J-60 | J-62 | 4.0 | 130.0 | 2 | 0.04 |
| 175 | P-68 | 301 | J-44 | J-62 | 2.0 | 130.0 | 0 | 0.05 |
| 181 | P-69 | 343 | J-60 | J-66 | 8.0 | 130.0 | 79 | 0.51 |
| 182 | P-70 | 322 | J-66 | J-64 | 8.0 | 130.0 | 47 | 0.30 |
| 183 | P-71 | 98 | J-64 | J-65 | 6.0 | 130.0 | 1 | 0.01 |
| 184 | P-72 | 733 | J-66 | J-47 | 12.0 | 130.0 | -31 | 0.09 |
| 194 | P-73 | 717 | J-54 | J-68 | 8.0 | 130.0 | -7 | 0.04 |
| 195 | P-74 | 307 | J-68 | J-69 | 8.0 | 130.0 | -10 | 0.07 |
| 196 | P-75 | 23 | J-69 | J-70 | 8.0 | 130.0 | -29 | 0.18 |
| 198 | P-77 | 331 | J-70 | J-71 | 8.0 | 130.0 | 9 | 0.05 |
| 199 | P-78 | 285 | J-71 | J-72 | 8.0 | 130.0 | -39 | 0.25 |
| 201 | P-80 | 53 | J-74 | J-73 | 12.0 | 130.0 | -123 | 0.35 |
| 202 | P-81 | 306 | J-73 | J-58 | 10.0 | 130.0 | -123 | 0.50 |
| 207 | P-82 | 145 | J-74 | J-75 | 12.0 | 130.0 | 98 | 0.28 |
| 208 | P-83 | 36 | J-75 | J-76 | 8.0 | 130.0 | 98 | 0.62 |
| 209 | P-84 | 166 | J-76 | J-77 | 8.0 | 130.0 | 45 | 0.29 |
| 210 | P-85 | 79 | J-77 | J-78 | 8.0 | 130.0 | 78 | 0.50 |
| 211 | P-86 | 374 | J-77 | J-59 | 8.0 | 130.0 | -35 | 0.22 |
| 212 | P-87 | 275 | J-78 | J-79 | 8.0 | 130.0 | 31 | 0.20 |
| 213 | P-88 | 133 | J-79 | J-80 | 6.0 | 130.0 | 9 | 0.10 |
| 214 | P-89 | 243 | J-80 | J-60 | 4.0 | 130.0 | 9 | 0.22 |
| 218 | P-90 | 385 | J-69 | J-81 | 6.0 | 130.0 | 16 | 0.18 |
| 219 | P-91 | 344 | J-81 | J-82 | 6.0 | 130.0 | 12 | 0.14 |
| 220 | P-92 | 51 | J-82 | J-83 | 12.0 | 130.0 | -45 | 0.13 |
| 221 | P-93 | 334 | J-83 | J-71 | 8.0 | 130.0 | -45 | 0.29 |
| 226 | P-94 | 329 | J-82 | J-84 | 8.0 | 130.0 | 53 | 0.34 |
| 227 | P-95 | 269 | J-84 | J-85 | 4.0 | 130.0 | 10 | 0.25 |
| 228 | P-96 | 63 | J-85 | J-87 | 8.0 | 130.0 | 10 | 0.06 |
| 229 | P-97 | 44 | J-87 | J-86 | 8.0 | 130.0 | -14 | 0.09 |
| 230 | P-98 | 1,050 | J-86 | J-76 | 8.0 | 130.0 | -50 | 0.32 |
| 236 | P-99 | 1,160 | J-78 | J-92 | 8.0 | 130.0 | 44 | 0.28 |
| 237 | P-100 | 1,056 | J-79 | J-92 | 6.0 | 130.0 | 20 | 0.23 |
| 238 | P-101 | 293 | J-92 | J-91 | 6.0 | 130.0 | 31 | 0.35 |
| 239 | P-102 | 54 | J-91 | J-90 | 8.0 | 130.0 | 31 | 0.20 |
| 240 | P-103 | 332 | J-66 | J-88 | 12.0 | 130.0 | 58 | 0.16 |
| 241 | P-104 | 40 | J-88 | J-89 | 8.0 | 130.0 | 11 | 0.07 |
| 242 | P-105 | 1,101 | J-88 | J-90 | 12.0 | 130.0 | 44 | 0.12 |
| 245 | P-106 | 265 | J-89 | J-93 | 4.0 | 130.0 | 11 | 0.29 |
| 246 | P-107 | 25 | J-93 | J-94 | 8.0 | 130.0 | 11 | 0.07 |
| 247 | P-108 | 352 | J-94 | J-64 | 8.0 | 130.0 | -43 | 0.28 |
| 253 | P-109 | 701 | J-94 | J-95 | 8.0 | 130.0 | 27 | 0.17 |
| 254 | P-110 | 390 | J-95 | J-96 | 8.0 | 130.0 | 16 | 0.10 |
| 255 | P-111 | 1,072 | J-96 | J-97 | 8.0 | 130.0 | 4 | 0.02 |
| 256 | P-112 | 1,081 | J-97 | J-98 | 8.0 | 130.0 | 7 | 0.05 |
| 257 | P-113 | 728 | J-98 | J-99 | 8.0 | 130.0 | 11 | 0.07 |
| 259 | P-114 | 978 | J-94 | J-100 | 8.0 | 130.0 | 24 | 0.15 |
| 260 | P-115 | 344 | J-95 | J-100 | 6.0 | 150.0 | 6 | 0.06 |
| 262 | P-116 | 392 | J-100 | J-101 | 8.0 | 150.0 | 22 | 0.14 |
| 263 | P-117 | 345 | J-96 | J-101 | 6.0 | 150.0 | 8 | 0.09 |
| 265 | P-118 | 348 | J-101 | J-102 | 8.0 | 150.0 | 27 | 0.17 |
| 267 | P-119 | 725 | J-102 | J-103 | 8.0 | 150.0 | 11 | 0.07 |
| 268 | P-120 | 346 | J-103 | J-97 | 6.0 | 150.0 | -17 | 0.19 |
| 270 | P-121 | 361 | J-103 | J-104 | 8.0 | 150.0 | 22 | 0.14 |

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|-----|-------|-------|-------|-------|------|-------|-----|------|
| | P-122 | 362 | J-104 | J-105 | 8.0 | 150.0 | 11 | 0.07 |
| 274 | P-123 | 344 | J-98 | J-106 | 4.0 | 130.0 | 6 | 0.15 |
| 275 | P-124 | 357 | J-105 | J-106 | 8.0 | 150.0 | 1 | 0.00 |
| 277 | P-125 | 729 | J-106 | J-107 | 8.0 | 150.0 | 2 | 0.02 |
| 280 | P-126 | 193 | J-104 | J-109 | 8.0 | 130.0 | 6 | 0.04 |
| 281 | P-127 | 1,093 | J-109 | J-108 | 8.0 | 130.0 | -9 | 0.06 |
| 282 | P-128 | 165 | J-102 | J-108 | 6.0 | 130.0 | 12 | 0.14 |
| 288 | P-129 | 356 | J-107 | J-99 | 8.0 | 130.0 | -31 | 0.20 |
| 289 | P-130 | 185 | J-99 | J-114 | 8.0 | 130.0 | -25 | 0.16 |
| 290 | P-131 | 742 | J-114 | J-113 | 12.0 | 130.0 | -63 | 0.18 |
| 292 | P-132 | 81 | J-115 | J-113 | 8.0 | 130.0 | 25 | 0.16 |
| 293 | P-133 | 306 | J-113 | J-98 | 6.0 | 130.0 | 17 | 0.19 |
| 294 | P-134 | 1,085 | J-113 | J-112 | 12.0 | 130.0 | -60 | 0.17 |
| 295 | P-135 | 303 | J-97 | J-112 | 6.0 | 130.0 | -25 | 0.28 |
| 296 | P-136 | 358 | J-112 | J-111 | 12.0 | 130.0 | -89 | 0.25 |
| 297 | P-137 | 353 | J-111 | J-110 | 12.0 | 130.0 | -65 | 0.18 |
| 298 | P-138 | 369 | J-110 | J-90 | 12.0 | 130.0 | -67 | 0.19 |
| 303 | P-139 | 756 | J-84 | J-119 | 8.0 | 130.0 | 41 | 0.26 |
| 304 | P-140 | 333 | J-119 | J-118 | 8.0 | 130.0 | 13 | 0.09 |
| 305 | P-141 | 756 | J-118 | J-87 | 8.0 | 130.0 | -21 | 0.13 |
| 306 | P-142 | 188 | J-118 | J-117 | 4.0 | 130.0 | 8 | 0.20 |
| 307 | P-143 | 771 | J-86 | J-117 | 8.0 | 130.0 | 32 | 0.20 |
| 308 | P-144 | 230 | J-117 | J-116 | 6.0 | 130.0 | 9 | 0.10 |
| 309 | P-145 | 727 | J-116 | J-92 | 8.0 | 130.0 | -25 | 0.16 |
| 310 | P-146 | 311 | J-116 | J-111 | 6.0 | 130.0 | 30 | 0.34 |
| 318 | P-147 | 334 | J-119 | J-120 | 8.0 | 130.0 | 23 | 0.15 |
| 319 | P-148 | 380 | J-120 | J-122 | 8.0 | 130.0 | 8 | 0.05 |
| 320 | P-149 | 334 | J-122 | J-123 | 4.0 | 130.0 | 6 | 0.15 |
| 321 | P-150 | 336 | J-120 | J-121 | 8.0 | 130.0 | 12 | 0.08 |
| 322 | P-151 | 384 | J-123 | J-121 | 8.0 | 130.0 | -32 | 0.20 |
| 323 | P-152 | 336 | J-121 | J-118 | 8.0 | 130.0 | -23 | 0.14 |
| 324 | P-153 | 1,072 | J-117 | J-126 | 8.0 | 130.0 | 27 | 0.17 |
| 325 | P-154 | 366 | J-123 | J-124 | 8.0 | 130.0 | 34 | 0.22 |
| 326 | P-155 | 94 | J-124 | J-125 | 8.0 | 130.0 | 5 | 0.03 |
| 327 | P-156 | 231 | J-125 | J-126 | 4.0 | 130.0 | 5 | 0.12 |
| 331 | P-157 | 386 | J-124 | J-129 | 8.0 | 130.0 | 26 | 0.17 |
| 332 | P-158 | 126 | J-129 | J-128 | 8.0 | 130.0 | 5 | 0.03 |
| 333 | P-159 | 202 | J-128 | J-127 | 4.0 | 130.0 | 5 | 0.12 |
| 334 | P-160 | 387 | J-127 | J-126 | 8.0 | 130.0 | -24 | 0.15 |
| 335 | P-161 | 308 | J-127 | J-115 | 6.0 | 130.0 | 28 | 0.31 |
| 340 | P-162 | 328 | J-129 | J-131 | 8.0 | 130.0 | 19 | 0.12 |
| 341 | P-163 | 334 | J-131 | J-130 | 8.0 | 130.0 | 9 | 0.06 |
| 342 | P-164 | 329 | J-130 | J-127 | 8.0 | 130.0 | 3 | 0.02 |
| 343 | P-165 | 362 | J-131 | J-132 | 8.0 | 130.0 | 7 | 0.05 |
| 344 | P-166 | 336 | J-132 | J-133 | 8.0 | 130.0 | 5 | 0.03 |
| 345 | P-167 | 359 | J-133 | J-130 | 8.0 | 130.0 | -2 | 0.01 |
| 347 | P-168 | 686 | J-133 | J-134 | 8.0 | 130.0 | 4 | 0.03 |
| 352 | P-169 | 1,702 | J-135 | J-137 | 8.0 | 130.0 | -3 | 0.02 |
| 353 | P-170 | 230 | J-137 | J-136 | 8.0 | 130.0 | -6 | 0.04 |
| 354 | P-171 | 156 | J-109 | J-138 | 8.0 | 130.0 | 14 | 0.09 |
| 355 | P-172 | 378 | J-138 | J-136 | 8.0 | 130.0 | 6 | 0.04 |
| 359 | P-173 | 368 | J-138 | J-139 | 8.0 | 130.0 | 5 | 0.03 |
| 360 | P-174 | 346 | J-139 | J-105 | 8.0 | 130.0 | -6 | 0.04 |
| 361 | P-175 | 361 | J-139 | J-140 | 8.0 | 130.0 | 8 | 0.05 |
| 362 | P-176 | 343 | J-107 | J-141 | 8.0 | 130.0 | 11 | 0.07 |
| 363 | P-177 | 727 | J-141 | J-140 | 8.0 | 130.0 | -3 | 0.02 |
| 365 | P-178 | 370 | J-141 | J-142 | 6.0 | 130.0 | 4 | 0.04 |
| 366 | P-179 | 1,103 | J-140 | J-142 | 6.0 | 130.0 | 2 | 0.03 |
| 368 | P-180 | 1,454 | J-143 | J-142 | 6.0 | 130.0 | -2 | 0.03 |
| 369 | P-181 | 1,088 | J-141 | J-143 | 8.0 | 130.0 | 8 | 0.05 |
| 371 | P-182 | 211 | J-143 | J-144 | 8.0 | 130.0 | 6 | 0.04 |
| 373 | P-183 | 676 | J-144 | J-145 | 8.0 | 150.0 | 4 | 0.03 |
| 378 | P-184 | 154 | J-145 | J-146 | 8.0 | 150.0 | 6 | 0.04 |
| 379 | P-185 | 367 | J-146 | J-147 | 8.0 | 150.0 | -3 | 0.02 |
| 380 | P-186 | 155 | J-147 | J-148 | 8.0 | 150.0 | -7 | 0.04 |
| 381 | P-187 | 370 | J-148 | J-145 | 8.0 | 150.0 | 3 | 0.02 |
| 382 | P-188 | 370 | J-149 | J-146 | 8.0 | 130.0 | -6 | 0.04 |

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|-----|----------------|-------|-------|-------|------|-------|-------|-------|
| 390 | P-189 | 710 | J-148 | J-107 | 8.0 | 150.0 | -16 | 0.10 |
| 391 | P-192 | 158 | J-150 | J-151 | 8.0 | 130.0 | -4 | 0.03 |
| 392 | P-193 | 350 | J-151 | J-152 | 8.0 | 130.0 | -7 | 0.05 |
| 394 | P-194 | 61 | J-152 | J-153 | 8.0 | 130.0 | -20 | 0.13 |
| 397 | P-195 | 1,639 | J-151 | J-154 | 6.0 | 130.0 | -1 | 0.01 |
| 398 | P-197 | 1,163 | J-153 | J-155 | 8.0 | 130.0 | 2 | 0.01 |
| 406 | P-198 | 1,199 | J-152 | J-154 | 12.0 | 130.0 | 10 | 0.03 |
| 408 | P-202 | 495 | J-158 | J-159 | 16.0 | 130.0 | (N/A) | (N/A) |
| 410 | P-203 | 114 | J-159 | PMP-1 | 8.0 | 130.0 | (N/A) | (N/A) |
| 412 | P-204 | 78 | J-160 | PMP-1 | 8.0 | 130.0 | (N/A) | (N/A) |
| 421 | P-10000 | 146 | J-159 | J-160 | 0.5 | 50.0 | (N/A) | (N/A) |
| 422 | P-206 | 336 | J-160 | J-161 | 8.0 | 130.0 | 112 | 0.71 |
| 423 | P-207 | 928 | J-161 | J-162 | 8.0 | 130.0 | 64 | 0.41 |
| 424 | P-208 | 327 | J-163 | J-162 | 8.0 | 130.0 | 0 | 0.00 |
| 427 | P-209 | 1,549 | J-161 | J-164 | 6.0 | 130.0 | 41 | 0.46 |
| 428 | P-210 | 63 | J-164 | J-169 | 8.0 | 130.0 | 21 | 0.13 |
| 433 | P-211 | 303 | J-169 | J-170 | 8.0 | 130.0 | 1 | 0.01 |
| 434 | P-212 | 263 | J-169 | J-171 | 8.0 | 130.0 | 20 | 0.13 |
| 435 | P-213 | 317 | J-171 | J-172 | 8.0 | 130.0 | 1 | 0.01 |
| 436 | P-214 | 254 | J-171 | J-173 | 8.0 | 130.0 | 17 | 0.11 |
| 439 | P-215 | 348 | J-173 | J-174 | 8.0 | 130.0 | 1 | 0.01 |
| 440 | P-216 | 206 | J-173 | J-175 | 8.0 | 130.0 | 16 | 0.10 |
| 443 | P-217 | 303 | J-175 | J-176 | 8.0 | 130.0 | 1 | 0.01 |
| 444 | P-218 | 372 | J-175 | J-177 | 8.0 | 130.0 | 12 | 0.08 |
| 445 | P-219 | 27 | J-177 | J-165 | 8.0 | 130.0 | 9 | 0.06 |
| 448 | P-220 | 159 | J-177 | J-178 | 8.0 | 130.0 | 1 | 0.01 |
| 449 | P-221 | 954 | J-165 | J-180 | 8.0 | 130.0 | 3 | 0.02 |
| 450 | P-222 | 655 | J-180 | J-167 | 8.0 | 130.0 | 3 | 0.02 |
| 451 | P-223 | 512 | J-167 | J-166 | 8.0 | 130.0 | 4 | 0.02 |
| 452 | P-224 | 865 | J-166 | J-179 | 8.0 | 130.0 | -3 | 0.02 |
| 453 | P-225 | 788 | J-179 | J-165 | 8.0 | 130.0 | -3 | 0.02 |
| 456 | P-226 | 822 | J-164 | J-168 | 8.0 | 130.0 | 13 | 0.08 |
| 457 | P-227 | 213 | J-168 | J-181 | 8.0 | 130.0 | 12 | 0.08 |
| 458 | P-228 | 946 | J-181 | J-182 | 8.0 | 130.0 | 11 | 0.07 |
| 462 | P-229 | 490 | J-182 | J-167 | 8.0 | 130.0 | 8 | 0.05 |
| 463 | P-230 | 408 | J-162 | J-183 | 8.0 | 130.0 | 62 | 0.39 |
| 464 | P-231 | 723 | J-183 | J-184 | 8.0 | 130.0 | 52 | 0.33 |
| 471 | P-232 | 376 | J-184 | J-185 | 8.0 | 130.0 | 46 | 0.29 |
| 472 | P-233 | 594 | J-185 | J-187 | 8.0 | 130.0 | 46 | 0.29 |
| 473 | P-234 | 505 | J-187 | J-188 | 8.0 | 130.0 | 10 | 0.06 |
| 474 | P-235 | 138 | J-188 | J-186 | 8.0 | 130.0 | 1 | 0.00 |
| 475 | P-236 | 430 | J-188 | J-189 | 8.0 | 130.0 | 8 | 0.05 |
| 476 | P-237 | 400 | J-189 | J-190 | 8.0 | 130.0 | 4 | 0.03 |
| 477 | P-238 | 265 | J-190 | J-191 | 8.0 | 130.0 | 2 | 0.01 |
| 485 | P-239 | 287 | J-191 | J-190 | 8.0 | 130.0 | -2 | 0.01 |
| 486 | P-240 | 365 | J-187 | J-192 | 8.0 | 130.0 | 33 | 0.21 |
| 487 | P-241 | 349 | J-192 | J-193 | 8.0 | 130.0 | 30 | 0.19 |
| 488 | P-242 | 383 | J-193 | J-194 | 8.0 | 130.0 | 28 | 0.18 |
| 489 | P-243 | 304 | J-194 | J-195 | 8.0 | 130.0 | 27 | 0.17 |
| 490 | P-244 | 530 | J-195 | J-196 | 8.0 | 130.0 | 25 | 0.16 |
| 491 | P-245 | 713 | J-196 | J-197 | 8.0 | 130.0 | 8 | 0.05 |
| 495 | P-246 | 1,147 | J-197 | J-198 | 8.0 | 130.0 | 6 | 0.04 |
| 496 | P-247 | 757 | J-196 | J-200 | 8.0 | 130.0 | 12 | 0.08 |
| 497 | P-248 | 1,203 | J-200 | J-199 | 8.0 | 130.0 | 8 | 0.05 |
| 499 | P-249 | 366 | J-199 | J-166 | 8.0 | 130.0 | -1 | 0.00 |
| 503 | P-250 | 276 | J-202 | J-200 | 8.0 | 130.0 | -1 | 0.01 |
| 506 | P-201(2) | 711 | J-204 | J-158 | 16.0 | 130.0 | (N/A) | (N/A) |
| 508 | P-201(1)(2) | 810 | J-205 | J-204 | 16.0 | 130.0 | (N/A) | (N/A) |
| 509 | P-201(1)(1)(1) | 990 | J-157 | J-206 | 16.0 | 130.0 | (N/A) | (N/A) |
| 513 | P-201(1)(1)(2) | 1,183 | J-206 | J-205 | 16.0 | 130.0 | (N/A) | (N/A) |
| 514 | P-251 | 757 | J-208 | J-207 | 8.0 | 130.0 | -1 | 0.01 |
| 515 | P-252 | 356 | J-207 | J-209 | 8.0 | 130.0 | 2 | 0.02 |
| 522 | P-253 | 216 | J-199 | J-207 | 8.0 | 130.0 | 7 | 0.04 |
| 523 | P-254 | 456 | J-209 | J-210 | 8.0 | 130.0 | -2 | 0.01 |
| 524 | P-255 | 233 | J-210 | J-211 | 8.0 | 130.0 | -2 | 0.01 |
| 525 | P-256 | 443 | J-211 | J-212 | 8.0 | 130.0 | -3 | 0.02 |
| 525 | P-257 | 217 | J-212 | J-215 | 8.0 | 130.0 | 0 | 0.00 |

| | | | | | | | | |
|-----|----------------|-------|--------|--------|------|-------|-------|-------|
| 527 | P-258 | 357 | J-215 | J-213 | 8.0 | 130.0 | 0 | 0.00 |
| | P-259 | 173 | J-215 | J-214 | 8.0 | 130.0 | 0 | 0.00 |
| 532 | P-260 | 476 | J-212 | J-216 | 8.0 | 130.0 | -3 | 0.02 |
| 533 | P-261 | 431 | J-216 | J-217 | 8.0 | 130.0 | -6 | 0.04 |
| 534 | P-262 | 1,058 | J-217 | J-218 | 8.0 | 130.0 | -6 | 0.04 |
| 535 | P-263 | 903 | J-218 | J-198 | 8.0 | 130.0 | -6 | 0.04 |
| 536 | P-264 | 477 | J-218 | J-219 | 8.0 | 130.0 | 0 | 0.00 |
| 541 | P-265 | 394 | J-211 | J-220 | 8.0 | 130.0 | 2 | 0.01 |
| 542 | P-266 | 350 | J-220 | J-221 | 8.0 | 130.0 | 2 | 0.01 |
| 543 | P-267 | 1,171 | J-221 | J-223 | 8.0 | 130.0 | 2 | 0.01 |
| 544 | P-268 | 396 | J-223 | J-222 | 8.0 | 130.0 | 2 | 0.01 |
| 545 | P-269 | 1,286 | J-222 | J-220 | 8.0 | 130.0 | 0 | 0.00 |
| 548 | P-270 | 1,117 | J-217 | J-224 | 8.0 | 130.0 | 0 | 0.00 |
| 549 | P-271 | 297 | J-224 | J-225 | 8.0 | 130.0 | 0 | 0.00 |
| 550 | P-272 | 282 | J-224 | J-225 | 8.0 | 130.0 | 0 | 0.00 |
| 558 | P-273 | 3,737 | J-198 | J-231 | 12.0 | 130.0 | 0 | 0.00 |
| 559 | P-274 | 2,079 | J-222 | J-226 | 8.0 | 130.0 | 1 | 0.01 |
| 560 | P-275 | 1,692 | J-226 | J-223 | 8.0 | 130.0 | 0 | 0.00 |
| 561 | P-276 | 3,082 | J-216 | J-227 | 8.0 | 130.0 | 3 | 0.02 |
| 562 | P-277 | 291 | J-227 | J-226 | 8.0 | 130.0 | 0 | 0.00 |
| 563 | P-278 | 108 | J-227 | PRV-2 | 8.0 | 130.0 | 2 | 0.02 |
| 564 | P-279 | 2,535 | PRV-2 | J-228 | 8.0 | 130.0 | 2 | 0.02 |
| 565 | P-280 | 300 | J-228 | J-229 | 8.0 | 130.0 | 2 | 0.01 |
| 566 | P-281 | 253 | J-229 | J-230 | 8.0 | 130.0 | 1 | 0.01 |
| 588 | P-282(1) | 246 | J-230 | PRV-3 | 8.0 | 130.0 | 0 | 0.00 |
| 589 | P-282(2) | 13 | PRV-3 | J-231 | 8.0 | 130.0 | 0 | 0.00 |
| 594 | P-200(1) | 57 | J-53 | J-233 | 16.0 | 130.0 | (N/A) | (N/A) |
| 595 | P-200(2) | 368 | J-233 | J-157 | 16.0 | 130.0 | (N/A) | (N/A) |
| 598 | P-286 | 3,357 | J-234 | J-3 | 16.0 | 150.0 | -112 | 0.18 |
| 601 | P-287 | 80 | J-159 | PRV-5 | 8.0 | 130.0 | 112 | 0.71 |
| 602 | P-288 | 63 | PRV-5 | J-160 | 8.0 | 130.0 | 112 | 0.71 |
| 605 | P-290 | 361 | J-235 | J-234 | 16.0 | 130.0 | -112 | 0.18 |
| 607 | P-289(1) | 2,011 | J-159 | J-236 | 16.0 | 130.0 | -112 | 0.18 |
| 608 | P-289(2) | 2,162 | J-236 | J-235 | 16.0 | 130.0 | -112 | 0.18 |
| 613 | P-291 | 66 | J-9 | PRV-6 | 6.0 | 130.0 | (N/A) | (N/A) |
| 614 | P-292 | 134 | PRV-6 | J-22 | 6.0 | 130.0 | (N/A) | (N/A) |
| 615 | P-293 | 745 | J-39 | J-51 | 6.0 | 130.0 | (N/A) | (N/A) |
| 618 | P-294(1) | 967 | J-135 | J-237 | 6.0 | 130.0 | (N/A) | (N/A) |
| 622 | P-294(2)(2) | 267 | J-238 | J-52 | 6.0 | 130.0 | (N/A) | (N/A) |
| 624 | P-294(2)(1)(1) | 591 | J-237 | J-239 | 6.0 | 130.0 | (N/A) | (N/A) |
| 625 | P-294(2)(1)(2) | 270 | J-239 | J-238 | 6.0 | 130.0 | (N/A) | (N/A) |
| 638 | P-76(1) | 341 | J-70 | J-241 | 8.0 | 130.0 | -39 | 0.25 |
| 639 | P-76(2) | 342 | J-241 | J-57 | 8.0 | 130.0 | -56 | 0.36 |
| 641 | P-79(1) | 68 | J-72 | J-242 | 12.0 | 130.0 | -39 | 0.11 |
| 642 | P-79(2) | 26 | J-242 | J-74 | 12.0 | 130.0 | -23 | 0.07 |
| 643 | P-295 | 326 | J-241 | J-242 | 8.0 | 130.0 | 16 | 0.10 |
| 647 | P-199(2)(2) | 5,258 | J-244 | J-156 | 12.0 | 130.0 | 3 | 0.01 |
| 648 | P-296 | 56 | J-244 | J-154 | 12.0 | 130.0 | -3 | 0.01 |
| 651 | P-196(2) | 236 | J-245 | J-153 | 12.0 | 130.0 | 26 | 0.07 |
| 654 | P-297(1) | 65 | J-245 | PRV-8 | 6.0 | 130.0 | (N/A) | (N/A) |
| 655 | P-297(2) | 48 | PRV-8 | J-149 | 6.0 | 130.0 | (N/A) | (N/A) |
| 656 | P-298 | 41 | J-245 | J-149 | 12.0 | 130.0 | -26 | 0.07 |
| 659 | P-191(2) | 249 | J-246 | J-150 | 8.0 | 130.0 | 0 | 0.00 |
| 661 | P-191(1)(1) | 428 | J-134 | J-247 | 8.0 | 130.0 | 0 | 0.00 |
| 665 | P-300 | 23 | J-246 | J-247 | 6.0 | 130.0 | (N/A) | (N/A) |
| 673 | P-303(1) | 30 | J-247 | PRV-10 | 6.0 | 130.0 | (N/A) | (N/A) |
| 674 | P-303(2) | 31 | PRV-10 | J-246 | 6.0 | 130.0 | (N/A) | (N/A) |
| 676 | P-190(1) | 726 | J-114 | J-249 | 8.0 | 130.0 | 28 | 0.18 |
| 677 | P-190(2) | 358 | J-249 | J-149 | 12.0 | 130.0 | 28 | 0.08 |

J:\2-17103 - Red Lodge On-Call 2017\TO 14 - Water PER\CADD 2-17103-14\Water Cad\2-17103-TO14 Red Lodge 2019 Water Model.wtg

Scenario: Replace CIP Base
Current Time Step: 0.000 h
Fire Flow Node FlexTable: Fire Flow Report

| Label | Satisfies Fire Flow Constraints? | Fire Flow (Needed) (gpm) | Flow (Total Available) (gpm) | Pressure (Calculated Residual) (psi) | Fire Flow (Available) (gpm) | Pressure (Calculated Zone Lower Limit) (psi) | Junction w/ Minimum Pressure (Zone) | Is Fire Flow Run Balanced? |
|-------|----------------------------------|--------------------------|------------------------------|--------------------------------------|-----------------------------|--|-------------------------------------|----------------------------|
| J-1 | False | 500 | (N/A) | (N/A) | (N/A) | (N/A) | (N/A) | False |
| J-2 | True | 500 | 3,605 | 46 | 3,602 | 20 | J-10 | True |
| J-3 | True | 500 | 3,603 | 53 | 3,601 | 20 | J-10 | True |
| p | True | 500 | 1,001 | 42 | 1,000 | 41 | J-158 | True |
| J-5 | True | 500 | 4,502 | 39 | 4,500 | 40 | p | True |
| J-6 | True | 500 | 3,604 | 51 | 3,602 | 20 | J-10 | True |
| J-7 | True | 500 | 2,531 | 20 | 2,531 | 26 | J-10 | True |
| J-8 | True | 500 | 3,602 | 48 | 3,602 | 20 | J-10 | True |
| J-9 | True | 500 | 2,603 | 20 | 2,598 | 26 | J-10 | True |
| J-10 | False | 500 | (N/A) | (N/A) | (N/A) | (N/A) | (N/A) | False |
| J-11 | False | 200 | (N/A) | (N/A) | (N/A) | (N/A) | (N/A) | False |
| J-12 | False | 200 | (N/A) | (N/A) | (N/A) | (N/A) | (N/A) | False |
| J-13 | True | 500 | 3,507 | 21 | 3,505 | 20 | J-14 | True |
| J-14 | True | 500 | 2,166 | 20 | 2,165 | 35 | J-13 | True |
| J-15 | True | 500 | 4,500 | 36 | 4,500 | 36 | J-14 | True |
| J-16 | True | 500 | 4,502 | 42 | 4,500 | 40 | J-5 | True |
| J-17 | True | 500 | 4,500 | 42 | 4,500 | 40 | J-5 | True |
| J-18 | True | 500 | 4,500 | 42 | 4,500 | 40 | J-5 | True |
| J-19 | True | 500 | 4,503 | 35 | 4,500 | 39 | J-22 | True |
| J-20 | True | 500 | 4,503 | 33 | 4,500 | 31 | J-22 | True |
| J-21 | True | 500 | 4,503 | 22 | 4,500 | 21 | J-22 | True |
| J-22 | True | 500 | 2,396 | 20 | 2,393 | 40 | J-21 | True |
| J-23 | True | 500 | 4,500 | 33 | 4,500 | 30 | J-22 | True |
| J-24 | True | 500 | 4,500 | 32 | 4,500 | 32 | J-22 | True |
| J-26 | True | 500 | 4,500 | 42 | 4,500 | 40 | J-5 | True |
| J-27 | True | 500 | 4,506 | 40 | 4,500 | 40 | J-158 | True |
| J-28 | True | 500 | 4,504 | 47 | 4,500 | 40 | J-158 | True |
| J-29 | True | 500 | 4,503 | 39 | 4,500 | 40 | J-158 | True |
| J-30 | True | 500 | 4,504 | 40 | 4,500 | 40 | J-158 | True |
| J-31 | True | 500 | 4,504 | 49 | 4,500 | 40 | J-158 | True |
| J-32 | True | 500 | 4,500 | 49 | 4,500 | 40 | J-158 | True |
| J-33 | True | 500 | 4,504 | 49 | 4,500 | 40 | J-158 | True |
| J-34 | True | 500 | 4,503 | 49 | 4,500 | 40 | J-158 | True |
| J-35 | True | 500 | 4,500 | 48 | 4,500 | 40 | J-158 | True |
| J-36 | True | 500 | 4,500 | 49 | 4,500 | 40 | J-158 | True |
| J-37 | True | 500 | 4,273 | 20 | 4,271 | 26 | J-39 | True |
| J-38 | True | 500 | 4,114 | 22 | 4,111 | 20 | J-39 | True |
| J-39 | True | 500 | 2,773 | 20 | 2,771 | 37 | J-38 | True |
| J-40 | True | 500 | 4,500 | 35 | 4,500 | 36 | J-51 | True |
| J-41 | True | 500 | 4,503 | 36 | 4,500 | 36 | J-51 | True |
| J-42 | True | 500 | 4,500 | 34 | 4,500 | 36 | J-51 | True |
| J-43 | True | 500 | 4,504 | 30 | 4,500 | 29 | J-45 | True |
| J-44 | True | 500 | 4,500 | 27 | 4,500 | 30 | J-51 | True |
| J-45 | True | 500 | 1,742 | 20 | 1,740 | 41 | J-158 | True |
| J-46 | True | 500 | 4,500 | 33 | 4,500 | 20 | J-51 | True |
| J-47 | True | 500 | 4,419 | 37 | 4,415 | 20 | J-51 | True |
| J-48 | True | 500 | 4,293 | 37 | 4,293 | 20 | J-51 | True |
| J-49 | True | 500 | 2,411 | 36 | 2,411 | 20 | J-51 | True |
| J-50 | True | 500 | 895 | 29 | 892 | 20 | J-51 | True |
| J-51 | True | 500 | 637 | 20 | 631 | 41 | J-158 | True |
| J-52 | True | 500 | 1,982 | 36 | 1,979 | 20 | J-51 | True |
| J-53 | False | 500 | (N/A) | (N/A) | (N/A) | (N/A) | (N/A) | False |
| J-54 | True | 500 | 4,505 | 49 | 4,500 | 40 | J-158 | True |
| J-55 | True | 500 | 4,503 | 53 | 4,500 | 40 | J-158 | True |
| J-56 | True | 500 | 4,503 | 54 | 4,500 | 40 | J-158 | True |

| | | | | | | | | |
|-------|------|-----|-------|----|-------|----|-------|------|
| J-57 | True | 500 | 4,503 | 44 | 4,500 | 39 | J-68 | True |
| J-58 | True | 500 | 4,503 | 53 | 4,500 | 40 | J-51 | True |
| J-59 | True | 500 | 4,505 | 48 | 4,500 | 35 | J-51 | True |
| J-60 | True | 500 | 4,504 | 47 | 4,500 | 31 | J-51 | True |
| J-62 | True | 500 | 4,502 | 31 | 4,500 | 30 | J-51 | True |
| J-64 | True | 500 | 4,503 | 33 | 4,500 | 27 | J-51 | True |
| J-65 | True | 500 | 3,312 | 20 | 3,311 | 35 | J-51 | True |
| J-66 | True | 500 | 4,505 | 46 | 4,500 | 26 | J-51 | True |
| J-68 | True | 500 | 4,504 | 21 | 4,500 | 40 | J-158 | True |
| J-69 | True | 500 | 4,502 | 46 | 4,500 | 33 | J-68 | True |
| J-70 | True | 500 | 4,502 | 47 | 4,500 | 34 | J-68 | True |
| J-71 | True | 500 | 4,503 | 51 | 4,500 | 37 | J-68 | True |
| J-72 | True | 500 | 4,500 | 53 | 4,500 | 38 | J-51 | True |
| J-73 | True | 500 | 4,500 | 54 | 4,500 | 38 | J-51 | True |
| J-74 | True | 500 | 4,503 | 54 | 4,500 | 38 | J-51 | True |
| J-75 | True | 500 | 4,500 | 53 | 4,500 | 37 | J-51 | True |
| J-76 | True | 500 | 4,503 | 53 | 4,500 | 37 | J-51 | True |
| J-77 | True | 500 | 4,503 | 49 | 4,500 | 35 | J-51 | True |
| J-78 | True | 500 | 4,503 | 47 | 4,500 | 34 | J-51 | True |
| J-79 | True | 500 | 4,503 | 42 | 4,500 | 33 | J-51 | True |
| J-80 | True | 500 | 4,500 | 40 | 4,500 | 32 | J-51 | True |
| J-81 | True | 500 | 3,367 | 20 | 3,363 | 40 | J-68 | True |
| J-82 | True | 500 | 4,504 | 46 | 4,500 | 36 | J-51 | True |
| J-83 | True | 500 | 4,500 | 46 | 4,500 | 36 | J-51 | True |
| J-84 | True | 500 | 4,503 | 46 | 4,500 | 34 | J-51 | True |
| J-85 | True | 500 | 4,500 | 47 | 4,500 | 34 | J-51 | True |
| J-86 | True | 500 | 4,504 | 48 | 4,500 | 34 | J-51 | True |
| J-87 | True | 500 | 4,503 | 49 | 4,500 | 34 | J-51 | True |
| J-88 | True | 500 | 4,503 | 49 | 4,500 | 27 | J-51 | True |
| J-89 | True | 500 | 4,500 | 44 | 4,500 | 27 | J-51 | True |
| J-90 | True | 500 | 4,508 | 51 | 4,500 | 29 | J-51 | True |
| J-91 | True | 500 | 4,500 | 47 | 4,500 | 29 | J-51 | True |
| J-92 | True | 500 | 4,508 | 44 | 4,500 | 32 | J-51 | True |
| J-93 | True | 500 | 4,500 | 33 | 4,500 | 28 | J-51 | True |
| J-94 | True | 500 | 4,504 | 36 | 4,500 | 28 | J-51 | True |
| J-95 | True | 500 | 4,505 | 31 | 4,500 | 28 | J-51 | True |
| J-96 | True | 500 | 4,504 | 34 | 4,500 | 28 | J-51 | True |
| J-97 | True | 500 | 4,504 | 53 | 4,500 | 29 | J-51 | True |
| J-98 | True | 500 | 4,507 | 58 | 4,500 | 30 | J-51 | True |
| J-99 | True | 500 | 4,505 | 59 | 4,500 | 30 | J-51 | True |
| J-100 | True | 500 | 4,507 | 35 | 4,500 | 28 | J-51 | True |
| J-101 | True | 500 | 4,504 | 40 | 4,500 | 28 | J-51 | True |
| J-102 | True | 500 | 4,504 | 41 | 4,500 | 29 | J-51 | True |
| J-103 | True | 500 | 4,505 | 45 | 4,500 | 29 | J-51 | True |
| J-104 | True | 500 | 4,505 | 49 | 4,500 | 29 | J-51 | True |
| J-105 | True | 500 | 4,504 | 52 | 4,500 | 29 | J-51 | True |
| J-106 | True | 500 | 4,504 | 56 | 4,500 | 30 | J-51 | True |
| J-107 | True | 500 | 4,507 | 60 | 4,500 | 30 | J-51 | True |
| J-108 | True | 500 | 4,461 | 20 | 4,459 | 29 | J-51 | True |
| J-109 | True | 500 | 4,501 | 46 | 4,500 | 29 | J-51 | True |
| J-110 | True | 500 | 4,502 | 54 | 4,500 | 29 | J-51 | True |
| J-111 | True | 500 | 4,505 | 56 | 4,500 | 30 | J-51 | True |
| J-112 | True | 500 | 4,504 | 57 | 4,500 | 30 | J-51 | True |
| J-113 | True | 500 | 4,505 | 61 | 4,500 | 30 | J-51 | True |
| J-114 | True | 500 | 4,509 | 61 | 4,500 | 30 | J-51 | True |
| J-115 | True | 500 | 4,503 | 58 | 4,500 | 30 | J-51 | True |
| J-116 | True | 500 | 4,504 | 55 | 4,500 | 31 | J-51 | True |
| J-117 | True | 500 | 4,504 | 56 | 4,500 | 32 | J-51 | True |
| J-118 | True | 500 | 4,504 | 53 | 4,500 | 33 | J-51 | True |
| J-119 | True | 500 | 4,504 | 36 | 4,500 | 33 | J-51 | True |
| J-120 | True | 500 | 4,503 | 33 | 4,500 | 32 | J-51 | True |
| J-121 | True | 500 | 4,503 | 46 | 4,500 | 32 | J-51 | True |
| J-122 | True | 500 | 4,503 | 23 | 4,500 | 32 | J-51 | True |
| J-123 | True | 500 | 4,504 | 45 | 4,500 | 32 | J-51 | True |
| J-124 | True | 500 | 4,503 | 45 | 4,500 | 31 | J-51 | True |
| J-125 | True | 500 | 4,500 | 44 | 4,500 | 31 | J-51 | True |
| J-126 | True | 500 | 4,508 | 50 | 4,500 | 31 | J-51 | True |
| J-127 | True | 500 | 4,504 | 54 | 4,500 | 31 | J-51 | True |

| | | | | | | | | |
|-------|-------|-----|-------|-------|-------|-------|-------|-------|
| J-129 | True | 500 | 4,500 | 44 | 4,500 | 31 | J-51 | True |
| J-130 | True | 500 | 4,503 | 40 | 4,500 | 31 | J-51 | True |
| J-131 | True | 500 | 4,504 | 43 | 4,500 | 30 | J-132 | True |
| J-132 | True | 500 | 4,503 | 30 | 4,500 | 29 | J-132 | True |
| J-133 | True | 500 | 4,179 | 20 | 4,177 | 33 | J-51 | True |
| J-134 | True | 500 | 4,503 | 30 | 4,500 | 21 | J-132 | True |
| J-135 | True | 500 | 3,016 | 20 | 3,012 | 39 | J-51 | True |
| J-136 | True | 500 | 1,671 | 20 | 1,667 | 41 | J-158 | True |
| J-137 | True | 500 | 3,353 | 31 | 3,352 | 20 | J-135 | True |
| J-138 | True | 500 | 2,892 | 30 | 2,890 | 20 | J-135 | True |
| J-139 | True | 500 | 4,503 | 42 | 4,500 | 29 | J-51 | True |
| J-140 | True | 500 | 4,503 | 49 | 4,500 | 29 | J-51 | True |
| J-141 | True | 500 | 4,503 | 43 | 4,500 | 29 | J-51 | True |
| J-142 | True | 500 | 4,503 | 53 | 4,500 | 30 | J-51 | True |
| J-143 | True | 500 | 4,094 | 20 | 4,090 | 32 | J-51 | True |
| J-144 | True | 500 | 4,504 | 42 | 4,500 | 30 | J-51 | True |
| J-145 | True | 500 | 4,501 | 43 | 4,500 | 30 | J-51 | True |
| J-146 | True | 500 | 4,502 | 54 | 4,500 | 30 | J-51 | True |
| J-147 | True | 500 | 4,503 | 54 | 4,500 | 30 | J-51 | True |
| J-148 | True | 500 | 4,504 | 47 | 4,500 | 30 | J-51 | True |
| J-149 | True | 500 | 4,505 | 52 | 4,500 | 30 | J-51 | True |
| J-150 | True | 500 | 4,508 | 45 | 4,500 | 30 | J-51 | True |
| J-151 | True | 500 | 3,596 | 20 | 3,592 | 35 | J-51 | True |
| J-152 | True | 500 | 3,973 | 22 | 3,969 | 20 | J-150 | True |
| J-153 | True | 500 | 4,502 | 34 | 4,500 | 30 | J-51 | True |
| J-154 | True | 500 | 4,504 | 43 | 4,500 | 30 | J-51 | True |
| J-155 | True | 500 | 4,507 | 26 | 4,500 | 30 | J-51 | True |
| J-156 | True | 500 | 2,871 | 20 | 2,869 | 39 | J-51 | True |
| J-157 | True | 500 | 3,828 | 20 | 3,826 | 34 | J-51 | True |
| J-158 | False | 500 | (N/A) | (N/A) | (N/A) | (N/A) | (N/A) | False |
| J-159 | True | 500 | 4,500 | 20 | 4,500 | 42 | J-5 | True |
| J-160 | True | 500 | 2,380 | 20 | 2,380 | 43 | J-160 | True |
| J-161 | True | 500 | 1,630 | 20 | 1,630 | 23 | J-162 | True |
| J-162 | True | 500 | 1,531 | 21 | 1,524 | 20 | J-162 | True |
| J-163 | True | 500 | 1,309 | 20 | 1,306 | 21 | J-163 | True |
| J-164 | True | 500 | 1,251 | 20 | 1,251 | 23 | J-162 | True |
| J-165 | True | 500 | 1,220 | 22 | 1,214 | 20 | J-170 | True |
| J-166 | True | 500 | 1,231 | 28 | 1,228 | 20 | J-170 | True |
| J-167 | True | 500 | 1,251 | 39 | 1,244 | 20 | J-170 | True |
| J-168 | True | 500 | 1,241 | 38 | 1,235 | 20 | J-170 | True |
| J-169 | True | 500 | 1,224 | 25 | 1,223 | 20 | J-170 | True |
| J-170 | True | 500 | 1,209 | 23 | 1,209 | 20 | J-170 | True |
| J-171 | True | 500 | 1,162 | 20 | 1,161 | 25 | J-159 | True |
| J-172 | True | 500 | 1,218 | 22 | 1,216 | 20 | J-170 | True |
| J-173 | True | 500 | 1,203 | 20 | 1,202 | 21 | J-170 | True |
| J-174 | True | 500 | 1,220 | 23 | 1,220 | 20 | J-170 | True |
| J-175 | True | 500 | 1,181 | 20 | 1,180 | 23 | J-170 | True |
| J-176 | True | 500 | 1,224 | 24 | 1,222 | 20 | J-170 | True |
| J-177 | True | 500 | 1,223 | 20 | 1,222 | 20 | J-170 | True |
| J-178 | True | 500 | 1,230 | 28 | 1,228 | 20 | J-170 | True |
| J-179 | True | 500 | 1,229 | 26 | 1,228 | 20 | J-170 | True |
| J-180 | True | 500 | 1,236 | 31 | 1,236 | 20 | J-170 | True |
| J-181 | True | 500 | 1,233 | 30 | 1,233 | 20 | J-170 | True |
| J-182 | True | 500 | 1,225 | 26 | 1,224 | 20 | J-170 | True |
| J-183 | True | 500 | 1,232 | 35 | 1,229 | 20 | J-170 | True |
| J-184 | True | 500 | 1,331 | 22 | 1,321 | 20 | J-162 | True |
| J-185 | True | 500 | 1,348 | 22 | 1,341 | 20 | J-162 | True |
| J-186 | True | 500 | 1,350 | 20 | 1,350 | 20 | J-162 | True |
| J-187 | True | 500 | 1,264 | 20 | 1,263 | 23 | J-188 | True |
| J-188 | True | 500 | 1,365 | 21 | 1,362 | 20 | J-162 | True |
| J-189 | True | 500 | 1,288 | 21 | 1,286 | 20 | J-186 | True |
| J-190 | True | 500 | 1,265 | 20 | 1,261 | 22 | J-186 | True |
| J-191 | True | 500 | 1,239 | 20 | 1,239 | 22 | J-189 | True |
| J-192 | True | 500 | 1,243 | 21 | 1,239 | 20 | J-190 | True |
| J-193 | True | 500 | 1,372 | 24 | 1,369 | 20 | J-162 | True |
| J-194 | True | 500 | 1,376 | 26 | 1,373 | 20 | J-170 | True |
| J-195 | True | 500 | 1,353 | 29 | 1,351 | 20 | J-170 | True |
| J-196 | True | 500 | 1,335 | 31 | 1,334 | 20 | J-170 | True |

| | | | | | | | | |
|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| J-197 | False | 2,000 | 1,309 | 35 | 1,304 | 20 | J-170 | True |
| J-197 | True | 500 | 1,293 | 31 | 1,292 | 20 | J-170 | True |
| J-198 | True | 500 | 1,288 | 38 | 1,288 | 20 | J-170 | True |
| J-199 | True | 500 | 1,264 | 40 | 1,261 | 20 | J-170 | True |
| J-200 | True | 500 | 1,291 | 34 | 1,288 | 20 | J-170 | True |
| J-202 | True | 500 | 1,289 | 32 | 1,288 | 20 | J-170 | True |
| J-204 | True | 2,500 | 2,683 | 20 | 2,682 | 3 | J-157 | True |
| J-205 | False | 500 | 0 | 23 | 0 | 4 | J-157 | True |
| J-206 | False | 500 | (N/A) | (N/A) | (N/A) | (N/A) | (N/A) | False |
| J-207 | True | 500 | 1,268 | 40 | 1,266 | 20 | J-170 | True |
| J-208 | True | 500 | 1,267 | 30 | 1,266 | 20 | J-170 | True |
| J-209 | True | 500 | 1,275 | 37 | 1,271 | 20 | J-170 | True |
| J-210 | True | 500 | 1,276 | 38 | 1,276 | 20 | J-170 | True |
| J-211 | True | 500 | 1,278 | 39 | 1,278 | 20 | J-170 | True |
| J-212 | True | 500 | 1,279 | 38 | 1,279 | 20 | J-170 | True |
| J-213 | True | 500 | 1,279 | 30 | 1,279 | 20 | J-170 | True |
| J-214 | True | 500 | 1,279 | 31 | 1,279 | 20 | J-170 | True |
| J-215 | True | 500 | 1,279 | 34 | 1,279 | 20 | J-170 | True |
| J-216 | True | 500 | 1,281 | 40 | 1,281 | 20 | J-170 | True |
| J-217 | True | 500 | 1,284 | 39 | 1,284 | 20 | J-170 | True |
| J-218 | True | 500 | 1,286 | 36 | 1,286 | 20 | J-170 | True |
| J-219 | True | 500 | 1,286 | 26 | 1,286 | 20 | J-170 | True |
| J-220 | True | 500 | 1,279 | 38 | 1,279 | 20 | J-170 | True |
| J-221 | True | 500 | 1,279 | 37 | 1,279 | 20 | J-170 | True |
| J-222 | True | 500 | 1,280 | 46 | 1,279 | 20 | J-170 | True |
| J-223 | True | 500 | 1,279 | 45 | 1,279 | 20 | J-170 | True |
| J-224 | True | 500 | 1,284 | 33 | 1,284 | 20 | J-170 | True |
| J-225 | True | 500 | 1,284 | 33 | 1,284 | 20 | J-170 | True |
| J-226 | True | 500 | 1,279 | 58 | 1,279 | 20 | J-170 | True |
| J-227 | True | 500 | 1,280 | 57 | 1,279 | 20 | J-170 | True |
| J-228 | True | 500 | 1,279 | 29 | 1,279 | 20 | J-170 | True |
| J-229 | True | 500 | 1,280 | 23 | 1,279 | 20 | J-170 | True |
| J-230 | True | 500 | 1,274 | 20 | 1,272 | 20 | J-170 | True |
| J-231 | True | 500 | 1,287 | 63 | 1,287 | 20 | J-170 | True |
| J-233 | False | 500 | (N/A) | (N/A) | (N/A) | (N/A) | (N/A) | False |
| J-234 | False | 500 | (N/A) | (N/A) | (N/A) | (N/A) | (N/A) | False |
| J-235 | False | 500 | (N/A) | (N/A) | (N/A) | (N/A) | (N/A) | False |
| J-236 | False | 500 | (N/A) | (N/A) | (N/A) | (N/A) | (N/A) | False |
| J-237 | False | 500 | (N/A) | (N/A) | (N/A) | (N/A) | (N/A) | False |
| J-238 | False | 500 | (N/A) | (N/A) | (N/A) | (N/A) | (N/A) | False |
| J-239 | False | 500 | (N/A) | (N/A) | (N/A) | (N/A) | (N/A) | False |
| J-241 | False | 500 | (N/A) | (N/A) | (N/A) | (N/A) | (N/A) | False |
| J-242 | False | 500 | (N/A) | (N/A) | (N/A) | (N/A) | (N/A) | False |
| J-244 | False | 500 | (N/A) | (N/A) | (N/A) | (N/A) | (N/A) | False |
| J-245 | False | 500 | (N/A) | (N/A) | (N/A) | (N/A) | (N/A) | False |
| J-246 | False | 500 | (N/A) | (N/A) | (N/A) | (N/A) | (N/A) | False |
| J-247 | False | 500 | (N/A) | (N/A) | (N/A) | (N/A) | (N/A) | False |
| J-249 | False | 500 | (N/A) | (N/A) | (N/A) | (N/A) | (N/A) | False |

J:\2-17103 - Red Lodge On-Call 2017\TO 14 - Water PER\CADD 2-17103-14\Water Cad\2-17103-TO14 Red Lodge 2019 Water Model.wtg

Scenario: Replace CIP Base
Current Time Step: 0.000 h
FlexTable: Junction Table

| ID | Label | Elevation (ft) | Demand (gpm) | Hydraulic Grade (ft) | Pressure (psi) |
|-----|-------|-------------------|-----------------|-------------------------|-------------------|
| 596 | J-234 | 5,724.00 | (N/A) | (N/A) | (N/A) |
| 603 | J-235 | 5,738.00 | (N/A) | (N/A) | (N/A) |
| 606 | J-236 | 5,710.54 | (N/A) | (N/A) | (N/A) |
| 617 | J-237 | 5,587.93 | (N/A) | (N/A) | (N/A) |
| 620 | J-238 | 5,599.43 | (N/A) | (N/A) | (N/A) |
| 623 | J-239 | 5,595.82 | (N/A) | (N/A) | (N/A) |
| 401 | J-157 | 5,738.00 | 1 | 5,748.14 | 4 |
| 30 | J-1 | 5,869.00 | 0 | 5,881.99 | 6 |
| 593 | J-233 | 5,724.15 | 0 | 5,748.14 | 10 |
| 151 | J-53 | 5,722.00 | 0 | 5,748.14 | 11 |
| 63 | J-12 | 5,854.50 | 0 | 5,881.43 | 12 |
| 507 | J-206 | 5,719.00 | 1 | 5,748.13 | 13 |
| 60 | J-11 | 5,830.00 | 2 | 5,880.66 | 22 |
| 504 | J-205 | 5,696.00 | 0 | 5,748.11 | 23 |
| 501 | J-204 | 5,686.00 | 1 | 5,748.10 | 27 |
| 403 | J-159 | 5,685.00 | 0 | 5,748.09 | 27 |
| 57 | J-10 | 5,799.00 | 0 | 5,879.54 | 35 |
| 402 | J-158 | 5,653.00 | 0 | 5,748.10 | 41 |
| 37 | J-5 | 5,654.00 | 2 | 5,752.62 | 43 |
| 35 | p | 5,654.00 | 1 | 5,752.77 | 43 |
| 67 | J-14 | 5,648.00 | 1 | 5,752.32 | 45 |
| 66 | J-13 | 5,646.00 | 1 | 5,752.32 | 46 |
| 185 | J-68 | 5,642.00 | 4 | 5,748.72 | 46 |
| 92 | J-26 | 5,645.00 | 0 | 5,752.20 | 46 |
| 71 | J-18 | 5,645.00 | 0 | 5,752.25 | 46 |
| 70 | J-17 | 5,645.00 | 0 | 5,752.26 | 46 |
| 69 | J-16 | 5,645.00 | 2 | 5,752.27 | 46 |
| 68 | J-15 | 5,645.00 | 0 | 5,752.27 | 46 |
| 145 | J-51 | 5,640.00 | 5 | 5,748.63 | 47 |
| 83 | J-22 | 5,640.00 | 2 | 5,749.68 | 47 |
| 72 | J-19 | 5,640.00 | 3 | 5,750.39 | 48 |
| 82 | J-21 | 5,637.00 | 3 | 5,749.68 | 49 |
| 122 | J-39 | 5,635.00 | 3 | 5,749.53 | 50 |
| 409 | J-160 | 5,685.00 | 0 | 5,800.47 | 50 |
| 81 | J-20 | 5,632.00 | 3 | 5,749.77 | 51 |
| 94 | J-27 | 5,632.00 | 6 | 5,750.16 | 51 |
| 85 | J-24 | 5,631.00 | 0 | 5,749.75 | 51 |
| 84 | J-23 | 5,631.00 | 0 | 5,749.77 | 51 |
| 113 | J-38 | 5,630.00 | 3 | 5,749.53 | 52 |
| 414 | J-162 | 5,679.00 | 2 | 5,800.26 | 52 |
| 97 | J-29 | 5,628.00 | 3 | 5,749.58 | 53 |
| 101 | J-30 | 5,626.00 | 4 | 5,749.49 | 53 |
| 415 | J-163 | 5,676.00 | 0 | 5,800.26 | 54 |
| 413 | J-161 | 5,676.00 | 7 | 5,800.37 | 54 |
| 153 | J-54 | 5,624.00 | 5 | 5,748.71 | 54 |
| 112 | J-37 | 5,624.00 | 2 | 5,749.37 | 54 |
| 96 | J-28 | 5,624.00 | 4 | 5,749.48 | 54 |
| 102 | J-31 | 5,621.00 | 4 | 5,749.05 | 55 |
| 144 | J-50 | 5,619.00 | 3 | 5,748.63 | 56 |
| 111 | J-36 | 5,615.00 | 0 | 5,748.98 | 58 |
| 110 | J-35 | 5,615.00 | 0 | 5,748.98 | 58 |
| 108 | J-33 | 5,615.00 | 4 | 5,748.99 | 58 |
| 109 | J-34 | 5,615.00 | 3 | 5,748.99 | 58 |
| 107 | J-32 | 5,615.00 | 0 | 5,748.99 | 58 |
| 459 | J-183 | 5,665.00 | 9 | 5,800.22 | 59 |
| 162 | J-57 | 5,613.00 | 3 | 5,748.77 | 59 |
| 154 | J-55 | 5,613.00 | 3 | 5,748.80 | 59 |

| | | | | | |
|-----|-------|----------|---|----------|----|
| 215 | J-81 | 5,612.00 | 4 | 5,748.70 | 59 |
| 129 | J-45 | 5,609.00 | 2 | 5,748.69 | 60 |
| 637 | J-241 | 5,608.00 | 0 | 5,748.74 | 61 |
| 126 | J-42 | 5,608.00 | 0 | 5,748.78 | 61 |
| 163 | J-58 | 5,608.00 | 3 | 5,748.78 | 61 |
| 125 | J-41 | 5,608.00 | 3 | 5,748.78 | 61 |
| 124 | J-40 | 5,608.00 | 0 | 5,748.79 | 61 |
| 155 | J-56 | 5,608.00 | 3 | 5,748.79 | 61 |
| 127 | J-43 | 5,606.00 | 4 | 5,748.69 | 62 |
| 128 | J-44 | 5,606.00 | 0 | 5,748.69 | 62 |
| 133 | J-49 | 5,604.00 | 0 | 5,748.64 | 63 |
| 164 | J-59 | 5,604.00 | 5 | 5,748.74 | 63 |
| 146 | J-52 | 5,603.00 | 3 | 5,748.64 | 63 |
| 186 | J-69 | 5,603.00 | 2 | 5,748.72 | 63 |
| 187 | J-70 | 5,603.00 | 2 | 5,748.72 | 63 |
| 426 | J-170 | 5,654.00 | 1 | 5,800.06 | 63 |
| 460 | J-184 | 5,654.00 | 7 | 5,800.16 | 63 |
| 313 | J-122 | 5,602.00 | 3 | 5,748.62 | 63 |
| 173 | J-62 | 5,602.00 | 2 | 5,748.69 | 63 |
| 131 | J-47 | 5,601.00 | 4 | 5,748.64 | 64 |
| 132 | J-48 | 5,601.00 | 0 | 5,748.64 | 64 |
| 130 | J-46 | 5,601.00 | 0 | 5,748.64 | 64 |
| 461 | J-185 | 5,652.00 | 0 | 5,800.14 | 64 |
| 189 | J-72 | 5,599.00 | 0 | 5,748.74 | 65 |
| 191 | J-74 | 5,599.00 | 3 | 5,748.74 | 65 |
| 640 | J-242 | 5,599.00 | 0 | 5,748.74 | 65 |
| 190 | J-73 | 5,599.00 | 0 | 5,748.74 | 65 |
| 311 | J-120 | 5,598.00 | 3 | 5,748.62 | 65 |
| 302 | J-119 | 5,598.00 | 4 | 5,748.63 | 65 |
| 203 | J-77 | 5,598.00 | 3 | 5,748.72 | 65 |
| 192 | J-75 | 5,598.00 | 0 | 5,748.73 | 65 |
| 416 | J-164 | 5,649.00 | 7 | 5,800.06 | 65 |
| 204 | J-78 | 5,597.00 | 3 | 5,748.70 | 66 |
| 193 | J-76 | 5,597.00 | 3 | 5,748.73 | 66 |
| 425 | J-169 | 5,648.00 | 0 | 5,800.06 | 66 |
| 432 | J-174 | 5,647.00 | 1 | 5,800.05 | 66 |
| 165 | J-60 | 5,595.00 | 4 | 5,748.69 | 66 |
| 429 | J-171 | 5,646.00 | 2 | 5,800.06 | 67 |
| 430 | J-172 | 5,645.00 | 1 | 5,800.06 | 67 |
| 206 | J-80 | 5,593.00 | 0 | 5,748.69 | 67 |
| 188 | J-71 | 5,592.00 | 3 | 5,748.72 | 68 |
| 466 | J-187 | 5,643.00 | 3 | 5,800.11 | 68 |
| 179 | J-66 | 5,591.00 | 5 | 5,748.64 | 68 |
| 431 | J-173 | 5,642.00 | 0 | 5,800.05 | 68 |
| 216 | J-82 | 5,590.00 | 4 | 5,748.69 | 69 |
| 217 | J-83 | 5,590.00 | 0 | 5,748.69 | 69 |
| 205 | J-79 | 5,590.00 | 3 | 5,748.70 | 69 |
| 465 | J-186 | 5,641.00 | 1 | 5,800.10 | 69 |
| 438 | J-176 | 5,640.00 | 1 | 5,800.05 | 69 |
| 437 | J-175 | 5,639.00 | 2 | 5,800.05 | 70 |
| 467 | J-188 | 5,639.00 | 1 | 5,800.10 | 70 |
| 177 | J-64 | 5,587.00 | 3 | 5,748.62 | 70 |
| 178 | J-65 | 5,587.00 | 1 | 5,748.62 | 70 |
| 222 | J-84 | 5,587.00 | 3 | 5,748.66 | 70 |
| 231 | J-88 | 5,583.00 | 3 | 5,748.63 | 72 |
| 232 | J-89 | 5,583.00 | 0 | 5,748.63 | 72 |
| 420 | J-168 | 5,634.00 | 1 | 5,800.06 | 72 |
| 225 | J-87 | 5,582.00 | 3 | 5,748.65 | 72 |
| 224 | J-86 | 5,582.00 | 4 | 5,748.65 | 72 |
| 223 | J-85 | 5,582.00 | 0 | 5,748.65 | 72 |
| 468 | J-189 | 5,633.00 | 4 | 5,800.10 | 72 |
| 478 | J-192 | 5,632.00 | 3 | 5,800.09 | 73 |
| 235 | J-92 | 5,580.00 | 8 | 5,748.65 | 73 |
| 556 | J-230 | 5,523.00 | 1 | 5,691.79 | 73 |
| 417 | J-165 | 5,631.00 | 3 | 5,800.05 | 73 |
| 441 | J-177 | 5,631.00 | 3 | 5,800.05 | 73 |
| 442 | J-178 | 5,631.00 | 1 | 5,800.05 | 73 |

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|-----|-------|----------|---|----------|----|
| | J-181 | 5,630.00 | 1 | 5,800.06 | 74 |
| 338 | J-132 | 5,578.00 | 2 | 5,748.60 | 74 |
| 243 | J-93 | 5,578.00 | 0 | 5,748.61 | 74 |
| 244 | J-94 | 5,578.00 | 4 | 5,748.61 | 74 |
| 555 | J-229 | 5,521.00 | 1 | 5,691.79 | 74 |
| 233 | J-90 | 5,577.00 | 8 | 5,748.62 | 74 |
| 234 | J-91 | 5,577.00 | 0 | 5,748.62 | 74 |
| 348 | J-135 | 5,575.00 | 3 | 5,748.58 | 75 |
| 469 | J-190 | 5,626.00 | 0 | 5,800.10 | 75 |
| 248 | J-95 | 5,574.00 | 5 | 5,748.59 | 76 |
| 554 | J-228 | 5,517.00 | 1 | 5,691.79 | 76 |
| 337 | J-131 | 5,572.00 | 3 | 5,748.60 | 76 |
| 479 | J-193 | 5,623.00 | 2 | 5,800.08 | 77 |
| 330 | J-129 | 5,571.00 | 3 | 5,748.60 | 77 |
| 283 | J-110 | 5,570.00 | 2 | 5,748.62 | 77 |
| 301 | J-118 | 5,570.00 | 4 | 5,748.63 | 77 |
| 447 | J-180 | 5,621.00 | 0 | 5,800.05 | 77 |
| 470 | J-191 | 5,621.00 | 4 | 5,800.10 | 77 |
| 249 | J-96 | 5,569.00 | 4 | 5,748.59 | 78 |
| 312 | J-121 | 5,569.00 | 3 | 5,748.62 | 78 |
| 446 | J-179 | 5,619.00 | 0 | 5,800.05 | 78 |
| 48 | J-7 | 5,695.00 | 0 | 5,876.29 | 78 |
| 258 | J-100 | 5,567.00 | 7 | 5,748.59 | 79 |
| 315 | J-124 | 5,567.00 | 3 | 5,748.60 | 79 |
| 314 | J-123 | 5,567.00 | 4 | 5,748.62 | 79 |
| 299 | J-116 | 5,567.00 | 4 | 5,748.63 | 79 |
| 300 | J-117 | 5,567.00 | 4 | 5,748.63 | 79 |
| 316 | J-125 | 5,566.00 | 0 | 5,748.60 | 79 |
| 284 | J-111 | 5,566.00 | 5 | 5,748.61 | 79 |
| 480 | J-194 | 5,617.00 | 1 | 5,800.07 | 79 |
| 31 | J-2 | 5,691.00 | 4 | 5,876.29 | 80 |
| 481 | J-195 | 5,614.00 | 1 | 5,800.07 | 81 |
| 261 | J-101 | 5,562.00 | 4 | 5,748.59 | 81 |
| 285 | J-112 | 5,560.00 | 4 | 5,748.60 | 82 |
| 329 | J-128 | 5,559.00 | 0 | 5,748.60 | 82 |
| 455 | J-182 | 5,610.00 | 3 | 5,800.05 | 82 |
| 483 | J-197 | 5,610.00 | 1 | 5,800.06 | 82 |
| 482 | J-196 | 5,609.00 | 5 | 5,800.06 | 83 |
| 264 | J-102 | 5,557.00 | 4 | 5,748.58 | 83 |
| 250 | J-97 | 5,556.00 | 4 | 5,748.59 | 83 |
| 493 | J-200 | 5,607.00 | 3 | 5,800.05 | 84 |
| 278 | J-108 | 5,555.00 | 3 | 5,748.58 | 84 |
| 317 | J-126 | 5,555.00 | 8 | 5,748.60 | 84 |
| 418 | J-166 | 5,606.00 | 7 | 5,800.05 | 84 |
| 419 | J-167 | 5,606.00 | 7 | 5,800.05 | 84 |
| 350 | J-137 | 5,553.00 | 3 | 5,748.58 | 85 |
| 498 | J-202 | 5,604.00 | 1 | 5,800.05 | 85 |
| 266 | J-103 | 5,552.00 | 5 | 5,748.58 | 85 |
| 50 | J-8 | 5,678.97 | 1 | 5,875.83 | 85 |
| 328 | J-127 | 5,550.00 | 4 | 5,748.60 | 86 |
| 349 | J-136 | 5,549.00 | 1 | 5,748.58 | 86 |
| 492 | J-199 | 5,600.00 | 2 | 5,800.05 | 87 |
| 269 | J-104 | 5,548.00 | 5 | 5,748.58 | 87 |
| 512 | J-209 | 5,599.00 | 4 | 5,800.05 | 87 |
| 351 | J-138 | 5,547.00 | 3 | 5,748.58 | 87 |
| 279 | J-109 | 5,547.00 | 1 | 5,748.58 | 87 |
| 286 | J-113 | 5,547.00 | 5 | 5,748.59 | 87 |
| 291 | J-115 | 5,547.00 | 3 | 5,748.59 | 87 |
| 510 | J-207 | 5,597.00 | 3 | 5,800.05 | 88 |
| 511 | J-208 | 5,597.00 | 1 | 5,800.05 | 88 |
| 531 | J-219 | 5,596.00 | 0 | 5,800.05 | 88 |
| 251 | J-98 | 5,544.00 | 7 | 5,748.58 | 89 |
| 271 | J-105 | 5,543.00 | 4 | 5,748.58 | 89 |
| 336 | J-130 | 5,542.00 | 4 | 5,748.60 | 89 |
| 516 | J-210 | 5,591.00 | 0 | 5,800.05 | 90 |
| 356 | J-139 | 5,539.00 | 3 | 5,748.58 | 91 |
| 273 | J-106 | 5,538.00 | 4 | 5,748.58 | 91 |

| | | | | | |
|-----|-------|----------|---|----------|-----|
| 484 | J-214 | 5,589.00 | 0 | 5,800.05 | 91 |
| | J-198 | 5,589.00 | 0 | 5,800.05 | 91 |
| 339 | J-133 | 5,537.00 | 3 | 5,748.60 | 92 |
| 346 | J-134 | 5,537.00 | 4 | 5,748.60 | 92 |
| 519 | J-213 | 5,588.00 | 0 | 5,800.05 | 92 |
| 517 | J-211 | 5,587.00 | 0 | 5,800.05 | 92 |
| 521 | J-215 | 5,587.00 | 0 | 5,800.05 | 92 |
| 530 | J-218 | 5,587.00 | 0 | 5,800.05 | 92 |
| 357 | J-140 | 5,535.00 | 3 | 5,748.58 | 92 |
| 518 | J-212 | 5,586.00 | 0 | 5,800.05 | 93 |
| 45 | J-6 | 5,661.00 | 2 | 5,875.16 | 93 |
| 287 | J-114 | 5,534.00 | 9 | 5,748.58 | 93 |
| 252 | J-99 | 5,532.00 | 5 | 5,748.58 | 94 |
| 537 | J-220 | 5,582.00 | 0 | 5,800.05 | 94 |
| 538 | J-221 | 5,580.00 | 0 | 5,800.05 | 95 |
| 528 | J-216 | 5,580.00 | 0 | 5,800.05 | 95 |
| 529 | J-217 | 5,580.00 | 0 | 5,800.05 | 95 |
| 33 | J-3 | 5,654.00 | 2 | 5,874.95 | 96 |
| 276 | J-107 | 5,527.00 | 7 | 5,748.58 | 96 |
| 660 | J-247 | 5,524.78 | 0 | 5,748.60 | 97 |
| 657 | J-246 | 5,524.12 | 0 | 5,748.57 | 97 |
| 364 | J-142 | 5,524.00 | 4 | 5,748.57 | 97 |
| 358 | J-141 | 5,524.00 | 3 | 5,748.57 | 97 |
| 675 | J-249 | 5,521.95 | 0 | 5,748.57 | 98 |
| 53 | J-9 | 5,645.00 | 5 | 5,875.83 | 100 |
| 385 | J-150 | 5,517.00 | 4 | 5,748.57 | 100 |
| 377 | J-149 | 5,516.00 | 8 | 5,748.57 | 101 |
| 375 | J-147 | 5,516.00 | 4 | 5,748.57 | 101 |
| 376 | J-148 | 5,515.00 | 5 | 5,748.57 | 101 |
| 649 | J-245 | 5,514.95 | 0 | 5,748.57 | 101 |
| 386 | J-151 | 5,512.00 | 4 | 5,748.57 | 102 |
| 387 | J-152 | 5,510.00 | 2 | 5,748.57 | 103 |
| 374 | J-146 | 5,510.00 | 3 | 5,748.57 | 103 |
| 546 | J-224 | 5,561.00 | 0 | 5,800.05 | 103 |
| 388 | J-153 | 5,509.00 | 4 | 5,748.57 | 104 |
| 372 | J-145 | 5,509.00 | 2 | 5,748.57 | 104 |
| 540 | J-223 | 5,560.00 | 0 | 5,800.05 | 104 |
| 367 | J-143 | 5,508.00 | 4 | 5,748.57 | 104 |
| 547 | J-225 | 5,559.00 | 0 | 5,800.05 | 104 |
| 539 | J-222 | 5,558.00 | 1 | 5,800.05 | 105 |
| 370 | J-144 | 5,505.00 | 1 | 5,748.57 | 105 |
| 393 | J-154 | 5,490.00 | 7 | 5,748.57 | 112 |
| 396 | J-155 | 5,490.00 | 2 | 5,748.57 | 112 |
| 645 | J-244 | 5,488.97 | 0 | 5,748.57 | 112 |
| 552 | J-227 | 5,529.00 | 1 | 5,800.05 | 117 |
| 551 | J-226 | 5,528.00 | 0 | 5,800.05 | 118 |
| 557 | J-231 | 5,524.00 | 0 | 5,800.05 | 119 |
| 399 | J-156 | 5,393.00 | 3 | 5,748.57 | 154 |

J:\2-17103 - Red Lodge On-Call 2017\TO 14 - Water PER\CADD 2-17103-14\Water Cad\2-17103-TO14 Red Lodge 2019
Water Model.wtg

Scenario: Replace CIP Base
Current Time Step: 0.000 h
FlexTable: Pipe Table

| ID | Label | Length (Scaled) (ft) | Start Node | Stop Node | Diameter (in) | Hazen- Williams C | Flow (gpm) | Velocity (ft/s) |
|-----|--------------|----------------------------|---------------|--------------|------------------|-------------------------|---------------|--------------------|
| 38 | P-4 | 220 | p | J-5 | 16.0 | 130.0 | 1,074 | 1.71 |
| 40 | P-5 | 9 | J-3 | PRV-1 | 16.0 | 130.0 | 1,075 | 1.72 |
| 41 | P-6 | 7 | PRV-1 | p | 6.0 | 130.0 | 1,075 | 12.20 |
| 47 | P-2(2) | 286 | J-6 | J-3 | 16.0 | 130.0 | 1,077 | 1.72 |
| 49 | P-7 | 212 | J-2 | J-7 | 6.0 | 130.0 | 0 | 0.00 |
| 51 | P-2(1)(1) | 630 | J-2 | J-8 | 16.0 | 130.0 | 1,085 | 1.73 |
| 52 | P-2(1)(2) | 941 | J-8 | J-6 | 16.0 | 130.0 | 1,079 | 1.72 |
| 54 | P-8 | 1,598 | J-8 | J-9 | 8.0 | 150.0 | 5 | 0.03 |
| 56 | P-9 | 10 | J-1 | T-1 | 16.0 | 130.0 | -1,090 | 1.74 |
| 59 | P-1(2) | 4,445 | J-10 | J-2 | 16.0 | 130.0 | 1,089 | 1.74 |
| 62 | P-1(1)(2) | 1,123 | J-11 | J-10 | 16.0 | 110.0 | 1,089 | 1.74 |
| 64 | P-1(1)(1)(1) | 770 | J-1 | J-12 | 16.0 | 130.0 | 1,090 | 1.74 |
| 65 | P-1(1)(1)(2) | 1,055 | J-12 | J-11 | 16.0 | 130.0 | 1,090 | 1.74 |
| 73 | P-10 | 657 | J-5 | J-13 | 6.0 | 130.0 | 63 | 0.72 |
| 74 | P-11 | 119 | J-13 | J-15 | 6.0 | 130.0 | 61 | 0.70 |
| 75 | P-12 | 59 | J-15 | J-16 | 8.0 | 130.0 | 61 | 0.39 |
| 76 | P-13 | 550 | J-16 | J-5 | 16.0 | 130.0 | -1,009 | 1.61 |
| 77 | P-14 | 139 | J-13 | J-14 | 6.0 | 150.0 | 1 | 0.01 |
| 78 | P-15 | 16 | J-16 | J-17 | 16.0 | 130.0 | 1,068 | 1.70 |
| 79 | P-16 | 17 | J-17 | J-18 | 16.0 | 130.0 | 554 | 0.88 |
| 80 | P-17 | 350 | J-17 | J-19 | 8.0 | 130.0 | 514 | 3.28 |
| 86 | P-18 | 329 | J-19 | J-20 | 8.0 | 130.0 | 293 | 1.87 |
| 87 | P-19 | 48 | J-24 | J-20 | 8.0 | 130.0 | -142 | 0.91 |
| 88 | P-20 | 14 | J-20 | J-23 | 8.0 | 130.0 | 148 | 0.95 |
| 89 | P-21 | 208 | J-23 | J-21 | 8.0 | 150.0 | 148 | 0.95 |
| 91 | P-22 | 628 | J-21 | J-22 | 8.0 | 150.0 | 2 | 0.01 |
| 93 | P-23 | 63 | J-18 | J-26 | 12.0 | 130.0 | 554 | 1.57 |
| 95 | P-24 | 988 | J-26 | J-27 | 10.0 | 130.0 | 554 | 2.26 |
| 98 | P-25 | 337 | J-27 | J-28 | 10.0 | 130.0 | 548 | 2.24 |
| 99 | P-26 | 331 | J-28 | J-29 | 8.0 | 130.0 | -110 | 0.70 |
| 100 | P-27 | 739 | J-29 | J-19 | 8.0 | 130.0 | -219 | 1.40 |
| 103 | P-28 | 322 | J-28 | J-31 | 10.0 | 130.0 | 438 | 1.79 |
| 104 | P-29 | 329 | J-31 | J-30 | 8.0 | 130.0 | -244 | 1.56 |
| 105 | P-30 | 325 | J-30 | J-29 | 8.0 | 130.0 | -106 | 0.67 |
| 106 | P-31 | 695 | J-30 | J-24 | 8.0 | 150.0 | -142 | 0.91 |
| 114 | P-32 | 273 | J-31 | J-32 | 10.0 | 130.0 | 161 | 0.66 |
| 115 | P-33 | 65 | J-32 | J-33 | 12.0 | 130.0 | 161 | 0.46 |
| 116 | P-34 | 31 | J-33 | J-34 | 12.0 | 130.0 | -33 | 0.09 |
| 117 | P-35 | 66 | J-34 | J-35 | 12.0 | 130.0 | 100 | 0.28 |
| 118 | P-36 | 67 | J-33 | J-36 | 12.0 | 130.0 | 190 | 0.54 |
| 119 | P-37 | 847 | J-34 | J-37 | 8.0 | 130.0 | -136 | 0.87 |
| 120 | P-38 | 456 | J-37 | J-38 | 8.0 | 150.0 | -138 | 0.88 |
| 121 | P-39 | 383 | J-38 | J-21 | 8.0 | 150.0 | -143 | 0.92 |
| 123 | P-40 | 380 | J-38 | J-39 | 8.0 | 150.0 | 3 | 0.02 |
| 134 | P-41 | 211 | J-35 | J-40 | 6.0 | 140.0 | 100 | 1.14 |
| 135 | P-42 | 33 | J-40 | J-41 | 8.0 | 130.0 | 100 | 0.64 |
| 136 | P-43 | 45 | J-41 | J-42 | 8.0 | 130.0 | 51 | 0.33 |
| 137 | P-44 | 335 | J-42 | J-43 | 6.0 | 140.0 | 51 | 0.58 |
| 138 | P-45 | 246 | J-43 | J-46 | 6.0 | 140.0 | 43 | 0.49 |
| 139 | P-46 | 68 | J-44 | J-43 | 6.0 | 130.0 | -2 | 0.02 |
| 140 | P-47 | 387 | J-45 | J-43 | 6.0 | 130.0 | -2 | 0.02 |
| 141 | P-48 | 72 | J-46 | J-47 | 8.0 | 130.0 | 43 | 0.28 |
| 142 | P-49 | 11 | J-47 | J-48 | 8.0 | 130.0 | 11 | 0.07 |
| 143 | P-50 | 105 | J-48 | J-49 | 6.0 | 130.0 | 11 | 0.12 |
| 147 | P-51 | 81 | J-49 | J-52 | 6.0 | 140.0 | 11 | 0.12 |
| 148 | P-52 | 890 | J-52 | J-50 | 6.0 | 140.0 | 8 | 0.09 |

| | | | | | | | | |
|-----|-------|-------|-------|-------|------|-------|------|------|
| 149 | P-53 | 1,031 | J-50 | J-51 | 6.0 | 140.0 | 5 | 0.06 |
| 152 | P-54 | 357 | T-2 | J-53 | 14.0 | 130.0 | -550 | 1.15 |
| 156 | P-55 | 1,017 | J-53 | J-54 | 14.0 | 130.0 | -664 | 1.38 |
| 157 | P-56 | 320 | J-54 | J-55 | 14.0 | 130.0 | -441 | 0.92 |
| 158 | P-57 | 332 | J-55 | J-56 | 14.0 | 130.0 | 46 | 0.10 |
| 159 | P-58 | 715 | J-54 | J-28 | 8.0 | 130.0 | -216 | 1.38 |
| 160 | P-59 | 716 | J-55 | J-31 | 14.0 | 130.0 | -518 | 1.08 |
| 161 | P-60 | 647 | J-56 | J-36 | 10.0 | 130.0 | -190 | 0.78 |
| 166 | P-61 | 333 | J-57 | J-58 | 8.0 | 130.0 | -33 | 0.21 |
| 167 | P-62 | 344 | J-58 | J-59 | 8.0 | 130.0 | 70 | 0.44 |
| 168 | P-63 | 361 | J-59 | J-60 | 8.0 | 130.0 | 68 | 0.44 |
| 169 | P-64 | 28 | J-58 | J-56 | 10.0 | 130.0 | -233 | 0.95 |
| 171 | P-65 | 32 | J-55 | J-57 | 4.0 | 130.0 | 29 | 0.73 |
| 172 | P-66 | 740 | J-59 | J-41 | 8.0 | 130.0 | -46 | 0.30 |
| 174 | P-67 | 367 | J-60 | J-62 | 8.0 | 150.0 | 0 | 0.00 |
| 175 | P-68 | 301 | J-44 | J-62 | 8.0 | 150.0 | 2 | 0.01 |
| 181 | P-69 | 343 | J-60 | J-66 | 8.0 | 130.0 | 77 | 0.49 |
| 182 | P-70 | 322 | J-66 | J-64 | 8.0 | 130.0 | 41 | 0.26 |
| 183 | P-71 | 98 | J-64 | J-65 | 6.0 | 130.0 | 1 | 0.01 |
| 184 | P-72 | 733 | J-66 | J-47 | 12.0 | 130.0 | -28 | 0.08 |
| 194 | P-73 | 717 | J-54 | J-68 | 8.0 | 130.0 | -12 | 0.08 |
| 195 | P-74 | 307 | J-68 | J-69 | 8.0 | 130.0 | -16 | 0.10 |
| 196 | P-75 | 23 | J-69 | J-70 | 8.0 | 130.0 | -36 | 0.23 |
| 198 | P-77 | 331 | J-70 | J-71 | 8.0 | 130.0 | 7 | 0.05 |
| 199 | P-78 | 285 | J-71 | J-72 | 8.0 | 130.0 | -48 | 0.30 |
| 201 | P-80 | 53 | J-74 | J-73 | 12.0 | 130.0 | -128 | 0.36 |
| 202 | P-81 | 306 | J-73 | J-58 | 10.0 | 130.0 | -128 | 0.52 |
| 207 | P-82 | 145 | J-74 | J-75 | 12.0 | 130.0 | 91 | 0.26 |
| 208 | P-83 | 36 | J-75 | J-76 | 8.0 | 130.0 | 91 | 0.58 |
| 209 | P-84 | 166 | J-76 | J-77 | 8.0 | 130.0 | 39 | 0.25 |
| 210 | P-85 | 79 | J-77 | J-78 | 8.0 | 130.0 | 79 | 0.50 |
| 211 | P-86 | 374 | J-77 | J-59 | 8.0 | 130.0 | -42 | 0.27 |
| 212 | P-87 | 275 | J-78 | J-79 | 8.0 | 130.0 | 34 | 0.22 |
| 213 | P-88 | 133 | J-79 | J-80 | 6.0 | 130.0 | 12 | 0.14 |
| 214 | P-89 | 243 | J-80 | J-60 | 8.0 | 150.0 | 12 | 0.08 |
| 218 | P-90 | 385 | J-69 | J-81 | 6.0 | 130.0 | 18 | 0.20 |
| 219 | P-91 | 344 | J-81 | J-82 | 6.0 | 130.0 | 14 | 0.16 |
| 220 | P-92 | 51 | J-82 | J-83 | 12.0 | 130.0 | -52 | 0.15 |
| 221 | P-93 | 334 | J-83 | J-71 | 8.0 | 130.0 | -52 | 0.33 |
| 226 | P-94 | 329 | J-82 | J-84 | 8.0 | 130.0 | 62 | 0.39 |
| 227 | P-95 | 269 | J-84 | J-85 | 8.0 | 150.0 | 24 | 0.15 |
| 228 | P-96 | 63 | J-85 | J-87 | 8.0 | 130.0 | 24 | 0.15 |
| 229 | P-97 | 44 | J-87 | J-86 | 8.0 | 130.0 | -12 | 0.08 |
| 230 | P-98 | 1,050 | J-86 | J-76 | 8.0 | 130.0 | -49 | 0.31 |
| 236 | P-99 | 1,160 | J-78 | J-92 | 8.0 | 130.0 | 42 | 0.27 |
| 237 | P-100 | 1,056 | J-79 | J-92 | 6.0 | 130.0 | 19 | 0.21 |
| 238 | P-101 | 293 | J-92 | J-91 | 6.0 | 130.0 | 23 | 0.26 |
| 239 | P-102 | 54 | J-91 | J-90 | 8.0 | 130.0 | 23 | 0.15 |
| 240 | P-103 | 332 | J-66 | J-88 | 12.0 | 130.0 | 58 | 0.17 |
| 241 | P-104 | 40 | J-88 | J-89 | 8.0 | 130.0 | 10 | 0.06 |
| 242 | P-105 | 1,101 | J-88 | J-90 | 12.0 | 130.0 | 46 | 0.13 |
| 245 | P-106 | 265 | J-89 | J-93 | 4.0 | 130.0 | 10 | 0.25 |
| 246 | P-107 | 25 | J-93 | J-94 | 8.0 | 130.0 | 10 | 0.06 |
| 247 | P-108 | 352 | J-94 | J-64 | 8.0 | 130.0 | -38 | 0.24 |
| 253 | P-109 | 701 | J-94 | J-95 | 8.0 | 130.0 | 23 | 0.15 |
| 254 | P-110 | 390 | J-95 | J-96 | 8.0 | 130.0 | 12 | 0.08 |
| 255 | P-111 | 1,072 | J-96 | J-97 | 8.0 | 130.0 | -1 | 0.01 |
| 256 | P-112 | 1,081 | J-97 | J-98 | 8.0 | 130.0 | 15 | 0.10 |
| 257 | P-113 | 728 | J-98 | J-99 | 8.0 | 130.0 | 11 | 0.07 |
| 259 | P-114 | 978 | J-94 | J-100 | 8.0 | 130.0 | 20 | 0.13 |
| 260 | P-115 | 344 | J-95 | J-100 | 6.0 | 150.0 | 6 | 0.06 |
| 262 | P-116 | 392 | J-100 | J-101 | 8.0 | 150.0 | 19 | 0.12 |
| 263 | P-117 | 345 | J-96 | J-101 | 6.0 | 150.0 | 9 | 0.10 |
| 265 | P-118 | 348 | J-101 | J-102 | 8.0 | 150.0 | 24 | 0.15 |
| 267 | P-119 | 725 | J-102 | J-103 | 8.0 | 150.0 | 9 | 0.06 |
| 268 | P-120 | 346 | J-103 | J-97 | 6.0 | 150.0 | -16 | 0.19 |
| 270 | P-121 | 361 | J-103 | J-104 | 8.0 | 150.0 | 20 | 0.13 |

| | | | | | | | | |
|-----|-------|-------|-------|-------|------|-------|-----|------|
| 274 | P-122 | 362 | J-104 | J-105 | 8.0 | 150.0 | 7 | 0.05 |
| 275 | P-123 | 344 | J-98 | J-106 | 8.0 | 150.0 | 24 | 0.15 |
| 277 | P-124 | 357 | J-105 | J-106 | 8.0 | 150.0 | -6 | 0.04 |
| 280 | P-125 | 729 | J-106 | J-107 | 8.0 | 150.0 | 13 | 0.08 |
| 281 | P-126 | 193 | J-104 | J-109 | 8.0 | 130.0 | 7 | 0.05 |
| 282 | P-127 | 1,093 | J-109 | J-108 | 8.0 | 130.0 | -8 | 0.05 |
| 288 | P-128 | 165 | J-102 | J-108 | 6.0 | 130.0 | 11 | 0.12 |
| 289 | P-129 | 356 | J-107 | J-99 | 8.0 | 130.0 | -21 | 0.13 |
| 290 | P-130 | 185 | J-99 | J-114 | 8.0 | 130.0 | -15 | 0.10 |
| 292 | P-131 | 742 | J-114 | J-113 | 12.0 | 130.0 | -48 | 0.14 |
| 293 | P-132 | 81 | J-115 | J-113 | 8.0 | 130.0 | 25 | 0.16 |
| 294 | P-133 | 306 | J-113 | J-98 | 8.0 | 150.0 | 26 | 0.17 |
| 295 | P-134 | 1,085 | J-113 | J-112 | 12.0 | 130.0 | -55 | 0.16 |
| 296 | P-135 | 303 | J-97 | J-112 | 8.0 | 150.0 | -37 | 0.23 |
| 297 | P-136 | 358 | J-112 | J-111 | 12.0 | 130.0 | -96 | 0.27 |
| 298 | P-137 | 353 | J-111 | J-110 | 12.0 | 130.0 | -59 | 0.17 |
| 303 | P-138 | 369 | J-110 | J-90 | 12.0 | 130.0 | -61 | 0.17 |
| 304 | P-139 | 756 | J-84 | J-119 | 8.0 | 130.0 | 35 | 0.23 |
| 305 | P-140 | 333 | J-119 | J-118 | 8.0 | 130.0 | 8 | 0.05 |
| 306 | P-141 | 756 | J-118 | J-87 | 8.0 | 130.0 | -33 | 0.21 |
| 307 | P-142 | 188 | J-118 | J-117 | 8.0 | 150.0 | 14 | 0.09 |
| 308 | P-143 | 771 | J-86 | J-117 | 8.0 | 130.0 | 33 | 0.21 |
| 309 | P-144 | 230 | J-117 | J-116 | 8.0 | 150.0 | 17 | 0.11 |
| 310 | P-145 | 727 | J-116 | J-92 | 8.0 | 130.0 | -29 | 0.19 |
| 318 | P-146 | 311 | J-116 | J-111 | 8.0 | 150.0 | 42 | 0.27 |
| 319 | P-147 | 334 | J-119 | J-120 | 8.0 | 130.0 | 24 | 0.15 |
| 320 | P-148 | 380 | J-120 | J-122 | 8.0 | 130.0 | 18 | 0.12 |
| 321 | P-149 | 334 | J-122 | J-123 | 8.0 | 150.0 | 15 | 0.10 |
| 322 | P-150 | 336 | J-120 | J-121 | 8.0 | 130.0 | 3 | 0.02 |
| 323 | P-151 | 384 | J-123 | J-121 | 8.0 | 130.0 | -22 | 0.14 |
| 324 | P-152 | 336 | J-121 | J-118 | 8.0 | 130.0 | -22 | 0.14 |
| 325 | P-153 | 1,072 | J-117 | J-126 | 8.0 | 130.0 | 26 | 0.17 |
| 326 | P-154 | 366 | J-123 | J-124 | 8.0 | 130.0 | 34 | 0.22 |
| 327 | P-155 | 94 | J-124 | J-125 | 8.0 | 130.0 | 7 | 0.04 |
| 331 | P-156 | 231 | J-125 | J-126 | 8.0 | 150.0 | 7 | 0.04 |
| 332 | P-157 | 386 | J-124 | J-129 | 8.0 | 130.0 | 24 | 0.16 |
| 333 | P-158 | 126 | J-129 | J-128 | 8.0 | 130.0 | 11 | 0.07 |
| 334 | P-159 | 202 | J-128 | J-127 | 8.0 | 150.0 | 11 | 0.07 |
| 335 | P-160 | 387 | J-127 | J-126 | 8.0 | 130.0 | -26 | 0.16 |
| 340 | P-161 | 308 | J-127 | J-115 | 8.0 | 150.0 | 28 | 0.18 |
| 341 | P-162 | 328 | J-129 | J-131 | 8.0 | 130.0 | 11 | 0.07 |
| 342 | P-163 | 334 | J-131 | J-130 | 8.0 | 130.0 | 3 | 0.02 |
| 343 | P-164 | 329 | J-130 | J-127 | 8.0 | 130.0 | -5 | 0.03 |
| 344 | P-165 | 362 | J-131 | J-132 | 8.0 | 130.0 | 5 | 0.03 |
| 345 | P-166 | 336 | J-132 | J-133 | 8.0 | 130.0 | 3 | 0.02 |
| 347 | P-167 | 359 | J-133 | J-130 | 8.0 | 130.0 | -4 | 0.03 |
| 352 | P-168 | 686 | J-133 | J-134 | 8.0 | 130.0 | 4 | 0.03 |
| 353 | P-169 | 1,702 | J-135 | J-137 | 8.0 | 130.0 | -3 | 0.02 |
| 354 | P-170 | 230 | J-137 | J-136 | 8.0 | 130.0 | -6 | 0.04 |
| 355 | P-171 | 156 | J-109 | J-138 | 8.0 | 130.0 | 14 | 0.09 |
| 359 | P-172 | 378 | J-138 | J-136 | 8.0 | 130.0 | 6 | 0.04 |
| 360 | P-173 | 368 | J-138 | J-139 | 8.0 | 130.0 | 5 | 0.03 |
| 361 | P-174 | 346 | J-139 | J-105 | 8.0 | 130.0 | -10 | 0.06 |
| 362 | P-175 | 361 | J-139 | J-140 | 8.0 | 130.0 | 12 | 0.08 |
| 363 | P-176 | 343 | J-107 | J-141 | 8.0 | 130.0 | 10 | 0.06 |
| 365 | P-177 | 727 | J-141 | J-140 | 8.0 | 130.0 | -6 | 0.04 |
| 366 | P-178 | 370 | J-141 | J-142 | 6.0 | 130.0 | 4 | 0.04 |
| 368 | P-179 | 1,103 | J-140 | J-142 | 6.0 | 130.0 | 3 | 0.04 |
| 369 | P-180 | 1,454 | J-143 | J-142 | 6.0 | 130.0 | -3 | 0.03 |
| 371 | P-181 | 1,088 | J-141 | J-143 | 8.0 | 130.0 | 9 | 0.06 |
| 373 | P-182 | 211 | J-143 | J-144 | 8.0 | 130.0 | 8 | 0.05 |
| 378 | P-183 | 676 | J-144 | J-145 | 8.0 | 150.0 | 7 | 0.04 |
| 379 | P-184 | 154 | J-145 | J-146 | 8.0 | 150.0 | 9 | 0.06 |
| 380 | P-185 | 367 | J-146 | J-147 | 8.0 | 150.0 | -4 | 0.03 |
| 381 | P-186 | 155 | J-147 | J-148 | 8.0 | 150.0 | -8 | 0.05 |
| 382 | P-187 | 370 | J-148 | J-145 | 8.0 | 150.0 | 4 | 0.03 |
| 382 | P-188 | 370 | J-149 | J-146 | 8.0 | 130.0 | -10 | 0.07 |

| | | | | | | | | |
|-----|----------------|-------|-------|-------|------|-------|------|------|
| | P-189 | 710 | J-148 | J-107 | 8.0 | 150.0 | -18 | 0.11 |
| 390 | P-192 | 158 | J-150 | J-151 | 8.0 | 130.0 | -4 | 0.03 |
| 391 | P-193 | 350 | J-151 | J-152 | 8.0 | 130.0 | -7 | 0.05 |
| 392 | P-194 | 61 | J-152 | J-153 | 8.0 | 130.0 | -20 | 0.13 |
| 394 | P-195 | 1,639 | J-151 | J-154 | 6.0 | 130.0 | -1 | 0.01 |
| 397 | P-197 | 1,163 | J-153 | J-155 | 8.0 | 130.0 | 2 | 0.01 |
| 398 | P-198 | 1,199 | J-152 | J-154 | 12.0 | 130.0 | 10 | 0.03 |
| 406 | P-202 | 495 | J-158 | J-159 | 16.0 | 130.0 | 112 | 0.18 |
| 408 | P-203 | 114 | J-159 | PMP-1 | 8.0 | 130.0 | 112 | 0.71 |
| 410 | P-204 | 78 | J-160 | PMP-1 | 8.0 | 130.0 | -112 | 0.71 |
| 412 | P-10000 | 146 | J-159 | J-160 | 0.5 | 50.0 | 0 | 0.22 |
| 421 | P-206 | 336 | J-160 | J-161 | 8.0 | 130.0 | 112 | 0.71 |
| 422 | P-207 | 928 | J-161 | J-162 | 8.0 | 130.0 | 64 | 0.41 |
| 423 | P-208 | 327 | J-163 | J-162 | 8.0 | 130.0 | 0 | 0.00 |
| 424 | P-209 | 1,549 | J-161 | J-164 | 6.0 | 130.0 | 41 | 0.46 |
| 427 | P-210 | 63 | J-164 | J-169 | 8.0 | 130.0 | 21 | 0.13 |
| 428 | P-211 | 303 | J-169 | J-170 | 8.0 | 130.0 | 1 | 0.01 |
| 433 | P-212 | 263 | J-169 | J-171 | 8.0 | 130.0 | 20 | 0.13 |
| 434 | P-213 | 317 | J-171 | J-172 | 8.0 | 130.0 | 1 | 0.01 |
| 435 | P-214 | 254 | J-171 | J-173 | 8.0 | 130.0 | 17 | 0.11 |
| 436 | P-215 | 348 | J-173 | J-174 | 8.0 | 130.0 | 1 | 0.01 |
| 439 | P-216 | 206 | J-173 | J-175 | 8.0 | 130.0 | 16 | 0.10 |
| 440 | P-217 | 303 | J-175 | J-176 | 8.0 | 130.0 | 1 | 0.01 |
| 443 | P-218 | 372 | J-175 | J-177 | 8.0 | 130.0 | 12 | 0.08 |
| 444 | P-219 | 27 | J-177 | J-165 | 8.0 | 130.0 | 9 | 0.06 |
| 445 | P-220 | 159 | J-177 | J-178 | 8.0 | 130.0 | 1 | 0.01 |
| 448 | P-221 | 954 | J-165 | J-180 | 8.0 | 130.0 | 3 | 0.02 |
| 449 | P-222 | 655 | J-180 | J-167 | 8.0 | 130.0 | 3 | 0.02 |
| 450 | P-223 | 512 | J-167 | J-166 | 8.0 | 130.0 | 4 | 0.02 |
| 451 | P-224 | 865 | J-166 | J-179 | 8.0 | 130.0 | -3 | 0.02 |
| 452 | P-225 | 788 | J-179 | J-165 | 8.0 | 130.0 | -3 | 0.02 |
| 453 | P-226 | 822 | J-164 | J-168 | 8.0 | 130.0 | 13 | 0.08 |
| 456 | P-227 | 213 | J-168 | J-181 | 8.0 | 130.0 | 12 | 0.08 |
| 457 | P-228 | 946 | J-181 | J-182 | 8.0 | 130.0 | 11 | 0.07 |
| 458 | P-229 | 490 | J-182 | J-167 | 8.0 | 130.0 | 8 | 0.05 |
| 462 | P-230 | 408 | J-162 | J-183 | 8.0 | 130.0 | 62 | 0.39 |
| 463 | P-231 | 723 | J-183 | J-184 | 8.0 | 130.0 | 52 | 0.33 |
| 464 | P-232 | 376 | J-184 | J-185 | 8.0 | 130.0 | 46 | 0.29 |
| 471 | P-233 | 594 | J-185 | J-187 | 8.0 | 130.0 | 46 | 0.29 |
| 472 | P-234 | 505 | J-187 | J-188 | 8.0 | 130.0 | 10 | 0.06 |
| 473 | P-235 | 138 | J-188 | J-186 | 8.0 | 130.0 | 1 | 0.00 |
| 474 | P-236 | 430 | J-188 | J-189 | 8.0 | 130.0 | 8 | 0.05 |
| 475 | P-237 | 400 | J-189 | J-190 | 8.0 | 130.0 | 4 | 0.03 |
| 476 | P-238 | 265 | J-190 | J-191 | 8.0 | 130.0 | 2 | 0.01 |
| 477 | P-239 | 287 | J-191 | J-190 | 8.0 | 130.0 | -2 | 0.01 |
| 485 | P-240 | 365 | J-187 | J-192 | 8.0 | 130.0 | 33 | 0.21 |
| 486 | P-241 | 349 | J-192 | J-193 | 8.0 | 130.0 | 30 | 0.19 |
| 487 | P-242 | 383 | J-193 | J-194 | 8.0 | 130.0 | 28 | 0.18 |
| 488 | P-243 | 304 | J-194 | J-195 | 8.0 | 130.0 | 27 | 0.17 |
| 489 | P-244 | 530 | J-195 | J-196 | 8.0 | 130.0 | 25 | 0.16 |
| 490 | P-245 | 713 | J-196 | J-197 | 8.0 | 130.0 | 8 | 0.05 |
| 491 | P-246 | 1,147 | J-197 | J-198 | 8.0 | 130.0 | 6 | 0.04 |
| 495 | P-247 | 757 | J-196 | J-200 | 8.0 | 130.0 | 12 | 0.08 |
| 496 | P-248 | 1,203 | J-200 | J-199 | 8.0 | 130.0 | 8 | 0.05 |
| 497 | P-249 | 366 | J-199 | J-166 | 8.0 | 130.0 | -1 | 0.00 |
| 499 | P-250 | 276 | J-202 | J-200 | 8.0 | 130.0 | -1 | 0.01 |
| 503 | P-201(2) | 711 | J-204 | J-158 | 16.0 | 130.0 | 112 | 0.18 |
| 506 | P-201(1)(2) | 810 | J-205 | J-204 | 16.0 | 130.0 | 113 | 0.18 |
| 508 | P-201(1)(1)(1) | 990 | J-157 | J-206 | 16.0 | 130.0 | 113 | 0.18 |
| 509 | P-201(1)(1)(2) | 1,183 | J-206 | J-205 | 16.0 | 130.0 | 113 | 0.18 |
| 513 | P-251 | 757 | J-208 | J-207 | 8.0 | 130.0 | -1 | 0.01 |
| 514 | P-252 | 356 | J-207 | J-209 | 8.0 | 130.0 | 3 | 0.02 |
| 515 | P-253 | 216 | J-199 | J-207 | 8.0 | 130.0 | 7 | 0.04 |
| 522 | P-254 | 456 | J-209 | J-210 | 8.0 | 130.0 | -1 | 0.01 |
| 523 | P-255 | 233 | J-210 | J-211 | 8.0 | 130.0 | -1 | 0.01 |
| 524 | P-256 | 443 | J-211 | J-212 | 8.0 | 130.0 | -4 | 0.02 |
| 525 | P-257 | 217 | J-212 | J-215 | 8.0 | 130.0 | 0 | 0.00 |

| | | | | | | | | |
|-----|----------------|-------|--------|--------|------|-------|-------|-------|
| 527 | P-258 | 357 | J-215 | J-213 | 8.0 | 130.0 | 0 | 0.00 |
| | P-259 | 173 | J-215 | J-214 | 8.0 | 130.0 | 0 | 0.00 |
| 532 | P-260 | 476 | J-212 | J-216 | 8.0 | 130.0 | -4 | 0.02 |
| 533 | P-261 | 431 | J-216 | J-217 | 8.0 | 130.0 | -6 | 0.04 |
| 534 | P-262 | 1,058 | J-217 | J-218 | 8.0 | 130.0 | -6 | 0.04 |
| 535 | P-263 | 903 | J-218 | J-198 | 8.0 | 130.0 | -6 | 0.04 |
| 536 | P-264 | 477 | J-218 | J-219 | 8.0 | 130.0 | 0 | 0.00 |
| 541 | P-265 | 394 | J-211 | J-220 | 8.0 | 130.0 | 2 | 0.01 |
| 542 | P-266 | 350 | J-220 | J-221 | 8.0 | 130.0 | 1 | 0.00 |
| 543 | P-267 | 1,171 | J-221 | J-223 | 8.0 | 130.0 | 1 | 0.00 |
| 544 | P-268 | 396 | J-223 | J-222 | 8.0 | 130.0 | -1 | 0.00 |
| 545 | P-269 | 1,286 | J-222 | J-220 | 8.0 | 130.0 | -2 | 0.01 |
| 548 | P-270 | 1,117 | J-217 | J-224 | 8.0 | 130.0 | 0 | 0.00 |
| 549 | P-271 | 297 | J-224 | J-225 | 8.0 | 130.0 | 0 | 0.00 |
| 550 | P-272 | 282 | J-224 | J-225 | 8.0 | 130.0 | 0 | 0.00 |
| 558 | P-273 | 3,737 | J-198 | J-231 | 12.0 | 130.0 | 0 | 0.00 |
| 559 | P-274 | 2,079 | J-222 | J-226 | 8.0 | 130.0 | 0 | 0.00 |
| 560 | P-275 | 1,692 | J-226 | J-223 | 8.0 | 130.0 | -1 | 0.01 |
| 561 | P-276 | 3,082 | J-216 | J-227 | 8.0 | 130.0 | 3 | 0.02 |
| 562 | P-277 | 291 | J-227 | J-226 | 8.0 | 130.0 | -1 | 0.01 |
| 563 | P-278 | 108 | J-227 | PRV-2 | 8.0 | 130.0 | 2 | 0.02 |
| 564 | P-279 | 2,535 | PRV-2 | J-228 | 8.0 | 130.0 | 2 | 0.02 |
| 565 | P-280 | 300 | J-228 | J-229 | 8.0 | 130.0 | 2 | 0.01 |
| 566 | P-281 | 253 | J-229 | J-230 | 8.0 | 130.0 | 1 | 0.01 |
| 588 | P-282(1) | 246 | J-230 | PRV-3 | 8.0 | 130.0 | 0 | 0.00 |
| 589 | P-282(2) | 13 | PRV-3 | J-231 | 8.0 | 130.0 | 0 | 0.00 |
| 594 | P-200(1) | 57 | J-53 | J-233 | 16.0 | 130.0 | 114 | 0.18 |
| 595 | P-200(2) | 368 | J-233 | J-157 | 16.0 | 130.0 | 114 | 0.18 |
| 598 | P-286 | 3,357 | J-234 | J-3 | 16.0 | 150.0 | (N/A) | (N/A) |
| 601 | P-287 | 80 | J-159 | PRV-5 | 8.0 | 130.0 | (N/A) | (N/A) |
| 602 | P-288 | 63 | PRV-5 | J-160 | 8.0 | 130.0 | (N/A) | (N/A) |
| 605 | P-290 | 361 | J-235 | J-234 | 16.0 | 130.0 | (N/A) | (N/A) |
| 607 | P-289(1) | 2,011 | J-159 | J-236 | 16.0 | 130.0 | (N/A) | (N/A) |
| 608 | P-289(2) | 2,162 | J-236 | J-235 | 16.0 | 130.0 | (N/A) | (N/A) |
| 613 | P-291 | 66 | J-9 | PRV-6 | 6.0 | 130.0 | (N/A) | (N/A) |
| 614 | P-292 | 134 | PRV-6 | J-22 | 6.0 | 130.0 | (N/A) | (N/A) |
| 615 | P-293 | 745 | J-39 | J-51 | 6.0 | 130.0 | (N/A) | (N/A) |
| 618 | P-294(1) | 967 | J-135 | J-237 | 6.0 | 130.0 | (N/A) | (N/A) |
| 622 | P-294(2)(2) | 267 | J-238 | J-52 | 6.0 | 130.0 | (N/A) | (N/A) |
| 624 | P-294(2)(1)(1) | 591 | J-237 | J-239 | 6.0 | 130.0 | (N/A) | (N/A) |
| 625 | P-294(2)(1)(2) | 270 | J-239 | J-238 | 6.0 | 130.0 | (N/A) | (N/A) |
| 638 | P-76(1) | 341 | J-70 | J-241 | 8.0 | 130.0 | -45 | 0.29 |
| 639 | P-76(2) | 342 | J-241 | J-57 | 8.0 | 130.0 | -59 | 0.37 |
| 641 | P-79(1) | 68 | J-72 | J-242 | 12.0 | 130.0 | -48 | 0.13 |
| 642 | P-79(2) | 26 | J-242 | J-74 | 12.0 | 130.0 | -34 | 0.10 |
| 643 | P-295 | 326 | J-241 | J-242 | 8.0 | 130.0 | 13 | 0.08 |
| 647 | P-199(2)(2) | 5,258 | J-244 | J-156 | 12.0 | 130.0 | 3 | 0.01 |
| 648 | P-296 | 56 | J-244 | J-154 | 12.0 | 130.0 | -3 | 0.01 |
| 651 | P-196(2) | 236 | J-245 | J-153 | 12.0 | 130.0 | 26 | 0.07 |
| 654 | P-297(1) | 65 | J-245 | PRV-8 | 6.0 | 130.0 | (N/A) | (N/A) |
| 655 | P-297(2) | 48 | PRV-8 | J-149 | 6.0 | 130.0 | (N/A) | (N/A) |
| 656 | P-298 | 41 | J-245 | J-149 | 12.0 | 130.0 | -26 | 0.07 |
| 659 | P-191(2) | 249 | J-246 | J-150 | 8.0 | 130.0 | 0 | 0.00 |
| 661 | P-191(1)(1) | 428 | J-134 | J-247 | 8.0 | 130.0 | 0 | 0.00 |
| 665 | P-300 | 23 | J-246 | J-247 | 6.0 | 130.0 | (N/A) | (N/A) |
| 673 | P-303(1) | 30 | J-247 | PRV-10 | 6.0 | 130.0 | (N/A) | (N/A) |
| 674 | P-303(2) | 31 | PRV-10 | J-246 | 6.0 | 130.0 | (N/A) | (N/A) |
| 676 | P-190(1) | 726 | J-114 | J-249 | 8.0 | 130.0 | 24 | 0.15 |
| 677 | P-190(2) | 358 | J-249 | J-149 | 12.0 | 130.0 | 24 | 0.07 |

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Appendix H:

User Rates and Financial Documents

RESOLUTION NO. 3386

A RESOLUTION TO SET THE WATER AND SEWER RATES AND CHARGES FOR THE CITY OF RED LODGE FOR THE NEXT FIVE YEARS EFFECTIVE ON JULY 1, 2015.

WHEREAS, the water and sanitary sewer rates and charges in effect at the present time are not adequate to provide revenues to defray the increased costs of operation, maintenance, and capital of the City's water and sewer distribution facilities and systems; and

WHEREAS, a Water and Sewer Rate Study has been conducted for the City of Red Lodge, March 2015, to insure that rates, charges and classifications are reasonable and just in accordance with MCA 69-7-101 and to insure that undertakings are self-supporting in accordance with MCA 7-7-4424; and

WHEREAS, the 2014 Red Lodge Capital Improvements Plan identifies numerous required capital projects for both the water and sewer systems; and,

WHEREAS, the provision of the water and sewer systems and facilities is essential to the preservation of the public's health and welfare; and,

WHEREAS the City Council of the City of Red Lodge advertised and conducted a public hearing on May 26, 2015 pursuant to the Rules and Regulations governing Water and Waster Water Service for the City of Red Lodge, Title 10, Chapter 8, Section 1and MCA Section 69-7-111; and

WHEREAS, current budgetary requirements with respect to the operation of said facilities in addition to on-going and future projects require the proposed rates to become effective on or about July 1, 2015, to enable the City to proceed as expeditiously as possible to accomplish the objectives ; and

WHEREAS, pursuant to Montana law, the City Council has determined the new water and waste water rates to be adequate, reasonable, and just.

NOW, THEREFORE, BE IT RESOLVED BY THE CITY COUNCIL OF THE CITY OF RED LODGE, MONTANA:

That the City Council of the City of Red Lodge, deeming it both advisable and necessary to increase the municipal water and sewer rates and charges for all users, hereby adopts the following rate schedule for the 5 year period beginning July 1, 2015:

Monthly Water Fees:

| | | Current | FY 2015-16 | FY 2016-17 | FY 2017-18 | FY 2018-19 | FY 2019-20 |
|---------------------------|------|------------------------|------------|------------|------------|------------|------------|
| Base Rate per EDU | | - | \$ 22.95 | \$ 23.41 | \$ 23.88 | \$ 24.35 | \$ 24.84 |
| Capital Expenses per EDU | | - | \$ - | \$ 2.81 | \$ 5.63 | \$ 9.85 | \$ 14.07 |
| Curb-Stop Fee per Service | | - | \$ 2.00 | \$ 2.00 | \$ 2.00 | \$ 2.00 | \$ 2.00 |
| Total | | - | \$ 24.95 | \$ 28.22 | \$ 31.51 | \$ 36.20 | \$ 40.91 |
| Meter Size | EDUs | Monthly Service Charge | | | | | |
| ¾" | 1.00 | \$ 22.95 | \$ 24.95 | \$ 28.22 | \$ 31.51 | \$ 36.20 | \$ 40.91 |
| 1" | 1.79 | \$ 32.79 | \$ 43.08 | \$ 48.93 | \$ 54.82 | \$ 63.23 | \$ 71.65 |
| 1½" | 4.00 | \$ 39.35 | \$ 93.80 | \$ 106.88 | \$ 120.03 | \$ 138.82 | \$ 157.65 |
| 2" | 7.14 | \$ 71.05 | \$ 165.86 | \$ 189.20 | \$ 212.68 | \$ 246.22 | \$ 279.83 |

| 3" | 16.00 | \$ 163.96 | \$ 369.20 | \$ 421.50 | \$ 474.11 | \$ 549.28 | \$ 624.59 |
|-------------------------|-------|--|-----------|-----------|-----------|-----------|-------------|
| 4" | 28.57 | \$ 327.91 | \$ 657.68 | \$ 751.08 | \$ 845.02 | \$ 979.23 | \$ 1,113.71 |
| Block | | Monthly Usage Charge per 1,000 gallons | | | | | |
| 0 to 3,000 gallons | | \$ - | \$ - | \$ - | \$ - | \$ - | \$ - |
| 3,001 to 8,000 gallons | | \$ 4.12 | \$ 4.12 | \$ 4.20 | \$ 4.29 | \$ 4.37 | \$ 4.46 |
| 8,001 to 20,000 gallons | | \$ 5.41 | \$ 5.41 | \$ 5.52 | \$ 5.63 | \$ 5.74 | \$ 5.86 |
| > 20,001 gallons | | \$ 6.83 | \$ 6.83 | \$ 6.97 | \$ 7.11 | \$ 7.25 | \$ 7.39 |

Fiscal Year being July 1- June 30

Monthly Sewer Fees:

| | | Current | FY 2015-16 | FY 2016-17 | FY 2017-18 | FY 2018-19 | FY 2019-20 |
|--------------------------|-------|--|------------|-------------|-------------|-------------|-------------|
| Base Rate per EDU | | - | \$ 23.83 | \$ 24.31 | \$ 24.79 | \$ 25.29 | \$ 25.79 |
| Capital Expenses per EDU | | - | \$ 10.82 | \$ 13.55 | \$ 16.28 | \$ 20.38 | \$ 24.48 |
| Total | | - | \$ 34.65 | \$ 37.86 | \$ 41.07 | \$ 45.67 | \$ 50.27 |
| Meter Size | EDUs | Monthly Service Charge | | | | | |
| ¾" | 1.00 | \$ 23.83 | \$ 34.65 | \$ 37.86 | \$ 41.07 | \$ 45.67 | \$ 50.27 |
| 1" | 1.79 | \$ 42.66 | \$ 62.02 | \$ 67.76 | \$ 73.52 | \$ 81.75 | \$ 89.99 |
| 1½" | 4.00 | \$ 95.32 | \$ 138.60 | \$ 151.43 | \$ 164.29 | \$ 182.67 | \$ 201.10 |
| 2" | 7.14 | \$ 170.15 | \$ 247.40 | \$ 270.30 | \$ 293.26 | \$ 326.07 | \$ 358.96 |
| 3" | 16.00 | \$ 381.82 | \$ 554.40 | \$ 605.71 | \$ 657.16 | \$ 730.70 | \$ 804.39 |
| 4" | 28.57 | \$ 680.82 | \$ 989.95 | \$ 1,081.56 | \$ 1,173.45 | \$ 1,304.75 | \$ 1,436.34 |
| Block | | Monthly Usage Charge per 1,000 gallons | | | | | |
| 0 to 3,000 gallons | | \$ - | \$ - | \$ - | \$ - | \$ - | \$ - |
| 3,001 to 8,000 gallons | | \$ 1.61 | \$ 1.61 | \$ 1.64 | \$ 1.68 | \$ 1.71 | \$ 1.74 |
| 8,001 to 20,000 gallons | | \$ 1.61 | \$ 2.11 | \$ 2.15 | \$ 2.20 | \$ 2.24 | \$ 2.28 |
| > 20,001 gallons | | \$ 1.61 | \$ 2.67 | \$ 2.72 | \$ 2.78 | \$ 2.83 | \$ 2.89 |

Fiscal Year being July 1- June 30

One (1) EDU = equivalent dwelling unit, which is a typical ¾" residential water service.

Based upon an assumed average usage of 6,000 gallons per month, the rate structure is estimated to increase the monthly charges as follows for a typical ¾" service.

| Fund | Current | FY 2015-16 | FY 2016-17 | FY 2017-18 | FY 2018-19 | FY 2019-20 | Current Target Rate |
|-----------------------|----------|------------|------------|------------|------------|------------|---------------------|
| Water | \$ 35.31 | \$ 37.31 | \$ 40.83 | \$ 44.37 | \$ 49.32 | \$ 54.29 | \$ 58.74 |
| Sewer | \$ 28.66 | \$ 39.48 | \$ 42.78 | \$ 46.10 | \$ 50.79 | \$ 55.50 | \$ 37.76 |
| Water and Sewer | \$ 63.97 | \$ 76.79 | \$ 83.61 | \$ 90.46 | \$ 100.12 | \$ 109.79 | \$ 96.51 |
| Increase Over Current | - | \$ 12.82 | \$ 19.64 | \$ 26.49 | \$ 36.15 | \$ 45.82 | - |

Fiscal Year being July 1- June 30

Discontinuance/Reestablishment Charges.

A. Water Service: Charge for discontinuance/reestablishment of water service:

Inside normal working hours (When City Hall is open) — Fifty dollars (\$50.00).

Outside normal working hours — Seventy-five dollars (\$75.00).

B. Wastewater Service: Charge for discontinuance/reestablishment of wastewater service:

Per hour—Sixty dollars (\$60.00).

Miscellaneous Fees.

| | |
|--|--|
| Application fee for service area enlargements | \$500.00 |
| Application fee for extensions | \$500.00 |
| Fee for special meter accuracy test (Data Log) | \$75.00 |
| Fee for setting/removing fire hydrant meter | \$50.00 (A deposit shall also be required for anticipated water use.) |
| Fee for performing fireflow test (Admin) | \$60.00 |
| Main Tapping fee: | \$500.00 |
| Late payment interest charge | 1% per month |
| Fee for disposal septage | \$25.00 for 1,000 gallons or a yearly fee as determined by City Council for each individual hauler |


These fees / charges supersede and replace any previously established rates for water and/or sewer services.

Introduced at a regular meeting of the City Council on June 9, 2015, by Council Member Schoenike.

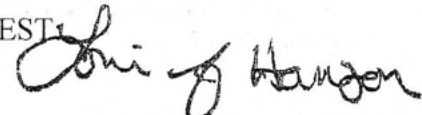
PASSED and APPROVED by the City Council of the City of Red Lodge this 9th day of June, 2015.

APPROVED by the Mayor this 9th day of June, 2015.

CITY OF RED LODGE


Ed Williams, Mayor

ATTEST:



Loni Hanson, City Clerk



COMMUNITY DEVELOPMENT DIVISION



Census and Target Rate 2015 Info

CDD Target Rate Calculation Resource

The Community Development Division (CDD) has updated the U.S. Census Bureau's American Communities Survey (ACS) data set 2011-2015 for the calculation of local government target rates. The Treasure State Endowment Program (TSEP) and Community Development Block Grant (CDBG) programs use ACS information as the base data set to calculate applicant target rates for community infrastructure systems.

These calculated rates, along with other demographic information, are components of the review and analysis of applications submitted to the programs for funding requests. Applications to be submitted in 2018 or later for TSEP or CDBG programs must use the 2015 ACS data for the calculation of target rates for an applicant.

Search below for 2015 American Communities Survey data used to calculate target rates when applying to the **Treasure State Endowment Program** and **Community Development Block Group Grant Program**.

Select a Location:

City/Designated location or County

| | |
|--|----------------------|
| City | Red Lodge city |
| County | <i>Carbon County</i> |
| Total Population | 2,236 |
| Total Households | 1,038 |
| Median Household Income | \$42,500 |
| Low & Moderate Income Percent | 48.97% |
| Percent Poverty | 20.6 % |

Target Rates

| | |
|--------------------------------|---------|
| Water & Waste Water | \$81.46 |
| Water Only | \$49.58 |
| WasteWater Only | \$31.88 |
| Solid Waste Only | \$10.63 |

Amounts are computed using the 2015 census and target percentage rationale reviewed biennially by Commerce. The target percentages are:

- 2.3% combined (water and wastewater)
- 1.4% for water alone
- 0.9% for wastewater alone
- 0.3% for solid waste

For example: Community median household income is \$25,000 and the residents pay both water and wastewater rates, the calculation would be: \$25,000 times 2.3% divided by 12 equals monthly target rate of \$47.92. $(25,000 \times 2.3\%) / 12 = \47.92

Having trouble finding data for your community? Some communities may not be listed in the resources above because the American Community Survey (ACS) did not provide 2015 MHI data for those areas. Please contact us at (406) 841-2770 or email TSEP or CDBG if you have any questions about this information.

Mapping

To see maps of the City/Town/CDP or County in which you are interested, please go to <http://ceic.mt.gov/>. For more information about the maps or tools available, please contact the Census and Economic Information Bureau at (406) 841-2713 or email ceic@mt.gov.

Contacts

| | |
|--|--------------|
| Treasure State Endowment Program (TSEP) | 406 841-2770 |
| Community Development Block Grant Program (CDBG) | 406 841-2770 |
| Census & Economic Information Center | 406 841-2740 |

Definitions

Census Designated Place (CDP): Census designated places (CDPs) have been created for each decennial census as the statistical counterparts of incorporated places. CDPs are delineated to provide census data for concentrations of population, housing, and commercial structures that are identifiable by name but are not within an incorporated place. CDP boundaries usually are defined in cooperation with state, local, and tribal officials. These boundaries, which usually coincide with visible features or the boundary of an adjacent incorporated place or other legal entity boundary, have no legal status, nor do these places have officials elected to serve traditional municipal functions.

Household: A household includes all the people who occupy a housing unit as their usual place of residence.

Income of households: This includes the income of the householder and all other individuals 15 years old and over in the household, whether they are related to the householder or not.

Low and Moderate Income Percent: Low and Moderate Income Percent is calculated by U.S. Housing and Urban Development (HUD) using data from the U.S. Census Bureau's Decennial Census, specifically for the Community Development Block Grant Program (CDBG). LMI families are defined as those families whose income does not exceed 80% of the county median income for the previous year or 80% of the median income of the entire non-metropolitan area of the State of Montana, whichever is higher.

Median income: The median income divides the income distribution into two equal groups, one having incomes above the median, and other having incomes below the median.

Notes: Total Population and Total Households are from Summary File (SF) 1, 100% data. Poverty Rates and Median Household Income are from Summary File (SF) 3, Sample data. Low and Moderate Income Percentage was developed by HUD using Census 2010 data.

Sources: U.S. Census Bureau & HUD
Median Household Income
Census Bureau, American Community Survey 2011 - 2015 Estimates

Total Population & Households
U.S. Census Bureau, 2010 Census - Summary File 1 (SF1) 100% Data

Low to Moderate Income Percent
HUD 2010 Low and Moderate Income Data

Target Rates for 2010 Census Data

[View 2010 Census data rates](#) for comparison purposes.

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Haggin Project

WRF-19441 364889 9999JVTG0

STATE OF MONTANA
GENERAL OBLIGATION BONDS
DRINKING WATER
(REVOLVING FUND PROGRAM)

Final Schedule
as of 01/17/20

BORROWER: Red Lodge
PROJECT NAME: Water Distribution Lines
LOAN COMMITMENT: \$1,123,000.00
LOAN AMOUNT: \$944,466.00
INTEREST RATE: 2.50%

FINAL LOAN PAYMENT: 7/1/2039
TOTAL # OF LOAN PAYMENTS: 40
PROJECT NUMBER: WRF-19441
DATE OF LOAN FUNDING: 6/26/2019

| PAYMENT DUE | INTEREST RATE | # DAYS DUE | ADM EXPENSE SURCHARGE | LOAN LOSS SURCHARGE | INTEREST PAYMENT | PRINCIPAL PAYMENT | O/S LOAN BALANCE | TOTAL PAYMENT | |
|--------------------|---------------|------------|-----------------------|---------------------|------------------|-------------------|------------------|---------------|-----------|
| Beginning Balance: | | | | | | | 52,667.00 | | |
| 01/01/20 | 2.500% | 185 | 707.68 | 707.68 | 5,661.44 | 22,000.00 | 922,466.00 | \$29,076.80 | 29,077 |
| 07/01/20 | 2.500% | 180 | 1,153.08 | 1,153.08 | 9,224.66 | 18,466.00 | 904,000.00 | \$29,996.83 | |
| 01/01/21 | 2.500% | 180 | 1,130.00 | 1,130.00 | 9,040.00 | 18,000.00 | 886,000.00 | \$29,300.00 | 59,297 |
| 07/01/21 | 2.500% | 180 | 1,107.50 | 1,107.50 | 8,860.00 | 19,000.00 | 867,000.00 | \$30,075.00 | |
| 01/01/22 | 2.500% | 180 | 1,083.75 | 1,083.75 | 8,670.00 | 19,000.00 | 848,000.00 | \$29,837.50 | 59,913 |
| 07/01/22 | 2.500% | 180 | 1,060.00 | 1,060.00 | 8,480.00 | 19,000.00 | 829,000.00 | \$29,600.00 | |
| 01/01/23 | 2.500% | 180 | 1,036.25 | 1,036.25 | 8,290.00 | 20,000.00 | 809,000.00 | \$30,362.50 | 59,963 |
| 07/01/23 | 2.500% | 180 | 1,011.25 | 1,011.25 | 8,090.00 | 20,000.00 | 789,000.00 | \$30,112.50 | |
| 01/01/24 | 2.500% | 180 | 986.25 | 986.25 | 7,890.00 | 20,000.00 | 769,000.00 | \$29,862.50 | 59,975 |
| 07/01/24 | 2.500% | 180 | 961.25 | 961.25 | 7,690.00 | 20,000.00 | 749,000.00 | \$29,612.50 | |
| 01/01/25 | 2.500% | 180 | 936.25 | 936.25 | 7,490.00 | 21,000.00 | 728,000.00 | \$30,362.50 | 59,975 |
| 07/01/25 | 2.500% | 180 | 910.00 | 910.00 | 7,280.00 | 21,000.00 | 707,000.00 | \$30,100.00 | |
| 01/01/26 | 2.500% | 180 | 883.75 | 883.75 | 7,070.00 | 21,000.00 | 686,000.00 | \$29,837.50 | 59,938 |
| 07/01/26 | 2.500% | 180 | 857.50 | 857.50 | 6,860.00 | 21,000.00 | 665,000.00 | \$29,575.00 | |
| 01/01/27 | 2.500% | 180 | 831.25 | 831.25 | 6,650.00 | 21,000.00 | 644,000.00 | \$29,312.50 | 58,888 |
| 07/01/27 | 2.500% | 180 | 805.00 | 805.00 | 6,440.00 | 22,000.00 | 622,000.00 | \$30,050.00 | |
| 01/01/28 | 2.500% | 180 | 777.50 | 777.50 | 6,220.00 | 22,000.00 | 600,000.00 | \$29,775.00 | 59,825 |
| 07/01/28 | 2.500% | 180 | 750.00 | 750.00 | 6,000.00 | 22,000.00 | 578,000.00 | \$29,500.00 | |
| 01/01/29 | 2.500% | 180 | 722.50 | 722.50 | 5,780.00 | 22,000.00 | 556,000.00 | \$29,225.00 | 58,725 |
| 07/01/29 | 2.500% | 180 | 695.00 | 695.00 | 5,560.00 | 23,000.00 | 533,000.00 | \$29,950.00 | |
| 01/01/30 | 2.500% | 180 | 666.25 | 666.25 | 5,330.00 | 23,000.00 | 510,000.00 | \$29,662.50 | 59,613 |
| 07/01/30 | 2.500% | 180 | 637.50 | 637.50 | 5,100.00 | 23,000.00 | 487,000.00 | \$29,375.00 | |
| 01/01/31 | 2.500% | 180 | 608.75 | 608.75 | 4,870.00 | 24,000.00 | 463,000.00 | \$30,087.50 | 59,463 |
| 07/01/31 | 2.500% | 180 | 578.75 | 578.75 | 4,630.00 | 24,000.00 | 439,000.00 | \$29,787.50 | |
| 01/01/32 | 2.500% | 180 | 548.75 | 548.75 | 4,390.00 | 24,000.00 | 415,000.00 | \$29,487.50 | 59,275 |
| 07/01/32 | 2.500% | 180 | 518.75 | 518.75 | 4,150.00 | 25,000.00 | 390,000.00 | \$30,187.50 | |
| 01/01/33 | 2.500% | 180 | 487.50 | 487.50 | 3,900.00 | 25,000.00 | 365,000.00 | \$29,875.00 | 60,063 |
| 07/01/33 | 2.500% | 180 | 456.25 | 456.25 | 3,650.00 | 25,000.00 | 340,000.00 | \$29,562.50 | |
| 01/01/34 | 2.500% | 180 | 425.00 | 425.00 | 3,400.00 | 26,000.00 | 314,000.00 | \$30,250.00 | 59,813 |
| 07/01/34 | 2.500% | 180 | 392.50 | 392.50 | 3,140.00 | 27,000.00 | 287,000.00 | \$30,925.00 | |
| 01/01/35 | 2.500% | 180 | 358.75 | 358.75 | 2,870.00 | 27,000.00 | 260,000.00 | \$30,587.50 | 61,513 |
| 07/01/35 | 2.500% | 180 | 325.00 | 325.00 | 2,600.00 | 28,000.00 | 232,000.00 | \$31,250.00 | |
| 01/01/36 | 2.500% | 180 | 290.00 | 290.00 | 2,320.00 | 28,000.00 | 204,000.00 | \$30,900.00 | 62,150 |
| 07/01/36 | 2.500% | 180 | 255.00 | 255.00 | 2,040.00 | 28,000.00 | 176,000.00 | \$30,550.00 | |
| 01/01/37 | 2.500% | 180 | 220.00 | 220.00 | 1,760.00 | 29,000.00 | 147,000.00 | \$31,200.00 | 61,750 |
| 07/01/37 | 2.500% | 180 | 183.75 | 183.75 | 1,470.00 | 29,000.00 | 118,000.00 | \$30,837.50 | |
| 01/01/38 | 2.500% | 180 | 147.50 | 147.50 | 1,180.00 | 29,000.00 | 89,000.00 | \$30,475.00 | 61,313 |
| 07/01/38 | 2.500% | 180 | 111.25 | 111.25 | 890.00 | 29,000.00 | 60,000.00 | \$30,112.50 | |
| 01/01/39 | 2.500% | 180 | 75.00 | 75.00 | 600.00 | 30,000.00 | 30,000.00 | \$30,750.00 | 60,863 |
| 07/01/39 | 2.500% | 180 | 37.50 | 37.50 | 300.00 | 30,000.00 | 0.00 | \$30,375.00 | 30,375 |
| | | | 25,729.51 | 25,729.51 | 205,836.10 | 944,466.00 | | 1,201,761.13 | 1,201,761 |

\$4,695,000

City of Red Lodge, Montana
 Water System Revenue Refunding Bonds, Series 2019C

Debt Service Schedule

Part 1 of 2

| Date | Principal | Coupon | Interest | Total P+I |
|--------------|-----------------------|----------|-----------------------|-----------------------|
| 01/01/2020✓ | - | - | 22,682.57 | 22,682.57 |
| 07/01/2020 | 195,000.00 | 2.000% | 53,721.88 | 248,721.88 |
| 01/01/2021 | - | - | 51,771.88 | 51,771.88 |
| 07/01/2021 | 260,000.00 | 2.000% | 51,771.88 | 311,771.88 |
| 01/01/2022 | - | - | 49,171.88 | 49,171.88 |
| 07/01/2022 | 265,000.00 | 2.000% | 49,171.88 | 314,171.88 |
| 01/01/2023 | - | - | 46,521.88 | 46,521.88 |
| 07/01/2023 | 270,000.00 | 2.000% | 46,521.88 | 316,521.88 |
| 01/01/2024 | - | - | 43,821.88 | 43,821.88 |
| 07/01/2024 | 275,000.00 | 2.000% | 43,821.88 | 318,821.88 |
| 01/01/2025 | - | - | 41,071.88 | 41,071.88 |
| 07/01/2025 | 195,000.00 | 2.000% | 41,071.88 | 236,071.88 |
| 01/01/2026 | - | - | 39,121.88 | 39,121.88 |
| 07/01/2026 | 200,000.00 | 2.250% | 39,121.88 | 239,121.88 |
| 01/01/2027 | - | - | 36,871.88 | 36,871.88 |
| 07/01/2027 | 205,000.00 | 2.250% | 36,871.88 | 241,871.88 |
| 01/01/2028 | - | - | 34,565.63 | 34,565.63 |
| 07/01/2028 | 210,000.00 | 2.250% | 34,565.63 | 244,565.63 |
| 01/01/2029 | - | - | 32,203.13 | 32,203.13 |
| 07/01/2029 | 215,000.00 | 2.250% | 32,203.13 | 247,203.13 |
| 01/01/2030 | - | - | 29,784.38 | 29,784.38 |
| 07/01/2030 | 220,000.00 | 2.375% | 29,784.38 | 249,784.38 |
| 01/01/2031 | - | - | 27,171.88 | 27,171.88 |
| 07/01/2031 | 225,000.00 | 2.375% | 27,171.88 | 252,171.88 |
| 01/01/2032 | - | - | 24,500.00 | 24,500.00 |
| 07/01/2032 | 230,000.00 | 2.500% | 24,500.00 | 254,500.00 |
| 01/01/2033 | - | - | 21,625.00 | 21,625.00 |
| 07/01/2033 | 235,000.00 | 2.500% | 21,625.00 | 256,625.00 |
| 01/01/2034 | - | - | 18,687.50 | 18,687.50 |
| 07/01/2034 | 240,000.00 | 2.500% | 18,687.50 | 258,687.50 |
| 01/01/2035 | - | - | 15,687.50 | 15,687.50 |
| 07/01/2035 | 245,000.00 | 2.500% | 15,687.50 | 260,687.50 |
| 01/01/2036 | - | - | 12,625.00 | 12,625.00 |
| 07/01/2036 | 250,000.00 | 2.500% | 12,625.00 | 262,625.00 |
| 01/01/2037 | - | - | 9,500.00 | 9,500.00 |
| 07/01/2037 | 260,000.00 | 2.500% | 9,500.00 | 269,500.00 |
| 01/01/2038 | - | - | 6,250.00 | 6,250.00 |
| 07/01/2038 | 265,000.00 | 2.500% | 6,250.00 | 271,250.00 |
| 01/01/2039 | - | - | 2,937.50 | 2,937.50 |
| 07/01/2039 | 235,000.00 | 2.500% | 2,937.50 | 237,937.50 |
| Total | \$4,695,000.00 | - | \$1,164,185.81 | \$5,859,185.81 |

\$4,695,000

City of Red Lodge, Montana

Water System Revenue Refunding Bonds, Series 2019C

Debt Service Schedule

Part 2 of 2

Yield Statistics

| | |
|-----------------------------------|--------------|
| Bond Year Dollars | \$48,443.67 |
| Average Life | 10.318 Years |
| Average Coupon | 2.4031744% |
| Net Interest Cost (NIC) | 2.3177754% |
| True Interest Cost (TIC) | 2.2958615% |
| Bond Yield for Arbitrage Purposes | 2.1161641% |
| All Inclusive Cost (AIC) | 2.6120790% |

IRS Form 8038

| | |
|---------------------------|--------------|
| Net Interest Cost | 2.1670710% |
| Weighted Average Maturity | 10.304 Years |

| 2017 Expenses | |
|------------------------------|-----------------|
| 430510 admin | |
| account total | \$ 382,736.49 |
| less professional services | \$ (7,414.85) |
| | \$ (3,604.78) |
| Plus PERS | \$ 23,329.80 |
| | \$ 395,046.66 |
| 2018 Expenses | |
| 430510 admin | |
| account total | \$ 457,619.99 |
| less professional services | \$ (3,777.07) |
| Plus PERS | \$ 81.00 |
| | \$ 14,421.18 |
| | \$ 8,000.00 |
| | \$ 476,345.10 |
| 2019 expenses | |
| 430510 admin | |
| account total | \$ 567,668.50 |
| less professional services | \$ (15,000.00) |
| | \$ (5,200.54) |
| Less Capital Improv | \$ 15,000.00 |
| | \$ 3,735.19 |
| Plus PERS | \$ (770.00) |
| | \$ 24,434.13 |
| | \$ 589,867.28 |
| 2019 Revenue | |
| 330000 Intergovernmental Rev | |
| Account total | \$ 275,436.00 |
| Less Grant | \$ (273,010.00) |
| | \$ 2,426.00 |

*capital of \$15,000.00 and \$3,735.19 was a negative expense. Pension of \$770.00 was a negative expense

From: ellis.courtney@dorsey.com
To: [Amy Carter](#)
Subject: RE: [EXTERNAL] City of Red Lodge Water System Debt Services
Date: Monday, May 18, 2020 1:28:38 PM

Doing the math, it looks like the Series 2019C Bonds are outstanding in the principal amount of \$4,695,000. Looks like Cid said for the Series 2019B Bond: Current balance \$922,466 with a payment due 7/1/20.

From: Amy Carter <acarter@greatwesteng.com>
Sent: Monday, May 18, 2020 1:24 PM
To: Ellis, Courtney <ellis.courtney@dorsey.com>
Subject: RE: [EXTERNAL] City of Red Lodge Water System Debt Services

Courtney,
Thank you. What is the current balance on the 2019B and 2019C bonds?

Amy Carter, PE | Project Engineer
Great West Engineering, Inc.
DIRECT: 406-281-8588

www.greatwesteng.com



From: ellis.courtney@dorsey.com <ellis.courtney@dorsey.com>
Sent: Monday, May 18, 2020 1:16 PM
To: Amy Carter <acarter@greatwesteng.com>
Subject: RE: [EXTERNAL] City of Red Lodge Water System Debt Services

Hi Amy,

Red Lodge refunded their RD water bonds last fall. Here's the most recent debt service schedule I have for them—but note that the SRF debt service schedule (Series 2019B Bonds) may not be correct, as this refunding issue closed before they closed out their Series 2019A/B Bonds with SRF.

| Bond Year | Series 2019B Bonds | | Series 2019C Bonds | | Total |
|--------------|--------------------|-----------|--------------------|-----------|------------|
| | Indebtedness | | (This Issue) | | |
| | Principal | Interest | Principal | Interest | |
| 2020 | \$ 44,000 | \$ 28,190 | \$ 195,000 | \$ 76,404 | \$ 343,594 |
| 2021 | 45,000 | 26,700 | 260,000 | 103,544 | 435,244 |
| 2022 | 46,000 | 25,562 | 265,000 | 98,344 | 434,906 |
| 2023 | 48,000 | 24,400 | 270,000 | 93,044 | 435,444 |
| 2024 | 48,000 | 23,200 | 275,000 | 87,644 | 433,844 |
| 2025 | 50,000 | 21,988 | 195,000 | 82,144 | 349,132 |
| 2026 | 51,000 | 20,738 | 200,000 | 78,244 | 349,982 |
| 2027 | 52,000 | 19,450 | 205,000 | 73,744 | 350,194 |
| 2028 | 54,000 | 18,138 | 210,000 | 69,131 | 351,269 |
| 2029 | 55,000 | 16,788 | 215,000 | 64,406 | 351,194 |
| 2030 | 56,000 | 15,400 | 220,000 | 59,569 | 350,969 |
| 2031 | 58,000 | 13,988 | 225,000 | 54,344 | 351,332 |
| 2032 | 59,000 | 12,538 | 230,000 | 49,000 | 350,538 |
| 2033 | 61,000 | 11,050 | 235,000 | 43,250 | 350,300 |
| 2034 | 62,000 | 9,513 | 240,000 | 37,375 | 348,888 |
| 2035 | 64,000 | 7,950 | 245,000 | 31,375 | 348,325 |
| 2036 | 65,000 | 6,350 | 250,000 | 25,250 | 346,600 |
| 2037 | 67,000 | 4,713 | 260,000 | 19,000 | 350,713 |
| 2038 | 68,000 | 3,025 | 265,000 | 12,500 | 348,525 |
| 2039 | 70,000 | 1,313 | 235,000 | 5,875 | 312,188 |

From: Amy Carter <acarter@greatwesteng.com>
Sent: Monday, May 18, 2020 9:34 AM
To: Ellis, Courtney <ellis.courtney@dorsey.com>
Subject: [EXTERNAL] City of Red Lodge Water System Debt Services

Courtney,
 Cid Sivil cc'd you on an email regarding the City of Red Lodge Debt services for their water system. I am working on a Water PER for them, and want to make sure I have current debt services. Do you have information about their current SRF and RD loans?

Amy Carter, PE | Project Engineer

Great West Engineering, Inc.
 6780 Trade Center Avenue
 Billings, MT 59101

DIRECT: 406-281-8588
 FAX: 406-248-1363
 OFFICE: 406-652-5000

www.greatwesteng.com



From: ellis.courtney@dorsey.com
To: [Amy Carter](#)
Subject: RE: [EXTERNAL] City of Red Lodge Water System Debt Services
Date: Monday, May 18, 2020 1:16:28 PM

Hi Amy,

Red Lodge refunded their RD water bonds last fall. Here's the most recent debt service schedule I have for them—but note that the SRF debt service schedule (Series 2019B Bonds) may not be correct, as this refunding issue closed before they closed out their Series 2019A/B Bonds with SRF.

| <u>Bond Year</u> | <u>Series 2019B Bonds</u> | | <u>Series 2019C Bonds</u> | | <u>Total</u> |
|------------------|---------------------------|-----------------|---------------------------|-----------------|--------------|
| | <u>Indebtedness</u> | | <u>(This Issue)</u> | | |
| | <u>Principal</u> | <u>Interest</u> | <u>Principal</u> | <u>Interest</u> | |
| 2020 | \$ 44,000 | \$ 28,190 | \$ 195,000 | \$ 76,404 | \$ 343,594 |
| 2021 | 45,000 | 26,700 | 260,000 | 103,544 | 435,244 |
| 2022 | 46,000 | 25,562 | 265,000 | 98,344 | 434,906 |
| 2023 | 48,000 | 24,400 | 270,000 | 93,044 | 435,444 |
| 2024 | 48,000 | 23,200 | 275,000 | 87,644 | 433,844 |
| 2025 | 50,000 | 21,988 | 195,000 | 82,144 | 349,132 |
| 2026 | 51,000 | 20,738 | 200,000 | 78,244 | 349,982 |
| 2027 | 52,000 | 19,450 | 205,000 | 73,744 | 350,194 |
| 2028 | 54,000 | 18,138 | 210,000 | 69,131 | 351,269 |
| 2029 | 55,000 | 16,788 | 215,000 | 64,406 | 351,194 |
| 2030 | 56,000 | 15,400 | 220,000 | 59,569 | 350,969 |
| 2031 | 58,000 | 13,988 | 225,000 | 54,344 | 351,332 |
| 2032 | 59,000 | 12,538 | 230,000 | 49,000 | 350,538 |
| 2033 | 61,000 | 11,050 | 235,000 | 43,250 | 350,300 |
| 2034 | 62,000 | 9,513 | 240,000 | 37,375 | 348,888 |
| 2035 | 64,000 | 7,950 | 245,000 | 31,375 | 348,325 |
| 2036 | 65,000 | 6,350 | 250,000 | 25,250 | 346,600 |
| 2037 | 67,000 | 4,713 | 260,000 | 19,000 | 350,713 |
| 2038 | 68,000 | 3,025 | 265,000 | 12,500 | 348,525 |
| 2039 | 70,000 | 1,313 | 235,000 | 5,875 | 312,188 |

From: Amy Carter <acarter@greatwesteng.com>
Sent: Monday, May 18, 2020 9:34 AM
To: Ellis, Courtney <ellis.courtney@dorsey.com>
Subject: [EXTERNAL] City of Red Lodge Water System Debt Services

Courtney,

Cid Sivil cc'd you on an email regarding the City of Red Lodge Debt services for their water system. I am working on a Water PER for them, and want to make sure I have current debt services. Do you have information about their current SRF and RD loans?

Amy Carter, PE | Project Engineer

Great West Engineering, Inc.

6780 Trade Center Avenue
Billings, MT 59101

DIRECT: 406-281-8588

FAX: 406-248-1363

OFFICE: 406-652-5000

www.greatwesteng.com



RESOLUTION NO. 3371

**A RESOLUTION BY THE CITY COUNCIL OF THE CITY OF RED LODGE,
MONTANA, AUTHORIZING AN INTERFUND LOAN PAYMENT AGREEMENT FOR
THE 2013 BROADWAY WATER REHAB PROJECT.**

The City may make accelerated payments without incurring any penalties.

BE IT RESOLVED by the Red Lodge City Council that:

The portion of the project completed with a loan from the Sewer Fund shall be paid for by an interfund loan from the Water Fund to the Sewer Fund in the amount of \$534,172.71. The loan shall be repaid according to the terms below as stipulated in Exhibit A, by monthly appropriations from the Water Fund of the City of Red Lodge.

Term: Twenty (20) years

Interest: 2%

Payment Date: 24th of each month

Total Cost: \$648,549.77

PASSED and APPROVED by the Red Lodge City Council and approved by the Mayor on this 12th day of August, 2014.

Mayor

ATTEST:

City Clerk

Exhibit A

Mortgage Calculator

Amortization table for \$534,172.71 borrowed on Jul 24, 2014

| Month/ Year | Payment | Principal Paid | Interest Paid | Total Interest | Balance |
|--------------|-------------|----------------|---------------|----------------|---------------|
| Aug. 2014 ✓ | \$ 2,702.29 | \$ 1,812.00 | \$ 890.29 | \$ 890.29 | \$ 532,360.71 |
| Sept. 2014 ✓ | \$ 2,702.29 | \$ 1,815.02 | \$ 887.27 | \$ 1,777.56 | \$ 530,545.68 |
| Oct. 2014 ✓ | \$ 2,702.29 | \$ 1,818.05 | \$ 884.24 | \$ 2,661.80 | \$ 528,727.64 |
| Nov. 2014 ✓ | \$ 2,702.29 | \$ 1,821.08 | \$ 881.21 | \$ 3,543.01 | \$ 526,906.56 |
| Dec. 2014 ✓ | \$ 2,702.29 | \$ 1,824.11 | \$ 878.18 | \$ 4,421.19 | \$ 525,082.45 |
| Jan. 2015 | \$ 2,702.29 | \$ 1,827.15 | \$ 875.14 | \$ 5,296.33 | \$ 523,255.29 |
| Feb. 2015 | \$ 2,702.29 | \$ 1,830.20 | \$ 872.09 | \$ 6,168.42 | \$ 521,425.09 |
| Mar. 2015 | \$ 2,702.29 | \$ 1,833.25 | \$ 869.04 | \$ 7,037.46 | \$ 519,591.84 |
| April 2015 | \$ 2,702.29 | \$ 1,836.30 | \$ 865.99 | \$ 7,903.45 | \$ 517,755.54 |
| May 2015 | \$ 2,702.29 | \$ 1,839.36 | \$ 862.93 | \$ 8,766.37 | \$ 515,916.18 |
| June 2015 | \$ 2,702.29 | \$ 1,842.43 | \$ 859.86 | \$ 9,626.23 | \$ 514,073.74 |
| July 2015 | \$ 2,702.29 | \$ 1,845.50 | \$ 856.79 | \$ 10,483.02 | \$ 512,228.24 |
| Aug. 2015 | \$ 2,702.29 | \$ 1,848.58 | \$ 853.71 | \$ 11,336.74 | \$ 510,379.67 |
| Sept. 2015 | \$ 2,702.29 | \$ 1,851.66 | \$ 850.63 | \$ 12,187.37 | \$ 508,528.01 |
| Oct. 2015 | \$ 2,702.29 | \$ 1,854.74 | \$ 847.55 | \$ 13,034.92 | \$ 506,673.26 |
| Nov. 2015 | \$ 2,702.29 | \$ 1,857.84 | \$ 844.46 | \$ 13,879.37 | \$ 504,815.43 |
| Dec. 2015 | \$ 2,702.29 | \$ 1,860.93 | \$ 841.36 | \$ 14,720.73 | \$ 502,954.50 |
| Jan. 2016 | \$ 2,702.29 | \$ 1,864.03 | \$ 838.26 | \$ 15,558.99 | \$ 501,090.46 |

| | <i>Pmt</i> | <i>Principal</i> | <i>Interest</i> | | |
|-----------------------|-------------|--------------------|------------------|--------------|---------------|
| Feb. 2016 | \$ 2,702.29 | \$ 1,867.14 | \$ 835.15 | \$ 16,394.14 | \$ 499,223.32 |
| Mar. 2016 | \$ 2,702.29 | \$ 1,870.25 | \$ 832.04 | \$ 17,226.18 | \$ 497,353.07 |
| April 2016 | \$ 2,702.29 | \$ 1,873.37 | \$ 828.92 | \$ 18,055.10 | \$ 495,479.70 |
| May 2016 | \$ 2,702.29 | \$ 1,876.49 | \$ 825.80 | \$ 18,880.90 | \$ 493,603.21 |
| June 2016 | \$ 2,702.29 | <u>\$ 1,879.62</u> | <u>\$ 822.67</u> | \$ 19,703.57 | \$ 491,723.59 |
| July 2016 | \$ 2,702.29 | \$ 1,882.75 | \$ 819.54 | \$ 20,523.11 | \$ 489,840.84 |
| Aug. 2016 | \$ 2,702.29 | \$ 1,885.89 | \$ 816.40 | \$ 21,339.51 | \$ 487,954.95 |
| Sept. 2016 | \$ 2,702.29 | \$ 1,889.03 | \$ 813.26 | \$ 22,152.77 | \$ 486,065.92 |
| Oct. 2016 | \$ 2,702.29 | \$ 1,892.18 | \$ 810.11 | \$ 22,962.88 | \$ 484,173.74 |
| Nov. 2016 | \$ 2,702.29 | \$ 1,895.33 | \$ 806.96 | \$ 23,769.84 | \$ 482,278.41 |
| Dec. 2016 | \$ 2,702.29 | \$ 1,898.49 | \$ 803.80 | \$ 24,573.63 | \$ 480,379.91 |
| Jan. 2017 | \$ 2,702.29 | \$ 1,901.66 | \$ 800.63 | \$ 25,374.27 | \$ 478,478.25 |
| Feb. 2017 | \$ 2,702.29 | \$ 1,904.83 | \$ 797.46 | \$ 26,171.73 | \$ 476,573.43 |
| Mar. 2017 | \$ 2,702.29 | \$ 1,908.00 | \$ 794.29 | \$ 26,966.02 | \$ 474,665.43 |
| April 2017 | \$ 2,702.29 | \$ 1,911.18 | \$ 791.11 | \$ 27,757.13 | \$ 472,754.24 |
| May 2017 | \$ 2,702.29 | \$ 1,914.37 | \$ 787.92 | \$ 28,545.05 | \$ 470,839.88 |
| June 2017 | \$ 2,702.29 | \$ 1,917.56 | \$ 784.73 | \$ 29,329.78 | \$ 468,922.32 |
| July 2017 | \$ 2,702.29 | \$ 1,920.75 | \$ 781.54 | \$ 30,111.32 | \$ 467,001.57 |
| Aug. 2017 | \$ 2,702.29 | \$ 1,923.95 | \$ 778.34 | \$ 30,889.66 | \$ 465,077.61 |
| Sept. 2017 | \$ 2,702.29 | \$ 1,927.16 | \$ 775.13 | \$ 31,664.79 | \$ 463,150.45 |
| Oct. 2017 | \$ 2,702.29 | \$ 1,930.37 | \$ 771.92 | \$ 32,436.70 | \$ 461,220.08 |
| Noy. 2017 | \$ 2,702.29 | \$ 1,933.59 | \$ 768.70 | \$ 33,205.40 | \$ 459,286.49 |
| Dec. 2017 | \$ 2,702.29 | \$ 1,936.81 | \$ 765.48 | \$ 33,970.88 | \$ 457,349.67 |
| Jan. 2018 | \$ 2,702.29 | \$ 1,940.04 | \$ 762.25 | \$ 34,733.13 | \$ 455,409.63 |
| Feb. 2018 | \$ 2,702.29 | \$ 1,943.27 | \$ 759.02 | \$ 35,492.15 | \$ 453,466.36 |

| | <i>Pmt.</i> | <i>Principal</i> | <i>Interest</i> | | |
|-----------------------|-------------|------------------|-----------------|--------------|---------------|
| Mar. 2018 | \$ 2,702.29 | \$ 1,946.51 | \$ 755.78 | \$ 36,247.93 | \$ 451,519.84 |
| April 2018 | \$ 2,702.29 | \$ 1,949.76 | \$ 752.53 | \$ 37,000.46 | \$ 449,570.09 |
| May 2018 | \$ 2,702.29 | \$ 1,953.01 | \$ 749.28 | \$ 37,749.74 | \$ 447,617.08 |
| June 2018 | \$ 2,702.29 | \$ 1,956.26 | \$ 746.03 | \$ 38,495.77 | \$ 445,660.82 |
| July 2018 | \$ 2,702.29 | \$ 1,959.52 | \$ 742.77 | \$ 39,238.54 | \$ 443,701.29 |
| Aug. 2018 | \$ 2,702.29 | \$ 1,962.79 | \$ 739.50 | \$ 39,978.04 | \$ 441,738.51 |
| Sept. 2018 | \$ 2,702.29 | \$ 1,966.06 | \$ 736.23 | \$ 40,714.27 | \$ 439,772.45 |
| Oct. 2018 | \$ 2,702.29 | \$ 1,969.34 | \$ 732.95 | \$ 41,447.23 | \$ 437,803.11 |
| Nov. 2018 | \$ 2,702.29 | \$ 1,972.62 | \$ 729.67 | \$ 42,176.90 | \$ 435,830.49 |
| Dec. 2018 | \$ 2,702.29 | \$ 1,975.91 | \$ 726.38 | \$ 42,903.28 | \$ 433,854.58 |
| Jan. 2019 | \$ 2,702.29 | \$ 1,979.20 | \$ 723.09 | \$ 43,626.37 | \$ 431,875.38 |
| Feb. 2019 | \$ 2,702.29 | \$ 1,982.50 | \$ 719.79 | \$ 44,346.16 | \$ 429,892.88 |
| Mar. 2019 | \$ 2,702.29 | \$ 1,985.80 | \$ 716.49 | \$ 45,062.65 | \$ 427,907.08 |
| April 2019 | \$ 2,702.29 | \$ 1,989.11 | \$ 713.18 | \$ 45,775.83 | \$ 425,917.97 |
| May 2019 | \$ 2,702.29 | \$ 1,992.43 | \$ 709.86 | \$ 46,485.69 | \$ 423,925.54 |
| June 2019 | \$ 2,702.29 | \$ 1,995.75 | \$ 706.54 | \$ 47,192.24 | \$ 421,929.79 |
| July 2019 | \$ 2,702.29 | \$ 1,999.07 | \$ 703.22 | \$ 47,895.45 | \$ 419,930.72 |
| Aug. 2019 | \$ 2,702.29 | \$ 2,002.41 | \$ 699.88 | \$ 48,595.34 | \$ 417,928.31 |
| Sept. 2019 | \$ 2,702.29 | \$ 2,005.74 | \$ 696.55 | \$ 49,291.89 | \$ 415,922.57 |
| Oct. 2019 | \$ 2,702.29 | \$ 2,009.09 | \$ 693.20 | \$ 49,985.09 | \$ 413,913.48 |
| Nov. 2019 | \$ 2,702.29 | \$ 2,012.43 | \$ 689.86 | \$ 50,674.95 | \$ 411,901.05 |
| Dec. 2019 | \$ 2,702.29 | \$ 2,015.79 | \$ 686.50 | \$ 51,361.45 | \$ 409,885.26 |
| Jan. 2020 | \$ 2,702.29 | \$ 2,019.15 | \$ 683.14 | \$ 52,044.59 | \$ 407,866.11 |
| Feb. 2020 | \$ 2,702.29 | \$ 2,022.51 | \$ 679.78 | \$ 52,724.37 | \$ 405,843.60 |
| Mar. 2020 | \$ 2,702.29 | \$ 2,025.88 | \$ 676.41 | \$ 53,400.77 | \$ 403,817.71 |

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|---------------------|-------------|-------------|-----------|--------------|---------------|
| April 2020 | \$ 2,702.29 | \$ 2,029.26 | \$ 673.03 | \$ 54,073.80 | \$ 401,788.45 |
| May 2020 | \$ 2,702.29 | \$ 2,032.64 | \$ 669.65 | \$ 54,743.45 | \$ 399,755.81 |
| June 2020 | \$ 2,702.29 | \$ 2,036.03 | \$ 666.26 | \$ 55,409.71 | \$ 397,719.78 |
| July 2020 | \$ 2,702.29 | \$ 2,039.42 | \$ 662.87 | \$ 56,072.57 | \$ 395,680.35 |
| Aug. 2020 | \$ 2,702.29 | \$ 2,042.82 | \$ 659.47 | \$ 56,732.04 | \$ 393,637.53 |
| Sept. 2020 | \$ 2,702.29 | \$ 2,046.23 | \$ 656.06 | \$ 57,388.10 | \$ 391,591.30 |
| Oct. 2020 | \$ 2,702.29 | \$ 2,049.64 | \$ 652.65 | \$ 58,040.76 | \$ 389,541.66 |
| Nov. 2020 | \$ 2,702.29 | \$ 2,053.05 | \$ 649.24 | \$ 58,689.99 | \$ 387,488.61 |
| Dec. 2020 | \$ 2,702.29 | \$ 2,056.48 | \$ 645.81 | \$ 59,335.81 | \$ 385,432.13 |
| Jan. 2021 | \$ 2,702.29 | \$ 2,059.90 | \$ 642.39 | \$ 59,978.19 | \$ 383,372.23 |
| Feb. 2021 | \$ 2,702.29 | \$ 2,063.34 | \$ 638.95 | \$ 60,617.15 | \$ 381,308.89 |
| Mar. 2021 | \$ 2,702.29 | \$ 2,066.78 | \$ 635.51 | \$ 61,252.66 | \$ 379,242.11 |
| April 2021 | \$ 2,702.29 | \$ 2,070.22 | \$ 632.07 | \$ 61,884.73 | \$ 377,171.89 |
| May 2021 | \$ 2,702.29 | \$ 2,073.67 | \$ 628.62 | \$ 62,513.35 | \$ 375,098.22 |
| June 2021 | \$ 2,702.29 | \$ 2,077.13 | \$ 625.16 | \$ 63,138.52 | \$ 373,021.10 |
| July 2021 | \$ 2,702.29 | \$ 2,080.59 | \$ 621.70 | \$ 63,760.22 | \$ 370,940.51 |
| Aug. 2021 | \$ 2,702.29 | \$ 2,084.06 | \$ 618.23 | \$ 64,378.45 | \$ 368,856.45 |
| Sept. 2021 | \$ 2,702.29 | \$ 2,087.53 | \$ 614.76 | \$ 64,993.21 | \$ 366,768.92 |
| Oct. 2021 | \$ 2,702.29 | \$ 2,091.01 | \$ 611.28 | \$ 65,604.49 | \$ 364,677.91 |
| Nov. 2021 | \$ 2,702.29 | \$ 2,094.49 | \$ 607.80 | \$ 66,212.29 | \$ 362,583.42 |
| Dec. 2021 | \$ 2,702.29 | \$ 2,097.99 | \$ 604.31 | \$ 66,816.60 | \$ 360,485.43 |
| Jan. 2022 | \$ 2,702.29 | \$ 2,101.48 | \$ 600.81 | \$ 67,417.41 | \$ 358,383.95 |
| Feb. 2022 | \$ 2,702.29 | \$ 2,104.98 | \$ 597.31 | \$ 68,014.71 | \$ 356,278.97 |
| Mar. 2022 | \$ 2,702.29 | \$ 2,108.49 | \$ 593.80 | \$ 68,608.51 | \$ 354,170.47 |

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| April 2022 | \$ 2,702.29 | \$ 2,112.01 | \$ 590.28 | \$ 69,198.79 | \$ 352,058.47 |
| May 2022 | \$ 2,702.29 | \$ 2,115.53 | \$ 586.76 | \$ 69,785.56 | \$ 349,942.94 |
| June 2022 | \$ 2,702.29 | \$ 2,119.05 | \$ 583.24 | \$ 70,368.80 | \$ 347,823.89 |
| July 2022 | \$ 2,702.29 | \$ 2,122.58 | \$ 579.71 | \$ 70,948.50 | \$ 345,701.30 |
| Aug. 2022 | \$ 2,702.29 | \$ 2,126.12 | \$ 576.17 | \$ 71,524.67 | \$ 343,575.18 |
| Sept. 2022 | \$ 2,702.29 | \$ 2,129.67 | \$ 572.63 | \$ 72,097.30 | \$ 341,445.52 |
| Oct. 2022 | \$ 2,702.29 | \$ 2,133.21 | \$ 569.08 | \$ 72,666.37 | \$ 339,312.30 |
| Nov. 2022 | \$ 2,702.29 | \$ 2,136.77 | \$ 565.52 | \$ 73,231.89 | \$ 337,175.53 |
| Dec. 2022 | \$ 2,702.29 | \$ 2,140.33 | \$ 561.96 | \$ 73,793.85 | \$ 335,035.20 |
| Jan. 2023 | \$ 2,702.29 | \$ 2,143.90 | \$ 558.39 | \$ 74,352.25 | \$ 332,891.30 |
| Feb. 2023 | \$ 2,702.29 | \$ 2,147.47 | \$ 554.82 | \$ 74,907.06 | \$ 330,743.83 |
| Mar. 2023 | \$ 2,702.29 | \$ 2,151.05 | \$ 551.24 | \$ 75,458.30 | \$ 328,592.78 |
| April 2023 | \$ 2,702.29 | \$ 2,154.64 | \$ 547.65 | \$ 76,005.96 | \$ 326,438.14 |
| May 2023 | \$ 2,702.29 | \$ 2,158.23 | \$ 544.06 | \$ 76,550.02 | \$ 324,279.92 |
| June 2023 | \$ 2,702.29 | \$ 2,161.82 | \$ 540.47 | \$ 77,090.49 | \$ 322,118.09 |
| July 2023 | \$ 2,702.29 | \$ 2,165.43 | \$ 536.86 | \$ 77,627.35 | \$ 319,952.66 |
| Aug. 2023 | \$ 2,702.29 | \$ 2,169.04 | \$ 533.25 | \$ 78,160.61 | \$ 317,783.63 |
| Sept. 2023 | \$ 2,702.29 | \$ 2,172.65 | \$ 529.64 | \$ 78,690.25 | \$ 315,610.98 |
| Oct. 2023 | \$ 2,702.29 | \$ 2,176.27 | \$ 526.02 | \$ 79,216.26 | \$ 313,434.70 |
| Nov. 2023 | \$ 2,702.29 | \$ 2,179.90 | \$ 522.39 | \$ 79,738.66 | \$ 311,254.80 |
| Dec. 2023 | \$ 2,702.29 | \$ 2,183.53 | \$ 518.76 | \$ 80,257.41 | \$ 309,071.27 |
| Jan. 2024 | \$ 2,702.29 | \$ 2,187.17 | \$ 515.12 | \$ 80,772.53 | \$ 306,884.10 |
| Feb. 2024 | \$ 2,702.29 | \$ 2,190.82 | \$ 511.47 | \$ 81,284.01 | \$ 304,693.28 |
| Mar. 2024 | \$ 2,702.29 | \$ 2,194.47 | \$ 507.82 | \$ 81,791.83 | \$ 302,498.81 |
| April 2024 | \$ 2,702.29 | \$ 2,198.13 | \$ 504.16 | \$ 82,295.99 | \$ 300,300.69 |

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| May 2024 | \$ 2,702.29 | \$ 2,201.79 | \$ 500.50 | \$ 82,796.49 | \$ 298,098.90 |
| June 2024 | \$ 2,702.29 | \$ 2,205.46 | \$ 496.83 | \$ 83,293.33 | \$ 295,893.44 |
| July 2024 | \$ 2,702.29 | \$ 2,209.13 | \$ 493.16 | \$ 83,786.48 | \$ 293,684.30 |
| Aug. 2024 | \$ 2,702.29 | \$ 2,212.82 | \$ 489.47 | \$ 84,275.95 | \$ 291,471.49 |
| Sept. 2024 | \$ 2,702.29 | \$ 2,216.50 | \$ 485.79 | \$ 84,761.74 | \$ 289,254.98 |
| Oct. 2024 | \$ 2,702.29 | \$ 2,220.20 | \$ 482.09 | \$ 85,243.83 | \$ 287,034.78 |
| Nov. 2024 | \$ 2,702.29 | \$ 2,223.90 | \$ 478.39 | \$ 85,722.22 | \$ 284,810.88 |
| Dec. 2024 | \$ 2,702.29 | \$ 2,227.61 | \$ 474.68 | \$ 86,196.91 | \$ 282,583.28 |
| Jan. 2025 | \$ 2,702.29 | \$ 2,231.32 | \$ 470.97 | \$ 86,667.88 | \$ 280,351.96 |
| Feb. 2025 | \$ 2,702.29 | \$ 2,235.04 | \$ 467.25 | \$ 87,135.13 | \$ 278,116.92 |
| Mar. 2025 | \$ 2,702.29 | \$ 2,238.76 | \$ 463.53 | \$ 87,598.66 | \$ 275,878.16 |
| April 2025 | \$ 2,702.29 | \$ 2,242.49 | \$ 459.80 | \$ 88,058.46 | \$ 273,635.67 |
| May 2025 | \$ 2,702.29 | \$ 2,246.23 | \$ 456.06 | \$ 88,514.52 | \$ 271,389.43 |
| June 2025 | \$ 2,702.29 | \$ 2,249.97 | \$ 452.32 | \$ 88,966.83 | \$ 269,139.46 |
| July 2025 | \$ 2,702.29 | \$ 2,253.72 | \$ 448.57 | \$ 89,415.40 | \$ 266,885.73 |
| Aug. 2025 | \$ 2,702.29 | \$ 2,257.48 | \$ 444.81 | \$ 89,860.21 | \$ 264,628.25 |
| Sept. 2025 | \$ 2,702.29 | \$ 2,261.24 | \$ 441.05 | \$ 90,301.26 | \$ 262,367.01 |
| Oct. 2025 | \$ 2,702.29 | \$ 2,265.01 | \$ 437.28 | \$ 90,738.53 | \$ 260,102.00 |
| Nov. 2025 | \$ 2,702.29 | \$ 2,268.79 | \$ 433.50 | \$ 91,172.04 | \$ 257,833.21 |
| Dec. 2025 | \$ 2,702.29 | \$ 2,272.57 | \$ 429.72 | \$ 91,601.76 | \$ 255,560.64 |
| Jan. 2026 | \$ 2,702.29 | \$ 2,276.36 | \$ 425.93 | \$ 92,027.69 | \$ 253,284.29 |
| Feb. 2026 | \$ 2,702.29 | \$ 2,280.15 | \$ 422.14 | \$ 92,449.84 | \$ 251,004.13 |
| Mar. 2026 | \$ 2,702.29 | \$ 2,283.95 | \$ 418.34 | \$ 92,868.18 | \$ 248,720.18 |
| April 2026 | \$ 2,702.29 | \$ 2,287.76 | \$ 414.53 | \$ 93,282.71 | \$ 246,432.43 |

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| May 2026 | \$ 2,702.29 | \$ 2,291.57 | \$ 410.72 | \$ 93,693.43 | \$ 244,140.86 |
| June 2026 | \$ 2,702.29 | \$ 2,295.39 | \$ 406.90 | \$ 94,100.33 | \$ 241,845.47 |
| July 2026 | \$ 2,702.29 | \$ 2,299.21 | \$ 403.08 | \$ 94,503.41 | \$ 239,546.25 |
| Aug. 2026 | \$ 2,702.29 | \$ 2,303.05 | \$ 399.24 | \$ 94,902.65 | \$ 237,243.21 |
| Sept. 2026 | \$ 2,702.29 | \$ 2,306.89 | \$ 395.41 | \$ 95,298.06 | \$ 234,936.32 |
| Oct. 2026 | \$ 2,702.29 | \$ 2,310.73 | \$ 391.56 | \$ 95,689.62 | \$ 232,625.59 |
| Nov. 2026 | \$ 2,702.29 | \$ 2,314.58 | \$ 387.71 | \$ 96,077.33 | \$ 230,311.01 |
| Dec. 2026 | \$ 2,702.29 | \$ 2,318.44 | \$ 383.85 | \$ 96,461.18 | \$ 227,992.57 |
| Jan. 2027 | \$ 2,702.29 | \$ 2,322.30 | \$ 379.99 | \$ 96,841.17 | \$ 225,670.27 |
| Feb. 2027 | \$ 2,702.29 | \$ 2,326.17 | \$ 376.12 | \$ 97,217.28 | \$ 223,344.09 |
| Mar. 2027 | \$ 2,702.29 | \$ 2,330.05 | \$ 372.24 | \$ 97,589.52 | \$ 221,014.04 |
| April 2027 | \$ 2,702.29 | \$ 2,333.93 | \$ 368.36 | \$ 97,957.88 | \$ 218,680.11 |
| May 2027 | \$ 2,702.29 | \$ 2,337.82 | \$ 364.47 | \$ 98,322.35 | \$ 216,342.29 |
| June 2027 | \$ 2,702.29 | \$ 2,341.72 | \$ 360.57 | \$ 98,682.92 | \$ 214,000.56 |
| July 2027 | \$ 2,702.29 | \$ 2,345.62 | \$ 356.67 | \$ 99,039.58 | \$ 211,654.94 |
| Aug. 2027 | \$ 2,702.29 | \$ 2,349.53 | \$ 352.76 | \$ 99,392.34 | \$ 209,305.41 |
| Sept. 2027 | \$ 2,702.29 | \$ 2,353.45 | \$ 348.84 | \$ 99,741.18 | \$ 206,951.96 |
| Oct. 2027 | \$ 2,702.29 | \$ 2,357.37 | \$ 344.92 | \$ 100,086.10 | \$ 204,594.59 |
| Nov. 2027 | \$ 2,702.29 | \$ 2,361.30 | \$ 340.99 | \$ 100,427.10 | \$ 202,233.29 |
| Dec. 2027 | \$ 2,702.29 | \$ 2,365.24 | \$ 337.06 | \$ 100,764.15 | \$ 199,868.06 |
| Jan. 2028 | \$ 2,702.29 | \$ 2,369.18 | \$ 333.11 | \$ 101,097.26 | \$ 197,498.88 |
| Feb. 2028 | \$ 2,702.29 | \$ 2,373.13 | \$ 329.16 | \$ 101,426.43 | \$ 195,125.75 |
| Mar. 2028 | \$ 2,702.29 | \$ 2,377.08 | \$ 325.21 | \$ 101,751.64 | \$ 192,748.67 |
| April 2028 | \$ 2,702.29 | \$ 2,381.04 | \$ 321.25 | \$ 102,072.89 | \$ 190,367.63 |
| May 2028 | \$ 2,702.29 | \$ 2,385.01 | \$ 317.28 | \$ 102,390.17 | \$ 187,982.62 |

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| June 2028 | \$ 2,702.29 | \$ 2,388.99 | \$ 313.30 | \$ 102,703.47 | \$ 185,593.63 |
| July 2028 | \$ 2,702.29 | \$ 2,392.97 | \$ 309.32 | \$ 103,012.79 | \$ 183,200.66 |
| Aug. 2028 | \$ 2,702.29 | \$ 2,396.96 | \$ 305.33 | \$ 103,318.13 | \$ 180,803.71 |
| Sept. 2028 | \$ 2,702.29 | \$ 2,400.95 | \$ 301.34 | \$ 103,619.47 | \$ 178,402.75 |
| Oct. 2028 | \$ 2,702.29 | \$ 2,404.95 | \$ 297.34 | \$ 103,916.80 | \$ 175,997.80 |
| Nov. 2028 | \$ 2,702.29 | \$ 2,408.96 | \$ 293.33 | \$ 104,210.13 | \$ 173,588.84 |
| Dec. 2028 | \$ 2,702.29 | \$ 2,412.98 | \$ 289.31 | \$ 104,499.45 | \$ 171,175.86 |
| Jan. 2029 | \$ 2,702.29 | \$ 2,417.00 | \$ 285.29 | \$ 104,784.74 | \$ 168,758.87 |
| Feb. 2029 | \$ 2,702.29 | \$ 2,421.03 | \$ 281.26 | \$ 105,066.01 | \$ 166,337.84 |
| Mar. 2029 | \$ 2,702.29 | \$ 2,425.06 | \$ 277.23 | \$ 105,343.24 | \$ 163,912.78 |
| April 2029 | \$ 2,702.29 | \$ 2,429.10 | \$ 273.19 | \$ 105,616.42 | \$ 161,483.68 |
| May 2029 | \$ 2,702.29 | \$ 2,433.15 | \$ 269.14 | \$ 105,885.56 | \$ 159,050.53 |
| June 2029 | \$ 2,702.29 | \$ 2,437.21 | \$ 265.08 | \$ 106,150.65 | \$ 156,613.32 |
| July 2029 | \$ 2,702.29 | \$ 2,441.27 | \$ 261.02 | \$ 106,411.67 | \$ 154,172.05 |
| Aug. 2029 | \$ 2,702.29 | \$ 2,445.34 | \$ 256.95 | \$ 106,668.62 | \$ 151,726.71 |
| Sept. 2029 | \$ 2,702.29 | \$ 2,449.41 | \$ 252.88 | \$ 106,921.50 | \$ 149,277.30 |
| Oct. 2029 | \$ 2,702.29 | \$ 2,453.50 | \$ 248.80 | \$ 107,170.30 | \$ 146,823.81 |
| Nov. 2029 | \$ 2,702.29 | \$ 2,457.58 | \$ 244.71 | \$ 107,415.00 | \$ 144,366.22 |
| Dec. 2029 | \$ 2,702.29 | \$ 2,461.68 | \$ 240.61 | \$ 107,655.61 | \$ 141,904.54 |
| Jan. 2030 | \$ 2,702.29 | \$ 2,465.78 | \$ 236.51 | \$ 107,892.12 | \$ 139,438.76 |
| Feb. 2030 | \$ 2,702.29 | \$ 2,469.89 | \$ 232.40 | \$ 108,124.52 | \$ 136,968.87 |
| Mar. 2030 | \$ 2,702.29 | \$ 2,474.01 | \$ 228.28 | \$ 108,352.80 | \$ 134,494.86 |
| April 2030 | \$ 2,702.29 | \$ 2,478.13 | \$ 224.16 | \$ 108,576.96 | \$ 132,016.72 |
| May 2030 | \$ 2,702.29 | \$ 2,482.26 | \$ 220.03 | \$ 108,796.99 | \$ 129,534.46 |

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| June 2030 | \$ 2,702.29 | \$ 2,486.40 | \$ 215.89 | \$ 109,012.88 | \$ 127,048.06 |
| July 2030 | \$ 2,702.29 | \$ 2,490.54 | \$ 211.75 | \$ 109,224.62 | \$ 124,557.52 |
| Aug. 2030 | \$ 2,702.29 | \$ 2,494.69 | \$ 207.60 | \$ 109,432.22 | \$ 122,062.82 |
| Sept. 2030 | \$ 2,702.29 | \$ 2,498.85 | \$ 203.44 | \$ 109,635.66 | \$ 119,563.97 |
| Oct. 2030 | \$ 2,702.29 | \$ 2,503.02 | \$ 199.27 | \$ 109,834.93 | \$ 117,060.95 |
| Nov. 2030 | \$ 2,702.29 | \$ 2,507.19 | \$ 195.10 | \$ 110,030.03 | \$ 114,553.76 |
| Dec. 2030 | \$ 2,702.29 | \$ 2,511.37 | \$ 190.92 | \$ 110,220.96 | \$ 112,042.39 |
| Jan. 2031 | \$ 2,702.29 | \$ 2,515.55 | \$ 186.74 | \$ 110,407.69 | \$ 109,526.84 |
| Feb. 2031 | \$ 2,702.29 | \$ 2,519.75 | \$ 182.54 | \$ 110,590.24 | \$ 107,007.10 |
| Mar. 2031 | \$ 2,702.29 | \$ 2,523.95 | \$ 178.35 | \$ 110,768.58 | \$ 104,483.15 |
| April 2031 | \$ 2,702.29 | \$ 2,528.15 | \$ 174.14 | \$ 110,942.72 | \$ 101,955.00 |
| May 2031 | \$ 2,702.29 | \$ 2,532.37 | \$ 169.92 | \$ 111,112.65 | \$ 99,422.63 |
| June 2031 | \$ 2,702.29 | \$ 2,536.59 | \$ 165.70 | \$ 111,278.35 | \$ 96,886.05 |
| July 2031 | \$ 2,702.29 | \$ 2,540.81 | \$ 161.48 | \$ 111,439.83 | \$ 94,345.23 |
| Aug. 2031 | \$ 2,702.29 | \$ 2,545.05 | \$ 157.24 | \$ 111,597.07 | \$ 91,800.18 |
| Sept. 2031 | \$ 2,702.29 | \$ 2,549.29 | \$ 153.00 | \$ 111,750.07 | \$ 89,250.89 |
| Oct. 2031 | \$ 2,702.29 | \$ 2,553.54 | \$ 148.75 | \$ 111,898.82 | \$ 86,697.35 |
| Nov. 2031 | \$ 2,702.29 | \$ 2,557.80 | \$ 144.50 | \$ 112,043.32 | \$ 84,139.56 |
| Dec. 2031 | \$ 2,702.29 | \$ 2,562.06 | \$ 140.23 | \$ 112,183.55 | \$ 81,577.50 |
| Jan. 2032 | \$ 2,702.29 | \$ 2,566.33 | \$ 135.96 | \$ 112,319.51 | \$ 79,011.17 |
| Feb. 2032 | \$ 2,702.29 | \$ 2,570.61 | \$ 131.69 | \$ 112,451.20 | \$ 76,440.57 |
| Mar. 2032 | \$ 2,702.29 | \$ 2,574.89 | \$ 127.40 | \$ 112,578.60 | \$ 73,865.68 |
| April 2032 | \$ 2,702.29 | \$ 2,579.18 | \$ 123.11 | \$ 112,701.71 | \$ 71,286.50 |
| May 2032 | \$ 2,702.29 | \$ 2,583.48 | \$ 118.81 | \$ 112,820.52 | \$ 68,703.02 |
| June 2032 | \$ 2,702.29 | \$ 2,587.79 | \$ 114.51 | \$ 112,935.02 | \$ 66,115.23 |

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| July 2032 | \$ 2,702.29 | \$ 2,592.10 | \$ 110.19 | \$ 113,045.22 | \$ 63,523.13 |
| Aug. 2032 | \$ 2,702.29 | \$ 2,596.42 | \$ 105.87 | \$ 113,151.09 | \$ 60,926.71 |
| Sept. 2032 | \$ 2,702.29 | \$ 2,600.75 | \$ 101.54 | \$ 113,252.63 | \$ 58,325.97 |
| Oct. 2032 | \$ 2,702.29 | \$ 2,605.08 | \$ 97.21 | \$ 113,349.84 | \$ 55,720.89 |
| Nov. 2032 | \$ 2,702.29 | \$ 2,609.42 | \$ 92.87 | \$ 113,442.71 | \$ 53,111.46 |
| Dec. 2032 | \$ 2,702.29 | \$ 2,613.77 | \$ 88.52 | \$ 113,531.23 | \$ 50,497.69 |
| Jan. 2033 | \$ 2,702.29 | \$ 2,618.13 | \$ 84.16 | \$ 113,615.39 | \$ 47,879.56 |
| Feb. 2033 | \$ 2,702.29 | \$ 2,622.49 | \$ 79.80 | \$ 113,695.19 | \$ 45,257.07 |
| Mar. 2033 | \$ 2,702.29 | \$ 2,626.86 | \$ 75.43 | \$ 113,770.62 | \$ 42,630.21 |
| April 2033 | \$ 2,702.29 | \$ 2,631.24 | \$ 71.05 | \$ 113,841.67 | \$ 39,998.97 |
| May 2033 | \$ 2,702.29 | \$ 2,635.63 | \$ 66.66 | \$ 113,908.34 | \$ 37,363.34 |
| June 2033 | \$ 2,702.29 | \$ 2,640.02 | \$ 62.27 | \$ 113,970.61 | \$ 34,723.32 |
| July 2033 | \$ 2,702.29 | \$ 2,644.42 | \$ 57.87 | \$ 114,028.48 | \$ 32,078.91 |
| Aug. 2033 | \$ 2,702.29 | \$ 2,648.83 | \$ 53.46 | \$ 114,081.95 | \$ 29,430.08 |
| Sept. 2033 | \$ 2,702.29 | \$ 2,653.24 | \$ 49.05 | \$ 114,131.00 | \$ 26,776.84 |
| Oct. 2033 | \$ 2,702.29 | \$ 2,657.66 | \$ 44.63 | \$ 114,175.62 | \$ 24,119.18 |
| Nov. 2033 | \$ 2,702.29 | \$ 2,662.09 | \$ 40.20 | \$ 114,215.82 | \$ 21,457.08 |
| Dec. 2033 | \$ 2,702.29 | \$ 2,666.53 | \$ 35.76 | \$ 114,251.58 | \$ 18,790.56 |
| Jan. 2034 | \$ 2,702.29 | \$ 2,670.97 | \$ 31.32 | \$ 114,282.90 | \$ 16,119.58 |
| Feb. 2034 | \$ 2,702.29 | \$ 2,675.42 | \$ 26.87 | \$ 114,309.77 | \$ 13,444.16 |
| Mar. 2034 | \$ 2,702.29 | \$ 2,679.88 | \$ 22.41 | \$ 114,332.17 | \$ 10,764.27 |
| April 2034 | \$ 2,702.29 | \$ 2,684.35 | \$ 17.94 | \$ 114,350.11 | \$ 8,079.92 |
| May 2034 | \$ 2,702.29 | \$ 2,688.82 | \$ 13.47 | \$ 114,363.58 | \$ 5,391.10 |
| June 2034 | \$ 2,702.29 | \$ 2,693.31 | \$ 8.99 | \$ 114,372.57 | \$ 2,697.79 |

July 2034

\$ 2,702.29

\$ 2,697.79

\$ 4.50

\$ 114,377.06

\$ 0.00

RESOLUTION No. 3450

A RESOLUTION OF THE CITY COUNCIL OF RED LODGE, MONTANA TO ADJUST THE FEE SCHEDULE AND WATER AND SEWER RATES FOR SEASONAL OCCUPANTS AND UNDEVELOPED LOTS AND MISCELLANEOUS CHARGES FOR THE CITY OF RED LODGE TO BECOME EFFECTIVE ON JANUARY 1, 2018.

WHEREAS, the application of the water and sanitary sewer rates and charges in effect at the present time is not complete and thorough enough to provide for fair and consistent utility billing throughout the City; and

WHEREAS, the Council desires to have a sustainable budget source to fund major sewer and water infrastructure projects that is beneficial to and supported by all Red Lodge City residents; and

WHEREAS, the lack of a complete and thorough fee schedule hinders the collection of adequate revenue to defray the increased costs of operation, maintenance, and capital improvements of the City's water and sewer distribution facilities and systems; and

WHEREAS, a Water and Sewer Rate Study had been conducted for the City of Red Lodge, in March, 2015, to ensure that rates, charges and classifications are reasonable and just and in accordance with MCA 69-7-101 and to ensure that undertakings are self-supporting in accordance with MCA 7-7-4424; and

WHEREAS, the provision of the water and sewer systems and facilities is essential to the preservation of the public's health and welfare; and, that how the adjustment of rates are applied must, before taking effect, be approved by the City Council after advertising and conducting a public hearing pursuant to the Rules and Regulations governing Sewer and Water Service for the City of Red Lodge, in its municipal code at Title 10 - Sewer and Water, Chapter 8 - Rates, Charges, And Fees, Section 1 - Established by Resolution, as previously adopted by City Council Ordinances 835, 835-Amended, and 916; and

WHEREAS, current budgetary requirements with respect to the operation of said facilities in addition to on-going and future projects require that the proposed rates become effective on January 1, 2018 to enable the City to proceed as expeditiously as possible to accomplish the objectives herein above recited; and

WHEREAS, the provision of emergency services by the Red Lodge Fire Department benefits all property owners within the City and requires access and the use of City water as made available through the installation, system enhancement, and operations and maintenance of the City water; and

WHEREAS, pursuant to Montana law, the City Council has determined that a public hearing must be advertised and held to gather public testimony and input regarding the proposed increases in water and sewer rates for seasonal occupants and undeveloped lots, and increases in miscellaneous charges.

NOW THEREFORE BE IT RESOLVED by the City Council:

1. That the City Council considers it advisable and necessary to both adjust the application of the Water and Sewer Fee Schedule, and to also increase certain miscellaneous fees as noted on Exhibit A, attached hereto; and to the extent permitted by Montana Code Annotated and/or the existing service agreements with those applicable portions of Remington Ranch; Beartooth Business Park; and the Woodlands, to also apply Exhibit A thereto.
2. That Resolution of Intent No. 3443 was approved at a Public Hearing held on September 12, 2017, and that a Public Hearing was held on October 10, 2017 at 6 p.m. in the City Council Chambers, at City Hall, at 1 Platt Ave. S., Red Lodge, MT, 59068, for the purpose of gathering and receiving testimony, input and comments from all interested or affected users, citizens, persons, associations, corporations and/or companies regarding this Resolution No. 3450.
3. Notice of the October 10, 2017 Public Hearing was published multiple times, in the Carbon County News, mailed to utility customers, and to the Montana Consumer Counsel pursuant to MCA § 7-1-4127 and 69-7-111.
4. At the duly noticed public hearing held on October 10, 2017, the Council continued the hearing to October 24, 2017; thereby preserving its legally noticed status.
5. At the public hearing held on October 24, 2017, the Council again continued the hearing to November 14, 2017; thereby preserving its legally noticed status.
6. In addition to the legal notice requirements for this Water and Sewer rate adjustment public hearing per MCA § 7-1-4127 and 69-7-111 as noted herein above in item 4, additional but not required courtesy notice was provided to almost 650 undeveloped lot owners both within and without the City limits.

EXHIBIT – A

to Resolution No. 3450

The City Council hereby adopts the following rate schedule. The below noted fees/charges supersede and replace any previously established rates for water and/or sewer services.

Monthly Water Fees (Fiscal Year being July 1- June 30) **EXISTING – NO CHANGE** EXHIBIT A-1

| | | Current | FY 2015-16 | FY 2016-17 | FY 2017-18 | FY 2018-19 | FY 2019-20 |
|---------------------------|--|------------------------|------------|------------|------------|------------|-------------|
| Base Rate per EDU* | | - | \$ 22.95 | \$ 23.41 | \$ 23.88 | \$ 24.35 | \$ 24.84 |
| Capital Expenses per EDU | | - | \$ - | \$ 2.81 | \$ 5.63 | \$ 9.85 | \$ 14.07 |
| Curb-Stop Fee per Service | | - | \$ 2.00 | \$ 2.00 | \$ 2.00 | \$ 2.00 | \$ 2.00 |
| Total | | - | \$ 24.95 | \$ 28.22 | \$ 31.51 | \$ 36.20 | \$ 40.91 |
| Meter Size | EDUs | Monthly Service Charge | | | | | |
| ¾" | 1.00 | \$ 22.95 | \$ 24.95 | \$ 28.22 | \$ 31.51 | \$ 36.20 | \$ 40.91 |
| 1" | 1.79 | \$ 32.79 | \$ 43.08 | \$ 48.93 | \$ 54.82 | \$ 63.23 | \$ 71.65 |
| 1½" | 4.00 | \$ 39.35 | \$ 93.80 | \$ 106.88 | \$ 120.03 | \$ 138.82 | \$ 157.65 |
| 2" | 7.14 | \$ 71.05 | \$ 165.86 | \$ 189.20 | \$ 212.68 | \$ 246.22 | \$ 279.83 |
| 3" | 16.00 | \$ 163.96 | \$ 369.20 | \$ 421.50 | \$ 474.11 | \$ 549.28 | \$ 624.59 |
| 4" | 28.57 | \$ 327.91 | \$ 657.68 | \$ 751.08 | \$ 845.02 | \$ 979.23 | \$ 1,113.71 |
| Block | Monthly Usage Charge per 1,000 gallons | | | | | | |
| 0 to 3,000 gallons | \$ - | \$ - | \$ - | \$ - | \$ - | \$ - | \$ - |
| 3,001 to 8,000 gallons | \$ 4.12 | \$ 4.12 | \$ 4.20 | \$ 4.29 | \$ 4.37 | \$ 4.46 | \$ 4.46 |
| 8,001 to 20,000 gallons | \$ 5.41 | \$ 5.41 | \$ 5.52 | \$ 5.63 | \$ 5.74 | \$ 5.86 | \$ 5.86 |
| > 20,001 gallons | \$ 6.83 | \$ 6.83 | \$ 6.97 | \$ 7.11 | \$ 7.25 | \$ 7.39 | \$ 7.39 |

*One (1) EDU = equivalent dwelling unit, which is a typical ¾" residential water service.

Monthly SEWER Fees (Fiscal Year being July 1- June 30) **EXISTING – NO CHANGE** EXHIBIT – A 2

| | | Current | FY 2015-16 | FY 2016-17 | FY 2017-18 | FY 2018-19 | FY 2019-20 |
|--------------------------|--|------------------------|------------|-------------|-------------|-------------|-------------|
| Base Rate per EDU | | - | \$ 23.83 | \$ 24.31 | \$ 24.79 | \$ 25.29 | \$ 25.79 |
| Capital Expenses per EDU | | - | \$ 10.82 | \$ 13.55 | \$ 16.28 | \$ 20.38 | \$ 24.48 |
| Total | | - | \$ 34.65 | \$ 37.86 | \$ 41.07 | \$ 45.67 | \$ 50.27 |
| Meter Size | EDUs | Monthly Service Charge | | | | | |
| ¾" | 1.00 | \$ 23.83 | \$ 34.65 | \$ 37.86 | \$ 41.07 | \$ 45.67 | \$ 50.27 |
| 1" | 1.79 | \$ 42.66 | \$ 62.02 | \$ 67.76 | \$ 73.52 | \$ 81.75 | \$ 89.99 |
| 1½" | 4.00 | \$ 95.32 | \$ 138.60 | \$ 151.43 | \$ 164.29 | \$ 182.67 | \$ 201.10 |
| 2" | 7.14 | \$ 170.15 | \$ 247.40 | \$ 270.30 | \$ 293.26 | \$ 326.07 | \$ 358.96 |
| 3" | 16.00 | \$ 381.82 | \$ 554.40 | \$ 605.71 | \$ 657.16 | \$ 730.70 | \$ 804.39 |
| 4" | 28.57 | \$ 680.82 | \$ 989.95 | \$ 1,081.56 | \$ 1,173.45 | \$ 1,304.75 | \$ 1,436.34 |
| Block | Monthly Usage Charge per 1,000 gallons | | | | | | |
| 0 to 3,000 gallons | \$ - | \$ - | \$ - | \$ - | \$ - | \$ - | \$ - |
| 3,001 to 8,000 gallons | \$ 1.61 | \$ 1.61 | \$ 1.64 | \$ 1.68 | \$ 1.71 | \$ 1.74 | \$ 1.74 |
| 8,001 to 20,000 gallons | \$ 1.61 | \$ 2.11 | \$ 2.15 | \$ 2.20 | \$ 2.24 | \$ 2.28 | \$ 2.28 |
| > 20,001 gallons | \$ 1.61 | \$ 2.67 | \$ 2.72 | \$ 2.78 | \$ 2.83 | \$ 2.89 | \$ 2.89 |

*One (1) EDU = equivalent dwelling unit, which is a typical ¾" residential water service.

Based upon an assumed average usage of 6,000 gallons per month, the rate structure is estimated to increase the monthly charges as follows for a typical ¾" service (Fiscal Year being July 1- June 30)

| Fund | Current | FY 2015-16 | FY 2016-17 | FY 2017-18 | FY 2018-19 | FY 2019-20 | Current Target Rate |
|-----------------------|----------|------------|------------|------------|------------|------------|---------------------|
| Water | \$ 35.31 | \$ 37.31 | \$ 40.83 | \$ 44.37 | \$ 49.32 | \$ 54.29 | \$ 58.74 |
| Sewer | \$ 28.66 | \$ 39.48 | \$ 42.78 | \$ 46.10 | \$ 50.79 | \$ 55.50 | \$ 37.76 |
| Water and Sewer | \$ 63.97 | \$ 76.79 | \$ 83.61 | \$ 90.46 | \$ 100.12 | \$ 109.79 | \$ 96.51 |
| Increase Over Current | - | \$ 12.82 | \$ 19.64 | \$ 26.49 | \$ 36.15 | \$ 45.82 | - |

DEVELOPED LOTS --- Discontinuance/Reestablishment Charges.

A. Water Service: Charge for discontinuance/reestablishment of water service:
Inside normal working hours (i.e. when City Hall is open) — Sixty Dollars (\$60.00).
Outside normal working hours — Ninety Dollars (\$90.00).

B. Wastewater Service: Charge for discontinuance/reestablishment of wastewater service:
Same Hourly Rate as noted above for Water Service, except that in addition, a fee of \$150 per hour for heavy equipment shall be added.

C. Seasonal Occupant (Developed Lot): All developed lots with a structure connected to the City Water and Sewer system shall be charged for Water and Sewer service regardless of the status of the service. When the Water Service is turned-off at the request of the owner, the full amount attendant to both Water and Sewer Fees as hereon shown shall continue to be required except that the “Base Rates” for both Water and Sewer shall not apply during said time of voluntary turn-off.

UNDEVELOPED LOTS --- Infrastructure Related Service Charges.

A. Undeveloped Lot – Inside City Limits:

All vacant lots within the City limits shall be charged a pro-rata fair share of the infrastructure costs associated with the provision of Water and Sewer service, (Vacant Lots are all lots where habitable structures do not exist, or if structures do exist, are otherwise by prior written approval of the City not connected to the City Water and Sewer Service.) Any individual lot which may have multiple Curbstops (due to lot aggregation or otherwise), shall be charged as if it has only One (1) Curbstop. Water and Sewer Fees, as hereon shown, shall be required except that the “Base Rates” for both Water and Sewer shall not apply. All Miscellaneous Fees shall be applicable as noted hereon. Curbstop and Capital Expenses shall be charged as follows:

1. CURBSTOP PRESENT: 50% of the Capital Expense, and 100% of the Curbstop fees
2. CURBSTOP ABSENT, BUT MAIN LINES PRESENT IN STREET ADJACENT TO LOT: 40% of the Capital Expense and 0% of the Curbstop fees
3. CURBSTOP ABSENT AND MAIN LINES ABSENT FROM STREET ADJACENT TO LOT: 0% (i.e. No Fee)

B. Undeveloped Lot – Outside the City Limits:

All vacant lots located outside the City Limits, and located within those applicable portions of Remington Ranch; Beartooth Business Park; and the Woodlands, shall be charged a pro-rata fair share of the infrastructure costs associated with the provision of Sewer service only. Sewer Fees, as hereon shown, shall be required except that the “Base Rates” shall not apply. All Miscellaneous Fees shall be applicable as noted hereon. Sewer Capital Expenses shall be charged at 50%.

Miscellaneous Fees.

| | |
|---|---|
| Application fee for service area enlargements | \$500.00 |
| Application fee for extensions | \$500.00 |
| Fee for special meter accuracy test (Data Log) | \$75.00 |
| Fee for setting/removing fire hydrant meter | \$50.00 (The PW Director may require a deposit for anticipated water use.) |
| Fee for performing fireflow test (Admin) | \$60.00 |
| Main-Line Tapping fee: | \$500.00 (Additional fees apply for Mains larger than 12") |
| <u>Late payment penalty charge</u> | <u>10% per month **</u> |
| <u>Shut-Off Notice charge</u> | <u>\$25 ***</u> |
| <u>Service Call (Not charged when on site less than 10 minutes and use of tools not required)</u> | <u>Sixty Dollars (\$60.00).</u> Inside normal working hours (i.e. when City Hall is open) |
| | <u>Ninety Dollars (\$90.00).</u> Outside normal working hours |
| <u>Fee for Disposal of Septage</u> | <u>Septage shall not be accepted until such time that the Council adopts, by Resolution, specific protocols to ensure compliance with the City's DEQ Wastewater Discharge Permit.</u> |

** Payment for all utility billing related fees shall be due as of the 15th of each month. The Utility department shall provide a grace period of no more than 10 calendar days (after which the account shall be considered delinquent); and shall then apply the late payment penalty charge as hereon shown to the full amount of the utility bill.

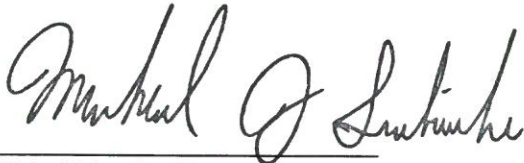
*** Shut-Off Notices (door hangers) will be placed if payment is not received prior to delinquency for the 2nd month.

INTRODUCED at a Regular meeting of the City Council on November 28, 2017 by Council Member Corey Thompson.

PASSED AND APPROVED BY THE RED LODGE CITY COUNCIL on this 28th day of November, 2017.

City of Red Lodge:

Approved as to Form:



Michael Schoenike, Mayor



Rebecca Narmore, City Attorney

Attest:



Loni Hanson, City Clerk

5210 WATER

| Account | Received Current Month | Received YTD | Estimated Revenue | Revenue To Be Received | % Received |
|--|---------------------------|---------------------|---------------------|---------------------------|---------------|
| 330000 INTERGOVERNMENTAL REVENUES | | | | | |
| 336020 On Behalf Payments | 1,890.00 | 1,890.00 | 0.00 | -1,890.00 | ** % |
| Account Group Total: | 1,890.00 | 1,890.00 | 0.00 | -1,890.00 | ** % |
| 340000 CHARGES FOR SERVICES | | | | | |
| 343021 Metered Water Sales | 77,751.98 | 866,621.99 | 825,000.00 | -41,621.99 | 105 % |
| 343024 Sales of Water Materials & Supplies | 1,005.00 | 6,865.00 | 1,500.00 | -5,365.00 | 458 % |
| 343025 Water Permits | 7,770.00 | 39,350.00 | 50,000.00 | 10,650.00 | 79 % |
| 343027 Miscellaneous Water Revenue | 675.00 | 6,040.00 | 5,000.00 | -1,040.00 | 121 % |
| 343029 Curb Stop Fee | 3,088.94 | 36,851.93 | 36,750.00 | -101.93 | 100 % |
| Account Group Total: | 90,290.92 | 955,728.92 | 918,250.00 | -37,478.92 | 104 % |
| 370000 INVESTMENTS AND ROYALTY EARNINGS | | | | | |
| 371000 Investment Earnings | 101.17 | 1,355.35 | 1,000.00 | -355.35 | 136 % |
| Account Group Total: | 101.17 | 1,355.35 | 1,000.00 | -355.35 | 136 % |
| 380000 OTHER FINANCING SOURCES | | | | | |
| 383000 Transfer from Resort Tax - 15% | 0.00 | 100,000.00 | 100,000.00 | 0.00 | 100 % |
| Account Group Total: | 0.00 | 100,000.00 | 100,000.00 | 0.00 | 100 % |
| Fund Total: | 92,282.09 | 1,058,974.27 | 1,019,250.00 | -39,724.27 | 104 % |
| Grand Total: | 92,282.09 | 1,058,974.27 | 1,019,250.00 | -39,724.27 | 104 % |

5210 WATER

| Account | Received Current Month | Received YTD | Estimated Revenue | Revenue To Be Received | % Received |
|--|---------------------------|---------------------|---------------------|---------------------------|---------------|
| 330000 INTERGOVERNMENTAL REVENUES | | | | | |
| 336020 On Behalf Payments | 1,857.00 | 1,857.00 | 0.00 | -1,857.00 | ** % |
| Account Group Total: | 1,857.00 | 1,857.00 | 0.00 | -1,857.00 | ** % |
| 340000 CHARGES FOR SERVICES | | | | | |
| 343021 Metered Water Sales | 75,814.15 | 941,210.09 | 875,000.00 | -66,210.09 | 108 % |
| 343024 Sales of Water Materials & Supplies | 378.11 | 4,307.88 | 3,000.00 | -1,307.88 | 144 % |
| 343025 Water Permits | 3,745.00 | 23,450.00 | 35,000.00 | 11,550.00 | 67 % |
| 343027 Miscellaneous Water Revenue | 51,128.17 | 93,324.43 | 5,000.00 | -88,324.43 | *** % |
| 343029 Curb Stop Fee | 3,171.35 | 37,515.31 | 36,750.00 | -765.31 | 102 % |
| Account Group Total: | 134,236.78 | 1,099,807.71 | 954,750.00 | -145,057.71 | 115 % |
| 370000 INVESTMENTS AND ROYALTY EARNINGS | | | | | |
| 371000 Investment Earnings | 191.06 | 4,198.43 | 1,000.00 | -3,198.43 | 420 % |
| Account Group Total: | 191.06 | 4,198.43 | 1,000.00 | -3,198.43 | 420 % |
| 380000 OTHER FINANCING SOURCES | | | | | |
| 383000 Transfer from Resort Tax - 15% | 100,000.00 | 100,000.00 | 100,000.00 | 0.00 | 100 % |
| Account Group Total: | 100,000.00 | 100,000.00 | 100,000.00 | 0.00 | 100 % |
| Fund Total: | 236,284.84 | 1,205,863.14 | 1,055,750.00 | -150,113.14 | 114 % |
| Grand Total: | 236,284.84 | 1,205,863.14 | 1,055,750.00 | -150,113.14 | 114 % |

5210 WATER

| Account | Received Current Month | Received YTD | Estimated Revenue | Revenue To Be Received | % Received |
|--|---------------------------|---------------------|---------------------|---------------------------|---------------|
| 330000 INTERGOVERNMENTAL REVENUES | | | | | |
| 331900 capital grant | 273,010.00 | 273,010.00 | 0.00 | -273,010.00 | ** % |
| 336020 On Behalf Payments | 2,426.00 | 2,426.00 | 0.00 | -2,426.00 | ** % |
| Account Group Total: | 275,436.00 | 275,436.00 | 0.00 | -275,436.00 | ** % |
| 340000 CHARGES FOR SERVICES | | | | | |
| 343021 Metered Water Sales | 81,372.04 | 1,030,515.87 | 975,000.00 | -55,515.87 | 106 % |
| 343024 Sales of Water Materials & Supplies | 1,512.44 | 9,185.09 | 3,000.00 | -6,185.09 | 306 % |
| 343025 Water Permits | 15,965.00 | 71,125.00 | 30,000.00 | -41,125.00 | 237 % |
| 343027 Miscellaneous Water Revenue | 721.42 | 13,187.11 | 5,000.00 | -8,187.11 | 264 % |
| 343029 Curb Stop Fee | 3,199.31 | 47,284.36 | 36,750.00 | -10,534.36 | 129 % |
| 343037 Capital Expense Fee | 0.00 | 24,625.44 | 0.00 | -24,625.44 | ** % |
| Account Group Total: | 102,770.21 | 1,195,922.87 | 1,049,750.00 | -146,172.87 | 114 % |
| 360000 MISCELLANEOUS REVENUES | | | | | |
| 362000 Miscellaneous | 3,369.20 | 8,319.20 | 3,000.00 | -5,319.20 | 277 % |
| 365000 Contributions and Donations | 0.00 | 756.00 | 0.00 | -756.00 | ** % |
| Account Group Total: | 3,369.20 | 9,075.20 | 3,000.00 | -6,075.20 | 303 % |
| 370000 INVESTMENTS AND ROYALTY EARNINGS | | | | | |
| 371000 Investment Earnings | 483.97 | 6,918.98 | 2,000.00 | -4,918.98 | 346 % |
| Account Group Total: | 483.97 | 6,918.98 | 2,000.00 | -4,918.98 | 346 % |
| 380000 OTHER FINANCING SOURCES | | | | | |
| 382010 Sale of General Fixed Assets | -4,950.00 | -4,950.00 | 0.00 | 4,950.00 | ** % |
| 383000 Transfer from Resort Tax - 15% | 101,477.10 | 201,477.10 | 100,000.00 | -101,477.10 | 201 % |
| Account Group Total: | 96,527.10 | 196,527.10 | 100,000.00 | -96,527.10 | 197 % |
| Fund Total: | 478,586.48 | 1,683,880.15 | 1,154,750.00 | -529,130.15 | 146 % |
| Grand Total: | 478,586.48 | 1,683,880.15 | 1,154,750.00 | -529,130.15 | 146 % |

5210 WATER

| Account | Received Current Month | Received YTD | Estimated Revenue | Revenue To Be Received | % Received |
|--|---------------------------|---------------------|---------------------|---------------------------|---------------|
| 330000 INTERGOVERNMENTAL REVENUES | | | | | |
| 331900 capital grant | 273,010.00 | 273,010.00 | 0.00 | -273,010.00 | ** % |
| 336020 On Behalf Payments | 2,426.00 | 2,426.00 | 0.00 | -2,426.00 | ** % |
| Account Group Total: | 275,436.00 | 275,436.00 | 0.00 | -275,436.00 | ** % |
| 340000 CHARGES FOR SERVICES | | | | | |
| 343021 Metered Water Sales | 81,372.04 | 1,030,515.87 | 975,000.00 | -55,515.87 | 106 % |
| 343024 Sales of Water Materials & Supplies | 1,512.44 | 9,185.09 | 3,000.00 | -6,185.09 | 306 % |
| 343025 Water Permits | 15,965.00 | 71,125.00 | 30,000.00 | -41,125.00 | 237 % |
| 343027 Miscellaneous Water Revenue | 721.42 | 13,187.11 | 5,000.00 | -8,187.11 | 264 % |
| 343029 Curb Stop Fee | 3,199.31 | 47,284.36 | 36,750.00 | -10,534.36 | 129 % |
| 343037 Capital Expense Fee | 0.00 | 24,625.44 | 0.00 | -24,625.44 | ** % |
| Account Group Total: | 102,770.21 | 1,195,922.87 | 1,049,750.00 | -146,172.87 | 114 % |
| 360000 MISCELLANEOUS REVENUES | | | | | |
| 362000 Miscellaneous | 3,369.20 | 8,319.20 | 3,000.00 | -5,319.20 | 277 % |
| 365000 Contributions and Donations | 0.00 | 756.00 | 0.00 | -756.00 | ** % |
| Account Group Total: | 3,369.20 | 9,075.20 | 3,000.00 | -6,075.20 | 303 % |
| 370000 INVESTMENTS AND ROYALTY EARNINGS | | | | | |
| 371000 Investment Earnings | 483.97 | 6,918.98 | 2,000.00 | -4,918.98 | 346 % |
| Account Group Total: | 483.97 | 6,918.98 | 2,000.00 | -4,918.98 | 346 % |
| 380000 OTHER FINANCING SOURCES | | | | | |
| 382010 Sale of General Fixed Assets | -4,950.00 | -4,950.00 | 0.00 | 4,950.00 | ** % |
| 383000 Transfer from Resort Tax - 15% | 101,477.10 | 201,477.10 | 100,000.00 | -101,477.10 | 201 % |
| Account Group Total: | 96,527.10 | 196,527.10 | 100,000.00 | -96,527.10 | 197 % |
| Fund Total: | 478,586.48 | 1,683,880.15 | 1,154,750.00 | -529,130.15 | 146 % |
| Grand Total: | 478,586.48 | 1,683,880.15 | 1,154,750.00 | -529,130.15 | 146 % |

CITY OF RED LODGE
Statement of Expenditure - Budget vs. Actual Report
For the Accounting Period: 6 / 17

5210 WATER

| Account | Object | Committed Current Month | Committed YTD | Original Appropriation | Current Appropriation | Available Appropriation | % Committed |
|---------|---|----------------------------|------------------|---------------------------|--------------------------|----------------------------|----------------|
| 400000 | pension expense | | | | | | |
| 400000 | pension expense | | | | | | |
| | 100 Personal Services | -2,202.00 | -2,202.00 | 0.00 | 0.00 | 2,202.00 | % |
| | Account Total: | -2,202.00 | -2,202.00 | 0.00 | 0.00 | 2,202.00 | % |
| | Account Group Total: | -2,202.00 | -2,202.00 | 0.00 | 0.00 | 2,202.00 | % |
| 430000 | PUBLIC WORKS | | | | | | |
| 430510 | Administration | | | | | | |
| | 100 Personal Services | 9,730.17 | 230,971.18 | 231,500.00 | 253,325.00 | 22,353.82 | 91 % |
| | 142 Workers' Compensation | 475.05 | 8,275.89 | 10,000.00 | 10,000.00 | 1,724.11 | 83 % |
| | 210 Office Supplies & Materials | 602.13 | 1,899.01 | 2,000.00 | 2,000.00 | 100.99 | 95 % |
| | 214 Postage | 252.24 | 3,085.33 | 3,500.00 | 3,500.00 | 414.67 | 88 % |
| | 221 Agriculture & Horticulture Supplies | 558.80 | 558.80 | 2,000.00 | 2,000.00 | 1,441.20 | 28 % |
| | 222 Chemical & Medical Supplies | 1,612.98 | 9,850.04 | 10,000.00 | 10,000.00 | 149.96 | 99 % |
| | 228 Educational Supplies | 0.00 | 0.00 | 550.00 | 550.00 | 550.00 | % |
| | 229 Other Operating Supplies | 0.00 | 842.58 | 1,000.00 | 1,000.00 | 157.42 | 84 % |
| | 231 Gas, Oil, Diesel Fuel, Grease, etc. | 683.57 | 3,768.87 | 6,000.00 | 6,000.00 | 2,231.13 | 63 % |
| | 232 Motor Vehicle Parts | 0.00 | 572.85 | 5,000.00 | 5,000.00 | 4,427.15 | 11 % |
| | 233 Machinery & Equipment Parts | 8,614.06 | 18,785.41 | 20,000.00 | 20,000.00 | 1,214.59 | 94 % |
| | 234 Painting Supplies | 0.00 | 116.84 | 900.00 | 900.00 | 783.16 | 13 % |
| | 235 Plumbing Supplies | 106.90 | 106.90 | 900.00 | 900.00 | 793.10 | 12 % |
| | 236 Electrical Supplies | 0.00 | 0.00 | 1,200.00 | 1,200.00 | 1,200.00 | % |
| | 237 Tools | 235.00 | 254.83 | 2,000.00 | 2,000.00 | 1,745.17 | 13 % |
| | 238 Repair Parts for Water and Sewer | 0.00 | 2,446.21 | 4,500.00 | 4,500.00 | 2,053.79 | 54 % |
| | 239 Tires | 0.00 | 0.00 | 2,000.00 | 2,000.00 | 2,000.00 | % |
| | 314 Improvements | 0.00 | 154.05 | 43,186.00 | 2,826.00 | 2,671.95 | 5 % |
| | 315 Line Locates | 111.02 | 298.48 | 1,000.00 | 1,000.00 | 701.52 | 30 % |
| | 331 Publication of Formal & Legal Notices | 0.00 | 0.00 | 1,500.00 | 1,500.00 | 1,500.00 | % |
| | 335 Membership & Registration Fees | 0.00 | 3,542.82 | 3,700.00 | 3,700.00 | 157.18 | 96 % |
| | 341 Electric & Gas Utility Services | 2,889.00 | 35,368.43 | 40,000.00 | 40,000.00 | 4,631.57 | 88 % |
| | 345 Telephone & Telegraph | 205.14 | 2,089.30 | 3,000.00 | 3,000.00 | 910.70 | 70 % |
| | 346 Cellular Phone | 101.02 | 877.44 | 1,500.00 | 1,500.00 | 622.56 | 58 % |
| | 347 Internet | 136.88 | 1,703.46 | 2,000.00 | 2,000.00 | 296.54 | 85 % |
| | 352 Legal Services | 0.00 | 558.65 | 3,000.00 | 3,000.00 | 2,441.35 | 19 % |
| | 353 Accounting and Auditing | 180.00 | 6,814.38 | 6,000.00 | 6,815.00 | 0.62 | 100 % |
| | 354 Architectural /Engineering/Landscape Svcs | -21,098.70 | 7,414.85 | 65,000.00 | 73,168.00 | 65,753.15 | 10 % |
| | 355 Computer Technical Support | 718.51 | 9,006.91 | 7,000.00 | 9,007.00 | 0.09 | 100 % |
| | 359 Other Professional Services | 2,504.90 | 3,604.78 | 2,000.00 | 3,605.00 | 0.22 | 100 % |
| | 361 Motor Vehicle | 0.00 | 1,079.19 | 2,000.00 | 2,000.00 | 920.81 | 54 % |
| | 362 Equipment Repair | 100.00 | 3,447.87 | 5,000.00 | 5,000.00 | 1,552.13 | 69 % |
| | 367 Plumbing, Heating, & Electrical | 705.63 | 12,278.87 | 10,000.00 | 12,279.00 | 0.13 | 100 % |
| | 380 Training Services | 125.54 | 1,234.53 | 4,000.00 | 4,000.00 | 2,765.47 | 31 % |
| | 390 Other Purchased Services | 0.00 | 0.00 | 1,000.00 | 1,000.00 | 1,000.00 | % |
| | 396 Rentals | 0.00 | 2,020.00 | 2,000.00 | 2,020.00 | 0.00 | 100 % |
| | 397 Contract Payments | 0.00 | 3,640.74 | 0.00 | 3,641.00 | 0.26 | 100 % |
| | 471 Asphalt & Asphalt Filler | 4,542.00 | 6,067.00 | 20,000.00 | 20,000.00 | 13,933.00 | 30 % |
| | 810 Losses (Bad Debt Exp-Enterprise Funds) | 0.00 | 0.00 | 2,000.00 | 2,000.00 | 2,000.00 | % |
| | 940 Machinery & Equipment | -52,612.40 | -43,500.00 | 10,000.00 | 10,558.00 | 54,058.00 | *** % |
| | 941 P.W. Equipment | 0.00 | 43,500.00 | 37,500.00 | 43,500.00 | 0.00 | 100 % |
| | 949 Water Plant Generator | -63,855.14 | 0.00 | 150,000.00 | 143,442.00 | 143,442.00 | % |

CITY OF RED LODGE
Statement of Expenditure - Budget vs. Actual Report
For the Accounting Period: 6 / 17

5210 WATER

| Account | Object | Committed Current Month | Committed YTD | Original Appropriation | Current Appropriation | Available Appropriation | % Committed |
|--|--------|----------------------------|------------------|---------------------------|--------------------------|----------------------------|----------------|
| Account Total: | | -102,375.70 | 382,736.49 | 725,436.00 | 725,436.00 | 342,699.51 | 53 % |
| Account Group Total: | | -102,375.70 | 382,736.49 | 725,436.00 | 725,436.00 | 342,699.51 | 53 % |
| 490000 DEBT SERVICE | | | | | | | |
| 490200 Revenue Bonds | | | | | | | |
| 620 Interest | | 1,723.81 | 23,921.14 | 42,000.00 | 42,000.00 | 18,078.86 | 57 % |
| Account Total: | | 1,723.81 | 23,921.14 | 42,000.00 | 42,000.00 | 18,078.86 | 57 % |
| 490210 USDA/RD Bonds | | | | | | | |
| 620 Interest | | 4,044.91 | 44,410.03 | 56,000.00 | 56,000.00 | 11,589.97 | 79 % |
| Account Total: | | 4,044.91 | 44,410.03 | 56,000.00 | 56,000.00 | 11,589.97 | 79 % |
| 490220 USDA-2007 Rehab | | | | | | | |
| 620 Interest | | 12,116.37 | 152,017.02 | 170,000.00 | 170,000.00 | 17,982.98 | 89 % |
| Account Total: | | 12,116.37 | 152,017.02 | 170,000.00 | 170,000.00 | 17,982.98 | 89 % |
| 490230 Broadway Rehab Loan | | | | | | | |
| 620 Interest | | 784.73 | 9,626.21 | 10,000.00 | 10,000.00 | 373.79 | 96 % |
| Account Total: | | 784.73 | 9,626.21 | 10,000.00 | 10,000.00 | 373.79 | 96 % |
| Account Group Total: | | 18,669.82 | 229,974.40 | 278,000.00 | 278,000.00 | 48,025.60 | 83 % |
| 510000 MISCELLANEOUS | | | | | | | |
| 510400 Depreciation | | | | | | | |
| 830 Deprec-Closed to Retained Earnings | | 319,569.56 | 319,569.56 | 329,000.00 | 328,195.00 | 8,625.44 | 97 % |
| Account Total: | | 319,569.56 | 319,569.56 | 329,000.00 | 328,195.00 | 8,625.44 | 97 % |
| Account Group Total: | | 319,569.56 | 319,569.56 | 329,000.00 | 328,195.00 | 8,625.44 | 97 % |
| 520000 OTHER FINANCING USES | | | | | | | |
| 521000 Interfund Operating Transfers Out | | | | | | | |
| 826 Transfer to PERS | | 1,382.19 | 15,329.80 | 14,525.00 | 15,330.00 | 0.20 | 100 % |
| 827 Transfer to Comp. Insurance | | 0.00 | 8,000.00 | 8,000.00 | 8,000.00 | 0.00 | 100 % |
| Account Total: | | 1,382.19 | 23,329.80 | 22,525.00 | 23,330.00 | 0.20 | 100 % |
| Account Group Total: | | 1,382.19 | 23,329.80 | 22,525.00 | 23,330.00 | 0.20 | 100 % |
| Fund Total: | | 235,043.87 | 953,408.25 | 1,354,961.00 | 1,354,961.00 | 401,552.75 | 70 % |
| Grand Total: | | 235,043.87 | 953,408.25 | 1,354,961.00 | 1,354,961.00 | 401,552.75 | 70 % |

5210 WATER

| Account | Object | Committed Current Month | Committed YTD | Original Appropriation | Current Appropriation | Available Appropriation | % Committed |
|---------|--|----------------------------|------------------|---------------------------|--------------------------|----------------------------|----------------|
| 400000 | pension expense | | | | | | |
| 400000 | pension expense | | | | | | |
| | 195 Pension expense GASB 68 | 81.00 | 81.00 | 0.00 | 0.00 | -81.00 | % |
| | Account Total: | 81.00 | 81.00 | 0.00 | 0.00 | -81.00 | % |
| | Account Group Total: | 81.00 | 81.00 | 0.00 | 0.00 | -81.00 | % |
| 430000 | PUBLIC WORKS | | | | | | |
| 430510 | Administration | | | | | | |
| | 100 Personal Services | 66,145.61 | 277,139.95 | 266,050.00 | 266,050.00 | -11,089.95 | 104 % |
| | 142 Workers' Compensation | 513.87 | 6,676.41 | 10,000.00 | 10,000.00 | 3,323.59 | 67 % |
| | 210 Office Supplies & Materials | 496.01 | 1,252.89 | 2,000.00 | 2,000.00 | 747.11 | 63 % |
| | 214 Postage | 282.82 | 3,428.19 | 3,500.00 | 3,500.00 | 71.81 | 98 % |
| | 221 Agriculture & Horticulture Supplies | 0.00 | 0.00 | 2,000.00 | 2,000.00 | 2,000.00 | % |
| | 222 Chemical & Medical Supplies | 514.77 | 9,662.03 | 10,000.00 | 10,000.00 | 337.97 | 97 % |
| | 224 Janitorial Supplies | 0.00 | 98.00 | 0.00 | 0.00 | -98.00 | % |
| | 228 Educational Supplies | 0.00 | 0.00 | 550.00 | 550.00 | 550.00 | % |
| | 229 Other Operating Supplies | 0.00 | 0.00 | 1,000.00 | 1,000.00 | 1,000.00 | % |
| | 231 Gas, Oil, Diesel Fuel, Grease, etc. | 788.15 | 4,140.78 | 6,000.00 | 6,000.00 | 1,859.22 | 69 % |
| | 232 Motor Vehicle Parts | 26.19 | 147.04 | 5,000.00 | 5,000.00 | 4,852.96 | 3 % |
| | 233 Machinery & Equipment Parts | 15,738.65 | 23,347.59 | 20,000.00 | 20,000.00 | -3,347.59 | 117 % |
| | 234 Painting Supplies | 4.99 | 15.97 | 900.00 | 900.00 | 884.03 | 2 % |
| | 235 Plumbing Supplies | 0.00 | 419.25 | 900.00 | 900.00 | 480.75 | 47 % |
| | 236 Electrical Supplies | 0.00 | 0.00 | 1,200.00 | 1,200.00 | 1,200.00 | % |
| | 237 Tools | 0.00 | 260.55 | 2,000.00 | 2,000.00 | 1,739.45 | 13 % |
| | 238 Repair Parts for Water and Sewer | 0.00 | 0.00 | 4,500.00 | 4,500.00 | 4,500.00 | % |
| | 239 Tires | 0.00 | 0.00 | 2,000.00 | 2,000.00 | 2,000.00 | % |
| | 300 Purchased Services | 0.00 | 22,867.07 | 0.00 | 0.00 | -22,867.07 | % |
| | 314 Improvements | -13,041.00 | 0.00 | 43,186.00 | 43,186.00 | 43,186.00 | % |
| | 315 Line Locates | 127.40 | 348.35 | 1,000.00 | 1,000.00 | 651.65 | 35 % |
| | 331 Publication of Formal & Legal Notices | 0.00 | 848.31 | 1,500.00 | 1,500.00 | 651.69 | 57 % |
| | 335 Membership & Registration Fees | 0.00 | 5,918.96 | 3,700.00 | 3,700.00 | -2,218.96 | 160 % |
| | 341 Electric & Gas Utility Services | -1,171.48 | 34,411.22 | 40,000.00 | 40,000.00 | 5,588.78 | 86 % |
| | 345 Telephone & Telegraph | 143.75 | 1,826.85 | 3,000.00 | 3,000.00 | 1,173.15 | 61 % |
| | 346 Cellular Phone | 145.92 | 1,878.46 | 1,500.00 | 1,500.00 | -378.46 | 125 % |
| | 347 Internet | 67.15 | 1,242.71 | 2,000.00 | 2,000.00 | 757.29 | 62 % |
| | 351 Medical, Dental, Veterinary Services | 0.00 | 219.21 | 300.00 | 300.00 | 80.79 | 73 % |
| | 352 Legal Services | 0.00 | 677.95 | 0.00 | 0.00 | -677.95 | % |
| | 353 Accounting and Auditing | 0.00 | 3,225.00 | 6,000.00 | 6,000.00 | 2,775.00 | 54 % |
| | 354 Architectural/Engineering/Landscape Svcs | -50,343.40 | 0.00 | 65,000.00 | 65,000.00 | 65,000.00 | % |
| | 355 Computer Technical Support | 616.97 | 10,338.67 | 7,000.00 | 7,000.00 | -3,338.67 | 148 % |
| | 359 Other Professional Services | 141.82 | 3,777.07 | 3,250.00 | 3,250.00 | -527.07 | 116 % |
| | 361 Motor Vehicle | 0.00 | 802.00 | 2,000.00 | 2,000.00 | 1,198.00 | 40 % |
| | 362 Equipment Repair | 3,763.59 | 13,967.42 | 5,000.00 | 5,000.00 | -8,967.42 | 279 % |
| | 367 Plumbing, Heating, & Electrical | 597.00 | 10,878.69 | 12,000.00 | 12,000.00 | 1,121.31 | 91 % |
| | 380 Training Services | 0.00 | 282.50 | 4,000.00 | 4,000.00 | 3,717.50 | 7 % |
| | 390 Other Purchased Services | 0.00 | 0.00 | 1,000.00 | 1,000.00 | 1,000.00 | % |
| | 396 Rentals | 0.00 | 3,193.98 | 2,000.00 | 2,000.00 | -1,193.98 | 160 % |
| | 397 Contract Payments | 0.00 | 1,371.42 | 0.00 | 0.00 | -1,371.42 | % |
| | 471 Asphalt & Asphalt Filler | 2,425.50 | 12,955.50 | 20,000.00 | 20,000.00 | 7,044.50 | 65 % |
| | 810 Losses (Bad Debt Exp-Enterprise Funds) | 0.00 | 0.00 | 2,000.00 | 2,000.00 | 2,000.00 | % |
| | 930 Improvements Other than Buildings | 0.00 | 0.00 | 25,000.00 | 25,000.00 | 25,000.00 | % |

5210 WATER

| Account | Object | Committed Current Month | Committed YTD | Original Appropriation | Current Appropriation | Available Appropriation | % Committed |
|---------|--|----------------------------|------------------|---------------------------|--------------------------|----------------------------|----------------|
| | 931 Roads, Streets & Parking Lots | -39,917.18 | 0.00 | 70,000.00 | 70,000.00 | 70,000.00 | % |
| | 940 Machinery & Equipment | -10,351.85 | 0.00 | 41,500.00 | 41,500.00 | 41,500.00 | % |
| | 941 P.W. Equipment | -20,712.00 | 0.00 | 21,000.00 | 21,000.00 | 21,000.00 | % |
| | Account Total: | -42,996.75 | 457,619.99 | 720,536.00 | 720,536.00 | 262,916.01 | 64 % |
| | Account Group Total: | -42,996.75 | 457,619.99 | 720,536.00 | 720,536.00 | 262,916.01 | 64 % |
| 490000 | DEBT SERVICE | | | | | | |
| 490200 | Revenue Bonds | | | | | | |
| | 620 Interest | 1,695.21 | 21,357.56 | 42,000.00 | 42,000.00 | 20,642.44 | 51 % |
| | Account Total: | 1,695.21 | 21,357.56 | 42,000.00 | 42,000.00 | 20,642.44 | 51 % |
| 490210 | USDA/RD Bonds | | | | | | |
| | 620 Interest | 3,603.00 | 42,860.39 | 56,000.00 | 56,000.00 | 13,139.61 | 77 % |
| | Account Total: | 3,603.00 | 42,860.39 | 56,000.00 | 56,000.00 | 13,139.61 | 77 % |
| 490220 | USDA-2007 Rehab | | | | | | |
| | 620 Interest | 12,990.12 | 150,663.25 | 170,000.00 | 170,000.00 | 19,336.75 | 89 % |
| | Account Total: | 12,990.12 | 150,663.25 | 170,000.00 | 170,000.00 | 19,336.75 | 89 % |
| 490230 | Broadway Rehab Loan | | | | | | |
| | 620 Interest | 746.03 | 9,166.00 | 10,000.00 | 10,000.00 | 834.00 | 92 % |
| | Account Total: | 746.03 | 9,166.00 | 10,000.00 | 10,000.00 | 834.00 | 92 % |
| | Account Group Total: | 19,034.36 | 224,047.20 | 278,000.00 | 278,000.00 | 53,952.80 | 81 % |
| 510000 | MISCELLANEOUS | | | | | | |
| 510400 | Depreciation | | | | | | |
| | 830 Deprec-Closed to Retained Earnings | 323,659.00 | 323,659.00 | 329,000.00 | 329,000.00 | 5,341.00 | 98 % |
| | Account Total: | 323,659.00 | 323,659.00 | 329,000.00 | 329,000.00 | 5,341.00 | 98 % |
| | Account Group Total: | 323,659.00 | 323,659.00 | 329,000.00 | 329,000.00 | 5,341.00 | 98 % |
| 520000 | OTHER FINANCING USES | | | | | | |
| 521000 | Interfund Operating Transfers Out | | | | | | |
| | 826 Transfer to PERS | 1,159.12 | 14,421.18 | 17,625.00 | 17,625.00 | 3,203.82 | 82 % |
| | 827 Transfer to Comp. Insurance | 8,000.00 | 8,000.00 | 8,000.00 | 8,000.00 | 0.00 | 100 % |
| | Account Total: | 9,159.12 | 22,421.18 | 25,625.00 | 25,625.00 | 3,203.82 | 87 % |
| | Account Group Total: | 9,159.12 | 22,421.18 | 25,625.00 | 25,625.00 | 3,203.82 | 87 % |
| | Fund Total: | 308,936.73 | 1,027,828.37 | 1,353,161.00 | 1,353,161.00 | 325,332.63 | 76 % |
| | Grand Total: | 308,936.73 | 1,027,828.37 | 1,353,161.00 | 1,353,161.00 | 325,332.63 | 76 % |

5210 WATER

| Account | Object | Committed Current Month | Committed YTD | Original Appropriation | Current Appropriation | Available Appropriation | % Committed |
|---------|--|----------------------------|------------------|---------------------------|--------------------------|----------------------------|----------------|
| 400000 | pension expense | | | | | | |
| 400000 | pension expense | | | | | | |
| | 195 Pension expense GASB 68 | -770.00 | -770.00 | 0.00 | 0.00 | 770.00 | % |
| | Account Total: | -770.00 | -770.00 | 0.00 | 0.00 | 770.00 | % |
| | Account Group Total: | -770.00 | -770.00 | 0.00 | 0.00 | 770.00 | % |
| 430000 | PUBLIC WORKS | | | | | | |
| 430500 | Water Utilities | | | | | | |
| | 355 Computer Technical Support | 0.00 | 3,918.60 | 0.00 | 0.00 | -3,918.60 | % |
| | Account Total: | 0.00 | 3,918.60 | 0.00 | 0.00 | -3,918.60 | % |
| 430510 | Administration | | | | | | |
| | 100 Personal Services | 86,910.16 | 384,550.14 | 331,782.00 | 331,782.00 | -52,768.14 | 116 % |
| | 142 Workers' Compensation | 1,177.75 | 12,762.56 | 10,000.00 | 10,000.00 | -2,762.56 | 128 % |
| | 210 Office Supplies & Materials | 4,377.68 | 5,029.84 | 2,500.00 | 2,500.00 | -2,529.84 | 201 % |
| | 214 Postage | 211.37 | 3,220.83 | 3,500.00 | 3,500.00 | 279.17 | 92 % |
| | 221 Agriculture & Horticulture Supplies | 400.00 | 400.00 | 2,000.00 | 2,000.00 | 1,600.00 | 20 % |
| | 222 Chemical & Medical Supplies | 0.00 | 15,635.22 | 12,000.00 | 12,000.00 | -3,635.22 | 130 % |
| | 224 Janitorial Supplies | 0.00 | 0.00 | 100.00 | 100.00 | 100.00 | % |
| | 229 Other Operating Supplies | 0.00 | 0.00 | 1,000.00 | 1,000.00 | 1,000.00 | % |
| | 231 Gas, Oil, Diesel Fuel, Grease, etc. | 708.81 | 4,021.31 | 6,000.00 | 6,000.00 | 1,978.69 | 67 % |
| | 232 Motor Vehicle Parts | 127.05 | 425.32 | 5,000.00 | 5,000.00 | 4,574.68 | 9 % |
| | 233 Machinery & Equipment Parts | 10,056.32 | 21,301.78 | 20,000.00 | 20,000.00 | -1,301.78 | 107 % |
| | 234 Painting Supplies | 0.00 | 0.00 | 900.00 | 900.00 | 900.00 | % |
| | 235 Plumbing Supplies | 104.21 | 104.21 | 900.00 | 900.00 | 795.79 | 12 % |
| | 236 Electrical Supplies | 0.00 | 0.00 | 1,200.00 | 1,200.00 | 1,200.00 | % |
| | 237 Tools | 0.00 | 250.91 | 2,000.00 | 2,000.00 | 1,749.09 | 13 % |
| | 238 Repair Parts for Water and Sewer | 3,645.89 | 3,674.29 | 4,500.00 | 4,500.00 | 825.71 | 82 % |
| | 239 Tires | 0.00 | 1,184.00 | 2,000.00 | 2,000.00 | 816.00 | 59 % |
| | 314 Improvements | -6,779.75 | 4,908.47 | 45,000.00 | 45,000.00 | 40,091.53 | 11 % |
| | 315 Line Locates | 178.36 | 426.16 | 1,000.00 | 1,000.00 | 573.84 | 43 % |
| | 331 Publication and Formal & Legal Notices | 0.00 | 227.85 | 1,500.00 | 1,500.00 | 1,272.15 | 15 % |
| | 335 Membership & Registration Fees | 18.33 | 5,085.88 | 6,000.00 | 6,000.00 | 914.12 | 85 % |
| | 341 Electric & Gas Utility Services | 3,387.32 | 36,267.68 | 40,000.00 | 40,000.00 | 3,732.32 | 91 % |
| | 345 Telephone & Telegraph | 136.38 | 1,641.17 | 3,000.00 | 3,000.00 | 1,358.83 | 55 % |
| | 346 Cellular Phone | 259.84 | 1,554.52 | 2,000.00 | 2,000.00 | 445.48 | 78 % |
| | 347 Internet | 68.79 | 672.52 | 2,000.00 | 2,000.00 | 1,327.48 | 34 % |
| | 351 Medical, Dental, Veterinary Services | 0.00 | 0.00 | 300.00 | 300.00 | 300.00 | % |
| | 352 Legal Services | 0.00 | 155.40 | 700.00 | 700.00 | 544.60 | 22 % |
| | 353 Accounting and Auditing | 0.00 | 5,042.90 | 5,000.00 | 5,000.00 | -42.90 | 101 % |
| | 354 Architectural/Engineering/Landscape Svcs | -15,640.25 | 15,000.00 | 65,000.00 | 65,000.00 | 50,000.00 | 23 % |
| | 355 Computer Technical Support | 760.01 | 8,034.62 | 11,000.00 | 11,000.00 | 2,965.38 | 73 % |
| | 359 Other Professional Services | 679.25 | 5,200.54 | 33,500.00 | 33,500.00 | 28,299.46 | 16 % |
| | 360 Repair & Maintenance Services | 1,142.78 | 15,917.10 | 43,577.00 | 43,577.00 | 27,659.90 | 37 % |
| | 361 Motor Vehicle | 0.00 | 0.00 | 2,000.00 | 2,000.00 | 2,000.00 | % |
| | 362 Equipment Repair | 0.00 | 2,783.33 | 10,000.00 | 10,000.00 | 7,216.67 | 28 % |
| | 367 Plumbing, Heating, & Electrical | 403.75 | 4,302.78 | 12,000.00 | 12,000.00 | 7,697.22 | 36 % |
| | 380 Training Services | 176.30 | 2,568.36 | 4,000.00 | 4,000.00 | 1,431.64 | 64 % |
| | 390 Other Purchased Services | 0.00 | 0.00 | 1,000.00 | 1,000.00 | 1,000.00 | % |
| | 396 Rentals | 125.00 | 125.00 | 3,200.00 | 3,200.00 | 3,075.00 | 4 % |
| | 397 Contract Payments | 0.00 | 4,600.00 | 5,400.00 | 5,400.00 | 800.00 | 85 % |

5210 WATER

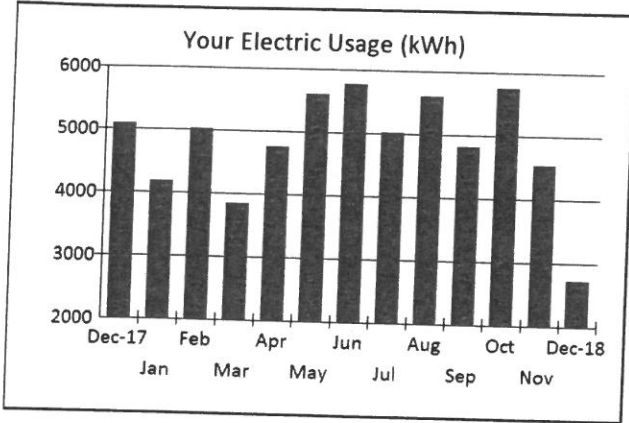
| Account | Object | Committed Current Month | Committed YTD | Original Appropriation | Current Appropriation | Available Appropriation | % Committed |
|---------|--|----------------------------|------------------|---------------------------|--------------------------|----------------------------|----------------|
| | 471 Asphalt & Asphalt Filler | 15,591.00 | 19,329.00 | 20,000.00 | 20,000.00 | 671.00 | 97 % |
| | 810 Losses (Bad Debt Exp-Enterprise Funds) | 0.00 | 0.00 | 2,000.00 | 2,000.00 | 2,000.00 | % |
| | 930 Improvements Other than Buildings | -15,000.00 | -15,000.00 | 25,000.00 | 25,000.00 | 40,000.00 | -60 % |
| | 940 Machinery & Equipment | -42,996.60 | -3,735.19 | 48,500.00 | 48,500.00 | 52,235.19 | -8 % |
| | 941 P.W. Equipment | -24,733.00 | 0.00 | 30,000.00 | 30,000.00 | 30,000.00 | % |
| | Account Total: | 25,496.75 | 567,668.50 | 828,059.00 | 828,059.00 | 260,390.50 | 69 % |
| | Account Group Total: | 25,496.75 | 571,587.10 | 828,059.00 | 828,059.00 | 256,471.90 | 69 % |
| 490000 | DEBT SERVICE | | | | | | |
| 490200 | Revenue Bonds | | | | | | |
| | 620 Interest | 1,451.39 | 18,459.03 | 42,000.00 | 42,000.00 | 23,540.97 | 44 % |
| | Account Total: | 1,451.39 | 18,459.03 | 42,000.00 | 42,000.00 | 23,540.97 | 44 % |
| 490210 | USDA/RD Bonds | | | | | | |
| | 620 Interest | 3,480.90 | 41,589.55 | 56,000.00 | 56,000.00 | 14,410.45 | 74 % |
| | Account Total: | 3,480.90 | 41,589.55 | 56,000.00 | 56,000.00 | 14,410.45 | 74 % |
| 490220 | USDA-2007 Rehab | | | | | | |
| | 620 Interest | 12,489.49 | 148,219.74 | 170,000.00 | 170,000.00 | 21,780.26 | 87 % |
| | Account Total: | 12,489.49 | 148,219.74 | 170,000.00 | 170,000.00 | 21,780.26 | 87 % |
| 490230 | Broadway Rehab Loan | | | | | | |
| | 620 Interest | 706.54 | 8,696.45 | 10,000.00 | 10,000.00 | 1,303.55 | 87 % |
| | Account Total: | 706.54 | 8,696.45 | 10,000.00 | 10,000.00 | 1,303.55 | 87 % |
| 490240 | Agent Fees | | | | | | |
| | 630 Paying Agent Fees | 15,000.00 | 15,000.00 | 0.00 | 0.00 | -15,000.00 | % |
| | Account Total: | 15,000.00 | 15,000.00 | 0.00 | 0.00 | -15,000.00 | % |
| | Account Group Total: | 33,128.32 | 231,964.77 | 278,000.00 | 278,000.00 | 46,035.23 | 83 % |
| 510000 | MISCELLANEOUS | | | | | | |
| 510400 | Depreciation | | | | | | |
| | 830 Deprec-Closed to Retained Earnings | 326,697.00 | 326,697.00 | 329,000.00 | 329,000.00 | 2,303.00 | 99 % |
| | Account Total: | 326,697.00 | 326,697.00 | 329,000.00 | 329,000.00 | 2,303.00 | 99 % |
| | Account Group Total: | 326,697.00 | 326,697.00 | 329,000.00 | 329,000.00 | 2,303.00 | 99 % |
| 520000 | OTHER FINANCING USES | | | | | | |
| 521000 | Interfund Operating Transfers Out | | | | | | |
| | 826 Transfer to PERS | 1,195.97 | 14,434.13 | 21,818.00 | 21,818.00 | 7,383.87 | 66 % |
| | 827 Transfer to Comp. Insurance | 0.00 | 10,000.00 | 10,000.00 | 10,000.00 | 0.00 | 100 % |
| | Account Total: | 1,195.97 | 24,434.13 | 31,818.00 | 31,818.00 | 7,383.87 | 77 % |
| | Account Group Total: | 1,195.97 | 24,434.13 | 31,818.00 | 31,818.00 | 7,383.87 | 77 % |
| | Fund Total: | 385,748.04 | 1,153,913.00 | 1,466,877.00 | 1,466,877.00 | 312,964.00 | 79 % |
| | Grand Total: | 385,748.04 | 1,153,913.00 | 1,466,877.00 | 1,466,877.00 | 312,964.00 | 79 % |



Customer Service: 1-888-467-2669

CUSTOMER: CITY OF RED LODGE
ACCOUNT NUMBER: 0308082-7
ACCOUNT DESCRIPTION:
BILLING DATE: December 12, 2018

Service Address: 631 LAZY M ST, RED LODGE MT 59068



| DUE DATE | TOTAL AMOUNT DUE |
|-------------------|------------------|
| December 28, 2018 | \$ 764.83 |

ACCOUNT SUMMARY

| | | | |
|-------------------|-----------------------------|----|----------|
| Previous Balance | | \$ | 1,004.87 |
| Payments Received | November 16, 2018 Thank you | \$ | (554.25) |
| Current Charges | | \$ | 314.21 |

| | Dec 2017 | Nov 2018 | Dec 2018 |
|----------------------|----------|----------|----------|
| Days of Service | 29 | 29 | 30 |
| kWh Used | 5088.00 | 4548.00 | 2728.00 |
| Avg. kWh per day | 175.4 | 156.8 | 90.9 |
| Avg. daily temp (°F) | 37 | 45 | 33 |

Total Amount Due \$ 764.83

SUMMARY OF CURRENT CHARGES

| | Delivery Service | Supply Service | TOTAL |
|-----------------------|------------------|----------------|-----------|
| Electric Service | \$ 101.17 | \$ 172.39 | \$ 273.56 |
| State and Local Taxes | \$ 28.91 | \$ 11.74 | \$ 40.65 |

Total Current Charges \$ 130.08 \$ 184.13 \$ **314.21**

BUDGET BILLING INFORMATION

BUDGET BILLING -- PAY THE SAME AMOUNT EACH MONTH

If you were to go on budget billing next month, your approximate monthly budget billing amount would be \$493.00. Your account must be current and in good standing to qualify for budget billing.

IMPORTANT ACCOUNT INFORMATION

Water Booster

MESSAGE BOARD

Effective 12/01/2018, electric supply rates have increased from the previous month as a result of the supply tracker. For questions about your bill or service, call NorthWestern Energy at 888-467-2669 (Monday through Friday, 7 a.m.-6 p.m.). For information or to make a payment, visit us at: www.northwesternenergy.com.

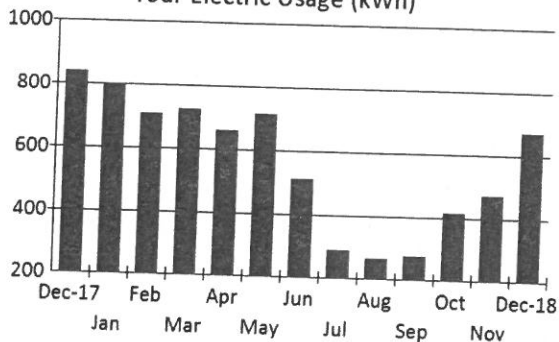


Customer Service: 1-888-467-2669

CUSTOMER: CITY OF RED LODGE
ACCOUNT NUMBER: 0713534-6 GB
ACCOUNT DESCRIPTION:
BILLING DATE: December 12, 2018

Service Address: 1219 S WHITE AVE, RED LODGE MT 59068

Your Electric Usage (kWh)



| | Dec 2017 | Nov 2018 | Dec 2018 |
|----------------------|----------|----------|----------|
| Days of Service | 29 | 29 | 33 |
| Wh Used | 839.00 | 472.00 | 674.00 |
| avg. kWh per day | 28.9 | 16.3 | 20.4 |
| avg. daily temp (°F) | 38 | 45 | 33 |

| DUE DATE | TOTAL AMOUNT DUE |
|-----------------|------------------|
| January 4, 2019 | \$ 87.52 |

ACCOUNT SUMMARY

| | | | |
|-------------------|-----------------------------|----|---------|
| Previous Balance | | \$ | 62.88 |
| Payments Received | December 17, 2018 Thank you | \$ | (62.88) |
| Current Charges | | \$ | 87.52 |

Total Amount Due \$ 87.52

SUMMARY OF CURRENT CHARGES

| | Delivery Service | Supply Service | TOTAL |
|-----------------------|------------------|----------------|----------|
| Electric Service | \$ 32.87 | \$ 41.26 | \$ 74.13 |
| State and Local Taxes | \$ 10.49 | \$ 2.90 | \$ 13.39 |

Total Current Charges \$ 43.36 \$ 44.16 \$ **87.52**

BUDGET BILLING INFORMATION

IMPORTANT ACCOUNT INFORMATION

Currently, a balance remains on your account. If payment has been sent, please disregard this reminder.

Water - PRV

MESSAGE BOARD

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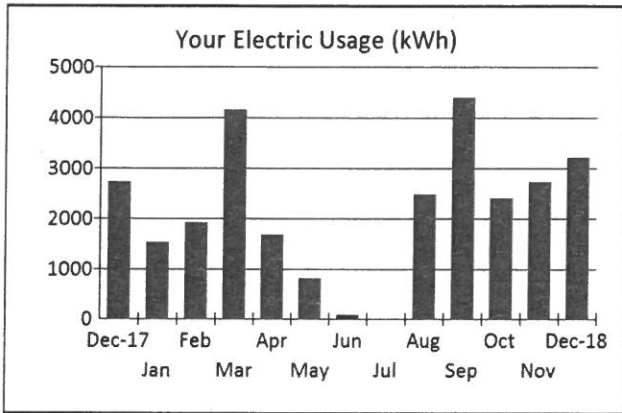


Customer Service: 1-888-467-2669

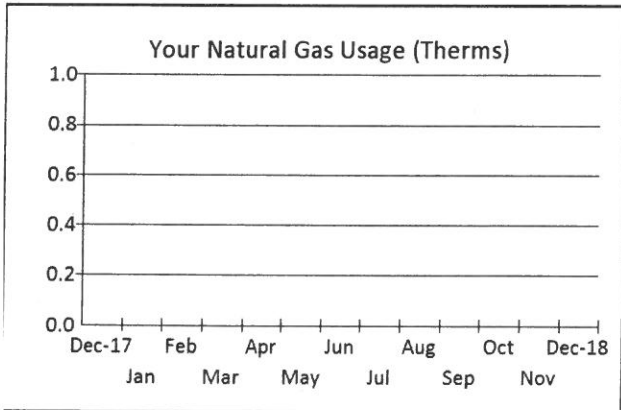
CUSTOMER: CITY OF RED LODGE
ACCOUNT NUMBER: 0713535-3
ACCOUNT DESCRIPTION:
BILLING DATE: December 12, 2018

GB

Service Address: 713 S GRANT AVE PMP, RED LODGE MT 59068



| | Dec 2017 | Nov 2018 | Dec 2018 |
|----------------------|----------|----------|----------|
| Days of Service | 30 | 29 | 30 |
| kWh Used | 2720.00 | 2720.00 | 3200.00 |
| Avg. kWh per day | 90.7 | 93.8 | 106.7 |
| Avg. daily temp (°F) | 38 | 45 | 33 |



| | Dec 2017 | Nov 2018 | Dec 2018 |
|----------------------|----------|----------|----------|
| Days of Service | 29 | 29 | 30 |
| Therms Used | | | |
| Avg. Therms per day | | | |
| Avg. daily temp (°F) | 38 | 45 | 33 |

| DUE DATE | TOTAL AMOUNT DUE |
|-----------------|------------------|
| January 4, 2019 | \$ 739.68 |

ACCOUNT SUMMARY

| | | | |
|-------------------|-----------------------------|----|----------|
| Previous Balance | | \$ | 701.61 |
| Payments Received | December 17, 2018 Thank you | \$ | (701.61) |
| Current Charges | | \$ | 739.68 |

Total Amount Due \$ 739.68

SUMMARY OF CURRENT CHARGES

| | Delivery Service | Supply Service | TOTAL |
|-----------------------|------------------|----------------|-----------|
| Electric Service | \$ 381.85 | \$ 202.22 | \$ 584.07 |
| Natural Gas Service | \$ 16.35 | \$ 0.00 | \$ 16.35 |
| State and Local Taxes | \$ 125.48 | \$ 13.78 | \$ 139.26 |

Total Current Charges \$ 523.68 \$ 216.00 \$ 739.68

BUDGET BILLING INFORMATION

IMPORTANT ACCOUNT INFORMATION

Currently, a balance remains on your account. If payment has been sent, please disregard this reminder.

Water-Grant well

MESSAGE BOARD

Effective 12/01/2018, electric supply rates have increased from the previous month as a result of the supply tracker. Effective 12/01/2018, gas supply rates have decreased from the previous month as a result of the supply tracker. For questions about your bill or service, call NorthWestern Energy at 888-467-2669 (Monday through Friday, 7 a.m.-6 p.m). For information or to make a payment, visit us at: www.northwesternenergy.com.



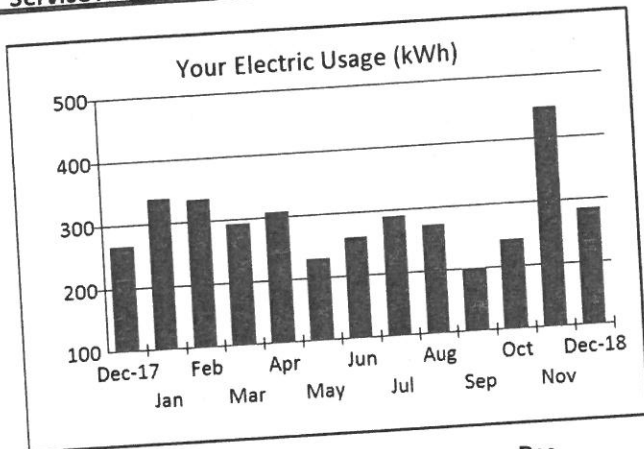
Customer Service: 1-888-467-2669

CUSTOMER: CITY OF RED LODGE
 ACCOUNT NUMBER: 0713564-3
 ACCOUNT DESCRIPTION:
 BILLING DATE: December 12, 2018

GB

Service Address: 701 WATER WORKS RD. RED LODGE MT 59068

| DUE DATE | TOTAL AMOUNT DUE |
|-----------------|------------------|
| January 4, 2019 | \$ 198. |



ACCOUNT SUMMARY

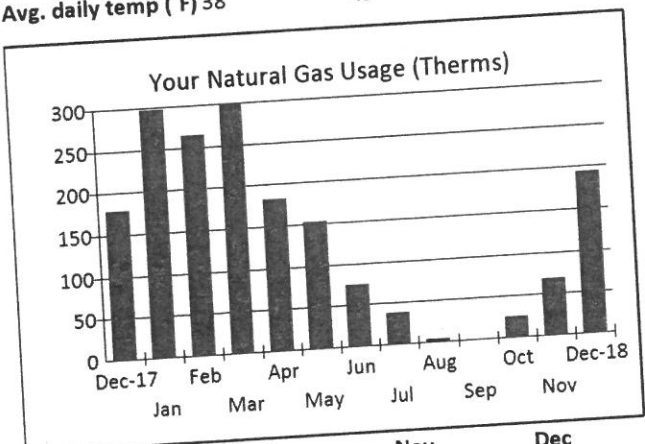
| | | | |
|-------------------|-----------------------------|----|-------|
| Previous Balance | | \$ | 131 |
| Payments Received | December 17, 2018 Thank you | \$ | (138) |
| Current Charges | | \$ | 19 |

| | Dec 2017 | Nov 2018 | Dec 2018 |
|----------------------|----------|----------|----------|
| Days of Service | 29 | 29 | 33 |
| kWh Used | 267.00 | 449.00 | 284.00 |
| Avg. kWh per day | 9.2 | 15.5 | 8.6 |
| Avg. daily temp (°F) | 38 | 45 | 33 |

Total Amount Due \$ 1

SUMMARY OF CURRENT CHARGES

| | Delivery Service | Supply Service | |
|------------------------------|------------------|-----------------|-----------|
| Electric Service | \$ 17.22 | \$ 17.38 | \$ |
| Unmetered Service | \$ 9.50 | \$ 5.02 | \$ |
| Natural Gas Service | \$ 73.91 | \$ 44.07 | \$ |
| State and Local Taxes | \$ 28.53 | \$ 2.50 | \$ |
| Total Current Charges | \$ 129.16 | \$ 68.97 | \$ |



| | Dec 2017 | Nov 2018 | Dec 2018 |
|----------------------|----------|----------|----------|
| Days of Service | 29 | 29 | 33 |
| Therms Used | 179.00 | 69.00 | 194.00 |
| Avg. Therms per day | 6.2 | 2.4 | 5.9 |
| Avg. daily temp (°F) | 38 | 45 | 33 |

BUDGET BILLING INFORMATION

IMPORTANT ACCOUNT INFORMATION

Currently, a balance remains on your account. If payment has been sent disregard this reminder.

Water

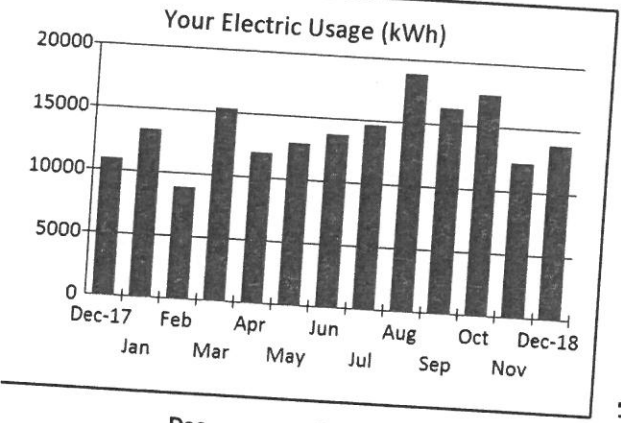
MESSAGE BOARD

Effective 12/01/2018, electric supply rates have increased from the previous month as a result of the supply tracker.
 Effective 12/01/2018, gas supply rates have decreased from the previous month as a result of the supply tracker.
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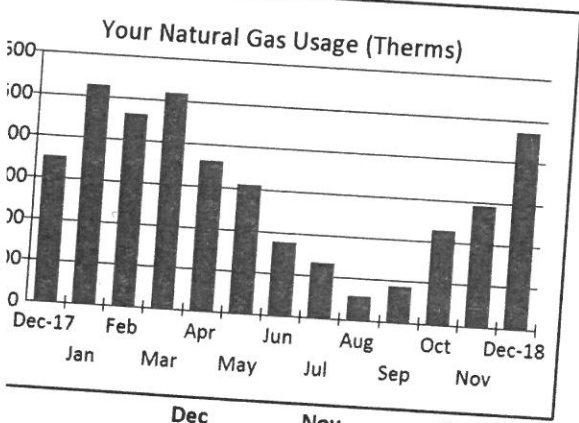
Customer Service: 1-888-467-2669

CUSTOMER: CITY OF RED LODGE
ACCOUNT NUMBER: 0713565-0
ACCOUNT DESCRIPTION: GB
BILLING DATE: December 12, 2018

Service Address: 723 WATER WORKS RD PLNT, RED LODGE MT 59068



| | Dec 2017 | Nov 2018 | Dec 2018 |
|-------------------------|----------|----------|----------|
| Days of Service | 29 | 29 | 33 |
| kWh Used | 10900.00 | 12300.00 | 13760.00 |
| kWh per day | 375.9 | 424.1 | 417.0 |
| Average daily temp (°F) | 38 | 45 | 33 |



| | Dec 2017 | Nov 2018 | Dec 2018 |
|-------------------------|----------|----------|----------|
| Days of Service | 29 | 29 | 33 |
| Therms Used | 350.00 | 290.00 | 473.00 |
| Therms per day | 12.1 | 10.0 | 14.3 |
| Average daily temp (°F) | 38 | 45 | 33 |

| DUE DATE | TOTAL AMOUNT DUE |
|-----------------|------------------|
| January 4, 2019 | \$ 1,749.39 |

ACCOUNT SUMMARY

| | | | |
|-------------------|-----------------------------|----|------------|
| Previous Balance | | \$ | 1,498.65 |
| Payments Received | December 17, 2018 Thank you | \$ | (1,498.65) |
| Current Charges | | \$ | 1,749.39 |

| | |
|------------------|-------------|
| Total Amount Due | \$ 1,749.39 |
|------------------|-------------|

SUMMARY OF CURRENT CHARGES

| | Delivery Service | Supply Service | TOTAL |
|-----------------------|------------------|----------------|-------------|
| Electric Service | \$ 384.87 | \$ 869.68 | \$ 1,254.55 |
| Natural Gas Service | \$ 161.91 | \$ 107.47 | \$ 269.38 |
| State and Local Taxes | \$ 163.95 | \$ 61.51 | \$ 225.46 |

| | | | |
|-----------------------|-----------|-------------|-------------|
| Total Current Charges | \$ 710.73 | \$ 1,038.66 | \$ 1,749.39 |
|-----------------------|-----------|-------------|-------------|

BUDGET BILLING INFORMATION

IMPORTANT ACCOUNT INFORMATION

Currently, a balance remains on your account. If payment has been sent, please disregard this reminder.

Water-Plant

MESSAGE BOARD

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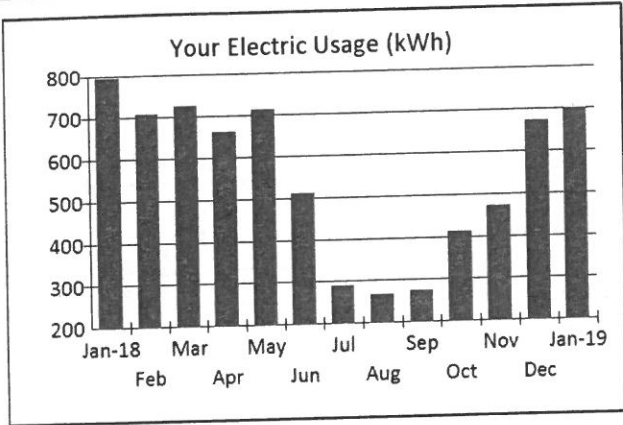


Delivering a Bright Future

Customer Service: 1-888-467-2669

CUSTOMER: CITY OF RED LODGE
ACCOUNT NUMBER: 0713534-6 GB
ACCOUNT DESCRIPTION:
BILLING DATE: January 15, 2019

Service Address: 1219 S WHITE AVE, RED LODGE MT 59068



| | Jan 2018 | Dec 2018 | Jan 2019 |
|----------------------|----------|----------|----------|
| Days of Service | 34 | 33 | 30 |
| kWh Used | 796.00 | 674.00 | 700.00 |
| Avg. kWh per day | 23.4 | 20.4 | 23.3 |
| Avg. daily temp (°F) | 24 | 33 | 32 |

| DUE DATE | TOTAL AMOUNT DUE |
|------------------|------------------|
| February 6, 2019 | \$ 68.76 |

ACCOUNT SUMMARY

| | | |
|------------------------|----------------------------|------------|
| Previous Balance | | \$ 87.52 |
| Payments Received | January 11, 2019 Thank you | \$ (87.52) |
| Current Charges | | \$ 91.47 |
| Miscellaneous Services | | \$ (22.71) |

Total Amount Due \$ 68.76

SUMMARY OF CURRENT CHARGES

| | Delivery Service | Supply Service | TOTAL |
|------------------------------|------------------|-----------------|-----------------|
| Electric Service | \$ 33.92 | \$ 43.17 | \$ 77.09 |
| State and Local Taxes | \$ 11.35 | \$ 3.03 | \$ 14.38 |
| Total Current Charges | \$ 45.27 | \$ 46.20 | \$ 91.47 |

BUDGET BILLING INFORMATION

IMPORTANT ACCOUNT INFORMATION

We are pleased to pass the benefits of the new tax laws to our customers. The Federal Tax Cuts and Jobs Act, effective January 1, 2018, resulted in a one-time credit reflected on this billing statement as Tax Cut Jobs Act Refund.

MESSAGE BOARD

Effective 01/01/2019, electric supply rates have increased from the previous month as a result of the supply tracker. The state and local taxes have increased as a result of the property tracker. For questions about your bill or service, call NorthWestern Energy at 888-467-2669 (Monday through Friday, 7 a.m.-6 p.m). For information or to make a payment, visit us at: www.northwesternenergy.com.

Water PRV

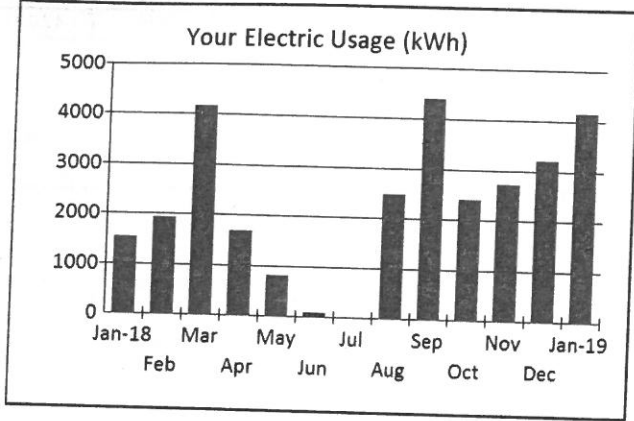


Customer Service: 1-888-467-2669

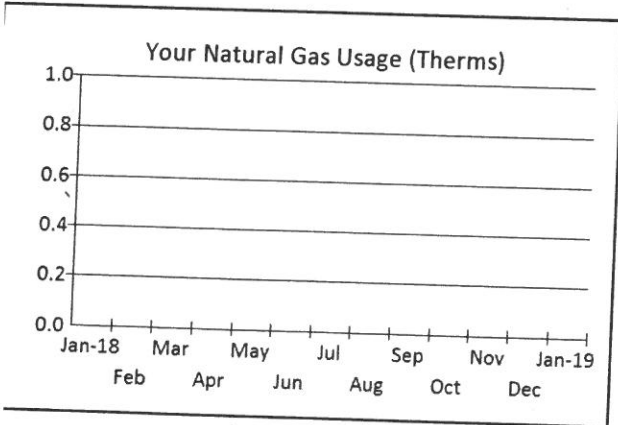
CUSTOMER: CITY OF RED LODGE
ACCOUNT NUMBER: 0713535-3
ACCOUNT DESCRIPTION:
BILLING DATE: January 15, 2019

GB

Service Address: 713 S GRANT AVE PMP, RED LODGE MT 59068



| | Jan 2018 | Dec 2018 | Jan 2019 |
|----------------------|----------|----------|----------|
| Days of Service | 32 | 30 | 33 |
| kWh Used | 1520.00 | 3200.00 | 4160.00 |
| Avg. kWh per day | 47.5 | 106.7 | 126.1 |
| Avg. daily temp (°F) | 23 | 33 | 32 |



| | Jan 2018 | Dec 2018 | Jan 2019 |
|----------------------|----------|----------|----------|
| Days of Service | 33 | 30 | 33 |
| Therms Used | | | |
| Avg. Therms per day | | | |
| Avg. daily temp (°F) | 24 | 33 | 32 |

| DUE DATE | TOTAL AMOUNT DUE |
|------------------|------------------|
| February 6, 2019 | \$ 745.07 |

ACCOUNT SUMMARY

| | | | |
|------------------------|------------------|-----------|-------------|
| Previous Balance | | \$ | 739.68 |
| Payments Received | January 11, 2019 | Thank you | \$ (739.68) |
| Current Charges | | \$ | 819.03 |
| Miscellaneous Services | | \$ | (73.96) |

Total Amount Due \$ 745.07

SUMMARY OF CURRENT CHARGES

| | Delivery Service | Supply Service | TOTAL |
|-----------------------|------------------|----------------|-----------|
| Electric Service | \$ 389.76 | \$ 262.42 | \$ 652.18 |
| Natural Gas Service | \$ 16.35 | \$ 0.00 | \$ 16.35 |
| State and Local Taxes | \$ 132.53 | \$ 17.97 | \$ 150.50 |

Total Current Charges \$ 538.64 \$ 280.39 \$ 819.03

BUDGET BILLING INFORMATION

IMPORTANT ACCOUNT INFORMATION

We are pleased to pass the benefits of the new tax laws to our customers. The Federal Tax Cuts and Jobs Act, effective January 1, 2018, resulted in a one-time credit reflected on this billing statement as Tax Cut Jobs Act Refund.

Water Grant well

MESSAGE BOARD

Effective 01/01/2019, electric supply rates have increased from the previous month as a result of the supply tracker. The state and local taxes have increased as a result of the property tracker.
 Effective 01/01/2019, gas supply rates have decreased from the previous month as a result of the supply tracker. The state and local taxes have increased as a result of the property tracker.
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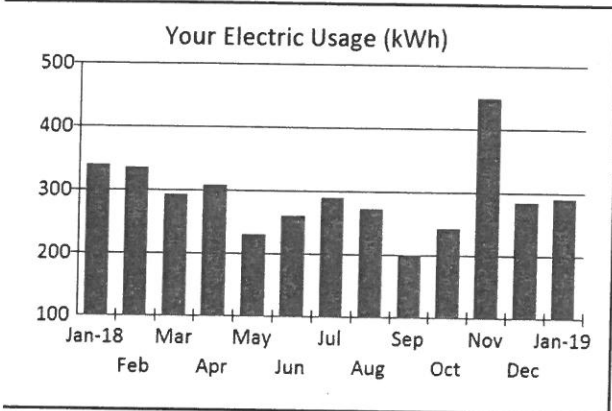


Customer Service: 1-888-467-2669

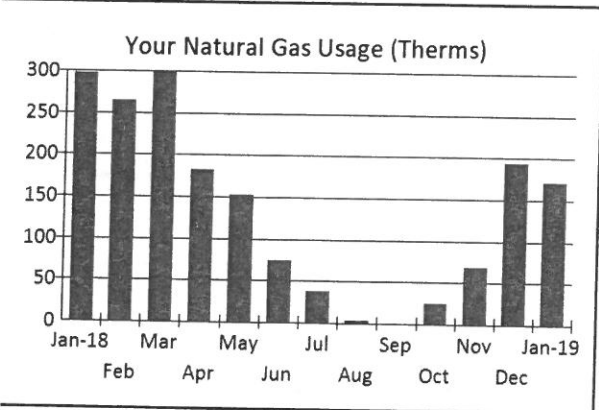
CUSTOMER: CITY OF RED LODGE
ACCOUNT NUMBER: 0713564-3
ACCOUNT DESCRIPTION:
BILLING DATE: January 15, 2019

GB

Service Address: 701 WATER WORKS RD, RED LODGE MT 59068



| | Jan 2018 | Dec 2018 | Jan 2019 |
|----------------------|----------|----------|----------|
| Days of Service | 34 | 33 | 30 |
| kWh Used | 339.00 | 284.00 | 290.00 |
| avg. kWh per day | 10.0 | 8.6 | 9.7 |
| avg. daily temp (°F) | 24 | 33 | 32 |



| | Jan 2018 | Dec 2018 | Jan 2019 |
|----------------------|----------|----------|----------|
| Days of Service | 34 | 33 | 30 |
| Therms Used | 298.00 | 194.00 | 171.00 |
| avg. Therms per day | 8.8 | 5.9 | 5.7 |
| avg. daily temp (°F) | 24 | 33 | 32 |

| DUE DATE | TOTAL AMOUNT DUE |
|------------------|------------------|
| February 6, 2019 | \$ 162.42 |

ACCOUNT SUMMARY

| | | |
|------------------------|------------------|-----------------------|
| Previous Balance | | \$ 198.13 |
| Payments Received | January 11, 2019 | Thank you \$ (198.13) |
| Current Charges | | \$ 183.29 |
| Miscellaneous Services | | \$ (20.87) |

Total Amount Due \$ 162.42

SUMMARY OF CURRENT CHARGES

| | Delivery Service | Supply Service | TOTAL |
|------------------------------|------------------|-----------------|------------------|
| Electric Service | \$ 17.47 | \$ 17.88 | \$ 35.35 |
| Unmetered Service | \$ 9.50 | \$ 5.07 | \$ 14.57 |
| Natural Gas Service | \$ 67.01 | \$ 37.52 | \$ 104.53 |
| State and Local Taxes | \$ 26.39 | \$ 2.45 | \$ 28.84 |
| Total Current Charges | \$ 120.37 | \$ 62.92 | \$ 183.29 |

BUDGET BILLING INFORMATION

IMPORTANT ACCOUNT INFORMATION

We are pleased to pass the benefits of the new tax laws to our customers. The Federal Tax Cuts and Jobs Act, effective January 1, 2018, resulted in a one-time credit reflected on this billing statement as Tax Cut Jobs Act Refund.

Water

MESSAGE BOARD

Effective 01/01/2019, electric supply rates have increased from the previous month as a result of the supply tracker. The state and local taxes have increased as a result of the property tracker.
 Effective 01/01/2019, gas supply rates have decreased from the previous month as a result of the supply tracker. The state and local taxes have increased as a result of the property tracker.
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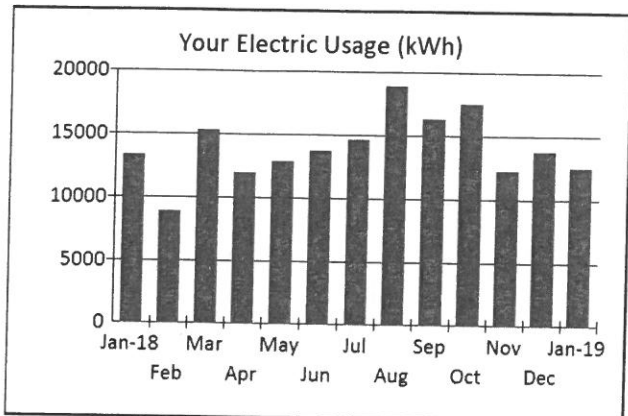
Delivering a Bright Future

Customer Service: 1-888-467-2669

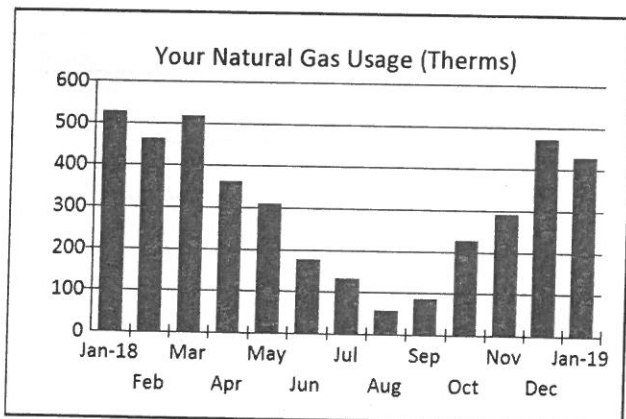
CUSTOMER: CITY OF RED LODGE
ACCOUNT NUMBER: 0713565-0
ACCOUNT DESCRIPTION:
BILLING DATE: January 15, 2019

GB

Service Address: 723 WATER WORKS RD PLNT, RED LODGE MT 59068



| | Jan 2018 | Dec 2018 | Jan 2019 |
|----------------------|----------|----------|----------|
| Days of Service | 33 | 33 | 30 |
| kWh Used | 13360.00 | 13760.00 | 12520.00 |
| Avg. kWh per day | 404.8 | 417.0 | 417.3 |
| Avg. daily temp (°F) | 24 | 33 | 32 |



| | Jan 2018 | Dec 2018 | Jan 2019 |
|----------------------|----------|----------|----------|
| Days of Service | 33 | 33 | 30 |
| Therms Used | 526.00 | 473.00 | 429.00 |
| Avg. Therms per day | 15.9 | 14.3 | 14.3 |
| Avg. daily temp (°F) | 24 | 33 | 32 |

| DUE DATE | TOTAL AMOUNT DUE |
|------------------|------------------|
| February 6, 2019 | \$ 1,112.22 |

ACCOUNT SUMMARY

| | | | |
|------------------------|------------------|-----------|---------------|
| Previous Balance | | \$ | 1,749.39 |
| Payments Received | January 11, 2019 | Thank you | \$ (1,749.39) |
| Current Charges | | \$ | 1,619.34 |
| Miscellaneous Services | | \$ | (507.12) |

Total Amount Due \$ 1,112.22

SUMMARY OF CURRENT CHARGES

| | Delivery Service | Supply Service | TOTAL |
|-----------------------|------------------|----------------|-------------|
| Electric Service | \$ 370.23 | \$ 789.54 | \$ 1,159.77 |
| Natural Gas Service | \$ 148.63 | \$ 94.11 | \$ 242.74 |
| State and Local Taxes | \$ 160.62 | \$ 56.21 | \$ 216.83 |

Total Current Charges \$ 679.48 \$ 939.86 \$ 1,619.34

BUDGET BILLING INFORMATION

IMPORTANT ACCOUNT INFORMATION

We are pleased to pass the benefits of the new tax laws to our customers. The Federal Tax Cuts and Jobs Act, effective January 1, 2018, resulted in a one-time credit reflected on this billing statement as Tax Cut Jobs Act Refund.

water plant

MESSAGE BOARD

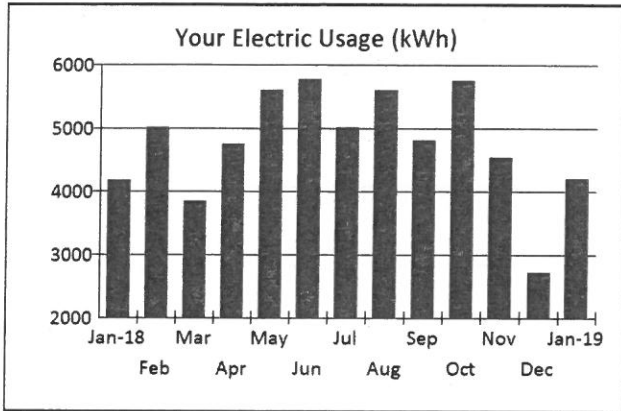
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Customer Service: 1-888-467-2669

CUSTOMER: CITY OF RED LODGE
ACCOUNT NUMBER: 0308082-7
ACCOUNT DESCRIPTION:
BILLING DATE: January 15, 2019

Service Address: 631 LAZY M ST, RED LODGE MT 59068



| | Jan 2018 | Dec 2018 | Jan 2019 |
|----------------------|----------|----------|----------|
| Days of Service | 32 | 30 | 34 |
| kWh Used | 4179.00 | 2728.00 | 4218.00 |
| Avg. kWh per day | 130.6 | 90.9 | 124.1 |
| Avg. daily temp (°F) | 23 | 33 | 31 |

| DUE DATE | TOTAL AMOUNT DUE |
|------------------|------------------|
| January 31, 2019 | \$ 244.56 |

ACCOUNT SUMMARY

| | | | |
|------------------------|------------------|-----------|-------------|
| Previous Balance | | \$ | 764.83 |
| Payments Received | January 11, 2019 | Thank you | \$ (764.83) |
| Current Charges | | \$ | 427.28 |
| Miscellaneous Services | | \$ | (182.72) |

Total Amount Due \$ 244.56

SUMMARY OF CURRENT CHARGES

| | Delivery Service | Supply Service | TOTAL |
|-----------------------|------------------|----------------|-----------|
| Electric Service | \$ 111.24 | \$ 266.10 | \$ 377.34 |
| State and Local Taxes | \$ 31.72 | \$ 18.22 | \$ 49.94 |

Total Current Charges \$ 142.96 \$ 284.32 \$ 427.28

BUDGET BILLING INFORMATION

BUDGET BILLING -- PAY THE SAME AMOUNT EACH MONTH

If you were to go on budget billing next month, your approximate monthly budget billing amount would be \$480.00. Your account must be current and in good standing to qualify for budget billing.

IMPORTANT ACCOUNT INFORMATION

We are pleased to pass the benefits of the new tax laws to our customers. The Federal Tax Cuts and Jobs Act, effective January 1, 2018, resulted in a one-time credit reflected on this billing statement as Tax Cut Jobs Act Refund.

Water-Booster

MESSAGE BOARD

Effective 01/01/2019, electric supply rates have increased from the previous month as a result of the supply tracker. The state and local taxes have increased as a result of the property tracker.

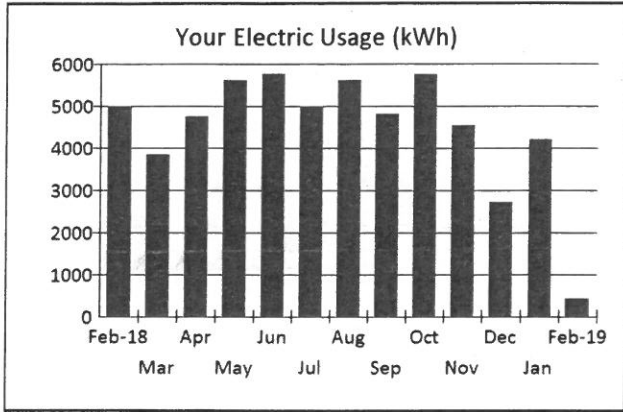
For questions about your bill or service, call NorthWestern Energy at 888-467-2669 (Monday through Friday, 7 a.m.-6 p.m). For information or to make a payment, visit us at: www.northwesternenergy.com.



Customer Service: 1-888-467-2669

CUSTOMER: CITY OF RED LODGE
ACCOUNT NUMBER: 0308082-7
ACCOUNT DESCRIPTION:
BILLING DATE: February 13, 2019

Service Address: 631 LAZY M ST, RED LODGE MT 59068



| | Feb 2018 | Jan 2019 | Feb 2019 |
|----------------------|----------|----------|----------|
| Days of Service | 31 | 34 | 29 |
| kWh Used | 5018.00 | 4218.00 | 423.00 |
| Avg. kWh per day | 161.9 | 124.1 | 14.6 |
| Avg. daily temp (°F) | 27 | 31 | 24 |

| DUE DATE | TOTAL AMOUNT DUE |
|---------------|------------------|
| March 1, 2019 | \$ 388.79 |

ACCOUNT SUMMARY

| | |
|-------------------|-----------|
| Previous Balance | \$ 244.56 |
| Payments Received | \$ 0.00 |
| Current Charges | \$ 144.23 |

Total Amount Due \$ 388.79

SUMMARY OF CURRENT CHARGES

| | Delivery Service | Supply Service | TOTAL |
|-----------------------|------------------|----------------|-----------|
| Electric Service | \$ 85.25 | \$ 26.45 | \$ 111.70 |
| State and Local Taxes | \$ 30.68 | \$ 1.85 | \$ 32.53 |

Total Current Charges \$ 115.93 \$ 28.30 \$ 144.23

BUDGET BILLING INFORMATION

BUDGET BILLING -- PAY THE SAME AMOUNT EACH MONTH

If you were to go on budget billing next month, your approximate monthly budget billing amount would be \$480.00. Your account must be current and in good standing to qualify for budget billing.

IMPORTANT ACCOUNT INFORMATION

Water - Booster

MESSAGE BOARD

For questions about your bill or service, call NorthWestern Energy at 888-467-2669 (Monday through Friday, 7 a.m.-6 p.m). For information or to make a payment, visit us at: www.northwesternenergy.com.

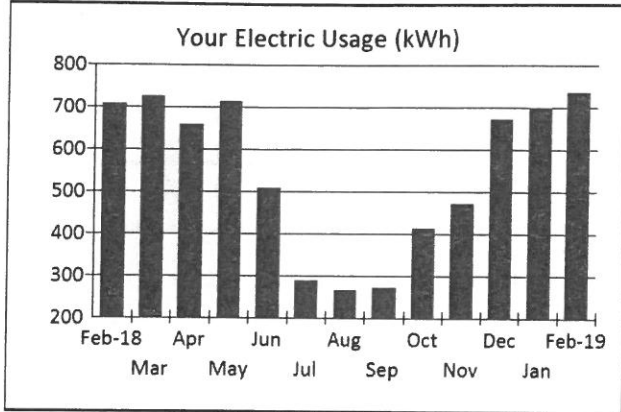


Customer Service: 1-888-467-2669

CUSTOMER: CITY OF RED LODGE
ACCOUNT NUMBER: 0713534-6
ACCOUNT DESCRIPTION:
BILLING DATE: February 14, 2019

GB

Service Address: 1219 S WHITE AVE, RED LODGE MT 59068



| | Feb 2018 | Jan 2019 | Feb 2019 |
|----------------------|----------|----------|----------|
| Days of Service | 28 | 30 | 30 |
| kWh Used | 708.00 | 700.00 | 736.00 |
| Avg. kWh per day | 25.3 | 23.3 | 24.5 |
| Avg. daily temp (°F) | 26 | 32 | 24 |

| DUE DATE | TOTAL AMOUNT DUE |
|----------------|------------------|
| March 11, 2019 | \$ 97.61 |

ACCOUNT SUMMARY

| | | |
|-------------------|-----------------------------|------------|
| Previous Balance | | \$ 68.76 |
| Payments Received | February 15, 2019 Thank you | \$ (68.76) |
| Current Charges | | \$ 97.61 |

Total Amount Due \$ 97.61

SUMMARY OF CURRENT CHARGES

| | Delivery Service | Supply Service | TOTAL |
|------------------------------|------------------|-----------------|-----------------|
| Electric Service | \$ 35.36 | \$ 46.01 | \$ 81.37 |
| State and Local Taxes | \$ 13.03 | \$ 3.21 | \$ 16.24 |
| Total Current Charges | \$ 48.39 | \$ 49.22 | \$ 97.61 |

BUDGET BILLING INFORMATION

IMPORTANT ACCOUNT INFORMATION

Currently, a balance remains on your account. If payment has been sent, please disregard this reminder.

Water PRV

MESSAGE BOARD

For questions about your bill or service, call NorthWestern Energy at 888-467-2669 (Monday through Friday, 7 a.m.-6 p.m). For information or to make a payment, visit us at: www.northwesternenergy.com.

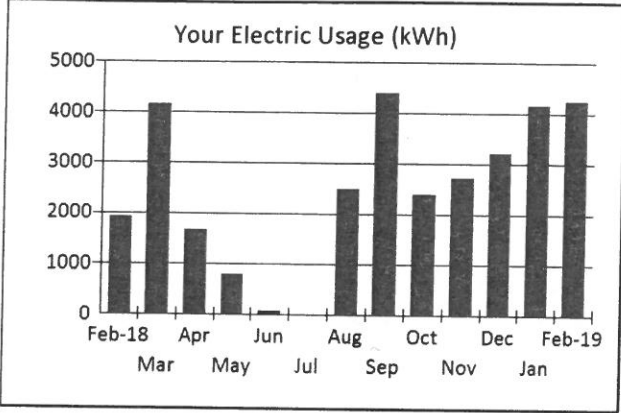


Customer Service: 1-888-467-2669

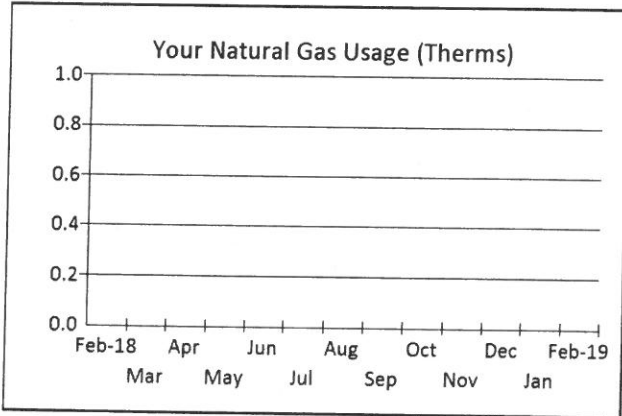
CUSTOMER: CITY OF RED LODGE
ACCOUNT NUMBER: 0713535-3
ACCOUNT DESCRIPTION:
BILLING DATE: February 14, 2019

GB

Service Address: 713 S GRANT AVE PMP, RED LODGE MT 59068



| | Feb 2018 | Jan 2019 | Feb 2019 |
|----------------------|----------|----------|----------|
| Days of Service | 30 | 33 | 30 |
| kWh Used | 1920.00 | 4160.00 | 4240.00 |
| Avg. kWh per day | 64.0 | 126.1 | 141.3 |
| Avg. daily temp (°F) | 26 | 32 | 24 |



| | Feb 2018 | Jan 2019 | Feb 2019 |
|----------------------|----------|----------|----------|
| Days of Service | 30 | 33 | 30 |
| Therms Used | 1920.00 | 4160.00 | 4240.00 |
| Avg. Therms per day | 64.0 | 126.1 | 141.3 |
| Avg. daily temp (°F) | 26 | 32 | 24 |

| DUE DATE | TOTAL AMOUNT DUE |
|----------------|------------------|
| March 11, 2019 | \$ 870.98 |

| ACCOUNT SUMMARY | | | |
|-------------------|-------------------|-----------|-------------|
| Previous Balance | | \$ | 745.07 |
| Payments Received | February 15, 2019 | Thank you | \$ (745.07) |
| Current Charges | | \$ | 870.98 |

Total Amount Due \$ 870.98

| SUMMARY OF CURRENT CHARGES | | | |
|----------------------------|------------------|----------------|-----------|
| | Delivery Service | Supply Service | TOTAL |
| Electric Service | \$ 414.03 | \$ 265.08 | \$ 679.11 |
| Natural Gas Service | \$ 16.35 | \$ 0.00 | \$ 16.35 |
| State and Local Taxes | \$ 157.03 | \$ 18.49 | \$ 175.52 |

Total Current Charges \$ 587.41 \$ 283.57 \$ 870.98

BUDGET BILLING INFORMATION

IMPORTANT ACCOUNT INFORMATION

Currently, a balance remains on your account. If payment has been sent, please disregard this reminder.

Water-Grand well

MESSAGE BOARD

Effective 02/01/2019, gas supply rates have decreased from the previous month as a result of the supply tracker. For questions about your bill or service, call NorthWestern Energy at 888-467-2669 (Monday through Friday, 7 a.m.-6 p.m). For information or to make a payment, visit us at: www.northwesternenergy.com.

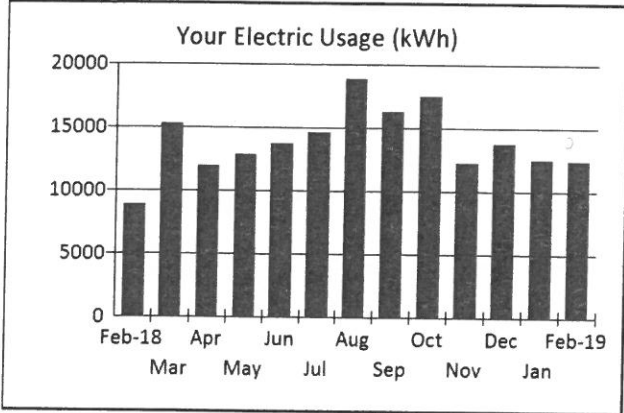


Customer Service: 1-888-467-2669

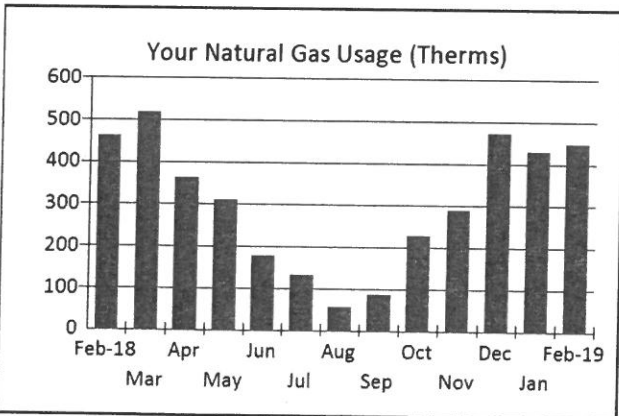
CUSTOMER: CITY OF RED LODGE
ACCOUNT NUMBER: 0713565-0
ACCOUNT DESCRIPTION:
BILLING DATE: February 14, 2019

GB

Service Address: 723 WATER WORKS RD PLNT, RED LODGE MT 59068



| | Feb 2018 | Jan 2019 | Feb 2019 |
|----------------------|----------|----------|----------|
| Days of Service | 29 | 30 | 30 |
| kWh Used | 8880.00 | 12520.00 | 12420.00 |
| Avg. kWh per day | 306.2 | 417.3 | 414.0 |
| Avg. daily temp (°F) | 26 | 32 | 24 |



| | Feb 2018 | Jan 2019 | Feb 2019 |
|----------------------|----------|----------|----------|
| Days of Service | 30 | 30 | 30 |
| Therms Used | 462.00 | 429.00 | 446.00 |
| Avg. Therms per day | 15.4 | 14.3 | 14.9 |
| Avg. daily temp (°F) | 26 | 32 | 24 |

| DUE DATE | TOTAL AMOUNT DUE |
|----------------|------------------|
| March 11, 2019 | \$ 1,621.91 |

ACCOUNT SUMMARY

| | | | |
|-------------------|-------------------|-----------|--------------|
| Previous Balance | | \$ | 1,112.22 |
| Payments Received | February 15, 2019 | Thank you | \$(1,112.22) |
| Current Charges | | \$ | 1,621.91 |

Total Amount Due \$ 1,621.91

SUMMARY OF CURRENT CHARGES

| | Delivery Service | Supply Service | TOTAL |
|-----------------------|------------------|----------------|-------------|
| Electric Service | \$ 369.41 | \$ 776.49 | \$ 1,145.90 |
| Natural Gas Service | \$ 153.12 | \$ 92.78 | \$ 245.90 |
| State and Local Taxes | \$ 173.64 | \$ 56.47 | \$ 230.11 |

Total Current Charges \$ 696.17 \$ 925.74 \$ 1,621.91

BUDGET BILLING INFORMATION

IMPORTANT ACCOUNT INFORMATION

Currently, a balance remains on your account. If payment has been sent, please disregard this reminder.

Water plant

MESSAGE BOARD

Effective 02/01/2019, gas supply rates have decreased from the previous month as a result of the supply tracker. For questions about your bill or service, call NorthWestern Energy at 888-467-2669 (Monday through Friday, 7 a.m.-6 p.m). For information or to make a payment, visit us at: www.northwesternenergy.com.

Rich Hovey

11

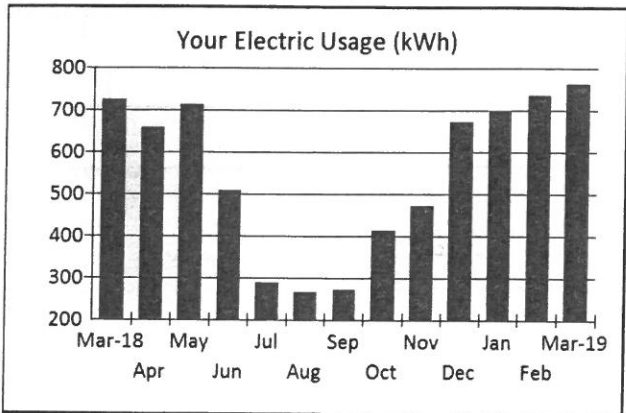


Customer Service: 1-888-467-2669

CUSTOMER: CITY OF RED LODGE
ACCOUNT NUMBER: 0713534-6
ACCOUNT DESCRIPTION:
BILLING DATE: March 14, 2019

GB

Service Address: 1219 S WHITE AVE, RED LODGE MT 59068



| | Mar 2018 | Feb 2019 | Mar 2019 |
|----------------------|----------|----------|----------|
| Days of Service | 29 | 30 | 31 |
| kWh Used | 725.00 | 736.00 | 765.00 |
| Avg. kWh per day | 25.0 | 24.5 | 24.7 |
| Avg. daily temp (°F) | 17 | 24 | 9 |

| DUE DATE | TOTAL AMOUNT DUE |
|---------------|------------------|
| April 5, 2019 | \$ 101.21 |

ACCOUNT SUMMARY

| | | | |
|-------------------|----------------|-----------|------------|
| Previous Balance | | \$ | 97.61 |
| Payments Received | March 15, 2019 | Thank you | \$ (97.61) |
| Current Charges | | \$ | 101.21 |

Total Amount Due \$ 101.21

SUMMARY OF CURRENT CHARGES

| | Delivery Service | Supply Service | TOTAL |
|-----------------------|------------------|----------------|----------|
| Electric Service | \$ 36.51 | \$ 47.82 | \$ 84.33 |
| State and Local Taxes | \$ 13.54 | \$ 3.34 | \$ 16.88 |

Total Current Charges \$ 50.05 \$ 51.16 \$ 101.21

BUDGET BILLING INFORMATION

IMPORTANT ACCOUNT INFORMATION

Currently, a balance remains on your account. If payment has been sent, please disregard this reminder.

water PRV

MESSAGE BOARD

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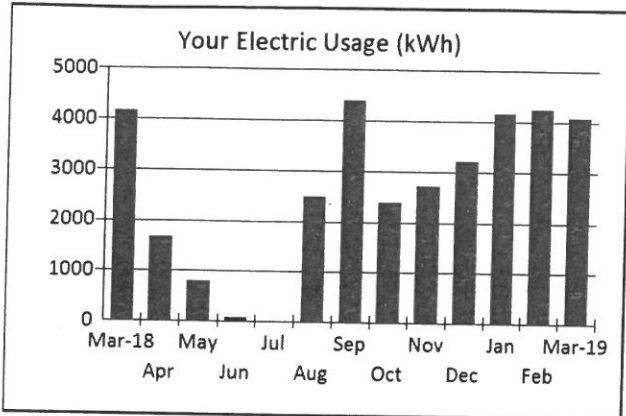


Customer Service: 1-888-467-2669

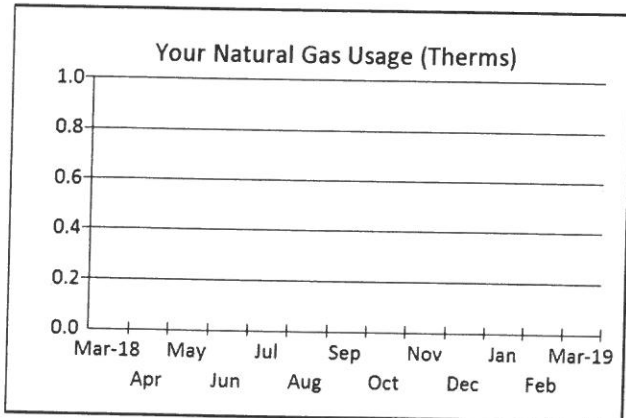
CUSTOMER: CITY OF RED LODGE
ACCOUNT NUMBER: 0713535-3
ACCOUNT DESCRIPTION:
BILLING DATE: March 14, 2019

GB

Service Address: 713 S GRANT AVE PMP, RED LODGE MT 59068



| | Mar 2018 | Feb 2019 | Mar 2019 |
|----------------------|----------|----------|----------|
| Days of Service | 28 | 30 | 31 |
| kWh Used | 4160.00 | 4240.00 | 4080.00 |
| Avg. kWh per day | 148.6 | 141.3 | 131.6 |
| Avg. daily temp (°F) | 17 | 24 | 9 |



| | Mar 2018 | Feb 2019 | Mar 2019 |
|----------------------|----------|----------|----------|
| Days of Service | 29 | 30 | 31 |
| Therms Used | | | |
| Avg. Therms per day | | | |
| Avg. daily temp (°F) | 18 | 24 | 9 |

Water Grant Well

| DUE DATE | TOTAL AMOUNT DUE |
|---------------|------------------|
| April 5, 2019 | \$ 858.67 |

ACCOUNT SUMMARY

| | | | |
|-------------------|----------------|-----------|------------|
| Previous Balance | | \$ | 870.98 |
| Payments Received | March 15, 2019 | Thank you | \$(870.98) |
| Current Charges | | \$ | 858.67 |

Total Amount Due \$ 858.67

SUMMARY OF CURRENT CHARGES

| | Delivery Service | Supply Service | TOTAL |
|-----------------------|------------------|----------------|-----------|
| Electric Service | \$ 412.70 | \$ 255.07 | \$ 667.77 |
| Natural Gas Service | \$ 16.35 | \$ 0.00 | \$ 16.35 |
| State and Local Taxes | \$ 156.75 | \$ 17.80 | \$ 174.55 |

Total Current Charges \$ 585.80 \$ 272.87 \$ 858.67

BUDGET BILLING INFORMATION

IMPORTANT ACCOUNT INFORMATION

Currently, a balance remains on your account. If payment has been sent, please disregard this reminder.

MESSAGE BOARD

Effective 03/01/2019, gas supply rates have increased from the previous month as a result of the supply tracker. For questions about your bill or service, call NorthWestern Energy at 888-467-2669 (Monday through Friday, 7 a.m.-6 p.m). For information or to make a payment, visit us at: www.northwesternenergy.com.

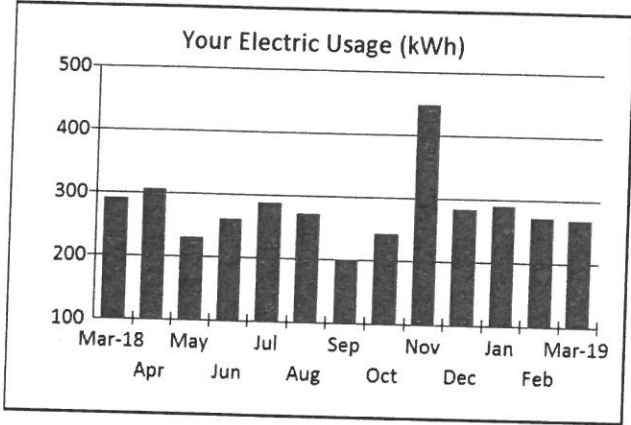


Customer Service: 1-888-467-2669

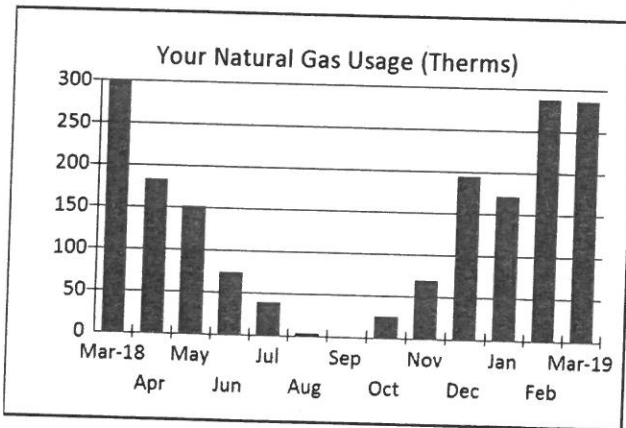
CUSTOMER: CITY OF RED LODGE
ACCOUNT NUMBER: 0713564-3
ACCOUNT DESCRIPTION:
BILLING DATE: March 14, 2019

GB

Service Address: 701 WATER WORKS RD, RED LODGE MT 59068



| | Mar 2018 | Feb 2019 | Mar 2019 |
|-------------------------|----------|----------|----------|
| Days of Service | 28 | 30 | 28 |
| kWh Used | 292.00 | 271.00 | 268.00 |
| Avg. kWh per day | 10.4 | 9.0 | 9.6 |
| Avg. daily temp (°F) 17 | | 24 | 7 |



| | Mar 2018 | Feb 2019 | Mar 2019 |
|----------------------|----------|----------|----------|
| Days of Service | 28 | 33 | 28 |
| Therms Used | 299.00 | 288.00 | 286.00 |
| Avg. Therms per day | 10.7 | 8.7 | 10.2 |
| Avg. daily temp (°F) | 17 | 22 | 10 |

| DUE DATE | TOTAL AMOUNT DUE |
|---------------|------------------|
| April 5, 2019 | \$ 249.63 |

ACCOUNT SUMMARY

| | | |
|-------------------|----------------|-----------------------|
| Previous Balance | | \$ 251.18 |
| Payments Received | March 15, 2019 | Thank you \$ (251.18) |
| Current Charges | | \$ 249.63 |

Total Amount Due \$ 249.63

SUMMARY OF CURRENT CHARGES

| | Delivery Service | Supply Service | TOTAL |
|------------------------------|------------------|-----------------|------------------|
| Electric Service | \$ 16.59 | \$ 16.76 | \$ 33.35 |
| Unmetered Service | \$ 9.50 | \$ 5.13 | \$ 14.63 |
| Natural Gas Service | \$ 100.72 | \$ 59.34 | \$ 160.06 |
| State and Local Taxes | \$ 38.59 | \$ 3.00 | \$ 41.59 |
| Total Current Charges | \$ 165.40 | \$ 84.23 | \$ 249.63 |

BUDGET BILLING INFORMATION

IMPORTANT ACCOUNT INFORMATION

Currently, a balance remains on your account. If payment has been sent, please disregard this reminder.

Water

MESSAGE BOARD

Effective 03/01/2019, gas supply rates have increased from the previous month as a result of the supply tracker. For questions about your bill or service, call NorthWestern Energy at 888-467-2669 (Monday through Friday, 7 a.m.-6 p.m.). For information or to make a payment, visit us at: www.northwesternenergy.com.

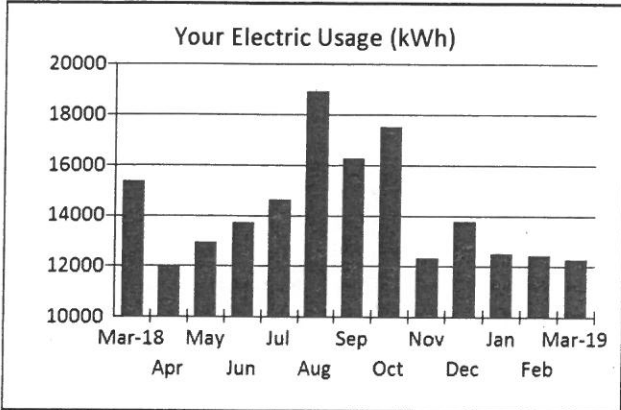


Customer Service: 1-888-467-2669

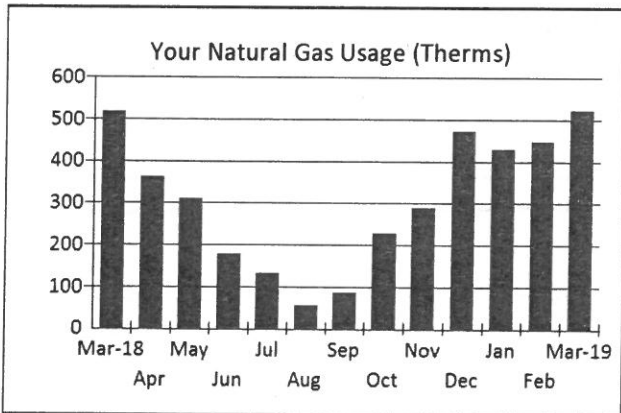
CUSTOMER: CITY OF RED LODGE
ACCOUNT NUMBER: 0713565-0
ACCOUNT DESCRIPTION:
BILLING DATE: March 14, 2019

GB

Service Address: 723 WATER WORKS RD PLNT, RED LODGE MT 59068



| | Mar 2018 | Feb 2019 | Mar 2019 |
|----------------------|----------|----------|----------|
| Days of Service | 29 | 30 | 28 |
| kWh Used | 15340.00 | 12420.00 | 12260.00 |
| Avg. kWh per day | 529.0 | 414.0 | 437.9 |
| Avg. daily temp (°F) | 17 | 24 | 7 |



| | Mar 2018 | Feb 2019 | Mar 2019 |
|----------------------|----------|----------|----------|
| Days of Service | 28 | 30 | 28 |
| Therms Used | 517.00 | 446.00 | 522.00 |
| Avg. Therms per day | 18.5 | 14.9 | 18.6 |
| Avg. daily temp (°F) | 17 | 24 | 7 |

| DUE DATE | TOTAL AMOUNT DUE |
|---------------|------------------|
| April 5, 2019 | \$ 1,646.60 |

ACCOUNT SUMMARY

| | | | |
|-------------------|----------------|-----------|---------------|
| Previous Balance | | \$ | 1,621.91 |
| Payments Received | March 15, 2019 | Thank you | \$ (1,621.91) |
| Current Charges | | \$ | 1,646.60 |

Total Amount Due \$ 1,646.60

SUMMARY OF CURRENT CHARGES

| | Delivery Service | Supply Service | TOTAL |
|------------------------------|------------------|------------------|--------------------|
| Electric Service | \$ 362.19 | \$ 766.48 | \$ 1,128.67 |
| Natural Gas Service | \$ 175.54 | \$ 107.19 | \$ 282.73 |
| State and Local Taxes | \$ 179.04 | \$ 56.16 | \$ 235.20 |
| Total Current Charges | \$ 716.77 | \$ 929.83 | \$ 1,646.60 |

BUDGET BILLING INFORMATION

IMPORTANT ACCOUNT INFORMATION

Currently, a balance remains on your account. If payment has been sent, please disregard this reminder.

Water plant

MESSAGE BOARD

Effective 03/01/2019, gas supply rates have increased from the previous month as a result of the supply tracker. For questions about your bill or service, call NorthWestern Energy at 888-467-2669 (Monday through Friday, 7 a.m.-6 p.m). For information or to make a payment, visit us at: www.northwesternenergy.com.



Delivering a Bright Future

Customer Service: 1-888-467-2669

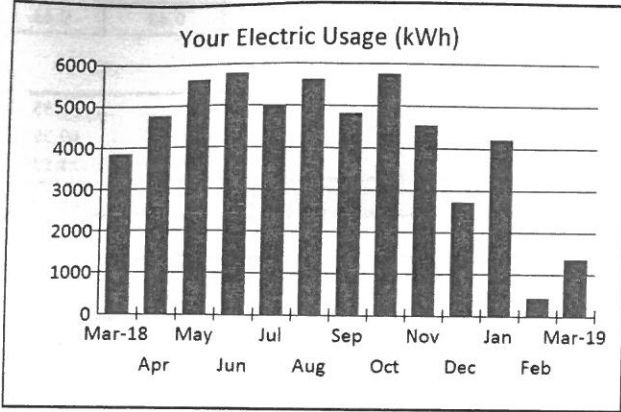
CUSTOMER: CITY OF RED LODGE

ACCOUNT NUMBER: 0308082-7

ACCOUNT DESCRIPTION:

BILLING DATE: March 13, 2019

Service Address: 631 LAZY M ST, RED LODGE MT 59068



| | Mar 2018 | Feb 2019 | Mar 2019 |
|----------------------|----------|----------|----------|
| Days of Service | 29 | 29 | 28 |
| kWh Used | 3848.00 | 423.00 | 1353.00 |
| Avg. kWh per day | 132.7 | 14.6 | 48.3 |
| Avg. daily temp (°F) | 17 | 24 | 6 |

| DUE DATE | TOTAL AMOUNT DUE |
|----------------|------------------|
| March 29, 2019 | \$ 353.16 |

ACCOUNT SUMMARY

| | | |
|-------------------|-----------------------------|-------------|
| Previous Balance | | \$ 388.79 |
| Payments Received | February 15, 2019 Thank you | \$ (244.56) |
| Current Charges | | \$ 208.93 |

Total Amount Due \$ 353.16

SUMMARY OF CURRENT CHARGES

| | Delivery Service ³ | Supply Service | TOTAL |
|------------------------------|-------------------------------|-----------------|------------------|
| Electric Service | \$ 88.07 | \$ 84.59 | \$ 172.66 |
| State and Local Taxes | \$ 30.37 | \$ 5.90 | \$ 36.27 |
| Total Current Charges | \$ 118.44 | \$ 90.49 | \$ 208.93 |

BUDGET BILLING INFORMATION

BUDGET BILLING -- PAY THE SAME AMOUNT EACH MONTH

If you were to go on budget billing next month, your approximate monthly budget billing amount would be \$451.00. Your account must be current and in good standing to qualify for budget billing.

IMPORTANT ACCOUNT INFORMATION

Water-booster

MESSAGE BOARD

For questions about your bill or service, call NorthWestern Energy at 888-467-2669 (Monday through Friday, 7 a.m.-6 p.m). For information or to make a payment, visit us at: www.northwesternenergy.com.

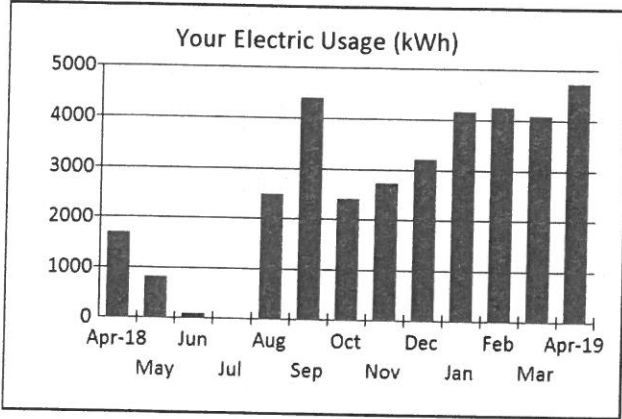
Title Clerk

Customer Service: 1-888-467-2669

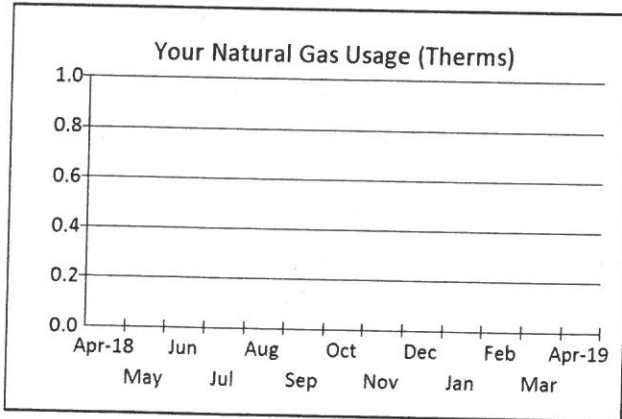
CUSTOMER: CITY OF RED LODGE
ACCOUNT NUMBER: 0713535-3
ACCOUNT DESCRIPTION:
BILLING DATE: April 15, 2019

GB

Service Address: 713 S GRANT AVE PMP, RED LODGE MT 59068



| | Apr 2018 | Mar 2019 | Apr 2019 |
|----------------------|----------|----------|----------|
| Days of Service | 30 | 31 | 28 |
| kWh Used | 1680.00 | 4080.00 | 4720.00 |
| Avg. kWh per day | 56.0 | 131.6 | 168.6 |
| Avg. cost per day | \$0.92 | \$27.17 | \$30.86 |
| Avg. daily temp (°F) | 33 | 9 | 42 |



| | Apr 2018 | Mar 2019 | Apr 2019 |
|----------------------|----------|----------|----------|
| Days of Service | 29 | 31 | 28 |
| Therms Used | | | |
| Avg. Therms per day | | | |
| Avg. cost per day | \$0.52 | \$0.53 | \$0.58 |
| Avg. daily temp (°F) | 33 | 9 | 42 |

Water-Grant

| DUE DATE | TOTAL AMOUNT DUE |
|-------------|------------------|
| May 8, 2019 | \$ 880.44 |

ACCOUNT SUMMARY

| | | | |
|-------------------|----------------|-----------|------------|
| Previous Balance | | \$ | 858.67 |
| Payments Received | April 12, 2019 | Thank you | \$(858.67) |
| Current Charges | | \$ | 880.44 |

Total Amount Due \$ 880.44

SUMMARY OF CURRENT CHARGES

| | Delivery Service | Supply Service | TOTAL |
|-----------------------|------------------|----------------|-----------|
| Electric Service | \$ 398.57 | \$ 295.09 | \$ 693.66 |
| Natural Gas Service | \$ 16.35 | \$ 0.00 | \$ 16.35 |
| State and Local Taxes | \$ 149.85 | \$ 20.58 | \$ 170.43 |

Total Current Charges \$ 564.77 \$ 315.67 \$ 880.44

BUDGET BILLING INFORMATION

IMPORTANT ACCOUNT INFORMATION

MESSAGE BOARD

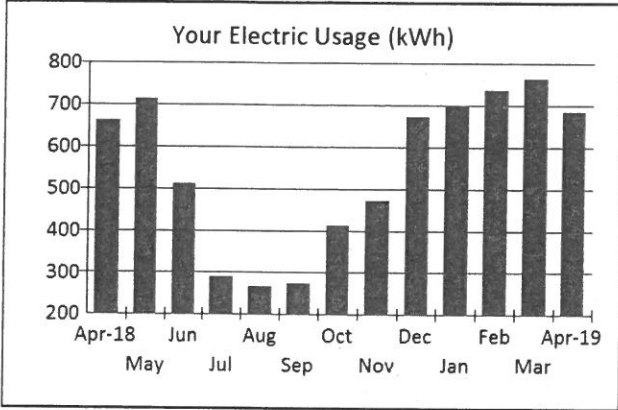
Effective 04/01/2019, gas supply rates have increased from the previous month as a result of the supply tracker. For questions about your bill or service, call NorthWestern Energy at 888-467-2669 (Monday through Friday, 7 a.m.-6 p.m). For information or to make a payment, visit us at: www.northwesternenergy.com.

Customer Service: 1-888-467-2669

CUSTOMER: CITY OF RED LODGE
ACCOUNT NUMBER: 0713534-6
ACCOUNT DESCRIPTION:
BILLING DATE: April 12, 2019

GB

Service Address: 1219 S WHITE AVE, RED LODGE MT 59068



| DUE DATE | TOTAL AMOUNT DUE |
|-------------|------------------|
| May 8, 2019 | \$ 91.63 |

ACCOUNT SUMMARY

| | | | | |
|-------------------|----------------|-----------|----|----------|
| Previous Balance | | | \$ | 101.21 |
| Payments Received | April 12, 2019 | Thank you | \$ | (101.21) |
| Current Charges | | | \$ | 91.63 |

Total Amount Due \$ 91.63

SUMMARY OF CURRENT CHARGES

| | Delivery Service | Supply Service | TOTAL |
|-----------------------|------------------|----------------|----------|
| Electric Service | \$ 33.64 | \$ 42.77 | \$ 76.41 |
| State and Local Taxes | \$ 12.24 | \$ 2.98 | \$ 15.22 |

Total Current Charges \$ 45.88 \$ 45.75 \$ 91.63

BUDGET BILLING INFORMATION

IMPORTANT ACCOUNT INFORMATION

Currently, a balance remains on your account. If payment has been sent, please disregard this reminder.

Water PRV

MESSAGE BOARD

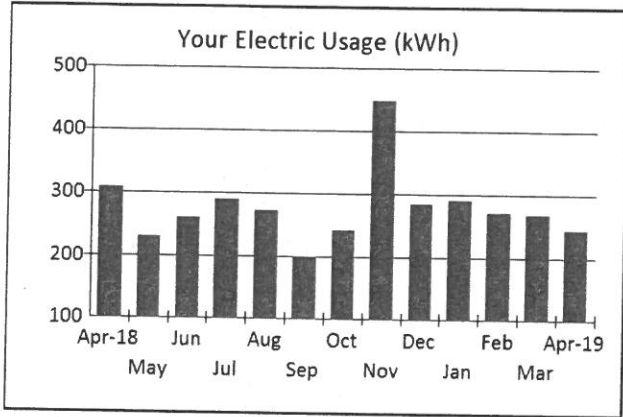
For questions about your bill or service, call NorthWestern Energy at 888-467-2669 (Monday through Friday, 7 a.m.-6 p.m). For information or to make a payment, visit us at: www.northwesternenergy.com.

Customer Service: 1-888-467-2669

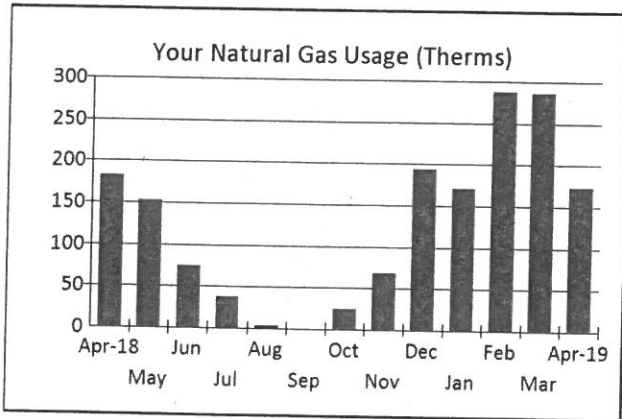
CUSTOMER: CITY OF RED LODGE
ACCOUNT NUMBER: 0713564-3
ACCOUNT DESCRIPTION:
BILLING DATE: April 15, 2019

GB

Service Address: 701 WATER WORKS RD, RED LODGE MT 59068



| | Apr 2018 | Mar 2019 | Apr 2019 |
|----------------------|----------|----------|----------|
| Days of Service | 29 | 28 | 32 |
| kWh Used | 307.00 | 268.00 | 243.00 |
| Avg. kWh per day | 10.6 | 9.6 | 7.6 |
| Avg. cost per day | \$1.50 | \$1.40 | \$1.14 |
| Avg. daily temp (°F) | 34 | 7 | 40 |



| | Apr 2018 | Mar 2019 | Apr 2019 |
|----------------------|----------|----------|----------|
| Days of Service | 29 | 28 | 29 |
| Therms Used | 182.00 | 286.00 | 173.00 |
| Avg. Therms per day | 6.3 | 10.2 | 6.0 |
| Avg. cost per day | \$4.67 | \$6.85 | \$4.42 |
| Avg. daily temp (°F) | 34 | 10 | 42 |

| DUE DATE | TOTAL AMOUNT DUE |
|-------------|------------------|
| May 8, 2019 | \$ 183.31 |

ACCOUNT SUMMARY

| | | | |
|-------------------|----------------|-----------|-------------|
| Previous Balance | | \$ | 249.63 |
| Payments Received | April 12, 2019 | Thank you | \$ (249.63) |
| Current Charges | | \$ | 183.31 |

Total Amount Due \$ **183.31**

SUMMARY OF CURRENT CHARGES

| | Delivery Service | Supply Service | TOTAL |
|-----------------------|------------------|----------------|-----------|
| Electric Service | \$ 15.77 | \$ 15.19 | \$ 30.96 |
| Unmetered Service | \$ 9.65 | \$ 5.13 | \$ 14.78 |
| Natural Gas Service | \$ 67.38 | \$ 41.57 | \$ 108.95 |
| State and Local Taxes | \$ 26.31 | \$ 2.31 | \$ 28.62 |

Total Current Charges \$ **119.11** \$ **64.20** \$ **183.31**

BUDGET BILLING INFORMATION

IMPORTANT ACCOUNT INFORMATION

Water -

MESSAGE BOARD

Effective 04/01/2019, gas supply rates have increased from the previous month as a result of the supply tracker. For questions about your bill or service, call NorthWestern Energy at 888-467-2669 (Monday through Friday, 7 a.m.-6 p.m). For information or to make a payment, visit us at: www.northwesternenergy.com.

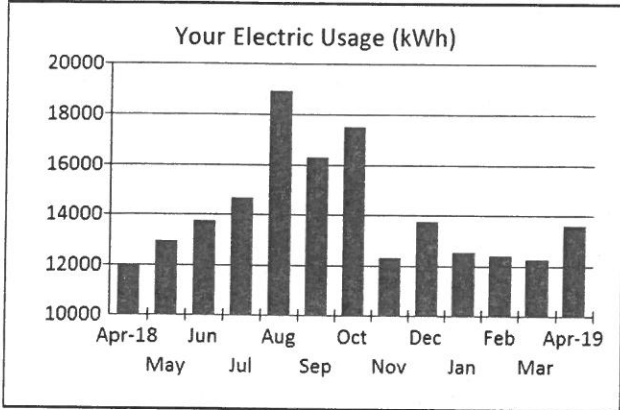


Customer Service: 1-888-467-2669

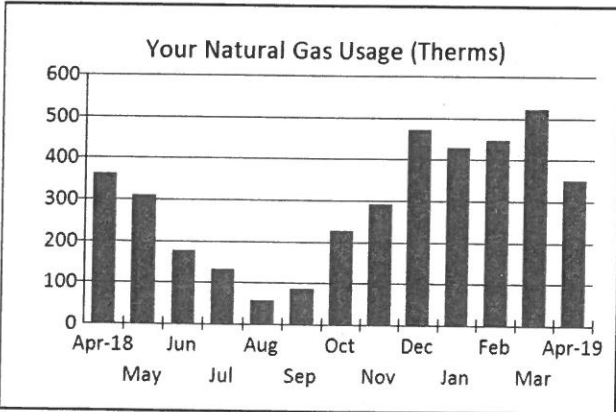
CUSTOMER: CITY OF RED LODGE
ACCOUNT NUMBER: 0713565-0
ACCOUNT DESCRIPTION:
BILLING DATE: April 12, 2019

GB

Service Address: 723 WATER WORKS RD PLNT, RED LODGE MT 59068



| | Apr 2018 | Mar 2019 | Apr 2019 |
|----------------------|----------|----------|----------|
| Days of Service | 29 | 28 | 31 |
| kWh Used | 11980.00 | 12260.00 | 13580.00 |
| Avg. kWh per day | 413.1 | 437.9 | 438.1 |
| Avg. cost per day | \$44.65 | \$46.64 | \$45.74 |
| Avg. daily temp (°F) | 34 | 7 | 40 |



| | Apr 2018 | Mar 2019 | Apr 2019 |
|----------------------|----------|----------|----------|
| Days of Service | 29 | 28 | 31 |
| Therms Used | 362.00 | 522.00 | 350.00 |
| Avg. Therms per day | 12.5 | 18.6 | 11.3 |
| Avg. cost per day | \$8.95 | \$12.17 | \$7.95 |
| Avg. daily temp (°F) | 34 | 7 | 40 |

| DUE DATE | TOTAL AMOUNT DUE |
|-------------|------------------|
| May 8, 2019 | \$ 1,664.52 |

ACCOUNT SUMMARY

| | | |
|-------------------|--------------------------|---------------|
| Previous Balance | | \$ 1,646.60 |
| Payments Received | April 12, 2019 Thank you | \$ (1,646.60) |
| Current Charges | | \$ 1,664.52 |

Total Amount Due \$ 1,664.52

SUMMARY OF CURRENT CHARGES

| | Delivery Service | Supply Service | TOTAL |
|-----------------------|------------------|----------------|-------------|
| Electric Service | \$ 380.73 | \$ 849.01 | \$ 1,229.74 |
| Natural Gas Service | \$ 124.80 | \$ 82.84 | \$ 207.64 |
| State and Local Taxes | \$ 166.10 | \$ 61.04 | \$ 227.14 |

Total Current Charges \$ 671.63 \$ 992.89 \$ 1,664.52

BUDGET BILLING INFORMATION

IMPORTANT ACCOUNT INFORMATION

Currently, a balance remains on your account. If payment has been sent, please disregard this reminder.

Water-Plant

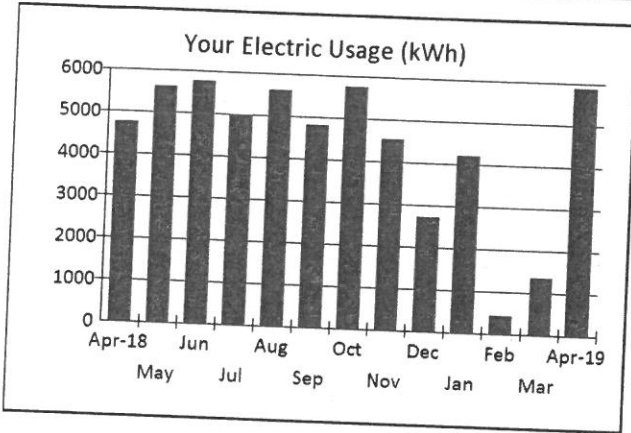
MESSAGE BOARD

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Customer Service: 1-888-467-2669

CUSTOMER: CITY OF RED LODGE
ACCOUNT NUMBER: 0308082-7
ACCOUNT DESCRIPTION:
BILLING DATE: April 12, 2019

Service Address: 631 LAZY M ST, RED LODGE MT 59068



| | Apr 2018 | Mar 2019 | Apr 2019 |
|----------------------|----------|----------|----------|
| Days of Service | 29 | 28 | 32 |
| kWh Used | 4767.00 | 1353.00 | 5898.00 |
| Avg. kWh per day | 164.4 | 48.3 | 184.3 |
| Avg. cost per day | \$16.36 | \$7.46 | \$17.71 |
| Avg. daily temp (°F) | 34 | 6 | 40 |

| DUE DATE | TOTAL AMOUNT DUE |
|----------------|------------------|
| April 29, 2019 | \$ 775.51 |

ACCOUNT SUMMARY

| | | | |
|-------------------|----------------|-----------|-------------|
| Previous Balance | | \$ | 353.16 |
| Payments Received | March 15, 2019 | Thank you | \$ (144.23) |
| Current Charges | | \$ | 566.58 |

Total Amount Due \$ 775.51

SUMMARY OF CURRENT CHARGES

| | Delivery Service | Supply Service | TOTAL |
|-----------------------|------------------|----------------|-----------|
| Electric Service | \$ 131.39 | \$ 368.74 | \$ 500.13 |
| State and Local Taxes | \$ 40.72 | \$ 25.73 | \$ 66.45 |

Total Current Charges \$ 172.11 \$ 394.47 \$ **566.58**

BUDGET BILLING INFORMATION

BUDGET BILLING -- PAY THE SAME AMOUNT EACH MONTH

If you were to go on budget billing next month, your approximate monthly budget billing amount would be \$441.00. Your account must be current and in good standing to qualify for budget billing.

IMPORTANT ACCOUNT INFORMATION

Water-booster

MESSAGE BOARD

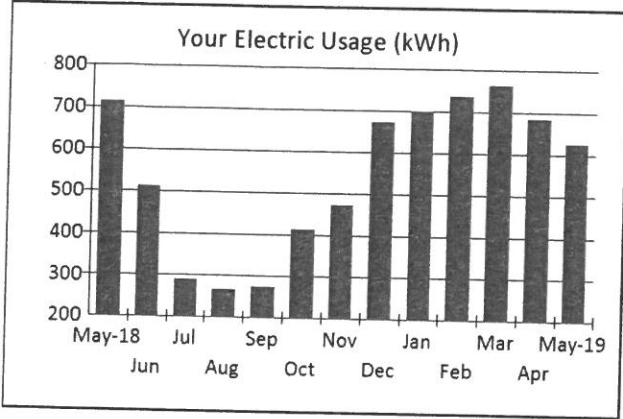
For questions about your bill or service, call NorthWestern Energy at 888-467-2669 (Monday through Friday, 7 a.m.-6 p.m). For information or to make a payment, visit us at: www.northwesternenergy.com.

Customer Service: 1-888-467-2669

CUSTOMER: CITY OF RED LODGE
ACCOUNT NUMBER: 0713534-6
ACCOUNT DESCRIPTION:
BILLING DATE: May 14, 2019

GB

Service Address: 1219 S WHITE AVE, RED LODGE MT 59068



| | May 2018 | Apr 2019 | May 2019 |
|----------------------|----------|----------|----------|
| Days of Service | 32 | 29 | 30 |
| kWh Used | 715.00 | 684.00 | 625.00 |
| Avg. kWh per day | 22.3 | 23.6 | 20.8 |
| Avg. cost per day | \$2.92 | \$3.16 | \$2.84 |
| Avg. daily temp (°F) | 49 | 42 | 47 |

| DUE DATE | TOTAL AMOUNT DUE |
|--------------|------------------|
| June 5, 2019 | \$ 85.28 |

ACCOUNT SUMMARY

| | | | |
|-------------------|--------------|-----------|------------|
| Previous Balance | | \$ | 91.63 |
| Payments Received | May 17, 2019 | Thank you | \$ (91.63) |
| Current Charges | | \$ | 85.28 |

| | | |
|------------------|----|-------|
| Total Amount Due | \$ | 85.28 |
|------------------|----|-------|

SUMMARY OF CURRENT CHARGES

| | Delivery Service | Supply Service | TOTAL |
|-----------------------|------------------|----------------|----------|
| Electric Service | \$ 32.03 | \$ 39.07 | \$ 71.10 |
| State and Local Taxes | \$ 11.45 | \$ 2.73 | \$ 14.18 |

| | | | |
|-----------------------|----------|----------|----------|
| Total Current Charges | \$ 43.48 | \$ 41.80 | \$ 85.28 |
|-----------------------|----------|----------|----------|

BUDGET BILLING INFORMATION

IMPORTANT ACCOUNT INFORMATION

Currently, a balance remains on your account. If payment has been sent, please disregard this reminder.

Water-P&W

MESSAGE BOARD

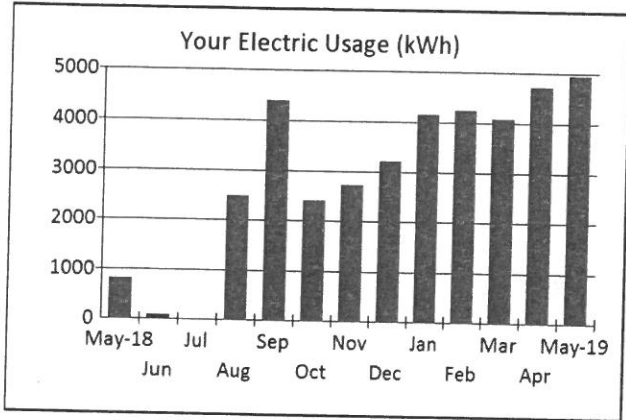
For questions about your bill or service, call NorthWestern Energy at 888-467-2669 (Monday through Friday, 7 a.m.-6 p.m). For information or to make a payment, visit us at: www.northwesternenergy.com.

Customer Service: 1-888-467-2669

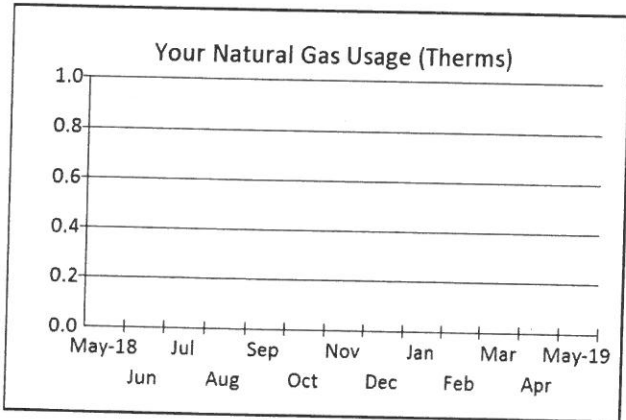
CUSTOMER: CITY OF RED LODGE
ACCOUNT NUMBER: 0713535-3
ACCOUNT DESCRIPTION:
BILLING DATE: May 16, 2019

GB

Service Address: 713 S GRANT AVE PMP, RED LODGE MT 59068



| | May 2018 | Apr 2019 | May 2019 |
|----------------------|----------|----------|----------|
| Days of Service | 31 | 28 | 31 |
| kWh Used | 800.00 | 4720.00 | 4960.00 |
| Avg. kWh per day | 25.8 | 168.6 | 160.0 |
| Avg. cost per day | \$5.32 | \$30.86 | \$28.93 |
| Avg. daily temp (°F) | 49 | 42 | 47 |



| | May 2018 | Apr 2019 | May 2019 |
|----------------------|----------|----------|----------|
| Days of Service | 31 | 28 | 31 |
| Therms Used | 0 | 0 | 0 |
| Avg. Therms per day | 0 | 0 | 0 |
| Avg. cost per day | \$0.53 | \$0.58 | \$0.53 |
| Avg. daily temp (°F) | 49 | 42 | 47 |

Water-Grant well

| DUE DATE | TOTAL AMOUNT DUE |
|--------------|------------------|
| June 5, 2019 | \$ 913.10 |

ACCOUNT SUMMARY

| | | | |
|-------------------|--------------|-----------|------------|
| Previous Balance | | \$ | 880.44 |
| Payments Received | May 17, 2019 | Thank you | \$(880.44) |
| Current Charges | | \$ | 913.10 |

Total Amount Due \$ 913.10

SUMMARY OF CURRENT CHARGES

| | Delivery Service | Supply Service | TOTAL |
|-----------------------|------------------|----------------|-----------|
| Electric Service | \$ 411.06 | \$ 310.10 | \$ 721.16 |
| Natural Gas Service | \$ 16.35 | \$ 0.00 | \$ 16.35 |
| State and Local Taxes | \$ 153.95 | \$ 21.64 | \$ 175.59 |

Total Current Charges \$ 581.36 \$ 331.74 \$ 913.10

BUDGET BILLING INFORMATION

IMPORTANT ACCOUNT INFORMATION

Currently, a balance remains on your account. If payment has been sent, please disregard this reminder.

MESSAGE BOARD

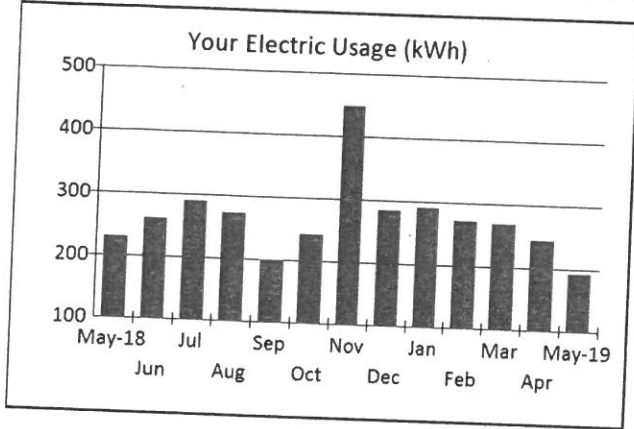
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Customer Service: 1-888-467-2669

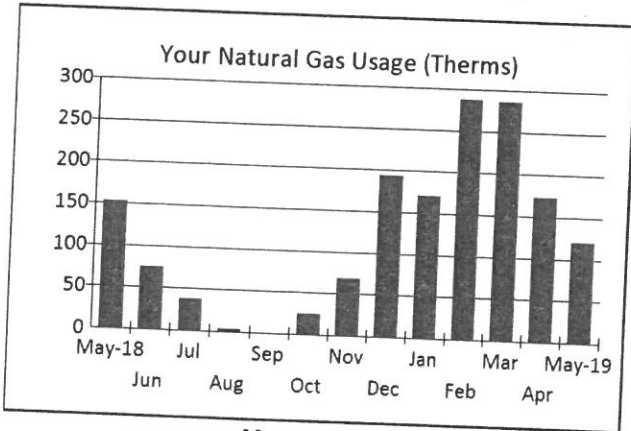
CUSTOMER: CITY OF RED LODGE
ACCOUNT NUMBER: 0713564-3
ACCOUNT DESCRIPTION:
BILLING DATE: May 14, 2019

GB

Service Address: 701 WATER WORKS RD, RED LODGE MT 59068



| | May 2018 | Apr 2019 | May 2019 |
|----------------------|----------|----------|----------|
| Days of Service | 32 | 32 | 30 |
| kWh Used | 230.00 | 243.00 | 192.00 |
| Avg. kWh per day | 7.2 | 7.6 | 6.4 |
| Avg. cost per day | \$1.06 | \$1.14 | \$1.01 |
| Avg. daily temp (°F) | 49 | 40 | 47 |



| | May 2018 | Apr 2019 | May 2019 |
|----------------------|----------|----------|----------|
| Days of Service | 32 | 29 | 30 |
| Therms Used | 152.00 | 173.00 | 120.00 |
| Avg. Therms per day | 4.8 | 6.0 | 4.0 |
| Avg. cost per day | \$3.71 | \$4.42 | \$0.88 |
| Avg. daily temp (°F) | 49 | 42 | 42 |

| DUE DATE | TOTAL AMOUNT DUE |
|--------------|------------------|
| June 5, 2019 | \$ 75.75 |

ACCOUNT SUMMARY

| | | | |
|--|--------------|-----------|-------------|
| Previous Balance | | \$ | 183.31 |
| Payments Received | May 17, 2019 | Thank you | \$ (183.31) |
| Current Charges | | \$ | 148.41 |
| Adjustments/Deposits/Transfers/Refunds | | \$ | (72.66) |

| | |
|------------------|----------|
| Total Amount Due | \$ 75.75 |
|------------------|----------|

SUMMARY OF CURRENT CHARGES

| | Delivery Service | Supply Service | TOTAL |
|------------------------------|------------------|-----------------|------------------|
| Electric Service | \$ 14.07 | \$ 12.01 | \$ 26.08 |
| Unmetered Service | \$ 9.85 | \$ 5.13 | \$ 14.98 |
| Natural Gas Service | \$ 51.75 | \$ 33.84 | \$ 85.59 |
| State and Local Taxes | \$ 19.94 | \$ 1.82 | \$ 21.76 |
| Total Current Charges | \$ 95.61 | \$ 52.80 | \$ 148.41 |

BUDGET BILLING INFORMATION

IMPORTANT ACCOUNT INFORMATION

Currently, a balance remains on your account. If payment has been sent, please disregard this reminder.

Water

MESSAGE BOARD

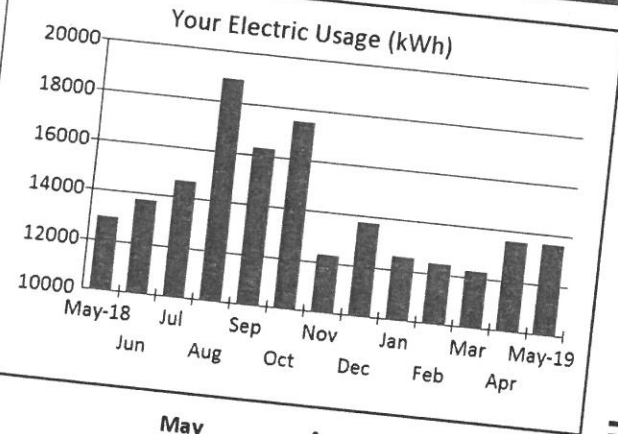
Effective 05/01/2019, gas supply rates have decreased from the previous month as a result of the supply tracker. For questions about your bill or service, call NorthWestern Energy at 888-467-2669 (Monday through Friday, 7 a.m.-6 p.m). For information or to make a payment, visit us at: www.northwesternenergy.com.

Customer Service: 1-888-467-2669

CUSTOMER: CITY OF RED LODGE
ACCOUNT NUMBER: 0713565-0
ACCOUNT DESCRIPTION:
BILLING DATE: May 14, 2019

GE

Service Address: 723 WATER WORKS RD PLNT, RED LODGE MT 59068



| | May 2018 | Apr 2019 | May 2019 |
|----------------------|----------|----------|----------|
| Days of Service | 32 | 31 | 31 |
| kWh Used | 12920.00 | 13580.00 | 13640.00 |
| Avg. kWh per day | 403.8 | 438.1 | 440.0 |
| Avg. cost per day | \$42.91 | \$45.74 | \$46.23 |
| Avg. daily temp (°F) | 49 | 40 | 47 |

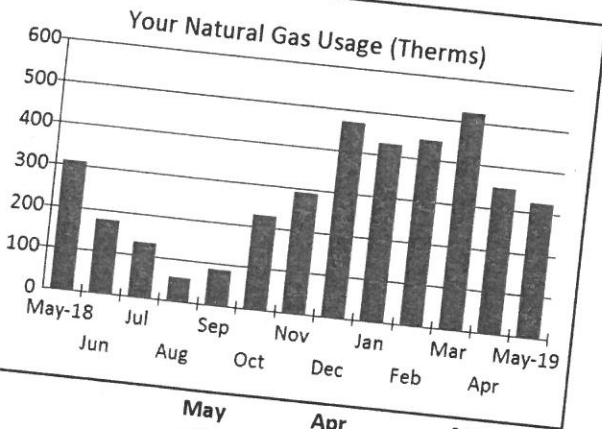
Total Amount Due

SUMMARY OF CURRENT CHARGES \$ 1,677.53

| | Delivery Service | Supply Service | TOTAL |
|------------------------------|------------------|--------------------|--------------------|
| Electric Service | \$ 388.95 | \$ 852.76 | \$ 1,241.71 |
| Natural Gas Service | \$ 117.13 | \$ 91.41 | \$ 208.54 |
| State and Local Taxes | \$ 166.11 | \$ 61.17 | \$ 227.28 |
| Total Current Charges | \$ 672.19 | \$ 1,005.34 | \$ 1,677.53 |

Total Current Charges

BUDGET BILLING INFORMATION \$ 1,677.53



| | May 2018 | Apr 2019 | May 2019 |
|-----------------|----------|----------|----------|
| Days of Service | 32 | 31 | 31 |
| Therms Used | 310.00 | 350.00 | 324.00 |
| Therms per day | 9.7 | 11.3 | 10.5 |
| cost per day | \$7.20 | \$7.95 | \$7.89 |
| daily temp (°F) | 49 | 40 | 47 |

IMPORTANT ACCOUNT INFORMATION

Currently, a balance remains on your account. If payment has been sent, please disregard this reminder.

Water-plant

MESSAGE BOARD

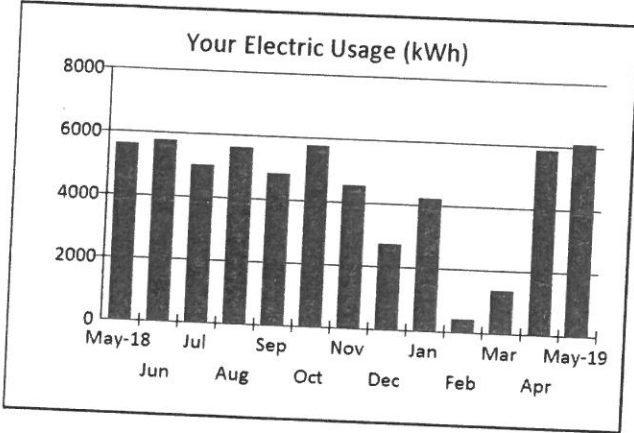
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Customer Service: 1-888-467-2669

CUSTOMER: CITY OF RED LODGE
 ACCOUNT NUMBER: 0308082-7
 ACCOUNT DESCRIPTION:
 BILLING DATE: May 13, 2019

Service Address: 631 LAZY M ST, RED LODGE MT 59068



| | May 2018 | Apr 2019 | May 2019 |
|----------------------|----------|----------|----------|
| Days of Service | 28 | 32 | 29 |
| kWh Used | 5615.00 | 5898.00 | 6104.00 |
| Avg. kWh per day | 200.5 | 184.3 | 210.5 |
| Avg. cost per day | \$19.39 | \$17.71 | \$20.15 |
| Avg. daily temp (°F) | 46 | 40 | 47 |

| DUE DATE | TOTAL AMOUNT DUE |
|--------------|------------------|
| May 29, 2019 | \$ 1,150.80 |

ACCOUNT SUMMARY

| | | | |
|-------------------|----------------|-----------|-------------|
| Previous Balance | | \$ | 775.51 |
| Payments Received | April 12, 2019 | Thank you | \$ (208.93) |
| Current Charges | | \$ | 584.22 |

Total Amount Due \$ 1,150.80

SUMMARY OF CURRENT CHARGES

| | Delivery Service | Supply Service | TOTAL |
|-----------------------|------------------|----------------|-----------|
| Electric Service | \$ 134.50 | \$ 381.62 | \$ 516.12 |
| State and Local Taxes | \$ 41.47 | \$ 26.63 | \$ 68.10 |

Total Current Charges \$ 175.97 \$ 408.25 \$ 584.22

BUDGET BILLING INFORMATION

BUDGET BILLING -- PAY THE SAME AMOUNT EACH MONTH

If you were to go on budget billing next month, your approximate monthly budget billing amount would be \$449.00. Your account must be current and in good standing to qualify for budget billing.

IMPORTANT ACCOUNT INFORMATION

Water booster
~~584.22~~

MESSAGE BOARD

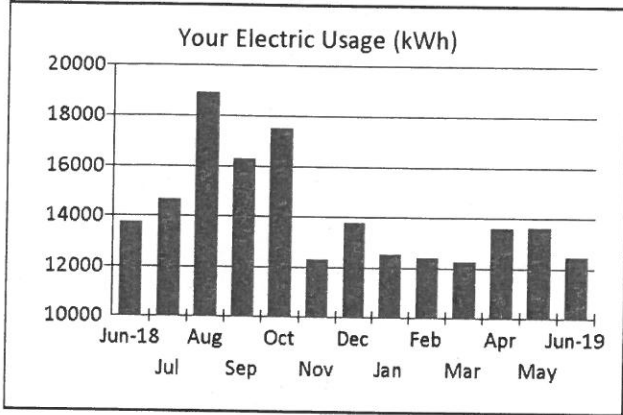
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Customer Service: 1-888-467-2669

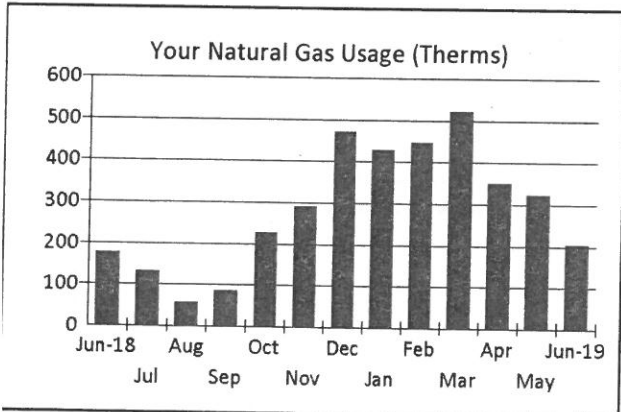
CUSTOMER: CITY OF RED LODGE
ACCOUNT NUMBER: 0713565-0
ACCOUNT DESCRIPTION:
BILLING DATE: June 13, 2019

GB

Service Address: 723 WATER WORKS RD PLNT, RED LODGE MT 59068



| | Jun 2018 | May 2019 | Jun 2019 |
|----------------------|----------|----------|----------|
| Days of Service | 31 | 31 | 29 |
| kWh Used | 13720.00 | 13640.00 | 12440.00 |
| Avg. kWh per day | 442.6 | 440.0 | 429.0 |
| Avg. cost per day | \$46.10 | \$46.23 | \$46.22 |
| Avg. daily temp (°F) | 61 | 47 | 59 |



| | Jun 2018 | May 2019 | Jun 2019 |
|----------------------|----------|----------|----------|
| Days of Service | 31 | 31 | 29 |
| Therms Used | 177.00 | 324.00 | 204.00 |
| Avg. Therms per day | 5.7 | 10.5 | 7.0 |
| Avg. cost per day | \$4.41 | \$7.89 | \$5.45 |
| Avg. daily temp (°F) | 61 | 47 | 59 |

| DUE DATE | TOTAL AMOUNT DUE |
|--------------|------------------|
| July 5, 2019 | \$ 1,498.44 |

ACCOUNT SUMMARY

| | | |
|-------------------|---------------|-------------------------|
| Previous Balance | | \$ 1,677.53 |
| Payments Received | June 14, 2019 | Thank you \$ (1,677.53) |
| Current Charges | | \$ 1,498.44 |

Total Amount Due \$ 1,498.44

SUMMARY OF CURRENT CHARGES

| | Delivery Service | Supply Service | TOTAL |
|-----------------------|------------------|----------------|-------------|
| Electric Service | \$ 378.87 | \$ 777.74 | \$ 1,156.61 |
| Natural Gas Service | \$ 81.60 | \$ 53.70 | \$ 135.30 |
| State and Local Taxes | \$ 151.22 | \$ 55.31 | \$ 206.53 |

Total Current Charges \$ 611.69 \$ 886.75 \$ 1,498.44

BUDGET BILLING INFORMATION

IMPORTANT ACCOUNT INFORMATION

Currently, a balance remains on your account. If payment has been sent, please disregard this reminder.

Water

MESSAGE BOARD

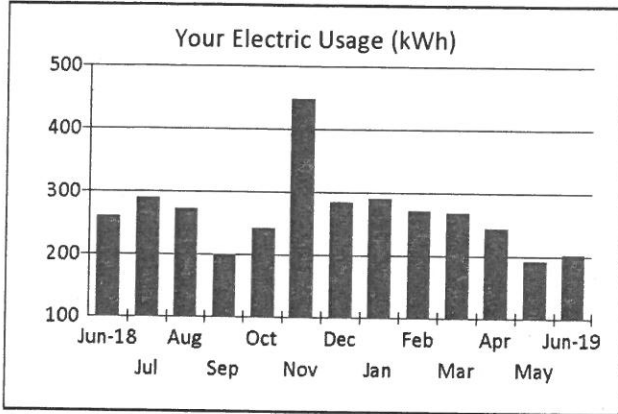
Effective 06/01/2019, gas supply rates have decreased from the previous month as a result of the supply tracker. For questions about your bill or service, call NorthWestern Energy at 1-888-467-2669 (Monday through Friday, 7 a.m.-6 p.m). For information or to make a payment, visit us at: www.northwesternenergy.com

Customer Service: 1-888-467-2669

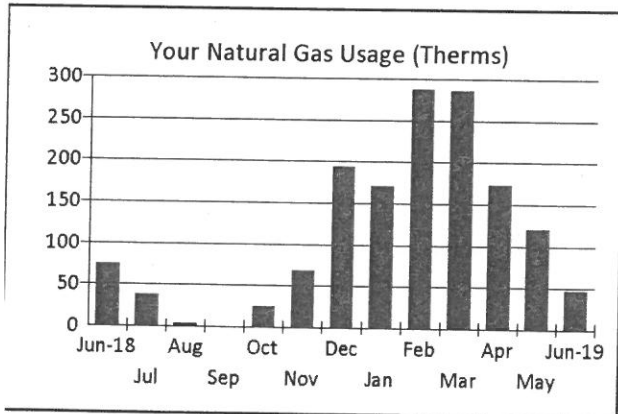
CUSTOMER: CITY OF RED LODGE
ACCOUNT NUMBER: 0713564-3
ACCOUNT DESCRIPTION:
BILLING DATE: June 13, 2019

GB

Service Address: 701 WATER WORKS RD, RED LODGE MT 59068



| | Jun 2018 | May 2019 | Jun 2019 |
|----------------------|----------|----------|----------|
| Days of Service | 31 | 30 | 32 |
| kWh Used | 261.00 | 192.00 | 202.00 |
| Avg. kWh per day | 8.4 | 6.4 | 6.3 |
| Avg. cost per day | \$1.22 | \$1.01 | \$0.99 |
| Avg. daily temp (°F) | 61 | 47 | 58 |



| | Jun 2018 | May 2019 | Jun 2019 |
|----------------------|----------|----------|----------|
| Days of Service | 31 | 7 | 32 |
| Therms Used | 74.00 | 120.00 | 47.00 |
| Avg. Therms per day | 2.4 | 17.1 | 1.5 |
| Avg. cost per day | \$2.08 | \$7.50 | \$1.49 |
| Avg. daily temp (°F) | 61 | 42 | 58 |

| DUE DATE | TOTAL AMOUNT DUE |
|--------------|------------------|
| July 5, 2019 | \$ 98.35 |

ACCOUNT SUMMARY

| | | | |
|-------------------|---------------|-----------|-----------|
| Previous Balance | | \$ | 75.75 |
| Payments Received | June 14, 2019 | Thank you | \$(75.75) |
| Current Charges | | \$ | 98.35 |

Total Amount Due \$ 98.35

SUMMARY OF CURRENT CHARGES

| | Delivery Service | Supply Service | TOTAL |
|------------------------------|------------------|-----------------|-----------------|
| Electric Service | \$ 14.47 | \$ 12.63 | \$ 27.10 |
| Unmetered Service | \$ 9.85 | \$ 5.13 | \$ 14.98 |
| Natural Gas Service | \$ 30.18 | \$ 12.22 | \$ 42.40 |
| State and Local Taxes | \$ 12.39 | \$ 1.48 | \$ 13.87 |
| Total Current Charges | \$ 66.89 | \$ 31.46 | \$ 98.35 |

BUDGET BILLING INFORMATION

IMPORTANT ACCOUNT INFORMATION

Currently, a balance remains on your account. If payment has been sent, please disregard this reminder.

water

MESSAGE BOARD

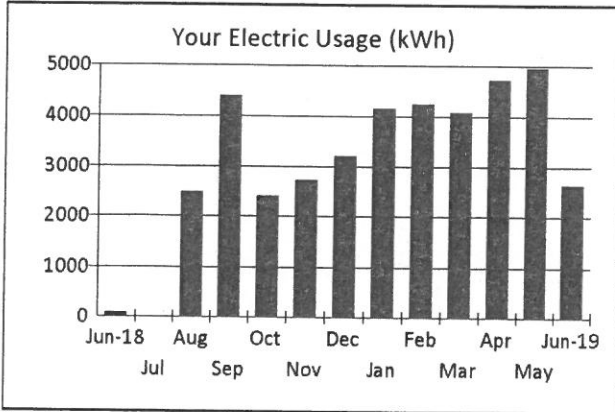
Effective 06/01/2019, gas supply rates have decreased from the previous month as a result of the supply tracker. For questions about your bill or service, call NorthWestern Energy at 1-888-467-2669 (Monday through Friday, 7 a.m.-6 p.m.). For information or to make a payment, visit us at: www.northwesternenergy.com

Customer Service: 1-888-467-2669

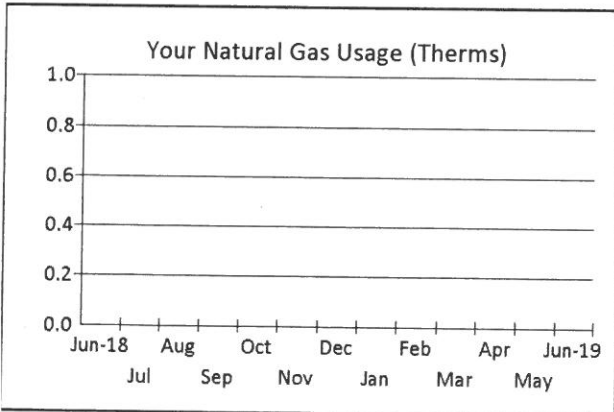
CUSTOMER: CITY OF RED LODGE
ACCOUNT NUMBER: 0713535-3
ACCOUNT DESCRIPTION:
BILLING DATE: June 17, 2019

GB

Service Address: 713 S GRANT AVE PMP, RED LODGE MT 59068



| | Jun 2018 | May 2019 | Jun 2019 |
|----------------------|----------|----------|----------|
| Days of Service | 30 | 31 | 32 |
| kWh Used | 80.00 | 4960.00 | 2640.00 |
| Avg. kWh per day | 2.7 | 160.0 | 82.5 |
| Avg. cost per day | \$1.77 | \$28.93 | \$22.43 |
| Avg. daily temp (°F) | 61 | 47 | 58 |



| | Jun 2018 | May 2019 | Jun 2019 |
|----------------------|----------|----------|----------|
| Days of Service | 30 | 31 | 32 |
| Therms Used | | | |
| Avg. Therms per day | | | |
| Avg. cost per day | \$0.55 | \$0.53 | \$0.51 |
| Avg. daily temp (°F) | 61 | 47 | 58 |

| DUE DATE | TOTAL AMOUNT DUE |
|--------------|------------------|
| July 5, 2019 | \$ 734.18 |

ACCOUNT SUMMARY

| | | | |
|-------------------|---------------|-----------|-------------|
| Previous Balance | | \$ | 913.10 |
| Payments Received | June 14, 2019 | Thank you | \$ (913.10) |
| Current Charges | | \$ | 734.18 |

Total Amount Due \$ 734.18

SUMMARY OF CURRENT CHARGES

| | Delivery Service | Supply Service | TOTAL |
|-----------------------|------------------|----------------|-----------|
| Electric Service | \$ 391.57 | \$ 165.05 | \$ 556.62 |
| Natural Gas Service | \$ 16.35 | \$ 0.00 | \$ 16.35 |
| State and Local Taxes | \$ 149.69 | \$ 11.52 | \$ 161.21 |

Total Current Charges \$ 557.61 \$ 176.57 \$ 734.18

BUDGET BILLING INFORMATION

IMPORTANT ACCOUNT INFORMATION

Currently, a balance remains on your account. If payment has been sent, please disregard this reminder.

Water - Grant well

MESSAGE BOARD

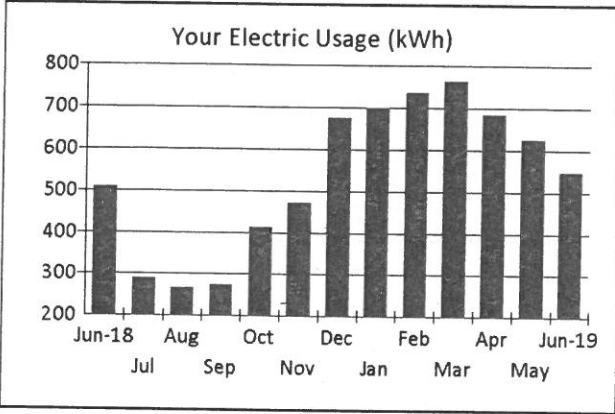
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Customer Service: 1-888-467-2669

CUSTOMER: CITY OF RED LODGE
ACCOUNT NUMBER: 0713534-6
ACCOUNT DESCRIPTION:
BILLING DATE: June 13, 2019

GB

Service Address: 1219 S WHITE AVE, RED LODGE MT 59068



| | Jun 2018 | May 2019 | Jun 2019 |
|----------------------|----------|----------|----------|
| Days of Service | 31 | 30 | 32 |
| kWh Used | 510.00 | 625.00 | 548.00 |
| Avg. kWh per day | 16.5 | 20.8 | 17.1 |
| Avg. cost per day | \$2.20 | \$2.84 | \$2.36 |
| Avg. daily temp (°F) | 61 | 47 | 58 |

| DUE DATE | TOTAL AMOUNT DUE |
|--------------|------------------|
| July 5, 2019 | \$ 75.54 |

ACCOUNT SUMMARY

| | | | |
|-------------------|---------------|-----------|-----------|
| Previous Balance | | \$ | 85.28 |
| Payments Received | June 14, 2019 | Thank you | \$(85.28) |
| Current Charges | | \$ | 75.54 |

Total Amount Due \$ 75.54

SUMMARY OF CURRENT CHARGES

| | Delivery Service | Supply Service | TOTAL |
|------------------------------|------------------|-----------------|-----------------|
| Electric Service | \$ 28.84 | \$ 34.27 | \$ 63.11 |
| State and Local Taxes | \$ 10.04 | \$ 2.39 | \$ 12.43 |
| Total Current Charges | \$ 38.88 | \$ 36.66 | \$ 75.54 |

BUDGET BILLING INFORMATION

IMPORTANT ACCOUNT INFORMATION

Currently, a balance remains on your account. If payment has been sent, please disregard this reminder.

Water - PRV

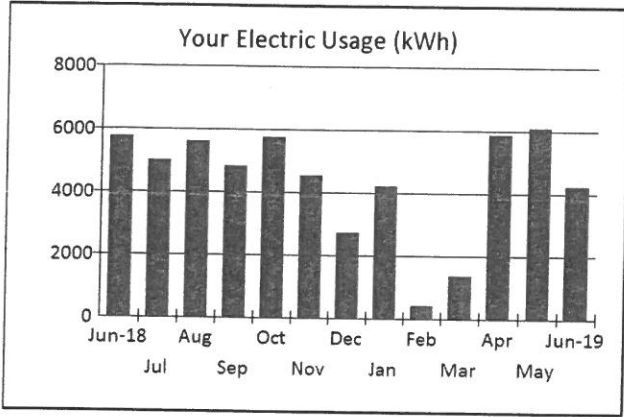
MESSAGE BOARD

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Customer Service: 1-888-467-2669

CUSTOMER: CITY OF RED LODGE
ACCOUNT NUMBER: 0308082-7
ACCOUNT DESCRIPTION:
BILLING DATE: June 12, 2019

Service Address: 631 LAZY M ST, RED LODGE MT 59068



| | Jun 2018 | May 2019 | Jun 2019 |
|----------------------|----------|----------|----------|
| Days of Service | 33 | 29 | 30 |
| kWh Used | 5774.00 | 6104.00 | 4239.00 |
| Avg. kWh per day | 175.0 | 210.5 | 141.3 |
| Avg. cost per day | \$17.29 | \$20.15 | \$15.14 |
| Avg. daily temp (°F) | 61 | 47 | 58 |

| DUE DATE | TOTAL AMOUNT DUE |
|---------------|------------------|
| June 28, 2019 | \$ 1,038.35 |

ACCOUNT SUMMARY

| | | | |
|-------------------|--------------|-----------|-------------|
| Previous Balance | | \$ | 1,150.80 |
| Payments Received | May 17, 2019 | Thank you | \$ (566.58) |
| Current Charges | | \$ | 454.13 |

| | |
|-------------------------|--------------------|
| Total Amount Due | \$ 1,038.35 |
|-------------------------|--------------------|

SUMMARY OF CURRENT CHARGES

| | Delivery Service | Supply Service | TOTAL |
|-----------------------|------------------|----------------|-----------|
| Electric Service | \$ 128.66 | \$ 265.02 | \$ 393.68 |
| State and Local Taxes | \$ 41.96 | \$ 18.49 | \$ 60.45 |

| | | | |
|------------------------------|------------------|------------------|------------------|
| Total Current Charges | \$ 170.62 | \$ 283.51 | \$ 454.13 |
|------------------------------|------------------|------------------|------------------|

BUDGET BILLING INFORMATION

BUDGET BILLING -- PAY THE SAME AMOUNT EACH MONTH

If you were to go on budget billing next month, your approximate monthly budget billing amount would be \$452.00. Your account must be current and in good standing to qualify for budget billing.

IMPORTANT ACCOUNT INFORMATION

Water-Booster

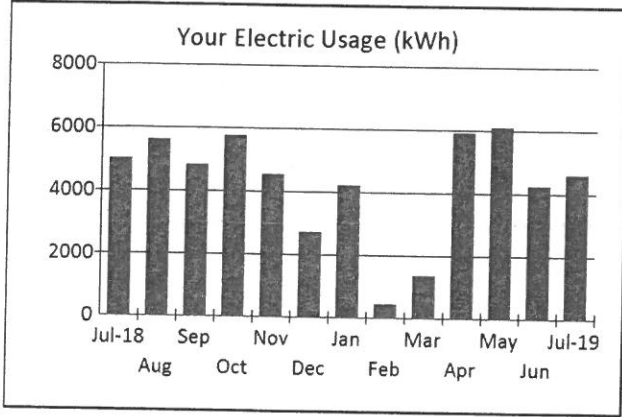
MESSAGE BOARD

For questions about your bill or service, call NorthWestern Energy at 888-467-2669 (Monday through Friday, 7 a.m.-6 p.m). For information or to make a payment, visit us at: www.northwesternenergy.com.

Customer Service: 1-888-467-2669

CUSTOMER: CITY OF RED LODGE
ACCOUNT NUMBER: 0308082-7
ACCOUNT DESCRIPTION:
BILLING DATE: July 12, 2019

Service Address: 631 LAZY M ST, RED LODGE MT 59068



| | Jul 2018 | Jun 2019 | Jul 2019 |
|----------------------|----------|----------|----------|
| Days of Service | 30 | 30 | 33 |
| kWh Used | 5017.00 | 4239.00 | 4592.00 |
| Avg. kWh per day | 167.2 | 141.3 | 139.2 |
| Avg. cost per day | \$16.59 | \$15.14 | \$13.68 |
| Avg. daily temp (°F) | 65 | 58 | 66 |

| DUE DATE | TOTAL AMOUNT DUE |
|---------------|------------------|
| July 29, 2019 | \$ 905.49 |

ACCOUNT SUMMARY

| | | | |
|-------------------|---------------|-----------|-------------|
| Previous Balance | | \$ | 1,038.35 |
| Payments Received | June 14, 2019 | Thank you | \$ (584.22) |
| Current Charges | | \$ | 451.36 |

| | | | |
|-------------------------|--|----|---------------|
| Total Amount Due | | \$ | 905.49 |
|-------------------------|--|----|---------------|

SUMMARY OF CURRENT CHARGES

| | Delivery Service | Supply Service | TOTAL |
|-----------------------|------------------|----------------|-----------|
| Electric Service | \$ 110.25 | \$ 287.09 | \$ 397.34 |
| State and Local Taxes | \$ 33.99 | \$ 20.03 | \$ 54.02 |

| | | | |
|------------------------------|-----------|-----------|-----------|
| Total Current Charges | \$ 144.24 | \$ 307.12 | \$ 451.36 |
|------------------------------|-----------|-----------|-----------|

BUDGET BILLING INFORMATION

BUDGET BILLING -- PAY THE SAME AMOUNT EACH MONTH

If you were to go on budget billing next month, your approximate monthly budget billing amount would be \$443.00. Your account must be current and in good standing to qualify for budget billing.

IMPORTANT ACCOUNT INFORMATION

Water-Booster

MESSAGE BOARD

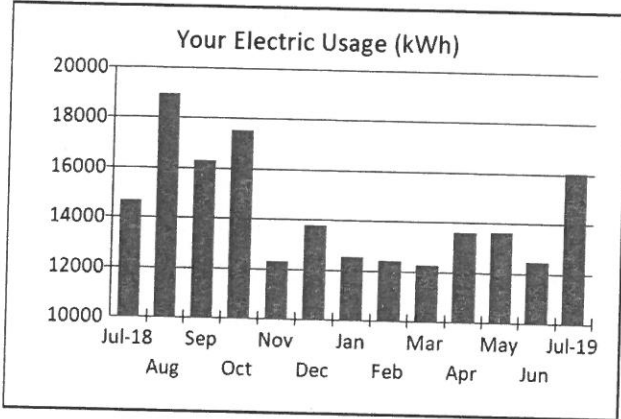
For questions about your bill or service, call NorthWestern Energy at 1-888-467-2669 (Monday through Friday, 7 a.m.-6 p.m). For information or to make a payment, visit us at: www.northwesternenergy.com

Customer Service: 1-888-467-2669

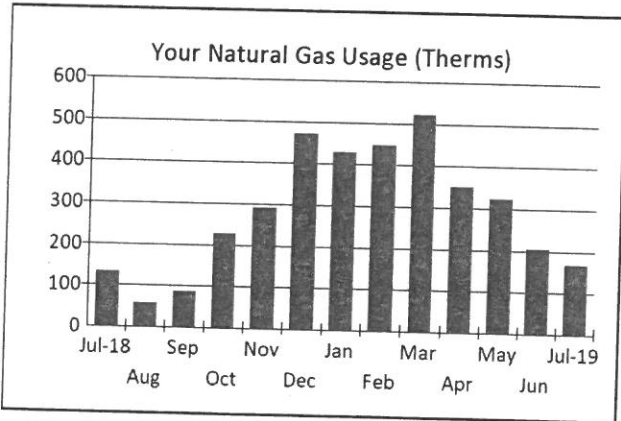
CUSTOMER: CITY OF RED LODGE
ACCOUNT NUMBER: 0713565-0
ACCOUNT DESCRIPTION:
BILLING DATE: July 15, 2019

GB

Service Address: 723 WATER WORKS RD PLNT, RED LODGE MT 59068



| | Jul 2018 | Jun 2019 | Jul 2019 |
|----------------------|----------|----------|----------|
| Days of Service | 28 | 29 | 33 |
| kWh Used | 14640.00 | 12440.00 | 16040.00 |
| Avg. kWh per day | 522.9 | 429.0 | 486.1 |
| Avg. cost per day | \$53.25 | \$46.22 | \$48.86 |
| Avg. daily temp (°F) | 65 | 59 | 66 |



| | Jul 2018 | Jun 2019 | Jul 2019 |
|----------------------|----------|----------|----------|
| Days of Service | 28 | 29 | 33 |
| Therms Used | 132.00 | 204.00 | 166.00 |
| Avg. Therms per day | 4.7 | 7.0 | 5.0 |
| Avg. cost per day | \$3.80 | \$5.45 | \$3.84 |
| Avg. daily temp (°F) | 65 | 59 | 66 |

Water

| DUE DATE | TOTAL AMOUNT DUE |
|----------------|------------------|
| August 7, 2019 | \$ 1,738.99 |

ACCOUNT SUMMARY

| | | |
|-------------------|---------------|-------------------------|
| Previous Balance | | \$ 1,498.44 |
| Payments Received | July 12, 2019 | Thank you \$ (1,498.44) |
| Current Charges | | \$ 1,738.99 |

Total Amount Due \$ 1,738.99

SUMMARY OF CURRENT CHARGES

| | Delivery Service | Supply Service | TOTAL |
|-----------------------|------------------|----------------|-------------|
| Electric Service | \$ 405.18 | \$ 1,002.81 | \$ 1,407.99 |
| Natural Gas Service | \$ 70.03 | \$ 38.19 | \$ 108.22 |
| State and Local Taxes | \$ 151.96 | \$ 70.82 | \$ 222.78 |

Total Current Charges \$ 627.17 \$ 1,111.82 \$ 1,738.99

BUDGET BILLING INFORMATION

IMPORTANT ACCOUNT INFORMATION

MESSAGE BOARD

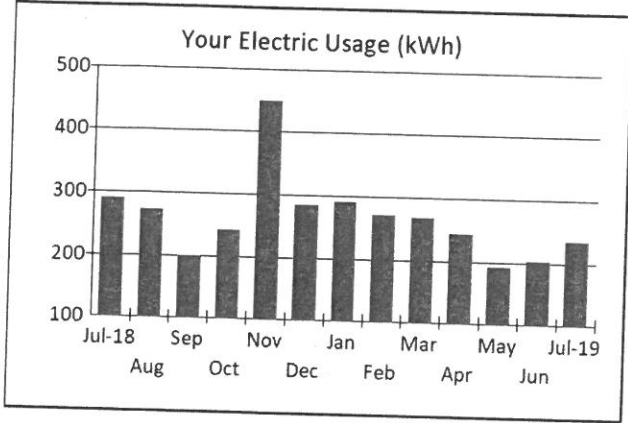
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Customer Service: 1-888-467-2669

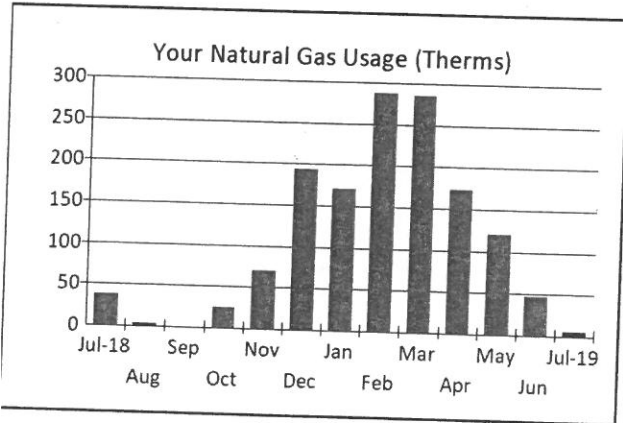
CUSTOMER: CITY OF RED LODGE
ACCOUNT NUMBER: 0713564-3
ACCOUNT DESCRIPTION:
BILLING DATE: July 15, 2019

GB

Service Address: 701 WATER WORKS RD, RED LODGE MT 59068



| | Jul 2018 | Jun 2019 | Jul 2019 |
|----------------------|----------|----------|----------|
| Days of Service | 29 | 32 | 30 |
| kWh Used | 289.00 | 202.00 | 234.00 |
| Avg. kWh per day | 10.0 | 6.3 | 7.8 |
| Avg. cost per day | \$1.41 | \$0.99 | \$1.19 |
| Avg. daily temp (°F) | 65 | 58 | 67 |



| | Jul 2018 | Jun 2019 | Jul 2019 |
|----------------------|----------|----------|----------|
| Days of Service | 28 | 32 | 30 |
| Therms Used | 38.00 | 47.00 | 5.00 |
| Avg. Therms per day | 1.4 | 1.5 | .2 |
| Avg. cost per day | \$1.46 | \$1.49 | \$0.65 |
| Avg. daily temp (°F) | 65 | 58 | 67 |

| DUE DATE | TOTAL AMOUNT DUE |
|----------------|------------------|
| August 7, 2019 | \$ 74.35 |

ACCOUNT SUMMARY

| | | | |
|-------------------|---------------|-----------|-----------|
| Previous Balance | | \$ | 98.35 |
| Payments Received | July 12, 2019 | Thank you | \$(98.35) |
| Current Charges | | \$ | 74.35 |

Total Amount Due \$ 74.35

SUMMARY OF CURRENT CHARGES

| | Delivery Service | Supply Service | TOTAL |
|------------------------------|------------------|-----------------|-----------------|
| Electric Service | \$ 15.82 | \$ 14.63 | \$ 30.45 |
| Unmetered Service | \$ 9.86 | \$ 5.13 | \$ 14.99 |
| Natural Gas Service | \$ 17.81 | \$ 1.15 | \$ 18.96 |
| State and Local Taxes | \$ 8.54 | \$ 1.41 | \$ 9.95 |
| Total Current Charges | \$ 52.03 | \$ 22.32 | \$ 74.35 |

BUDGET BILLING INFORMATION

IMPORTANT ACCOUNT INFORMATION

MESSAGE BOARD

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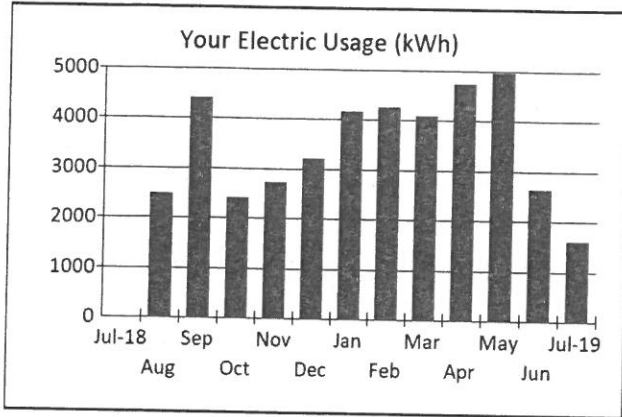
Water

Customer Service: 1-888-467-2669

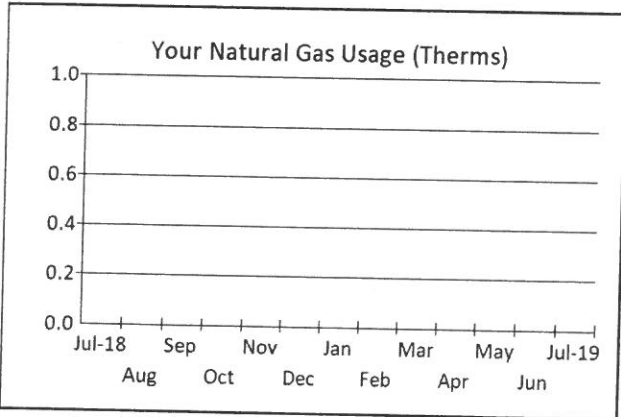
CUSTOMER: CITY OF RED LODGE
ACCOUNT NUMBER: 0713535-3
ACCOUNT DESCRIPTION:
BILLING DATE: July 17, 2019

GB

Service Address: 713 S GRANT AVE PMP, RED LODGE MT 59068



| | Jul 2018 | Jun 2019 | Jul 2019 |
|----------------------|----------|----------|----------|
| Days of Service | | 32 | 30 |
| kWh Used | | 2640.00 | 1600.00 |
| Avg. kWh per day | 0.0 | 82.5 | 53.3 |
| Avg. cost per day | \$ | \$22.43 | \$21.26 |
| Avg. daily temp (°F) | | 58 | 67 |



| | Jul 2018 | Jun 2019 | Jul 2019 |
|----------------------|----------|----------|----------|
| Days of Service | 30 | 32 | 30 |
| Therms Used | | | |
| Avg. Therms per day | | | |
| Avg. cost per day | \$0.55 | \$0.51 | \$0.55 |
| Avg. daily temp (°F) | 65 | 58 | 67 |

Water-Grant

| DUE DATE | TOTAL AMOUNT DUE |
|----------------|------------------|
| August 7, 2019 | \$ 654.04 |

ACCOUNT SUMMARY

| | | | |
|-------------------|---------------|-----------|------------|
| Previous Balance | | \$ | 734.18 |
| Payments Received | July 12, 2019 | Thank you | \$(734.18) |
| Current Charges | | \$ | 654.04 |

Total Amount Due \$ 654.04

SUMMARY OF CURRENT CHARGES

| | Delivery Service | Supply Service | TOTAL |
|-----------------------|------------------|----------------|-----------|
| Electric Service | \$ 382.90 | \$ 100.03 | \$ 482.93 |
| Natural Gas Service | \$ 16.35 | \$ 0.00 | \$ 16.35 |
| State and Local Taxes | \$ 147.78 | \$ 6.98 | \$ 154.76 |

Total Current Charges \$ 547.03 \$ 107.01 \$ 654.04

BUDGET BILLING INFORMATION

IMPORTANT ACCOUNT INFORMATION

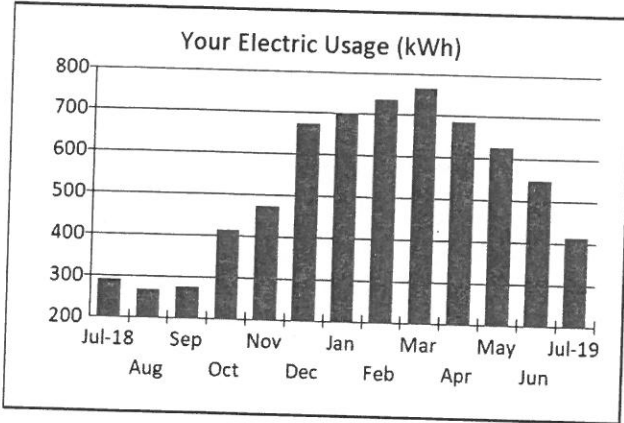
MESSAGE BOARD

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Customer Service: 1-888-467-2669

CUSTOMER: CITY OF RED LODGE
ACCOUNT NUMBER: 0713534-6 GB
ACCOUNT DESCRIPTION:
BILLING DATE: July 15, 2019

Service Address: 1219 S WHITE AVE, RED LODGE MT 59068



| | Jul 2018 | Jun 2019 | Jul 2019 |
|----------------------|----------|----------|----------|
| Days of Service | 29 | 32 | 30 |
| kWh Used | 290.00 | 548.00 | 414.00 |
| Avg. kWh per day | 10.0 | 17.1 | 13.8 |
| Avg. cost per day | \$1.42 | \$2.36 | \$1.95 |
| Avg. daily temp (°F) | 65 | 58 | 67 |

| DUE DATE | TOTAL AMOUNT DUE |
|----------------|------------------|
| August 7, 2019 | \$ 58.58 |

ACCOUNT SUMMARY

| | | | | |
|-------------------|---------------|-----------|----|---------|
| Previous Balance | | | \$ | 75.54 |
| Payments Received | July 12, 2019 | Thank you | \$ | (75.54) |
| Current Charges | | | \$ | 58.58 |

Total Amount Due \$ 58.58

SUMMARY OF CURRENT CHARGES

| | Delivery Service | Supply Service | TOTAL |
|-----------------------|------------------|----------------|----------|
| Electric Service | \$ 23.29 | \$ 25.89 | \$ 49.18 |
| State and Local Taxes | \$ 7.59 | \$ 1.81 | \$ 9.40 |

Total Current Charges \$ 30.88 \$ 27.70 \$ 58.58

BUDGET BILLING INFORMATION

IMPORTANT ACCOUNT INFORMATION

Water - PRV

MESSAGE BOARD

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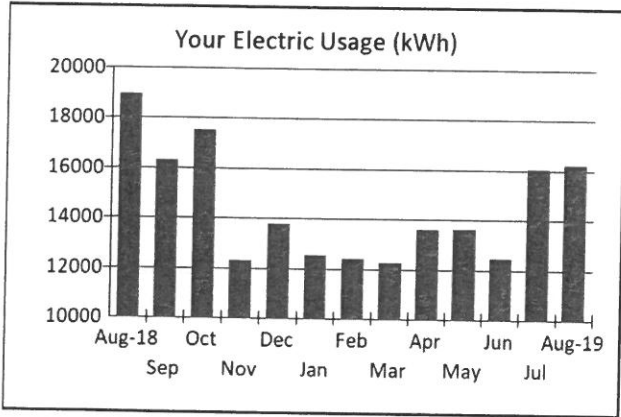


Customer Service: 1-888-467-2669

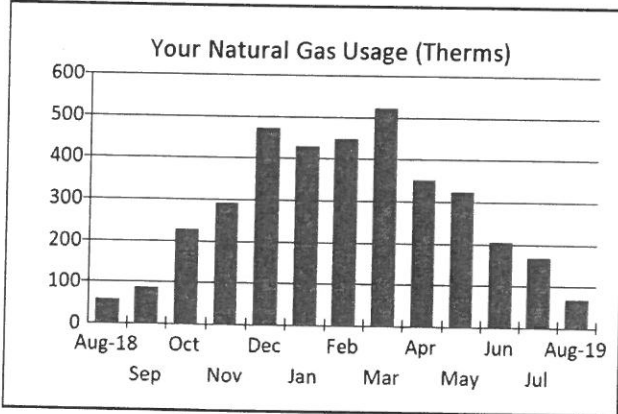
CUSTOMER: CITY OF RED LODGE
 ACCOUNT NUMBER: 0713565-0
 ACCOUNT DESCRIPTION:
 BILLING DATE: August 14, 2019

GB

Service Address: 723 WATER WORKS RD PLNT, RED LODGE MT 59068



| | Aug 2018 | Jul 2019 | Aug 2019 |
|----------------------|----------|----------|----------|
| Days of Service | 33 | 33 | 30 |
| kWh Used | 18900.00 | 16040.00 | 16200.00 |
| Avg. kWh per day | 572.7 | 486.1 | 540.0 |
| Avg. cost per day | \$54.39 | \$48.86 | \$54.85 |
| Avg. daily temp (°F) | 74 | 66 | 78 |



| | Aug 2018 | Jul 2019 | Aug 2019 |
|----------------------|----------|----------|----------|
| Days of Service | 33 | 33 | 30 |
| Therms Used | 57.00 | 166.00 | 68.00 |
| Avg. Therms per day | 1.7 | 5.0 | 2.3 |
| Avg. cost per day | \$1.77 | \$3.84 | \$2.15 |
| Avg. daily temp (°F) | 74 | 66 | 78 |

| DUE DATE | TOTAL AMOUNT DUE |
|-------------------|------------------|
| September 5, 2019 | \$ 1,709.94 |

ACCOUNT SUMMARY

| | | |
|-------------------|-----------------|-------------------------|
| Previous Balance | | \$ 1,738.99 |
| Payments Received | August 16, 2019 | Thank you \$ (1,738.99) |
| Current Charges | | \$ 1,709.94 |

Total Amount Due \$ 1,709.94

SUMMARY OF CURRENT CHARGES

| | Delivery Service | Supply Service | TOTAL |
|-----------------------|------------------|----------------|-------------|
| Electric Service | \$ 421.86 | \$ 1,012.80 | \$ 1,434.66 |
| Natural Gas Service | \$ 41.38 | \$ 15.48 | \$ 56.86 |
| State and Local Taxes | \$ 147.41 | \$ 71.01 | \$ 218.42 |

Total Current Charges \$ 610.65 \$ 1,099.29 \$ 1,709.94

BUDGET BILLING INFORMATION

IMPORTANT ACCOUNT INFORMATION

Currently, a balance remains on your account. If payment has been sent, please disregard this reminder.

water

MESSAGE BOARD

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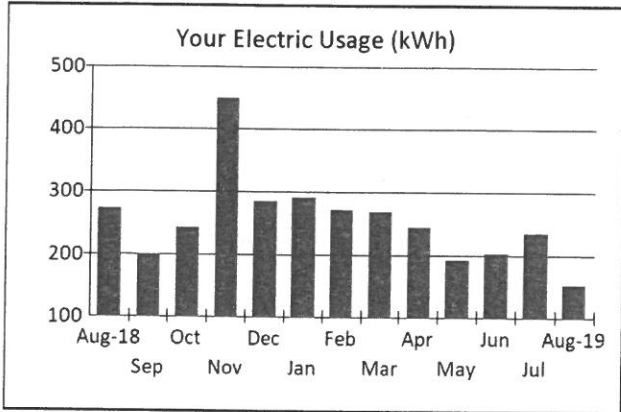
Delivering a Bright Future

Customer Service: 1-888-467-2669

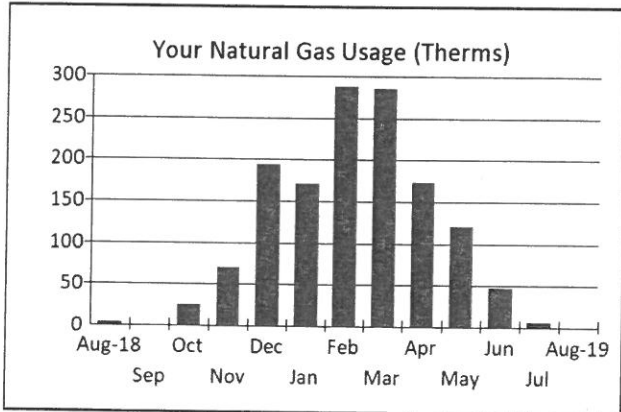
CUSTOMER: CITY OF RED LODGE
ACCOUNT NUMBER: 0713564-3
ACCOUNT DESCRIPTION:
BILLING DATE: August 14, 2019

GB

Service Address: 701 WATER WORKS RD, RED LODGE MT 59068



| | Aug 2018 | Jul 2019 | Aug 2019 |
|----------------------|----------|----------|----------|
| Days of Service | 32 | 30 | 30 |
| kWh Used | 272.00 | 234.00 | 152.00 |
| Avg. kWh per day | 8.5 | 7.8 | 5.1 |
| Avg. cost per day | \$1.20 | \$1.19 | \$0.85 |
| Avg. daily temp (°F) | 74 | 67 | 78 |



| | Aug 2018 | Jul 2019 | Aug 2019 |
|----------------------|----------|----------|----------|
| Days of Service | 33 | 30 | 30 |
| Therms Used | 3.00 | 5.00 | |
| Avg. Therms per day | .1 | .2 | |
| Avg. cost per day | \$0.55 | \$0.65 | \$0.55 |
| Avg. daily temp (°F) | 74 | 67 | 78 |

| DUE DATE | TOTAL AMOUNT DUE |
|-------------------|------------------|
| September 5, 2019 | \$ 60.79 |

ACCOUNT SUMMARY

| | | | |
|-------------------|-----------------|-----------|-----------|
| Previous Balance | | \$ | 74.35 |
| Payments Received | August 16, 2019 | Thank you | \$(74.35) |
| Current Charges | | \$ | 60.79 |

Total Amount Due \$ 60.79

SUMMARY OF CURRENT CHARGES

| | Delivery Service | Supply Service | TOTAL |
|------------------------------|------------------|-----------------|-----------------|
| Electric Service | \$ 12.42 | \$ 9.50 | \$ 21.92 |
| Unmetered Service | \$ 9.86 | \$ 5.13 | \$ 14.99 |
| Natural Gas Service | \$ 16.35 | \$ 0.00 | \$ 16.35 |
| State and Local Taxes | \$ 6.51 | \$ 1.02 | \$ 7.53 |
| Total Current Charges | \$ 45.14 | \$ 15.65 | \$ 60.79 |

BUDGET BILLING INFORMATION

IMPORTANT ACCOUNT INFORMATION

Currently, a balance remains on your account. If payment has been sent, please disregard this reminder.

Water

MESSAGE BOARD

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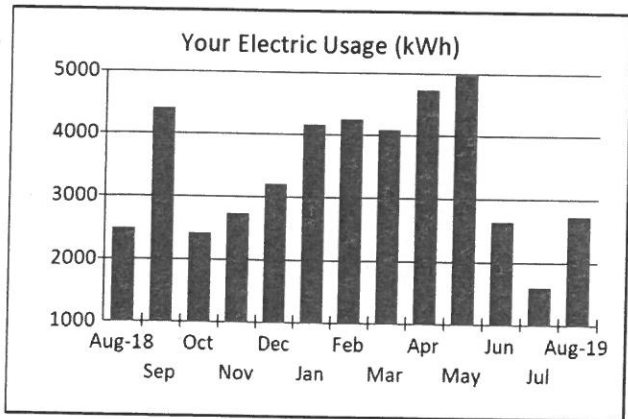


Customer Service: 1-888-467-2669

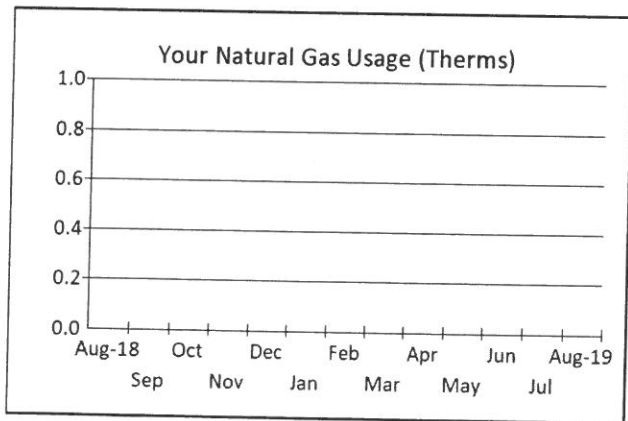
CUSTOMER: CITY OF RED LODGE
ACCOUNT NUMBER: 0713535-3
ACCOUNT DESCRIPTION:
BILLING DATE: August 14, 2019

GB

Service Address: 713 S GRANT AVE PMP, RED LODGE MT 59068



| | Aug 2018 | Jul 2019 | Aug 2019 |
|----------------------|----------|----------|----------|
| Days of Service | 32 | 30 | 29 |
| kWh Used | 2480.00 | 1600.00 | 2720.00 |
| Avg. kWh per day | 77.5 | 53.3 | 93.8 |
| Avg. cost per day | \$20.52 | \$21.26 | \$24.68 |
| Avg. daily temp (°F) | 74 | 67 | 78 |



| | Aug 2018 | Jul 2019 | Aug 2019 |
|----------------------|----------|----------|----------|
| Days of Service | 32 | 30 | 29 |
| Therms Used | | | |
| Avg. Therms per day | | | |
| Avg. cost per day | \$0.51 | \$0.55 | \$0.56 |
| Avg. daily temp (°F) | 74 | 67 | 78 |

| DUE DATE | TOTAL AMOUNT DUE |
|-------------------|------------------|
| September 5, 2019 | \$ 732.10 |

ACCOUNT SUMMARY

| | | | |
|-------------------|-----------------|-----------|------------|
| Previous Balance | | \$ | 654.04 |
| Payments Received | August 16, 2019 | Thank you | \$(654.04) |
| Current Charges | | \$ | 732.10 |

| | | |
|------------------|----|--------|
| Total Amount Due | \$ | 732.10 |
|------------------|----|--------|

SUMMARY OF CURRENT CHARGES

| | Delivery Service | Supply Service | TOTAL |
|-----------------------|------------------|----------------|-----------|
| Electric Service | \$ 386.46 | \$ 170.06 | \$ 556.52 |
| Natural Gas Service | \$ 16.35 | \$ 0.00 | \$ 16.35 |
| State and Local Taxes | \$ 147.37 | \$ 11.86 | \$ 159.23 |

| | | | |
|-----------------------|-----------|-----------|-----------|
| Total Current Charges | \$ 550.18 | \$ 181.92 | \$ 732.10 |
|-----------------------|-----------|-----------|-----------|

BUDGET BILLING INFORMATION

IMPORTANT ACCOUNT INFORMATION

Currently, a balance remains on your account. If payment has been sent, please disregard this reminder.

Water Grant

MESSAGE BOARD

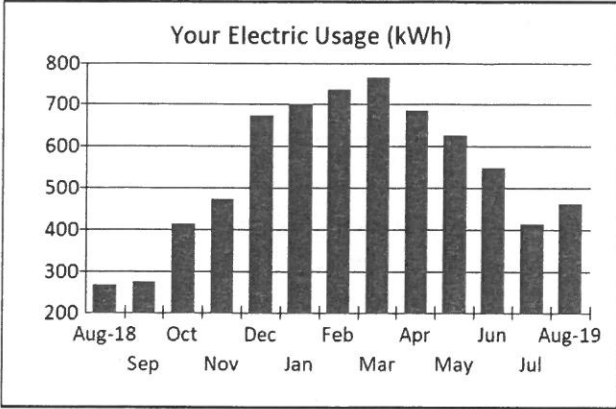
Effective 08/01/2019, gas supply rates have decreased from the previous month as a result of the supply tracker. For questions about your bill or service, call NorthWestern Energy at 1-888-467-2669 (Monday through Friday, 7 a.m.-6 p.m). For information or to make a payment, visit us at: www.northwesternenergy.com



CUSTOMER: CITY OF RED LODGE
ACCOUNT NUMBER: 0713534-6 GB
ACCOUNT DESCRIPTION:
BILLING DATE: August 14, 2019

Customer Service: 1-888-467-2669

Service Address: 1219 S WHITE AVE, RED LODGE MT 59068



| | Aug 2018 | Jul 2019 | Aug 2019 |
|----------------------|----------|----------|----------|
| Days of Service | 32 | 30 | 30 |
| kWh Used | 266.00 | 414.00 | 461.00 |
| Avg. kWh per day | 8.3 | 13.8 | 15.4 |
| Avg. cost per day | \$1.18 | \$1.95 | \$2.15 |
| Avg. daily temp (°F) | 74 | 67 | 78 |

| DUE DATE | TOTAL AMOUNT DUE |
|-------------------|------------------|
| September 5, 2019 | \$ 64.58 |

ACCOUNT SUMMARY

| | | | |
|-------------------|-----------------|-----------|------------|
| Previous Balance | | \$ | 58.58 |
| Payments Received | August 16, 2019 | Thank you | \$ (58.58) |
| Current Charges | | \$ | 64.58 |

Total Amount Due \$ 64.58

SUMMARY OF CURRENT CHARGES

| | Delivery Service | Supply Service | TOTAL |
|------------------------------|------------------|-----------------|-----------------|
| Electric Service | \$ 25.29 | \$ 28.83 | \$ 54.12 |
| State and Local Taxes | \$ 8.45 | \$ 2.01 | \$ 10.46 |
| Total Current Charges | \$ 33.74 | \$ 30.84 | \$ 64.58 |

BUDGET BILLING INFORMATION

IMPORTANT ACCOUNT INFORMATION

Currently, a balance remains on your account. If payment has been sent, please disregard this reminder.

Water-PRV

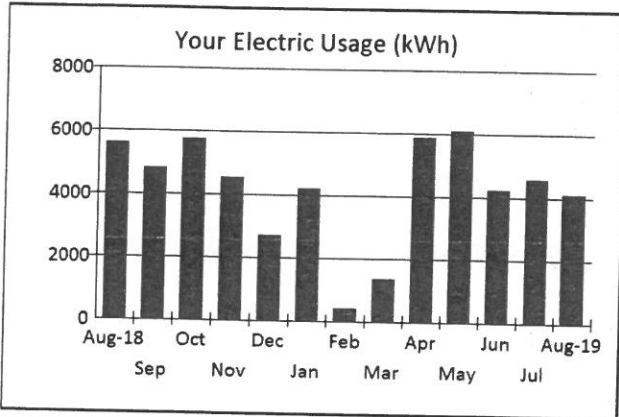
MESSAGE BOARD

For questions about your bill or service, call NorthWestern Energy at 1-888-467-2669 (Monday through Friday, 7 a.m.-6 p.m.). For information or to make a payment, visit us at: www.northwesternenergy.com

Customer Service: 1-888-467-2669

CUSTOMER: CITY OF RED LODGE
ACCOUNT NUMBER: 0308082-7
ACCOUNT DESCRIPTION:
BILLING DATE: August 13, 2019

Service Address: 631 LAZY M ST, RED LODGE MT 59068



| | Aug 2018 | Jul 2019 | Aug 2019 |
|----------------------|----------|----------|----------|
| Days of Service | 33 | 33 | 30 |
| kWh Used | 5610.00 | 4592.00 | 4113.00 |
| Avg. kWh per day | 170.0 | 139.2 | 137.1 |
| Avg. cost per day | \$16.32 | \$13.68 | \$13.93 |
| Avg. daily temp (°F) | 74 | 66 | 77 |

| DUE DATE | TOTAL AMOUNT DUE |
|-----------------|------------------|
| August 29, 2019 | \$ 869.16 |

ACCOUNT SUMMARY

| | | | |
|-------------------|---------------|-----------|-------------|
| Previous Balance | | \$ | 905.49 |
| Payments Received | July 12, 2019 | Thank you | \$ (454.13) |
| Current Charges | | \$ | 417.80 |

| | | | |
|-------------------------|--|----|---------------|
| Total Amount Due | | \$ | 869.16 |
|-------------------------|--|----|---------------|

SUMMARY OF CURRENT CHARGES

| | Delivery Service | Supply Service | TOTAL |
|------------------------------|------------------|------------------|------------------|
| Electric Service | \$ 108.75 | \$ 257.14 | \$ 365.89 |
| State and Local Taxes | \$ 33.97 | \$ 17.94 | \$ 51.91 |
| Total Current Charges | \$ 142.72 | \$ 275.08 | \$ 417.80 |

BUDGET BILLING INFORMATION

BUDGET BILLING -- PAY THE SAME AMOUNT EACH MONTH

If you were to go on budget billing next month, your approximate monthly budget billing amount would be \$439.00. Your account must be current and in good standing to qualify for budget billing.

IMPORTANT ACCOUNT INFORMATION

Water-Booster stall.

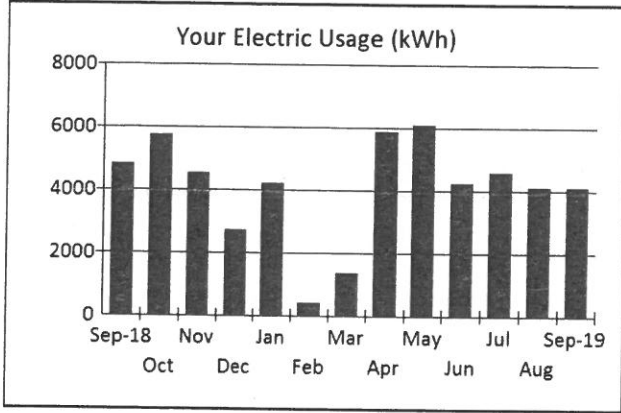
MESSAGE BOARD

For questions about your bill or service, call NorthWestern Energy at 1-888-467-2669 (Monday through Friday, 7 a.m.-6 p.m). For information or to make a payment, visit us at: www.northwesternenergy.com

Customer Service: 1-888-467-2669

CUSTOMER: CITY OF RED LODGE
ACCOUNT NUMBER: 0308082-7
ACCOUNT DESCRIPTION:
BILLING DATE: September 12, 2019

Service Address: 631 LAZY M ST. RED LODGE MT 59068



| | Sep 2018 | Aug 2019 | Sep 2019 |
|----------------------|----------|----------|----------|
| Days of Service | 28 | 30 | 32 |
| kWh Used | 4819.00 | 4113.00 | 4113.00 |
| Avg. kWh per day | 172.1 | 137.1 | 128.5 |
| Avg. cost per day | \$17.33 | \$13.93 | \$12.98 |
| Avg. daily temp (°F) | 68 | 77 | 72 |

| DUE DATE | TOTAL AMOUNT DUE |
|--------------------|------------------|
| September 30, 2019 | \$ 833.01 |

ACCOUNT SUMMARY

| | | |
|-------------------|---------------------------|-------------|
| Previous Balance | | \$ 869.16 |
| Payments Received | August 16, 2019 Thank you | \$ (451.36) |
| Current Charges | | \$ 415.21 |

Total Amount Due \$ **833.01**

SUMMARY OF CURRENT CHARGES

| | Delivery Service | Supply Service | TOTAL |
|-----------------------|------------------|----------------|-----------|
| Electric Service | \$ 106.90 | \$ 257.14 | \$ 364.04 |
| State and Local Taxes | \$ 33.23 | \$ 17.94 | \$ 51.17 |

Total Current Charges \$ **140.13** \$ **275.08** \$ **415.21**

BUDGET BILLING INFORMATION

BUDGET BILLING -- PAY THE SAME AMOUNT EACH MONTH

If you were to go on budget billing next month, your approximate monthly budget billing amount would be \$427.00. Your account must be current and in good standing to qualify for budget billing.

IMPORTANT ACCOUNT INFORMATION

Water-Booster

MESSAGE BOARD

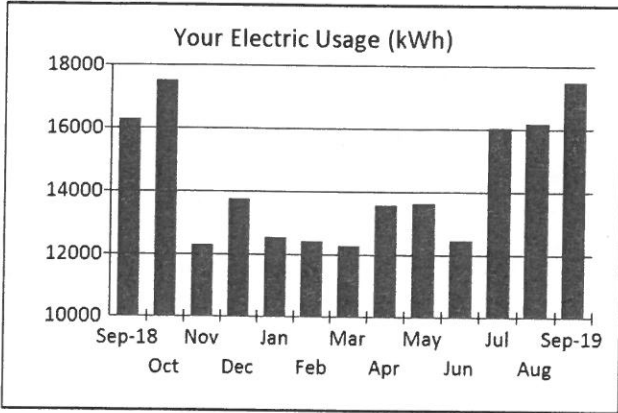
For questions about your bill or service, call NorthWestern Energy at 1-888-467-2669 (Monday through Friday, 7 a.m.-6 p.m). For information or to make a payment, visit us at: www.northwesternenergy.com

Customer Service: 1-888-467-2669

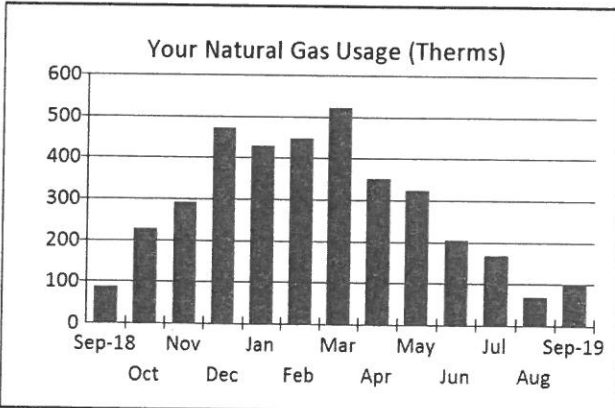
CUSTOMER: CITY OF RED LODGE
ACCOUNT NUMBER: 0713565-0
ACCOUNT DESCRIPTION:
BILLING DATE: September 13, 2019

GB

Service Address: 723 WATER WORKS RD PLNT, RED LODGE MT 59068



| | Sep 2018 | Aug 2019 | Sep 2019 |
|----------------------|----------|----------|----------|
| Days of Service | 30 | 30 | 32 |
| kWh Used | 16280.00 | 16200.00 | 17480.00 |
| Avg. kWh per day | 542.7 | 540.0 | 546.3 |
| Avg. cost per day | \$53.64 | \$54.85 | \$54.18 |
| Avg. daily temp (°F) | 68 | 78 | 71 |



| | Sep 2018 | Aug 2019 | Sep 2019 |
|----------------------|----------|----------|----------|
| Days of Service | 30 | 30 | 32 |
| Therms Used | 87.00 | 68.00 | 101.00 |
| Avg. Therms per day | 2.9 | 2.3 | 3.2 |
| Avg. cost per day | \$2.60 | \$2.15 | \$2.65 |
| Avg. daily temp (°F) | 68 | 78 | 71 |

| DUE DATE | TOTAL AMOUNT DUE |
|-----------------|------------------|
| October 9, 2019 | \$ 1,818.35 |

ACCOUNT SUMMARY

| | | |
|-------------------|------------------------------|---------------|
| Previous Balance | | \$ 1,709.94 |
| Payments Received | September 13, 2019 Thank you | \$ (1,709.94) |
| Current Charges | | \$ 1,818.35 |

Total Amount Due \$ 1,818.35

SUMMARY OF CURRENT CHARGES

| | Delivery Service | Supply Service | TOTAL |
|-----------------------|------------------|----------------|-------------|
| Electric Service | \$ 425.12 | \$ 1,092.83 | \$ 1,517.95 |
| Natural Gas Service | \$ 50.98 | \$ 22.47 | \$ 73.45 |
| State and Local Taxes | \$ 150.18 | \$ 76.77 | \$ 226.95 |

Total Current Charges \$ 626.28 \$ 1,192.07 \$ 1,818.35

BUDGET BILLING INFORMATION

IMPORTANT ACCOUNT INFORMATION

Currently, a balance remains on your account. If payment has been sent, please disregard this reminder.

Water-Plant

MESSAGE BOARD

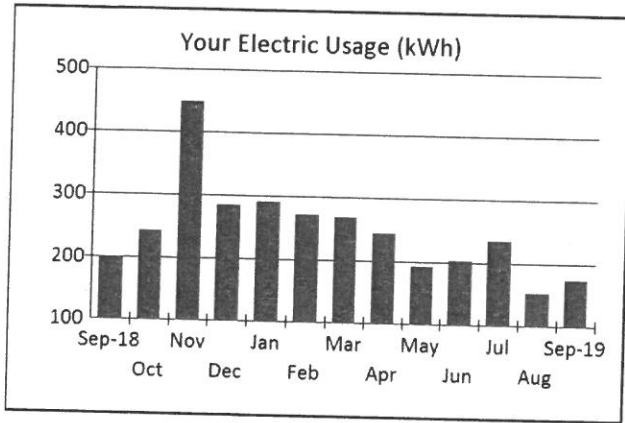
Effective 09/01/2019, gas supply rates have decreased from the previous month as a result of the supply tracker. For questions about your bill or service, call NorthWestern Energy at 1-888-467-2669 (Monday through Friday, 7 a.m.-6 p.m). For information or to make a payment, visit us at: www.northwesternenergy.com

Customer Service: 1-888-467-2669

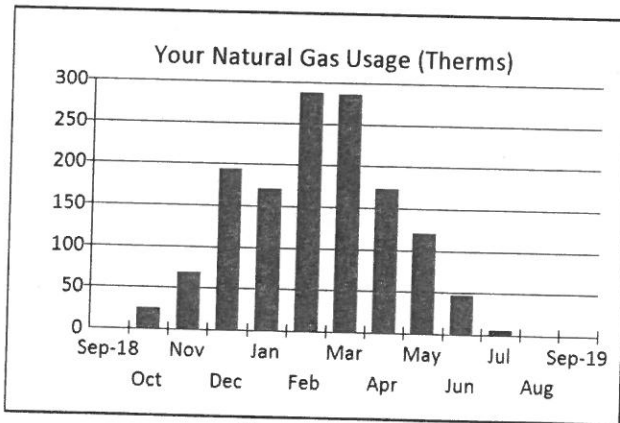
CUSTOMER: CITY OF RED LODGE
ACCOUNT NUMBER: 0713564-3
ACCOUNT DESCRIPTION:
BILLING DATE: September 13, 2019

GB

Service Address: 701 WATER WORKS RD, RED LODGE MT 59068



| | Sep 2018 | Aug 2019 | Sep 2019 |
|----------------------|----------|----------|----------|
| Days of Service | 30 | 30 | 32 |
| kWh Used | 200.00 | 152.00 | 174.00 |
| Avg. kWh per day | 6.7 | 5.1 | 5.4 |
| Avg. cost per day | \$1.00 | \$0.85 | \$0.88 |
| Avg. daily temp (°F) | 68 | 78 | 71 |



| | Sep 2018 | Aug 2019 | Sep 2019 |
|----------------------|----------|----------|----------|
| Days of Service | 30 | 30 | 32 |
| Therms Used | | | |
| Avg. Therms per day | | | |
| Avg. cost per day | \$0.55 | \$0.55 | \$0.51 |
| Avg. daily temp (°F) | 68 | 78 | 71 |

| DUE DATE | TOTAL AMOUNT DUE |
|-----------------|------------------|
| October 9, 2019 | \$ 63.60 |

ACCOUNT SUMMARY

| | | |
|-------------------|------------------------------|------------|
| Previous Balance | | \$ 60.79 |
| Payments Received | September 13, 2019 Thank you | \$ (60.79) |
| Current Charges | | \$ 63.60 |

Total Amount Due \$ 63.60

SUMMARY OF CURRENT CHARGES

| | Delivery Service | Supply Service | TOTAL |
|------------------------------|------------------|-----------------|-----------------|
| Electric Service | \$ 13.35 | \$ 10.88 | \$ 24.23 |
| Unmetered Service | \$ 9.86 | \$ 5.13 | \$ 14.99 |
| Natural Gas Service | \$ 16.35 | \$ 0.00 | \$ 16.35 |
| State and Local Taxes | \$ 6.91 | \$ 1.12 | \$ 8.03 |
| Total Current Charges | \$ 46.47 | \$ 17.13 | \$ 63.60 |

BUDGET BILLING INFORMATION

IMPORTANT ACCOUNT INFORMATION

Currently, a balance remains on your account. If payment has been sent, please disregard this reminder.

Water -

MESSAGE BOARD

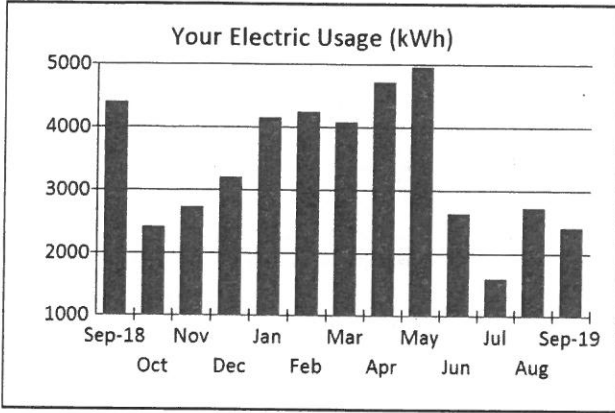
Effective 09/01/2019, gas supply rates have decreased from the previous month as a result of the supply tracker. For questions about your bill or service, call NorthWestern Energy at 1-888-467-2669 (Monday through Friday, 7 a.m.-6 p.m). For information or to make a payment, visit us at: www.northwesternenergy.com

Customer Service: 1-888-467-2669

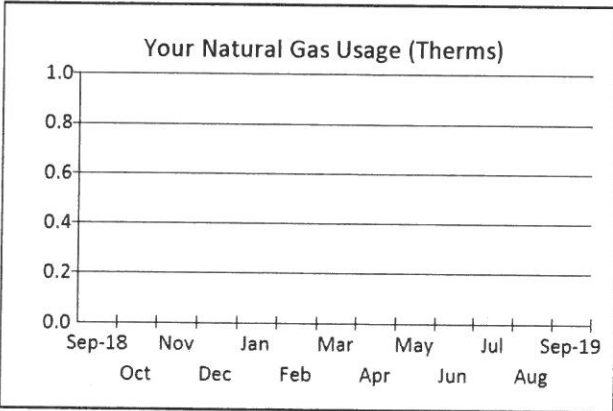
CUSTOMER: CITY OF RED LODGE
ACCOUNT NUMBER: 0713535-3
ACCOUNT DESCRIPTION:
BILLING DATE: September 13, 2019

GB

Service Address: 713 S GRANT AVE PMP, RED LODGE MT 59068



| | Sep 2018 | Aug 2019 | Sep 2019 |
|----------------------|----------|----------|----------|
| Days of Service | 30 | 29 | 33 |
| kWh Used | 4400.00 | 2720.00 | 2400.00 |
| Avg. kWh per day | 146.7 | 93.8 | 72.7 |
| Avg. cost per day | \$27.09 | \$24.68 | \$20.94 |
| Avg. daily temp (°F) | 68 | 78 | 71 |



| | Sep 2018 | Aug 2019 | Sep 2019 |
|----------------------|----------|----------|----------|
| Days of Service | 30 | 29 | 33 |
| Therms Used | | | |
| Avg. Therms per day | | | |
| Avg. cost per day | \$0.55 | \$0.56 | \$0.50 |
| Avg. daily temp (°F) | 68 | 78 | 71 |

| DUE DATE | TOTAL AMOUNT DUE |
|-----------------|------------------|
| October 9, 2019 | \$ 707.39 |

ACCOUNT SUMMARY

| | | | |
|-------------------|------------------------------|----|----------|
| Previous Balance | | \$ | 732.10 |
| Payments Received | September 13, 2019 Thank you | \$ | (732.10) |
| Current Charges | | \$ | 707.39 |

Total Amount Due \$ 707.39

SUMMARY OF CURRENT CHARGES

| | Delivery Service | Supply Service | TOTAL |
|-----------------------|------------------|----------------|-----------|
| Electric Service | \$ 383.73 | \$ 150.05 | \$ 533.78 |
| Natural Gas Service | \$ 16.35 | \$ 0.00 | \$ 16.35 |
| State and Local Taxes | \$ 146.79 | \$ 10.47 | \$ 157.26 |

Total Current Charges \$ 546.87 \$ 160.52 \$ 707.39

BUDGET BILLING INFORMATION

IMPORTANT ACCOUNT INFORMATION

Currently, a balance remains on your account. If payment has been sent, please disregard this reminder.

Water-Grant

MESSAGE BOARD

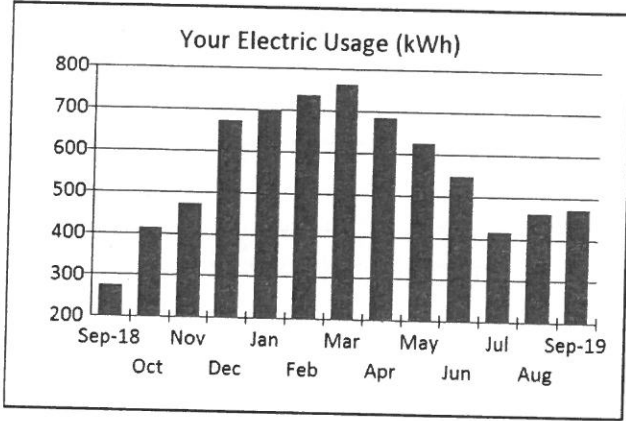
Effective 09/01/2019, gas supply rates have decreased from the previous month as a result of the supply tracker. For questions about your bill or service, call NorthWestern Energy at 1-888-467-2669 (Monday through Friday, 7 a.m.-6 p.m). For information or to make a payment, visit us at: www.northwesternenergy.com

Customer Service: 1-888-467-2669

CUSTOMER: CITY OF RED LODGE
ACCOUNT NUMBER: 0713534-6
ACCOUNT DESCRIPTION:
BILLING DATE: September 13, 2019

GB

Service Address: 1219 S WHITE AVE, RED LODGE MT 59068



| DUE DATE | TOTAL AMOUNT DUE |
|-----------------|------------------|
| October 9, 2019 | \$ 65.98 |

ACCOUNT SUMMARY

| | | | |
|-------------------|------------------------------|----|---------|
| Previous Balance | | \$ | 64.58 |
| Payments Received | September 13, 2019 Thank you | \$ | (64.58) |
| Current Charges | | \$ | 65.98 |

Total Amount Due \$ 65.98

SUMMARY OF CURRENT CHARGES

| | Delivery Service | Supply Service | TOTAL |
|-----------------------|------------------|----------------|----------|
| Electric Service | \$ 25.76 | \$ 29.51 | \$ 55.27 |
| State and Local Taxes | \$ 8.65 | \$ 2.06 | \$ 10.71 |

Total Current Charges \$ 34.41 \$ 31.57 \$ **65.98**

BUDGET BILLING INFORMATION

IMPORTANT ACCOUNT INFORMATION

Currently, a balance remains on your account. If payment has been sent, please disregard this reminder.

Handwritten initials

Water - PRV

MESSAGE BOARD

For questions about your bill or service, call NorthWestern Energy at 1-888-467-2669 (Monday through Friday, 7 a.m.-6 p.m). For information or to make a payment, visit us at: www.northwesternenergy.com



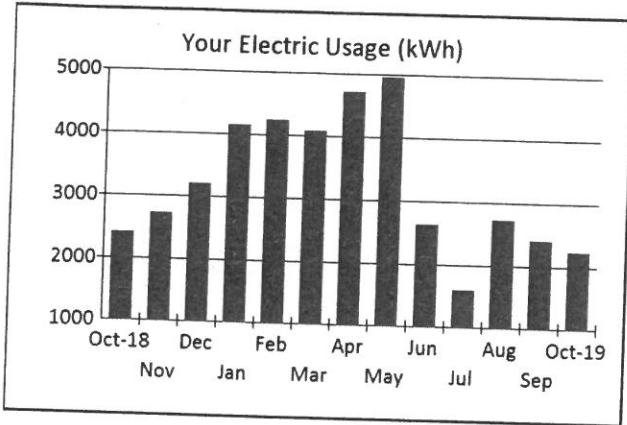
NorthWestern Energy
Delivering a Bright Future

Customer Service: 1-888-467-2669

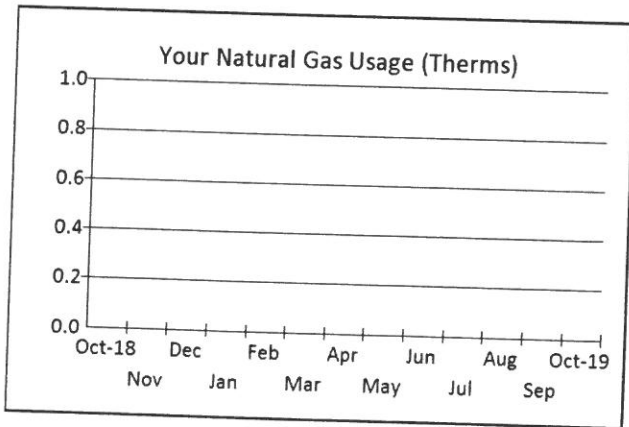
CUSTOMER: CITY OF RED LODGE
ACCOUNT NUMBER: 0713535-3
ACCOUNT DESCRIPTION:
BILLING DATE: October 14, 2019

GB

Service Address: 713 S GRANT AVE PMP, RED LODGE MT 59068



| | Oct 2018 | Sep 2019 | Oct 2019 |
|----------------------|----------|----------|----------|
| Days of Service | 33 | 33 | 28 |
| kWh Used | 2400.00 | 2400.00 | 2240.00 |
| Avg. kWh per day | 72.7 | 72.7 | 80.0 |
| Avg. cost per day | \$20.03 | \$20.94 | \$24.33 |
| Avg. daily temp (°F) | 54 | 71 | 55 |



| | Oct 2018 | Sep 2019 | Oct 2019 |
|----------------------|----------|----------|----------|
| Days of Service | 33 | 33 | 28 |
| Therms Used | | | |
| Avg. Therms per day | | | |
| Avg. cost per day | \$0.50 | \$0.50 | \$0.58 |
| Avg. daily temp (°F) | 54 | 71 | 55 |

| DUE DATE | TOTAL AMOUNT DUE |
|------------------|------------------|
| November 6, 2019 | \$ 697.66 |

ACCOUNT SUMMARY

| | | | |
|-------------------|------------------|-----------|-------------|
| Previous Balance | | \$ | 707.39 |
| Payments Received | October 11, 2019 | Thank you | \$ (707.39) |
| Current Charges | | \$ | 697.66 |

Total Amount Due \$ 697.66

SUMMARY OF CURRENT CHARGES

| | Delivery Service | Supply Service | TOTAL |
|-----------------------|------------------|----------------|-----------|
| Electric Service | \$ 382.36 | \$ 142.69 | \$ 525.05 |
| Natural Gas Service | \$ 16.35 | \$ 0.00 | \$ 16.35 |
| State and Local Taxes | \$ 146.49 | \$ 9.77 | \$ 156.26 |

Total Current Charges \$ 545.20 \$ 152.46 \$ 697.66

BUDGET BILLING INFORMATION

IMPORTANT ACCOUNT INFORMATION

Water-Grant well

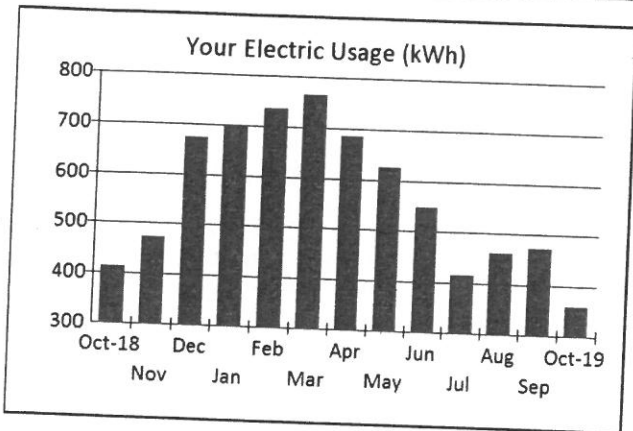
MESSAGE BOARD

Effective 10/01/2019, electric supply rates have increased from the previous month as a result of the supply tracker.
Effective 10/01/2019, gas supply rates have increased from the previous month as a result of the supply tracker.
For questions about your bill or service, call NorthWestern Energy at 1-888-467-2669 (Monday through Friday, 7 a.m.-6 p.m). For information or to make a payment, visit us at: www.northwesternenergy.com

Customer Service: 1-888-467-2669

CUSTOMER: CITY OF RED LODGE
ACCOUNT NUMBER: 0713534-6 GB
ACCOUNT DESCRIPTION:
BILLING DATE: October 14, 2019

Service Address: 1219 S WHITE AVE, RED LODGE MT 59068



| | Oct 2018 | Sep 2019 | Oct 2019 |
|----------------------|----------|----------|----------|
| Days of Service | 33 | 32 | 28 |
| kWh Used | 413.00 | 472.00 | 360.00 |
| Avg. kWh per day | 12.5 | 14.8 | 12.9 |
| Avg. cost per day | \$1.69 | \$2.06 | \$1.86 |
| Avg. daily temp (°F) | 54 | 71 | 55 |

| DUE DATE | TOTAL AMOUNT DUE |
|------------------|------------------|
| November 6, 2019 | \$ 52.19 |

ACCOUNT SUMMARY

| | | | |
|-------------------|------------------|-----------|-----------|
| Previous Balance | | \$ | 65.98 |
| Payments Received | October 11, 2019 | Thank you | \$(65.98) |
| Current Charges | | \$ | 52.19 |

Total Amount Due \$ 52.19

SUMMARY OF CURRENT CHARGES

| | Delivery Service | Supply Service | TOTAL |
|-----------------------|------------------|----------------|----------|
| Electric Service | \$ 21.08 | \$ 22.94 | \$ 44.02 |
| State and Local Taxes | \$ 6.60 | \$ 1.57 | \$ 8.17 |

Total Current Charges \$ 27.68 \$ 24.51 \$ 52.19

BUDGET BILLING INFORMATION

IMPORTANT ACCOUNT INFORMATION

Water - PRV

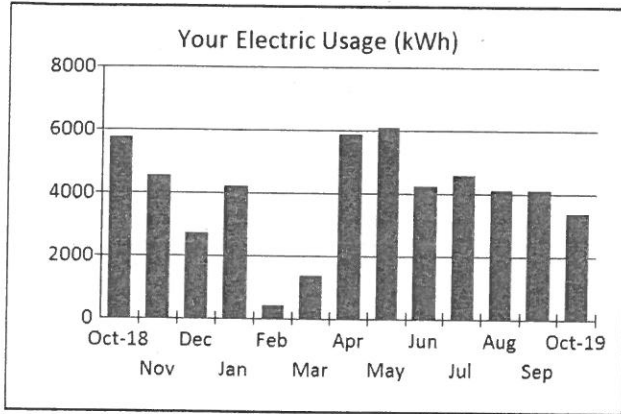
MESSAGE BOARD

Effective 10/01/2019, electric supply rates have increased from the previous month as a result of the supply tracker. For questions about your bill or service, call NorthWestern Energy at 1-888-467-2669 (Monday through Friday, 7 a.m.-6 p.m.). For information or to make a payment, visit us at: www.northwesternenergy.com

Customer Service: 1-888-467-2669

CUSTOMER: CITY OF RED LODGE
ACCOUNT NUMBER: 0308082-7
ACCOUNT DESCRIPTION:
BILLING DATE: October 11, 2019

Service Address: 631 LAZY M ST, RED LODGE MT 59068



| DUE DATE | TOTAL AMOUNT DUE |
|------------------|------------------|
| October 28, 2019 | \$ 788.17 |

ACCOUNT SUMMARY

| | | |
|-------------------|------------------------------|-------------|
| Previous Balance | | \$ 833.01 |
| Payments Received | September 13, 2019 Thank you | \$ (417.80) |
| Current Charges | | \$ 372.96 |

| | Oct 2018 | Sep 2019 | Oct 2019 |
|----------------------|----------|----------|----------|
| Days of Service | 34 | 32 | 29 |
| kWh Used | 5762.00 | 4113.00 | 3388.00 |
| Avg. kWh per day | 169.5 | 128.5 | 116.8 |
| Avg. cost per day | \$16.30 | \$12.98 | \$12.86 |
| Avg. daily temp (°F) | 55 | 72 | 56 |

| | |
|------------------|-----------|
| Total Amount Due | \$ 788.17 |
|------------------|-----------|

SUMMARY OF CURRENT CHARGES

| | Delivery Service | Supply Service | TOTAL |
|------------------------------|------------------|------------------|------------------|
| Electric Service | \$ 107.77 | \$ 215.68 | \$ 323.45 |
| State and Local Taxes | \$ 34.73 | \$ 14.78 | \$ 49.51 |
| Total Current Charges | \$ 142.50 | \$ 230.46 | \$ 372.96 |

BUDGET BILLING INFORMATION

BUDGET BILLING -- PAY THE SAME AMOUNT EACH MONTH

If you were to go on budget billing next month, your approximate monthly budget billing amount would be \$437.00. Your account must be current and in good standing to qualify for budget billing.

IMPORTANT ACCOUNT INFORMATION

Water booster

MESSAGE BOARD

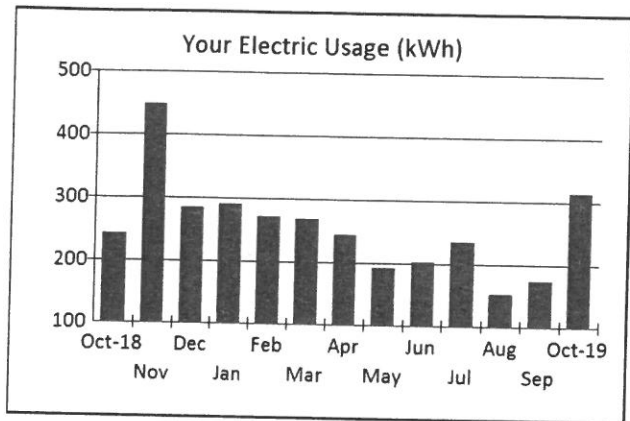
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Customer Service: 1-888-467-2669

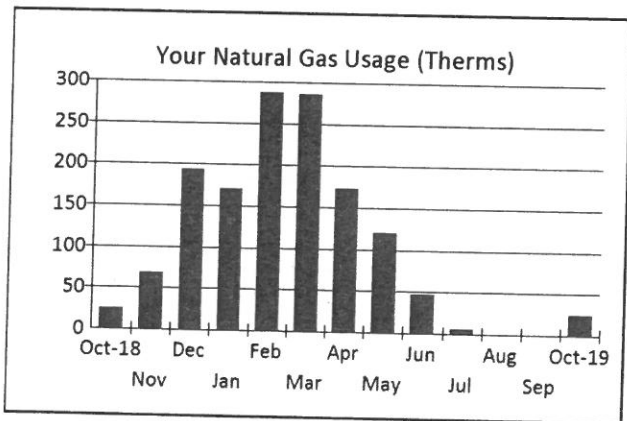
CUSTOMER: CITY OF RED LODGE
ACCOUNT NUMBER: 0713564-3
ACCOUNT DESCRIPTION:
BILLING DATE: October 14, 2019

GB

Service Address: 701 WATER WORKS RD, RED LODGE MT 59068



| | Oct 2018 | Sep 2019 | Oct 2019 |
|----------------------|----------|----------|----------|
| Days of Service | 33 | 32 | 28 |
| kWh Used | 242.00 | 174.00 | 314.00 |
| Avg. kWh per day | 7.3 | 5.4 | 11.2 |
| Avg. cost per day | \$1.06 | \$0.88 | \$1.65 |
| Avg. daily temp (°F) | 54 | 71 | 55 |



| | Oct 2018 | Sep 2019 | Oct 2019 |
|----------------------|----------|----------|----------|
| Days of Service | 33 | 32 | 28 |
| Therms Used | 25.00 | | 25.00 |
| Avg. Therms per day | .8 | | .9 |
| Avg. cost per day | \$0.98 | \$0.51 | \$1.14 |
| Avg. daily temp (°F) | 54 | 71 | 55 |

water

| DUE DATE | TOTAL AMOUNT DUE |
|------------------|------------------|
| November 6, 2019 | \$ 97.41 |

ACCOUNT SUMMARY

| | | | |
|-------------------|------------------|-----------|-----------|
| Previous Balance | | \$ | 63.60 |
| Payments Received | October 11, 2019 | Thank you | \$(63.60) |
| Current Charges | | \$ | 97.41 |

Total Amount Due \$ 97.41

SUMMARY OF CURRENT CHARGES

| | Delivery Service | Supply Service | TOTAL |
|------------------------------|------------------|-----------------|-----------------|
| Electric Service | \$ 19.17 | \$ 20.01 | \$ 39.18 |
| Unmetered Service | \$ 9.86 | \$ 5.26 | \$ 15.12 |
| Natural Gas Service | \$ 23.64 | \$ 5.49 | \$ 29.13 |
| State and Local Taxes | \$ 12.12 | \$ 1.86 | \$ 13.98 |
| Total Current Charges | \$ 64.79 | \$ 32.62 | \$ 97.41 |

BUDGET BILLING INFORMATION

IMPORTANT ACCOUNT INFORMATION

MESSAGE BOARD

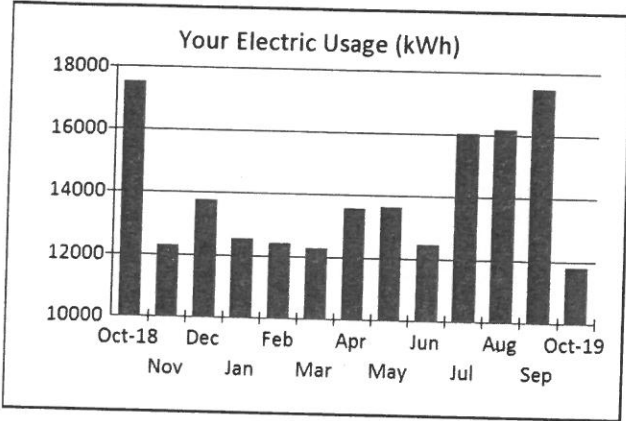
Effective 10/01/2019, electric supply rates have increased from the previous month as a result of the supply tracker.
 Effective 10/01/2019, gas supply rates have increased from the previous month as a result of the supply tracker.
 For questions about your bill or service, call NorthWestern Energy at 1-888-467-2669 (Monday through Friday, 7 a.m.-6 p.m.). For information or to make a payment, visit us at: www.northwesternenergy.com

Customer Service: 1-888-467-2669

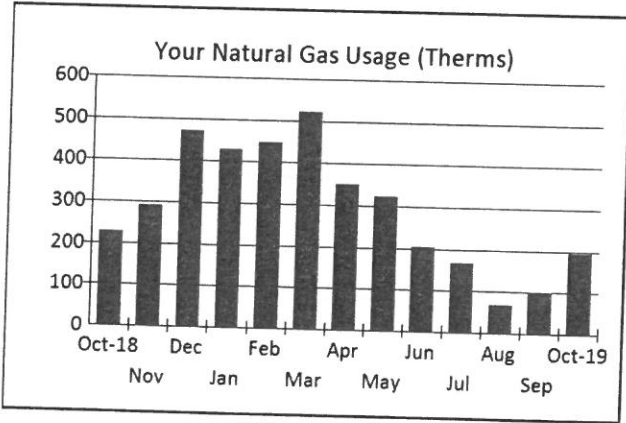
CUSTOMER: CITY OF RED LODGE
ACCOUNT NUMBER: 0713565-0
ACCOUNT DESCRIPTION:
BILLING DATE: October 14, 2019

GB

Service Address: 723 WATER WORKS RD PLNT, RED LODGE MT 59068



| | Oct 2018 | Sep 2019 | Oct 2019 |
|----------------------|----------|----------|----------|
| Days of Service | 33 | 32 | 28 |
| kWh Used | 17520.00 | 17480.00 | 11800.00 |
| Avg. kWh per day | 530.9 | 546.3 | 421.4 |
| Avg. cost per day | \$51.71 | \$54.18 | \$46.74 |
| Avg. daily temp (°F) | 54 | 71 | 55 |



| | Oct 2018 | Sep 2019 | Oct 2019 |
|----------------------|----------|----------|----------|
| Days of Service | 33 | 32 | 28 |
| Therms Used | 227.00 | 101.00 | 195.00 |
| Avg. Therms per day | 6.9 | 3.2 | 7.0 |
| Avg. cost per day | \$5.04 | \$2.65 | \$5.10 |
| Avg. daily temp (°F) | 54 | 71 | 55 |

| DUE DATE | TOTAL AMOUNT DUE |
|------------------|------------------|
| November 6, 2019 | \$ 1,451.63 |

ACCOUNT SUMMARY

| | | | |
|-------------------|------------------|-----------|---------------|
| Previous Balance | | \$ | 1,818.35 |
| Payments Received | October 11, 2019 | Thank you | \$ (1,818.35) |
| Current Charges | | \$ | 1,451.63 |

Total Amount Due \$ 1,451.63

SUMMARY OF CURRENT CHARGES

| | Delivery Service | Supply Service | TOTAL |
|-----------------------|------------------|----------------|-------------|
| Electric Service | \$ 376.63 | \$ 751.64 | \$ 1,128.27 |
| Natural Gas Service | \$ 78.37 | \$ 42.83 | \$ 121.20 |
| State and Local Taxes | \$ 149.69 | \$ 52.47 | \$ 202.16 |

Total Current Charges \$ 604.69 \$ 846.94 \$ 1,451.63

BUDGET BILLING INFORMATION

IMPORTANT ACCOUNT INFORMATION

Water-Plant

MESSAGE BOARD

Effective 10/01/2019, electric supply rates have increased from the previous month as a result of the supply tracker.
 Effective 10/01/2019, gas supply rates have increased from the previous month as a result of the supply tracker.
 For questions about your bill or service, call NorthWestern Energy at 1-888-467-2669 (Monday through Friday, 7 a.m.-6 p.m). For information or to make a payment, visit us at: www.northwesternenergy.com

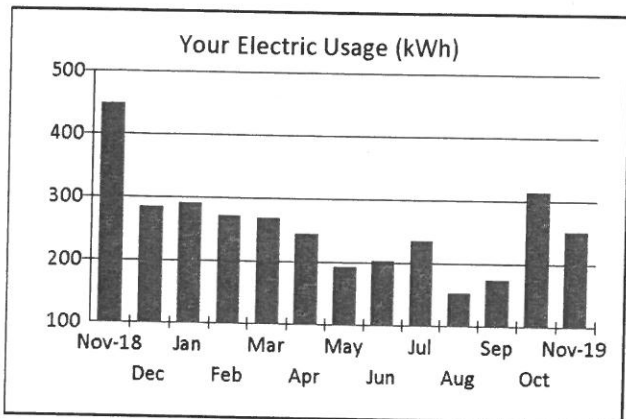


Customer Service: 1-888-467-2669

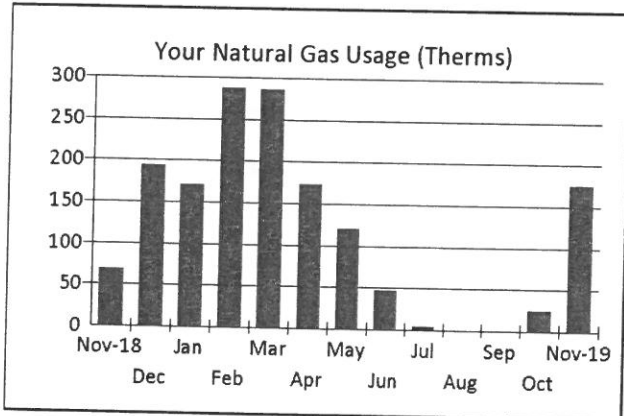
CUSTOMER: CITY OF RED LODGE
ACCOUNT NUMBER: 0713564-3
ACCOUNT DESCRIPTION:
BILLING DATE: November 12, 2019

GB

Service Address: 701 WATER WORKS RD, RED LODGE MT 59068



| | Nov 2018 | Oct 2019 | Nov 2019 |
|----------------------|----------|----------|----------|
| Days of Service | 29 | 28 | 30 |
| kWh Used | 449.00 | 314.00 | 251.00 |
| Avg. kWh per day | 15.5 | 11.2 | 8.4 |
| Avg. cost per day | \$2.07 | \$1.65 | \$1.30 |
| Avg. daily temp (°F) | 42 | 52 | 37 |



| | Nov 2018 | Oct 2019 | Nov 2019 |
|----------------------|----------|----------|----------|
| Days of Service | 29 | 28 | 30 |
| Therms Used | 69.00 | 25.00 | 175.00 |
| Avg. Therms per day | 2.4 | .9 | 5.8 |
| Avg. cost per day | \$2.07 | \$1.14 | \$4.17 |
| Avg. daily temp (°F) | 45 | 55 | 37 |

| DUE DATE | TOTAL AMOUNT DUE |
|-------------------|------------------|
| December 13, 2019 | \$ 183.54 |

ACCOUNT SUMMARY

| | | | |
|-------------------|-----------------------------|----|---------|
| Previous Balance | | \$ | 97.41 |
| Payments Received | November 18, 2019 Thank you | \$ | (97.41) |
| Current Charges | | \$ | 183.54 |

Total Amount Due \$ 183.54

SUMMARY OF CURRENT CHARGES

| | Delivery Service | Supply Service | TOTAL |
|------------------------------|------------------|-----------------|------------------|
| Electric Service | \$ 16.55 | \$ 16.73 | \$ 33.28 |
| Unmetered Service | \$ 9.86 | \$ 5.47 | \$ 15.33 |
| Natural Gas Service | \$ 67.18 | \$ 38.56 | \$ 105.74 |
| State and Local Taxes | \$ 26.84 | \$ 2.35 | \$ 29.19 |
| Total Current Charges | \$ 120.43 | \$ 63.11 | \$ 183.54 |

BUDGET BILLING INFORMATION

IMPORTANT ACCOUNT INFORMATION

Currently, a balance remains on your account. If payment has been sent, please disregard this reminder.

water

MESSAGE BOARD

Effective 11/01/2019, electric supply rates have decreased from the previous month as a result of the supply tracker. Effective 11/01/2019, gas supply rates have decreased from the previous month as a result of the supply tracker. For questions about your bill or service, call NorthWestern Energy at 1-888-467-2669 (Monday through Friday, 7 a.m.-6 p.m). For information or to make a payment, visit us at: www.northwesternenergy.com

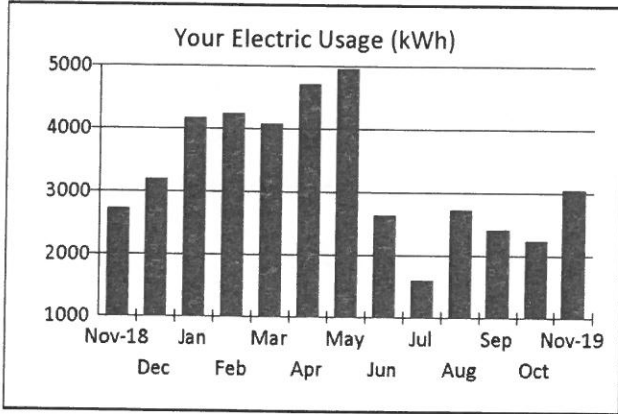


Customer Service: 1-888-467-2669

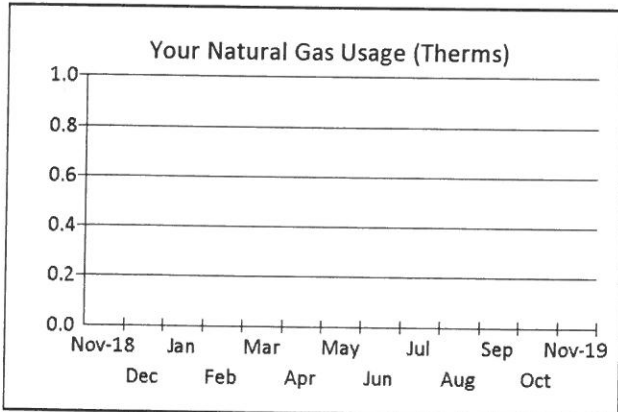
CUSTOMER: CITY OF RED LODGE
ACCOUNT NUMBER: 0713535-3
ACCOUNT DESCRIPTION:
BILLING DATE: November 12, 2019

GB

Service Address: 713 S GRANT AVE PMP, RED LODGE MT 59068



| | Nov 2018 | Oct 2019 | Nov 2019 |
|----------------------|----------|----------|----------|
| Days of Service | 29 | 28 | 29 |
| kWh Used | 2720.00 | 2240.00 | 3040.00 |
| Avg. kWh per day | 93.8 | 80.0 | 104.8 |
| Avg. cost per day | \$23.63 | \$24.33 | \$27.15 |
| Avg. daily temp (°F) | 45 | 55 | 37 |



| | Nov 2018 | Oct 2019 | Nov 2019 |
|----------------------|----------|----------|----------|
| Days of Service | 29 | 28 | 29 |
| Therms Used | | | |
| Avg. Therms per day | | | |
| Avg. cost per day | \$0.56 | \$0.58 | \$0.56 |
| Avg. daily temp (°F) | 45 | 55 | 37 |

| DUE DATE | TOTAL AMOUNT DUE |
|-------------------|------------------|
| December 13, 2019 | \$ 803.70 |

ACCOUNT SUMMARY

| | | |
|-------------------|-----------------------------|-------------|
| Previous Balance | | \$ 697.66 |
| Payments Received | November 18, 2019 Thank you | \$ (697.66) |
| Current Charges | | \$ 803.70 |

Total Amount Due \$ 803.70

SUMMARY OF CURRENT CHARGES

| | Delivery Service | Supply Service | TOTAL |
|------------------------------|------------------|------------------|------------------|
| Electric Service | \$ 413.71 | \$ 202.60 | \$ 616.31 |
| Natural Gas Service | \$ 16.35 | \$ 0.00 | \$ 16.35 |
| State and Local Taxes | \$ 157.78 | \$ 13.26 | \$ 171.04 |
| Total Current Charges | \$ 587.84 | \$ 215.86 | \$ 803.70 |

BUDGET BILLING INFORMATION

IMPORTANT ACCOUNT INFORMATION

Currently, a balance remains on your account. If payment has been sent, please disregard this reminder.

Water-Grant well

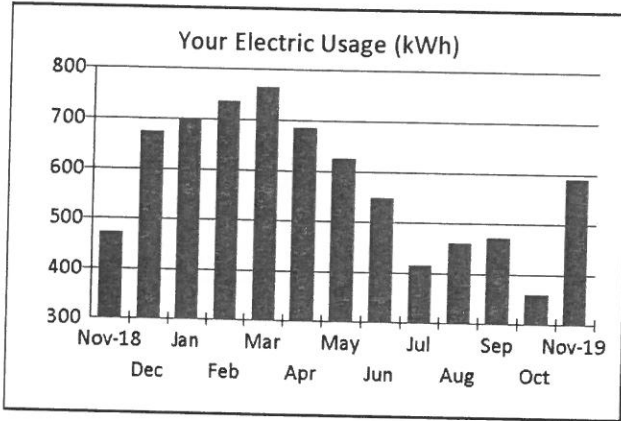
MESSAGE BOARD

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Customer Service: 1-888-467-2669

CUSTOMER: CITY OF RED LODGE
ACCOUNT NUMBER: 0713534-6 GB
ACCOUNT DESCRIPTION:
BILLING DATE: November 12, 2019

Service Address: 1219 S WHITE AVE, RED LODGE MT 59068



| | Nov 2018 | Oct 2019 | Nov 2019 |
|----------------------|----------|----------|----------|
| Days of Service | 29 | 28 | 30 |
| kWh Used | 472.00 | 360.00 | 589.00 |
| Avg. kWh per day | 16.3 | 12.9 | 19.6 |
| Avg. cost per day | \$2.17 | \$1.86 | \$2.77 |
| Avg. daily temp (°F) | 45 | 55 | 37 |

| DUE DATE | TOTAL AMOUNT DUE |
|-------------------|------------------|
| December 13, 2019 | \$ 83.22 |

ACCOUNT SUMMARY

| | | | |
|-------------------|-----------------------------|----|---------|
| Previous Balance | | \$ | 52.19 |
| Payments Received | November 18, 2019 Thank you | \$ | (52.19) |
| Current Charges | | \$ | 83.22 |

Total Amount Due \$ **83.22**

SUMMARY OF CURRENT CHARGES

| | Delivery Service | Supply Service | TOTAL |
|------------------------------|------------------|-----------------|-----------------|
| Electric Service | \$ 30.61 | \$ 39.25 | \$ 69.86 |
| State and Local Taxes | \$ 10.79 | \$ 2.57 | \$ 13.36 |
| Total Current Charges | \$ 41.40 | \$ 41.82 | \$ 83.22 |

BUDGET BILLING INFORMATION

IMPORTANT ACCOUNT INFORMATION

Currently, a balance remains on your account. If payment has been sent, please disregard this reminder.

Water - PRV

MESSAGE BOARD

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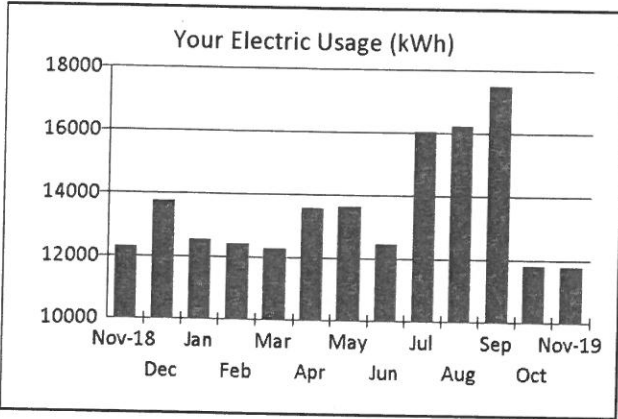


Customer Service: 1-888-467-2669

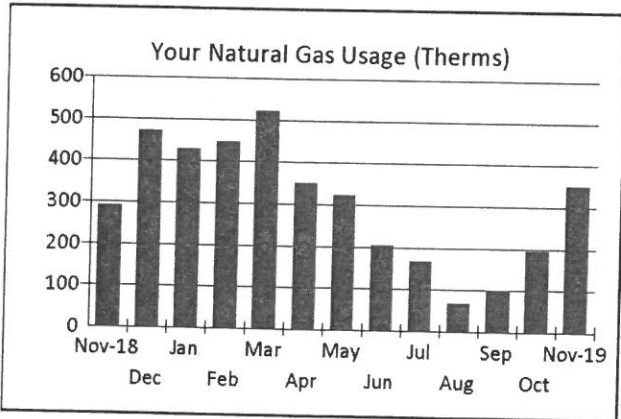
CUSTOMER: CITY OF RED LODGE
ACCOUNT NUMBER: 0713565-0
ACCOUNT DESCRIPTION:
BILLING DATE: November 12, 2019

GB

Service Address: 723 WATER WORKS RD PLNT, RED LODGE MT 59068



| | Nov 2018 | Oct 2019 | Nov 2019 |
|----------------------|----------|----------|----------|
| Days of Service | 29 | 28 | 29 |
| kWh Used | 12300.00 | 11800.00 | 11780.00 |
| Avg. kWh per day | 424.1 | 421.4 | 406.2 |
| Avg. cost per day | \$44.59 | \$46.74 | \$46.35 |
| Avg. daily temp (°F) | 45 | 55 | 37 |



| | Nov 2018 | Oct 2019 | Nov 2019 |
|----------------------|----------|----------|----------|
| Days of Service | 29 | 28 | 29 |
| Therms Used | 290.00 | 195.00 | 350.00 |
| Avg. Therms per day | 10.0 | 7.0 | 12.1 |
| Avg. cost per day | \$7.08 | \$5.10 | \$8.25 |
| Avg. daily temp (°F) | 45 | 55 | 37 |

| DUE DATE | TOTAL AMOUNT DUE |
|-------------------|------------------|
| December 13, 2019 | \$ 1,583.39 |

ACCOUNT SUMMARY

| | | |
|-------------------|-----------------------------|---------------|
| Previous Balance | | \$ 1,451.63 |
| Payments Received | November 18, 2019 Thank you | \$ (1,451.63) |
| Current Charges | | \$ 1,583.39 |

Total Amount Due \$ 1,583.39

SUMMARY OF CURRENT CHARGES

| | Delivery Service | Supply Service | TOTAL |
|-----------------------|------------------|----------------|-------------|
| Electric Service | \$ 377.98 | \$ 785.10 | \$ 1,163.08 |
| Natural Gas Service | \$ 123.24 | \$ 77.21 | \$ 200.45 |
| State and Local Taxes | \$ 166.68 | \$ 53.18 | \$ 219.86 |

Total Current Charges \$ 667.90 \$ 915.49 \$ 1,583.39

BUDGET BILLING INFORMATION

IMPORTANT ACCOUNT INFORMATION

Currently, a balance remains on your account. If payment has been sent, please disregard this reminder.

Water plant

MESSAGE BOARD

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Delivering a Bright Future

Customer Service: 1-888-467-2669

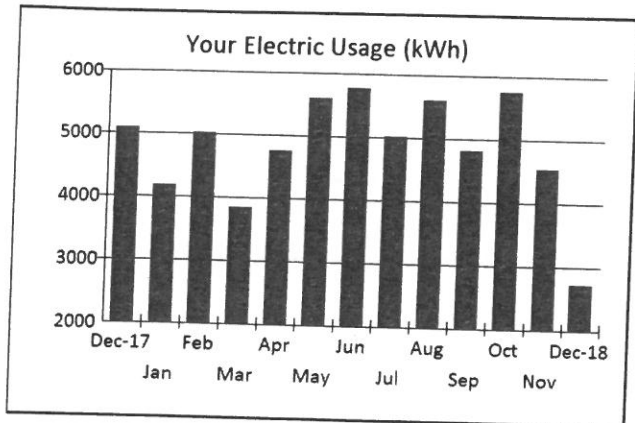
CUSTOMER: CITY OF RED LODGE

ACCOUNT NUMBER: 0308082-7

ACCOUNT DESCRIPTION:

BILLING DATE: December 12, 2018

Service Address: 631 LAZY M ST, RED LODGE MT 59068



| DUE DATE | TOTAL AMOUNT DUE |
|-------------------|------------------|
| December 28, 2018 | \$ 764.83 |

ACCOUNT SUMMARY

| | | | |
|-------------------|-----------------------------|----|----------|
| Previous Balance | | \$ | 1,004.87 |
| Payments Received | November 16, 2018 Thank you | \$ | (554.25) |
| Current Charges | | \$ | 314.21 |

| | Dec 2017 | Nov 2018 | Dec 2018 |
|----------------------|----------|----------|----------|
| Days of Service | 29 | 29 | 30 |
| kWh Used | 5088.00 | 4548.00 | 2728.00 |
| Avg. kWh per day | 175.4 | 156.8 | 90.9 |
| Avg. daily temp (°F) | 37 | 45 | 33 |

Total Amount Due \$ 764.83

SUMMARY OF CURRENT CHARGES

| | Delivery Service | Supply Service | TOTAL |
|-----------------------|------------------|----------------|-----------|
| Electric Service | \$ 101.17 | \$ 172.39 | \$ 273.56 |
| State and Local Taxes | \$ 28.91 | \$ 11.74 | \$ 40.65 |

Total Current Charges \$ 130.08 \$ 184.13 \$ **314.21**

BUDGET BILLING INFORMATION

BUDGET BILLING -- PAY THE SAME AMOUNT EACH MONTH
 If you were to go on budget billing next month, your approximate monthly budget billing amount would be \$493.00. Your account must be current and in good standing to qualify for budget billing.

IMPORTANT ACCOUNT INFORMATION

Water Booster

MESSAGE BOARD

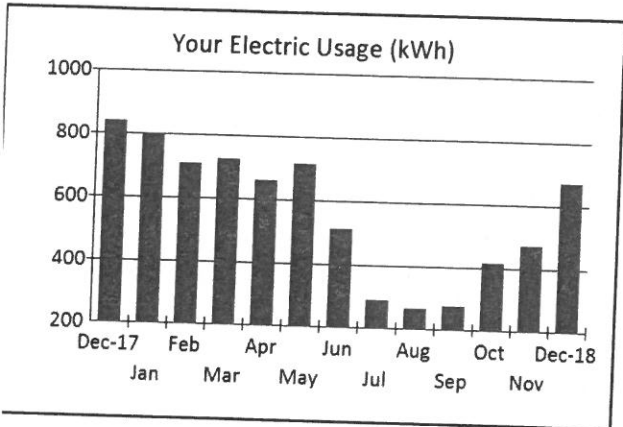
Effective 12/01/2018, electric supply rates have increased from the previous month as a result of the supply tracker. For questions about your bill or service, call NorthWestern Energy at 888-467-2669 (Monday through Friday, 7 a.m.-6 p.m.). For information or to make a payment, visit us at: www.northwesternenergy.com.



Customer Service: 1-888-467-2669

CUSTOMER: CITY OF RED LODGE
ACCOUNT NUMBER: 0713534-6 GB
ACCOUNT DESCRIPTION:
BILLING DATE: December 12, 2018

Service Address: 1219 S WHITE AVE, RED LODGE MT 59068



| | Dec 2017 | Nov 2018 | Dec 2018 |
|----------------------|----------|----------|----------|
| Days of Service | 29 | 29 | 33 |
| Wh Used | 839.00 | 472.00 | 674.00 |
| avg. kWh per day | 28.9 | 16.3 | 20.4 |
| avg. daily temp (°F) | 38 | 45 | 33 |

| DUE DATE | TOTAL AMOUNT DUE |
|-----------------|------------------|
| January 4, 2019 | \$ 87.52 |

ACCOUNT SUMMARY

| | | |
|-------------------|-----------------------------|------------|
| Previous Balance | | \$ 62.88 |
| Payments Received | December 17, 2018 Thank you | \$ (62.88) |
| Current Charges | | \$ 87.52 |

Total Amount Due \$ 87.52

SUMMARY OF CURRENT CHARGES

| | Delivery Service | Supply Service | TOTAL |
|-----------------------|------------------|----------------|----------|
| Electric Service | \$ 32.87 | \$ 41.26 | \$ 74.13 |
| State and Local Taxes | \$ 10.49 | \$ 2.90 | \$ 13.39 |

Total Current Charges \$ 43.36 \$ 44.16 \$ **87.52**

BUDGET BILLING INFORMATION

IMPORTANT ACCOUNT INFORMATION

Currently, a balance remains on your account. If payment has been sent, please disregard this reminder.

Water - PRV

MESSAGE BOARD

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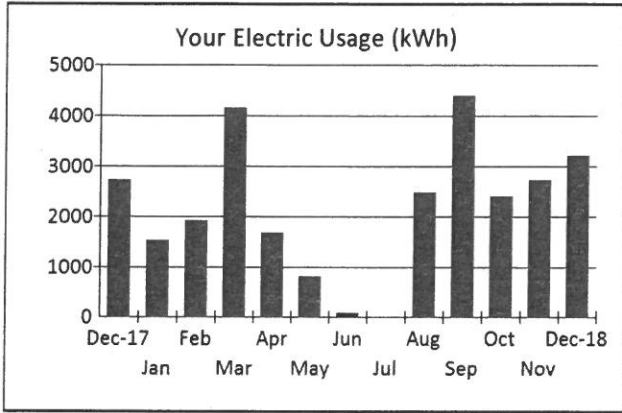


Customer Service: 1-888-467-2669

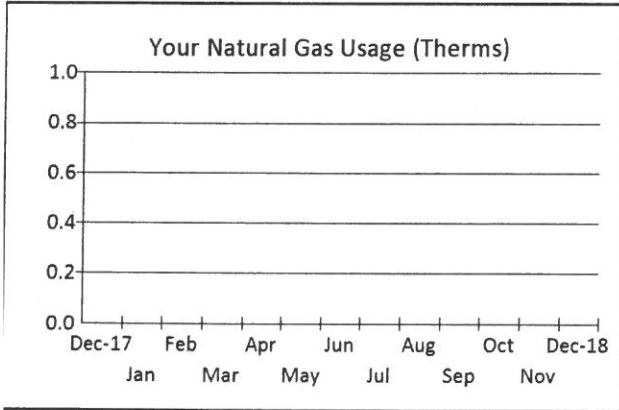
CUSTOMER: CITY OF RED LODGE
ACCOUNT NUMBER: 0713535-3
ACCOUNT DESCRIPTION:
BILLING DATE: December 12, 2018

GB

Service Address: 713 S GRANT AVE PMP, RED LODGE MT 59068



| | Dec 2017 | Nov 2018 | Dec 2018 |
|----------------------|----------|----------|----------|
| Days of Service | 30 | 29 | 30 |
| kWh Used | 2720.00 | 2720.00 | 3200.00 |
| Avg. kWh per day | 90.7 | 93.8 | 106.7 |
| Avg. daily temp (°F) | 38 | 45 | 33 |



| | Dec 2017 | Nov 2018 | Dec 2018 |
|----------------------|----------|----------|----------|
| Days of Service | 29 | 29 | 30 |
| Therms Used | | | |
| Avg. Therms per day | | | |
| Avg. daily temp (°F) | 38 | 45 | 33 |

| DUE DATE | TOTAL AMOUNT DUE |
|-----------------|------------------|
| January 4, 2019 | \$ 739.68 |

ACCOUNT SUMMARY

| | | | |
|-------------------|-----------------------------|----|----------|
| Previous Balance | | \$ | 701.61 |
| Payments Received | December 17, 2018 Thank you | \$ | (701.61) |
| Current Charges | | \$ | 739.68 |

Total Amount Due \$ 739.68

SUMMARY OF CURRENT CHARGES

| | Delivery Service | Supply Service | TOTAL |
|-----------------------|------------------|----------------|-----------|
| Electric Service | \$ 381.85 | \$ 202.22 | \$ 584.07 |
| Natural Gas Service | \$ 16.35 | \$ 0.00 | \$ 16.35 |
| State and Local Taxes | \$ 125.48 | \$ 13.78 | \$ 139.26 |

Total Current Charges \$ 523.68 \$ 216.00 \$ 739.68

BUDGET BILLING INFORMATION

IMPORTANT ACCOUNT INFORMATION

Currently, a balance remains on your account. If payment has been sent, please disregard this reminder.

Water-Grant well

MESSAGE BOARD

Effective 12/01/2018, electric supply rates have increased from the previous month as a result of the supply tracker. Effective 12/01/2018, gas supply rates have decreased from the previous month as a result of the supply tracker. For questions about your bill or service, call NorthWestern Energy at 888-467-2669 (Monday through Friday, 7 a.m.-6 p.m). For information or to make a payment, visit us at: www.northwesternenergy.com.



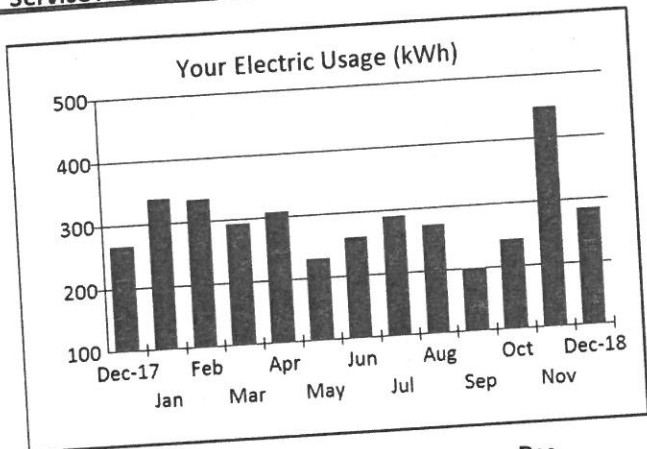
Customer Service: 1-888-467-2669

CUSTOMER: CITY OF RED LODGE
 ACCOUNT NUMBER: 0713564-3
 ACCOUNT DESCRIPTION:
 BILLING DATE: December 12, 2018

GB

Service Address: 701 WATER WORKS RD. RED LODGE MT 59068

| DUE DATE | TOTAL AMOUNT DUE |
|-----------------|------------------|
| January 4, 2019 | \$ 198. |



ACCOUNT SUMMARY

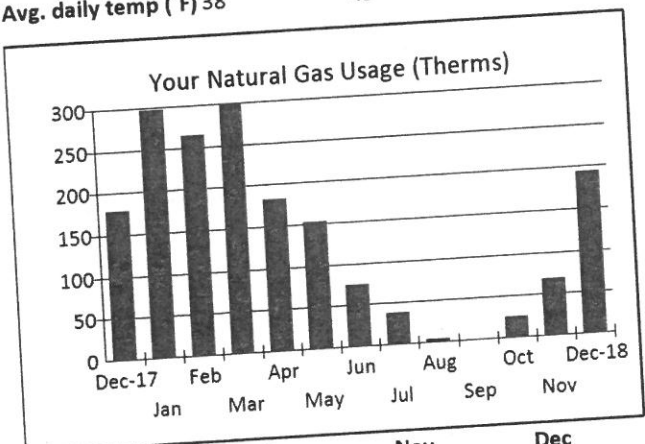
| | | | |
|-------------------|-----------------------------|----|-------|
| Previous Balance | | \$ | 131 |
| Payments Received | December 17, 2018 Thank you | \$ | (138) |
| Current Charges | | \$ | 19 |

| | Dec 2017 | Nov 2018 | Dec 2018 |
|----------------------|----------|----------|----------|
| Days of Service | 29 | 29 | 33 |
| kWh Used | 267.00 | 449.00 | 284.00 |
| Avg. kWh per day | 9.2 | 15.5 | 8.6 |
| Avg. daily temp (°F) | 38 | 45 | 33 |

Total Amount Due \$ 1

SUMMARY OF CURRENT CHARGES

| | Delivery Service | Supply Service | |
|------------------------------|------------------|-----------------|-----------|
| Electric Service | \$ 17.22 | \$ 17.38 | \$ |
| Unmetered Service | \$ 9.50 | \$ 5.02 | \$ |
| Natural Gas Service | \$ 73.91 | \$ 44.07 | \$ |
| State and Local Taxes | \$ 28.53 | \$ 2.50 | \$ |
| Total Current Charges | \$ 129.16 | \$ 68.97 | \$ |



| | Dec 2017 | Nov 2018 | Dec 2018 |
|----------------------|----------|----------|----------|
| Days of Service | 29 | 29 | 33 |
| Therms Used | 179.00 | 69.00 | 194.00 |
| Avg. Therms per day | 6.2 | 2.4 | 5.9 |
| Avg. daily temp (°F) | 38 | 45 | 33 |

BUDGET BILLING INFORMATION

IMPORTANT ACCOUNT INFORMATION

Currently, a balance remains on your account. If payment has been sent disregard this reminder.

Water

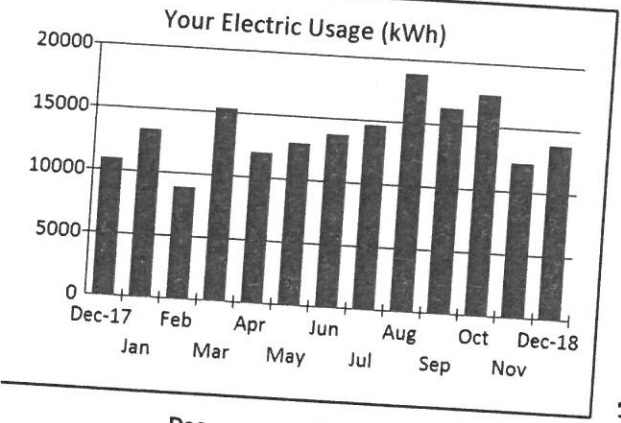
MESSAGE BOARD

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 Effective 12/01/2018, gas supply rates have decreased from the previous month as a result of the supply tracker.
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 information or to make a payment, visit us at: www.northwesternenergy.com.

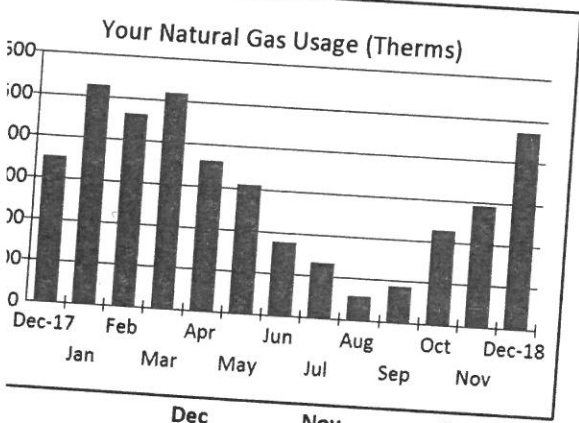
Customer Service: 1-888-467-2669

CUSTOMER: CITY OF RED LODGE
ACCOUNT NUMBER: 0713565-0
ACCOUNT DESCRIPTION: GB
BILLING DATE: December 12, 2018

Service Address: 723 WATER WORKS RD PLNT, RED LODGE MT 59068



| | Dec 2017 | Nov 2018 | Dec 2018 |
|-------------------------|----------|----------|----------|
| Days of Service | 29 | 29 | 33 |
| kWh Used | 10900.00 | 12300.00 | 13760.00 |
| kWh per day | 375.9 | 424.1 | 417.0 |
| Average daily temp (°F) | 38 | 45 | 33 |



| | Dec 2017 | Nov 2018 | Dec 2018 |
|-------------------------|----------|----------|----------|
| Days of Service | 29 | 29 | 33 |
| Therms Used | 350.00 | 290.00 | 473.00 |
| Therms per day | 12.1 | 10.0 | 14.3 |
| Average daily temp (°F) | 38 | 45 | 33 |

| DUE DATE | TOTAL AMOUNT DUE |
|-----------------|------------------|
| January 4, 2019 | \$ 1,749.39 |

ACCOUNT SUMMARY

| | | | |
|-------------------|-------------------|-----------|---------------|
| Previous Balance | | | \$ 1,498.65 |
| Payments Received | December 17, 2018 | Thank you | \$ (1,498.65) |
| Current Charges | | | \$ 1,749.39 |

| | |
|------------------|-------------|
| Total Amount Due | \$ 1,749.39 |
|------------------|-------------|

SUMMARY OF CURRENT CHARGES

| | Delivery Service | Supply Service | TOTAL |
|-----------------------|------------------|----------------|-------------|
| Electric Service | \$ 384.87 | \$ 869.68 | \$ 1,254.55 |
| Natural Gas Service | \$ 161.91 | \$ 107.47 | \$ 269.38 |
| State and Local Taxes | \$ 163.95 | \$ 61.51 | \$ 225.46 |

| | | | |
|-----------------------|-----------|-------------|-------------|
| Total Current Charges | \$ 710.73 | \$ 1,038.66 | \$ 1,749.39 |
|-----------------------|-----------|-------------|-------------|

BUDGET BILLING INFORMATION

IMPORTANT ACCOUNT INFORMATION

Currently, a balance remains on your account. If payment has been sent, please disregard this reminder.

Water-Plant

MESSAGE BOARD

Effective 12/01/2018, electric supply rates have increased from the previous month as a result of the supply tracker. Effective 12/01/2018, gas supply rates have decreased from the previous month as a result of the supply tracker. For questions about your bill or service, call NorthWestern Energy at 888-467-2669 (Monday through Friday, 7 a.m.-6 p.m.). For more information or to make a payment, visit us at: www.northwesternenergy.com.

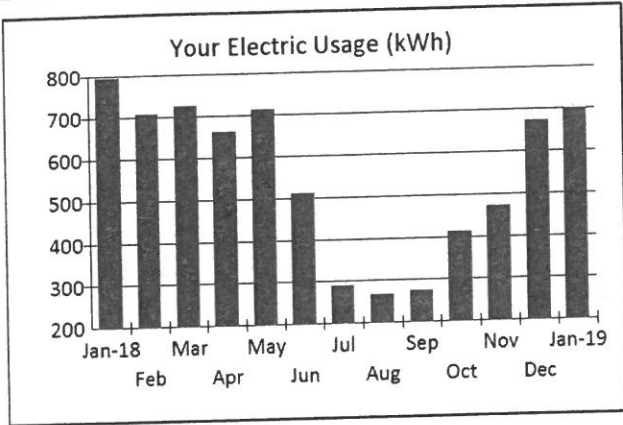


Delivering a Bright Future

Customer Service: 1-888-467-2669

CUSTOMER: CITY OF RED LODGE
ACCOUNT NUMBER: 0713534-6
ACCOUNT DESCRIPTION:
BILLING DATE: January 15, 2019

Service Address: 1219 S WHITE AVE, RED LODGE MT 59068



| | Jan 2018 | Dec 2018 | Jan 2019 |
|----------------------|----------|----------|----------|
| Days of Service | 34 | 33 | 30 |
| kWh Used | 796.00 | 674.00 | 700.00 |
| Avg. kWh per day | 23.4 | 20.4 | 23.3 |
| Avg. daily temp (°F) | 24 | 33 | 32 |

| DUE DATE | TOTAL AMOUNT DUE |
|------------------|------------------|
| February 6, 2019 | \$ 68.76 |

ACCOUNT SUMMARY

| | | |
|------------------------|------------------|----------------------|
| Previous Balance | | \$ 87.52 |
| Payments Received | January 11, 2019 | Thank you \$ (87.52) |
| Current Charges | | \$ 91.47 |
| Miscellaneous Services | | \$ (22.71) |

Total Amount Due \$ 68.76

SUMMARY OF CURRENT CHARGES

| | Delivery Service | Supply Service | TOTAL |
|------------------------------|------------------|-----------------|-----------------|
| Electric Service | \$ 33.92 | \$ 43.17 | \$ 77.09 |
| State and Local Taxes | \$ 11.35 | \$ 3.03 | \$ 14.38 |
| Total Current Charges | \$ 45.27 | \$ 46.20 | \$ 91.47 |

BUDGET BILLING INFORMATION

IMPORTANT ACCOUNT INFORMATION

We are pleased to pass the benefits of the new tax laws to our customers. The Federal Tax Cuts and Jobs Act, effective January 1, 2018, resulted in a one-time credit reflected on this billing statement as Tax Cut Jobs Act Refund.

MESSAGE BOARD

Effective 01/01/2019, electric supply rates have increased from the previous month as a result of the supply tracker. The state and local taxes have increased as a result of the property tracker. For questions about your bill or service, call NorthWestern Energy at 888-467-2669 (Monday through Friday, 7 a.m.-6 p.m). For information or to make a payment, visit us at: www.northwesternenergy.com.

Water PRV

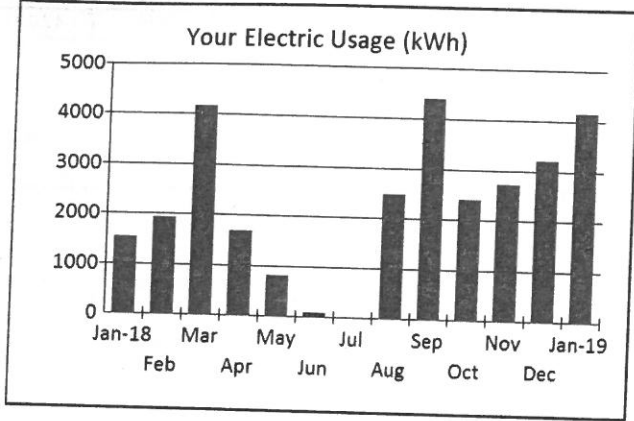


Customer Service: 1-888-467-2669

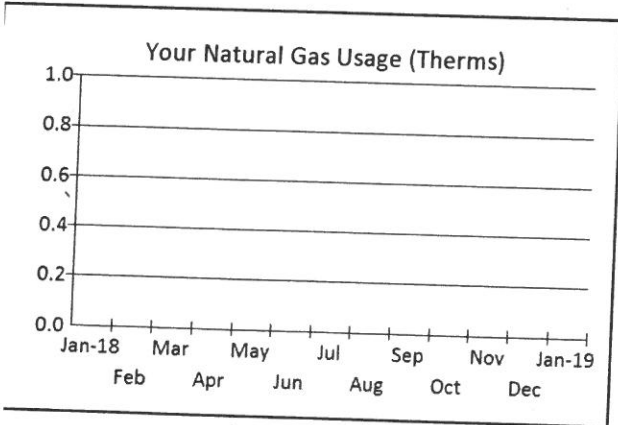
CUSTOMER: CITY OF RED LODGE
ACCOUNT NUMBER: 0713535-3
ACCOUNT DESCRIPTION:
BILLING DATE: January 15, 2019

GB

Service Address: 713 S GRANT AVE PMP, RED LODGE MT 59068



| | Jan 2018 | Dec 2018 | Jan 2019 |
|----------------------|----------|----------|----------|
| Days of Service | 32 | 30 | 33 |
| kWh Used | 1520.00 | 3200.00 | 4160.00 |
| Avg. kWh per day | 47.5 | 106.7 | 126.1 |
| Avg. daily temp (°F) | 23 | 33 | 32 |



| | Jan 2018 | Dec 2018 | Jan 2019 |
|----------------------|----------|----------|----------|
| Days of Service | 33 | 30 | 33 |
| Therms Used | 7.5 | 9.0 | 10.0 |
| Avg. Therms per day | 0.22 | 0.30 | 0.30 |
| Avg. daily temp (°F) | 24 | 33 | 32 |

| DUE DATE | TOTAL AMOUNT DUE |
|------------------|------------------|
| February 6, 2019 | \$ 745.07 |

ACCOUNT SUMMARY

| | | | |
|------------------------|------------------|-----------|-------------|
| Previous Balance | | \$ | 739.68 |
| Payments Received | January 11, 2019 | Thank you | \$ (739.68) |
| Current Charges | | \$ | 819.03 |
| Miscellaneous Services | | \$ | (73.96) |

Total Amount Due \$ **745.07**

SUMMARY OF CURRENT CHARGES

| | Delivery Service | Supply Service | TOTAL |
|-----------------------|------------------|----------------|-----------|
| Electric Service | \$ 389.76 | \$ 262.42 | \$ 652.18 |
| Natural Gas Service | \$ 16.35 | \$ 0.00 | \$ 16.35 |
| State and Local Taxes | \$ 132.53 | \$ 17.97 | \$ 150.50 |

Total Current Charges \$ **538.64** \$ **280.39** \$ **819.03**

BUDGET BILLING INFORMATION

IMPORTANT ACCOUNT INFORMATION

We are pleased to pass the benefits of the new tax laws to our customers. The Federal Tax Cuts and Jobs Act, effective January 1, 2018, resulted in a one-time credit reflected on this billing statement as Tax Cut Jobs Act Refund.

Water Grant well

MESSAGE BOARD

Effective 01/01/2019, electric supply rates have increased from the previous month as a result of the supply tracker. The state and local taxes have increased as a result of the property tracker.
 Effective 01/01/2019, gas supply rates have decreased from the previous month as a result of the supply tracker. The state and local taxes have increased as a result of the property tracker.
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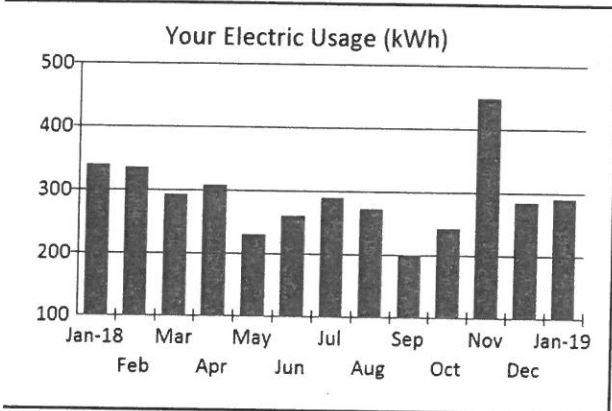


Customer Service: 1-888-467-2669

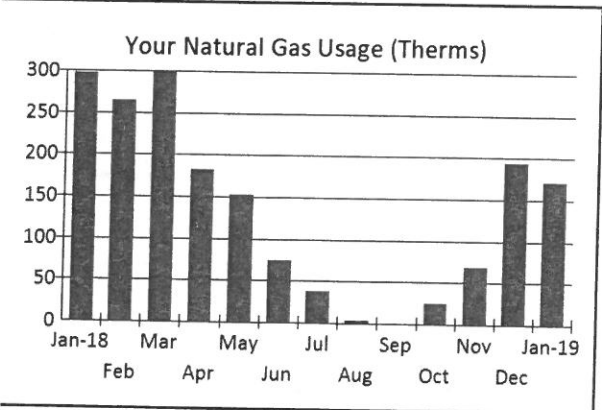
CUSTOMER: CITY OF RED LODGE
ACCOUNT NUMBER: 0713564-3
ACCOUNT DESCRIPTION:
BILLING DATE: January 15, 2019

GB

Service Address: 701 WATER WORKS RD, RED LODGE MT 59068



| | Jan 2018 | Dec 2018 | Jan 2019 |
|----------------------|----------|----------|----------|
| Days of Service | 34 | 33 | 30 |
| kWh Used | 339.00 | 284.00 | 290.00 |
| avg. kWh per day | 10.0 | 8.6 | 9.7 |
| avg. daily temp (°F) | 24 | 33 | 32 |



| | Jan 2018 | Dec 2018 | Jan 2019 |
|----------------------|----------|----------|----------|
| Days of Service | 34 | 33 | 30 |
| Therms Used | 298.00 | 194.00 | 171.00 |
| avg. Therms per day | 8.8 | 5.9 | 5.7 |
| avg. daily temp (°F) | 24 | 33 | 32 |

| DUE DATE | TOTAL AMOUNT DUE |
|------------------|------------------|
| February 6, 2019 | \$ 162.42 |

ACCOUNT SUMMARY

| | | |
|------------------------|----------------------------|-------------|
| Previous Balance | | \$ 198.13 |
| Payments Received | January 11, 2019 Thank you | \$ (198.13) |
| Current Charges | | \$ 183.29 |
| Miscellaneous Services | | \$ (20.87) |

Total Amount Due \$ 162.42

SUMMARY OF CURRENT CHARGES

| | Delivery Service | Supply Service | TOTAL |
|------------------------------|------------------|-----------------|------------------|
| Electric Service | \$ 17.47 | \$ 17.88 | \$ 35.35 |
| Unmetered Service | \$ 9.50 | \$ 5.07 | \$ 14.57 |
| Natural Gas Service | \$ 67.01 | \$ 37.52 | \$ 104.53 |
| State and Local Taxes | \$ 26.39 | \$ 2.45 | \$ 28.84 |
| Total Current Charges | \$ 120.37 | \$ 62.92 | \$ 183.29 |

BUDGET BILLING INFORMATION

IMPORTANT ACCOUNT INFORMATION

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Water

MESSAGE BOARD

Effective 01/01/2019, electric supply rates have increased from the previous month as a result of the supply tracker. The state and local taxes have increased as a result of the property tracker.
 Effective 01/01/2019, gas supply rates have decreased from the previous month as a result of the supply tracker. The state and local taxes have increased as a result of the property tracker.
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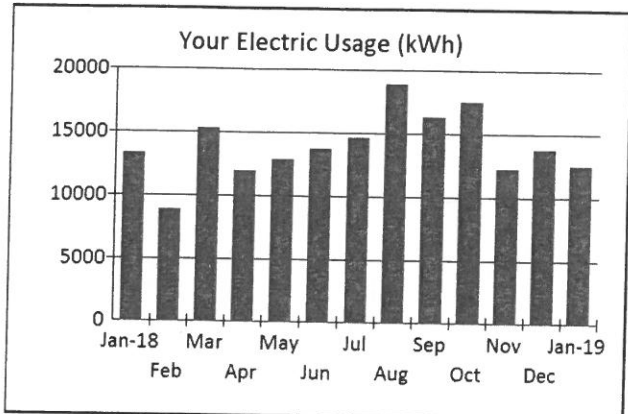
Delivering a Bright Future

Customer Service: 1-888-467-2669

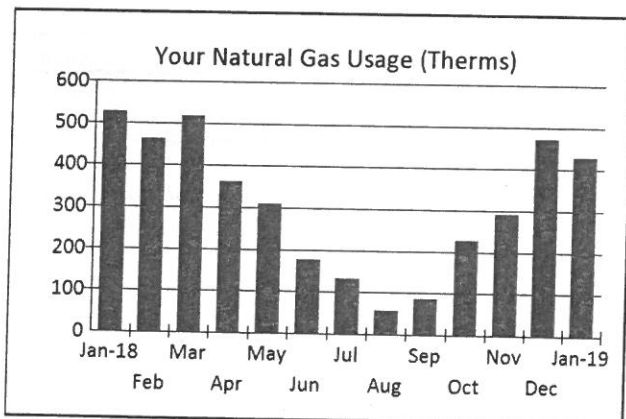
CUSTOMER: CITY OF RED LODGE
ACCOUNT NUMBER: 0713565-0
ACCOUNT DESCRIPTION:
BILLING DATE: January 15, 2019

GB

Service Address: 723 WATER WORKS RD PLNT, RED LODGE MT 59068



| | Jan 2018 | Dec 2018 | Jan 2019 |
|----------------------|----------|----------|----------|
| Days of Service | 33 | 33 | 30 |
| kWh Used | 13360.00 | 13760.00 | 12520.00 |
| Avg. kWh per day | 404.8 | 417.0 | 417.3 |
| Avg. daily temp (°F) | 24 | 33 | 32 |



| | Jan 2018 | Dec 2018 | Jan 2019 |
|----------------------|----------|----------|----------|
| Days of Service | 33 | 33 | 30 |
| Therms Used | 526.00 | 473.00 | 429.00 |
| Avg. Therms per day | 15.9 | 14.3 | 14.3 |
| Avg. daily temp (°F) | 24 | 33 | 32 |

| DUE DATE | TOTAL AMOUNT DUE |
|------------------|------------------|
| February 6, 2019 | \$ 1,112.22 |

ACCOUNT SUMMARY

| | | | |
|------------------------|------------------|-----------|---------------|
| Previous Balance | | \$ | 1,749.39 |
| Payments Received | January 11, 2019 | Thank you | \$ (1,749.39) |
| Current Charges | | \$ | 1,619.34 |
| Miscellaneous Services | | \$ | (507.12) |

Total Amount Due \$ 1,112.22

SUMMARY OF CURRENT CHARGES

| | Delivery Service | Supply Service | TOTAL |
|-----------------------|------------------|----------------|-------------|
| Electric Service | \$ 370.23 | \$ 789.54 | \$ 1,159.77 |
| Natural Gas Service | \$ 148.63 | \$ 94.11 | \$ 242.74 |
| State and Local Taxes | \$ 160.62 | \$ 56.21 | \$ 216.83 |

Total Current Charges \$ 679.48 \$ 939.86 \$ 1,619.34

BUDGET BILLING INFORMATION

IMPORTANT ACCOUNT INFORMATION

We are pleased to pass the benefits of the new tax laws to our customers. The Federal Tax Cuts and Jobs Act, effective January 1, 2018, resulted in a one-time credit reflected on this billing statement as Tax Cut Jobs Act Refund.

water plant

MESSAGE BOARD

Effective 01/01/2019, electric supply rates have increased from the previous month as a result of the supply tracker. The state and local taxes have increased as a result of the property tracker.

Effective 01/01/2019, gas supply rates have decreased from the previous month as a result of the supply tracker. The state and local taxes have increased as a result of the property tracker.

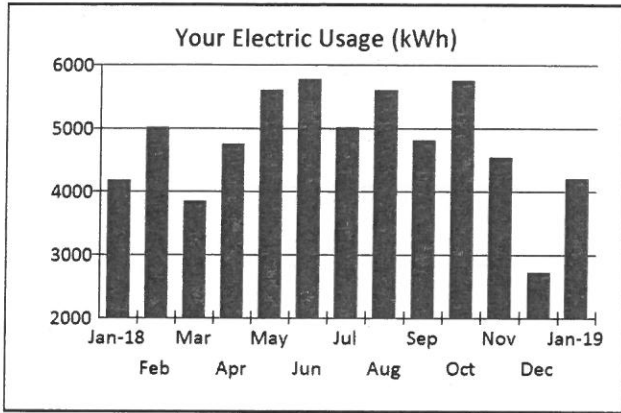
For questions about your bill or service, call NorthWestern Energy at 888-467-2669 (Monday through Friday, 7 a.m.-6 p.m.). For information or to make a payment, visit us at: www.northwesternenergy.com.



Customer Service: 1-888-467-2669

CUSTOMER: CITY OF RED LODGE
ACCOUNT NUMBER: 0308082-7
ACCOUNT DESCRIPTION:
BILLING DATE: January 15, 2019

Service Address: 631 LAZY M ST, RED LODGE MT 59068



| | Jan 2018 | Dec 2018 | Jan 2019 |
|----------------------|----------|----------|----------|
| Days of Service | 32 | 30 | 34 |
| kWh Used | 4179.00 | 2728.00 | 4218.00 |
| Avg. kWh per day | 130.6 | 90.9 | 124.1 |
| Avg. daily temp (°F) | 23 | 33 | 31 |

| DUE DATE | TOTAL AMOUNT DUE |
|------------------|------------------|
| January 31, 2019 | \$ 244.56 |

ACCOUNT SUMMARY

| | | | |
|------------------------|------------------|-----------|-------------|
| Previous Balance | | \$ | 764.83 |
| Payments Received | January 11, 2019 | Thank you | \$ (764.83) |
| Current Charges | | \$ | 427.28 |
| Miscellaneous Services | | \$ | (182.72) |

Total Amount Due \$ 244.56

SUMMARY OF CURRENT CHARGES

| | Delivery Service | Supply Service | TOTAL |
|-----------------------|------------------|----------------|-----------|
| Electric Service | \$ 111.24 | \$ 266.10 | \$ 377.34 |
| State and Local Taxes | \$ 31.72 | \$ 18.22 | \$ 49.94 |

Total Current Charges \$ 142.96 \$ 284.32 \$ 427.28

BUDGET BILLING INFORMATION

BUDGET BILLING -- PAY THE SAME AMOUNT EACH MONTH

If you were to go on budget billing next month, your approximate monthly budget billing amount would be \$480.00. Your account must be current and in good standing to qualify for budget billing.

IMPORTANT ACCOUNT INFORMATION

We are pleased to pass the benefits of the new tax laws to our customers. The Federal Tax Cuts and Jobs Act, effective January 1, 2018, resulted in a one-time credit reflected on this billing statement as Tax Cut Jobs Act Refund.

Water-Booster

MESSAGE BOARD

Effective 01/01/2019, electric supply rates have increased from the previous month as a result of the supply tracker. The state and local taxes have increased as a result of the property tracker.

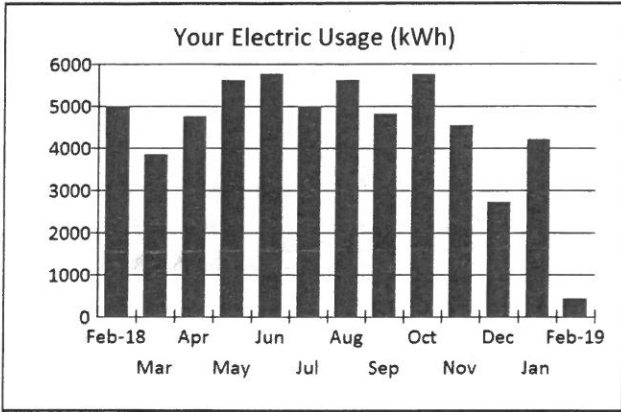
For questions about your bill or service, call NorthWestern Energy at 888-467-2669 (Monday through Friday, 7 a.m.-6 p.m). For information or to make a payment, visit us at: www.northwesternenergy.com.



Customer Service: 1-888-467-2669

CUSTOMER: CITY OF RED LODGE
ACCOUNT NUMBER: 0308082-7
ACCOUNT DESCRIPTION:
BILLING DATE: February 13, 2019

Service Address: 631 LAZY M ST, RED LODGE MT 59068



| | Feb 2018 | Jan 2019 | Feb 2019 |
|----------------------|----------|----------|----------|
| Days of Service | 31 | 34 | 29 |
| kWh Used | 5018.00 | 4218.00 | 423.00 |
| Avg. kWh per day | 161.9 | 124.1 | 14.6 |
| Avg. daily temp (°F) | 27 | 31 | 24 |

| DUE DATE | TOTAL AMOUNT DUE |
|---------------|------------------|
| March 1, 2019 | \$ 388.79 |

ACCOUNT SUMMARY

| | |
|-------------------|-----------|
| Previous Balance | \$ 244.56 |
| Payments Received | \$ 0.00 |
| Current Charges | \$ 144.23 |

Total Amount Due \$ 388.79

SUMMARY OF CURRENT CHARGES

| | Delivery Service | Supply Service | TOTAL |
|-----------------------|------------------|----------------|-----------|
| Electric Service | \$ 85.25 | \$ 26.45 | \$ 111.70 |
| State and Local Taxes | \$ 30.68 | \$ 1.85 | \$ 32.53 |

Total Current Charges \$ 115.93 \$ 28.30 \$ 144.23

BUDGET BILLING INFORMATION

BUDGET BILLING -- PAY THE SAME AMOUNT EACH MONTH

If you were to go on budget billing next month, your approximate monthly budget billing amount would be \$480.00. Your account must be current and in good standing to qualify for budget billing.

IMPORTANT ACCOUNT INFORMATION

Water - Booster

MESSAGE BOARD

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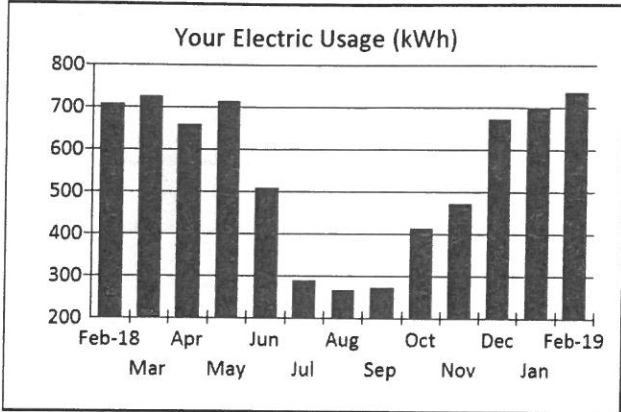


Customer Service: 1-888-467-2669

CUSTOMER: CITY OF RED LODGE
ACCOUNT NUMBER: 0713534-6
ACCOUNT DESCRIPTION:
BILLING DATE: February 14, 2019

GB

Service Address: 1219 S WHITE AVE, RED LODGE MT 59068



| | Feb 2018 | Jan 2019 | Feb 2019 |
|----------------------|----------|----------|----------|
| Days of Service | 28 | 30 | 30 |
| kWh Used | 708.00 | 700.00 | 736.00 |
| Avg. kWh per day | 25.3 | 23.3 | 24.5 |
| Avg. daily temp (°F) | 26 | 32 | 24 |

| DUE DATE | TOTAL AMOUNT DUE |
|----------------|------------------|
| March 11, 2019 | \$ 97.61 |

ACCOUNT SUMMARY

| | | |
|-------------------|-----------------------------|------------|
| Previous Balance | | \$ 68.76 |
| Payments Received | February 15, 2019 Thank you | \$ (68.76) |
| Current Charges | | \$ 97.61 |

Total Amount Due \$ 97.61

SUMMARY OF CURRENT CHARGES

| | Delivery Service | Supply Service | TOTAL |
|------------------------------|------------------|-----------------|-----------------|
| Electric Service | \$ 35.36 | \$ 46.01 | \$ 81.37 |
| State and Local Taxes | \$ 13.03 | \$ 3.21 | \$ 16.24 |
| Total Current Charges | \$ 48.39 | \$ 49.22 | \$ 97.61 |

BUDGET BILLING INFORMATION

IMPORTANT ACCOUNT INFORMATION

Currently, a balance remains on your account. If payment has been sent, please disregard this reminder.

Water PRV

MESSAGE BOARD

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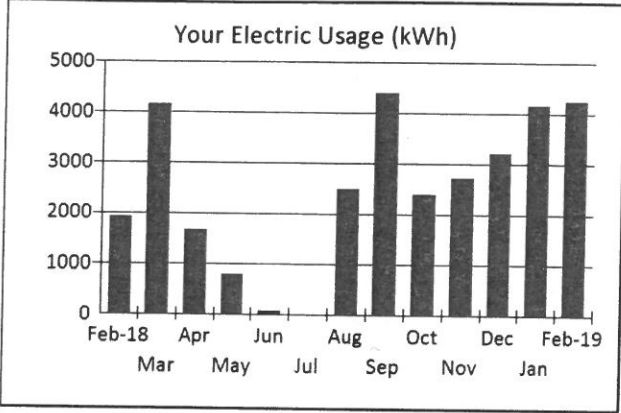


Customer Service: 1-888-467-2669

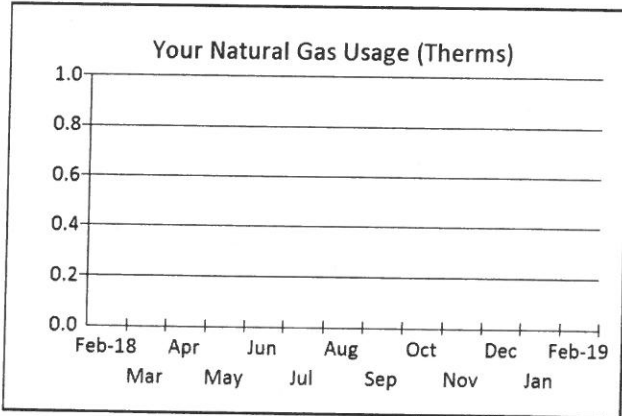
CUSTOMER: CITY OF RED LODGE
ACCOUNT NUMBER: 0713535-3
ACCOUNT DESCRIPTION:
BILLING DATE: February 14, 2019

GB

Service Address: 713 S GRANT AVE PMP, RED LODGE MT 59068



| | Feb 2018 | Jan 2019 | Feb 2019 |
|----------------------|----------|----------|----------|
| Days of Service | 30 | 33 | 30 |
| kWh Used | 1920.00 | 4160.00 | 4240.00 |
| Avg. kWh per day | 64.0 | 126.1 | 141.3 |
| Avg. daily temp (°F) | 26 | 32 | 24 |



| | Feb 2018 | Jan 2019 | Feb 2019 |
|----------------------|----------|----------|----------|
| Days of Service | 30 | 33 | 30 |
| Therms Used | 0.0 | 0.0 | 0.0 |
| Avg. Therms per day | 0.0 | 0.0 | 0.0 |
| Avg. daily temp (°F) | 26 | 32 | 24 |

| DUE DATE | TOTAL AMOUNT DUE |
|----------------|------------------|
| March 11, 2019 | \$ 870.98 |

ACCOUNT SUMMARY

| | | | |
|-------------------|-------------------|-----------|-------------|
| Previous Balance | | \$ | 745.07 |
| Payments Received | February 15, 2019 | Thank you | \$ (745.07) |
| Current Charges | | \$ | 870.98 |

Total Amount Due \$ 870.98

SUMMARY OF CURRENT CHARGES

| | Delivery Service | Supply Service | TOTAL |
|-----------------------|------------------|----------------|-----------|
| Electric Service | \$ 414.03 | \$ 265.08 | \$ 679.11 |
| Natural Gas Service | \$ 16.35 | \$ 0.00 | \$ 16.35 |
| State and Local Taxes | \$ 157.03 | \$ 18.49 | \$ 175.52 |

Total Current Charges \$ 587.41 \$ 283.57 \$ 870.98

BUDGET BILLING INFORMATION

IMPORTANT ACCOUNT INFORMATION

Currently, a balance remains on your account. If payment has been sent, please disregard this reminder.

Water-Grand well

MESSAGE BOARD

Effective 02/01/2019, gas supply rates have decreased from the previous month as a result of the supply tracker. For questions about your bill or service, call NorthWestern Energy at 888-467-2669 (Monday through Friday, 7 a.m.-6 p.m). For information or to make a payment, visit us at: www.northwesternenergy.com.

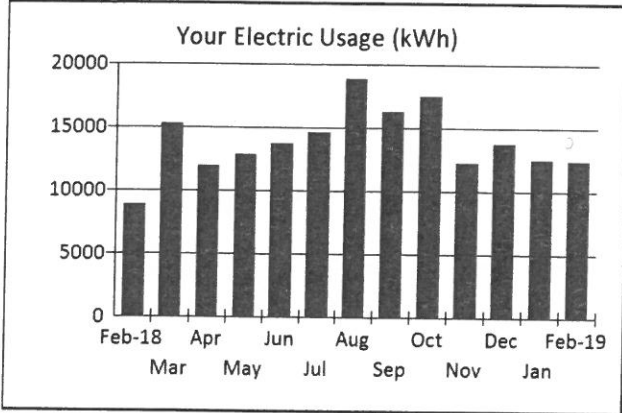


Customer Service: 1-888-467-2669

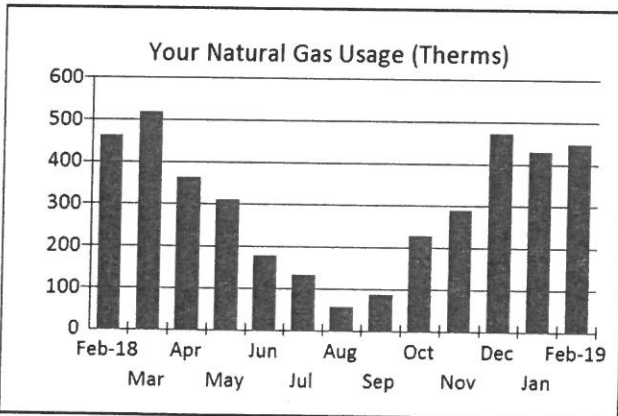
CUSTOMER: CITY OF RED LODGE
ACCOUNT NUMBER: 0713565-0
ACCOUNT DESCRIPTION:
BILLING DATE: February 14, 2019

GB

Service Address: 723 WATER WORKS RD PLNT, RED LODGE MT 59068



| | Feb 2018 | Jan 2019 | Feb 2019 |
|----------------------|----------|----------|----------|
| Days of Service | 29 | 30 | 30 |
| kWh Used | 8880.00 | 12520.00 | 12420.00 |
| Avg. kWh per day | 306.2 | 417.3 | 414.0 |
| Avg. daily temp (°F) | 26 | 32 | 24 |



| | Feb 2018 | Jan 2019 | Feb 2019 |
|----------------------|----------|----------|----------|
| Days of Service | 30 | 30 | 30 |
| Therms Used | 462.00 | 429.00 | 446.00 |
| Avg. Therms per day | 15.4 | 14.3 | 14.9 |
| Avg. daily temp (°F) | 26 | 32 | 24 |

| DUE DATE | TOTAL AMOUNT DUE |
|----------------|------------------|
| March 11, 2019 | \$ 1,621.91 |

ACCOUNT SUMMARY

| | | | |
|-------------------|-------------------|-----------|--------------|
| Previous Balance | | \$ | 1,112.22 |
| Payments Received | February 15, 2019 | Thank you | \$(1,112.22) |
| Current Charges | | \$ | 1,621.91 |

Total Amount Due \$ 1,621.91

SUMMARY OF CURRENT CHARGES

| | Delivery Service | Supply Service | TOTAL |
|-----------------------|------------------|----------------|-------------|
| Electric Service | \$ 369.41 | \$ 776.49 | \$ 1,145.90 |
| Natural Gas Service | \$ 153.12 | \$ 92.78 | \$ 245.90 |
| State and Local Taxes | \$ 173.64 | \$ 56.47 | \$ 230.11 |

Total Current Charges \$ 696.17 \$ 925.74 \$ 1,621.91

BUDGET BILLING INFORMATION

IMPORTANT ACCOUNT INFORMATION

Currently, a balance remains on your account. If payment has been sent, please disregard this reminder.

Water plant

MESSAGE BOARD

Effective 02/01/2019, gas supply rates have decreased from the previous month as a result of the supply tracker. For questions about your bill or service, call NorthWestern Energy at 888-467-2669 (Monday through Friday, 7 a.m.-6 p.m). For information or to make a payment, visit us at: www.northwesternenergy.com.

Rich Hovey

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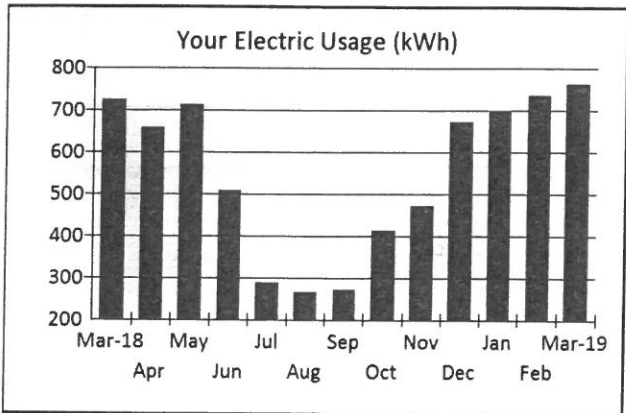


Customer Service: 1-888-467-2669

CUSTOMER: CITY OF RED LODGE
ACCOUNT NUMBER: 0713534-6
ACCOUNT DESCRIPTION:
BILLING DATE: March 14, 2019

GB

Service Address: 1219 S WHITE AVE, RED LODGE MT 59068



| | Mar 2018 | Feb 2019 | Mar 2019 |
|----------------------|----------|----------|----------|
| Days of Service | 29 | 30 | 31 |
| kWh Used | 725.00 | 736.00 | 765.00 |
| Avg. kWh per day | 25.0 | 24.5 | 24.7 |
| Avg. daily temp (°F) | 17 | 24 | 9 |

| DUE DATE | TOTAL AMOUNT DUE |
|---------------|------------------|
| April 5, 2019 | \$ 101.21 |

ACCOUNT SUMMARY

| | | | |
|-------------------|----------------|-----------|------------|
| Previous Balance | | \$ | 97.61 |
| Payments Received | March 15, 2019 | Thank you | \$ (97.61) |
| Current Charges | | \$ | 101.21 |

Total Amount Due \$ 101.21

SUMMARY OF CURRENT CHARGES

| | Delivery Service | Supply Service | TOTAL |
|-----------------------|------------------|----------------|----------|
| Electric Service | \$ 36.51 | \$ 47.82 | \$ 84.33 |
| State and Local Taxes | \$ 13.54 | \$ 3.34 | \$ 16.88 |

Total Current Charges \$ 50.05 \$ 51.16 \$ 101.21

BUDGET BILLING INFORMATION

IMPORTANT ACCOUNT INFORMATION

Currently, a balance remains on your account. If payment has been sent, please disregard this reminder.

water PRV

MESSAGE BOARD

For questions about your bill or service, call NorthWestern Energy at 888-467-2669 (Monday through Friday, 7 a.m.-6 p.m). For information or to make a payment, visit us at: www.northwesternenergy.com.

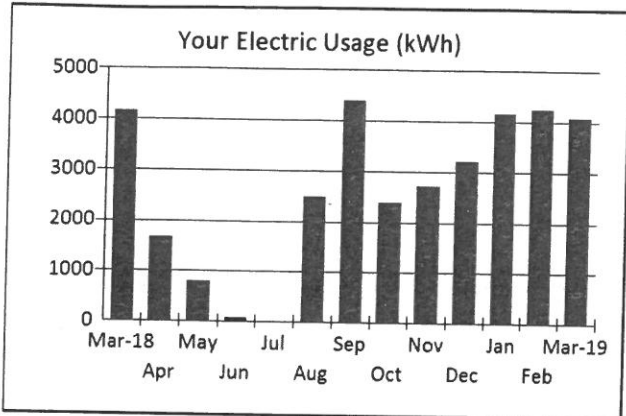


Customer Service: 1-888-467-2669

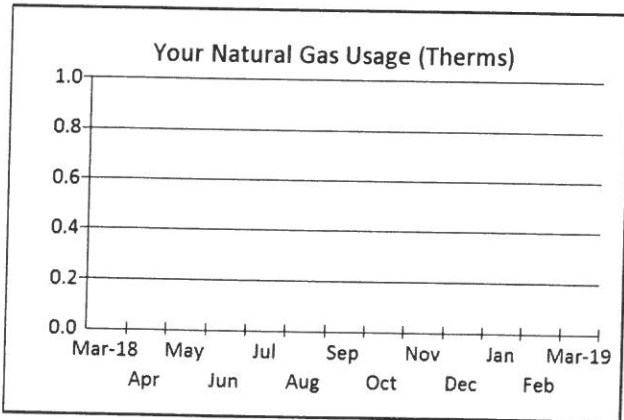
CUSTOMER: CITY OF RED LODGE
ACCOUNT NUMBER: 0713535-3
ACCOUNT DESCRIPTION:
BILLING DATE: March 14, 2019

GB

Service Address: 713 S GRANT AVE PMP, RED LODGE MT 59068



| | Mar 2018 | Feb 2019 | Mar 2019 |
|----------------------|----------|----------|----------|
| Days of Service | 28 | 30 | 31 |
| kWh Used | 4160.00 | 4240.00 | 4080.00 |
| Avg. kWh per day | 148.6 | 141.3 | 131.6 |
| Avg. daily temp (°F) | 17 | 24 | 9 |



| | Mar 2018 | Feb 2019 | Mar 2019 |
|----------------------|----------|----------|----------|
| Days of Service | 29 | 30 | 31 |
| Therms Used | | | |
| Avg. Therms per day | | | |
| Avg. daily temp (°F) | 18 | 24 | 9 |

Water Grant Well

| DUE DATE | TOTAL AMOUNT DUE |
|---------------|------------------|
| April 5, 2019 | \$ 858.67 |

ACCOUNT SUMMARY

| | | | |
|-------------------|----------------|-----------|------------|
| Previous Balance | | \$ | 870.98 |
| Payments Received | March 15, 2019 | Thank you | \$(870.98) |
| Current Charges | | \$ | 858.67 |

Total Amount Due \$ 858.67

SUMMARY OF CURRENT CHARGES

| | Delivery Service | Supply Service | TOTAL |
|-----------------------|------------------|----------------|-----------|
| Electric Service | \$ 412.70 | \$ 255.07 | \$ 667.77 |
| Natural Gas Service | \$ 16.35 | \$ 0.00 | \$ 16.35 |
| State and Local Taxes | \$ 156.75 | \$ 17.80 | \$ 174.55 |

Total Current Charges \$ 585.80 \$ 272.87 \$ 858.67

BUDGET BILLING INFORMATION

IMPORTANT ACCOUNT INFORMATION

Currently, a balance remains on your account. If payment has been sent, please disregard this reminder.

MESSAGE BOARD

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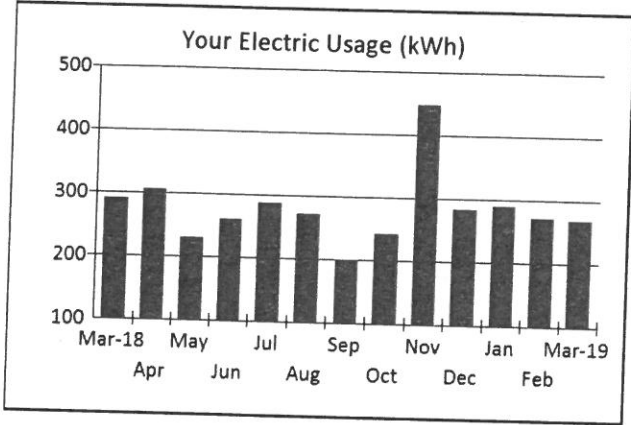


Customer Service: 1-888-467-2669

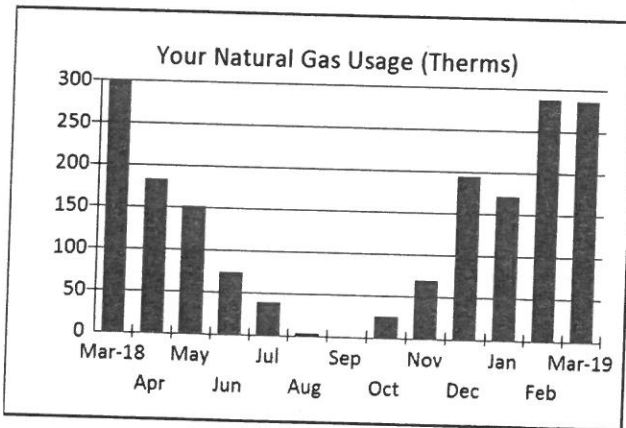
CUSTOMER: CITY OF RED LODGE
ACCOUNT NUMBER: 0713564-3
ACCOUNT DESCRIPTION:
BILLING DATE: March 14, 2019

GB

Service Address: 701 WATER WORKS RD, RED LODGE MT 59068



| | Mar 2018 | Feb 2019 | Mar 2019 |
|-------------------------|----------|----------|----------|
| Days of Service | 28 | 30 | 28 |
| kWh Used | 292.00 | 271.00 | 268.00 |
| Avg. kWh per day | 10.4 | 9.0 | 9.6 |
| Avg. daily temp (°F) 17 | | 24 | 7 |



| | Mar 2018 | Feb 2019 | Mar 2019 |
|----------------------|----------|----------|----------|
| Days of Service | 28 | 33 | 28 |
| Therms Used | 299.00 | 288.00 | 286.00 |
| Avg. Therms per day | 10.7 | 8.7 | 10.2 |
| Avg. daily temp (°F) | 17 | 22 | 10 |

| DUE DATE | TOTAL AMOUNT DUE |
|---------------|------------------|
| April 5, 2019 | \$ 249.63 |

ACCOUNT SUMMARY

| | | |
|-------------------|----------------|-----------------------|
| Previous Balance | | \$ 251.18 |
| Payments Received | March 15, 2019 | Thank you \$ (251.18) |
| Current Charges | | \$ 249.63 |

Total Amount Due \$ 249.63

SUMMARY OF CURRENT CHARGES

| | Delivery Service | Supply Service | TOTAL |
|------------------------------|------------------|-----------------|------------------|
| Electric Service | \$ 16.59 | \$ 16.76 | \$ 33.35 |
| Unmetered Service | \$ 9.50 | \$ 5.13 | \$ 14.63 |
| Natural Gas Service | \$ 100.72 | \$ 59.34 | \$ 160.06 |
| State and Local Taxes | \$ 38.59 | \$ 3.00 | \$ 41.59 |
| Total Current Charges | \$ 165.40 | \$ 84.23 | \$ 249.63 |

BUDGET BILLING INFORMATION

IMPORTANT ACCOUNT INFORMATION

Currently, a balance remains on your account. If payment has been sent, please disregard this reminder.

Water

MESSAGE BOARD

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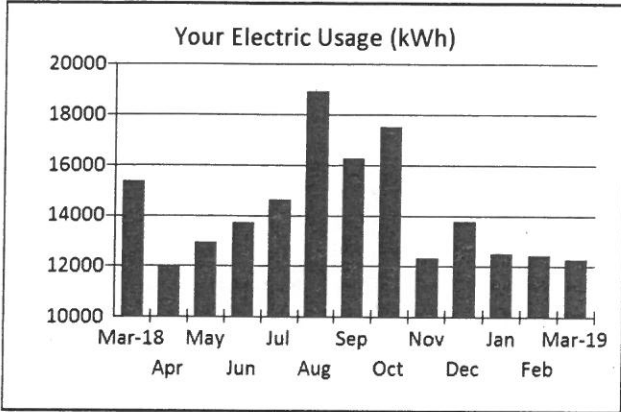


Customer Service: 1-888-467-2669

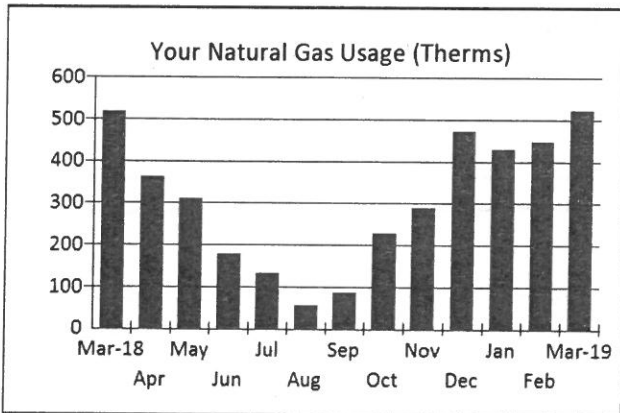
CUSTOMER: CITY OF RED LODGE
ACCOUNT NUMBER: 0713565-0
ACCOUNT DESCRIPTION:
BILLING DATE: March 14, 2019

GB

Service Address: 723 WATER WORKS RD PLNT, RED LODGE MT 59068



| | Mar 2018 | Feb 2019 | Mar 2019 |
|----------------------|----------|----------|----------|
| Days of Service | 29 | 30 | 28 |
| kWh Used | 15340.00 | 12420.00 | 12260.00 |
| Avg. kWh per day | 529.0 | 414.0 | 437.9 |
| Avg. daily temp (°F) | 17 | 24 | 7 |



| | Mar 2018 | Feb 2019 | Mar 2019 |
|----------------------|----------|----------|----------|
| Days of Service | 28 | 30 | 28 |
| Therms Used | 517.00 | 446.00 | 522.00 |
| Avg. Therms per day | 18.5 | 14.9 | 18.6 |
| Avg. daily temp (°F) | 17 | 24 | 7 |

| DUE DATE | TOTAL AMOUNT DUE |
|---------------|------------------|
| April 5, 2019 | \$ 1,646.60 |

ACCOUNT SUMMARY

| | | | |
|-------------------|----------------|-----------|---------------|
| Previous Balance | | \$ | 1,621.91 |
| Payments Received | March 15, 2019 | Thank you | \$ (1,621.91) |
| Current Charges | | \$ | 1,646.60 |

Total Amount Due \$ 1,646.60

SUMMARY OF CURRENT CHARGES

| | Delivery Service | Supply Service | TOTAL |
|------------------------------|------------------|------------------|--------------------|
| Electric Service | \$ 362.19 | \$ 766.48 | \$ 1,128.67 |
| Natural Gas Service | \$ 175.54 | \$ 107.19 | \$ 282.73 |
| State and Local Taxes | \$ 179.04 | \$ 56.16 | \$ 235.20 |
| Total Current Charges | \$ 716.77 | \$ 929.83 | \$ 1,646.60 |

BUDGET BILLING INFORMATION

IMPORTANT ACCOUNT INFORMATION

Currently, a balance remains on your account. If payment has been sent, please disregard this reminder.

Water plant

MESSAGE BOARD

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Delivering a Bright Future

Customer Service: 1-888-467-2669

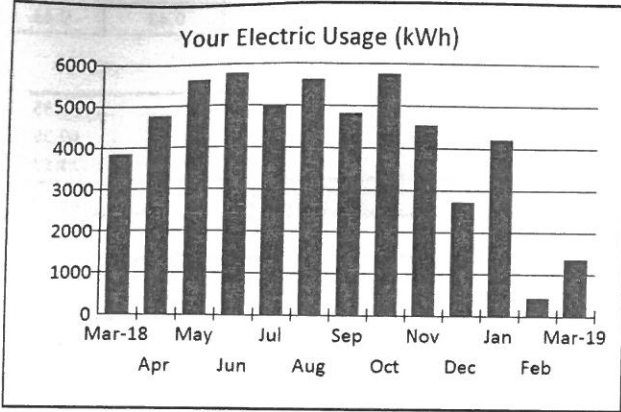
CUSTOMER: CITY OF RED LODGE

ACCOUNT NUMBER: 0308082-7

ACCOUNT DESCRIPTION:

BILLING DATE: March 13, 2019

Service Address: 631 LAZY M ST, RED LODGE MT 59068



| | Mar 2018 | Feb 2019 | Mar 2019 |
|----------------------|----------|----------|----------|
| Days of Service | 29 | 29 | 28 |
| kWh Used | 3848.00 | 423.00 | 1353.00 |
| Avg. kWh per day | 132.7 | 14.6 | 48.3 |
| Avg. daily temp (°F) | 17 | 24 | 6 |

| DUE DATE | TOTAL AMOUNT DUE |
|----------------|------------------|
| March 29, 2019 | \$ 353.16 |

ACCOUNT SUMMARY

| | | |
|-------------------|-----------------------------|-------------|
| Previous Balance | | \$ 388.79 |
| Payments Received | February 15, 2019 Thank you | \$ (244.56) |
| Current Charges | | \$ 208.93 |

Total Amount Due \$ 353.16

SUMMARY OF CURRENT CHARGES

| | Delivery Service ³ | Supply Service | TOTAL |
|------------------------------|-------------------------------|-----------------|------------------|
| Electric Service | \$ 88.07 | \$ 84.59 | \$ 172.66 |
| State and Local Taxes | \$ 30.37 | \$ 5.90 | \$ 36.27 |
| Total Current Charges | \$ 118.44 | \$ 90.49 | \$ 208.93 |

BUDGET BILLING INFORMATION

BUDGET BILLING -- PAY THE SAME AMOUNT EACH MONTH

If you were to go on budget billing next month, your approximate monthly budget billing amount would be \$451.00. Your account must be current and in good standing to qualify for budget billing.

IMPORTANT ACCOUNT INFORMATION

Water-booster

MESSAGE BOARD

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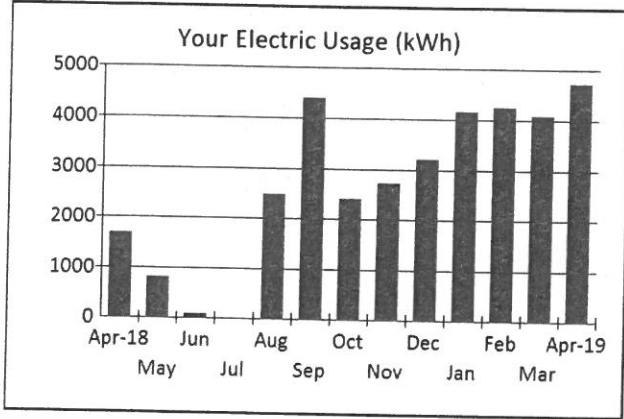
Title Clerk

Customer Service: 1-888-467-2669

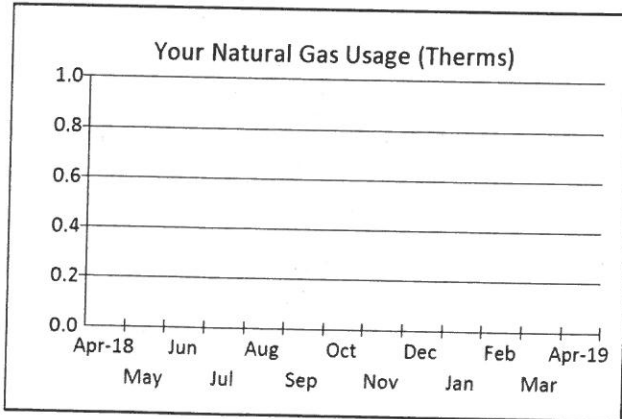
CUSTOMER: CITY OF RED LODGE
ACCOUNT NUMBER: 0713535-3
ACCOUNT DESCRIPTION:
BILLING DATE: April 15, 2019

GB

Service Address: 713 S GRANT AVE PMP, RED LODGE MT 59068



| | Apr 2018 | Mar 2019 | Apr 2019 |
|----------------------|----------|----------|----------|
| Days of Service | 30 | 31 | 28 |
| kWh Used | 1680.00 | 4080.00 | 4720.00 |
| Avg. kWh per day | 56.0 | 131.6 | 168.6 |
| Avg. cost per day | \$0.92 | \$27.17 | \$30.86 |
| Avg. daily temp (°F) | 33 | 9 | 42 |



| | Apr 2018 | Mar 2019 | Apr 2019 |
|----------------------|----------|----------|----------|
| Days of Service | 29 | 31 | 28 |
| Therms Used | | | |
| Avg. Therms per day | | | |
| Avg. cost per day | \$0.52 | \$0.53 | \$0.58 |
| Avg. daily temp (°F) | 33 | 9 | 42 |

Water-Grant

| DUE DATE | TOTAL AMOUNT DUE |
|-------------|------------------|
| May 8, 2019 | \$ 880.44 |

ACCOUNT SUMMARY

| | | | |
|-------------------|----------------|-----------|------------|
| Previous Balance | | \$ | 858.67 |
| Payments Received | April 12, 2019 | Thank you | \$(858.67) |
| Current Charges | | \$ | 880.44 |

Total Amount Due \$ 880.44

SUMMARY OF CURRENT CHARGES

| | Delivery Service | Supply Service | TOTAL |
|-----------------------|------------------|----------------|-----------|
| Electric Service | \$ 398.57 | \$ 295.09 | \$ 693.66 |
| Natural Gas Service | \$ 16.35 | \$ 0.00 | \$ 16.35 |
| State and Local Taxes | \$ 149.85 | \$ 20.58 | \$ 170.43 |

Total Current Charges \$ 564.77 \$ 315.67 \$ 880.44

BUDGET BILLING INFORMATION

IMPORTANT ACCOUNT INFORMATION

MESSAGE BOARD

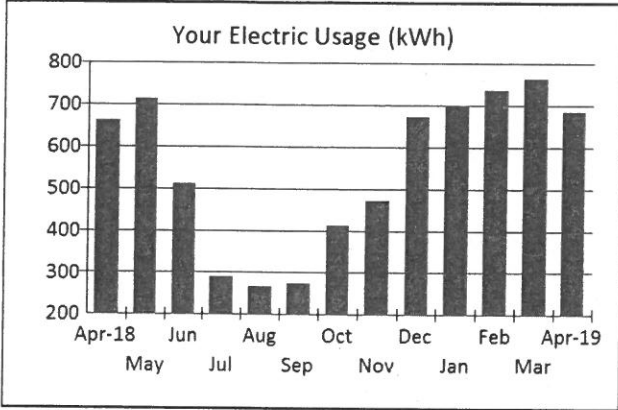
Effective 04/01/2019, gas supply rates have increased from the previous month as a result of the supply tracker. For questions about your bill or service, call NorthWestern Energy at 888-467-2669 (Monday through Friday, 7 a.m.-6 p.m). For information or to make a payment, visit us at: www.northwesternenergy.com.

Customer Service: 1-888-467-2669

CUSTOMER: CITY OF RED LODGE
ACCOUNT NUMBER: 0713534-6
ACCOUNT DESCRIPTION:
BILLING DATE: April 12, 2019

GB

Service Address: 1219 S WHITE AVE, RED LODGE MT 59068



| DUE DATE | TOTAL AMOUNT DUE |
|-------------|------------------|
| May 8, 2019 | \$ 91.63 |

ACCOUNT SUMMARY

| | | | | |
|-------------------|----------------|-----------|----|----------|
| Previous Balance | | | \$ | 101.21 |
| Payments Received | April 12, 2019 | Thank you | \$ | (101.21) |
| Current Charges | | | \$ | 91.63 |

Total Amount Due \$ 91.63

SUMMARY OF CURRENT CHARGES

| | Delivery Service | Supply Service | TOTAL |
|-----------------------|------------------|----------------|----------|
| Electric Service | \$ 33.64 | \$ 42.77 | \$ 76.41 |
| State and Local Taxes | \$ 12.24 | \$ 2.98 | \$ 15.22 |

Total Current Charges \$ 45.88 \$ 45.75 \$ 91.63

BUDGET BILLING INFORMATION

IMPORTANT ACCOUNT INFORMATION

Currently, a balance remains on your account. If payment has been sent, please disregard this reminder.

Water PRV

MESSAGE BOARD

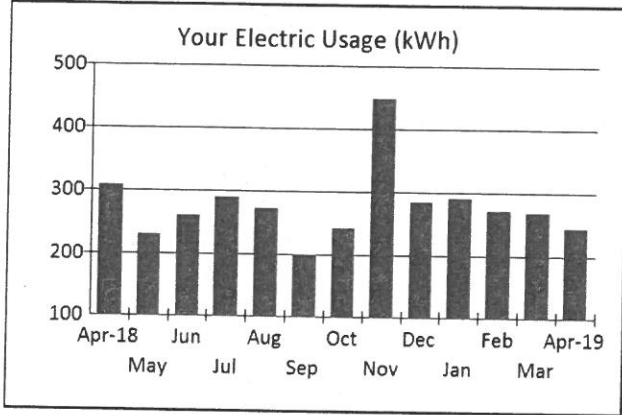
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Customer Service: 1-888-467-2669

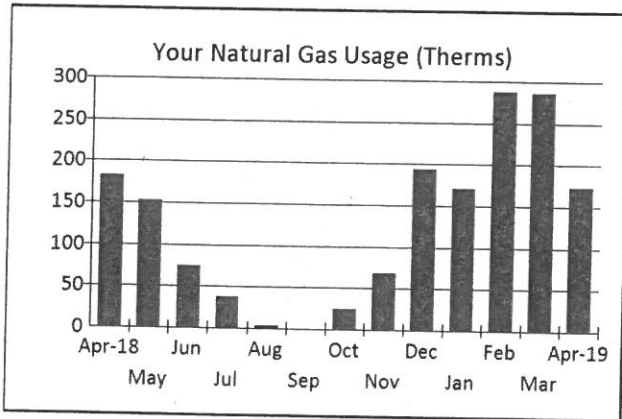
CUSTOMER: CITY OF RED LODGE
ACCOUNT NUMBER: 0713564-3
ACCOUNT DESCRIPTION:
BILLING DATE: April 15, 2019

GB

Service Address: 701 WATER WORKS RD, RED LODGE MT 59068



| | Apr 2018 | Mar 2019 | Apr 2019 |
|----------------------|----------|----------|----------|
| Days of Service | 29 | 28 | 32 |
| kWh Used | 307.00 | 268.00 | 243.00 |
| Avg. kWh per day | 10.6 | 9.6 | 7.6 |
| Avg. cost per day | \$1.50 | \$1.40 | \$1.14 |
| Avg. daily temp (°F) | 34 | 7 | 40 |



| | Apr 2018 | Mar 2019 | Apr 2019 |
|----------------------|----------|----------|----------|
| Days of Service | 29 | 28 | 29 |
| Therms Used | 182.00 | 286.00 | 173.00 |
| Avg. Therms per day | 6.3 | 10.2 | 6.0 |
| Avg. cost per day | \$4.67 | \$6.85 | \$4.42 |
| Avg. daily temp (°F) | 34 | 10 | 42 |

| DUE DATE | TOTAL AMOUNT DUE |
|-------------|------------------|
| May 8, 2019 | \$ 183.31 |

ACCOUNT SUMMARY

| | | | |
|-------------------|----------------|-----------|-------------|
| Previous Balance | | \$ | 249.63 |
| Payments Received | April 12, 2019 | Thank you | \$ (249.63) |
| Current Charges | | \$ | 183.31 |

Total Amount Due \$ **183.31**

SUMMARY OF CURRENT CHARGES

| | Delivery Service | Supply Service | TOTAL |
|-----------------------|------------------|----------------|-----------|
| Electric Service | \$ 15.77 | \$ 15.19 | \$ 30.96 |
| Unmetered Service | \$ 9.65 | \$ 5.13 | \$ 14.78 |
| Natural Gas Service | \$ 67.38 | \$ 41.57 | \$ 108.95 |
| State and Local Taxes | \$ 26.31 | \$ 2.31 | \$ 28.62 |

Total Current Charges \$ **119.11** \$ **64.20** \$ **183.31**

BUDGET BILLING INFORMATION

IMPORTANT ACCOUNT INFORMATION

Water -

MESSAGE BOARD

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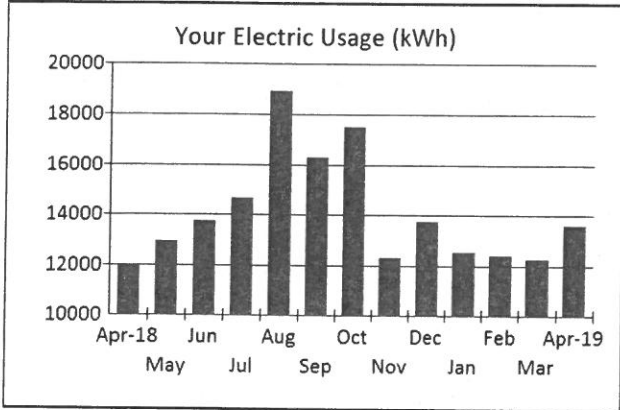


Customer Service: 1-888-467-2669

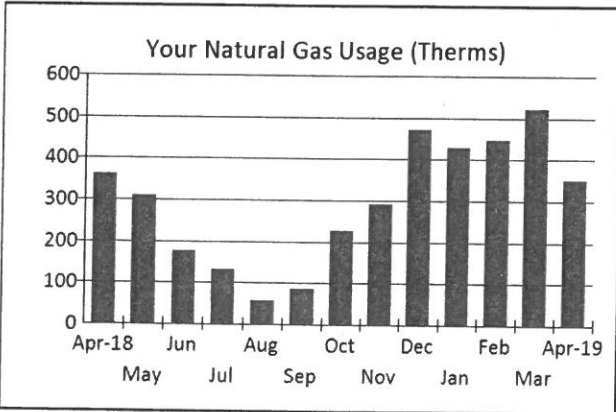
CUSTOMER: CITY OF RED LODGE
ACCOUNT NUMBER: 0713565-0
ACCOUNT DESCRIPTION:
BILLING DATE: April 12, 2019

GB

Service Address: 723 WATER WORKS RD PLNT, RED LODGE MT 59068



| | Apr 2018 | Mar 2019 | Apr 2019 |
|----------------------|----------|----------|----------|
| Days of Service | 29 | 28 | 31 |
| kWh Used | 11980.00 | 12260.00 | 13580.00 |
| Avg. kWh per day | 413.1 | 437.9 | 438.1 |
| Avg. cost per day | \$44.65 | \$46.64 | \$45.74 |
| Avg. daily temp (°F) | 34 | 7 | 40 |



| | Apr 2018 | Mar 2019 | Apr 2019 |
|----------------------|----------|----------|----------|
| Days of Service | 29 | 28 | 31 |
| Therms Used | 362.00 | 522.00 | 350.00 |
| Avg. Therms per day | 12.5 | 18.6 | 11.3 |
| Avg. cost per day | \$8.95 | \$12.17 | \$7.95 |
| Avg. daily temp (°F) | 34 | 7 | 40 |

| DUE DATE | TOTAL AMOUNT DUE |
|-------------|------------------|
| May 8, 2019 | \$ 1,664.52 |

ACCOUNT SUMMARY

| | | |
|-------------------|--------------------------|---------------|
| Previous Balance | | \$ 1,646.60 |
| Payments Received | April 12, 2019 Thank you | \$ (1,646.60) |
| Current Charges | | \$ 1,664.52 |

Total Amount Due \$ 1,664.52

SUMMARY OF CURRENT CHARGES

| | Delivery Service | Supply Service | TOTAL |
|-----------------------|------------------|----------------|-------------|
| Electric Service | \$ 380.73 | \$ 849.01 | \$ 1,229.74 |
| Natural Gas Service | \$ 124.80 | \$ 82.84 | \$ 207.64 |
| State and Local Taxes | \$ 166.10 | \$ 61.04 | \$ 227.14 |

Total Current Charges \$ 671.63 \$ 992.89 \$ 1,664.52

BUDGET BILLING INFORMATION

IMPORTANT ACCOUNT INFORMATION

Currently, a balance remains on your account. If payment has been sent, please disregard this reminder.

Water-Plant

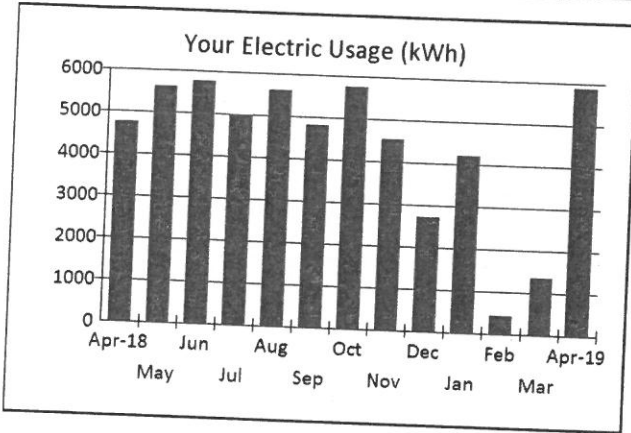
MESSAGE BOARD

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Customer Service: 1-888-467-2669

CUSTOMER: CITY OF RED LODGE
ACCOUNT NUMBER: 0308082-7
ACCOUNT DESCRIPTION:
BILLING DATE: April 12, 2019

Service Address: 631 LAZY M ST, RED LODGE MT 59068



| | Apr 2018 | Mar 2019 | Apr 2019 |
|----------------------|----------|----------|----------|
| Days of Service | 29 | 28 | 32 |
| kWh Used | 4767.00 | 1353.00 | 5898.00 |
| Avg. kWh per day | 164.4 | 48.3 | 184.3 |
| Avg. cost per day | \$16.36 | \$7.46 | \$17.71 |
| Avg. daily temp (°F) | 34 | 6 | 40 |

| DUE DATE | TOTAL AMOUNT DUE |
|----------------|------------------|
| April 29, 2019 | \$ 775.51 |

ACCOUNT SUMMARY

| | | | |
|-------------------|----------------|-----------|-------------|
| Previous Balance | | \$ | 353.16 |
| Payments Received | March 15, 2019 | Thank you | \$ (144.23) |
| Current Charges | | \$ | 566.58 |

Total Amount Due \$ 775.51

SUMMARY OF CURRENT CHARGES

| | Delivery Service | Supply Service | TOTAL |
|-----------------------|------------------|----------------|-----------|
| Electric Service | \$ 131.39 | \$ 368.74 | \$ 500.13 |
| State and Local Taxes | \$ 40.72 | \$ 25.73 | \$ 66.45 |

Total Current Charges \$ 172.11 \$ 394.47 \$ **566.58**

BUDGET BILLING INFORMATION

BUDGET BILLING -- PAY THE SAME AMOUNT EACH MONTH

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IMPORTANT ACCOUNT INFORMATION

Water-booster

MESSAGE BOARD

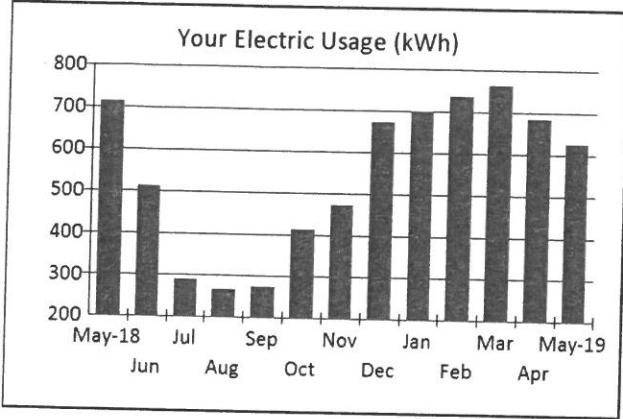
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Customer Service: 1-888-467-2669

CUSTOMER: CITY OF RED LODGE
ACCOUNT NUMBER: 0713534-6
ACCOUNT DESCRIPTION:
BILLING DATE: May 14, 2019

GB

Service Address: 1219 S WHITE AVE, RED LODGE MT 59068



| | May 2018 | Apr 2019 | May 2019 |
|----------------------|----------|----------|----------|
| Days of Service | 32 | 29 | 30 |
| kWh Used | 715.00 | 684.00 | 625.00 |
| Avg. kWh per day | 22.3 | 23.6 | 20.8 |
| Avg. cost per day | \$2.92 | \$3.16 | \$2.84 |
| Avg. daily temp (°F) | 49 | 42 | 47 |

| DUE DATE | TOTAL AMOUNT DUE |
|--------------|------------------|
| June 5, 2019 | \$ 85.28 |

ACCOUNT SUMMARY

| | | | |
|-------------------|--------------|-----------|------------|
| Previous Balance | | \$ | 91.63 |
| Payments Received | May 17, 2019 | Thank you | \$ (91.63) |
| Current Charges | | \$ | 85.28 |

| | | |
|------------------|----|-------|
| Total Amount Due | \$ | 85.28 |
|------------------|----|-------|

SUMMARY OF CURRENT CHARGES

| | Delivery Service | Supply Service | TOTAL |
|-----------------------|------------------|----------------|----------|
| Electric Service | \$ 32.03 | \$ 39.07 | \$ 71.10 |
| State and Local Taxes | \$ 11.45 | \$ 2.73 | \$ 14.18 |

| | | | |
|-----------------------|----------|----------|----------|
| Total Current Charges | \$ 43.48 | \$ 41.80 | \$ 85.28 |
|-----------------------|----------|----------|----------|

BUDGET BILLING INFORMATION

IMPORTANT ACCOUNT INFORMATION

Currently, a balance remains on your account. If payment has been sent, please disregard this reminder.

Water-P&W

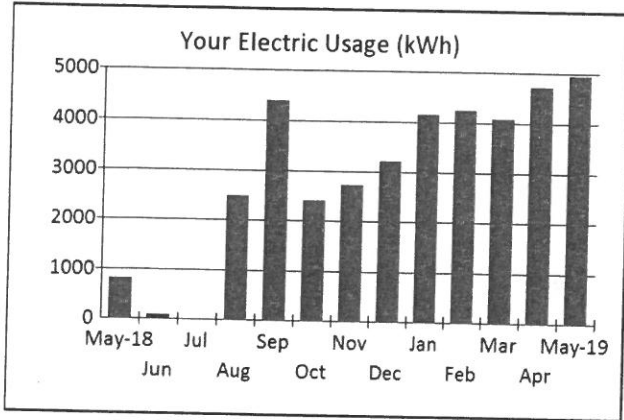
MESSAGE BOARD

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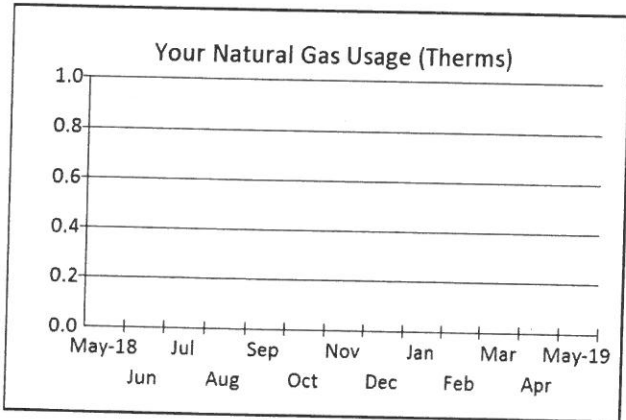
Customer Service: 1-888-467-2669

CUSTOMER: CITY OF RED LODGE
ACCOUNT NUMBER: 0713535-3 GB
ACCOUNT DESCRIPTION:
BILLING DATE: May 16, 2019

Service Address: 713 S GRANT AVE PMP, RED LODGE MT 59068



| | May 2018 | Apr 2019 | May 2019 |
|----------------------|----------|----------|----------|
| Days of Service | 31 | 28 | 31 |
| kWh Used | 800.00 | 4720.00 | 4960.00 |
| Avg. kWh per day | 25.8 | 168.6 | 160.0 |
| Avg. cost per day | \$5.32 | \$30.86 | \$28.93 |
| Avg. daily temp (°F) | 49 | 42 | 47 |



| | May 2018 | Apr 2019 | May 2019 |
|----------------------|----------|----------|----------|
| Days of Service | 31 | 28 | 31 |
| Therms Used | ~0.53 | ~0.58 | ~0.53 |
| Avg. Therms per day | ~0.017 | ~0.021 | ~0.017 |
| Avg. cost per day | \$0.53 | \$0.58 | \$0.53 |
| Avg. daily temp (°F) | 49 | 42 | 47 |

Water-Grant well

| DUE DATE | TOTAL AMOUNT DUE |
|--------------|------------------|
| June 5, 2019 | \$ 913.10 |

ACCOUNT SUMMARY

| | | | |
|-------------------|--------------|-----------|------------|
| Previous Balance | | \$ | 880.44 |
| Payments Received | May 17, 2019 | Thank you | \$(880.44) |
| Current Charges | | \$ | 913.10 |

Total Amount Due \$ 913.10

SUMMARY OF CURRENT CHARGES

| | Delivery Service | Supply Service | TOTAL |
|-----------------------|------------------|----------------|-----------|
| Electric Service | \$ 411.06 | \$ 310.10 | \$ 721.16 |
| Natural Gas Service | \$ 16.35 | \$ 0.00 | \$ 16.35 |
| State and Local Taxes | \$ 153.95 | \$ 21.64 | \$ 175.59 |

Total Current Charges \$ 581.36 \$ 331.74 \$ 913.10

BUDGET BILLING INFORMATION

IMPORTANT ACCOUNT INFORMATION

Currently, a balance remains on your account. If payment has been sent, please disregard this reminder.

MESSAGE BOARD

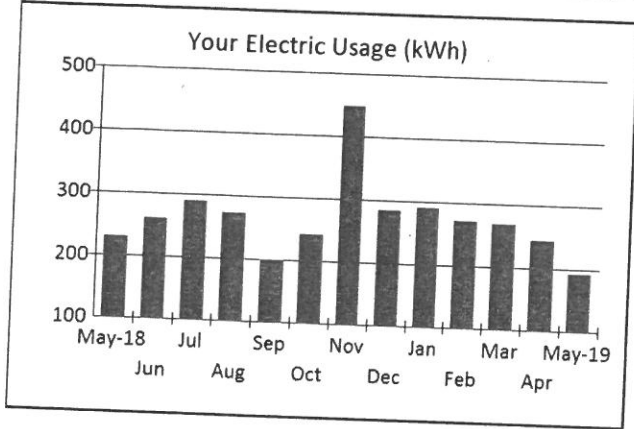
Effective 05/01/2019, gas supply rates have decreased from the previous month as a result of the supply tracker. For questions about your bill or service, call NorthWestern Energy at 888-467-2669 (Monday through Friday, 7 a.m.-6 p.m.). For information or to make a payment, visit us at: www.northwesternenergy.com.

Customer Service: 1-888-467-2669

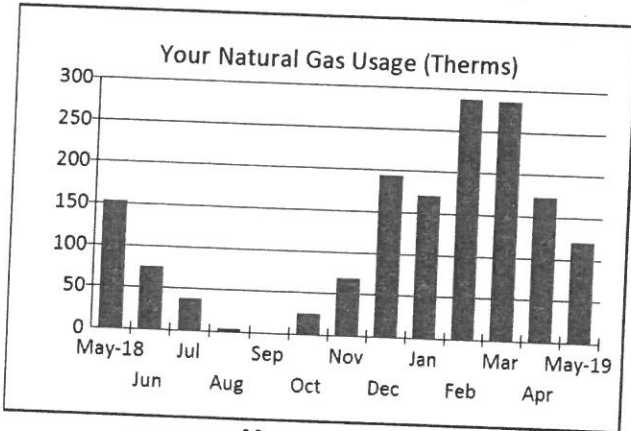
CUSTOMER: CITY OF RED LODGE
ACCOUNT NUMBER: 0713564-3
ACCOUNT DESCRIPTION:
BILLING DATE: May 14, 2019

GB

Service Address: 701 WATER WORKS RD, RED LODGE MT 59068



| | May 2018 | Apr 2019 | May 2019 |
|----------------------|----------|----------|----------|
| Days of Service | 32 | 32 | 30 |
| kWh Used | 230.00 | 243.00 | 192.00 |
| Avg. kWh per day | 7.2 | 7.6 | 6.4 |
| Avg. cost per day | \$1.06 | \$1.14 | \$1.01 |
| Avg. daily temp (°F) | 49 | 40 | 47 |



| | May 2018 | Apr 2019 | May 2019 |
|----------------------|----------|----------|----------|
| Days of Service | 32 | 29 | 30 |
| Therms Used | 152.00 | 173.00 | 120.00 |
| Avg. Therms per day | 4.8 | 6.0 | 4.0 |
| Avg. cost per day | \$3.71 | \$4.42 | \$0.88 |
| Avg. daily temp (°F) | 49 | 42 | 42 |

| DUE DATE | TOTAL AMOUNT DUE |
|--------------|------------------|
| June 5, 2019 | \$ 75.75 |

ACCOUNT SUMMARY

| | | | |
|--|--------------|-----------|-------------|
| Previous Balance | | \$ | 183.31 |
| Payments Received | May 17, 2019 | Thank you | \$ (183.31) |
| Current Charges | | \$ | 148.41 |
| Adjustments/Deposits/Transfers/Refunds | | \$ | (72.66) |

| | |
|------------------|----------|
| Total Amount Due | \$ 75.75 |
|------------------|----------|

SUMMARY OF CURRENT CHARGES

| | Delivery Service | Supply Service | TOTAL |
|------------------------------|------------------|-----------------|------------------|
| Electric Service | \$ 14.07 | \$ 12.01 | \$ 26.08 |
| Unmetered Service | \$ 9.85 | \$ 5.13 | \$ 14.98 |
| Natural Gas Service | \$ 51.75 | \$ 33.84 | \$ 85.59 |
| State and Local Taxes | \$ 19.94 | \$ 1.82 | \$ 21.76 |
| Total Current Charges | \$ 95.61 | \$ 52.80 | \$ 148.41 |

BUDGET BILLING INFORMATION

IMPORTANT ACCOUNT INFORMATION

Currently, a balance remains on your account. If payment has been sent, please disregard this reminder.

Water

MESSAGE BOARD

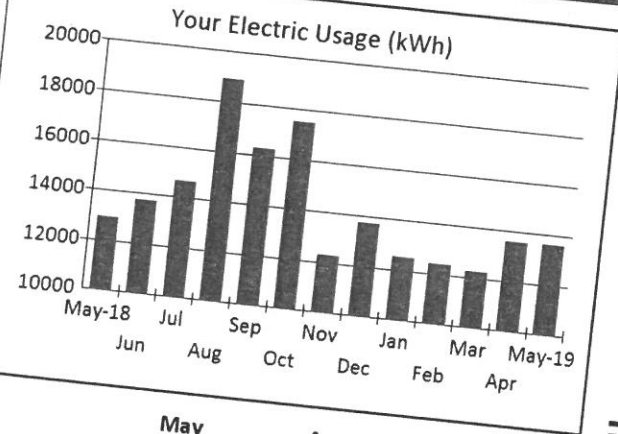
Effective 05/01/2019, gas supply rates have decreased from the previous month as a result of the supply tracker. For questions about your bill or service, call NorthWestern Energy at 888-467-2669 (Monday through Friday, 7 a.m.-6 p.m.). For information or to make a payment, visit us at: www.northwesternenergy.com.

Customer Service: 1-888-467-2669

CUSTOMER: CITY OF RED LODGE
ACCOUNT NUMBER: 0713565-0
ACCOUNT DESCRIPTION:
BILLING DATE: May 14, 2019

GE

Service Address: 723 WATER WORKS RD PLNT, RED LODGE MT 59068



| | May 2018 | Apr 2019 | May 2019 |
|----------------------|----------|----------|----------|
| Days of Service | 32 | 31 | 31 |
| kWh Used | 12920.00 | 13580.00 | 13640.00 |
| Avg. kWh per day | 403.8 | 438.1 | 440.0 |
| Avg. cost per day | \$42.91 | \$45.74 | \$46.23 |
| Avg. daily temp (°F) | 49 | 40 | 47 |

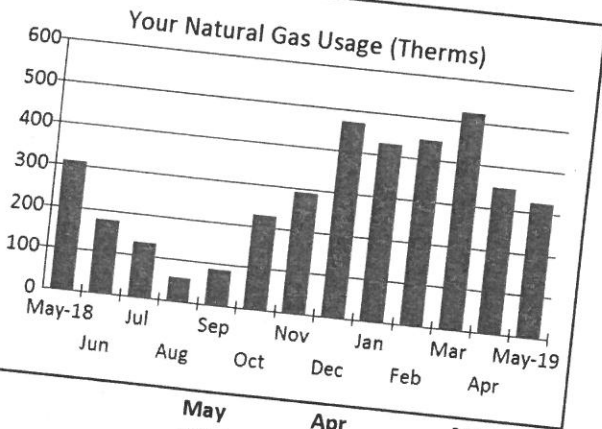
Total Amount Due

SUMMARY OF CURRENT CHARGES \$ 1,677.53

| | Delivery Service | Supply Service | TOTAL |
|------------------------------|------------------|--------------------|--------------------|
| Electric Service | \$ 388.95 | \$ 852.76 | \$ 1,241.71 |
| Natural Gas Service | \$ 117.13 | \$ 91.41 | \$ 208.54 |
| State and Local Taxes | \$ 166.11 | \$ 61.17 | \$ 227.28 |
| Total Current Charges | \$ 672.19 | \$ 1,005.34 | \$ 1,677.53 |

Total Current Charges

BUDGET BILLING INFORMATION \$ 1,677.53



| | May 2018 | Apr 2019 | May 2019 |
|-----------------|----------|----------|----------|
| Days of Service | 32 | 31 | 31 |
| Therms Used | 310.00 | 350.00 | 324.00 |
| Therms per day | 9.7 | 11.3 | 10.5 |
| cost per day | \$7.20 | \$7.95 | \$7.89 |
| daily temp (°F) | 49 | 40 | 47 |

IMPORTANT ACCOUNT INFORMATION

Currently, a balance remains on your account. If payment has been sent, please disregard this reminder.

Water-plant

MESSAGE BOARD

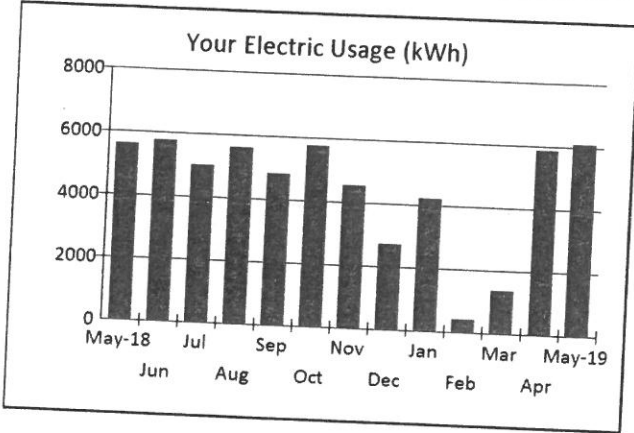
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Customer Service: 1-888-467-2669

CUSTOMER: CITY OF RED LODGE
 ACCOUNT NUMBER: 0308082-7
 ACCOUNT DESCRIPTION:
 BILLING DATE: May 13, 2019

Service Address: 631 LAZY M ST, RED LODGE MT 59068



| | May 2018 | Apr 2019 | May 2019 |
|----------------------|----------|----------|----------|
| Days of Service | 28 | 32 | 29 |
| kWh Used | 5615.00 | 5898.00 | 6104.00 |
| Avg. kWh per day | 200.5 | 184.3 | 210.5 |
| Avg. cost per day | \$19.39 | \$17.71 | \$20.15 |
| Avg. daily temp (°F) | 46 | 40 | 47 |

| DUE DATE | TOTAL AMOUNT DUE |
|--------------|------------------|
| May 29, 2019 | \$ 1,150.80 |

ACCOUNT SUMMARY

| | | | |
|-------------------|----------------|-----------|-------------|
| Previous Balance | | \$ | 775.51 |
| Payments Received | April 12, 2019 | Thank you | \$ (208.93) |
| Current Charges | | \$ | 584.22 |

Total Amount Due \$ 1,150.80

SUMMARY OF CURRENT CHARGES

| | Delivery Service | Supply Service | TOTAL |
|-----------------------|------------------|----------------|-----------|
| Electric Service | \$ 134.50 | \$ 381.62 | \$ 516.12 |
| State and Local Taxes | \$ 41.47 | \$ 26.63 | \$ 68.10 |

Total Current Charges \$ 175.97 \$ 408.25 \$ 584.22

BUDGET BILLING INFORMATION

BUDGET BILLING -- PAY THE SAME AMOUNT EACH MONTH

If you were to go on budget billing next month, your approximate monthly budget billing amount would be \$449.00. Your account must be current and in good standing to qualify for budget billing.

IMPORTANT ACCOUNT INFORMATION

Water booster
~~584.22~~

MESSAGE BOARD

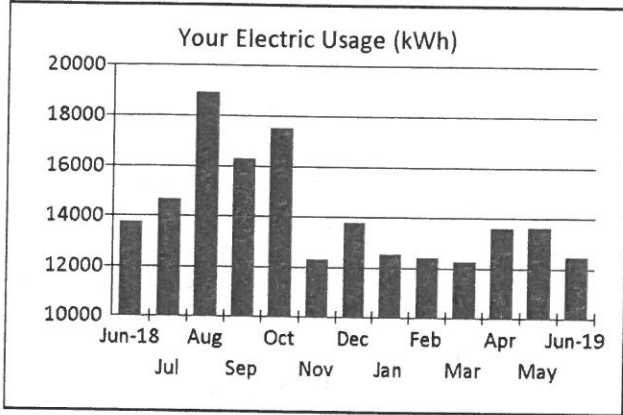
For questions about your bill or service, call NorthWestern Energy at 888-467-2669 (Monday through Friday, 7 a.m.-6 p.m.). For information or to make a payment, visit us at: www.northwesternenergy.com.

Customer Service: 1-888-467-2669

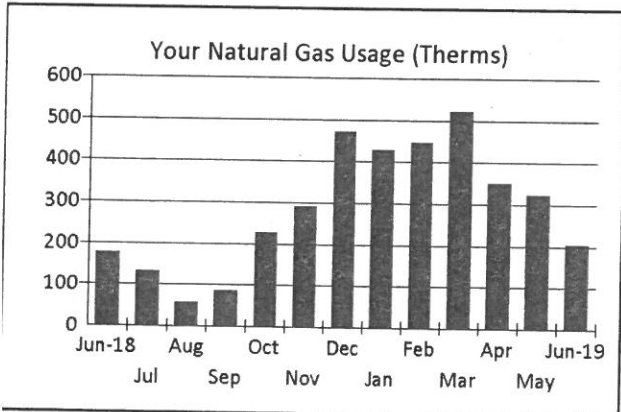
CUSTOMER: CITY OF RED LODGE
ACCOUNT NUMBER: 0713565-0
ACCOUNT DESCRIPTION:
BILLING DATE: June 13, 2019

GB

Service Address: 723 WATER WORKS RD PLNT, RED LODGE MT 59068



| | Jun 2018 | May 2019 | Jun 2019 |
|----------------------|----------|----------|----------|
| Days of Service | 31 | 31 | 29 |
| kWh Used | 13720.00 | 13640.00 | 12440.00 |
| Avg. kWh per day | 442.6 | 440.0 | 429.0 |
| Avg. cost per day | \$46.10 | \$46.23 | \$46.22 |
| Avg. daily temp (°F) | 61 | 47 | 59 |



| | Jun 2018 | May 2019 | Jun 2019 |
|----------------------|----------|----------|----------|
| Days of Service | 31 | 31 | 29 |
| Therms Used | 177.00 | 324.00 | 204.00 |
| Avg. Therms per day | 5.7 | 10.5 | 7.0 |
| Avg. cost per day | \$4.41 | \$7.89 | \$5.45 |
| Avg. daily temp (°F) | 61 | 47 | 59 |

| DUE DATE | TOTAL AMOUNT DUE |
|--------------|------------------|
| July 5, 2019 | \$ 1,498.44 |

ACCOUNT SUMMARY

| | | |
|-------------------|---------------|-------------------------|
| Previous Balance | | \$ 1,677.53 |
| Payments Received | June 14, 2019 | Thank you \$ (1,677.53) |
| Current Charges | | \$ 1,498.44 |

Total Amount Due \$ 1,498.44

SUMMARY OF CURRENT CHARGES

| | Delivery Service | Supply Service | TOTAL |
|-----------------------|------------------|----------------|-------------|
| Electric Service | \$ 378.87 | \$ 777.74 | \$ 1,156.61 |
| Natural Gas Service | \$ 81.60 | \$ 53.70 | \$ 135.30 |
| State and Local Taxes | \$ 151.22 | \$ 55.31 | \$ 206.53 |

Total Current Charges \$ 611.69 \$ 886.75 \$ 1,498.44

BUDGET BILLING INFORMATION

IMPORTANT ACCOUNT INFORMATION

Currently, a balance remains on your account. If payment has been sent, please disregard this reminder.

Water

MESSAGE BOARD

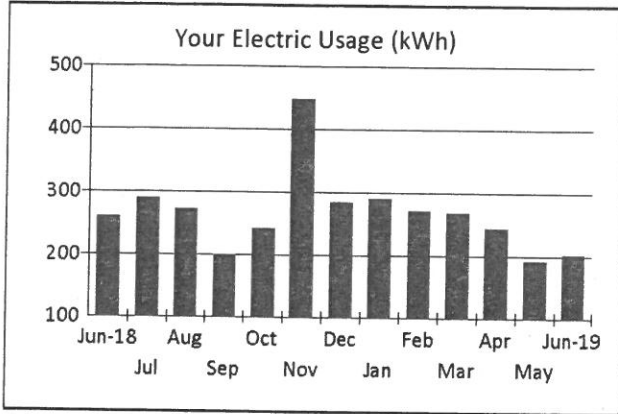
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Customer Service: 1-888-467-2669

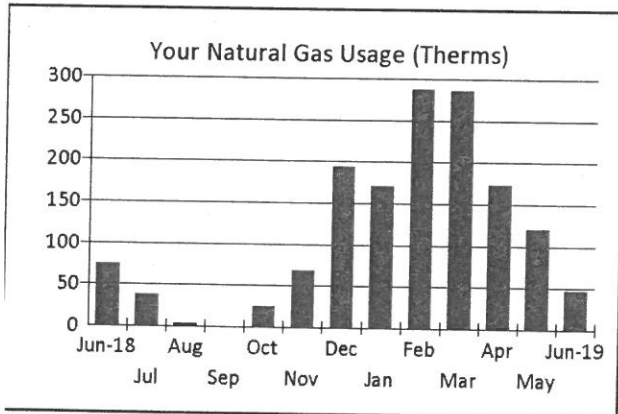
CUSTOMER: CITY OF RED LODGE
ACCOUNT NUMBER: 0713564-3
ACCOUNT DESCRIPTION:
BILLING DATE: June 13, 2019

GB

Service Address: 701 WATER WORKS RD, RED LODGE MT 59068



| | Jun 2018 | May 2019 | Jun 2019 |
|----------------------|----------|----------|----------|
| Days of Service | 31 | 30 | 32 |
| kWh Used | 261.00 | 192.00 | 202.00 |
| Avg. kWh per day | 8.4 | 6.4 | 6.3 |
| Avg. cost per day | \$1.22 | \$1.01 | \$0.99 |
| Avg. daily temp (°F) | 61 | 47 | 58 |



| | Jun 2018 | May 2019 | Jun 2019 |
|----------------------|----------|----------|----------|
| Days of Service | 31 | 7 | 32 |
| Therms Used | 74.00 | 120.00 | 47.00 |
| Avg. Therms per day | 2.4 | 17.1 | 1.5 |
| Avg. cost per day | \$2.08 | \$7.50 | \$1.49 |
| Avg. daily temp (°F) | 61 | 42 | 58 |

| DUE DATE | TOTAL AMOUNT DUE |
|--------------|------------------|
| July 5, 2019 | \$ 98.35 |

ACCOUNT SUMMARY

| | | | |
|-------------------|---------------|-----------|-----------|
| Previous Balance | | \$ | 75.75 |
| Payments Received | June 14, 2019 | Thank you | \$(75.75) |
| Current Charges | | \$ | 98.35 |

Total Amount Due \$ 98.35

SUMMARY OF CURRENT CHARGES

| | Delivery Service | Supply Service | TOTAL |
|------------------------------|------------------|-----------------|-----------------|
| Electric Service | \$ 14.47 | \$ 12.63 | \$ 27.10 |
| Unmetered Service | \$ 9.85 | \$ 5.13 | \$ 14.98 |
| Natural Gas Service | \$ 30.18 | \$ 12.22 | \$ 42.40 |
| State and Local Taxes | \$ 12.39 | \$ 1.48 | \$ 13.87 |
| Total Current Charges | \$ 66.89 | \$ 31.46 | \$ 98.35 |

BUDGET BILLING INFORMATION

IMPORTANT ACCOUNT INFORMATION

Currently, a balance remains on your account. If payment has been sent, please disregard this reminder.

water

MESSAGE BOARD

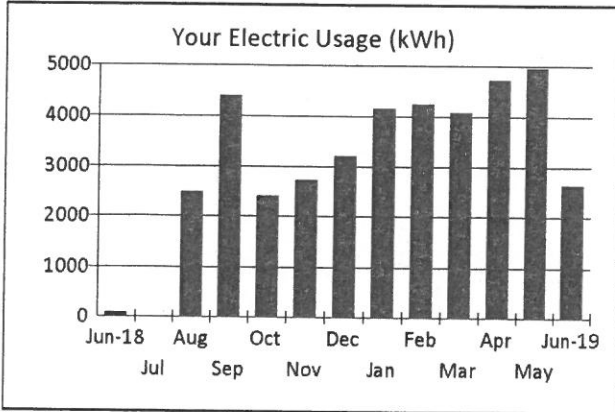
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Customer Service: 1-888-467-2669

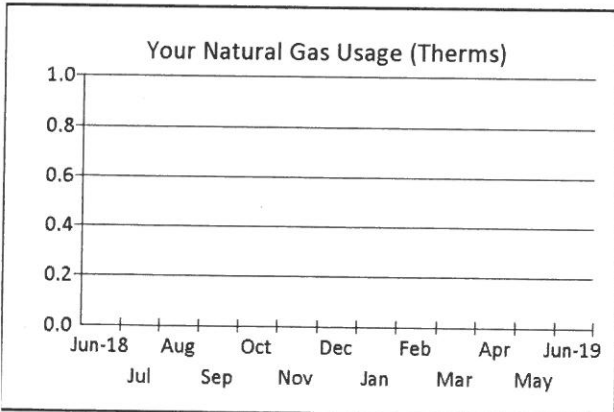
CUSTOMER: CITY OF RED LODGE
ACCOUNT NUMBER: 0713535-3
ACCOUNT DESCRIPTION:
BILLING DATE: June 17, 2019

GB

Service Address: 713 S GRANT AVE PMP, RED LODGE MT 59068



| | Jun 2018 | May 2019 | Jun 2019 |
|----------------------|----------|----------|----------|
| Days of Service | 30 | 31 | 32 |
| kWh Used | 80.00 | 4960.00 | 2640.00 |
| Avg. kWh per day | 2.7 | 160.0 | 82.5 |
| Avg. cost per day | \$1.77 | \$28.93 | \$22.43 |
| Avg. daily temp (°F) | 61 | 47 | 58 |



| | Jun 2018 | May 2019 | Jun 2019 |
|----------------------|----------|----------|----------|
| Days of Service | 30 | 31 | 32 |
| Therms Used | | | |
| Avg. Therms per day | | | |
| Avg. cost per day | \$0.55 | \$0.53 | \$0.51 |
| Avg. daily temp (°F) | 61 | 47 | 58 |

| DUE DATE | TOTAL AMOUNT DUE |
|--------------|------------------|
| July 5, 2019 | \$ 734.18 |

ACCOUNT SUMMARY

| | | | |
|-------------------|---------------|-----------|-------------|
| Previous Balance | | \$ | 913.10 |
| Payments Received | June 14, 2019 | Thank you | \$ (913.10) |
| Current Charges | | \$ | 734.18 |

Total Amount Due \$ 734.18

SUMMARY OF CURRENT CHARGES

| | Delivery Service | Supply Service | TOTAL |
|-----------------------|------------------|----------------|-----------|
| Electric Service | \$ 391.57 | \$ 165.05 | \$ 556.62 |
| Natural Gas Service | \$ 16.35 | \$ 0.00 | \$ 16.35 |
| State and Local Taxes | \$ 149.69 | \$ 11.52 | \$ 161.21 |

Total Current Charges \$ 557.61 \$ 176.57 \$ 734.18

BUDGET BILLING INFORMATION

IMPORTANT ACCOUNT INFORMATION

Currently, a balance remains on your account. If payment has been sent, please disregard this reminder.

Water - Grant well

MESSAGE BOARD

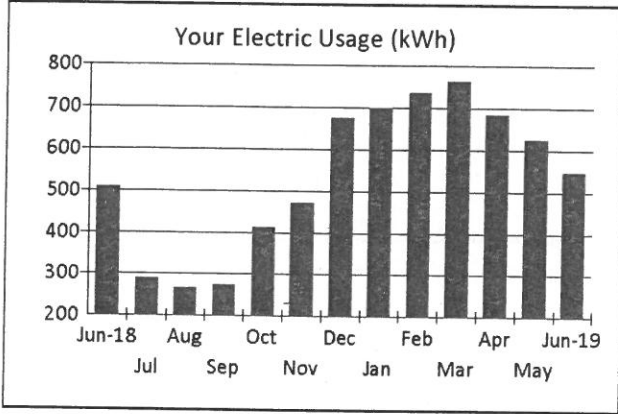
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Customer Service: 1-888-467-2669

CUSTOMER: CITY OF RED LODGE
ACCOUNT NUMBER: 0713534-6
ACCOUNT DESCRIPTION:
BILLING DATE: June 13, 2019

GB

Service Address: 1219 S WHITE AVE, RED LODGE MT 59068



| | Jun 2018 | May 2019 | Jun 2019 |
|----------------------|----------|----------|----------|
| Days of Service | 31 | 30 | 32 |
| kWh Used | 510.00 | 625.00 | 548.00 |
| Avg. kWh per day | 16.5 | 20.8 | 17.1 |
| Avg. cost per day | \$2.20 | \$2.84 | \$2.36 |
| Avg. daily temp (°F) | 61 | 47 | 58 |

| DUE DATE | TOTAL AMOUNT DUE |
|--------------|------------------|
| July 5, 2019 | \$ 75.54 |

ACCOUNT SUMMARY

| | | | |
|-------------------|---------------|-----------|-----------|
| Previous Balance | | \$ | 85.28 |
| Payments Received | June 14, 2019 | Thank you | \$(85.28) |
| Current Charges | | \$ | 75.54 |

Total Amount Due \$ 75.54

SUMMARY OF CURRENT CHARGES

| | Delivery Service | Supply Service | TOTAL |
|------------------------------|------------------|-----------------|-----------------|
| Electric Service | \$ 28.84 | \$ 34.27 | \$ 63.11 |
| State and Local Taxes | \$ 10.04 | \$ 2.39 | \$ 12.43 |
| Total Current Charges | \$ 38.88 | \$ 36.66 | \$ 75.54 |

BUDGET BILLING INFORMATION

IMPORTANT ACCOUNT INFORMATION

Currently, a balance remains on your account. If payment has been sent, please disregard this reminder.

Water - PRV

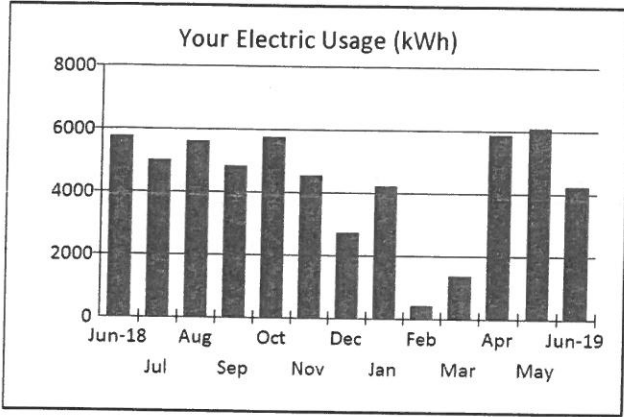
MESSAGE BOARD

For questions about your bill or service, call NorthWestern Energy at 1-888-467-2669 (Monday through Friday, 7 a.m.-6 p.m). For information or to make a payment, visit us at: www.northwesternenergy.com

Customer Service: 1-888-467-2669

CUSTOMER: CITY OF RED LODGE
ACCOUNT NUMBER: 0308082-7
ACCOUNT DESCRIPTION:
BILLING DATE: June 12, 2019

Service Address: 631 LAZY M ST, RED LODGE MT 59068



| | Jun 2018 | May 2019 | Jun 2019 |
|----------------------|----------|----------|----------|
| Days of Service | 33 | 29 | 30 |
| kWh Used | 5774.00 | 6104.00 | 4239.00 |
| Avg. kWh per day | 175.0 | 210.5 | 141.3 |
| Avg. cost per day | \$17.29 | \$20.15 | \$15.14 |
| Avg. daily temp (°F) | 61 | 47 | 58 |

| DUE DATE | TOTAL AMOUNT DUE |
|---------------|------------------|
| June 28, 2019 | \$ 1,038.35 |

ACCOUNT SUMMARY

| | | | |
|-------------------|--------------|-----------|-------------|
| Previous Balance | | \$ | 1,150.80 |
| Payments Received | May 17, 2019 | Thank you | \$ (566.58) |
| Current Charges | | \$ | 454.13 |

Total Amount Due \$ 1,038.35

SUMMARY OF CURRENT CHARGES

| | Delivery Service | Supply Service | TOTAL |
|-----------------------|------------------|----------------|-----------|
| Electric Service | \$ 128.66 | \$ 265.02 | \$ 393.68 |
| State and Local Taxes | \$ 41.96 | \$ 18.49 | \$ 60.45 |

Total Current Charges \$ 170.62 \$ 283.51 \$ 454.13

BUDGET BILLING INFORMATION

BUDGET BILLING -- PAY THE SAME AMOUNT EACH MONTH

If you were to go on budget billing next month, your approximate monthly budget billing amount would be \$452.00. Your account must be current and in good standing to qualify for budget billing.

IMPORTANT ACCOUNT INFORMATION

Water-Booster

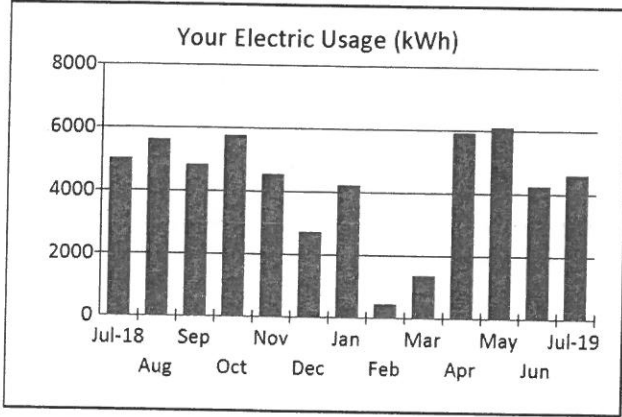
MESSAGE BOARD

For questions about your bill or service, call NorthWestern Energy at 888-467-2669 (Monday through Friday, 7 a.m.-6 p.m). For information or to make a payment, visit us at: www.northwesternenergy.com.

Customer Service: 1-888-467-2669

CUSTOMER: CITY OF RED LODGE
ACCOUNT NUMBER: 0308082-7
ACCOUNT DESCRIPTION:
BILLING DATE: July 12, 2019

Service Address: 631 LAZY M ST, RED LODGE MT 59068



| | Jul 2018 | Jun 2019 | Jul 2019 |
|----------------------|----------|----------|----------|
| Days of Service | 30 | 30 | 33 |
| kWh Used | 5017.00 | 4239.00 | 4592.00 |
| Avg. kWh per day | 167.2 | 141.3 | 139.2 |
| Avg. cost per day | \$16.59 | \$15.14 | \$13.68 |
| Avg. daily temp (°F) | 65 | 58 | 66 |

| DUE DATE | TOTAL AMOUNT DUE |
|---------------|------------------|
| July 29, 2019 | \$ 905.49 |

ACCOUNT SUMMARY

| | | | |
|-------------------|---------------|-----------|-------------|
| Previous Balance | | \$ | 1,038.35 |
| Payments Received | June 14, 2019 | Thank you | \$ (584.22) |
| Current Charges | | \$ | 451.36 |

| | | | |
|-------------------------|--|----|---------------|
| Total Amount Due | | \$ | 905.49 |
|-------------------------|--|----|---------------|

SUMMARY OF CURRENT CHARGES

| | Delivery Service | Supply Service | TOTAL |
|-----------------------|------------------|----------------|-----------|
| Electric Service | \$ 110.25 | \$ 287.09 | \$ 397.34 |
| State and Local Taxes | \$ 33.99 | \$ 20.03 | \$ 54.02 |

| | | | |
|------------------------------|-----------|-----------|-----------|
| Total Current Charges | \$ 144.24 | \$ 307.12 | \$ 451.36 |
|------------------------------|-----------|-----------|-----------|

BUDGET BILLING INFORMATION

BUDGET BILLING -- PAY THE SAME AMOUNT EACH MONTH

If you were to go on budget billing next month, your approximate monthly budget billing amount would be \$443.00. Your account must be current and in good standing to qualify for budget billing.

IMPORTANT ACCOUNT INFORMATION

Water-Booster

MESSAGE BOARD

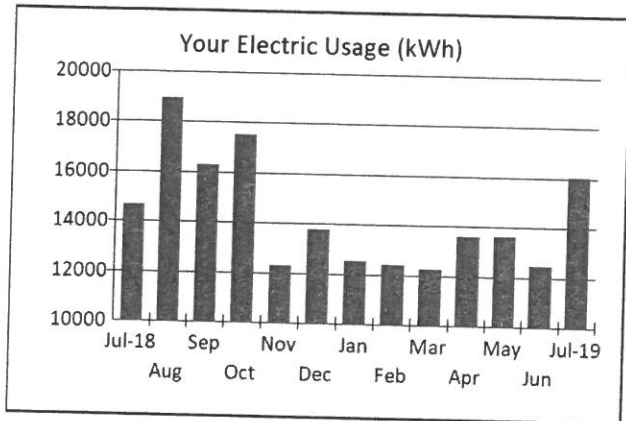
For questions about your bill or service, call NorthWestern Energy at 1-888-467-2669 (Monday through Friday, 7 a.m.-6 p.m). For information or to make a payment, visit us at: www.northwesternenergy.com

Customer Service: 1-888-467-2669

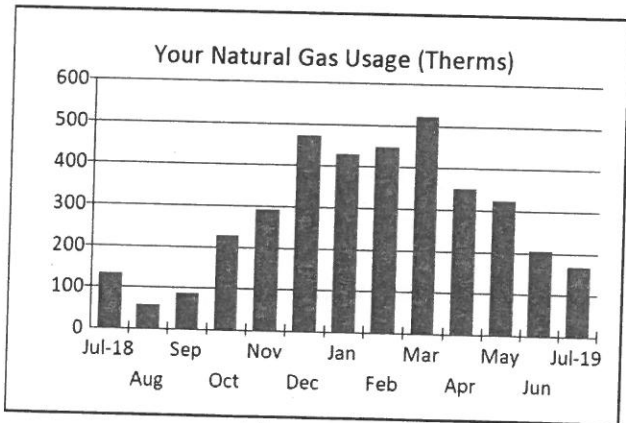
CUSTOMER: CITY OF RED LODGE
ACCOUNT NUMBER: 0713565-0
ACCOUNT DESCRIPTION:
BILLING DATE: July 15, 2019

GB

Service Address: 723 WATER WORKS RD PLNT, RED LODGE MT 59068



| | Jul 2018 | Jun 2019 | Jul 2019 |
|----------------------|----------|----------|----------|
| Days of Service | 28 | 29 | 33 |
| kWh Used | 14640.00 | 12440.00 | 16040.00 |
| Avg. kWh per day | 522.9 | 429.0 | 486.1 |
| Avg. cost per day | \$53.25 | \$46.22 | \$48.86 |
| Avg. daily temp (°F) | 65 | 59 | 66 |



| | Jul 2018 | Jun 2019 | Jul 2019 |
|----------------------|----------|----------|----------|
| Days of Service | 28 | 29 | 33 |
| Therms Used | 132.00 | 204.00 | 166.00 |
| Avg. Therms per day | 4.7 | 7.0 | 5.0 |
| Avg. cost per day | \$3.80 | \$5.45 | \$3.84 |
| Avg. daily temp (°F) | 65 | 59 | 66 |

Water

| DUE DATE | TOTAL AMOUNT DUE |
|----------------|------------------|
| August 7, 2019 | \$ 1,738.99 |

ACCOUNT SUMMARY

| | | |
|-------------------|---------------|-------------------------|
| Previous Balance | | \$ 1,498.44 |
| Payments Received | July 12, 2019 | Thank you \$ (1,498.44) |
| Current Charges | | \$ 1,738.99 |

Total Amount Due \$ 1,738.99

SUMMARY OF CURRENT CHARGES

| | Delivery Service | Supply Service | TOTAL |
|-----------------------|------------------|----------------|-------------|
| Electric Service | \$ 405.18 | \$ 1,002.81 | \$ 1,407.99 |
| Natural Gas Service | \$ 70.03 | \$ 38.19 | \$ 108.22 |
| State and Local Taxes | \$ 151.96 | \$ 70.82 | \$ 222.78 |

Total Current Charges \$ 627.17 \$ 1,111.82 \$ 1,738.99

BUDGET BILLING INFORMATION

IMPORTANT ACCOUNT INFORMATION

MESSAGE BOARD

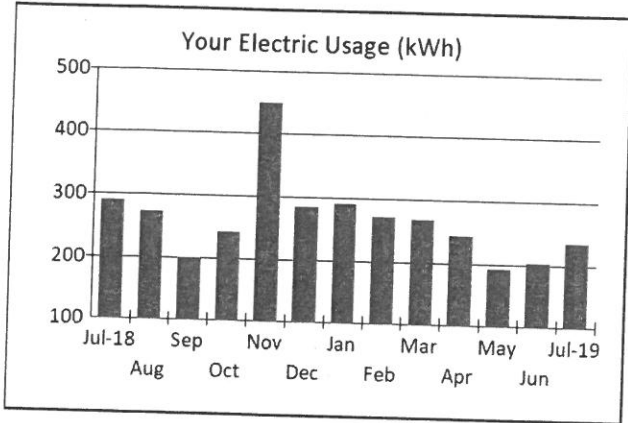
Effective 07/01/2019, gas supply rates have decreased from the previous month as a result of the supply tracker. For questions about your bill or service, call NorthWestern Energy at 1-888-467-2669 (Monday through Friday, 7 a.m.-6 p.m.). For information or to make a payment, visit us at: www.northwesternenergy.com

Customer Service: 1-888-467-2669

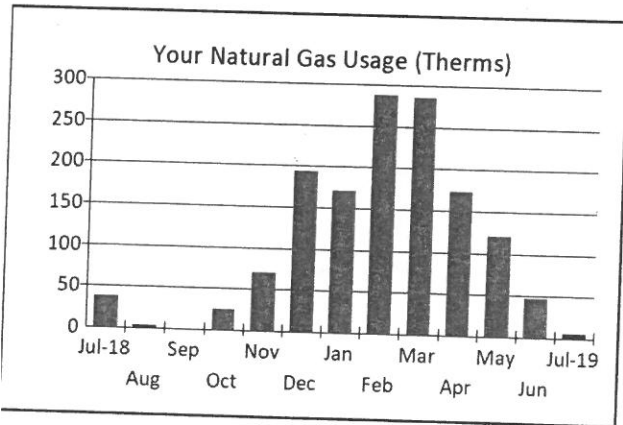
CUSTOMER: CITY OF RED LODGE
ACCOUNT NUMBER: 0713564-3
ACCOUNT DESCRIPTION:
BILLING DATE: July 15, 2019

GB

Service Address: 701 WATER WORKS RD, RED LODGE MT 59068



| | Jul 2018 | Jun 2019 | Jul 2019 |
|----------------------|----------|----------|----------|
| Days of Service | 29 | 32 | 30 |
| kWh Used | 289.00 | 202.00 | 234.00 |
| Avg. kWh per day | 10.0 | 6.3 | 7.8 |
| Avg. cost per day | \$1.41 | \$0.99 | \$1.19 |
| Avg. daily temp (°F) | 65 | 58 | 67 |



| | Jul 2018 | Jun 2019 | Jul 2019 |
|----------------------|----------|----------|----------|
| Days of Service | 28 | 32 | 30 |
| Therms Used | 38.00 | 47.00 | 5.00 |
| Avg. Therms per day | 1.4 | 1.5 | .2 |
| Avg. cost per day | \$1.46 | \$1.49 | \$0.65 |
| Avg. daily temp (°F) | 65 | 58 | 67 |

Water

| DUE DATE | TOTAL AMOUNT DUE |
|----------------|------------------|
| August 7, 2019 | \$ 74.35 |

ACCOUNT SUMMARY

| | | | |
|-------------------|---------------|-----------|------------|
| Previous Balance | | \$ | 98.35 |
| Payments Received | July 12, 2019 | Thank you | \$ (98.35) |
| Current Charges | | \$ | 74.35 |

Total Amount Due \$ 74.35

SUMMARY OF CURRENT CHARGES

| | Delivery Service | Supply Service | TOTAL |
|------------------------------|------------------|-----------------|-----------------|
| Electric Service | \$ 15.82 | \$ 14.63 | \$ 30.45 |
| Unmetered Service | \$ 9.86 | \$ 5.13 | \$ 14.99 |
| Natural Gas Service | \$ 17.81 | \$ 1.15 | \$ 18.96 |
| State and Local Taxes | \$ 8.54 | \$ 1.41 | \$ 9.95 |
| Total Current Charges | \$ 52.03 | \$ 22.32 | \$ 74.35 |

BUDGET BILLING INFORMATION

IMPORTANT ACCOUNT INFORMATION

MESSAGE BOARD

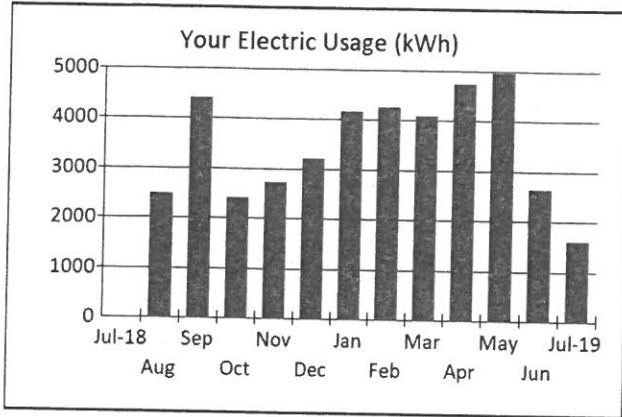
Effective 07/01/2019, gas supply rates have decreased from the previous month as a result of the supply tracker. For questions about your bill or service, call NorthWestern Energy at 1-888-467-2669 (Monday through Friday, 7 a.m.-6 p.m.). For information or to make a payment, visit us at: www.northwesternenergy.com

Customer Service: 1-888-467-2669

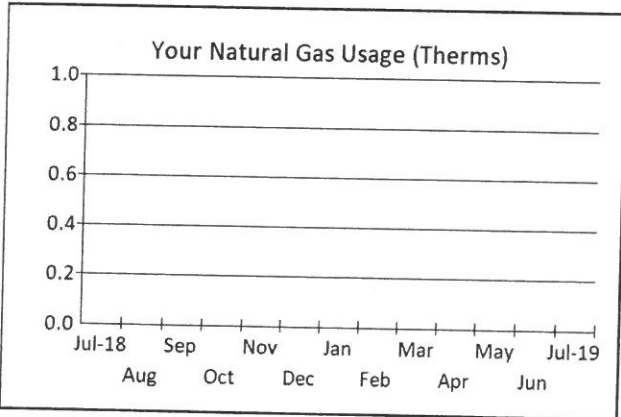
CUSTOMER: CITY OF RED LODGE
ACCOUNT NUMBER: 0713535-3
ACCOUNT DESCRIPTION:
BILLING DATE: July 17, 2019

GB

Service Address: 713 S GRANT AVE PMP, RED LODGE MT 59068



| | Jul 2018 | Jun 2019 | Jul 2019 |
|----------------------|----------|----------|----------|
| Days of Service | | 32 | 30 |
| kWh Used | | 2640.00 | 1600.00 |
| Avg. kWh per day | 0.0 | 82.5 | 53.3 |
| Avg. cost per day | \$ | \$22.43 | \$21.26 |
| Avg. daily temp (°F) | | 58 | 67 |



| | Jul 2018 | Jun 2019 | Jul 2019 |
|----------------------|----------|----------|----------|
| Days of Service | 30 | 32 | 30 |
| Therms Used | | | |
| Avg. Therms per day | | | |
| Avg. cost per day | \$0.55 | \$0.51 | \$0.55 |
| Avg. daily temp (°F) | 65 | 58 | 67 |

Water-Grant

| DUE DATE | TOTAL AMOUNT DUE |
|----------------|------------------|
| August 7, 2019 | \$ 654.04 |

ACCOUNT SUMMARY

| | | | |
|-------------------|---------------|-----------|------------|
| Previous Balance | | \$ | 734.18 |
| Payments Received | July 12, 2019 | Thank you | \$(734.18) |
| Current Charges | | \$ | 654.04 |

Total Amount Due \$ 654.04

SUMMARY OF CURRENT CHARGES

| | Delivery Service | Supply Service | TOTAL |
|-----------------------|------------------|----------------|-----------|
| Electric Service | \$ 382.90 | \$ 100.03 | \$ 482.93 |
| Natural Gas Service | \$ 16.35 | \$ 0.00 | \$ 16.35 |
| State and Local Taxes | \$ 147.78 | \$ 6.98 | \$ 154.76 |

Total Current Charges \$ 547.03 \$ 107.01 \$ 654.04

BUDGET BILLING INFORMATION

IMPORTANT ACCOUNT INFORMATION

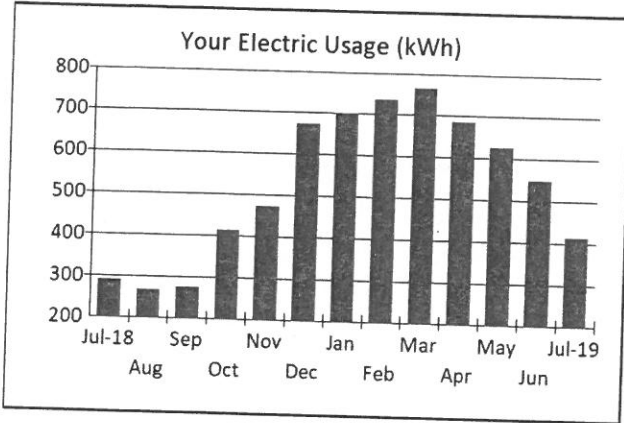
MESSAGE BOARD

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Customer Service: 1-888-467-2669

CUSTOMER: CITY OF RED LODGE
ACCOUNT NUMBER: 0713534-6 GB
ACCOUNT DESCRIPTION:
BILLING DATE: July 15, 2019

Service Address: 1219 S WHITE AVE, RED LODGE MT 59068



| | Jul 2018 | Jun 2019 | Jul 2019 |
|----------------------|----------|----------|----------|
| Days of Service | 29 | 32 | 30 |
| kWh Used | 290.00 | 548.00 | 414.00 |
| Avg. kWh per day | 10.0 | 17.1 | 13.8 |
| Avg. cost per day | \$1.42 | \$2.36 | \$1.95 |
| Avg. daily temp (°F) | 65 | 58 | 67 |

| DUE DATE | TOTAL AMOUNT DUE |
|----------------|------------------|
| August 7, 2019 | \$ 58.58 |

ACCOUNT SUMMARY

| | | | | |
|-------------------|---------------|-----------|----|---------|
| Previous Balance | | | \$ | 75.54 |
| Payments Received | July 12, 2019 | Thank you | \$ | (75.54) |
| Current Charges | | | \$ | 58.58 |

Total Amount Due \$ 58.58

SUMMARY OF CURRENT CHARGES

| | Delivery Service | Supply Service | TOTAL |
|-----------------------|------------------|----------------|----------|
| Electric Service | \$ 23.29 | \$ 25.89 | \$ 49.18 |
| State and Local Taxes | \$ 7.59 | \$ 1.81 | \$ 9.40 |

Total Current Charges \$ 30.88 \$ 27.70 \$ 58.58

BUDGET BILLING INFORMATION

IMPORTANT ACCOUNT INFORMATION

Water - PRV

MESSAGE BOARD

For questions about your bill or service, call NorthWestern Energy at 1-888-467-2669 (Monday through Friday, 7 a.m.-6 p.m). For information or to make a payment, visit us at: www.northwesternenergy.com

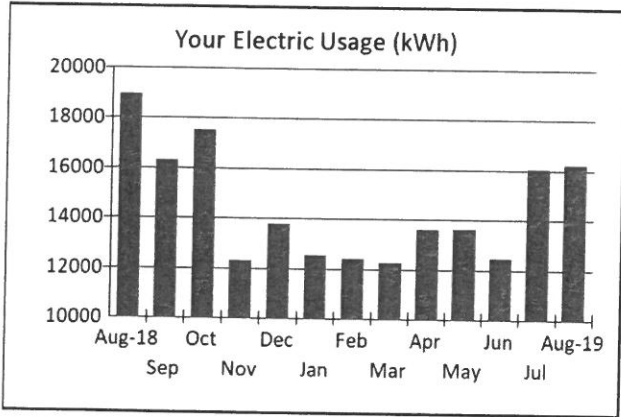


Customer Service: 1-888-467-2669

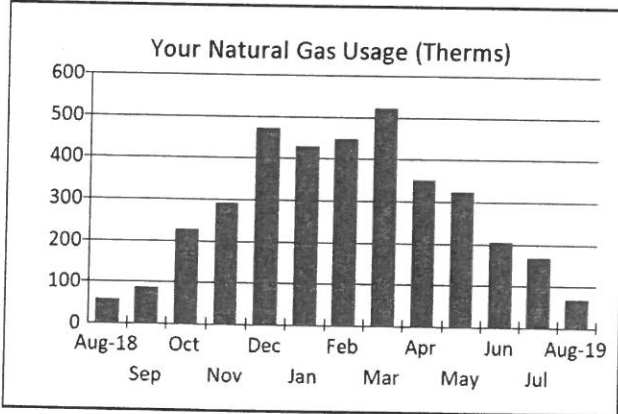
CUSTOMER: CITY OF RED LODGE
 ACCOUNT NUMBER: 0713565-0
 ACCOUNT DESCRIPTION:
 BILLING DATE: August 14, 2019

GB

Service Address: 723 WATER WORKS RD PLNT, RED LODGE MT 59068



| | Aug 2018 | Jul 2019 | Aug 2019 |
|----------------------|----------|----------|----------|
| Days of Service | 33 | 33 | 30 |
| kWh Used | 18900.00 | 16040.00 | 16200.00 |
| Avg. kWh per day | 572.7 | 486.1 | 540.0 |
| Avg. cost per day | \$54.39 | \$48.86 | \$54.85 |
| Avg. daily temp (°F) | 74 | 66 | 78 |



| | Aug 2018 | Jul 2019 | Aug 2019 |
|----------------------|----------|----------|----------|
| Days of Service | 33 | 33 | 30 |
| Therms Used | 57.00 | 166.00 | 68.00 |
| Avg. Therms per day | 1.7 | 5.0 | 2.3 |
| Avg. cost per day | \$1.77 | \$3.84 | \$2.15 |
| Avg. daily temp (°F) | 74 | 66 | 78 |

| DUE DATE | TOTAL AMOUNT DUE |
|-------------------|------------------|
| September 5, 2019 | \$ 1,709.94 |

ACCOUNT SUMMARY

| | | |
|-------------------|-----------------|-------------------------|
| Previous Balance | | \$ 1,738.99 |
| Payments Received | August 16, 2019 | Thank you \$ (1,738.99) |
| Current Charges | | \$ 1,709.94 |

Total Amount Due \$ 1,709.94

SUMMARY OF CURRENT CHARGES

| | Delivery Service | Supply Service | TOTAL |
|-----------------------|------------------|----------------|-------------|
| Electric Service | \$ 421.86 | \$ 1,012.80 | \$ 1,434.66 |
| Natural Gas Service | \$ 41.38 | \$ 15.48 | \$ 56.86 |
| State and Local Taxes | \$ 147.41 | \$ 71.01 | \$ 218.42 |

Total Current Charges \$ 610.65 \$ 1,099.29 \$ 1,709.94

BUDGET BILLING INFORMATION

IMPORTANT ACCOUNT INFORMATION

Currently, a balance remains on your account. If payment has been sent, please disregard this reminder.

water

MESSAGE BOARD

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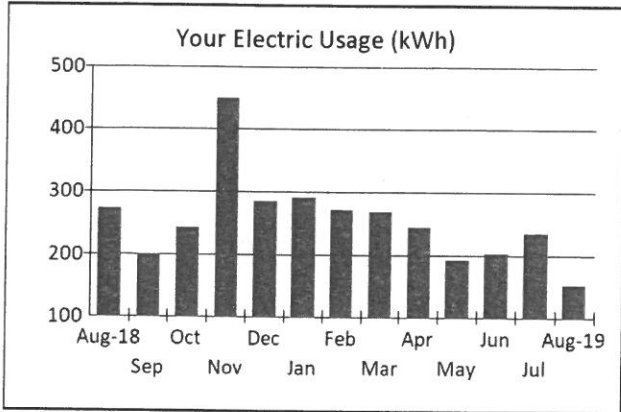
Delivering a Bright Future

Customer Service: 1-888-467-2669

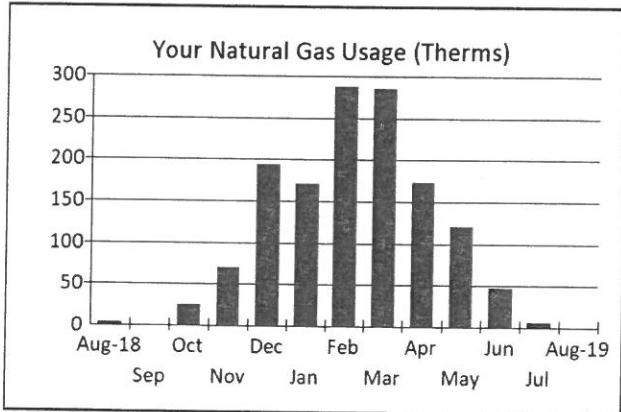
CUSTOMER: CITY OF RED LODGE
ACCOUNT NUMBER: 0713564-3
ACCOUNT DESCRIPTION:
BILLING DATE: August 14, 2019

GB

Service Address: 701 WATER WORKS RD, RED LODGE MT 59068



| | Aug 2018 | Jul 2019 | Aug 2019 |
|----------------------|----------|----------|----------|
| Days of Service | 32 | 30 | 30 |
| kWh Used | 272.00 | 234.00 | 152.00 |
| Avg. kWh per day | 8.5 | 7.8 | 5.1 |
| Avg. cost per day | \$1.20 | \$1.19 | \$0.85 |
| Avg. daily temp (°F) | 74 | 67 | 78 |



| | Aug 2018 | Jul 2019 | Aug 2019 |
|----------------------|----------|----------|----------|
| Days of Service | 33 | 30 | 30 |
| Therms Used | 3.00 | 5.00 | |
| Avg. Therms per day | .1 | .2 | |
| Avg. cost per day | \$0.55 | \$0.65 | \$0.55 |
| Avg. daily temp (°F) | 74 | 67 | 78 |

| DUE DATE | TOTAL AMOUNT DUE |
|-------------------|------------------|
| September 5, 2019 | \$ 60.79 |

ACCOUNT SUMMARY

| | | | |
|-------------------|-----------------|-----------|-----------|
| Previous Balance | | \$ | 74.35 |
| Payments Received | August 16, 2019 | Thank you | \$(74.35) |
| Current Charges | | \$ | 60.79 |

Total Amount Due \$ 60.79

SUMMARY OF CURRENT CHARGES

| | Delivery Service | Supply Service | TOTAL |
|------------------------------|------------------|-----------------|-----------------|
| Electric Service | \$ 12.42 | \$ 9.50 | \$ 21.92 |
| Unmetered Service | \$ 9.86 | \$ 5.13 | \$ 14.99 |
| Natural Gas Service | \$ 16.35 | \$ 0.00 | \$ 16.35 |
| State and Local Taxes | \$ 6.51 | \$ 1.02 | \$ 7.53 |
| Total Current Charges | \$ 45.14 | \$ 15.65 | \$ 60.79 |

BUDGET BILLING INFORMATION

IMPORTANT ACCOUNT INFORMATION

Currently, a balance remains on your account. If payment has been sent, please disregard this reminder.

Water

MESSAGE BOARD

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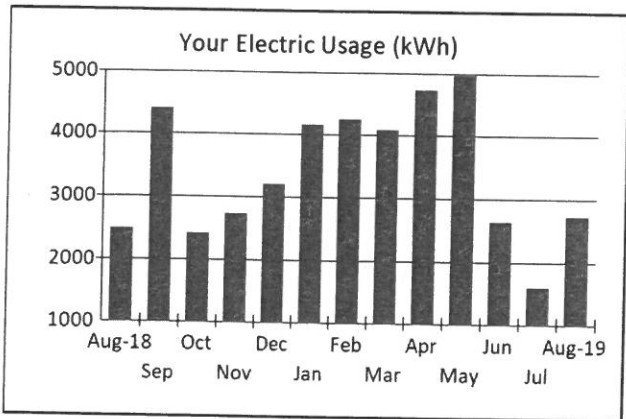


Customer Service: 1-888-467-2669

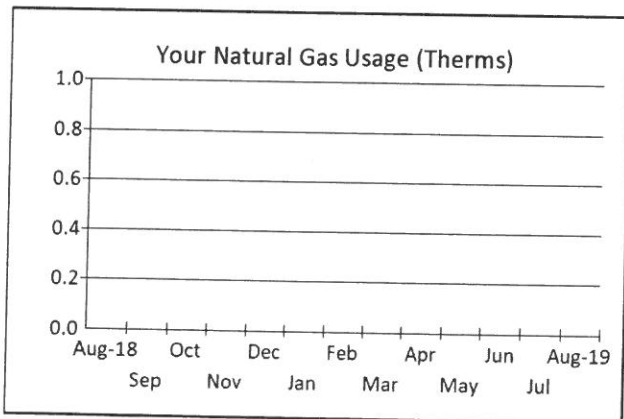
CUSTOMER: CITY OF RED LODGE
ACCOUNT NUMBER: 0713535-3
ACCOUNT DESCRIPTION:
BILLING DATE: August 14, 2019

GB

Service Address: 713 S GRANT AVE PMP, RED LODGE MT 59068



| | Aug 2018 | Jul 2019 | Aug 2019 |
|----------------------|----------|----------|----------|
| Days of Service | 32 | 30 | 29 |
| kWh Used | 2480.00 | 1600.00 | 2720.00 |
| Avg. kWh per day | 77.5 | 53.3 | 93.8 |
| Avg. cost per day | \$20.52 | \$21.26 | \$24.68 |
| Avg. daily temp (°F) | 74 | 67 | 78 |



| | Aug 2018 | Jul 2019 | Aug 2019 |
|----------------------|----------|----------|----------|
| Days of Service | 32 | 30 | 29 |
| Therms Used | | | |
| Avg. Therms per day | | | |
| Avg. cost per day | \$0.51 | \$0.55 | \$0.56 |
| Avg. daily temp (°F) | 74 | 67 | 78 |

| DUE DATE | TOTAL AMOUNT DUE |
|-------------------|------------------|
| September 5, 2019 | \$ 732.10 |

ACCOUNT SUMMARY

| | | | |
|-------------------|-----------------|-----------|-------------|
| Previous Balance | | \$ | 654.04 |
| Payments Received | August 16, 2019 | Thank you | \$ (654.04) |
| Current Charges | | \$ | 732.10 |

Total Amount Due \$ 732.10

SUMMARY OF CURRENT CHARGES

| | Delivery Service | Supply Service | TOTAL |
|-----------------------|------------------|----------------|-----------|
| Electric Service | \$ 386.46 | \$ 170.06 | \$ 556.52 |
| Natural Gas Service | \$ 16.35 | \$ 0.00 | \$ 16.35 |
| State and Local Taxes | \$ 147.37 | \$ 11.86 | \$ 159.23 |

Total Current Charges \$ 550.18 \$ 181.92 \$ 732.10

BUDGET BILLING INFORMATION

IMPORTANT ACCOUNT INFORMATION

Currently, a balance remains on your account. If payment has been sent, please disregard this reminder.

Water Grant

MESSAGE BOARD

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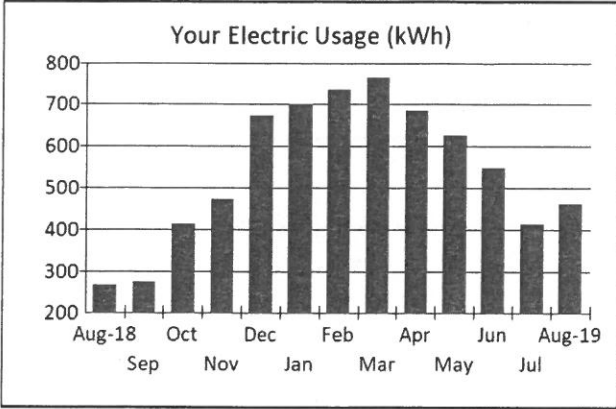


CUSTOMER: CITY OF RED LODGE
ACCOUNT NUMBER: 0713534-6
ACCOUNT DESCRIPTION:
BILLING DATE: August 14, 2019

GB

Customer Service: 1-888-467-2669

Service Address: 1219 S WHITE AVE, RED LODGE MT 59068



| | Aug 2018 | Jul 2019 | Aug 2019 |
|----------------------|----------|----------|----------|
| Days of Service | 32 | 30 | 30 |
| kWh Used | 266.00 | 414.00 | 461.00 |
| Avg. kWh per day | 8.3 | 13.8 | 15.4 |
| Avg. cost per day | \$1.18 | \$1.95 | \$2.15 |
| Avg. daily temp (°F) | 74 | 67 | 78 |

| DUE DATE | TOTAL AMOUNT DUE |
|-------------------|------------------|
| September 5, 2019 | \$ 64.58 |

ACCOUNT SUMMARY

| | | |
|-------------------|-----------------|----------------------|
| Previous Balance | | \$ 58.58 |
| Payments Received | August 16, 2019 | Thank you \$ (58.58) |
| Current Charges | | \$ 64.58 |

Total Amount Due \$ 64.58

SUMMARY OF CURRENT CHARGES

| | Delivery Service | Supply Service | TOTAL |
|------------------------------|------------------|-----------------|-----------------|
| Electric Service | \$ 25.29 | \$ 28.83 | \$ 54.12 |
| State and Local Taxes | \$ 8.45 | \$ 2.01 | \$ 10.46 |
| Total Current Charges | \$ 33.74 | \$ 30.84 | \$ 64.58 |

BUDGET BILLING INFORMATION

IMPORTANT ACCOUNT INFORMATION

Currently, a balance remains on your account. If payment has been sent, please disregard this reminder.

Water-PRV

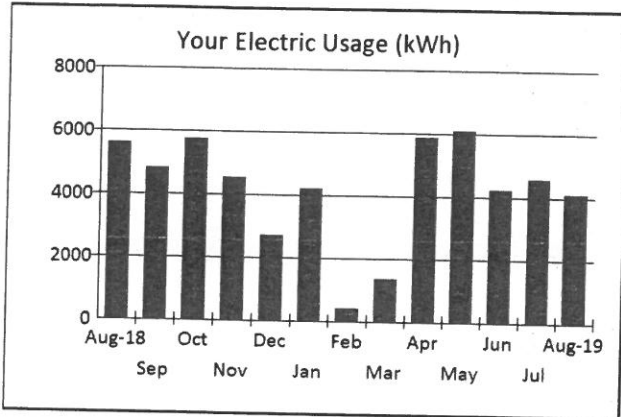
MESSAGE BOARD

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Customer Service: 1-888-467-2669

CUSTOMER: CITY OF RED LODGE
ACCOUNT NUMBER: 0308082-7
ACCOUNT DESCRIPTION:
BILLING DATE: August 13, 2019

Service Address: 631 LAZY M ST, RED LODGE MT 59068



| | Aug 2018 | Jul 2019 | Aug 2019 |
|----------------------|----------|----------|----------|
| Days of Service | 33 | 33 | 30 |
| kWh Used | 5610.00 | 4592.00 | 4113.00 |
| Avg. kWh per day | 170.0 | 139.2 | 137.1 |
| Avg. cost per day | \$16.32 | \$13.68 | \$13.93 |
| Avg. daily temp (°F) | 74 | 66 | 77 |

| DUE DATE | TOTAL AMOUNT DUE |
|-----------------|------------------|
| August 29, 2019 | \$ 869.16 |

ACCOUNT SUMMARY

| | | | |
|-------------------|---------------|-----------|-------------|
| Previous Balance | | \$ | 905.49 |
| Payments Received | July 12, 2019 | Thank you | \$ (454.13) |
| Current Charges | | \$ | 417.80 |

| | | | |
|-------------------------|--|----|---------------|
| Total Amount Due | | \$ | 869.16 |
|-------------------------|--|----|---------------|

SUMMARY OF CURRENT CHARGES

| | Delivery Service | Supply Service | TOTAL |
|-----------------------|------------------|----------------|-----------|
| Electric Service | \$ 108.75 | \$ 257.14 | \$ 365.89 |
| State and Local Taxes | \$ 33.97 | \$ 17.94 | \$ 51.91 |

| | | | |
|------------------------------|-----------|-----------|-----------|
| Total Current Charges | \$ 142.72 | \$ 275.08 | \$ 417.80 |
|------------------------------|-----------|-----------|-----------|

BUDGET BILLING INFORMATION

BUDGET BILLING -- PAY THE SAME AMOUNT EACH MONTH

If you were to go on budget billing next month, your approximate monthly budget billing amount would be \$439.00. Your account must be current and in good standing to qualify for budget billing.

IMPORTANT ACCOUNT INFORMATION

Water-Booster stall.

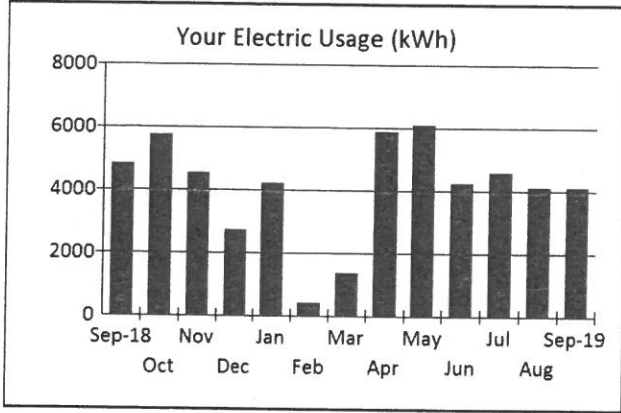
MESSAGE BOARD

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Customer Service: 1-888-467-2669

CUSTOMER: CITY OF RED LODGE
ACCOUNT NUMBER: 0308082-7
ACCOUNT DESCRIPTION:
BILLING DATE: September 12, 2019

Service Address: 631 LAZY M ST. RED LODGE MT 59068



| | Sep 2018 | Aug 2019 | Sep 2019 |
|----------------------|----------|----------|----------|
| Days of Service | 28 | 30 | 32 |
| kWh Used | 4819.00 | 4113.00 | 4113.00 |
| Avg. kWh per day | 172.1 | 137.1 | 128.5 |
| Avg. cost per day | \$17.33 | \$13.93 | \$12.98 |
| Avg. daily temp (°F) | 68 | 77 | 72 |

| DUE DATE | TOTAL AMOUNT DUE |
|--------------------|------------------|
| September 30, 2019 | \$ 833.01 |

ACCOUNT SUMMARY

| | | | |
|-------------------|-----------------|-----------|-------------|
| Previous Balance | | \$ | 869.16 |
| Payments Received | August 16, 2019 | Thank you | \$ (451.36) |
| Current Charges | | \$ | 415.21 |

Total Amount Due \$ **833.01**

SUMMARY OF CURRENT CHARGES

| | Delivery Service | Supply Service | TOTAL |
|-----------------------|------------------|----------------|-----------|
| Electric Service | \$ 106.90 | \$ 257.14 | \$ 364.04 |
| State and Local Taxes | \$ 33.23 | \$ 17.94 | \$ 51.17 |

Total Current Charges \$ **140.13** \$ **275.08** \$ **415.21**

BUDGET BILLING INFORMATION

BUDGET BILLING -- PAY THE SAME AMOUNT EACH MONTH

If you were to go on budget billing next month, your approximate monthly budget billing amount would be \$427.00. Your account must be current and in good standing to qualify for budget billing.

IMPORTANT ACCOUNT INFORMATION

Water-Booster

MESSAGE BOARD

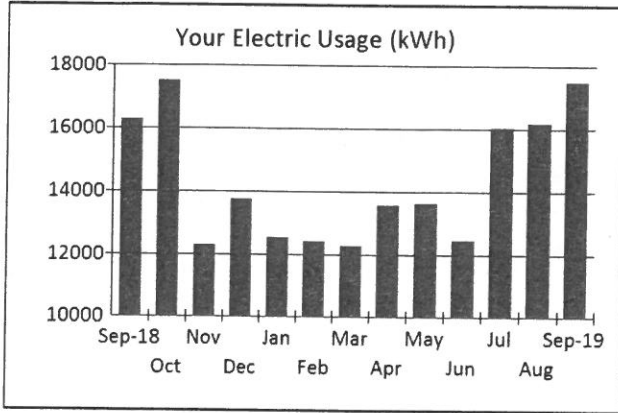
For questions about your bill or service, call NorthWestern Energy at 1-888-467-2669 (Monday through Friday, 7 a.m.-6 p.m). For information or to make a payment, visit us at: www.northwesternenergy.com

Customer Service: 1-888-467-2669

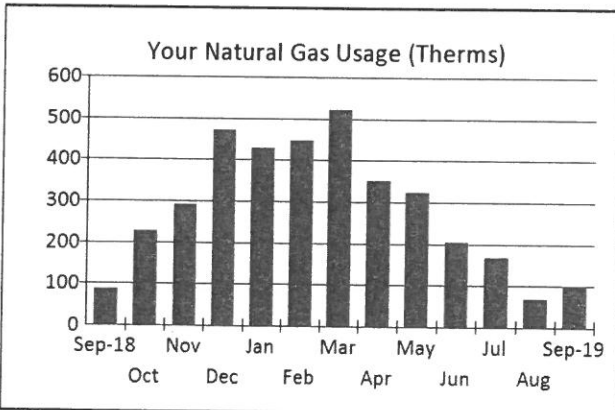
CUSTOMER: CITY OF RED LODGE
ACCOUNT NUMBER: 0713565-0
ACCOUNT DESCRIPTION:
BILLING DATE: September 13, 2019

GB

Service Address: 723 WATER WORKS RD PLNT, RED LODGE MT 59068



| | Sep 2018 | Aug 2019 | Sep 2019 |
|----------------------|----------|----------|----------|
| Days of Service | 30 | 30 | 32 |
| kWh Used | 16280.00 | 16200.00 | 17480.00 |
| Avg. kWh per day | 542.7 | 540.0 | 546.3 |
| Avg. cost per day | \$53.64 | \$54.85 | \$54.18 |
| Avg. daily temp (°F) | 68 | 78 | 71 |



| | Sep 2018 | Aug 2019 | Sep 2019 |
|----------------------|----------|----------|----------|
| Days of Service | 30 | 30 | 32 |
| Therms Used | 87.00 | 68.00 | 101.00 |
| Avg. Therms per day | 2.9 | 2.3 | 3.2 |
| Avg. cost per day | \$2.60 | \$2.15 | \$2.65 |
| Avg. daily temp (°F) | 68 | 78 | 71 |

| DUE DATE | TOTAL AMOUNT DUE |
|-----------------|------------------|
| October 9, 2019 | \$ 1,818.35 |

ACCOUNT SUMMARY

| | | |
|-------------------|------------------------------|---------------|
| Previous Balance | | \$ 1,709.94 |
| Payments Received | September 13, 2019 Thank you | \$ (1,709.94) |
| Current Charges | | \$ 1,818.35 |

Total Amount Due \$ 1,818.35

SUMMARY OF CURRENT CHARGES

| | Delivery Service | Supply Service | TOTAL |
|-----------------------|------------------|----------------|-------------|
| Electric Service | \$ 425.12 | \$ 1,092.83 | \$ 1,517.95 |
| Natural Gas Service | \$ 50.98 | \$ 22.47 | \$ 73.45 |
| State and Local Taxes | \$ 150.18 | \$ 76.77 | \$ 226.95 |

Total Current Charges \$ 626.28 \$ 1,192.07 \$ 1,818.35

BUDGET BILLING INFORMATION

IMPORTANT ACCOUNT INFORMATION

Currently, a balance remains on your account. If payment has been sent, please disregard this reminder.

Water-Plant

MESSAGE BOARD

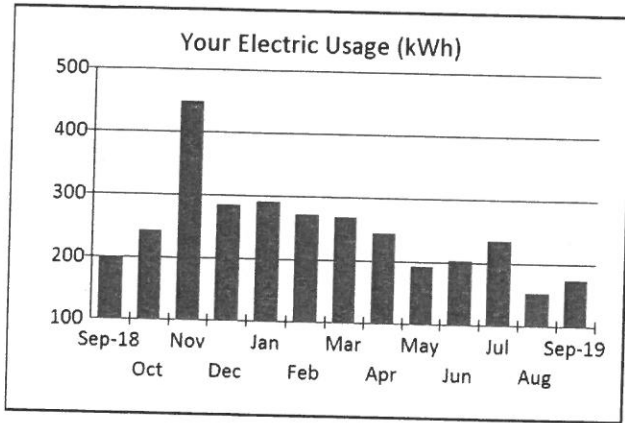
Effective 09/01/2019, gas supply rates have decreased from the previous month as a result of the supply tracker. For questions about your bill or service, call NorthWestern Energy at 1-888-467-2669 (Monday through Friday, 7 a.m.-6 p.m). For information or to make a payment, visit us at: www.northwesternenergy.com

Customer Service: 1-888-467-2669

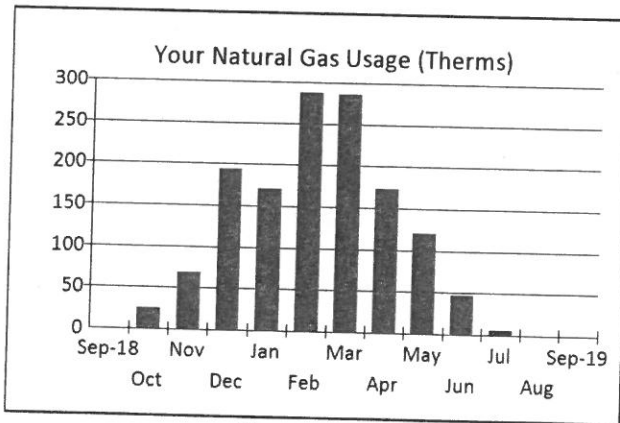
CUSTOMER: CITY OF RED LODGE
ACCOUNT NUMBER: 0713564-3
ACCOUNT DESCRIPTION:
BILLING DATE: September 13, 2019

GB

Service Address: 701 WATER WORKS RD, RED LODGE MT 59068



| | Sep 2018 | Aug 2019 | Sep 2019 |
|----------------------|----------|----------|----------|
| Days of Service | 30 | 30 | 32 |
| kWh Used | 200.00 | 152.00 | 174.00 |
| Avg. kWh per day | 6.7 | 5.1 | 5.4 |
| Avg. cost per day | \$1.00 | \$0.85 | \$0.88 |
| Avg. daily temp (°F) | 68 | 78 | 71 |



| | Sep 2018 | Aug 2019 | Sep 2019 |
|----------------------|----------|----------|----------|
| Days of Service | 30 | 30 | 32 |
| Therms Used | | | |
| Avg. Therms per day | | | |
| Avg. cost per day | \$0.55 | \$0.55 | \$0.51 |
| Avg. daily temp (°F) | 68 | 78 | 71 |

| DUE DATE | TOTAL AMOUNT DUE |
|-----------------|------------------|
| October 9, 2019 | \$ 63.60 |

ACCOUNT SUMMARY

| | | |
|-------------------|------------------------------|------------|
| Previous Balance | | \$ 60.79 |
| Payments Received | September 13, 2019 Thank you | \$ (60.79) |
| Current Charges | | \$ 63.60 |

Total Amount Due \$ 63.60

SUMMARY OF CURRENT CHARGES

| | Delivery Service | Supply Service | TOTAL |
|------------------------------|------------------|-----------------|-----------------|
| Electric Service | \$ 13.35 | \$ 10.88 | \$ 24.23 |
| Unmetered Service | \$ 9.86 | \$ 5.13 | \$ 14.99 |
| Natural Gas Service | \$ 16.35 | \$ 0.00 | \$ 16.35 |
| State and Local Taxes | \$ 6.91 | \$ 1.12 | \$ 8.03 |
| Total Current Charges | \$ 46.47 | \$ 17.13 | \$ 63.60 |

BUDGET BILLING INFORMATION

IMPORTANT ACCOUNT INFORMATION

Currently, a balance remains on your account. If payment has been sent, please disregard this reminder.

Water -

MESSAGE BOARD

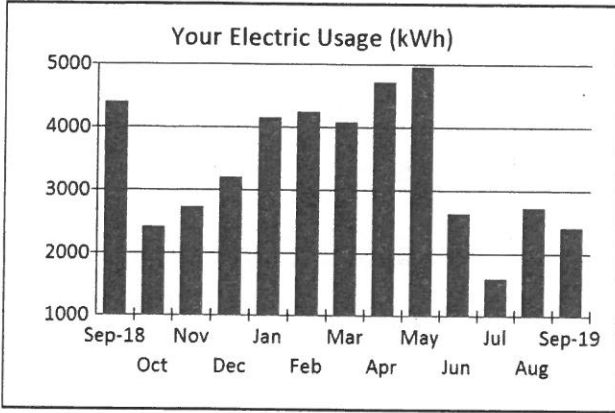
Effective 09/01/2019, gas supply rates have decreased from the previous month as a result of the supply tracker. For questions about your bill or service, call NorthWestern Energy at 1-888-467-2669 (Monday through Friday, 7 a.m.-6 p.m). For information or to make a payment, visit us at: www.northwesternenergy.com

Customer Service: 1-888-467-2669

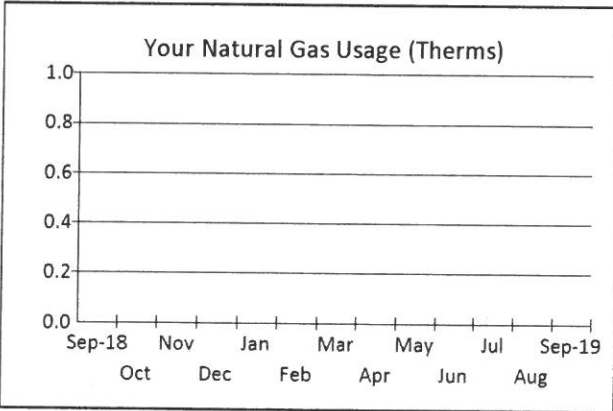
CUSTOMER: CITY OF RED LODGE
ACCOUNT NUMBER: 0713535-3
ACCOUNT DESCRIPTION:
BILLING DATE: September 13, 2019

GB

Service Address: 713 S GRANT AVE PMP, RED LODGE MT 59068



| | Sep 2018 | Aug 2019 | Sep 2019 |
|----------------------|----------|----------|----------|
| Days of Service | 30 | 29 | 33 |
| kWh Used | 4400.00 | 2720.00 | 2400.00 |
| Avg. kWh per day | 146.7 | 93.8 | 72.7 |
| Avg. cost per day | \$27.09 | \$24.68 | \$20.94 |
| Avg. daily temp (°F) | 68 | 78 | 71 |



| | Sep 2018 | Aug 2019 | Sep 2019 |
|----------------------|----------|----------|----------|
| Days of Service | 30 | 29 | 33 |
| Therms Used | | | |
| Avg. Therms per day | | | |
| Avg. cost per day | \$0.55 | \$0.56 | \$0.50 |
| Avg. daily temp (°F) | 68 | 78 | 71 |

| DUE DATE | TOTAL AMOUNT DUE |
|-----------------|------------------|
| October 9, 2019 | \$ 707.39 |

ACCOUNT SUMMARY

| | | | |
|-------------------|------------------------------|----|----------|
| Previous Balance | | \$ | 732.10 |
| Payments Received | September 13, 2019 Thank you | \$ | (732.10) |
| Current Charges | | \$ | 707.39 |

Total Amount Due \$ 707.39

SUMMARY OF CURRENT CHARGES

| | Delivery Service | Supply Service | TOTAL |
|-----------------------|------------------|----------------|-----------|
| Electric Service | \$ 383.73 | \$ 150.05 | \$ 533.78 |
| Natural Gas Service | \$ 16.35 | \$ 0.00 | \$ 16.35 |
| State and Local Taxes | \$ 146.79 | \$ 10.47 | \$ 157.26 |

Total Current Charges \$ 546.87 \$ 160.52 \$ **707.39**

BUDGET BILLING INFORMATION

IMPORTANT ACCOUNT INFORMATION

Currently, a balance remains on your account. If payment has been sent, please disregard this reminder.

Water-Grant

MESSAGE BOARD

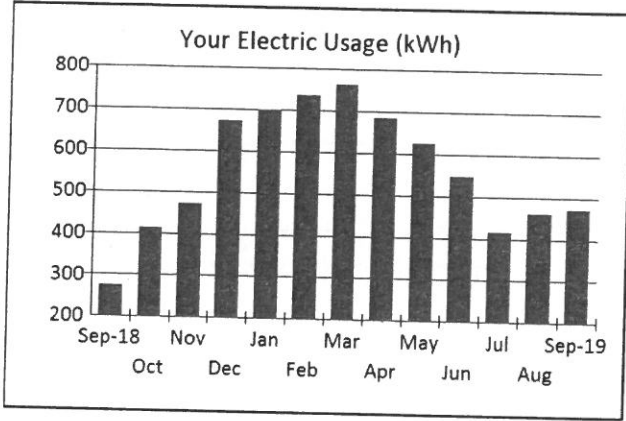
Effective 09/01/2019, gas supply rates have decreased from the previous month as a result of the supply tracker. For questions about your bill or service, call NorthWestern Energy at 1-888-467-2669 (Monday through Friday, 7 a.m.-6 p.m). For information or to make a payment, visit us at: www.northwesternenergy.com

Customer Service: 1-888-467-2669

CUSTOMER: CITY OF RED LODGE
ACCOUNT NUMBER: 0713534-6
ACCOUNT DESCRIPTION:
BILLING DATE: September 13, 2019

GB

Service Address: 1219 S WHITE AVE, RED LODGE MT 59068



| DUE DATE | TOTAL AMOUNT DUE |
|-----------------|------------------|
| October 9, 2019 | \$ 65.98 |

ACCOUNT SUMMARY

| | | | |
|-------------------|------------------------------|----|---------|
| Previous Balance | | \$ | 64.58 |
| Payments Received | September 13, 2019 Thank you | \$ | (64.58) |
| Current Charges | | \$ | 65.98 |

| | Sep 2018 | Aug 2019 | Sep 2019 |
|----------------------|----------|----------|----------|
| Days of Service | 30 | 30 | 32 |
| kWh Used | 274.00 | 461.00 | 472.00 |
| Avg. kWh per day | 9.1 | 15.4 | 14.8 |
| Avg. cost per day | \$1.30 | \$2.15 | \$2.06 |
| Avg. daily temp (°F) | 68 | 78 | 71 |

| | | |
|------------------|----|-------|
| Total Amount Due | \$ | 65.98 |
|------------------|----|-------|

SUMMARY OF CURRENT CHARGES

| | Delivery Service | Supply Service | TOTAL |
|-----------------------|------------------|----------------|----------|
| Electric Service | \$ 25.76 | \$ 29.51 | \$ 55.27 |
| State and Local Taxes | \$ 8.65 | \$ 2.06 | \$ 10.71 |

| | | | |
|-----------------------|----------|----------|----------|
| Total Current Charges | \$ 34.41 | \$ 31.57 | \$ 65.98 |
|-----------------------|----------|----------|----------|

BUDGET BILLING INFORMATION

IMPORTANT ACCOUNT INFORMATION

Currently, a balance remains on your account. If payment has been sent, please disregard this reminder.

Handwritten initials

Water - PRV

MESSAGE BOARD

For questions about your bill or service, call NorthWestern Energy at 1-888-467-2669 (Monday through Friday, 7 a.m.-6 p.m). For information or to make a payment, visit us at: www.northwesternenergy.com



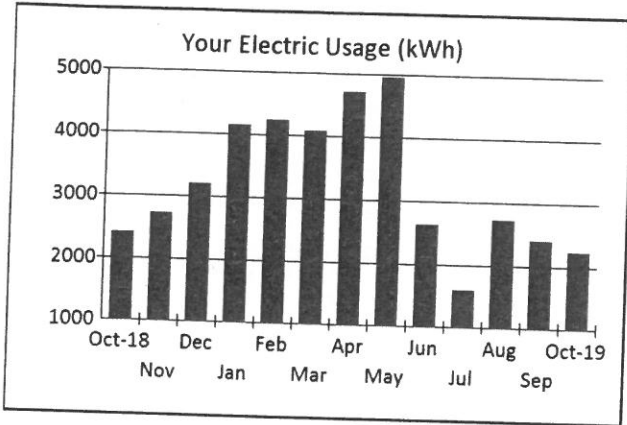
NorthWestern Energy
Delivering a Bright Future

Customer Service: 1-888-467-2669

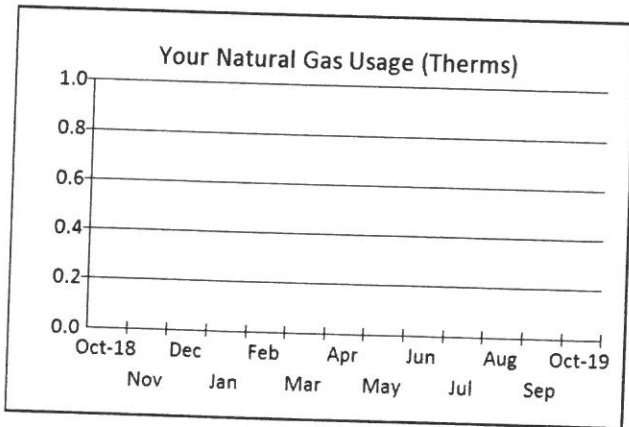
CUSTOMER: CITY OF RED LODGE
ACCOUNT NUMBER: 0713535-3
ACCOUNT DESCRIPTION:
BILLING DATE: October 14, 2019

GB

Service Address: 713 S GRANT AVE PMP, RED LODGE MT 59068



| | Oct 2018 | Sep 2019 | Oct 2019 |
|----------------------|----------|----------|----------|
| Days of Service | 33 | 33 | 28 |
| kWh Used | 2400.00 | 2400.00 | 2240.00 |
| Avg. kWh per day | 72.7 | 72.7 | 80.0 |
| Avg. cost per day | \$20.03 | \$20.94 | \$24.33 |
| Avg. daily temp (°F) | 54 | 71 | 55 |



| | Oct 2018 | Sep 2019 | Oct 2019 |
|----------------------|----------|----------|----------|
| Days of Service | 33 | 33 | 28 |
| Therms Used | | | |
| Avg. Therms per day | | | |
| Avg. cost per day | \$0.50 | \$0.50 | \$0.58 |
| Avg. daily temp (°F) | 54 | 71 | 55 |

| DUE DATE | TOTAL AMOUNT DUE |
|------------------|------------------|
| November 6, 2019 | \$ 697.66 |

ACCOUNT SUMMARY

| | | | |
|-------------------|------------------|-----------|-------------|
| Previous Balance | | \$ | 707.39 |
| Payments Received | October 11, 2019 | Thank you | \$ (707.39) |
| Current Charges | | \$ | 697.66 |

Total Amount Due \$ 697.66

SUMMARY OF CURRENT CHARGES

| | Delivery Service | Supply Service | TOTAL |
|-----------------------|------------------|----------------|-----------|
| Electric Service | \$ 382.36 | \$ 142.69 | \$ 525.05 |
| Natural Gas Service | \$ 16.35 | \$ 0.00 | \$ 16.35 |
| State and Local Taxes | \$ 146.49 | \$ 9.77 | \$ 156.26 |

Total Current Charges \$ 545.20 \$ 152.46 \$ 697.66

BUDGET BILLING INFORMATION

IMPORTANT ACCOUNT INFORMATION

Water-Grant well

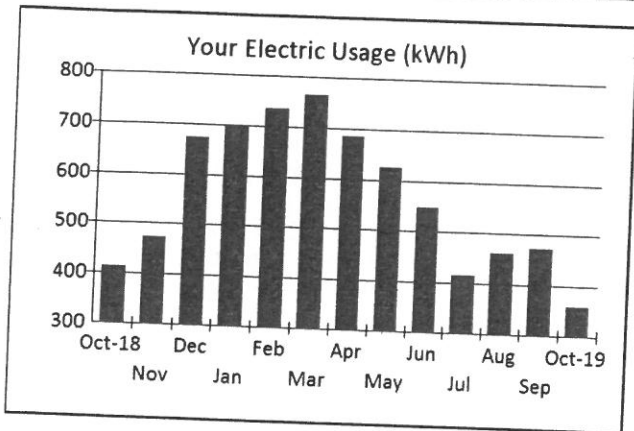
MESSAGE BOARD

Effective 10/01/2019, electric supply rates have increased from the previous month as a result of the supply tracker.
Effective 10/01/2019, gas supply rates have increased from the previous month as a result of the supply tracker.
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Customer Service: 1-888-467-2669

CUSTOMER: CITY OF RED LODGE
ACCOUNT NUMBER: 0713534-6 GB
ACCOUNT DESCRIPTION:
BILLING DATE: October 14, 2019

Service Address: 1219 S WHITE AVE, RED LODGE MT 59068



| | Oct 2018 | Sep 2019 | Oct 2019 |
|----------------------|----------|----------|----------|
| Days of Service | 33 | 32 | 28 |
| kWh Used | 413.00 | 472.00 | 360.00 |
| Avg. kWh per day | 12.5 | 14.8 | 12.9 |
| Avg. cost per day | \$1.69 | \$2.06 | \$1.86 |
| Avg. daily temp (°F) | 54 | 71 | 55 |

| DUE DATE | TOTAL AMOUNT DUE |
|------------------|------------------|
| November 6, 2019 | \$ 52.19 |

ACCOUNT SUMMARY

| | | | |
|-------------------|------------------|-----------|-----------|
| Previous Balance | | \$ | 65.98 |
| Payments Received | October 11, 2019 | Thank you | \$(65.98) |
| Current Charges | | \$ | 52.19 |

Total Amount Due \$ 52.19

SUMMARY OF CURRENT CHARGES

| | Delivery Service | Supply Service | TOTAL |
|-----------------------|------------------|----------------|----------|
| Electric Service | \$ 21.08 | \$ 22.94 | \$ 44.02 |
| State and Local Taxes | \$ 6.60 | \$ 1.57 | \$ 8.17 |

Total Current Charges \$ 27.68 \$ 24.51 \$ 52.19

BUDGET BILLING INFORMATION

IMPORTANT ACCOUNT INFORMATION

Water - PRV

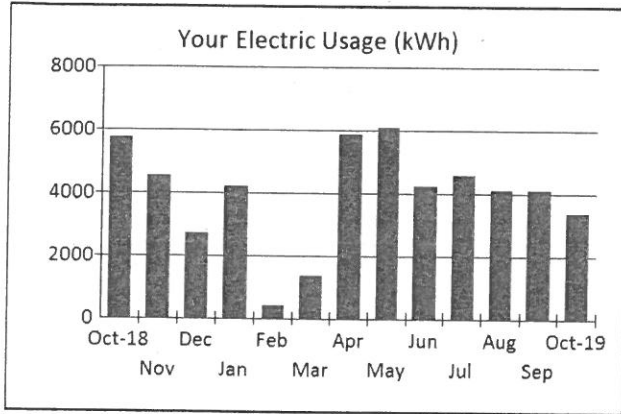
MESSAGE BOARD

Effective 10/01/2019, electric supply rates have increased from the previous month as a result of the supply tracker. For questions about your bill or service, call NorthWestern Energy at 1-888-467-2669 (Monday through Friday, 7 a.m.-6 p.m.). For information or to make a payment, visit us at: www.northwesternenergy.com

Customer Service: 1-888-467-2669

CUSTOMER: CITY OF RED LODGE
ACCOUNT NUMBER: 0308082-7
ACCOUNT DESCRIPTION:
BILLING DATE: October 11, 2019

Service Address: 631 LAZY M ST, RED LODGE MT 59068



| DUE DATE | TOTAL AMOUNT DUE |
|------------------|------------------|
| October 28, 2019 | \$ 788.17 |

ACCOUNT SUMMARY

| | | | |
|-------------------|------------------------------|----|----------|
| Previous Balance | | \$ | 833.01 |
| Payments Received | September 13, 2019 Thank you | \$ | (417.80) |
| Current Charges | | \$ | 372.96 |

| | Oct 2018 | Sep 2019 | Oct 2019 |
|----------------------|----------|----------|----------|
| Days of Service | 34 | 32 | 29 |
| kWh Used | 5762.00 | 4113.00 | 3388.00 |
| Avg. kWh per day | 169.5 | 128.5 | 116.8 |
| Avg. cost per day | \$16.30 | \$12.98 | \$12.86 |
| Avg. daily temp (°F) | 55 | 72 | 56 |

| | |
|------------------|-----------|
| Total Amount Due | \$ 788.17 |
|------------------|-----------|

SUMMARY OF CURRENT CHARGES

| | Delivery Service | Supply Service | TOTAL |
|------------------------------|------------------|------------------|------------------|
| Electric Service | \$ 107.77 | \$ 215.68 | \$ 323.45 |
| State and Local Taxes | \$ 34.73 | \$ 14.78 | \$ 49.51 |
| Total Current Charges | \$ 142.50 | \$ 230.46 | \$ 372.96 |

BUDGET BILLING INFORMATION

BUDGET BILLING -- PAY THE SAME AMOUNT EACH MONTH

If you were to go on budget billing next month, your approximate monthly budget billing amount would be \$437.00. Your account must be current and in good standing to qualify for budget billing.

IMPORTANT ACCOUNT INFORMATION

Water booster

MESSAGE BOARD

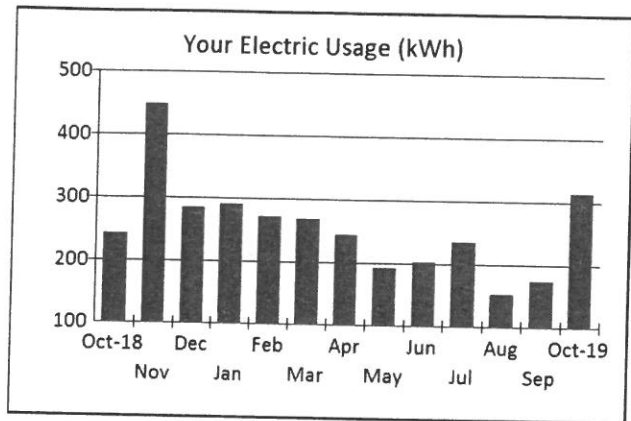
Effective 10/01/2019, electric supply rates have increased from the previous month as a result of the supply tracker. For questions about your bill or service, call NorthWestern Energy at 1-888-467-2669 (Monday through Friday, 7 a.m.-6 p.m). For information or to make a payment, visit us at: www.northwesternenergy.com

Customer Service: 1-888-467-2669

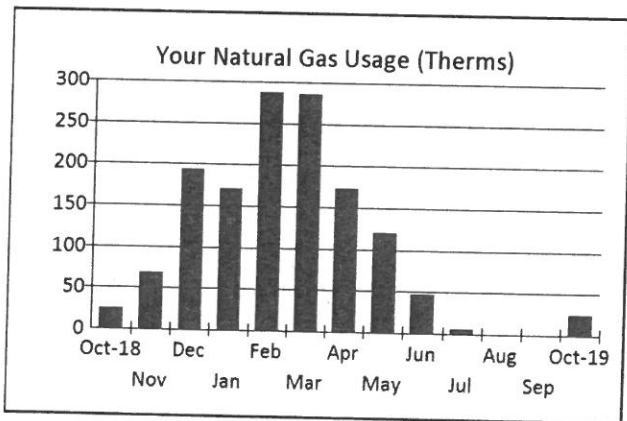
CUSTOMER: CITY OF RED LODGE
ACCOUNT NUMBER: 0713564-3
ACCOUNT DESCRIPTION:
BILLING DATE: October 14, 2019

GB

Service Address: 701 WATER WORKS RD, RED LODGE MT 59068



| | Oct 2018 | Sep 2019 | Oct 2019 |
|----------------------|----------|----------|----------|
| Days of Service | 33 | 32 | 28 |
| kWh Used | 242.00 | 174.00 | 314.00 |
| Avg. kWh per day | 7.3 | 5.4 | 11.2 |
| Avg. cost per day | \$1.06 | \$0.88 | \$1.65 |
| Avg. daily temp (°F) | 54 | 71 | 55 |



| | Oct 2018 | Sep 2019 | Oct 2019 |
|----------------------|----------|----------|----------|
| Days of Service | 33 | 32 | 28 |
| Therms Used | 25.00 | | 25.00 |
| Avg. Therms per day | .8 | | .9 |
| Avg. cost per day | \$0.98 | \$0.51 | \$1.14 |
| Avg. daily temp (°F) | 54 | 71 | 55 |

water

| DUE DATE | TOTAL AMOUNT DUE |
|------------------|------------------|
| November 6, 2019 | \$ 97.41 |

ACCOUNT SUMMARY

| | | | |
|-------------------|------------------|-----------|------------|
| Previous Balance | | \$ | 63.60 |
| Payments Received | October 11, 2019 | Thank you | \$ (63.60) |
| Current Charges | | \$ | 97.41 |

Total Amount Due \$ 97.41

SUMMARY OF CURRENT CHARGES

| | Delivery Service | Supply Service | TOTAL |
|------------------------------|------------------|-----------------|-----------------|
| Electric Service | \$ 19.17 | \$ 20.01 | \$ 39.18 |
| Unmetered Service | \$ 9.86 | \$ 5.26 | \$ 15.12 |
| Natural Gas Service | \$ 23.64 | \$ 5.49 | \$ 29.13 |
| State and Local Taxes | \$ 12.12 | \$ 1.86 | \$ 13.98 |
| Total Current Charges | \$ 64.79 | \$ 32.62 | \$ 97.41 |

BUDGET BILLING INFORMATION

IMPORTANT ACCOUNT INFORMATION

MESSAGE BOARD

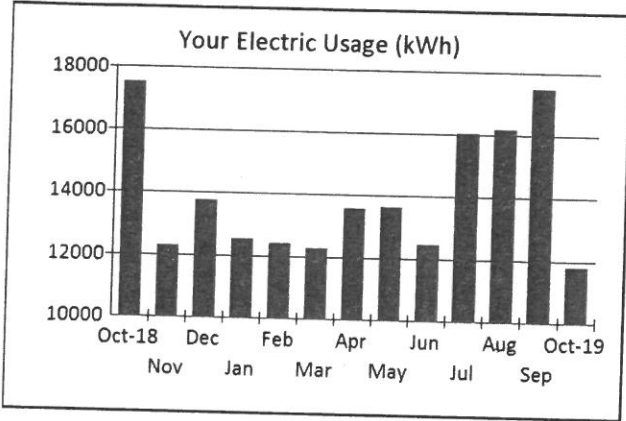
Effective 10/01/2019, electric supply rates have increased from the previous month as a result of the supply tracker.
Effective 10/01/2019, gas supply rates have increased from the previous month as a result of the supply tracker.
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Customer Service: 1-888-467-2669

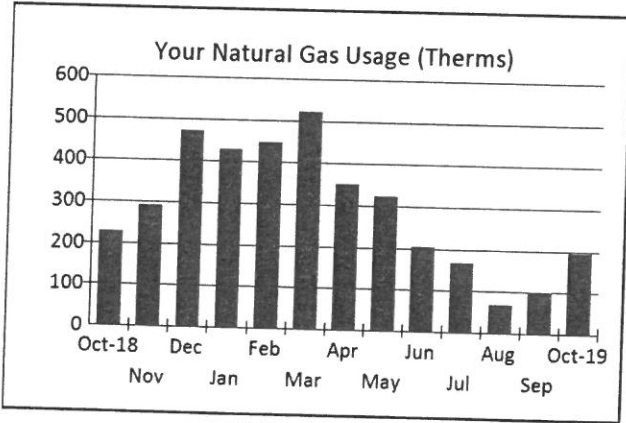
CUSTOMER: CITY OF RED LODGE
ACCOUNT NUMBER: 0713565-0
ACCOUNT DESCRIPTION:
BILLING DATE: October 14, 2019

GB

Service Address: 723 WATER WORKS RD PLNT, RED LODGE MT 59068



| | Oct 2018 | Sep 2019 | Oct 2019 |
|----------------------|----------|----------|----------|
| Days of Service | 33 | 32 | 28 |
| kWh Used | 17520.00 | 17480.00 | 11800.00 |
| Avg. kWh per day | 530.9 | 546.3 | 421.4 |
| Avg. cost per day | \$51.71 | \$54.18 | \$46.74 |
| Avg. daily temp (°F) | 54 | 71 | 55 |



| | Oct 2018 | Sep 2019 | Oct 2019 |
|----------------------|----------|----------|----------|
| Days of Service | 33 | 32 | 28 |
| Therms Used | 227.00 | 101.00 | 195.00 |
| Avg. Therms per day | 6.9 | 3.2 | 7.0 |
| Avg. cost per day | \$5.04 | \$2.65 | \$5.10 |
| Avg. daily temp (°F) | 54 | 71 | 55 |

| DUE DATE | TOTAL AMOUNT DUE |
|------------------|------------------|
| November 6, 2019 | \$ 1,451.63 |

ACCOUNT SUMMARY

| | | |
|-------------------|----------------------------|---------------|
| Previous Balance | | \$ 1,818.35 |
| Payments Received | October 11, 2019 Thank you | \$ (1,818.35) |
| Current Charges | | \$ 1,451.63 |

Total Amount Due \$ 1,451.63

SUMMARY OF CURRENT CHARGES

| | Delivery Service | Supply Service | TOTAL |
|-----------------------|------------------|----------------|-------------|
| Electric Service | \$ 376.63 | \$ 751.64 | \$ 1,128.27 |
| Natural Gas Service | \$ 78.37 | \$ 42.83 | \$ 121.20 |
| State and Local Taxes | \$ 149.69 | \$ 52.47 | \$ 202.16 |

Total Current Charges \$ 604.69 \$ 846.94 \$ 1,451.63

BUDGET BILLING INFORMATION

IMPORTANT ACCOUNT INFORMATION

Water-Plant

MESSAGE BOARD

Effective 10/01/2019, electric supply rates have increased from the previous month as a result of the supply tracker.
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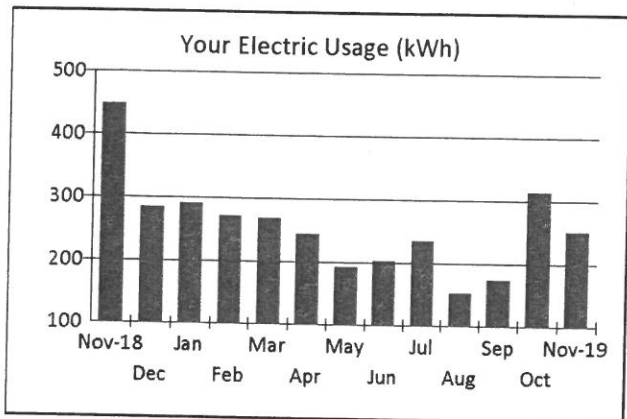


Customer Service: 1-888-467-2669

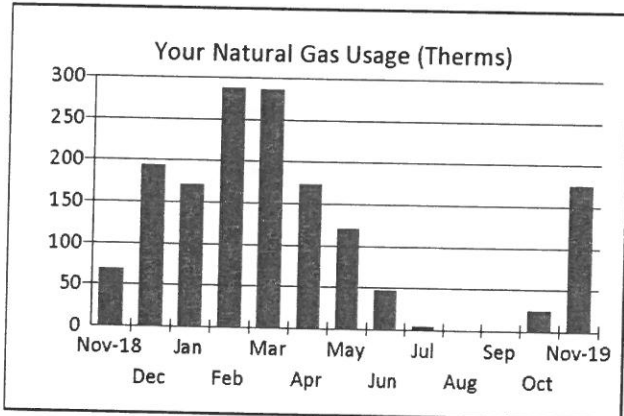
CUSTOMER: CITY OF RED LODGE
ACCOUNT NUMBER: 0713564-3
ACCOUNT DESCRIPTION:
BILLING DATE: November 12, 2019

GB

Service Address: 701 WATER WORKS RD, RED LODGE MT 59068



| | Nov 2018 | Oct 2019 | Nov 2019 |
|----------------------|----------|----------|----------|
| Days of Service | 29 | 28 | 30 |
| kWh Used | 449.00 | 314.00 | 251.00 |
| Avg. kWh per day | 15.5 | 11.2 | 8.4 |
| Avg. cost per day | \$2.07 | \$1.65 | \$1.30 |
| Avg. daily temp (°F) | 42 | 52 | 37 |



| | Nov 2018 | Oct 2019 | Nov 2019 |
|----------------------|----------|----------|----------|
| Days of Service | 29 | 28 | 30 |
| Therms Used | 69.00 | 25.00 | 175.00 |
| Avg. Therms per day | 2.4 | .9 | 5.8 |
| Avg. cost per day | \$2.07 | \$1.14 | \$4.17 |
| Avg. daily temp (°F) | 45 | 55 | 37 |

| DUE DATE | TOTAL AMOUNT DUE |
|-------------------|------------------|
| December 13, 2019 | \$ 183.54 |

ACCOUNT SUMMARY

| | | | |
|-------------------|-----------------------------|----|---------|
| Previous Balance | | \$ | 97.41 |
| Payments Received | November 18, 2019 Thank you | \$ | (97.41) |
| Current Charges | | \$ | 183.54 |

Total Amount Due \$ 183.54

SUMMARY OF CURRENT CHARGES

| | Delivery Service | Supply Service | TOTAL |
|------------------------------|------------------|-----------------|------------------|
| Electric Service | \$ 16.55 | \$ 16.73 | \$ 33.28 |
| Unmetered Service | \$ 9.86 | \$ 5.47 | \$ 15.33 |
| Natural Gas Service | \$ 67.18 | \$ 38.56 | \$ 105.74 |
| State and Local Taxes | \$ 26.84 | \$ 2.35 | \$ 29.19 |
| Total Current Charges | \$ 120.43 | \$ 63.11 | \$ 183.54 |

BUDGET BILLING INFORMATION

IMPORTANT ACCOUNT INFORMATION

Currently, a balance remains on your account. If payment has been sent, please disregard this reminder.

water

MESSAGE BOARD

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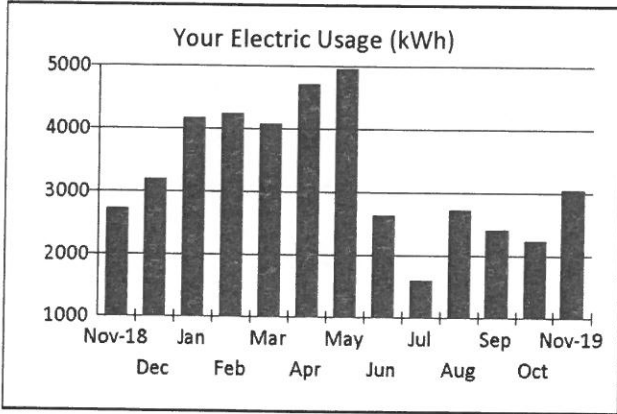


Customer Service: 1-888-467-2669

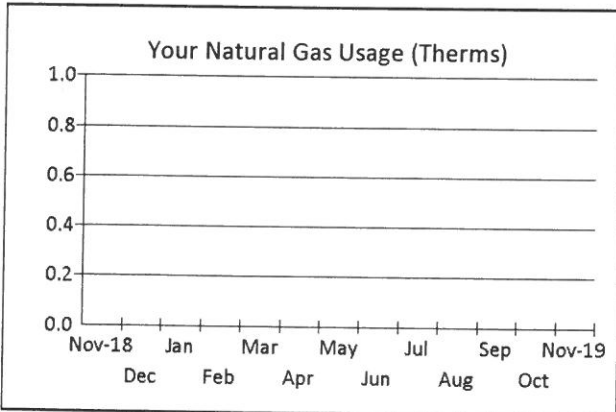
CUSTOMER: CITY OF RED LODGE
ACCOUNT NUMBER: 0713535-3
ACCOUNT DESCRIPTION:
BILLING DATE: November 12, 2019

GB

Service Address: 713 S GRANT AVE PMP, RED LODGE MT 59068



| | Nov 2018 | Oct 2019 | Nov 2019 |
|----------------------|----------|----------|----------|
| Days of Service | 29 | 28 | 29 |
| kWh Used | 2720.00 | 2240.00 | 3040.00 |
| Avg. kWh per day | 93.8 | 80.0 | 104.8 |
| Avg. cost per day | \$23.63 | \$24.33 | \$27.15 |
| Avg. daily temp (°F) | 45 | 55 | 37 |



| | Nov 2018 | Oct 2019 | Nov 2019 |
|----------------------|----------|----------|----------|
| Days of Service | 29 | 28 | 29 |
| Therms Used | | | |
| Avg. Therms per day | | | |
| Avg. cost per day | \$0.56 | \$0.58 | \$0.56 |
| Avg. daily temp (°F) | 45 | 55 | 37 |

| DUE DATE | TOTAL AMOUNT DUE |
|-------------------|------------------|
| December 13, 2019 | \$ 803.70 |

ACCOUNT SUMMARY

| | | |
|-------------------|-----------------------------|-------------|
| Previous Balance | | \$ 697.66 |
| Payments Received | November 18, 2019 Thank you | \$ (697.66) |
| Current Charges | | \$ 803.70 |

Total Amount Due \$ 803.70

SUMMARY OF CURRENT CHARGES

| | Delivery Service | Supply Service | TOTAL |
|------------------------------|------------------|------------------|------------------|
| Electric Service | \$ 413.71 | \$ 202.60 | \$ 616.31 |
| Natural Gas Service | \$ 16.35 | \$ 0.00 | \$ 16.35 |
| State and Local Taxes | \$ 157.78 | \$ 13.26 | \$ 171.04 |
| Total Current Charges | \$ 587.84 | \$ 215.86 | \$ 803.70 |

BUDGET BILLING INFORMATION

IMPORTANT ACCOUNT INFORMATION

Currently, a balance remains on your account. If payment has been sent, please disregard this reminder.

Water-Grant well

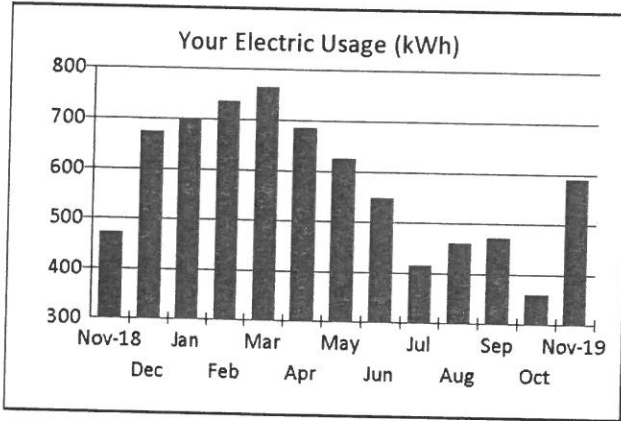
MESSAGE BOARD

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Customer Service: 1-888-467-2669

CUSTOMER: CITY OF RED LODGE
ACCOUNT NUMBER: 0713534-6 GB
ACCOUNT DESCRIPTION:
BILLING DATE: November 12, 2019

Service Address: 1219 S WHITE AVE, RED LODGE MT 59068



| | Nov 2018 | Oct 2019 | Nov 2019 |
|----------------------|----------|----------|----------|
| Days of Service | 29 | 28 | 30 |
| kWh Used | 472.00 | 360.00 | 589.00 |
| Avg. kWh per day | 16.3 | 12.9 | 19.6 |
| Avg. cost per day | \$2.17 | \$1.86 | \$2.77 |
| Avg. daily temp (°F) | 45 | 55 | 37 |

| DUE DATE | TOTAL AMOUNT DUE |
|-------------------|------------------|
| December 13, 2019 | \$ 83.22 |

ACCOUNT SUMMARY

| | | | |
|-------------------|-----------------------------|----|---------|
| Previous Balance | | \$ | 52.19 |
| Payments Received | November 18, 2019 Thank you | \$ | (52.19) |
| Current Charges | | \$ | 83.22 |

Total Amount Due \$ **83.22**

SUMMARY OF CURRENT CHARGES

| | Delivery Service | Supply Service | TOTAL |
|------------------------------|------------------|-----------------|-----------------|
| Electric Service | \$ 30.61 | \$ 39.25 | \$ 69.86 |
| State and Local Taxes | \$ 10.79 | \$ 2.57 | \$ 13.36 |
| Total Current Charges | \$ 41.40 | \$ 41.82 | \$ 83.22 |

BUDGET BILLING INFORMATION

IMPORTANT ACCOUNT INFORMATION

Currently, a balance remains on your account. If payment has been sent, please disregard this reminder.

Water - PRV

MESSAGE BOARD

Effective 11/01/2019, electric supply rates have decreased from the previous month as a result of the supply tracker. For questions about your bill or service, call NorthWestern Energy at 1-888-467-2669 (Monday through Friday, 7 a.m.-6 p.m). For information or to make a payment, visit us at: www.northwesternenergy.com

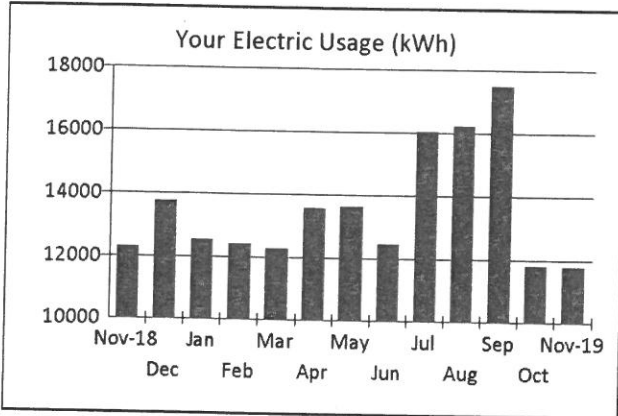


Customer Service: 1-888-467-2669

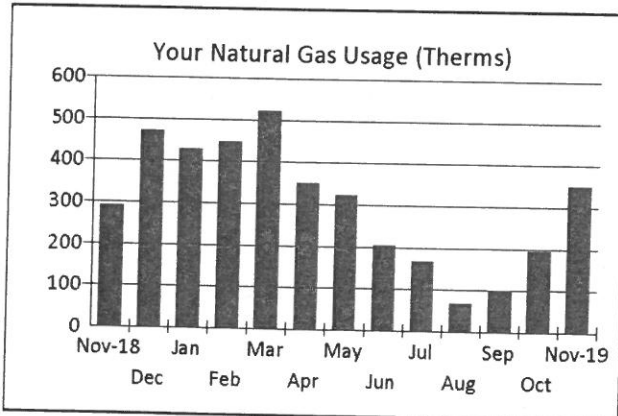
CUSTOMER: CITY OF RED LODGE
 ACCOUNT NUMBER: 0713565-0
 ACCOUNT DESCRIPTION:
 BILLING DATE: November 12, 2019

GB

Service Address: 723 WATER WORKS RD PLNT, RED LODGE MT 59068



| | Nov 2018 | Oct 2019 | Nov 2019 |
|----------------------|----------|----------|----------|
| Days of Service | 29 | 28 | 29 |
| kWh Used | 12300.00 | 11800.00 | 11780.00 |
| Avg. kWh per day | 424.1 | 421.4 | 406.2 |
| Avg. cost per day | \$44.59 | \$46.74 | \$46.35 |
| Avg. daily temp (°F) | 45 | 55 | 37 |



| | Nov 2018 | Oct 2019 | Nov 2019 |
|----------------------|----------|----------|----------|
| Days of Service | 29 | 28 | 29 |
| Therms Used | 290.00 | 195.00 | 350.00 |
| Avg. Therms per day | 10.0 | 7.0 | 12.1 |
| Avg. cost per day | \$7.08 | \$5.10 | \$8.25 |
| Avg. daily temp (°F) | 45 | 55 | 37 |

| DUE DATE | TOTAL AMOUNT DUE |
|-------------------|------------------|
| December 13, 2019 | \$ 1,583.39 |

ACCOUNT SUMMARY

| | | |
|-------------------|-----------------------------|---------------|
| Previous Balance | | \$ 1,451.63 |
| Payments Received | November 18, 2019 Thank you | \$ (1,451.63) |
| Current Charges | | \$ 1,583.39 |

Total Amount Due \$ 1,583.39

SUMMARY OF CURRENT CHARGES

| | Delivery Service | Supply Service | TOTAL |
|-----------------------|------------------|----------------|-------------|
| Electric Service | \$ 377.98 | \$ 785.10 | \$ 1,163.08 |
| Natural Gas Service | \$ 123.24 | \$ 77.21 | \$ 200.45 |
| State and Local Taxes | \$ 166.68 | \$ 53.18 | \$ 219.86 |

Total Current Charges \$ 667.90 \$ 915.49 \$ 1,583.39

BUDGET BILLING INFORMATION

IMPORTANT ACCOUNT INFORMATION

Currently, a balance remains on your account. If payment has been sent, please disregard this reminder.

Water plant

MESSAGE BOARD

Effective 11/01/2019, electric supply rates have decreased from the previous month as a result of the supply tracker. Effective 11/01/2019, gas supply rates have decreased from the previous month as a result of the supply tracker. For questions about your bill or service, call NorthWestern Energy at 1-888-467-2669 (Monday through Friday, 7 a.m.-6 p.m.). For information or to make a payment, visit us at: www.northwesternenergy.com

Appendix I: Tank Inspection

Liquid Engineering Corporation
Concrete Water Reservoir Interior Condition Survey

Job Number: 50074

Utility: CITY OF RED LODGE

Tank: CLEARWELL #1

Inspector: M. BUTAK

Dive Controller: J. FAURÔT

Date: 7/26/2016

**AMERICAN CONCRETE INSTITUTE
 ACI 201.1R-08 / 311.1R**

| CONCRETE CONDITION CODE | | | | | | | | | |
|-------------------------|----------------|-----------------|------------------|---------------|--------------|--------------|-------------------|---------------|--|
| A - Abrasion | D - Cracking | G - contraction | J - Curling | M - Void | P - Pitting | S - Bugholes | V - Exudation | Y - Corrosion | |
| B - Erosion | E - Deflection | H - Deformation | K - Checking | N - Cold Pour | Q - Spalling | T - Chalking | W - Efflorescence | Z - Exposed | |
| C - Blistering | F - Expansion | I - Settling | L - Delamination | O - Honeycomb | R - Popouts | U - Leaching | X - Stains | Reinforcement | |

QUADRANT 1

QUADRANT 2

QUADRANT 3

QUADRANT 4

INTERIOR RESERVOIR ROOF

| | | | | |
|--------------------|-------|-----|-----|-----|
| Roof Slab(s) | X,S,W | X,S | X,S | X,S |
| Expansion Joint(s) | X | X | X | X |
| Support Beam(s) | | | | |
| Beam Joint(s) | | | | |
| Roof Column Joint | | | | |

General Appearance: Good Coating: N/A Vents: Good Level Sensors: -----

All expansion Joints Uniform width: Yes Uniform Level: Yes Gaskets Intact: -----

INTERIOR RESERVOIR WALLS

| | | | | |
|-----------------|-----------|-----------|-----------|-----------|
| Wall-Roof Joint | X,S | X,S | X,S | X,S |
| Wall Structure | X,S,R,Q,Z | X,S,R,Q,Z | X,S,R,Q,Z | X,S,R,Q,Z |

General Appearance: Good Coating: N/A Ladder: Good Leaking: None observed Dye Tested: No

All expansion Joints Uniform width: ----- Uniform Level: ----- Gaskets Intact: -----

~~**INTERIOR RESERVOIR SUPPORT COLUMNS**~~

| | | | | |
|-------------------|--|--|--|--|
| Columns | | | | |
| Clmn Floor Plates | | | | |

General Appearance: Good Coating: N/A ColumnBase Leaking: ----- Dye Tested: -----

All expansion Joints Uniform width: ----- Uniform Level: ----- Gaskets Intact: -----

INTERIOR RESERVOIR FLOOR

| | | | | |
|-----------------|-------|-------|-------|-------|
| Perimeter Joint | X,S,Q | X,S,Q | X,S,Q | X,S,Q |
| Floor Slabs | X,Q | X,Q | X,Q | X,Q |

General Appearance: Good Coating: N/A Inlet Structure: Good Outlet Structure: Good

Overflow Structure: Good Sump System: ----- Leaking: None observed Dye Tested: -----

All expansion Joints Uniform width: ----- Uniform Level: ----- Gaskets Intact: -----

Additional Interior Notes / Comments

DISCLAIMER

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Liquid Engineering Corporation
Concrete Water Reservoir Exterior Condition Survey

Job Number: 50074
 Inspector: M. BUTAK

Utility: CITY OF RED LODGE
 Dive Controller: J. FAUROT

Tank: CLEARWELL #1
 Date: 7/26/2016

AMERICAN CONCRETE INSTITUTE
ACI 201.1R-08 / 311.1R

| CONCRETE CONDITION CODE | | | | | | | | | |
|-------------------------|----------------|-----------------|------------------|---------------|--------------|--------------|-------------------|---------------|--|
| A - Abrasion | D - Cracking | G - contraction | J - Curling | M - Void | P - Pitting | S - Bugholes | V - Exudation | Y - Corrosion | |
| B - Erosion | E - Deflection | H - Deformation | K - Checking | N - Cold Pour | Q - Spalling | T - Chalking | W - Efflorescence | Z - Exposed | |
| C - Blistering | F - Expansion | I - Settling | L - Delamination | O - Honeycomb | R - Popouts | U - Leaching | X - Stains | Reinforcement | |

| | | | |
|-------------------|-------------------|-------------------|-------------------|
| QUADRANT 1 | QUADRANT 2 | QUADRANT 3 | QUADRANT 4 |
|-------------------|-------------------|-------------------|-------------------|

EXTERIOR RESERVOIR ROOF

| | | | |
|---------------------------|--------------------------------|----------------------|------------------------|
| Roof Slab(s) | UNDERGROUND/ NOT OBSERVED ↓ | | |
| Expansion Joint(s) | ↓ | | |
| Roof-Wall Joint | ↓ | | |
| General Appearance: ----- | | Coating: N/A | Versts: Good |
| Hatch & Gaskets: Good | | Hatch hinges: Good | Level Indicator: ----- |
| All expansion Joints | | Uniform width: ----- | Uniform Level: ----- |
| | | | Gaskets Intact: ----- |

EXTERIOR RESERVOIR WALLS

| | | | |
|---------------------------|--------------------------------|------------------------|------------------------|
| Wall-Roof Joint | UNDERGROUND/ NOT OBSERVED ↓ | | |
| Wall Structure | ↓ | | |
| General Appearance: ----- | | Coating: N/A | Ladder: ----- |
| Overflow Structure: ----- | | Clean out hatch: ----- | Safety Climb: ----- |
| All expansion Joints | | Uniform width: ----- | Leaking: None observed |
| | | Uniform Level: ----- | Gaskets Intact: ----- |

EXTERIOR RESERVOIR FOOTINGS / FOUNDATION

| | | | |
|---------------------------|--------------------------------|----------------------|----------------------------------|
| Perimeter Joint | UNDERGROUND/ NOT OBSERVED ↓ | | |
| Floor Slab | ↓ | | |
| Footing Ring | ↓ | | |
| Sump-Valve Vault | ↓ | | |
| General Appearance: ----- | | Coating: N/A | Leaking: None observed |
| All expansion Joints | | Uniform width: ----- | Ground Subsidence: None observed |
| | | Uniform Level: ----- | Gaskets Intact: ----- |
| | | | Overflow: ----- |

Additional Exterior Notes / Comments

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Liquid Engineering Corporation
Potable Water Reservoir Contamination, Health and Safety Report

Job Number: 50074

Utility: CITY OF RED LODGE

Tank: CLEARWELL #1

Inspector: M. BUTAK

Dive Controller: J. FAUROT

Date: 7/26/2016

Complies With: AWWA • OSHA • ANSI • NIOSH • NAVFAC • NFPAC

CONTAMINATION & HEALTH

| | | | |
|-----------------------------------|----------------------------|----------------------------|--|
| Air Vents | Type: J-TUBE | #: 1 | Screen Condition(s): Good |
| Hatches | Type: Square | #: 1 | Secured Properly: Yes Properly Sealed: Yes |
| Exterior Overflow | Flapper: ---- | Screen: ---- | Gasket: ---- Condition: ---- |
| Cathodic Covers | In-Place: ---- | #: ---- | Gasket: ---- Properly Sealed: ---- |
| Roof to Wall Joint | Welded: No | Properly Sealed: Yes | |
| Roof Integrity | Holes: No | Cracking: No | Standing Water: No |
| Wall Integrity | Holes: No | Cracking: No | |
| Manway Integrity | Leaks: ---- | Condition: ---- | |
| Water Clarity | General Appearance: CLEAR | | Odor: NONE |
| Floating Surface Debris | Type: NONE | | Source: N/A |
| Hypalon Floating Cover | Condition: ---- | Holes: ---- | Tears: ---- |
| Telemetry Penetrations | Properly Sealed: Yes | | |

FACILITY SAFETY COMPLIANCE

~~Exterior Ladder~~

| | | | | |
|----------------------|------------------------|-----------------------------|-----------------------------|-------------------------|
| Overall Ladder | Condition: ---- | #: ---- | Offset Landing: ---- | Height: |
| Vandal Guard | Present: ---- | Vandal Guard Locked: ---- | | |
| Ladder Rails & Rungs | Condition: ---- | Missing/Damaged Rungs: ---- | | |
| Rung Spacing & Depth | Spacing: in. (max 12") | Toe Depth: in. (min 7") | | |
| Rail Spacing & Size | Width: in. (min 2") | Thickness: in. (min 1/4") | Rail to Rail: in. (min 16") | |
| Safety Climb System | Type: ----- | Condition: ---- | | |
| Number & Locations | Wall: | Leg: | Roof: | Riser Pipe: Other: |
| Ladder Attachments | | | | |

~~Manways~~

| | | | |
|--------------------|-------------|-----------------|----------------------------------|
| Type and size | Type: ----- | #: ---- | Size: inches (24" – 18'x22" min) |
| Support Structure | Type: ----- | Condition: ---- | |
| Number & Locations | Wall: | Roof: | Riser Pipe: Other: |

Hatches

| | | | |
|------------------------|-----------------------|---------------------|-------------------------------------|
| Hatch Type & Size | Type: Square | #: 2 | Size: 36x36 in. (24" – 24"x15" min) |
| Hatch & Lid Lip Height | Hatch: 3 in. (min 4") | Lid: 2 in. (min 2") | |

~~Balconies & Railing~~

| | | | |
|---------------------|-----------------|-----------------------|--------------------|
| Deck / Walkways | Condition: ---- | Width: | |
| Hand Rails | Condition: ---- | Height: in. (min 42") | No. Rails: (min 2) |
| Toe Rail | Condition: ---- | Height: in. (min 4") | |
| Welds / Attachments | Condition: ---- | | |

~~Roof~~

| | | |
|-----------------------|-----------------|---------|
| Safety Tie-Off Points | Condition: ---- | #: ---- |
| Antennas | Type: ----- | #: ---- |

DISCLAIMER

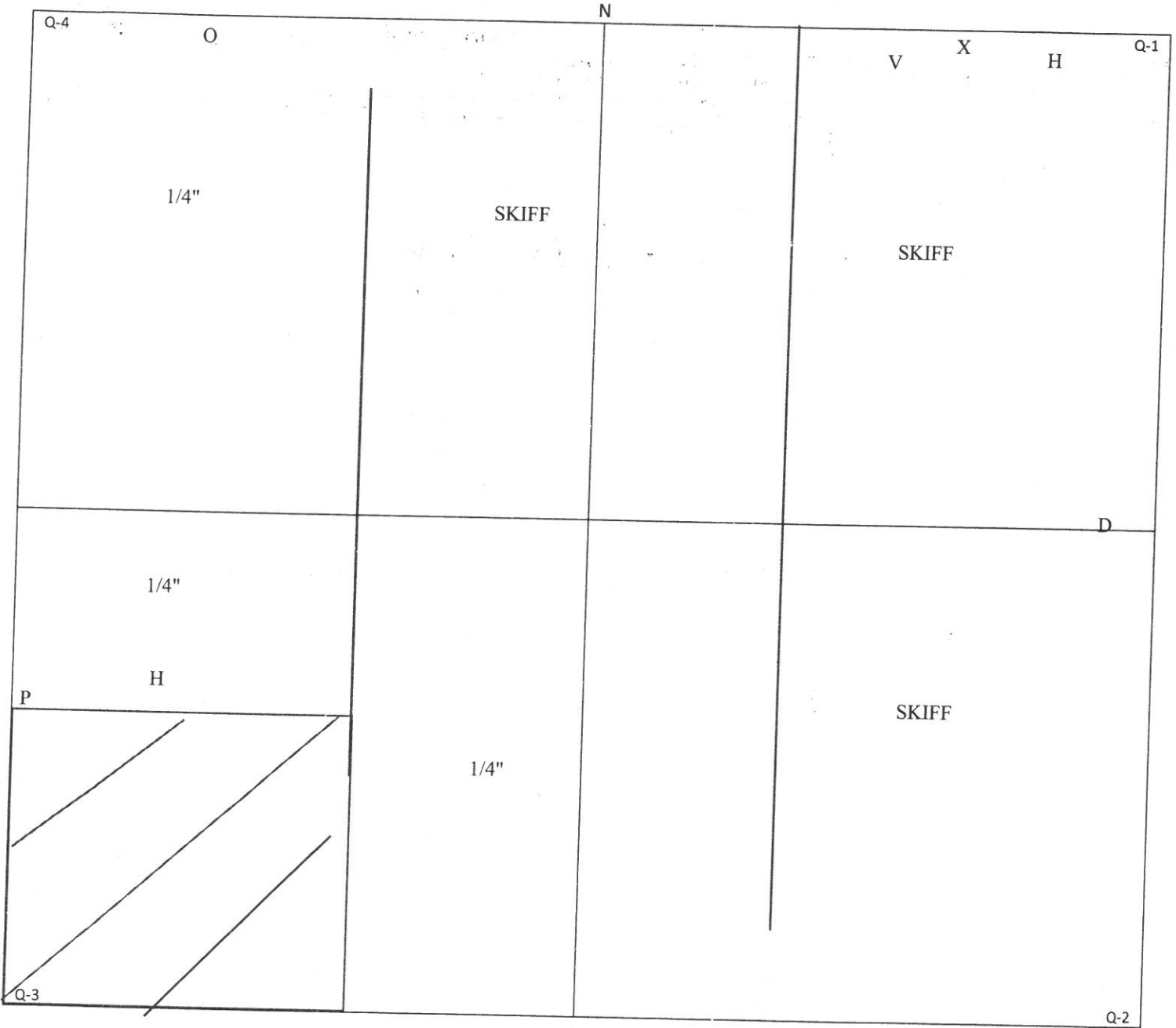
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Liquid Engineering Corporation
Rectangular Tank Diagram / Information Worksheet

Job Number 50074

Utility Name CITY OF RED LODGE

Tank Name CLEARWELL #1



Sediment Depth Measurements

Average Sediment Depth = The sum of all measurements taken, divided by the number of measurements taken

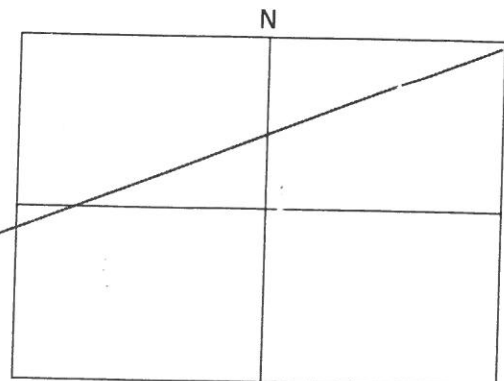
Avg. Depth 1/8" **Cubic Yardage** **Sediment Type** SAND

Plumbing & Structure location

Plumbing and structure codes
 O=Outlet X=Inlet Z=Manway
 V=Vent D=Drain S=Sump
 L=Ladder H=Hatch P=Overflow
 F=Float Level Indicator
 T=Telemetry

Column Placement

Type of Column ○ □ I
 Base Structure [] [] [] []
 Top Structure [] [] [] []
 Column Construction Steel



DISCLAIMER

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Steel Potable Water Reservoir Security / Measurement Worksheet

Job Number 50074

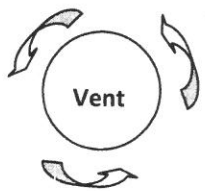
Utility Name CITY OF RED LODGE

Tank Name CLEARWELL #1

Security

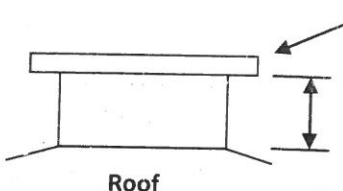
| | |
|--|-----|
| Is the area surrounding the tank well lit? | No |
| Is the tank surrounded by a Security Fence? | No |
| Are the access gates locked? | N/A |
| Is the tank equipped with a Vandal Guard on the primary access ladder? | N/A |
| If so, is the Vandal Guard locked? | N/A |
| Are the vents equipped with security vent shrouds? | No |
| Are all of the hatches equipped with electronic monitoring devices? | No |
| Are the external plumbing components housed in a secure vault or out-building? | Yes |
| Does the surrounding geography of the tank obscure it from public view? | Yes |
| Does the exterior of the tank show signs of trespass? | No |

Measurements



Vent

Outside Circumference
43 Inches



Roof

Flange Metal Thickness Inches

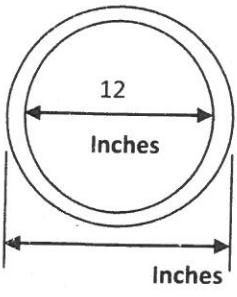
Roof to Screen or Flange 30 Inches

Flange -----

Number of Bolt Holes

Size of Bolts Inches

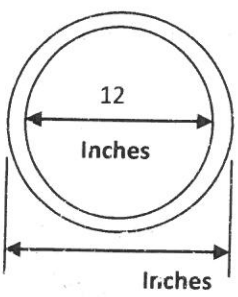
Inlet



12
Inches

Inches

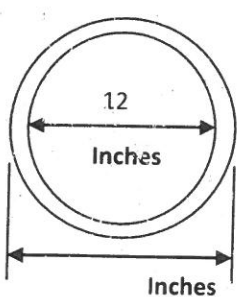
Outlet



12
Inches

Inches

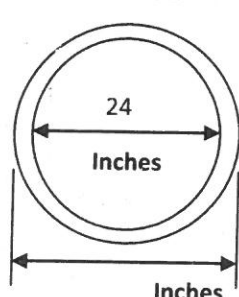
Drain



12
Inches

Inches

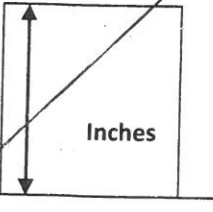
Overflow



24
Inches

Inches

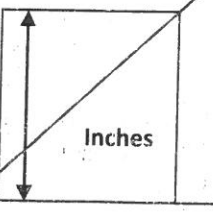
Inlet Riser



Inches

Floor

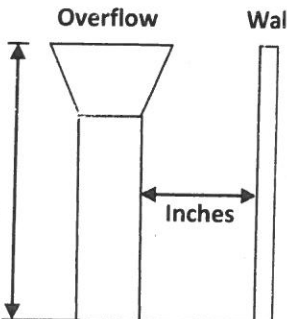
Outlet Riser



Inches

Floor

Overflow **Wall**



10
Feet/Inches

Inches

Floor

DISCLAIMER

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Liquid Engineering Corporation
Steel Potable Water Reservoir Immediate Needs Assessment

Job Number: 50074

Utility: CITY OF RED LODGE

Tank: CLEARWELL #1

Inspector: M. BUTAK

Dive Controller: J. FAUROT

Date: 7/26/2016

1. Health and Safety Items

- Safety Climb System Installation:
 Vent Screen Repairs:

2. Testing Items

- Dye Testing for Leak Evaluation: NOT RECOMMENDED
 Presence of Lead Test (Interior/Exterior): NOT RECOMMENDED

3. Destructive Testing Items

- % of Lead Test (interior/Exterior) (Coating samples are removed for laboratory analysis) NOT RECOMMENDED
 Coating Adhesion Test (Interior/Exterior): NOT RECOMMENDED

Specific written authorization required to perform destructive testing. Destructive tests include touch-up of coating system.

4. Repair Items

- Epoxy Coating Repairs: NONE RECOMMENDED
 Temporary Leak Repairs: NONE NEEDED
 Float Operated Level Indicator Repairs / Maintenance:
 Hypalon Repairs: N/A

5. Security Related Items (Critical security upgrade information is immediately available)

- Tank vents are not equipped with a security vent shroud: NONE PRESENT
 Tank hatches are not equipped with a security hatch locking device: NONE PRESENT
 Tank perimeter not adequately secured:

The above mentioned additional work is considered immediately necessary and is recommended to be completed. Some items may be completed in conjunction with work currently being performed while the crew is on site.

Reservoir Inspection Condition Supplemental

CLEAN AND ASSESS EVERY 3 YEARS

SECURITY RELATED ITEMS ABOVE

CEILING: STAINING THROUGHOUT ALL FOUR QUADRANTS. SMALL CRACK AND EFFLORESCENCE NOTED IN FIRST QUADRANT. OVER ALL GOOD CONDITION. VENT AND HATCH PENETRATIONS IN GOOD CONDITION AS WELL. VENT SHOWS OVERALL SURFACE CORROSION.
 WALLS: WALLS SHOW FREQUENT BUGHOLE AND POPOUTS IN ALL FOUR QUADRANTS. CONCENTRATION CELLS ON THE WALLS DUE TO EXPOSED REINFORCEMENT. EXPOSED AGGREGATE IS ALSO FOUND FREQUENTLY ON ALL WALLS, PARTICULARLY BY THE FLOOR WHERE THERE IS SPALLING CLOSE TO THE FLOOR/WALL SEAM. TOP LAYER OF CONCRETE IS VERY DELICATE, RUBBING OFF WHEN BRUSHED.
 FLOOR: SLIGHT SPALLING AROUND PREDRILLED HOLES IN FLOOR. OVERALL GOOD CONDITION, TOP LAYER OF CONCRETE IS VERY DELICATE, RUBBING OFF WHEN BRUSHED.
 PLUMBING: INLET AND OUTLET SHOW CONCENTRATION CELL CORROSION. VENT AND DRAIN HAVE OVERALL SURFACE CORROSION. STANDOFFS ON PVC INTERNAL OVERFLOW SHOW CONCENTRATION CELLS BUT ARE IN OVERALL GOOD CONDITION. ALL PLUMBING IS FREE OF BLOCKAGE AND FULLY FUNCTIONAL.

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Liquid Engineering Corporation
Concrete Water Reservoir Interior Condition Survey

Job Number: 50074

Utility: CITY OF RED LODGE

Tank: CLEARWELL 2 250KG

Inspector: ERIK POTTER

Dive Controller: MEG BUTAK

Date: 7/27/2016

**AMERICAN CONCRETE INSTITUTE
 ACI 201.1R-08 / 311.1R**

| CONCRETE CONDITION CODE | | | | | | | | | |
|-------------------------|----------------|-----------------|------------------|---------------|--------------|--------------|-------------------|---------------|--|
| A - Abrasion | D - Cracking | G - contraction | J - Curling | M - Void | P - Pitting | S - Bugholes | V - Exudation | Y - Corrosion | |
| B - Erosion | E - Deflection | H - Deformation | K - Checking | N - Cold Pour | Q - Spalling | T - Chalking | W - Efflorescence | Z - Exposed | |
| C - Blistering | F - Expansion | I - Settling | L - Delamination | O - Honeycomb | R - Popouts | U - Leaching | X - Stains | Reinforcement | |

QUADRANT 1 QUADRANT 2 QUADRANT 3 QUADRANT 4

INTERIOR RESERVOIR ROOF

| | | | | |
|--------------------|------|------|------|------|
| Roof Slab(s) | ID,W | ID,W | ID,W | ID,W |
| Expansion Joint(s) | | | | |
| Support Beam(s) | S | S | S | S |
| Beam Joint(s) | GOOD | GOOD | GOOD | GOOD |
| Roof-Column Joint | N | GOOD | GOOD | GOOD |

General Appearance: Good Coating: N/A Vents: Good Level Sensors: Good
 All expansion Joints Uniform width: ----- Uniform Level: ----- Gaskets Intact: -----

INTERIOR RESERVOIR WALLS

| | | | | |
|-----------------|----------|----------|----------|----------|
| Wall-Roof Joint | ID,W | ID,W | GOOD | GOOD |
| Wall Structure | ID,W,S,X | ID,W,S,X | ID,W,S,X | ID,W,S,X |

General Appearance: Good Coating: N/A Ladder: Good Leaking: None observed Dye Tested: No
 All expansion Joints Uniform width: ----- Uniform Level: ----- Gaskets Intact: -----

INTERIOR RESERVOIR SUPPORT COLUMNS

| | | | | |
|-------------------|-----|-----|-----|-----|
| Columns | X,S | X,S | X,S | X,S |
| Clmn Floor Plates | | | | |

General Appearance: Good Coating: N/A ColumnBase Leaking: None observed Dye Tested: No
 All expansion Joints Uniform width: ----- Uniform Level: ----- Gaskets Intact: -----

INTERIOR RESERVOIR FLOOR

| | | | | |
|-----------------|-----|----|-----|----|
| Perimeter Joint | X,N | X | X,N | X |
| Floor Slabs | ID | ID | ID | ID |

General Appearance: Good Coating: N/A Inlet Structure: Good Outlet Structure: Good
 Overflow Structure: ----- Sump System: ----- Leaking: None observed Dye Tested: No
 All expansion Joints Uniform width: ----- Uniform Level: ----- Gaskets Intact: -----

Additional Interior Notes / Comments

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Liquid Engineering Corporation
Concrete Water Reservoir Exterior Condition Survey

Job Number: 50074

Utility: CITY OF RED LODGE

Tank: CLEARWELL 2 250KG

Inspector: ERIK POTTER

Dive Controller: MEG BUTAK

Date: 7/27/2016

**AMERICAN CONCRETE INSTITUTE
 ACI 201.1R-08 / 311.1R**

| CONCRETE CONDITION CODE | | | | | | | | |
|-------------------------|----------------|-----------------|------------------|---------------|--------------|--------------|-------------------|---------------|
| A - Abrasion | D - Cracking | G - contraction | J - Curling | M - Void | P - Pitting | S - Bugholes | V - Exudation | Y - Corrosion |
| B - Erosion | E - Deflection | H - Deformation | K - Checking | N - Cold Pour | Q - Spalling | T - Chalking | W - Efflorescence | Z - Exposed |
| C - Blistering | F - Expansion | I - Settling | L - Delamination | O - Honeycomb | R - Popouts | U - Leaching | X - Stains | Reinforcement |

QUADRANT 1
QUADRANT 2
QUADRANT 3
QUADRANT 4

EXTERIOR RESERVOIR ROOF

| | | | |
|--------------------------|----------------------|----------------------|-----------------------------|
| Roof Slab(s) | BELOW GROUND | | |
| Expansion Joint(s) | | | |
| Roof-Wall Joint | | | |
| General Appearance: Good | Coating: N/A | Vents: Good | Level Indicator: ----- |
| Hatch & Gaskets: Good | Hatch hinges: Good | Lock & Hasp: ----- | Hatch Cage & Railing: ----- |
| All expansion Joints | Uniform width: ----- | Uniform Level: ----- | Gaskets Intact: ----- |

EXTERIOR RESERVOIR WALLS

| | | | |
|---------------------------|------------------------|------------------------|-----------------------|
| Wall-Roof Joint | BELOW GROUND | | |
| Wall Structure | | | |
| General Appearance: Good | Coating: N/A | Ladder: ----- | Safety Climb: ----- |
| Overflow Structure: ----- | Clean out hatch: ----- | Leaking: None observed | |
| All expansion Joints | Uniform width: ----- | Uniform Level: ----- | Gaskets Intact: ----- |

EXTERIOR RESERVOIR FOOTINGS / FOUNDATION

| | | | |
|---------------------------|----------------------|----------------------|----------------------------------|
| Perimeter Joint | BELOW GROUND | | |
| Floor Slab | | | |
| Footing Ring | | | |
| Sump-Valve Vault | | | |
| General Appearance: ----- | Coating: N/A | Leaking: ----- | Ground Subsidence: None observed |
| All expansion Joints | Uniform width: ----- | Uniform Level: ----- | Gaskets Intact: ----- |
| | | | Overflow: ----- |

Additional Exterior Notes / Comments

DISCLAIMER

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Potable Water Reservoir Contamination, Health and Safety Report

Job Number: 50074

Utility: CITY OF RED LODGE

Tank: CLEARWELL 2 250KG

Inspector: ERIK POTTER

Dive Controller: MEG BUTAK

Date: 7/27/2016

Complies With: AWWA • OSHA • ANSI • NIOSH • NAVFAC • NFPAC

CONTAMINATION & HEALTH

| | | | | |
|-----------------------------------|----------------------------|------------------------|---------------------------|----------------------------------|
| Air Vents | Type: J-TUBE | #: 1 | Screen Condition(s): Good | |
| Hatches | Type: Square | #: 1 | Secured Properly: Yes | Properly Sealed: Yes |
| Exterior Overflow | Flapper: ---- | Screen: ---- | Gasket: ---- | Condition: ---- |
| Cathodic Covers | In-Place: ---- | #: ---- | Gasket: ---- | Properly Sealed: ---- |
| Roof to Wall Joint | Welded: No | Properly Sealed: Yes | | |
| Roof Integrity | Holes: No | Cracking: No | Standing Water: No | |
| Wall Integrity | Holes: No | Cracking: No | | |
| Manway Integrity | Leaks: ---- | Condition: ---- | | |
| Water Clarity | General Appearance: CLEAR | | Odor: NONE | |
| Floating Surface Debris | Type: NONE | | Source: N/A | |
| Hypalon Floating Cover | Condition: ---- | Holes: ---- | Tears: ---- | |
| Telemetry Penetrations | Properly Sealed: Yes | | | |

FACILITY SAFETY COMPLIANCE

~~Exterior Ladder~~

| | | | | |
|----------------------|-------------------------------------|-----------------------------|-----------------------------|---------|
| Overall Ladder | Condition: ---- | #: ---- | Offset Landing: ---- | Height: |
| Vandal Guard | Present: ---- | Vandal Guard Locked: ---- | | |
| Ladder Rails & Rungs | Condition: ---- | Missing/Damaged Rungs: ---- | | |
| Rung Spacing & Depth | Spacing: in. (max 12") | Toe Depth: in. (min 7") | | |
| Rail Spacing & Size | Width: in. (min 2") | Thickness: in. (min 1/4") | Rail to Rail: in. (min 16") | |
| Safety Climb System | Type: ---- | Condition: ---- | | |
| Number & Locations | Wall: Leg: Roof: Riser Pipe: Other: | | | |
| Ladder Attachments | | | | |

~~Manways~~

| | | | |
|--------------------|--------------------------------|-----------------|----------------------------------|
| Type and size | Type: ---- | #: ---- | Size: inches (24" – 18'x22" min) |
| Support Structure | Type: ---- | Condition: ---- | |
| Number & Locations | Wall: Roof: Riser Pipe: Other: | | |

Hatches

| | | | |
|------------------------|------------------------|---------------------|-------------------------------------|
| Hatch Type & Size | Type: Square | #: 1 | Size: 36x30 in. (24" – 24"x15" min) |
| Hatch & Lid Lip Height | Hatch: 12 in. (min 4") | Lid: 2 in. (min 2") | |

~~Balconies & Railing~~

| | | | |
|---------------------|-----------------|-----------------------|--------------------|
| Deck / Walkways | Condition: ---- | Width: | |
| Hand Rails | Condition: ---- | Height: in. (min 42") | No. Rails: (min 2) |
| Toe Rail | Condition: ---- | Height: in. (min 4") | |
| Welds / Attachments | Condition: ---- | | |

~~Roof~~

| | | |
|-----------------------|-----------------|---------|
| Safety Tie-Off Points | Condition: ---- | #: ---- |
| Antennas | Type: ---- | #: ---- |

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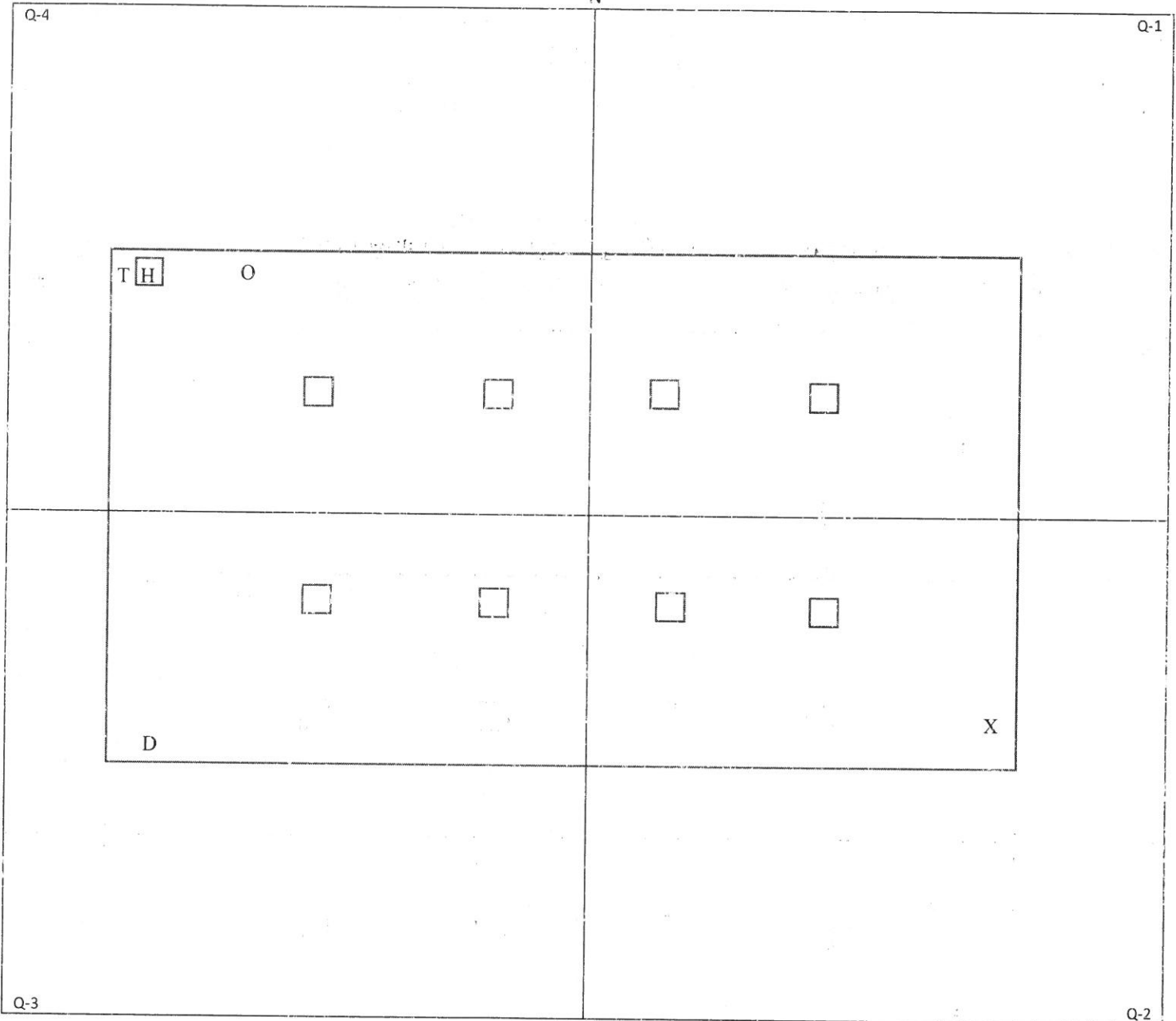
Liquid Engineering Corporation
Rectangular Tank Diagram / Information Worksheet

Job Number 50074

Utility Name CITY OF RED LODGE

Tank Name CLEARWELL 2 250KG

N



Sediment Depth Measurements

Average Sediment Depth = The sum of all measurements taken, divided by the number of measurements taken

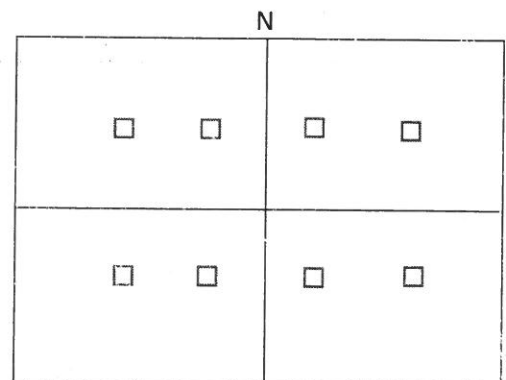
Avg. Depth Cubic Yardage Sediment Type

Plumbing & Structure location

Plumbing and structure codes
 O=Outlet X=Inlet Z=Manway
 V=Vent D=Drain S=Sump
 L=Ladder H=Hatch P=Overflow
 F=Float Level Indicator
 T=Telemetry

Column Placement

Type of Column ○ □ I
 Base Structure [] [] [] []
 Top Structure [] [] [] []
 Column Construction Concrete



DISCLAIMER

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Steel Potable Water Reservoir Security / Measurement Worksheet

Job Number 50074

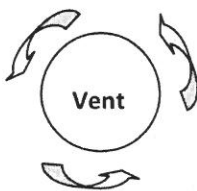
Utility Name CITY OF RED LODGE

Tank Name CLEARWELL 2 250KG

Security

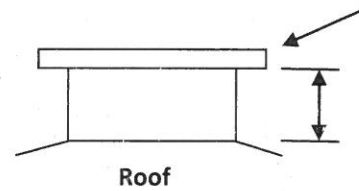
| | |
|--|-----|
| Is the area surrounding the tank well lit? | No |
| Is the tank surrounded by a Security Fence? | Yes |
| Are the access gates locked? | Yes |
| Is the tank equipped with a Vandal Guard on the primary access ladder? | Yes |
| If so, is the Vandal Guard locked? | Yes |
| Are the vents equipped with security vent shrouds? | No |
| Are all of the hatches equipped with electronic monitoring devices? | No |
| Are the external plumbing components housed in a secure vault or out-building? | Yes |
| Does the surrounding geography of the tank obscure it from public view? | Yes |
| Does the exterior of the tank show signs of trespass? | No |

Measurements



Vent

Outside Circumference
28 Inches



Roof

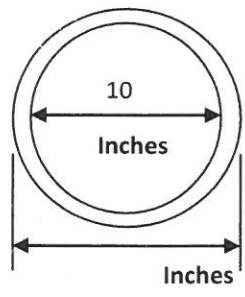
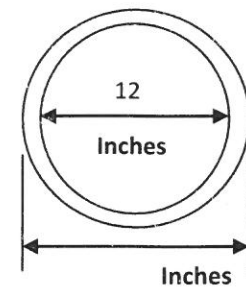
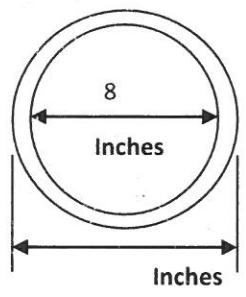
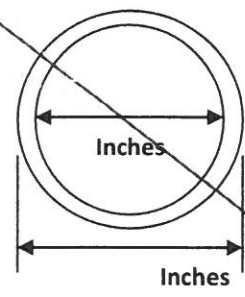
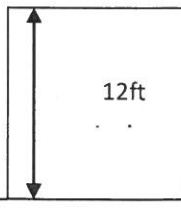
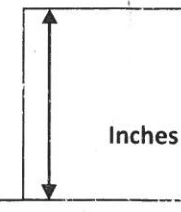
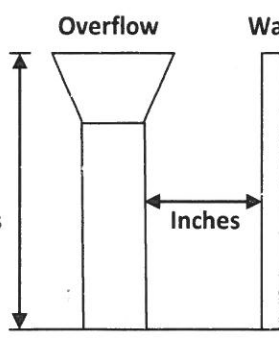
Flange Metal Thickness Inches

Roof to Screen or Flange 40 Inches

Flange ---

Number of Bolt Holes

Size of Bolts Inches

| Inlet | Outlet | Drain | Overflow |
|---|--|--|---|
|  <p>10 Inches</p> <p>Inches</p> |  <p>12 Inches</p> <p>Inches</p> |  <p>8 Inches</p> <p>Inches</p> |  <p>Inches</p> <p>Inches</p> |
|  <p>Inlet Riser</p> <p>12ft</p> <p>Floor</p> |  <p>Outlet Riser</p> <p>Inches</p> <p>Floor</p> | |  <p>Overflow Wall</p> <p>Feet/Inches</p> <p>Inches</p> <p>Floor</p> |

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Liquid Engineering Corporation

Steel Potable Water Reservoir Immediate Needs Assessment

Job Number: 50074

Utility: CITY OF RED LODGE

Tank: CLEARWELL 2 250KG

Inspector: ERIK POTTER

Dive Controller: MEG BUTAK

Date: 7/27/2016

1. Health and Safety Items

- Safety Climb System Installation:
 Vent Screen Repairs:

2. Testing Items

- Dye Testing for Leak Evaluation: NOT RECOMMENDED
 Presence of Lead Test (Interior/Exterior): NOT RECOMMENDED

3. Destructive Testing Items

- % of Lead Test (Interior/Exterior) (*Coating samples are removed for laboratory analysis*) NOT RECOMMENDED
 Coating Adhesion Test (Interior/Exterior): NOT RECOMMENDED

Specific written authorization required to perform destructive testing. Destructive tests include touch-up of coating system.

4. Repair Items

- Epoxy Coating Repairs: NONE RECOMMENDED
 Temporary Leak Repairs: NONE NEEDED
 Float Operated Level Indicator Repairs / Maintenance:
 Hypalon Repairs: N/A

5. Security Related Items (*Critical security upgrade information is immediately available*)

- Tank vents are not equipped with a security vent shroud: NONE PRESENT
 Tank hatches are not equipped with a security hatch locking device: NONE PRESENT
 Tank perimeter not adequately secured:

The above mentioned additional work is considered immediately necessary and is recommended to be completed. Some items may be completed in conjunction with work currently being performed while the crew is on site.

Reservoir Inspection Condition Supplemental

CLEAN AND ASSESS EVERY 3 YEARS

SECURITY RELATED ITEMS ABOVE

FLOOR- STAINING WITH SOME LIGHT SURFACE CRACKS.

WALLS- SETTling CRACKS ON THE NORTH AND SOUTH WALLS WITH EFFLORESCENCE. LARGE QUANTITY OF BUGHOLES AVERAGING 1/2".

ROOF- SOME SETTling CRACKS WITH EFFLORESCENCE IN ALL QUADRANTS. SMALL AREAS OF CORROSION FROM LEFTOVER NAILS.

COLUMNS- HEAVY STAINING WITH BUGHOLES.

SUPPORT BEAM- SOME BUGHOLING BUT NO CRACKING.

INLET/OUTLET/DRAIN-LIGHT SURFACE CORROSION ON THE OUTER LIP BUT NO OBSTRUCTIONS OR BUILD UP ON INTERIOR.

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Liquid Engineering Corporation
Concrete Water Reservoir Interior Condition Survey

Job Number: 50074
 Inspector: J FAUROT

Utility: CITY OF RED LODGE
 Dive Controller: E POTTER

Tank: CLEARWELL 3 175KG
 Date: 7/27/2016

**AMERICAN CONCRETE INSTITUTE
 ACI 201.1R-08 / 311.1R**

| CONCRETE CONDITION CODE | | | | | | | | | |
|-------------------------|----------------|-----------------|------------------|---------------|--------------|--------------|-------------------|---------------|--|
| A - Abrasion | D - Cracking | G - contraction | J - Curling | M - Void | P - Pitting | S - Bugholes | V - Exudation | Y - Corrosion | |
| B - Erosion | E - Deflection | H - Deformation | K - Checking | N - Cold Pour | Q - Spalling | T - Chalking | W - Efflorescence | Z - Exposed | |
| C - Blistering | F - Expansion | I - Settling | L - Delamination | O - Honeycomb | R - Popouts | U - Leaching | X - Stains | Reinforcement | |

QUADRANT 1

QUADRANT 2

QUADRANT 3

QUADRANT 4

INTERIOR RESERVOIR ROOF

| | | | |
|--------------------|------|------|------|
| Roof Slab(s) | D | D | D |
| Expansion Joint(s) | GOOD | GOOD | GOOD |
| Support Beam(s) | | | |
| Beam Joint(s) | | | |
| Roof-Column Joint | GOOD | GOOD | GOOD |

General Appearance: Good Coating: N/A Vents: Good Level Sensors: -----
 All expansion Joints Uniform width: Yes Uniform Level: Yes Gaskets Intact: Yes

INTERIOR RESERVOIR WALLS

| | | | |
|-----------------|-------------|-------------|-------------|
| Wall-Roof Joint | GOOD | GOOD | GOOD |
| Wall Structure | D,O,S,W,X,Z | D,O,S,W,X,Z | D,O,S,W,X,Z |

General Appearance: Good Coating: N/A Ladder: Good Leaking: None observed Dye Tested: No
 All expansion Joints Uniform width: Yes Uniform Level: Yes Gaskets Intact: Yes

~~**INTERIOR RESERVOIR SUPPORT COLUMNS**~~

| | | | |
|-------------------|--|--|--|
| Columns | | | |
| Clmn Floor Plates | | | |

General Appearance: Good Coating: N/A ColumnBase Leaking: None observed Dye Tested: No
 All expansion Joints Uniform width: ----- Uniform Level: ----- Gaskets Intact: -----

INTERIOR RESERVOIR FLOOR

| | | | |
|-----------------|------|------|------|
| Perimeter Joint | GOOD | GOOD | GOOD |
| Floor Slabs | GOOD | GOOD | GOOD |

General Appearance: Good Coating: N/A Inlet Structure: Good Outlet Structure: Good
 Overflow Structure: Good Sump System: Good Leaking: None observed Dye Tested: No
 All expansion Joints Uniform width: Yes Uniform Level: Yes Gaskets Intact: Yes

Additional Interior Notes / Comments

ROOF PANELS HAVE SETTLING CRACKS RUNNING EAST/WEST ACROSS ALL THREE CHAMBERS. NO SIGNS OF DEFLECTION OR POPOUTS.
 ALL WALLS HAVE EXPOSED REINFORCEMENT, BUG HOLES, AND HONEY/COMB LESS THAN 2", BUT ARE IN GOOD CONDITION.
 FLOORS ARE IN EXCELLENT CONDITION. THE WESTERN MOST CHAMBER HAD SAND ADHERED TO THE FLOOR AROUND THE INLET.
 ALL PLUMBING COMPONENTS HAVE LARGE CONCENTRATION CELL CORROSION, BUT APPEAR TO BE IN GOOD WORKING CONDITION.
 ALL PENETRATIONS, MANWAYS BETWEEN CHAMBERS, OVERFLOWS BETWEEN CHAMBERS AND BETWEEN CLEARWELLS ARE IN GOOD CONDITION WITH NO SIGNS OF ABRASION OR SPALLING.

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Liquid Engineering Corporation
Concrete Water Reservoir Exterior Condition Survey

Job Number: 50074

Utility: CITY OF RED LODGE

Tank: CLEARWELL 3 175KG

Inspector: J FAUROT

Dive Controller: E POTTER

Date: 7/27/2016

**AMERICAN CONCRETE INSTITUTE
 ACI 201.1R-08 / 311.1R**

CONCRETE CONDITION CODE

| | | | | | | | | |
|----------------|----------------|-----------------|------------------|---------------|--------------|--------------|-------------------|---------------|
| A - Abrasion | D - Cracking | G - contraction | J - Curling | M - Void | P - Pitting | S - Bugholes | V - Exudation | Y - Corrosion |
| B - Erosion | E - Deflection | H - Deformation | K - Checking | N - Cold Pour | Q - Spalling | T - Chalking | W - Efflorescence | Z - Exposed |
| C - Blistering | F - Expansion | I - Settling | L - Delamination | O - Honeycomb | R - Popouts | U - Leaching | X - Stains | Reinforcement |

QUADRANT 1

QUADRANT 2

QUADRANT 3

QUADRANT 4

EXTERIOR RESERVOIR ROOF

| | | | |
|---------------------------|--|----------------------|-----------------------------|
| Roof Slab(s) | NOT OBSERVED / UNDERGR ⁺ ↓ | | → |
| Expansion Joint(s) | | | |
| Roof-Wall Joint | | | |
| General Appearance: ----- | Coating: N/A | Vents: Good | Level Indicator: ----- |
| Hatch & Gaskets: Good | Hatch hinges: Good | Lock & Hasp: Fair | Hatch Cage & Railing: ----- |
| All expansion Joints | Uniform width: ----- | Uniform Level: ----- | Gaskets Intact: ----- |

EXTERIOR RESERVOIR WALLS

| | | | |
|---------------------------|------------------------|------------------------|-----------------------|
| Wall-Roof Joint | BELOW GROUND ↓ | | → |
| Wall Structure | | | |
| General Appearance: ----- | Coating: N/A | Ladder: ----- | Safety Climb: ----- |
| Overflow Structure: ----- | Clean out hatch: ----- | Leaking: None observed | |
| All expansion Joints | Uniform width: ----- | Uniform Level: ----- | Gaskets Intact: ----- |

EXTERIOR RESERVOIR FOOTINGS / FOUNDATION

| | | | |
|---------------------------|----------------------|------------------------|----------------------------------|
| Perimeter Joint | BELOW GROUND ↓ | | → |
| Floor Slab | | | |
| Footing Ring | | | |
| Sump-Valve Vault | | | |
| General Appearance: ----- | Coating: N/A | Leaking: None observed | Ground Subsidence: None observed |
| All expansion Joints | Uniform width: ----- | Uniform Level: ----- | Gaskets Intact: ----- |
| | | | Overflow: ----- |

Additional Exterior Notes / Comments

UN OBSERVABLE.

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Potable Water Reservoir Contamination, Health and Safety Report

Job Number: 50074

Utility: CITY OF RED LODGE

Tank: CLEARWELL 3 175KG

Inspector: J FAUROT

Dive Controller: E.POTTER

Date: 7/27/2016

Complies With: AWWA • OSHA • ANSI • NIOSH • NAVFAC • NFPAC

CONTAMINATION & HEALTH

| | | | |
|-----------------------------------|----------------------------|----------------------------|--|
| Air Vents | Type: J-TUBE | #: 1 | Screen Condition(s): Good |
| Hatches | Type: Square | #: 1 | Secured Properly: Yes Properly Sealed: Yes |
| Exterior Overflow | Flapper: ---- | Screen: ---- | Gasket: ---- Condition: ---- |
| Cathodic Covers | In-Place: ---- | #: ---- | Gasket: ---- Properly Sealed: ---- |
| Roof to Wall Joint | Welded: No | Properly Sealed: Yes | |
| Roof Integrity | Holes: No | Cracking: No | Standing Water: No |
| Wall Integrity | Holes: No | Cracking: No | |
| Manway Integrity | Leaks: ---- | Condition: ---- | |
| Water Clarity | General Appearance: CLEAR | | Odor: NONE |
| Floating Surface Debris | Type: NONE | | Source: N/A |
| Hypalon Floating Cover | Condition: ---- | Holes: ---- | Tears: ---- |
| Telemetry Penetrations | Properly Sealed: Yes | | |

FACILITY SAFETY COMPLIANCE

Exterior Ladder

| | | | | |
|---------------------------------|---|-----------------------------|-----------------------------|---------|
| Overall Ladder | Condition: ---- | #: ---- | Offset Landing: ---- | Height: |
| Vandal Guard | Present: ---- | Vandal Guard Locked: ---- | | |
| Ladder Rails & Rungs | Condition: ---- | Missing/Damaged Rungs: ---- | | |
| Rung Spacing & Depth | Spacing: in. (max 12") | Toe Depth: in. (min 7") | | |
| Rail Spacing & Size | Width: in. (min 2") | Thickness: in. (min 1/4") | Rail to Rail: in. (min 16") | |
| Safety Climb System | Type: ---- | Condition: ---- | | |
| Number & Locations | Wall: Leg: Roof: Riser Pipe: Other: | | | |
| Ladder Attachments | | | | |

Manways

| | | | |
|-------------------------------|---|-----------------|----------------------------------|
| Type and size | Type: ---- | #: ---- | Size: inches (24" – 18'x22" min) |
| Support Structure | Type: ---- | Condition: ---- | |
| Number & Locations | Wall: Roof: Riser Pipe: Other: | | |

Hatches

| | | | |
|-----------------------------------|------------------------|---------------------|-------------------------------------|
| Hatch Type & Size | Type: Square | #: 1 | Size: 37x30 in. (24" – 24"x15" min) |
| Hatch & Lid Lip Height | Hatch: 12 in. (min 4") | Lid: 2 in. (min 2") | |

Balconies & Railing

| | | | |
|----------------------------|-----------------|-----------------------|--------------------|
| Deck / Walkways | Condition: ---- | Width: | |
| Hand Rails | Condition: ---- | Height: in. (min 42") | No. Rails: (min 2) |
| Toe Rail | Condition: ---- | Height: in. (min 4") | |
| Welds / Attachments | Condition: ---- | | |

Roof

| | | |
|------------------------------|-----------------|---------|
| Safety Tie-Off Points | Condition: ---- | #: ---- |
| Antennas | Type: ---- | #: ---- |

DISCLAIMER

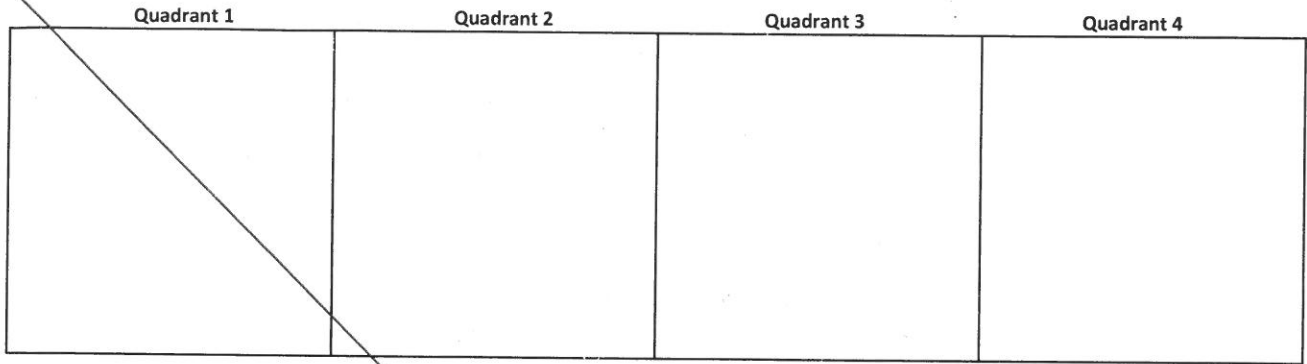
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Liquid Engineering Corporation
Circular Tank Diagram / Information Worksheet

Job Number 50074

Utility Name CITY OF RED LODGE

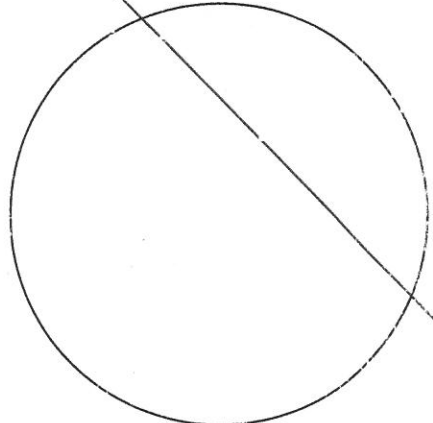
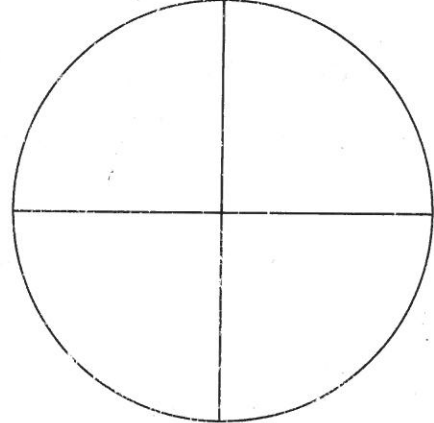
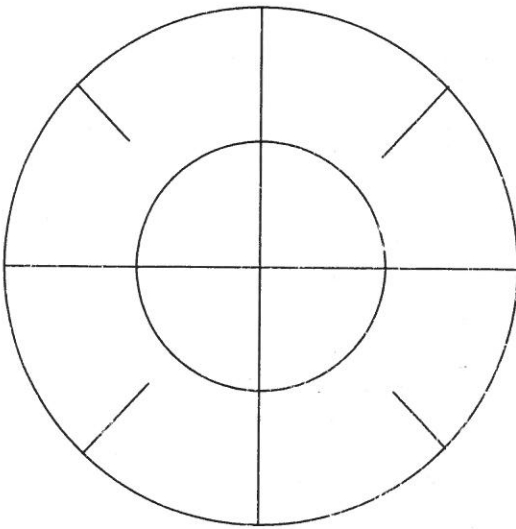
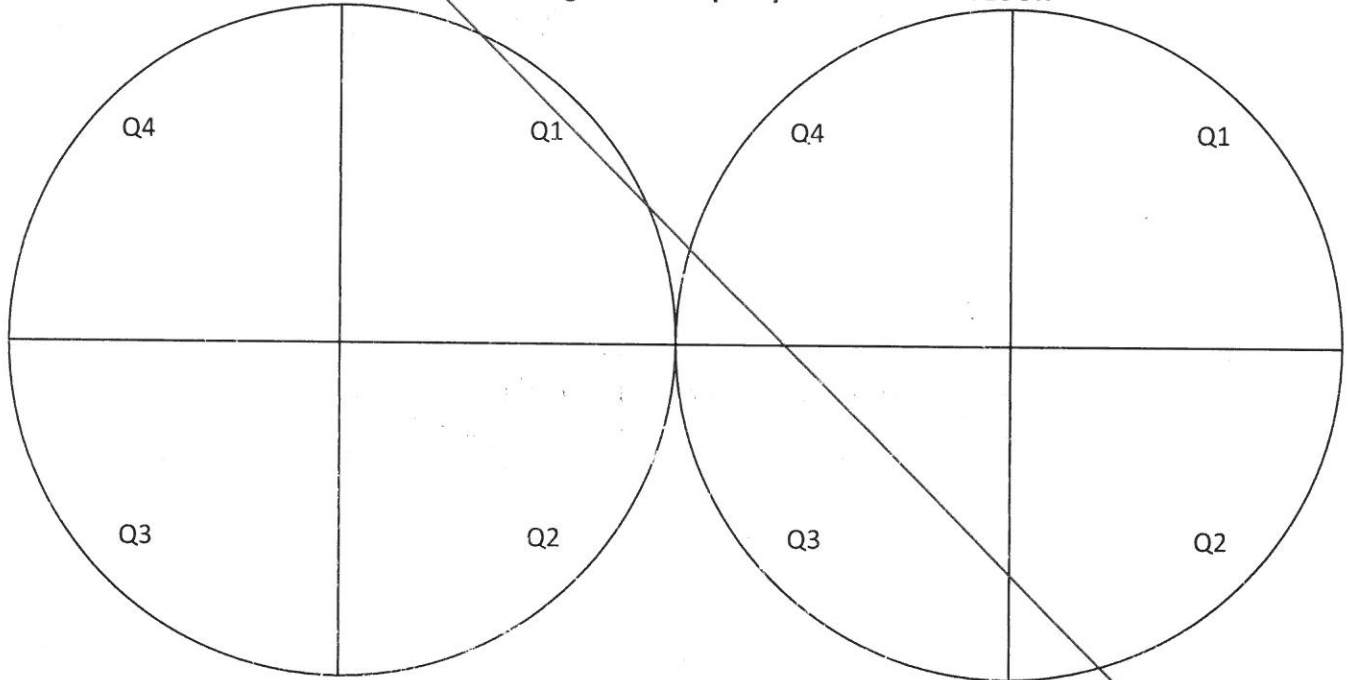
Tank Name CLEARWELL 3 175KG



ROOF

Testing and Discrepancy Locations

FLOOR



Sediment Depth Measurements

Average Sediment Depth = The sum of all measurements taken, divided by the number of measurements taken

Avg. Depth Cubic Yardage Sediment Type

Plumbing & Structure location

Plumbing and structure codes
 O=Outlet X=Inlet Z=Manway
 V=Vent D=Drain S=Sump
 L=Ladder H=Hatch P=Overflow
 F=Float Level Indicator
 T=Telemetry

Column Placement

Type of Column ○ □ I
 Base Structure I
 Top Structure I
 Column Construction -----

DISCLAIMER

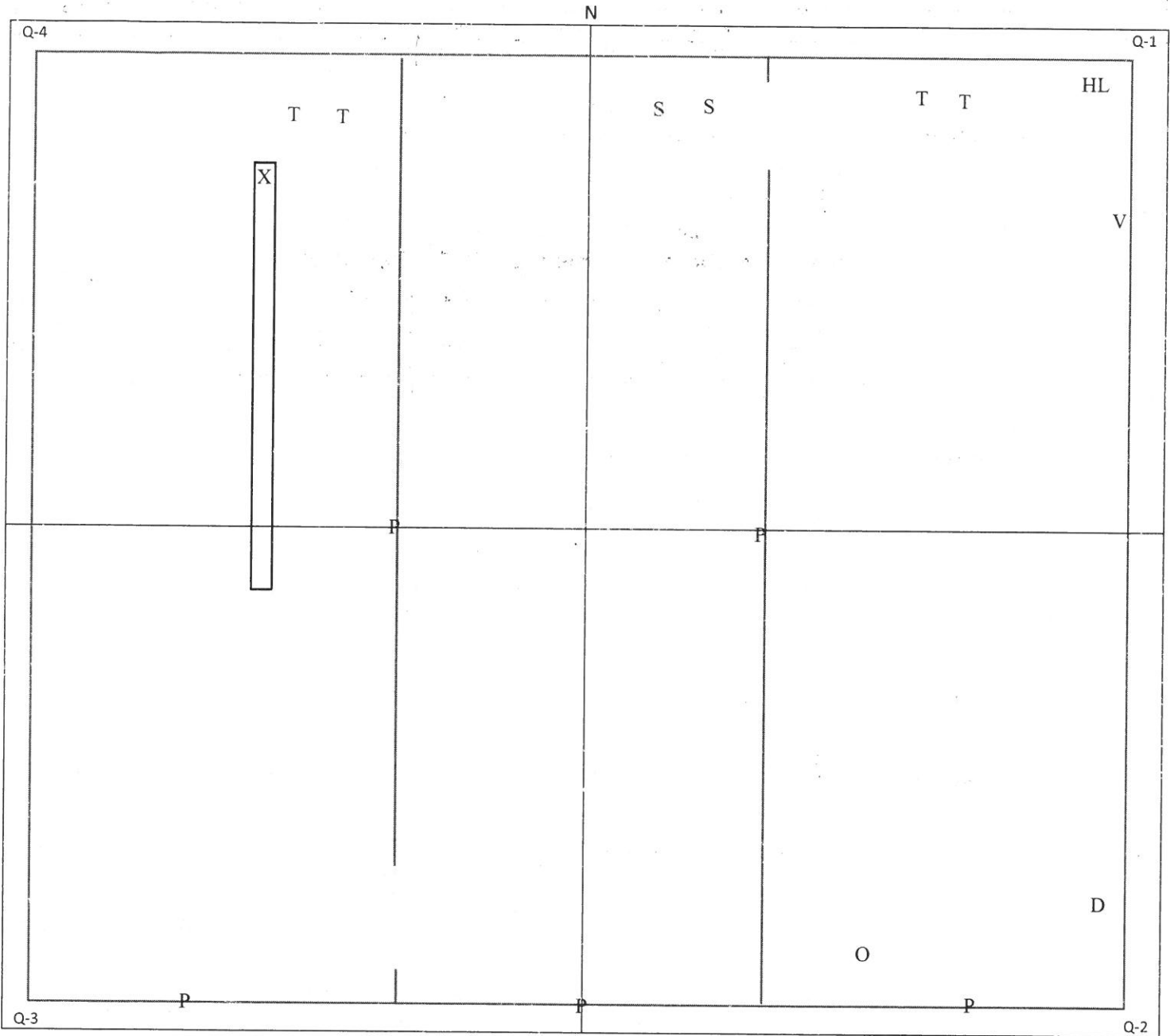
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Liquid Engineering Corporation
Rectangular Tank Diagram / Information Worksheet

Job Number 50074

Utility Name CITY OF RED LODGE

Tank Name CLEARWELL 3 175KG



Sediment Depth Measurements

Average Sediment Depth = The sum of all measurements taken, divided by the number of measurements taken

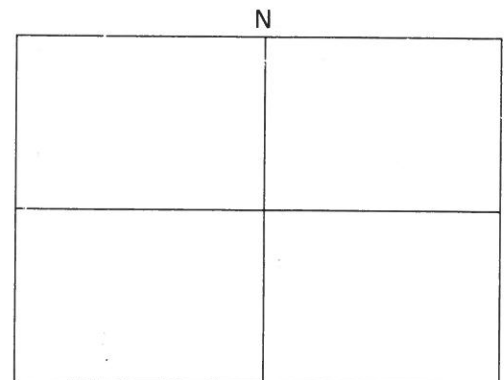
Avg. Depth 1/4" Cubic Yardage Sediment Type SAND

Plumbing & Structure location

Plumbing and structure codes
 O=Outlet X=Inlet Z=Manway
 V=Vent D=Drain S=Sump
 L=Ladder H=Hatch P=Overflow
 F=Float Level Indicator
 T=Telemetry

Column Placement

Type of Column ○ □ I
 Base Structure [diagram symbols]
 Top Structure [diagram symbols]
 Column Construction Steel



DISCLAIMER

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Steel Potable Water Reservoir Security / Measurement Worksheet

Job Number 50074

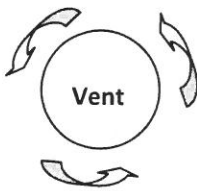
Utility Name CITY OF RED LODGE

Tank Name CLEARWELL 3 175KG

Security

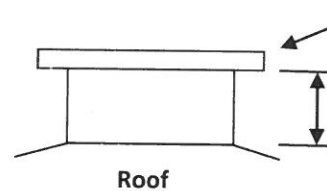
| | |
|--|-----|
| Is the area surrounding the tank well lit? | Yes |
| Is the tank surrounded by a Security Fence? | Yes |
| Are the access gates locked? | Yes |
| Is the tank equipped with a Vandal Guard on the primary access ladder? | Yes |
| If so, is the Vandal Guard locked? | Yes |
| Are the vents equipped with security vent shrouds? | No |
| Are all of the hatches equipped with electronic monitoring devices? | No |
| Are the external plumbing components housed in a secure vault or out-building? | Yes |
| Does the surrounding geography of the tank obscure it from public view? | Yes |
| Does the exterior of the tank show signs of trespass? | No |

Measurements



Vent

Outside Circumference
28.5 Inches



Roof

Flange Metal Thickness Inches

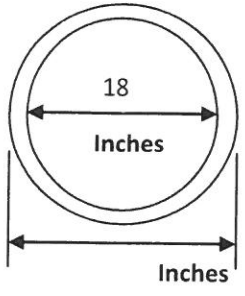
Roof to Screen or Flange 24 Inches

Flange ---

Number of Bolt Holes

Size of Bolts Inches

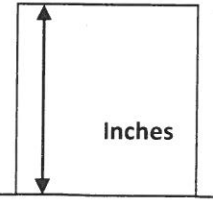
Inlet



18
Inches

Inches

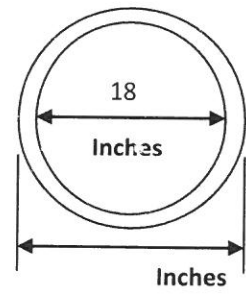
Inlet Riser



Inches

Floor

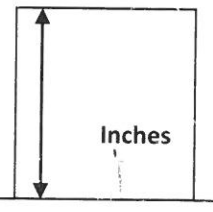
Outlet



18
Inches

Inches

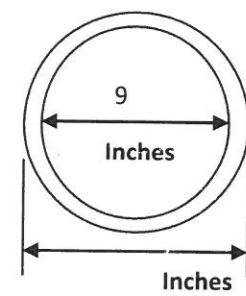
Outlet Riser



Inches

Floor

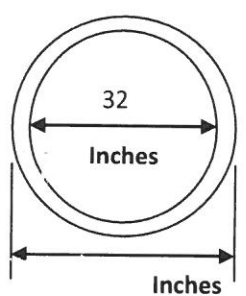
Drain



9
Inches

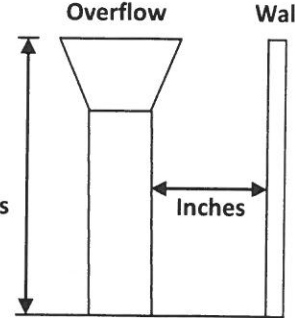
Inches

Overflow



32
Inches

Inches



Overflow **Wall**

Feet/Inches

Inches

Floor

DISCLAIMER

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Liquid Engineering Corporation

Steel Potable Water Reservoir Immediate Needs Assessment

Job Number: 50074

Utility: CITY OF RED LODGE

Tank: CLEARWELL 3 175KG

Inspector: J FAUROT

Dive Controller: E POTTER

Date: 7/27/2016

1. Health and Safety Items

- Safety Climb System Installation:
 Vent Screen Repairs:

2. Testing Items

- Dye Testing for Leak Evaluation: NOT RECOMMENDED
 Presence of Lead Test (Interior/Exterior): NOT RECOMMENDED

3. Destructive Testing Items

- % of Lead Test (Interior/Exterior) (*Coating samples are removed for laboratory analysis*) NOT RECOMMENDED
 Coating Adhesion Test (Interior/Exterior): NOT RECOMMENDED

Specific written authorization required to perform destructive testing. Destructive tests include touch-up of coating system.

4. Repair Items

- Epoxy Coating Repairs: NONE RECOMMENDED
 Temporary Leak Repairs: NONE NEEDED
 Float Operated Level Indicator Repairs / Maintenance:
 Hypalon Repairs: N/A

5. Security Related Items (*Critical security upgrade information is immediately available*)

- Tank vents are not equipped with a security vent shroud: NONE PRESENT
 Tank hatches are not equipped with a security hatch locking device: NONE PRESENT
 Tank perimeter not adequately secured:

The above mentioned additional work is considered immediately necessary and is recommended to be completed. Some items may be completed in conjunction with work currently being performed while the crew is on site.

Reservoir Inspection Condition Supplemental

CLEAN AND ASSESS EVERY 3 YEARS

SECURITY RELATED ITEMS ABOVE

DISCLAIMER

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Liquid Engineering Corporation
Concrete Water Reservoir Interior Condition Survey

Job Number: 50074
 Inspector: M BUTAK

Utility: CITY OF RED LODGE
 Dive Controller: J FAUROT

Tank: HILL TANK 750 KG
 Date: 7/28/2016

**AMERICAN CONCRETE INSTITUTE
 ACI 201.1R-08 / 311.1R**

| CONCRETE CONDITION CODE | | | | | | | | |
|-------------------------|----------------|-----------------|------------------|---------------|--------------|--------------|-------------------|---------------|
| A - Abrasion | D - Cracking | G - contraction | J - Curling | M - Void | P - Pitting | S - Bugholes | V - Exudation | Y - Corrosion |
| B - Erosion | E - Deflection | H - Deformation | K - Checking | N - Cold Pour | Q - Spalling | T - Chalking | W - Efflorescence | Z - Exposed |
| C - Blistering | F - Expansion | I - Settling | L - Delamination | O - Honeycomb | R - Popouts | U - Leaching | X - Stains | Reinforcement |

QUADRANT 1
QUADRANT 2
QUADRANT 3
QUADRANT 4

INTERIOR RESERVOIR ROOF

| | | | | |
|--------------------|-------|-------|-------|-------|
| Roof Slab(s) | X,W,I | X,W,I | X,W,I | X,W,I |
| Expansion Joint(s) | | | | |
| Support Beam(s) | | | | |
| Beam Joint(s) | | | | |
| Roof-Column Joint | X | X | X | X |

General Appearance: Good Coating: N/A Vents: Good Level Sensors: -----
 All expansion Joints Uniform width: ----- Uniform Level: ----- Gaskets Intact: -----

INTERIOR RESERVOIR WALLS

| | | | | |
|-----------------|-----|-----|-----|-----|
| Wall-Roof Joint | X | X | X | X |
| Wall Structure | X,T | X,T | X,T | X,T |

General Appearance: Good Coating: N/A Ladder: Good Leaking: None observed Dye Tested: No
 All expansion Joints Uniform width: ----- Uniform Level: ----- Gaskets Intact: -----

INTERIOR RESERVOIR SUPPORT COLUMNS

| | | | | |
|-------------------|---------|---------|---------|---------|
| Columns | X,T,S,R | X,T,S,R | X,T,S,R | X,T,S,R |
| Clmn Floor Plates | | | | |

General Appearance: Good Coating: N/A ColumnBase Leaking: ----- Dye Tested: -----
 All expansion Joints Uniform width: ----- Uniform Level: ----- Gaskets Intact: -----

INTERIOR RESERVOIR FLOOR

| | | | | |
|-----------------|-----|-----|-----|-----|
| Perimeter Joint | X | X | X | X |
| Floor Slabs | X,B | X,B | X,B | X,B |

General Appearance: ----- Coating: N/A Inlet Structure: ----- Outlet Structure: -----
 Overflow Structure: ----- Sump System: ----- Leaking: ----- Dye Tested: -----
 All expansion Joints Uniform width: ----- Uniform Level: ----- Gaskets Intact: -----

Additional Interior Notes / Comments

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Concrete Water Reservoir Exterior Condition Survey

Job Number: 50074

Utility: CITY OF RED LODGE

Tank: HILL TANK 750 KG

Inspector: M BUTAK

Dive Controller: J FAUROT

Date: 7/28/2016

**AMERICAN CONCRETE INSTITUTE
ACI 201.1R-08 / 311.1R**

CONCRETE CONDITION CODE

| | | | | | | | | |
|----------------|----------------|-----------------|------------------|---------------|--------------|--------------|-------------------|---------------|
| A - Abrasion | D - Cracking | G - contraction | J - Curling | M - Void | P - Pitting | S - Bugholes | V - Exudation | Y - Corrosion |
| B - Erosion | E - Deflection | H - Deformation | K - Checking | N - Cold Pour | Q - Spalling | T - Chalking | W - Efflorescence | Z - Exposed |
| C - Blistering | F - Expansion | I - Settling | L - Delamination | O - Honeycomb | R - Popouts | U - Leaching | X - Stains | Reinforcement |

QUADRANT 1

QUADRANT 2

QUADRANT 3

QUADRANT 4

EXTERIOR RESERVOIR ROOF

| | | | | |
|--------------------------|----------------------|----------------------|-----------------------------|---|
| Roof Slab(s) | UNABLE TO EVALUATE | | | |
| Expansion Joint(s) | | | | → |
| Roof-Wall Joint | | | | |
| General Appearance: Good | Coating: N/A | Vents: Good | Level Indicator: ----- | |
| Hatch & Gaskets: Good | Hatch hinges: Good | Lock & Hasp: ----- | Hatch Cage & Railing: ----- | |
| All expansion Joints | Uniform width: ----- | Uniform Level: ----- | Gaskets Intact: ----- | |

EXTERIOR RESERVOIR WALLS

| | | | | |
|---------------------------|------------------------|------------------------|-----------------------|---|
| Wall-Roof Joint | UNABLE TO EVALUATE | | | |
| Wall Structure | | | | → |
| General Appearance: Good | Coating: N/A | Ladder: ----- | Safety Climb: ----- | |
| Overflow Structure: ----- | Clean out hatch: ----- | Leaking: None observed | | |
| All expansion Joints | Uniform width: ----- | Uniform Level: ----- | Gaskets Intact: ----- | |

EXTERIOR RESERVOIR FOOTINGS / FOUNDATION

| | | | | |
|---------------------------|----------------------|----------------------|----------------------------------|-----------------|
| Perimeter Joint | UNABLE TO EVALUATE | | | |
| Floor Slab | | | | → |
| Footing Ring | | | | |
| Sump-Valve Vault | | | | |
| General Appearance: ----- | Coating: N/A | Leaking: ----- | Ground Subsidence: None observed | |
| All expansion Joints | Uniform width: ----- | Uniform Level: ----- | Gaskets Intact: ----- | Overflow: ----- |

Additional Exterior Notes / Comments

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Potable Water Reservoir Contamination, Health and Safety Report

Job Number: 50074

Utility: CITY OF RED LODGE

Tank: HILL TANK 750 KG

Inspector: M BUTAK

Dive Controller: J FAUROT

Date: 7/28/2016

Complies With: AWWA • OSHA • ANSI • NIOSH • NAVFAC • NFPAC

CONTAMINATION & HEALTH

| | | | | |
|-----------------------------------|---------------------------|----------------------|---------------------------|-----------------------|
| Air Vents | Type: J TUBE | #: 1 | Screen Condition(s): Good | |
| Hatches | Type: Square | #: 1 | Secured Properly: Yes | Properly Sealed: Yes |
| Exterior Overflow | Flapper: ---- | Screen: ---- | Gasket: ---- | Condition: ---- |
| Cathodic Covers | In-Place: ---- | #: ---- | Gasket: ---- | Properly Sealed: ---- |
| Roof to Wall Joint | Welded: No | Properly Sealed: Yes | | |
| Roof Integrity | Holes: No | Cracking: No | Standing Water: No | |
| Wall Integrity | Holes: No | Cracking: No | | |
| Manway Integrity | Leaks: ---- | Condition: ---- | | |
| Water Clarity | General Appearance: CLEAR | | Odor: NONE | |
| Floating Surface Debris | Type: NONE | | Source: N/A | |
| Hypalon Floating Cover | Condition: ---- | Holes: ---- | Tears: ---- | |
| Telemetry Penetrations | Properly Sealed: Yes | | | |

FACILITY SAFETY COMPLIANCE

Exterior Ladder

| | | | | |
|----------------------|------------------------|-----------------------------|-----------------------------|--------------------|
| Overall Ladder | Condition: ---- | #: ---- | Offset Landing: ---- | Height: |
| Vandal Guard | Present: ---- | Vandal Guard Locked: ---- | | |
| Ladder Rails & Rungs | Condition: ---- | Missing/Damaged Rungs: ---- | | |
| Rung Spacing & Depth | Spacing: in. (max 12") | Toe Depth: in. (min 7") | | |
| Rail Spacing & Size | Width: in. (min 2") | Thickness: in. (min 1/4") | Rail to Rail: in. (min 16") | |
| Safety Climb System | Type: ---- | Condition: ---- | | |
| Number & Locations | Wall: | Leg: | Roof: | Riser Pipe: Other: |
| Ladder Attachments | | | | |

Manways

| | | | |
|--------------------|------------|-----------------|----------------------------------|
| Type and size | Type: ---- | #: ---- | Size: inches (24" – 18'x22" min) |
| Support Structure | Type: ---- | Condition: ---- | |
| Number & Locations | Wall: | Roof: | Riser Pipe: Other: |

Hatches

| | | | |
|------------------------|--------------------------|----------------------|--------------------------------------|
| Hatch Type & Size | Type: Square | #: 1 | Size: 30X36" in. (24" – 24"x15" min) |
| Hatch & Lid Lip Height | Hatch: 4.5" in. (min 4") | Lid: 3" in. (min 2") | |

Balconies & Railing

| | | | |
|---------------------|-----------------|-----------------------|--------------------|
| Deck / Walkways | Condition: ---- | Width: | |
| Hand Rails | Condition: ---- | Height: in. (min 42") | No. Rails: (min 2) |
| Toe Rail | Condition: ---- | Height: in. (min 4") | |
| Welds / Attachments | Condition: ---- | | |

Roof

| | | |
|-----------------------|-----------------|---------|
| Safety Tie-Off Points | Condition: ---- | #: ---- |
| Antennas | Type: ---- | #: ---- |

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Liquid Engineering Corporation
Circular Tank Diagram / Information Worksheet

Job Number 50074

Utility Name CITY OF RED LODGE

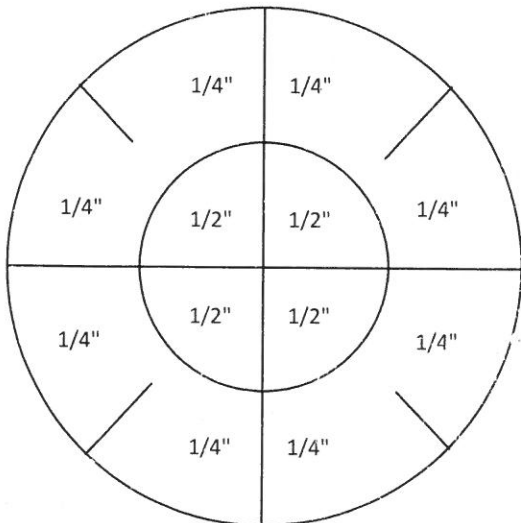
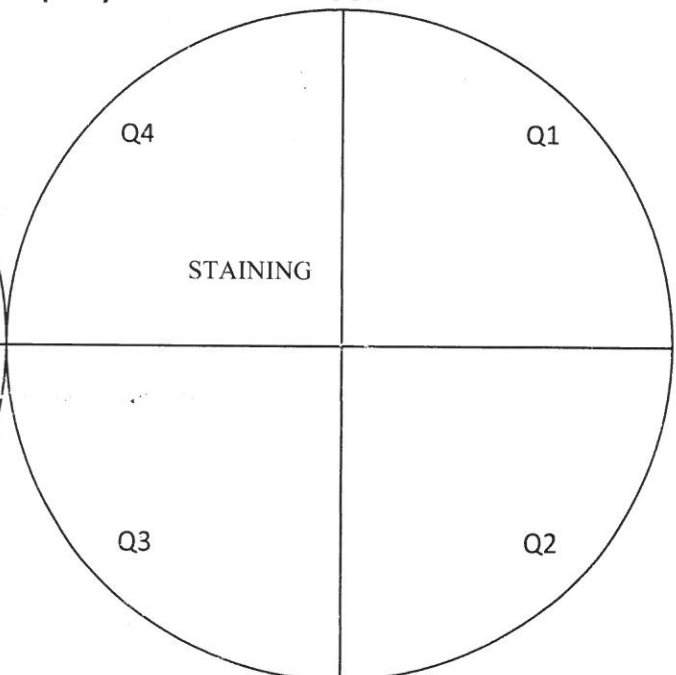
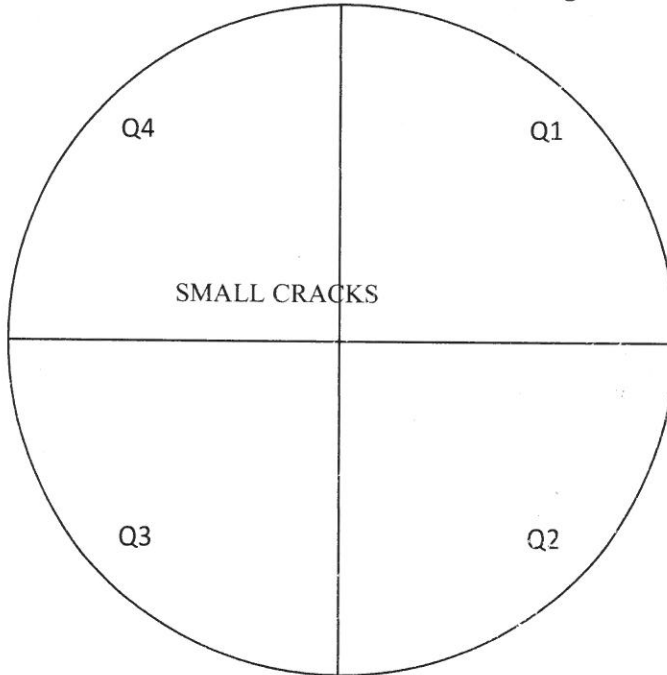
Tank Name HILL TANK 750 KG

| Quadrant 1 | Quadrant 2 | Quadrant 3 | Quadrant 4 |
|---------------------|------------|------------|------------|
| STAINING THROUGHOUT | | | |

ROOF

Testing and Discrepancy Locations

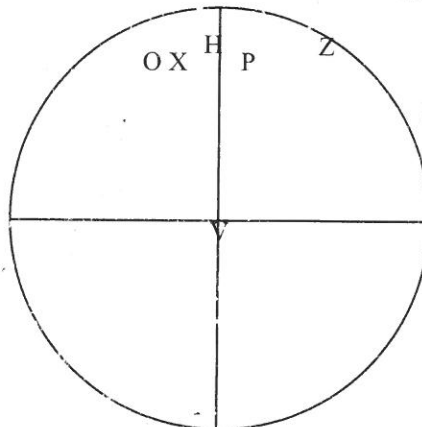
FLOOR



Sediment Depth Measurements

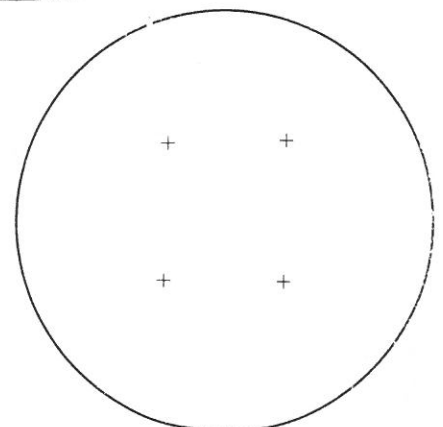
Average Sediment Depth = The sum of all measurements taken, divided by the number of measurements taken

Avg. Depth 3/8" Cubic Yardage Sediment Type SAND/ IRON



Plumbing & Structure location

Plumbing and structure codes
 O=Outlet X=Inlet Z=Manway
 V=Vent D=Drain S=Sump
 L=Ladder H=Hatch P=Overflow
 F=Float Level indicator
 T=Telemetry



Column Placement

Type of Column ○ □ I
 Base Structure ▱ U Y I
 Top Structure ▱ □ Y I
 Column Construction -----

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Steel Potable Water Reservoir Security / Measurement Worksheet

Job Number 50074

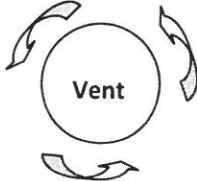
Utility Name CITY OF RED LODGE

Tank Name HILL TANK 750 KG

Security

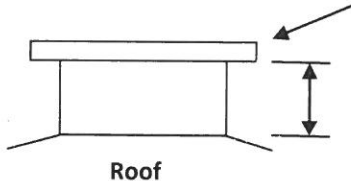
| | |
|--|-----|
| Is the area surrounding the tank well lit? | N/A |
| Is the tank surrounded by a Security Fence? | No |
| Are the access gates locked? | N/A |
| Is the tank equipped with a Vandal Guard on the primary access ladder? | N/A |
| If so, is the Vandal Guard locked? | N/A |
| Are the vents equipped with security vent shrouds? | No |
| Are all of the hatches equipped with electronic monitoring devices? | No |
| Are the external plumbing components housed in a secure vault or out-building? | Yes |
| Does the surrounding geography of the tank obscure it from public view? | Yes |
| Does the exterior of the tank show signs of trespass? | No |

Measurements



Vent

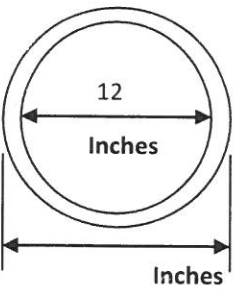
Outside Circumference
42 Inches



Roof

| | | |
|--------------------------|-----|--------|
| Flange Metal Thickness | 1 | Inches |
| Roof to Screen or Flange | 30 | Inches |
| Flange | Yes | |
| Number of Bolt Holes | 12 | |
| Size of Bolts | 3/4 | Inches |

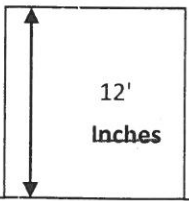
Inlet



12
Inches

Inches

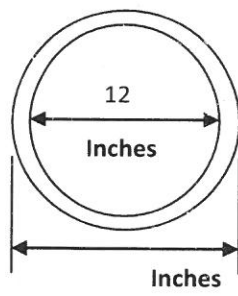
Inlet Riser



12'
Inches

Floor

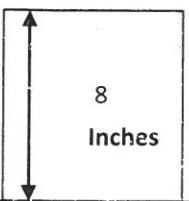
Outlet



12
Inches

Inches

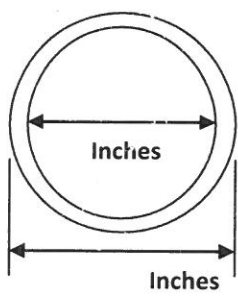
Outlet Riser



8
Inches

Floor

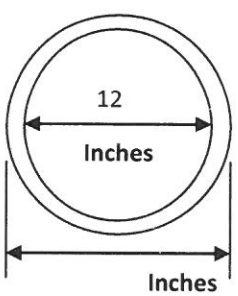
Drain



Inches

Inches

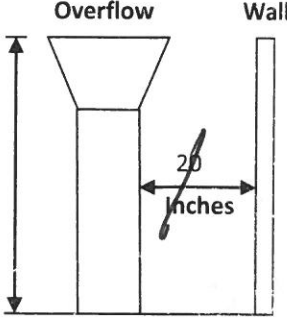
Overflow



12
Inches

Inches

Overflow



20
Feet/Inches

20
Inches

Floor

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Liquid Engineering Corporation

Steel Potable Water Reservoir Immediate Needs Assessment

Job Number: 50074

Utility: CITY OF RED LODGE

Tank: HILL TANK 750 KG

Inspector: M BUTAK

Dive Controller: J FAUROT

Date: 7/28/2016

1. Health and Safety Items

- Safety Climb System Installation:
- Vent Screen Repairs:

2. Testing Items

- Dye Testing for Leak Evaluation: NOT RECOMMENDED
- Presence of Lead Test (Interior/Exterior): NOT RECOMMENDED

3. Destructive Testing Items

- % of Lead Test (Interior/Exterior) (Coating samples are removed for laboratory analysis) NOT RECOMMENDED
- Coating Adhesion Test (Interior/Exterior): NOT RECOMMENDED

Specific written authorization required to perform destructive testing. Destructive tests include touch-up of coating system.

4. Repair Items

- Epoxy Coating Repairs: NONE RECOMMENDED
- Temporary Leak Repairs: NONE NEEDED
- Float Operated Level Indicator Repairs / Maintenance:
- Hypalon Repairs: N/A

5. Security Related Items (Critical security upgrade information is immediately available)

- Tank vents are not equipped with a security vent shroud: NONE PRESENT
- Tank hatches are not equipped with a security hatch locking device: NONE PRESENT
- Tank perimeter not adequately secured:

The above mentioned additional work is considered immediately necessary and is recommended to be completed. Some items may be completed in conjunction with work currently being performed while the crew is on site.

Reservoir Inspection Condition Supplemental

CLEAN AND ASSESS EVERY 3 YEARS

SECURITY RELATED ITEMS ABOVE

ROOF: OVERALL GOOD CONDITION. SMALL CRACKS AND EFFLORESCENCE LOCATED BY VENT.

WALLS: STAINING, NO NOTABLE DISCREPENCIES. OVERALL GOOD CONDITON.

FLOOR: SLIGHTLY ERODED. SOME STAINING AND SOME SEDIMENT ADHERED TO SURFACE BUT OVERALL GOOD CONDITON.

PLUMBING: PIPES SHOW SURFACE CORROSION, AND FLANGES AND STANDOFFS SHOW LARGE CONCENTRATION CELL CORROSION COVERING THE MAJORITY IF METAL IN THESE AREAS. LADDER ALSO SHOWS SURFACE AND CONCENTRATION CELL CORROSION.

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Appendix J:

Public Participation

City of Red Lodge



2020 Water PER Hearing

Amy Carter, PE

Chad E. Hanson, PE



Preliminary Engineering Report (PER)

- **Evaluation of Existing System**

- Compile Inventory and Assess Condition
- Evaluate Performance
- Identify Deficiencies

- **Alternative Development**

- Determine All Possible Solutions During Alternative Screening
- Retain Viable Alternatives for Detailed Analysis

- **Development of Water System Capital Improvement Plan**

Evaluation of Existing Water System

System History

Serves City of Red Lodge residents and businesses within the City Limits of Red Lodge

- **1910:** Original portions of the distribution system installed
- **1994:** Water PER was completed
- **Late 1990's:** Well 2 was drilled, and 39 blocks of original water mains were replaced
- **2000-2010:** Major upgrades completed.
 - Well 3 was drilled
 - Construction of additional 500,000 gallons of storage at the water treatment plant
 - Replaced transmission main from water treatment plant to the PRV in White Avenue
- **2012:** Broadway Avenue water replacement project.
- **2018:** Chlorination system upgraded to liquid chlorination
- **2019:** Haggin Avenue water replacement project.

1103-17103 - Red Lodge, Or - Call 2017.10.14 - Water PRS/CRSD 2 - 17103-14/Sheet/Equip 3.1 Overview of Existing Water System.dwg

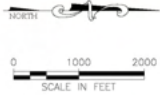
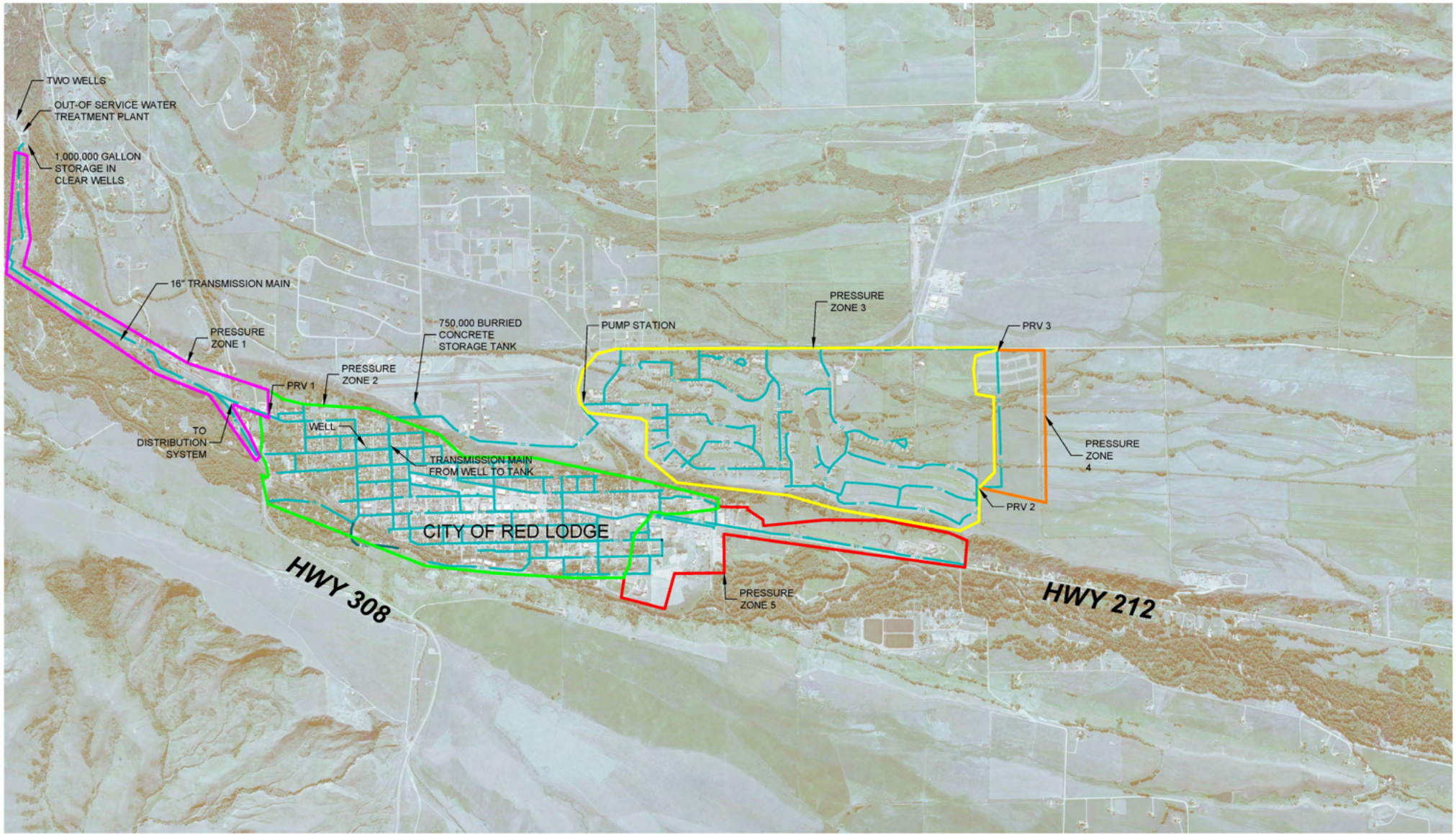


Figure 3:1
Overview of Existing Water System

City of Red Lodge, Montana
2019 Water Preliminary Engineering Report

WATER SUPPLY AND TREATMENT

Well #1 (Grant Avenue)

Drilled in 1961

Well Capacity 900 gpm

Treated w/ chlorine

Controls replaced in 2018

Well #2 (Water Treatment Plant)

Drilled in 1999

Well Capacity 1040 gpm

Treated w/ chlorine

Joint Header with Well #3

Well #3 (Water Treatment Plant)

Drilled in 2005

Well Capacity 500 gpm

Treated w/ chlorine

Joint Header with Well #2

WATER STORAGE

West Bench Storage:

- 750,000 gallon buried tank

Water Treatment Plant Storage:

(1) 500,000 gallon buried tank

- Built in 1983

(2) 500,000 gallon buried tank

- Built in 2009

Total storage of 1,750,000 gallons meets operational needs & fire flow needs

- **Recommendation: Continue good maintenance & regular inspections/cleaning**



DISTRIBUTION SYSTEM

Distribution System Issues:

- Undersized Cast Iron Water Mains
- Dead end water mains
- Poor Fire Flow
- System Pressure
- 47% Water Loss (79 million gallons per year)

| Pipe Size | Length (ft) | | | | Total (ft) |
|--------------|--------------|-------|-----------|-----------------|------------|
| | Ductile Iron | PVC | Cast iron | Asbestos Cement | |
| 2" | 0 | 0 | 301 | 0 | 301 |
| 4" | 0 | 0 | 3,309 | 0 | 3,309 |
| 6" | 8,571 | 1,035 | 5,085 | 2,794 | 17,486 |
| 8" | 83,895 | 5,707 | 0 | 1,598 | 91,200 |
| 10" | 2,900 | 0 | 0 | 0 | 2,900 |
| 12" | 16,596 | 0 | 0 | 0 | 16,596 |
| 14" | 2,742 | 0 | 0 | 0 | 2,742 |
| 16" | 14,698 | 0 | 0 | 0 | 14,698 |
| Total | 129,401 | 6,743 | 8,695 | 4,392 | 159,231 |

CAST IRON MAINS



Haggin Avenue Cast Iron Main

Areas with cast iron water mains:

- 6 blocks in S. Hauser between 13th and 19th Street
- 2 blocks in Grant Avenue between 20th Street and 22nd Street
- 4 blocks in 7th Street from Haggin Avenue to Villard Avenue.
- 5 block portions scattered throughout the City

DEAD END WATER MAINS

Dead end water mains

- Reduce available fire flow
- Stagnation of the water causes water quality issues
- Causes Freezing

Dead end main locations:

- Park Avenue
- Kainu Avenue
- HWY 212 near Adams Avenue
- Adams Avenue

POOR FIRE FLOW

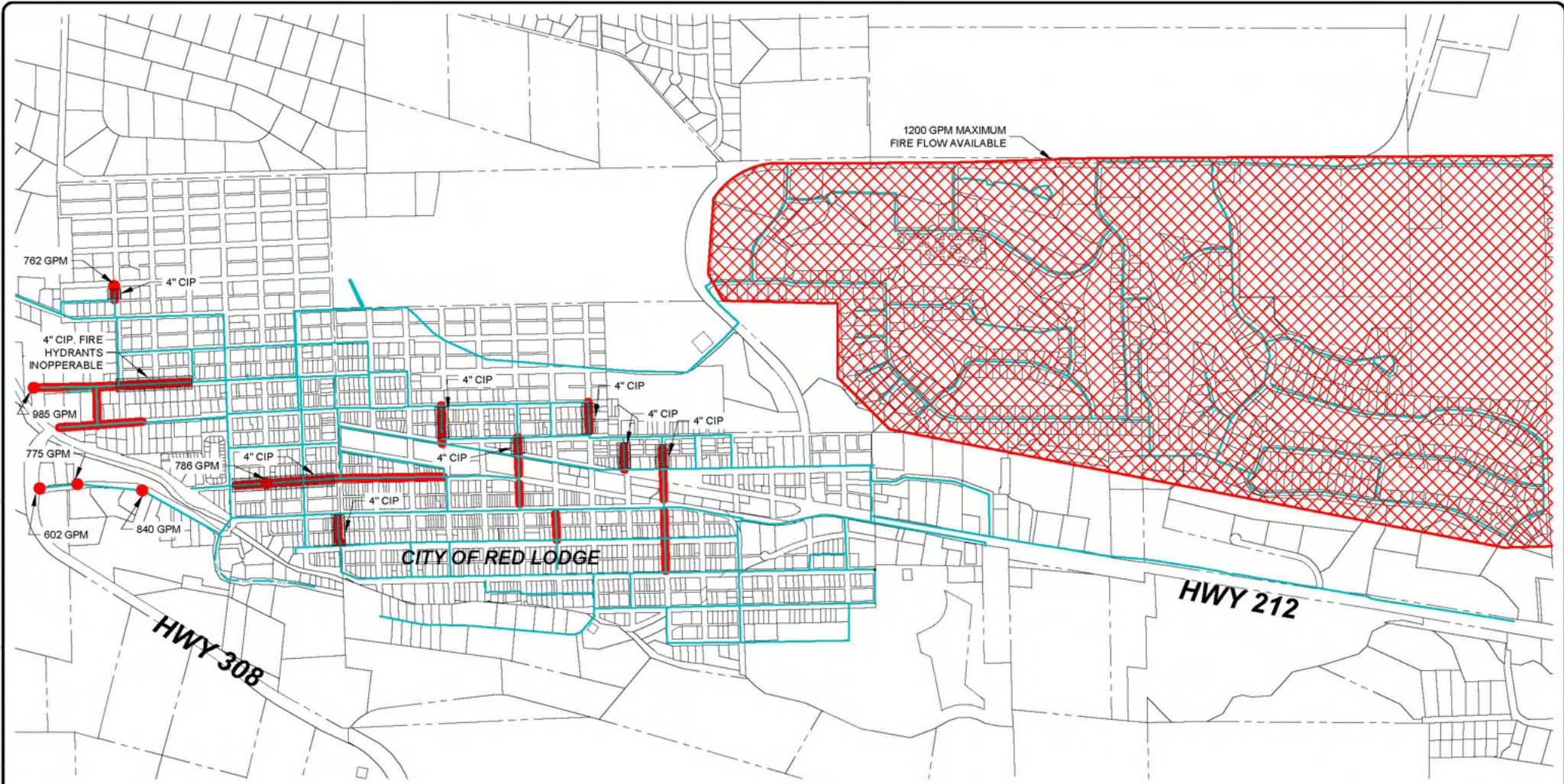
Poor fire flow is caused by:

- Undersized mains
- Cast Iron Mains
- Poor Pressure
- Dead End Mains
- PRV restriction

Poor Fire Flow Locations:

- Undersized cast iron mains in Grant Avenue (985 gpm), and Hauser Avenue (786 gpm), 22nd Street (762 gpm)
- Park Avenue (602 gpm)
- Country Club Estates available flow is 1200 gpm, needed residential fire flow is 1500 gpm, and 2000 gpm is needed for the Country Club
- The entire City does not have adequate fire flow when the only available water storage is at the water treatment plant, as a result of the PRV in White Avenue.

A:\3-17103 - Red Lodge City-Coll 2017\10 14 - Water PERI\GOOD 2-17103-14\Sheets\Figure 4.5 CAST IRON WATER MAINS.dwg



LEGEND
 CAST IRON WATER MAIN ———


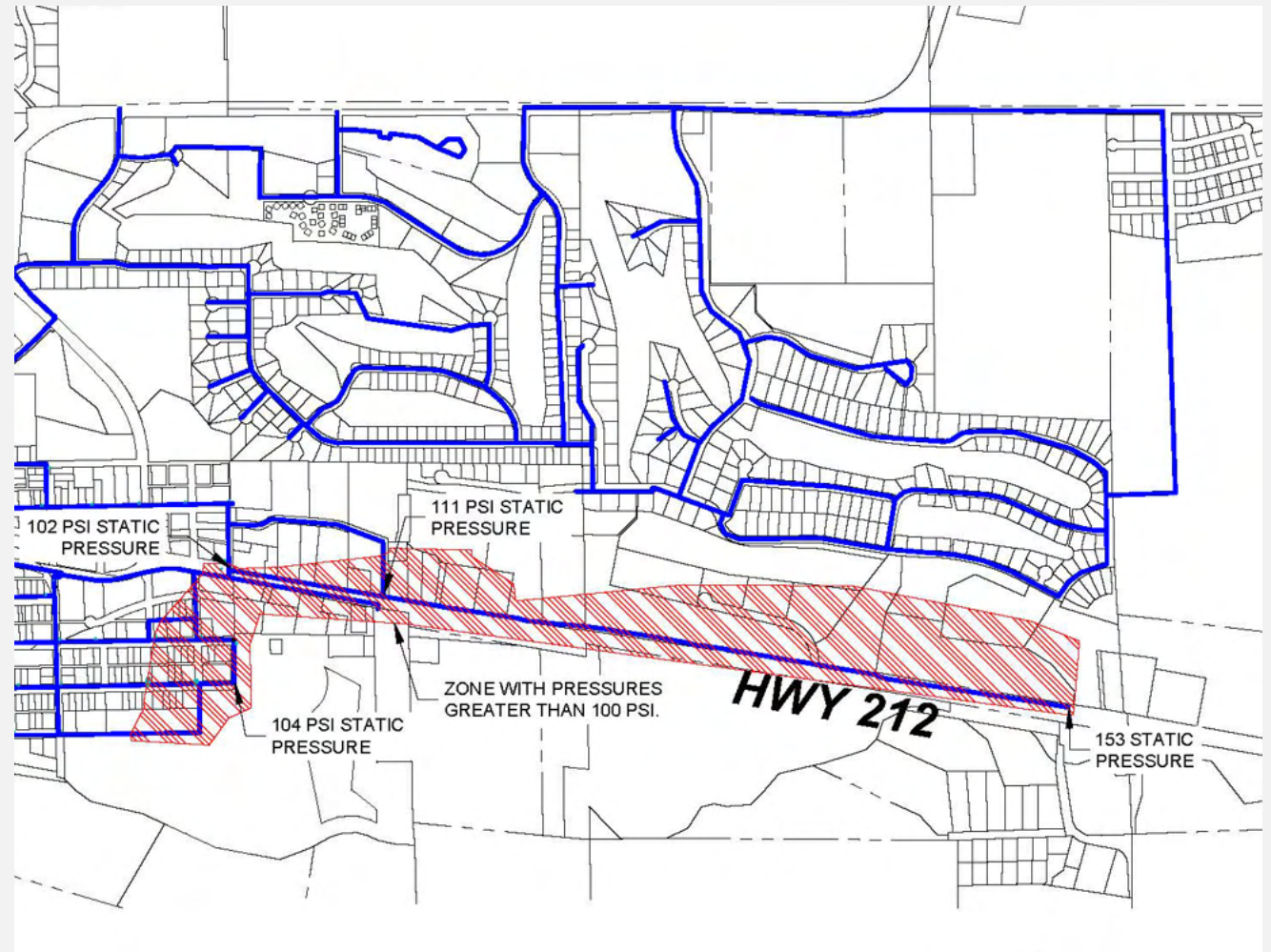
NORTH 
 SCALE: 1" = 1,000 FT

Figure 4:2
CAST IRON WATER MAINS AND
INADEQUATE FIRE FLOW
 City of Red Lodge, Montana
 2019 Water Preliminary Engineering Report

EXCESSIVE PRESSURE

DEQ Circular I recommends static pressure below 100 psi.

- Pressure near hospital is over 150 psi.
- Zone in Red Hatch shows pressure over 100 psi



Proposed Projects

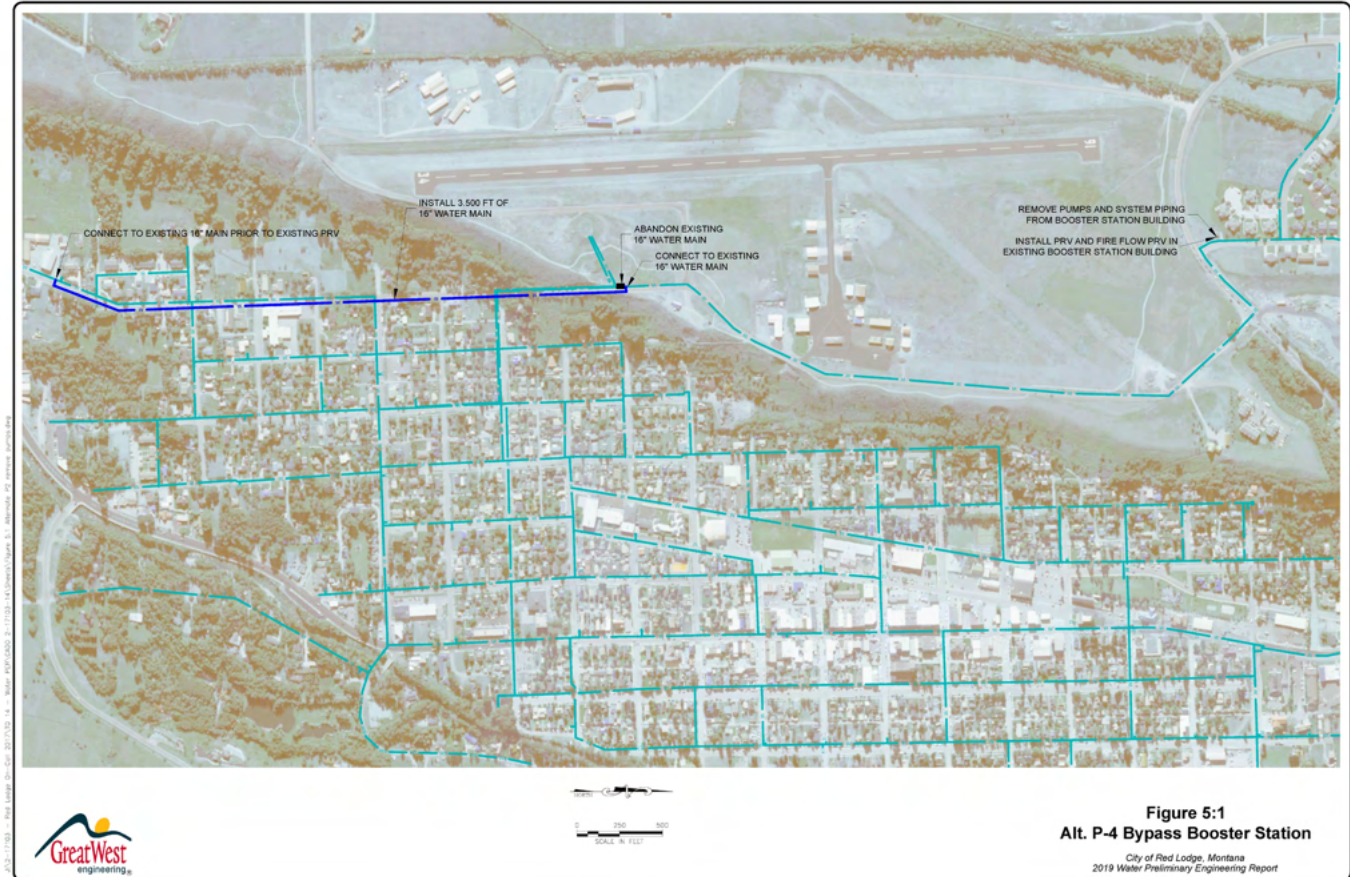
BYPASS BOOSTER STATION

Project Highlights:

- Construction of new 16" water main which will connect the transmission main from the water treatment plant to the transmission main to the booster station.
- Provides needed fire flow to Country Club Estates and Spires subdivision
- Pressure Relief valves installed in existing booster station building
- Check valve will allow water from the water treatment plant to fill west bench tower.

Additional Benefits:

- Reduces energy use by nearly 40,000 kWh annually
- Reduce energy cost by nearly \$4,000 annually
- Increase Pressure to potential new water service to the airport.



Project Cost:

\$1,234,000

Annual Energy Savings:

\$4,000

PARK AVENUE WATER REPLACEMENT

Project Highlights:

- Replace 6" AC water main in Park Avenue with 8" PVC.
- Directional drill under rock creek and Broadway
- Open Trench across Highway 212 at Grant Avenue
- Eliminate four dead end water mains
- Supply needed fire flow
- Additional bury depth will prevent freezing
- Reduce water loss

Project Cost:

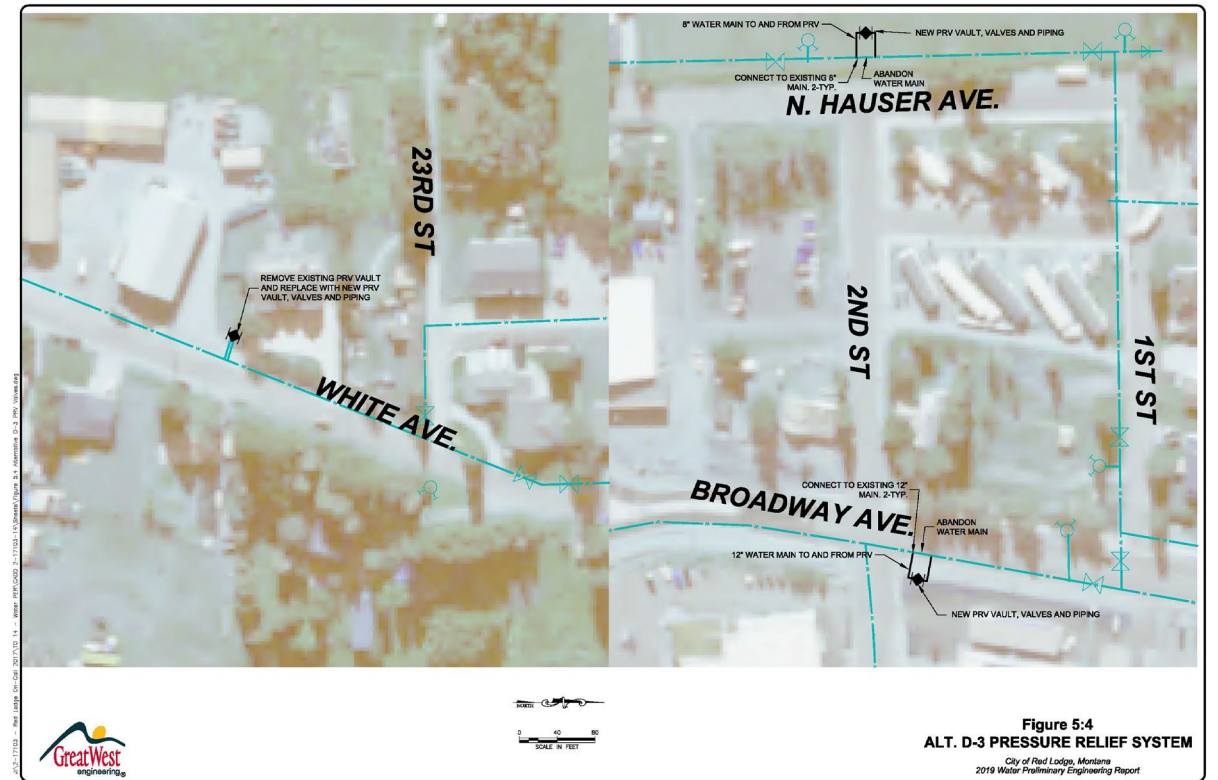
\$1,488,000



PRESSURE RELIEF VALVES

Project Highlights:

- Replace pressure relief valve system in White Avenue sized to provide fire flow
- Install two new pressure relief valves in 2nd Street to reduce static pressure in high pressure zone



Project Cost:

\$1,510,000

REPLACE REMAINING CAST IRON WATER MAINS

Project Highlights:

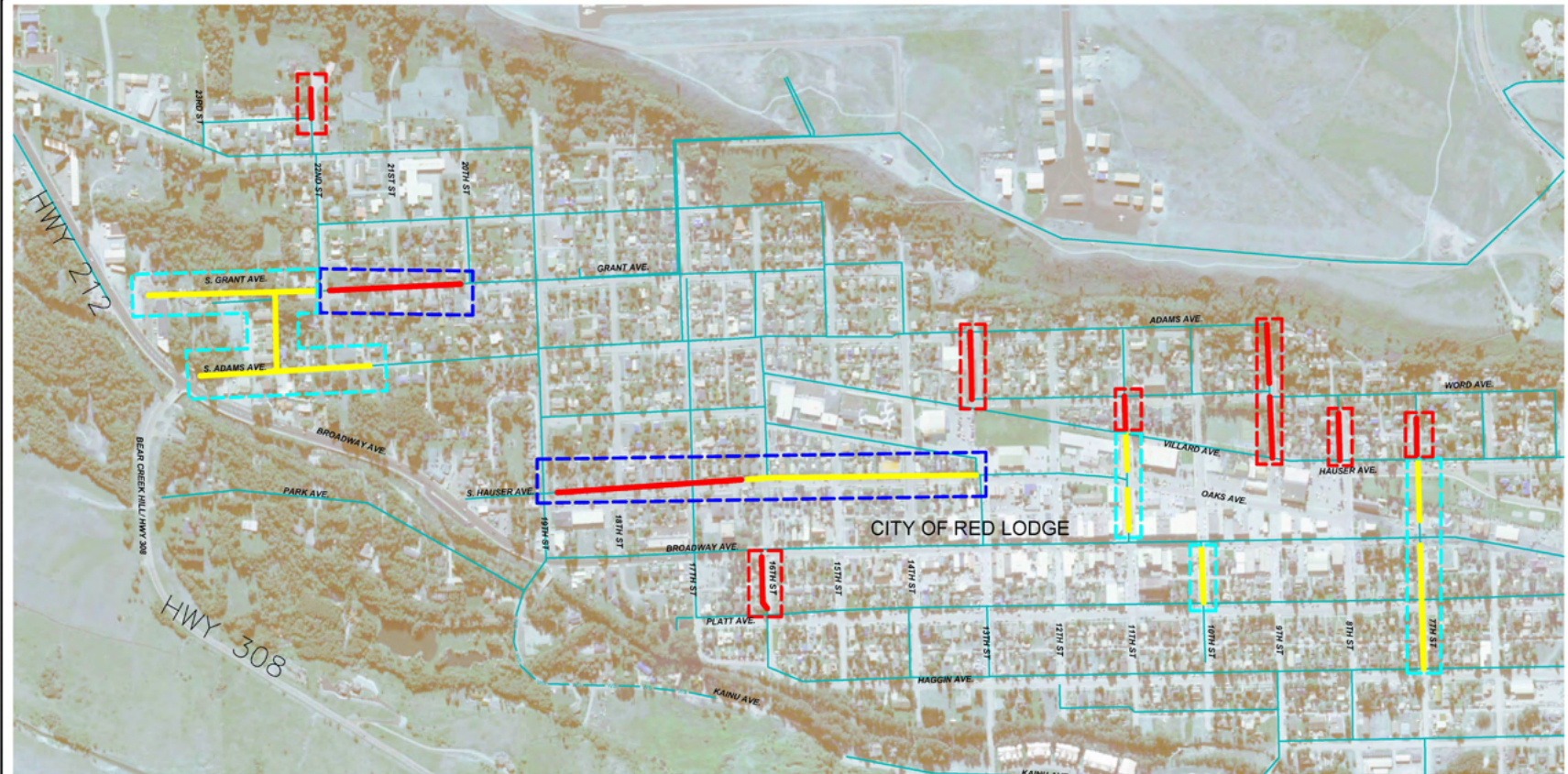
- Project Priorities

- Priority #1: replace cast iron mains in Grant Avenue and Hauser Avenue with 8” PVC
- Priority #2: Replace 4” cast iron mains with 8” PVC
- Priority #3: Replace remaining 6” cast iron mains with 8” PVC

- Project includes adding needed valves, fire hydrants, corporation stops, and water service lines to the curb stop.
- Reduce City’s 47% Water Loss
- Reduce risk of contamination from leaking cast iron mains.

| | |
|---|-------------|
| Priority #1: Grant Avenue and Hauser Avenue | \$1,372,000 |
| Priority #2: 4” Cast Iron Mains | \$1,114,000 |
| Priority #3: 6” Cast Iron Mains | \$1,519,000 |

REPLACE CAST IRON MAINS



LEGEND

- REPLACE 4"CAST IRON WATER MAIN WITH 8" —
- REPLACE 6"CAST IRON WATER MAIN WITH 8" —
- ALTERNATE D-4: PRIORITY 1, GRANT AND HAUSER
- ALTERNATE D-4: PRIORITY 2, REPLACE 4" CIP
- ALTERNATE D-4: PRIORITY 3, REPLACE 6" CIP

SCALE: 1"= 500 FT

Figure 5:6
ALT D-4 REPLACE CAST IRON WATER MAINS

City of Red Lodge, Montana
 2019 Water Preliminary Engineering Report



C:\Users\jrt023... \Red Lodge DW-CIP 2019\210 - 14 - Water 2019\CAD - 2-17-2019 - 14-01 - Water 2019\Map 5.6 - 2019 - 01 - WATER MAINS.dwg

KAINU AVENUE WATER EXTENSION

Project Highlights:

- Replace 2" water service line in South Kainu Avenue with 8" PVC, and extend new 8" water main to connect to the dead-end water main in Kainu near 15th Street
- New services could be connected to the main.
- Project includes new valves and fire hydrants to provide fire protection to the project area.



Project Cost:

\$758,000

Development of Capital Improvement Plan

DECISION MATRIX RANKING CRITERIA

Projects were ranked based on:

- Life cycle costs
- Operation and Maintenance Considerations
- Permitting Issues
- Social Impacts
- Environmental Impacts
- Sustainability Considerations
- Public Health and Safety
- Land Acquisition

DECISION MATRIX

Table 6.2: Decision Matrix

| Alternative | Description | Life Cycle Cost | | Operation and Maintenance | | Permitting Issues | | Social Impacts | | Environmental Impacts | | Sustainability | | Public Health and Safety | | Land Acquisition | | TOTAL |
|----------------|---|-----------------|------|---------------------------|------|-------------------|------|----------------|------|-----------------------|------|----------------|------|--------------------------|------|------------------|----|-------|
| | | Weight: | 10 | Weight: | 7 | Weight: | 4 | Weight: | 5 | Weight: | 5 | Weight: | 4 | Weight: | 7 | Weight: | 3 | |
| | | Score | Wtd. | Score | Wtd. | Score | Wtd. | Score | Wtd. | Score | Wtd. | Score | Wtd. | Score | Wtd. | | | |
| P-4 | Bypass Booster Station | 1.4 | 14 | 8.5 | 60 | 5.0 | 20 | 5.0 | 25 | 5.0 | 25 | 9.0 | 36 | 8.0 | 56 | 8.0 | 24 | 284 |
| D-2 | Park Avenue | 3.6 | 36 | 9.0 | 63 | 4.0 | 16 | 8.0 | 40 | 7.0 | 35 | 8.0 | 32 | 9.0 | 63 | 5.0 | 15 | 315 |
| D-3 | PRV Systems | 2.5 | 25 | 5.0 | 35 | 5.0 | 20 | 5.0 | 25 | 5.0 | 25 | 8.0 | 32 | 8.0 | 56 | 8.0 | 24 | 266 |
| D-4 Priority 1 | Replace Cast Iron Mains in Grant Avenue and Hauser Avenue | 4.7 | 47 | 9.0 | 63 | 5.0 | 20 | 8.0 | 40 | 7.0 | 35 | 8.0 | 32 | 9.0 | 63 | 8.0 | 24 | 348 |
| D-4 Priority 2 | Replace 4" Cast Iron Mains | 6.1 | 61 | 7.0 | 49 | 5.0 | 20 | 6.0 | 30 | 5.0 | 25 | 8.0 | 32 | 7.0 | 49 | 8.0 | 24 | 314 |
| D-4 Priority 3 | Replace 6" Cast Iron Mains | 3.7 | 37 | 7.0 | 49 | 5.0 | 20 | 6.0 | 30 | 5.0 | 25 | 8.0 | 32 | 7.0 | 49 | 8.0 | 24 | 290 |
| D-5 | Kainu Avenue | 7.5 | 75 | 5.0 | 35 | 5.0 | 20 | 4.0 | 20 | 5.0 | 25 | 5.0 | 20 | 5.0 | 35 | 5.0 | 15 | 260 |

It is important to note that the above scoring and weighting are subjective. Alternatives that score overall within 10 pts of each other may essentially hold the same degree of preference.

WATER SYSTEM CAPITAL IMPROVEMENT PLAN

| City of Red Lodge Water System Project Priority Table | | |
|---|----------------------------|--|
| Priority | Alternative | Description |
| 1 | Alternative D-4 Priority 1 | Replace cast iron mains in two blocks of Grant Avenue from 20th Street to 22nd Street, and replace cast iron mains in six blocks of Hauser Avenue from 13th Street to 19th Street. |
| 2 | Alternative D-2 | Replace Asbestos Cement Main in Park Avenue, and eliminate four dead end mains. |
| 3 | Alternative D-4 Priority 2 | Replace all remaining 4" Cast Iron Mains |
| 4 | Alternative D-4 Priority 3 | Replace all remaining 6" Cast Iron Mains |
| 5 | Alternative P-4 | Bypass Booster Station |
| 6 | Alternative D-3 | Replace PRV system in White Avenue, and install new PRV system for zone 5. |
| 7 | Alternative D-5 | Construct new water main in Kainu Avenue to eliminate two dead ends. |



QUESTIONS?
COMMENTS?

Water/Wastewater ■ Transportation ■ Grant Services ■ Solid Waste ■
Structural ■ Bridges ■ Natural Resources ■ Planning



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