

CITY OF CHALLIS, IDAHO

REVISED ENVIRONMENTAL INFORMATION DOCUMENT

October 2014



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ACRONYMS AND ABBREVIATIONS

AMR	Automated meter read
APE	Area of Potential Effect
ASTM	American Society for Testing and Materials
AWWA	American Water Works Association
BFE	Base Flood Elevation
CSWCD	Custer Soil and Water Conservation District
DEQ	Idaho Department of Environmental Quality
EDU	Equivalent Dwelling Unit
EID	Environmental Information Document
EPA	United States Environmental Protection Agency
ESA	Endangered Species Act
GPM	Gallons per Minute
IDAPA	Idaho Administrative Procedures Act
MGD	Million Gallons per Day
NRCS	Natural Resource Conservation Service
PPPA	Proposed Project Planning Area
PRV	Pressure reducing valves
PSI	Pounds per square inch
RCRA	Resource Conservation and Recovery Act
SCADA	Supervisory control and data acquisition
SPCC	Spill Prevention Control and Countermeasures
SRF	State Revolving Funds

City of Challis Environmental Information Document 2014

Project Identification: City of Challis Water System Improvements Project

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1. ABSTRACT/ EXECUTIVE SUMMARY

The City, located in Custer County, Idaho, is proposing to build new facilities for its distribution system. The City completed and had approved a water system facility plan¹ (the Plan). The existing system, as of the approval of the Plan, did not have any compliance issues with the Idaho Department of Environmental Quality. The Plan identified deficiencies that impact the health and safety of the public. The Plan also identified changes needed for growth in the community.

Riedesel Engineering helped the City establish 11 criteria for water system improvements, reviewed multiple combinations of work that would meet the criteria, and condensed the combinations into 3 specific project alternatives. The final 3 projects all addressed source water issues, distribution system improvements, re-metering the community, expanding the City's telemetry of its key assets, and expanding the distribution system to meet estimated growth. The 3 projects were presented to the citizens in a public participation meeting on July 11, 2011. City council adopted Recommend Plan 1(RP1) on August 9, 2011. Initially RP1 was to be funded through USDA-Rural Development.

Since 2011, the City has been reviewing its funding options for a capital project, narrowing the focus of RP1 to meet just the health and safety issues presented in the Plan. Starting in 2013, the City completed an application to IDEQ for SRF funding and refined RP1 into "the Proposed Project" of about \$3.2M. The City secured Judicial Confirmation to proceed with the Proposed Project.

The process leading to the Environmental Information Document (EID) has been long with several submittals, comments, and responses. So, for the sake of clarity:

- Recommended Project 1 is the basis for the Proposed Project. All of the elements in the Proposed Project were presented, discussed, and analyzed in the approved Water System Facility Plan.
- The Proposed Project addresses and corrects health and safety issues identified in the Plan.
- This EID presents the probable impacts caused by Proposed Project and the mitigation of those impacts.
- The EID is footnoted, providing the sources of key information used in the EID where needed.
- The EID follows IDEQ's Form 5-B.
- The resource areas that are anticipated to be affected as a result of the Proposed Project include Floodplains, Air Quality and Noise, and Water Quality.
- The City of Challis (City) is seeking 100 percent funding through a State Revolving Funds (SRF) loan from DEQ. The project has the following elements and estimated costs:

¹ EID Appendix A - Challis Water System Facility Plan with Supplementary Information, Riedesel Engineering, Inc., February, 2012.

Table 1 Project Elements and Costs

CATEGORY	RECOMMENDED PROJECT 1 ELEMENT	ESTIMATED COST
Transmission & Distribution Construction	Old Town Improvements - Clinic Road Airport Extension	\$1,484,031
Treatment	None	\$0
Source	By others	\$0
Metering & Telemetry	Metering and Telemetry	\$645,036
	Total Construction	\$2,129,067
Contingencies		\$236,826
Engineering	Design, Bidding & Award	\$348,715
Construction Services	Testing, Observation, Pay Requests, Etc.	\$207,352
Other	Legal, Interim Interest, Development Company Administrations	\$115,000
	TOTAL ESTIMATED COST	\$3,036,960

- Mr. Rick Miller of the Development Company is handling the funding part of the project for the City. The data in the following table is provided by Mr. Miller. A copy of his Rate Analysis is attached with this response to comments in Appendix A.

Table 2 Proposed User Rates

Current Average Monthly User Charge per EDU	\$13.75
Usage Fee for 3,000 Gallons @ \$0.95/Gallon	\$2.85
Change in Operation and Maintenance Monthly Charge per EDU	\$9.23
Change in Debt Service Monthly Charge per EDU	\$22.36
Future Average Monthly User Charge per EDU	\$48.19

- The assumptions for this analysis are: 1.75 percent loan; \$268,030 principal forgiveness; 30 year term; 750 users; approximately \$2,768,930 (\$3,036,960-\$268,030) loan amount. The complete financial information is part of the loan application documentation. The City has received Judicial Confirmation for \$3.2M for the revised project. The ruling is currently being appealed.

2. PURPOSE AND NEED

At the beginning of the facility plan, the City of Challis staff expressed concerns about its water system which could create water quantity and quality problems within a 20-year planning horizon (year 2030). The concerns included:

- The City's water supply comes from the unprotected Garden Creek Watershed and from two existing ground water wells. "Unprotected" signifies that the City of Challis does not have control on the land uses in the watershed and cannot enforce mitigation efforts to minimize negative impacts on water quality. The Garden Creek surface water source is susceptible to contamination from the watershed².
- The City may not be able to provide adequate fire flows due to the use of existing old and dead end water mains, and small diameter 4-inch un-looped lines as well as improperly spaced hydrants connected to 4-inch water mains (6-inch mains provide the minimum supply for fire suppression according to IDAPA).

² EID Appendix A, Drinking Water Protection Plan for the City of Challis, Prepared by Idaho Rural Water Association, starting on page A-3

- Depending on the water year, the surface water source cannot meet the summertime peak demand without rationing³.
- The City does not have a plan to anticipate water demands and provide water services for future growth.
- The residential services and meters installed with the 1980's capital project are aged and need to be replaced. Random selections of meters were removed from within the distribution system, and when calibrated, 5 out of every 6 meters were inaccurate. The meters read either greater than or less than actual flow, thus not allowing for proper measurements to perform a water audit or accurately measure loss within the system.
- Aged pipes not replaced in the 1980's project that are in need of replacement. The existing "Old Town" system has had multiple mainline breaks, (2) during the winter of 2013-2014. Anytime a break occurs there is an increased risk for contamination into the drinking water system. As the pipes continue to age and deteriorate the City puts itself at an increased risk for potential failures.

Riedesel Engineering took the City's concerns listed above and identified and addressed deficiencies in the planning study. The deficiencies are the bases for the purpose and need of the Proposed Project. The Proposed Project is described in Section 2.1. The purpose of the Proposed Project is to correct the health and safety issues in the City's water system. The health and safety deficiencies are the needs of the Proposed Project. These needs are:

1. Source Water – Surface Water and Surface Water Treatment. Idaho Rural Water Association identified numerous concerns with Challis' surface water drinking source (see footnote 2). Further, the Plan addresses surface water concerns⁴. The slow sand filter technology used by the City for surface water treatment is effective against microbial contamination, but not against toxic chemicals dumped into Garden Creek. Groundwater source development, both for water quality and water quantity issues, was identified in the Plan as one of the primary goals of a capital improvement project⁵. Groundwater development is not part of the Proposed Project since the City entered into a memorandum of understanding (MOU) with Custer Soil and Water Conservation District (CSWCD). CSWCD has federal funding partners who are interested in restoring fish migration in Garden Creek. The diversion structure the City uses for its slow sand filter precludes fish migration beyond the structure. The existing intake is gravity fed. The proposed diversion intake will also be gravity fed and relocated further upstream. By relocating the diversion structure upstream and constructing a new non-fish blocking structure, the fish will be able to migrate upstream.

If successful, CSWCD will undertake a separate environmental information document (EID) and separate permitting for stream and riparian area construction. CWSCD is providing groundwater source development in exchange for construction "fish friendly" City-owned diversions on Garden Creek. Groundwater is a separate project that will be managed by CSWCD. CWSCD is drilling test wells for the City in efforts to find enough groundwater to replace the delivery of the slow sand filters.

³ Corey Rice, City of Challis Water & Wastewater Superintendent, conversations during the facility planning study, 2011-2012.

⁴ EID Appendix A, Challis Water System Facility Plan with Supplementary Information, loc.cit. Section 4.4, #5, page 44.

⁵ Ibid. Section 5.2 Description of Problems/Deficiencies, page 47.

The permitting and work for the “Source” project are not part of this EID and will not involve DEQ at this time.

2. Old Town Distribution System – Aged Pipes. There are aged and failing 4-inch pipelines in the Old Town Distribution System. These pipes were not replaced in the latest improvement project (circa 1980). The frequency of breaks is increasing⁶. Pipeline breaks create a potential for “cross connection”⁷ that jeopardizes drinking water quality.
3. Old Town Distribution System –Dead End Mains. There are dead-end mains in the Old Town System that need to be looped.⁸ Dead end lines create multiple health risks including:
 - a. Decrease in disinfectant residual levels, potentially leading to the growth of microbial pathogens and becoming unsafe within 30 days or less.
 - b. Rise in disinfectant by-products
 - c. Lack of flushing capability
 - d. Existing system does not meet standards as set in IDAPA 58.01.08.542.09
4. Old Town Distribution System –System Pressure. The Plan determined the Old Town distribution system exceeds ordinary maximum static pressure of 80 PSI or controlling pressures above 100 PSI with pressure reducing devices (IDAPA 58.01.08.552.01.b.vi)⁹.
5. Old Town Distribution System –System Pressures during Fire Flow. The existing distribution system cannot meet the existing peak hour demand with the design fire criteria and be compliant with IDAPA 58.01.552.01.b.i¹⁰.
6. Challis Airport - System Pressures during Fire Flow. The airport water system cannot meet the required fire flow demand¹¹ and be compliant with IDAPA 58.01.552.01.b.i.
7. Telemetry. The Plan identifies improving the City’s supervisory control and data acquisition (SCADA) system as a need. The project engineer testified that improved telemetry is a health and safety issue for the community¹².

2.1 Proposed Project Description

The Proposed Project will upgrade the drinking water system in Challis, Idaho as follows:

- **Distribution System.** Upgrade the Old Town distribution system to meet fire flow requirements by replacing old 4-inch pipes with 6 inch pipes and looping dead end lines. The Old Town system will also have new pressure reducing stations to correct over-pressure conditions. The system will have new, properly spaced hydrants on new pipelines and add hydrants where needed to improve hydrant spacing on the existing pipelines. This solves the pressure zone issues with the existing distribution system, solves the fire hydrant spacing issue, and will be part of any future expansion work to allow the City to meet the projected drinking water demands of the year 2030 population. The City will be able to meet the requirements of the design fire flow and duration. The project includes new transmission pipeline to provide water and firefighting service to the Challis Airport.
- **Metering.** The project will replace all the meters in the City with new automated meter read (AMR) equipment. This allows the City to read every meter every month, reduce the staffing requirements to bill for water, increase the accuracy of that billing, take the first steps to recover water loss in the system. Currently the water loss is estimated at 4 percent as identified by

⁶ Corey Rice, City of Challis Water & Wastewater Superintendent, Judicial Confirmation Testimony, January 17, 2014.

⁷ Idaho Rules for Public Drinking Water Systems - IDAPA 58.01.08.003.25

⁸ *Ibid.*, Section 542.09

⁹ EID Appendix A, Challis Water System Facility Plan with Supplementary Information, *loc.cit.*, Section 3.8 Pressure Zone and Problems, page 36.

¹⁰ *Ibid.* Section 3.5, page 35&36.

¹¹ *Ibid.* Section 4.4 Future Conditions without Proposed Improvements, page 43.

¹² Donald G. Acheson, P.E., Judicial Confirmation Testimony, January 17, 2014.

Idaho Rural Water Association (IRWA). Due to the lack of accurate water meters the actual quantity of loss is currently unknown and expected to be much greater than the 4% mentioned in the IRWA report, and provide the data needed to do a water audit.

- Telemetry. The project connects the City's key facilities into an integrated network that provides enhanced supervisory control and data acquisition (SCADA). Key facilities include the existing groundwater wells and East and West Reservoirs. Telemetry will provide better security for the drinking water system, and City staff will be able to access the SCADA system remotely to evaluate and respond to alarm conditions.

3. ALTERNATIVES, INCLUDING THE PROPOSED PROJECT

The basis for the Proposed Project comes from Recommended Project 1(RP1) adopted by the City Council. The Proposed Project is a refinement of RP1 and addresses health and safety concerns of the water system. Please see the approved Water System Facility Plan, especially Section 5 starting on page 46, for more details about the various project alternative analyzed leading to RP1 and the Proposed Project. Sections 3.1 through 3.3 briefly summarize those alternatives as they apply to the key elements of the Proposed Project. The key elements are: distribution system improvements, re-metering, and telemetry.

Please note that one of the most important health and safety elements of RP1 is the replacement of its surface water source with new groundwater well(s). Source water development is being accomplished through Custer Soil and Water Conservation District (CSWCD) through a MOU with the City of Challis, and is not part of the Proposed Project.

3.1 Source Water Alternatives

Discussion

The Plan reviewed the City's drinking water sources in Section 3.3 Existing Sources, Distribution System & Treatment, starting on page 25. Section 4.4 Future Conditions without Proposed Improvements, starting on page 43 concludes that developing new groundwater source(s) to replace the surface water source is a criterion of the City that cannot be met without an improvement project¹³. The Plan evaluated source water alternatives for estimated costs¹⁴, recommended groundwater development¹⁵, and justified this alternative¹⁶. All of the groundwater alternatives include piping, metering and standby emergency generators.

A brief overview of the alternatives considered in the Plan is as follows:

Alternative 1- Source Water, No Action. This alternative would be to continue using water from the Garden Creek surface source, and continuing to use the two existing wells (East Well & West Well #2) with no improvements included in this project.

Alternative 2 - Source Water, West Well #1 Renovation and Drilling a New Well in the Salmon River Aquifer. West Well #1 located in the Garden Creek aquifer system, was damaged in the 1983 earthquake and is no longer producing water. Alternative 2 would consist of videoing the well to determine what happened to the well, re-drilling and most likely re-casing the well. West Well #1 if recovered is expected to produce approximately 600 gallons per minute (GPM). Well log information from the drilling of West Well # 1 indicates that this well was drilled into hydrothermally altered

¹³ EID Appendix A, Challis Water System Facility Plan with Supplementary Information, loc. cit., #5 & #7.

¹⁴ Ibid. Appendix D Chart "Microsoft Word - 1668 - Source Water Projects Matrix EXHB"

¹⁵ Ibid. Section 7, page 53

¹⁶ Ibid, Section 7.1.1, page 54, and Section 7.1.2, page 55.

rocks. Along with gold, hydrothermally altered rocks often bear the minerals: iron, copper, nickel, cobalt, manganese, molybdenum, mercury and arsenic, any of which could contribute to poor water quality. The City used this well until it failed. All water quality tests during this period met drinking water quality standards. The City has continued to run this well periodically since the failure. All water quality tests still show water from the well meets drinking water standards¹⁷. Under this alternative, either another well would have to be drilled in the Salmon River Aquifer, or the City would need to continue to use at least 600 GPM from Garden Creek surface waters.

If the well can be renovated, and another well drilled into the Salmon River Aquifer, the Garden Creek surface water right would be retained by the City, possibly banking the water with Natural Resource Conservation Service (NRCS) to augment current water flows in Garden Creek.

Alternative 3 - Source Water, Drilling Two New Wells in the Salmon Aquifer System. Alternative 3 would consist of drilling two new 12" finished diameter 300' to 400' depth wells in the Salmon Aquifer and pumping all the water about 6000 lineal feet to the East and West Reservoirs. Each well is expected to provide 600 GPM (a total of the 1,200 GPM). With the water from East Well #1 and West Well #2, the City would meet the 2,400 GPM needed.

Alternative 4 - Source Water, Retain Garden Creek Surface Water Source and Replace Existing Filtration System. Alternative 4 consists of retaining the Garden Creek surface water source and replacing the existing slow sand filtration system with a state of the art membrane filtration unit to provide added safety for the use of surface water. The existing slow sand filter uses chlorine disinfection for finished water and a new membrane plant would have to include chlorine or equivalent disinfection means. The slow sand filter technology used by the City for surface water treatment is effective against microbial contamination, but not against toxic chemicals dumped into Garden Creek. Feasibility and cost estimates indicate this option would be the most expensive solution for the City of Challis.

Alternative 5 - Source Water, Drilling a New Well in the Garden Creek Aquifer and a New Well in the Salmon River Aquifer. Alternative 5 consists of drilling and constructing a new 12" finished diameter, 600' to 700' depth well into the Garden Creek Aquifer. The new well would be located on City property near the slow sand filter site, and is expected to produce about 600 GPM. A new 12" finished diameter, 300' to 400' well would be drilled in the Salmon River Aquifer. Combining the water in this manner is expected to produce a total of 2,400 GPM. If these wells are constructed, the Garden Creek surface water right would be retained by the City, possibly banking the water with NRCS to augment current water flows in Garden Creek. The existing slow sand filter system would be retained.

As stated previously, the groundwater source development is being handled through a memorandum of agreement (MOA) between the City of Challis and Custer Soil and Water Conservation District (CSWCD). The permitting and construction are not part of this EID and revision, and will not involve DEQ. For more information, please contact:

Karma Bragg
District Manager
Custer Soil and Water Conservation District
1258 Pleasant Avenue

¹⁷ Corey Rice, City of Challis Water & Wastewater Superintendent, conversations during the facility planning study, 2011-2012.

Conclusions

1. The City is proceeding with groundwater development with another funding partner and engineer. It is not part of the Proposed Project.
2. The Plan shows that developing new groundwater sources to replace the surface water source is the preferred alternative for the range of alternatives presented, including "Do Nothing".
3. To the extent we know, the work by CSWCD appears to be commensurate with the Plan findings.
4. To the extent we know, the long term environmental effects of this related project should be positive and that the mitigation measures employed by CSWCD will be developed to address short term effects during construction.

3.2 Distribution System

Discussion

The Plan reviewed the City's distribution system in Section 3.3 Existing Sources, Distribution System & Treatment, starting on page 25. Section 4.4 Future Conditions without Proposed Improvements, starting on page 43 concludes that distribution system improvements are a criterion of the City that cannot be met without an improvement project¹⁸. The Plan presented distribution system alternatives with estimated costs¹⁹, recommended the distribution system improvements in RP1²⁰, and justified this alternative²¹. All of the distribution system improvements will use existing crossings on Garden Creek. Please see the map in Appendix E. The extent of road repairs for new pipelines will be limited to patching existing pavement.

A brief overview of the alternatives considered in the Plan is as follows:

Alternative 1 - Distribution System, No Action

This alternative would be to use the existing water distribution system with no improvements. Fire protection in the Butts Subdivision would remain inadequate and the City will not be able to provide adequate fire response flows in other areas due to the use of existing old and dead end water mains, and small diameter 4-inch un-looped lines. The old, improperly spaced hydrants connected to 4-inch water mains would remain as is. The "Old Town" section of Challis will continue to be served by a piping system of unknown materials and quality. Finally, any extension of service to the airport, fairground, county yards or any new developments cannot be considered using the current distribution system.

Alternative 2 - Distribution System

Alternative 2 would consist of upgrading the Old Town piping system from 4" to 6" mains, installing valves, hydrants pressure reducing valves (PRV) and the associated road repairs, extending 6" mains, hydrants, PRVs and associated road repairs to Butts Subdivision and extending service to the airport and fairgrounds via the Clinic Road route. Future build out could be accommodated using this system.

¹⁸ EID Appendix A, Challis Water System Facility Plan with Supplementary Information, loc. cit., #s 1, 2, 6, 9, 10, 11.

¹⁹ Ibid. Appendix D Chart "Microsoft Word - 1668 -Distribution System Projects Matrix EXH REV 3MAY11"

²⁰ Ibid. Section 7, page 53

²¹ Ibid, Section 7.1.1, page 54, and Section 7.1.2, page 55.

Alternative 3 - Distribution System

Alternative 3 would consist of upgrading the Old Town piping system from 4" to 6" mains, installing valves, hydrants PRV and the associated road repairs, extending 6" mains, hydrants, PRV, and associated road repairs to Butts Subdivision and extending service to the airport and fairgrounds via the proposed Butts route. Future build out could be accommodated using this system. This alternative would produce a longer piping route but would result in a fully looped system with no dead end lines.

Alternative 4 – Proposed Project (Preferred Alternative), Distribution System

Alternative 4 would consist of upgrading the Old Town piping system from 4" to 6" mains, installing valves, hydrants, pressure reducing stations, and associated road repairs. Alternative 4 includes 6" mains, hydrants, pressure reducing stations, fire line extension to the airport, fire loop at the airport, and associated road repairs to the airport.

The Proposed Project, which derives from RP1, limits distribution system improvements to the Old Town and water line extension to the airport. The major features of the Proposed Project distribution system improvements are presented in Section 4.2 that follows further on, in the EID.

Conclusions

1. The Proposed Project, alternative 4, derives its distribution system improvements from RP1 as discussed in the approved facility plan.
2. The distribution system improvements in the Proposed Project address health and safety issues, as described in EID Section 2, Purpose and Need.

3.3 Metering and Telemetry

Discussion

The Plan reviewed the City's metering system based on discussions with City Staff. Section 4.2 of the Plan, starting on page 41, addresses upgrading the meters that were installed in the 1980s with new automated read equipment. Plan Section 4.3, Needed Drinking Water Facilities for 20-year Horizon, starting on page 42 discusses the existing water meter age, lack of accuracy, non-reading meters²². Section 4.4 Future Conditions without Proposed Improvements, starting on page 43 concludes that metering improvements are a criterion of the City that cannot be met without an improvement project²³. The Plan identifies re-metering as a problem/deficiency that needs to be addressed²⁴, needed for optimum operation²⁵, and is part of the selected project, alternative 4, addressed in the Plan, RP1²⁶. The alternatives for replacing the meters are "Do Nothing" or make different amounts of replacements, with and without automated read equipment.

The Proposed Project, alternative 4, which derives from RP1, will replace all the water meters in the system with drive by-type automated read equipment²⁷. The Proposed Project will reuse where possible meter boxes and setters. The major features of the Proposed Project metering improvements are presented in Section 4.2 that follows further on in the EID.

²² Ibid. Section 4.3, page 42, Facility-Need-Discussion Table

²³ Ibid. Section 4.4, page 44, items #6& 10.

²⁴ Ibid. Section 5.2, page 47, item #8

²⁵ Ibid. Section 5.3.4, page 49

²⁶ Ibid. Section 7.1.1, page 55

²⁷ Ibid Section 7.2.3, page 57

The Plan reviews the City's control system and uses the terms "Telemetry", and "Telemetry/SCADA" throughout the document. Telemetry was defined as one of the 5 main study foci²⁸, one of the needs of the City for assessment of threats and response to problems²⁹, one of the 11 criteria of a potential capital improvement project³⁰, and a problem or deficiency³¹. The alternatives for telemetry are "Do Nothing" or make various improvements³². Telemetry is part of the selected project, alternative 4³³.

The Proposed Project, which derives from RP1, will augment the existing City controls with additional monitoring of the City water storage reservoirs, drinking water wells, and other key monitoring points in the City³⁴. The major features of the Proposed Project telemetry improvements are presented in Section 4.2 that follows further on in the EID.

Conclusions

1. The Proposed Project metering and telemetry elements are based on the alternatives reviewed by the City and accepted as part of the selected project, alternative 4.
2. Metering does directly affect the health and safety of the community, but does involve the issue of fairness in the equitable assessment of the costs and fees of operating and maintaining the drinking water system. Those citizens with non-recording or under-recording meters are not paying a fair share, while those with over-recording meters are being overcharged. Telemetry elements used either to prevent threats or provide a more timely notice of an incursion are a health and safety issue for the community.³⁵
3. Telemetry/SCADA improvements are a needed health and safety issue for the City.

3.4 The Proposed Project - Apparent Best Alternative

Discussion

The Plan presented an evaluation of costs both on preliminary and final alternatives. The final alternative cost evaluations use and equivalent uniform annual cost (EUAC) method which is a derivative of Present Work Analysis. EUAC presents an annualized cost based on capital cost of improvements and its financing, the replacement frequency or life of the improvements, the impact of the improvements on operation and maintenance, and current electrical costs based on the rate structure of the local utility. The Preferred Alternative has the least Equivalent Uniform Annual Cost and is therefore the best economic choice for the City. Based on the EUAC, Challis City Council selected Recommended Project 1 on August 9, 2011. The EUAC evaluations are in Appendix D, Charts, of the Plan.

All the elements of the Proposed Project derive from the process by which the City of Challis selected Recommended Project 1. The Proposed Project differs from RP1 in that it has a scope that focuses on health and safety issues, does not address infrastructure for growth, and does not address source water. It is a prudent implementation of the findings of the Plan³⁶. As stated previously, the City has another funding partner and engineer pursuing groundwater development. In summary:

²⁸ Ibid. Section 2.1, page 10

²⁹ Ibid. Section 4.3, page 42, Table item #9

³⁰ Ibid. Section 4.4, page 44, criteria #6&10

³¹ Ibid. Section 5.2, page 47, Table item #9

³² Ibid. Appendix D Charts.

³³ Ibid. Section 7.1.1, page 55

³⁴ Ibid. Section 7.2.4, page 57

³⁵ Donald G. Acheson, P.E., Judicial Confirmation Testimony, January 17, 2014.

³⁶ EID Appendix A, Challis Water System Facility Plan with Supplementary Information, loc. cit., Section 8.1, page 59

- Source Water. The Proposed Project does not address source water issues.
- Distribution System. The Proposed Project includes all the modeled pipeline changes. It serves as the basis to meet the year 2030 design population demands. Pressure zones will be established with new pressure reducing stations and isolation valves. The system will have new, properly spaced hydrants on the proposed pipelines and add hydrants where needed to improve hydrant spacing in Old Town. This alternative solves the pressure zone issues with the existing distribution system, the fire hydrant spacing issue, and allows the City to meet the projected drinking water demands of the year 2030 population. It also includes new transmission pipeline to provide water for fire-fighting service to the Challis Airport and will meet the requirements of the design fire flow and duration.
- Metering. The Proposed Project replaces all the meters in the City with new AMR equipment. This alternative allows the City to read every meter every month, reduce the staffing requirements to bill for water, increase the accuracy of that billing, take the first steps to recovering the estimated 4 percent lost water identified by Idaho Rural Water, and provide the data needed to do a water audit.
- Telemetry. The Proposed Project connects the City's key facilities into an integrated network that provides enhanced supervisory control and data acquisition (SCADA). Telemetry will provide better security for the drinking water system, and City staff will be able to access the SCADA system remotely to evaluate and respond to alarm conditions. This alternative improves the operation and security of the drinking water system.
- The Proposed Project addresses the most significant City concerns while keeping costs at a minimum.
- There are fewer environmental impacts under for the Proposed Project due compared to the alternatives discussed in the previous section due to less disturbed ground for pipeline replacement and new pipe installation. The statement of “less disturbed ground” excludes the “No Action” alternative which does not install any new pipe or replace any old pipe. The Proposed Project does not include laying pipe for future development. Pipeline construction will take place in existing roads and rights-of-way.
- RP1 at \$8M had the lowest EUAC of all the alternatives reviewed by the City in the Plan. The Proposed Project, alternative 4, has an even lower estimated construction cost of a little over \$3.0M.

4. AFFECTED / EXISTING ENVIRONMENT

The City of Challis is located within north central Custer County, in central Idaho. The City is situated on the alluvial fan created by Garden Creek, within Round Valley, with the mountainous Sawtooth Recreational District to the south, the Challis National Forest to the West and the Salmon National Forest to the North. The northerly flowing Salmon River bounds the area on the east. Elevation ranges from about 5,100' to 5,400' above mean sea level. Central Challis is located at Latitude 44° 30' 17.76" N and Longitude 114° 13' 55.44' W.

4.1 Proposed Project Planning Area and Area of Potential Effect

The Proposed Project Planning Area (PPPA) described in the Challis Water System Facility Plan encompasses about 2,048 acres or 3.2 square miles. About 60 percent of the planning area is within the existing City limits. This area, which goes beyond the City Limits, was included to assure any potential environmental impacts of the project would be covered no matter what alternative was chosen. Any capital improvement project accepted by the City will occur within this study boundary. The boundary is also the footprint of the environmental document. The boundaries of the PPPA are shown by the blue dotted lines on the map located in Appendix E. There is an additional map that includes a re-defined area showing the extent of the actual project the City will undertake. The border of the actual project area is

highlighted in yellow. The Area of Potential Effect (APE) is the same size as the PPPA. The APE does not include downstream sections of Garden Creek or the Salmon River as there will be no work within the creek or the riparian area adjacent to the creek. Please note that the sizes of the planning areas are estimates and not based on actual survey.

Key topographic and geographic features in the PPPA are foothills to the north and the south and Garden Creek flowing from the west to the east, with the Garden Creek delta to the east, west of the Salmon River. The population served is 1,073 with the majority of residences and businesses south of Garden Creek in Old Town. Industrial and commercial features in the PPPA include the Airport, varied small businesses, restaurants and hotels, Challis High School and Challis Elementary School.

4.2 Major Features of Project

Distribution System Major Features:

- Transmission pipeline to the Challis Airport for fire flow.
- Looped fire line at the Airport.
- Elimination of pipeline dead ends in Old Town.
- Replacement of all old 4-inch with 6 inch pipe in Old Town system pipes.
- Addition of fire hydrants in the Old Town system to improve spacing.
- New fire hydrants with new transmission lines.
- Ability to convey design year demand flows with fire flow to all areas of the City.
- New pressure zones that extend throughout the system.

Distribution System Changes:

The following table shows the elements of proposed upgrades to the distribution system. All existing 4-inch pipes in the system will be replaced with 6-inch minimum mains. Quantities are estimates.

Table 3 Elements of the Distribution System Upgrades

DIAMETER AND DESCRIPTION	TOTAL ESTIMATED LENGTH(FEET)
Old Town: 6-Inch Replacing Existing 4-Inch	13,000
Old Town: New Hydrants	52
Old Town: Pipeline Fittings	65
Old Town: Pressure Reducing Station	3
Old Town: Replacement Residential and Commercial Meters	787
<hr/>	
New Airport: 6-Inch Fire Line Loop	2,000
New Airport: New Hydrants	8
New Airport: Pipeline Fittings	10
New Airport: Residential and Commercial Meters	5
<hr/>	
8-Inch Fire line Extension to the Airport	6,000
8-Inch Fire line Extension to the Airport: New Hydrants	24
8-Inch Fire line Extension to the Airport: Fittings	30
8-Inch Fire line Extension to the Airport: Pressure Reducing Stations	2
8-Inch Fire line Extension to the Airport: Meters	0

Proposed Design Criteria:

- Idaho Rules for Public Drinking Water Systems. (IDAPA 58.01.08)
- Idaho Standards for Public Works Construction, most recent edition.
- American Society for Testing and Materials (ASTM) / American Water Works Association (AWWA) Standards such as C651, C654.
- Conforming construction standards from the City of Challis.
- System network design to provide fire flow for the design year 2030, during peak day/peak hour demand, with no location in the system dropping below 20 pounds per square inch (PSI).
- Minimum design year peak day/peak hour pressure 40 PSI.
- Maximum design year peak day/peak hour pressure 90.

Metering Major Features:

- Replace all residential meters with new 5/8 x 3/4 inch, automated read meters. Reuse existing meter setters and meter boxes.
- Replace all commercial meters larger than 5/8 x 3/4 inch with automated read meters.
- Equip the City with a vehicle mounted receiver and laptop computer to read the meters in "drive-by" mode.
- Equip the City with software to process meter reading data to work with either the City's existing billing, or provide new software billing.
-

Proposed Design Criteria:

- Idaho Standards for Public Works Construction, most recent edition.
- AWWA/ASTM C700-713.
- Manufacturer's recommendations

Telemetry Major Features:

- Provides enhanced SCADA for key system elements like wells, and East & West reservoirs.
- Provides better security for the drinking water system.
- City staff will be able to access the SCADA system remotely to evaluate and respond to alarm conditions

Proposed Design Criteria:

- Proprietary and public domain design criteria.
- AWWA/ASTM G200 & G4.

4.3 Regional Plan

The drinking water project does not fit into a regional plan.

4.4 Schedule of Construction

Please note that there are numerous issues involved with estimating a progress schedule that are beyond our control. Our current best projection is:

Table 4 Schedule

TASK	WORK DESCRIPTION	Duration
Pre-Design Phase (can be concurrent)		
EID	Updates, revisions and approval	1 month
Bonding	Judicial review and approval to incur debt	2 month
Loan	Finalize SRF loan application with DEQ	1 month
Loan	SRF loan award, conditions and commitments	1 month
Engineering	Finalize fee and scope for project design & construction	1 month
Pre-Design Phase Duration (4 months)		
Design and Bidding Phase		
Engineering	Water system improvement design	4 months
Agency	DEQ design review and approval	2 months
Construction	Bidding, DEQ concurrence, Notice of Award	1 month
Construction	Contract documents, DEQ concurrence, pre-construction meeting, and Notice to Proceed	1 month
Design and Bidding Phase Duration (8 months)		
Construction Phase		
Construction	Project construction	4 months
Construction	Substantial completion and project closeout	1 month
Construction Phase Duration (5 months)		

4.5 Flow Projections and Sources

The approved facility plan addresses existing and future flows for the City. More details for the table that follows can be found in the DEQ approved facility plan in Section 3.3.3.5 starting on page 32, Section 4.1 starting on page 41, and in Appendix D of the facility plan in the chart titled “How Much Water Do We Need”.

Table 5 Flow Projections

PERIOD	POPULATION	EDU	PEAK DAY FLOW - MG	GALLONS PER DAY PER EDU
2010	906	984	1.9 MG	1,892
2030	1,250	1,358	2.57 MG	1,892
2050*** Estimated	1,250	1,358	2.57 MG	1,892

The facility plan was approved with a 20-year design window for a design year of 2030. The Plan uses the year 2030 as the maximum population for the City of Challis³⁷. 1,250 persons is the projection for the 40 year projections for the distribution system.

³⁷EID Appendix A, Challis Water System Facility Plan with Supplementary Information, loc. cit., Section 4.1, page 41.

4.5.1 Contribution of Flow:

The approved facility plan addresses flow contributions in Section 3.3.3.3 Analysis of Storage and Response - East & West Reservoir, starting on page 29. The following is a portion of that section:

The West Reservoir directly supplies the upper and a small portion of the mid Cyprus pressure zone around Summit Circle and Blue Mountain Road. West Reservoir also connects to the East Reservoir as a backup supply. Flow to the East Reservoir from West Reservoir is governed by a float valve. The proportioning of usage between West Well 2 and the East Well to meet the total Cyprus system demand is an operational procedure managed by City staff. The East Reservoir directly supplies the lower Cyprus pressure zone and the remainder of the Mid Cyprus zone.

Table 2 in Appendix A (of the Facility Plan) shows how the water system connections and system Equivalent Dwelling Units(EDUs) are distributed in the Upper, Mid, and Lower Cyprus zones as well as the Old Town system.. A summary of Table 2 values follows below:

- *Total system from Challis Rate Study - 789 Connections, 984 EDUs.*
- *Hydraulic Model Lower Cyprus East Reservoir (LCER) - 136 residential connections, 7 commercial EDUs, total 143 EDUs.*
- *Hydraulic Model Mid Cyprus East Reservoir (MCER) - 163 residential connections, 40 commercial EDUs, total 203 EDUs.*
- *Hydraulic Model Old Town System (OTS) - 329 residential connections, 162 commercial EDUs, total 491 EDUs.*
- *Hydraulic Model Upper Cyprus West Reservoir (UCWR) - 126 residential connections, 28 commercial EDUs, total 157 EDUs.*

The term EDU as used in the approved Plan and in the EID does not mean “ the amount of water provided to the average single family detached housing unit within the water system” as typically understood, but rather 1 EDU = 1 Challis residential water connection based on a 5/8 x 3/4 inch meter service. Other meter sizes have different EDU values. See Appendix C (in the Facility Plan) for City Water Rates and Meter Sizes.

4.5.2 Identification of Related Problems:

The approved facility plan addresses several problems in detail throughout the document. A summary of the analysis scope is found in Section 1 Facility Plan Summary starting on page 5 of the plan. The problems include: inability to provide fire flow at peak hour demand, reliance on a surface water treatment system that is subject to contamination from an unprotected watershed, fire hydrants on 4-inch mains, failing 4-inch mains, improper spacing of fire hydrants, water rights, and inability of the system to meet peak hour demand if one source becomes inoperable.

4.6 Characterization of Environmental Features

4.6.1 Topography, Geology and Soils

The City is situated on the alluvial fan created by Garden Creek, within Round Valley, with the mountainous Sawtooth Recreational District to the south, the Challis National Forest to the West and the Salmon National Forest to the North. The northerly flowing Salmon River bounds the area on the east. Elevation ranges from about 5,100' to 5,400' above mean sea level. The topography within Challis is generally level to gently sloping toward the east, although steep slopes bound the valley to the north, west

and south. The Salmon River and associated floodplain lie to the east. The project lies almost entirely within the area mapped as the Whiteknob-Zer Complex soils. These soils are considered to be prime farmland if irrigated. See the Soil Survey Map in Appendix B. Since most of the project is system replacement in areas where the existing system has been located for years and the new construction will be in the same soil type there should be no adverse effects due to physical conditions.

4.6.2 Climate

The climate in Challis is semi-arid with cold winters and hot summers. The warm season lasts from mid-June to mid-September with an average daily high temperature above 74°F. The cold season lasts from mid-November through February with an average daily high temperature below 39°F. The area receives between 0.34 and 1.2 inches of precipitation per month with most of the precipitation in the spring and summer. The elevation is 5,288 feet above mean sea level. The frost depth is approximately 30 to 36 inches. (Western Regional Climate Center www.wrcc.dri.edu/summary/climsmid.html accessed on 12/17/13.) Proposed pipelines will be located approximately 6 feet deep approximately 3 feet deeper than the average frost depth so there is no effect on project design. Construction season is typically considered to be April through November in the area.

4.6.3 Population Served

Water service is currently provided by City of Challis. As of 2010, the City of Challis had 794 water service connections, supplying a population of about 1,081. Residences outside of the City of Challis service area rely on wells and surface water diversions.

The DEQ approved Challis Water System Facility Plan used two methods to predict the population for the 20-year design for treatment facilities and 40-year design for distribution systems. To summarize the analysis, the City and REI determined that the best projection was to use the peak population during the 1980s mining boom, which was 1,250 persons. This number reflects the City's existing service obligations that have been dormant since the boom ended. The projected growth is less than 500 residential units. So, there is no projected population increase over the historic peak of 1,250 persons, and the project will not promote "excessive growth".

4.6.4 Economics and Social Profile

The population of Challis from the 2010 Census is 1,081. The population is 93.6 percent white, 7.2 percent Hispanic, 0.8 percent American Indian/Alaska Native and 0.1 percent African American. The population is 45 percent female and the median age is 44.7 years and 55 percent male median age 39.6 years. The median household income is \$25,833.00.

The most common industries in Challis are mining, quarrying, educational services, construction, accommodation and food services, agriculture, forestry, fishing and hunting, public administration, food and beverage stores. The major employers in Custer County are the Challis & Mackay Joint School District #181 & #182, Custer County, Idaho & U.S. Government (BLM, F&G, and USDA), Lamb's Foodtown, The Village Inn, Thompson Creek Mining Company and Village Square.

The project is not designed to disproportionately advantage any community group above any other community group. The project costs would be born equally by each EDU. Executive Order 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations, signed by the President on February 11, 1994, directs Federal agencies to identify and address disproportionately high and adverse human health and environmental effects, including the interrelated and social and economic effects of their programs, policies and activities on minority and low-income populations in the United States. No minority or low-income populations have been identified that would be adversely impacted by the proposed project as determined

above. This project will not have disproportionately high or adverse effects on minority or low income populations per Executive Order 12898.

4.6.5 Land Use

Of the 3,152,384 land acres in Custer County the Federal government owns 93 percent. The USFS owns 2,123,710 acres and the BLM owns 813,965. The State of Idaho owns 1.7 percent of the County's acres including 52,626 Endowment land acres, 1,253 Fish and Game acres and 22 Park and Recreation acres. Cities and the County own less than 1 percent of the land. Private land is 5 percent of the total at 158,503 acres. The Bureau of Land Management has most of its land in the Pahsimeroi, Little Lost River, Salmon, and Big Lost River Valleys. State of Idaho Lands is scattered throughout BLM land. Private land is concentrated around the major roads and near or within cities.

The project is compatible with land use within Challis and will have only favorable impacts on the local population. The project is not expected to stimulate any new development or change current land use practices.

4.6.6 Floodplain Development

The Flood Insurance Rate Map (FIRM) for the project area is in EID Appendix B. The area directly adjacent to Garden Creek including parts of North Avenue and a small portion of Main Street between Second and Third Streets are within the 100 year flood Zone A – No Base Flood Elevation (BFE) Has Been Determined. The northern part of the project area is in Zone X – Areas Determined to be Outside the 500 Year Flood Plain. The National Flood Insurance Program (NFIP) has established the 100-year flood as the basis for determining minimal land use measures for construction of new facilities or substantial improvements to existing development in flood hazard areas. Water treatment facilities will not be constructed in the flood plain, however, water lines will cross underneath it at certain points. The water lines will not change the floodplain elevation. Some of the system components will be constructed in the mapped flood plain. Mitigation measures are in Section 5.1.

4.6.7 Wetlands

The project site was visited and a wetland determination was made by Denise Stark of North Wind. It was found that because there was no hydrology or hydrophytic vegetation, there are no wetlands in areas where construction and/or excavation will take place. The NWI map is attached in Appendix B. There is wetland vegetation along Challis Creek Road and along Garden Creek, outside the APE which will be marked on project maps as retain and protect. Mitigation measures are in Section 5.2.

4.6.8 Wild and Scenic Rivers

The local reach of the Salmon River is not designated as Wild and Scenic. The Salmon River is designated Wild and Scenic for 125 miles from the North Fork west to Long Tom Bar. The project is located in the Salmon River watershed approximately 65 miles south of the reach designated Wild and Scenic (www.rivers.gov accessed 11/5/13). See map in Appendix B.

4.6.9 Cultural Resources

The City of Challis lies at the boundary of three distinct cultural areas: the Plains, the Great Basin and the Columbia Plateau. The area contains 495 known, recorded cultural resource sites which represent a variety of types and chronological time periods. Together these sites document an almost continuous human occupation of the area from at least 11,000 years ago to the present. Historic sites in this area include historic mining districts, stage and freight road remnants, homesteads, cabins and dumps. The City of Challis has two National Historic Districts, the Old Challis Historic District and the Challis Brewery Historic District. Historic places in Challis are listed in Table 6, below.

Table 6 National Register of Historic Places listings in Challis, Custer County, Idaho

LANDMARK NAME	DATE LISTED	LOCATION	CITY
6w/Horse	March 15, 1976	South of Challis off U.S. Route 93 44°23'52"N, 114°18'42"W 44.39778°N, 114.31167°W	Challis
Boards-and-Batten Commercial Building	December 3, 1980	Main Ave. 44°30'19"N, 114°14'9"W 44.50528°N, 114.23583°W	Challis
Building at 247 Pleasant Avenue	December 3, 1980	247 Pleasant Ave. 44°30'13"N, 114°14'10"W 44.50361°N, 114.23611°	Challis
Buster Meat Marker	December 3, 1980	321 Main Ave. 44°30'17"N, 114°14'06"W 44.50472°N, 114.23611°W	Challis
Bux's	December 3, 1980	321 Main Ave. 44°30'17"N, 114°14'06"W 44.50472°N, 114.235°W	Challis
Challis Archeological Spring District	February 12, 1981	Address Restricted	Challis
Challis Bison Jump Site	September 5, 1975	Address Restricted	Challis
Challis Brewery Historic District	February 5, 1980	Challis Creek Rd. 44°30'28"N, 114°13'38"W 44.50778°N, 114.22722°W	Challis
Challis Cold Storage	December 3, 1980	Main Ave. 44°30'19N, 114°14'07"W 44.50528°N, 114.23528°W	Challis
Challis High School	December 3, 1980	Main Ave. 44°30'17"N, 114°13'52"W 44.50472° N, 114.23111°W	Challis
Bill Chivers	December 3, 1980	3rd St. 44°30'21"N, 114°14'07"W 44.50583°N, 114.23528°W	Challis
Thomas Chivers Cellar	December 3, 1980	Challis Creek Rd. 44°30'27"N, 114°13'34"W 44.5075°N, 114.22611°W	Challis
Thomas Chivers House	December 3, 1980	Challis Creek Rd. 44°30'27"N, 114°13'52"W 44.5075°N, 114.23111°W	Challis
Custer County Jail	December 3, 1980	Main Ave. 44°30'18"N, 114°13'49"W 44.505°N, 114.23028°W	Challis
False-Front Commercial Building	December 3, 1980	Main Ave. 44°30'17"N, 114°14'09"W 44.50472°N, 114.23583°W	Challis

LANDMARK NAME	DATE LISTED	LOCATION	CITY
Emmett Hosford House	December 3, 1980	3rd St. 44°30'22"N, 114°14'07"W 44.50611°N, 114.23528°W	Challis
Independent Order of Odd Fellows (IOOF) Hall	December 3, 1980	Main Ave. 44°30'17"N, 114°13'59"W 44.50472°N, 114.23306°W	Challis
McKendrick House	December 3, 1980	4th St. 44°30'12"N, 114°14'03"W 44.50333°N, 114.23417°W	Challis
Old Challis Historical District	December 3, 1980	Bounded by Valley and Pleasant Aves and 2nd and 3rd Sts. 44°30'13"N, 114°14'10"W 44.50361°N, 114.23611°W	Challis
Bill Peck House	December 3, 1980	16 Main Ave. 44°30'18"N, 114°14'17"W 44.505°N, 114.23806°W	Challis
Penwell House	December 3, 1980	North Ave. 44°30'23"N, 114°13'50"W 44.50639° N114.23056°W	Challis
Donaldson Rowles House	December 3, 1980	North Ave. 44°30'22"N, 114°13'23"W 44.50611°N, 114.22306°W	Challis
Stone and Log Building	December 3, 1980	Pleasant Ave. 44°30'16"N, 114°14'06"W 44.50444°N, 114.235°W	Challis
Stone Building	December 3, 1980	3rd St. 44°30'20"N, 114°14'07"W 44.50556°N, 114.23528°W	Challis
Twin Peaks Sports	December 3, 1980	Main Ave. 44°30'20"N, 114°13'59"W 44.50556°N, 114.23306°W	Challis
Clyde Wilkinson House	December 3, 1980	9th St. 44°30'25"N, 114°13'46"W 44.50694°N, 114.22944°W	Challis

The revised project planning map shows 2 areas for pipeline line work. Area #1 is the Old Town portion of the City. This area is scheduled for pipeline replacement of old water mains and hydrants. Construction will take place in the existing streets and alleyways. No new ground will be disturbed.

Area #2 lies north of Garden Creek and includes all the elements for the airport extension. The revised project map shows 8 areas where existing pipelines will be upgraded or new mains will be installed. All of the alignments are in existing roadways and or road rights-of-way. No new ground will be disturbed. No Historic Properties will be directly or indirectly impacted by the project completed correspondence and responses from SHPO may be seen in Appendix D.

Temporary mitigation during construction will be necessary. Mitigation measures are in Section 5.3. Consultation with Tribes was completed by DEQ. A response was received from the Shoshone_Bannock Tribe, however the Shoshone-Paiute tribe was non-responsive. In essence, if archeological artifacts (such as beads, arrow heads, pottery, fabric, grave goods, glass, metal fragments, or other human-made objects that

appear to predate 1960) or human remains (such as bones, bone fragments, or teeth) are inadvertently discovered during construction, ground disturbing activities shall cease and the State Historical Preservation Officer (SHPO), Shoshone-Bannock Tribe, and Shoshone-Paiute Tribe shall be notified. Mitigation measures will be implemented as directed by SHPO and the tribe(s), and work will not resume at the discovery site without their consent.

. A complete correspondence of the consultation requests and responses may be seen in Appendix D.

4.6.10 Flora and Fauna

The U.S. Fish and Wildlife Service Species List web site ECOS provides a list of endangered, threatened, proposed, and/or candidate species that may be present in the area of the proposed project. The list fulfills requirements for a species list under Section 7(c) of the Endangered Species Act (ESA) of 1973. The list is included in Appendix B. The site is relatively new and would not allow retrieval of a project specific species list. Instead a county wide species list was provided.

There will be no stream crossings associated with this project. The existing water system crosses under Garden Creek in 3 locations. One or more of those locations will be utilized for the system on the north side of the creek. The project site was visited and it was found that construction and/or excavation will not take place in wetlands or riparian areas. Therefore the project activities will not affect Garden Creek or any downstream waters.

County-wide Species List:

Whitebark pine (*Pinus albicaulis*)

Listing Status: *Candidate*

Whitebark pine is typically found in cold, windy, high elevation or high latitude sites in western North America and as a result, many stands are geographically isolated. It is a stress-tolerant pine and its hardiness allows it to grow where other conifer species cannot. Whitebark pine is considered a keystone species because it regulates runoff by slowing the progress of snowmelt, reduces soil erosion by initiating early succession after fires and other disturbances, and provides seeds that are a high-energy food source for some birds and mammals. There is no Whitebark pine habitat in the project area.

There are cottonwoods in the project area mainly in the entrenched creek bed. The area does not support a dense understory. Homes/yards in the area, in many cases, are directly adjacent to the creek bank. The project will not impact habitat for yellow-billed cuckoo. Because project activities are located within existing streets and alleyways and/or road rights-of-way there will be no impacts to fish and wildlife habitat, migratory routes, wintering or calving areas. Temporary mitigation during construction will be necessary. Mitigation measures are in Section 5.4.

Fauna in the area include:

Banbury Springs limpet (*Lanx sp.*)

Population: Entire Listing

Status: Endangered

Its conical, pyramid-shaped shell is red-cinnamon in color, ranges from .09 to .28 inch long, and is only .03 to .17 inch tall. The species is particularly sensitive to dissolved oxygen fluctuations. It requires cold, clear and well-oxygenated water with swift currents. Lanx are found on smooth basalt, boulders, or cobble-sized grounds ranging from 2 to 20 inches deep, but they avoid areas with green algae. Currently this species only exists at four cold-spring locations that are isolated from each other: Thousand Springs, Box Canyon Springs, Briggs Springs and Banbury Springs. There is no Banbury Springs limpet habitat in the project area.

Bliss Rapids snail (*Taylorconcha serpenticola*)

Population: Entire

Listing Status: Threatened

The Bliss Rapids snail (*Taylorconcha serpenticola*) has a very small ovoid/turbinated shell (approximately 0.08 to 0.16- inches long), with about 3.5 to 4.5 whorls (curls or turns in the shell). The shell is clear to white but appears to have two colors, very light tan to dark brown-red, which results in the “pale” and “orange” forms. The Bliss Rapids snail occurs in cold water springs and spring-fed tributaries to the Snake River, and in some reaches of the Snake River. The Bliss Rapids snail is primarily found on cobble boulder substrate, and in water temperatures between 59 and 61 degrees Fahrenheit. Recent surveys indicate the species is distributed discontinuously over 22 miles, from River Mile (RM) 547-560, RM 566-572, and at RM 580 on the Snake River (East of Twin Falls to Boise). The species is also known to occur in 14 springs or tributaries to the Snake River. The species does not occur in reservoirs. There is no Bliss Rapids snail habitat in the project area.

Snake River Physa snail (*Physa natricina*)

Population: Entire

Listing Status: Endangered

The Snake River physa snail (*Haitia (Physa) natricina*) is a freshwater mollusk found in the middle Snake River of southern Idaho. It has an ovoid shell that is amber to brown in color, and has 3 to 3.5 whorls. The physa can reach a maximum length of about 6.5 millimeters. The Snake River physa is believed to be confined to the Snake River, inhabiting areas of swift current on sand to boulder-sized substrate. . There is no Snake River Physa snail habitat in the project area.

Bull Trout (*Salvelinus confluentus*)

Population: U.S.A., conterminous, lower 48 states

Listing Status: Threatened

Has Critical Habitat: Final designated

Bull trout (*Salvelinus confluentus*) are members of the family Salmonidae. Compared to other salmonids, bull trout have more specific habitat requirements that appear to influence their distribution and abundance. They need cold water to survive, so they are seldom found in waters where temperatures exceed 59 to 64 degrees (F). They also require stable stream channels, clean spawning and rearing gravel, complex and diverse cover, and unblocked migratory corridors. There is no Bull Trout habitat in the project area.

Canada Lynx (*Lynx canadensis*)

Population: (Contiguous U.S. DPS)

Listing Status: *Threatened*

Has Critical Habitat: Final designated

The lynx is a medium-sized cat with long legs, large, well-furred paws, long tufts on the ears, and a short, black-tipped tail. The lynx’s long legs and large feet make it highly adapted for hunting in deep snow. The distribution of lynx in North America is closely associated with the distribution of North American boreal forest. Lynx are most likely to persist in areas that receive deep snow and have high-density populations of snowshoe hares, the principal prey of lynx. Early successional stands with high densities of shrubs and seedlings provide optimal habitat for snowshoe hares, making them important foraging habitat for lynx. Mature forests with downed logs and windfall provide denning, security cover, and travel corridors for lynx. There is no Lynx habitat in the project area.

North American wolverine (*Gulo gulo luscus*)

Listing Status: *Proposed Threatened*

Wolverines do not appear to occur in specific vegetation or geological habitats, but instead select areas that are cold and receive enough winter precipitation to reliably maintain deep persistent snow late into the warm season. Wolverines have large spatial requirements; the availability and distribution of food is likely the primary factor in determining wolverine movements and home range. There is no Wolverine habitat in the project area.

Yellow-Billed Cuckoo (*Coccyzus americanus*)

Population: Western U.S. DPS

Listing Status: *Proposed Threatened*

Size: 31 cm (12 in) in length. Color: Brownish above and white below; with rusty colored flight feathers. The upper mandible of the bill is black and the lower mandible is yellow. The underside of the tail has pairs of large white spots. The yellow-billed cuckoo prefers habitat with large stands of cottonwoods that have a dense understory consisting primarily of willows. There is no Yellow-billed Cuckoo habitat in the project area.

Greater sage-grouse (*Centrocercus urophasianus*)

Population: entire

Listing Status: *Candidate*

Greater sage-grouse are the largest grouse in North America. Males often weigh in excess of 4-5 pounds and hens weigh in at 2-3 pounds. Adult males have blackish-brown throat feathers which are separated by a narrow band of white from a dark V-shaped pattern on the neck. White breast feathers conceal 2 large, skin sacs (used in courtship displays) which are yellow-green in color. Males also have yellow eyecombs (obvious in the spring during courtship displays). Female sage grouse lack the specialized structures used for courtship displays but generally resemble males in coloration. However, in comparison to males, their throats are buffy with blackish markings and the lower throat and breast are barred which presents a blackish-brown appearance. Sage grouse require large undisturbed areas of sage brush. There is no Sage-grouse habitat in the project area.

4.6.11 Recreation and Open Space

The project will not eliminate or modify recreational open space, parks, or areas of recognized scenic value. There will be no environmental impacts and no mitigation is necessary.

4.6.12 Agricultural Lands

The project lies almost entirely within the area mapped as the Whiteknob-Zer Complex soils. These soils are considered to be prime farmland if irrigated. Although most of the project area overlies soils mapped as Prime Farmland if Irrigated, there will be no impacts to farmland. The area is already developed with no undeveloped areas large enough to farm. The project is staying within the existing right-of-way which would not be farmed regardless of project activities. Additionally, the APE is a small fraction of the available farmland with this designation. The only expansion of the system is to provide service to the Challis Municipal Airport, which will not increase capacity of the water system, nor does it promote population growth, this expansion is not expected to convert farmland to nonfarm uses. Existing land use practices will not change due to project activities. There will be no environmental impacts and no mitigation is necessary.

4.6.13 Air Quality

The City of Challis is not within an Idaho Department of Environmental Quality (DEQ) air quality area of concern (Air Quality map in Appendix B). DEQ was contacted and advised that the project will need to control fugitive dust, have no open burning, control odor, and properly dispose of solid waste. There will be direct, temporary adverse impacts to air quality which will be mitigated during construction.

Mitigation measures are in Section 5.5

The installation of emergency generator(s) as backup energy supply for new water sources will have to comply with the new water National Emission Standards for Hazardous Air Pollutants for Reciprocating Internal Combustion Engines.

4.6.14 Water Quality Issues

Groundwater will not be affected as no new wells will be drilled as part of this project. The project does not overlie the Eastern Snake River Plain Sole Source Aquifer or its stream flow source area. The project will not impact water rights or source water area for the public drinking water system as the source is not changing. There are no new crossings of Garden Creek and no work in the Creek or adjacent riparian area. There is potential for direct, temporary adverse impacts to Water Quality which will require mitigation during construction. Mitigation measures are in Section 5.6.

4.6.15 Hazardous Materials / Airport Clear Zones

Hazardous Materials

An Idaho State and United States Environmental Protection Agency (EPA) data base search found no groundwater contamination monitoring wells in the Challis area, or in Custer County. The EPA data base search of Brownfield, Federal Resource Conservation and Recovery Act (RCRA) / Superfund sites or Corrective Action sites showed no listed contaminated sites in Custer County, with the exception of the Bayhorse Mining District, eight miles southwest of Challis.

Potential adverse effects to groundwater and surface water include leaking fuel oil in equipment and from petroleum stored on site.

The existing water mains being removed may contain hazardous materials (asbestos, lead, etc.).

Airport Clear Zones

The Challis Airport is a small publicly owned airport which serves 27 aircraft based at the field. The Proposed Project extends water service to the airport, so it is possible that underground water lines could cross Airport clear zones. Mitigation measures will be necessary to control hazardous materials and situations. Temporary mitigation during construction will be necessary. Mitigation measures are in Section 5.8.

5. ENVIRONMENTAL IMPACTS OF THE PROPOSED PROJECT

The revised project planning map shows 2 areas for pipeline line work. Area #1 is the Old Town portion of the City. This area is scheduled for pipeline replacement of old water mains. Construction will take place in the existing streets and alleyways. No new ground will be disturbed.

Area #2 lies north of Garden Creek and includes all the elements for the airport extension. The revised project map shows 8 areas where existing pipelines will be upgraded or new mains will be installed. All of the alignments are in existing roadways and or road rights-of-way. No new ground will be disturbed.

There will be no new stream crossings associated with this project. The existing water system crosses under Garden Creek in 3 locations. One or more of those locations will be utilized for the system on the north side of the creek. The project site was visited and it was found that construction and/or excavation will not take place in wetlands or riparian areas

5.1 Floodplain Development

The area directly adjacent to Garden Creek on the north and south sides of the creek are in the 100 year floodplain. This area includes parts of North Avenue and a small portion of Main Street between Second and Third Streets where existing pipe and fire hydrants will be replaced. No BFE has been determined for

this area. The northern part of the project area is in Zone X – Areas Determined to be Outside the 500 Year Flood Plain.

Replacement/addition of water lines and fire hydrants will not change the floodplain elevation. Further, no features of the replacement design will be affected by the determination of a base flood plain elevation. Components of the proposed project will be installed where existing infrastructure already exists.

Mitigation of direct, short-term impacts will include:

- Defining the base flood elevation.
- A floodplain development permit will be obtained from the City Clerk of Challis for the work that occurs in the flood hazard area.
- The federal minimum requirements to minimize or eliminate infiltration of flood waters into the water systems will be incorporated into the design.

5.2 Wetlands

A wetland determination was completed on site and it was found that there are no wetlands in the project impact areas (see section 4.6).

There are potential wetlands within the incised Garden Creek channel and in the ditch on the west side of Challis Creek Road. These areas are shown on the Fish and Wildlife Service National Wetland Inventory (NWI) Map in Appendix B. The Service's objective of mapping wetlands and deep water habitats is to produce reconnaissance level information on the location, type and size of these resources and are not intended to be used in lieu of field wetland determination and delineation (see disclaimer on the Fish and Wildlife Service Wetland Mapper website). The NWI map shows Paulustrine, Emergent, persistent, saturated (PEMC) wetlands. These areas will be marked on project plans as "retain and protect".

5.3 Cultural Resources

Because the project activities will stay within existing rights-of-way, a cultural resource survey was not completed. There will be no visual impacts to existing historic structures. There will be no direct or indirect impacts to the existing eligible properties. Mitigation for potential subsurface artifacts will be:

- Retain an archeologist to monitor excavation activities as necessary.
- If archaeological or cultural resources are unexpectedly exposed during excavation activities, all construction will be temporarily stopped in the area and Idaho State Historic Preservation Office (SHPO) Boise, Idaho will be notified.

5.4 Flora and Fauna

There will be no new stream crossings associated with this project. The existing water system crosses under Garden Creek in 3 locations. One or more of those locations will be utilized for the system on the north side of the creek. The project site was visited and it was found that construction and/or excavation will not take place in wetlands or riparian areas. There will be no impacts to Essential Fish Habitat. An updated threatened/endangered species memo was received from DEQ on October 10, 2014. The complete memo can be seen in Appendix B.

The following measures will be implemented to mitigate for potential direct, short-term impacts:

- Prepare a Soil Erosion and Sediment Control Plan to prevent increased turbidity in Garden Creek.
- The existing road right-of-way will be utilized to minimize new clearings.
- The proposed project required Contractor to cleanup and revegetate the right-of-way after project completion.
- Prevent the spread of any noxious weeds.

5.5 Air Quality

Challis is not in a DEQ designated area of concern. DEQ was contacted and requested the following mitigation measures for direct, short-term impacts:

- Prepare BMP's to control fugitive dust.
- Prohibit open burning of construction debris.
- Control odor;
- Dispose of construction waste disposal in accordance with IDAPA 58.01.06 Solid Waste Management Rules and Standards and Idaho Standards for Public Works Construction in a certified landfill.
- To control noise nuisance problems construction activity will be limited to daylight hours.
- The emergency generator will have to comply with the new National Emission Standards for Hazardous Air Pollutants for Reciprocating Internal Combustion Engines.

5.6 Water Quality Issues

No work will be done in Garden Creek or the adjacent riparian area. To mitigate potential affects to the Creek during and after construction the project will:

- Prepare a Soil Erosion and Sediment Control Plan to prevent increased turbidity in Garden Creek.
- Employ additional BMPs as necessary.
- A stormwater inspector will be onsite to monitor project area as needed.

5.7 Neighborhood or Service Impacts

There will be direct, short-term impacts to the local population and visitors during construction. To mitigate these impacts the project will require:

- Residents to be notified on a regular basis of street closures, if any.
- Detours to be well marked and access to local homes and businesses will be maintained throughout construction.
- Residences and non-food businesses will be notified of any interruption of water services as early as possible but no later than 4 hours in advance of the interruption.
- The City will schedule and receive approval from the Health Department in Salmon prior to water outages in food establishments.

5.8 Hazardous Materials / Airport Clear Zones

No hazardous materials will be used for construction. There is potential for groundwater and/or surface water contamination from petroleum products and hazardous material in the removed pipes. To mitigate for these potential impacts the project will require:

- Fuel to be stored in accordance with a Spill Prevention, Control and Countermeasure (SPCC) Plan or be purchased as needed from local suppliers.
- Check equipment for leaks on a schedule outlined in the SPCC Plan.
- Cleaned up leaks in accordance with the SPCC plan.
- Contract to determine composition of pipes being removed and work with the landfill prior to disposal.
- Project personnel to coordinate with airport personnel prior to any work on airport grounds.

6. PUBLIC PARTICIPATION

Judicial Confirmation. The City of Challis reviewed its options for securing funding for the proposed water system improvement project, and passed a resolution (No. 25-082713) authorizing the filing for judicial confirmation. Judicial confirmation is a process whereby the City acquires the authority to incur debt for a capital project. The resolution followed a public hearing on August 13, 2013 that was properly noticed in the Challis Messenger. On September 12 of 2013, the City of Challis published notification that it was petitioning for judicial confirmation. The initial hearing for the confirmation was set for October 16, 2013 but challenged by a citizen's group, Consent of the Governed Caucus, and Clarence Leuzinger, opposing the judicial confirmation process. The hearing was scheduled for January 17, 2014. The hearing provided the City and the opposition opportunity to give sworn testimony before a judge about the merits of the project and whether or not the project meets the criteria for judicial confirmation. In layman's terms, the criteria are "Ordinary and Necessary". The proceedings took the morning of January 17. On February 5, 2014, the judge, Hon. Alan C. Stephens, ruled in favor of the City of Challis and granted judicial confirmation, Case N. CV 2013-120 Decision and Order. The opposing group subsequently sued to appeal the ruling before the Idaho Supreme Court. The suit has stalled the project and the City lost its original funding opportunity with the Idaho Department of Environmental Quality (IDEQ) for a loan and loan forgiveness using State Revolving Funds (SRF), a new funding package is dependent on the timing and ruling of the Idaho Supreme Court. The appeal is pending.

Public Participation. A public meeting for the EID was advertised on the 27th of February and 6th of March 2014 in the Challis Messenger (see EID Appendix D), per standard public notice requirements for cities the size of Challis the meeting was also posted in City Hall. The public meeting was held on March 13, 2014 at City Hall. An oral description of the project was presented to those in attendance which outlined some of the system deficiencies and recommended improvements with estimated project costs and funding sources.

A few comments were voiced after the presentation was over regarding the recommended project. No questions or comments were received in written form. The public comment period ran for twenty-eight (28) days, from February 27 to March 27, 2014. A list of questions and the associated written responses can be seen in EID Appendix D.

On Tuesday, May 13 2014, the Challis City Council elected to move forward with the Proposed Project. There will be no improvements to the water source as part of this project. See EID Appendix D for City Council Minutes.

7. AGENCIES CONSULTED

Table 7 Agency Consultation

Category / Agency	Agency and Contact	Scoping Letter Submittal	Responses	Final Disposition
Flora / Fauna	Idaho Department of Fish and Game Jim Mende and Martha Wackenhut Regional Nongame Biologist, SE Region 1435 Barton Road Pocatello, ID 83204 208 232-4703	REI - 18JAN11 PEG -21NOV11	No comments received.	No Affect
	National Marine Fisheries Chad Fealko 1206 S. Challis Street Salmon, ID 83467	REI - 18JAN11 PEG -21NOV11	9DEC11 Supports the City's letting of water and would like the diversion to be left fish friendly. Thought the City means to abandon their water right.	No longer applicable due to change in project.
	US Fish and Wildlife Service David Kampwerth, Supervisor Eastern Idaho Field Office 4425 Burley Dr., Suite A Chubbuck ID 83202 208 237-6975	REI - 18JAN11 PEG -21NOV11	29NOV11 Listed Species: sockeye salmon, spring-summer chinook salmon, steelhead, and bull trout.	No Affect The updated list from FWS ECOS IPaC is for all of Custer Co due to website malfunction.

Category / Agency	Agency and Contact	Scoping Letter Submittal	Responses	Final Disposition
Water Quality	Idaho DEQ Greg Eager, Engineering Manager Willie Teuscher 900 N. Skyline, Suite B Idaho Falls ID 83402 208 528-2650	REI - 18JAN11 PEG -21NOV11	16DEC11: Plans & Specs must be developed by licensed engineer and approved. Meet minimum well standards. Well site approval from IDEQ prior to drilling. New source monitoring.	The project no longer proposes to drill new wells.
	U.S. EPA, Idaho Operations James Wertz 1435 North Orchard Boise, ID 83706 208 378-5746	PEG -21NOV11	No comments received	No Affect
Sole Source Aquifer or Stream flow Source Area	EPA Region 10 Susan Ennes, Hydrogeologist Office of Environmental Assessment (OEA- 095) 1200 6th Ave Seattle WA 98101 206 553-6249	REI - 18JAN11 PEG -21NOV11	No comments received	No Affect
Solid Waste	District 7 Health Department Kellye Eager, Environmental Health Dir., Solid Waste 1250 Hollipark Drive Idaho Falls ID 83401 208 523-5382	REI - 18JAN11 PEG -1NOV11	Dispose solid waste at an approved facility, check for lead and/ or asbestos in the piping materials. Clear water shut offs with Health Department to avoid impacting food establishments.	Adopted into mitigation
Water Rights	Jean Robertson 1341 Fillmore St, Suite 200 Twin Falls, ID 83301-3380 208 736-3033 Fax: 208 736-3037	REI - 18JAN11 PEG -21NOV11	No comments received	No Affect
Land Use	Idaho Department of Lands Patrick Brown 3563 Ririe Hwy Idaho Falls, ID 83401 208 525-7167	REI - 18JAN11 PEG -21NOV11	20DEC11, no comments.	No Affect
	Custer County Planning & Zoning, Stacie Angelopoulos, Administrator PO Box 385 Challis, ID 83226 208 879-6894 sangelos@co.custer.id.us	REI - 18JAN11 PEG -21NOV11	No comments received.	No Affect

Category / Agency	Agency and Contact	Scoping Letter Submittal	Responses	Final Disposition
Floodplain	U.S. Army Corps of Engineers James Joyner 900 N. Skyline Drive, Suite A Idaho Falls, ID 83402 208 522-1645	REI - 18JAN11 PEG -21NOV11	Comment received 4/5/12	No Affect
	Idaho Department of Water Resources Mary McGown State NFIP Coordinator, 22 East Front Street PO Box 83720 Boise, ID 83720-0098 208 287-4928	REI - 18JAN11 PEG -21NOV11	28NOV11 Transfer of water rights / new well construction standards. 19DEC11 Some of the system components will be constructed in the mapped flood hazard area of Garden Creek as it flows through the city. Hazard Maps posted on the Idaho Department of Water Resources Floodplain Management webpage. A floodplain development permit will be required from the City of Challis for the work that occurs in the flood hazard area. A floodplain development permit is a minimum requirement of the National Flood Insurance Program. The city clerk of Challis is the floodplain administrator.	No longer applicable. Adopted into mitigation.

Category / Agency	Agency and Contact	Scoping Letter Submittal	Responses	Final Disposition
Wetlands	U.S. Army Corps of Engineers James Joyner 900 N. Skyline Drive, Suite A Idaho Falls, ID 83402 208 522-1645	REI - 18JAN11 PEG -21NOV11	Robert Brochu email on 3/17/11 stated that wetland delineation would be beneficial to help avoid/minimize impacts to wetlands and other waters of the U.S. If there are impacts to wetlands or waters of the U.S. a 404 permit will be needed as will consultation with USFWS and NOAA	A wetland determination was done and it was concluded no wetlands are in the APE.
Wild and Scenic Rivers	Salmon-Challis National Forest, Gloria Jakobac Forest Supervisors Office 1206 S. Challis Street Salmon, ID 83467 208 756-5100	REI - 18JAN11 PEG -21NOV11	No comments received	No Affect
	Challis - Yankee Fork Ranger District Kris Martinson HC 63 Box 1669 Hwy 93 Challis, ID 83226 208 879-4100	REI - 18JAN11 PEG -21NOV11	No comments received	No Affect
	Middle Fork Ranger District Mr. Chris Grove P.O. Box 750 Hwy 93 Challis, ID 83226 208 879-4101	REI - 18JAN11 PEG -21NOV11	No comments received	No Affect
Cultural Resources	Idaho State Historical Society Suzi Pengilly, Deputy SHPO 210 Main Street Boise, ID 83702 208 208 334-3847	REI - 8JAN11 PEG -21NOV11	3DEC2011 Archeological survey for any project component that requires new ground disturbance.	No longer applicable
	Ted Howard, Director Cultural Resource Program Shoshone-Paiute Tribe P.O. Box 219 Owyhee, NV 89832 775 757-3161 ext 243 or 208 759-3100	REI -18JAN11 PEG -21NOV11	No comments received	No Affect
	Northwestern Band of Shoshoni Nation P.O. Box 637 Blackfoot, ID 99924 208 785-7401 Fax: 208 785-2206	REI -18JAN11 PEG -21NOV11	No comments received	No Affect
	Shoshone-Bannock Tribes Carolyn Boyer Smith, Cultural Resources Coordinator Cultural Resources Program P.O. Box 306 Fort Hall, ID 83203 208 478-3707	REI -18JAN11 PEG -21NOV11	No comments received	No Affect

Category / Agency	Agency and Contact	Scoping Letter Submittal	Responses	Final Disposition
Rural Development	USDA Rural Development Julie Neff, Area Specialist Community Programs 725 Jensen Grove Drive, Suite 1 Blackfoot, ID 83221 208 785-5840	REI - 18JAN11 PEG -21NOV11	16DEC11 Consult with Shoshone Bannock and Shoshone Paiute, 40 year revenue fund for USDA funding	TBD by DEQ
Fire Rating	Idaho Surveying and Rating Bureau Douglas H. Young 5440 Franklin Road, Ste.101 P.O. Box 6430 Boise, ID 83707-6430 208 343-5483 Fax: 208 343-5485	REI - 18JAN11 PEG -21NOV11	No comments received	No Affect
Bureau of Land Management	Bureau of Land Management, Challis Field Office Ronald C. Tipton 1151 Blue Mountain Road Challis, ID 83226 208 879-6200 Fax: 208 879-6219	REI - 18JAN11 PEG -21NOV11	No comments received	No Affect
Utilities	Salmon River Electric Cooperative, Inc. Ken Dizes, General Manager 1140 E. Main Ave. P.O. Box 384 Challis, ID 83226 208 879-2283 Fax: 208 879-2596	REI - 18JAN11 PEG-21NOV11	No comments received	No Affect
	IDACORP Mr. Paul Ortmann, Senior Electrical Engineer Power Quality 273 Blue Lakes Blvd. South Twin Falls, ID 83301	REI - 18JAN11	Referred to Salmon River Electric Coop	No Affect
Noxious Weeds	Brian Clapp Office: 208 879-5229 Cell: 208 833-5229 Email: bclapp@custertel.net	Phone call and email, 12/12/11	No Comments received	Mitigation will include measures to prevent the spread of noxious weeds.

8. REFERENCES

Federal Emergency Management Agency, National Flood Insurance Program; Flood Insurance Rate Map, Custer County Idaho and Incorporated Areas; Map Number 16037C0381 C, Effective Date: March 4, 1988

"Hydrogeologic Analysis of the Water Supply for Challis, Custer County, Idaho" 2005 Idaho Geologic Survey, Otto, Wylie and Martin.

Information Web site: lmi.idaho.gov

Population Trends for Custer County Source: Idaho Department of Commerce and Labor, Prepared by Will Jenson, Regional Economist, Idaho Department of Labor • 1515 E. Lincoln Road, Idaho Falls, Idaho 83401

"Putting Down Roots in Earthquake Country, Your Handbook for Earthquakes in Idaho" Printed by the Idaho Bureau of Homeland Security, 2009
Seismic Guidelines for Water Pipelines March 2005
www.americanlifelinesalliance.org

USDA NRCS. 2014. Web Soil Survey. U.S. Department of Agriculture – Natural Resources Conservation Service website. <http://websoilsurvey.nrcs.usda.gov/app/WebSoilSurvey.aspx>.

USFWS NWI. 2014. Wetlands Digital Data Wetlands Mapper. U.S. Fish and Wildlife Service's National Wetlands Inventory website. (<http://wetlandsfws.er.usgs.gov/NWI/index.html>).

Western Regional Climate Center, wrc@dr.edu City-data.com