FINDING OF NO SIGNIFICANT IMPACT
FOR THE GORE HILL COUNTY WATER DISTRICT
WATER SYSTEM IMPROVEMENTS PROJECT

TO: ALL INTERESTED PERSONS

Date: June 4, 2010
Action: Installing arsenic treatment facilities at each of the two existing wells and constructing distribution system improvements
Location of Project: Great Falls, Montana
DWSRF Funding: $546,000
Total Project Cost: $896,300

An environmental review has been conducted by the Montana Department of Environmental Quality for the proposed improvements to the water system serving the Gore Hill County Water District. The purpose of the project is to make improvements to the district's water system that are needed to ensure an adequate supply of water meeting state and federal drinking water rules.

The affected environment will primarily be in the vicinity of the well sites and along the connecting pipeline and street right-of-way. The human environment affected will include Gore Hill and the surrounding area. Based on the information provided in the references below, the project is not expected to have any significant adverse impacts upon terrestrial and aquatic life or habitat, including endangered species, water quality or quantity, air quality, geological features, cultural or historical features, or social quality.

This project will be funded in part with a low-interest loan from the Montana Drinking Water State Revolving Fund (DWSRF) Program, administered by the Montana Department of Environmental Quality and the Montana Department of Natural Resources and Conservation.

The Department of Environmental Quality utilized the following references in completing its environmental review of this project:

- Water System Preliminary Engineering Report, April 2008, prepared for the Gore Hill County Water District by Great West Engineering, Helena, Montana.
- Uniform Application Form for Montana Public Facility Projects, April 22, 2008, submitted by the Gore Hill County Water District.
- Gore Hill County Water System Improvements Project Manual, December 2009, prepared by Great West Engineering, Helena, Montana.

- Gore Hill County Water System Improvements Construction Plans, December 2009, prepared by Great West Engineering, Helena, Montana.
- Gore Hill County Water System Improvements Revised Engineering Design Report, April 2010, prepared by Great West Engineering, Helena, Montana.

These references are available for review upon request by contacting:

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Dennis Peppenger, Chairman
Gore Hill County Water District
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Great Falls, Montana 59403
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Comments on this finding or on the environmental assessment may be submitted to the Department of Environmental Quality at the above address. Comments must be postmarked no later than July 19, 2010. After evaluating all substantive comments received, the department will revise the environmental assessment or determine if an environmental impact statement is necessary. Otherwise, this finding of no significant impact will stand if no substantive comments are received during the comment period or if substantive comments are received and evaluated and the environmental impacts are still determined to be non-significant.

Signed,

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Todd Teegarden, Chief
Technical & Financial Assistance Bureau

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GORE HILL COUNTY WATER DISTRICT
WATER SYSTEM IMPROVEMENTS

ENVIRONMENTAL ASSESSMENT

I. COVER SHEET

A. PROJECT IDENTIFICATION

Applicant:	Gore Hill County Water District
Address:	P.O. Box 263
	Great Falls, MT 59403
DOC-TSEP Project #	MT-TSEP-CG-10-492

B. CONTACT PERSON

Name:	Dennis Peppenger, Chairman
	Gore Hill County Water District
Address:	P.O. Box 263
	Great Falls, MT 59403
Telephone:	(406) 452-2978

C. ABSTRACT

The Gore Hill water system serves a residential community south of Great Falls, Montana, by providing drinking water to 220 households, as shown in the attached map. In response to stricter standards for the permissible level of arsenic in drinking water, the district is undertaking improvements to its water supply facilities. An April 2008 preliminary engineering report prepared by Great West Engineering includes consideration of alternatives for improvements with estimated capital costs ranging from $445,000 to $1,689,000.

Constructed in 1975, the water system consists of two deep wells, four 50,000-gallon concrete storage tanks and 6.5 miles of 6- and 8-inch diameter water mains. Both wells have orthophosphate treatment to sequester iron, followed by gaseous chlorination for disinfection.

The federal Safe Drinking Water Act, as amended in 1996, requires periodic chemical testing of community public water supplies. After the federal standard for arsenic was lowered from 0.050 to 0.010 mg/l, the district conducted the required quarterly testing in 2007 and 2008 to determine compliance with the new standard. Since the running annual average of these tests exceeded the new limit, the Department of Environmental Quality issued an administrative ordera Notice of Violation and Administrative Compliance and Penalty Order on March 26, 2009, requiring the district to come into compliance with the arsenic rule by

taking measures to deliver water meeting the standard. The proposed project is intended to address the arsenic problem by installing treatment facilities that will lower arsenic concentrations in both water sources to acceptable levels.

Nine alternatives were evaluated in the preliminary engineering report prepared by the district's engineer. After analyses of the probable lifetime costs of construction, operation and maintenance, three alternatives emerged as the most cost-effective. Several meetings were held to inform the public and, based on input from the residents of the district, the following alternative was selected:

1. Install Macrolite arsenic removal facilities at each well, and
2. Construct distribution system improvements.

The proposed water treatment process would consist of chlorination of the source water to oxidize arsenic and iron, followed by filtering the chlorinated solution through a manufactured media that would adsorb the metals. The filtration media would be periodically backwashed to remove deposited solids. Backwash water would be settled in a tank, with the aqueous portion recycled to the head of the treatment works. Iron and arsenic would be bound in the remaining solids, which, after TCLP testing to confirm their acceptability for disposal, would be trucked to a landfill.The Macrolite process is a type of enhanced ferric iron coagulation, combining oxidation, coagulation and filtration, and uses a proprietary ceramic media specifically designed for drinking water filtration.

The proposed water treatment improvements will enable the district to return to compliance with the Safe Drinking Water Act and will ensure that drinking water meeting state and federal regulations will be reliably provided to all consumers.

Since theThe project will be funded in part by a Drinking Water State Revolving Fund loan. , this environmental assessment was prepared to satisfy the requirements of the Montana Environmental Policy Act and the National Environmental Policy Act. The Treasure State Endowment Program of the Montana Department of Commerce has also reviewed this document for the purposes of MEPA compliance. Environmentally sensitive characteristics such as wetlands, floodplains and threatened or endangered species are not expected to be adversely impacted as a consequence of the proposed project. No significant long-term environmental impacts were identified during the preparation of this document.

D. COMMENT PERIOD

Thirty (30) calendar days.

II. PURPOSE AND NEED FOR ACTION

A. EXISTING WATER SUPPLY SYSTEM

The water system was constructed in 1975 to serve six subdivisions on the southern outskirts of Great Falls. Source water is drawn from two deep wells drilled into the Madison formation, treated with a poly orthophosphate chemical to prevent iron problems, and then pumped into four 50,000-gallon storage tanks. From the tanks, water is pressurized for distribution and chlorinated for disinfection. The distribution system consists of 33,800 lineal feet of 6- and 8-inch diameter water mains. Several of the mains terminate in dead ends, which may lead to water quality problems from stagnation.

B. PROPOSED PROJECT

The proposed project includes the following improvements:

1. Construct new metal buildings at each well site,
2. Install Macrolite media arsenic treatment systems in each building,
3. Provide backwash recycle and drainfield disposal systems at each site,
4. Install new chlorination equipment at each site, and
5. Loop dead end mains at two locations within the distribution system.

Proper water treatment is essential for the protection of public health and safety. By adding treatment facilities to the district's water system, adequately treated water will be delivered to the users of the system and public health and safety with respect to the water supply will be ensured.

III. ALTERNATIVES INCLUDING THE PROPOSED ACTION

A. WATER SUPPLY AND TREATMENT ALTERNATIVES

Five alternative approaches for addressing the district's long-term water needs were considered:

1. NO ACTION – This alternative would involve continued use of the existing facilities without any major modifications. Consumers in the district would continue to be exposed to the health risks associated with arsenic in their drinking water. Long-term exposure to arsenic is linked to cancers of the bladder, lungs, skin, liver, kidney, nasal passages and prostate. Non-cancer effects include cardiovascular, pulmonary, immunological neurological and endocrine disorders. In addition to exposing consumers to the health risks of arsenic, the district would

continue to operate in violation of the department's administrative order and would be subject to judicial action.

2. DEVELOP NEW GROUNDWATER SOURCES – Groundwater sources in some nearby communities, including Sun River, Cascade, Power, Fort Benton and several others, were investigated to determine available water quantity and quality. Based on the available information, it appears unlikely that a groundwater source with greatly improved water quality could be found near Gore Hill.

3. BLENDING THE TWO EXISTING WELLS – Tests from Well #2 have shown lower arsenic concentrations than Well #1. Blending the two sources is permissible if the running annual average of the blended water remains at or below the maximum contaminant level of 0.010 mg/l. The major obstacle to this approach is the 4300-foot separation of the two sources. To effectively blend the two sources, a 4300-foot long pipeline would have to be constructed to convey water from one well to the other and another 4300-foot long pipeline to return blended water to the other pair of storage tanks. Furthermore, there is no guarantee that the arsenic concentrations in Well #2 will remain at levels low enough to dilute the higher arsenic levels in Well #1. Finally, blending does not address the high iron concentrations in both wells.

4. INSTALL TREATMENT – This alternative would include the installation of treatment facilities that would reduce the arsenic and iron concentrations to acceptable levels. The district's engineer investigated a number of treatment alternatives, evaluating them based on cost-effectiveness, operation, maintenance, environmental and regulatory factors.

5. CONNECT TO THE GREAT FALLS WATER SYSTEM – The Gore Hill water system could be connected to the city's system by installing a booster station, a backup power generator and 5600 lineal feet of 8-inch diameter transmission main. This alternative would allow the district to discontinue the use of the existing wells, pumps and storage tanks, eliminating the operation, maintenance and replacement costs of those facilities. The district would purchase water from the city and continue to operate and maintain the distribution system. The city would require each household to pay a $300 connection fee and sign a waiver of protest of future annexation.

Since the first three alternative approaches are not feasible, detailed cost analyses were conducted on connection to the city system and eight treatment alternatives.

B. CAPITAL COST COMPARISONS

Table 1 provides a present worth cost comparison of the nine alternatives.

Table 1. Alternative Evaluation

Alternative	Present Worth Cost
1. Zirconium Oxide Media (Isolux)	$1,349,600
2. AD26 Media (AdEdge)	$863,400
3. Macrolite Media (Kinetico)	$763,800
4. Electromedia (Filtronics)	$1,534,600
5. Tonka Filter (Tonka Water Company)	$1,403,000
6. Microfiltration (Pall)	$1,564,600
7. Pureflow Filter (Pureflow)	$1,689,000
8. Reverse Osmosis Point of Use Devices	$445,000
9. Connection to the Great Falls Water System	$787,000

These alternatives were then presented to the district's residents at three public meetings. A majority favored installing centralized treatment on the existing water sources, with a smaller percentage favoring point of use devices. Connection to the Great Falls system was opposed by a majority, many of whom objected to the city's requirement of waiving protest to future annexation. Based on input from the public meetings, the list of alternatives was narrowed down to the two lowest cost centralized treatment alternatives along with the option of connection to the Great Falls water system. These remaining three alternatives were further evaluated by assigning values to other criteria. The criteria were cost-effectiveness, environment, operation and maintenance, treatment performance, energy consumption and public preference. The results of this ranking are listed in Table 2.

Table 2. Comparative Ranking Table

Ranking Criteria	Alternative #2 or #31	Alternative #8	Alternative #9
Cost-effectiveness	0	+1	0
Environment	0	0	0
Operation and Maintenance	0	-1	+1
Treatment Performance	0	+1	+1
Energy Consumption	0	0	+1
Public Preference	+1	0	-2
TOTAL	**+1**	**+1**	**+1**

A positive number in Table 2 indicates a strong rating, a zero indicates a neutral rating and a negative number indicates a weak rating. Since the three alternatives received the same total rating from this method, the district chose to rely on public preference and selected the option of centralized treatment of the existing water sources. The project specifications will call for the treatment technology of Alternates 2 and 3, that is, oxidation followed by filtration with the AdEdge or Kinetico systems.

C. TOTAL ESTIMATED COSTS

The total estimated construction cost of the proposed project, including administrative, engineering and construction contingency, is $896,300, based on implementation of the preferred alternative. The district has secured a $100,000 Renewable Resources Grant from the Department of Natural Resources and Conservation and a $250,300 Treasure State Endowment Program grant from the Department of Commerce. The remaining project funds will be provided by a $546,000 low-interest loan from the Drinking Water State Revolving Fund program.

IV. AFFECTED ENVIRONMENT

A. PLANNING AREA

The Gore Hill County Water District covers 500 acres on the eastern edge of the Sun River Bench, near Interstate I15, and 1.5 miles south of the Great Falls International Airport. The Sun River Bench is bounded by the Missouri River to the south and east and the Sun River to the north.

The service area population is estimated at 550. Since there are vacant lots within the district, a ten percent population increase was assumed for the 20-year planning period, bringing the total 2027 design population to 605. All service connections to the distribution system are metered.

Construction of the proposed project is expected to take an estimated six months following the award of a contract. Bid opening is anticipated in spring summer of 2010, with construction in summer and fall of 2010.

B. FLOW PROJECTIONS

Projected water use is based on the water demands developed by Great West Engineering in the Gore Hill County Water District Preliminary Engineering Report, April 2008. Table 2-6 of that report lists a 2027 average day demand of 53 gallons per minute, a maximum day demand of 170 gallons per minute and a peak hour demand of 340 gallons per minute.

C. NATURAL FEATURES

The topography is generally flat, lying at an elevation of 3700 feet above mean sea level. The underlying geology of the area consists of the Marias River and Blackleaf shale formations. Soils are loams with some fine sand, and vegetation consists of native grasses and weeds. Land use within the district is primarily residential. Surrounding land use is mostly agricultural, such as range and pasture.

The climate is typical of the weather patterns of the high plains of north central Montana. Summer days are warm to hot with cool nights. Winter is often cold with occasional sub-zero temperatures caused by Arctic air masses from Canada. However, winter warming often occurs from frequent Chinook winds, which may produce temperature rises of 40 degrees F. in a day. Fall and spring months are transition periods with variable weather. Seasonal temperatures range from an average maximum of 34.1 degrees F. and an average minimum of 14.1 degrees F. in January to an average maximum of 84.5 degrees F. and an average minimum of 54.5 degrees F. in July. Average annual precipitation is 14.7 inches, with May and June the wettest months.

The entire district, including all water system facilities, is outside of the 500-year and 100-year floodplains, as defined by the Federal Emergency Management

Agency maps. Similarly, there are no streams or wetlands within the district boundaries.

The U.S. Fish and Wildlife Service identifies seven species in Montana as endangered and seven species as threatened. The endangered animal species include the whooping crane, Eskimo curlew, black-footed ferret, pallid sturgeon, white sturgeon, least tern and gray wolf. Threatened animal species in the state include the grizzly bear, Canada lynx, piping plover and bull trout. Threatened plant species are the Spalding's catchfly, water howellia and Ute ladies'-tresses. Additionally, one animal species, the yellow-billed cuckoo, is listed as a candidate for a threatened or endangered designation. No impact on any of these species is anticipated as a consequence of the proposed project.

Construction will take place on the sites of existing water system facilities and in existing streets. Since construction will take place in previously disturbed areas, no native vegetation is expected to be impacted by the construction. Similarly, the sites do not provide prime habitat for wildlife, and as a result no impacts on wildlife are anticipated.

V. ENVIRONMENTAL IMPACTS OF PROPOSED PROJECT

A. DIRECT AND INDIRECT ENVIRONMENTAL IMPACTS

1. Housing and Commercial Development – Developed land use within the city limits is entirely residential. The proposed improvements are not expected to have an impact on housing and any future commercial development.

2. Future Land Use – No adverse impacts to land use are expected from the proposed project.

3. Floodplains and Wetlands – As discussed previously, the construction sites are far removed from the 100-year and 500-year floodplains. No wetlands have been identified at or near the proposed construction sites.

4. Cultural Resources – Damon Murdo, Cultural Records Manager for the Montana Historical Society, conducted a cultural resource file search for the project and found no recorded sites within the search locales. In a letter dated April 7, 2008, he wrote that any structure over fifty years of age may be eligible for the National Register of Historic Places. Since the water system was constructed in the 1970s, no structures of that age will be affected. The proposed construction sites are on previously disturbed land, so there is a low probability that cultural properties will be impacted, and a cultural resource inventory was not conducted. The state Historic Preservation Office will be immediately contacted in the event any cultural resources are identified during construction.

5. Fish and Wildlife – No impacts on biological resources in the area are

anticipated as a result of the proposed project. In a letter dated April 14, 2008, R. Mark Wilson of the U.S. Fish and Wildlife Service wrote, "this project is unlikely to have any significant adverse effects upon any fish, wildlife, or habitat resources under the purview of the U.S. Fish and Wildlife Service."

6. Water Quality – Impacts on water quality are expected to be minor and short-term. Short-term impacts on water quality can be controlled through proper construction practices.

7. Air Quality - Short-term negative impacts on air quality may occur from heavy equipment, dust and exhaust fumes during project construction. Proper construction practices and dust abatement measures will be implemented during construction to control dust, thus minimizing this problem.

8. Public Health – The proposed project is not expected to have adverse impacts on public health, and should instead enhance public health by reducing arsenic concentrations in water consumed by the district's residents.

9. Energy - During construction of the proposed project, additional energy will be consumed, causing a direct short-term impact on this resource. Additional energy will also be expended in the operation of the new treatment facilities.

10. Noise - Short-term impacts from increased noise levels may occur during construction of the proposed project improvements. Construction is anticipated to take about six months and will occur primarily during daylight hours.

11. Hazardous Facilities – There are no known hazardous waste sites or flammable hazards in the project area.

B. UNAVOIDABLE ADVERSE IMPACTS

Short-term construction-related impacts, such as noise, dust and traffic disruption, will occur but can be minimized through proper construction management. Energy consumption during construction and operation of the new facilities cannot be avoided.

VI. PUBLIC PARTICIPATION

The proposed project was considered at public meetings held by the district on March 5, 2008, March 12, 2008, and April 21, 2008. There was general support for the project at these meetings. Subsequently, the district board voted to proceed with the proposed funding package and to pursue grant and loan applications with state funding agencies.

VII. REFERENCE DOCUMENTS

The following documents were used in the environmental review of this project and are considered to be part of the project file:

A. Water System Preliminary Engineering Report, April 2008, prepared for the Gore Hill County Water District by Great West Engineering, Helena, Montana.

B. Uniform Application Form for Montana Public Facility Projects, April 22, 2008, submitted by the Gore Hill County Water District.

C. Gore Hill County Water System Improvements Project Manual, December 2009, prepared by Great West Engineering, Helena, Montana.

D. Gore Hill County Water System Improvements Construction Plans, December 2009, prepared by Great West Engineering, Helena, Montana.

E. Gore Hill County Water System Improvements Revised Engineering Design Report, April 2010???, prepared by Great West Engineering, Helena, Montana.

VIII. RECOMMENDATION FOR FURTHER ENVIRONMENTAL ANALYSIS

❑ EIS ❑ More Detailed EA ☑ No Further Analysis

Rationale for Recommendation: Through this environmental assessment, the department has determined that none of the adverse impacts of the proposed project are significant. Therefore, an environmental impact statement is not required. Kathleen Miller, P.E., representing the Treasure State Endowment Program of the Department of Commerce, reviewed this document on April 30, 2010, and concurs with these findings. The environmental review was conducted in accordance with the Administrative Rules of Montana (ARM) 17.4.607, 17.4.608, 17.4.609 and 17.4.610. The environmental assessment is the appropriate level of analysis because none of the adverse effects of the project are considered significant.

Environmental Assessment prepared by:

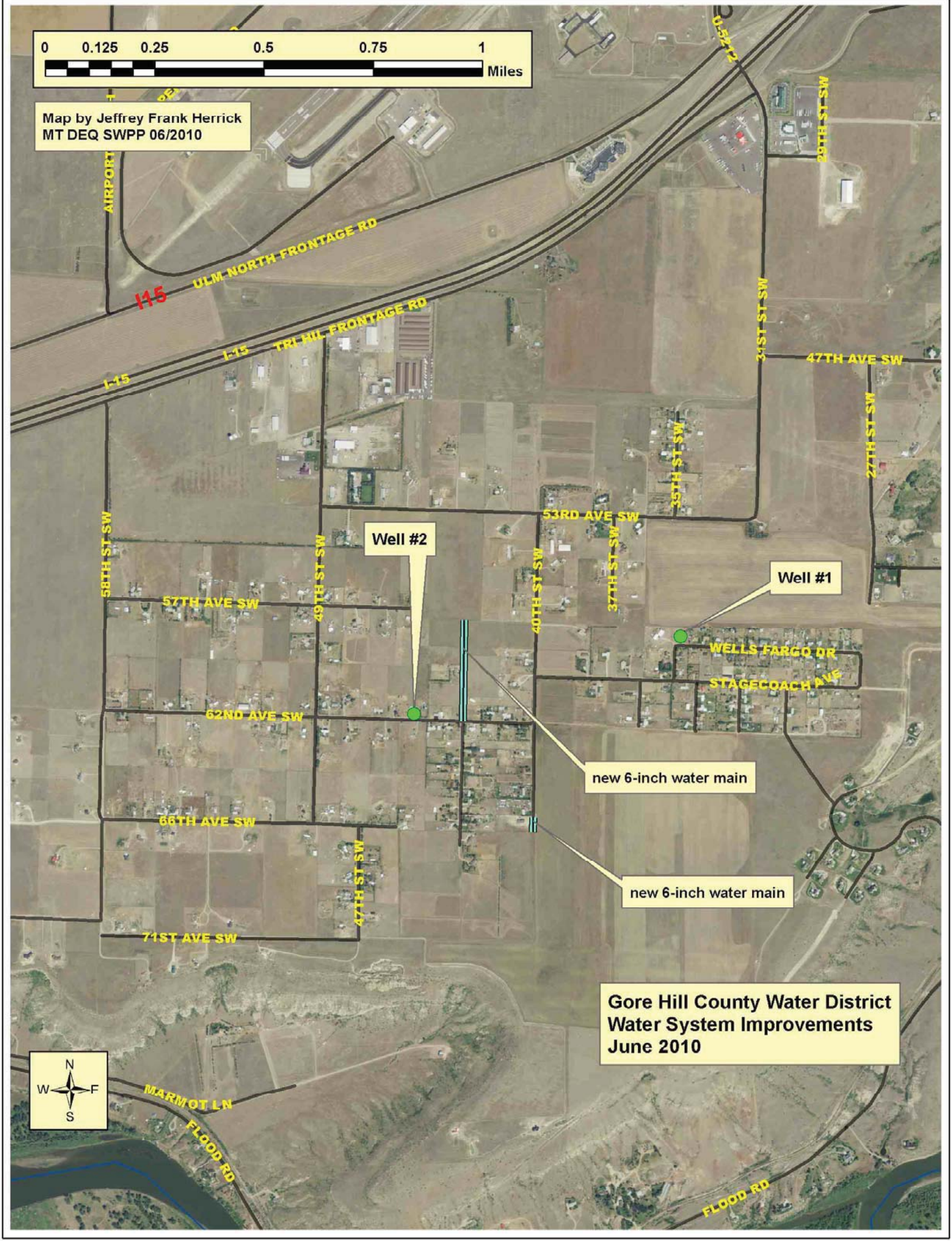
_____ _____

Name Date

Environmental Assessment reviewed by:

_____ _____

Name Date


0 0.125 0.25 0.5 0.75 1
Miles
Map by Jeffrey Frank Herrick
MT DEQ SWPP 06/2010
AIRPORT
ULM NORTH FRONTAGE RD
I15
I-15
TRI HILL FRONTAGE RD
I-15
U-5212
29TH ST SW
31ST ST SW
47TH AVE SW
27TH ST SW
35TH ST SW
53RD AVE SW
58TH ST SW
49TH ST SW
40TH ST SW
37TH ST SW
Well #2
Well #1
57TH AVE SW
WELLS FARGO DR
STAGECOACH AVE
62ND AVE SW
new 6-inch water main
66TH AVE SW
47TH ST SW
new 6-inch water main
71ST AVE SW
Gore Hill County Water District
Water System Improvements
June 2010
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W
F
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MARMOT LN
FLOOD RD
FLOOD RD