TOWN OF GERALDINE, MONTANA

Phase 1 Water System Improvements

Technical Memorandum

January, 2022

GreatWest ENGINEERING

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1.0 Existing Condition and History

1.1 Existing Information and History

The Town of Geraldine (Town) is located in central Montana, 28 miles south-east of Fort Benton. The town supports the agricultural community in the surrounding area. Highway 80 connects Geraldine to US Highway 87 at Fort Benton and Stanford. The public water supply (PWS) system serves the Town of Geraldine (PWS MT0000225) plus the North Geraldine (PWS MT0003521) and Hawarden Square Butte (PWS MT0003522), both rural public water systems consecutively connected to Geraldine's PWS.

The Town of Geraldine's PWS is primarily supplied by a spring system located over 15 miles south of Town near Square Butte. The spring system was constructed in the 1980s. Before the spring system, water was provided by wells within the Town limits and originally from a spring located west of Town. The existing wells are of poor water quality. Water is disinfected with liquid sodium hypochlorite and allows for contact time before being directed to the transmission and distribution systems. The system works entirely with gravity and no pumping is required. However, pressure reducing valve (PRV) stations are installed along the transmission main to regulate pressures. The Town has two storage tanks; a newer concrete tank located south of Town and an older elevated steel tank in Town. Water fills the elevated storage tank on the west side of Town via a solenoid valve that allows the tank to fill as needed. The in-town tank gravity feeds and pressurizes the Town's distribution system. Fire hydrants are provided in Town, with the majority of the existing fire hydrants installed in the 1950s.

The distribution system within the Town system was originally constructed in 1935 of wood stave pipe, and then was upgraded in the 1950s with several blocks of asphalt cement (AC) piping that ranges in size from 3 to 8 inches in diameter throughout Town. A few sections were upgraded to PVC piping in the 1980s with the spring supply and transmission project. Based on record drawing information, the majority of the existing water mains in Town are made of AC piping with over 65% comprised of 4-inch diameter or less mains as the original as-builts show a length of 10,563-feet of 2 and 4-inch AC, 4,850-feet of 6-inch AC and 910-ft of 8-inch AC. (See Appendix A for original record drawings). All AC piping in Town is problematic as encountered and described in this memorandum. All of the existing AC piping should be considered for phased replacement with the highest priority being the 4-inch and less piping.

The Town has worked hard to maintain adequate sewer and water systems to serve the community and has been active in planning and completing improvements as funding allows. Water and sewer improvements are listed in the Town's most recent CIP. The Town has presently completed a major sewer project in 2021 to replace and rehabilitate (open cut and CIPP) nearly 10,000 feet of old clay sewer mains. Geraldine will now focus its infrastructure planning efforts next on their water system needs and the much-needed upgrades.

The Town is presently under contract with Great West Engineering to complete a Preliminary Engineering Report (PER) to evaluate the entire water system. However, immediate needs with the undersized and old AC mains, is a serious concern for the Town.

Several components of the water system are operating well beyond their useful life and will require improvements to continue to effectively serve the local residents. Several known and suspected deficiencies exist with the Town's water system including the supply, transmission, and distribution systems. These deficiencies will be further analyzed and evaluated in more detail in the upcoming water PER, which has commenced in the Fall of 2021. However, the most notable deficiency and project alternative considered for ARPA funding applications is the replacement of the known undersized 4-inch and less AC mains, valves, and fire hydrants, and also planning efforts to Town's spring supply. The spring supply system is located on a slow-moving land slide and should be studied in more detail by a

professional hydrogeologist with experience in springs. The water pipe project scope of work is clearly identified, quantified, and summarized in this technical memorandum for an ARPA competitive grant funding application. The general scope of the project, referred to as the Phase 1 Water Project, is described as the replacement and upsizing of the 4-inch and less mains and a section of 6-inch main located within a known petroleum contaminated soil region, the replacement of two (2) lead service lines, and the completion of a hydrogeologic assessment of the springs. A water PER is presently being completed with separate funding from the Montana Coal Endowment Program (MCEP), the Department of Natural Resources Conservation (DNRC) and the Rural Development (RD) SEARCH planning grant programs.

1.2 Goals, Objectives, and Effectiveness

The Town of Geraldine contracted with Great West Engineering to review and evaluate the condition and associated problems of the existing distribution system focusing on the undersized AC mains, and deficient fire hydrants and valves. The intended goal of the Town is to develop a dependable and safe distribution system for the Town for the foreseeable future by reducing water system leakage occurrences, reducing maintenance costs, increasing fire flow capacities, and providing operational isolation distribution gate valves.

This memorandum identifies a recommended alternative, describes the primary project features, provides an estimated budgetary total project cost, and summarizes potential funding options. An implementation schedule to upgrade the distribution system is provided. The replacement of the undersized AC mains, as a pipe project, is straightforward in quantifying and estimating construction costs. A detailed hydrogeologic study of the spring source is also important to inform the Town of necessary supply improvements. The improvements identified within this memorandum are referred to as the Phase 1 water project as described above. Future phased projects which may apply to the Town's storage, treatment, and transmission systems, will require further detailed study and analysis. The subsequent phased projects (Phase 2, 3, etc.) project scopes will be described in a forthcoming comprehensive water PER.

The Town is seeking funding to replace all 4-inch and less AC mains and a section of a 6-inch AC main within a section of known petroleum contaminated soils and complete a hydrogeologic study of the spring source. The most-critical sections include a section of 3-inch AC mains and shallow pipelines in the northeast portion of Town. Pipeline ruptures and leaks occur in all areas of the Town.

The Town of Geraldine understands the importance of maintaining the function and continual operation of a safe and reliable water system. A summary of the known problems and a budgetary cost estimate were presented to the City Council in work sessions on June 8, 2021, and December 14, 2021, to support the ARPA round 2 application.

The Town has also approached Chouteau County Commissioners on June 14, 2021, to pursue the County's available ARPA funding. The County voted to authorize up to $500,000 as split between $250,000 direct treasure funds, and $250,000 minimum allocation funds for the Town important water system improvements.

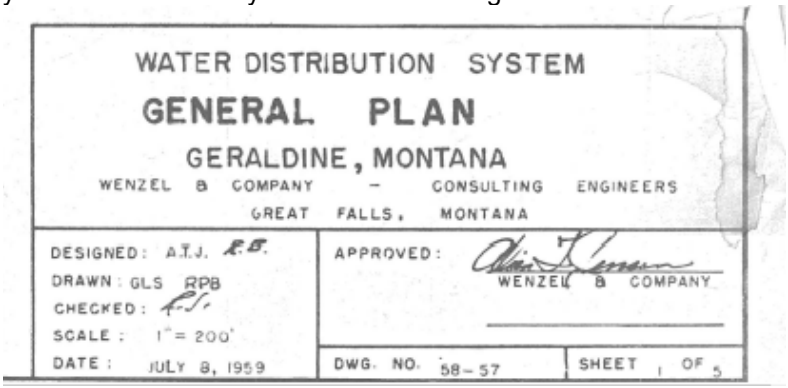
1.3 Problem Definition

A summary of the Geraldine water source and distribution deficiencies, as observed, and identified, are summarized in this section.

- Undersized AC mains - Approximately 65% of the distribution within Town system is comprised of 4-inch diameter or smaller AC mains. These mains are connected to fire hydrants which does not comply with DEQ standards. Circular DEQ-1 states *"the minimum size of water main for providing fire protection and servicing fire hydrants must be six-inch diameter".* Undersized and leaking lines limit flows that could prove critical in emergency situations and create a severe safety hazard for residents. Flow testing done on hydrants connected to the 4-inch AC mains show available flows of 500 or less gpm which is a concern for local businesses the nearby elementary and high school. Providing sufficient flows will allow buildings to be saved and may allow insurance rates to decrease. A more important aspect to providing sufficient fire flows is that firefighters are better able to control fires, increasing their ability to save the lives of individuals who may be trapped within the building.

- Lack of functioning isolation gate valves – As encountered in the most recent sewer project, significantly large portions of the Town were needed to be shut-down (without water service) in order to complete work on isolated portions of the water system in support of the sewer project (i.e., sewer/water crossings and or water realignments). Feedback from the Town operator also confirms that larger-than-needed areas are needed to be shut down in certain areas for times of water line repairs or maintenance work. According to information provided by the Town and first-hand experience during the recent sewer project, approximately 30-40% of the water valves located on the old AC mains are not even operational. Lack of operating valves is a health and safety concern. Frequent and extended shutdowns is a health and safety concern for local residents which creates periods of low service pressures and back siphonage risks. According to DEQ-1 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 not more than one block or 800-foot intervals in other districts."*

- Old/outdated piping – The vintage of the existing AC piping is from the 1950s based on available Town as-builts. Water system retrofits, tie-ins, and improvements require tapping into and adapting new piping to the existing AC mains. The dissimilar piping connections between the AC and PVC (or other) newer piping/fittings creates weak points where future leaks or ruptures are regularly occurring in the Town. Figure 1 shows the title block drawing date of the system as 1959. A full copy of the distribution system record drawing if found in Attachment A.


WATER DISTRIBUTION SYSTEM
GENERAL PLAN
GERALDINE, MONTANA
WENZEL & COMPANY – CONSULTING ENGINEERS
GREAT FALLS, MONTANA
DESIGNED: A.T.J. R.B.
DRAWN: GLS RPB
CHECKED:
SCALE: 1" = 200'
DATE: JULY 8, 1959
APPROVED:
WENZEL & COMPANY
DWG. NO. 58-57
SHEET 1 OF 5

- Airborne asbestos inhalation concerns – Cutting the existing AC pipe can result in airborne asbestos particles putting the risk of inhalation and exposure to contractors and operators conducting pipe repairs and/or tie-ins. Disturbance of asbestos cement pipe through cutting, drilling, and other activities results in elevated levels of airborne asbestos fibers. Asbestos containing material is a cancer and lung disease hazard. There is concern that smaller local contractors or private residents conducting connections, not uncommon to small towns, may not always follow proper OSHA guidelines and safe practices for handling asbestos pipe materials.

- Outdated and Leaking Fire Hydrants - The existing fire hydrants are old and are evidenced to be leaking. The fire hydrant leads are only 4-inch and do not comply with DEQ standards. The fire hydrants connected to the 3 and 4-inch AC piping were also installed in the 1950's. Several hydrants are observed to be leaking or even cracked. (See Figure 1 below for a typical cracked and leaking hydrant)

- Lack of Fire Hydrants – The existing functioning hydrants are spaced several blocks apart and do not comply with DEQ-1 8.4.1 stating *"Hydrants should be provided at each street intersection…"* A fire was experienced during the sewer project and two residences were burned with one being a complete loss. The sewer construction crew was available to assist with their available and filled water truck nearby the fire area before the volunteer fire department was able to locate and hook up to the nearest functioning fire hydrant the which was more than a block away. Otherwise, more than two structures, if not a section of Town, would have been lost with the blaze. The occurrence makes available hydrants especially important to the Town.

- Pipe ruptures/leaks – The AC mains are outdated and are increasingly causing recurring issues such as pipe cracks and ruptures in Town. The Town experiences over 6-8 major leaks and ruptures per year along the AC mains. Additionally, when low and negative system pressures occur (such as when the lines are depressurized) the pipe is susceptible to draw backflow contaminated water from the environment into the water supply system. Moreover, during periods of breaks on the distribution main, large sections of the Town is cut off from its only water supply for a prolonged period of time due to the lack of functioning valves. With every repair comes periods of no water availability and the opportunity for contaminants to enter the system. The risk of contamination is prevalent within the water system. Main breaks result in a loss of pressure, which increases the potential for backflow and contamination of the water system. Backflow is recognized by the Environmental Protection Agency (EPA) as one of the most significant public health and safety issues facing water systems today.

- Corrosion on metal fittings - The metal fittings and bolts installed within the existing water system fittings have been subject to corrosion. The corrosive soils are causing leaks at exposed metallic bolts and fittings, which then serve as potential entry points for contaminants. Corrosion of

existing metallic bolts and fittings has been observed when encountering the water line during the most recent sewer project. Figure 2 shows an existing bolt extensively corroded with all threads worn down on a coupler fitting in 2021.

Figure 3 - Removed coupler to AC main (notice completed corroded bolt in the hand)

- Brittle piping that is subject to cracking/leaking - The existing 4-inch AC mains were encountered in at up to 6 locations/crossings with the most recent sewer improvements project. Even with extra precautionary construction measures for bedding and, four locations of existing 4-inch AC mains ended up leaking and/or rupturing due to the slightest ground movements. The sewer project then resorted to using more costly flowable fill backfill methods for all sewer/water crossings to support the water lines better structurally.

- Shallow Water Mains – Water mains that were installed to less than 4-feet in depth are located in Town. This is known to occur in up to 1,000 feet of water main along Spring Street. These mains experience periodic freezing and rupturing resulting in increased attention and cost.

- Old AC main within petroleum contaminated soils – The existing 6-inch AC water main on north Main Street is located within about 300-feet of documented petroleum contaminated soils adjacent to a known DEQ leaking underground storage tank (LUST) site. The exposure area of the contaminated soils was determined by the recent sewer project which replaced a sewer main in this location. A representative from DEQ Petroleum Tank Cleanup Section program was required to be onsite full-time during this work. This contaminated soil condition poses a health and safety risk in that in the event any negative pressures occur (such as when the lines are depressurized to conduct needed repairs) the AC pipe could draw the contaminated water into the water supply system. This is a very serious risk to public health and safety. (See Appendix B for the petroleum soils documentation)

- Lead services – The Town as at least two residences with documented lead service lines from the water main to the house (and within the house). Lead pipes are a source of lead contaminated drinking water, failure to remove the entire pipe leaves the source of lead

contamination in place. Lead exposure, even at low levels, can cause neurological effects, especially in young children, young women, and developing fetuses. The most effective method is to replace the lead service lines with poly piping. (See Appendix C)

- Spring Source Issues and Susceptibility to Contamination – The Town's public water supply depends completely on the sole spring supply from Square Butte and has no other source, including groundwater wells. Available groundwater sources in the are not near the high quality as the springs. However, the springs are located on a geologic slow-moving landslide. The sliding moving tends to increase during periods of wet weather. There is also concern that the supply could diminish in times of drought conditions. In addition, access to the spring source location is difficult due to adverse and slippery road conditions and during wet or snowy weather and access via private property easement. The spring source has received past enforcement action for fecal positive corrective action in 2018. This show that the springs are subject to microbial contamination in the future. (See Appendix D for spring supply information)

- Water Loss – A cursory review of the available main flow data as recorded at the main supply meter and SCADA system in comparison to the total gallons of individual metered water sold, indicates a water loss of up to 50%. Further detailed assessment is being completed with the water PER. (Appendix E)

2.0 Design Criteria

2.1 Design Conditions

2.2 Alternatives Comparative Analysis and Selection

The potential alternatives that can be considered for the Geraldine water distribution system are simply to do nothing - “no action” - or to replace the undersized and failing distribution system.

The No Action alternative for the Town’s distribution system is an option to consider. At this time, there is no administrative order requiring the Town to replace its distribution piping. However, without improvements, the distribution system will continue to require increased operation and maintenance attention and associated costs. Replacing undersized and leaking mains will reduce leakage and in turn reduce chemical costs, as well as reduce the risks of contamination associated with leaking mains and main repairs.

The proposed project, as referred to as the Geraldine Phase 1 Water Improvements project includes:

- Replacing 4-inch and less AC piping with 6-inch PVC piping,
- Replacing a section of 6-inch AC piping within the contaminated petroleum section on Main Street,
- Reconnecting associated water services and extending the new services to the property lines, replacing old hydrants, and also all related surface improvements as needed (gravel or asphalt)
- Replacing two lead service lines from the water main to the house,
- Conducting a hydrogeologic study and assessment of the spring source and evaluation of potential alternative/redundant water source options.

The total cost of performing all necessary improvements at once is often cost prohibitive from an economic point of view. Therefore, the phasing approach will address the currently identified and estimated issues in a Phase 1 project. Subsequent phases will be identified in the forthcoming water PER. Depending on the funding packages received in the future, more than one project phase will be considered to be completed for a given construction project. At this time, the full phase 1 project is considered for the funding application.

2.3 General Design Parameters

2.3.1 Design Criteria

All water system improvements will comply with those requirements set forth in Circular DEQ-1. All design criteria presented in Circular DEQ-1 is applicable to each alternative considered, but specifically, improvements to the distribution system improvements will meet the requirements of Chapter 8 – Transmission Mains, Distribution Systems, Piping and Appurtenances. All improvements related to the spring and well sources will be evaluated in light of DEQ-1 Chapter 3 – Source Development. All proposed improvements will receive MDEQ approval prior to commencement of any construction activity.

2.3.2 Map

Figure 1 presents an overall map of the existing water system. Figure 2 shows the existing distribution system and Figure 3 shows the location of proposed pipeline improvements. over 6,400-feet of AC water main replacement for a Phase 1 project which includes 500 feet of 6-inch AC main replacement on Main

Street that is located within petroleum contaminated soils. Figure 1 shows the location of the springs where the hydrogeologic study is focused.

2.3.3 Environmental impacts

The majority of the proposed improvements will be in previously disturbed areas. Simply replacing existing pipes will not result in significant environmental impacts. It does not appear that there would be significant impacts on any floodplains, wetlands, or other important environmental features.

2.3.4 Land Requirements

It appears that the pipeline improvements will take place within the existing public right of ways and no additional easements or land acquisition will be needed. This will be verified during the design phase.

2.3.5 Potential Construction Problems

Based on experience with the wastewater project that replaced collection mains in Town, portions of soft clay soils and high groundwater will be encountered. Additional geotechnical bore holes and a geotechnical evaluation specific to the water project location will be included with the proposed water project.

It is anticipated that the pipe bedding will need to be wrapped in filter fabric in addition to the use of Type 2 bedding needed to support the pipes in soft subsurface locations. Dewatering requirements will be considered carefully during design, as groundwater can be encountered during parts of the typical construction season.

It will be important that the contractor coordinate with local businesses and residents during construction. Traffic control will be required, and temporary water service will be provided where existing mains have to be taken out of service during the installation of the new main.

2.3.6 Sustainability Considerations

Replacement of aging and deteriorated water system infrastructure is a sustainable utility management practice that aids in creating a resilient utility and provides social, economic, and environmental benefits. The current risks of contamination associated with leaking and failing distribution mains will be reduced with the implementation of this alternative.

2.3.7 Water and Energy Efficiency

The majority of water loss likely occurs in the distribution system and results in increased chemical costs and water revenue loss. Replacing the undersized AC mains will reduce leakage, which will ultimately result in reduced energy consumption.

2.3.8 Green Infrastructure

Stormwater management during the project will include temporary erosion and sediment control measures including the installation and maintenance of temporary structural control measures to reduce or eliminate the erosion of soils and transport of sediment offsite as a result of construction activities.

Figure 4 - Existing Water System

Figure 5 - Existing Distribution System

Figure 6 – Proposed Phase 1 Water System Improvements

3.0 Project Implementation

This section describes the estimated budgetary cost for the water project, and the recommended steps to implement the project.

3.1 Budgetary Cost Estimate

The estimated construction cost to complete the project, as described in the memorandum, is approximately $1,754,000 with a 6% inflation to 2023 costs to replace over 6,300 feet of pipe. The cost estimate includes a 25% contingency given the preliminary nature of this study and the uncertain construction economics and supply chain concerns at this time. The total project cost for the Phase 1 project, when factoring in other costs such as engineering, geotechnical and related professional services, grand administration, and a springs hydrogeologic study, is estimated to be $2,643,000.

The estimated itemized cost and budget estimates for the Phase 1 project, are shown in Tables 1 and 2 below.

Table 1 - Estimated Project Construction Cost (Phase 1)

ITEM NO.	DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	TOTAL PRICE
Spring Street (Replace 3-inch AC)					
1	Connect to Existing Water	1	EA	$ 2,500.00	$ 2,500.00
2	Exploratory Excavation	4	HR	$ 250.00	$ 1,000.00
3	6" PVC Water and Fittings	790	LF	$ 90.00	$ 71,100.00
4	6" Gate Valve	3	EA	$ 2,500.00	$ 7,500.00
5	6" Fittings	4	EA	$ 1,200.00	$ 4,800.00
6	6" Fire Hydrant with gate valve	1	EA	$ 6,000.00	$ 6,000.00
7	Water Service Connection	8	EA	$ 1,500.00	$ 12,000.00
8	3/4" PE Water Service	160	LF	$ 60.00	$ 9,600.00
9	Type A (Asphalt) Surface Restoration	0	SY	$ 55.00	$ -
10	Type B (Gravel) Surface Restoration	450	SY	$ 25.00	$ 11,250.00
11	Type C (Grass) Surface Restoration	450	SY	$ 15.00	$ 6,750.00
Subtotal Spring Street					**$ 132,500.00**
Brady Ave. (Replace 4-inch AC main)					
12	Connect to Existing Water	2	EA	$ 2,500.00	$ 5,000.00
13	Exploratory Excavation	4	HR	$ 250.00	$ 1,000.00
14	6" PVC Water and Fittings	750	LF	$ 90.00	$ 67,500.00
15	6" Gate Valve	3	EA	$ 2,500.00	$ 7,500.00
16	6" Fittings	6	EA	$ 1,200.00	$ 7,200.00
17	6" Fire Hydrant with gate valve	2	EA	$ 6,000.00	$ 12,000.00
18	Water Service Connection	12	EA	$ 1,500.00	$ 18,000.00
19	3/4" PE Water Service	240	LF	$ 60.00	$ 14,400.00
20	Type A (Asphalt) Surface Restoration	0	SY	$ 55.00	$ -
21	Type B (Gravel) Surface Restoration	800	SY	$ 25.00	$ 20,000.00
22	Type C (Grass) Surface Restoration	0	SY	$ 15.00	$ -
Subtotal Brady Ave.					**$ 152,600.00**

Hilger St. (Replace 4-inc AC Main, Collins to Flagler)					
23	Connect to Existing Water	4	EA	$ 2,500.00	$ 10,000.00
24	Exploratory Excavation	4	HR	$ 250.00	$ 1,000.00
25	6" PVC Water and Fittings	750	LF	$ 90.00	$ 67,500.00
26	6" Gate Valve	4	EA	$ 2,500.00	$ 10,000.00
27	6" Fittings	6	EA	$ 1,200.00	$ 7,200.00
28	6" Fire Hydrant with gate valve	3	EA	$ 6,000.00	$ 18,000.00
29	Water Service Connection	18	EA	$ 1,500.00	$ 27,000.00
30	3/4" PE Water Service	360	LF	$ 60.00	$ 21,600.00
31	Type A (Asphalt) Surface Restoration	850	SY	$ 55.00	$ 46,750.00
32	Type B (Gravel) Surface Restoration	0	SY	$ 25.00	$ -
33	Type C (Grass) Surface Restoration	0	SY	$ 15.00	$ -
Subtotal Hilger St.					**$ 209,050.00**
Frields St. (Replace 4-inch AC Main)					
34	Connect to Existing Water	2	EA	$ 2,500.00	$ 5,000.00
35	Exploratory Excavation	4	HR	$ 250.00	$ 1,000.00
36	6" PVC Water and Fittings	400	LF	$ 90.00	$ 36,000.00
37	6" Gate Valve	2	EA	$ 2,500.00	$ 5,000.00
38	6" Fittings	5	EA	$ 1,200.00	$ 6,000.00
39	6" Fire Hydrant with gate valve	1	EA	$ 6,000.00	$ 6,000.00
40	Water Service Connection	5	EA	$ 1,500.00	$ 7,500.00
41	3/4" PE Water Service	100	LF	$ 60.00	$ 6,000.00
42	Type A (Asphalt) Surface Restoration	500	SY	$ 55.00	$ 27,500.00
43	Type B (Gravel) Surface Restoration	0	SY	$ 25.00	$ -
44	Type C (Grass) Surface Restoration	0	SY	$ 15.00	$ -
Frields St.					**$ 100,000.00**
Brewster St. (Replace 4-inch AC, Collins to Clary)					
45	Connect to Existing Water	2	EA	$ 2,500.00	$ 5,000.00
46	Exploratory Excavation	4	HR	$ 250.00	$ 1,000.00
47	6" PVC Water and Fittings	1200	LF	$ 90.00	$ 108,000.00
48	6" Gate Valve	3	EA	$ 2,500.00	$ 7,500.00
49	6" Fittings	6	EA	$ 1,200.00	$ 7,200.00
50	6" Fire Hydrant with gate valve	2	EA	$ 6,000.00	$ 12,000.00
51	Water Service Connection	16	EA	$ 1,500.00	$ 24,000.00
52	3/4" PE Water Service	320	LF	$ 60.00	$ 19,200.00
53	Type A (Asphalt) Surface Restoration	500	SY	$ 55.00	$ 27,500.00
54	Type B (Gravel) Surface Restoration	900	SY	$ 25.00	$ 22,500.00
55	Type C (Grass) Surface Restoration	0	SY	$ 15.00	$ -
Brewster St.					**$ 233,900.00**
Main St. (Replace 6-inch AC within petroleum contaminated area-Broadway to Winchell)					
56	Connect to Existing Water	2	EA	$ 2,500.00	$ 5,000.00
57	Exploratory Excavation	4	HR	$ 250.00	$ 1,000.00
58	6" PVC Water and Fittings	500	LF	$ 90.00	$ 45,000.00
59	6" Gate Valve	2	EA	$ 2,500.00	$ 5,000.00
60	6" Fittings	6	EA	$ 1,200.00	$ 7,200.00
61	6" Fire Hydrant with gate valve	2	EA	$ 6,000.00	$ 12,000.00
62	Water Service Connection	8	EA	$ 1,500.00	$ 12,000.00
63	3/4" PE Water Service	400	LF	$ 60.00	$ 24,000.00

64	Type A (Asphalt) Surface Restoration	600	SY	$ 55.00	$ 33,000.00
65	Type B (Gravel) Surface Restoration	0	SY	$ 25.00	$ -
66	Type C (Grass) Surface Restoration	0	SY	$ 15.00	$ -
Subtotal Main St.					**$ 144,200.00**
East Winchell Ave. (Replace 4-inch AC Main)					
67	Connect to Existing Water	2	EA	$ 2,500.00	$ 5,000.00
68	Exploratory Excavation	4	HR	$ 250.00	$ 1,000.00
69	6" PVC Water and Fittings	360	LF	$ 90.00	$ 32,400.00
70	6" Gate Valve	3	EA	$ 2,500.00	$ 7,500.00
71	6" Fittings	6	EA	$ 1,200.00	$ 7,200.00
72	6" Fire Hydrant with gate valve	2	EA	$ 6,000.00	$ 12,000.00
73	Water Service Connection	10	EA	$ 1,500.00	$ 15,000.00
74	3/4" PE Water Service	200	LF	$ 60.00	$ 12,000.00
75	Type A (Asphalt) Surface Restoration	0	SY	$ 55.00	$ -
76	Type B (Gravel) Surface Restoration	400	SY	$ 25.00	$ 10,000.00
77	Type C (Grass) Surface Restoration	0	SY	$ 15.00	$ -
Subtotal East Winchell Ave.					**$ 102,100.00**
Baucus St. (Replace 4-inch AC Main Winchell to Flagler)					
78	Connect to Existing Water	1	EA	$ 2,500.00	$ 2,500.00
79	Exploratory Excavation	4	HR	$ 250.00	$ 1,000.00
80	6" PVC Water and Fittings	400	LF	$ 90.00	$ 36,000.00
81	6" Gate Valve	2	EA	$ 2,500.00	$ 5,000.00
82	6" Fittings	5	EA	$ 1,200.00	$ 6,000.00
83	6" Fire Hydrant with gate valve	1	EA	$ 6,000.00	$ 6,000.00
84	Water Service Connection	10	EA	$ 1,500.00	$ 15,000.00
85	3/4" PE Water Service	200	LF	$ 60.00	$ 12,000.00
86	Type A (Asphalt) Surface Restoration	0	SY	$ 55.00	$ -
87	Type B (Gravel) Surface Restoration	450	SY	$ 25.00	$ 11,250.00
88	Type C (Grass) Surface Restoration	0	SY	$ 15.00	$ -
Subtotal Baucus St.					**$ 94,750.00**
Collins Ave (Replace 4-inch AC Main Brewster to Hilger)					
89	Connect to Existing Water	1	EA	$ 2,500.00	$ 2,500.00
90	Exploratory Excavation	4	HR	$ 250.00	$ 1,000.00
91	6" PVC Water and Fittings	400	LF	$ 90.00	$ 36,000.00
92	6" Gate Valve	2	EA	$ 2,500.00	$ 5,000.00
93	6" Fittings	5	EA	$ 1,200.00	$ 6,000.00
94	6" Fire Hydrant with gate valve	1	EA	$ 6,000.00	$ 6,000.00
95	Water Service Connection	10	EA	$ 1,500.00	$ 15,000.00
96	3/4" PE Water Service	200	LF	$ 60.00	$ 12,000.00
97	Type A (Asphalt) Surface Restoration	450	SY	$ 55.00	$ 24,750.00
98	Type B (Gravel) Surface Restoration	0	SY	$ 25.00	$ -
99	Type C (Grass) Surface Restoration	0	SY	$ 15.00	$ -
Subtotal Collins (Brewster to Hilger)					**$ 108,250.00**

Collins Ave (Replace 2-inch AC Main Brewster to Hilger)					
100	Connect to Existing Water	1	EA	$ 2,500.00	$ 2,500.00
101	Exploratory Excavation	4	HR	$ 250.00	$ 1,000.00
102	6" PVC Water and Fittings	380	LF	$ 90.00	$ 34,200.00
103	6" Gate Valve	2	EA	$ 2,500.00	$ 5,000.00
104	6" Fittings	4	EA	$ 1,200.00	$ 4,800.00
105	6" Fire Hydrant with gate valve	1	EA	$ 6,000.00	$ 6,000.00
106	Water Service Connection	8	EA	$ 1,500.00	$ 12,000.00
107	3/4" PE Water Service	160	LF	$ 60.00	$ 9,600.00
108	Type A (Asphalt) Surface Restoration	0	SY	$ 55.00	$ -
109	Type B (Gravel) Surface Restoration	400	SY	$ 25.00	$ 10,000.00
110	Type C (Grass) Surface Restoration	0	SY	$ 15.00	$ -
Subtotal Collins (Main St. To Baucus)					**$ 85,100.00**
Main St. (Replace 4-inch AC Main, Flagler to Clary)					
111	Connect to Existing Water	2	EA	$ 2,500.00	$ 5,000.00
112	Exploratory Excavation	4	HR	$ 250.00	$ 1,000.00
113	6" PVC Water and Fittings	400	LF	$ 90.00	$ 36,000.00
114	6" Gate Valve	2	EA	$ 2,500.00	$ 5,000.00
115	6" Fittings	4	EA	$ 1,200.00	$ 4,800.00
116	6" Fire Hydrant with gate valve	1	EA	$ 6,000.00	$ 6,000.00
117	Water Service Connection	5	EA	$ 1,500.00	$ 7,500.00
118	3/4" PE Water Service	250	LF	$ 60.00	$ 15,000.00
119	Type A (Asphalt) Surface Restoration	450	SY	$ 55.00	$ 24,750.00
120	Type B (Gravel) Surface Restoration	0	SY	$ 25.00	$ -
121	Type C (Grass) Surface Restoration	0	SY	$ 15.00	$ -
Subtotal Collins (Flagler to Clary)					**$ 105,050.00**
122	Replace Service in Ground (226 Spring St.)	60	LF	$ 80.00	$ 4,800.00
123	Replace Service in Ground (241 Main St.)	60	LF	$ 80.00	$ 4,800.00
Subtotal Lead Service Line Replacements					**$ 9,600.00**

SUBTOTAL		**$ 1,477,100**
MOBILIZATION	10%	$ 147,700
TEMPORARY WATER		$ 30,000
DIRECT CONSTRUCTION COSTS		**$ 1,654,800**
CONSTRUCTION COSTS TO 2023 (6%)		**$ 1,754,000**
CONTINGENCY	25%	$ 439,000
ENGINEERING	20%	$ 351,000
GEOTECHNICAL EVALUATION		$ 20,000
HYDROGEOLOGIC STUDY		$ 25,000
AUDIT		$ 20,000
LEGAL AND ADMIN		$ 34,000
TOTAL		**$ 2,643,000**

Table 2 - Estimated Project Budget (Phase 1)

ADMINISTRATION	ARPA Competitive Grant	County Match ARPA Treasury	County Match Min. Allocation Grant	Local ARPA Min. Allocation Grant	Local ARPA Treasury	TOTAL
Professional Services	$30,000					$30,000
Legal Costs	$4,000					$4,000
Audit Fees	$20,000					$20,000
TOTAL ADMINISTRATION	$54,000					$54,000
CONSTRUCTION RELATED ACTIVTIES						
Engineering (Design, CM, RPR)	$19,000	$225,000	$32,000	$35,000	$40,000	$351,000
Construction						$25,000
Contingency	$1,754,000	$25,000	$198,000	$68,000		$1,754,000
Geotechnical Evaluation	$173,000		$20,000			$20,000
TOTAL ACTIVITY	$1,946,000	$250,000	$250,000	$103,000	$40,000	$2,589,000
TOTAL PROJECT BUDGET	**$2,000,000**	**$250,000**	**$250,000**	**$103,000**	**$40,000**	**$2,643,000**

3.2 Funding

The preferred funding scenario is to fund the Phase 1 project using a combination of ARPA funding from Chouteau County's ARPA treasury and location grants totaling $500,000, the Town's local treasury and allocation grants totaling over $143,000and the remainder with the ARPA competitive grant capped at $2 million.

3.3 Implementation Schedule

The implementation schedule for the proposed project is summarized in Table 3 below.

Table 3 - Project Implementation Schedule

Action	Date
Technical Memorandum Complete	June 2021, Updated Nov. 2021
Secure Chouteau County ARPA funding	July, 2021
Apply for ARPA Competitive Grant	January 14, 2022
Award of ARPA Grant	July, 2022
Contracting for Grants & Engineering	August 2022
Begin Design	September 2022
Submit Design Plans and Specifications to MDEQ	November, 2022
MDEQ Review & Approval	January 2023
Advertise and Open Bids	February 2023
Start Construction	May/June 2023
Complete System Construction	By November 2023