CITY OF DIETRICH, IDAHO

Water System Priority Improvements

ENVIRONMENTAL INFORMATION DOCUMENT

February 2012

KELLER associates

209118-001/EID/12-083

ENVIRONMENTAL INFORMATION DOCUMENT

for Dietrich Water System Priority Improvements

APPLICANT NAME AND ADDRESS: City of Dietrich, 35 W. First St., Dietrich, ID 83324

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PROJECT COST AND FUNDING:

Priority 1 Improvements (Actual Project)	Cost Opinion
Priority 1	
Transmission & Distribution (4,800 ')	$448,300
Treatment	$2,000
Storage	-
Source (new well and Main well upgrade)	$908,700
TOTAL PRIORITY 1	$1,359,000
Future Improvements as Funding Allows	
Transmission & Distribution System	$857,200
7th Street Waterline Loop	$208,700
Storage	$453,800
TOTAL FUTURE	$1,519,700
Funding for Priority 1 (Actual Project)	
DEQ Loan (Priority 1)	$696,338
DEQ Subsidy (Principal Forgiveness)	$162,662
Community Develop. Block Grant[1]	$500,000
TOTAL	$1,359,000

[1] Pending approval from Idaho Dept. of Commerce

The proposed project will only include Priority 1 improvements. Estimated User Cost for Priority 1 Improvements (assuming $696,338 loan over 30 years at 0.0% interest rate): The existing average monthly user charge for operations and maintenance (O&M) is $17.30 per month, and for debt service is $7.70 per month. The new user charge for O&M will be $17.30 per month, and the new debt service charge will be $27.40 per month, a total increase of $19.70 per month.

The total estimated cost of priority 1 improvements is $1,359,000. The City has submitted an application for a Community Development Block Grant for $500.000 and is awaiting grant award.

ABSTRACT

The City of Dietrich water system has a single well with a capacity of 134 gpm, and a 100,000-gallon water reservoir. Water from the well is disinfected with liquid sodium hypochlorite before entering the distribution system. Several deficiencies have been identified and prioritized.

The proposed water system project involves only Priority 1 Improvements. Priority 1 improvements are most urgent and will correct existing water system deficiencies relative to redundancy, reliability, and service area. Priority 1 improvements include developing a new municipal well with standby power; upgrading the pump and installing an emergency eyewash station at the existing Main Well; and constructing water main lines to serve existing residents along Waucanza Street. Priority 2 improvements correct less critical existing deficiencies, and will be implemented at a later time as funding is secured and will not be part of the initial project. Priority 2 improvements include constructing a 350,000-gallon water tank, and installing waterlines from the new water tank to the City pipe network and in isolated areas of town.

PURPOSE AND NEED FOR THE PROPOSED PROJECT

The existing Dietrich water system has deficiencies relative to redundancy, reliability, fire protection and service area. With only one well the system has no redundant water supply capacity, and thus does not comply with Idaho Drinking Water Standards for reliability and emergency capabilities. The existing reservoir volume is significantly less than the storage volume needed for fire flow (2500 gpm for 2 hours) plus operational and peaking storage. The system cannot currently supply water to numerous City residents on the west side of town who have requested City water service.

The purpose of the proposed project is first and foremost to add water supply redundancy for residents in Dietrich. Currently, if the City were to experience mechanical failure at the Main Well on a summer day, city residents would have no other source of supply. Redundant water supplies for public systems serving more than 25 customers are required by Idaho Code. Another purpose of this project is to improve safety conditions for water system operators at the well facilities. A third purpose of this project is to improve fire protection throughout the water system, but particularly to meet recommended fire flow requirements for the School District. Lastly, this project will bring the City into compliance with State emergency operation requirements.

ALTERNATIVES STUDIED

Three alternatives for addressing the existing Dietrich water system deficiencies, discussed in detail in the 2011 Water System Facilities Planning and Study [1], are summarized below. The City evaluated these alternatives and received public comment before selecting the preferred alternative.

1. **No Action Alternative**: If the City were to make no improvements to the existing supply, treatment, storage, or distribution facilities, the water system would be out of compliance with public drinking water standards due to the absence of redundant water supply, deficiencies in available fire flow protection, reliability and emergency operation standards, and water storage shortages. Consequently, the City would be unable to approve any additional new water connections. Public health and safety would be at risk given the existing system deficiencies. In addition, the right-of-way permit with the Bureau of Land Management (BLM) that authorizes the existence of the concrete water tank and associated transmission pipeline expires in 2022 which is within the planning period and would need to be addressed under the "No-Action" alternative.

   Furthermore, the City could be subject to various enforcement actions by the Department of Environmental Quality. These conditions would prove the No Action alternative to be an unsustainable choice.

The two action alternatives involve construction of well, storage and distribution improvements that respectively, would: 1) provide a backup water supply that will meet maximum day water demands for up to 550 people, and meet redundant water supply demands beyond 20 years; 2) meet peaking, equalization, and fire storage needs beyond 20 years; and 3) satisfy fire flow objectives for the school, address other fire flow deficiencies and improve pressure conditions throughout town.

Elements common to both these alternatives include:

- Increasing the existing Main Well pumping capacity from 134 gpm to 250 gpm.
- New 8-inch pipeline along 4th Street from existing 6-inch line at intersection of Lincoln Street and 4th Street to east edge of city limits.
- Replacement of existing 6-inch pipeline with 8-inch on Lincoln Street from 4th Street to 3rd Street.
- New 12-inch pipeline along 7th Street from Washington Street to Waucanza Street.
- New 8-inch pipline along Waucanza Street from 7th Street to E. 165 South.
- New 8-inch looping pipeline from Washington Street to Waucanza Street, at a location that would minimize disruption to private property since there is no right-of-way in this area.
- Retain operability existing 100,000 gallon concrete water tank.

The differences between the two alternatives are outlined in the following paragraphs:

2. **New Well and Bench Tank Alternative (Action Alternative 1)**: Alternative 1 includes construction of a 350,000-gallon water tank in the vicinity with the same hydraulic grade as the existing water tank, a new well (with standby power) close to the existing 10-inch transmission pipeline from the existing well to the existing tank, and the distribution pipeline improvements shown on Figure 1. Alternative 1 which includes more than Priority 1 improvements would cost an estimated $1,991,500, and would have the following advantages and disadvantages:

   Advantages:

   - System controls and existing piping would be configured to force all water from the wells to be routed through the water tank(s) under normal operation, which would improve tank circulation.

   - Water storage located at a hydraulic grade that provides "gravity" water service with sufficient pressures eliminates the need for a booster pump station and associated continuous pumping to pressurize the system.

   - Aligning the proposed 12-inch transmission pipeline from the water tanks to the City's water distribution system along the existing 10-inch waterline would likely allow the City to take advantage of existing easements and crossing agreements across the Dietrich Main Canal. In addition, since rock was blasted when the original 10-inch waterline was installed, constructing the new 12-inch waterline directly adjacent to the existing 10-inch waterline would probably avoid rock excavation along the entire corridor.

   - By locating the new 350,000 gallon water tank in the same vicinity as the existing water tank, it is likely that the City can modify the existing easement agreement with the Bureau of Land Management (BLM). In addition, yard piping improvements can be minimized by sharing yard piping and valving between both tanks.

   - By locating the new well along the existing transmission line corridor from the tank down to the City, the existing 6-inch waterline could be used to convey water from the existing and new well to the storage tanks.

Figure 1
Alternative 1 Improvements

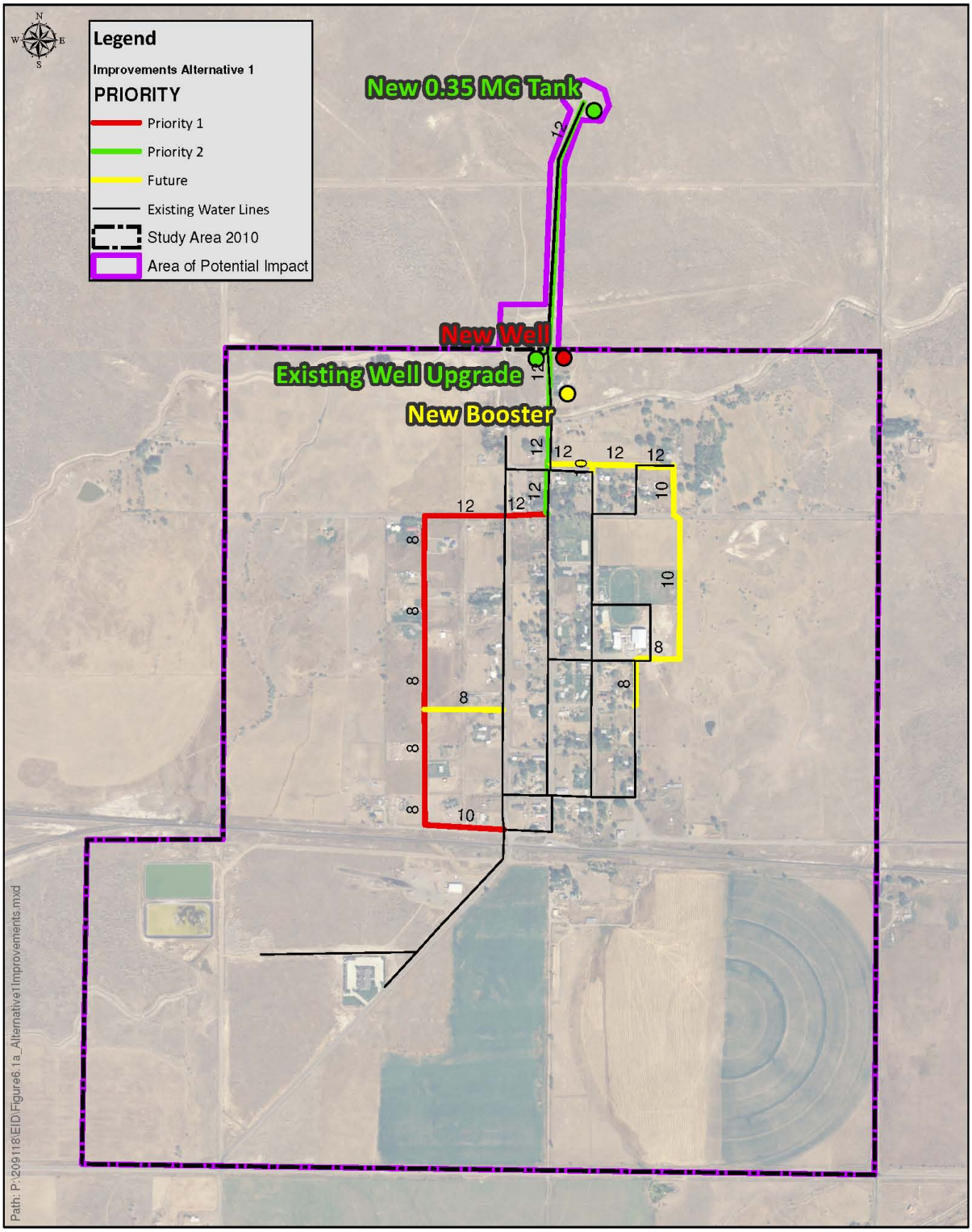

Figure 6.1a Dietrich, Idaho: Alternative 1 Improvements

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Disadvantages:

- Locating the water tank remote from the City's distribution system requires more waterline construction.

- Construction activities in non-disturbed areas and a crossing of the Dietrich Main Canal increase the potential for environmental impacts. However, environmental impacts may be minimized by locating new infrastructure in the vicinity of existing infrastructure where possible.

3. **Well, Tank, Booster Station Alternative (Action Alternative 2)**: Alternative 2 includes construction of a 350,000-gallon ground-level water tank in town and a new well and booster station (with standby power) adjacent to the water tank. One possible location of the proposed well, tank, and booster station is shown in Figure 2. In addition, the alternative would include construction of the distribution pipeline improvements shown on Figure 2. This alternative, again which includes more than the Priority 1 improvements, would cost an estimated $2,121,800, and poses the following advantages and disadvantages.

Advantages:

- Fewer new waterlines due to the elimination of the long transmission pipeline up to the bench water tank.

- The water supply (new well) would be located closer to the structures needing fire protection (e.g. the school). Consequently, there would be less friction losses in the pipes and less dependency on water transmission capabilities.

Figure 2
Alternative 2 Improvements

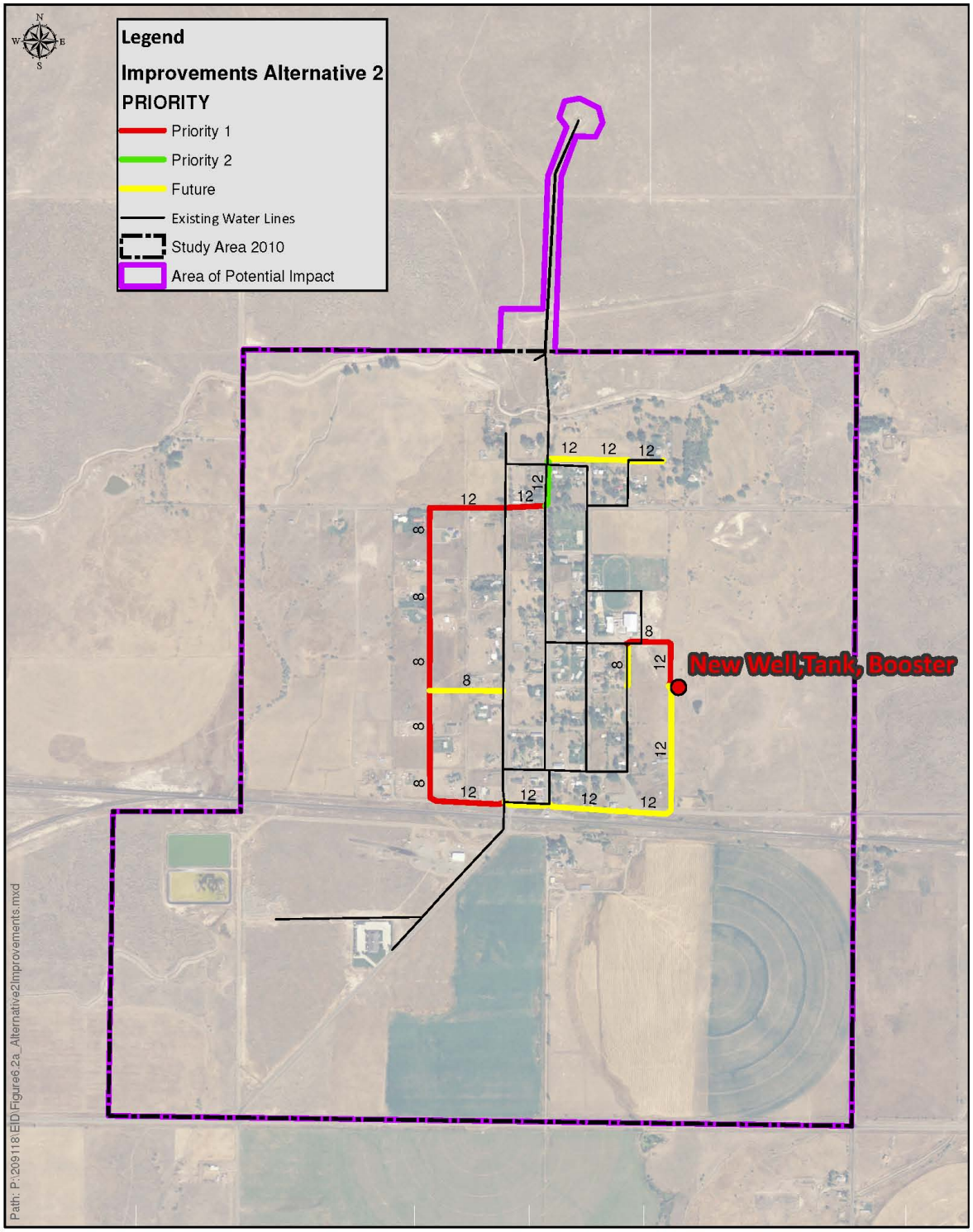

Figure 6.2a Dietrich, Idaho: Alternative 2 Improvements

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Disadvantages:

- When using the existing Main Well as the duty well, there would be no tank circulation in the new ground-level tank.
- With a booster station, utilization of the storage volumes in the new tank would be dependent on power supply. Water would require double-pumping (from well into tank and tank into the system).
- Possible concerns about the aesthetics of a large water tank inside the City limits.
- Since the new well, tank, and booster station would likely be located on private property, the City would have to negotiate the acquisition of property or an easement.

A comparison of potential environmental impacts of the alternatives is summarized in the following table. Though the No Action alternative appears to have few environmental impacts initially, it poses potential severe risks to the public health, economic sustainability, and social services of the community. Since No Action does not address the increasing risk to public health, it is not considered a feasible alternative.

The main differences between the potential impacts of the two action alternatives are due to the location of the improvements, and whether a booster station is required. Alternative 1 is the least costly of the construction alternatives, in terms of both capital and operating costs. Considering both environmental and capital cost issues, Alternative 1 is the recommended and preferred alternative to address the existing system deficiencies.

Dietrich Priority Water System Improvements Environmental Screening

Environmental Criteria	No Action	Action Alternative 1 Well and Bench Water Tank Alternative	Action Alternative 2 Well, Tank, and Booster Station Alternative
Climate/Physical Aspects (topography/geology/and soils)	No impact	Rock excavation likely required for construction of pipelines and new well; less rock due to following existing pipe alignments	Rock excavation likely required for construction of pipelines and new well
Population, Economic, and Social Profile	Likely severe detrimental effect on socioeconomic sustainability of community	No adverse impact	Higher capital and operating costs
Land Use	Likely detrimental effect on structures such as school due to insufficient fire protection	No adverse impact	No adverse impact
Floodplain Development	No impact	No impact	No impact
Wetlands and Water Quality	No impact	Temporary impact during installation of water line across Dietrich Canal	Likely no adverse impact
Wild & Scenic Rivers	No impact	No wild/scenic rivers within project or impact areas	No wild/scenic rivers within project or impact areas
Cultural Resources	No impact	Potential for short-term impacts (if cultural resources found in project area)	Potential for short-term impacts (if cultural resources found in project area)
Flora and Fauna	No impact	Potential for short-term and long-term impacts to Greater Sage-Grouse (Candidate) species	Potential for short-term and long-term impacts to Greater Sage-Grouse (Candidate) species
Recreation/Open Space	No impact	No adverse impact	No adverse impact
Agricultural Lands	No impact	Potential for short-term impact during construction of improvements	Potential for short-term impact during construction of improvements
Air Quality	No impact	No adverse impact	No adverse impact
Energy	No impact	No adverse impact	Greater energy consumption due to double-pumping of water with well and booster station
Public Health	Public health risk from absence of redundant water supply and insufficient fire protection	Positive long-term impact	Positive long-term impact

PROJECT PLANNING AREA AND AREA OF POTENTIAL IMPACTS

The project planning area boundaries encompass the area of impact for the City of Dietrich, as shown on Figure 3. The area generally slopes from north to south, with the City bordered on the north by land administered by the Bureau of Land Management. Over 90% of the population is Caucasian, and the median age of the residents is 36 years [2]. The largest employers are the school district and the highway district.

The area of potential effects coincides with the project planning area plus the area around water tank and transmission line as shown in Figure 3.

PROJECT FEATURES

Improvements associated with Alternative #1 (see Figure 1) have been assigned priorities. Priority 1 improvements include a new 250-gpm well located at a site along the existing transmission line corridor from the reservoir; an emergency eyewash station at the existing Main Well; and a series of water mains to provide water service to existing residents along Waucanza Street. Priority 2 improvements include upgrading the existing Main Well with a larger pump and motor capable of pumping 250+ gpm, a VFD, and three-phase power; construction of a 350,000-gallon water tank near the existing tank, and water main lines from the new water tank to the City pipe network and in isolated areas in town.

The Phase 1 project is intended to include all Priority 1 improvements, plus as many of the Priority 2 improvements as can be funded. It is anticipated that this will include upgrading the existing well, adding a flow meter on the line from the tank, and constructing the 350,000-gallon water tank. The remaining improvements, including transmission lines for the water tank and the 7th Street waterline loop, would be constructed in the future as funding allows.

WATER DEMAND PROJECTIONS

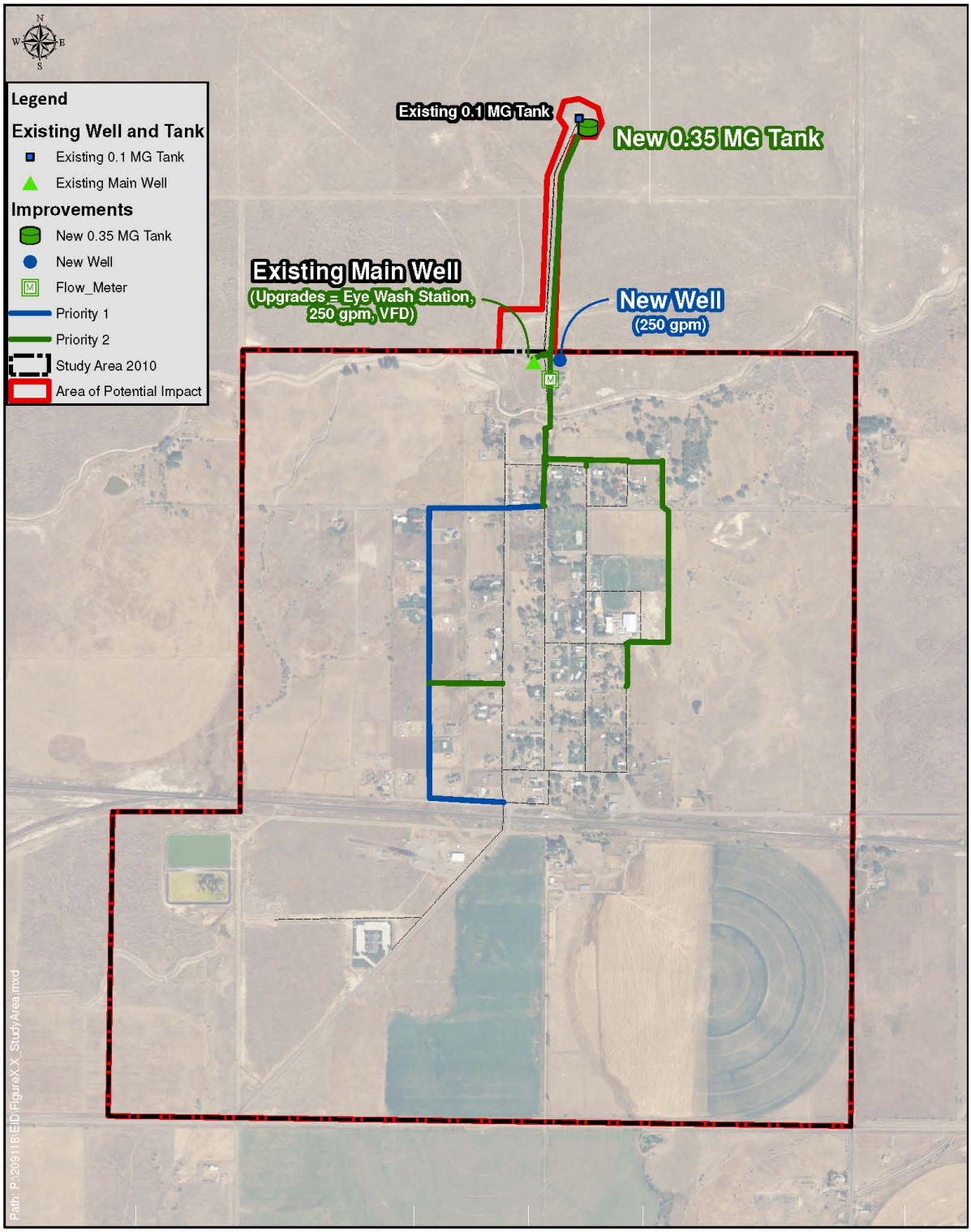
From City data, current maximum day demand is 118 gpm; at an average annual growth rate of 3.4% (see population section), projected maximum day demand in 30 years would be 230 gpm. The new pumping equipment and storage infrastructure is sized to meet the maximum day water demands for the next 30 years. The water pipeline improvements have been sized for build-out of the study area (population 1,300), and will be sufficient for the expected life of the pipelines.

ENVIRONMENTAL FEATURES AFFECTED BY THE PROPOSED PROJECT

1. **Physical Aspects (topography, geology, soils)**: There are no physical conditions that might be adversely affected by or adversely affect construction of the facilities.

    - There are no unusual or unique geological features in the vicinity that might be affected by or that would affect the project. The proposed waterlines may be located in areas with shallow bedrock, which would require construction techniques necessary to remove the rock (e.g. blasting, hammering, or sawing). Measures should be taken during design and construction of the well house and water tank structures to provide sufficient soil strength and stability.

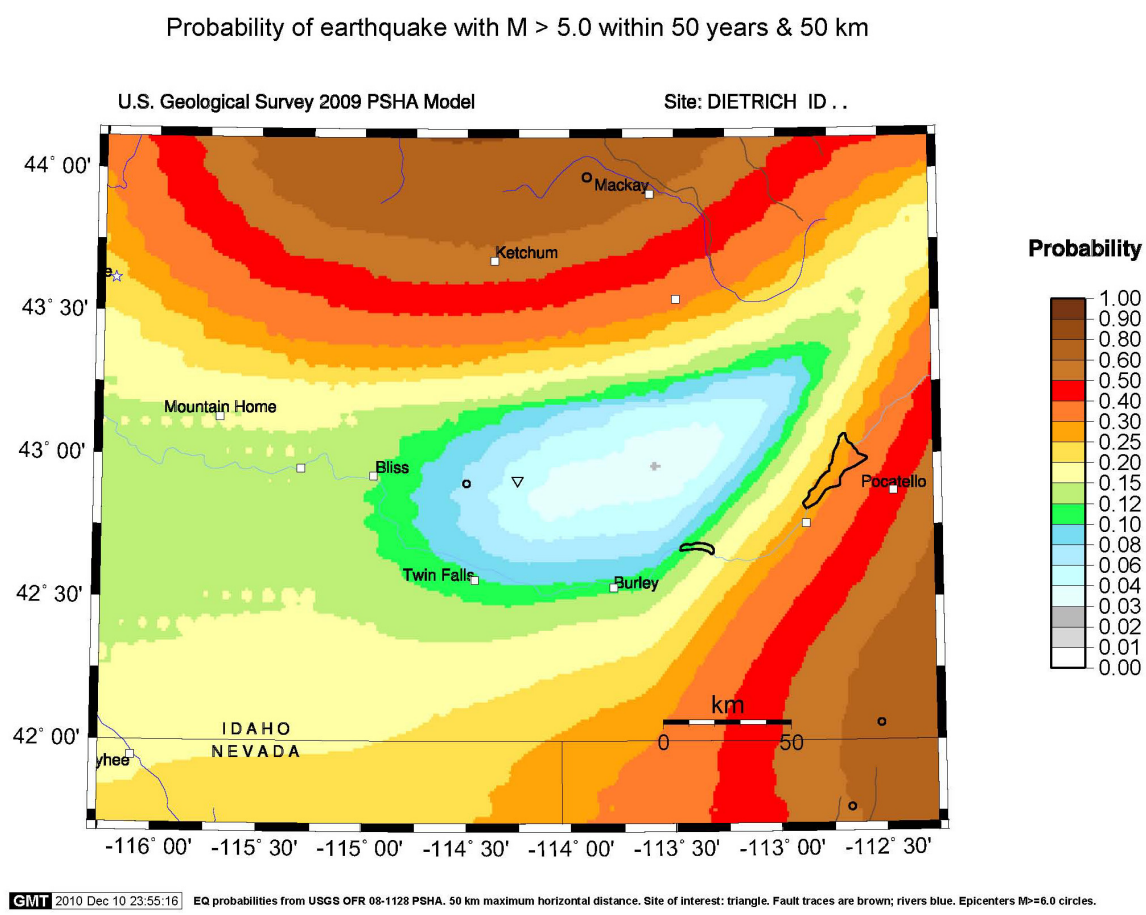
Figure 3
Dietrich Water Improvements Planning Area



- The main soil units in the Dietrich study area include Snowmore-Besslen-Hoosegow complex, Snowmore-Minveno-Hoosegrow complex, Snowmore-Wako-Harsan complex, and Wako-Harsan complex. All of the soils in the study area pose a low risk of corrosion to concrete, but a high risk of corrosion of steel (the main soil units listed are all rated as posing a "high" risk of corrosion to steel). Essentially the entire area has the potential to have shallow bedrock (less than 6 feet), which makes excavation difficult and expensive. The soils in the area are also subject to sloughing during construction, which also complicates excavation and will need to be mitigated during construction [3].

- The USGS [4] reports a low probability (4-6%) for an earthquake greater than 5.0 magnitude in the next 50 years. On the earthquake probability map (Figure 4), the proposed project area is marked by an inverted triangle just east of Bliss. Measures will also be taken as part of the water supply and storage infrastructure designs to provide safety factors to minimize structural failure during an earthquake.

Figure 4 [4]
Dietrich Area Earthquake Hazard Map



2. **Climate**: Climatological data for Shoshone (closest weather station to Dietrich) [5] is presented in the table below. There are no unusual or special meteorological constraints in the project area that might result in an air quality problem due to the project, or that affect the feasibility of the proposed alternative.

CLIMATOLOGICAL DATA[1] for SHOSHONE, IDAHO

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Year
Precipitation, in	1.42	1.10	0.95	0.81	0.93	0.67	0.21	0.29	0.49	0.75	1.19	1.32	10.14
Avg Max Temp, °F	33.1	39.0	50.0	61.8	71.7	81.2	91.4	89.2	78.2	64.5	47.0	35.5	61.9
Avg Min Temp, °F	15.7	19.5	26.0	32.8	40.3	47.7	55.4	53.1	43.8	34.4	25.7	18.3	34.4

[1] Climatological data 3/1/1908 to 7/31/2010

3. **Population**: Dietrich's population has grown at an average annual rate of 3.45% for the last 40 years, increasing 180% between 1970 and 2010. The largest growth rate appears to have been since 2000, when the population grew from 150 to 200; the City currently provides potable water to an estimated 200 residents (2010 estimate from city officials). Assuming future population increases follows the average growth rate over the past 40 years (about 3.45% per year), the population at the end of the 50-year pipe life would be 1,100. At 2.59 people per household [2], this represents an increase of 347 EDUs.

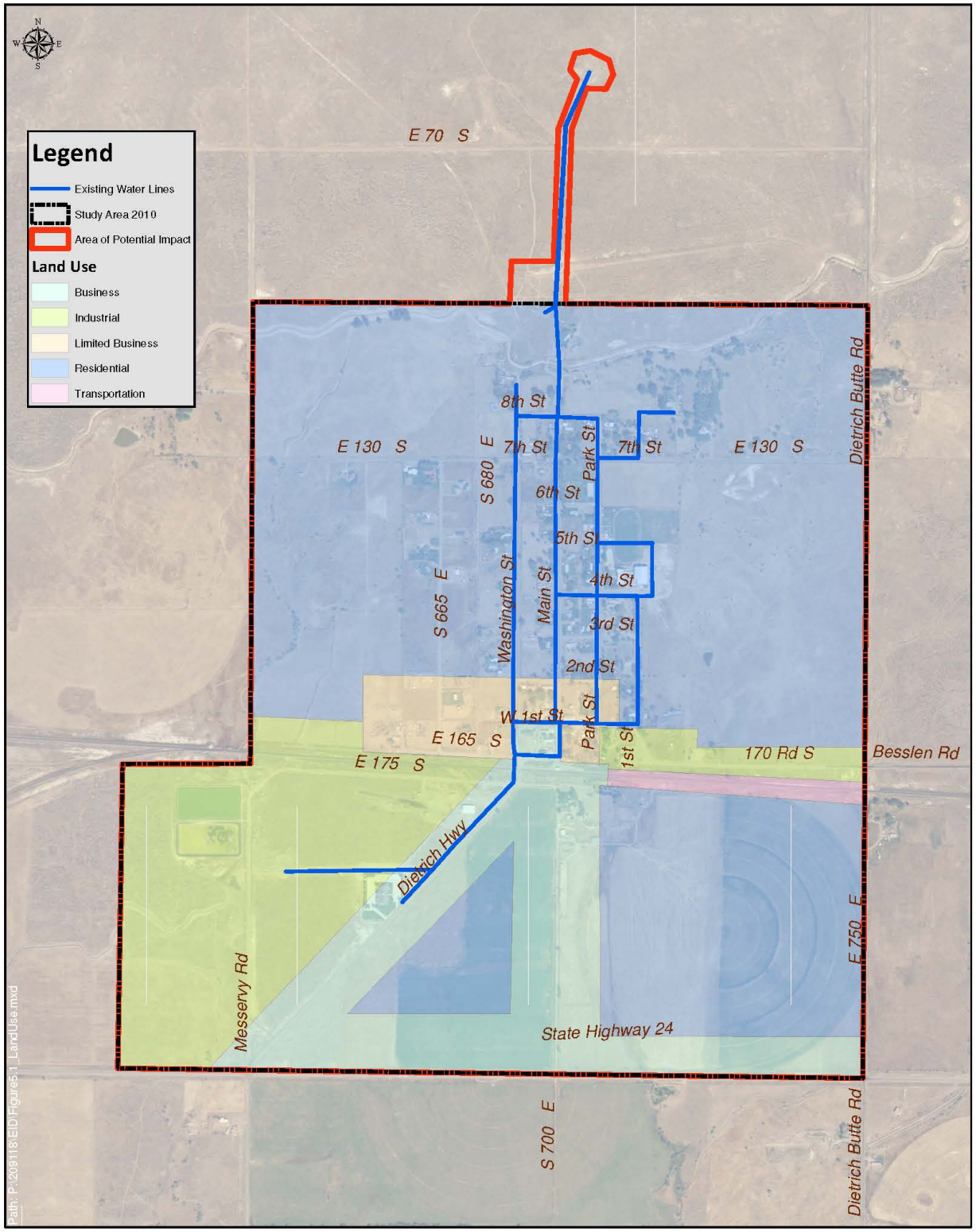
4. **Environmental Justice, Economics and Social Profile**: Based on most recent available (2000) census data, about 20% of the families in Dietrich were below the poverty level. The 2000 median household income is $35,620 [2].

   The only specific landowners who may appreciably gain more than other landowners due to the location of the proposed facilities include the currently unserved property owners who will be adjacent to the proposed waterline improvements (e.g. along Waucanza Street). However, the proposed improvements will generally tend to improve the overall land values in the City of Dietrich because they will improve fire protection and water service to the entire area and make future residential and commercial growth possible. No minority or low-income disadvantaged groups will be adversely impacted.

5. **Land Use**: As stated above, the proposed priority improvements will make possible additional residential and commercial development in the study area. The City of Dietrich has established land use guidelines, policies, and ordinances to manage growth in the area. Figure 5 illustrates the future land use zoning. While the improvements will accommodate growth, they will not directly impact future land use patterns.

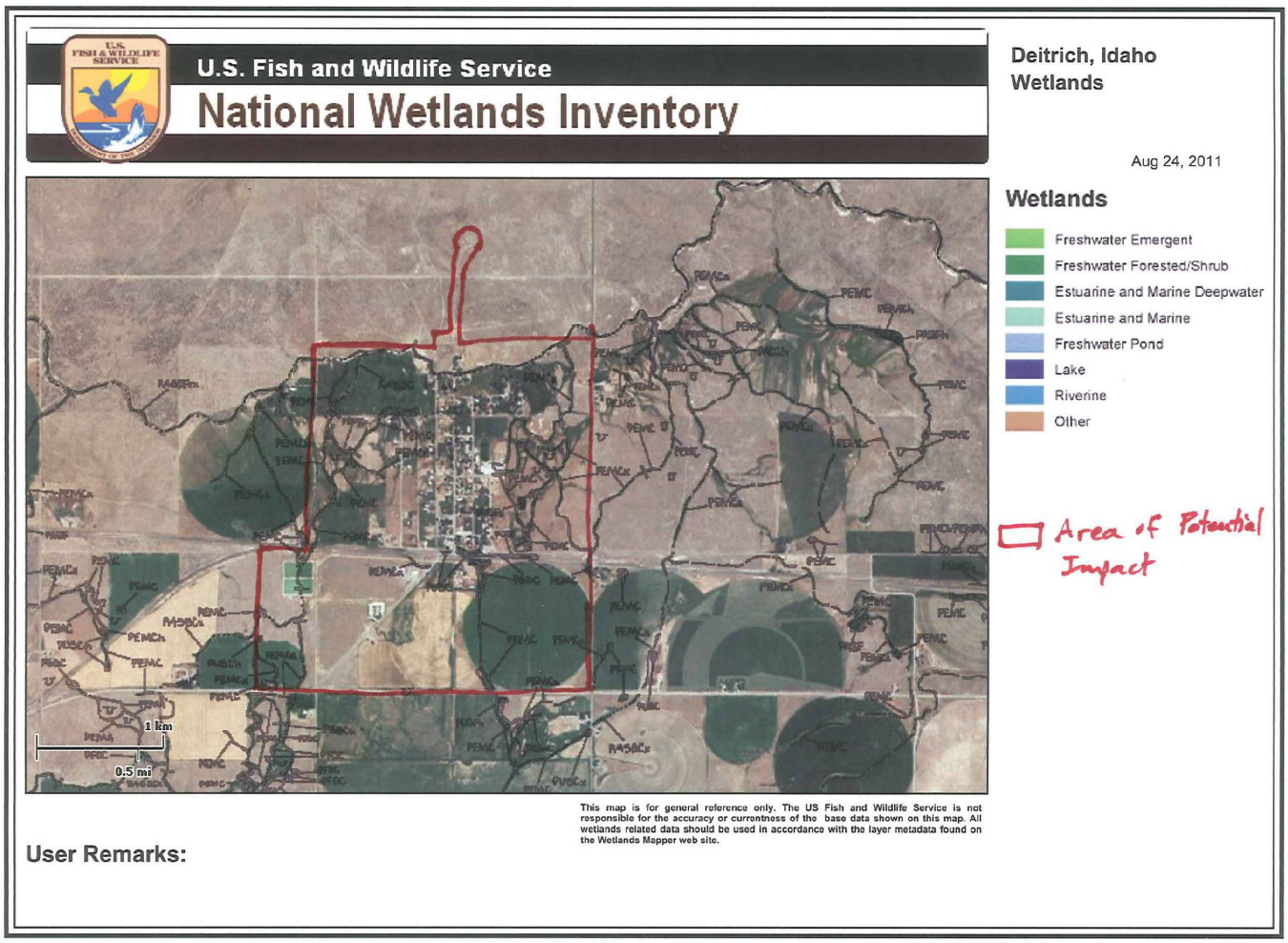
6. **Floodplain**: There are no floodplains or floodways inside the project area.

Figure 5
City of Dietrich Land Use



7. **Wetlands**: The Fish and Wildlife Service National Wetland Inventory [6] was used to develop Figure 6, which show wetlands in the project area. Based on the project location and correspondence from the Department of the Army Corps of Engineers, most of the project will occur in upland and non-jurisdictional areas. The nature of the climate and waterways in Dietrich is such that there are very few wetlands in the study area, and most of them are small. The majority of the wetlands in the Dietrich area are freshwater emergent wetlands. Much of the wetland vegetation that may be encountered is a result of seasonal irrigation delivery canals or small seasonal ponds. Due to potential for wetland disturbance at the pipeline crossing of the Dietrich Main Canal and transmission pipelines on the east side of town, the Army Corps of Engineers recommended that these areas be inspected by a professional wetland consultant.

Figure 6
Wetlands in Planning Area



(PEMC - Seasonally flooded Palustrine Emergent wetlands, PUBF – Semipermanently flooded Palustrine Unconsolidated Bottom Wetlands, PSSC – Seasonally flooded Palustrine Scrub-Shrub wetlands, “x” denotes area has been excavated)

A wetland delineation and survey was conducted by *North Wind Resource Consulting* on July 7, 2011. A report outlining their findings has been included in Appendix F and submitted to the US Corps of Engineers for review and consideration. Wetlands were discovered in three locations in the project corridor which are illustrated in Figure 7. After reviewing the information provided, the Corp of Engineers issued a Preliminary Jurisdictional Determination (p-JD) declaring the abutting emergent wetlands of the Dietrich Main Canal and the unnamed irrigation canal off the Dietrich Main Canal to be jurisdictional which would require a Department of Army permit prior to construction activities (included in Appendix D). The Corps stated that is was likely the project could be authorized under the Nationwide Permit No. 12.

Figure 7
Wetlands in Project Corridor

For any projects that involve disturbances to jurisdictional wetlands, formal consultation with the U.S Army Corps of Engineers and the Idaho Department of Water Resources (IDWR) will be required to obtain nationwide 404 permits for stream crossings, wetland alteration, or utility crossings of the Dietrich Main Canal. A copy of the 404 permit application has been provided in Appendix B. The IDWR Stream Alteration Permit and the 404 permit from the Corps of Engineers include mitigation measures to minimize long-term impacts.

8. **Wild and Scenic Rivers**: There are no wild/scenic rivers in the area as documented at www.rivers.gov/wildriverslist.html#id.

9. **Cultural Resources**: The National Register of Historic Places lists the following structures. However, none of the structures appear to be in the study area or area of potential impact and the State Historical Society did not include any of these sites as elements of concern.

   - Bate, S. A., Barn and Chicken House (added 1983 - Building, #83002358; SE of Dietrich, Dietrich)
   - Berriochoa, Ignacio, Farm (added 1983-Building, #83002360; NW of Dietrich, Dietrich)
   - Hunt, Daniel A., House (added 1983 - Building - #83002371; SW of Dietrich, Dietrich)
   - Paul, Denton J., Water Tank (added 1983 - Building - #83002384; E of Dietrich, Dietrich)

   Based on correspondence from the State Historical Society and the Shoshone–Paiute Tribes, the proposed new well and tank is located in archaeologically sensitive areas and a cultural survey was requested by the Shoshone-Paiute Tribe. A cultural survey of the proposed new well site, new tank site, and pipeline from the tank site to the City's distribution system was conducted by *North Wind Resource Consulting* on August 29, 2011 which was submitted to the State Historical Preservation Office (SHPO), the Shoshone-Pauite tribe, and Shoshone-Bannock tribe. A report of their findings is included in Appendix G. The only cultural property/feature identified in the survey was the Dietrich Main Canal. The Dietrich Main Canal is recommended as eligible for inclusion on the National Register of Historic Places under Criteria A and C. Under Criterion A, it is associated with irrigation of the arid west. Under Criterion C, it is associated with early engineering practices.

   The Shoshone-Bannock tribe also requested that construction activities would be stopped and the tribes be notified immediately if cultural resources or archaeological remains are encountered during construction. This language will be included in the construction contract documentation.

10. **Flora and Fauna** (see appendix for list): Those species documented in Lincoln County that are listed as endangered, threatened, proposed, and candidate species by US Fish and Wildlife (as of 8/17/2011) are listed below:

Threatened:	None
Endangered:	None
Candidate:	Greater sage-grouse (Centrocerus urophasiunus), wolverine (Gulo gulo)

No threatened or endangered species are listed for Lincoln County. The wolverine specie is not anticipated to be found within the project area, since suitable habitat does not exist in the project area. Wolverines' preferred habitat is scattered trees at high elevations with deep, persistent, and reliable spring snow cover that is deeper than five feet between February and April which is necessary for denning (ecos.fws.gov/speciesProfile/profile/speciesProfile.action?spcode=A0FA, http://www.fws.gov/mountain-prairie/species/mammals/wolverine)

The greater sage-grouse are found at elevations ranging from 4,000 to 9,000 feet and are highly dependent on sagebrush for cover and food (http://www.fws.gov/oregonfwo/Species/Data/GreaterSageGrouse/, http://www.fws.gov/nevada/nv_species/sage_grouse.html). Habitat for the Greater sage-grouse is not anticipated to be found within the Dietrich urban area where most of the proposed improvements would be constructed, but could be present in areas around the City such as the location of the existing water tank and conveyance waterline from the tank to the City's water distribution system. The greatest potential for disturbance to the greater sage-grouse would occur during construction of the proposed improvements, which is only temporary. The only permanent structures that could reduce the available habitat for the sage-grouse are the proposed 0.35 million gallon water tank and the new well house, with a combined footprint of only 3,500 square feet. Thus the project is not expected to adversely affect the greater sage-grouse.

Best Management Practices identified to limit the impacts to the greater sage-grouse include:

- Locate the new water tank and new well as close as possible to the existing structures.
- Locate new transmission pipes in previously disturbed areas where possible, and restore ground over waterline to as close to preexisting conditions as possible.
- When designing and constructing the extension of 3-phase power to the new well site, the requirements of the Migratory Bird Treaty Act (MBTA) need to be addressed by considering avian needs.

11. **Recreation and Open Space**: Because the priority improvements are located adjacent to existing structures or on property previously owned or leased by the City of Dietrich, the project will not eliminate or modify recreational open space, parks, or areas of recognized scenic or recreational value. The proposed project is such that it is not

feasible to combine the project with parks, bicycle paths, hiking trails, waterway access, and other recreational uses.

The future water storage reservoir is proposed on land owned by the Bureau of Land Management (BLM) adjacent to the existing water reservoir. The City has a right-of-way grant from the BLM for the existing water tank, pipelines, and access road. Either a new right-of-way or amendment of the existing right-of-way grant will be required to accommodate the proposed water tank and associated 12-inch transmission pipeline. Based on correspondence from BLM, the following issues will need to be addressed:

- The existing access road and pipeline alignment do not follow one another as authorized in the grant.
- The waiver of rental policy has recently changed and may be reconsidered in the future.
- Proposed improvements on BLM ground will have to comply to the National Environmental Policy Act (NEPA) including addressing cultural, wildlife, botanical, and hazardous material clearances.
- Processing of right-of-way amendment or new permit can take 6-12 months and requires processing fee.

12. **Agricultural Lands**: About 50% of the non-urban land in the Dietrich planning area is designated by NRCS as prime farmland if irrigated. The new well, water reservoir facility, and transmission pipeline are proposed in undisturbed areas that are <u>not</u> prime farmland. Most future pipeline improvements are anticipated to be located within existing or future right-of-ways. In some cases, future pipelines may be constructed within easements through unimproved or agricultural land, but it is anticipated in these cases that the ground surface after construction will be restored to its original condition and use. Therefore, it is anticipated that this project will not involve the conversion of existing farmland to other uses.

13. **Air Quality**: There will not be any direct air emissions from the project that will not meet federal and state emission standards contained in the air quality state implementation plan, nor will the project violate national ambient air quality standards in an attainment area (current non-attainment map provided in Appendix E). The proposed water facilities will not cause odor or noise nuisance problems.

    It is anticipated that there will be temporary increased noise and dust pollution during construction of the proposed improvements which can be minimized with appropriate best management practices, including utilizing sufficient site watering equipment for dust control.

14. **Water Quality**: Drilling and development of the new municipal well will require compliance with State well drilling and water supply requirements, including filing of a water right transfer application to add a point of diversion for the new well to the City's existing water right 37-20729 and a new water right permit application to increase the

City's diversion rate beyond 0.37 cfs (166 GPM). Copies of these applications are included in Appendix B.

In addition, minor short-term adverse conditions including minimal impacts to water service, and storm water accumulation and runoff may exist during construction of infrastructure. Appropriate best management practices will be required during construction as recommended by DEQ, including a Notice of Intent and Stormwater Pollution Prevention Plan (SWPPP). Dietrich is within the review area of the Eastern Snake River Plain aquifer [6]. However, based on consultation with EPA included in Appendix D, the proposed project will not have significant adverse impact on the Eastern Snake River Plan aquifer.

15. **Public Health**: The project purpose includes protection of public health. There will be no adverse noise impacts, vector problems, or unique public health problems (such as increased disease risk) as a result of the project. In fact, the proposed improvements will improve public health and safety by providing a redundant water supply and improving fire protection to the residents of Dietrich.

16. **Energy**: The existing water system utilizes electrical energy for pumping water from well(s) throughout the distribution system. Additional transmission facilities will reduce head loss in the system, and additional storage will reduce the need for additional peak pumping facilities, which will both reduce energy demands/consumption.

17. **Regionalization**: There is no apparent feasible opportunity for regionalization involved with this project, and there are no jurisdictional disputes or controversy over the project.

18. **Noise Abatement and Control**: The proposed infrastructure including the well, tank, and distribution piping improvements are <u>not</u> sensitive to noise for successful operation. The only substantial permanent noise-generating improvements proposed in the project are a new pump, motor, and standby power generator for the new well. It is anticipated that the closest residence will be more than 300' away from the new well site. The new pump and motor will be enclosed inside a well house building that will provide sound attenuation to reduce sound levels below 65 dB. The standby power generator will either be enclosed in a building or equipped with sound attenuation measures that restrict noise levels to acceptable levels.

    Additional temporary noise will be generated during construction of proposed improvements. Noise will be mitigated during construction by restricting work activities between dawn and dusk and or between limited work hours (e.g. 7 am to 7 pm).

19. **Explosive and Flammable Operations**: This project does not include the construction of any housing developments. The project will include a fuel storage tank for the emergency standby power generator, but it will likely be less than 100 gallons and be equipped with secondary containment measures.

20. **Toxic Chemicals and Radioactive Materials**: This project does not include the construction of any housing developments. The project is not near any known toxic or solid landfill waste sites. EPA superfund or Idaho Cleanup sites, or any known toxic or

radioactive contaminants. There are no underground storage tanks on or near the property (list provided in the Dietrich area in Appendix E).

21. **Airport Clear Zones**: This project does not include the construction of any housing developments, nor is the project near any type of active airport or runway. A runway just north of the existing well site, on BLM land, has not been used for many years and is inactive. The State of Idaho relinquished the lease for the airport back to the BLM in 1976.

ENVIRONMENTAL IMPACTS OF PROPOSED PROJECT

There are not any anticipated adverse direct or indirect, long-term or cumulative impacts on manmade and natural features anticipated in conjunction with the proposed project. There will be short-term impacts to areas adjacent to the Dietrich Main Canal and east of Dietrich associated with construction; however, these will be mitigated by the measures required by the Joint 404 permit, water right applications, and implementation of Best Management Practices during construction.

MEANS TO MITIGATE ADVERSE ENVIRONMENTAL IMPACTS

The Contractor will be required to meet all permit and right-of-way agreement requirements. Mitigation measures that will be incorporated in the project include the following:

- Wetland professional consultant will conduct wetlands inventory at the Dietrich Main Canal and along the proposed transmission pipelines east of town prior to construction activities.
- Construction activities in the Dietrich Main Canal shall be accomplished during non-irrigation periods.
- Best Management Practices will be required for traffic control services, erosion and stormwater pollution prevention and control, and dust control.
- Disturbed areas shall be restored and re-vegetated and/or seeded with perennial vegetation approved by the local NRCS or IDFG office.
- In the event that cultural resources are encountered, work shall stop until such time as a qualified archeologist can be called to assess the value of these potential cultural resources and make recommendations to the State Historical and Preservation Office.

PUBLIC PARTICIPATION

A summary of public involvement, comments and minutes of meetings at which the project were discussed are included in the appendix.

The City held at least four technical review committee meetings that included Keller Associates, elected officials, and the City's public works staff to review information and study findings. These meetings were held at City Hall and were open to the public. On November 1, 2010 representatives of Keller Associates gave a project status report in a City Council meeting (copy of presentation included in the Appendix C). On January 7, 2011, the City published a Notice

inviting public comments during a 30-day public comment period on the Water Facilities Planning Study report to be closed on February 7, 2011 with a public open house at City Hall. A draft of the report was made available at the City Hall and also posted on the City's website.

The City received written comments from one individual during the public comment period. The City received no public testimony during the public hearing session of the open house. Responses were provided by Keller Associates and elected officials to the comments and questions posed in the written comments received by the City. After considering the public comment received during the public comment period and deliberation, the City Council selected Alternative 1 as the preferred alternative.

AGENCIES CONSULTED (see Appendix for correspondence)

Agency	Response	Date of Response
Army Corps of Engineers	Recommends professional wetland inventory at Dietrich Main Canal.	March 29, 2011
Idaho Dept. of Water Resources	Will require compliance of State requirement for drilling and developing new well including submission of new water right and water right transfer application.	March 29, 2011
Idaho Dept. of Environmental Quality	Minor, short-term traffic disruption, impacts to water service, storm water and erosion, and noise and dust pollution to mitigated with BMPs.	March 30, 2011
Idaho Dept. of Agriculture	No comments.	April 1, 2011
Department of Lands	No environmental impacts.	March 24, 2011
IDWR State Floodplain Coordinator	Dietrich not enrolled in NFIP. No impacts.	April 15, 2011
Idaho Dept. of Commerce	Reliable water system will maintain and improve economic vitality.	April 1, 2011
Bureau of Land Management	Need to address issues with right-of-way grant for water tank and pipeline.	April 8, 2011
Idaho Dept. of Fish and Game, Upper Snake Region	No anticipated environmental impacts.	June 3, 2011
Idaho State Historical Society	Recommend cultural survey in area of new tank and well and consideration of Dietrich Main Canal for eligibility to the National Register of Historic Places.	April 20, 2011
Shoshone-Bannock Tribe	No response.	Consultation attempt April 21, 2011 , March 22, 2011
Shoshone-Paiute Tribe	Recommend cultural survey.	April 22, 2011
Shoshone Office of Natural Resources Conservation Service	No impact.	April 5, 2011
United States Dept. of Agriculture Rural Development	No detrimental environmental impacts.	April 25, 2011
United States Fish and Wildlife Service	Likely not to adversely affect. Recommends considering avian needs under MBTA.	June 1, 2011
Idaho Transportation Dept., Division of Aeronautics	No impact.	October 12, 2011
Environmental Protection Agency, Sole Source Aquifer	No significant adverse impacts.	October 20, 2011

REFERENCES

1. City of Dietrich, Idaho 2011 Water Facilities Master Planning and Study.
2. http://censtats.census.gov/data/ID/1601621790.pdf
3. NRCS Web Soil Survey: http://websoilsurvey.nrcs.usda.gov/app/
4. USGS Earthquake Hazard Mapping: https://geohazards.usgs.gov/eqprob/2009/index.php
5. Western Regional Climate Center http://www.wrcc.dri.edu/cgi-bin/cliMAIN.pl?idshos
6. http://yosemite.epa.gov/r10/water.nsf/Sole+Source+Aquifers/ssamaps
7. National Wetlands Inventory: http://www.fws.gov/wetlands/

MAILING LIST

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Snake River Office Supervisor
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Boise, ID 83709

Brian Reed
Dept. of Environmental Quality
1363 Fillmore
Twin Falls, ID 83301

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1200 6th Avenue, OWW 130
Seattle, WA 98101

Sue Ennes
EPA Region 10, Office of
Environmental Assessment (OEA-095)
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Seattle, WA 98101

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U.S. EPA, Idaho Operations Office
1435 North Orchard
Boise, ID 83706

Barbara Astle – Administrative Assistant
USDA – Conservation District
PO Box 398
Shoshone, Idaho 83352

Patti Hurley
NRCS, Shoshone/Jerome, Idaho
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Shoshone, Idaho 83352

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Southern Region
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Twin Falls, ID 83301

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ITD – Division of Aeronautics
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Boise, ID 83707-1129

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Magic Valley Region
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Jerome, ID 83338

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Boise, ID 83701

Merl Egbert
South Central District Health Dept.
1020 Washington Street North
Twin Falls, ID 83301

Kurt Houston
Department of Lands
300 North 6th Street, Suite 103
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Boise, ID 83720-0050

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USDA-RD, Central Idaho Area Office
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Twin Falls, ID 83301

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Idaho Dept. of Commerce
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Boise, ID 83720

Suzi Pengilly
Idaho State Historical Society
210 Main Street
Boise, ID 83702

Carolyn Boyer Smith
Shoshone-Bannock Tribes
P.O. Box 306
Fort Hall, ID 83203

Ted Howard
Shoshone-Paiute Tribe
P.O. Box 219
Owyhee, NV 89832

Tara Hagen
Bureau of Land Management
400 West F Street
Shoshone, ID 83352

Todd Morris and Mary Souchik
537 N. Washington Street
Dietrich, ID 83324

Susan Eastman
Sole Source Aquifer Manager
Region 10 EPA
1200 Sixth Avenue, Suite 900
Seattle, WA 98101

Appendix A

SPECIES LIST

United States Department of the Interior

IDAHO FISH AND WILDLIFE OFFICE

1387 S. Vinnell Way, Room 368
Boise, Idaho 83709
Telephone (208) 378-5243
http://www.fws.gov/idaho

U.S. Fish and Wildlife Service - Idaho Fish and Wildlife Office
Endangered, Threatened, Proposed, and Candidate Species With Associated Proposed and Critical Habitats

(Updated August 17, 2011)

Federal Agency Assistance and Consultation

Section 7(c) of the Endangered Species Act directs the U.S. Fish and Wildlife Service to consult with federal agencies on any proposed actions (direct or indirect) on federal lands that may potentially affect listed, proposed or candidate species or their habitat.

It is the responsibility of federal "action agencies" (or their designated representatives) to obtain an official table ("Species List") of listed, proposed and candidate species that may be present where the proposed activity is to occur. If the project potentially affects the species or its habitat, the federal agency is required to consult with the Service.

To assist agencies with this task, the Service prepares and regularly updates Species Lists by county. The lists are valid for up to 180 days. Species List areas may be larger than the footprint of the proposed activity. Status changes, such as listings, delistings or critical habitat designations, will be updated immediately by the Service so the action agency will always have access to the most current information for project planning.

For comprehensive information specific to federal agency assistance and consultation, go to: http://www.fws.gov/idaho/agencies.htm

Obtaining Species Lists for Proposed Federal Actions

The Fish and Wildlife Service is developing a web-based system that will allow Action Agencies to generate project-specific Species Lists. We will provide instructions when the new web-based species list system is launched.

Until then, please obtain an official "T&E Species List" directly from the Service's Idaho FWS website, which is organized by county for your proposed activity consultation.

This list will ensure that your project records contain the most current species information. Please print and retain a copy of this list with your project records. Should your project plans expand or change to include additional counties, you will need to check the website for an updated list, and reprint a new species list for your files.

To obtain the most current County Species List (PDF file for download), click on the link under "Obtaining an Official T&E Species List for Proposed Federal Actions" - www.fws.gov/idaho/species/IdahoSpeciesList.pdf.

Before initiating an action, a federal action agency (or their designated representative) that is planning an activity must obtain a list of species that may be present in the proposed project area. (Please note that the area for which this list is being generated may encompass a larger area than the footprint of the construction.) The area includes any effects of the action (direct and indirect) that may potentially affect species or habitats.

This species/county table meets the Fish and Wildlife Services' regulatory obligation under Section 7(c) of the Endangered Species Act (Act) to provide federal agencies with a species list. Please print and retain a copy of this table and this information sheet with your project records.

Use this information to verify the habitats and/or species present in the area affected by the projects you are developing. Any project-specific species list generated from this table is valid for up to 180 days. Because the information in this table may change without notice, you are advised to visit our website frequently.

When you submit a request for Section 7 Consultation, please include a copy of your downloaded Species List marked with the date that it was downloaded. This will document your compliance with 50 CFR 402.12(c).

If the area affected by the proposed project extends beyond the boundary of the State of Idaho, please contact the appropriate U.S. Fish and Wildlife Service office listed below to obtain a Species List for their area of jurisdiction.

U.S. Fish and Wildlife Service Contacts
Idaho – Bob Kibler, bob_kibler@fws.gov (208) 378-5255
Montana – Montana Ecological Services Field Office (406) 449-5225
Nevada – Nevada Fish & Wildlife Office (775) 861-6300
Oregon – La Grande Field Office (541) 962-8584
Utah – Utah Ecological Service Field Office (801) 975-3330
Washington – Spokane Field Office (509) 891-6839
Wyoming – Wyoming Ecological Services Field Office (307) 772-2374

Candidate Species Conservation
Though candidate species have no protection under the Act, they are included in the table for early planning consideration. Candidate species could be proposed or listed during the project planning period. The Service advises you to evaluate potential effects to candidate species that may occur in the project area. Should the species be listed, this may expedite section 7 consultation under the Act.

NOAA Fisheries Species
Listed or proposed species that are under National Marine Fisheries Service's (NOAA Fisheries) jurisdiction do NOT appear on the Service's Species Lists. In Idaho, please contact NOAA Fisheries at (208) 378-5696 or visit NOAA Fisheries' webpage at http://www.nwr.noaa.gov/Species-Lists.cfm for consultation information.

Rev 5/10/11
IFWO

Grouping	Amphibian	Bird	
Common Name	**Columbia spotted frog - Great Basin population**	**Greater Sage-Grouse**	**Yellow-billed cuckoo**
Scientific Name	*Rana luteiventris*	*Centrocercus urophasiunus*	*Coccyzus americanus*
Status	**[C]**	**[C]**	**[C]**
Ada		x	x
Adams		x	
Bannock		x	x
Bear Lake		x	
Benewah			
Bingham		x	x
Blaine		x	x
Boise			x
Bonner			
Bonneville		x	x
Boundary			
Butte		x	
Camas		x	
Canyon			x
Caribou		x	
Cassia		x	x
Clark		x	x
Clearwater			
Custer		x	x
Elmore		x	x
Franklin		x	
Fremont		x	x
Gem		x	
Gooding		x	
Idaho			x
Jefferson		x	x
Jerome		x	
Kootenai			x
Latah			x
Lemhi		x	x
Lewis			x
Lincoln		x	
Madison		x	x
Minidoka		x	x
Nez Perce			
Oneida		x	
Owyhee	x	x	x
Payette		x	
Power		x	
Shoshone			
Teton			
Twin Falls	x	x	x
Valley			
Washington		x	

[C] Candidate [T] Threatened [CH] Designated Critical Habitat
[P] Proposed [E] Endangered [PCH] Proposed Critica Habitat

Grouping	Mammal				
Common Name	**Canada lynx**		**Grizzly bear**	**Northern Idaho ground squirrel**	**Selkirk Mountain caribou**
Scientific Name	*Lynx canadensis*		*Ursus arctos horribilis*	*Spermophilus brunneus brunneus*	*Rangifer tarandus caribou*
Status	**[T]**	**[CH]**	**[T]**	**[T]**	**[E]**
Ada					
Adams	x			x	
Bannock					
Bear Lake	x				
Benewah	x				
Bingham					
Blaine	x				
Boise	x				
Bonner	x		x		x
Bonneville	x		x		
Boundary	x	x	x		x
Butte	x				
Camas	x				
Canyon					
Caribou	x				
Cassia					
Clark	x		x		
Clearwater	x				
Custer	x				
Elmore	x				
Franklin	x				
Fremont	x		x		
Gem					
Gooding					
Idaho	x				
Jefferson	x				
Jerome					
Kootenai	x				
Latah	x				
Lemhi	x				
Lewis					
Lincoln					
Madison	x				
Minidoka					
Nez Perce	x				
Oneida					
Owyhee					
Payette					
Power					
Shoshone	x				
Teton	x		x		
Twin Falls					
Valley	x			x	
Washington				x	

[C] Candidate [T] Threatened [CH] Designated Critical Habitat
[P] Proposed [E] Endangered [PCH] Proposed Critica Habitat

Grouping	Mammal	
Common Name	**Southern Idaho ground squirrel**	**Wolverine**
Scientific Name	*Spermophilus brunneus enemicus*	*Gulo gulo*
Status	**[C]**	**[C]**
Ada		x
Adams	x	x
Bannock		x
Bear Lake		x
Benewah		x
Bingham		x
Blaine		x
Boise		x
Bonner		x
Bonneville		x
Boundary		x
Butte		x
Camas		x
Canyon		x
Caribou		x
Cassia		
Clark		x
Clearwater		x
Custer		x
Elmore		x
Franklin		x
Fremont		x
Gem	x	x
Gooding		x
Idaho		x
Jefferson		x
Jerome		
Kootenai		x
Latah		x
Lemhi		x
Lewis		x
Lincoln		x
Madison		x
Minidoka		
Nez Perce		x
Oneida		
Owyhee		
Payette	x	
Power		
Shoshone		x
Teton		x
Twin Falls		x
Valley		x
Washington	x	x

Grouping	Fish				Mollusk			
Common Name	**Bull trout**		**Kootenai River white sturgeon**		**Banbury Springs lanx**	**Bliss Rapids snail**	**Bruneau hot springsnail**	**Snake River physa snail**
Scientific Name	*Salvelinus confluentus*		*Acipenser transmontanus*		*Lanx sp .*	*Talorconcha serpenticola*	*Pyrgolopsis bruneauensis*	*Haitia (Physa) natricinia*
Status	**[T]**	**[CH]**	**[E]**	**[CH]**	**[E]**	**[T]**	**[E]**	**[E]**
Ada	x							x
Adams	x	x						
Bannock								
Bear Lake								
Benewah	x	x						
Bingham								
Blaine	x	x						
Boise	x	x						
Bonner	x	x						
Bonneville								
Boundary	x	x	x	x				
Butte	x	x						
Camas	x	x						
Canyon								x
Caribou								
Cassia								x
Clark								
Clearwater	x	x						
Custer	x	x						
Elmore	x	x				x		x
Franklin								
Fremont								
Gem	x	x						
Gooding					x	x		x
Idaho	x	x						
Jefferson								
Jerome						x		x
Kootenai	x	x						
Latah								
Lemhi	x	x						
Lewis	x	x						
Lincoln								
Madison								
Minidoka								x
Nez Perce	x	x						
Oneida								
Owyhee	x	x					x	x
Payette	x							x
Power								
Shoshone	x	x						
Teton								
Twin Falls					x	x		x
Valley	x	x						
Washington	x	x						x

[C] Candidate [T] Threatened [CH] Designated Critical Habitat
[P] Proposed [E] Endangered [PCH] Proposed Critica Habitat

Grouping	Plant					
Common Name	**Christ's paintbrush**	**Goose Creek milkvetch**	**Macfarlane's four-o'clock**	**Packard's Milkvetch**	**Slickspot peppergrass**	
Scientific Name	*Castilleja christii*	*Astragalus anserrinus*	*Mirabilis macfarlanei*	*Astragalus cusickii var. parkardiae*	*Lepidium papilliferum*	
Status	**[C]**	**[C]**	**[T]**	**[C]**	**[T]**	**[PCH]**
Ada					x	x
Adams						
Bannock						
Bear Lake						
Benewah						
Bingham						
Blaine						
Boise						
Bonner						
Bonneville						
Boundary						
Butte						
Camas						
Canyon					x	x
Caribou						
Cassia	x	x				
Clark						
Clearwater						
Custer						
Elmore					x	x
Franklin						
Fremont						
Gem					x	x
Gooding						
Idaho			x			
Jefferson						
Jerome						
Kootenai						
Latah						
Lemhi						
Lewis						
Lincoln						
Madison						
Minidoka						
Nez Perce						
Oneida						
Owyhee					x	x
Payette				x	x	x
Power						
Shoshone						
Teton						
Twin Falls						
Valley						
Washington						

[C] Candidate [T] Threatened [CH] Designated Critical Habitat
[P] Proposed [E] Endangered [PCH] Proposed Critica Habitat

Grouping	Plant			
Common Name	**Spalding's catchfly**	**Ute ladies'-tresses**	**Water Howellia**	**Whitebark Pine**
Scientific Name	*Silene spaldingii*	*Spiranthese diluvialis*	*Howellia aquatilis*	*Pinus albicaulis*
Status	**[T]**	**[T]**	**[T]**	**[C]**
Ada				
Adams				x
Bannock				
Bear Lake				x
Benewah	x		x	
Bingham		x		
Blaine				x
Boise				x
Bonner				x
Bonneville		x		x
Boundary				x
Butte				x
Camas				x
Canyon				
Caribou				x
Cassia				
Clark				x
Clearwater				x
Custer				x
Elmore				x
Franklin				
Fremont		x		x
Gem				x
Gooding				
Idaho	x			x
Jefferson		x		
Jerome				
Kootenai	x		x	
Latah	x		x	
Lemhi				
Lewis	x			
Lincoln				
Madison		x		
Minidoka				
Nez Perce	x			
Oneida				
Owyhee				
Payette				
Power				
Shoshone	x		x	x
Teton				x
Twin Falls				
Valley				x
Washington				x

[C] Candidate [T] Threatened [CH] Designated Critical Habitat
[P] Proposed [E] Endangered [PCH] Proposed Critica Habitat

Appendix B

PERMITS

STATE OF IDAHO
DEPARTMENT OF WATER RESOURCES

APPLICATION FOR TRANSFER OF WATER RIGHT – POINT(S) OF DIVERSION

This form may be used to apply to change and/or add points of diversion for existing water rights and to report an ownership change for an entire water right(s) in connection with the proposed point of diversion change(s). Do not use this form to apply for changes to other elements of a water right or to report an ownership change for a portion of a water right. See the *Application for Transfer Instructions* for help completing this form and for mailing addresses of Department offices where your application can be submitted.

Check all that apply:

☐ Change diversion point(s) ☐ Add diversion point(s) ☐ Ownership change

1. **APPLICANT(S)** _____ Phone _____

2. **MAILING ADDRESS** _____ City _____

State _____ Zip _____ Email _____

☐ If the applicant is not an individual and not registered to do business in the State of Idaho, attach documentation identifying officers authorized to sign for the applicant.

☐ If the applicant is not the current water right(s) owner, attach documentation of authority to file the application.

☐ If the application includes a change in ownership of water right(s), attach a copy of the conveyance document, such as a warranty deed, court decree, contract of sale, etc. The conveyance document must include a legal description of the property conveyed or description of the water right if no land is conveyed.

☐ If the application is not signed by the applicant, attach a Power of Attorney or other documentation providing authority to sign for the applicant.

3. **LIST WATER RIGHT NUMBER(S)** _____

_____

☐ Attach a copy of the water right(s) as recorded, available at *www.idwr.idaho.gov*, *Water Right Transfers, Step 1*, or by contacting any Department office.

4. **TOTAL AMOUNT OF WATER** transferred is _____ cubic feet per second and/or _____ acre-feet per annum.
(diversion rate) (storage volume)

5. **POINT OF DIVERSION** – Describe all the point(s) of diversion to be included on the water right(s) after the proposed change.

☐ Attach Eastern Snake Plain Aquifer (ESPA) analysis if this transfer proposes to change a point of diversion affecting the ESPA. ESPA analysis information is available at *www.idwr.idaho.gov*, *Water Right Transfers, Online Resources*.

Twp	Rge	Sec	Govt Lot	¼	¼	¼	County	Source	Local name or tag #

Transfer No. _____

6. GENERAL INFORMATION

a. Describe the complete diversion system, including how you will accommodate a measuring device and lockable controlling works should they be required now or in the future:

_____

_____

b. Who owns the property at the point(s) of diversion? _____
If other than the applicant, describe the arrangement enabling the applicant to access the property for the diversion system:

_____

c. To your knowledge, has/is any portion of the water right(s) proposed to be changed:

Yes	No	
☐	☐	undergone a period of five or more consecutive years of non-use,
☐	☐	currently leased to the Water Supply Bank,
☐	☐	currently used in a mitigation plan limiting the use of water under the right(s), or
☐	☐	currently enrolled in a Federal set-aside program limiting the use of water under the right(s)?

If yes, describe _____

_____

7. **MAP** – ☐ Attach a map of the diversion, measurement, control and distribution system. Clearly label the map with township, range, section and ¼ ¼ of section information. The *Map Tool,* available at *http://maps.idwr.idaho.gov/TransferApplicationLayouts/* provides a satisfactory template for creating the required map.

8. **SIGNATURE** - The information in this application is true to the best of my knowledge. I understand any willful misrepresentations in this application may result in rejection of the application or cancellation of an approval.

_____	_____	_____
Signature of applicant or authorized agent	Print name and title if applicable	Date
_____	_____	_____
Signature of applicant or authorized agent	Print name and title if applicable	Date

9. **FEE** - ☐ The application filing fee provided in Section 42-221, Idaho Code, must be submitted with the application for transfer. The Application fee is based on the total amount of water proposed for transfer in Item 4: the larger fee for either cubic feet per second (diversion rate) or acre-feet per annum (storage volume). The *Fee Schedule* is available at *www.idwr.idaho.gov, Water Right Transfers, Step 4* and in the *Application for Transfer Instructions.*

FOR DEPARTMENT USE ONLY

Transfer includes _____ pages of attachments. Received by _____ Date _____

Fee paid _____ Date _____ Receipted by _____ Receipt # _____

Preliminary review completed by _____ Date _____

FORM 202 03/10 Print form as a 2 page, single-sided document

STATE OF IDAHO
DEPARTMENT OF WATER RESOURCES

Ident. No. _____

APPLICATION FOR PERMIT

To appropriate the public waters of the State of Idaho

1. Name of applicant(s) _____ Phone _____
   Name connector (check one): ☐ and ☐ or ☐ and/or

   Mailing address: _____ City _____

   State _____ Zip _____ Email: _____

2. Source of water supply _____ which is a tributary of _____

3. Location of point(s) of diversion:

Twp	Rge	Sec	Govt Lot	¼	¼	¼	County	Source	Local name or tag #

4. Water will be used for the following purposes:

   Amount _____ for _____ purposes from _____ to _____ (both dates inclusive)
   (cfs or acre-feet per year)

   Amount _____ for _____ purposes from _____ to _____ (both dates inclusive)
   (cfs or acre-feet per year)

   Amount _____ for _____ purposes from _____ to _____ (both dates inclusive)
   (cfs or acre-feet per year)

   Amount _____ for _____ purposes from _____ to _____ (both dates inclusive)
   (cfs or acre-feet per year)

5. Total quantity to be appropriated is (a) _____ cubic feet per second (cfs) and/or (b) _____ acre-feet per year (af).

6. Proposed diverting works:

   a. Describe type and size of devices used to divert water from the source. _____

   b. Height of storage dam _____ feet; active reservoir capacity _____ acre-feet; total reservoir capacity _____ acre-feet. If the reservoir will be filled more than once each year, describe the refill plan in item 11.
   For dams 10 feet or more in height OR reservoirs with a total storage capacity of 50 acre-feet or more, submit a separate Application for Construction or Enlargement of a New or Existing Dam. Application required? ☐ Yes ☐ No

   c. Proposed well diameter is _____ inches; proposed depth of well is _____ feet.

   d. Is ground water with a temperature of greater than 85°F being sought? ☐ Yes ☐ No

   e. If well is already drilled, when? _____; drilling firm _____;
   Well was drilled for (well owner) _____; Drilling Permit No. _____.

7. Description of proposed uses (if irrigation only, go to item 8):

   a. Hydropower; show total feet of head and proposed capacity in kW. _____

   b. Stockwatering; list number and kind of livestock. _____

   c. Municipal; show name of municipality or the applicant's qualifications as a municipal provider. _____

   d. Domestic; show number of households _____

   e. Other; describe fully. _____

8. Description of place of use:

a. If water is for irrigation, indicate acreage in each subdivision in the tabulation below.

b. If water is used for other purposes, place a symbol of the use (example: D for Domestic) in the corresponding place of use below. See instructions for standard symbols.

TWP	RGE	SEC	NE				NW				SW				SE				TOTALS
			NE	NW	SW	SE	NE	NW	SW	SE	NE	NW	SW	SE	NE	NW	SW	SE	

Total number of acres to be irrigated: _____

9. Describe any other water rights used for the same purposes as described above. Include water delivered by a municipality, canal company, or irrigation district. If this application is for domestic purposes, do you intend to use this water, water from another source, or both, to irrigate your lawn, garden, and/or landscaping? _____

10. a. Who owns the property at the point of diversion? _____

b. Who owns the land to be irrigated or place of use? _____

c. If the property is owned by a person other than the applicant, describe the arrangement enabling the applicant to make this filing: _____

11. Describe your proposal in narrative form, and provide additional explanation for any of the items above. Attach additional pages if necessary. _____

12. Time required for completion of works and application of water to proposed beneficial use is ____ years (minimum 1 year).

13. **MAP OF PROPOSED PROJECT REQUIRED** - Attach an 8½" x 11" map clearly identifying the proposed point of diversion, place of use, section #, township & range. A photocopy of a USGS 7.5 minute topographic quadrangle map is preferred.

The information contained in this application is true to the best of my knowledge. I understand that any willful misrepresentations made in this application may result in rejection of the application or cancellation of an approval.

_____ Signature of Applicant

_____ Signature of Applicant

_____ Print Name (and title, if applicable)

_____ Print Name (and title, if applicable)

For Department Use:

Received by _____ Date _____ Time _____ Preliminary check by _____

Fee $ _____ Receipted by _____ Receipt No. _____ Date _____

JOINT APPLICATION FOR PERMITS

U.S. ARMY CORPS OF ENGINEERS - IDAHO DEPARTMENT OF WATER RESOURCES - IDAHO DEPARTMENT OF LANDS

Authorities: The Department of Army Corps of Engineers (Corps), Idaho Department of Water Resources (IDWR), and Idaho Department of Lands (IDL) established a joint process for activities impacting jurisdictional waterways that require review and/or approval of both the Corps and State of Idaho. Department of Army permits are required by Section 10 of the Rivers & Harbors Act of 1899 for any structure(s) or work in or affecting navigable waters of the United States and by Section 404 of the Clean Water Act for the discharge of dredged or fill materia ls into waters of the United States, including adjacent wetlands. State permits are required under the State of Idaho, Stream Protection Act (Title 42, Chapter 38, Idaho Code and Lake Protection Act (Section 58, Chapter 13 et seq., Idaho Code).

Joint Application : Applicant will need to send a completed application, along with one (1) set of legible and reproducible drawings illustrating the location and character of the proposed activities/project to both the Corps and the State of Idaho. Information provided on this application will be used in evaluating the proposed activities. Disclosure of requested information is voluntary, however, if the information is not provided, the application may not be processed and permits may not be issued. Information requested in Block 26 and Block 27 are not required to process the application. DO NOT START WORK UNTIL YOU RECEIVE ALL PERMITS FROM BOTH THE CORPS AND THE STATE OF IDAHO.

Drawings & Supplemental Requirements : See Instruction Guide for required vicinity map, plan-view, and section-view drawings on 8-1/2 x 11 paper size.

INCOMPLETE APPLICATIONS MAY NOT BE PROCESSED

1 DATE:

2 CONTACT INFORMATION - APPLICANT: Required	3 CONTACT INFORMATION - AGENT: Completion of Block #29 Required
Name: Company: Mailing Address: City: State: Zip: PH #:( ) E-mail:	Name: Company: Mailing Address: City: State: Zip: PH #:( ) E-mail:
4 PROJECT NAME or TITLE:	5 PROJECT STREET ADDRESS:
6 PROJECT CITY: / 7 PROJECT COUNTY:	8 PROJECT ZIP CODE: / 9 NEAREST WATERWAY/WATERBODY:
10 TAX PARCEL ID#: / 11 LATITUDE/LONGITUDE (Required with vicinity Map):	12a 1/4 / 12b 1/4 / 12c SECTION / 12d TOWNSHIP / 12E RANGE
13a ESTIMATED START DATE:	13b ESTIMATED END DATE:

14 DESCRIBE INTENDED USE (Commercial, Industrial, Public, Private, Other):

15 HAVE ALL ADJACENT PROPERTY OWNERS BEEN NOTIFIED OF PROPOSED ACTIVITY OR PROJECT? ☐ NO ☐ YES
Complet the attached sheet by providing list of contract information (including names, address, phone number) of all adjacent property owners.

16 ☐ CHECK BOX IF ALTERATION(S) ARE LOCATED ON PUBLIC TRUST LANDS ADMINISTERED BY STATE OF IDAHO DEPARTMENT OF LANDS.

17 DIRECTIONS TO PROJECT SITE Include vicinity map with legible crossroads, street numbers/names, landmarks, attach additional sheet(s), if needed:

18 HAS WORK BEGAN ON THIS PROJECT/ACTIVITY? ☐ NO ☐ YES If yes, describe ALL work that has occurred, including dates; attach additional sheet(s), if needed:

19 PREVIOUSLY ISSUED PERMIT AUTHORIZATIONS:

20 TYPE, MATERIAL AND AMOUNT BEING DISCHARGED BELOW THE ORDINARY HIGH WATER MARK, IN CUBIC YARDS:
(1) TYPE Cubic Yards (2) TYPE Cubic Yards (3) TYPE Cubic Yards

21 SURFACE AREA IN ACRES OF WETLAND OR OTHER WATERS FILLED See Instructions Guide:
Acres OR Square Feet

22 SIZE AND FLOW CAPACITY OF BRIDGE OR CULVERT & DRAINAGE AREA SERVED: Square Miles

23 IS PROJECT LOCATED IN A MAPPED FLOODWAY? ☐ NO ☐ YES If yes, contact the floodplain administrator in the local government jurisdiction in which the project is located. A Floodplain Development permit and a No-Rise Certification may be required.

FOR AGENCY USE ONLY

Corps of Engineers #:	ID Water Resources #:	ID Dept of Lands #:
Date Received:	Date Received:	Date Received:
☐ Incomplete App. - Return Date:	Fee Received: Receipt #:	Fee Received: Receipt #:

24a OVERALL DESCRIPTION & PURPOSE OF PROJECT TO WATERS OF U.S., INCLUDING WETLANDS Attach additional sheet(s), if needed:

24b DETAILED DESCRIPTION OF EACH INDIVIDUAL ACTIVITY, WITHIN OVERALL PROJECT (Include dimensions, equipment, construction,methods, etc.):

25a DESCRIBE MEASURES TAKEN TO AVOID, MINIMIZE, COMPENSATE FOR IMPACTS TO WATERS OF THE UNITED STATES, INCLUDING WETLANDS: See Instruction Guide for specific details.

25b PROPOSED MITIGATION PLAN: Attach copy of proposed mitigation plan or statement/reasoning why no mitigation plan is required. Attach additional sheet(s), if needed.

26 LIST EACH IMPACT TO STREAM, RIVER, LAKE, RESERVOIR, INCLUDING SHORELINE. Attach site map with location of EACH impact listed; attach additional sheet(s).

Activity Number	Name of Waterbody	Seasonal or Perennial	Avg. Stream Width (Linear Feet)	Description of Impact (road crossing, impound, culvert, etc.)	Impact Length (Linear Feet)
1					
2					
3					
4					
			TOTAL STREAM IMPACTS (Linear Feet):		

27 LIST EACH WETLAND IMPACT, INCLUDING MECHANIZED CLEARING, FILL, EXCAVATION, FLOOD, DRAINAGE, ETC.
Attach site map with location of EACH impact listed; attach additional sheet(s).

Activity Number	Wetland Type (Emergent, Forested, Scrub/Shrub)	Distance to Waterbody (Linear Feet)	Description of Impact (purpose of road crossing, impoundment, culvert, etc.)	Impact Size (Acres or Square Feet)
1				
2				
3				
4				
			TOTAL WETLAND IMPACTS (Linear Feet):	

28 AUTHORIZATION OF AGENT/ACCESS: I hereby authorize the Agent (listed in Block 3 of this application) to act in my behalf in the processing of this application and to furnish all information, drawings, maps, and supplemental information in support of this application. I hereby grant to the agencies to which this application is made, the right to access/come upon the above-described location(s) to inspect the propsed and completed work/activities.

Signature of Applicant *Date*

29 CERTIFICATION: Application is hereby made for permit, or permits, to authorize the work and uses of the work as described in this application and all supporting documentation. I certify that the information in this application is complete and accurate. I further certify that I possess the authority to undertake the work described herein, or I am acting as the duly authorized agent for the applicant.*

Signature of Applicant *Date* *Signature of Agent* *Date*

* The application must be signed by the person who desires to undertake the proposed activity AND signed by a duly authorized agent, if the authorization statement in both Blocks 3 & 28 havebeen completed and signed. 18 USC Section 1001 provides that: Whoever, in any manner within the jurisdiction of any department of the United States knowingly and willfully falsifies, conceals, or covers up any trick, scheme, or disguises a material fact or makes any false, fictitious, or fraudulent statements or representations or makes or uses any false writing or document knowing same to contain any false, fictitious or fraudulent statements or entry, shall be fined not more than $10,000 or imprisoned not more than five years or both.

ADJACENT PROPERTY OWNERS NOTIFICATION REQUIREMENT

Provide the name, physical address, and telephone number of ALL adjacent property owners.

This includes adjacent property owners with ownership located on both sides of the near stream bank AND/OR all other ownership on the waterway that may be affected by the proposed activities/project. Also, include homeowner or community associations within the proposed project area.

CONTACT INFORMATION - OWNERSHIP NEAR STREAM BANK

DOWNSTREAM NOTIFICATION

Name:

Mailing Address:

City: State: Zip:

PH #:( ) E-mail:

UPSTREAM NOTIFICATION

Name:

Mailing Address:

City: State: Zip:

PH #:( ) E-mail:

CONTACT INFORMATION - OWNERSHIP ON WATERWAY

Name:

Mailing Address:

City: State: Zip:

PH #:( ) E-mail:

Name:

Mailing Address:

City: State: Zip:

PH #:( ) E-mail:

Name:

Mailing Address:

City: State: Zip:

PH #:( ) E-mail:

Name:

Mailing Address:

City: State: Zip:

PH #:( ) E-mail:

Name:

Mailing Address:

City: State: Zip:

PH #:( ) E-mail:

Attach as many additional sheets as needed.

STANDARD FORM 299 (7/2007)
Prescribed by DOI/USDA/DOT
P.L. 96487 and Federal
Register Notice 5-22-95

APPLICATION FOR TRANSPORTATION AND UTILITY SYSTEMS AND FACILITIES ON FEDERAL LANDS

FORM APPROVED
OMB NO. 1004-0189
Expires: November 30, 2008

FOR AGENCY USE ONLY

Application Number

Date filed

NOTE: Before completing and filing the application, the applicant should completely review this package and schedule a preapplication meeting with representatives of the agency responsible for processing the application. Each agency may have specific and unique requirements to be met in preparing and processing the application. Many times, with the help of the agency representative, the application can be completed at the preapplication meeting.

1. Name and address of applicant *(include zip code)*

2. Name, title, and address of authorized agent if different from Item 1 *(include zip code)*

3. TELEPHONE *(area code)*

Applicant

Authorized Agent

4. As applicant are you? *(check one)*

a. ☐ Individual
b. ☐ Corporation*
c. ☐ Partnership/Association*
d. ☐ State Government/State Agency
e. ☐ Local Government
f. ☐ Federal Agency

** If checked, complete supplemental page*

5. Specify what application is for: *(check one)*

a. ☐ New authorization
b. ☐ Renewing existing authorization No.
c. ☐ Amend existing authorization No.
d. ☐ Assign existing authorization No.
e. ☐ Existing use for which no authorization has been received*
f. ☐ Other*

**If checked provide details under Item 7*

6. If an individual, or partnership are you a citizen(s) of the United States? ☐ Yes ☐ No

7. Project description *[describe in detail):* (a) Type of system or facility, *(e.g., canal, pipeline, road);* (b) related structures and facilities; (c) physical specifications *(length, width, grading, etc.);* (d) term of years needed; (e) time of year of use or operation; (f) Volume or amount of product to be transported; (g) duration and timing of construction; and (h) temporary work areas needed for construction *(Attach additional sheets, if additional space is needed,)*

8. Attach a map covering area and show location of project proposal

9. State or local government approval: ☐ Attached ☐ Applied for ☐ Not required

10. Nonreturnable application fee. ☐ Attached ☐ Not required

11. Does project cross international boundary or affect international waterways? ☐ Yes ☐ No *(If "yes," indicate on map)*

12. Give statement of your technical and financial capability to construct, operate, maintain, and terminate system for which authorization is being requested.

(Continued on page 2)

This form is authorized for local reproduction.

13a. Describe other reasonable alternative routes and modes considered.

b. Why were these alternatives not selected?

c. Give explanation as to why it is necessary to cross Federal Lands

14. List authorizations and pending applications filed for similar projects which may provide information to the authorizing agency. *(Specify number, date, code, or name)*

15. Provide statement of need for project, including the economic feasibility and items such as: (a) cost of proposal *(construction, operation, and maintenance);* (b) estimated cost of next best alternative; and (c) expected public benefits.

16. Describe probable effects on the population in the area, including the social and economic aspects, and the rural lifestyles.

17. Describe likely environmental effects that the proposed project will have on: (a) air quality; (b) visual impact; (c) surface and ground water quality and quantity; (d) the control or structural change on any stream or other body of water; (e) existing noise levels; and (f) the surface of the land, including vegetation, permafrost, soil, and soil stability.

18. Describe the probable effects that the proposed project will have on (a) populations of fish, plantlife, wildlife, and marine life, including threatened and endangered species; and (b) marine mammals, including hunting, capturing, collecting, or killing these animals.

19. State whether any hazardous material, as defined in this paragraph, will be used, produced, transported or stored on or within the right-of-way or any of the right-of-way facilities, or used in the construction, operation, maintenance or termination of the right-of-way or any of its facilities. "Hazardous material" means any substance, pollutant or contaminant that is listed as hazardous under the Comprehensive Environmental Response, Compensation, and Liability Act of 1980, as amended, 42 U.S.C. 9601 et seq., and its regulations. The definition of hazardous substances under CERCLA includes any "hazardous waste" as defined in the Resource Conservation and Recovery Act of 1976 (RCRA), as amended, 42 U.S.C. 9601 et seq., and its regulations. The term hazardous materials also includes any nuclear or byproduct material as defined by the Atomic Energy Act of 1954, as amended, 42 U.S.C. 2011 et seq. The term does **not** include petroleum, including crude oil or any fraction thereof that is not otherwise specifically listed or designated as a hazardous substance under CERCLA Section 101(14), 42 U.S.C. 9601(14), nor does the term include natural gas.

20. Name all the Department(s)/Agency(ies) where this application is being filed.

I HEREBY CERTIFY, That I am of legal age and authorized to do business in the State and that I have personally examined the information contained in the application and believe that the information submitted is correct to the best of my knowledge.

Signature of Applicant	Date

Title 18, U.S.C. Section 1001 and Title 43 U.S.C. Section 1212, make it a crime for any person knowingly and willfully to make to any department or agency of the United States any false, fictitious, or fraudulent statements or representations as to any matter within its jurisdiction.

(Continued on page 3)

APPLICATION FOR TRANSPORTATION AND UTILITY SYSTEMS AND FACILITIES ON FEDERAL LANDS

GENERAL INFORMATION

ALASKA NATIONAL INTEREST LANDS

This application will be used when applying for a right-of-way, permit, license, lease, or certificate for the use of Federal lands which lie within conservation system units and National Recreation or Conservation Areas as defined in the Alaska National Interest Lands Conservation Act. Conservation system units include the National Park System, National Wildlife Refuge System, National Wild and Scenic Rivers System, National Trails System, National Wilderness Preservation System, and National Forest Monuments.

Transportation and utility systems and facility uses for which the application may be used are:

1. Canals, ditches, flumes, laterals, pipes, pipelines, tunnels, and other systems for the transportation of water.
2. Pipelines and other systems for the transportation of liquids other than water, including oil, natural gas, synthetic liquid and gaseous fuels, and any refined product produced therefrom.
3. Pipelines, slurry and emulsion systems, and conveyor belts for transportation of solid materials.
4. Systems for the transmission and distribution of electric energy.
5. Systems for transmission or reception of radio, television, telephone, telegraph, and other electronic signals, and other means of communications.
6. Improved rights-of-way for snow machines, air cushion vehicles, and all-terrain vehicles.
7. Roads, highways, railroads, tunnels, tramways, airports, landing strips, docks, and other systems of general transportation.

This application must be filed simultaneously with each Federal department or agency requiring authorization to establish and operate your proposal.

In Alaska, the following agencies will help the applicant file an application and identify the other agencies the applicant should contact and possibly file with:

Department of Agriculture
Regional Forester, Forest Service (USFS)
Federal Office Building, P.O. Box 21628
Juneau, Alaska 99802-1628
Telephone: (907) 586-7847 *(or a local Forest Service Office)*

Department of the Interior
Bureau of Indian Affairs (BIA)
Juneau Area Office
9109 Mendenhall Mall Road, Suite 5, Federal Building Annex
Juneau, Alaska 99802
Telephone: (907) 586-7177

Bureau of Land Management (BLM)
222 West 7th Ave., Box 13
Anchorage, Alaska 99513-7599
Telephone: (907) 271-5477 *(or a local BLM Office)*

National Park Service (NPS)
Alaska Regional Office, 240 West 5th Ave., Rm. 114
Anchorage, Alaska 99501
Telephone: (907) 644-3501

U.S. Fish & Wildlife Service (FWS)
Office of the Regional Director
1011 East Tudor Road
Anchorage, Alaska 99503
Telephone: (907) 786-3440

Note-Filings with any Interior agency may be filed with any office noted above or with the: Office of the Secretary of the Interior, Regional Environmental Officer, Box 120, 1675 C Street, Anchorage, Alaska 99513.

Department of Transportation
Federal Aviation Administration
Alaska Region AAL-4, 222 West 7th Ave., Box 14
Anchorage, Alaska 99513-7587
Telephone: (907) 271-5285

NOTE - The Department of Transportation has established the above central filing point for agencies within that Department. Affected agencies are: Federal Aviation Administration (FAA), Coast Guard (USCG), Federal Highway Administration (FHWA), Federal Railroad Administration (FRA).

OTHER THAN ALASKA NATIONAL INTEREST LANDS

Use of this form is not limited to National Interest Conservation Lands of Alaska.

Individual departments/agencies may authorize the use of this form by applicants for transportation and utility systems and facilities on other Federal lands outside those areas described above.

For proposals located outside of Alaska, applications will be filed at the local agency office or at a location specified by the responsible Federal agency.

SPECIFIC INSTRUCTIONS

(Items not listed are self-explanatory)

Item

7 Attach preliminary site and facility construction plans. The responsible agency will provide instructions whenever specific plans are required.

8 Generally, the map must show the section(s), township(s), and ranges within which the project is to be located. Show the proposed location of the project on the map as accurately as possible. Some agencies require detailed survey maps. The responsible agency will provide additional instructions.

9, 10, and 12 - The responsible agency will provide additional instructions.

13 Providing information on alternate routes and modes in as much detail as possible, discussing why certain routes or modes were rejected and why it is necessary to cross Federal lands will assist the agency(ies) in processing your application and reaching a final decision. Include only reasonable alternate routes and modes as related to current technology and economics.

14 The responsible agency will provide instructions.

15 Generally, a simple statement of the purpose of the proposal will be sufficient. However, major proposals located in critical or sensitive areas may require a full analysis with additional specific information. The responsible agency will provide additional instructions.

16 through 19 - Providing this information in as much detail as possible will assist the Federal agency(ies) in processing the application and reaching a decision. When completing these items, you should use a sound judgment in furnishing relevant information. For example, if the project is not near a stream or other body of water, do not address this subject. The responsible agency will provide additional instructions.

Application must be signed by the applicant or applicant's authorized representative.

If additional space is needed to complete any item, please put the information on a separate sheet of paper and identify it as "Continuation of Item".

(For supplemental, see page 4)

SUPPLEMENTAL		
NOTE: The responsible agency(ies) will provide additional instructions	CHECK APPROPRIATE BLOCK	
I - PRIVATE CORPORATIONS	ATTACHED	FILED*
a. Articles of Incorporation	☐	☐
b. Corporation Bylaws	☐	☐
c. A certification from the State showing the corporation is in good standing and is entitled to operate within the State.	☐	☐
d. Copy of resolution authorizing filing	☐	☐
e. The name and address of each shareholder owning 3 percent or more of the shares, together with the number and percentage of any class of voting shares of the entity which such shareholder is authorized to vote and the name and address of each affiliate of the entity together with, in the case of an affiliate controlled by the entity, the number of shares and the percentage of any class of voting stock of that affiliate owned, directly or indirectly, by that entity, and in the case of an affiliate which controls that entity, the number of shares and the percentage of any class of voting stock of that entity owned, directly or indirectly, by the affiliate.	☐	☐
f. If application is for an oil or gas pipeline, describe any related right-of-way or temporary use permit applications, and identify previous applications	☐	☐
g. If application is for an oil and gas pipeline, identify all Federal lands by agency impacted by proposal.	☐	☐
II - PUBLIC CORPORATIONS		
a. Copy of law forming corporation	☐	☐
b. Proof of organization	☐	☐
c. Copy of Bylaws	☐	☐
d. Copy of resolution authorizing filing	☐	☐
e. If application is for an oil or gas pipeline, provide information required by Item "I-f" and "I-g" above.	☐	☐
III - PARTNERSHIP OR OTHER UNINCORPORATED ENTITY		
a. Articles of association, if any	☐	☐
b. If one partner is authorized to sign, resolution authorizing action is	☐	☐
c. Name and address of each participant, partner, association, or other	☐	☐
d. If application is for an oil or gas pipeline, provide information required by Item "I-f" and "I-g" above.	☐	☐

* If the required information is already filed with the agency processing this application and is current, check block entitled "Filed." Provide the file identification information (e.g., number, date, code, name). If not on file or current, attach the requested information.

(Continued on page 5)

NOTICES

NOTE: This applies to the Department of the Interior/Bureau of Land Management (BLM).

The Privacy Act of 1974 provides that you be furnished with the following information in connection with the information provided by this application for an authorization.
AUTHORITY: 16 U.S.C. 310 and 5 U.S.C. 301.
PRINCIPAL PURPOSE: The primary uses of the records are to facilitate the (1) processing of claims or applications; (2) recordation of adjudicative actions; and (3) indexing of documentation in case files supporting administrative actions.
ROUTINE USES: BLM and the Department of the Interior (DOI) may disclose your information on this form: (1) to appropriate Federal agencies when concurrence or supporting information is required prior to granting or acquiring a right or interest in lands or resources; (2) to members or the public who have a need for the information that is maintained by BLM for public record; (3) to the U.S. Department of Justice, court, or other adjudicative body when DOI determines the information is necessary and relevant to litigation; (4) to appropriate Federal, State, local, or foreign agencies responsible for investigating, prosecuting violation, enforcing, or implementing this statute, regulation, or order; and (5) to a congressional office when you request the assistance of the Member of Congress in writing.
EFFECT OF NOT PROVIDING THE INFORMATION: Disclosing this information is necessary to receive or maintain a benefit. Not disclosing it may result in rejecting the application.

The Paperwork Reduction Act of 1995 requires us to inform you that:
The Federal agencies collect this information from applicants requesting right-of-way, permit, license, lease, or certifications for the use of Federal Lands.
Federal agencies use this information to evaluate your proposal.
No Federal agency may request or sponsor and you are not required to respond to a request for information which does not contain a currently valid OMB Control Number.

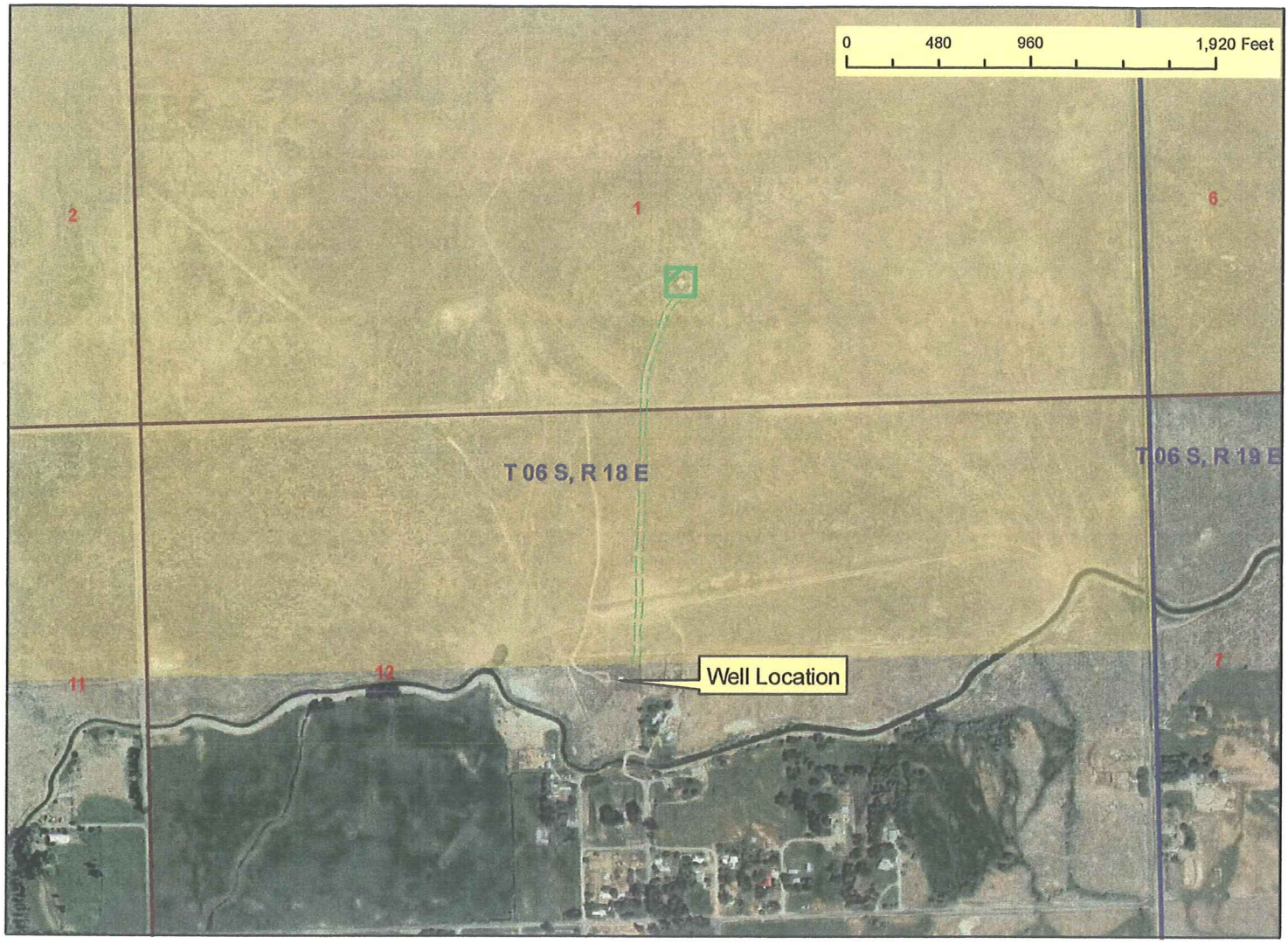
BURDEN HOURS STATEMENT: The public burden for this form is estimated at 25 hours per response including the time for reviewing instructions, gathering and maintaining data, and completing and reviewing the form. Direct comments regarding the burden estimate or any other aspect of this form to: U.S. Department of the Interior, Bureau of Land Management (1004-0189), Bureau Information Collection Clearance Officer (WO-630) 1849 C Street, N.W., Mail Stop 401 LS, Washington, D.C. 20240.

A reproducible copy of this form may be obtained from the Bureau of Land Management, Land and Realty Group, 1620 L Street, N.W., Rm. 1000 LS, Washington, D.C. 20036.

IDI-29449 City of Dietrich
Water Storage Facility and Access Right-of-Way

T. 6 S, R. 18 E, B.M.
Sec. 1: A portion of the S1/2S1/2
Sec. 12: A portion of the N1/2N1/2

TH 1/31/11

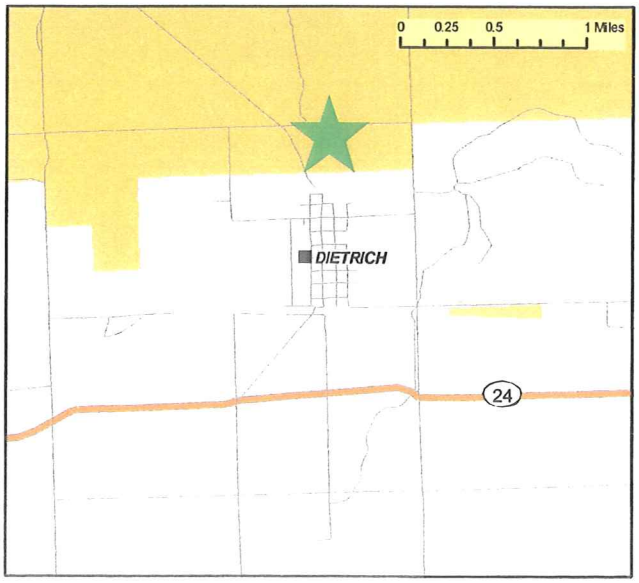


- Bureau of Land Management
- Bureau of Reclamation
- Military, Department of Defense
- Bankhead-Jones Land Use
- Department of Energy
- National Grasslands
- Forest Service
- Fish and Wildlife Service
- National Park Service
- Native American Reservation
- Private; other
- State
- State Fish and Game
- Historical Open Water

- 29449 Storage Tank Site (150' x 150')
- 29449 Road & Pipelines (10" and 6")

N
W E
S

U.S.Department of Interior
Bureau of Land Management
State of Idaho
Twin Falls District
Shoshone Field Office



Form 2800-14
(August 1985)

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

RIGHT-OF-WAY GRANT/TEMPORARY USE PERMIT

Issuing Office: SHOSHONE

Serial Number: IDI 29449

1. A (right-of-way) (permit) is hereby granted pursuant to:

a. [X] Title V of the Federal Land Policy and Management Act of October 21, 1976 (90 Stat. 2776; 43 U.S.C. 1761);

b. [ ] Section 28 of the Mineral Leasing Act of 1920, as amended (30 U.S.C. 185);

c. [ ] Other (describe) _____

2. Nature of Interest:

a. By this instrument, the holder City of Dietrich receives a right to construct, operate, maintain, and terminate a storage reservoir, 2 waterlines, and an access road on public lands (or Federal land for MLA Rights-of-Way) described as follows:

T. 6S., R. 18E., B.M.
Sec. 1: S½S½
12: N½N½

b. The right-of-way or permit area granted herein is 20 feet wide, 2,006 feet long and contains 0.92 acres, more or less. If a site type facility, the facility contains .52 acres.

c. This instrument shall terminate on _____, 30 years from its effective date unless, prior thereto, it is relinquished, abandoned, terminated, or modified pursuant to the terms and conditions of this instrument or of any applicable Federal law or regulation.

d. This instrument [X] may [ ] may not be renewed. If renewed, the right-of-way or permit shall be subject to the regulations existing at the time of renewal and any other terms and conditions that the authorized officer deems necessary to protect the public interest.

e. Notwithstanding the expiration of this instrument or any renewal thereof, early relinquishment, abandonment, or termination, the provisions of this instrument, to the extent applicable, shall continue in effect and shall be binding on the holder, its successors, or assigns, until they have fully satisfied the obligations and/or liabilities accruing herein before or on account of the expiration, or prior termination, of the grant.

3. Rental:

For and in consideration of the rights granted, the holder agrees to pay the Bureau of Land Management fair market value rental as determined by the authorized officer unless specifically exempted from such payment by regulation. Provided, however, that the rental may be adjusted by the authorized officer, whenever necessary, to reflect changes in the fair market rental value as determined by the application of sound business management principles, and so far as practicable and feasible, in accordance with comparable commercial practices.

4. Terms and Conditions:

a. This grant or permit is issued subject to the holder's compliance with all applicable regulations contained in Title 43 Code of Federal Regulations parts 2800 and 2880.

b. Upon grant termination by the authorized officer, all improvements shall be removed from the public lands within 90 days, or otherwise disposed of as provided in paragraph (4)(d) or as directed by the authorized officer.

c. Each grant issued pursuant to the authority of paragraph (1)(a) for a term of 20 years or more shall, at a minimum, be reviewed by the authorized officer at the end of the 20th year and at regular intervals thereafter not to exceed 10 years. Provided, however, that a right-of-way or permit granted herein may be reviewed at any time deemed necessary by the authorized officer.

d. The stipulations, plans, maps, or designs set forth in Exhibit(s) A and Map 1, dated _____, attached hereto, are incorporated into and made a part of this grant instrument as fully and effectively as if they were set forth herein in their entirety.

e. Failure of the holder to comply with applicable law or any provision of this right-of-way grant or permit shall constitute grounds for suspension or termination thereof.

f. The holder shall perform all operations in a good and workmanlike manner so as to ensure protection of the environment and the health and safety of the public.

IN WITNESS WHEREOF, The undersigned agrees to the terms and conditions of this right-of-way grant or permit.

Jeanetta R. Crowder	[illegible]
(Signature of Holder)	(Signature of Authorized Officer)
Mayor	Acting Area Manager
(Title)	(Title)
10/29/92	10/30/92
(Date)	(Effective Date of Grant)

GPO : 1985 O - 483-259

1. The Holder shall comply with the applicable Federal and State laws and regulations concerning the use of pesticides (i.e., insecticides, herbicides, fungicides, rodenticides, and other similar substances) in all activities/operations under this permit. The Holder shall obtain from the Authorized Officer approval of a written plan prior to the use of such substances. The plan must provide the type and quantity of material to be used; the pest, insect, fungus, etc. to be controlled; the method of application; the location for storage and disposal of containers; and other information that the BLM Authorized Officer may require. A pesticide shall not be used if the Secretary of the Interior has prohibited its use. A pesticide shall be used only in accordance with its registered uses and within other limitations if the Secretary has imposed limitations. Pesticides shall not be permanently stored on public lands. The chemicals listed on Exhibit A page 2 of 2 shall not be used on public lands.

2. (1) All disturbed areas must be reseeded at the completion of the construction. If this authorization is either relinquished, canceled, terminated, or expires, the public land, which has been disturbed or occupied, shall have all authorized developments and improvements removed from public land.

   a. Prior to termination of the right-of-way, the Holder shall contact the authorized officer to arrange a pre-termination conference. This conference will be held to review the termination provisions of the grant.

   b. 30 days prior to termination of the right-of-way, the Holder shall contact the authorized officer to arrange a joint inspection of the right-of-way. This inspection will be held to agree to an acceptable termination (and rehabilitation) plan. This plan shall include but is not limited to, removal of facilities, drainage structures, or surface material, recontouring, topsoiling, or seeding. The authorized officer must approve the plan in writing prior to the Holder's commencement of any termination activities.

   (2) The Holder shall seed all disturbed areas with the seed mixture listed below. The seed mixture shall be planted in the amounts specified in pounds of pure live seed. There shall be <u>no</u> primary or secondary noxious weed seed in the seed mixture. Seed shall be tested and the viability testing of seed shall be done in accordance with State laws and withing 9 months prior to purchase. Commercial seed shall be either certified or registered seed. The seed mixture container shall be tagged in accordance with State laws and available for inspection by the authorized officer.

(3) Seed shall be planted using a drill equipped with a depth regulator to ensure proper depth of planting where drilling is possible. The seed mixture shall be evenly and uniformly by planted over the disturbed area. (Smaller/heavier seeds have a tendency to drop to the bottom of the drill and are planted first. The Holder shall take appropriate measures to ensure this does not occur.) Where drilling is not possible, seed shall be broadcast and the area shall be raked or chained to cover the seed. When broadcasting the seed, the pounds per acre noted below are to be doubled. The seeding will be repeated until a satisfactory stand is established as determined by the authorized officer. Evaluation of growth will not be made before completion of the summer growing season after seeding. The authorized officer is to be notified a minimum of 7 days prior to seeding of the project.

Seed Mixture	pounds per acre
Hycrest Crested Wheatgrass	2
Siberian Wheatgrass	2
Ephraim Crested Wheatgrass	2
Lewis Flax	1
Ladak Alfalfa	1
Sanfoin	1

(4) The seeding is to be done between September 15 and October 31 or between April 1 and May 15 depending on which season falls immediately after completion of all surface disturbing construction activity. If the seeding is not successful, it will be reseeded again. Success can be measured by the survival of at least 5 viable plants per square yard from the seed mixture required.

(5) The Holder shall be responsible for weed control on disturbed areas within the limits of the right-of-way. The Holder is responsible for consultation with the authorized officer and/or local authorities for acceptable weed control methods (within limits imposed in the the grant stipulations).

(6) No construction activity or routine maintenance activity shall be preformed during periods when the soil is too wet to adequately support construction equipment. If such equipment creates ruts in excess of 2 inches deep, the soil shall be deemed too wet to adequately support construction equipment. Any damage to existing developments on the public land caused by the Holder shall be repaired by the Holder at their expense.

3. All topsoil will be stockpiled for rehabilitation within the right-of-way. The Holder shall uniformly spread the topsoil over all unoccupied disturbed areas before reseeding. Spreading shall not be done when the ground or topsoil is frozen or wet.

(1) The Holder shall recontour disturbed areas by grading to restore the site to approximately the original contour of the ground as determined by the authorized officer. This will include obliterate all earthwork by removing embankments and backfilling excavations.

(2) The Holder shall construct waterbars on all disturbed areas to the spacing and cross sections specified by the authorized officer. Waterbars are to be constructed to: (a) simulate the imaginary contour lines of the slope (ideally with a grade of one or two percent); (b) drain away from the disturbed area; and (c) begin and end in vegetation or rock whenever possible.

4. The Holder may be required at a future date to allow analysis of the right-of-way for purposes of inventory and possible reclamation in connection with the old landfill and related hazardous materials. This may include activities which will disturb or cause damage to the water system. It may also require rerouting or removal of the storage tank, pipelines, or access road. Any rerouting or removal will be at the Holder's expense.

5. Holder shall comply with all applicable Federal laws and regulations existing or hereafter enacted or promulgated. In any event, the Holder shall comply with the Toxic Substances Control Act of 1976, as amended (15 U.S.C. 2601, et. seq.) with regard to any toxic substances that are used, generated by or stored on the authorized area or on facilities authorized. (See 40 CFR, Part 702-799 and especially, provisions on polychlorinated biphenyls, 40 CFR 761.1-761.193) Additionally, any release of toxic substances (leaks, spills, etc.) in excess of the reportable quantity established by 40 CFR, Part 117 shall be reported as required by the Comprehensive Environmental Response, Compensation and Liability Act of 1980, Section 102b. A copy of any report required or requested by any Federal agency or State government as a result of a reportable release or spill of any toxic substances shall be furnished to the authorized officer concurrent with the filing of the reports to the involved Federal agency or State government. Holder agrees to indemnify the United States against any liability arising from the release of any hazardous substance or hazardous waste (as these terms are defined in the Comprehensive Environmental Response, Compensation and Liability Act of 1980, 42 U.S.C. 9601, et. seq. or the Resource Conservation and Recovery Act, 42 U.S.C. 6901, et. seq.) on the permit area (unless the release or threatened release is wholly unrelated to the Holder's activity), or resulting from the activity of the Holder. This agreement applies without regard to whether a release is caused by the Holder, its agents, or unrelated third parties.

<u>USDI PROHIBITED LIST</u>

Aldrin
Amitrole
Arsenical Compounds (inorganic)
Azodrin
Bidrin
Dieldrin
Endrin
Hepiachlor
Mercurial Compounds
Strobane

DDT
DDD (TDE)
2,4,5-T
Thallium Sulfate
Toxaphene

USDI RESTRICTED LIST

Acrolein
Aldicarb (Temik)
Aramite
Arsenic compounds (organic)
Azinphosmethyl (Guthion) and homologs
Benomyl
BHC (benzene hexachloride)
Capian
Carbaryl (Sevin)
Carbophenothion (Trithion) and homologs
Chlordane
Chlorobenzilate
Coumaphos
Cyanide compounds

Demeton (Systox)

Dicamba (Banvel-D)
Dinitrocresel
Diquat
Disulfoton (Di-syston)
Dursban
(1050)
Dyfonate
Endosulfan (Thiodan)
Endothall
EPN
Ethion (Nialate)

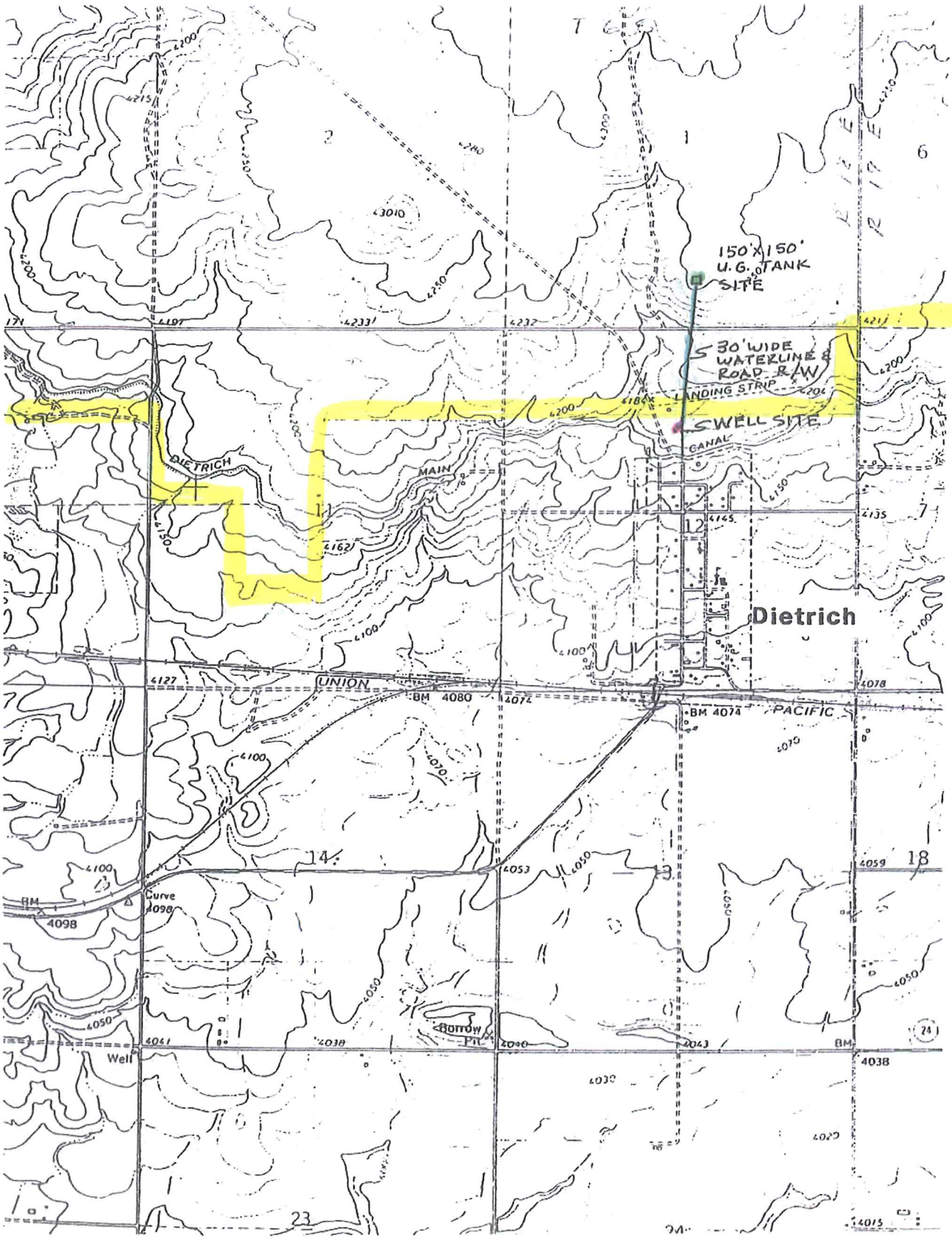
Fenac
Fenthion (Baytex)
Folpet (Phaltan)
Furadan
Imidan (Prolate)
(phosmet)
Kepone (outdoor uses)
Lindane

Matacil
Metasystox
Methyl bromide
Mevinphos (Phosdrin)
Mirex

Paraquat
Parathion and homologs
PCNB
(pentachloronitrobenzene)
Phorate (Thimet)
Phosphamidon
Picloram (Tordon)

Sodium monofluoroacetate

TCMTB (Busan 72)
TEPP (Tetron)
Trichlorfon
(Dylox, Dipterex)
Zoctran



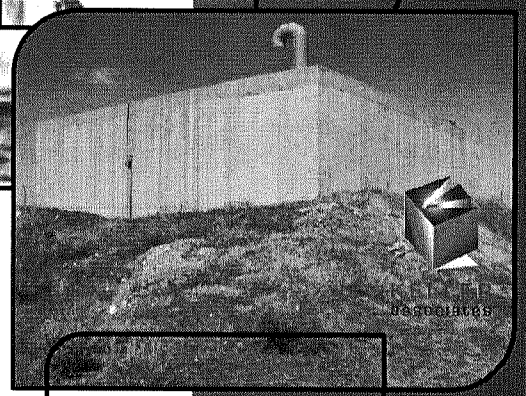
BLM Lands
Access Road & Pipeline route
Storage Tank site
Well Location

MAP 1

T.6S., R.18E., B.M.
Sections 1 + 12

Appendix C

PUBLIC PARTICIPATION



PRESENTATION

Dietrich Water Master Plan Update

City Council Meeting

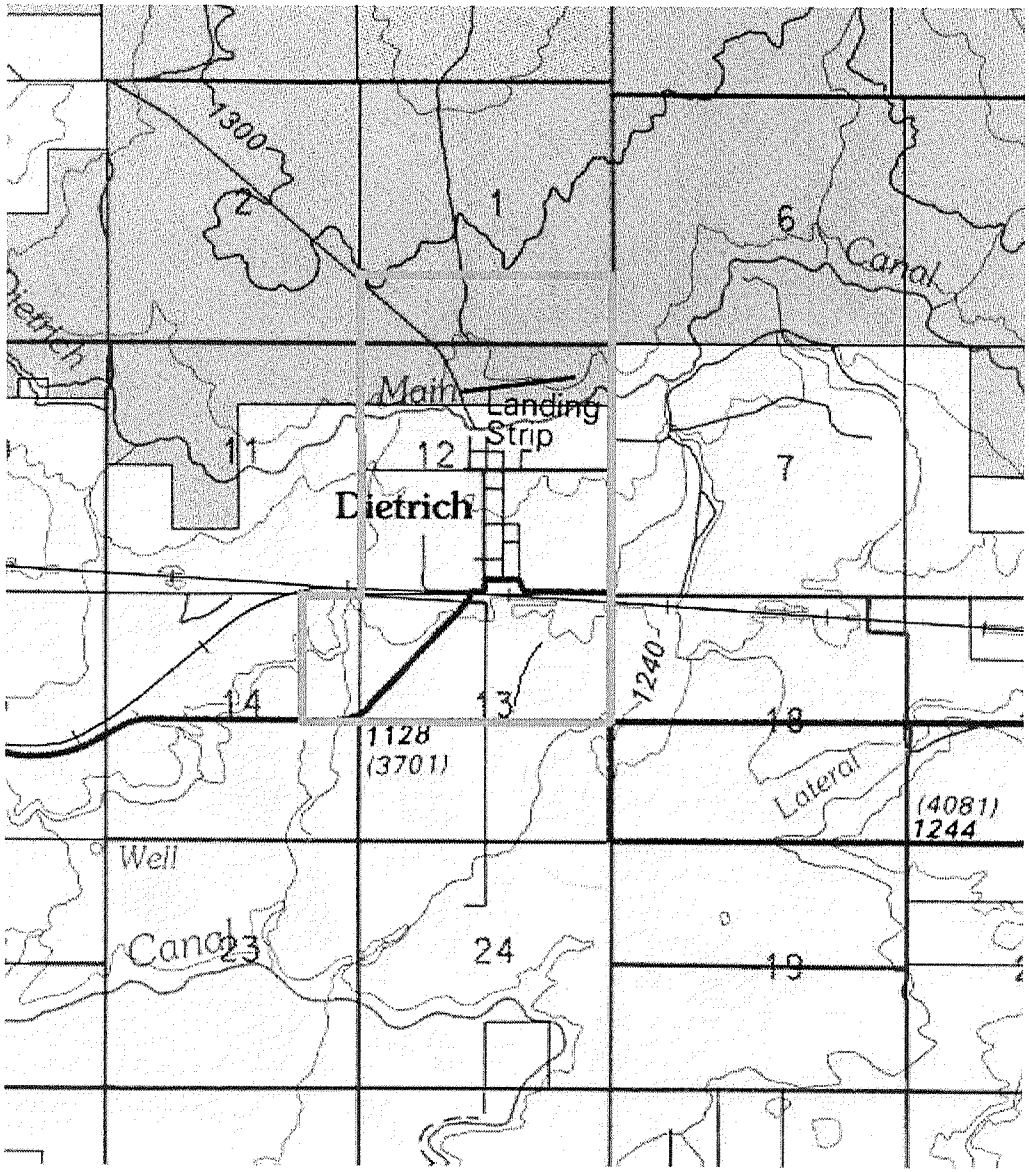
Presenters:

Justin Walker, P.E. (Project Manager)

Stillman Norton, E.I.T. (Project Engineer)

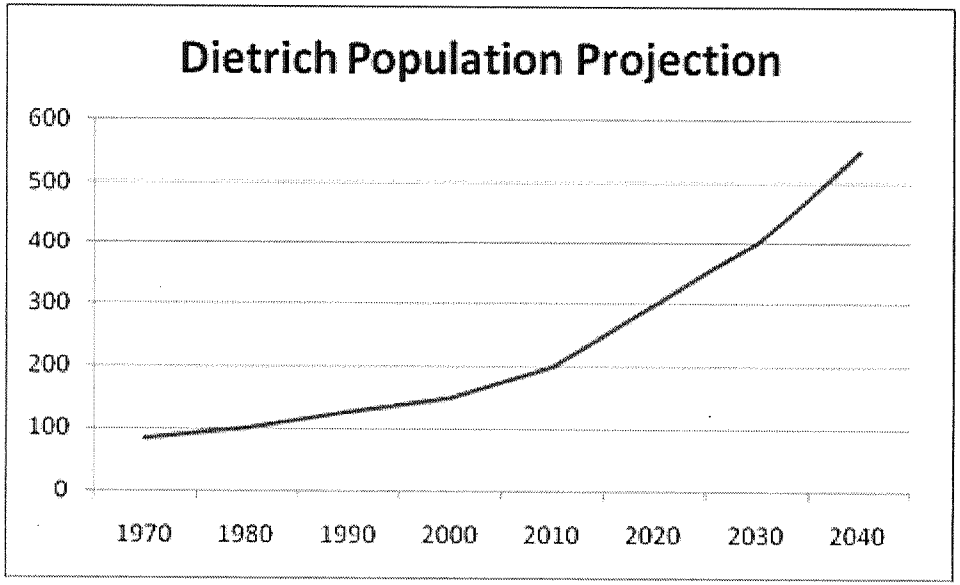
November 1, 2010

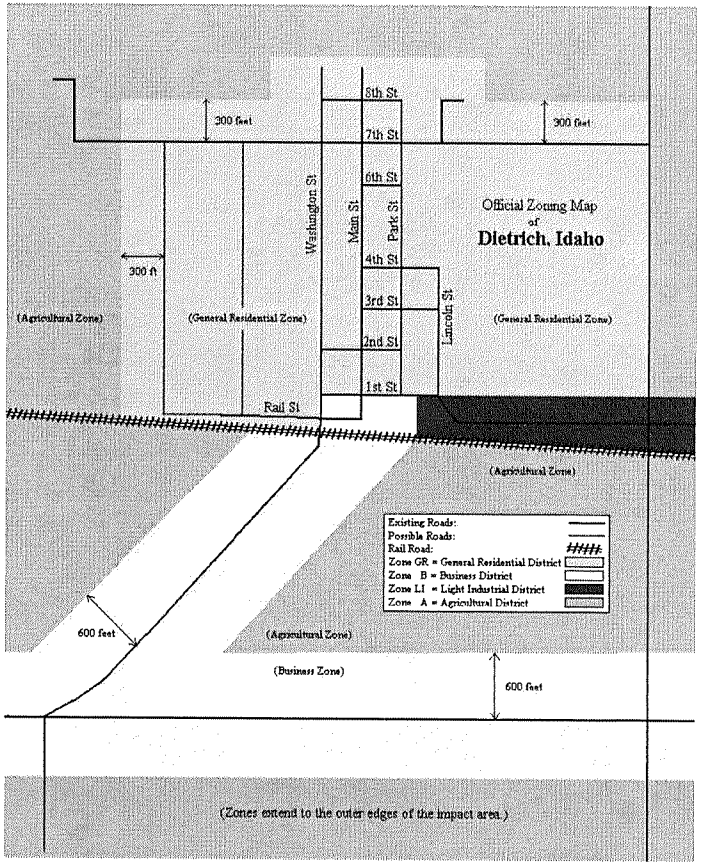
Study Area


1300
2
1
6
Canal
Main
Landing
Strip
11
12
7
Dietrich
1240
14
13
18
1128
(3701)
Lateral
(4081)
1244
Well
Canal
23
24
19

Demographics

Historical	Population	Average Annual Growth (linear)
1970	84	
1980	101	2.0%
1990	127	2.6%
2000	150	1.8%
2010	Approx. 200	3.3%
	20 yr Avg	**2.9%**
	40 Yr Avg	**3.45%**

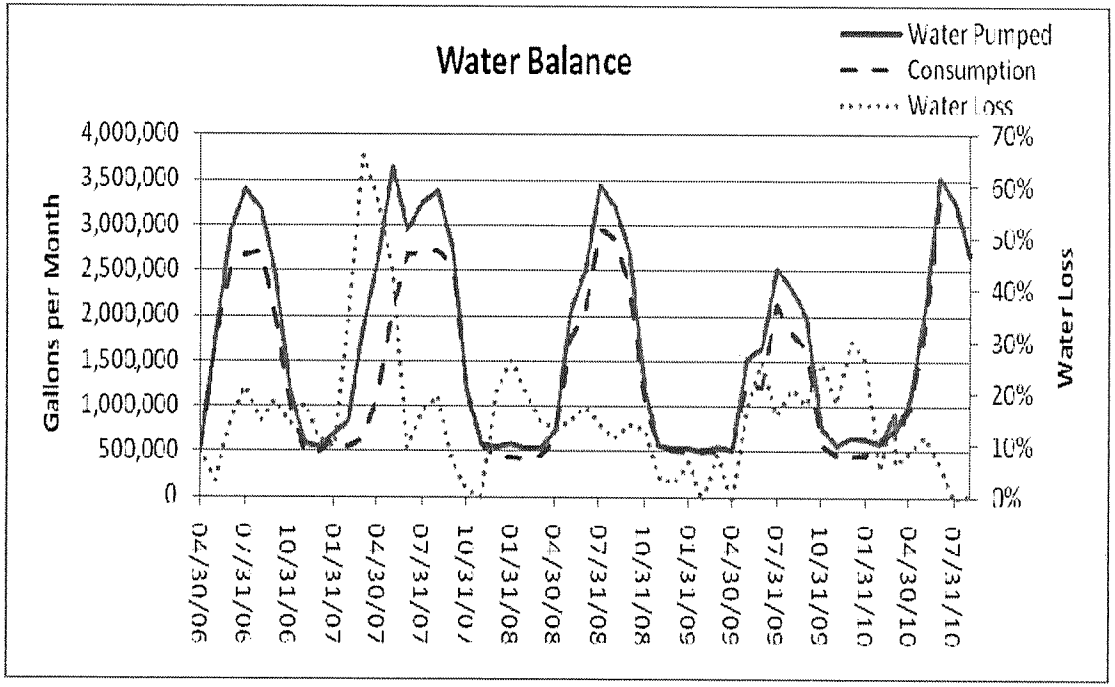




Water Demands

Water Right	(cfs)	(gpm)
Licensed	0.37	170
Permitted	0.45	200

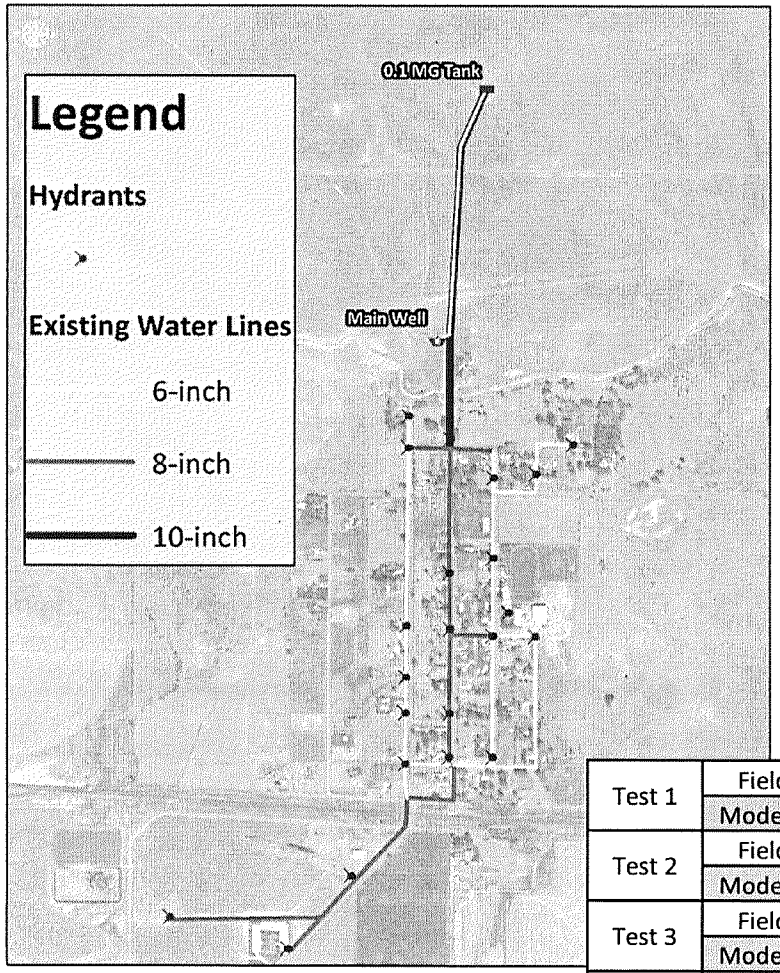
Statistic	2006-2010 Average Water Demands	Future Potable Demands
Average Day	294	177
Max Month	581	349
Peak Day	752	451
Peak Hour	1,053	632



	GPM						
Population	Average Day	Max Month	Peak Day	Peak Hour	PDD+Fire [1]	Equalization	PDD + Equalization
200	37	79	118	165	2,618	14	132
250	43	91	133	186	2,633	16	149
300	50	103	149	208	2,649	18	167
350	56	115	165	230	2,665	20	184
400	62	127	180	252	2,680	22	202
450	68	139	196	274	2,696	24	219
500	74	151	212	296	2,712	25	237
550	80	164	227	318	2,727	27	254
1,300 (build-out)	172	345	462	647	2,962	55	518

1. Assumes 2,500 GPM Fire Demand

Hydraulic Model



Dietrich, Idaho: Existing Distribution System

		Site 1			Site 2			ERROR	
		Static	Residual	*Drop*	Static	Residual	*Drop*	Site 1	Site 2
Test 1	Field	46	36	*10*	46	39	*7*	4	1
	Model	47	41	*6*	47	41	*6*		
Test 2	Field	47	34	*13*			*0*	-2	0
	Model	46	31	*15*			*0*		
Test 3	Field	58	43	*15*	57	45	*12*	-1	-2
	Model	60	44	*16*	59	45	*14*		
Test 4	Field	68	52	*16*	59	45	*14*	-1	0
	Model	67	50	*17*	58	44	*14*		
Test 5	Field	68	63	*5*	80	60	*20*	-7	1
	Model	75	63	*12*	83	64	*19*		

Water Storage

Existing Storage

	Storage (gals)
Concrete Reservoir	100,000
Total	100,000
Effective Total Storage	**80,000**

Existing Storage Needs

	Storage (gals)
Operational Storage[1]	18,000
Peaking Storage[2]	21,000
Fire Storage[3]	300,000
Recommended Storage	**339,000**
Less Existing Storage	(80,000)
Existing Additional Storage Need	**259,000**
Standby Emergency Storage [4]	18,000
Total Recommended Storage	**277,000**

1. Typically 15% of total storage volume. Represents difference between pump ON and OFF levels.
2. Volume of storage necessary to meet daily peak demands. Assumes that water supply is equal to the average peak day demand. Diurnal curve pattern assumed to be similar to Mtn Home.
3. Assumes range of 2,500 GPM for 2 hours (See Appendix C for a fire flow inventory)
4. Standby emergency storage estimated to be average day demands for 8 hours

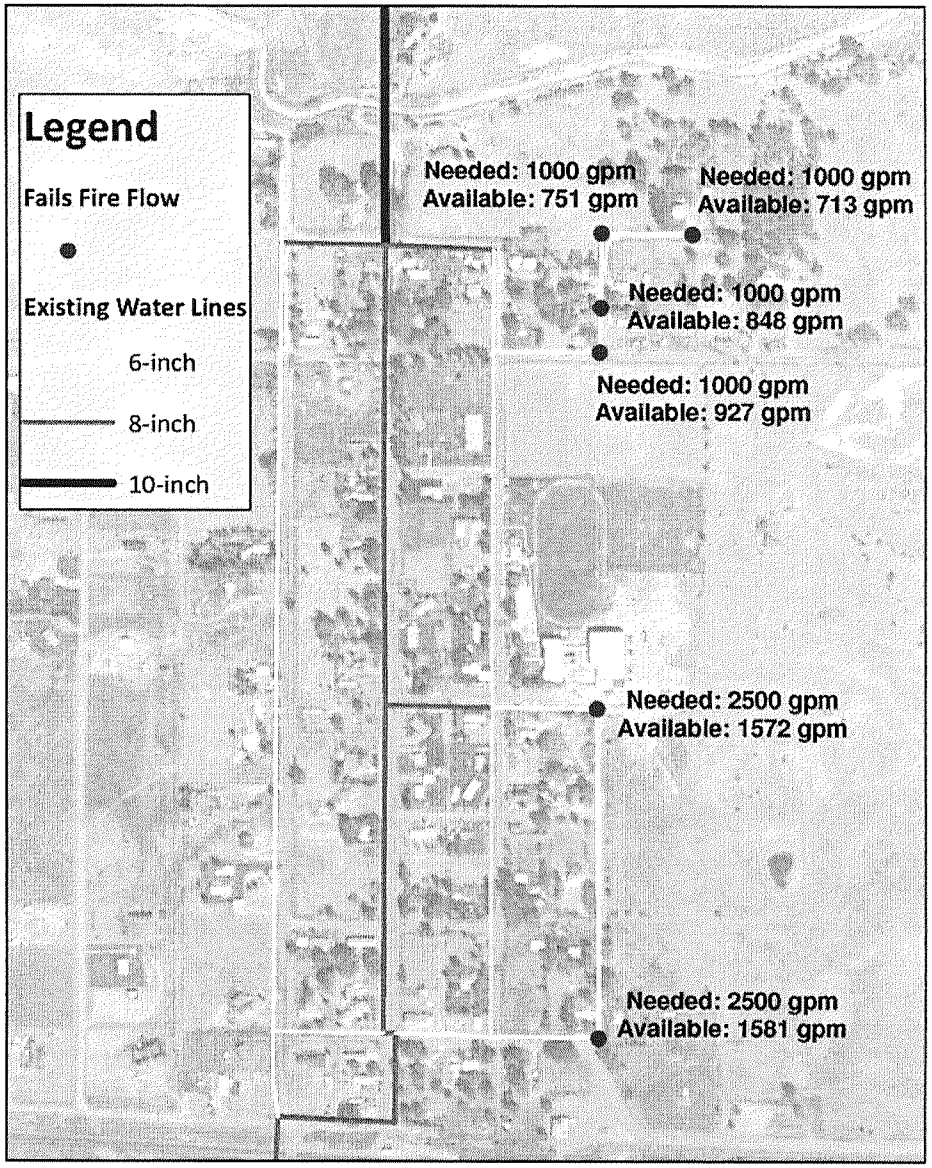
Future Storage Needs

				Build-out
Population	***300***	***400***	***550***	***1,300***
Operational Storage [1]	58,000	59,000	60,000	74,000
Peaking Storage[2]	27,000	32,000	41,000	83,000
Fire Storage[3]	300,000	300,000	300,000	300,000
Total Minimum Recommended Storage	**385,000**	**391,000**	**401,000**	**457,000**
Less Existing Storage	(80,000)	(80,000)	(80,000)	(80,000)
Needed Additional Storage	**305,000**	**311,000**	**321,000**	**377,000**
Standby Emergency Storage [4]	24,000	30,000	38,000	109,000
Total Recommended Storage	**329,000**	**341,000**	**359,000**	**486,000**
	Minimum	**Maximum**	**Recommended**	
Tank Size Recommendation (MG)	**0.3**	**0.5**	**0.35**	

1. Typically 15% of total storage volume. Represents difference between pump ON and OFF levels.
2. Volume of storage necessary to meet daily peak demands. Assumes that water supply is equal to the average peak day demand. Diurnal curve pattern assumed to be similar to Mtn Home.
3. Assumes range of 2,500 GPM for 2 hours (See Appendix C for a fire flow inventory)
4. Standby emergency storage estimated to be average day demands for 8 hours

Distribution System

- Fire Flow Deficiencies

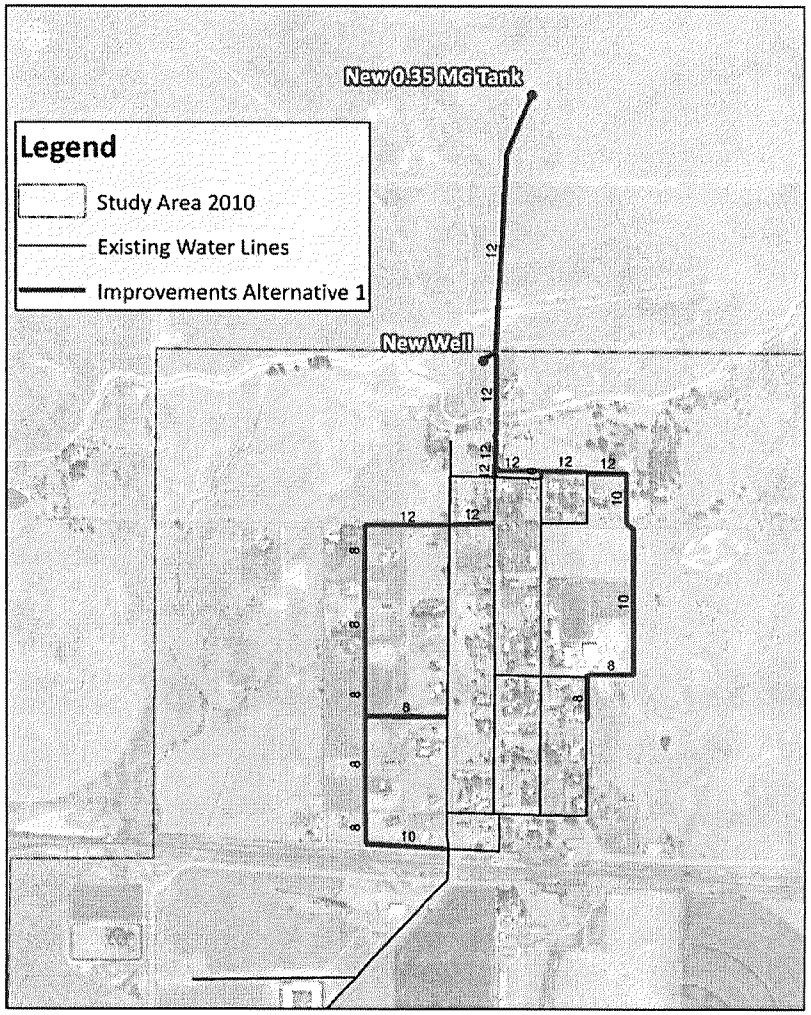


Dietrich, Idaho: Existing Distriubtion Deficiencies

KELLER associates

Supply, Storage, Distribution – Alternative 1

- 0.35 MG bench reservoir
- New well near existing well
- Transmission improvements (see figure)
- Comparative cost estimate = $1,726,000
- Advantages:
  - Better tank circulation
  - More efficient operation
  - May be able to use existing easements
  - Slightly less expensive
- Disadvantages
  - More transmission pipeline improvements (rock excavation)
  - USDA-RD may not fund fire flow improvements

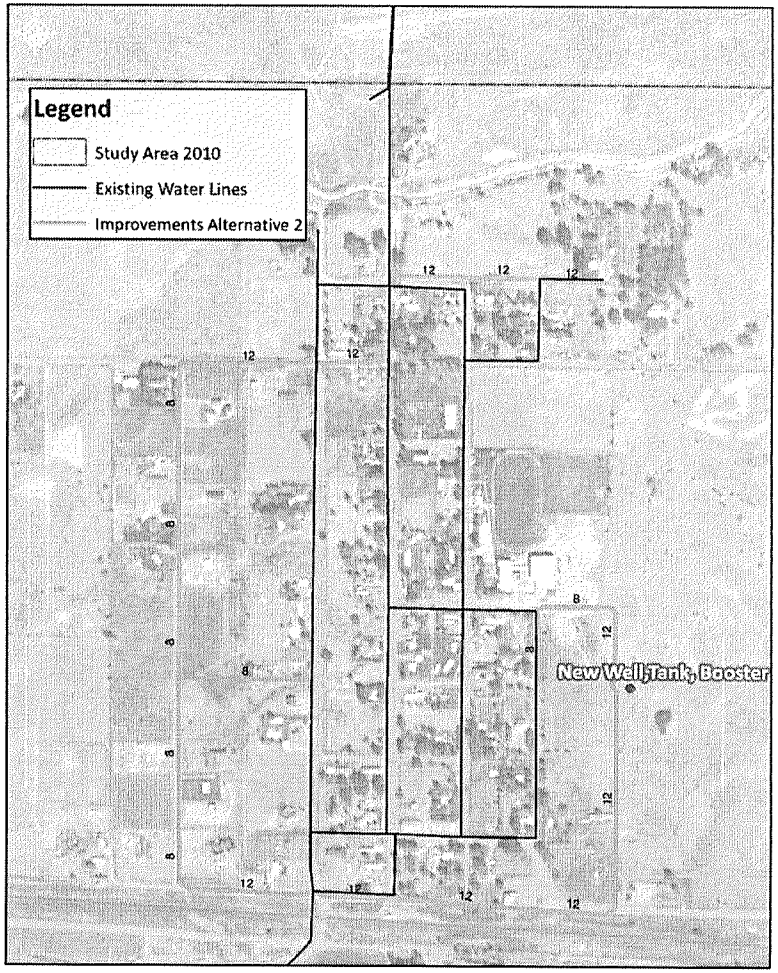


Dietrich, Idaho: Alternative 1 Improvements

KELLER associates

Supply, Storage, Distribution – Alternative 2

- 0.35 MG ground level tank
- New well and booster station near tank
- Transmission improvements (see figure)
- Comparative cost estimate = $1,782,000
- Advantages:
  - Fewer transmission pipeline improvements
  - Water source closer to structures needing fire protection
- Disadvantages
  - Requires booster station
  - Requires property acquisition or easement
  - Requires continuous pumping / power use
  - Slightly more expensive



Dietrich, Idaho: Alternative 2 Improvements

KELLER associates

Master Plan

- With Alternative 1

Legend

Study Area 2010

Future Upper Pressure Zone

Study Area Build Out Improvements

8-inch

10-inch

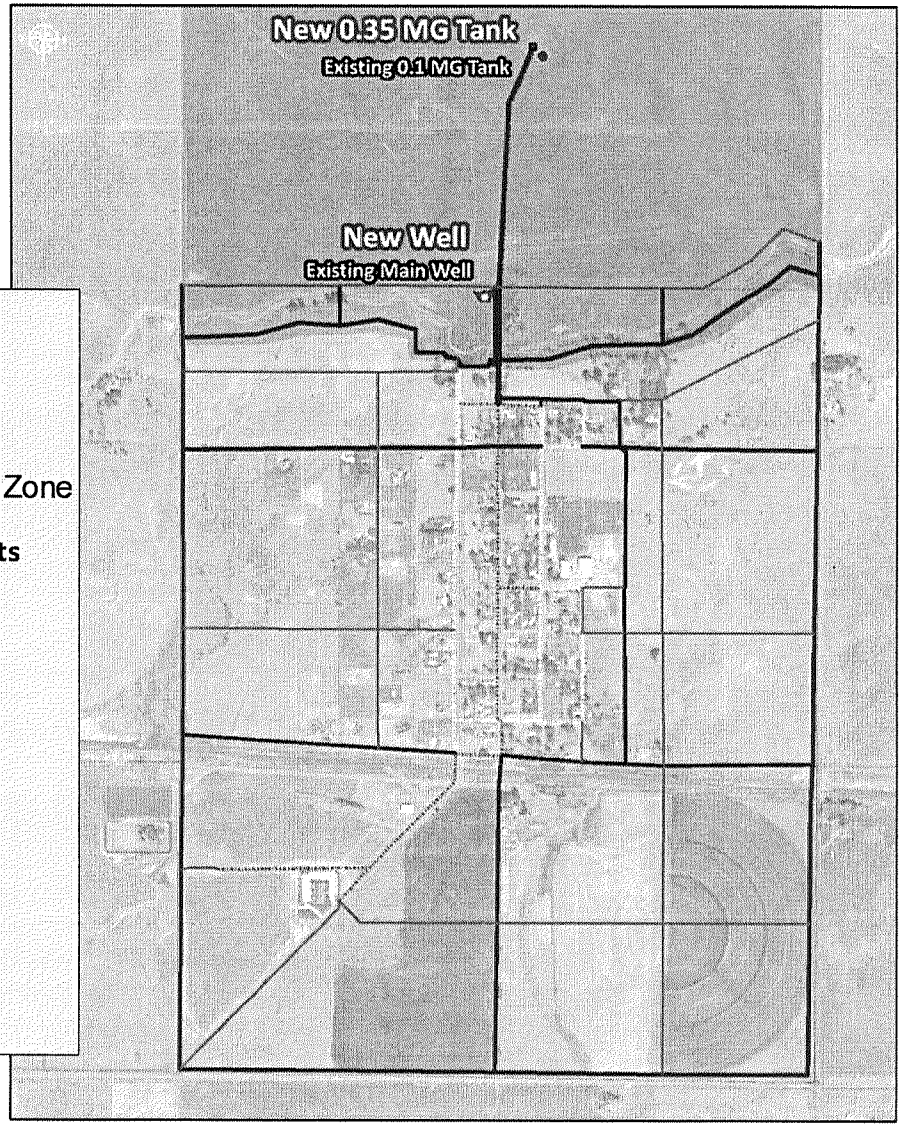
12-inch

Existing Water Lines

6-inch

8-inch

10-inch



Dietrich, Idaho: Study Area Build-Out Concept

Capital Improvement Plan

Item (2010 Project Costs*)	Priority 1	Priority 2	Future
Priority 1 - Water Supply and Storage (needed now)			
New 250 GPM backup well and pump house (3-phase power)	$743,000		
Eye wash station at Main well house	$5,000		
350,000 gallon water reservoir (bolted steel)	$453,800		
Replace all water meters with touch read meters ($300 x 98 meters)	$29,400		
Flow meter on line from tank	$12,500		
System-wide SCADA (software and hardware)	$63,100		
SUBTOTAL	$1,306,800		
Priority 1- Pipelines (needed now)			
8" Waterline on Wacanza Street	$418,300		
SUBTOTAL	$418,300		
TOTAL PRIORITY 1	***$1,800,700***		
Priority 2 - Water Supply and Storage			
Upgrade Main well pump with VFD, 250 gpm, 3-phase power		$183,400	
Priority 2 - Pipelines (As resources permit)			
Transmission Line upgrades for new water reservoir		$579,600	
7th Street pipeline loop		$185,700	
TOTAL PRIORITY 2		***$948,700***	
Future Water Supply and Storage (as development occurs)			
Additional well (needed when PDD exceeds 250 GPM and then every 600 EDUs assuming pumping capacity of 500 GPM)			$668,000
Upper Pressure Zone Booster Station			$350,900
Additional 150,000 gallons of water storage (bolted steel)			$257,280
Future Pipelines (As development Occurs)			
General Distribution System Extensions - Upsize Cost			$985,300
TOTAL FUTURE IMPROVEMENTS			***$2,261,500***
TOTAL	**$1,800,700**	**$948,700**	**$2,261,500**

Funding Update

- USDA – RD (Robert Lanford)
- CDBG (Kathy Uker)
- DEQ – SRF

Affidavit of Publication

STATE OF IDAHO)
COUNTY OF TWIN FALLS) SS.

I, Ruby Aufderheide, being first duly sworn upon oath, depose and say that I am Legal Clerk of the TIMES-NEWS,published daily at, Twins Falls, Idaho, and do solemnly swear that a copy of the notice of advertisement, as per clipping attached, was published in the regular and entire issue of said newspaper, and not in any supplement thereof, for one ~~consecutive~~ publication, commencing with the issue dated 7th day of January, 2011, and ending with the issue dated 7th day of January, 2011

And I do further certify that said newspaper is a consolidation, effective February 16, 1942, of the Idaho Evening Times, published theretofore daily except Sunday, and the Twin Falls News, published theretofore daily except Monday, both of which newspapers prior to consolidation had been published under said names in said city and county continuously and uninterruptedly during a period of more than twelve consecutive months, and said TIMES-NEWS, since such consolidation, has been published as a daily newspaper except Saturday, until July 31, 1978, at which time said newspaper began daily publication under said name in said city and county continuously and uninterrupted.

And I further certify that pursuant to Section 60-108 Idaho Code, Thursday of each week has been designated as the day on which legal notice by law or by order of any court of competent jurisdiction within the state of Idaho to be issued thereof Thursday is announced as the day on which said legal will be published.

Ruby Aufderheide
Ruby Aufderheide, Legal Clerk

STATE OF IDAHO
COUNTY OF TWIN FALLS

On this 7th day of January, 2011, before me,

a Notary Public, personally appeared Ruby Aufderheide,
known or identified to me to be the person whose name subscribed to the within instrument, and being by me first duly
rein are true, and acknowledged to me that he executed the same.

Linda Capps McGuire
otary Public for Idaho
siding at Twin Falls, Idaho.
y commision expires: 5-19-15

LINDA CAPPS-McGUIRE
NOTARY PUBLIC
STATE OF IDAHO

NOTICE OF 30 DAY PUBLIC COMMENT PERIOD AND PUBLIC OPEN HOUSE FOR THE WATER FACILITIES PLANNING STUDY

The City of Dietrich, Idaho is currently in the process of developing a planning document to address the needs of the public potable water system. As part of this process, the public is invited to review a draft version of the water master plan report at City Hall, 35 West First Street, for a period of 30 days beginning January 7, 2011 and ending February 7, 2011. The water master plan report can also be viewed on the City's website at http://www.dietrichidaho.com/masterplan/

At the conclusion of this 30-day comment period, the City will hold an open house to discuss the study outcomes and the proposed improvements to the water system. The open house will be held:

Monday, February 7, 2010 at 7:00 PM
City Council Chambers, Dietrich City Hall
35 West First Street
Dietrich, Idaho

Citizens may also send written comments before the open house to Iva Lee Green at 35 West First Street, Dietrich, ID 83324 or at ivaleegreen@dietrichidaho.com

Individuals with disabilities, who require special accommodations to attend the open house or otherwise participate in the public comment period, must make a request with the City at least seven (7) business days before the meeting by contacting the City or Dietrich at (208) 544-2102.

PUBLISH: January 7, 2011

DIETRICH WATER MASTER PLAN

Response by Todd Morris & Mary Souchik
537 N Washington Street
Dietrich, ID 83324-5095

We have read the Plan and feel it leaves more questions asked than answered while using assumptions that are unsubstantiated. In a time of financial uncertainty, high unemployment and falling home values you can not assume such a proposal could ever be financed or that the residents could afford it. It reads like a sales proposal. It sounds like this is a worst case scenario bordering on fear mongering so that we'll all be shocked and will later concede to some lesser plan which is likely what was desired in the first place. When the system was installed in 1993 wasn't there a process like the Plan that preceded it? If so, why is the entire system wrong and there's now a new Plan to do it all over again?

We recently had a significant property tax increase because the Dietrich school is fiscally challenged and is reluctant to institute austerity measures. The problems with our water system stem from prior city government mistakes and mismanagement. Who would do the proposed work and assume responsibility to ensure we don't repeat the issues resulting from what the prior contractor created? The current government has demonstrated fiscal mismanagement as well in approving cost of living increases when even Social Security didn't; installing street lights; wasting water on grass in the park; giving themselves a stipend; considering adding park benches; purchasing a sand truck that is never used; and the list goes on. Why should we assume that anything they propose or support doing will be correct, cost effective and in the long term best interest of the residents of Dietrich?

The city water system will never stop costing the taxpayer and it was ill advised to undertake it in the first place. The city annexed Dietrich West to increase their property tax base and now it's a burden to the water infrastructure. Dietrich is a small rural community that you had to make sacrifices to live here and many did so. Wells and septic systems remain a viable alternative to the beast that city has created. Some points of consideration:

- What empirical evidence is there to support the average lifetimes used for pipes, fire hydrants and meters? Hydrants should last a lifetime.
- Why are we not in compliance with the Idaho Rules regarding a second well?
- Why don't we have sufficient water flow for fire protection?
- Why is outdated census data used? Census 2000 numbers of 2.59 per household, median incomes and employment percentage are not reflective of where Dietrich is now. New census data is available which more accurately reflects the current economic times, employment and home values.
- Has a water meter ever been tested for accuracy? Inaccurate readings can also impact the consumer but there seems to be little concern unless it impacts the provider. We all deserve an accurate reading.
- Why haven't the lines that run from the meter to the properties ever been tested for leakage? If the city water system has such a short life why isn't the connection from the meter to the consumer being addressed?
- What evidence has been offered to substantiate the belief that the system will fail? I have not seen any water line or hydrant failure through anything other than neglect or improper installation.
- If there is, and has been, a water issue why has the city allowed new connections to increase the burden on the system? I count 6 new properties within the last 2 years and several long term vacant properties are now occupied. Placing further strains on an inefficient system seems like management neglect by the city and failure to extend the existing system for current users.

- If leaks are created by improper installation the city should require repairs without cost and/or reimbursement from the contractor that did the initial work.
- City Park is the largest water user at 15,000 gpd. The park is a waste of taxpayer money and little used. We pay a city employee to waste water on it and then we pay him to cut the grass that is growing fast because he waters it too much. Why not irrigate with surface water and/or stop watering it altogether and plant it with drought tolerant indigenous plants?
- The city currently does not perform preventative maintenance on hydrants so why not do so?
- When there is water service to the church why is a new home across the street from it not connected but is allowed to use a private well?
- Place a moratorium on new connections and stick to it for once.
- Allow residents to opt out of using city water. Many still have a functioning well and would like to avoid the future costs that will inevitably be passed on to those that don't want the water in the first place and/or can't afford it. Our wells will certainly outlive the water system the city installed.
- The city is not aggressively pursuing the money owed for water usage. We purchased a property last year that had over $2,000 due for unpaid water usage and little was done to collect it such as placing a lien on the property.
- If the consumer and/or taxpayer see increased personal costs to repair and/or replace the water supply system the city should prepare how it intends to deal with consumers that disconnect.
- An independent engineer should review the Plan.

Was the current system installed in the early 1990's based on any plan? I would assume so and it begs the question of why it's all problematic now. There were errors in installation, inspection, documentation on variances and materials used so it's safe to assume that history will repeat and the consumer cost for water will increase. Let's dissolve the city and become a rural community with wells and septic systems. If that's not a viable alternative then we need to have the Plan reviewed by a professional but we should be looking at the initial problems of an inadequate water supply being impacted by waste, misuse and neglect. The city has failed in its fiduciary responsibility to provide adequate water for fire protection and to comply with existing rules governing the supply of potable water.

KELLER associates

131 SW 5th Avenue, Suite A • Meridian, ID 83642
208.288.1992 phone • 208.288.1999 fax • www.kellerassociates.com

October 10, 2011

Mayor Don Heiken
24 East 2nd Street
Dietrich, Idaho, 83324

Re: **City of Dietrich State Drinking Water Grant Project Public Comment Response**

Dear Mayor Heiken:

Please find this letter in response to written comments received by the City from Todd Morris and Mary Souchik regarding the *City of Dietrich, State Drinking Water Grant Project Facility Planning Report*. A written response to the comments is required by DEQ as part of the environmental information document (EID) approval and will be incorporated into the said document.

This letter identified a number of comments and questions enumerated in bullet format. Keller Associates has prepared responses to each of the comments/questions. The comments are addressed in the following format:

Bullet #—Keller Associates Response.

Questions in Paragraph #1—Yes, there was a water plan prepared by another consultant prior to the 1993 water system improvements. The entire system is not wrong. However, portions of the system have deteriorated in the last nearly 20 years and regulatory requirements have changed, which have created system deficiencies that need to be addressed.

Questions in Paragraph #2—State law requires that construction of all public drinking water system improvements is overseen by a registered professional engineer in the State of Idaho with charge to check compliance with State laws and act in the interests of the City. City elected officials are elected by the citizens and are charged to act in the best interests of their citizens. Public meetings are held regularly to obtain input from the public.

Questions in Paragraph #3—A city water system will have continuous operating and maintenance costs. Any other alternative water source would also. Private wells and septic tanks are an alternative to a public drinking water system but would be subject to approval of the local District Health Department. In essentially all cases, public drinking water systems are a preferred alternative, both environmentally and economically, to private wells and septic tanks, especially for commercial and public structures.

Bullet 1—Manufacturers of water system infrastructure publish values for average useful life. The values used in the facility planning study are consistent with industry standards.

Bullet 2—The City does not meet state redundant water supply and emergency operation requirements.

Bullet 3—The recommended fire flow for the school is 2,500 GPM for two hours. The existing water system cannot provide this water quantity for this duration.

Bullet 4—The 2000 census data was the most current regulatory demographic data available; the 2010 census data was not available at the time of the report.

Bullet 5—Water meters can be tested for accuracy. Traditionally, water meters tend to underestimate water flow as they age. The report recommends the City implement a water meter testing and replacement program.

Bullet 6—Testing and repair of the water service from the meter to the home is the responsibility of the resident.

Bullet 7—The report does not propose that the water system will fail. It simply outlines system deficiencies that are required to maintain the overall operability of the water system and meet current state standards.

Bullet 8—Prior to the commencement of this water plan process, the City had identified the number of available connections on the water system based on the information they had at the time of the system capacity. The City was issuing water permits based on that evaluation. The City is now completing this water system plan to establish what the water system capacity is, and is implementing improvements to correct system deficiencies and upsize water system capacity.

Bullet 9—The work warranty required of the original contractor for the original water system construction has expired.

Bullet 10—It is our understanding that the elected officials take into consideration the opinions of the entire community. Alternative irrigation water sources could be considered for the park.

Bullet 11—The City does perform maintenance on fire hydrants. They exercise hydrants and recently equipped them with locks to prevent unauthorized water use.

Bullet 12—Residents with existing wells and septic tanks are entitled to use them as long as they remain functional. If they fail, the local District Health Department governs whether a new well or septic tank permit is approved.

Bullet 13—Comment noted…there is no question.

Bullet 14—Comment noted…there is no question.

Bullet 15—The City has a policy for collecting on bad debt. There is no question.

Bullet 16—Comment noted…there is no question. A water structure is based on both fixed costs and consumptive costs to account for fluctuation in water use.

Bullet 17—The City is free to have a peer review completed by another consultant. At least one objective review by an independent engineer will be conducted by Idaho DEQ.

Questions in Paragraph #4—Yes, the original system was based on a plan. As noted above, portions of the system have deteriorated in the last nearly 20 years and regulatory requirements have changed, which have created system deficiencies that need to be addressed.

Please call myself with any questions at 208-288-1992.

Thank you,

KELLER ASSOCIATES, INC.

Justin Walker

Justin Walker, P.E.
Project Manager

cc: Michael May (IDEQ)
file

REGULAR MEETING AND PUBLIC HEARING OF THE CITY
OF DIETRICH
FEBRUARY 7, 2011

The Dietrich City Council met in regular session at 7:00 P.M. The roll was called by Mayor Heiken. The following members answered present: Daryl Ballard, Boyd King, Jeanette Chambers, and Connie Anderson was absent. Also attending the meeting was Tom Young, city maintenance, T.R. Bowlin, Lincoln County Chronicle, Robert Langford, Rural Development, and Justin Walker, Keller and Associates.

The following addition was made to the agenda-Discussion to put a lien on a property because the property is going to be sold. Motion was made by Ballard and 2nd by Chambers to add discussion to the agenda.

7:15 Motion was made by Ballard and 2nd by Chambers to approve the minutes as read. All were in favor and the motion carried.

7:18 Public Meeting was open. A letter was received from Todd Morris on Water Faculty Master Planning Study. Justin Walker read the letter to the council. Mr. Walker. Mr. Walker then proceeded to answer some of the points that were brought up by Mr. Morris. The answers were as follows: New rules did not exist at the time that the original water system was put into use. The in efficiencies were for the Idaho Code. Requirements for fire flow have become more stringent. Census- the new census has not been released. Meter replacement and lines from meter to the house are responsibility of the home owner. System is not in compliance with the State at this time and DEQ would regulate any new water mains. They would probably not approve of any new connections. Preventive maintenance on hydrants is already being done. New wells are not allowed when a property is within 250 yds of a municipal water system.

All the standards for construction for the 1992 well have been met.

7:25 Since no other observations or patrons attended the public meeting a motion was made by Chambers and 2nd by King to close the public hearing. All were in favor and the motion carried.

Justin Walker costs were updated for rock excavation. Plan was amended so water line does not go through existing homes.

Updated cost: Will take advantage of existing lines and well storage. Master Plan was fixed dashed lines so it is basically the same.

Priority Number1 is new well and capital improvement, Fire hydrants, eye wash station.

Priority two is getting the water to west area of town.

Capital Improvement Plan is a road map of future development and establish connection fee. Also look at short lived assets and set aside a budget for replacing parts.

Growth should be 100%. Go over connection fees and present recommendations.

Mr. Walker discussed different funding sources.

The city planning study needs to be wrapped up so Kathy Uker can be contacted to get things moving on apply for a Block Grant. Council was told that Bacon-Davis wage scale would be in affect.

Councilwoman Chambers asked the question if the new house on the end of 7th street was in the city limits. It is not in the city limits but in the impact area. Motion was made by Ballard and 2nd by Chambers that having heard all the public comments on the Water Facility Planning Study that the council adopt Alternative I as our preferred planning guide. All in favor and the motion carried. The motion was adopted.

8:20 Question of payment from the DEQ. How does the payment work, do they pay the invoices as they come in? DEQ will reimburse 50%. It was requested that the amount the city owes Keller and Associates be invoiced so we can pay them some money.

The LMI survey needs to be started.

Eagle Scout Project has been canceled with the city. The young man has found another project to do that does not involve the city.

The following bills were received:

FROM		FOR	AMOUNT
United States Treasury	*	Withholdings	$262.76
Iva Lee Green	*	33.25x12.88=428.26-67.20=	$361.06
Tom Young	*	85x9.27=787.95-149.52=	$638.43
Ann's Auto and Ag		oil and parts	$16.72
Craig Hobdey	*	retainer fee	$250.00
Dietrich Highway Dist		property tax	$1,936.37
Dietrich Water System		water/sewer($98.00	
		Dietrich Grange Hall(46.00	$144.00
E. Scott Paul		retainer fee	$75.00
Idaho Power		st.lights(144.48	
		hall(312.88	
	*	lift station(139.27	
		park(4.23	
	*	well-(213.29	$814.15
Lincoln County	*	deputy fee	$150.00
One Wave	*	internet services	$34.95
Qwest		city hall(43.78	
		Excel long distance(14.13	
	*	well(30.44	
	*	lift station(34.86	$123.21
Times News	*	publish ordinance(61.77	
Time News		publish for open house)55.56	$117.33
Valley Co-op	*	gas for the truck	$256.41
Wells Fargo Card Service	*	Go-Daddy, intuit payroll, upgrade on Quik bks.	$355.93
Wood River RC&D		Membership assessment	$13.00
Dietrich School		gas for snow plow	$120.57

Motion was made by Ballard and 2nd by King to pay the bills. All were in favor and the motion carried.

The following credits were received:

FROM		FOR	AMOUNT	
Lincoln County		2010 current tax(7225.09		
		2010 Penalty tax(.69		
		2010 Highwy tio City(1715.91		
		2010 Penalty tax(.18		
		2010 Current Tx(79.04		
		2010 Occupancy tax to Highwy to city(18.76		
		2010 curcuit Breaker tax(444.51		
		2010 Circuit Breaker Highwy to city(105.55		
		2009 Deliquent tax(200.76		
		2009 Penalty tax(3.98		
		2009 Interest tax(23.64		
		2009 Highwy to city(52.03		
		2009 deliquent highwy to city(1.05		
		2009 interest highwy to city(6.15		
		2008 deliquent tax(56.40		
		2008 penalty tax(1.08		
		2008 interest tax(13.56		
		2008 hgihwy to city(14.88		
		2008 penalty tax highwy to city(.30		
		2008 interest on highwy to city(3.60		
		2007 deliquent tax(51.71		
		2007 penalty tax(1.02		
		2007 interest (18.94		
		2007 highwy to city tax(12.96		
		2007 penalty tax highwy to city(.26		
		2007 interest tax highwy to city(4.74	$10,056.79	
State of Idaho		liquor distribution	$1,096.00	
Idaho Power		quarterly	$413.74	
Depart of Tres.		refund on 941	$664.85	
			$12,231.38	

Marvin Miller Platt- the council reviewed the final blue print and discussed the changes and additions made to them.

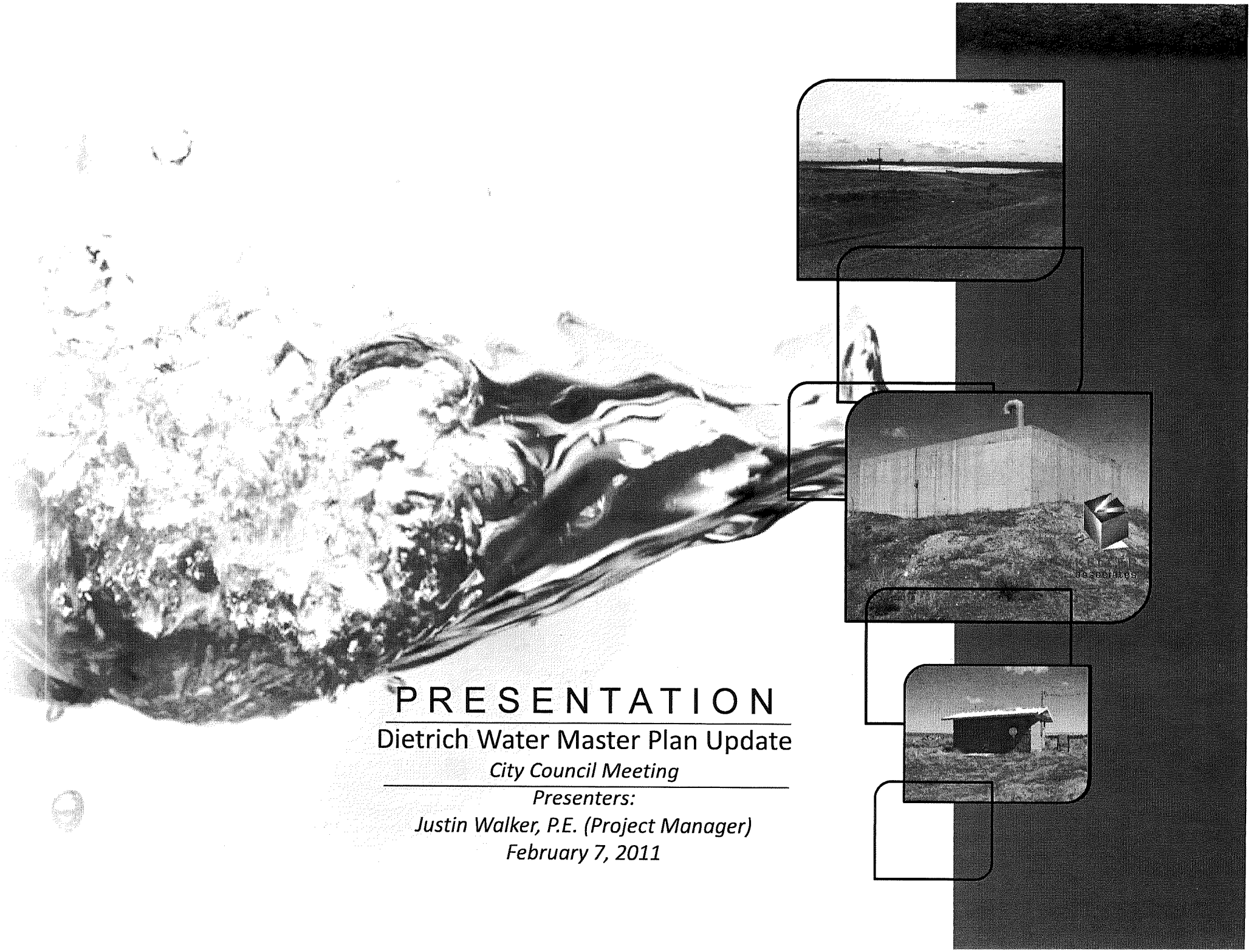
Council discussed past due sewer bills and what could be done about collecting them. Discussed sending a letter for payment and if that didn't work placing a lien on the property. It was also discussed to place a lien on a property, with a past due bill.

Motion was made by Ballard and 2nd by Chambers to send Mr. Varadi a letter and also for Susan Flores a lien on her property. All in favor and the motion carried.

8:50 Report from Tom Young- Mr. Young requested be able to go to the Idaho Rural Water Conference at Idaho Falls in March. Motion by Chambers and 2nd by Ballard to sent Mr. Young to the conference. All were in favor and the motion carried.

Motion was made by Chambers and 2nd by Ballard to adjourn the meeting. All were in favor and the meeting adjourned at 89:00 p.m.

_____Mayor _____Clerk



PRESENTATION

Dietrich Water Master Plan Update

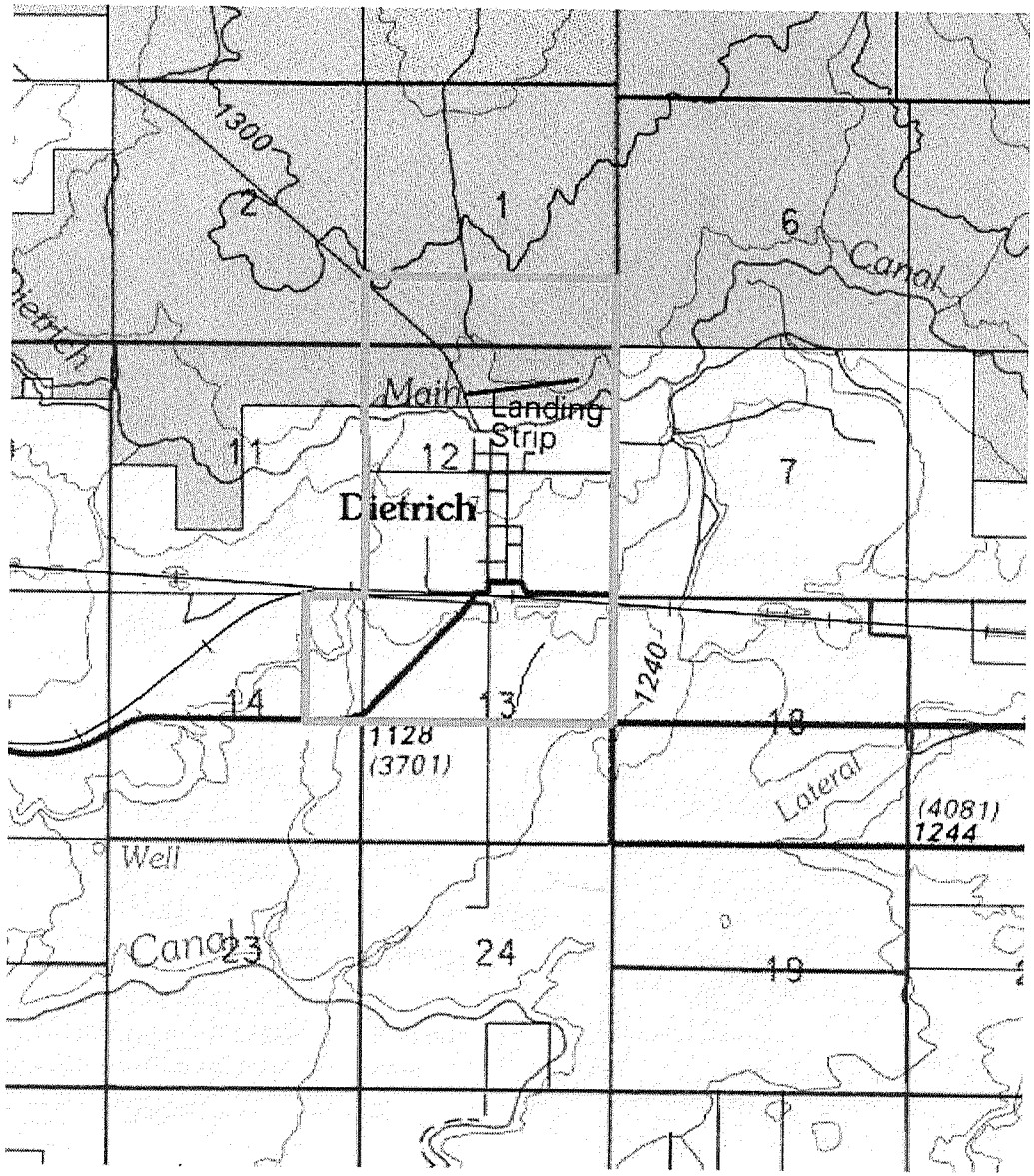
City Council Meeting

Presenters:

Justin Walker, P.E. (Project Manager)

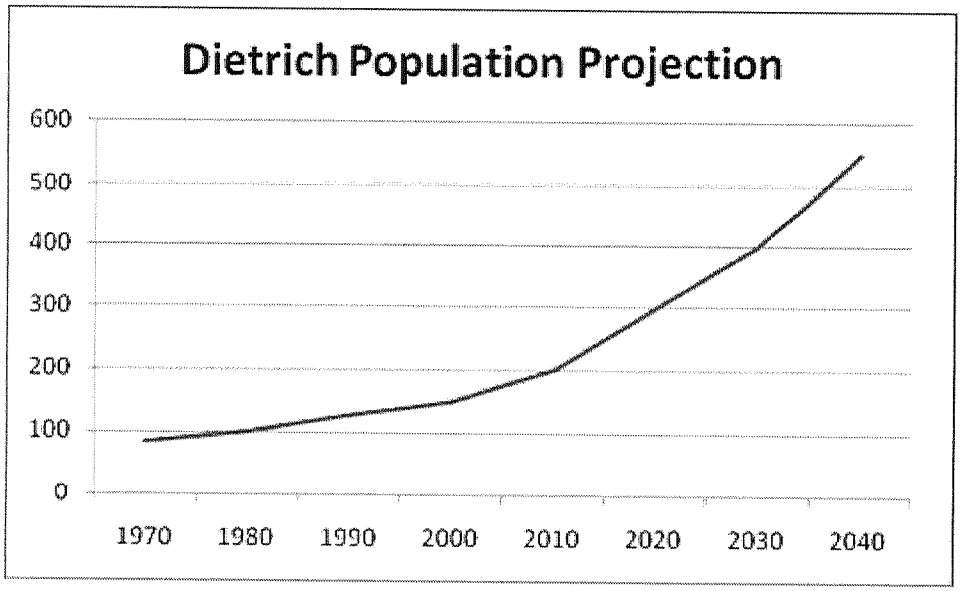
February 7, 2011

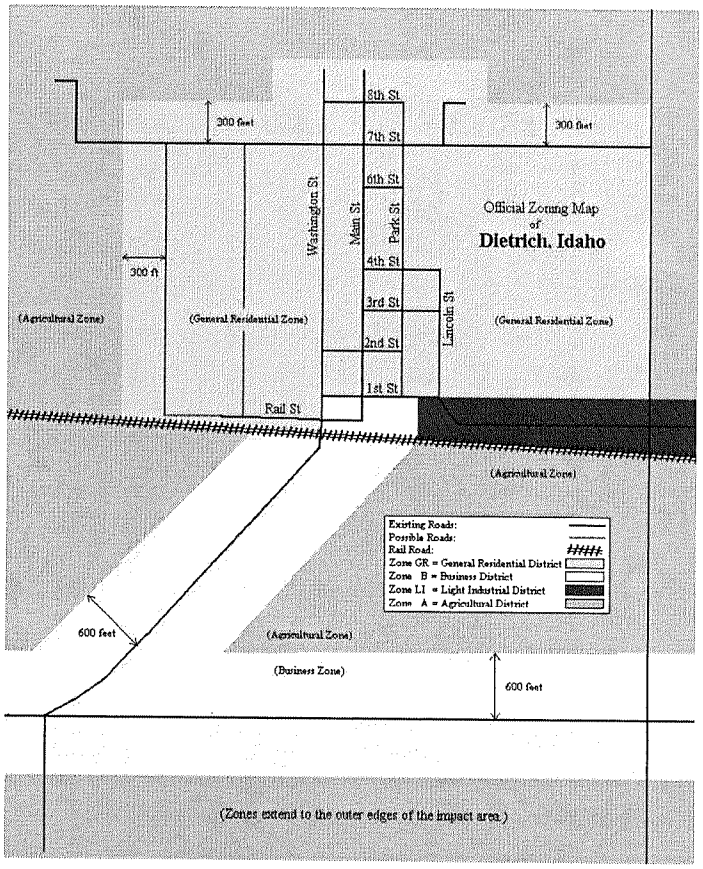
Study Area


1300
2
1
6
Canal
Main
Landing
Strip
11
12
7
Dietrich
1240
14
13
18
1128
(3701)
Lateral
(4081)
1244
Well
Canal
23
24
19

Demographics

Historical	Population	Average Annual Growth (linear)
1970	84	
1980	101	2.0%
1990	127	2.6%
2000	150	1.8%
2010	Approx. 200	3.3%
	20 yr Avg	**2.9%**
	40 Yr Avg	**3.45%**

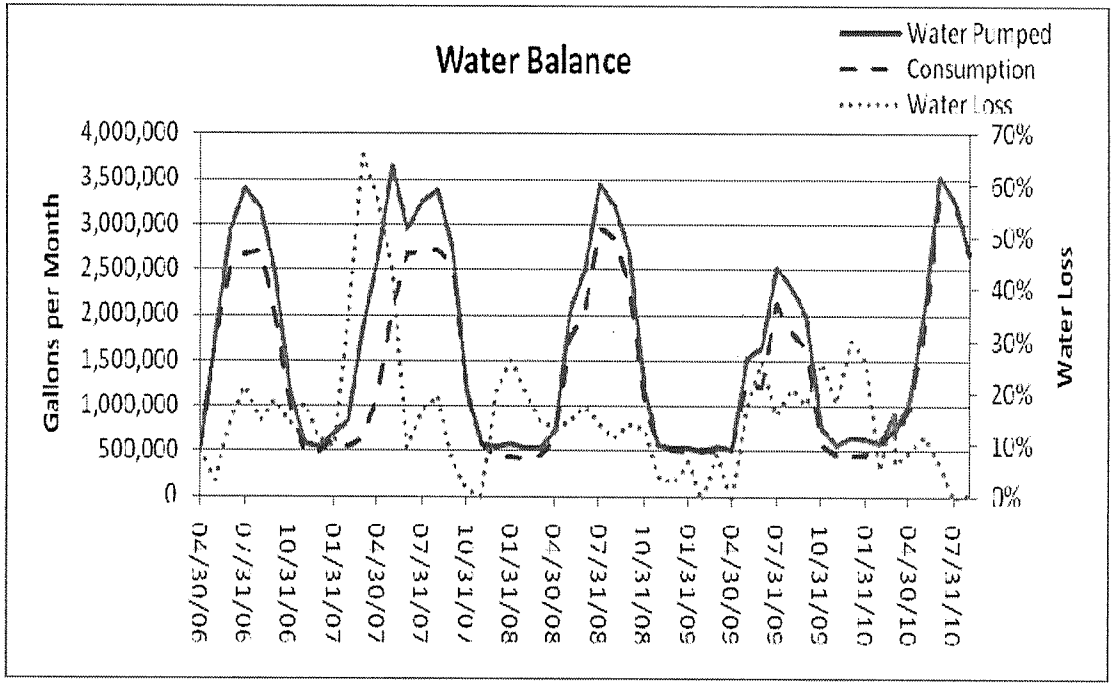




Water Demands

Water Right	(cfs)	(gpm)
Licensed	0.37	170
Permitted	0.45	200

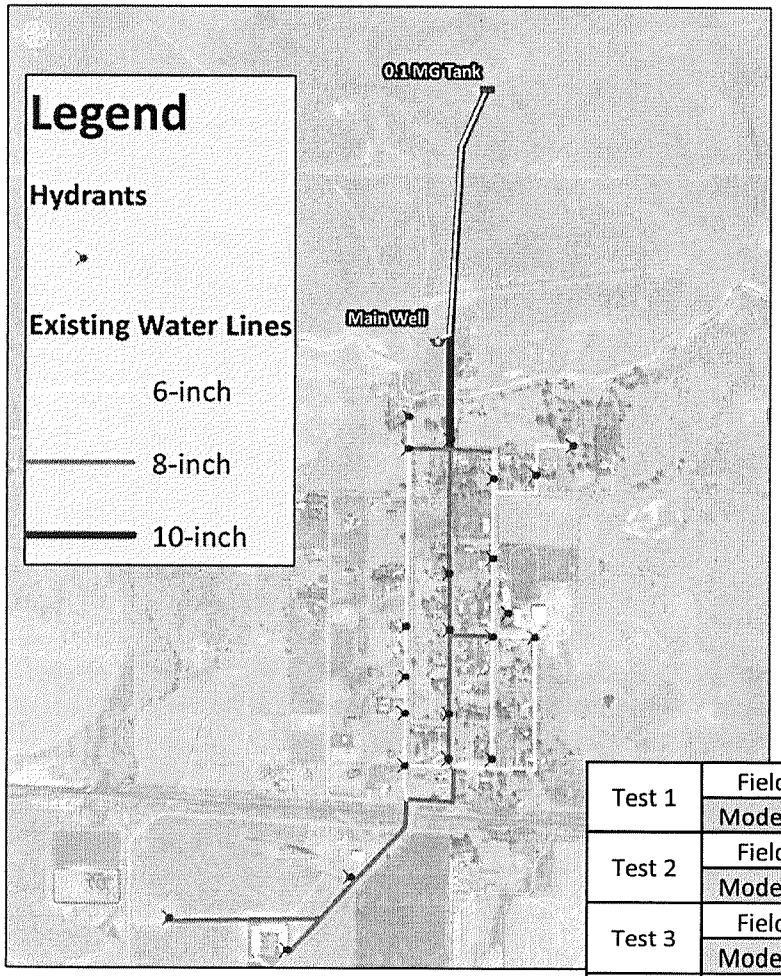
Statistic	2006-2010 Average Water Demands	Future Potable Demands
Average Day	294	177
Max Month	581	349
Peak Day	752	451
Peak Hour	1,053	632



	GPM						
Population	Average Day	Max Month	Peak Day	Peak Hour	PDD+Fire [1]	Equalization	PDD + Equalization
200	37	79	118	165	2,618	14	132
250	43	91	133	186	2,633	16	149
300	50	103	149	208	2,649	18	167
350	56	115	165	230	2,665	20	184
400	62	127	180	252	2,680	22	202
450	68	139	196	274	2,696	24	219
500	74	151	212	296	2,712	25	237
550	80	164	227	318	2,727	27	254
1,300 (build-out)	172	345	462	647	2,962	55	518

1. Assumes 2,500 GPM Fire Demand

Hydraulic Model



Dietrich, Idaho: Existing Distribution System

		Site 1			Site 2			ERROR	
		Static	Residual	*Drop*	Static	Residual	*Drop*	Site 1	Site 2
Test 1	Field	46	36	*10*	46	39	*7*	4	1
	Model	47	41	*6*	47	41	*6*		
Test 2	Field	47	34	*13*			*0*	-2	0
	Model	46	31	*15*			*0*		
Test 3	Field	58	43	*15*	57	45	*12*	-1	-2
	Model	60	44	*16*	59	45	*14*		
Test 4	Field	68	52	*16*	59	45	*14*	-1	0
	Model	67	50	*17*	58	44	*14*		
Test 5	Field	76	63	*5*	80	60	*20*	1	1
	Model	75	63	*12*	83	64	*19*		

Water Storage

Existing Storage

	Storage (gals)
Concrete Reservoir	100,000
Total	100,000
Effective Total Storage	**80,000**

Existing Storage Needs

	Storage (gals)
Operational Storage[1]	18,000
Peaking Storage[2]	21,000
Fire Storage[3]	300,000
Recommended Storage	**339,000**
Less Existing Storage	(80,000)
Existing Additional Storage Need	**259,000**
Standby Emergency Storage [4]	18,000
Total Recommended Storage	**277,000**

1. Typically 15% of total storage volume. Represents difference between pump ON and OFF levels.
2. Volume of storage necessary to meet daily peak demands. Assumes that water supply is equal to the average peak day demand. Diurnal curve pattern assumed to be similar to Mtn Home.
3. Assumes range of 2,500 GPM for 2 hours (See Appendix C for a fire flow inventory)
4. Standby emergency storage estimated to be average day demands for 8 hours

Future Storage Needs

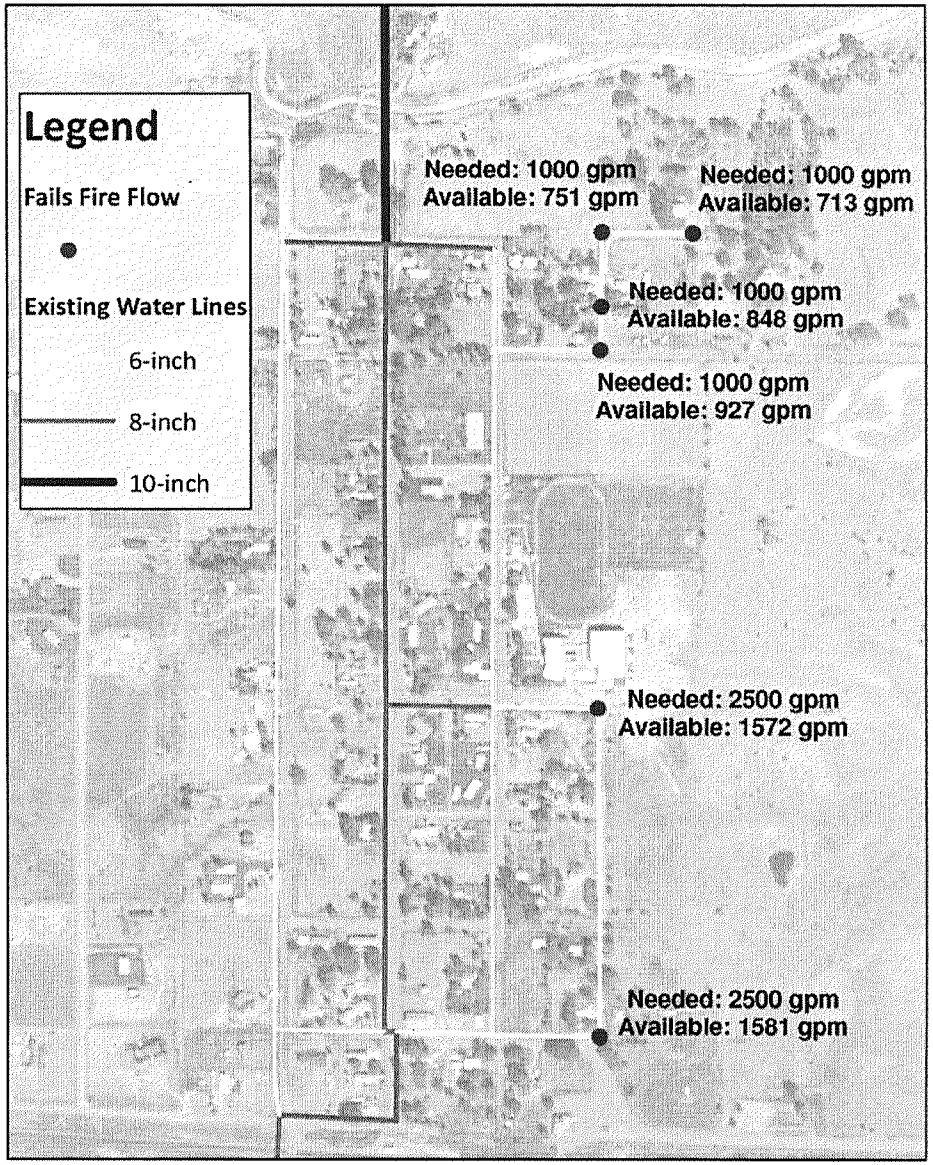
				Build-out
Population	***300***	***400***	***550***	***1,300***
Operational Storage [1]	58,000	59,000	60,000	74,000
Peaking Storage[2]	27,000	32,000	41,000	83,000
Fire Storage[3]	300,000	300,000	300,000	300,000
Total Minimum Recommended Storage	**385,000**	**391,000**	**401,000**	**457,000**
Less Existing Storage	(80,000)	(80,000)	(80,000)	(80,000)
Needed Additional Storage	**305,000**	**311,000**	**321,000**	**377,000**
Standby Emergency Storage [4]	24,000	30,000	38,000	109,000
Total Recommended Storage	**329,000**	**341,000**	**359,000**	**486,000**

	Minimum	Maximum	Recommended
Tank Size Recommendation (MG)	**0.3**	**0.5**	**0.35**

1. Typically 15% of total storage volume. Represents difference between pump ON and OFF levels.
2. Volume of storage necessary to meet daily peak demands. Assumes that water supply is equal to the average peak day demand. Diurnal curve pattern assumed to be similar to Mtn Home.
3. Assumes range of 2,500 GPM for 2 hours (See Appendix C for a fire flow inventory)
4. Standby emergency storage estimated to be average day demands for 8 hours

Distribution System

- Fire Flow Deficiencies



Dietrich, Idaho: Existing Distriubtion Deficiencies

KELLER associates

Supply, Storage, Distribution – Alternative 1

- 0.35 MG bench reservoir
- New well near existing well
- Transmission improvements (see figure)
- Comparative cost estimate = $1,991,500
- Advantages:
  - Better tank circulation
  - More efficient operation
  - May be able to use existing easements
  - Slightly less expensive
- Disadvantages
  - More transmission pipeline improvements (rock excavation)
  - USDA-RD may not fund fire flow improvements

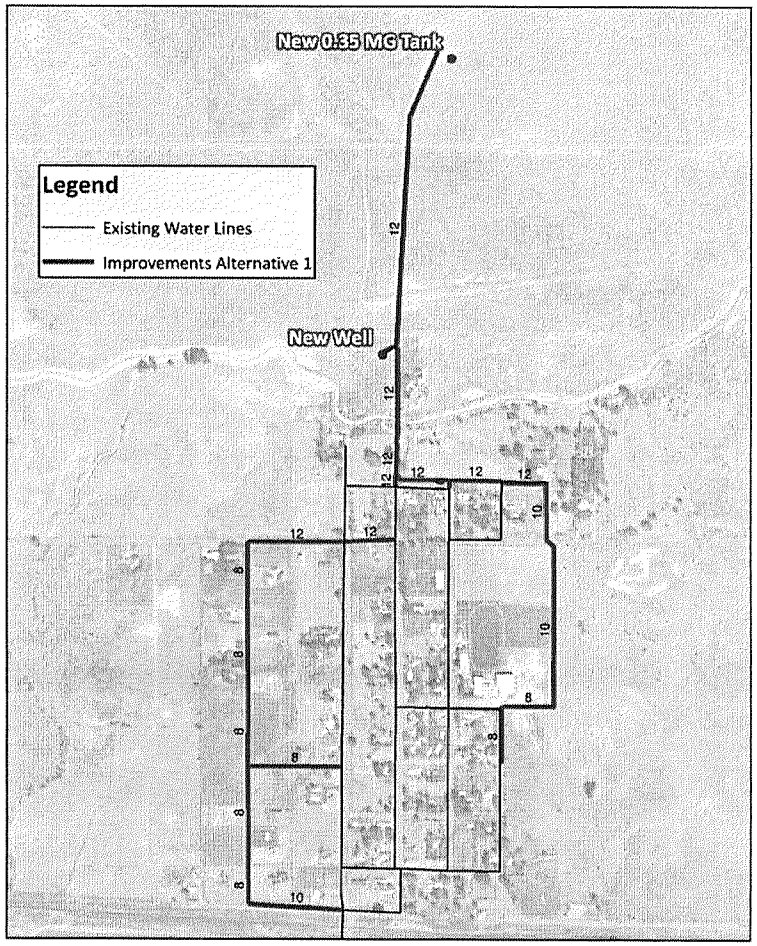


Figure 6.1 Dietrich, Idaho: Alternative 1 Improvements

KELLER associates

Supply, Storage, Distribution – Alternative 2

- 0.35 MG ground level tank
- New well and booster station near tank
- Transmission improvements (see figure)
- Comparative cost estimate = $2,121,800
- Advantages:
  - Fewer transmission pipeline improvements
  - Water source closer to structures needing fire protection
- Disadvantages
  - Requires booster station
  - Requires property acquisition or easement
  - Requires continuous pumping / power use
  - Slightly more expensive

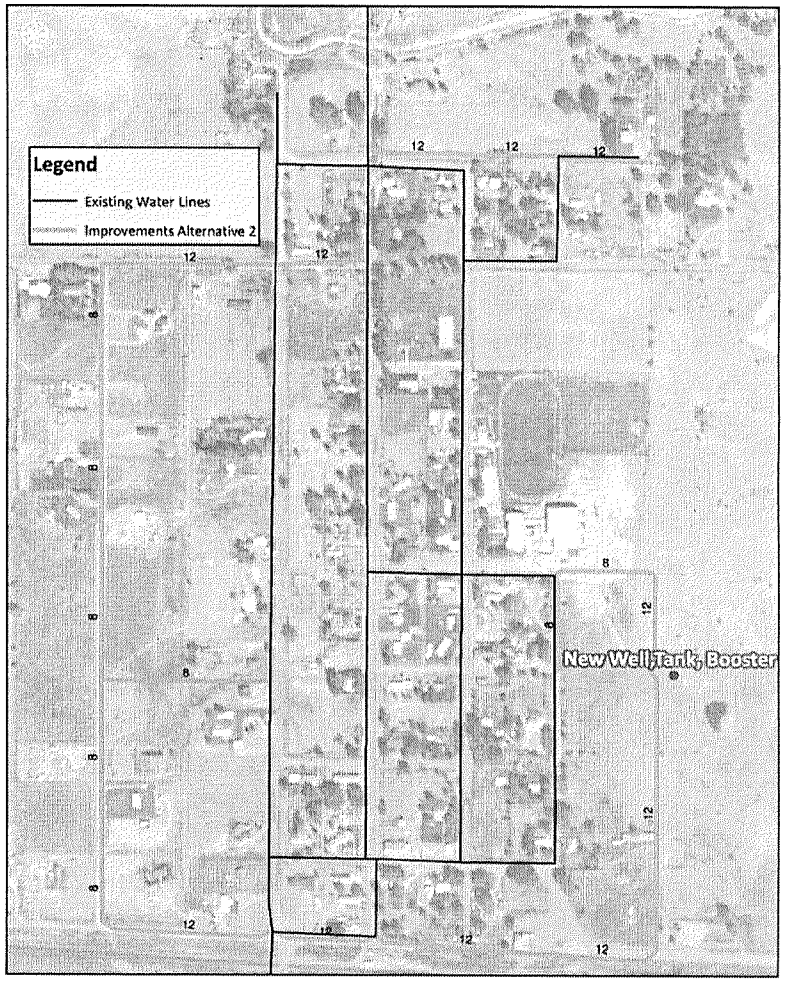
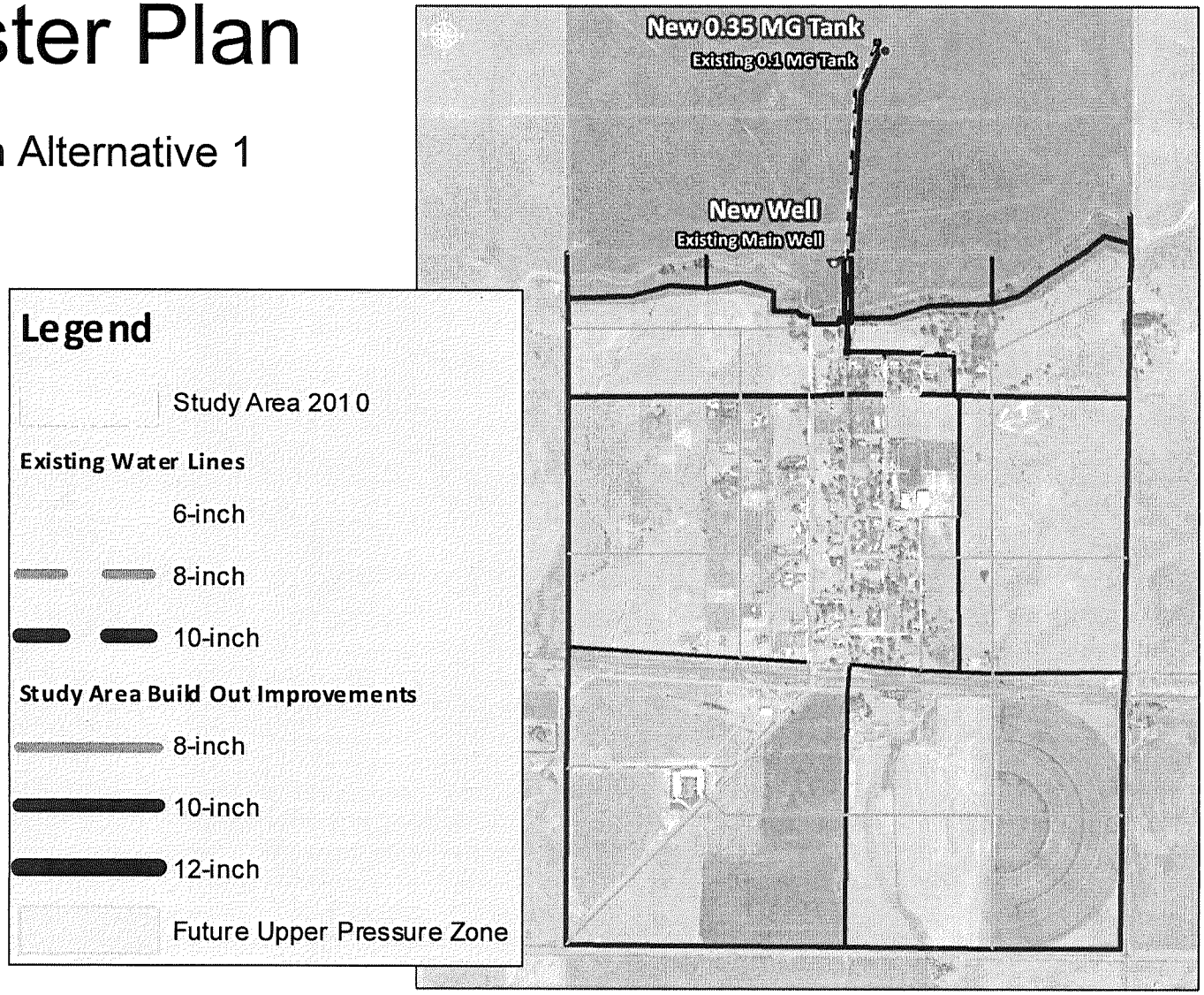


Figure 6.2 Dietrich, Idaho: Alternative 2 Improvements

Master Plan

- With Alternative 1



Dietrich, Idaho: Study Area Build-Out Concept

Capital Improvement Plan

Item (2010 Project Costs*)	Priority 1	Priority 2	Future
Priority 1 - Water Supply and Storage (needed now)			
New 250 GPM backup well and pump house (3-phase power)	$743,000		
Fire Hydrant Replacement Program (4 @ $2,000 EA)	$4,000		
Eye wash station at Main wellhouse	$2,000		
SUBTOTAL	$749,000		
Priority 1- Pipelines (needed now)			
8" Waterline on Wacanza Street and connection pipeline	$418,300		
TOTAL PRIORITY 1	***$1,167,300***		
Priority 2 - Water Supply and Storage			
Upgrade Main well pump with VFD, 250 gpm		$74,700	
350,000 gallon water reservoir (bolted steel)		$453,800	
Replace all water meters with touch read meters		$29,400	
Flow meter on line from tank		$12,500	
Priority 2 - Pipelines (As resources permit)			
Tranmission Line upgrades for new water reservoir		$844,700	
7th Street pipeline loop		$208,700	
TOTAL PRIORITY 2		***$1,623,800***	
Future Water Supply and Storage (as development occurs)			
Additional well (needed when PDD exceeds 250 GPM and then every 600 EDUs assuming pumping capacity of 500 GPM)			$668,000
Upper Pressure Zone Booster Station			$350,900
Additional 150,000 gallons of water storage (bolted steel)			$257,300
System-wide SCADA (software and hardware)			$63,100
Future Pipelines (As development Occurs)			
Upper Pressure Zone Pipelines-Upsize Costs			$254,800
Existing Pressure Zone Pipelines-Upsize Costs			$730,600
TOTAL FUTURE IMPROVEMENTS			***$2,324,700***
TOTAL	**$1,167,300**	**$1,623,800**	**$2,324,700**

Annual System Replacement Budget

Item	Amount	Comment
Pipeline Replacement and Repair[1]	$4,000	Spot repairs as needed
Fire Hydrant Replacement[2]	$4,000	2 hydrants per year for the next 15 years only.
Pumping and Storage Infrastructure Budget[3]	$4,600	Pumping and storage facilities
Meter Replacement Program[4]	$3,000	10 meters per year for the next 10 years only
Annual Replacement/Maintenance Budget	**$15,600**	

Assumptions:

[1] Pipelines generally assumed to have 40+ years of useful life since only 20 years old.

[2] Fire hydrant replacement cost estimated at $2,000 each including parts and labor. City personnel to provide labor.

[3] Includes replacement of electrical and controls, SCADA, pump, motor, chemical dosing equipment and instrumentation every 20 years for pumping facilities. Includes cleaning and inspection of concrete tank every 10 years.

[4] Meter replacement includes replacing existing meters with touch-read meters estimated to cost $300 each for parts and labor. City personnel to provide labor.

Connection Fee Calculation

Item (2010 Project Costs*)	Improvements	% Benefiting Growth	$ Benefiting Growth
Priority 1 - Water Supply and Storage (needed now)			
New 250 GPM backup well and pump house (3-phase power)	$743,000	53%	$393,664
Fire Hydrant Replacement Program (2 @ $2,000 EA)	$4,000	0%	$0
Eye wash station at Main wellhouse	$2,000	0%	$0
Priority 1- Pipelines (needed now)			
8" Waterline on Wacanza Street and connection pipeline	$418,300	0%	$0
TOTAL PRIORITY 1	**$1,167,300**		**$393,664**
Priority 2 - Water Supply and Storage			
Upgrade Main well pump with VFD, 250 gpm	$74,700	87%	$65,195
350,000 gallon water reservoir (bolted steel)	$453,800	21%	$94,650
Replace all water meters with touch read meters	$29,400	0%	$0
Flow meter on line from tank	$12,500	0%	$0
Priority 2 - Pipelines (As resources permit)			
Tranmission Line upgrades for new water reservoir	$844,700	50%	$422,350
7th Street pipeline loop	$208,700	0%	$0
TOTAL PRIORITY 2	**$1,623,800**		**$582,195**
Future Water Supply and Storage (as development occurs)			
Additional well (needed when PDD exceeds 250 GPM and then every 600 EDUs assuming pumping capacity of 500 GPM)	$668,000	100%	$668,000
Upper Pressure Zone Booster Station	$350,900	100%	$350,900
Additional 150,000 gallons of water storage (bolted steel)	$257,300	100%	$257,300
System-wide SCADA (software and hardware)	$63,100	84%	$52,832
Future Pipelines (As development Occurs)			
Upper Pressure Zone Pipelines-Upsize Costs	$254,800	100%	$254,800
Existing Pressure Zone Pipelines-Upsize Costs	$730,600	100%	$730,600
TOTAL FUTURE IMPROVEMENTS	**$2,324,700**		**$2,314,432**
TOTAL	**$5,115,800**		**$3,290,291**

CONNECTION FEE CALCULATIONS

Existing Pressure Zone		
Number of additional EDUs to buildout (approx.)	602	
Total*	**$ 4,458**	*Does not include cost of parts and labor for water meter
Upper Pressure Zone		
Number of additional EDUs to buildout (approx.)	70	
Total*	**$ 11,898**	*Does not include cost of parts and labor for water meter

Funding Scenarios

New Water System Improvements Bond Payment Assumptions					
Current # of EDUs	98				
Current average monthly user rate	$ 25.00				
2000 Median HH Income	$ 35,625				
1.5% of 2000 Median HH Income	$ 44.53				
Component	**Scenarios**				
	Phase 1	Phase 1&2	Phase 1 [1]	Phase 1 [2]	Phase 1 [3]
Interest	1.75%	1.75%	1.75%	1.75%	3.5%
Term	20	20	20	20	30
Project Cost	$1,174,300	$2,798,100	$ 1,174,300	$ 1,174,300	$ 1,174,300
Grant	0%	0%	$ 500,000	$ 800,000	30%
Annual Payment	$70,095	$167,022	$40,250	$22,342	$17,508
Approximate Monthly User Rate Increase	$60	$142	$34	$19	$15
Total Estimated User Rate	**$85**	**$167**	**$59**	**$44**	**$40**

Notes:
1. Assumes $500k CDBG
2. Assumes $500k CDBG and $300k in principal forgiveness from SRF
3. Assumes $500k CDBG and 30% grant from USDA-RD

Appendix D

AGENCY CONSULTATION

DEPARTMENT OF THE ARMY
WALLA WALLA DISTRICT, CORPS OF ENGINEERS
IDAHO FALLS REGULATORY OFFICE
900 N SKYLINE DRIVE, SUITE A
IDAHO FALLS, IDAHO 83402

REPLY TO
ATTENTION OF

APR 01 2011

March 29, 2011

Regulatory Division

SUBJECT: NWW-2011-133-I02

Mr. Justin Walker
Keller Associates
131 SW 5th Avenue, Suite A
Meridian, Idaho 83462

Dear Mr. Walker:

This is in response to your request dated March 22, 2011, for Department of the Army, Corps of Engineers (DA or Corps) review and comments regarding your client's proposal to improve the water system in the City of Dietrich. The proposed project is located within Section(s) 12 and 13 of Township 6 South, Range 18 East, near latitude 42.9092° N and longitude -114.2667° W, in Lincoln County, in the City of Dietrich, Idaho. Your request has been assigned file number **NWW-2011-133-I02**, which should be referred to in all future correspondence with our office regarding the proposed project.

The DA exerts regulatory jurisdiction over Waters of the United States (U.S.), including wetlands, pursuant to Section 404 of the Clean Water Act (33 U.S.C. 1344). Section 404 requires a DA permit be obtained prior to discharging dredged and/or fill material into Waters of the U.S., which includes most perennial and intermittent rivers and streams, natural and man-made lakes and ponds, irrigation and drainage canals and ditches that are tributaries to other waters, and wetlands.

Based on our review of the information you provided, it appears that most of the work proposed would occur in areas that are upland and non-jurisdictional (New Well, New Storage Tank and pipeline improvements on the West side of town). However, we are unable to determine if the proposed project will involve work in areas subject to our regulatory jurisdiction at the point the transmission line crosses Dietrich Main Canal and at the location of the new 10-inch transmission line on the East side of town. Therefore, we recommend you have these areas inspected by a professional wetland consultant to determine if the proposed project will involve work in such areas. The selected consultant should be knowledgeable in the identification of and Corps methodology for delineating wetlands and Waters of the U.S.

Activities regulated under Section 404 would include excavation and land clearing operations involving vegetation removal with mechanized equipment such as front-end loaders, backhoes, or bulldozers with sheer blades, rakes, or discs; windrowing of vegetation; land leveling; or other soil disturbance in areas subject to Corps jurisdiction that result in a

discharge of dredged or fill material into wetlands or Waters of the U.S. Should activities such as this be anticipated in the Dietrich Main Canal or wetlands/waters located on the East side of town a DA permit may be required prior to the start of construction.

We are interested in your thoughts and opinions concerning the quality of service you received from the Walla Walla District, Corps of Engineers Regulatory Division. If you have Internet access, please visit our web site at www.nww.usace.army.mil/html/offices/op/rf/survey.asp and complete an electronic version of our Customer Service Survey form, which will be automatically submitted to us. Alternatively, you may call and request a paper copy of the survey, which you may complete and return to us by mail or by fax at (208) 522-2994. Your responses are appreciated and will allow us to improve our services. Also, for additional information regarding the Corps' permitting jurisdiction and the Walla Walla District Regulatory program please visit our website at www.nww.usace.army.mil/html/offices/op/rf/rfhome.asp.

Please contact me by telephone at (208) 522-1676, by mail at the address in the above letterhead, or via e-mail at james.m.joyner@usace.army.mil if you have any questions regarding the information contained in this letter. For additional information about the Walla Walla District Regulatory program, please visit our website at http://www.nww.usace.army.mil/html/offices/op/rf/rfhome.asp.

Sincerely,

James M. Joyner

James M. Joyner
Regulatory Project Manager
Idaho Falls Regulatory Office

Enclosures

ATTACHMENT

PRELIMINARY JURISDICTIONAL DETERMINATION FORM

BACKGROUND INFORMATION

A. REPORT COMPLETION DATE FOR PRELIMINARY JURISDICTIONAL DETERMINATION (JD): **Date**: March 29, 2011

B. NAME AND ADDRESS OF PERSON REQUESTING PRELIMINARY JD:
Mr. Justin Walker - Keller Associates
131 SW 5th Avenue, Suite A
Meridian, Idaho 83642

C. DISTRICT OFFICE, FILE NAME, AND NUMBER: Walla Walla District – Idaho Falls Regulatory Office (CENWW-RD-Idaho Falls), NWW-2011-133-I02

D. PROJECT LOCATION(S) AND BACKGROUND INFORMATION:

State: Idaho **County:** Lincoln **City:** Dietrich

Center coordinates of site (lat/long in degree decimal format):
Lat. 42.9091816704405°N **Long.** -114.266632395648°W

Universal Transverse Mercator:
Easting: 723126.442058793(x) **Northing:** 4754354.6912452(y) **Zone:** 11

Name of nearest waterbody: Dietrich Main Canal

Identify (estimate) amount of waters in the review area:
Non-wetland waters: ~100 linear feet; _____ width (ft) and/or _____ acres.

Cowardin Class: Riverine

Stream Flow: Intermittent

Wetlands: Undetermined acres

Cowardin Class: Palustrine - emergent

Name of any waterbodies on site, identified as Section 10 waters:
Tidal:

Non-Tidal:

E. REVIEW PERFORMED FOR SITE EVALUATION (CHECK ALL THAT APPLY):

☒ Office (Desk) Determination Date: March 29, 2011

☐ Field Determination Date(s):

1. The Corps of Engineers believes that there may be jurisdictional waters of the United States on the subject site, and the permit applicant or other affected party who requested this Preliminary JD is hereby advised of his or her option to request and obtain an approved jurisdictional determination (JD) for that site. Nevertheless, the permit applicant or other person who requested this preliminary JD has declined to exercise the option to obtain an approved JD in this instance and at this time.

2. In any circumstance where a permit applicant obtains an individual permit, or a Nationwide General Permit (NWP) or other general permit verification requiring "pre-construction notification" (PCN), or requests verification for a non-reporting NWP or other general permit, and the permit applicant has not requested an approved JD for the activity, the permit applicant is hereby made aware of the following: (1) the permit applicant has elected to seek a permit authorization based on a preliminary JD, which does not make an official determination of jurisdictional waters; (2) that the applicant has the option to request an approved JD before accepting the terms and conditions of the permit authorization, and that basing a permit authorization on an approved JD could possibly result in less compensatory mitigation being required or different special conditions; (3) that the applicant has the right to request an individual permit rather than accepting the terms and conditions of the NWP or other general permit authorization; (4) that the applicant can accept a permit authorization and thereby agree to comply with all the terms and conditions of that permit, including whatever mitigation requirements the Corps has determined to be necessary; (5) that undertaking any activity in reliance upon the subject permit authorization without requesting an approved JD constitutes the applicant's acceptance of the use of the preliminary JD, but that either form of JD will be processed as soon as is practicable; (6) accepting a permit authorization (e.g., signing a proffered individual permit) or undertaking any activity in reliance on any form of Corps permit authorization based on a preliminary JD constitutes agreement that all wetlands and other water bodies on the site affected in any way by that activity are jurisdictional waters of the United States, and precludes any challenge to such jurisdiction in any administrative or judicial compliance or enforcement action, or in any administrative appeal or in any Federal court; and (7) whether the applicant elects to use either an approved JD or a preliminary JD, that JD will be processed as soon as is practicable. Further, an approved JD, a proffered individual permit (and all terms and conditions contained therein), or individual permit denial can be administratively appealed pursuant to 33 C.F.R. Part 331, and that in any administrative appeal, jurisdictional issues can be raised (see 33 C.F.R. 331.5(a)(2)). If, during that administrative appeal, it becomes necessary to make an official determination whether CWA jurisdiction exists over a site, or to provide an official delineation of jurisdictional waters on the site, the Corps will provide an approved JD to accomplish that result, as soon as is practicable. This preliminary JD finds that there *"may be"* waters of the United States on the subject project site, and identifies all aquatic features on the site that could be affected by the proposed activity, based on the following information:

SUPPORTING DATA **Data reviewed for preliminary JD (check all that apply** - checked items should be included in case file, and where checked and requested, appropriately reference sources below):

☒ Maps, plans, plots or plat submitted by or on behalf of the applicant/consultant:

☐ Data sheets prepared/submitted by or on behalf of the applicant/consultant:
- ☐ Office concurs with data sheets/delineation report.
- ☐ Office does not concur with data sheets/delineation report.

☐ Data sheets prepared by the Corps:

☐ Corps navigable waters' study:

☐ U.S. Geological Survey Hydrologic Atlas:
- ☐ USGS NHD data.
- ☐ USGS 8 and 12 digit HUC maps

☒ U.S. Geological Survey map(s). Cite scale & quad name: 1:24K (Dietrich)

☒ USDA Natural Resources Conservation Service Soil Survey. Citation: USDA (Web Soil Survey)

☒ National wetlands inventory map(s) Cite name: USFWS (Wetlands Mapper)

☐ State/Local wetland inventory map(s):

☐ FEMA/FIRM maps:

☐ 100-year Floodplain Elevation is: _____ (National Geodetic Vertical Datum, 1929)

☒ Photographs: ☒ Aerial (Name & Date): 2004, 2006, ORM Database, and aerial of unkonwn date provided by the project proponent
or ☐ Other (Name & Date):

☐ Previous determination(s) File no. and date of response letter:

☐ Other Information (please specify):

<u>IMPORTANT NOTE: The information recorded on this form has not necessarily been verified by the Corps and should not be relied upon for later jurisdictional determinations.</u>

James M. Joyner

March 29, 2011

Signature and date of Regulatory Project Manager **(REQUIRED)**	Signature and date of person requesting preliminary JD **(REQUIRED, unless obtaining the Signature is impracticable)**

Site Number	Latitude	Longitude	Cowardin Class	Estimated amount of aquatic resource in review area	Class of aquatic resource
Dietrich Main Canal	42.9179	-114.2655	Riverine	100 feet	Section 404, Other Water of the U.S.
Emergent Wetland	42.9139	-114.2618	Palustrine	950 feet	Section 404, Wetland

ATTACHMENT

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Mr. Justin Walker - Keller Associates
131 SW 5th Avenue, Suite A
Meridian, Idaho 83642

C. DISTRICT OFFICE, FILE NAME, AND NUMBER: Walla Walla District – Idaho Falls Regulatory Office (CENWW-RD-Idaho Falls), NWW-2011-133-I02

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Universal Transverse Mercator:
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Name of nearest waterbody: Dietrich Main Canal

Identify (estimate) amount of waters in the review area:
Non-wetland waters: ~100 linear feet; _____ width (ft) and/or _____ acres.

Cowardin Class: Riverine

Stream Flow: Intermittent

Wetlands: Undetermined acres

Cowardin Class: Palustrine - emergent

Name of any waterbodies on site, identified as Section 10 waters:
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Non-Tidal:

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☐ Corps navigable waters' study:

☐ U.S. Geological Survey Hydrologic Atlas:
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- ☐ USGS 8 and 12 digit HUC maps

☒ U.S. Geological Survey map(s). Cite scale & quad name: 1:24K (Dietrich)

☒ USDA Natural Resources Conservation Service Soil Survey. Citation: USDA (Web Soil Survey)

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☐ State/Local wetland inventory map(s):

☐ FEMA/FIRM maps:

☐ 100-year Floodplain Elevation is: _____ (National Geodetic Vertical Datum, 1929)

☒ Photographs: ☒ Aerial (Name & Date): 2004, 2006, ORM Database, and aerial of unkonwn date provided by the project proponent
or ☐ Other (Name & Date):

☐ Previous determination(s) File no. and date of response letter:

☐ Other Information (please specify):

IMPORTANT NOTE: The information recorded on this form has not necessarily been verified by the Corps and should not be relied upon for later jurisdictional determinations.

James M. Joyner
March 29, 2011

Signature and date of Regulatory Project Manager **(REQUIRED)**	Signature and date of person requesting preliminary JD **(REQUIRED, unless obtaining the Signature is impracticable)**

Site Number	Latitude	Longitude	Cowardin Class	Estimated amount of aquatic resource in review area	Class of aquatic resource
Dietrich Main Canal	42.9179	-114.2655	Riverine	100 feet	Section 404, Other Water of the U.S.
Emergent Wetland	42.9139	-114.2618	Palustrine	950 feet	Section 404, Wetland

NOTIFICATION OF ADMINISTRATIVE APPEAL OPTIONS AND PROCESS AND REQUEST FOR APPEAL

Applicant: City of Dietrich	File Number: NWW-**2011-133-I02**	Date: 29-Mar-11
Attached is:		See Section Below
	INITIAL PROFFERED PERMIT (Standard Permit or Letter of Permission)	A
	PROFFERED PERMIT (Standard Permit or Letter or Permission)	B
	PERMIT DENIAL	C
	APPROVED JURISDICTIONAL DETERMINATION	D
X	PRELIMINARY JURISDICTIONAL DETERMINATION	E

SECTION I - The following identifies your rights and options regarding an administrative appeal of the above decision. Additional information may be found at http://www.usace.army.mil/CECW/Pages/reg_rel_res.aspx or Corps regulations at 33 CFR Part 331.

A: INITIAL PROFFERED PERMIT: You may accept or object to the permit.

ACCEPT: If you received a Standard Permit, you may sign the permit document and return it to the District Engineer for final authorization. If you received a Letter of Permission (LOP), you may accept the LOP and your work is authorized. Your signature on the Standard Permit or acceptance of the LOP means that you accept the permit in its entirety, and waive all rights to appeal the permit, including its terms and conditions, and approved jurisdictional determinations (JD) associated with the permit.

OBJECT: If you object to the permit (Standard or LOP) because of certain terms and conditions therein, you may request that the permit be modified accordingly. You must complete Section II of this form and return the form to the District Engineer. Your objections must be received by the District Engineer within 60 days of the date of this notice, or you will forfeit your right to appeal the permit in the future. Upon receipt of your letter, the District Engineer will evaluate your objections and may: (a) modify the permit to address all of your concerns, (b) modify the permit to address some of your objections, or (c) not modify the permit having determined that the permit should be issued as previously written. After evaluating your objections, the District Engineer will send you a proffered permit for your reconsideration, as indicated in Section B, below.

B: PROFFERED PERMIT: You may accept or appeal the permit.

ACCEPT: If you received a Standard Permit, you may sign the permit document and return it to the District Engineer for final authorization. If you received a Letter of Permission (LOP), you may accept the LOP and your work is authorized. Your signature on the Standard Permit or acceptance of the LOP means that you accept the permit in its entirety, and waive all rights to appeal the permit, including its terms and conditions, and approved jurisdictional determinations (JD) associated with the permit.

APPEAL: If you choose to decline the proffered permit (Standard or LOP) because of certain terms and conditions therein, you may appeal the declined permit under the Corps of Engineers Administrative Appeal Process by completing Section II of this form and sending the form to the Division Engineer. This form must be received by the Division Engineer within 60 days of the date of this notice.

C: PERMIT DENIAL: You may appeal the denial of a permit under the Corps of Engineers Administrative Appeal Process by completing Section II of this form and sending the form to the Division Engineer. This form must be received by the Division Engineer within 60 days of the date of this notice.

D: APPROVED JURISDICTIONAL DETERMINATION: You may accept or appeal the approved JD or provide new information.

ACCEPT: You do not need to notify the Corps to accept an approved JD. Failure to notify the Corps within 60 days of the date of this notice means that you accept the approved JD in its entirety, and waive all rights to appeal the approved JD.

APPEAL: If you disagree with the approved JD, you may appeal the approved JD under the Corps of Engineers Administrative Appeal Process by completing Section II of this form and sending the form to the Division Engineer. This form must be received by the Division Engineer within 60 days of the date of this notice.

E: PRELIMINARY JURISDICTIONAL DETERMINATION: You do not need to respond to the Corps regarding the preliminary JD. The Preliminary JD is not appealable. If you wish, you may request an approved JD (which may be appealed), by contacting the Corps district for further instruction. Also you may provide new information for further consideration by the Corps to re-evaluate the JD.

SECTION II - REQUEST FOR APPEAL or OBJECTIONS TO AN INITIAL PROFFERED PERMT

REASONS FOR APPEAL OR OBJECTIONS: (Describe your reasons for appealing the decision or your objections to an initial proffered permit in clear concise statements. You may attach additional information to this form to clarify where your reasons or objections are addressed in the administrative record.)

ADDITIONAL INFORMATION: The appeal is limited to a review of the administrative record, the Corps memorandum for the record of the appeal conference or meeting, and any supplemental information that the review officer has determined is needed to clarify the administrative record. Neither the appellant nor the Corps may add new information or analyses to the record. However, you may provide additional information to clarify the location of information that is already in the administrative record.

POINT OF CONTACT FOR QUESTIONS OR INFORMATION:

If you have questions regarding this decision and/or the appeal process you may contact:	If you only have questions regarding the appeal process you may also contact:
MR. DAVID B. BARROWS CHIEF, REGULATORY DIVISION WALLA WALLA DISTRICT 201 NORTH 3RD AVENUE WALLA WALLA, WASHINGTON 99362-1876 TELEPHONE (509) 527-7150	U.S. ARMY CORPS OF ENGINEERS NORTHWEST DIVISION ATTN: DAVID GESL, APPEAL REVIEW OFFICER POST OFFICE BOX 2870 PORTLAND, OREGON 97208-2870 TELEPHONE (503) 808-3825

RIGHT OF ENTRY: Your signature below grants the right of entry to Corps of Engineers personnel, and any government consultants, to conduct investigations of the project site during the course of the appeal process. You will be provided a 15 day notice of any site investigation, and will have the opportunity to participate in all site investigations.

SIGNATURE OF APPELLANT OR AGENT:	DATE:	TELEPHONE NUMBER:

State of Idaho
DEPARTMENT OF WATER RESOURCES
Southern Region, 1341 Fillmore Street, Suite 200 • Twin Falls, Idaho 83301-3380
Phone: (208) 736-3033 • Fax: (208) 736-3037 • Web Site: www.idwr.idaho.gov

C. L. "BUTCH" OTTER
Governor

GARY SPACKMAN
Interim Director

March 29, 2011

RECEIVED
MAR 31

Justin Walker
131 SW 5th Avenue, Suite A
Meridian, ID 83642

RE: Dietrich, Idaho Water System Improvement Project

Dear Mr. Walker:

You recently contacted our office regarding the proposed "Water System Improvement Project" for the City of Dietrich, located in Sections 12, 13, and 14, Township 6 South, Range 18 East, B.M., in Lincoln County. Upon review, our office would like to make the following comments for your consideration.

The City of Dietrich currently has water right 37-20729 recorded with the Department for Municipal use. The water right shows one point of diversion and a diversion limit of 0.370 cfs. The proposed changes will add a point of diversion which will require that a transfer be filed to update water right 37-20729. The proposal also includes an increase in the Cities diversion rate; this will require a new water right (application for permit) for additional flow from the system (including both wells) beyond the current 0.37 cfs allowed under water right 37-20729.

It should also be noted that the drilling of the new well must comply with the drilling permit requirements of §42-235, IDAHO CODE, and are subject to the Department's well construction standards (IDAPA 37, Title, 03, Chapter 09).

In summary, it appears that there are options available for development of water for the City of Dietrich. If you have any questions, or if you need any further assistance, feel free to contact our office at your convenience.

Sincerely,

Nathan Erickson
Sr. Water Resource Agent

STATE OF IDAHO
DEPARTMENT OF
ENVIRONMENTAL QUALITY

APR 01 2011

1363 Fillmore Street • Twin Falls, Idaho 83301 • (208) 736-2190

C.L. "Butch" Otter, Governor
Toni Hardesty, Director

March 30, 2011

The Honorable Don Heiken
Mayor, City of Dietrich
35 W. First Street
Dietrich Idaho 83324

Re: Request for Environmental Comments, **Proposed City of Dietrich Drinking Water Supply Improvements Project**, Lincoln County

Dear Mayor Heiken:

It is our understanding that the city of Dietrich is working to complete a NEPA based environmental information document as required by state drinking water grant program requirements; state revolving loan program requirements; and other state and federal funding partners.

It is our opinion that project areas as outlined in Justin Walker's March 22, 2011 request for environmental comments letter may experience minor short term adverse conditions, including traffic disruption; minimal impacts to water service; storm water accumulation and runoff; reduction in parking capacity and increased noise and dust pollution. In order to minimize these effects, we recommend that sufficient traffic support services and project personnel be provided; the appropriate stormwater best management practices be in place and site watering equipment available and utilized during construction.

Federal stormwater planning approvals may be required for your project prior to construction. We recommend that you contact the Boise EPA satellite office or visit the federal EPA website for additional information on stormwater permitting requirements.

Please understand that our evaluation of potential environmental concerns is limited to our review of the information contained in the provided March 22, 2011 submittal and our experience with similar projects. Ultimately, our conclusion as to whether this project may or will have prolonged and permanent environmental impacts may not be determined at this time.

If you have any questions or concerns, please do not hesitate to contact this office at 736-2190.

Sincerely,

Brian A. Reed, PE
Technical Engineer I

BAR:gl

c: Justin Walker, PE, Keller Associates, Meridian
File: City of Dietrich DW Program Filer w/ submittal
City of Dietrich DW Grant Program File w/ submittal

ec: Ester Ceja, Senior Water Quality Analyst, DEQ-SO w/ submittal

Printed on Recycled Paper

STATE OF IDAHO

C. L. "BUTCH" OTTER
GOVERNOR
CELIA R. GOULD
DIRECTOR

April 1, 2011

Justin Walker
Keller Associates, Inc.
131 SW 5th Ave, Suite A
Meridian, ID 83642

Dear Mr. Walker:

Thank you for inquiring with the Idaho State Department of Agriculture (ISDA) with regards to your work with the City of Dietrich Water System Improvement Project. The public works project being proposed will be an important project for the citizens of that area.

We have reviewed the planning documents provided to us. Your documents appear to be professional and informative. At this time we do not have comments or questions related to this project.

Thank you for contacting our agency. Feel free to contact us in the future (main number - 208-332-8500, my number - 208-332-8597).

Sincerely,

Gary Bahr

Gary Bahr

Water Quality Programs

PC: Water Program File

APR 05 2011

SOUTH CENTRAL SUPERVISORY AREA
324 South 417 East, Ste. 2
Jerome, ID 83338-6206
Phone (208) 324-2561
FAX (208) 324-2917

IDAHO DEPARTMENT OF LANDS

GEORGE B. BACON, DIRECTOR
EQUAL OPPORTUNITY EMPLOYER

STATE BOARD OF LAND COMMISSIONERS
C.L. "Butch" Otter, Governor
Ben Ysursa, Secretary of State
Lawrence G. Wasden, Attorney General
Donna M. Jones, State Controller
Tom Luna, Sup't of Public Instruction

March 24, 2011

MAR 28 2011

Justin Walker
Keller Associates
131 SW 5th Avenue, Suite A
Meridian ID 83642-8609

RE: DIETRICH, IDAHO EID WATER SYSTEM IMPROVEMENTS

Dear Justin:

We have reviewed the project description for the Dietrich, Idaho Municipal Water System Improvement Project. The Idaho Department of Lands has identified no environmental impacts from the project for issues we regulate.

Thank you for giving us the opportunity to review the project and provide comments.

Sincerely,

TIMOTHY C. DUFFNER
Area Manager

TD/ww

cc: Julianne Shaw, Asst. Planner, IDL
Kurt Houston, South Ops Chief, IDL

Justin Walker

From: McGown, Mary [Mary.McGown@idwr.idaho.gov]
Sent: Friday, April 15, 2011 10:27 AM
To: Justin Walker
Subject: City of Dietrich Water System Improvement Project

Mr. Walker,

The City of Dietrich is not enrolled in the National Flood Insurance Program. Therefore, federal and state floodplain regulations are not applicable to development there.

Mary G. McGown, Ph.D., CFM

State Floodplain Coordinator

Idaho Department of Water Resources

322 E. Front Street

P.O. Box 83720

Boise, ID 83720-0098

(208) 287-4928

(208) 287-6700 fax

Justin Walker

From: Dennis Porter [Dennis.Porter@commerce.idaho.gov]
Sent: Friday, April 01, 2011 9:58 AM
To: Justin Walker
Subject: Dietrich - Water System EID Comment

Justin

No comments, with one exception.
A reliable water system will ensure the city maintains or improves its economic vitality.

Dennis J. Porter, Manager
Idaho Department of Commerce
P.O. Box 83720
Boise, Idaho 83720-0093
Tel: 208-334-2650 ext. 2145
Fax: 208-334-2631
www.commerce.idaho.gov

Justin Walker

From: thagen@blm.gov
Sent: Friday, April 08, 2011 12:30 PM
To: Justin Walker
Subject: Re: City of Dietrich BLM Agreement

Justin - The BLM Shoshone Field Office is in receipt of your request for comments for preparation of an Environmental Information Document dated March 22, 2011. I have not been able to adequately review and respond to this request due to higher workload priorities. Unfortunately, there may be a shut-down of the government which may impede our office from responding to your request within the 30-day timeframe. I ask that my comments below in follow-up to our discussions be taken into consideration.

Thanks!!!
Tara Hagen
Realty Specialist
Shoshone Field Office
400 West F Street
Shoshone, ID 83352
(208) 732-7205
Fax: (208) 732-7317

----- Forwarded by Tara Hagen/TFD/ID/BLM/DOI on 04/08/2011 12:22 PM -----

Tara Hagen/TFD/ID/BLM/DOI 01/31/2011 09:36 AM		To Justin Walker <jwalker@Kellerassociates.com> cc Don Heiken <donheiken@dietrichidaho.com>, Lisa L Claxton/TFD/ID/BLM/DOI@BLM Subject Re: City of Dietrich BLM Agreement (Document link: Tara Hagen)

Justin - After reviewing the right-of-way grant and maps it does appear that the city well is located on private property. Attached is a copy of the right-of-way grant to the City of Dietrich for an underground water storage tank (150' by 150'), and access road with two buried water pipelines (6" line, and a 10" line). I've also attached a map for the right-of-way. It does appear though on the NAIP imagery that the pipeline and access road do not follow one another along the southern portion like authorized in the grant. This will need to be addressed. Another issue that I noticed in the case file is the waiver of rental for the right-of-way. It appears that the rental was waived in the past due to a bond issue; however, the BLM regulations for rights-of-way (43 CFR Part

2800) have been updated twice in the last 6 years which may impact this decision.

To apply for an amendment to the existing right-of-way an application (SF299) would need to be submitted. There would be processing fees associated with the application. These are based on the estimated number of hours that it will take BLM to process the application and come to a decision to either approve or deny. The BLM will need to comply with the National Environmental Policy Act (NEPA) in processing the application - meaning and environmental studies (Cultural, Wildlife, Botanical, Hazardous Materials) and analysis would need to be completed for the action applied for. These can either be completed by a third-party contractor or by the BLM. It would be helpful to know how the City would like to proceed at the time of application as this will impact how BLM determines the processing fees. If a third-party contractor is involved then the studies and analysis would need to be completed to BLM standards.

It a decision is reached to approve the application then there are two other fees associated with a right-of-way - Monitoring fee, which covers the fees that the BLM will endure during the construction and monitoring of the right-of-way to ensure compliance; - Rental, this is a fee charged for the use of the public lands and is determined either by a linear rental schedule or by appraisal. As I noted above, this right-of-way has had rental waived which may no longer be valid.
[attachment "29449_Dietrich_ROW_Grant_Map.pdf" deleted by Tara Hagen/TFD/ID/BLM/DOI]
[attachment "29449_Dietrich_ROW_Grant_Scanned.pdf"
deleted by Tara Hagen/TFD/ID/BLM/DOI] [attachment "ObtainingaROWPamphlet.3.10.2009.pdf"
deleted by Tara Hagen/TFD/ID/BLM/DOI] [attachment "SF-299_Right-of-way_Application.pdf"
deleted by Tara Hagen/TFD/ID/BLM/DOI]

If you have any questions please feel free to contact me.

Thanks!!!
Tara Hagen
Realty Specialist
Shoshone Field Office
400 West F Street
Shoshone, ID 83352
(208) 732-7205
Fax: (208) 732-7317

Justin Walker
<jwalker@Kellerassociates.com>

01/28/2011 10:57 AM

To
"tara_hagen@blm.gov"
<tara_hagen@blm.gov>

cc
Justin Walker
<jwalker@Kellerassociates.com>, Don Heiken
<donheiken@dietrichidaho.com>

Subject
City of Dietrich BLM Agreement

United States Department of Agriculture
Rural Development
Central Idaho Area Office

April 25, 2011 sent electronically

Justin Walker, P.E.
Keller Associates, Inc.
131 S.W. 5th Ave., Ste. A
Meridian, Idaho 83642

Re: Dietrich EID Consultation

Dear Mr. Walker:

USDA, Rural Development is supportive of the City of Dietrich's efforts to bring their system into compliance with Idaho Department of Environmental Quality's water standards. At this time, we know of no detrimental environmental effects of the proposed system improvements.

Please send our agency a copy of your final Environmental Assessment.

Respectfully,

ROBERT M. LANFORD
Community Programs Specialist

Enclosures

1441 Fillmore, Suite C, Twin Falls, Idaho 83301
Phone: (208) 733-5380 • Fax: (208) 734-0428 • Web: http://www.rurdev.usda.gov/id

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www.history.idaho.gov

Idaho • State Historical SOCIETY

April 20, 2011

RECEIVED
APR 22 2011

Justin Walker, P.E.
Project Consulting Engineer
Keller Associates
131 SW 5th Ave., Suite A
Meridian, Idaho 83642

RE: Dietrich Water System Improvement Project, Lincoln County, Idaho

Dear Justin,

Thank your for soliciting our comments regarding the proposed wastewater improvement project for the City of Dietrich, Lincoln County, Idaho.

Based upon the map and project description submitted for our review it appears that some aspects of the proposed project will take place in archaeologically sensitive areas. We recommend you contract with a professional archaeologist to survey the area where the New Water Tank is proposed and the area where the New Well is proposed.

Additionally, if the project will impact the Dietrich Main Canal, the property should be recorded and evaluated for eligibility to the National Register of Historic Places. The resulting report and any supporting site recordation forms should be submitted to our office for further review. Finally, because certain project actions will take place on Bureau of Land Management land, that agency should also be consulted.

We appreciate your cooperation. If you should have any questions please feel free to contact me at 208-334-3847 or travis.pitkin@ishs.idaho.gov.

Sincerely,

Travis Pitkin, M.S.
Archaeologist

C.L. "Butch" Otter
Governor of Idaho

Janet Gallimore
Executive Director

Administration
2205 Old Penitentiary Road
Boise, Idaho 83712-8250
Office: (208) 334-2682
Fax: (208) 334-2774

Membership and Fund Development
2205 Old Penitentiary Road
Boise, Idaho 83712-8250
Office: (208) 514-2310
Fax: (208) 334-2774

Historical Museum and Education Programs
610 North Julia Davis Drive
Boise, Idaho 83702-7695
Office: (208) 334-2120
Fax: (208) 334-4059

State Historic Preservation Office and Historic Sites Archeological Survey of Idaho
210 Main Street
Boise, Idaho 83702-7264
Office: (208) 334-3861
Fax: (208) 334-2775

Statewide Sites:
• Franklin Historic Site
• Pierce Courthouse
• Rock Creek Station and
• Stricker Homesite

Old Penitentiary
2445 Old Penitentiary Road
Boise, Idaho 83712-8254
Office: (208) 334-2844
Fax: (208) 334-3225

Idaho State Archives
2205 Old Penitentiary Road
Boise, Idaho 83712-8250
Office: (208) 334-2620
Fax: (208) 334-2626

North Idaho Office
112 West 4th Street, Suite #7
Moscow, Idaho 83843
Office: (208) 882-1540
Fax: (208) 882-1763

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Justin Walker

From: Ted Howard [howard.ted@shopai.org]
Sent: Friday, April 22, 2011 8:30 AM
To: Justin Walker
Cc: Doug McConnaughey
Subject: Re: Dietrich, Idaho Water System Improvement Project - Request for Comments for Preparation of an Environmental Information Document

Dear Mr. Walker,

In review of the recent meeting agendas we've had with the BLM, I don't see where this has been consulted on by the BLM. I'll also need a cultural survey for this project. Until we have this information I cannot provide comment on this proposal. I would appreciate it if you could provide me with that information at your earliest convenience. I will need a cultural survey, botanical survey and a information any regarding sensitive species.

Sincerely,
Ted Howard
Director, Cultural Resources Protection Authority
Shoshone-Paiute Tribes
P.O. Box 219
Owyhee, Nevada 89832
Wk. (208) 759-3100 ext. 243
Fx. (208) 759-3202
Cell (208) 871-7064

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On Thu, Apr 21, 2011 at 3:46 PM, Justin Walker <jwalker@kellerassociates.com> wrote:

My name is Justin Walker. I am preparing an environmental information document for water system improvements to the Dietrich, Idaho water system. You should have received a letter similar to the one attached last month. I have not received any comments from you. Do you have any that you would like documented in the environmental information document. We will submitting the document tomorrow (Friday April 22nd) afternoon. If you would like to provide any comments, please do so prior to that time. Thank you.

Justin Walker, P.E.

United States Department of Agriculture

NRCS

Natural Resources Conservation Service
215 West Front St., P. O. Box 398, Shoshone, ID 83352-0398
Telephone: 208-886-2258 FAX: 208-886-2370

APR 22 2011

April 5, 2011

Justin Walker, P.E.
Keller Associates
131 SW 5th Avenue, Suite A
Meridian, ID 83642

RE: Comment for Preparation of Environmental Information Document
Dietrich, Idaho Water System Improvement Project

Dear Mr. Walker,

The Shoshone Natural Resource Conservation Services Field Office received your letter requesting comments on the City of Dietrich's plan to improve the water supply system. My comments will specifically regard:

- Farmland/Agricultural Lands Protection
- Wetland Protection
- Site features such as wetlands, slopes, erosion, soil suitability, unique natural features, or vegetation.

The improvements outlined in your letter do not impinge or affect any natural resource concerns of which I am aware. There is no impact to the farmland soils. The wetlands appear to be associated with the canal irrigation delivery ditches. If you intend to conduct any activity that constitutes a discharge of dredged or fill material into wetlands or other waters, you should request a jurisdictional determination from the local office of the COE prior to starting the work. Local Corps office: Corps of Engineers, Boise Regulatory Field Office, 10095 W. Emerald, Boise, ID 83704-9754. Phone Number: (208) 345-2155. To obtain a Joint Application for Permit please visit the web page at http://www.nww.usace.army.mil/html/offices/op/rf/rfhome.asp.

We work to improve/protect surface and groundwater quality from a variety of pollutants. The proposed improvements do not appear to affect water quality. An impact concern that I do see is in water quantity; the increased pumping could lead to lowered water table levels. I have enclosed some maps identifying soils, resource impact areas and wetland locations in the immediate area. There are no unique features or vegetation in the area.

I hope this provides you with the necessary information you requested.

Sincerely,
Patti Hurley
Patti Hurley
District Conservationist
NRCS, Shoshone/Jerome, Idaho

The Natural Resources Conservation Service provides leadership in a partnership effort to help people conserve, maintain, and improve our natural resources and environment.

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U.S. Fish and Wildlife Service

National Wetlands Inventory

Wetland Inventory-Dietrich, Idaho

Apr 20, 2011

Wetlands

- Freshwater Emergent
- Freshwater Forested/Shrub
- Estuarine and Marine Deepwater
- Estuarine and Marine
- Freshwater Pond
- Lake
- Riverine
- Other

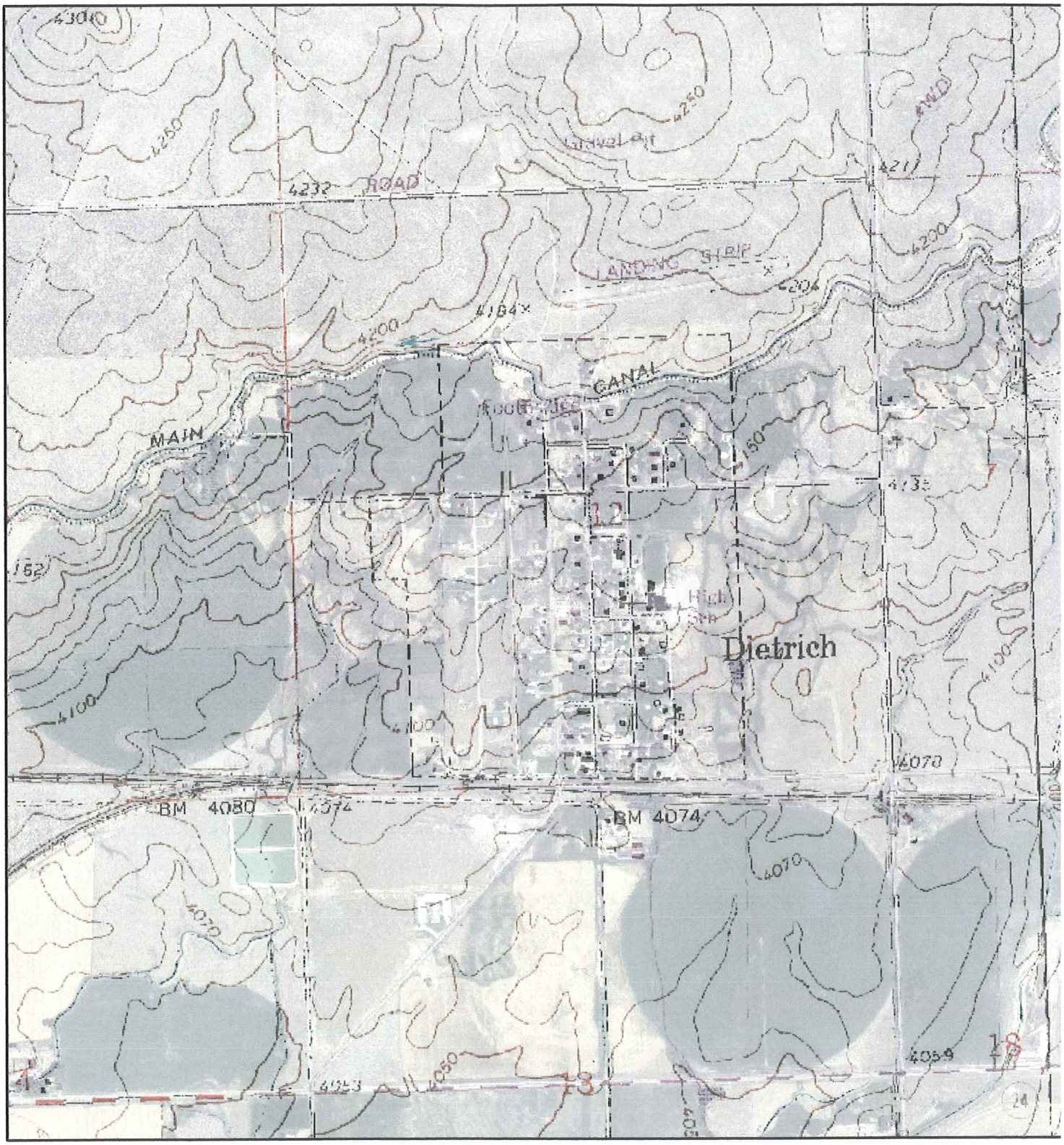
This map is for general reference only. The US Fish and Wildlife Service is not responsible for the accuracy or currentness of the base data shown on this map. All wetlands related data should be used in accordance with the layer metadata found on the Wetlands Mapper web site.

User Remarks:

Water System Improvement Project

Topography

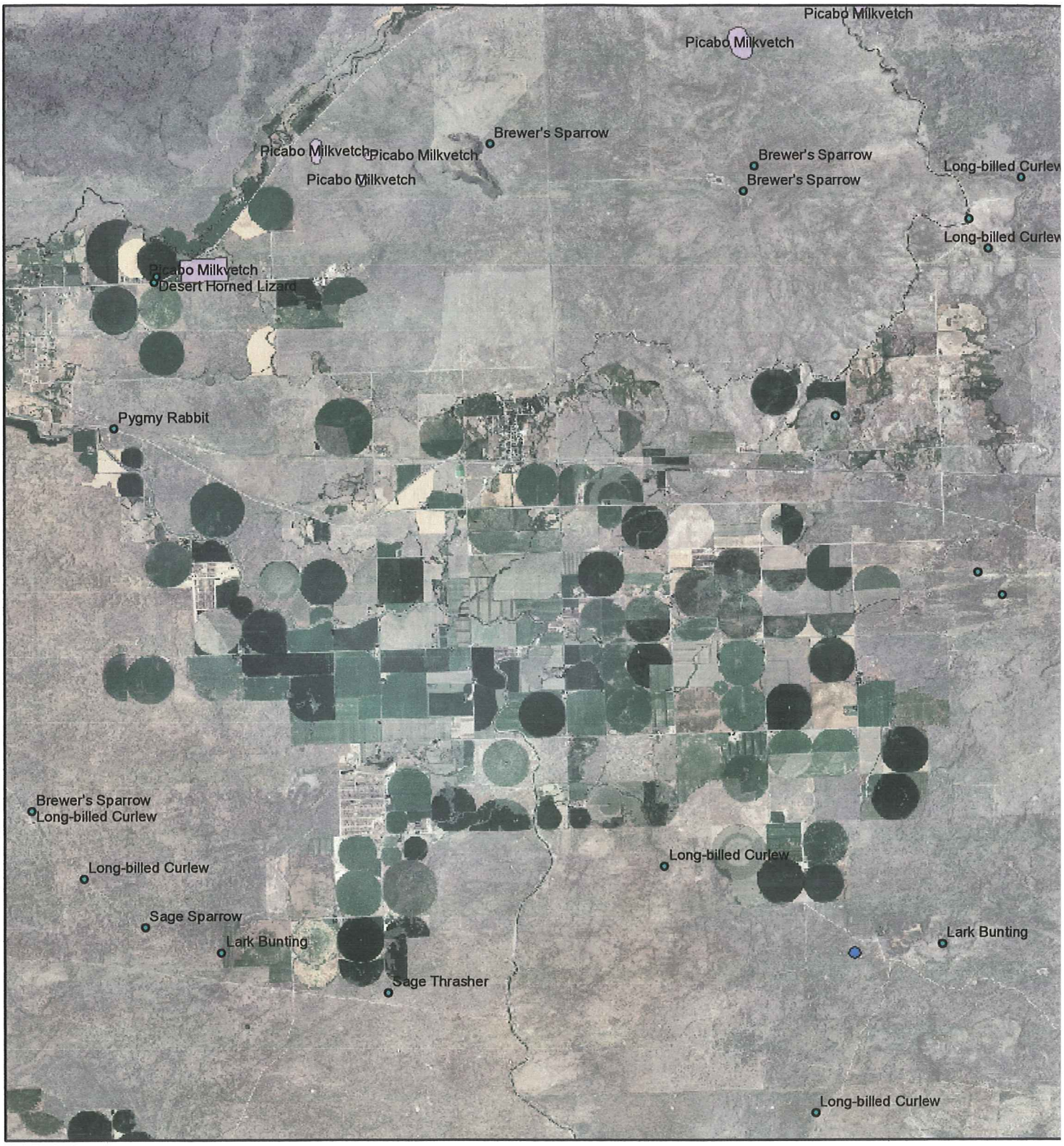
City of Dietrich
Lincoln County, Idaho



0 600 1,200 2,400 3,600 4,800 Feet

Species of Concern Map

City of Dietrich
Lincoln County, Idaho



Legend

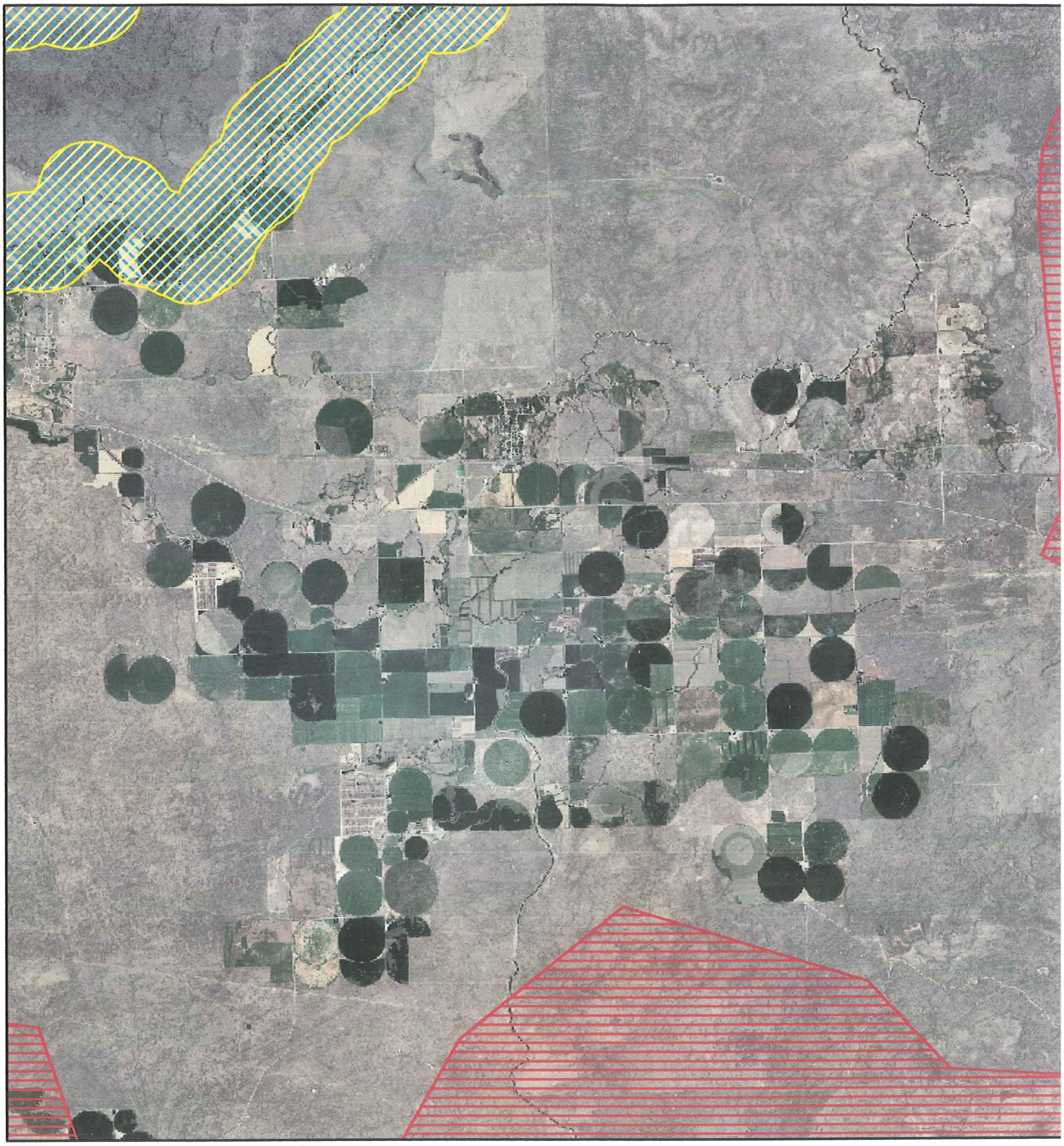
- Animal_Database_Aug10
- Plants_General_Aug10
- Plants_Precise_Aug10
- SageGrouseLeksDiv4
- Wolf_Aug10

0 3,600 7,200 14,400 21,600 28,800 Feet

Resources of Concern Map

City of Dietrich
Lincoln County, Idaho

N



0 3,600 7,200 14,400 21,600 28,800 Feet

Legend

- Completed Ground Water Management Plan
- Completed AG Implementation
- Buffered TMDL Water Bodies
- DWPP Delineation

Soils Map

City of Dietrich
Lincoln County, Idaho

0 485 970 1,940 2,910 3,880
Feet

Prime and other Important Farmlands

Wood River Area, Idaho, Gooding County and Parts of Blaine, Lincoln, and Minidoka Counties

Map symbol	Map unit name	Farmland classification
177	Snowmore-Wako-Harsan complex, 1 to 4 percent slopes	Prime farmland if irrigated

Physical Soil Properties

Wood River Area, Idaho, Gooding County and Parts of Blaine, Lincoln, and Minidoka Counties

Map symbol and soil name	Depth	Sand	Silt	Clay	Moist bulk density	Saturated hydraulic conductivity	Available water capacity	Linear extensi-bility	Organic matter	Erosion factors			Wind erodi-bility group	Wind erodi-bility index
										Kw	Kf	T		
	In	*Pct*	*Pct*	*Pct*	*g/cc*	*micro m/sec*	*In/In*	*Pct*	*Pct*					
171:														
Snowmore	0-9	—	—	15-22	1.30-1.40	4.00-14.11	0.15-0.18	0.0-2.9	0.5-1.0	.32	.32	2	5	56
	9-21	—	—	20-29	1.30-1.40	1.41-14.11	0.15-0.19	3.0-5.9	0.0-0.5	.32	.32			
	21-26	—	—	20-25	1.20-1.30	4.00-14.11	0.15-0.18	0.0-2.9	0.0-0.5	.32	.32			
	26-39	—	—	—	—	0.01-0.42	0.00	—	—	—	—			
	39-49	—	—	—	—	—	—	—	—	—	—			
Besslen	0-2	—	—	10-18	1.20-1.40	4.00-14.11	0.13-0.18	0.0-2.9	1.0-2.0	.32	.43	1	5	56
	2-13	—	—	10-18	1.20-1.40	4.00-14.11	0.10-0.19	0.0-2.9	1.0-2.0	.24	.32			
	13-19	—	—	10-18	1.20-1.40	4.00-14.11	0.09-0.15	0.0-2.9	0.5-1.0	.15	.24			
	19-38	—	—	—	—	0.01-0.42	0.00	—	—	—	—			
	38-48	—	—	—	—	—	—	—	—	—	—			
Hoosegow	0-7	—	—	10-15	1.45-1.55	4.00-14.11	0.13-0.19	0.0-2.9	0.8-1.0	.32	.32	4	5	56
	7-25	—	—	14-18	1.50-1.65	4.00-14.11	0.10-0.19	0.0-2.9	0.5-1.0	.28	.28			
	25-41	—	—	20-27	1.55-1.65	4.00-14.11	0.13-0.20	3.0-5.9	0.5-1.0	.37	.37			
	41-50	—	—	10-15	1.50-1.60	14.11-42.34	0.10-0.19	0.0-2.9	0.0-0.5	.28	.28			
	50-60	—	—	5-10	1.55-1.65	42.00-141.14	0.08-0.14	0.0-2.9	0.0-0.5	.15	.17			
174:														
Snowmore	0-6	—	—	15-20	1.30-1.50	4.00-14.11	0.13-0.15	0.0-2.9	1.0-2.0	.28	.32	2	3	86
	6-18	—	—	20-30	1.25-1.45	1.41-4.23	0.17-0.19	3.0-5.9	0.5-2.0	.32	.37			
	18-22	—	—	25-35	1.40-1.60	1.41-4.23	0.17-0.19	3.0-5.9	0.5-1.0	.24	.32			
	22-33	—	—	—	—	0.01-0.42	0.00	—	—	—	—			
	33-43	—	—	—	—	—	—	—	—	—	—			

Physical Soil Properties

Wood River Area, Idaho, Gooding County and Parts of Blaine, Lincoln, and Minidoka Counties

Map symbol and soil name	Depth	Sand	Silt	Clay	Moist bulk density	Saturated hydraulic conductivity	Available water capacity	Linear extensi-bility	Organic matter	Erosion factors			Wind erodi-bility group	Wind erodi-bility index
										Kw	Kf	T		
	In	*Pct*	*Pct*	*Pct*	*g/cc*	*micro m/sec*	*In/In*	*Pct*	*Pct*					
174:														
Minveno	0-2	—	—	8-18	1.35-1.50	14.11-42.34	0.13-0.16	0.0-2.9	0.7-2.0	.32	.32	1	3	86
	2-14	—	—	10-18	1.25-1.35	4.00-14.11	0.16-0.21	0.0-2.9	0.0-0.5	.43	.49			
	14-21	—	—	—	—	0.01-0.42	0.00	—	—	—	—			
	21-31	—	—	—	—	—	—	—	—	—	—			
Hoosegow	0-3	—	—	8-15	1.55-1.65	14.11-42.34	0.10-0.14	0.0-2.9	0.5-1.0	.24	.24	4	3	86
	3-13	—	—	14-18	1.50-1.65	4.00-14.11	0.10-0.19	0.0-2.9	0.5-1.0	.28	.28			
	13-36	—	—	20-27	1.55-1.65	4.00-14.11	0.13-0.20	3.0-5.9	0.5-1.0	.37	.37			
	36-65	—	—	5-10	1.55-1.65	42.00-141.14	0.08-0.14	0.0-2.9	0.0-0.5	.15	.17			
177:														
Snowmore	0-6	—	—	15-20	1.30-1.50	4.00-14.11	0.13-0.15	0.0-2.9	1.0-2.0	.28	.32	2	3	86
	6-18	—	—	20-30	1.25-1.45	1.41-4.23	0.17-0.19	3.0-5.9	0.5-2.0	.32	.37			
	18-22	—	—	15-35	1.40-1.60	1.41-4.23	0.17-0.19	3.0-5.9	0.5-1.0	.24	.32			
	22-33	—	—	—	—	0.01-0.42	0.00	—	—	—	—			
	33-43	—	—	—	—	—	—	—	—	—	—			
Wako	0-9	—	—	8-14	1.30-1.50	14.11-42.34	0.10-0.14	0.0-2.9	0.7-1.0	.20	.24	2	3	86
	9-31	—	—	22-32	1.20-1.40	1.41-4.23	0.14-0.16	3.0-5.9	0.0-0.5	.28	.28			
	31-34	—	—	17-25	1.25-1.45	4.00-14.11	0.10-0.12	0.0-2.9	0.0-0.5	.24	.32			
	34-44	—	—	—	—	0.01-0.42	0.00	—	—	—	—			
	44-54	—	—	—	—	—	—	—	—	—	—			
Harsan	0-18	—	—	5-10	1.30-1.50	14.11-42.34	0.13-0.15	0.0-2.9	0.5-1.0	.28	.28	3	3	86
	18-35	—	—	22-30	1.30-1.50	1.41-4.23	0.14-0.16	3.0-5.9	0.0-0.5	.28	.28			
	35-51	—	—	20-26	1.30-1.50	4.00-14.11	0.18-0.21	3.0-5.9	0.0-0.5	.49	.49			
	51-60	—	—	—	—	0.01-0.42	0.00	—	—	—	—			

This report shows only the major soils in each map unit. Others may exist.

Map Unit Description

Wood River Area, Idaho, Gooding County and Parts of Blaine, Lincoln, and Minidoka Counties

171 Snowmore-Besslen-Hoosegow complex, 1 to 4 percent slopes

Setting

Elevation: 3300 to 4600 feet
Mean annual precipitation: 8 to 12 inches
Mean annual air temperature: 46 to 52 degrees F
Frost-free period: 90 to 140 days

Composition

Snowmore and similar soils: 40 percent
Besslen and similar soils: 35 percent
Hoosegow and similar soils: 15 percent

Description of Snowmore

Setting

Landform: Hills, buttes
Landform position (two-dimensional): Backslope
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Volcanic ash and/or mixed alluvium and/or loess over bedrock derived fromrhyolite and/or basalt

Properties and Qualities

Slope: 1 to 4 percent
Depth to restrictive feature: 20 to 34 inches to Duripan; 21 to 40 inches to Lithic bedrock
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Very low or moderately low (0.00 to 0.06 in/hr)
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate maximum: 15 percent
Gypsum maximum: 0 percent
Available water capacity: Low (about 4.4 inches)

Interpretive Groups

Land capability classification (irrigated): 3e
Land capability (non irrigated): 6c
Ecological site: LOAMY 8-12 ARTRW8/PSSPS-ACTH7 (R011XY001ID)

Typical Profile

0 to 9 inches: loam
9 to 21 inches: loam
21 to 26 inches: sandy clay loam
26 to 39 inches: cemented material
39 to 49 inches: unweathered bedrock

Description of Besslen

Setting

Landform: Buttes
Landform position (two-dimensional): Summit
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Silty alluvium and/or loess over bedrock derived from basalt

Properties and Qualities

Slope: 1 to 4 percent
Depth to restrictive feature: 10 to 20 inches to Duripan; 24 to 40 inches to Lithic bedrock
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Very low or moderately low (0.00 to 0.06 in/hr)
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate maximum: 40 percent
Gypsum maximum: 0 percent
Salinity maximum: Non saline or very slightly saline (2.0 to 4.0 mmhos/cm)
Available water capacity: Very low (about 2.7 inches)

Interpretive Groups

Land capability classification (irrigated): 4e
Land capability (non irrigated): 6e
Ecological site: LOAMY 8-12 ARTRW8/PSSPS-ACTH7 (R011XY001ID)

Typical Profile

0 to 2 inches: loam
2 to 13 inches: loam
13 to 19 inches: gravelly sandy loam
19 to 38 inches: cemented material
38 to 48 inches: unweathered bedrock

Description of Hoosegow

Setting

Landform: Depressions, drainageways, buttes
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Mixed alluvium

Properties and Qualities

Slope: 1 to 4 percent
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high or high (0.57 to 2.00 in/hr)
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate maximum: 3 percent
Gypsum maximum: 0 percent
Available water capacity: Moderate (about 9.0 inches)

Interpretive Groups

Land capability classification (irrigated): 2e
Land capability (non irrigated): 6c
Ecological site: LOAMY BOTTOM 8-14 ARTRT/LECI4 (R011XY015ID)

Typical Profile

0 to 7 inches: loam
7 to 25 inches: loam
25 to 41 inches: sandy clay loam
41 to 50 inches: fine sandy loam
50 to 60 inches: fine sandy loam

Map Unit Description

Wood River Area, Idaho, Gooding County and Parts of Blaine, Lincoln, and Minidoka Counties

174 Snowmore-Minveno-Hoosegow complex, 2 to 10 percent slopes

Setting

Elevation: 2500 to 5400 feet
Mean annual precipitation: 8 to 12 inches
Mean annual air temperature: 45 to 54 degrees F
Frost-free period: 90 to 150 days

Composition

Snowmore and similar soils: 35 percent
Minveno and similar soils: 25 percent
Hoosegow and similar soils: 20 percent

Description of Snowmore

Setting

Landform: Hills
Landform position (two-dimensional): Backslope
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Volcanic ash and/or mixed alluvium and/or loess over bedrock derived fromrhyolite and/or basalt

Properties and Qualities

Slope: 2 to 10 percent
Depth to restrictive feature: 20 to 34 inches to Duripan; 21 to 40 inches to Lithic bedrock
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Very low or moderately low (0.00 to 0.06 in/hr)
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate maximum: 15 percent
Gypsum maximum: 0 percent
Sodium adsorption ratio maximum: 12.0
Available water capacity: Low (about 3.7 inches)

Interpretive Groups

Land capability classification (irrigated): 3e
Land capability (non irrigated): 6e
Ecological site: LOAMY 8-12 ARTRW8/PSSPS-ACTH7 (R011XY001ID)

Typical Profile

0 to 6 inches: fine sandy loam
6 to 18 inches: sandy clay loam
18 to 22 inches: gravelly loam
22 to 33 inches: cemented material
33 to 43 inches: unweathered bedrock

Description of Minveno

Setting

Landform: Lava fields
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Volcanic ash and/or loess and/or mixed silty alluvium over bedrock derived from volcanic rock and/or basalt

Properties and Qualities

Slope: 2 to 10 percent
Depth to restrictive feature: 10 to 20 inches to Duripan; 20 to 40 inches to Lithic bedrock
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Very low or moderately low (0.00 to 0.06 in/hr)
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate maximum: 30 percent
Gypsum maximum: 0 percent
Salinity maximum: Non saline or very slightly saline (2.0 to 4.0 mmhos/cm)
Sodium adsorption ratio maximum: 5.0
Available water capacity: Very low (about 2.6 inches)

Map Unit Description

Wood River Area, Idaho, Gooding County and Parts of Blaine, Lincoln, and Minidoka Counties

177 Snowmore-Wako-Harsan complex, 1 to 4 percent slopes

Setting

Elevation: 3200 to 5400 feet
Mean annual precipitation: 8 to 12 inches
Mean annual air temperature: 45 to 52 degrees F
Frost-free period: 90 to 140 days

Composition

Snowmore and similar soils: 50 percent
Wako and similar soils: 20 percent
Harsan and similar soils: 15 percent

Description of Snowmore

Setting

Landform: Lava fields, buttes
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Volcanic ash and/or mixed alluvium and/or loess over bedrock derived fromrhyolite and/or basalt

Properties and Qualities

Slope: 1 to 4 percent
Depth to restrictive feature: 20 to 34 inches to Duripan; 21 to 40 inches to Lithic bedrock
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Very low or moderately low (0.00 to 0.06 in/hr)
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate maximum: 15 percent
Gypsum maximum: 0 percent
Sodium adsorption ratio maximum: 12.0
Available water capacity: Low (about 3.7 inches)

Interpretive Groups

Land capability classification (irrigated): 3e
Land capability (non irrigated): 6c
Ecological site: LOAMY 8-12 ARTRW8/PSSPS-ACTH7 (R011XY001ID)

Typical Profile

0 to 6 inches: sandy loam
6 to 18 inches: sandy clay loam
18 to 22 inches: gravelly loam
22 to 33 inches: cemented material
33 to 43 inches: unweathered bedrock

Description of Wako

Setting

Landform: Lava plains, buttes
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Eolian deposits over bedrock derived from volcanic rock

Properties and Qualities

Slope: 1 to 4 percent
Depth to restrictive feature: 24 to 40 inches to Duripan; 40 to 60 inches to Lithic bedrock
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Very low or moderately low (0.00 to 0.06 in/hr)
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate maximum: 40 percent
Gypsum maximum: 0 percent
Salinity maximum: Very slightly saline or slightly saline (4.0 to 8.0 mmhos/cm)
Sodium adsorption ratio maximum: 6.0
Available water capacity: Low (about 4.7 inches)

Interpretive Groups

Land capability classification (irrigated): 3e
Land capability (non irrigated): 6e
Ecological site: LOAMY 8-12 ARTRW8/PSSPS-ACTH7 (R011XY001ID)

Typical Profile

0 to 9 inches: sandy loam
9 to 31 inches: clay loam
31 to 34 inches: sandy clay loam
34 to 44 inches: cemented material
44 to 54 inches: unweathered bedrock

Description of Harsan

Setting

Landform: Lava fields, buttes
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Mixed alluvium and/or eolian deposits

Properties and Qualities

Slope: 1 to 4 percent
Depth to restrictive feature: 40 to 60 inches to Duripan
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Very low or moderately low (0.00 to 0.06 in/hr)
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate maximum: 30 percent
Gypsum maximum: 0 percent
Available water capacity: Moderate (about 8.3 inches)

Interpretive Groups

Land capability classification (irrigated): 3e
Land capability (non irrigated): 6e
Ecological site: LOAMY 8-12 ARTRT/PSSPS (R011AY009ID)

Typical Profile

0 to 18 inches: fine sandy loam
18 to 35 inches: sandy clay loam
35 to 51 inches: loam
51 to 60 inches: cemented material

Land capability classification (irrigated): 3e
Land capability (non irrigated): 6e
Ecological site: LOAMY 8-12 ARTRW8/PSSPS-ACTH7 (R011XY001ID)

Typical Profile

0 to 9 inches: sandy loam
9 to 31 inches: clay loam
31 to 34 inches: sandy clay loam
34 to 44 inches: cemented material
44 to 54 inches: unweathered bedrock

Description of Harsan

Setting

Landform: Lava fields, buttes
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Mixed alluvium and/or eolian deposits

Properties and Qualities

Slope: 1 to 4 percent
Depth to restrictive feature: 40 to 60 inches to Duripan
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Very low or moderately low (0.00 to 0.06 in/hr)
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate maximum: 30 percent
Gypsum maximum: 0 percent
Available water capacity: Moderate (about 8.3 inches)

Interpretive Groups

Land capability classification (irrigated): 3e
Land capability (non irrigated): 6e
Ecological site: LOAMY 8-12 ARTRT/PSSPS (R011AY009ID)

Typical Profile

0 to 18 inches: fine sandy loam
18 to 35 inches: sandy clay loam
35 to 51 inches: loam
51 to 60 inches: cemented material

Justin Walker

From: Clay_Fletcher@fws.gov
Sent: Wednesday, June 01, 2011 2:34 PM
To: Justin Walker
Cc: Ester.Ceja@deq.idaho.gov
Subject: Re: Dietrich Water Improvements-Environmental Information Document

Hi Justin - First, for the record, I need to point out a much needed correction to your March 22 letter: I am not the Supervisor of this office. That person is Brian T. Kelly and he is the State Supervisor. I thought that error had been corrected with DEQ some time ago. Anyway, as for the project, you mention a number of Federal agencies in your letter including USDA, Department of Commerce, and BLM. Is Keller Associates the designated representative for any or all of these agencies, and are they aware of and agree with your determinations? Also, you indicate that the project requires an extension of three-phase power. How are the requirements of the Migratory Bird Treaty Act (MBTA) being addressed for this project, specifically relating to the expansion of electric power infrastructure? We do acknowledge that there are no listed species in the action area, and your "not likely to adversely affect" determination for the greater sage-grouse, but recommend that you coordinate with the identified Federal agencies and consider avian needs under the MBTA. Thank you for the opportunity to review and please let me know if you have additional questions.

Clay

U.S. Fish and Wildlife Service
1387 S. Vinnell Way, Room 368
Boise, ID 83709
(208) 378-5256; fax (208) 378-5262
clay_fletcher@fws.gov

Justin Walker <jwalker@Kellerassociates.com>

Justin Walker
<jwalker@Kellerassociates.com>

06/01/2011 09:17 AM

To"clay_fletcher@fws.gov" <clay_fletcher@fws.gov>

ccJustin Walker <jwalker@Kellerassociates.com>, "Ester.Ceja@deq.idaho.gov" <Ester.Ceja@deq.idaho.gov>

SubjectDietrich Water Improvements-Environmental Information Document

Clay,

In accordance with our phone conversation this morning, please find attached the project description narrative and project overview map for your consideration. I have also included the narrative in the report regarding the "Flora and Fauna" section for your information. We would appreciate your timely response on the matter. Thank you.

Flora and Fauna *(see appendix for list): Those species documented in Lincoln County that are listed as endangered, threatened, proposed, and candidate species by US Fish and Wildlife (as of 12/13/2010) are listed below:*

Threatened: None

Endangered: None

Candidate: Greater sage-grouse, wolverine

Experimental Nonessential: Gray wolf

No threatened or endangered species are listed for Lincoln County. Neither the wolverine nor gray wolf species are anticipated to be found within the project area, since suitable habitat does not exist in the project area (gray wolves prefer wooded areas with low densities of humans and roads, and plenty of deer; wolverines' preferred habitat is scattered trees at high elevations). The greater sage-grouse are found at elevations ranging from 4,000 to 9,000 feet and are highly dependent on sagebrush for cover and food. Habitat for the Greater sage-grouse is not anticipated to be found within the Dietrich urban area where most of the proposed improvements would be constructed, but could be present in areas around the City such as the location of the existing water tank and conveyance waterline from the tank to the City's water distribution system. The greatest potential for disturbance to the greater sage-grouse would occur during construction of the proposed improvements, which is only temporary. The only permanent structures that could reduce the available habitat for the sage-grouse are the proposed 0.35 million gallon water tank and the new well house, with a combined footprint of only 3,500 square feet. Thus the project is not expected to adversely affect the greater sage-grouse.

Best Management Practices identified to limit the impacts to the greater sage-grouse include:

- *Locate the new water tank and new well as close as possible to the existing structures.*
- *Locate new transmission pipes in previously disturbed areas where possible, and restore ground over waterline to as close to preexisting conditions as possible.*

Justin Walker, P.E.
Keller Associates, Inc.
131 S.W. 5th Ave., Ste. A
Meridian, Idaho 83642
Office (208) 288-1992

[attachment "11-112 Dietrich EID Agency Consultation Letter for Loans (Signed).pdf" deleted by Clay Fletcher/ESBO/R1/FWS/DOI] [attachment "EID Water System Priority Improvements Drawing.pdf" deleted by Clay Fletcher/ESBO/R1/FWS/DOI] [attachment "Dietrich EID study area.pdf" deleted by Clay Fletcher/ESBO/R1/FWS/DOI]

Justin Walker

From: Clay_Fletcher@fws.gov
Sent: Thursday, June 02, 2011 2:09 PM
To: Justin Walker
Cc: Ester.Ceja@deq.idaho.gov
Subject: RE: Dietrich Water Improvements-Environmental Information Document

Justin - Designated representative refers to a nonfederal entity that a federal agency formally designates to draft biological assessments and conduct informal consultation under section 7 of the ESA in the agencies stead. Under the MBTA it is illegal for people to "take" migratory birds, their eggs, feathers, or nests. For more information, go to http://www.fws.gov/pacific/migratorybirds/mbta.htm. It's not clear from what you provided whether there are any migratory bird issues associated with this project. I only mentioned the MBTA because it is something that should be considered during project planning.

Clay

U.S. Fish and Wildlife Service
1387 S. Vinnell Way, Room 368
Boise, ID 83709
(208) 378-5256; fax (208) 378-5262
clay_fletcher@fws.gov

Justin Walker <jwalker@Kellerassociates.com>

Justin Walker
<jwalker@Kellerassociates.com>

06/01/2011 02:51 PM

To"Clay_Fletcher@fws.gov"
<Clay_Fletcher@fws.gov>

cc"Ester.Ceja@deq.idaho.gov"
<Ester.Ceja@deq.idaho.gov>, Justin Walker
<jwalker@Kellerassociates.com>

SubjectRE: Dietrich Water Improvements-Environmental Information Document

Clay,

I am not sure what you mean by "designated representative", but those agencies you mention have been provided a similar packet as you received as part of our consultation process. Based on my review of the responses from these and other agencies, some additional field work has been recommended including an archeological survey of portions of the project area and permitting clearance from the US Corps and BLM for a 404 permit and expansion of a right-of-way with BLM. I am not familiar with the MBTA. Can you provide additional information on this requirement and suggestions for compliance. The details of the power improvements for the new well are not completed at this time, but I would anticipate that 3-phase power would be extended with overhead power lines to the new well site. Thank you.

Justin Walker, P.E.

Justin Walker

From: McDonald,Mike [mike.mcdonald@idfg.idaho.gov]
Sent: Friday, June 03, 2011 3:20 PM
To: Justin Walker
Subject: Dietrich Water Improvements-Environmental Information Document

Justin:

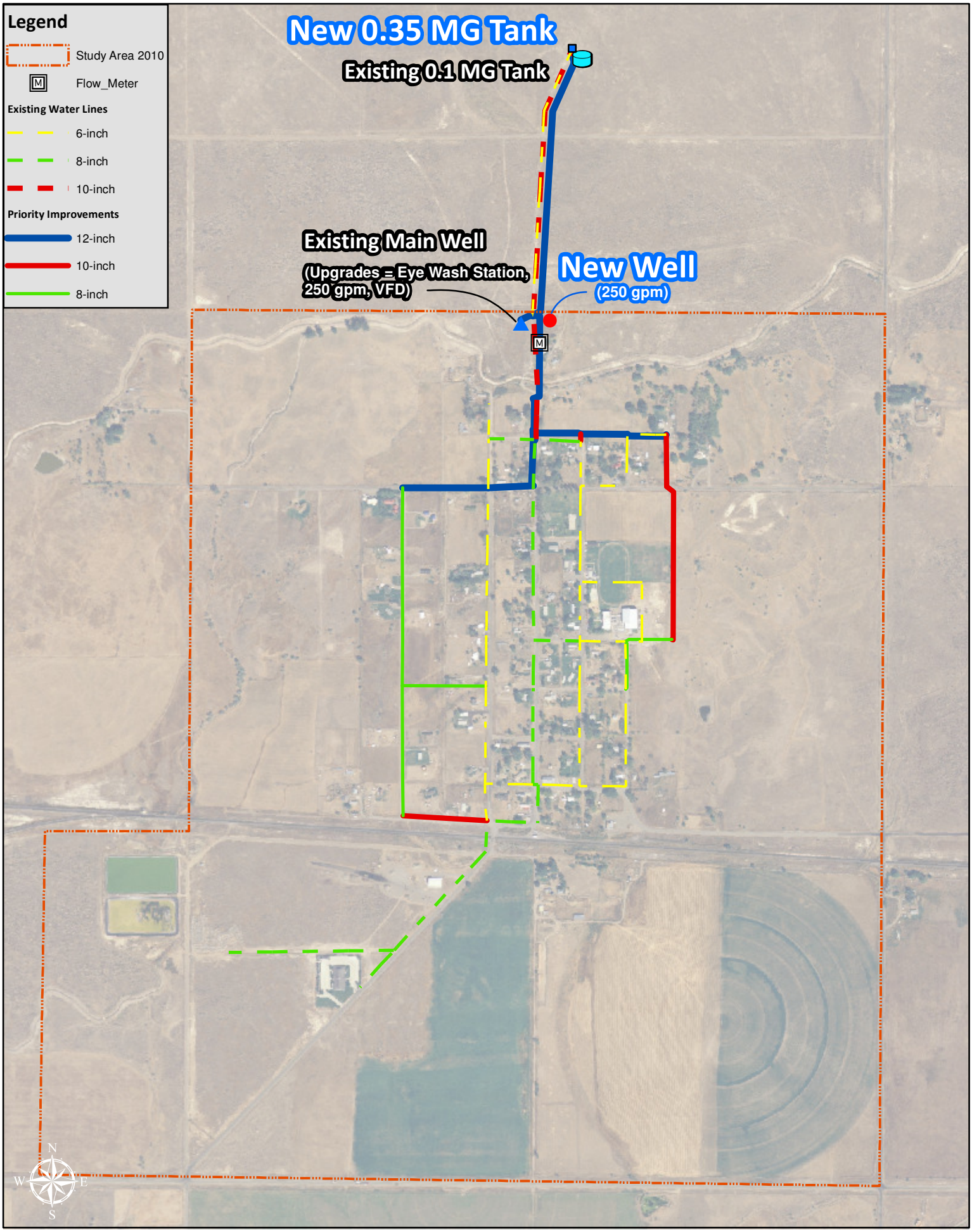
Idaho Department of Fish and Game (Department) staff have reviewed your request for information on species (and their habitats) listed under the Endangered Species Act in relation to the City of Dietrich's planned drinking water system improvements. It is our understanding the improvments will occur on previous disturbed lands or in close proximity to existing infrastructure. The Department is currently not aware of any threatened, endangered, or candidate invertebrates, fish, wildlife, or plants inhabiting the project area. Further, we are unaware of any critical habitat for threatened, endangered, or candidate invertebrates, fish, wildlife, or plants within the project area.

Thank you for the opportunity to review the project proposal and provide information. Please contact me if you need additional information or have any questions. Also, please let me know if more formal correspondence is required.

Mike McDonald
Environmental Staff Biologist
Idaho Department of Fish and Game
324 South 417 East, Suite 1
Jerome, ID 83338
(208) 324-4359
(208) 324-1160 fax
NEW E-MAIL ADDRESS: mike.mcdonald@idfg.idaho.gov

Dietrich, Idaho: Study Area 2010

KELLER associates



Dietrich, Idaho: EID Water System Priority Improvements

KELLER associates

KELLER associates
131 SW 5th Avenue, Suite A • Meridian, ID 83642
208.288.1992 phone • 208.288.1999 fax • www.kellerassociates.com

March 22, 2011

James Joyer
US Army Corps of Engineers
900 North Skyline Drive, Suite A
Idaho Falls, ID 83402-1718

RE: **Dietrich, Idaho Water System Improvement Project – Request for Comments for Preparation of an Environmental Information Document**

Dear Mr. Joyer:

The City of Dietrich is in the final planning phase of developing a drinking water system improvement project which could be in full or partially funded by the **Drinking Water State Revolving Loan Fund, Department of Commerce Community Development Block Grant (CDBG), and/or United States Department of Agriculture-Rural Development program (USDA-RD).** The purpose of this letter is to request your review and response regarding any environmental impacts that your agency may identify for this proposed project pursuant to the Idaho Department of Environmental Quality's State Environmental Review Process, the state's National Environmental Policy Act like process, and other funding agency environmental policies.

The proposed project consists of the following elements:

- **New Municipal Well:** Site and drill a new municipal well near the existing Main Well including necessary permitting, property acquisition, and environmental clearances. It is recommended that the well be drilled to a depth of 600-foot with a 12" to 16" borehole diameter. At the completion of drilling, design and construct well house pumping facilities capable of pumping a minimum of 250 GPM (estimated 50 HP motor) that is equipped with standby power generation. Three-phase power will be extended to the new well site.

- **Eye Wash Station at Main Well:** Install an eye wash station at the Main Well.

- **New Water Storage Tank:** Site, permit, design, and construct a new 350,000 gallon water storage tank in the vicinity of the existing water storage reservoir on property managed by the Bureau of Land Management. Tank material will be either bolted or welded steel or concrete. The new tank will be approximately 60 feet in diameter and approximately 20 feet tall.

- **Upgrades to the Main Well:** Upgrade the existing Main well by expanding the pumping capacity to 250 GPM, extending three-phase power to the site, and equipping with a variable frequency drive (VFD). Permanent upgrades and impacts to Main Well will be confined within the existing well house building other than upgrades to power supply which is currently overhead power to the existing well house building.

- **Flow Meter on Waterline from Tank(s):** Install a flow meter on the waterline(s) from the tank(s) to the distribution system to quantify system usage. Permanent upgrades will be generally confined within previously disturbed property along the existing water transmission main and the new proposed 12-inch transmission main.

- **Transmission Pipeline Improvements:** The priority improvements include the following waterlines to extend City water service and fire protection to the residents along Waucanza Street and improve fire protection of existing structures:

  1. Approximately 700 feet of new 12-inch PVC waterline along 7th Street from Washington Street to Waucanza Street inside right-of-way under an existing roadway.
  2. Approximately 3,120 feet of new 8-inch PVC waterline along Waucanza Street from 7th Street to E. 165 South inside right-of-way under an existing gravel roadway.
  3. Approximately 700 feet of new 10-inch waterline along E. 165 South from Waucanza Street to Washington Street inside right-of-way under an existing roadway.

4. Approximately 3,400 feet of new 12-inch pipeline from water tanks to existing distribution system (intersection of Main Street and 7th Street). It is the intent that the new pipeline be constructed as close as possible to the existing 10-inch pipeline to minimize disturbance to ground not previously disturbed during installation of the existing water main and to minimize amount of rock excavation. A portion of the proposed alignment will be on BLM property and the balance will be inside existing easements or right-of-way.
5. Approximately 1,000 feet of new 12-inch pipeline along 8th Street alignment from Main Street approximately the edge of the city limits. A majority of this segment will be inside right-of-way under an existing roadway (8th Street). Installation of approximately 350' of this segment will require an easement from private property owner.
6. Approximately 1,500 feet of new 10-inch pipeline approximately along the east edge of the city limits from 8th Street to 4th Street. This pipeline will require easements from private property owners and the School District.
7. Approximately 400 feet of new 8-inch pipeline along 4th Street from existing 6-inch waterline at intersection of Lincoln Street and 4th Street to east edge of city limits. A majority of this segment will be inside right-of-way under an existing roadway (4th Street), and a short section will require an easement on private property.
8. Upsize approximately 400 feet of existing 6-inch waterline to 8-inch on Lincoln Street from 4th Street to 3rd Street. This segment will be inside existing right-of-way under an existing roadway.
9. Approximately 700 feet of new 8-inch looping waterline from Washington Street to Waucanza Street at a location that would minimize disruption to private property since there is no right-of-way in this area. This pipeline will require easements from private property owners.

The project is being proposed to bring the water system in compliance with state water supply redundancy and emergency operation standards, meet water storage and fire protection needs for important structures including the School, improve safety conditions at the existing well, and extend municipal water supply to existing residents inside the City limits on private wells. Enclosed are maps of the proposed project planning area that depict the proposed project improvements and area of potential effect for all construction activities.

We request that you advise us of any comments that you may have regarding this project within 30 days (**April 20, 2011**), so the City of Dietrich can proceed with the completion of the Environmental Information Document.

If you have any questions concerning this proposed project or if you need any further information, please feel free to contact Justin Walker, P.E. at your convenience.

Sincerely,

KELLER ASSOCIATES

Justin Walker

Justin Walker, P.E.
Project Consulting Engineer

Encl: maps

KELLER associates
131 SW 5th Avenue, Suite A • Meridian, ID 83642
208.288.1992 phone • 208.288.1999 fax • www.kellerassociates.com

March 22, 2011

Clay Fletcher
Snake River Office Supervisor
US Fish and Wildlife Service
1387 South Vinnell Way, Room 368
Boise, ID 83709

RE: **Dietrich, Idaho Water System Improvement Project – Request for Comments for Preparation of an Environmental Information Document**

Dear Mr. Fletcher:

The City of Dietrich is in the final planning phase of developing a drinking water system improvement project which could be in full or partially funded by the **Drinking Water State Revolving Loan Fund, Department of Commerce Community Development Block Grant (CDBG), and/or United States Department of Agriculture-Rural Development program (USDA-RD).** The purpose of this letter is to request your review and response regarding any environmental impacts that your agency may identify for this proposed project pursuant to the Idaho Department of Environmental Quality's State Environmental Review Process, the state's National Environmental Policy Act like process, and other funding agency environmental policies.

The proposed project consists of the following elements:

- **New Municipal Well:** Site and drill a new municipal well near the existing Main Well including necessary permitting, property acquisition, and environmental clearances. It is recommended that the well be drilled to a depth of 600-foot with a 12" to 16" borehole diameter. At the completion of drilling, design and construct well house pumping facilities capable of pumping a minimum of 250 GPM (estimated 50 HP motor) that is equipped with standby power generation. Three-phase power will be extended to the new well site.

- **Eye Wash Station at Main Well:** Install an eye wash station at the Main Well.

- **New Water Storage Tank:** Site, permit, design, and construct a new 350,000 gallon water storage tank in the vicinity of the existing water storage reservoir on property managed by the Bureau of Land Management. Tank material will be either bolted or welded steel or concrete. The new tank will be approximately 60 feet in diameter and approximately 20 feet tall.

- **Upgrades to the Main Well:** Upgrade the existing Main well by expanding the pumping capacity to 250 GPM, extending three-phase power to the site, and equipping with a variable frequency drive (VFD). Permanent upgrades and impacts to Main Well will be confined within the existing well house building other than upgrades to power supply which is currently overhead power to the existing well house building.

- **Flow Meter on Waterline from Tank(s):** Install a flow meter on the waterline(s) from the tank(s) to the distribution system to quantify system usage. Permanent upgrades will be generally confined within previously disturbed property along the existing water transmission main and the new proposed 12-inch transmission main.

- **Transmission Pipeline Improvements:** The priority improvements include the following waterlines to extend City water service and fire protection to the residents along Waucanza Street and improve fire protection of existing structures:

  1. Approximately 700 feet of new 12-inch PVC waterline along 7th Street from Washington Street to Waucanza Street inside right-of-way under an existing roadway.
  2. Approximately 3,120 feet of new 8-inch PVC waterline along Waucanza Street from 7th Street to E. 165 South inside right-of-way under an existing gravel roadway.

3. Approximately 700 feet of new 10-inch waterline along E. 165 South from Waucanza Street to Washington Street inside right-of-way under an existing roadway.
4. Approximately 3,400 feet of new 12-inch pipeline from water tanks to existing distribution system (intersection of Main Street and 7th Street). It is the intent that the new pipeline be constructed as close as possible to the existing 10-inch pipeline to minimize disturbance to ground not previously disturbed during installation of the existing water main and to minimize amount of rock excavation. A portion of the proposed alignment will be on BLM property and the balance will be inside existing easements or right-of-way.
5. Approximately 1,000 feet of new 12-inch pipeline along 8th Street alignment from Main Street approximately the edge of the city limits. A majority of this segment will be inside right-of-way under an existing roadway (8th Street). Installation of approximately 350' of this segment will require an easement from private property owner.
6. Approximately 1,500 feet of new 10-inch pipeline approximately along the east edge of the city limits from 8th Street to 4th Street. This pipeline will require easements from private property owners and the School District.
7. Approximately 400 feet of new 8-inch pipeline along 4th Street from existing 6-inch waterline at intersection of Lincoln Street and 4th Street to east edge of city limits. A majority of this segment will be inside right-of-way under an existing roadway (4th Street), and a short section will require an easement on private property.
8. Upsize approximately 400 feet of existing 6-inch waterline to 8-inch on Lincoln Street from 4th Street to 3rd Street. This segment will be inside existing right-of-way under an existing roadway.
9. Approximately 700 feet of new 8-inch looping waterline from Washington Street to Waucanza Street at a location that would minimize disruption to private property since there is no right-of-way in this area. This pipeline will require easements from private property owners.

The project is being proposed to bring the water system in compliance with state water supply redundancy and emergency operation standards, meet water storage and fire protection needs for important structures including the School, improve safety conditions at the existing well, and extend municipal water supply to existing residents inside the City limits on private wells. Enclosed are maps of the proposed project planning area that depict the proposed project improvements and area of potential effect for all construction activities.

We request that you advise us of any comments that you may have regarding this project within 30 days (**April 20, 2011**), so the City of Dietrich can proceed with the completion of the Environmental Information Document.

If you have any questions concerning this proposed project or if you need any further information, please feel free to contact Justin Walker, P.E. at your convenience.

Sincerely,

KELLER ASSOCIATES

Justin Walker

Justin Walker, P.E.
Project Consulting Engineer

Encl: maps

KELLER associates
131 SW 5th Avenue, Suite A • Meridian, ID 83642
208.288.1992 phone • 208.288.1999 fax • www.kellerassociates.com

March 22, 2011

Brian Reed
Dept. of Environmental Quality
1363 Fillmore
Twin Falls, ID 83301

RE: **Dietrich, Idaho Water System Improvement Project – Request for Comments for Preparation of an Environmental Information Document**

Dear Mr. Reed:

The City of Dietrich is in the final planning phase of developing a drinking water system improvement project which could be in full or partially funded by the **Drinking Water State Revolving Loan Fund, Department of Commerce Community Development Block Grant (CDBG), and/or United States Department of Agriculture-Rural Development program (USDA-RD).** The purpose of this letter is to request your review and response regarding any environmental impacts that your agency may identify for this proposed project pursuant to the Idaho Department of Environmental Quality's State Environmental Review Process, the state's National Environmental Policy Act like process, and other funding agency environmental policies.

The proposed project consists of the following elements:

- **New Municipal Well:** Site and drill a new municipal well near the existing Main Well including necessary permitting, property acquisition, and environmental clearances. It is recommended that the well be drilled to a depth of 600-foot with a 12" to 16" borehole diameter. At the completion of drilling, design and construct well house pumping facilities capable of pumping a minimum of 250 GPM (estimated 50 HP motor) that is equipped with standby power generation. Three-phase power will be extended to the new well site.

- **Eye Wash Station at Main Well:** Install an eye wash station at the Main Well.

- **New Water Storage Tank:** Site, permit, design, and construct a new 350,000 gallon water storage tank in the vicinity of the existing water storage reservoir on property managed by the Bureau of Land Management. Tank material will be either bolted or welded steel or concrete. The new tank will be approximately 60 feet in diameter and approximately 20 feet tall.

- **Upgrades to the Main Well:** Upgrade the existing Main well by expanding the pumping capacity to 250 GPM, extending three-phase power to the site, and equipping with a variable frequency drive (VFD). Permanent upgrades and impacts to Main Well will be confined within the existing well house building other than upgrades to power supply which is currently overhead power to the existing well house building.

- **Flow Meter on Waterline from Tank(s):** Install a flow meter on the waterline(s) from the tank(s) to the distribution system to quantify system usage. Permanent upgrades will be generally confined within previously disturbed property along the existing water transmission main and the new proposed 12-inch transmission main.

- **Transmission Pipeline Improvements:** The priority improvements include the following waterlines to extend City water service and fire protection to the residents along Waucanza Street and improve fire protection of existing structures:

  1. Approximately 700 feet of new 12-inch PVC waterline along 7th Street from Washington Street to Waucanza Street inside right-of-way under an existing roadway.
  2. Approximately 3,120 feet of new 8-inch PVC waterline along Waucanza Street from 7th Street to E. 165 South inside right-of-way under an existing gravel roadway.
  3. Approximately 700 feet of new 10-inch waterline along E. 165 South from Waucanza Street to Washington Street inside right-of-way under an existing roadway.

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5. Approximately 1,000 feet of new 12-inch pipeline along 8th Street alignment from Main Street approximately the edge of the city limits. A majority of this segment will be inside right-of-way under an existing roadway (8th Street). Installation of approximately 350' of this segment will require an easement from private property owner.
6. Approximately 1,500 feet of new 10-inch pipeline approximately along the east edge of the city limits from 8th Street to 4th Street. This pipeline will require easements from private property owners and the School District.
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8. Upsize approximately 400 feet of existing 6-inch waterline to 8-inch on Lincoln Street from 4th Street to 3rd Street. This segment will be inside existing right-of-way under an existing roadway.
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The project is being proposed to bring the water system in compliance with state water supply redundancy and emergency operation standards, meet water storage and fire protection needs for important structures including the School, improve safety conditions at the existing well, and extend municipal water supply to existing residents inside the City limits on private wells. Enclosed are maps of the proposed project planning area that depict the proposed project improvements and area of potential effect for all construction activities.

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If you have any questions concerning this proposed project or if you need any further information, please feel free to contact Justin Walker, P.E. at your convenience.

Sincerely,

KELLER ASSOCIATES

Justin Walker

Justin Walker, P.E.
Project Consulting Engineer

Encl: maps

KELLER associates
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208.288.1992 phone • 208.288.1999 fax • www.kellerassociates.com

March 22, 2011

Mike Lidgard
EPA Region 10
1200 6th Avenue, OWW 130
Seattle, WA 98101

RE: **Dietrich, Idaho Water System Improvement Project – Request for Comments for Preparation of an Environmental Information Document**

Dear Mr. Lidgard:

The City of Dietrich is in the final planning phase of developing a drinking water system improvement project which could be in full or partially funded by the **Drinking Water State Revolving Loan Fund, Department of Commerce Community Development Block Grant (CDBG), and/or United States Department of Agriculture-Rural Development program (USDA-RD).** The purpose of this letter is to request your review and response regarding any environmental impacts that your agency may identify for this proposed project pursuant to the Idaho Department of Environmental Quality's State Environmental Review Process, the state's National Environmental Policy Act like process, and other funding agency environmental policies.

The proposed project consists of the following elements:

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- **Eye Wash Station at Main Well:** Install an eye wash station at the Main Well.

- **New Water Storage Tank:** Site, permit, design, and construct a new 350,000 gallon water storage tank in the vicinity of the existing water storage reservoir on property managed by the Bureau of Land Management. Tank material will be either bolted or welded steel or concrete. The new tank will be approximately 60 feet in diameter and approximately 20 feet tall.

- **Upgrades to the Main Well:** Upgrade the existing Main well by expanding the pumping capacity to 250 GPM, extending three-phase power to the site, and equipping with a variable frequency drive (VFD). Permanent upgrades and impacts to Main Well will be confined within the existing well house building other than upgrades to power supply which is currently overhead power to the existing well house building.

- **Flow Meter on Waterline from Tank(s):** Install a flow meter on the waterline(s) from the tank(s) to the distribution system to quantify system usage. Permanent upgrades will be generally confined within previously disturbed property along the existing water transmission main and the new proposed 12-inch transmission main.

- **Transmission Pipeline Improvements:** The priority improvements include the following waterlines to extend City water service and fire protection to the residents along Waucanza Street and improve fire protection of existing structures:

  1. Approximately 700 feet of new 12-inch PVC waterline along 7th Street from Washington Street to Waucanza Street inside right-of-way under an existing roadway.
  2. Approximately 3,120 feet of new 8-inch PVC waterline along Waucanza Street from 7th Street to E. 165 South inside right-of-way under an existing gravel roadway.
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KELLER ASSOCIATES

Justin Walker

Justin Walker, P.E.
Project Consulting Engineer

Encl: maps

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March 22, 2011

Sue Ennes
EPA Region 10
Office of Environmental Assessment (OEA-095)
1200 6th Avenue, OWW 136
Seattle, WA 98101

RE: **Dietrich, Idaho Water System Improvement Project – Request for Comments for Preparation of an Environmental Information Document**

Dear Ms. Ennes:

The City of Dietrich is in the final planning phase of developing a drinking water system improvement project which could be in full or partially funded by the **Drinking Water State Revolving Loan Fund, Department of Commerce Community Development Block Grant (CDBG), and/or United States Department of Agriculture-Rural Development program (USDA-RD).** The purpose of this letter is to request your review and response regarding any environmental impacts that your agency may identify for this proposed project pursuant to the Idaho Department of Environmental Quality's State Environmental Review Process, the state's National Environmental Policy Act like process, and other funding agency environmental policies.

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- **New Water Storage Tank:** Site, permit, design, and construct a new 350,000 gallon water storage tank in the vicinity of the existing water storage reservoir on property managed by the Bureau of Land Management. Tank material will be either bolted or welded steel or concrete. The new tank will be approximately 60 feet in diameter and approximately 20 feet tall.

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Justin Walker

Justin Walker, P.E.
Project Consulting Engineer

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March 22, 2011

James Werntz
U.S. EPA, Idaho Operations Office
1435 North Orchard
Boise, ID 83706

RE: Dietrich, Idaho Water System Improvement Project – Request for Comments for Preparation of an Environmental Information Document

Dear Mr. Werntz:

The City of Dietrich is in the final planning phase of developing a drinking water system improvement project which could be in full or partially funded by the **Drinking Water State Revolving Loan Fund, Department of Commerce Community Development Block Grant (CDBG), and/or United States Department of Agriculture-Rural Development program (USDA-RD).** The purpose of this letter is to request your review and response regarding any environmental impacts that your agency may identify for this proposed project pursuant to the Idaho Department of Environmental Quality's State Environmental Review Process, the state's National Environmental Policy Act like process, and other funding agency environmental policies.

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KELLER ASSOCIATES

Justin Walker

Justin Walker, P.E.
Project Consulting Engineer

Encl: maps

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March 22, 2011

Barbara Astle
Administrative Assistant
USDA – Conservation District
PO Box 398
Shoshone, Idaho 83352

RE: **Dietrich, Idaho Water System Improvement Project – Request for Comments for Preparation of an Environmental Information Document**

Dear Ms. Astle:

The City of Dietrich is in the final planning phase of developing a drinking water system improvement project which could be in full or partially funded by the **Drinking Water State Revolving Loan Fund, Department of Commerce Community Development Block Grant (CDBG), and/or United States Department of Agriculture-Rural Development program (USDA-RD).** The purpose of this letter is to request your review and response regarding any environmental impacts that your agency may identify for this proposed project pursuant to the Idaho Department of Environmental Quality's State Environmental Review Process, the state's National Environmental Policy Act like process, and other funding agency environmental policies.

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KELLER ASSOCIATES

Justin Walker

Justin Walker, P.E.
Project Consulting Engineer

Encl: maps

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March 22, 2011

Patti Hurley
NRCS, Shoshone/Jerome, Idaho
215 West Front Street
PO Box 398
Shoshone, Idaho 83352

RE: **Dietrich, Idaho Water System Improvement Project – Request for Comments for Preparation of an Environmental Information Document**

Dear Ms. Hurley:

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March 22, 2011

Mary McGown
Idaho Dept. of Water Resources
P.O. Box 83720
Boise, ID 83720-0098

RE: **Dietrich, Idaho Water System Improvement Project – Request for Comments for Preparation of an Environmental Information Document**

Dear Ms. McGown:

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- **Upgrades to the Main Well:** Upgrade the existing Main well by expanding the pumping capacity to 250 GPM, extending three-phase power to the site, and equipping with a variable frequency drive (VFD). Permanent upgrades and impacts to Main Well will be confined within the existing well house building other than upgrades to power supply which is currently overhead power to the existing well house building.

- **Flow Meter on Waterline from Tank(s):** Install a flow meter on the waterline(s) from the tank(s) to the distribution system to quantify system usage. Permanent upgrades will be generally confined within previously disturbed property along the existing water transmission main and the new proposed 12-inch transmission main.

- **Transmission Pipeline Improvements:** The priority improvements include the following waterlines to extend City water service and fire protection to the residents along Waucanza Street and improve fire protection of existing structures:

  1. Approximately 700 feet of new 12-inch PVC waterline along 7th Street from Washington Street to Waucanza Street inside right-of-way under an existing roadway.
  2. Approximately 3,120 feet of new 8-inch PVC waterline along Waucanza Street from 7th Street to E. 165 South inside right-of-way under an existing gravel roadway.
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Sincerely,

KELLER ASSOCIATES

Justin Walker

Justin Walker, P.E.
Project Consulting Engineer

Encl: maps

KELLER associates
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March 22, 2011

Nathan Erickson
Idaho Dept. of Water Resources, Southern Region
1341 Fillmore Street, Suite 200
Twin Falls, ID 83301

RE: **Dietrich, Idaho Water System Improvement Project – Request for Comments for Preparation of an Environmental Information Document**

Dear Mr. Erickson:

The City of Dietrich is in the final planning phase of developing a drinking water system improvement project which could be in full or partially funded by the **Drinking Water State Revolving Loan Fund, Department of Commerce Community Development Block Grant (CDBG), and/or United States Department of Agriculture-Rural Development program (USDA-RD).** The purpose of this letter is to request your review and response regarding any environmental impacts that your agency may identify for this proposed project pursuant to the Idaho Department of Environmental Quality's State Environmental Review Process, the state's National Environmental Policy Act like process, and other funding agency environmental policies.

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- **Eye Wash Station at Main Well:** Install an eye wash station at the Main Well.

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Justin Walker

Justin Walker, P.E.
Project Consulting Engineer

Encl: maps

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March 22, 2011

Justin Barret
Idaho Dept. of Fish and Game
Magic Valley Region
319 South 417 East
Jerome, ID 83338

RE: **Dietrich, Idaho Water System Improvement Project – Request for Comments for Preparation of an Environmental Information Document**

Dear Mr. Barret:

The City of Dietrich is in the final planning phase of developing a drinking water system improvement project which could be in full or partially funded by the **Drinking Water State Revolving Loan Fund, Department of Commerce Community Development Block Grant (CDBG), and/or United States Department of Agriculture-Rural Development program (USDA-RD).** The purpose of this letter is to request your review and response regarding any environmental impacts that your agency may identify for this proposed project pursuant to the Idaho Department of Environmental Quality's State Environmental Review Process, the state's National Environmental Policy Act like process, and other funding agency environmental policies.

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March 22, 2011

Gary Bahr
Idaho Dept. of Agriculture
P.O. Box 790
Boise, ID 83701

RE: **Dietrich, Idaho Water System Improvement Project – Request for Comments for Preparation of an Environmental Information Document**

Dear Mr. Bahr:

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March 22, 2011

Merl Egbert
South Central District Health Dept.
1020 Washington Street North
Twin Falls, ID 83301

RE: **Dietrich, Idaho Water System Improvement Project – Request for Comments for Preparation of an Environmental Information Document**

Dear Mr. Egbert:

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March 22, 2011

Kurt Houston
Department of Lands
P.O. Box 83720
Boise, ID 83720-0050

RE: **Dietrich, Idaho Water System Improvement Project – Request for Comments for Preparation of an Environmental Information Document**

Dear Mr. Houston:

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March 22, 2011

Rob Lanford
USDA-RD
Central Idaho Area Office
1441 Fillmore, Suite C
Twin Falls, ID 83301

RE: **Dietrich, Idaho Water System Improvement Project – Request for Comments for Preparation of an Environmental Information Document**

Dear Mr. Lanford:

The City of Dietrich is in the final planning phase of developing a drinking water system improvement project which could be in full or partially funded by the **Drinking Water State Revolving Loan Fund, Department of Commerce Community Development Block Grant (CDBG), and/or United States Department of Agriculture-Rural Development program (USDA-RD).** The purpose of this letter is to request your review and response regarding any environmental impacts that your agency may identify for this proposed project pursuant to the Idaho Department of Environmental Quality's State Environmental Review Process, the state's National Environmental Policy Act like process, and other funding agency environmental policies.

The proposed project consists of the following elements:

- **New Municipal Well:** Site and drill a new municipal well near the existing Main Well including necessary permitting, property acquisition, and environmental clearances. It is recommended that the well be drilled to a depth of 600-foot with a 12" to 16" borehole diameter. At the completion of drilling, design and construct well house pumping facilities capable of pumping a minimum of 250 GPM (estimated 50 HP motor) that is equipped with standby power generation. Three-phase power will be extended to the new well site.

- **Eye Wash Station at Main Well:** Install an eye wash station at the Main Well.

- **New Water Storage Tank:** Site, permit, design, and construct a new 350,000 gallon water storage tank in the vicinity of the existing water storage reservoir on property managed by the Bureau of Land Management. Tank material will be either bolted or welded steel or concrete. The new tank will be approximately 60 feet in diameter and approximately 20 feet tall.

- **Upgrades to the Main Well:** Upgrade the existing Main well by expanding the pumping capacity to 250 GPM, extending three-phase power to the site, and equipping with a variable frequency drive (VFD). Permanent upgrades and impacts to Main Well will be confined within the existing well house building other than upgrades to power supply which is currently overhead power to the existing well house building.

- **Flow Meter on Waterline from Tank(s):** Install a flow meter on the waterline(s) from the tank(s) to the distribution system to quantify system usage. Permanent upgrades will be generally confined within previously disturbed property along the existing water transmission main and the new proposed 12-inch transmission main.

- **Transmission Pipeline Improvements:** The priority improvements include the following waterlines to extend City water service and fire protection to the residents along Waucanza Street and improve fire protection of existing structures:

  1. Approximately 700 feet of new 12-inch PVC waterline along 7th Street from Washington Street to Waucanza Street inside right-of-way under an existing roadway.
  2. Approximately 3,120 feet of new 8-inch PVC waterline along Waucanza Street from 7th Street to E. 165 South inside right-of-way under an existing gravel roadway.

3. Approximately 700 feet of new 10-inch waterline along E. 165 South from Waucanza Street to Washington Street inside right-of-way under an existing roadway.
4. Approximately 3,400 feet of new 12-inch pipeline from water tanks to existing distribution system (intersection of Main Street and 7th Street). It is the intent that the new pipeline be constructed as close as possible to the existing 10-inch pipeline to minimize disturbance to ground not previously disturbed during installation of the existing water main and to minimize amount of rock excavation. A portion of the proposed alignment will be on BLM property and the balance will be inside existing easements or right-of-way.
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6. Approximately 1,500 feet of new 10-inch pipeline approximately along the east edge of the city limits from 8th Street to 4th Street. This pipeline will require easements from private property owners and the School District.
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8. Upsize approximately 400 feet of existing 6-inch waterline to 8-inch on Lincoln Street from 4th Street to 3rd Street. This segment will be inside existing right-of-way under an existing roadway.
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The project is being proposed to bring the water system in compliance with state water supply redundancy and emergency operation standards, meet water storage and fire protection needs for important structures including the School, improve safety conditions at the existing well, and extend municipal water supply to existing residents inside the City limits on private wells. Enclosed are maps of the proposed project planning area that depict the proposed project improvements and area of potential effect for all construction activities.

We request that you advise us of any comments that you may have regarding this project within 30 days (**April 20, 2011**), so the City of Dietrich can proceed with the completion of the Environmental Information Document.

If you have any questions concerning this proposed project or if you need any further information, please feel free to contact Justin Walker, P.E. at your convenience.

Sincerely,

KELLER ASSOCIATES

Justin Walker

Justin Walker, P.E.
Project Consulting Engineer

Encl: maps

KELLER associates
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208.288.1992 phone • 208.288.1999 fax • www.kellerassociates.com

March 22, 2011

Dennis Porter
Idaho Dept. of Commerce
P.O. Box 83720
Boise, ID 83720

RE: Dietrich, Idaho Water System Improvement Project – Request for Comments for Preparation of an Environmental Information Document

Dear Mr. Porter:

The City of Dietrich is in the final planning phase of developing a drinking water system improvement project which could be in full or partially funded by the **Drinking Water State Revolving Loan Fund, Department of Commerce Community Development Block Grant (CDBG), and/or United States Department of Agriculture-Rural Development program (USDA-RD).** The purpose of this letter is to request your review and response regarding any environmental impacts that your agency may identify for this proposed project pursuant to the Idaho Department of Environmental Quality's State Environmental Review Process, the state's National Environmental Policy Act like process, and other funding agency environmental policies.

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- **New Water Storage Tank:** Site, permit, design, and construct a new 350,000 gallon water storage tank in the vicinity of the existing water storage reservoir on property managed by the Bureau of Land Management. Tank material will be either bolted or welded steel or concrete. The new tank will be approximately 60 feet in diameter and approximately 20 feet tall.

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Justin Walker

Justin Walker, P.E.
Project Consulting Engineer

Encl: maps

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March 22, 2011

Suzi Pengilly
Idaho State Historical Society
210 Main Street
Boise, ID 83702

RE: **Dietrich, Idaho Water System Improvement Project – Request for Comments for Preparation of an Environmental Information Document**

Dear Ms. Pengilly:

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KELLER ASSOCIATES

Justin Walker

Justin Walker, P.E.
Project Consulting Engineer

Encl: maps

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March 22, 2011

Carolyn Boyer Smith
Shoshone-Bannock Tribes
P.O. Box 306
Fort Hall, ID 83203

RE: **Dietrich, Idaho Water System Improvement Project – Request for Comments for Preparation of an Environmental Information Document**

Dear Ms. Boyer Smith:

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March 22, 2011

Ted Howard
Shoshone-Paiute Tribe
P.O. Box 219
Owyhee, NV 89832

RE: **Dietrich, Idaho Water System Improvement Project – Request for Comments for Preparation of an Environmental Information Document**

Dear Mr. Howard:

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March 22, 2011

Tara Hagen
Bureau of Land Management
400 West F Street
Shoshone, ID 83352

RE: **Dietrich, Idaho Water System Improvement Project – Request for Comments for Preparation of an Environmental Information Document**

Dear Ms. Hagen:

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The project is being proposed to bring the water system in compliance with state water supply redundancy and emergency operation standards, meet water storage and fire protection needs for important structures including the School, improve safety conditions at the existing well, and extend municipal water supply to existing residents inside the City limits on private wells. Enclosed are maps of the proposed project planning area that depict the proposed project improvements and area of potential effect for all construction activities.

We request that you advise us of any comments that you may have regarding this project within 30 days (**April 20, 2011**), so the City of Dietrich can proceed with the completion of the Environmental Information Document.

If you have any questions concerning this proposed project or if you need any further information, please feel free to contact Justin Walker, P.E. at your convenience.

Sincerely,

KELLER ASSOCIATES

Justin Walker

Justin Walker, P.E.
Project Consulting Engineer

Encl: maps

IDAHO TRANSPORTATION DEPARTMENT
P.O. Box 7129
Boise ID 83707-1129

(208) 334-8000
itd.idaho.gov

October 12, 2011

Justin Walker, P.E.
Keller Associates Inc.
131 S.W. 5th Ave., Ste A
Meridian, ID 83642

Dear Mr. Walker,

Per your request, the Idaho Division of Aeronautics has reviewed our files and determined that the site ½ mile north of the center of Dietrich, Idaho, in the county of Lincoln is no longer active as an airport. The State of Idaho relinquished the lease on the site back to the Bureau of Land Management in 1976 and as a condition of the lease, re-seeded the runway and removed all navigation aids. We consider the airport abandoned and no longer in use.

Sincerely,

Mark Lessor
Aviation Technician
Idaho Division of Aeronautics

Justin Walker

From: Justin Walker
Sent: Wednesday, October 12, 2011 3:56 PM
To: Eastman.Susan@epa.gov
Cc: Michael.May@deq.idaho.gov; Justin Walker
Subject: City of Dietrich Idaho Water Project Environmental Consultation
Attachments: Figure6.1a_Alternative1Improvements.pdf; EPA Region 10 Sole Source Aquifer Checklist.DOC

Ms. Eastman,

I was given your contact information from Michael May with the Idaho Dept. of Environmental Quality and asked to complete the attached Sole Source Aquifer Checklist and submit to you with a request for comments regarding the proposed project explained below. A prompt response to this request would be very appreciated.

The City of Dietrich is in the final planning phase of developing a drinking water system improvement project which could be in full or partially funded by the **Drinking Water State Revolving Loan Fund, Department of Commerce Community Development Block Grant (CDBG), and/or United States Department of Agriculture-Rural Development program (USDA-RD).** The purpose of this letter is to request your review and response regarding any environmental impacts that your agency may identify for this proposed project pursuant to the Idaho Department of Environmental Quality's State Environmental Review Process, the state's National Environmental Policy Act like process, and other funding agency environmental policies.

The proposed project consists of the following elements which are shown on the attached figure:

- **New Municipal Well:** Site and drill a new municipal well near the existing Main Well including necessary permitting, property acquisition, and environmental clearances. It is recommended that the well be drilled to a depth of 600-foot with a 12" to 16" borehole diameter. At the completion of drilling, design and construct well house pumping facilities capable of pumping a minimum of 250 GPM (estimated 50 HP motor) that is equipped with standby power generation. Three-phase power will be extended to the new well site.

- **Eye Wash Station at Main Well:** Install an eye wash station at the Main Well.

- **New Water Storage Tank:** Site, permit, design, and construct a new 350,000 gallon water storage tank in the vicinity of the existing water storage reservoir on property managed by the Bureau of Land Management. Tank material will be either bolted or welded steel or concrete. The new tank will be approximately 60 feet in diameter and approximately 20 feet tall.

- **Upgrades to the Main Well:** Upgrade the existing Main well by expanding the pumping capacity to 250 GPM, extending three-phase power to the site, and equipping with a variable frequency drive (VFD). Permanent upgrades and impacts to Main Well will be confined within the existing well house building other than upgrades to power supply which is currently overhead power to the existing well house building.

- **Flow Meter on Waterline from Tank(s):** Install a flow meter on the waterline(s) from the tank(s) to the distribution system to quantify system usage. Permanent upgrades will be generally confined within previously disturbed property along the existing water transmission main and the new proposed 12-inch transmission main.

- **Transmission Pipeline Improvements:** The priority improvements include the Priority 1 and 2 waterlines (illustrated in the attached figure) to extend City water service and fire protection to the residents along Waucanza Street and improve fire protection of existing structures:

The project is being proposed to bring the water system in compliance with state water supply redundancy and emergency operation standards, meet water storage and fire protection needs for important structures including the School, improve safety conditions at the existing well, and extend municipal water supply to existing residents inside the City limits on private wells.

Thank you.

Justin Walker, P.E.
Keller Associates, Inc.
131 S.W. 5th Ave., Ste. A
Meridian, Idaho 83642
Office (208) 288-1992

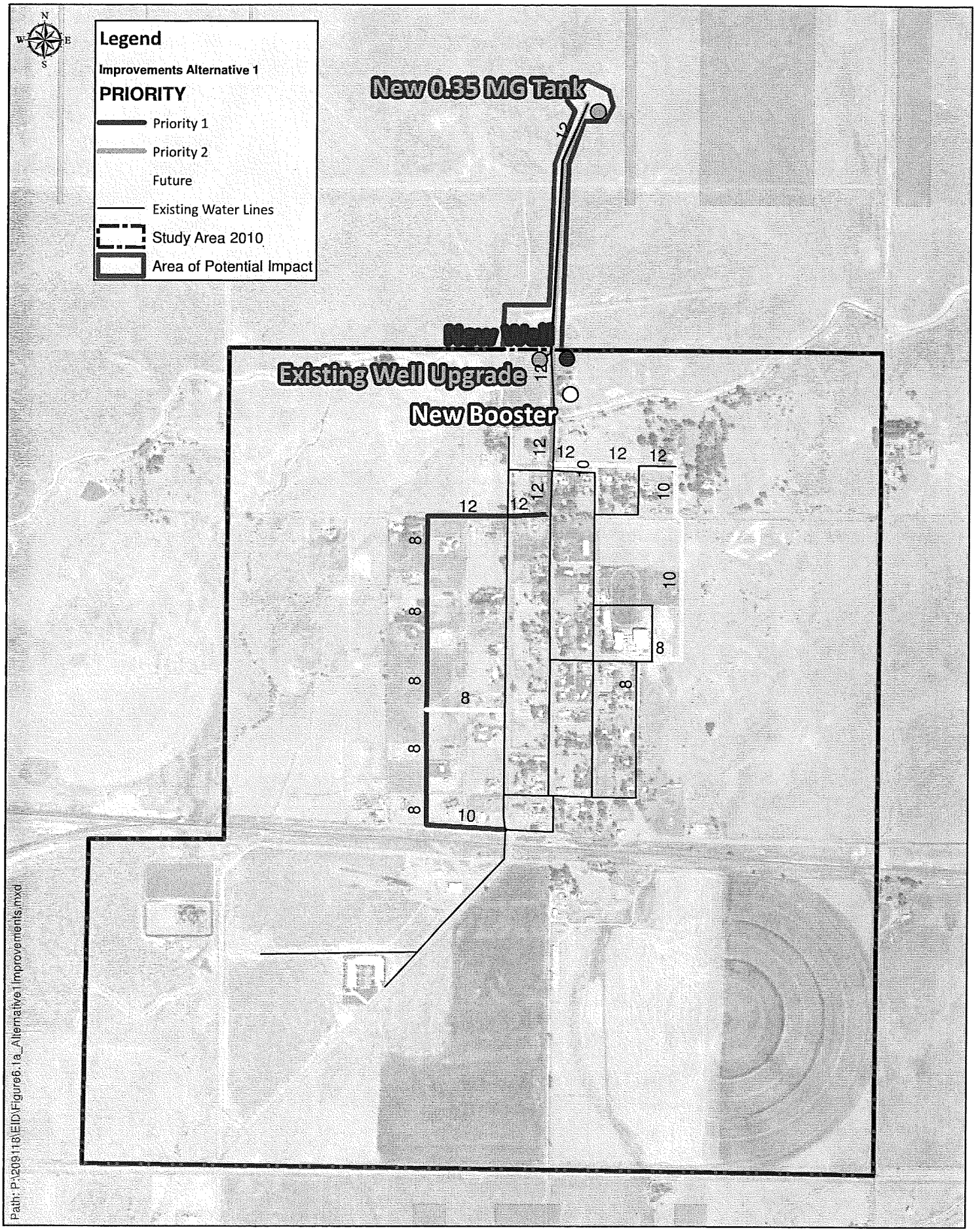


Figure 6.1a Dietrich, Idaho: Alternative 1 Improvements

KELLER associates

Sole Source Aquifer Checklist

1. Location and name of Sole Source Aquifer or Source Area.

   Eastern Snake River Plain Aquifer

2. Project description.

   The City of Dietrich water system has a single well with a capacity of 134 gpm, and a 100,000-gallon water reservoir. Water from the well is disinfected with liquid sodium hypochlorite before entering the distribution system. Several deficiencies have been identified and prioritized.

   The proposed project includes developing a new municipal well; installing an emergency eyewash station at the existing Main Well; and constructing water main lines to serve existing residents along Waucanza Street, upgrading the existing Main Well with a larger pump and motor capable of pumping 250+ gpm, a VFD, and three-phase power; constructing a 350,000-gallon water tank, and installing waterlines from the new water tank to the City pipe network and in isolated areas of town.

3. Is there any increase of impervious surface? If so, what is the area?

   Minimal additional impervious surface area created by a new well house (approximately 1200 sq. ft.)

4. Describe how storm water is currently treated on the site?

   Runoff water from the roof of the existing well house and water tank runs onto adjacent impervious ground and infiltrates into the ground.

5. How will storm water be treated on this site during construction and after the project is complete?

   Runoff water from the proposed well house and water tank roofs will be disposed with infiltration. No changes to the existing structures are proposed.

6. Are there any underground storage tanks present or to be installed? Include details of such tanks.

   No.

7. Will there be any liquid or solid waste generated? If so how will it be disposed of?

   No.

8. What is the depth of excavation?

   The estimated depth of excavation for pipelines, proposed well house, and proposed water tank are 5', 3', and 2-10' respectively.

9. Are there any wells in the area that may provide direct routes for contaminates to access the aquifer and how close are they to the project?

   Yes. The existing main municipal well is approximately 300' from the proposed well. However, the existing well was drilled to Idaho water standards which require sealing wells to prevent lower aquifer contamination. There are also private wells within 50' to 100' from the proposed waterline along Waucanza Street (Priority 1 improvement on the west side of town). However, construction activities are not anticipated to be in the vicinity of the private wells.

10. Are there any hazardous waste sites in the project area....especially if the waste site has an underground plume with monitoring wells that may be disturbed? Include details.

    None that are known.

11. Are there any deep pilings that may provide access to the aquifer?

    No.

12. Are Best Management Practices planned to address any possible risks or concerns?

    Yes.

13. Is there any other information that could be helpful in determining if this project may have an affect on the aquifer?

    The proposed well construction will adhere to state well construction standards. A water right and drilling permit will be obtained in accordance with Idaho Dept. of Water Resources requirements.

14. Does this Project include any improvements that may be beneficial to the aquifer, such as improvements to the wastewater treatment plan?

    The City has plans to construct a gravity sewer line along Waucanza Street to ultimately eliminate existing individual home septic tanks.

The EPA Sole Source Aquifer Program may request additional information if impacts to the aquifer are questionable after this information is submitted for review.

Submit hard copy to:
Sue Ennes,
Sole Source Aquifer Manager
Region 10 EPA, 1200 Sixth Ave, Suite 900, OWW-136
Seattle, WA 98101

The Sole Source Aquifer Checklist is also available at the following link:
(See attached file: R10 Sole Source Aquifer Checklist.doc)

http://yosemite.epa.gov/r10/water.nsf/Sole+Source+Aquifers/SSA

Justin Walker

From: Eastman.Susan@epamail.epa.gov
Sent: Thursday, October 20, 2011 1:22 PM
To: Justin Walker
Subject: Re: FW: City of Dietrich Idaho Water Project Environmental Consultation

Thank you for submitting your project for review. We have reviewed the information provided and find that the project will not have a significant adverse impact on the Eastern Snake River Plain Sole Source Aquifer and therefore the funding may proceed.

EPA reviews federally financially assisted projects that are proposed in federally designated Sole Source Aquifer review areas to determine if the projects have a potential to contaminate the aquifer through a recharge zone so as to create a significant hazard to public health. Such projects are submitted to EPA by federal, state, and local governments, and by the public.

This correspondence only addresses the Sole Source Aquifer Program, any other federal environmental requirements are your responsibility to ensure compliance. Please retain this email for your records.

Thank You,

Susan Eastman, Environmental Scientist
EPA Region 10
1200 Sixth Ave. Suite 900, OWW-136
Seattle, WA. 98101
SDWA Tribal & CWA Indian Set Aside Program, Sole Source Aquifer Program, Source Water Protection and ID 106

206-553-6249
EASTMAN.SUSAN@EPA.GOV

From: Justin Walker <jwalker@Kellerassociates.com>
To: Susan Eastman/R10/USEPA/US@EPA
Cc: Justin Walker <jwalker@Kellerassociates.com>
Date: 10/19/2011 03:46 PM
Subject: FW: City of Dietrich Idaho Water Project Environmental Consultation

Susan,

I received your voice mail. Thank you for your response. See below for the email transmittal again. A loan and grant application is pending your comments, so a rapid turn-around would be very appreciated. I believe even an email response would be sufficient if that makes it easier. Please respond so I know you received this email.

Justin Walker, P.E.
Keller Associates, Inc.
Office (208) 288-1992

From: Justin Walker
Sent: Wednesday, October 12, 2011 3:56 PM
To: Eastman.Susan@epa.gov
Cc: Michael.May@deq.idaho.gov; Justin Walker
Subject: City of Dietrich Idaho Water Project Environmental Consultation

Ms. Eastman,

I was given your contact information from Michael May with the Idaho Dept. of Environmental Quality and asked to complete the attached Sole Source Aquifer Checklist and submit to you with a request for comments regarding the proposed project explained below. A prompt response to this request would be very appreciated.

The City of Dietrich is in the final planning phase of developing a drinking water system improvement project which could be in full or partially funded by the Drinking Water State Revolving Loan Fund, Department of Commerce Community Development Block Grant (CDBG), and/or United States Department of Agriculture-Rural Development program (USDA-RD). The purpose of this letter is to request your review and response regarding any environmental impacts that your agency may identify for this proposed project pursuant to the Idaho Department of Environmental Quality's State Environmental Review Process, the state's National Environmental Policy Act like process, and other funding agency environmental policies.

The proposed project consists of the following elements which are shown on the attached figure:

Ÿ New Municipal Well: Site and drill a new municipal well near the existing Main Well including necessary permitting, property acquisition, and environmental clearances. It is recommended that the well be drilled to a depth of 600-foot with a 12" to 16" borehole diameter. At the completion of drilling, design and construct well house pumping facilities capable of pumping a minimum of 250 GPM (estimated 50 HP motor) that is equipped with standby power generation. Three-phase power will be extended to the new well site.

Ÿ Eye Wash Station at Main Well: Install an eye wash station at the Main Well.

Ÿ New Water Storage Tank: Site, permit, design, and construct a new 350,000 gallon water storage tank in the vicinity of the existing water storage reservoir on property managed by the Bureau of Land Management. Tank material will be either bolted or welded steel or concrete. The new tank will be approximately 60 feet in diameter and approximately 20 feet tall.

Ÿ Upgrades to the Main Well: Upgrade the existing Main well by expanding the pumping capacity to 250 GPM, extending three-phase power to the site, and equipping with a variable frequency drive (VFD). Permanent upgrades and impacts to Main Well will be confined within the existing well house building other than upgrades to power supply which is currently overhead power to the existing well house building.

Ÿ Flow Meter on Waterline from Tank(s): Install a flow meter on the waterline(s) from the tank(s) to the distribution system to quantify system usage. Permanent upgrades will be generally confined within previously disturbed property along the existing water transmission main and the new proposed 12-inch transmission main.

Ÿ Transmission Pipeline Improvements: The priority improvements include the Priority 1 and 2 waterlines (illustrated in the attached figure) to extend City water service and fire protection to the residents along Waucanza Street and improve fire protection of existing structures:

The project is being proposed to bring the water system in compliance with state water supply redundancy and emergency operation standards, meet water storage and fire protection needs for important structures including the School, improve safety conditions at the existing well, and extend municipal water supply to existing residents inside the City limits on private wells.

Thank you.

Justin Walker, P.E.
Keller Associates, Inc.
131 S.W. 5th Ave., Ste. A
Meridian, Idaho 83642
Office (208) 288-1992
[attachment "Figure6.1a_Alternative1Improvements.pdf" deleted by Susan Eastman/R10/USEPA/US]
[attachment "EPA Region 10 Sole Source Aquifer Checklist.DOC" deleted by Susan Eastman/R10/USEPA/US]

STATE OF IDAHO
DEPARTMENT OF
ENVIRONMENTAL QUALITY

RECEIVED
OCT 13 2011

1410 North Hilton • Boise, Idaho 83706 • (208) 373-0502

C.L. "Butch" Otter, Governor
Toni Hardesty, Director

October 11, 2011

Justin Walker, P.E.
Keller Associates
131 SW 5th Avenue, Suite A
Meridian, Idaho 83642
jwalker@Kellerassociates.com

RE: Review of the Environmental Information Document for City of Dietrich Drinking Water Improvements (DWG-108-2011-2)

Dear Mr. Walker:

A review of the September 2011 *City of Dietrich, Idaho Water System Priority Improvements Environmental Information Document* has been conducted with respect to the State Environmental Review Process (SERP), the agency's National Environmental Policy Act (NEPA) like process, and the Rules for Administration of Planning Grants for Drinking Water Facilities (IDAPA 58.01.22) and Rules for Administration of Drinking Water Loan Program (IDAPA 58.01.20) requirements for an environmental determination.

The drinking water grant entered into by the City of Dietrich required completion of an Environmental Information Document (EID) for the selected alternative. Now that the community has selected their preferred alternative, an in-depth EID should be developed in accordance with the Department of Environmental Quality (DEQ) Outline and Checklist for Environmental Information Documents (EID checklist) for that one alternative and resubmitted as a revised or final EID. I appreciated the opportunity to discuss the project with you on October 4, 2011 regarding items to be completed and incorporated into the final EID.

The EID checklist was used as a baseline to determine the completeness of the information submitted and found the items listed below as incomplete or in need of clarification:

Section A: Cover Sheet

- Project Costs and Estimated User Costs. The reported costs are inconsistent between page 1, page 2 and Form 5-B. Please revise the figures for consistency, and clarify which improvements are included in the estimated user costs. Base your calculations on an estimate of $161,088 in principal reduction on a State Revolving Fund loan.

  The project nomenclature is confusing. Phase 1 includes Priority 1 elements and some Priority 2 elements, while other Priority 2 elements apparently belong in Phase 2, but there is no Phase 2 described. Please clarify.

Section C: Alternatives Including the Proposed Action

- No Action Alternative. The existing Right of Way Grant/Temporary Use Permit with the Bureau of Land Management (BLM) contained in Appendix B expires in 2022. Since this is within the 20-year planning horizon, the need for permit renewal should be mentioned in the No Action Alternative.

- Alternatives 1 and 2. Clarify whether the existing 100,000-gallon tank will be retained.

Section D: Affected Environment

- Wetlands/Clean Water Act-Section 404. Please mention that North Wind Resource Consulting's report anticipates that the U.S. Army Corps of Engineers (Corps) will rule the three canal crossings to be jurisdictional wetlands. I am forwarding a copy of the consultant's report to the Corps with a request for jurisdictional determination, and will forward the response to you for inclusion in the EID.

- Wild and Scenic Rivers. Please reference the Wild and Scenic Rivers website list (www.rivers.gov/wildriverslist.html#id) or other authoritative source to document your statement that there are no Wild and Scenic Rivers in the area. Also, add that no rivers in the area are being studied for addition to the Wild and Scenic River System (www.rivers.gov/study.html).

  Threatened/Endangered Species. Please include the scientific names of the threatened/endangered species as well as their common names. As stated on the Endangered, Threatened, Proposed and Candidate Species list, such lists are only valid for 180 days. Please download and include the latest species list from www.fws.gov/idaho/agencies. If it shows any new species, please consult again with Bob Kibler of USF&W at bob_kibler@fws.gov or (208) 378-5255. Note that the Gray Wolf was delisted on May 5, 2011 (fishandgame.idaho.gov/public/wildlife/wolves/?getPage=167).

- Air Quality. Please include a copy of the Idaho Air Quality Planning Areas Map, which can be downloaded from www.deq.idaho.gov/attainment-nonattainment.

- Ground Water Quality/Quantity. The EID identifies the project area as being above the Eastern Snake River Plain Aquifer. This makes it necessary to consult with the Environmental Protection Agency (EPA). Please fill out the enclosed Sole Source Aquifer Checklist and submit it to Susan Eastman of EPA Region 10 at (206) 553-6249 or Eastman.Susan@epa.gov.

- Airport Clear Zones. Please confirm with Mark Lessor of the Idaho Transportation Department Division of Aeronautics that the airstrip north of the existing well is inactive, or that it would not require ITD design review of nearby structures (such as the new reservoir), as required by Idaho Code 21-513 through 21-520 and Idaho Transportation Rule 39.04.02. He can be reached at (208) 334-8895 or mark.lessor@itd.idaho.gov.

Section H: Public Participation

- Response to Comments. Please prepare a letter responding to the written comments by Todd Morris and Mary Souchik. Address as many of the specific points as you can, particularly those of a technical or regulatory nature. Where possible, get answers to city policy questions (such as park operations or allowing residents to disconnect from the water system) from the city. As we discussed, there is no

need to incorporate these responses into the meeting minutes, but the response letter should be included in the EID.

- Minutes of Public Meeting. The minutes for the public meeting are dated February 6, 2011. Since the Public notice announced that the meeting would be held on February 7, and the presentation slides are dated February 7, this is most likely a typographic error. Please have the City Clerk revise the minutes with the correct date.

Section K: Mailing List

- Mailing List. Please include commenters Todd Morris and Mary Souchik and any members of the public that were present at the public meeting on the mailing list.

Miscellaneous Issues:

- EID Checklist. Use of the EID checklist will facilitate preparation of the EID. The checklist for environmental reviews is found at: www.deq.idaho.gov/media/518710-Form_5-B.pdf.

- Agency Follow-up. Include any agency follow up documentation in the final EID which could include a copy of a letter, an email, or if making follow up telephone calls to consulting agencies who have not responded to the initial letter, verify the telephone conversation with a follow up email.

The final EID must be submitted for review and assessment before an environmental determination can be made by DEQ for the project referenced above. If you have any questions, please contact me at Michael.May@deq.idaho.gov or (208) 373-0406.

Sincerely,

Michael Lee May

Michael Lee May
Sr. Water Quality Analyst

Enclosure: Sole Source Aquifer Checklist

MLM:dls

c: MaryAnna Peavey, DEQ State Office
Brian A. Reed, P.E., DEQ Twin Falls Regional Office
Mayor Don Heiken, City of Dietrich donheiken@dietrichidaho.com
Tom Young, Public Works Supervisor, City of Dietrich tom@dietrichidaho.com

Sole Source Aquifer Checklist

1. Location and name of Sole Source Aquifer or Source Area.

2. Project description.

3. Is there any increase of impervious surface? If so, what is the area?

4. Describe how storm water is currently treated on the site?

5. How will storm water be treated on this site during construction and after the project is complete?

6. Are there any underground storage tanks present or to be installed? Include details of such tanks.

7. Will there be any liquid or solid waste generated? If so how will it be disposed of?

8. What is the depth of excavation?

9. Are there any wells in the area that may provide direct routes for contaminates to access the aquifer and how close are they to the project?

10. Are there any hazardous waste sites in the project area....especially if the waste site has an underground plume with monitoring wells that may be disturbed? Include details.

11. Are there any deep pilings that may provide access to the aquifer?

12. Are Best Management Practices planned to address any possible risks or concerns?

13. Is there any other information that could be helpful in determining if this project may have an affect on the aquifer?

14. Does this Project include any improvements that may be beneficial to the aquifer, such as improvements to the wastewater treatment plan?

The EPA Sole Source Aquifer Program may request additional information if impacts to the aquifer are questionable after this information is submitted for review.

Submit hard copy to:
Sue Ennes,
Sole Source Aquifer Manager
Region 10 EPA, 1200 Sixth Ave, Suite 900, OWW-136
Seattle, WA 98101

The Sole Source Aquifer Checklist is also available at the following link:
(See attached file: R10 Sole Source Aquifer Checklist.doc)

http://yosemite.epa.gov/r10/water.nsf/Sole+Source+Aquifers/SSA

Justin Walker

From: Howard, Jamie N NWW <Jamie.N.Howard@usace.army.mil>
Sent: Thursday, February 09, 2012 12:47 PM
To: Justin Walker
Cc: Joyner, James M NWW
Subject: DA NWW-2011-00133: City of Dietrich, Drinking Water Improvements (UNCLASSIFIED)
Attachments: NWW-2011-133_City of Dietrich_Response to Scoping_LTR.pdf; p-JD_NWW-2011-133 _Dietrich Main Canal.pdf; Appeals Form_NWW-2011-133.pdf

Classification: UNCLASSIFIED
Caveats: NONE

Justin,

Attached is the Corps' response letter RE: the City of Dietrich's Drinking Water Improvements. I will send you a hard copy of these documents, via the U.S. Postal Service, but thought you would like an electronic version as well. Per the Corps' Regulatory Program, the attached is a Response to the Scoping Letter and based on the projects impacts originally proposed. I believe it will work with the most current changes to the project. If you need anything more specific, I will need to either have an application submitted or an updated project scoping letter.

If you have any questions, please contact me directly at (208) 345-2155.

Thank you,

Jamie Howard | Project Manager, Regulatory | U.S. Army Corps of Engineers | Walla Walla District | Boise Field Office | (208) 345-2155 Tell us how we're doing, complete our on-line Customer Survey @ http://per2.nwp.usace.army.mil/survey.html.

Classification: UNCLASSIFIED
Caveats: NONE

DEPARTMENT OF THE ARMY
WALLA WALLA DISTRICT, CORPS OF ENGINEERS
BOISE REGULATORY OFFICE
10095 W Emerald Street
Boise, ID 83704

February 7, 2012

Regulatory Division

Subject: NWW-2011-133, City of Dietrich

Mr. Justin Walker
Keller Associates
131 SW 5th Avenue, Suite A
Meridian, Idaho 83462

Dear Mr. Walker:

This is in response to your October 12, 2011, letter and August 2011, *Wetland Delineation Report and Information for Jurisdictional Determination (Delineation Report)* for drinking water improvements for the City of Dietrich, Idaho. This project may be funded under Idaho's (Clean Water or Drinking) Water State Revolving Fund loan program. Our comments regarding our jurisdictional determination for waters of the United States, including wetlands and associated permitting requirements are below.

The site is located within Sections 12 and 13; Township 6 South; Range 18 East; near latitude 42.91794º N and Longitude -114.26584º W; in Lincoln County, Dietrich, Idaho.

Based on our March 29, 2011 letter, review of the Delineation Report you provided and information available to our office, we have preliminarily determined that as described, the New Well, New Storage Tank, and pipeline improvements would occur in areas that are upland and non-jurisdictional. Further, it appears that placement of a utility crossing below the ordinary high water mark and in abutting emergent wetlands of the Dietrich Main Canal and the unnamed irrigation canal off of the Dietrich Main Canal may involve work within our jurisdiction and would require a Department of Army (DA) permit.

Our preliminary review indicates that project impacts to the Dietrich Main Canal and unnamed irrigation channel has the potential to be verified under Nationwide Permit (NWP) No. 12: Utility Line Activities. For your convenience, the Nationwide Permit and the General and Regional Conditions are on-line at http://www.nww.usace.army.mil/html/offices/op/rf/nw_permits.asp. In addition, the 401 Water Quality Certification for NWP 12 has currently been denied for the State of Idaho. An individual certification or waiver must be issued in order for our verification to be

authorized. However, based on the unknown level of potential impacts to waters of the U.S., including wetlands, an individual permit may be required. We strongly encourage you to contact this office prior to submitting your application to determine whether your project meets the terms and conditions of the permit you desire.

The importance of clear drawings and plans to your permit application cannot be overemphasized. For assistance in this area, please visit our Walla Walla Regulatory District website at http://www.nww.usace.army.mil/html/offices/op/rf/joint_app.asp to download our Joint Application for Permit, Instruction Guide, and sample drawings. We encourage you to work with our Boise Field Office to ensure that your plans are of acceptable quality for either a Pre-Construction Notification or Public Notice.

Finally, enclosed is a Preliminary Jurisdictional Determination (p-JD). This p-JD is for Waters of the United States, including wetland(s), which are located within your project area. The Preliminary Jurisdictional Determination is a non-binding action and shall remain in effect, unless a request for an Approved Jurisdictional Determination or new information supporting a revision is provided to this office. Please note that since this jurisdictional determination is preliminary, it is subject to change and therefore is not an appealable action under the Corps of Engineers Administrative Appeal Procedures (33 CFR 331). Enclosed you will find a *Notification of Administrative Appeal Options and Process and Request for Appeal* form for further clarification.

This proposal was reviewed pursuant to Section 404 of the Clean Water Act as well as other regulatory guidance that may be applicable. Section 404 of the Clean Water Act requires that a DA permit be obtained for the placement or discharge of dredged and/or fill material into waters of the United States, including wetlands, prior to conducting the work (33 U.S.C. 1344).

You may contact Ms. Jamie Howard at telephone (208) 345-2155 or via e-mail at jamie.n.howard@usace.army.mil, if you have any further questions.

Sincerely,

James M. Joyner

James M. Joyner
Regulatory Project Manager

Enclosure

PRELIMINARY JURISDICTIONAL DETERMINATION FORM

I. BACKGROUND INFORMATION

A. Report Completion Date of Preliminary Jurisdictional Determination (p-JD): 02/03/2012

B. Name & Address of Person Requesting p-JD:

City of Dietrich
35 W First Street
Dietrich, Idaho 83324

Mr. Justin Walker (Agent)
Keller Associates
131 SW 5th Avenue, Suite A
Meridian, Idaho 83462

C. District Office: CENWW-RD-BOISE

File Name: City of Dietrich, Drinking Water Improvements

File Number: NWW-2011-00133

D. Project Location(s) and Background Information:

State: IDAHO County/Parish/Borough: LINCOLN City: DIETRICH

Center Coordinates of Site (Lat/Long in Degree Decimal Format):

Latitude: 42 ° 55 ' 04.58 " North Longitude: 114 ° 15 ' 57.03 " West

Universal Transverse Mercator: BOISE

Name of Nearest Waterbody(s): Little Wood River;

Identify Amount of Waters in Review Area (estimated):

Non-Wetland Waters: 100.00 Linear feet Width (ft) and/or Acres

Cowardin Class: R4SBC: Riverine; Intermittent; Streambed; Seasonally Flooded; Excavated

Stream Flow: Big Lost River

Wetlands: 0.0080 acres

Cowardin Class: Palustrine Emergent (wetland fringe along irrigation canals)

Section 10: Name of All Water Bodies on Site, identified as Section 10 Water:

Tidal: N/A

Non-Tidal:

E. Review Performed for Site Evaluation: Check all that Apply

- [x] Office Determination Date (Desk): 02/03/2012
- [ ] Field Determination Date(s):

1. *The Corps of Engineers believes that there may be jurisdictional waters of the United States on the subject site. The permit applicant or other affected person/party who requested this preliminary JD is hereby advised of his or her option to request and obtain an approved jurisdictional determination (JD)*

for the site, as described above. Nevertheless, the permit applicant or other affected person/party who requested this preliminary JD has declined to exercise the option to obtain an approved JD in this instance and at this time.

2. *In any circumstance where a permit applicant obtains an individual permit, or a Nationwide General Permit (NWP) or other general permit verification requiring "Pre-Construction Notification" (PCN), or requests verification for a non-reporting NWP or other general permit, and the permit applicant has not requested an approved JD for the activity, the permit applicant is hereby made aware of the following:*

   (a) The permit applicant has elected to seek a permit authorization based on a preliminary JD, which does not make an official determination of jurisdictional waters;

   (b) That the applicant has the option to request an approved JD before accepting the terms and conditions of the permit authorization, and that basing a permit authorization on an approved JD could possibly result in less compensatory mitigation being required or different special conditions;

   (c) That the applicant has the right to request an individual permit rather than accepting the terms and conditions of the NWP or other general permit authorization;

   (d) That the applicant can accept a permit authorization and thereby agree to comply with all the terms and conditions of that permit, including whatever mitigation requirements the Corps has determined to be necessary;

   (e) That undertaking any activity in reliance upon the subject permit authorization without requesting an approved JD constitutes the applicant's acceptance of the use of the preliminary JD, but that either form of JD will be processed as soon as is practicable;

   (f) Accepting a permit authorization (e.g., signing a proffered individual permit) or undertaking any activity in reliance on any form of Corps permit authorization based on a preliminary JD constitutes agreement that all wetlands and other water bodies on the site affected in any way by that activity are jurisdictional waters of the United States, and precludes any challenge to such jurisdiction in any administrative or judicial compliance or enforcement action, or in any administrative appeal or in any Federal court; and

   (g) Whether the applicant elects to use either an approved JD or a preliminary JD, that JD will be processed as soon as is practicable.

3. *Further, an approved JD, a proffered individual permit (and all terms and conditions contained therein) or individual permit denial can be administratively appealed pursuant to 33 C.F.R. Part 331, and that in any administrative appeal, jurisdictional issues can be raised (see 33 C.F.R. 331.5(a)(2)). If, during that administrative appeal, it becomes necessary to make an official determination whether CWA jurisdiction exists over a site, or to provide an official delineation of jurisdictional waters on the site, the Corps will provide an approved JD to accomplish that result, as soon as is practicable.*

II. SUPPORTING DATA: Data Reviewed for Preliminary JD

This preliminary JD finds that there *may be* waters of the United States on the subject project site, and identifies all aquatic features on the site that could be affected by the proposed activity, based on the following information:

Check all boxes below that apply: The checked information should be included in the administrative file. Provide detailed reference sources for each checked box.

- [■] Maps, plans, plots or plat submitted by or on behalf of the applicant/consultant:

  - March 24, 2011 Request for Comments
  - October 12, 2011 DEQ Concurrence with North Wind Resource Consulting's Wetland Delineation Report, dated August 2011

- [■] Data sheets prepared/submitted by or on behalf of the applicant/consultant

  Wetland Delineation Report and Information for Jurisdictional Determination, City of Dietrich Drinking Water Improvements; August 2011; Prepared by North Wind Resource Consulting

  - [X] Office concurs with Data Sheets/Delineation Report.
  - [ ] Office does not concur with Data Sheets/Delineation Report.

- [■] Data Sheets prepared by the Corps: FWS_NWI Mapper Tool, NWW-2011-00133, date 06-FEB-2012
- [ ] Corps Navigable Waters' Study:
- [ ] U.S. Geological Survey Hydrologic Atlas:
  - [ ] USGS NHD data
  - [ ] USGS 8 and 12 digit HUC maps
- [■] U.S. Geological Survey map(s): Cite scale & Quad Name: Dietrich, Idaho (1:24K)
- [ ] USDA Natural Resources Conservation Service Soil Survey, Citation:
- [■] National Wetlands Inventory Map(s): Cite name: See attached (NWI Mapper)
- [ ] State/Local Wetland Inventory Map(s):
- [ ] FEMA/FIRM maps:
- [ ] 100-year Floodplain Elevation is:
  National Geodetic Vertical Datum of 1929
- [ ] Photographs:
  - [ ] Aerial, Name & Date:
  - [ ] Other, Name & Date:
- [ ] Previous determination(s):

  Include File No. and Date of Response Letter:

☒ Other Information, Please Specify:

Water for the Dietrich Main Canal is diverted from the Little Wood River (RPW) southeast of Richfield, approximately 10.7 miles N/NE of the project area. Water returns from the Dietrich Main Canal to the Little Wood River approximately 3.6 miles W/NW of the project site.

West of Gooding, Idaho the Little Wood River joins the Big Wood River, which is a tributary of the Snake River, a TNW - traditionally navigable water. The Snake River is a tributary of the Columbia River. Therefore, the Dietrich Main Canal is a Water of the U.S and subject to the Clean Water Act.

This constitutes a preliminary jurisdictional determination (p-JD) and is useful for the planning of your project. An approved JD is not necessary in order for the Corps to process a 404 permit application.

Admin File No: NWW-2011-00133

IMPORTANT NOTE: *The information recorded on this form has not necessarily been verified by the Corps and should not be relied upon for later jurisdictional determinations.*

Signature of Regulatory Project Manager REQUIRED	*Signature of person requesting Preliminary JD* REQUIRED (unless obtaining signature is impracticable)
06-Feb-2012	
Date	Date

NOTIFICATION OF ADMINISTRATIVE APPEAL OPTIONS AND PROCESS AND REQUEST FOR APPEAL

Applicant: **City of Dietrich, Idaho**	File Number: **NWW-2011-00133**	Date: **07 FEB 2012**
Attached is:		*See Section Below*
	INITIAL PROFFERED PERMIT (Standard Permit or Letter of Permission)	**A**
	PROFFERED PERMIT (Standard Permit or Letter of Permission)	**B**
	PERMIT DENIAL	**C**
	APPROVED JURISDICTIONAL DETERMINATION	**D**
X	**PRELIMINARY JURISDICTIONAL DETERMINATION**	**E**

SECTION I - The following identifies your rights and options regarding an administrative appeal of the above decision. Additional information may be found at http://usace.army.mil/inet/functions/cw/cecwo/reg or Corps regulations at 33 CFR Part 331.

A: INITIAL PROFFERED PERMIT: You may accept or object to the permit.

ACCEPT: If you received a Standard Permit, you may sign the permit document and return it to the district engineer for final authorization. If you received a Letter of Permission (LOP), you may accept the LOP and your work is authorized. Your signature on the Standard Permit or acceptance of the LOP means that you accept the permit in its entirety, and waive all rights to appeal the permit, including its terms and conditions, and approved jurisdictional determinations (JD) associated with the permit.

OBJECT: If you object to the permit (Standard or LOP) because of certain terms and conditions therein, you may request that the permit be modified accordingly. You must complete Section II of this form and return the form to the district engineer. Your objections must be received by the district engineer within 60 days of the date of this notice, or you will forfeit your right to appeal the permit in the future. Upon receipt of your letter, the district engineer will evaluate your objections and may: (a) modify the permit to address all of your concerns, (b) modify the permit to address some of your objections, or (c) not modify the permit having determined that the permit should be issued as previously written. After evaluating your objections, the district engineer will send you a proffered permit for your reconsideration, as indicated in Section B below.

B: PROFFERED PERMIT: You may accept or appeal the permit,

ACCEPT: If you received a Standard Permit, you may sign the permit document and return it to the district engineer for final authorization. If you received a Letter of Permission (LOP), you may accept the LOP and your work is authorized. Your signature on the Standard Permit or acceptance of the LOP means that you accept the permit in its entirety, and waive all rights to appeal the permit, including its terms and conditions, and approved jurisdictional determinations associated with the permit.

APPEAL: If you choose to decline the proffered permit (Standard or LOP) because of certain terms and conditions therein, you may appeal the declined permit under the Corps of Engineers Administrative Appeal Process by completing Section II of this form and sending the form to the division engineer. This form must be received by the division engineer within 60 days of the date of this notice.

C: PERMIT DENIAL: You may appeal the denial of a permit under the Corps of Engineers Administrative Appeal Process by completing Section II of this form and sending the form to the division engineer. This form must be received by the division engineer within 60 days of the date of this notice.

D: APPROVED JURISDICTIONAL DETERMINATION: You may accept or appeal the approved JD or provide new information.

ACCEPT: You do not need to notify the Corps to accept an approved JD. Failure to notify the Corps within 60 days of the date of this notice, means that you accept the approved JD in its entirety, and waive all rights to appeal the approved JD.

APPEAL: If you disagree with the approved JD, you may appeal the approved JD under the Corps of Engineers Administrative Appeal Process by completing Section II of this form and sending the form to the division engineer. This form must be received by the division engineer within 60 days of the date of this notice.

E: PRELIMINARY JURISDICTIONAL DETERMINATION: You do not need to respond to the Corps regarding the preliminary JD. The Preliminary JD is not appealable. If you wish, you may request an approved JD (which may be appealed), by contacting the Corps district for further instruction. Also you may provide new information for further consideration by the Corps to reevaluate the JD.

SECTION II - REQUEST FOR APPEAL or OBJECTIONS TO AN INITIAL PROFFERED PERMT

REASONS FOR APPEAL OR OBJECTIONS:

Describe your reasons for appealing the decision or your objections to an initial proffered permit in clear concise statements. You may attach additional information to this form to clarify where your reasons or objections are addressed in the administrative record.

ADDITIONAL INFORMATION: The appeal is limited to a review of the administrative record, the Corps memorandum for the record of the appeal conference or meeting, and any supplemental information that the review officer has determined is needed to clarify the administrative record. Neither the appellant nor the Corps may add new information or analyses to the record. However, you may provide additional information to clarify the location of information that is already in the administrative record.

POINT OF CONTACT FOR QUESTIONS OR INFORMATION:

If you have questions regarding this decision and/or the appeal process you may contact:

District Engineer
ATTN: David B. Barrows
Regulatory Division Walla Walla District
201 North 3rd Avenue
Walla Walla, Washington 99362-1876
Telephone (509) 527-7150

If you only have questions regarding the appeal process you may also contact:

U.S. Army Corps of Engineers
Northwestern Division
Attn: David Gesl, Appeal Review Officer
P.O. Box 2870
Portland, Oregon 97208-2870
Telephone (503) 808-3825

RIGHT OF ENTRY: Your signature below grants the right of entry to Corps of Engineers personnel, and any government consultants, to conduct investigations of the project site during the course of the appeal process. You will be provided a 15 day notice of any site investigation, and will have the opportunity to participate in all site investigations.

Signature of appellant or agent:	*Date:*	*Telephone:*

KELLER associates

RECORD OF TELEPHONE CONVERSATION

Keller Associates, Inc.
131 SW 5th Avenue, Suite A
Meridian, Idaho 83642
(208) 288-1992

Project Number: 209118 Date: January 27, 2012 Time: 3:45 pm

Person Called: Ted Howard of Shoshone-Pauite Tribe

Phone Number Called: 208-759-3100 (243) by Justin Walker, P.E.

SUBJECT: Environmental Consultation for Dietrich Water Project

DISCUSSION: Based on the information provided by Justin Walker in an email dated January 27, 2012 Which included the cultural survey report from Northwind, the SHPO approval letter, the Idaho Species List, and a figure of the proposed improvements, Ted Howard stated that no additional correspondence would be provided at this time beyond what was provided in an email dated April 22, 2011.

ACTION: 1. None

CC: Date: February 10, 2012

KELLER associates

RECORD OF TELEPHONE CONVERSATION

Keller Associates, Inc.
131 SW 5th Avenue, Suite A
Meridian, Idaho 83642
(208) 288-1992

Project Number: 209118 Date: Feb. 10, 2012 Time: 3:45 pm

Person Called: Carolyn Smith Boyer of Shoshone-Bannock Tribe

Phone Number Called: 208-236-1086 by Justin Walker, P.E.

SUBJECT: Environmental Consultation for Dietrich Water Project

DISCUSSION: Based on the information provided by Justin Walker in an email dated January 27, 2012 Which included the cultural survey report from Northwind, the SHPO approval letter, the Idaho Species List, and a figure of the proposed improvements, Carolyn requested the following:
She requested that the Site inventory form for Site 10LN34 referred to on Page 4 (Table 2) in the cultural survey be provided to her which was done. For the well component of the project, she requested that the construction documents include a stop-work requirement with immediate notification to the tribe if an artifact is encountered during construction. This language will be part of the construction documents. She also stated that the tribe MAY require onsite monitoring during ground disturbing activities during construction. The decision about whether this will be required will be made at a future time by the tribe. She also requested that the tribe be notified whether or not the well will be located on BLM property when that decision is made. For the proposed pipeline improvements that are located inside City ROW and City limits, she requested that the construction documents include a stop-work requirement with immediate notification to the tribe if an artifact is encountered during construction. This language will be part of the construction documents.

ACTION: 1. Send Carolyn the site form for 10LN34 (DONE)
2. Include "stop-work" and immediate notification to the tribe language during construction if an artifact is encountered. (WILL DO DURING FINAL DESIGN)

3. Notify the tribe whether or not well will be on BLM property when decision is made.

CC: Date: February 10, 2012

Justin Walker

From: Eastman.Susan@epamail.epa.gov
Sent: Thursday, October 20, 2011 1:22 PM
To: Justin Walker
Subject: Re: FW: City of Dietrich Idaho Water Project Environmental Consultation

Thank you for submitting your project for review. We have reviewed the information provided and find that the project will not have a significant adverse impact on the Eastern Snake River Plain Sole Source Aquifer and therefore the funding may proceed.

EPA reviews federally financially assisted projects that are proposed in federally designated Sole Source Aquifer review areas to determine if the projects have a potential to contaminate the aquifer through a recharge zone so as to create a significant hazard to public health.
Such projects are submitted to EPA by federal, state, and local governments, and by the public.

This correspondence only addresses the Sole Source Aquifer Program, any other federal environmental requirements are your responsibility to ensure compliance. Please retain this email for your records.

Thank You,

Susan Eastman, Environmental Scientist
EPA Region 10
1200 Sixth Ave. Suite 900, OWW-136
Seattle, WA. 98101
SDWA Tribal & CWA Indian Set Aside Program, Sole Source Aquifer Program, Source Water Protection and ID 106

206-553-6249
EASTMAN.SUSAN@EPA.GOV

From: Justin Walker <jwalker@Kellerassociates.com>
To: Susan Eastman/R10/USEPA/US@EPA
Cc: Justin Walker <jwalker@Kellerassociates.com>
Date: 10/19/2011 03:46 PM
Subject: FW: City of Dietrich Idaho Water Project Environmental Consultation

Susan,

I received your voice mail. Thank you for your response. See below for the email transmittal again. A loan and grant application is pending your comments, so a rapid turn-around would be very appreciated. I believe even an email response would be sufficient if that makes it easier. Please respond so I know you received this email.

Justin Walker, P.E.
Keller Associates, Inc.

Office (208) 288-1992

From: Justin Walker
Sent: Wednesday, October 12, 2011 3:56 PM
To: Eastman.Susan@epa.gov
Cc: Michael.May@deq.idaho.gov; Justin Walker
Subject: City of Dietrich Idaho Water Project Environmental Consultation

Ms. Eastman,

I was given your contact information from Michael May with the Idaho Dept. of Environmental Quality and asked to complete the attached Sole Source Aquifer Checklist and submit to you with a request for comments regarding the proposed project explained below. A prompt response to this request would be very appreciated.

The City of Dietrich is in the final planning phase of developing a drinking water system improvement project which could be in full or partially funded by the Drinking Water State Revolving Loan Fund, Department of Commerce Community Development Block Grant (CDBG), and/or United States Department of Agriculture-Rural Development program (USDA-RD). The purpose of this letter is to request your review and response regarding any environmental impacts that your agency may identify for this proposed project pursuant to the Idaho Department of Environmental Quality's State Environmental Review Process, the state's National Environmental Policy Act like process, and other funding agency environmental policies.

The proposed project consists of the following elements which are shown on the attached figure:

Ÿ New Municipal Well: Site and drill a new municipal well near the existing Main Well including necessary permitting, property acquisition, and environmental clearances. It is recommended that the well be drilled to a depth of 600-foot with a 12" to 16" borehole diameter. At the completion of drilling, design and construct well house pumping facilities capable of pumping a minimum of 250 GPM (estimated 50 HP motor) that is equipped with standby power generation. Three-phase power will be extended to the new well site.

Ÿ Eye Wash Station at Main Well: Install an eye wash station at the Main Well.

Ÿ New Water Storage Tank: Site, permit, design, and construct a new 350,000 gallon water storage tank in the vicinity of the existing water storage reservoir on property managed by the Bureau of Land Management. Tank material will be either bolted or welded steel or concrete. The new tank will be approximately 60 feet in diameter and approximately 20 feet tall.

Ÿ Upgrades to the Main Well: Upgrade the existing Main well by expanding the pumping capacity to 250 GPM, extending three-phase power to the site, and equipping with a variable frequency drive (VFD). Permanent upgrades and impacts to Main Well will be confined within the existing well house building other than upgrades to power supply which is currently overhead power to the existing well house building.

Ÿ Flow Meter on Waterline from Tank(s): Install a flow meter on the

waterline(s) from the tank(s) to the distribution system to quantify system usage. Permanent upgrades will be generally confined within previously disturbed property along the existing water transmission main and the new proposed 12-inch transmission main.

Ÿ Transmission Pipeline Improvements: The priority improvements include the Priority 1 and 2 waterlines (illustrated in the attached figure) to extend City water service and fire protection to the residents along Waucanza Street and improve fire protection of existing structures:

The project is being proposed to bring the water system in compliance with state water supply redundancy and emergency operation standards, meet water storage and fire protection needs for important structures including the School, improve safety conditions at the existing well, and extend municipal water supply to existing residents inside the City limits on private wells.

Thank you.

Justin Walker, P.E.
Keller Associates, Inc.
131 S.W. 5th Ave., Ste. A
Meridian, Idaho 83642
Office (208) 288-1992
[attachment "Figure6.1a_Alternative1Improvements.pdf" deleted by Susan Eastman/R10/USEPA/US] [attachment "EPA Region 10 Sole Source Aquifer Checklist.DOC" deleted by Susan Eastman/R10/USEPA/US]

Appendix E

SUPPORTING ENVIRONMENTAL INFORMATION

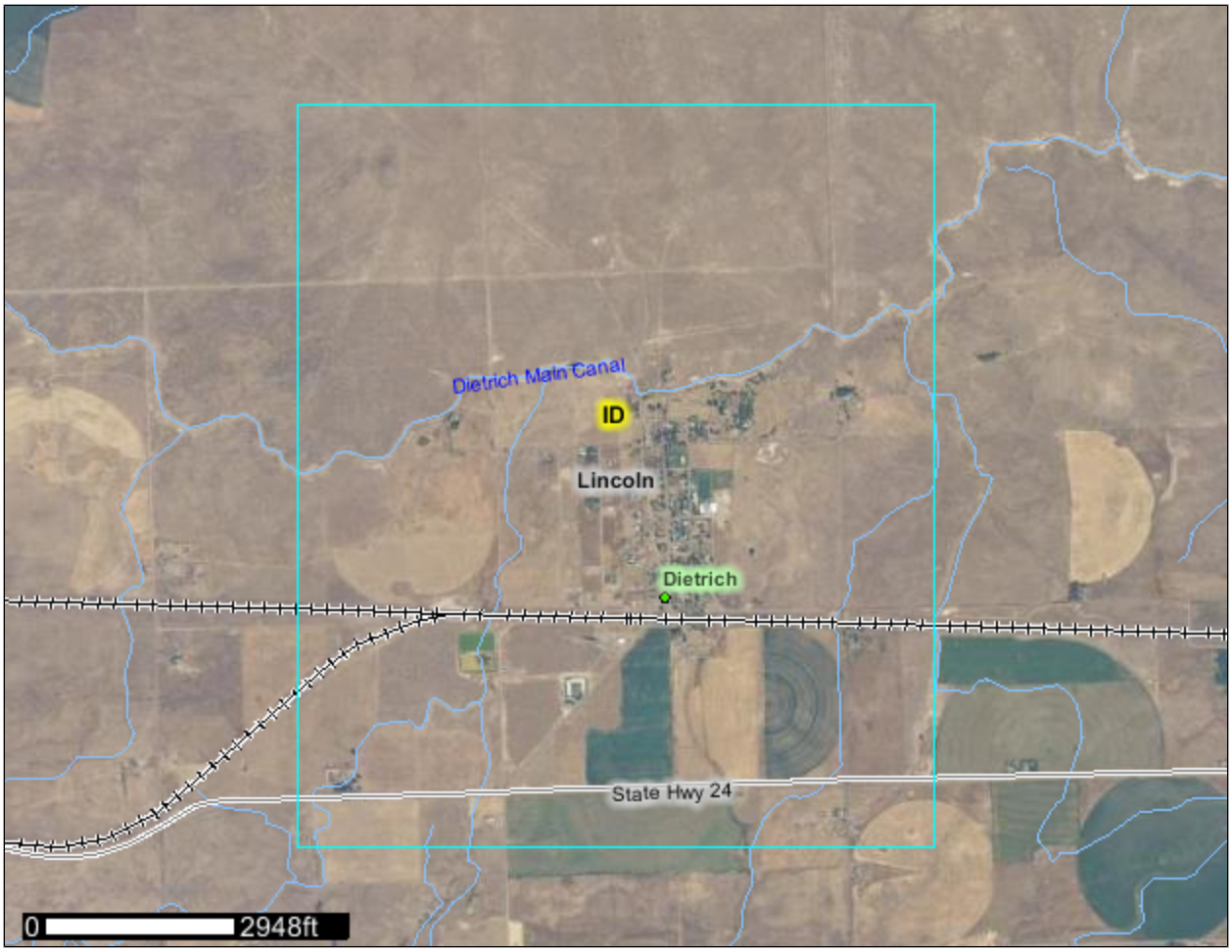
United States Department of Agriculture

Natural Resources Conservation Service

A product of the National Cooperative Soil Survey, a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local participants

Custom Soil Resource Report for Wood River Area, Idaho, Gooding County and Parts of Blaine, Lincoln, and Minidoka Counties

City of Dietrich Soil Survey



December 10, 2010

Preface

Soil surveys contain information that affects land use planning in survey areas. They highlight soil limitations that affect various land uses and provide information about the properties of the soils in the survey areas. Soil surveys are designed for many different users, including farmers, ranchers, foresters, agronomists, urban planners, community officials, engineers, developers, builders, and home buyers. Also, conservationists, teachers, students, and specialists in recreation, waste disposal, and pollution control can use the surveys to help them understand, protect, or enhance the environment.

Various land use regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. Soil surveys identify soil properties that are used in making various land use or land treatment decisions. The information is intended to help the land users identify and reduce the effects of soil limitations on various land uses. The landowner or user is responsible for identifying and complying with existing laws and regulations.

Although soil survey information can be used for general farm, local, and wider area planning, onsite investigation is needed to supplement this information in some cases. Examples include soil quality assessments (http://soils.usda.gov/sqi/) and certain conservation and engineering applications. For more detailed information, contact your local USDA Service Center (http://offices.sc.egov.usda.gov/locator/app?agency=nrcs) or your NRCS State Soil Scientist (http://soils.usda.gov/contact/state_offices/).

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

The National Cooperative Soil Survey is a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service (NRCS) has leadership for the Federal part of the National Cooperative Soil Survey.

Information about soils is updated periodically. Updated information is available through the NRCS Soil Data Mart Web site or the NRCS Web Soil Survey. The Soil Data Mart is the data storage site for the official soil survey information.

The U.S. Department of Agriculture (USDA) prohibits discrimination in all its programs and activities on the basis of race, color, national origin, age, disability, and where applicable, sex, marital status, familial status, parental status, religion, sexual orientation, genetic information, political beliefs, reprisal, or because all or a part of an individual's income is derived from any public assistance program. (Not all prohibited bases apply to all programs.) Persons with disabilities who require alternative means

for communication of program information (Braille, large print, audiotape, etc.) should contact USDA's TARGET Center at (202) 720-2600 (voice and TDD). To file a complaint of discrimination, write to USDA, Director, Office of Civil Rights, 1400 Independence Avenue, S.W., Washington, D.C. 20250-9410 or call (800) 795-3272 (voice) or (202) 720-6382 (TDD). USDA is an equal opportunity provider and employer.

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How Soil Surveys Are Made

Soil surveys are made to provide information about the soils and miscellaneous areas in a specific area. They include a description of the soils and miscellaneous areas and their location on the landscape and tables that show soil properties and limitations affecting various uses. Soil scientists observed the steepness, length, and shape of the slopes; the general pattern of drainage; the kinds of crops and native plants; and the kinds of bedrock. They observed and described many soil profiles. A soil profile is the sequence of natural layers, or horizons, in a soil. The profile extends from the surface down into the unconsolidated material in which the soil formed or from the surface down to bedrock. The unconsolidated material is devoid of roots and other living organisms and has not been changed by other biological activity.

Currently, soils are mapped according to the boundaries of major land resource areas (MLRAs). MLRAs are geographically associated land resource units that share common characteristics related to physiography, geology, climate, water resources, soils, biological resources, and land uses (USDA, 2006). Soil survey areas typically consist of parts of one or more MLRA.

The soils and miscellaneous areas in a survey area occur in an orderly pattern that is related to the geology, landforms, relief, climate, and natural vegetation of the area. Each kind of soil and miscellaneous area is associated with a particular kind of landform or with a segment of the landform. By observing the soils and miscellaneous areas in the survey area and relating their position to specific segments of the landform, a soil scientist develops a concept, or model, of how they were formed. Thus, during mapping, this model enables the soil scientist to predict with a considerable degree of accuracy the kind of soil or miscellaneous area at a specific location on the landscape.

Commonly, individual soils on the landscape merge into one another as their characteristics gradually change. To construct an accurate soil map, however, soil scientists must determine the boundaries between the soils. They can observe only a limited number of soil profiles. Nevertheless, these observations, supplemented by an understanding of the soil-vegetation-landscape relationship, are sufficient to verify predictions of the kinds of soil in an area and to determine the boundaries.

Soil scientists recorded the characteristics of the soil profiles that they studied. They noted soil color, texture, size and shape of soil aggregates, kind and amount of rock fragments, distribution of plant roots, reaction, and other features that enable them to identify soils. After describing the soils in the survey area and determining their properties, the soil scientists assigned the soils to taxonomic classes (units). Taxonomic classes are concepts. Each taxonomic class has a set of soil characteristics with precisely defined limits. The classes are used as a basis for comparison to classify soils systematically. Soil taxonomy, the system of taxonomic classification used in the United States, is based mainly on the kind and character of soil properties and the arrangement of horizons within the profile. After the soil scientists classified and named the soils in the survey area, they compared the

individual soils with similar soils in the same taxonomic class in other areas so that they could confirm data and assemble additional data based on experience and research.

The objective of soil mapping is not to delineate pure map unit components; the objective is to separate the landscape into landforms or landform segments that have similar use and management requirements. Each map unit is defined by a unique combination of soil components and/or miscellaneous areas in predictable proportions. Some components may be highly contrasting to the other components of the map unit. The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The delineation of such landforms and landform segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, onsite investigation is needed to define and locate the soils and miscellaneous areas.

Soil scientists make many field observations in the process of producing a soil map. The frequency of observation is dependent upon several factors, including scale of mapping, intensity of mapping, design of map units, complexity of the landscape, and experience of the soil scientist. Observations are made to test and refine the soil-landscape model and predictions and to verify the classification of the soils at specific locations. Once the soil-landscape model is refined, a significantly smaller number of measurements of individual soil properties are made and recorded. These measurements may include field measurements, such as those for color, depth to bedrock, and texture, and laboratory measurements, such as those for content of sand, silt, clay, salt, and other components. Properties of each soil typically vary from one point to another across the landscape.

Observations for map unit components are aggregated to develop ranges of characteristics for the components. The aggregated values are presented. Direct measurements do not exist for every property presented for every map unit component. Values for some properties are estimated from combinations of other properties.

While a soil survey is in progress, samples of some of the soils in the area generally are collected for laboratory analyses and for engineering tests. Soil scientists interpret the data from these analyses and tests as well as the field-observed characteristics and the soil properties to determine the expected behavior of the soils under different uses. Interpretations for all of the soils are field tested through observation of the soils in different uses and under different levels of management. Some interpretations are modified to fit local conditions, and some new interpretations are developed to meet local needs. Data are assembled from other sources, such as research information, production records, and field experience of specialists. For example, data on crop yields under defined levels of management are assembled from farm records and from field or plot experiments on the same kinds of soil.

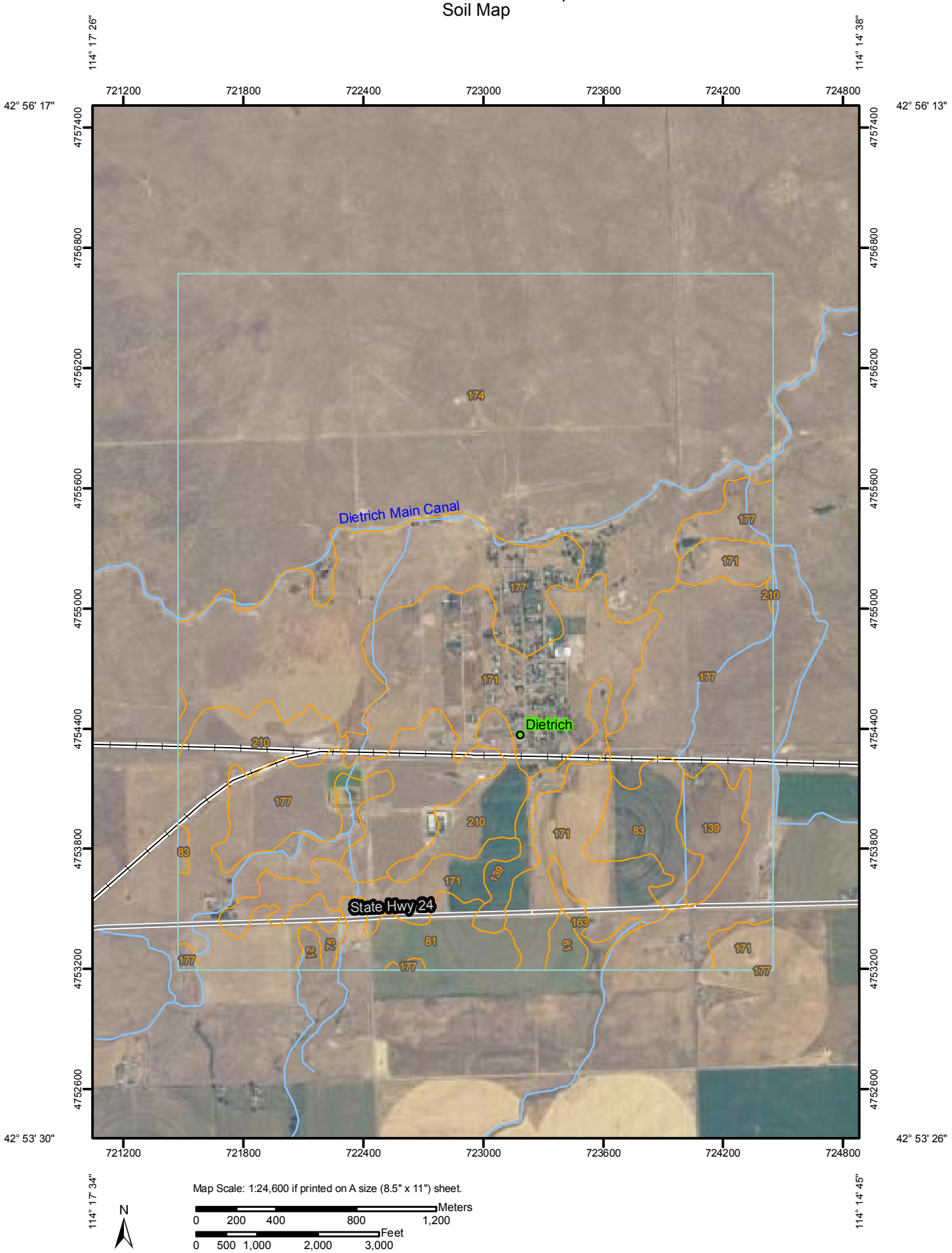
Predictions about soil behavior are based not only on soil properties but also on such variables as climate and biological activity. Soil conditions are predictable over long periods of time, but they are not predictable from year to year. For example, soil scientists can predict with a fairly high degree of accuracy that a given soil will have a high water table within certain depths in most years, but they cannot predict that a high water table will always be at a specific level in the soil on a specific date.

After soil scientists located and identified the significant natural bodies of soil in the survey area, they drew the boundaries of these bodies on aerial photographs and identified each as a specific map unit. Aerial photographs show trees, buildings, fields, roads, and rivers, all of which help in locating boundaries accurately.

Soil Map

The soil map section includes the soil map for the defined area of interest, a list of soil map units on the map and extent of each map unit, and cartographic symbols displayed on the map. Also presented are various metadata about data used to produce the map, and a description of each soil map unit.

Custom Soil Resource Report
Soil Map



Map Scale: 1:24,600 if printed on A size (8.5" x 11") sheet.

N

Meters
0 200 400 800 1,200

Feet
0 500 1,000 2,000 3,000

MAP LEGEND

Area of Interest (AOI)

Area of Interest (AOI)

Soils

Soil Map Units

Special Point Features

Blowout

Borrow Pit

Clay Spot

Closed Depression

Gravel Pit

Gravelly Spot

Landfill

Lava Flow

Marsh or swamp

Mine or Quarry

Miscellaneous Water

Perennial Water

Rock Outcrop

Saline Spot

Sandy Spot

Severely Eroded Spot

Sinkhole

Slide or Slip

Sodic Spot

Spoil Area

Stony Spot

Very Stony Spot

Wet Spot

Other

Special Line Features

Gully

Short Steep Slope

Other

Political Features

Cities

Water Features

Oceans

Streams and Canals

Transportation

Rails

Interstate Highways

US Routes

Major Roads

MAP INFORMATION

Map Scale: 1:24,600 if printed on A size (8.5" × 11") sheet.

The soil surveys that comprise your AOI were mapped at 1:24,000.

Please rely on the bar scale on each map sheet for accurate map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL: http://websoilsurvey.nrcs.usda.gov
Coordinate System: UTM Zone 11N NAD83

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Wood River Area, Idaho, Gooding County and Parts of Blaine, Lincoln, and Minidoka Counties
Survey Area Data: Version 9, Aug 26, 2010

Date(s) aerial images were photographed: 9/9/2004

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Wood River Area, Idaho, Gooding County and Parts of Blaine, Lincoln, and Minidoka Counties (ID681)			
Map Unit Symbol	**Map Unit Name**	**Acres in AOI**	**Percent of AOI**
21	Bruncan silt loam, 1 to 4 percent slopes	5.3	0.2%
75	Haploxerolls-Camborthids-Rock outcrop complex, 1 to 3 percent slopes	5.8	0.2%
81	Hoosegow sandy loam, 0 to 3 percent slopes	69.1	2.7%
83	Idow-Ackelton complex, 1 to 4 percent slopes	56.7	2.2%
139	Paulville loam, 0 to 2 percent slopes	75.7	3.0%
163	Sidlake-Banbury complex, 2 to 4 percent slopes	13.2	0.5%
171	Snowmore-Besslen-Hoosegow complex, 1 to 4 percent slopes	417.2	16.3%
174	Snowmore-Minveno-Hoosegow complex, 2 to 10 percent slopes	1,026.7	40.2%
177	Snowmore-Wako-Harsan complex, 1 to 4 percent slopes	664.8	26.0%
210	Wako-Harsan complex, 0 to 4 percent slopes	220.2	8.6%
Totals for Area of Interest		**2,554.6**	**100.0%**

Map Unit Descriptions

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified

by a special symbol on the maps. If included in the database for a given area, the contrasting minor components are identified in the map unit descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however, onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives important soil properties and qualities.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Alpha silt loam, 0 to 2 percent slopes, is a phase of the Alpha series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, or undifferentiated groups.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Alpha-Beta complex, 0 to 6 percent slopes, is an example.

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Alpha-Beta association, 0 to 2 percent slopes, is an example.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Alpha and Beta soils, 0 to 2 percent slopes, is an example.

Some surveys include *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Rock outcrop is an example.

Wood River Area, Idaho, Gooding County and Parts of Blaine, Lincoln, and Minidoka Counties

21—Bruncan silt loam, 1 to 4 percent slopes

Map Unit Setting

Elevation: 3,200 to 5,400 feet
Mean annual precipitation: 8 to 13 inches
Mean annual air temperature: 45 to 48 degrees F
Frost-free period: 85 to 115 days

Map Unit Composition

Bruncan and similar soils: 80 percent

Description of Bruncan

Setting

Landform: Buttes, lava plains
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Volcanic ash and/or loess over mixed alluvium over bedrock derived from volcanic rock

Properties and qualities

Slope: 1 to 4 percent
Depth to restrictive feature: 11 to 20 inches to duripan; 13 to 37 inches to lithic bedrock
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.06 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 40 percent
Maximum salinity: Nonsaline (0.0 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum: 5.0
Available water capacity: Very low (about 2.9 inches)

Interpretive groups

Land capability classification (irrigated): 4e
Land capability (nonirrigated): 6e

Typical profile

0 to 6 inches: Silt loam
6 to 14 inches: Silt loam
14 to 18 inches: Very cobbly silt loam
18 to 37 inches: Cemented material
37 to 47 inches: Unweathered bedrock

75—Haploxerolls-Camborthids-Rock outcrop complex, 1 to 3 percent slopes

Map Unit Setting

Elevation: 3,500 to 4,400 feet
Mean annual precipitation: 8 to 11 inches
Mean annual air temperature: 46 to 52 degrees F
Frost-free period: 100 to 120 days

Map Unit Composition

Haploxerolls and similar soils: 50 percent
Camborthids and similar soils: 20 percent
Rock outcrop: 15 percent
Minor components: 15 percent

Description of Haploxerolls

Setting

Landform: Stream terraces
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Mixed alluvium

Properties and qualities

Slope: 1 to 3 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 6.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: Occasional
Frequency of ponding: None
Calcium carbonate, maximum content: 10 percent
Available water capacity: Low (about 4.7 inches)

Interpretive groups

Land capability classification (irrigated): 5c
Land capability (nonirrigated): 6c
Ecological site: LOAMY BOTTOM 8-14 ARTRT/LECI4 (R011XY015ID)

Typical profile

0 to 16 inches: Loam
16 to 60 inches: Stratified fine sand to gravelly loamy sand

Description of Camborthids

Setting

Landform: Stream terraces
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Mixed alluvium over bedrock derived from sedimentary rock

Properties and qualities

Slope: 1 to 3 percent
Depth to restrictive feature: 10 to 20 inches to lithic bedrock
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 2.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: Occasional
Frequency of ponding: None
Calcium carbonate, maximum content: 5 percent
Maximum salinity: Nonsaline (0.0 to 2.0 mmhos/cm)
Available water capacity: Very low (about 1.7 inches)

Interpretive groups

Land capability (nonirrigated): 7s
Ecological site: SHALLOW LOAMY 8-12 ARTRT/PSSPS (R011AY003ID)

Typical profile

0 to 14 inches: Loamy sand
14 to 17 inches: Sandy loam
17 to 27 inches: Unweathered bedrock

Description of Rock Outcrop

Properties and qualities

Slope: 1 to 3 percent
Depth to restrictive feature: 0 inches to lithic bedrock

Interpretive groups

Land capability (nonirrigated): 8

Typical profile

0 to 60 inches: Unweathered bedrock

Minor Components

Aquolls

Percent of map unit: 15 percent
Landform: Depressions

81—Hoosegow sandy loam, 0 to 3 percent slopes

Map Unit Setting

Elevation: 3,300 to 4,600 feet
Mean annual precipitation: 8 to 12 inches
Mean annual air temperature: 46 to 52 degrees F
Frost-free period: 90 to 140 days

Map Unit Composition

Hoosegow and similar soils: 85 percent

Description of Hoosegow

Setting

Landform: Depressions, drainageways
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Mixed alluvium

Properties and qualities

Slope: 0 to 3 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 2.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 3 percent
Available water capacity: High (about 9.1 inches)

Interpretive groups

Land capability classification (irrigated): 2e
Land capability (nonirrigated): 6c

Typical profile

0 to 12 inches: Sandy loam
12 to 44 inches: Sandy clay loam
44 to 56 inches: Fine sandy loam
56 to 64 inches: Loamy sand

83—Idow-Ackelton complex, 1 to 4 percent slopes

Map Unit Setting

Elevation: 3,200 to 4,500 feet
Mean annual precipitation: 8 to 11 inches
Mean annual air temperature: 48 to 52 degrees F
Frost-free period: 100 to 120 days

Map Unit Composition

Idow and similar soils: 45 percent
Ackelton and similar soils: 40 percent

Description of Idow

Setting

Landform: Lava fields
Down-slope shape: Linear
Across-slope shape: Linear

Parent material: Mixed alluvium and/or eolian deposits over bedrock derived from basalt

Properties and qualities

Slope: 1 to 4 percent
Depth to restrictive feature: 20 to 40 inches to duripan; 40 to 60 inches to lithic bedrock
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.06 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 40 percent
Maximum salinity: Nonsaline (0.0 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum: 5.0
Available water capacity: Low (about 4.6 inches)

Interpretive groups

Land capability classification (irrigated): 3e
Land capability (nonirrigated): 6e

Typical profile

0 to 6 inches: Fine sandy loam
6 to 21 inches: Fine sandy loam
21 to 35 inches: Loam
35 to 51 inches: Cemented material
51 to 61 inches: Unweathered bedrock

Description of Ackelton

Setting

Landform: Ridges
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Eolian deposits

Properties and qualities

Slope: 1 to 4 percent
Depth to restrictive feature: 43 to 58 inches to duripan
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.06 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 40 percent
Maximum salinity: Nonsaline (0.0 to 2.0 mmhos/cm)
Available water capacity: Moderate (about 7.4 inches)

Interpretive groups

Land capability classification (irrigated): 3e
Land capability (nonirrigated): 6e

Typical profile

0 to 8 inches: Loamy fine sand
8 to 34 inches: Sandy clay loam
34 to 53 inches: Loam

53 to 62 inches: Cemented material
62 to 76 inches: Loamy very fine sand

139—Paulville loam, 0 to 2 percent slopes

Map Unit Setting

Elevation: 2,800 to 4,700 feet
Mean annual precipitation: 8 to 11 inches
Mean annual air temperature: 46 to 52 degrees F
Frost-free period: 95 to 120 days

Map Unit Composition

Paulville and similar soils: 90 percent

Description of Paulville

Setting

Landform: Drainageways, depressions
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Mixed alluvium and/or loess and/or lacustrine deposits

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20 to 0.60 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 30 percent
Maximum salinity: Nonsaline to very slightly saline (2.0 to 4.0 mmhos/cm)
Sodium adsorption ratio, maximum: 5.0
Available water capacity: High (about 10.3 inches)

Interpretive groups

Land capability classification (irrigated): 2c
Land capability (nonirrigated): 6c

Typical profile

0 to 6 inches: Loam
6 to 30 inches: Clay loam
30 to 47 inches: Silt loam
47 to 64 inches: Loamy fine sand

163—Sidlake-Banbury complex, 2 to 4 percent slopes

Map Unit Setting

Elevation: 3,000 to 4,500 feet
Mean annual precipitation: 8 to 12 inches
Mean annual air temperature: 45 to 52 degrees F
Frost-free period: 100 to 140 days

Map Unit Composition

Sidlake and similar soils: 45 percent
Banbury and similar soils: 35 percent

Description of Sidlake

Setting

Landform: Hills
Landform position (two-dimensional): Backslope
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Alluvium and/or loess over bedrock derived from volcanic rock

Properties and qualities

Slope: 2 to 4 percent
Depth to restrictive feature: 20 to 40 inches to lithic bedrock
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20 to 0.60 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 5 percent
Available water capacity: Low (about 4.1 inches)

Interpretive groups

Land capability classification (irrigated): 3e
Land capability (nonirrigated): 6e
Ecological site: LOAMY 8-12 ARTRW8/PSSPS-ACTH7 (R011XY001ID)

Typical profile

0 to 8 inches: Loam
8 to 24 inches: Sandy clay loam
24 to 34 inches: Unweathered bedrock

Description of Banbury

Setting

Landform: Lava fields
Down-slope shape: Convex
Across-slope shape: Linear
Parent material: Loess and/or alluvium over bedrock derived from basalt

Properties and qualities

Slope: 2 to 4 percent
Depth to restrictive feature: 10 to 20 inches to lithic bedrock
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 2.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 5 percent
Available water capacity: Low (about 3.0 inches)

Interpretive groups

Land capability classification (irrigated): 4e
Land capability (nonirrigated): 6e
Ecological site: SHALLOW LOAMY 8-12 ARTRT/PSSPS (R011AY003ID)

Typical profile

0 to 3 inches: Loam
3 to 16 inches: Loam
16 to 26 inches: Unweathered bedrock

171—Snowmore-Besslen-Hoosegow complex, 1 to 4 percent slopes

Map Unit Setting

Elevation: 3,300 to 4,600 feet
Mean annual precipitation: 8 to 12 inches
Mean annual air temperature: 46 to 52 degrees F
Frost-free period: 90 to 140 days

Map Unit Composition

Snowmore and similar soils: 40 percent
Besslen and similar soils: 35 percent
Hoosegow and similar soils: 15 percent

Description of Snowmore

Setting

Landform: Hills, buttes
Landform position (two-dimensional): Backslope
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Volcanic ash and/or mixed alluvium and/or loess over bedrock derived fromrhyolite and/or basalt

Properties and qualities

Slope: 1 to 4 percent
Depth to restrictive feature: 20 to 34 inches to duripan; 21 to 40 inches to lithic bedrock
Drainage class: Well drained

Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.06 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 15 percent
Maximum salinity: Nonsaline (0.0 to 2.0 mmhos/cm)
Available water capacity: Low (about 4.4 inches)

Interpretive groups
Land capability classification (irrigated): 3e
Land capability (nonirrigated): 6c
Ecological site: LOAMY 8-12 ARTRW8/PSSPS-ACTH7 (R011XY001ID)

Typical profile
0 to 9 inches: Loam
9 to 21 inches: Loam
21 to 26 inches: Sandy clay loam
26 to 39 inches: Cemented material
39 to 49 inches: Unweathered bedrock

Description of Besslen

Setting
Landform: Buttes
Landform position (two-dimensional): Summit
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Silty alluvium and/or loess over bedrock derived from basalt

Properties and qualities
Slope: 1 to 4 percent
Depth to restrictive feature: 10 to 20 inches to duripan; 24 to 40 inches to lithic bedrock
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.06 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 40 percent
Maximum salinity: Nonsaline to very slightly saline (2.0 to 4.0 mmhos/cm)
Available water capacity: Very low (about 2.7 inches)

Interpretive groups
Land capability classification (irrigated): 4e
Land capability (nonirrigated): 6e
Ecological site: LOAMY 8-12 ARTRW8/PSSPS-ACTH7 (R011XY001ID)

Typical profile
0 to 2 inches: Loam
2 to 13 inches: Loam
13 to 19 inches: Gravelly sandy loam
19 to 38 inches: Cemented material
38 to 48 inches: Unweathered bedrock

Description of Hoosegow

Setting

Landform: Depressions, drainageways, buttes
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Mixed alluvium

Properties and qualities

Slope: 1 to 4 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 2.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 3 percent
Available water capacity: Moderate (about 9.0 inches)

Interpretive groups

Land capability classification (irrigated): 2e
Land capability (nonirrigated): 6c
Ecological site: LOAMY BOTTOM 8-14 ARTRT/LECI4 (R011XY015ID)

Typical profile

0 to 7 inches: Loam
7 to 25 inches: Loam
25 to 41 inches: Sandy clay loam
41 to 50 inches: Fine sandy loam
50 to 60 inches: Fine sandy loam

174—Snowmore-Minveno-Hoosegow complex, 2 to 10 percent slopes

Map Unit Setting

Elevation: 2,500 to 5,400 feet
Mean annual precipitation: 8 to 12 inches
Mean annual air temperature: 45 to 54 degrees F
Frost-free period: 90 to 150 days

Map Unit Composition

Snowmore and similar soils: 35 percent
Minveno and similar soils: 25 percent
Hoosegow and similar soils: 20 percent

Description of Snowmore

Setting

Landform: Hills

Landform position (two-dimensional): Backslope
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Volcanic ash and/or mixed alluvium and/or loess over bedrock derived fromrhyolite and/or basalt

Properties and qualities

Slope: 2 to 10 percent
Depth to restrictive feature: 20 to 34 inches to duripan; 21 to 40 inches to lithic bedrock
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.06 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 15 percent
Maximum salinity: Nonsaline (0.0 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum: 12.0
Available water capacity: Low (about 3.7 inches)

Interpretive groups

Land capability classification (irrigated): 3e
Land capability (nonirrigated): 6e
Ecological site: LOAMY 8-12 ARTRW8/PSSPS-ACTH7 (R011XY001ID)

Typical profile

0 to 6 inches: Fine sandy loam
6 to 18 inches: Sandy clay loam
18 to 22 inches: Gravelly loam
22 to 33 inches: Cemented material
33 to 43 inches: Unweathered bedrock

Description of Minveno

Setting

Landform: Lava fields
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Volcanic ash and/or loess and/or mixed silty alluvium over bedrock derived from volcanic rock and/or basalt

Properties and qualities

Slope: 2 to 10 percent
Depth to restrictive feature: 10 to 20 inches to duripan; 20 to 40 inches to lithic bedrock
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.06 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 30 percent
Maximum salinity: Nonsaline to very slightly saline (2.0 to 4.0 mmhos/cm)
Sodium adsorption ratio, maximum: 5.0
Available water capacity: Very low (about 2.6 inches)

Interpretive groups

Land capability classification (irrigated): 4e
Land capability (nonirrigated): 6e
Ecological site: LOAMY 8-12 ARTRW8/PSSPS-ACTH7 (R011XY001ID)

Typical profile

0 to 2 inches: Very fine sandy loam
2 to 14 inches: Loam
14 to 21 inches: Cemented material
21 to 31 inches: Unweathered bedrock

Description of Hoosegow

Setting

Landform: Hills, buttes, drainageways
Landform position (two-dimensional): Toeslope
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Mixed alluvium

Properties and qualities

Slope: 2 to 4 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 2.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 3 percent
Available water capacity: Moderate (about 8.4 inches)

Interpretive groups

Land capability classification (irrigated): 2e
Land capability (nonirrigated): 6c
Ecological site: LOAMY BOTTOM 8-14 ARTRT/LECI4 (R011XY015ID)

Typical profile

0 to 3 inches: Fine sandy loam
3 to 13 inches: Fine sandy loam
13 to 36 inches: Sandy clay loam
36 to 65 inches: Fine sandy loam

177—Snowmore-Wako-Harsan complex, 1 to 4 percent slopes

Map Unit Setting

Elevation: 3,200 to 5,400 feet
Mean annual precipitation: 8 to 12 inches
Mean annual air temperature: 45 to 52 degrees F
Frost-free period: 90 to 140 days

Map Unit Composition

Snowmore and similar soils: 50 percent
Wako and similar soils: 20 percent
Harsan and similar soils: 15 percent

Description of Snowmore

Setting

Landform: Lava fields, buttes
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Volcanic ash and/or mixed alluvium and/or loess over bedrock derived fromrhyolite and/or basalt

Properties and qualities

Slope: 1 to 4 percent
Depth to restrictive feature: 20 to 34 inches to duripan; 21 to 40 inches to lithic bedrock
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.06 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 15 percent
Maximum salinity: Nonsaline (0.0 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum: 12.0
Available water capacity: Low (about 3.7 inches)

Interpretive groups

Land capability classification (irrigated): 3e
Land capability (nonirrigated): 6c
Ecological site: LOAMY 8-12 ARTRW8/PSSPS-ACTH7 (R011XY001ID)

Typical profile

0 to 6 inches: Sandy loam
6 to 18 inches: Sandy clay loam
18 to 22 inches: Gravelly loam
22 to 33 inches: Cemented material
33 to 43 inches: Unweathered bedrock

Description of Wako

Setting

Landform: Lava plains, buttes
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Eolian deposits over bedrock derived from volcanic rock

Properties and qualities

Slope: 1 to 4 percent
Depth to restrictive feature: 24 to 40 inches to duripan; 40 to 60 inches to lithic bedrock
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.06 in/hr)

Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 40 percent
Maximum salinity: Very slightly saline to slightly saline (4.0 to 8.0 mmhos/cm)
Sodium adsorption ratio, maximum: 6.0
Available water capacity: Low (about 4.7 inches)

Interpretive groups

Land capability classification (irrigated): 3e
Land capability (nonirrigated): 6e
Ecological site: LOAMY 8-12 ARTRW8/PSSPS-ACTH7 (R011XY001ID)

Typical profile

0 to 9 inches: Sandy loam
9 to 31 inches: Clay loam
31 to 34 inches: Sandy clay loam
34 to 44 inches: Cemented material
44 to 54 inches: Unweathered bedrock

Description of Harsan

Setting

Landform: Lava fields, buttes
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Mixed alluvium and/or eolian deposits

Properties and qualities

Slope: 1 to 4 percent
Depth to restrictive feature: 40 to 60 inches to duripan
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.06 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 30 percent
Available water capacity: Moderate (about 8.3 inches)

Interpretive groups

Land capability classification (irrigated): 3e
Land capability (nonirrigated): 6e
Ecological site: LOAMY 8-12 ARTRT/PSSPS (R011AY009ID)

Typical profile

0 to 18 inches: Fine sandy loam
18 to 35 inches: Sandy clay loam
35 to 51 inches: Loam
51 to 60 inches: Cemented material

210—Wako-Harsan complex, 0 to 4 percent slopes

Map Unit Setting

Elevation: 3,200 to 4,000 feet
Mean annual precipitation: 9 to 11 inches
Mean annual air temperature: 48 to 52 degrees F
Frost-free period: 100 to 140 days

Map Unit Composition

Wako and similar soils: 45 percent
Harsan and similar soils: 35 percent

Description of Wako

Setting

Landform: Buttes
Landform position (two-dimensional): Backslope
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Eolian deposits over bedrock derived from volcanic rock

Properties and qualities

Slope: 0 to 4 percent
Depth to restrictive feature: 24 to 40 inches to duripan; 40 to 60 inches to lithic bedrock
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.06 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 40 percent
Maximum salinity: Very slightly saline to slightly saline (4.0 to 8.0 mmhos/cm)
Sodium adsorption ratio, maximum: 6.0
Available water capacity: Low (about 5.0 inches)

Interpretive groups

Land capability classification (irrigated): 3e
Land capability (nonirrigated): 6e
Ecological site: LOAMY 8-12 ARTRW8/PSSPS-ACTH7 (R011XY001ID)

Typical profile

0 to 7 inches: Loam
7 to 24 inches: Clay loam
24 to 31 inches: Loam
31 to 51 inches: Cemented material
51 to 61 inches: Unweathered bedrock

Description of Harsan

Setting

Landform: Drainageways, buttes
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Mixed alluvium and/or eolian deposits

Properties and qualities

Slope: 0 to 4 percent
Depth to restrictive feature: 40 to 60 inches to duripan
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.06 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 30 percent
Available water capacity: Moderate (about 8.3 inches)

Interpretive groups

Land capability classification (irrigated): 3e
Land capability (nonirrigated): 6e
Ecological site: LOAMY 8-12 ARTRT/PSSPS (R011AY009ID)

Typical profile

0 to 18 inches: Fine sandy loam
18 to 35 inches: Clay loam
35 to 51 inches: Loam
51 to 60 inches: Cemented material

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Glossary

Many of the terms relating to landforms, geology, and geomorphology are defined in more detail in the "National Soil Survey Handbook."

ABC soil

A soil having an A, a B, and a C horizon.

Ablation till

Loose, relatively permeable earthy material deposited during the downwasting of nearly static glacial ice, either contained within or accumulated on the surface of the glacier.

AC soil

A soil having only an A and a C horizon. Commonly, such soil formed in recent alluvium or on steep, rocky slopes.

Aeration, soil

The exchange of air in soil with air from the atmosphere. The air in a well aerated soil is similar to that in the atmosphere; the air in a poorly aerated soil is considerably higher in carbon dioxide and lower in oxygen.

Aggregate, soil

Many fine particles held in a single mass or cluster. Natural soil aggregates, such as granules, blocks, or prisms, are called peds. Clods are aggregates produced by tillage or logging.

Alkali (sodic) soil

A soil having so high a degree of alkalinity (pH 8.5 or higher) or so high a percentage of exchangeable sodium (15 percent or more of the total exchangeable bases), or both, that plant growth is restricted.

Alluvial cone

A semiconical type of alluvial fan having very steep slopes. It is higher, narrower, and steeper than a fan and is composed of coarser and thicker layers of material deposited by a combination of alluvial episodes and (to a much lesser degree) landslides (debris flow). The coarsest materials tend to be concentrated at the apex of the cone.

Alluvial fan

A low, outspread mass of loose materials and/or rock material, commonly with gentle slopes. It is shaped like an open fan or a segment of a cone. The material was deposited by a stream at the place where it issues from a narrow mountain valley or upland valley or where a tributary stream is near or at its junction with the main stream. The fan is steepest near its apex, which points upstream, and slopes gently and convexly outward (downstream) with a gradual decrease in gradient.

Alluvium

Unconsolidated material, such as gravel, sand, silt, clay, and various mixtures of these, deposited on land by running water.

Alpha,alpha-dipyridyl

A compound that when dissolved in ammonium acetate is used to detect the presence of reduced iron (Fe II) in the soil. A positive reaction implies reducing conditions and the likely presence of redoximorphic features.

Animal unit month (AUM)

The amount of forage required by one mature cow of approximately 1,000 pounds weight, with or without a calf, for 1 month.

Aquic conditions

Current soil wetness characterized by saturation, reduction, and redoximorphic features.

Argillic horizon

A subsoil horizon characterized by an accumulation of illuvial clay.

Arroyo

The flat-floored channel of an ephemeral stream, commonly with very steep to vertical banks cut in unconsolidated material. It is usually dry but can be transformed into a temporary watercourse or short-lived torrent after heavy rain within the watershed.

Aspect

The direction toward which a slope faces. Also called slope aspect.

Association, soil

A group of soils or miscellaneous areas geographically associated in a characteristic repeating pattern and defined and delineated as a single map unit.

Available water capacity (available moisture capacity)

The capacity of soils to hold water available for use by most plants. It is commonly defined as the difference between the amount of soil water at field moisture capacity and the amount at wilting point. It is commonly expressed as inches of water per inch of soil. The capacity, in inches, in a 60-inch profile or to a limiting layer is expressed as:

Very low: 0 to 3
Low: 3 to 6
Moderate: 6 to 9
High: 9 to 12
Very high: More than 12

Backslope

The position that forms the steepest and generally linear, middle portion of a hillslope. In profile, backslopes are commonly bounded by a convex shoulder above and a concave footslope below.

Backswamp

A flood-plain landform. Extensive, marshy or swampy, depressed areas of flood plains between natural levees and valley sides or terraces.

Badland

A landscape that is intricately dissected and characterized by a very fine drainage network with high drainage densities and short, steep slopes and narrow interfluves. Badlands develop on surfaces that have little or no vegetative cover overlying unconsolidated or poorly cemented materials (clays, silts, or sandstones) with, in some cases, soluble minerals, such as gypsum or halite.

Bajada

A broad, gently inclined alluvial piedmont slope extending from the base of a mountain range out into a basin and formed by the lateral coalescence of a series of alluvial fans. Typically, it has a broadly undulating transverse profile, parallel to the mountain front, resulting from the convexities of component fans. The term is generally restricted to constructional slopes of intermontane basins.

Basal area

The area of a cross section of a tree, generally referring to the section at breast height and measured outside the bark. It is a measure of stand density, commonly expressed in square feet.

Base saturation

The degree to which material having cation-exchange properties is saturated with exchangeable bases (sum of Ca, Mg, Na, and K), expressed as a percentage of the total cation-exchange capacity.

Base slope (geomorphology)

A geomorphic component of hills consisting of the concave to linear (perpendicular to the contour) slope that, regardless of the lateral shape, forms an apron or wedge at the bottom of a hillside dominated by colluvium and slope-wash sediments (for example, slope alluvium).

Bedding plane

A planar or nearly planar bedding surface that visibly separates each successive layer of stratified sediment or rock (of the same or different lithology) from the preceding or following layer; a plane of deposition. It commonly marks a change

in the circumstances of deposition and may show a parting, a color difference, a change in particle size, or various combinations of these. The term is commonly applied to any bedding surface, even one that is conspicuously bent or deformed by folding.

Bedding system

A drainage system made by plowing, grading, or otherwise shaping the surface of a flat field. It consists of a series of low ridges separated by shallow, parallel dead furrows.

Bedrock

The solid rock that underlies the soil and other unconsolidated material or that is exposed at the surface.

Bedrock-controlled topography

A landscape where the configuration and relief of the landforms are determined or strongly influenced by the underlying bedrock.

Bench terrace

A raised, level or nearly level strip of earth constructed on or nearly on a contour, supported by a barrier of rocks or similar material, and designed to make the soil suitable for tillage and to prevent accelerated erosion.

Bisequum

Two sequences of soil horizons, each of which consists of an illuvial horizon and the overlying eluvial horizons.

Blowout (map symbol)

A saucer-, cup-, or trough-shaped depression formed by wind erosion on a preexisting dune or other sand deposit, especially in an area of shifting sand or loose soil or where protective vegetation is disturbed or destroyed. The adjoining accumulation of sand derived from the depression, where recognizable, is commonly included. Blowouts are commonly small.

Borrow pit (map symbol)

An open excavation from which soil and underlying material have been removed, usually for construction purposes.

Bottom land

An informal term loosely applied to various portions of a flood plain.

Boulders

Rock fragments larger than 2 feet (60 centimeters) in diameter.

Breaks

A landscape or tract of steep, rough or broken land dissected by ravines and gullies and marking a sudden change in topography.

Breast height

An average height of 4.5 feet above the ground surface; the point on a tree where diameter measurements are ordinarily taken.

Brush management

Use of mechanical, chemical, or biological methods to make conditions favorable for reseeding or to reduce or eliminate competition from woody vegetation and thus allow understory grasses and forbs to recover. Brush management increases forage production and thus reduces the hazard of erosion. It can improve the habitat for some species of wildlife.

Butte

An isolated, generally flat-topped hill or mountain with relatively steep slopes and talus or precipitous cliffs and characterized by summit width that is less than the height of bounding escarpments; commonly topped by a caprock of resistant material and representing an erosion remnant carved from flat-lying rocks.

Cable yarding

A method of moving felled trees to a nearby central area for transport to a processing facility. Most cable yarding systems involve use of a drum, a pole, and wire cables in an arrangement similar to that of a rod and reel used for fishing. To reduce friction and soil disturbance, felled trees generally are reeled in while one end is lifted or the entire log is suspended.

Calcareous soil

A soil containing enough calcium carbonate (commonly combined with magnesium carbonate) to effervesce visibly when treated with cold, dilute hydrochloric acid.

Caliche

A general term for a prominent zone of secondary carbonate accumulation in surficial materials in warm, subhumid to arid areas. Caliche is formed by both geologic and pedologic processes. Finely crystalline calcium carbonate forms a nearly continuous surface-coating and void-filling medium in geologic (parent) materials. Cementation ranges from weak in nonindurated forms to very strong in indurated forms. Other minerals (e.g., carbonates, silicate, and sulfate) may occur as accessory cements. Most petrocalcic horizons and some calcic horizons are caliche.

California bearing ratio (CBR)

The load-supporting capacity of a soil as compared to that of standard crushed limestone, expressed as a ratio. First standardized in California. A soil having a CBR of 16 supports 16 percent of the load that would be supported by standard crushed limestone, per unit area, with the same degree of distortion.

Canopy

The leafy crown of trees or shrubs. (See Crown.)

Canyon

A long, deep, narrow valley with high, precipitous walls in an area of high local relief.

Capillary water

Water held as a film around soil particles and in tiny spaces between particles. Surface tension is the adhesive force that holds capillary water in the soil.

Catena

A sequence, or “chain,” of soils on a landscape that formed in similar kinds of parent material and under similar climatic conditions but that have different characteristics as a result of differences in relief and drainage.

Cation

An ion carrying a positive charge of electricity. The common soil cations are calcium, potassium, magnesium, sodium, and hydrogen.

Cation-exchange capacity

The total amount of exchangeable cations that can be held by the soil, expressed in terms of milliequivalents per 100 grams of soil at neutrality (pH 7.0) or at some other stated pH value. The term, as applied to soils, is synonymous with base-exchange capacity but is more precise in meaning.

Catsteps

See Terracettes.

Cement rock

Shaly limestone used in the manufacture of cement.

Channery soil material

Soil material that has, by volume, 15 to 35 percent thin, flat fragments of sandstone, shale, slate, limestone, or schist as much as 6 inches (15 centimeters) along the longest axis. A single piece is called a channer.

Chemical treatment

Control of unwanted vegetation through the use of chemicals.

Chiseling

Tillage with an implement having one or more soil-penetrating points that shatter or loosen hard, compacted layers to a depth below normal plow depth.

Cirque

A steep-walled, semicircular or crescent-shaped, half-bowl-like recess or hollow, commonly situated at the head of a glaciated mountain valley or high on the side of a mountain. It was produced by the erosive activity of a mountain glacier. It commonly contains a small round lake (tarn).

Clay

As a soil separate, the mineral soil particles less than 0.002 millimeter in diameter. As a soil textural class, soil material that is 40 percent or more clay, less than 45 percent sand, and less than 40 percent silt.

Clay depletions

See Redoximorphic features.

Clay film

A thin coating of oriented clay on the surface of a soil aggregate or lining pores or root channels. Synonyms: clay coating, clay skin.

Clay spot (map symbol)

A spot where the surface texture is silty clay or clay in areas where the surface layer of the soils in the surrounding map unit is sandy loam, loam, silt loam, or coarser.

Claypan

A dense, compact subsoil layer that contains much more clay than the overlying materials, from which it is separated by a sharply defined boundary. The layer restricts the downward movement of water through the soil. A claypan is commonly hard when dry and plastic and sticky when wet.

Climax plant community

The stabilized plant community on a particular site. The plant cover reproduces itself and does not change so long as the environment remains the same.

Coarse textured soil

Sand or loamy sand.

Cobble (or cobblestone)

A rounded or partly rounded fragment of rock 3 to 10 inches (7.6 to 25 centimeters) in diameter.

Cobbly soil material

Material that has 15 to 35 percent, by volume, rounded or partially rounded rock fragments 3 to 10 inches (7.6 to 25 centimeters) in diameter. Very cobbly soil material has 35 to 60 percent of these rock fragments, and extremely cobbly soil material has more than 60 percent.

COLE (coefficient of linear extensibility)

See Linear extensibility.

Colluvium

Unconsolidated, unsorted earth material being transported or deposited on side slopes and/or at the base of slopes by mass movement (e.g., direct gravitational action) and by local, unconcentrated runoff.

Complex slope

Irregular or variable slope. Planning or establishing terraces, diversions, and other water-control structures on a complex slope is difficult.

Complex, soil

A map unit of two or more kinds of soil or miscellaneous areas in such an intricate pattern or so small in area that it is not practical to map them separately at the selected scale of mapping. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas.

Concretions

See Redoximorphic features.

Conglomerate

A coarse grained, clastic sedimentary rock composed of rounded or subangular rock fragments more than 2 millimeters in diameter. It commonly has a matrix of sand and finer textured material. Conglomerate is the consolidated equivalent of gravel.

Conservation cropping system

Growing crops in combination with needed cultural and management practices. In a good conservation cropping system, the soil-improving crops and practices more than offset the effects of the soil-depleting crops and practices. Cropping systems are needed on all tilled soils. Soil-improving practices in a conservation cropping system include the use of rotations that contain grasses and legumes and the return of crop residue to the soil. Other practices include the use of green manure crops of grasses and legumes, proper tillage, adequate fertilization, and weed and pest control.

Conservation tillage

A tillage system that does not invert the soil and that leaves a protective amount of crop residue on the surface throughout the year.

Consistence, soil

Refers to the degree of cohesion and adhesion of soil material and its resistance to deformation when ruptured. Consistence includes resistance of soil material to rupture and to penetration; plasticity, toughness, and stickiness of puddled soil material; and the manner in which the soil material behaves when subject to compression. Terms describing consistence are defined in the “Soil Survey Manual.”

Contour stripcropping

Growing crops in strips that follow the contour. Strips of grass or close-growing crops are alternated with strips of clean-tilled crops or summer fallow.

Control section

The part of the soil on which classification is based. The thickness varies among different kinds of soil, but for many it is that part of the soil profile between depths of 10 inches and 40 or 80 inches.

Coprogenous earth (sedimentary peat)

A type of limnic layer composed predominantly of fecal material derived from aquatic animals.

Corrosion (geomorphology)

A process of erosion whereby rocks and soil are removed or worn away by natural chemical processes, especially by the solvent action of running water, but also by other reactions, such as hydrolysis, hydration, carbonation, and oxidation.

Corrosion (soil survey interpretations)

Soil-induced electrochemical or chemical action that dissolves or weakens concrete or uncoated steel.

Cover crop

A close-growing crop grown primarily to improve and protect the soil between periods of regular crop production, or a crop grown between trees and vines in orchards and vineyards.

Crop residue management

Returning crop residue to the soil, which helps to maintain soil structure, organic matter content, and fertility and helps to control erosion.

Cropping system

Growing crops according to a planned system of rotation and management practices.

Cross-slope farming

Deliberately conducting farming operations on sloping farmland in such a way that tillage is across the general slope.

Crown

The upper part of a tree or shrub, including the living branches and their foliage.

Cryoturbate

A mass of soil or other unconsolidated earthy material moved or disturbed by frost action. It is typically coarser than the underlying material.

Cuesta

An asymmetric ridge capped by resistant rock layers of slight or moderate dip (commonly less than 15 percent slopes); a type of homocline produced by differential erosion of interbedded resistant and weak rocks. A cuesta has a long, gentle slope on one side (dip slope) that roughly parallels the inclined beds; on the other side, it has a relatively short and steep or clifflike slope (scarp) that cuts through the tilted rocks.

Culmination of the mean annual increment (CMAI)

The average annual increase per acre in the volume of a stand. Computed by dividing the total volume of the stand by its age. As the stand increases in age,

the mean annual increment continues to increase until mortality begins to reduce the rate of increase. The point where the stand reaches its maximum annual rate of growth is called the culmination of the mean annual increment.

Cutbanks cave

The walls of excavations tend to cave in or slough.

Decreasers

The most heavily grazed climax range plants. Because they are the most palatable, they are the first to be destroyed by overgrazing.

Deferred grazing

Postponing grazing or resting grazing land for a prescribed period.

Delta

A body of alluvium having a surface that is fan shaped and nearly flat; deposited at or near the mouth of a river or stream where it enters a body of relatively quiet water, generally a sea or lake.

Dense layer

A very firm, massive layer that has a bulk density of more than 1.8 grams per cubic centimeter. Such a layer affects the ease of digging and can affect filling and compacting.

Depression, closed (map symbol)

A shallow, saucer-shaped area that is slightly lower on the landscape than the surrounding area and that does not have a natural outlet for surface drainage.

Depth, soil

Generally, the thickness of the soil over bedrock. Very deep soils are more than 60 inches deep over bedrock; deep soils, 40 to 60 inches; moderately deep, 20 to 40 inches; shallow, 10 to 20 inches; and very shallow, less than 10 inches.

Desert pavement

A natural, residual concentration or layer of wind-polished, closely packed gravel, boulders, and other rock fragments mantling a desert surface. It forms where wind action and sheetwash have removed all smaller particles or where rock fragments have migrated upward through sediments to the surface. It typically protects the finer grained underlying material from further erosion.

Diatomaceous earth

A geologic deposit of fine, grayish siliceous material composed chiefly or entirely of the remains of diatoms.

Dip slope

A slope of the land surface, roughly determined by and approximately conforming to the dip of the underlying bedrock.

Diversion (or diversion terrace)

A ridge of earth, generally a terrace, built to protect downslope areas by diverting runoff from its natural course.

Divided-slope farming

A form of field stripcropping in which crops are grown in a systematic arrangement of two strips, or bands, across the slope to reduce the hazard of water erosion. One strip is in a close-growing crop that provides protection from erosion, and the other strip is in a crop that provides less protection from erosion. This practice is used where slopes are not long enough to permit a full stripcropping pattern to be used.

Drainage class (natural)

Refers to the frequency and duration of wet periods under conditions similar to those under which the soil formed. Alterations of the water regime by human activities, either through drainage or irrigation, are not a consideration unless they have significantly changed the morphology of the soil. Seven classes of natural soil drainage are recognized—*excessively drained, somewhat excessively drained, well drained, moderately well drained, somewhat poorly drained, poorly drained,* and *very poorly drained*. These classes are defined in the “Soil Survey Manual.”

Drainage, surface

Runoff, or surface flow of water, from an area.

Drainageway

A general term for a course or channel along which water moves in draining an area. A term restricted to relatively small, linear depressions that at some time move concentrated water and either do not have a defined channel or have only a small defined channel.

Draw

A small stream valley that generally is shallower and more open than a ravine or gulch and that has a broader bottom. The present stream channel may appear inadequate to have cut the drainageway that it occupies.

Drift

A general term applied to all mineral material (clay, silt, sand, gravel, and boulders) transported by a glacier and deposited directly by or from the ice or transported by running water emanating from a glacier. Drift includes unstratified material (till) that forms moraines and stratified deposits that form outwash plains, eskers, kames, varves, and glaciofluvial sediments. The term is generally applied to Pleistocene glacial deposits in areas that no longer contain glaciers.

Drumlin

A low, smooth, elongated oval hill, mound, or ridge of compact till that has a core of bedrock or drift. It commonly has a blunt nose facing the direction from which the ice approached and a gentler slope tapering in the other direction. The longer axis is parallel to the general direction of glacier flow. Drumlins are products of

streamline (laminar) flow of glaciers, which molded the subglacial floor through a combination of erosion and deposition.

Duff

A generally firm organic layer on the surface of mineral soils. It consists of fallen plant material that is in the process of decomposition and includes everything from the litter on the surface to underlying pure humus.

Dune

A low mound, ridge, bank, or hill of loose, windblown granular material (generally sand), either barren and capable of movement from place to place or covered and stabilized with vegetation but retaining its characteristic shape.

Earthy fill

See Mine spoil.

Ecological site

An area where climate, soil, and relief are sufficiently uniform to produce a distinct natural plant community. An ecological site is the product of all the environmental factors responsible for its development. It is typified by an association of species that differ from those on other ecological sites in kind and/or proportion of species or in total production.

Eluviation

The movement of material in true solution or colloidal suspension from one place to another within the soil. Soil horizons that have lost material through eluviation are eluvial; those that have received material are illuvial.

Endosaturation

A type of saturation of the soil in which all horizons between the upper boundary of saturation and a depth of 2 meters are saturated.

Eolian deposit

Sand-, silt-, or clay-sized clastic material transported and deposited primarily by wind, commonly in the form of a dune or a sheet of sand or loess.

Ephemeral stream

A stream, or reach of a stream, that flows only in direct response to precipitation. It receives no long-continued supply from melting snow or other source, and its channel is above the water table at all times.

Episaturation

A type of saturation indicating a perched water table in a soil in which saturated layers are underlain by one or more unsaturated layers within 2 meters of the surface.

Erosion

The wearing away of the land surface by water, wind, ice, or other geologic agents and by such processes as gravitational creep.

Erosion (accelerated)

Erosion much more rapid than geologic erosion, mainly as a result of human or animal activities or of a catastrophe in nature, such as a fire, that exposes the surface.

Erosion (geologic)

Erosion caused by geologic processes acting over long geologic periods and resulting in the wearing away of mountains and the building up of such landscape features as flood plains and coastal plains. Synonym: natural erosion.

Erosion pavement

A surficial lag concentration or layer of gravel and other rock fragments that remains on the soil surface after sheet or rill erosion or wind has removed the finer soil particles and that tends to protect the underlying soil from further erosion.

Erosion surface

A land surface shaped by the action of erosion, especially by running water.

Escarpment

A relatively continuous and steep slope or cliff breaking the general continuity of more gently sloping land surfaces and resulting from erosion or faulting. Most commonly applied to cliffs produced by differential erosion. Synonym: scarp.

Escarpment, bedrock (map symbol)

A relatively continuous and steep slope or cliff, produced by erosion or faulting, that breaks the general continuity of more gently sloping land surfaces. Exposed material is hard or soft bedrock.

Escarpment, nonbedrock (map symbol)

A relatively continuous and steep slope or cliff, generally produced by erosion but in some places produced by faulting, that breaks the continuity of more gently sloping land surfaces. Exposed earthy material is nonsoil or very shallow soil.

Esker

A long, narrow, sinuous, steep-sided ridge of stratified sand and gravel deposited as the bed of a stream flowing in an ice tunnel within or below the ice (subglacial) or between ice walls on top of the ice of a wasting glacier and left behind as high ground when the ice melted. Eskers range in length from less than a kilometer to more than 160 kilometers and in height from 3 to 30 meters.

Extrusive rock

Igneous rock derived from deep-seated molten matter (magma) deposited and cooled on the earth’s surface.

Fallow

Cropland left idle in order to restore productivity through accumulation of moisture. Summer fallow is common in regions of limited rainfall where cereal grain is grown.

The soil is tilled for at least one growing season for weed control and decomposition of plant residue.

Fan remnant

A general term for landforms that are the remaining parts of older fan landforms, such as alluvial fans, that have been either dissected or partially buried.

Fertility, soil

The quality that enables a soil to provide plant nutrients, in adequate amounts and in proper balance, for the growth of specified plants when light, moisture, temperature, tilth, and other growth factors are favorable.

Fibric soil material (peat)

The least decomposed of all organic soil material. Peat contains a large amount of well preserved fiber that is readily identifiable according to botanical origin. Peat has the lowest bulk density and the highest water content at saturation of all organic soil material.

Field moisture capacity

The moisture content of a soil, expressed as a percentage of the ovendry weight, after the gravitational, or free, water has drained away; the field moisture content 2 or 3 days after a soaking rain; also called *normal field capacity, normal moisture capacity,* or *capillary capacity*.

Fill slope

A sloping surface consisting of excavated soil material from a road cut. It commonly is on the downhill side of the road.

Fine textured soil

Sandy clay, silty clay, or clay.

Firebreak

An area cleared of flammable material to stop or help control creeping or running fires. It also serves as a line from which to work and to facilitate the movement of firefighters and equipment. Designated roads also serve as firebreaks.

First bottom

An obsolete, informal term loosely applied to the lowest flood-plain steps that are subject to regular flooding.

Flaggy soil material

Material that has, by volume, 15 to 35 percent flagstones. Very flaggy soil material has 35 to 60 percent flagstones, and extremely flaggy soil material has more than 60 percent flagstones.

Flagstone

A thin fragment of sandstone, limestone, slate, shale, or (rarely) schist 6 to 15 inches (15 to 38 centimeters) long.

Flood plain

The nearly level plain that borders a stream and is subject to flooding unless protected artificially.

Flood-plain landforms

A variety of constructional and erosional features produced by stream channel migration and flooding. Examples include backswamps, flood-plain splays, meanders, meander belts, meander scrolls, oxbow lakes, and natural levees.

Flood-plain splay

A fan-shaped deposit or other outspread deposit formed where an overloaded stream breaks through a levee (natural or artificial) and deposits its material (commonly coarse grained) on the flood plain.

Flood-plain step

An essentially flat, terrace-like alluvial surface within a valley that is frequently covered by floodwater from the present stream; any approximately horizontal surface still actively modified by fluvial scour and/or deposition. May occur individually or as a series of steps.

Fluvial

Of or pertaining to rivers or streams; produced by stream or river action.

Foothills

A region of steeply sloping hills that fringes a mountain range or high-plateau escarpment. The hills have relief of as much as 1,000 feet (300 meters).

Footslope

The concave surface at the base of a hillslope. A footslope is a transition zone between upslope sites of erosion and transport (shoulders and backslopes) and downslope sites of deposition (toeslopes).

Forb

Any herbaceous plant not a grass or a sedge.

Forest cover

All trees and other woody plants (underbrush) covering the ground in a forest.

Forest type

A stand of trees similar in composition and development because of given physical and biological factors by which it may be differentiated from other stands.

Fragipan

A loamy, brittle subsurface horizon low in porosity and content of organic matter and low or moderate in clay but high in silt or very fine sand. A fragipan appears cemented and restricts roots. When dry, it is hard or very hard and has a higher bulk density than the horizon or horizons above. When moist, it tends to rupture suddenly under pressure rather than to deform slowly.

Genesis, soil

The mode of origin of the soil. Refers especially to the processes or soil-forming factors responsible for the formation of the solum, or true soil, from the unconsolidated parent material.

Gilgai

Commonly, a succession of microbasins and microknolls in nearly level areas or of microvalleys and microridges parallel with the slope. Typically, the microrelief of clayey soils that shrink and swell considerably with changes in moisture content.

Glaciofluvial deposits

Material moved by glaciers and subsequently sorted and deposited by streams flowing from the melting ice. The deposits are stratified and occur in the form of outwash plains, valley trains, deltas, kames, eskers, and kame terraces.

Glaciolacustrine deposits

Material ranging from fine clay to sand derived from glaciers and deposited in glacial lakes mainly by glacial meltwater. Many deposits are bedded or laminated.

Gleyed soil

Soil that formed under poor drainage, resulting in the reduction of iron and other elements in the profile and in gray colors.

Graded stripcropping

Growing crops in strips that grade toward a protected waterway.

Grassed waterway

A natural or constructed waterway, typically broad and shallow, seeded to grass as protection against erosion. Conducts surface water away from cropland.

Gravel

Rounded or angular fragments of rock as much as 3 inches (2 millimeters to 7.6 centimeters) in diameter. An individual piece is a pebble.

Gravel pit (map symbol)

An open excavation from which soil and underlying material have been removed and used, without crushing, as a source of sand or gravel.

Gravelly soil material

Material that has 15 to 35 percent, by volume, rounded or angular rock fragments, not prominently flattened, as much as 3 inches (7.6 centimeters) in diameter.

Gravelly spot (map symbol)

A spot where the surface layer has more than 35 percent, by volume, rock fragments that are mostly less than 3 inches in diameter in an area that has less than 15 percent rock fragments.

Green manure crop (agronomy)

A soil-improving crop grown to be plowed under in an early stage of maturity or soon after maturity.

Ground water

Water filling all the unblocked pores of the material below the water table.

Gully (map symbol)

A small, steep-sided channel caused by erosion and cut in unconsolidated materials by concentrated but intermittent flow of water. The distinction between a gully and a rill is one of depth. A gully generally is an obstacle to farm machinery and is too deep to be obliterated by ordinary tillage whereas a rill is of lesser depth and can be smoothed over by ordinary tillage.

Hard bedrock

Bedrock that cannot be excavated except by blasting or by the use of special equipment that is not commonly used in construction.

Hard to reclaim

Reclamation is difficult after the removal of soil for construction and other uses. Revegetation and erosion control are extremely difficult.

Hardpan

A hardened or cemented soil horizon, or layer. The soil material is sandy, loamy, or clayey and is cemented by iron oxide, silica, calcium carbonate, or other substance.

Head slope (geomorphology)

A geomorphic component of hills consisting of a laterally concave area of a hillside, especially at the head of a drainageway. The overland waterflow is converging.

Hemic soil material (mucky peat)

Organic soil material intermediate in degree of decomposition between the less decomposed fibric material and the more decomposed sapric material.

High-residue crops

Such crops as small grain and corn used for grain. If properly managed, residue from these crops can be used to control erosion until the next crop in the rotation is established. These crops return large amounts of organic matter to the soil.

Hill

A generic term for an elevated area of the land surface, rising as much as 1,000 feet above surrounding lowlands, commonly of limited summit area and having a well defined outline. Slopes are generally more than 15 percent. The distinction between a hill and a mountain is arbitrary and may depend on local usage.

Hillslope

A generic term for the steeper part of a hill between its summit and the drainage line, valley flat, or depression floor at the base of a hill.

Horizon, soil

A layer of soil, approximately parallel to the surface, having distinct characteristics produced by soil-forming processes. In the identification of soil horizons, an uppercase letter represents the major horizons. Numbers or lowercase letters that follow represent subdivisions of the major horizons. An explanation of the subdivisions is given in the “Soil Survey Manual.” The major horizons of mineral soil are as follows:

O horizon: An organic layer of fresh and decaying plant residue.

L horizon: A layer of organic and mineral limnic materials, including coprogenous earth (sedimentary peat), diatomaceous earth, and marl.

A horizon: The mineral horizon at or near the surface in which an accumulation of humified organic matter is mixed with the mineral material. Also, a plowed surface horizon, most of which was originally part of a B horizon.

E horizon: The mineral horizon in which the main feature is loss of silicate clay, iron, aluminum, or some combination of these.

B horizon: The mineral horizon below an A horizon. The B horizon is in part a layer of transition from the overlying A to the underlying C horizon. The B horizon also has distinctive characteristics, such as (1) accumulation of clay, sesquioxides, humus, or a combination of these; (2) prismatic or blocky structure; (3) redder or browner colors than those in the A horizon; or (4) a combination of these.

C horizon: The mineral horizon or layer, excluding indurated bedrock, that is little affected by soil-forming processes and does not have the properties typical of the overlying soil material. The material of a C horizon may be either like or unlike that in which the solum formed. If the material is known to differ from that in the solum, an Arabic numeral, commonly a 2, precedes the letter C.

Cr horizon: Soft, consolidated bedrock beneath the soil.

R layer: Consolidated bedrock beneath the soil. The bedrock commonly underlies a C horizon, but it can be directly below an A or a B horizon.

M layer: A root-limiting subsoil layer consisting of nearly continuous, horizontally oriented, human-manufactured materials.

W layer: A layer of water within or beneath the soil.

Humus

The well decomposed, more or less stable part of the organic matter in mineral soils.

Hydrologic soil groups

Refers to soils grouped according to their runoff potential. The soil properties that influence this potential are those that affect the minimum rate of water infiltration on a bare soil during periods after prolonged wetting when the soil is not frozen. These properties include depth to a seasonal high water table, the infiltration rate, and depth to a layer that significantly restricts the downward movement of water. The slope and the kind of plant cover are not considered but are separate factors in predicting runoff.

Igneous rock

Rock that was formed by cooling and solidification of magma and that has not been changed appreciably by weathering since its formation. Major varieties include plutonic and volcanic rock (e.g., andesite, basalt, and granite).

Illuviation

The movement of soil material from one horizon to another in the soil profile. Generally, material is removed from an upper horizon and deposited in a lower horizon.

Impervious soil

A soil through which water, air, or roots penetrate slowly or not at all. No soil is absolutely impervious to air and water all the time.

Increasers

Species in the climax vegetation that increase in amount as the more desirable plants are reduced by close grazing. Increasers commonly are the shorter plants and the less palatable to livestock.

Infiltration

The downward entry of water into the immediate surface of soil or other material, as contrasted with percolation, which is movement of water through soil layers or material.

Infiltration capacity

The maximum rate at which water can infiltrate into a soil under a given set of conditions.

Infiltration rate

The rate at which water penetrates the surface of the soil at any given instant, usually expressed in inches per hour. The rate can be limited by the infiltration capacity of the soil or the rate at which water is applied at the surface.

Intake rate

The average rate of water entering the soil under irrigation. Most soils have a fast initial rate; the rate decreases with application time. Therefore, intake rate for design purposes is not a constant but is a variable depending on the net irrigation application. The rate of water intake, in inches per hour, is expressed as follows:

Very low: Less than 0.2

Low: 0.2 to 0.4

Moderately low: 0.4 to 0.75

Moderate: 0.75 to 1.25

Moderately high: 1.25 to 1.75

High: 1.75 to 2.5

Very high: More than 2.5

Interfluve

A landform composed of the relatively undissected upland or ridge between two adjacent valleys containing streams flowing in the same general direction. An elevated area between two drainageways that sheds water to those drainageways.

Interfluve (geomorphology)

A geomorphic component of hills consisting of the uppermost, comparatively level or gently sloping area of a hill; shoulders of backwearing hillslopes can narrow the upland or can merge, resulting in a strongly convex shape.

Intermittent stream

A stream, or reach of a stream, that does not flow year-round but that is commonly dry for 3 or more months out of 12 and whose channel is generally below the local water table. It flows only during wet periods or when it receives ground-water discharge or long, continued contributions from melting snow or other surface and shallow subsurface sources.

Invaders

On range, plants that encroach into an area and grow after the climax vegetation has been reduced by grazing. Generally, plants invade following disturbance of the surface.

Iron depletions

See Redoximorphic features.

Irrigation

Application of water to soils to assist in production of crops. Methods of irrigation are:

Basin: Water is applied rapidly to nearly level plains surrounded by levees or dikes.

Border: Water is applied at the upper end of a strip in which the lateral flow of water is controlled by small earth ridges called border dikes, or borders.

Controlled flooding: Water is released at intervals from closely spaced field ditches and distributed uniformly over the field.

Corrugation: Water is applied to small, closely spaced furrows or ditches in fields of close-growing crops or in orchards so that it flows in only one direction.

Drip (or trickle): Water is applied slowly and under low pressure to the surface of the soil or into the soil through such applicators as emitters, porous tubing, or perforated pipe.

Furrow: Water is applied in small ditches made by cultivation implements. Furrows are used for tree and row crops.

Sprinkler: Water is sprayed over the soil surface through pipes or nozzles from a pressure system.

Subirrigation: Water is applied in open ditches or tile lines until the water table is raised enough to wet the soil.

Wild flooding: Water, released at high points, is allowed to flow onto an area without controlled distribution.

Kame

A low mound, knob, hummock, or short irregular ridge composed of stratified sand and gravel deposited by a subglacial stream as a fan or delta at the margin of a melting glacier; by a supraglacial stream in a low place or hole on the surface of the glacier; or as a ponded deposit on the surface or at the margin of stagnant ice.

Karst (topography)

A kind of topography that formed in limestone, gypsum, or other soluble rocks by dissolution and that is characterized by closed depressions, sinkholes, caves, and underground drainage.

Knoll

A small, low, rounded hill rising above adjacent landforms.

Ksat

See Saturated hydraulic conductivity.

Lacustrine deposit

Material deposited in lake water and exposed when the water level is lowered or the elevation of the land is raised.

Lake plain

A nearly level surface marking the floor of an extinct lake filled by well sorted, generally fine textured, stratified deposits, commonly containing varves.

Lake terrace

A narrow shelf, partly cut and partly built, produced along a lakeshore in front of a scarp line of low cliffs and later exposed when the water level falls.

Landfill (map symbol)

An area of accumulated waste products of human habitation, either above or below natural ground level.

Landslide

A general, encompassing term for most types of mass movement landforms and processes involving the downslope transport and outward deposition of soil and rock materials caused by gravitational forces; the movement may or may not involve saturated materials. The speed and distance of movement, as well as the amount of soil and rock material, vary greatly.

Large stones

Rock fragments 3 inches (7.6 centimeters) or more across. Large stones adversely affect the specified use of the soil.

Lava flow (map symbol)

A solidified, commonly lobate body of rock formed through lateral, surface outpouring of molten lava from a vent or fissure.

Leaching

The removal of soluble material from soil or other material by percolating water.

Levee (map symbol)

An embankment that confines or controls water, especially one built along the banks of a river to prevent overflow onto lowlands.

Linear extensibility

Refers to the change in length of an unconfined clod as moisture content is decreased from a moist to a dry state. Linear extensibility is used to determine the shrink-swell potential of soils. It is an expression of the volume change between the water content of the clod at $^{1}/_{3}$- or $^{1}/_{10}$-bar tension (33kPa or 10kPa tension) and oven dryness. Volume change is influenced by the amount and type of clay minerals in the soil. The volume change is the percent change for the whole soil. If it is expressed as a fraction, the resulting value is COLE, coefficient of linear extensibility.

Liquid limit

The moisture content at which the soil passes from a plastic to a liquid state.

Loam

Soil material that is 7 to 27 percent clay particles, 28 to 50 percent silt particles, and less than 52 percent sand particles.

Loess

Material transported and deposited by wind and consisting dominantly of silt-sized particles.

Low strength

The soil is not strong enough to support loads.

Low-residue crops

Such crops as corn used for silage, peas, beans, and potatoes. Residue from these crops is not adequate to control erosion until the next crop in the rotation is established. These crops return little organic matter to the soil.

Map unit

A map unit is a collection of areas defined and named the same in terms of their soil components or miscellaneous (nonsoil) areas or both. Each map unit differs in some respect from all others in a survey area, and each has a symbol that uniquely identifies the map unit on a soil map. Each individual polygon, point, or line so identified on the map is referred to as a delineation.

Map unit component

A distinct kind of soil, generally a phase of a taxonomic unit, or miscellaneous (nonsoil) area within a soil map unit. Components can be categorized as either major or minor. The names of major components are used to name the map unit. Each component of a map unit has a unique set of soil properties that differentiates

it from other components within the same map unit. Each is assigned a designated range in proportionate extent (percent) within the map unit.

Marl

An earthy, unconsolidated deposit consisting chiefly of calcium carbonate mixed with clay in approximately equal proportions; formed primarily under freshwater lacustrine conditions but also formed in more saline environments.

Marsh or swamp (map symbol)

A water-saturated, very poorly drained area that is intermittently or permanently covered by water. Sedges, cattails, and rushes are the dominant vegetation in marshes, and trees or shrubs are the dominant vegetation in swamps. Not used in map units where the named soils are poorly drained or very poorly drained.

Mass movement

A generic term for the dislodgment and downslope transport of soil and rock material as a unit under direct gravitational stress.

Masses

See Redoximorphic features.

Meander belt

The zone within which migration of a meandering channel occurs; the flood-plain area included between two imaginary lines drawn tangential to the outer bends of active channel loops.

Meander scar

A crescent-shaped, concave or linear mark on the face of a bluff or valley wall, produced by the lateral erosion of a meandering stream that impinged upon and undercut the bluff.

Meander scroll

One of a series of long, parallel, close-fitting, crescent-shaped ridges and troughs formed along the inner bank of a stream meander as the channel migrated laterally down-valley and toward the outer bank.

Mechanical treatment

Use of mechanical equipment for seeding, brush management, and other management practices.

Medium textured soil

Very fine sandy loam, loam, silt loam, or silt.

Mesa

A broad, nearly flat topped and commonly isolated landmass bounded by steep slopes or precipitous cliffs and capped by layers of resistant, nearly horizontal rocky material. The summit width is characteristically greater than the height of the bounding escarpments.

Metamorphic rock

Rock of any origin altered in mineralogical composition, chemical composition, or structure by heat, pressure, and movement at depth in the earth's crust. Nearly all such rocks are crystalline.

Mine or quarry (map symbol)

An open excavation from which soil and underlying material have been removed and in which bedrock is exposed. Also denotes surface openings to underground mines.

Mine spoil

An accumulation of displaced earthy material, rock, or other waste material removed during mining or excavation. Also called earthy fill.

Mineral soil

Soil that is mainly mineral material and low in organic material. Its bulk density is more than that of organic soil.

Minimum tillage

Only the tillage essential to crop production and prevention of soil damage.

Miscellaneous area

A kind of map unit that has little or no natural soil and supports little or no vegetation.

Miscellaneous water (map symbol)

Small, constructed bodies of water that are used for industrial, sanitary, or mining applications and that contain water most of the year.

Moderately coarse textured soil

Coarse sandy loam, sandy loam, or fine sandy loam.

Moderately fine textured soil

Clay loam, sandy clay loam, or silty clay loam.

Mollic epipedon

A thick, dark, humus-rich surface horizon (or horizons) that has high base saturation and pedogenic soil structure. It may include the upper part of the subsoil.

Moraine

In terms of glacial geology, a mound, ridge, or other topographically distinct accumulation of unsorted, unstratified drift, predominantly till, deposited primarily by the direct action of glacial ice in a variety of landforms. Also, a general term for a landform composed mainly of till (except for kame moraines, which are composed mainly of stratified outwash) that has been deposited by a glacier. Some types of moraines are disintegration, end, ground, kame, lateral, recessional, and terminal.

Morphology, soil

The physical makeup of the soil, including the texture, structure, porosity, consistence, color, and other physical, mineral, and biological properties of the various horizons, and the thickness and arrangement of those horizons in the soil profile.

Mottling, soil

Irregular spots of different colors that vary in number and size. Descriptive terms are as follows: abundance—*few, common,* and *many;* size—*fine, medium,* and *coarse;* and contrast—*faint, distinct,* and *prominent*. The size measurements are of the diameter along the greatest dimension. *Fine* indicates less than 5 millimeters (about 0.2 inch); *medium,* from 5 to 15 millimeters (about 0.2 to 0.6 inch); and *coarse,* more than 15 millimeters (about 0.6 inch).

Mountain

A generic term for an elevated area of the land surface, rising more than 1,000 feet (300 meters) above surrounding lowlands, commonly of restricted summit area (relative to a plateau) and generally having steep sides. A mountain can occur as a single, isolated mass or in a group forming a chain or range. Mountains are formed primarily by tectonic activity and/or volcanic action but can also be formed by differential erosion.

Muck

Dark, finely divided, well decomposed organic soil material. (See Sapric soil material.)

Mucky peat

See Hemic soil material.

Mudstone

A blocky or massive, fine grained sedimentary rock in which the proportions of clay and silt are approximately equal. Also, a general term for such material as clay, silt, claystone, siltstone, shale, and argillite and that should be used only when the amounts of clay and silt are not known or cannot be precisely identified.

Munsell notation

A designation of color by degrees of three simple variables—hue, value, and chroma. For example, a notation of 10YR 6/4 is a color with hue of 10YR, value of 6, and chroma of 4.

Natric horizon

A special kind of argillic horizon that contains enough exchangeable sodium to have an adverse effect on the physical condition of the subsoil.

Neutral soil

A soil having a pH value of 6.6 to 7.3. (See Reaction, soil.)

Nodules

See Redoximorphic features.

Nose slope (geomorphology)

A geomorphic component of hills consisting of the projecting end (laterally convex area) of a hillside. The overland waterflow is predominantly divergent. Nose slopes consist dominantly of colluvium and slope-wash sediments (for example, slope alluvium).

Nutrient, plant

Any element taken in by a plant essential to its growth. Plant nutrients are mainly nitrogen, phosphorus, potassium, calcium, magnesium, sulfur, iron, manganese, copper, boron, and zinc obtained from the soil and carbon, hydrogen, and oxygen obtained from the air and water.

Organic matter

Plant and animal residue in the soil in various stages of decomposition. The content of organic matter in the surface layer is described as follows:

Very low: Less than 0.5 percent
Low: 0.5 to 1.0 percent
Moderately low: 1.0 to 2.0 percent
Moderate: 2.0 to 4.0 percent
High: 4.0 to 8.0 percent
Very high: More than 8.0 percent

Outwash

Stratified and sorted sediments (chiefly sand and gravel) removed or “washed out” from a glacier by meltwater streams and deposited in front of or beyond the end moraine or the margin of a glacier. The coarser material is deposited nearer to the ice.

Outwash plain

An extensive lowland area of coarse textured glaciofluvial material. An outwash plain is commonly smooth; where pitted, it generally is low in relief.

Paleoterrace

An erosional remnant of a terrace that retains the surface form and alluvial deposits of its origin but was not emplaced by, and commonly does not grade to, a present-day stream or drainage network.

Pan

A compact, dense layer in a soil that impedes the movement of water and the growth of roots. For example, *hardpan, fragipan, claypan, plowpan,* and *traffic pan*.

Parent material

The unconsolidated organic and mineral material in which soil forms.

Peat

Unconsolidated material, largely undecomposed organic matter, that has accumulated under excess moisture. (See Fibric soil material.)

Ped

An individual natural soil aggregate, such as a granule, a prism, or a block.

Pedisediment

A layer of sediment, eroded from the shoulder and backslope of an erosional slope, that lies on and is being (or was) transported across a gently sloping erosional surface at the foot of a receding hill or mountain slope.

Pedon

The smallest volume that can be called “a soil.” A pedon is three dimensional and large enough to permit study of all horizons. Its area ranges from about 10 to 100 square feet (1 square meter to 10 square meters), depending on the variability of the soil.

Percolation

The movement of water through the soil.

Perennial water (map symbol)

Small, natural or constructed lakes, ponds, or pits that contain water most of the year.

Permafrost

Ground, soil, or rock that remains at or below 0 degrees C for at least 2 years. It is defined on the basis of temperature and is not necessarily frozen.

pH value

A numerical designation of acidity and alkalinity in soil. (See Reaction, soil.)

Phase, soil

A subdivision of a soil series based on features that affect its use and management, such as slope, stoniness, and flooding.

Piping

Formation of subsurface tunnels or pipelike cavities by water moving through the soil.

Pitting

Pits caused by melting around ice. They form on the soil after plant cover is removed.

Plastic limit

The moisture content at which a soil changes from semisolid to plastic.

Plasticity index

The numerical difference between the liquid limit and the plastic limit; the range of moisture content within which the soil remains plastic.

Plateau (geomorphology)

A comparatively flat area of great extent and elevation; specifically, an extensive land region that is considerably elevated (more than 100 meters) above the adjacent lower lying terrain, is commonly limited on at least one side by an abrupt descent, and has a flat or nearly level surface. A comparatively large part of a plateau surface is near summit level.

Playa

The generally dry and nearly level lake plain that occupies the lowest parts of closed depressions, such as those on intermontane basin floors. Temporary flooding occurs primarily in response to precipitation and runoff. Playa deposits are fine grained and may or may not have a high water table and saline conditions.

Plinthite

The sesquioxide-rich, humus-poor, highly weathered mixture of clay with quartz and other diluents. It commonly appears as red mottles, usually in platy, polygonal, or reticulate patterns. Plinthite changes irreversibly to an ironstone hardpan or to irregular aggregates on repeated wetting and drying, especially if it is exposed also to heat from the sun. In a moist soil, plinthite can be cut with a spade. It is a form of laterite.

Plowpan

A compacted layer formed in the soil directly below the plowed layer.

Ponding

Standing water on soils in closed depressions. Unless the soils are artificially drained, the water can be removed only by percolation or evapotranspiration.

Poorly graded

Refers to a coarse grained soil or soil material consisting mainly of particles of nearly the same size. Because there is little difference in size of the particles, density can be increased only slightly by compaction.

Pore linings

See Redoximorphic features.

Potential native plant community

See Climax plant community.

Potential rooting depth (effective rooting depth)

Depth to which roots could penetrate if the content of moisture in the soil were adequate. The soil has no properties restricting the penetration of roots to this depth.

Prescribed burning

Deliberately burning an area for specific management purposes, under the appropriate conditions of weather and soil moisture and at the proper time of day.

Productivity, soil

The capability of a soil for producing a specified plant or sequence of plants under specific management.

Profile, soil

A vertical section of the soil extending through all its horizons and into the parent material.

Proper grazing use

Grazing at an intensity that maintains enough cover to protect the soil and maintain or improve the quantity and quality of the desirable vegetation. This practice increases the vigor and reproduction capacity of the key plants and promotes the accumulation of litter and mulch necessary to conserve soil and water.

Rangeland

Land on which the potential natural vegetation is predominantly grasses, grasslike plants, forbs, or shrubs suitable for grazing or browsing. It includes natural grasslands, savannas, many wetlands, some deserts, tundras, and areas that support certain forb and shrub communities.

Reaction, soil

A measure of acidity or alkalinity of a soil, expressed as pH values. A soil that tests to pH 7.0 is described as precisely neutral in reaction because it is neither acid nor alkaline. The degrees of acidity or alkalinity, expressed as pH values, are:

Ultra acid: Less than 3.5

Extremely acid: 3.5 to 4.4

Very strongly acid: 4.5 to 5.0

Strongly acid: 5.1 to 5.5

Moderately acid: 5.6 to 6.0

Slightly acid: 6.1 to 6.5

Neutral: 6.6 to 7.3

Slightly alkaline: 7.4 to 7.8

Moderately alkaline: 7.9 to 8.4

Strongly alkaline: 8.5 to 9.0

Very strongly alkaline: 9.1 and higher

Red beds

Sedimentary strata that are mainly red and are made up largely of sandstone and shale.

Redoximorphic concentrations

See Redoximorphic features.

Redoximorphic depletions

See Redoximorphic features.

Redoximorphic features

Redoximorphic features are associated with wetness and result from alternating periods of reduction and oxidation of iron and manganese compounds in the soil. Reduction occurs during saturation with water, and oxidation occurs when the soil is not saturated. Characteristic color patterns are created by these processes. The reduced iron and manganese ions may be removed from a soil if vertical or lateral fluxes of water occur, in which case there is no iron or manganese precipitation in that soil. Wherever the iron and manganese are oxidized and precipitated, they form either soft masses or hard concretions or nodules. Movement of iron and manganese as a result of redoximorphic processes in a soil may result in redoximorphic features that are defined as follows:

1. Redoximorphic concentrations.—These are zones of apparent accumulation of iron-manganese oxides, including:
2. Redoximorphic depletions.—These are zones of low chroma (chromas less than those in the matrix) where either iron-manganese oxides alone or both iron-manganese oxides and clay have been stripped out, including:
3. Reduced matrix.—This is a soil matrix that has low chroma *in situ* but undergoes a change in hue or chroma within 30 minutes after the soil material has been exposed to air.

Reduced matrix

See Redoximorphic features.

Regolith

All unconsolidated earth materials above the solid bedrock. It includes material weathered in place from all kinds of bedrock and alluvial, glacial, eolian, lacustrine, and pyroclastic deposits.

Relief

The relative difference in elevation between the upland summits and the lowlands or valleys of a given region.

Residuum (residual soil material)

Unconsolidated, weathered or partly weathered mineral material that accumulated as bedrock disintegrated in place.

Rill

A very small, steep-sided channel resulting from erosion and cut in unconsolidated materials by concentrated but intermittent flow of water. A rill generally is not an obstacle to wheeled vehicles and is shallow enough to be smoothed over by ordinary tillage.

Riser

The vertical or steep side slope (e.g., escarpment) of terraces, flood-plain steps, or other stepped landforms; commonly a recurring part of a series of natural, steplike landforms, such as successive stream terraces.

Road cut

A sloping surface produced by mechanical means during road construction. It is commonly on the uphill side of the road.

Rock fragments

Rock or mineral fragments having a diameter of 2 millimeters or more; for example, pebbles, cobbles, stones, and boulders.

Rock outcrop (map symbol)

An exposure of bedrock at the surface of the earth. Not used where the named soils of the surrounding map unit are shallow over bedrock or where “Rock outcrop” is a named component of the map unit.

Root zone

The part of the soil that can be penetrated by plant roots.

Runoff

The precipitation discharged into stream channels from an area. The water that flows off the surface of the land without sinking into the soil is called surface runoff. Water that enters the soil before reaching surface streams is called ground-water runoff or seepage flow from ground water.

Saline soil

A soil containing soluble salts in an amount that impairs growth of plants. A saline soil does not contain excess exchangeable sodium.

Saline spot (map symbol)

An area where the surface layer has an electrical conductivity of 8 mmhos/cm more than the surface layer of the named soils in the surrounding map unit. The surface layer of the surrounding soils has an electrical conductivity of 2 mmhos/cm or less.

Sand

As a soil separate, individual rock or mineral fragments from 0.05 millimeter to 2.0 millimeters in diameter. Most sand grains consist of quartz. As a soil textural class, a soil that is 85 percent or more sand and not more than 10 percent clay.

Sandstone

Sedimentary rock containing dominantly sand-sized particles.

Sandy spot (map symbol)

A spot where the surface layer is loamy fine sand or coarser in areas where the surface layer of the named soils in the surrounding map unit is very fine sandy loam or finer.

Sapric soil material (muck)

The most highly decomposed of all organic soil material. Muck has the least amount of plant fiber, the highest bulk density, and the lowest water content at saturation of all organic soil material.

Saturated hydraulic conductivity (Ksat)

The ease with which pores of a saturated soil transmit water. Formally, the proportionality coefficient that expresses the relationship of the rate of water movement to hydraulic gradient in Darcy's Law, a law that describes the rate of water movement through porous media. Commonly abbreviated as "Ksat." Terms describing saturated hydraulic conductivity are:

Very high: 100 or more micrometers per second (14.17 or more inches per hour)

High: 10 to 100 micrometers per second (1.417 to 14.17 inches per hour)

Moderately high: 1 to 10 micrometers per second (0.1417 inch to 1.417 inches per hour)

Moderately low: 0.1 to 1 micrometer per second (0.01417 to 0.1417 inch per hour)

Low: 0.01 to 0.1 micrometer per second (0.001417 to 0.01417 inch per hour)

Very low: Less than 0.01 micrometer per second (less than 0.001417 inch per hour).

To convert inches per hour to micrometers per second, multiply inches per hour by 7.0572. To convert micrometers per second to inches per hour, multiply micrometers per second by 0.1417.

Saturation

Wetness characterized by zero or positive pressure of the soil water. Under conditions of saturation, the water will flow from the soil matrix into an unlined auger hole.

Scarification

The act of abrading, scratching, loosening, crushing, or modifying the surface to increase water absorption or to provide a more tillable soil.

Sedimentary rock

A consolidated deposit of clastic particles, chemical precipitates, or organic remains accumulated at or near the surface of the earth under normal low temperature and pressure conditions. Sedimentary rocks include consolidated equivalents of alluvium, colluvium, drift, and eolian, lacustrine, and marine deposits. Examples are sandstone, siltstone, mudstone, claystone, shale, conglomerate, limestone, dolomite, and coal.

Sequum

A sequence consisting of an illuvial horizon and the overlying eluvial horizon. (See Eluviation.)

Series, soil

A group of soils that have profiles that are almost alike, except for differences in texture of the surface layer. All the soils of a series have horizons that are similar in composition, thickness, and arrangement.

Severely eroded spot (map symbol)

An area where, on the average, 75 percent or more of the original surface layer has been lost because of accelerated erosion. Not used in map units in which “severely eroded,”“very severely eroded,” or “gullied” is part of the map unit name.

Shale

Sedimentary rock that formed by the hardening of a deposit of clay, silty clay, or silty clay loam and that has a tendency to split into thin layers.

Sheet erosion

The removal of a fairly uniform layer of soil material from the land surface by the action of rainfall and surface runoff.

Short, steep slope (map symbol)

A narrow area of soil having slopes that are at least two slope classes steeper than the slope class of the surrounding map unit.

Shoulder

The convex, erosional surface near the top of a hillslope. A shoulder is a transition from summit to backslope.

Shrink-swell

The shrinking of soil when dry and the swelling when wet. Shrinking and swelling can damage roads, dams, building foundations, and other structures. It can also damage plant roots.

Shrub-coppice dune

A small, streamlined dune that forms around brush and clump vegetation.

Side slope (geomorphology)

A geomorphic component of hills consisting of a laterally planar area of a hillside. The overland waterflow is predominantly parallel. Side slopes are dominantly colluvium and slope-wash sediments.

Silica

A combination of silicon and oxygen. The mineral form is called quartz.

Silica-sesquioxide ratio

The ratio of the number of molecules of silica to the number of molecules of alumina and iron oxide. The more highly weathered soils or their clay fractions in warm-temperate, humid regions, and especially those in the tropics, generally have a low ratio.

Silt

As a soil separate, individual mineral particles that range in diameter from the upper limit of clay (0.002 millimeter) to the lower limit of very fine sand (0.05 millimeter). As a soil textural class, soil that is 80 percent or more silt and less than 12 percent clay.

Siltstone

An indurated silt having the texture and composition of shale but lacking its fine lamination or fissility; a massive mudstone in which silt predominates over clay.

Similar soils

Soils that share limits of diagnostic criteria, behave and perform in a similar manner, and have similar conservation needs or management requirements for the major land uses in the survey area.

Sinkhole (map symbol)

A closed, circular or elliptical depression, commonly funnel shaped, characterized by subsurface drainage and formed either by dissolution of the surface of underlying bedrock (e.g., limestone, gypsum, or salt) or by collapse of underlying caves within bedrock. Complexes of sinkholes in carbonate-rock terrain are the main components of karst topography.

Site index

A designation of the quality of a forest site based on the height of the dominant stand at an arbitrarily chosen age. For example, if the average height attained by dominant and codominant trees in a fully stocked stand at the age of 50 years is 75 feet, the site index is 75.

Slickensides (pedogenic)

Grooved, striated, and/or glossy (shiny) slip faces on structural peds, such as wedges; produced by shrink-swell processes, most commonly in soils that have a high content of expansive clays.

Slide or slip (map symbol)

A prominent landform scar or ridge caused by fairly recent mass movement or descent of earthy material resulting from failure of earth or rock under shear stress along one or several surfaces.

Slope

The inclination of the land surface from the horizontal. Percentage of slope is the vertical distance divided by horizontal distance, then multiplied by 100. Thus, a slope of 20 percent is a drop of 20 feet in 100 feet of horizontal distance.

Slope alluvium

Sediment gradually transported down the slopes of mountains or hills primarily by nonchannel alluvial processes (i.e., slope-wash processes) and characterized by particle sorting. Lateral particle sorting is evident on long slopes. In a profile sequence, sediments may be distinguished by differences in size and/or specific gravity of rock fragments and may be separated by stone lines. Burnished peds

and sorting of rounded or subrounded pebbles or cobbles distinguish these materials from unsorted colluvial deposits.

Slow refill

The slow filling of ponds, resulting from restricted water transmission in the soil.

Slow water movement

Restricted downward movement of water through the soil. See Saturated hydraulic conductivity.

Sodic (alkali) soil

A soil having so high a degree of alkalinity (pH 8.5 or higher) or so high a percentage of exchangeable sodium (15 percent or more of the total exchangeable bases), or both, that plant growth is restricted.

Sodic spot (map symbol)

An area where the surface layer has a sodium adsorption ratio that is at least 10 more than that of the surface layer of the named soils in the surrounding map unit. The surface layer of the surrounding soils has a sodium adsorption ratio of 5 or less.

Sodicity

The degree to which a soil is affected by exchangeable sodium. Sodicity is expressed as a sodium adsorption ratio (SAR) of a saturation extract, or the ratio of Na^{+} to Ca^{++} + Mg^{++}. The degrees of sodicity and their respective ratios are:

Slight: Less than 13:1

Moderate: 13-30:1

Strong: More than 30:1

Sodium adsorption ratio (SAR)

A measure of the amount of sodium (Na) relative to calcium (Ca) and magnesium (Mg) in the water extract from saturated soil paste. It is the ratio of the Na concentration divided by the square root of one-half of the Ca + Mg concentration.

Soft bedrock

Bedrock that can be excavated with trenching machines, backhoes, small rippers, and other equipment commonly used in construction.

Soil

A natural, three-dimensional body at the earth's surface. It is capable of supporting plants and has properties resulting from the integrated effect of climate and living matter acting on earthy parent material, as conditioned by relief and by the passage of time.

Soil separates

Mineral particles less than 2 millimeters in equivalent diameter and ranging between specified size limits. The names and sizes, in millimeters, of separates recognized in the United States are as follows:

Very coarse sand: 2.0 to 1.0
Coarse sand: 1.0 to 0.5
Medium sand: 0.5 to 0.25
Fine sand: 0.25 to 0.10
Very fine sand: 0.10 to 0.05
Silt: 0.05 to 0.002
Clay: Less than 0.002

Solum

The upper part of a soil profile, above the C horizon, in which the processes of soil formation are active. The solum in soil consists of the A, E, and B horizons. Generally, the characteristics of the material in these horizons are unlike those of the material below the solum. The living roots and plant and animal activities are largely confined to the solum.

Spoil area (map symbol)

A pile of earthy materials, either smoothed or uneven, resulting from human activity.

Stone line

In a vertical cross section, a line formed by scattered fragments or a discrete layer of angular and subangular rock fragments (commonly a gravel- or cobble-sized lag concentration) that formerly was draped across a topographic surface and was later buried by additional sediments. A stone line generally caps material that was subject to weathering, soil formation, and erosion before burial. Many stone lines seem to be buried erosion pavements, originally formed by sheet and rill erosion across the land surface.

Stones

Rock fragments 10 to 24 inches (25 to 60 centimeters) in diameter if rounded or 15 to 24 inches (38 to 60 centimeters) in length if flat.

Stony

Refers to a soil containing stones in numbers that interfere with or prevent tillage.

Stony spot (map symbol)

A spot where 0.01 to 0.1 percent of the soil surface is covered by rock fragments that are more than 10 inches in diameter in areas where the surrounding soil has no surface stones.

Strath terrace

A type of stream terrace; formed as an erosional surface cut on bedrock and thinly mantled with stream deposits (alluvium).

Stream terrace

One of a series of platforms in a stream valley, flanking and more or less parallel to the stream channel, originally formed near the level of the stream; represents

the remnants of an abandoned flood plain, stream bed, or valley floor produced during a former state of fluvial erosion or deposition.

Stripcropping

Growing crops in a systematic arrangement of strips or bands that provide vegetative barriers to wind erosion and water erosion.

Structure, soil

The arrangement of primary soil particles into compound particles or aggregates. The principal forms of soil structure are:

Platy: Flat and laminated

Prismatic: Vertically elongated and having flat tops

Columnar: Vertically elongated and having rounded tops

Angular blocky: Having faces that intersect at sharp angles (planes)

Subangular blocky: Having subrounded and planar faces (no sharp angles)

Granular: Small structural units with curved or very irregular faces

Structureless soil horizons are defined as follows:

Single grained: Entirely noncoherent (each grain by itself), as in loose sand

Massive: Occurring as a coherent mass

Stubble mulch

Stubble or other crop residue left on the soil or partly worked into the soil. It protects the soil from wind erosion and water erosion after harvest, during preparation of a seedbed for the next crop, and during the early growing period of the new crop.

Subsoil

Technically, the B horizon; roughly, the part of the solum below plow depth.

Subsoiling

Tilling a soil below normal plow depth, ordinarily to shatter a hardpan or claypan.

Substratum

The part of the soil below the solum.

Subsurface layer

Any surface soil horizon (A, E, AB, or EB) below the surface layer.

Summer fallow

The tillage of uncropped land during the summer to control weeds and allow storage of moisture in the soil for the growth of a later crop. A practice common in semiarid regions, where annual precipitation is not enough to produce a crop every year. Summer fallow is frequently practiced before planting winter grain.

Summit

The topographically highest position of a hillslope. It has a nearly level (planar or only slightly convex) surface.

Surface layer

The soil ordinarily moved in tillage, or its equivalent in uncultivated soil, ranging in depth from 4 to 10 inches (10 to 25 centimeters). Frequently designated as the “plow layer,” or the “Ap horizon.”

Surface soil

The A, E, AB, and EB horizons, considered collectively. It includes all subdivisions of these horizons.

Talus

Rock fragments of any size or shape (commonly coarse and angular) derived from and lying at the base of a cliff or very steep rock slope. The accumulated mass of such loose broken rock formed chiefly by falling, rolling, or sliding.

Taxadjuncts

Soils that cannot be classified in a series recognized in the classification system. Such soils are named for a series they strongly resemble and are designated as taxadjuncts to that series because they differ in ways too small to be of consequence in interpreting their use and behavior. Soils are recognized as taxadjuncts only when one or more of their characteristics are slightly outside the range defined for the family of the series for which the soils are named.

Terminal moraine

An end moraine that marks the farthest advance of a glacier. It typically has the form of a massive arcuate or concentric ridge, or complex of ridges, and is underlain by till and other types of drift.

Terrace (conservation)

An embankment, or ridge, constructed across sloping soils on the contour or at a slight angle to the contour. The terrace intercepts surface runoff so that water soaks into the soil or flows slowly to a prepared outlet. A terrace in a field generally is built so that the field can be farmed. A terrace intended mainly for drainage has a deep channel that is maintained in permanent sod.

Terrace (geomorphology)

A steplike surface, bordering a valley floor or shoreline, that represents the former position of a flood plain, lake, or seashore. The term is usually applied both to the relatively flat summit surface (tread) that was cut or built by stream or wave action and to the steeper descending slope (scarp or riser) that has graded to a lower base level of erosion.

Terracettes

Small, irregular steplike forms on steep hillslopes, especially in pasture, formed by creep or erosion of surficial materials that may be induced or enhanced by trampling of livestock, such as sheep or cattle.

Texture, soil

The relative proportions of sand, silt, and clay particles in a mass of soil. The basic textural classes, in order of increasing proportion of fine particles, are *sand, loamy sand, sandy loam, loam, silt loam, silt, sandy clay loam, clay loam, silty clay loam, sandy clay, silty clay,* and *clay*. The sand, loamy sand, and sandy loam classes may be further divided by specifying “coarse,”“fine,” or “very fine.”

Thin layer

Otherwise suitable soil material that is too thin for the specified use.

Till

Dominantly unsorted and nonstratified drift, generally unconsolidated and deposited directly by a glacier without subsequent reworking by meltwater, and consisting of a heterogeneous mixture of clay, silt, sand, gravel, stones, and boulders; rock fragments of various lithologies are embedded within a finer matrix that can range from clay to sandy loam.

Till plain

An extensive area of level to gently undulating soils underlain predominantly by till and bounded at the distal end by subordinate recessional or end moraines.

Tilth, soil

The physical condition of the soil as related to tillage, seedbed preparation, seedling emergence, and root penetration.

Toeslope

The gently inclined surface at the base of a hillslope. Toeslopes in profile are commonly gentle and linear and are constructional surfaces forming the lower part of a hillslope continuum that grades to valley or closed-depression floors.

Topsoil

The upper part of the soil, which is the most favorable material for plant growth. It is ordinarily rich in organic matter and is used to topdress roadbanks, lawns, and land affected by mining.

Trace elements

Chemical elements, for example, zinc, cobalt, manganese, copper, and iron, in soils in extremely small amounts. They are essential to plant growth.

Tread

The flat to gently sloping, topmost, laterally extensive slope of terraces, flood-plain steps, or other stepped landforms; commonly a recurring part of a series of natural steplike landforms, such as successive stream terraces.

Tuff

A generic term for any consolidated or cemented deposit that is 50 percent or more volcanic ash.

Upland

An informal, general term for the higher ground of a region, in contrast with a low-lying adjacent area, such as a valley or plain, or for land at a higher elevation than the flood plain or low stream terrace; land above the footslope zone of the hillslope continuum.

Valley fill

The unconsolidated sediment deposited by any agent (water, wind, ice, or mass wasting) so as to fill or partly fill a valley.

Variegation

Refers to patterns of contrasting colors assumed to be inherited from the parent material rather than to be the result of poor drainage.

Varve

A sedimentary layer or a lamina or sequence of laminae deposited in a body of still water within a year. Specifically, a thin pair of graded glaciolacustrine layers seasonally deposited, usually by meltwater streams, in a glacial lake or other body of still water in front of a glacier.

Very stony spot (map symbol)

A spot where 0.1 to 3.0 percent of the soil surface is covered by rock fragments that are more than 10 inches in diameter in areas where the surface of the surrounding soil is covered by less than 0.01 percent stones.

Water bars

Smooth, shallow ditches or depressional areas that are excavated at an angle across a sloping road. They are used to reduce the downward velocity of water and divert it off and away from the road surface. Water bars can easily be driven over if constructed properly.

Weathering

All physical disintegration, chemical decomposition, and biologically induced changes in rocks or other deposits at or near the earth's surface by atmospheric or biologic agents or by circulating surface waters but involving essentially no transport of the altered material.

Well graded

Refers to soil material consisting of coarse grained particles that are well distributed over a wide range in size or diameter. Such soil normally can be easily increased in density and bearing properties by compaction. Contrasts with poorly graded soil.

Wet spot (map symbol)

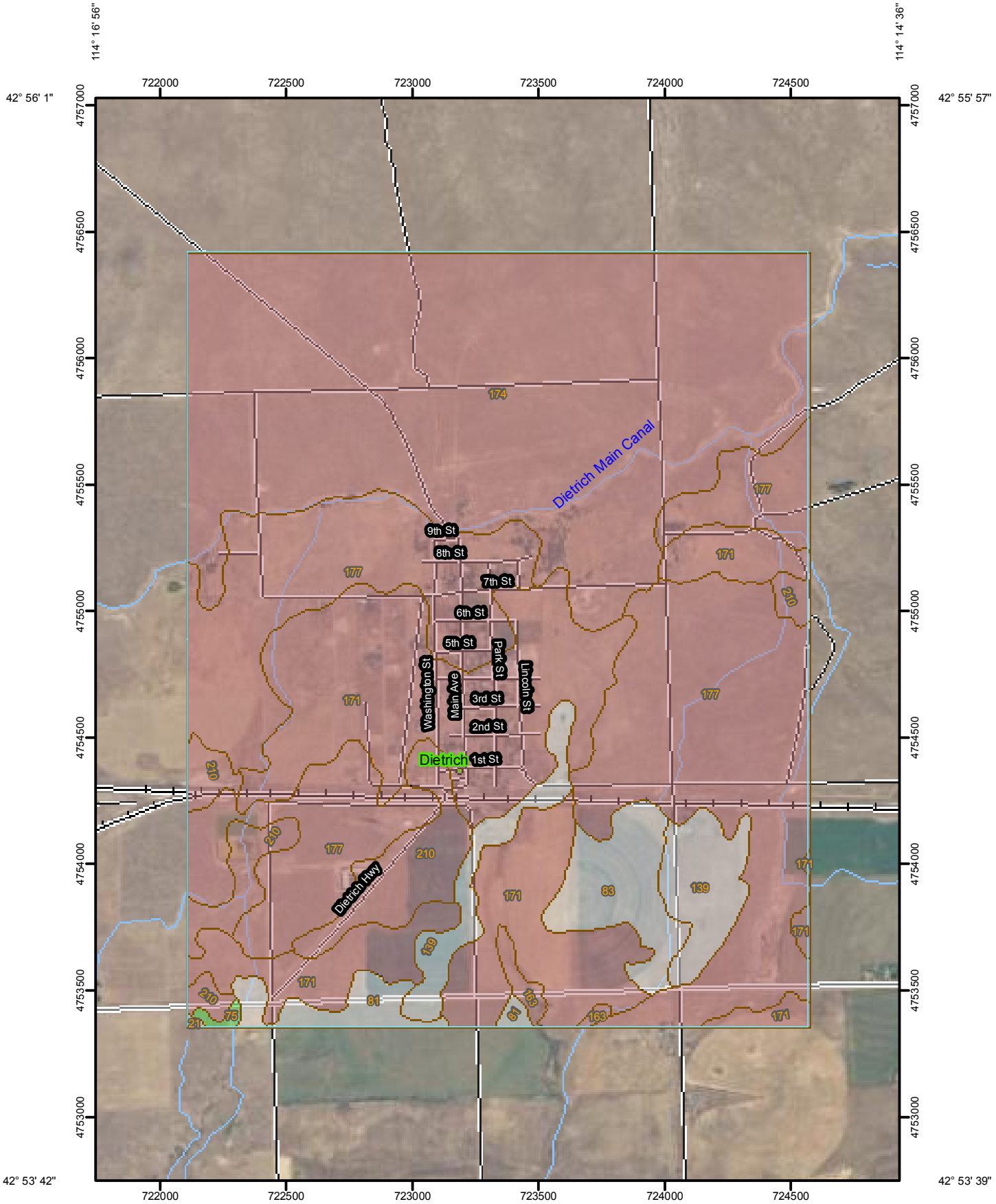
A somewhat poorly drained to very poorly drained area that is at least two drainage classes wetter than the named soils in the surrounding map unit.

Wilting point (or permanent wilting point)

The moisture content of soil, on an ovendry basis, at which a plant (specifically a sunflower) wilts so much that it does not recover when placed in a humid, dark chamber.

Windthrow

The uprooting and tipping over of trees by the wind.



Map Scale: 1:20,400 if printed on A size (8.5" x 11") sheet.

N

Meters
0 150 300 600 900

Feet
0 500 1,000 2,000 3,000

MAP LEGEND

Area of Interest (AOI)

Area of Interest (AOI)

Soils

Soil Map Units

Soil Ratings

R011XY001ID — LOAMY 8-12 ARTRW8/PSSPS-ACTH7

R011XY015ID — LOAMY BOTTOM 8-14 ARTRT/LECI4

Not rated or not available

Political Features

Cities

Water Features

Oceans

Streams and Canals

Transportation

Rails

Interstate Highways

US Routes

Major Roads

Local Roads

MAP INFORMATION

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The soil surveys that comprise your AOI were mapped at 1:24,000.

Please rely on the bar scale on each map sheet for accurate map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL: http://websoilsurvey.nrcs.usda.gov
Coordinate System: UTM Zone 11N NAD83

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Wood River Area, Idaho, Gooding County and Parts of Blaine, Lincoln, and Minidoka Counties
Survey Area Data: Version 9, Aug 26, 2010

Date(s) aerial images were photographed: 9/9/2004

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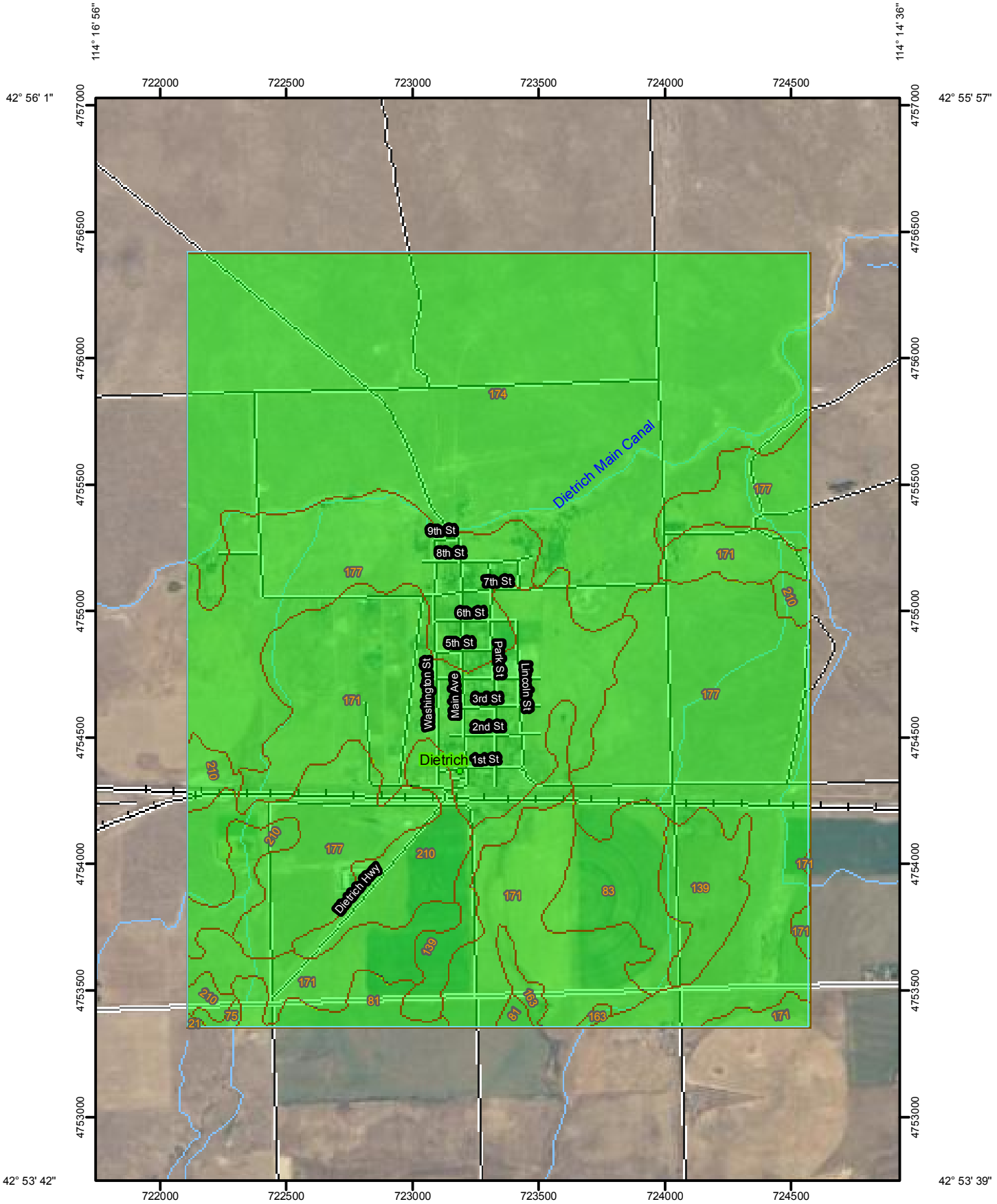
All Ecological Sites — Rangeland

Wood River Area, Idaho, Gooding County and Parts of Blaine, Lincoln, and Minidoka Counties				
Map unit symbol	**Component name (percent)**	**Ecological site**	**Acres in AOI**	**Percent of AOI**
21	Bruncan (80%)		0.6	0.0%
75	Haploxerolls (50%)	R011XY015ID — LOAMY BOTTOM 8-14 ARTRT/LECI4	2.5	0.1%
	Camborthids (20%)	R011AY003ID — SHALLOW LOAMY 8-12 ARTRT/PSSPS		
	Aquolls (15%)			
	Rock outcrop (15%)			
81	Hoosegow (85%)		27.4	1.5%
83	Idow (45%)		53.7	2.9%
	Ackelton (40%)			
139	Paulville (90%)		75.7	4.1%
163	Sidlake (45%)	R011XY001ID — LOAMY 8-12 ARTRW8/PSSPS-ACTH7	8.8	0.5%
	Banbury (35%)	R011AY003ID — SHALLOW LOAMY 8-12 ARTRT/PSSPS		
171	Snowmore (40%)	R011XY001ID — LOAMY 8-12 ARTRW8/PSSPS-ACTH7	392.5	21.1%
	Besslen (35%)	R011XY001ID — LOAMY 8-12 ARTRW8/PSSPS-ACTH7		
	Hoosegow (15%)	R011XY015ID — LOAMY BOTTOM 8-14 ARTRT/LECI4		
174	Snowmore (35%)	R011XY001ID — LOAMY 8-12 ARTRW8/PSSPS-ACTH7	650.4	34.9%
	Minveno (25%)	R011XY001ID — LOAMY 8-12 ARTRW8/PSSPS-ACTH7		
	Hoosegow (20%)	R011XY015ID — LOAMY BOTTOM 8-14 ARTRT/LECI4		
177	Snowmore (50%)	R011XY001ID — LOAMY 8-12 ARTRW8/PSSPS-ACTH7	560.5	30.1%
	Wako (20%)	R011XY001ID — LOAMY 8-12 ARTRW8/PSSPS-ACTH7		
	Harsan (15%)	R011AY009ID — LOAMY 8-12 ARTRT/PSSPS		
210	Wako (45%)	R011XY001ID — LOAMY 8-12 ARTRW8/PSSPS-ACTH7	89.7	4.8%
	Harsan (35%)	R011AY009ID — LOAMY 8-12 ARTRT/PSSPS		
Totals for Area of Interest			**1,861.8**	**100.0%**



Map Scale: 1:20,400 if printed on A size (8.5" x 11") sheet.

N

Meters: 0 150 300 600 900

Feet: 0 500 1,000 2,000 3,000

MAP LEGEND

Area of Interest (AOI)

Area of Interest (AOI)

Soils

Soil Map Units

Soil Ratings

High

Moderate

Low

Not rated or not available

Political Features

Cities

Water Features

Oceans

Streams and Canals

Transportation

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Major Roads

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Corrosion of Concrete

Corrosion of Concrete— Summary by Map Unit — Wood River Area, Idaho, Gooding County and Parts of Blaine, Lincoln, and Minidoka Counties				
Map unit symbol	**Map unit name**	**Rating**	**Acres in AOI**	**Percent of AOI**
21	Bruncan silt loam, 1 to 4 percent slopes	Low	0.6	0.0%
75	Haploxerolls-Camborthids-Rock outcrop complex, 1 to 3 percent slopes	Low	2.5	0.1%
81	Hoosegow sandy loam, 0 to 3 percent slopes	Low	27.4	1.5%
83	Idow-Ackelton complex, 1 to 4 percent slopes	Low	53.7	2.9%
139	Paulville loam, 0 to 2 percent slopes	Low	75.7	4.1%
163	Sidlake-Banbury complex, 2 to 4 percent slopes	Low	8.8	0.5%
171	Snowmore-Besslen-Hoosegow complex, 1 to 4 percent slopes	Low	392.5	21.1%
174	Snowmore-Minveno-Hoosegow complex, 2 to 10 percent slopes	Low	650.4	34.9%
177	Snowmore-Wako-Harsan complex, 1 to 4 percent slopes	Low	560.5	30.1%
210	Wako-Harsan complex, 0 to 4 percent slopes	Low	89.7	4.8%
Totals for Area of Interest			**1,861.8**	**100.0%**

Description

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

The risk of corrosion is expressed as "low," "moderate," or "high."

Rating Options

Aggregation Method: Dominant Condition

Aggregation is the process by which a set of component attribute values is reduced to a single value that represents the map unit as a whole.

A map unit is typically composed of one or more "components". A component is either some type of soil or some nonsoil entity, e.g., rock outcrop. For the attribute being aggregated, the first step of the aggregation process is to derive one attribute value for each of a map unit's components. From this set of component attributes, the next step of the aggregation process derives a single value that represents the map unit as a whole. Once a single value for each map unit is derived, a thematic map for soil map units can be rendered. Aggregation must be done because, on any soil map, map units are delineated but components are not.

For each of a map unit's components, a corresponding percent composition is recorded. A percent composition of 60 indicates that the corresponding component typically makes up approximately 60% of the map unit. Percent composition is a critical factor in some, but not all, aggregation methods.

The aggregation method "Dominant Condition" first groups like attribute values for the components in a map unit. For each group, percent composition is set to the sum of the percent composition of all components participating in that group. These groups now represent "conditions" rather than components. The attribute value associated with the group with the highest cumulative percent composition is returned. If more than one group shares the highest cumulative percent composition, the corresponding "tie-break" rule determines which value should be returned. The "tie-break" rule indicates whether the lower or higher group value should be returned in the case of a percent composition tie.

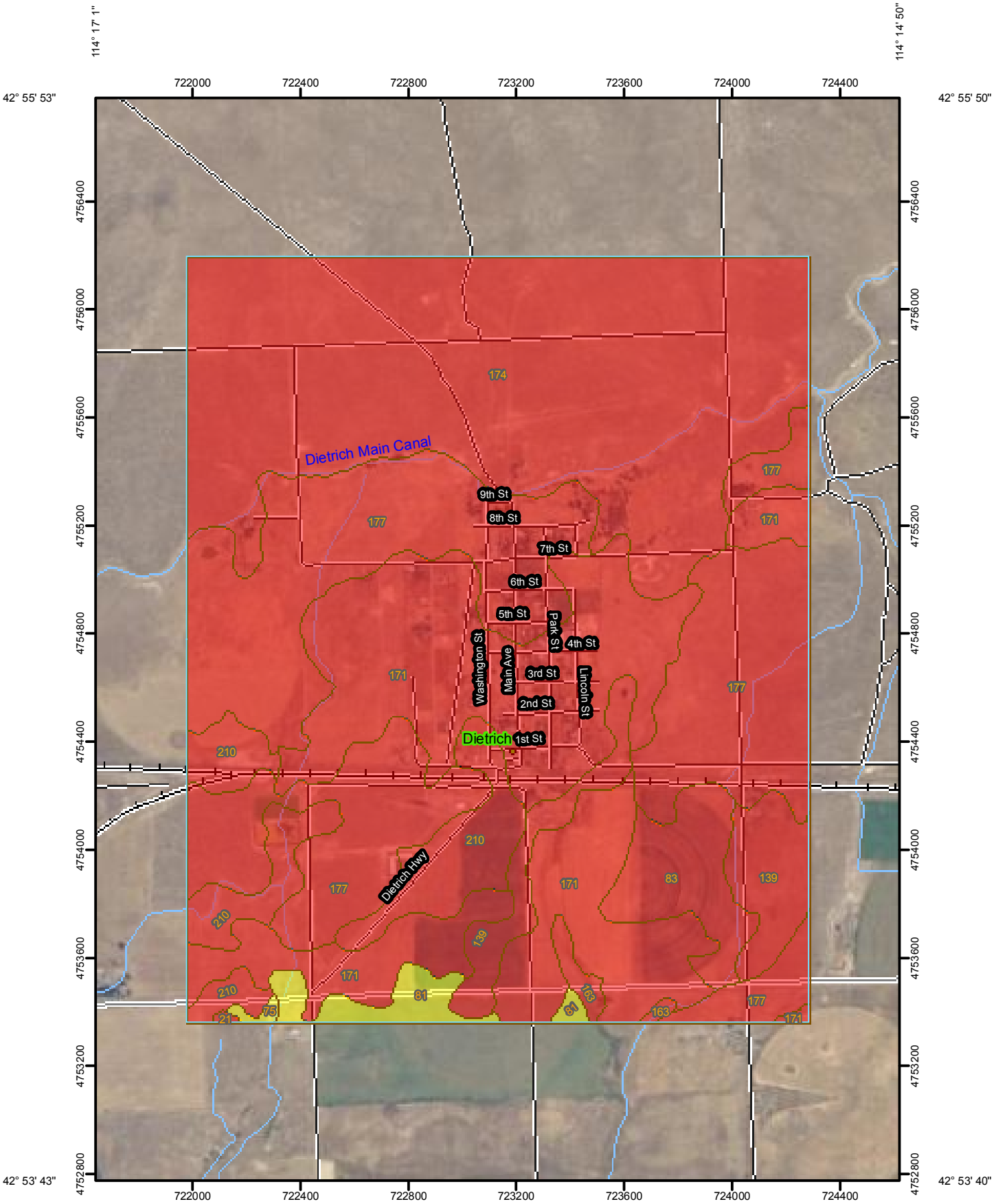
The result returned by this aggregation method represents the dominant condition throughout the map unit only when no tie has occurred.

Component Percent Cutoff: None Specified

Components whose percent composition is below the cutoff value will not be considered. If no cutoff value is specified, all components in the database will be considered. The data for some contrasting soils of minor extent may not be in the database, and therefore are not considered.

Tie-break Rule: Higher

The tie-break rule indicates which value should be selected from a set of multiple candidate values, or which value should be selected in the event of a percent composition tie.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114° 14' 50"
42° 55' 53"
42° 55' 50"
42° 53' 43"
42° 53' 40"
114° 17' 7"
114° 14' 56"
722000
722400
722800
723200
723600
724000
724400
4756400
4756000
4755600
4755200
4754800
4754400
4754000
4753600
4753200
4752800
Dietrich Main Canal
9th St
8th St
7th St
6th St
5th St
4th St
3rd St
2nd St
1st St
Washington St
Main Ave
Park St
Lincoln St
Dietrich
Dietrich Hwy
174
177
171
210
83
139
81
75
21
64
163
Map Scale: 1:19,100 if printed on A size (8.5" x 11") sheet.
Meters
0 150 300 600 900
Feet
0 500 1,000 2,000 3,000
N

MAP LEGEND

Area of Interest (AOI)

Area of Interest (AOI)

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Soil Map Units

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Date(s) aerial images were photographed: 9/9/2004

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Corrosion of Steel

Corrosion of Steel— Summary by Map Unit — Wood River Area, Idaho, Gooding County and Parts of Blaine, Lincoln, and Minidoka Counties				
Map unit symbol	**Map unit name**	**Rating**	**Acres in AOI**	**Percent of AOI**
21	Bruncan silt loam, 1 to 4 percent slopes	High	0.8	0.1%
75	Haploxerolls-Camborthids-Rock outcrop complex, 1 to 3 percent slopes	Moderate	2.4	0.1%
81	Hoosegow sandy loam, 0 to 3 percent slopes	Moderate	26.2	1.6%
83	Idow-Ackelton complex, 1 to 4 percent slopes	High	53.7	3.3%
139	Paulville loam, 0 to 2 percent slopes	High	72.2	4.5%
163	Sidlake-Banbury complex, 2 to 4 percent slopes	High	8.6	0.5%
171	Snowmore-Besslen-Hoosegow complex, 1 to 4 percent slopes	High	375.4	23.3%
174	Snowmore-Minveno-Hoosegow complex, 2 to 10 percent slopes	High	508.9	31.5%
177	Snowmore-Wako-Harsan complex, 1 to 4 percent slopes	High	464.3	28.8%
210	Wako-Harsan complex, 0 to 4 percent slopes	High	101.1	6.3%
Totals for Area of Interest			**1,613.5**	**100.0%**

Description

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

The risk of corrosion is expressed as "low," "moderate," or "high."

Rating Options

Aggregation Method: Dominant Condition

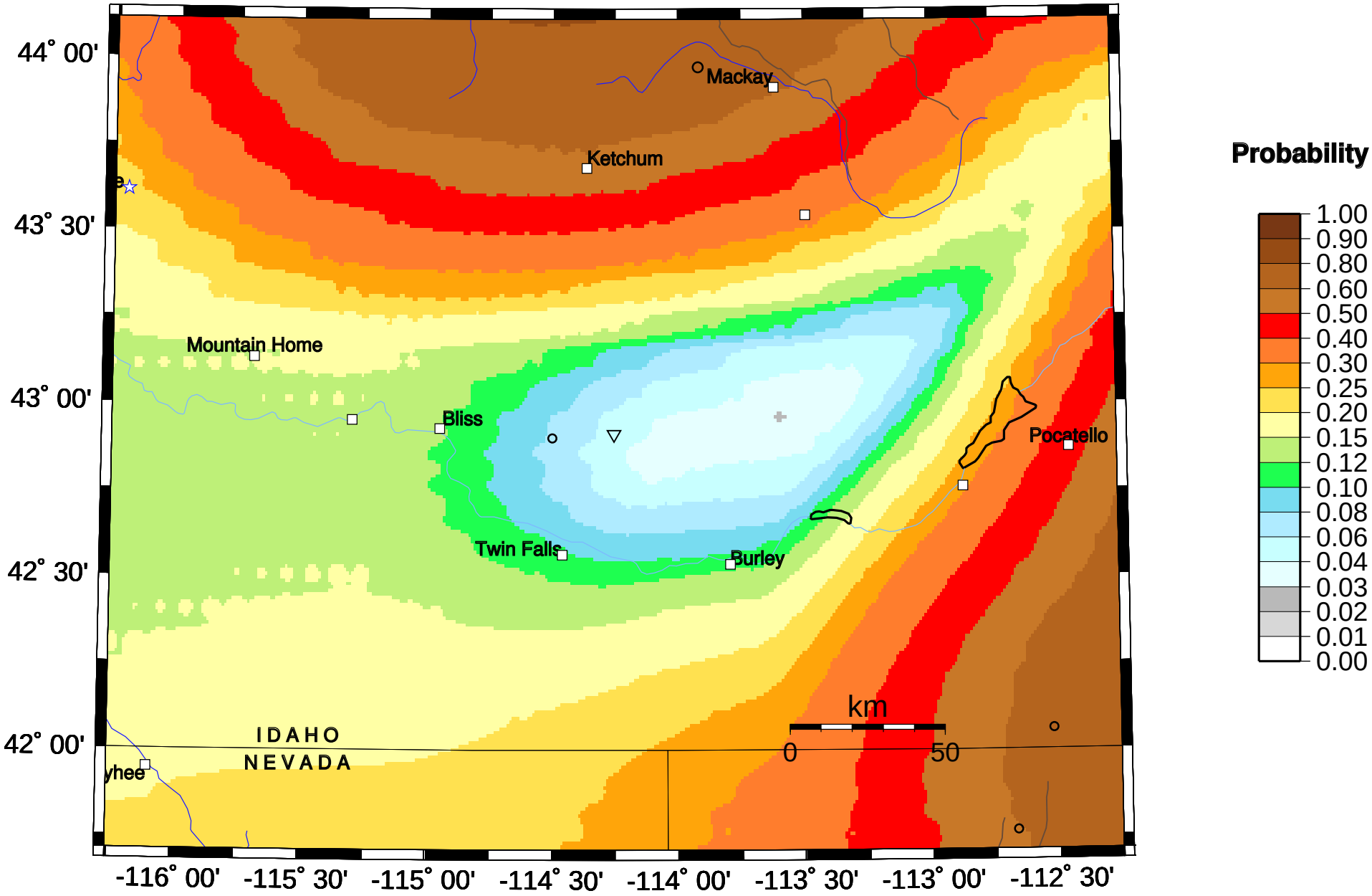
Component Percent Cutoff: *None Specified*

Tie-break Rule: Higher

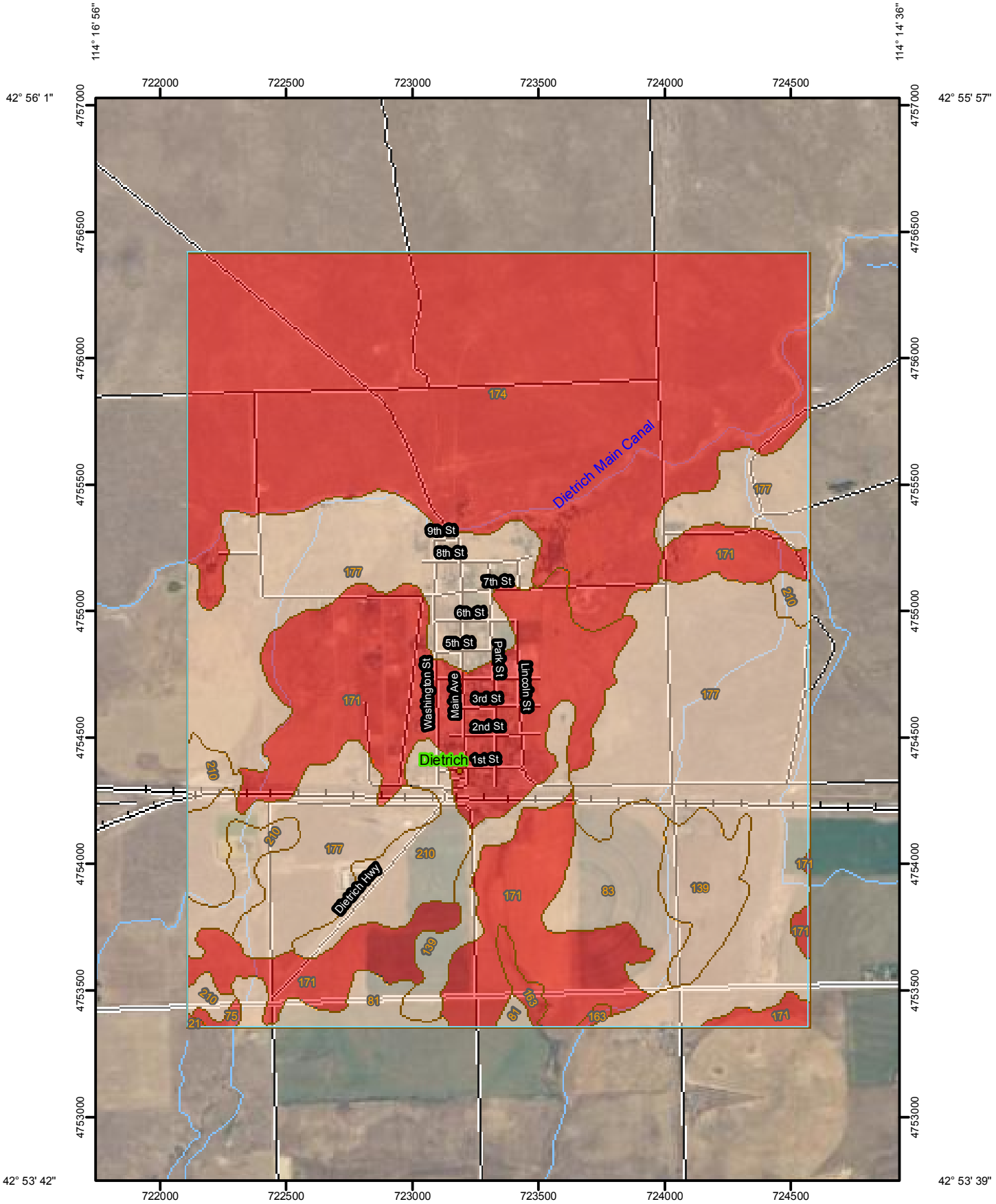
Probability of earthquake with M > 5.0 within 50 years & 50 km

U.S. Geological Survey 2009 PSHA Model

Site: DIETRICH ID . .



GMT 2010 Dec 10 23:55:16 **EQ probabilities from USGS OFR 08-1128 PSHA. 50 km maximum horizontal distance. Site of interest: triangle. Fault traces are brown; rivers blue. Epicenters M>=6.0 circles.**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4754000
4753500
4753000
Dietrich Main Canal
9th St
8th St
7th St
6th St
5th St
Park St
Washington St
Main Ave
Lincoln St
3rd St
2nd St
1st St
Dietrich
Dietrich Hwy
174
177
171
210
83
139
81
163
75
21
N
Map Scale: 1:20,400 if printed on A size (8.5" x 11") sheet.
Meters
0 150 300 600 900
Feet
0 500 1,000 2,000 3,000

MAP LEGEND

Area of Interest (AOI)

- Area of Interest (AOI)

Soils

- Soil Map Units

Soil Ratings

- Not prime farmland
- All areas are prime farmland
- Prime farmland if drained
- Prime farmland if protected from flooding or not frequently flooded during the growing season
- Prime farmland if irrigated
- Prime farmland if drained and either protected from flooding or not frequently flooded during the growing season
- Prime farmland if irrigated and drained
- Prime farmland if irrigated and either protected from flooding or not frequently flooded during the growing season
- Prime farmland if subsoiled, completely removing the root inhibiting soil layer
- Prime farmland if irrigated and the product of I (soil erodibility) x C (climate factor) does not exceed 60
- Prime farmland if irrigated and reclaimed of excess salts and sodium
- Farmland of statewide importance
- Farmland of local importance
- Farmland of unique importance
- Not rated or not available

Political Features

- Cities

Water Features

- Oceans
- Streams and Canals

Transportation

- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

MAP INFORMATION

Map Scale: 1:20,400 if printed on A size (8.5" × 11") sheet.

The soil surveys that comprise your AOI were mapped at 1:24,000.

Please rely on the bar scale on each map sheet for accurate map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL: http://websoilsurvey.nrcs.usda.gov
Coordinate System: UTM Zone 11N NAD83

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Wood River Area, Idaho, Gooding County and Parts of Blaine, Lincoln, and Minidoka Counties
Survey Area Data: Version 9, Aug 26, 2010

Date(s) aerial images were photographed: 9/9/2004

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Farmland Classification

Farmland Classification— Summary by Map Unit — Wood River Area, Idaho, Gooding County and Parts of Blaine, Lincoln, and Minidoka Counties				
Map unit symbol	**Map unit name**	**Rating**	**Acres in AOI**	**Percent of AOI**
21	Bruncan silt loam, 1 to 4 percent slopes	Not prime farmland	0.6	0.0%
75	Haploxerolls-Camborthids-Rock outcrop complex, 1 to 3 percent slopes	Not prime farmland	2.5	0.1%
81	Hoosegow sandy loam, 0 to 3 percent slopes	Prime farmland if irrigated	27.4	1.5%
83	Idow-Ackelton complex, 1 to 4 percent slopes	Prime farmland if irrigated	53.7	2.9%
139	Paulville loam, 0 to 2 percent slopes	Prime farmland if irrigated	75.7	4.1%
163	Sidlake-Banbury complex, 2 to 4 percent slopes	Not prime farmland	8.8	0.5%
171	Snowmore-Besslen-Hoosegow complex, 1 to 4 percent slopes	Not prime farmland	392.5	21.1%
174	Snowmore-Minveno-Hoosegow complex, 2 to 10 percent slopes	Not prime farmland	650.4	34.9%
177	Snowmore-Wako-Harsan complex, 1 to 4 percent slopes	Prime farmland if irrigated	560.5	30.1%
210	Wako-Harsan complex, 0 to 4 percent slopes	Prime farmland if irrigated	89.7	4.8%
Totals for Area of Interest			**1,861.8**	**100.0%**

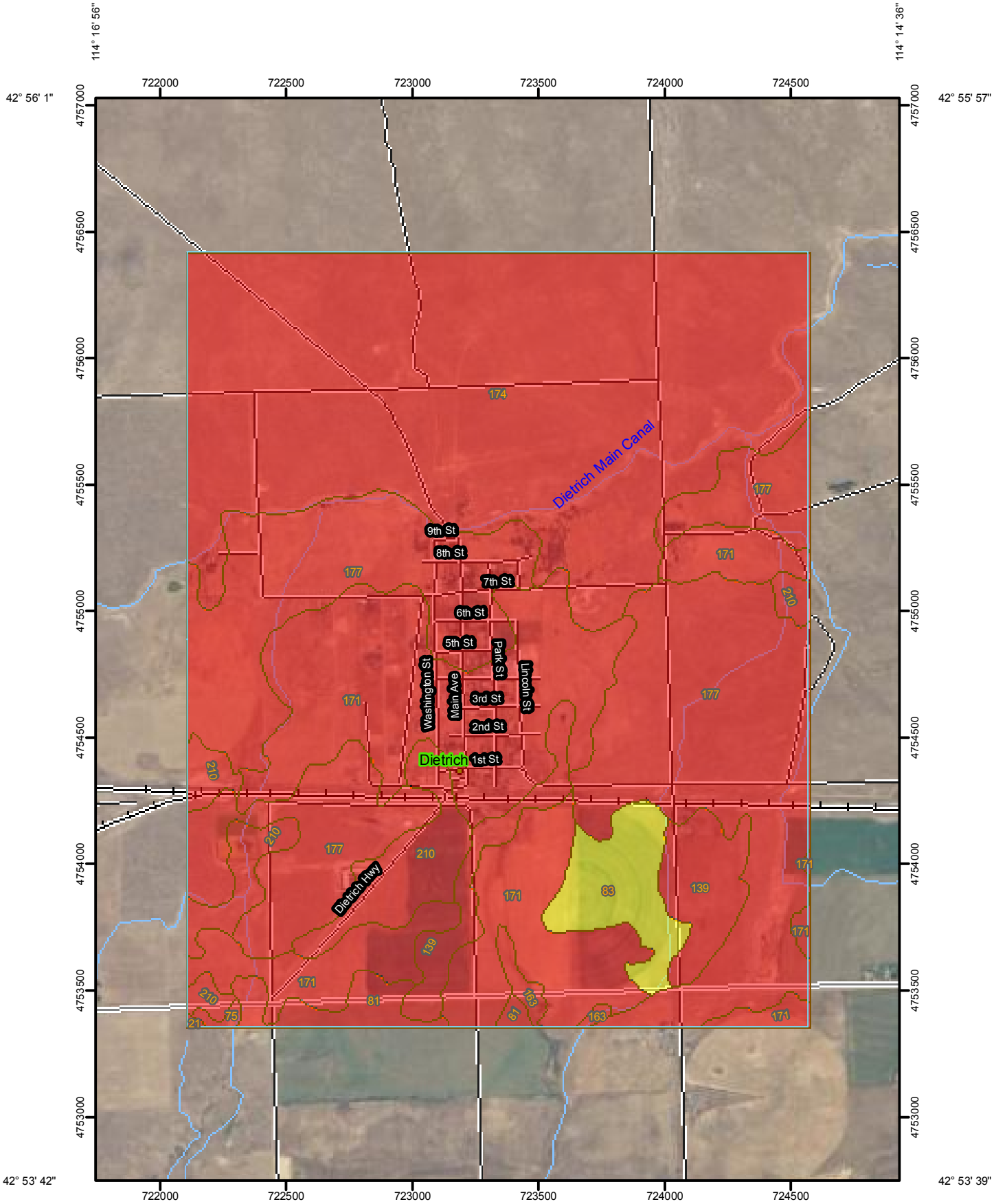
Description

Farmland classification identifies map units as prime farmland, farmland of statewide importance, farmland of local importance, or unique farmland. It identifies the location and extent of the soils that are best suited to food, feed, fiber, forage, and oilseed crops. NRCS policy and procedures on prime and unique farmlands are published in the "Federal Register," Vol. 43, No. 21, January 31, 1978.

Rating Options

Aggregation Method: No Aggregation Necessary

Tie-break Rule: Lower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4754000
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4753000
Dietrich Main Canal
9th St
8th St
7th St
6th St
5th St
Park St
Lincoln St
Washington St
Main Ave
3rd St
2nd St
1st St
Dietrich
Dietrich Hwy
174
177
171
210
83
139
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75
21
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Map Scale: 1:20,400 if printed on A size (8.5" x 11") sheet.
Meters
0 150 300 600 900
Feet
0 500 1,000 2,000 3,000

MAP LEGEND

Area of Interest (AOI)

Area of Interest (AOI)

Soils

Soil Map Units

Soil Ratings

Very limited

Somewhat limited

Not limited

Not rated or not available

Political Features

Cities

Water Features

Oceans

Streams and Canals

Transportation

Rails

Interstate Highways

US Routes

Major Roads

Local Roads

MAP INFORMATION

Map Scale: 1:20,400 if printed on A size (8.5" × 11") sheet.

The soil surveys that comprise your AOI were mapped at 1:24,000.

Please rely on the bar scale on each map sheet for accurate map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL: http://websoilsurvey.nrcs.usda.gov
Coordinate System: UTM Zone 11N NAD83

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Wood River Area, Idaho, Gooding County and Parts of Blaine, Lincoln, and Minidoka Counties
Survey Area Data: Version 9, Aug 26, 2010

Date(s) aerial images were photographed: 9/9/2004

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Shallow Excavations

Shallow Excavations— Summary by Map Unit — Wood River Area, Idaho, Gooding County and Parts of Blaine, Lincoln, and Minidoka Counties						
Map unit symbol	**Map unit name**	**Rating**	**Component name (percent)**	**Rating reasons (numeric values)**	**Acres in AOI**	**Percent of AOI**
21	Bruncan silt loam, 1 to 4 percent slopes	Very limited	Bruncan (80%)	Depth to hard bedrock (1.00)	0.6	0.0%
				Depth to thick cemented pan (1.00)		
75	Haploxerolls-Camborthids-Rock outcrop complex, 1 to 3 percent slopes	Very limited	Haploxerolls (50%)	Cutbanks cave (1.00)	2.5	0.1%
				Flooding (0.60)		
			Camborthids (20%)	Depth to hard bedrock (1.00)		
				Flooding (0.60)		
				Cutbanks cave (0.10)		
81	Hoosegow sandy loam, 0 to 3 percent slopes	Very limited	Hoosegow (85%)	Cutbanks cave (1.00)	27.4	1.5%
83	Idow-Ackelton complex, 1 to 4 percent slopes	Somewhat limited	Idow (45%)	Depth to hard bedrock (0.32)	53.7	2.9%
				Cutbanks cave (0.10)		
				Depth to thin cemented pan (0.10)		
139	Paulville loam, 0 to 2 percent slopes	Very limited	Paulville (90%)	Cutbanks cave (1.00)	75.7	4.1%
163	Sidlake-Banbury complex, 2 to 4 percent slopes	Very limited	Sidlake (45%)	Depth to hard bedrock (1.00)	8.8	0.5%
				Cutbanks cave (0.10)		
			Banbury (35%)	Depth to hard bedrock (1.00)		
				Cutbanks cave (0.10)		

Shallow Excavations— Summary by Map Unit — Wood River Area, Idaho, Gooding County and Parts of Blaine, Lincoln, and Minidoka Counties						
Map unit symbol	**Map unit name**	**Rating**	**Component name (percent)**	**Rating reasons (numeric values)**	**Acres in AOI**	**Percent of AOI**
171	Snowmore-Besslen-Hoosegow complex, 1 to 4 percent slopes	Very limited	Snowmore (40%)	Depth to hard bedrock (1.00)	392.5	21.1%
				Depth to thin cemented pan (0.79)		
				Cutbanks cave (0.10)		
			Besslen (35%)	Depth to hard bedrock (1.00)		
				Depth to thick cemented pan (1.00)		
174	Snowmore-Minveno-Hoosegow complex, 2 to 10 percent slopes	Very limited	Snowmore (35%)	Depth to hard bedrock (1.00)	650.4	34.9%
				Cutbanks cave (1.00)		
				Depth to thin cemented pan (0.97)		
			Minveno (25%)	Depth to hard bedrock (1.00)		
				Depth to thin cemented pan (1.00)		
177	Snowmore-Wako-Harsan complex, 1 to 4 percent slopes	Very limited	Snowmore (50%)	Depth to hard bedrock (1.00)	560.5	30.1%
				Cutbanks cave (1.00)		
				Depth to thin cemented pan (0.97)		
210	Wako-Harsan complex, 0 to 4 percent slopes	Very limited	Wako (45%)	Depth to thick cemented pan (1.00)	89.7	4.8%
				Depth to hard bedrock (0.32)		
				Cutbanks cave (0.10)		
Totals for Area of Interest					**1,861.8**	**100.0%**

Shallow Excavations— Summary by Rating Value		
Rating	**Acres in AOI**	**Percent of AOI**
Very limited	1,808.1	97.1%
Somewhat limited	53.7	2.9%
Totals for Area of Interest	**1,861.8**	**100.0%**

Description

Shallow excavations are trenches or holes dug to a maximum depth of 5 or 6 feet for graves, utility lines, open ditches, or other purposes. The ratings are based on the soil properties that influence the ease of digging and the resistance to sloughing. Depth to bedrock or a cemented pan, hardness of bedrock or a cemented pan, the amount of large stones, and dense layers influence the ease of digging, filling, and compacting. Depth to the seasonal high water table, flooding, and ponding may restrict the period when excavations can be made. Slope influences the ease of using machinery. Soil texture, depth to the water table, and linear extensibility (shrink-swell potential) influence the resistance to sloughing.

The ratings are both verbal and numerical. Rating class terms indicate the extent to which the soils are limited by all of the soil features that affect the specified use. "Not limited" indicates that the soil has features that are very favorable for the specified use. Good performance and very low maintenance can be expected. "Somewhat limited" indicates that the soil has features that are moderately favorable for the specified use. The limitations can be overcome or minimized by special planning, design, or installation. Fair performance and moderate maintenance can be expected. "Very limited" indicates that the soil has one or more features that are unfavorable for the specified use. The limitations generally cannot be overcome without major soil reclamation, special design, or expensive installation procedures. Poor performance and high maintenance can be expected.

Numerical ratings indicate the severity of individual limitations. The ratings are shown as decimal fractions ranging from 0.01 to 1.00. They indicate gradations between the point at which a soil feature has the greatest negative impact on the use (1.00) and the point at which the soil feature is not a limitation (0.00).

The map unit components listed for each map unit in the accompanying Summary by Map Unit table in Web Soil Survey or the Aggregation Report in Soil Data Viewer are determined by the aggregation method chosen. An aggregated rating class is shown for each map unit. The components listed for each map unit are only those that have the same rating class as listed for the map unit. The percent composition of each component in a particular map unit is presented to help the user better understand the percentage of each map unit that has the rating presented.

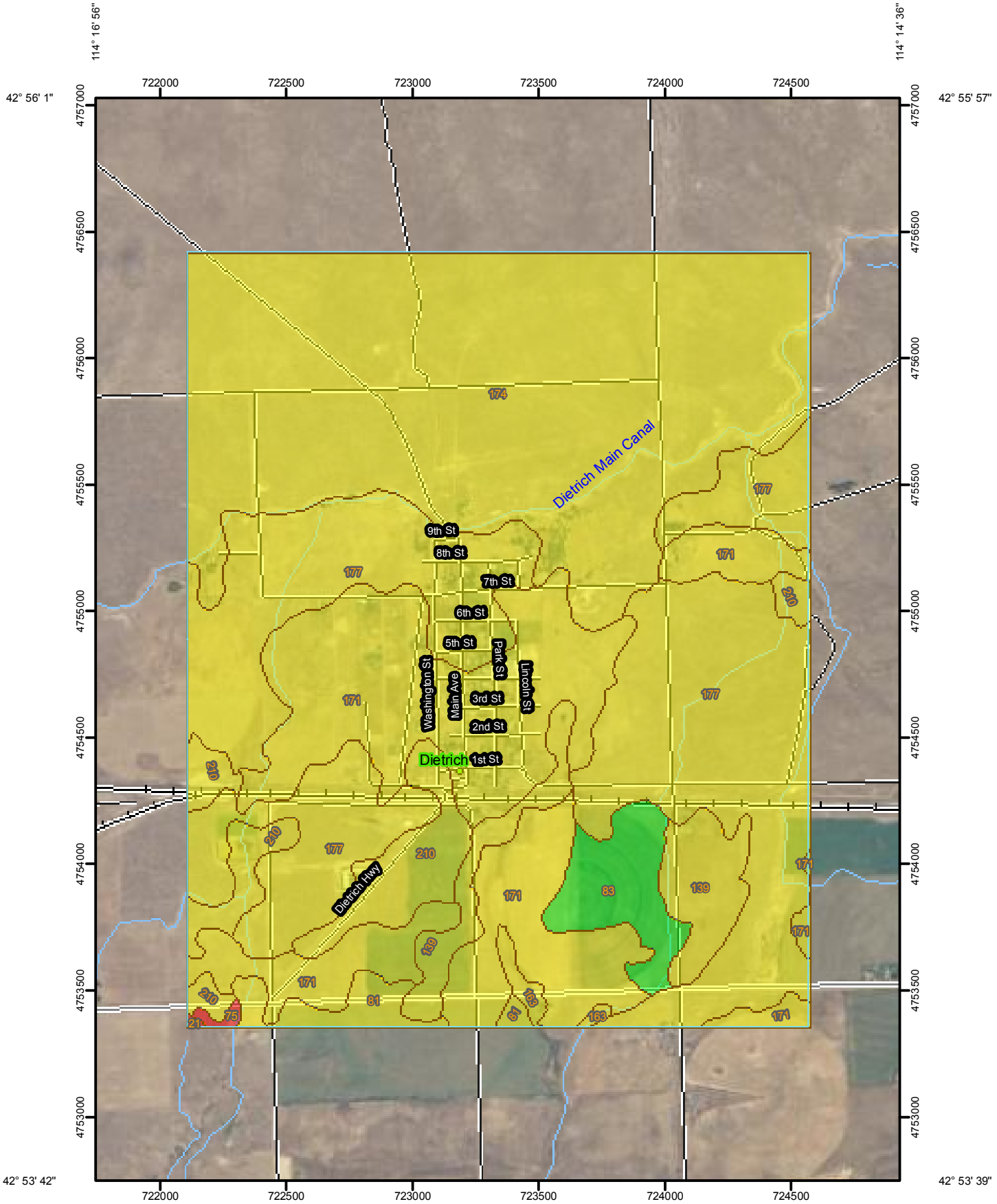
Other components with different ratings may be present in each map unit. The ratings for all components, regardless of the map unit aggregated rating, can be viewed by generating the equivalent report from the Soil Reports tab in Web Soil Survey or from the Soil Data Mart site. Onsite investigation may be needed to validate these interpretations and to confirm the identity of the soil on a given site.

Rating Options

Aggregation Method: Dominant Condition

Component Percent Cutoff: *None Specified*

Tie-break Rule: Higher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4754500
4754000
4753500
4753000
Dietrich Main Canal
9th St
8th St
7th St
6th St
5th St
Park St
Washington St
Main Ave
Lincoln St
3rd St
2nd St
1st St
Dietrich
Dietrich Hwy
174
177
171
210
83
139
81
75
21
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Map Scale: 1:20,400 if printed on A size (8.5" x 11") sheet.
Meters
0 150 300 600 900
Feet
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MAP LEGEND

Area of Interest (AOI)

- Area of Interest (AOI)

Soils

- Soil Map Units

Soil Ratings

- Very limited
- Somewhat limited
- Not limited
- Not rated or not available

Political Features

- Cities

Water Features

- Oceans
- Streams and Canals

Transportation

- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

MAP INFORMATION

Map Scale: 1:20,400 if printed on A size (8.5" × 11") sheet.

The soil surveys that comprise your AOI were mapped at 1:24,000.

Please rely on the bar scale on each map sheet for accurate map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL: http://websoilsurvey.nrcs.usda.gov
Coordinate System: UTM Zone 11N NAD83

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Wood River Area, Idaho, Gooding County and Parts of Blaine, Lincoln, and Minidoka Counties
Survey Area Data: Version 9, Aug 26, 2010

Date(s) aerial images were photographed: 9/9/2004

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Small Commercial Buildings

Small Commercial Buildings— Summary by Map Unit — Wood River Area, Idaho, Gooding County and Parts of Blaine, Lincoln, and Minidoka Counties						
Map unit symbol	**Map unit name**	**Rating**	**Component name (percent)**	**Rating reasons (numeric values)**	**Acres in AOI**	**Percent of AOI**
21	Bruncan silt loam, 1 to 4 percent slopes	Very limited	Bruncan (80%)	Depth to thick cemented pan (1.00)	0.6	0.0%
				Shrink-swell (0.50)		
				Depth to hard bedrock (0.03)		
75	Haploxerolls-Camborthids-Rock outcrop complex, 1 to 3 percent slopes	Very limited	Haploxerolls (50%)	Flooding (1.00)	2.5	0.1%
			Camborthids (20%)	Flooding (1.00)		
				Depth to hard bedrock (1.00)		
81	Hoosegow sandy loam, 0 to 3 percent slopes	Somewhat limited	Hoosegow (85%)	Shrink-swell (0.50)	27.4	1.5%
83	Idow-Ackelton complex, 1 to 4 percent slopes	Not limited	Idow (45%)		53.7	2.9%
139	Paulville loam, 0 to 2 percent slopes	Somewhat limited	Paulville (90%)	Shrink-swell (0.50)	75.7	4.1%
163	Sidlake-Banbury complex, 2 to 4 percent slopes	Somewhat limited	Sidlake (45%)	Depth to hard bedrock (0.90)	8.8	0.5%
				Shrink-swell (0.50)		
171	Snowmore-Besslen-Hoosegow complex, 1 to 4 percent slopes	Somewhat limited	Snowmore (40%)	Shrink-swell (0.50)	392.5	21.1%
				Depth to hard bedrock (0.01)		

Small Commercial Buildings— Summary by Map Unit — Wood River Area, Idaho, Gooding County and Parts of Blaine, Lincoln, and Minidoka Counties						
Map unit symbol	**Map unit name**	**Rating**	**Component name (percent)**	**Rating reasons (numeric values)**	**Acres in AOI**	**Percent of AOI**
174	Snowmore-Minveno-Hoosegow complex, 2 to 10 percent slopes	Somewhat limited	Snowmore (35%)	Slope (0.50)	650.4	34.9%
				Shrink-swell (0.50)		
				Depth to hard bedrock (0.20)		
			Minveno (25%)	Depth to thin cemented pan (1.00)		
				Depth to hard bedrock (0.99)		
				Slope (0.50)		
			Hoosegow (20%)	Shrink-swell (0.50)		
177	Snowmore-Wako-Harsan complex, 1 to 4 percent slopes	Somewhat limited	Snowmore (50%)	Shrink-swell (0.50)	560.5	30.1%
				Depth to hard bedrock (0.20)		
			Wako (20%)	Shrink-swell (0.50)		
			Harsan (15%)	Shrink-swell (0.50)		
210	Wako-Harsan complex, 0 to 4 percent slopes	Somewhat limited	Wako (45%)	Shrink-swell (0.50)	89.7	4.8%
				Depth to thick cemented pan (0.35)		
			Harsan (35%)	Shrink-swell (0.50)		
Totals for Area of Interest					**1,861.8**	**100.0%**

Small Commercial Buildings— Summary by Rating Value		
Rating	**Acres in AOI**	**Percent of AOI**
Somewhat limited	1,805.0	96.9%
Not limited	53.7	2.9%
Very limited	3.1	0.2%
Totals for Area of Interest	**1,861.8**	**100.0%**

Description

Small commercial buildings are structures that are less than three stories high and do not have basements. The foundation is assumed to consist of spread footings of reinforced concrete built on undisturbed soil at a depth of 2 feet or at the depth of maximum frost penetration, whichever is deeper. The ratings are based on the soil properties that affect the capacity of the soil to support a load without movement and on the properties that affect excavation and construction costs. The properties that affect the load-supporting capacity include depth to a water table, ponding, flooding, subsidence, linear extensibility (shrink-swell potential), and compressibility (which is inferred from the Unified classification of the soil). The properties that affect the ease and amount of excavation include flooding, depth to a water table, ponding, slope, depth to bedrock or a cemented pan, hardness of bedrock or a cemented pan, and the amount and size of rock fragments.

The ratings are both verbal and numerical. Rating class terms indicate the extent to which the soils are limited by all of the soil features that affect the specified use. "Not limited" indicates that the soil has features that are very favorable for the specified use. Good performance and very low maintenance can be expected. "Somewhat limited" indicates that the soil has features that are moderately favorable for the specified use. The limitations can be overcome or minimized by special planning, design, or installation. Fair performance and moderate maintenance can be expected. "Very limited" indicates that the soil has one or more features that are unfavorable for the specified use. The limitations generally cannot be overcome without major soil reclamation, special design, or expensive installation procedures. Poor performance and high maintenance can be expected.

Numerical ratings indicate the severity of individual limitations. The ratings are shown as decimal fractions ranging from 0.01 to 1.00. They indicate gradations between the point at which a soil feature has the greatest negative impact on the use (1.00) and the point at which the soil feature is not a limitation (0.00).

The map unit components listed for each map unit in the accompanying Summary by Map Unit table in Web Soil Survey or the Aggregation Report in Soil Data Viewer are determined by the aggregation method chosen. An aggregated rating class is shown for each map unit. The components listed for each map unit are only those that have the same rating class as listed for the map unit. The percent composition of each component in a particular map unit is presented to help the user better understand the percentage of each map unit that has the rating presented.

Other components with different ratings may be present in each map unit. The ratings for all components, regardless of the map unit aggregated rating, can be viewed by generating the equivalent report from the Soil Reports tab in Web Soil Survey or from the Soil Data Mart site. Onsite investigation may be needed to validate these interpretations and to confirm the identity of the soil on a given site.

Rating Options

Aggregation Method: Dominant Condition

Component Percent Cutoff: *None Specified*

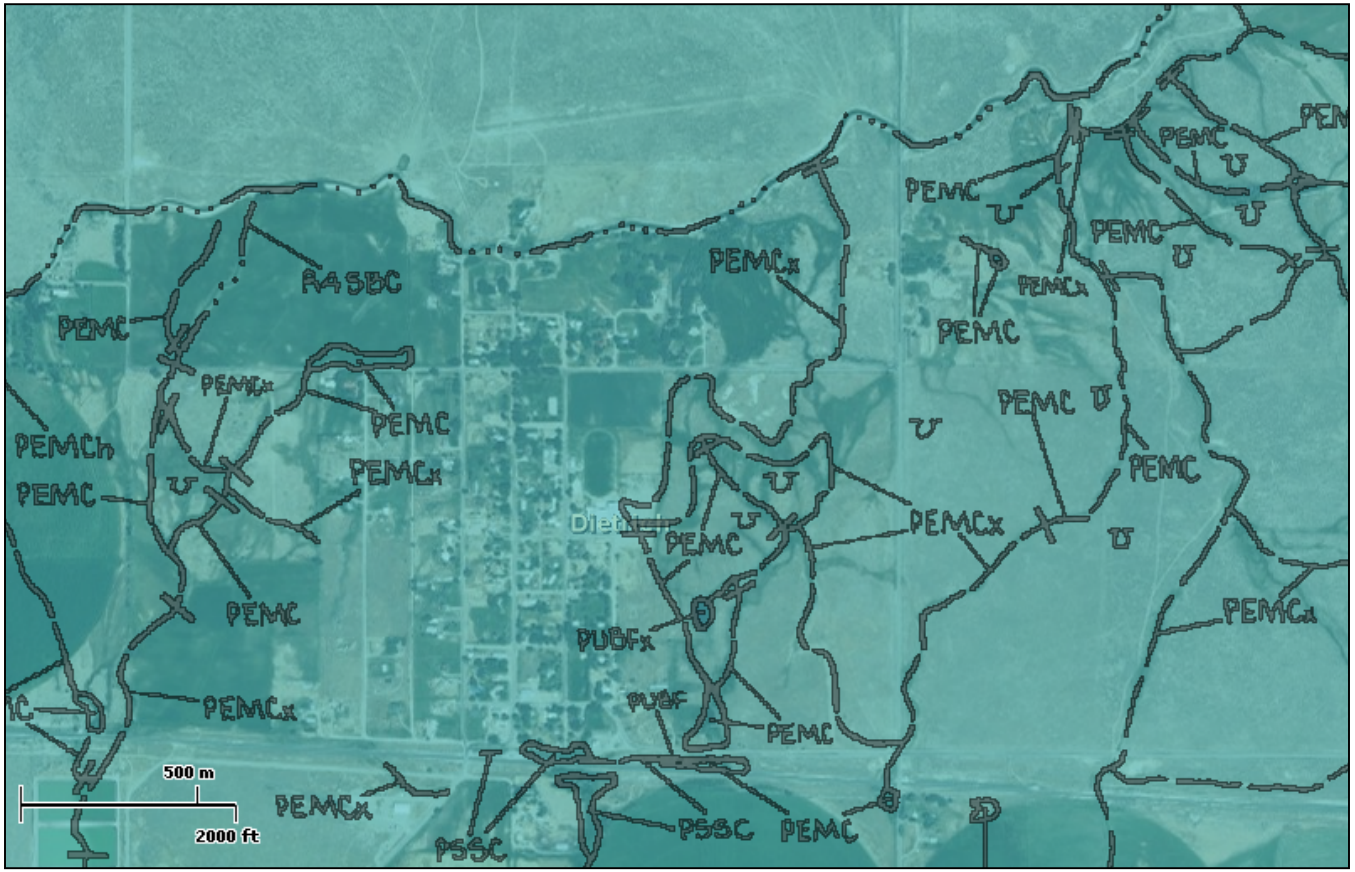
Tie-break Rule: Higher

U.S. Fish and Wildlife Service

National Wetlands Inventory

Dietrich, Idaho
Wetlands

Dec 23, 2010



Wetlands

- Freshwater Emergent
- Freshwater Forested/Shrub
- Estuarine and Marine Deepwater
- Estuarine and Marine
- Freshwater Pond
- Lake
- Riverine
- Other

Status

- Digital
- Scan
- Non-Digital
- No Data

This map is for general reference only. The US Fish and Wildlife Service is not responsible for the accuracy or currentness of the base data shown on this map. All wetlands related data should be used in accordance with the layer metadata found on the Wetlands Mapper web site.

User Remarks:

IDAHO

PREVAILING WIND DIRECTION

STATION	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	ANN
BOISE AP, ID (KBOI). WIND R	SE	SE	SE	NW	NW	NW	NW	NW	SE	SE	SE	ESE	SE
BURLEY AP, ID (KBYI). WIND	W	W	W	W	W	W	W	W	W	W	W	W	W
CALDWELL AIRPORT, ID (KEUL).	SSE	SSE	SSE	WNW	WNW	WNW	WNW	WNW	WNW	WNW	SSE	SE	WNW
CHALLIS AIRPORT, ID (KLLJ).	S	S	N	N	W	W	W	W	W	N	S	S	WNW
CHALLIS AP, ID (KU15). WIND	S	S	N	N	N	N	N	W	N	N	N	S	N
COEUR D'ALENE AP, ID (KCOE).	NNE	NNE	S	S	S	S	S	S	S	S	NNE	NNE	NNE
ELK CITY, ID (KP69). WIND R	N	NNE	NNE	NNE	NNE	NNE	NNE	N	N	NNE	NNE	N	NNE
HAILEY-SUN VALLEY AP, ID (KS	NNW	NNW	N	N	S	S	S	S	S	N	N	N	N
IDAHO FALLS AP, ID (KIDA).	N	N	SSW	SSW	SSW	SSW	SSW	SSW	SSW	SSW	N	N	SSW
JEROME AIRPORT, ID (KJER).	NE	NE	W	W	W	W	W	W	E	W	ENE	NE	W
LEWISTON AIRPORT, ID (KLWS).	S	E	E	E	WNW	E	E	WNW	E	E	E	S	E
MCCALL AIRPORT, ID (KMYL).	S	S	S	N	N	NW	S	SSW	S	S	S	S	S
MOUNTAIN HOME AFB, ID (KMUO)	ESE	ESE	ESE	NW	NW	NW	NW	NW	NW	NW	ESE	ESE	ESE
MULLAN PASS VOR, ID (KMLP).	S	S	S	SW	NW	NW	NW	NW	SW	S	S	S	S
POCATELLO AP, ID (KPIH). WI	SW	S	SW	SW	WSW	WSW	W	W	W	SW	SW	SW	SW
REXBURG AP, ID (KRXE). WIND	SSW	S	S	S	S	S	S	S	S	S	S	S	S
SALMON AIRPORT, ID (KSMN).	N	N	N	N	N	N	N	N	N	N	N	N	N
STANLEY RNGR STN, ID (KSNT).	SSE	SSE	SSE	N	S	S	S	S	S	S	S	SSE	S
TWIN FALLS AP, ID (KTWF). W	SSW	W	W	W	W	W	SSW	SSW	SSW	SSW	SSW	S	SSW

IDAHO

AVERAGE WIND SPEED - MPH

STATION	ID	Years	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
BOISE AIRPORT ASOS	KBOI	1996-2006	6.7	8.1	9.0	8.8	8.1	8.3	7.4	7.4	7.3	7.2	7.0	7.4	7.7
BURLEY AIRPORT ASOS	KBYI	1996-2006	9.2	9.3	10.3	9.9	9.3	8.6	7.0	6.9	6.8	7.9	8.5	9.4	8.6
CALDWELL AIRPORT AWOS	KEUL	1997-2006	5.8	7.5	7.9	7.7	6.7	6.6	5.6	5.3	5.0	5.3	5.8	6.1	6.2
CHALLIS AIRPORT ASOS	KLLJ	1998-2006	1.9	2.8	5.0	6.1	6.2	6.1	5.5	4.8	4.0	3.6	2.8	2.2	4.2
COEUR D'ALENE AP AWOS	KCOE	1996-2006	7.8	7.5	8.3	7.9	7.6	7.2	6.7	6.6	6.7	6.8	7.5	7.7	7.3
HAILEY-SUN VLY AP AWOS	KSUN	1996-2006	4.1	4.6	5.9	6.7	7.6	7.7	8.1	7.9	7.5	6.4	4.5	3.9	6.2
IDAHO FALLS AP ASOS	KIDA	1996-2006	8.2	8.1	10.1	10.6	10.8	9.9	8.6	8.3	8.1	8.8	8.4	8.0	9.0
JEROME AIRPORT ASOS	KJER	1998-2006	11.3	12.5	11.7	11.2	10.6	10.2	7.6	7.4	8.4	9.5	10.2	10.7	10.1
LEWISTON AIRPORT ASOS	KLWS	1996-2006	6.2	6.0	6.3	6.0	5.8	5.8	5.7	5.5	4.8	4.7	5.3	6.1	5.7
LOWELL R.S. ASOS	KP69	1996-2006	1.5	1.6	1.7	1.9	1.8	1.9	1.9	1.8	1.6	1.1	1.4	1.7	1.7
MCCALL AIRPORT ASOS	KMYL	1997-2006	2.7	3.3	4.1	5.1	5.6	5.0	4.2	4.3	4.0	3.8	3.2	2.9	4.0
MOUNTAIN HOME AFB	KMUO	1996-2006	9.9	11.7	11.4	11.1	10.2	10.2	9.0	8.8	8.7	9.2	9.1	10.0	10.0
MULLAN PASS ASOS	KMLP	1996-2006	5.2	6.4	7.4	6.9	6.8	6.9	6.1	6.0	6.5	7.1	7.3	5.2	6.5
POCATELLO AIRPORT ASOS	KPIH	1996-2006	9.6	9.0	10.9	11.2	11.0	10.3	8.7	8.8	8.5	9.4	9.2	9.6	9.7
REXBURG AIRPORT ASOS	KRXE	1998-2006	5.6	6.2	8.8	9.7	9.7	8.6	7.5	7.3	6.9	7.4	7.0	5.9	7.5
SALMON AIRPORT AWOS	KSMN	1996-2006	1.8	2.2	4.2	4.8	4.7	4.4	4.0	3.8	3.1	2.9	2.5	2.1	3.3
SANDPOINT AIRPORT AWSO	KSZT	2003-2006	4.8	4.2	4.6	5.1	5.0	4.9	4.1	3.6	3.4	3.9	4.9	4.2	4.4
STANLEY ASOS	KSNT	1998-2006	2.2	2.8	3.8	3.9	4.1	4.2	4.1	3.9	3.3	2.9	2.6	2.5	3.3
TWIN FALLS AIRPORT ASOS	KTWF	1996-2006	10.0	10.9	11.9	11.8	11.3	11.0	9.9	9.9	10.2	10.9	10.0	10.4	10.7

SHOSHONE 1 WNW, IDAHO (108380)

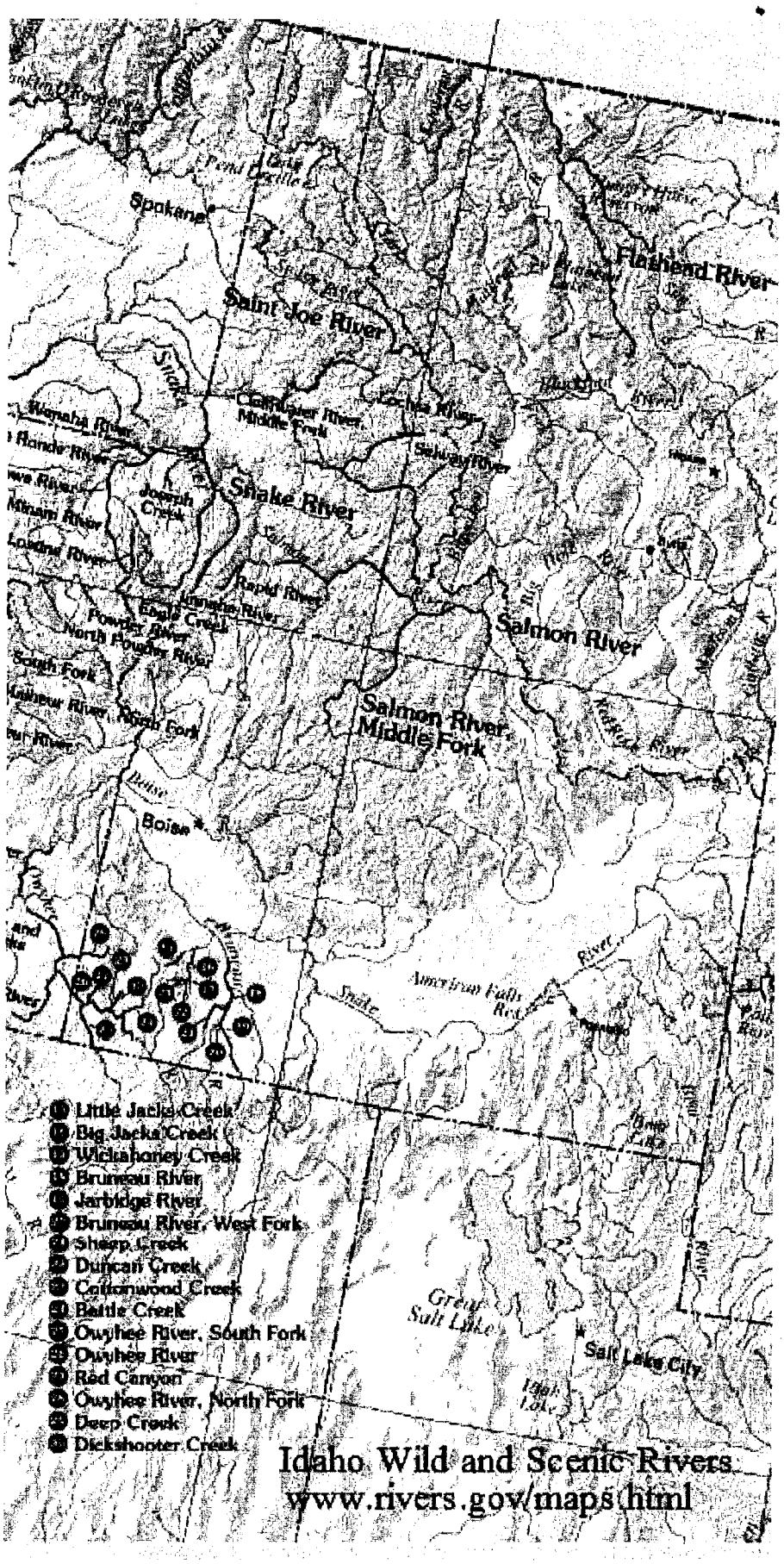
Period of Record Monthly Climate Summary

Period of Record : 3/ 1/1908 to 7/31/2010

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
Average Max. Temperature (F)	33.1	39.0	50.0	61.8	71.7	81.2	91.4	89.2	78.1	64.5	47.0	35.5	61.9
Average Min. Temperature (F)	15.7	19.5	26.0	32.8	40.3	47.7	55.4	53.1	43.8	34.4	25.7	18.3	34.4
Average Total Precipitation (in.)	1.42	1.10	0.95	0.81	0.93	0.67	0.21	0.29	0.49	0.75	1.19	1.32	10.14
Average Total SnowFall (in.)	10.3	5.6	2.3	0.6	0.1	0.0	0.0	0.0	0.1	0.1	2.4	6.8	28.2
Average Snow Depth (in.)	4	4	1	0	0	0	0	0	0	0	0	2	1

Percent of possible observations for period of record.
Max. Temp.: 96.3% Min. Temp.: 96.3% Precipitation: 97.5% Snowfall: 93.1% Snow Depth: 66.9%
Check Station Metadata or Metadata graphics for more detail about data completeness.

Western Regional Climate Center, wrcc@dri.edu


Spokane
Saint Joe River
Flathead River
Clearwater River, Middle Fork
Lochsa River
Selway River
Snake River
Salmon River
Salmon River, Middle Fork
Boise
American Falls Res.
Great Salt Lake
Salt Lake City
1. Little Jacks Creek
2. Big Jacks Creek
3. Wickahoney Creek
4. Bruneau River
5. Jarbidge River
6. Bruneau River, West Fork
7. Sheep Creek
8. Duncan Creek
9. Cottonwood Creek
10. Battle Creek
11. Owyhee River, South Fork
12. Owyhee River
13. Red Canyon
14. Owyhee River, North Fork
15. Deep Creek
16. Dickshooter Creek
Idaho Wild and Scenic Rivers
www.rivers.gov/maps.html

Detailed maps are available at:
http://yosemite.epa.gov/r10/water.nsf/Sole+Source+Aquifers/ssamaps

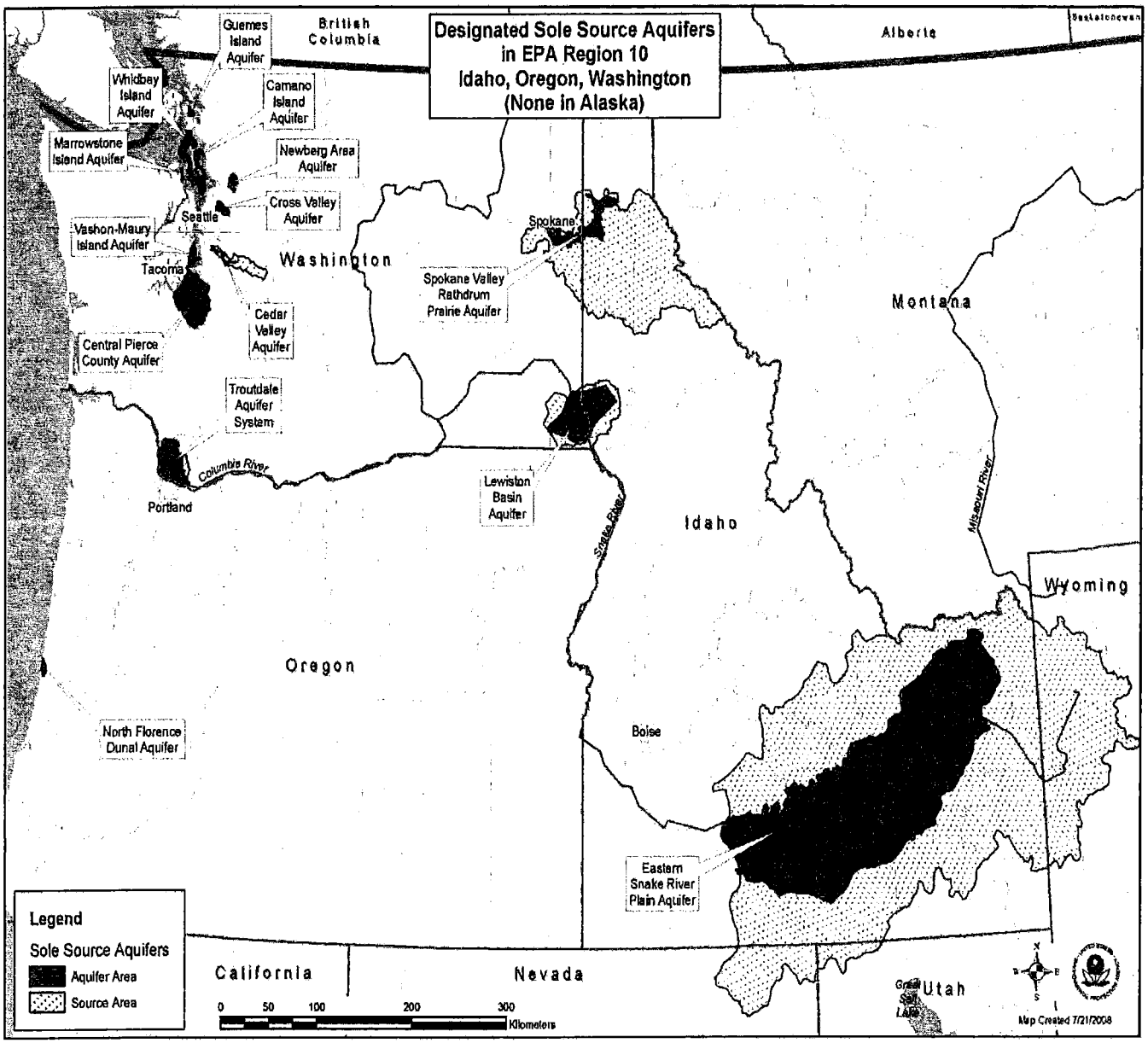


Table DP-1. Profile of General Demographic Characteristics: 2000

Geographic area: Dietrich city, Idaho

[For information on confidentiality protection, nonsampling error, and definitions, see text]

Subject	Number	Percent
Total population	**150**	**100.0**
SEX AND AGE		
Male	76	50.7
Female	74	49.3
Under 5 years	10	6.7
5 to 9 years	11	7.3
10 to 14 years	22	14.7
15 to 19 years	14	9.3
20 to 24 years	2	1.3
25 to 34 years	12	8.0
35 to 44 years	18	12.0
45 to 54 years	33	22.0
55 to 59 years	4	2.7
60 to 64 years	3	2.0
65 to 74 years	16	10.7
75 to 84 years	4	2.7
85 years and over	1	0.7
Median age (years)	36.0	(X)
18 years and over	101	67.3
Male	50	33.3
Female	51	34.0
21 years and over	92	61.3
62 years and over	22	14.7
65 years and over	21	14.0
Male	9	6.0
Female	12	8.0
RACE		
One race	140	93.3
White	139	92.7
Black or African American	1	0.7
American Indian and Alaska Native	-	-
Asian	-	-
Asian Indian	-	-
Chinese	-	-
Filipino	-	-
Japanese	-	-
Korean	-	-
Vietnamese	-	-
Other Asian [1]	-	-
Native Hawaiian and Other Pacific Islander	-	-
Native Hawaiian	-	-
Guamanian or Chamorro	-	-
Samoan	-	-
Other Pacific Islander [2]	-	-
Some other race	-	-
Two or more races	10	6.7
Race alone or in combination with one or more other races: [3]		
White	149	99.3
Black or African American	3	2.0
American Indian and Alaska Native	6	4.0
Asian	-	-
Native Hawaiian and Other Pacific Islander	-	-
Some other race	2	1.3

Subject	Number	Percent
HISPANIC OR LATINO AND RACE		
Total population	**150**	**100.0**
Hispanic or Latino (of any race)	1	0.7
Mexican	1	0.7
Puerto Rican	-	-
Cuban	-	-
Other Hispanic or Latino	-	-
Not Hispanic or Latino	149	99.3
White alone	138	92.0
RELATIONSHIP		
Total population	**150**	**100.0**
In households	150	100.0
Householder	58	38.7
Spouse	32	21.3
Child	56	37.3
Own child under 18 years	48	32.0
Other relatives	2	1.3
Under 18 years	1	0.7
Nonrelatives	2	1.3
Unmarried partner	1	0.7
In group quarters	-	-
Institutionalized population	-	-
Noninstitutionalized population	-	-
HOUSEHOLD BY TYPE		
Total households	**58**	**100.0**
Family households (families)	41	70.7
With own children under 18 years	20	34.5
Married-couple family	32	55.2
With own children under 18 years	15	25.9
Female householder, no husband present	5	8.6
With own children under 18 years	2	3.4
Nonfamily households	17	29.3
Householder living alone	16	27.6
Householder 65 years and over	10	17.2
Households with individuals under 18 years	21	36.2
Households with individuals 65 years and over	16	27.6
Average household size	2.59	(X)
Average family size	3.20	(X)
HOUSING OCCUPANCY		
Total housing units	**62**	**100.0**
Occupied housing units	58	93.5
Vacant housing units	4	6.5
For seasonal, recreational, or occasional use	-	-
Homeowner vacancy rate (percent)	5.8	(X)
Rental vacancy rate (percent)	-	(X)
HOUSING TENURE		
Occupied housing units	**58**	**100.0**
Owner-occupied housing units	49	84.5
Renter-occupied housing units	9	15.5
Average household size of owner-occupied units	2.57	(X)
Average household size of renter-occupied units	2.67	(X)

- Represents zero or rounds to zero. (X) Not applicable.

[1] Other Asian alone, or two or more Asian categories.

[2] Other Pacific Islander alone, or two or more Native Hawaiian and Other Pacific Islander categories.

[3] In combination with one or more of the other races listed. The six numbers may add to more than the total population and the six percentages may add to more than 100 percent because individuals may report more than one race.

Source: U.S. Census Bureau, Census 2000.

Table DP-2. Profile of Selected Social Characteristics: 2000

Geographic area: Dietrich city, Idaho

[Data based on a sample. For information on confidentiality protection, sampling error, nonsampling error, and definitions, see text]

Subject	Number	Percent
SCHOOL ENROLLMENT		
Population 3 years and over enrolled in school	**71**	**100.0**
Nursery school, preschool	1	1.4
Kindergarten	3	4.2
Elementary school (grades 1-8)	45	63.4
High school (grades 9-12)	16	22.5
College or graduate school	6	8.5
EDUCATIONAL ATTAINMENT		
Population 25 years and over	**109**	**100.0**
Less than 9th grade	2	1.8
9th to 12th grade, no diploma	11	10.1
High school graduate (includes equivalency)	37	33.9
Some college, no degree	35	32.1
Associate degree	2	1.8
Bachelor's degree	13	11.9
Graduate or professional degree	9	8.3
Percent high school graduate or higher	88.1	(X)
Percent bachelor's degree or higher	20.2	(X)
MARITAL STATUS		
Population 15 years and over	**129**	**100.0**
Never married	24	18.6
Now married, except separated	84	65.1
Separated	-	-
Widowed	7	5.4
Female	5	3.9
Divorced	14	10.9
Female	11	8.5
GRANDPARENTS AS CAREGIVERS		
Grandparent living in household with one or more own grandchildren under 18 years	-	-
Grandparent responsible for grandchildren	-	-
VETERAN STATUS		
Civilian population 18 years and over	**123**	**100.0**
Civilian veterans	13	10.6
DISABILITY STATUS OF THE CIVILIAN NONINSTITUTIONALIZED POPULATION		
Population 5 to 20 years	**73**	**100.0**
With a disability	1	1.4
Population 21 to 64 years	**88**	**100.0**
With a disability	17	19.3
Percent employed	52.9	(X)
No disability	71	80.7
Percent employed	85.9	(X)
Population 65 years and over	**21**	**100.0**
With a disability	9	42.9
RESIDENCE IN 1995		
Population 5 years and over	**182**	**100.0**
Same house in 1995	113	62.1
Different house in the U.S. in 1995	69	37.9
Same county	16	8.8
Different county	53	29.1
Same state	11	6.0
Different state	42	23.1
Elsewhere in 1995	-	-

Subject	Number	Percent
NATIVITY AND PLACE OF BIRTH		
Total population	**194**	**100.0**
Native	194	100.0
Born in United States	194	100.0
State of residence	140	72.2
Different state	54	27.8
Born outside United States	-	-
Foreign born	-	-
Entered 1990 to March 2000	-	-
Naturalized citizen	-	-
Not a citizen	-	-
REGION OF BIRTH OF FOREIGN BORN		
Total (excluding born at sea)	-	-
Europe	-	-
Asia	-	-
Africa	-	-
Oceania	-	-
Latin America	-	-
Northern America	-	-
LANGUAGE SPOKEN AT HOME		
Population 5 years and over	**182**	**100.0**
English only	182	100.0
Language other than English	-	-
Speak English less than "very well"	-	-
Spanish	-	-
Speak English less than "very well"	-	-
Other Indo-European languages	-	-
Speak English less than "very well"	-	-
Asian and Pacific Island languages	-	-
Speak English less than "very well"	-	-
ANCESTRY (single or multiple)		
Total population	**194**	**100.0**
Total ancestries reported	*240*	*123.7*
Arab	-	-
Czech[1]	-	-
Danish	26	13.4
Dutch	-	-
English	58	29.9
French (except Basque)[1]	5	2.6
French Canadian[1]	-	-
German	18	9.3
Greek	-	-
Hungarian	-	-
Irish[1]	47	24.2
Italian	4	2.1
Lithuanian	-	-
Norwegian	-	-
Polish	-	-
Portuguese	-	-
Russian	-	-
Scotch-Irish	2	1.0
Scottish	11	5.7
Slovak	-	-
Subsaharan African	-	-
Swedish	-	-
Swiss	2	1.0
Ukrainian	-	-
United States or American	5	2.6
Welsh	13	6.7
West Indian (excluding Hispanic groups)	-	-
Other ancestries	49	25.3

-Represents zero or rounds to zero. (X) Not applicable.

[1]The data represent a combination of two ancestries shown separately in Summary File 3. Czech includes Czechoslovakian. French includes Alsatian. French Canadian includes Acadian/Cajun. Irish includes Celtic.

Source: U.S. Bureau of the Census, Census 2000.

Table DP-3. Profile of Selected Economic Characteristics: 2000

Geographic area: Dietrich city, Idaho

[Data based on a sample. For information on confidentiality protection, sampling error, nonsampling error, and definitions, see text]

Subject	Number	Percent
EMPLOYMENT STATUS		
Population 16 years and over	**129**	**100.0**
In labor force	96	74.4
Civilian labor force	96	74.4
Employed	86	66.7
Unemployed	10	7.8
Percent of civilian labor force	10.4	(X)
Armed Forces	-	-
Not in labor force	33	25.6
Females 16 years and over	**73**	**100.0**
In labor force	52	71.2
Civilian labor force	52	71.2
Employed	52	71.2
Own children under 6 years	**12**	**100.0**
All parents in family in labor force	12	100.0
COMMUTING TO WORK		
Workers 16 years and over	**86**	**100.0**
Car, truck, or van - - drove alone	57	66.3
Car, truck, or van - - carpooled	12	14.0
Public transportation (including taxicab)	-	-
Walked	9	10.5
Other means	-	-
Worked at home	8	9.3
Mean travel time to work (minutes)[1]	28.3	(X)
Employed civilian population 16 years and over	**86**	**100.0**
OCCUPATION		
Management, professional, and related occupations	33	38.4
Service occupations	18	20.9
Sales and office occupations	16	18.6
Farming, fishing, and forestry occupations	-	-
Construction, extraction, and maintenance occupations	11	12.8
Production, transportation, and material moving occupations	8	9.3
INDUSTRY		
Agriculture, forestry, fishing and hunting, and mining	-	-
Construction	8	9.3
Manufacturing	4	4.7
Wholesale trade	2	2.3
Retail trade	5	5.8
Transportation and warehousing, and utilities	4	4.7
Information	5	5.8
Finance, insurance, real estate, and rental and leasing	-	-
Professional, scientific, management, administrative, and waste management services	2	2.3
Educational, health and social services	42	48.8
Arts, entertainment, recreation, accommodation and food services	4	4.7
Other services (except public administration)	10	11.6
Public administration	-	-
CLASS OF WORKER		
Private wage and salary workers	45	52.3
Government workers	29	33.7
Self-employed workers in own not incorporated business	12	14.0
Unpaid family workers	-	-

Subject	Number	Percent
INCOME IN 1999		
Households	**62**	**100.0**
Less than $10,000	8	12.9
$10,000 to $14,999	6	9.7
$15,000 to $24,999	6	9.7
$25,000 to $34,999	10	16.1
$35,000 to $49,999	10	16.1
$50,000 to $74,999	20	32.3
$75,000 to $99,999	2	3.2
$100,000 to $149,999	-	-
$150,000 to $199,999	-	-
$200,000 or more	-	-
Median household income (dollars)	35,625	(X)
With earnings	56	90.3
Mean earnings (dollars)[1]	33,963	(X)
With Social Security income	13	21.0
Mean Social Security income (dollars)[1]	10,054	(X)
With Supplemental Security Income	3	4.8
Mean Supplemental Security Income (dollars)[1]	6,900	(X)
With public assistance income	5	8.1
Mean public assistance income (dollars)[1]	640	(X)
With retirement income	11	17.7
Mean retirement income (dollars)[1]	18,609	(X)
Families	**46**	**100.0**
Less than $10,000	3	6.5
$10,000 to $14,999	2	4.3
$15,000 to $24,999	3	6.5
$25,000 to $34,999	8	17.4
$35,000 to $49,999	9	19.6
$50,000 to $74,999	20	43.5
$75,000 to $99,999	1	2.2
$100,000 to $149,999	-	-
$150,000 to $199,999	-	-
$200,000 or more	-	-
Median family income (dollars)	45,833	(X)
Per capita income (dollars)[1]	12,888	(X)
Median earnings (dollars):		
Male full-time, year-round workers	28,125	(X)
Female full-time, year-round workers	21,667	(X)

Subject	Number below poverty level	Percent below poverty level
POVERTY STATUS IN 1999		
Families	**8**	**17.4**
With related children under 18 years	8	30.8
With related children under 5 years	3	50.0
Families with female householder, no husband present	**3**	**50.0**
With related children under 18 years	3	100.0
With related children under 5 years	3	100.0
Individuals	**40**	**20.6**
18 years and over	24	19.5
65 years and over	-	-
Related children under 18 years	16	22.5
Related children 5 to 17 years	12	20.3
Unrelated individuals 15 years and over	4	21.1

-Represents zero or rounds to zero. (X) Not applicable.

[1]If the denominator of a mean value or per capita value is less than 30, then that value is calculated using a rounded aggregate in the numerator. See text.

Source: U.S. Bureau of the Census, Census 2000.

Table DP-4. Profile of Selected Housing Characteristics: 2000

Geographic area: Dietrich city, Idaho

[Data based on a sample. For information on confidentiality protection, sampling error, nonsampling error, and definitions, see text]

Subject	Number	Percent
Total housing units	**67**	**100.0**
UNITS IN STRUCTURE		
1-unit, detached	38	56.7
1-unit, attached	-	-
2 units	-	-
3 or 4 units	-	-
5 to 9 units	-	-
10 to 19 units	-	-
20 or more units	-	-
Mobile home	29	43.3
Boat, RV, van, etc	-	-
YEAR STRUCTURE BUILT		
1999 to March 2000	-	-
1995 to 1998	12	17.9
1990 to 1994	12	17.9
1980 to 1989	6	9.0
1970 to 1979	11	16.4
1960 to 1969	4	6.0
1940 to 1959	8	11.9
1939 or earlier	14	20.9
ROOMS		
1 room	-	-
2 rooms	-	-
3 rooms	5	7.5
4 rooms	13	19.4
5 rooms	19	28.4
6 rooms	8	11.9
7 rooms	9	13.4
8 rooms	13	19.4
9 or more rooms	-	-
Median (rooms)	5.3	(X)
Occupied housing units	**64**	**100.0**
YEAR HOUSEHOLDER MOVED INTO UNIT		
1999 to March 2000	10	15.6
1995 to 1998	23	35.9
1990 to 1994	11	17.2
1980 to 1989	14	21.9
1970 to 1979	6	9.4
1969 or earlier	-	-
VEHICLES AVAILABLE		
None	2	3.1
1	11	17.2
2	27	42.2
3 or more	24	37.5
HOUSE HEATING FUEL		
Utility gas	-	-
Bottled, tank, or LP gas	17	26.6
Electricity	31	48.4
Fuel oil, kerosene, etc	4	6.3
Coal or coke	-	-
Wood	12	18.8
Solar energy	-	-
Other fuel	-	-
No fuel used	-	-
SELECTED CHARACTERISTICS		
Lacking complete plumbing facilities	4	6.3
Lacking complete kitchen facilities	2	3.1
No telephone service	-	-

Subject	Number	Percent
OCCUPANTS PER ROOM		
Occupied housing units	**64**	**100.0**
1.00 or less	62	96.9
1.01 to 1.50	-	-
1.51 or more	2	3.1
Specified owner-occupied units	**31**	**100.0**
VALUE		
Less than $50,000	4	12.9
$50,000 to $99,999	21	67.7
$100,000 to $149,999	6	19.4
$150,000 to $199,999	-	-
$200,000 to $299,999	-	-
$300,000 to $499,999	-	-
$500,000 to $999,999	-	-
$1,000,000 or more	-	-
Median (dollars)	74,200	(X)
MORTGAGE STATUS AND SELECTED MONTHLY OWNER COSTS		
With a mortgage	21	67.7
Less than $300	-	-
$300 to $499	2	6.5
$500 to $699	15	48.4
$700 to $999	2	6.5
$1,000 to $1,499	2	6.5
$1,500 to $1,999	-	-
$2,000 or more	-	-
Median (dollars)	641	(X)
Not mortgaged	10	32.3
Median (dollars)	175	(X)
SELECTED MONTHLY OWNER COSTS AS A PERCENTAGE OF HOUSEHOLD INCOME IN 1999		
Less than 15.0 percent	18	58.1
15.0 to 19.9 percent	4	12.9
20.0 to 24.9 percent	3	9.7
25.0 to 29.9 percent	2	6.5
30.0 to 34.9 percent	-	-
35.0 percent or more	4	12.9
Not computed	-	-
Specified renter-occupied units	**14**	**100.0**
GROSS RENT		
Less than $200	-	-
$200 to $299	-	-
$300 to $499	4	28.6
$500 to $749	3	21.4
$750 to $999	-	-
$1,000 to $1,499	-	-
$1,500 or more	-	-
No cash rent	7	50.0
Median (dollars)	488	(X)
GROSS RENT AS A PERCENTAGE OF HOUSEHOLD INCOME IN 1999		
Less than 15.0 percent	-	-
15.0 to 19.9 percent	-	-
20.0 to 24.9 percent	-	-
25.0 to 29.9 percent	-	-
30.0 to 34.9 percent	2	14.3
35.0 percent or more	5	35.7
Not computed	7	50.0

-Represents zero or rounds to zero. (X) Not applicable.

Source: U.S. Bureau of the Census, Census 2000.

Region 10: the Pacific Northwest

You are here: EPA Home Region 10 Cleanup Page

Idaho Cleanup Sites

Leaking Underground Storage Tank (LUST) Sites
Indian Land Leaking Underground Storage Tank (LUST) Sites
Idaho Department of Environmental Quality

Brownfields, Oil, RCRA Corrective Action Superfund Sites
Click on the triangle ▲ near the row heading to re-sort the table. "Type of site" include National Priority List (NPL) and RCRA Corrective Action (RCRA CA) sites. Sites not associated with any particular city will show near the bottom of the list.

State ▲	City ▲	Title ▲	Type of Site ▲
Idaho	Ashton	Ashton Texaco Oil	Oil
Idaho	Atlanta	Talache Mine Tailings	Mining
Idaho	Bellevue	Minnie Moore Mine	Removal
Idaho	Blackfoot	Youngstrom Log Homes, Blackfoot, ID	Archived
Idaho	Boise	Payette River	Removal
Idaho	Bonner County	Idaho Conjecture Mine	Removal
Idaho	Caldwell	Franke's Laundromat	Removal
Idaho	Cataldo	East Mission Flats Repository	Information
Idaho	Cobalt	Blackbird Mine	Proposed NPL
Idaho	Coeur d'Alene	Coeur d'Alene Mercury Release	Response
Idaho	Garden Valley	Alley Fuels	Removal
Idaho	Garden Valley	Silver Creek Plunge	Oil
Idaho	Gem County	Gem County-South Slope Road Oil Spill	Oil
Idaho	Hailey	Triumph Mine Tailings Piles	Removed from NPL
Idaho	Kooskia	Clearwater Spill	Oil
Idaho	Lakeview	Idaho Lakeview Mine	Removal
Idaho	Lakeview	Idaho Lakeview Mine & Mill	Oil
Idaho	Meridian	Victory Road Oil Spill	Oil
Idaho	Mile Post 132 of Highway 12	Keller Transportation	Oil
Idaho	Mountain Home	Mountain Home Air Force Base	NPL
Idaho	Oldtown	Poles, Incorporated Integrated Assessment	
Idaho	Pacatello	Pacific Hide and Fur Recycling Company	Deleted NPL
Idaho	Pocatello	Union Pacific Railroad Company	Deleted NPL
Idaho	Pocatello	Eastern Michaud Flats Contamination	NPL
Idaho	Pocatello	H&M Oil Site	Oil
Idaho	Rathdrum	ARRCOM (Drexler Enterprises)	Deleted NPL
Idaho	Salmon	Steel & Ranch Supply	Removal
Idaho	Salmon	Hwy 28 Tank Truck Spill	Oil
Idaho	Sandpoint	Northwest Gas and Go	Oil
Idaho	Scoville	Idaho National Laboratory (USDOE)	NPL
Idaho	Smiths Ferry	Idaho Hwy 55 Orr Trucking Spill	Response
Idaho	Soda Springs	Kerr-McGee Chemical Corporation	NPL
Idaho	Soda Springs	Monsanto Chemical Company	NPL
Idaho	Soda Springs	Southeast Idaho Mines	Site Assessment
Idaho	Stibnite	Stibnite-Yellow Pine Mining Area	Proposed NPL
Idaho	St. Maries	St. Maries Creosote	Proposed NPL
Idaho	Wallace	Wallace Yard and Spur Line	Removal
Idaho	Wallace-Mullan	Union Pacific Railroad, Wallace-Mullan Branch, Northern ID.	Removal
Idaho	Yellow Pine	Stibnite Mine Mill Building	Removal

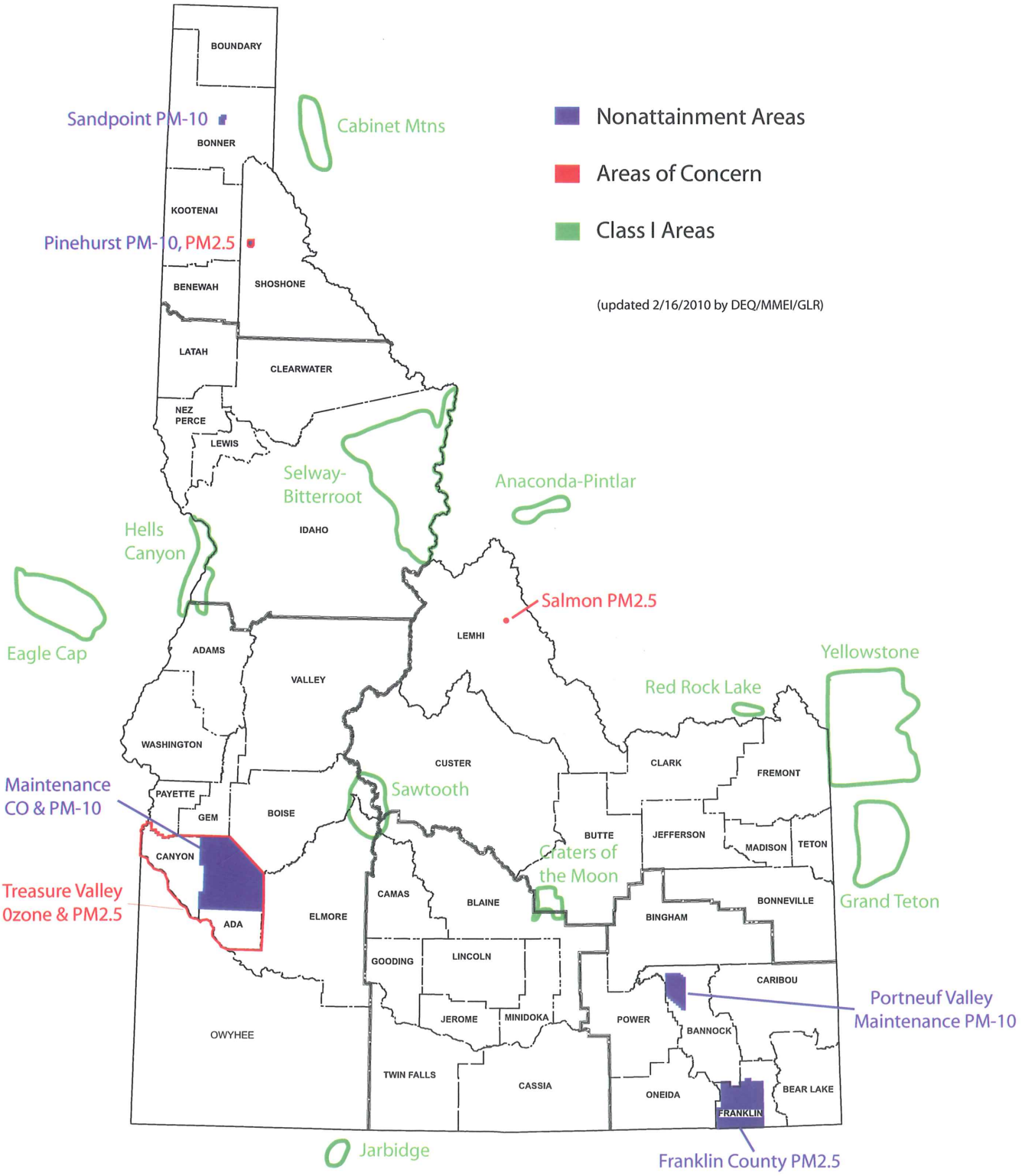
Idaho	Southeast Idaho Phosphorus Slag Program	
Idaho	Brownfields and Idaho	Brownfields
Idaho	RCRA Corrective Action Sites in Idaho	RCRA CA
Idaho	Burley Products Terminal	Oil
Idaho	Sanchez Trucking Henrys Lake Spill	Oil
Idaho	Bunker Hill Box	Part of NPL site
Idaho	Coeur d'Alene Basin	Part of NPL site
Idaho	Bunker Hill Mining and Metallurgical	NPL

Idaho Underground Storage Tank List as of Apr 18, 2011

Total Rows: 5032

Facility ID	Facility Name	Street Address	City	Zip	Status	Number of Tanks
4-320609	Union Pacific RR Dietrich MP314.7	500 WEST OF UPRR TOOL SHED MP 314.7	DIETRICH	83324	Closed	1
4-320001	DIETRICH MERC	BOX 425	DIETRICH	83324	Closed	2
4-320016	Union Pacific RR Dietrich MP304	UPRR MP 304	DIETRICH	83324	Closed	1

Idaho Air Quality Planning Areas



Appendix F

WETLAND DELINEATION

Wetland Delineation Report and Information for Jurisdictional Determination

PROJECT INFORMATION

PROJECT NAME (LOCATION): Dietrich Waterline

COUNTY: Lincoln County

DOCUMENT INFORMATION

SUBMITTED BY:	**City of Dietrich**
DATE:	**August 2011**
PREPARED BY (FIRM):	**North Wind Resource Consulting**

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Wetland Delineation Report and Information for Jurisdictional Determination

Dietrich Waterline, Lincoln County

INTRODUCTION

This wetland report has been prepared for the proposed improvement of the City of Dietrich main waterline which flows from the city well located north of the Dietrich main Canal south to the City of Dietrich (Figures 1 and 2). The project area is located in Township 6 S, Range 18 E, Section 12; latitude 42.9179 N, longitude -114.2659 W (NAD 83). The elevation of project area averages 4,170 feet above sea level.

North Wind Resource Consulting was contracted to prepare a wetland delineation report as part of the NEPA process. The City of Dietrich is the sponsoring agency. The City of Dietrich is proposing to upgrade their current water system as part of a master plan development.

The existing Dietrich water system has deficiencies relative to redundancy, reliability, fire protection, and service area. With only one well the system has no redundant water supply capacity, and thus does not comply with Idaho Drinking Water Standards for reliability and emergency capabilities. The existing reservoir volume is significantly less than the storage volume needed for fire flow (2500 gpm for 2 hours) plus operational and peaking storage. The system cannot currently supply water to numerous City residents on the west side of town who have requested City water service.

The purpose of the proposed project is first and foremost to add water supply redundancy for residents in Dietrich. Currently, if the City were to experience mechanical failure at the Main Well on a summer day, city residents would have no other source of supply. Redundant water supplies for public systems serving more than 25 customers are required by Idaho Code. Another purpose of this project is to improve safety conditions for water system operators at the well facilities. A third purpose of this project is to improve fire protection throughout the water system, but particularly to meet recommended fire flow requirements for the School District. Lastly, this project will bring the City into compliance with State emergency operation requirements.

To accomplish these tasks the City of Dietrich is proposing to install an additional well adjacent to the existing well location, improve transmission pipelines throughout portions of the city, and install new water storage tank adjacent to the existing tank located north of the city on BLM managed lands.

For this reason a wetland delineation was completed in the area where the new pipeline would be connected to the existing and proposed well location associated with the upgraded city system.

Field work was conducted on July 7, 2011 by Scott Webster of North Wind Resource Consulting. Mr. Webster has completed a five-day combined field/lecture course on wetland delineation. Mr. Webster has more than 10 years' experience conducting wetland delineations within southeastern Idaho.

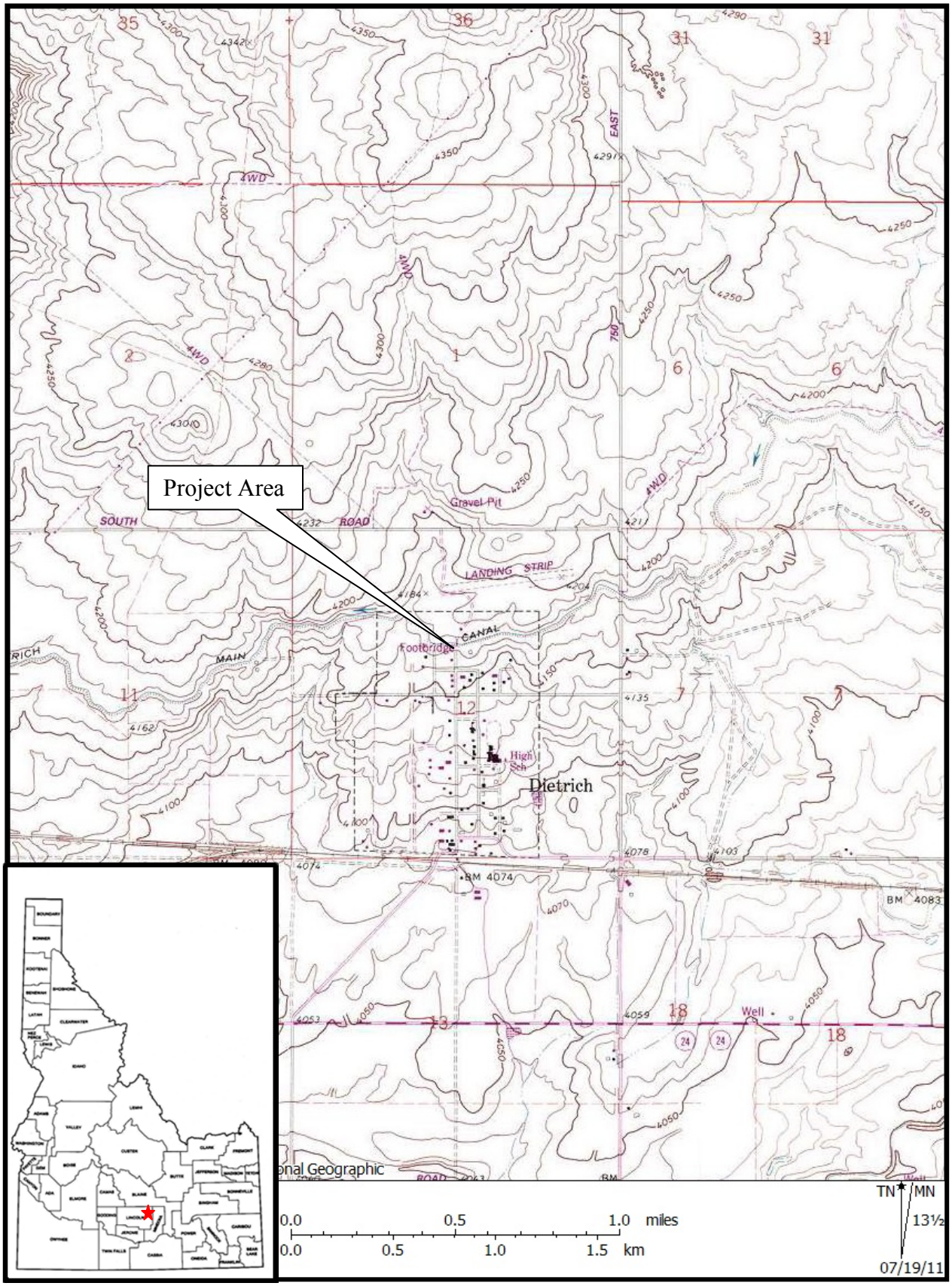

Figure 1 - Project Area showing project location

Figure 2 - Aerial Map of the Project Area showing project location

METHODS

The wetland delineations were performed using the *Corps of Engineers Wetland Delineation Manual* (Environmental Laboratory 1987) Routine Method for five acres or less with onsite inspection and the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region, Version 2.0* (USACE 2008). Prior to field visits, the U.S. Fish and Wildlife Service (FWS) National Wetland Inventory (NWI) Digital Data site was accessed to preview wetlands in the project areas (USFWS NWI 2008) as well as the Natural Resources Conservation Service (NRCS) for soil information (USDA 2008), and the Federal Emergency Management Agency (FEMA) National Flood Insurance Program for floodplain delineation (FEMA 1983).

The project area was surveyed for the presence of normal circumstances, atypical situations, or problem areas. A survey corridor was established, which extended out from the proposed pipeline location approximately 50 feet on both sides (east and west). The survey area extends between the existing water tank and the south side of the Dietrich Main Canal. During the initial scan locations with wetland indicators (Dietrich Main Canal and parallel irrigation ditch) were noted and delineated. Characteristics identified during the initial scan and delineation included a predominance of vegetation typically adapted for life in saturated soil conditions (hydrophytic), soils formed under saturation, flooding, or ponding long enough during the growing season to develop anaerobic conditions (hydric), and inundation of the area or soil saturated to the ground surface during all or a portion of the growing season (hydrology) (Environmental Laboratory 1987). Most wetland characteristics were clearly

defined by a transition between upland and wetland vegetation change, as well as a change in topography of the area. Wetland Determination Data Forms - Arid West Region (Arid West - Version 2.0) were completed and are included in Appendix A.

The scientific name of plants used in this report follows the Integrated Taxonomic Information System (ITIS) nomenclature accepted by taxonomic specialists for plants. The names were reviewed from the ITIS on-line database (ITIS 2011). When scientific names used in this report differ from the FWS NWI 1988 Region 9 List of Vascular Plant Species that Occur in Wetlands (USFWS 1988) and 1993 Supplement (USFWS 1993) they are noted in the table in Appendix B.

The connectivity of the Dietrich Main Canal to the Little Wood River (a tributary to the Snake River which is an interstate waterway), classifies it as Waters of the United States and thus assumed jurisdictional and regulated by Section 404 of the Clean Water Act (33 U.S.C. 1344), as administered by the U.S. Army Corps of Engineers (USACE). The wetlands associated with these waters are also assumed to be under the jurisdiction of the USACE. Any impacts to the wetlands will need a 404 permit prior to any disturbance.

Figures 3 and 4 show the delineated wetlands for all sites at a scale of 1 inch = 100 feet. Maps showing the NWI, soils, and FIRM information are provided in Appendix C.

Sources of additional existing information used in this delineation include:

- *Classification of Wetlands and Deep Water Habitat of the United States* (Cowardin et al. 1979)
- *Corps of Engineers Wetland Delineation Manual* (Environmental Laboratory 1987)
- Federal Emergency Management Agency, National Flood Insurance Program; Flood Insurance Rate Map, City of Declo, Idaho Cassia County; Community-Panel Number 160044 0001 C (FEMA 1983)
- *Flora of the Pacific Northwest* (Hitchcock and Cronquist 1973)
- Integrated Taxonomic Information System on-line database (ITIS 2011)
- *Munsell Soil Color Charts* (Munsell 2000)
- Natural Resources Conservation Service. Web Soil Survey. (USDA 2011)
- *Plants of the Rocky Mountains* (Kershaw et al. 1998)
- *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region* (Version 2.0) (USACE 2008)
- U.S. Fish and Wildlife Service National Wetland Inventory 1988 Region 9 List of Vascular Plant Species that Occur in Wetlands (USFWS 1988)
- U.S. Fish and Wildlife Service National Wetland Inventory 1993 Supplement (USFWS 1993)
- U.S. Fish and Wildlife Service National Wetland Inventory Digital Data for the project area (USFWS 2011)
- *Weeds of the West, 9th Ed.* (Burrill et al. 2000)

RESULTS AND DISCUSSION

The following sections provide information concerning observations made in the field during the wetland delineation as well as information gathered during the preliminary work. Figures 1 and 2 show the location of the project area. A total of three locations were assessed within the project area. These three locations (Figure 3 and Photos 1-5) were found to contain the characteristics required to be classified as a wetland as outlined in the USACE wetland delineation manuals (Environmental Laboratory 1987; USACE 2008).

Vegetation within the project area is made up of a variety of grasses and herbs species. A complete plant list of dominant species encountered within the delineated area is presented in Appendix B. The dominant species in the upland areas include upland grasses associated with undeveloped pastures and rangelands. The dominant species in the wetlands include reed canarygrass (*Phalaris arundinacea*), quackgrass (*Agropyron repens*), brookgrass (*Catabrosa aquatic*), and cattails (*Typha latifolia*). The USFWS National Wetland Inventory website did not identify the areas as containing wetlands (USDA 2008).

The soils in the project area have been officially mapped by the Natural Resource Conservation Service (NRCS) and portions are included in the Lincoln County Soil Survey (USDA 2011). There is one dominant soil type identified within the project area, the Snowmore-Minveno-Hoosegow complex, 2 to 10 percent slopes. This soil is moderately deep, well-drained soils derived from volcanic ash and/or mixed alluvium and/or loess over bedrock derived from rhyolite and/or basalt.

The hydrology within the project area is associated with the Dietrich Main Canal. According to the Flood Insurance Rate Map (FIRM) for the project is located in a Zone C. Zone C is designated as areas of minimal flooding (FEMA 1983). The FIRM for the project area is located in Appendix C.

FINDINGS

Three areas were analyzed during the field survey of the project area: two on the banks of the Dietrich Main Canal and one on an irrigation ditch which parallels the canal approximately 20 feet south of the south bank the canal. These sites are separate and distinct areas on each individual bank of the canal and are discussed individually in this section. Wetland characteristics (i.e., vegetation, soils, and hydrology) observed within the survey area are discussed in this section.

North Bank of the Dietrich Main Canal

The north banks of the Dietrich Main Canal are steep with a clear transition between upland and wetland plants. The upland vegetation along this area is grass species which commonly occur within undeveloped areas, roadside borrow ditches, and pasture ground. The wetland vegetation is a linear band of plants associated with the banks of the canal between the top of the canal banks and along the high watermark of the canal. The delineated area along the north bank of the canal encompasses 0.017 acres of wetland. Photo 1 displays an overview of the delineated area associated Dietrich Main Canal north bank.

Photo 1. Dietrich Main Canal North Bank facing west

Vegetation

Table 1 documents the vegetation observed along the north banks of the Dietrich Main Canal in order of dominance. Reed canarygrass dominated the area (90 percent). Because the dominant species has a FACW indicator status, the vegetation in the delineated area passed the dominance test and was determined to be hydrophytic.

Table 1. Dominant vegetation identified along the north banks of Dietrich Main Canal.

Common Name	Scientific Name	Indicator*
Reed canarygrass	*Phalaris arundinacea*	FACW
Quack grass	*Agropyron repens*	FAC

*Categories were originally developed and defined by the U.S. Fish and Wildlife Service (USFWS) National Wetlands Inventory (NWI) and subsequently modified by the National Plant List Panel. See Appendix B for definitions of Indicator.

Hydrology

The hydrology for the area is derived from irrigation waters which flow through the Dietrich Main Canal. Water is diverted to the canal system from the Little Wood River (a tributary to the Snake River and a designated Waters of the U.S.) just southeast of the community of Richfield approximately 10.7 miles north/northeast of the project area. Water from the Dietrich Main Canal appears to flow back into the Little Wood River approximately 3.6 miles west/northwest of the project area based on the images presented on the USGS 7.5 minute topographic map.

Soils

Due to the steepness of the banks of the Dietrich Main Canal and the routine disturbance associated with canal maintenance a soil test hole was not conducted. Following the protocol outlined in the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region* for Difficult Wetland Situation in Arid West-Problematic hydric soils, Step 4 (e) it was determined that since the canal contains water for greater than 14 days during the growing season and has done so for more than 5 years, the soils along the banks of the canal are considered hydric (USACE 2008).

Figure 3 – Wetland Locations

South Bank of the Dietrich Main Canal

The south banks of the Dietrich Main Canal are steep with a clear transition between upland and wetland plants. The upland vegetation along this area is grass species which commonly occur within undeveloped areas, roadside borrow ditches, and pasture ground. The wetland vegetation is a linear band of plants associated with the banks of the canal between the top of the canal banks and along the high watermark of the canal. This delineated area encompasses 0.012 acres. Photo 2 displays an overview of the delineated area associated Dietrich Main Canal south bank.

Photo 2. Dietrich Main Canal North and South Bank facing east

Vegetation

Table 2 documents the vegetation observed along the south banks of the Dietrich Main Canal in order of dominance. Reed canarygrass dominated the area (60 percent) with brook grass being co-dominant (15 percent). Because the dominant species have FACW and OBL indicator status, the vegetation in the delineated area passed the dominance test and was determined to be hydrophytic.

Table 2. Dominant vegetation identified along the south banks of Dietrich Main Canal.

Common Name	Scientific Name	Indicator*
Reed canarygrass	*Phalaris arundinacea*	FACW
Brookgrass	*Catabrosa aquatica*	OBL
Quack grass	*Agropyron repens*	FAC
Canada thistle	*Cirsium arvense*	FACU
Prickly lettuce	*Lactuca serriola*	FACU
Flix weed	*Descurainia sophia*	UPL

*Categories were originally developed and defined by the U.S. Fish and Wildlife Service (USFWS) National Wetlands Inventory (NWI) and subsequently modified by the National Plant List Panel. See Appendix B for definitions of Indicator.

Hydrology
The hydrology for the area is derived from irrigation waters which flow through the Dietrich Main Canal. Water is diverted to the canal system from the Little Wood just southeast of the community of Richfield approximately 10.7 miles north/northeast of the project area. Water from the Dietrich Main Canal appears to flow back into the Little Wood River approximately 3.6 miles west/northwest of the project area based on the images presented on the USGS 7.5 minute topographic map.

Soils
Due to the steepness of the banks of the Dietrich Main Canal and the routine disturbance associated with canal maintenance a soil test hole was not conducted. Following the protocol outlined in the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region* for Difficult Wetland Situation in Arid West-Problematic hydric soils, Step 4 (e) it was determined that since the canal contains water for greater than 14 days during the growing season and has done so for more than 5 years, the soils along the banks of the canal are considered hydric (USACE 2008).

Irrigation Ditch South of the Dietrich Main Canal
The irrigation ditch which was delineated parallels the Dietrich Main Canal just below the south banks of the canal. The delineated area encompasses 0.018 acres. The ditch is heavily over grown and is connected to the canal via a culvert/headgate located on the east end of the survey segment. The banks of the irrigation ditch are relatively steep and there is a clear transition between upland and wetland plants. The wetland vegetation is a linear band of plants associated with the irrigation ditch between the top of the ditch banks on each side vegetating the entire irrigation ditch. Photos 3 and 4 display an overview of the delineated area associated irrigation ditch and Photo 5 is a picture of the headgate which directs water from the Dietrich Main Canal to the irrigation ditch.

Photo 3. Irrigation ditch facing east

Photo 4. Irrigation ditch facing west

Photo 5. Headgate which diverts water from the Dietrich Main Canal to the irrigation ditch

Vegetation

Table 3 documents the vegetation observed along the irrigation ditch in order of dominance. Reed canarygrass dominated the area (35 percent) with cattail and prickly lettuce being co-dominant (30 and 15 percent respectively). Because more than 50 percent of the dominant species have FACW and OBL indicator status, the vegetation in the delineated area passed the dominance test and was determined to be hydrophytic.

Table 3. Dominant vegetation identified along the south banks of Dietrich Main Canal.

Common Name	Scientific Name	Indicator*
Reed canarygrass	*Phalaris arundinacea*	FACW
Cattail	*Typha latifolia*	OBL
Prickly lettuce	*Lactuca serriola*	FACU
Quack grass	*Agropyron repens*	FAC
Common teasel	*Dipsacus fullonum ssp. sylvestris*	FAC
Asparagus	*Asparagus officinalis*	FACU

*Categories were originally developed and defined by the U.S. Fish and Wildlife Service (USFWS) National Wetlands Inventory (NWI) and subsequently modified by the National Plant List Panel. See Appendix B for definitions of Indicator.

Hydrology

The hydrology for the area is derived from irrigation waters which flow through the Dietrich Main Canal, which are diverted into the irrigation ditch. Water is diverted to the canal system from the Little Wood River just southeast of the community of Richfield approximately 10.7 miles north/northeast of the project area based on the images presented on the USGS 7.5 minute topographic map. The irrigation

ditch does not reconnect to the canal or any other waterbody; therefore, the waters within the irrigation ditch are not classified as Waters of the U.S.

Soils

Due to the steepness of the banks of the irrigation ditch, segments of the banks being armored with basalt rip-rap, and the routine disturbance associated with maintenance a soil test hole was not conducted. Following the protocol outlined in the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region* for Difficult Wetland Situation in Arid West-Problematic hydric soils, Step 4 (e) it was determined that since the canal contains water for greater than 14 days during the growing season and has done so for more than 5 years, the soils along the banks of the canal are considered hydric (USACE 2008).

CONCLUSIONS

Three distinct areas were delineated within the survey area. All three of the wetland areas were found to contain greater than fifty percent hydrophytic vegetation. Hydrology characteristics for all three areas are present, and the connectivity of the Dietrich main Canal to the Little Wood River, a tributary to the Snake River, will involve a Jurisdictional Determination by the USACE. The soils along the banks of the canal were determined to by hydric using the protocols outlined in the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region* (USACE 2008) for Difficult Wetland Situation in Arid West-Problematic hydric soils, Step 4 (e). It is anticipated that the wetlands along the banks of the Dietrich Main Canal are jurisdictional by the USACE due the canal acting as a tributary to the Little Wood River which is a tributary to the Snake River, both designated as Waters of the U.S.

The wetlands associated with the irrigation ditch area also anticipated to fall under the jurisdiction of the USACE as neighboring wetlands to those associated with the canal banks only being separated by man-made features (i.e., the banks of the canal).

If a segment of the project area is excavated to install the waterline through the canal and irrigation ditch the proposed action has the potential to temporarily impact 0.003 acres of delineated wetland associated with the north bank of the Dietrich Main Canal, and 0.002 acres of wetland associated with the south bank of the canal. There is the potential to impact 0.003 acres of wetland associated with the irrigation ditch. Impacts are anticipated to only be temporary due to the vegetation's ability to become reestablished once the construction activities have been completed. Hydrology and soils within the delineated areas would not be impacted by the installation of the waterline. Alternate installation methods (i.e. directional boring) could be implemented that would prevent any impacts to the delineated wetland areas.

Table 4. Delineated acreage for each area assessed and potential acreage disturbed by the proposed action.

Delineated Area	Delineated Wetland Acreage	Non Wetland Acreage	Potential Disturbed Acreage
North Bank of Dietrich Main Canal	0.017	--	0.003
South Bank of Dietrich Main Canal	0.0012	--	0.002
Irrigation Ditch	0.018	--	0.003
Total	**0.047**	**0.000**	**0.008**

This report should contain enough information for the USACE to provide a Jurisdictional Determination. If the USACE determines there is connectivity of the wetlands to Waters of the U.S. the USACE would then have jurisdiction over these areas. Any potential disturbance to these areas would require a 404 permit prior to the initiation of any activities.

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APPENDIX A

Data Sheets

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Dietrich Main Canal City/County: Dietrich, Lincoln Sampling Date: 7/7/2011
Applicant/Owner: City of Dietrich State: Idaho Sampling Point: North Bank
Investigator(s): S. Webster Section, Township, Range: T 6 S, R 18 E, Sec 12
Landform (hillslope, terrace, etc.): Flat Local relief (concave, convex, none): None Slope (%): 0-1%
Subregion (LRR): B- Columbia/Snake River Plateau Lat: 42.9179 Long: -114.2659 Datum: NAD 83
Soil Map Unit Name: Snowmore-Minveno-Hoosegow complex, 2 to 10 % slopes NWI classification: None
Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)
Are Vegetation _____ Soil X or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes _____ No X
Are Vegetation _____ Soil _____ or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes	X	No		**Is the Sampled Area within a Wetland?**	Yes **X** No
Hydric Soil Present?	Yes	X	No			
Wetland Hydrology Present?	Yes	X	No			

Remarks: Soils are atypical due to being excavated for the canal. Grass fringe on bank is approximately 6 feet wide and routinely maintained.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot Size:_____)	Absolute % cover	Dominant species	Indicator Status
1.			
2.			
3.			
4			
Total Cover:	0		
Sapling/Shrub Stratum			
1.			
2.			
3.			
4.			
5.			
Total Cover:	0		
Herb Stratum			
1. *Phalaris arundinacea*	90	Yes	FACW
2. *Agropyron repens*	10	No	FAC
3.			
4.			
5.			
6.			
7.			
8.			
Total Cover:	100		
Woody Vine Stratum			
1.			
2.			
Total Cover:	0		

% Bare Ground in Herb Stratum 10 % Cover of Biotic Crust 0

Dominance Test worksheet:
Number of Dominant Species That Are OBL, FACW, or FAC: (excludes FAC-) 1 (A)
Total Number of Dominant Species Across All Strata: 1 (B)
Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of		Multiply by:	
OBL species		x 1=	
FACW species		x 2=	
FAC species		x 3=	
FACU species		x 4=	
UPL species		x 5=	
Column Totals:	(A)		(B)

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:
X Dominance Test is >50%
___ Prevalence Index is ≤3.0[1]
___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes X No _____

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: North Canal Bank

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ____ Histosol (A1)
- ____ Histic Epipedon (A2)
- ____ Black Histic (A3)
- ____ Hydrogen Sulfide (A4)
- ____ Stratified Layers (A5) (LRR C)
- ____ 1 cm Muck (A9) (LRR D)
- ____ Depleted Below Dark Surface (A11)
- ____ Thick Dark Surface (A12)
- ____ Sandy Mucky Mineral (S1)
- ____ Sandy Gleyed Matrix (S4)
- ____ Sandy Redox (S5)
- ____ Stripped Matrix (S6)
- ____ Loamy Mucky Mineral (F1)
- ____ Loamy Gleyed Matrix (F2)
- ____ Depleted Matrix (F3)
- ____ Redox Dark Surface (F6)
- ____ Depleted Dark Surface (F7)
- ____ Redox Depressions (F8)
- ____ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ____ 1 cm Muck (A9) (LRR C)
- ____ 2 cm Muck (A10) (LRR B)
- ____ Reduced Vertic (F18)
- ____ Red Parent Material (TF2)
- ____ Other (Explain in Remarks)
- ____
- ____
- ____

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** _____ **No** _____

Remarks: Due to the steepness of the banks of the Canal no soil test hole was done. Following the protocol for Difficult Wetland Situation in Arid West-Problematic hydric soils, Step 4(e) the soils along the banks of the canal are considered hydric if the canal contains water for more than 14 days during the growing season and has done so for more than 5 years.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- X Surface Water (A1)
- ____ High Water Table (A2)
- ____ Saturation (A3)
- ____ Water Marks (B1)
- X Sediment Deposits (B2)
- ____ Drift Deposits (B3)
- ____ Surface Soil Cracks (B6)
- X Inundation Visible on Aerial
- ____ Water-Stained Leaves (B9)
- ____ Salt Crust (B11)
- ____ Biotic Crust (B12)
- ____ Aquatic Invertebrates (B13)
- ____ Hydrogen Sulfide Odor (C1)
- ____ Oxidized Rhizospheres along Living Roots (C3)
- ____ Presence of Reduced Iron (C4)
- ____ Recent Iron Reduction in Plowed Soils (C6)
- ____ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ____ Water Marks (B1) (Riverine)
- ____ Sediment Deposits (B2) (Riverine)
- ____ Drift Deposits (B3) (Riverine)
- ____ Drainage Patterns (B10)
- ____ Dry-Season Water Table (C2)
- ____ Thin Muck Surface (C7)
- ____ Crayfish Burrows (C8)
- ____ Saturation Visible on Aerial Imagery (C9)
- ____ Shallow Aquitard (D3)
- ____ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes X No ____ Depth (inches): 48

Water Table Present? Yes ____ No X Depth (inches): ____

Saturation Present? (includes capillary fringe) Yes X No ____ Depth (inches): 0

Wetland Hydrology Present? Yes X No ____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: Water is visible in the canals on aerial photographs of the area.

Remarks: Water is present throughout the growing season when the canal system is in use.

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Dietrich Main Canal City/County: Dietrich / Lincoln Sampling Date: 7/7/2011
Applicant/Owner: City of Dietrich State: Idaho Sampling Point: South Bank
Investigator(s): S. Webster Section, Township, Range: T 6 S, R 18 E, Sec 12
Landform (hillslope, terrace, etc.): Flat Local relief (concave, convex, none): None Slope (%): 0-1%
Subregion (LRR): B- Columbia/Snake River Plateau Lat: 42.9179 Long: -114.2659 Datum: NAD 83
Soil Map Unit Name: Snowmore-Minveno-Hoosegow complex, 2 to 10 % slopes NWI classification: None
Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)
Are Vegetation _____ Soil X or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes _____ No X
Are Vegetation _____ Soil _____ or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes	X	No		**Is the Sampled Area within a Wetland?**	Yes	**X**	No	
Hydric Soil Present?	Yes	X	No						
Wetland Hydrology Present?	Yes	X	No						

Remarks: Soils are atypical due to being excavated for the canal. Grass fringe on bank is approximately 4 feet wide and routinely maintained.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot Size:_____)	Absolute % cover	Dominant species	Indicator Status
1.			
2.			
3.			
4			
Total Cover:	0		
Sapling/Shrub Stratum			
1.			
2.			
3.			
4.			
5.			
Total Cover:	0		
Herb Stratum			
1. *Phalaris arundinacea*	60	Yes	FACW
2. *Agropyron repens*	5	No	FAC
3. Catabrosa aquatica	15	Yes	OBL
4. *Cirsium arvense*	2	No	FACU
5. *Lactuca serriola*	2	No	FACU
6. *Descurainia sophia*	1	No	UPL
7.			
8.			
Total Cover:	85		
Woody Vine Stratum			
1.			
2.			
Total Cover:	0		

% Bare Ground in Herb Stratum 20 % Cover of Biotic Crust 0

Dominance Test worksheet:
Number of Dominant Species That Are OBL, FACW, or FAC: (excludes FAC-) 2 (A)
Total Number of Dominant Species Across All Strata: 2 (B)
Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of		Multiply by:	
OBL species		x 1=	
FACW species		x 2=	
FAC species		x 3=	
FACU species		x 4=	
UPL species		x 5=	
Column Totals:	(A)		(B)

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:
X Dominance Test is >50%
___ Prevalence Index is ≤3.0[1]
___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes X No _____

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: South Canal Bank

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ____ Histosol (A1)
- ____ Histic Epipedon (A2)
- ____ Black Histic (A3)
- ____ Hydrogen Sulfide (A4)
- ____ Stratified Layers (A5) (LRR C)
- ____ 1 cm Muck (A9) (LRR D)
- ____ Depleted Below Dark Surface (A11)
- ____ Thick Dark Surface (A12)
- ____ Sandy Mucky Mineral (S1)
- ____ Sandy Gleyed Matrix (S4)
- ____ Sandy Redox (S5)
- ____ Stripped Matrix (S6)
- ____ Loamy Mucky Mineral (F1)
- ____ Loamy Gleyed Matrix (F2)
- ____ Depleted Matrix (F3)
- ____ Redox Dark Surface (F6)
- ____ Depleted Dark Surface (F7)
- ____ Redox Depressions (F8)
- ____ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ____ 1 cm Muck (A9) (LRR C)
- ____ 2 cm Muck (A10) (LRR B)
- ____ Reduced Vertic (F18)
- ____ Red Parent Material (TF2)
- ____ Other (Explain in Remarks)
- ____
- ____
- ____

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** X **No** ____

Remarks: Due to the steepness of the banks of the Canal no soil test hole was done. Following the protocol for Difficult Wetland Situation in Arid West-Problematic hydric soils, Step 4(e) the soils along the banks of the canal are considered hydric if the canal contains water for more than 14 days during the growing season and has done so for more than 5 years.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- X Surface Water (A1)
- ____ High Water Table (A2)
- ____ Saturation (A3)
- ____ Water Marks (B1)
- X Sediment Deposits (B2)
- ____ Drift Deposits (B3)
- ____ Surface Soil Cracks (B6)
- X Inundation Visible on Aerial
- ____ Water-Stained Leaves (B9)
- ____ Salt Crust (B11)
- ____ Biotic Crust (B12)
- ____ Aquatic Invertebrates (B13)
- ____ Hydrogen Sulfide Odor (C1)
- ____ Oxidized Rhizospheres along Living Roots (C3)
- ____ Presence of Reduced Iron (C4)
- ____ Recent Iron Reduction in Plowed Soils (C6)
- ____ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ____ Water Marks (B1) (Riverine)
- ____ Sediment Deposits (B2) (Riverine)
- ____ Drift Deposits (B3) (Riverine)
- ____ Drainage Patterns (B10)
- ____ Dry-Season Water Table (C2)
- ____ Thin Muck Surface (C7)
- ____ Crayfish Burrows (C8)
- ____ Saturation Visible on Aerial Imagery (C9)
- ____ Shallow Aquitard (D3)
- ____ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes X No ____ Depth (inches): 48

Water Table Present? Yes ____ No X Depth (inches): ____

Saturation Present? (includes capillary fringe) Yes X No ____ Depth (inches): 0

Wetland Hydrology Present? Yes X No ____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available: Water is visible in the canals on aerial photographs of the area.

Remarks: Water is present throughout the growing season when the canal system is in use.

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Dietrich Main Canal City/County: Dietrich, Lincoln Sampling Date: 7/7/2011
Applicant/Owner: City of Dietrich State: Idaho Sampling Point: Irrigation ditch
Investigator(s): S. Webster Section, Township, Range: T 6 S, R 18 E, Sec 12
Landform (hillslope, terrace, etc.): Flat Local relief (concave, convex, none): None Slope (%): 0-1%
Subregion (LRR): B- Columbia/Snake River Plateau Lat: 42.9179 Long: -114.2658 Datum: NAD 83
Soil Map Unit Name: Snowmore-Minveno-Hoosegow complex, 2 to 10 % slopes NWI classification: None
Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No _____ (If no, explain in Remarks.)
Are Vegetation _____ Soil X or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes _____ No X
Are Vegetation _____ Soil _____ or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes	X	No		**Is the Sampled Area within a Wetland?**	Yes **X** No
Hydric Soil Present?	Yes	X	No			
Wetland Hydrology Present?	Yes	X	No			

Remarks: Soils are atypical due to being excavated for the canal. The entire ditch is vegetated and is approximately 6 feet wide from top of bank to top of bank. Some of the weedy species appeared to have been treated and were dying.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot Size:_____)	Absolute % cover	Dominant species	Indicator Status
1.			
2.			
3.			
4			
Total Cover:	0		
Sapling/Shrub Stratum			
1.			
2.			
3.			
4.			
5.			
Total Cover:	0		
Herb Stratum			
1. *Phalaris arundinacea*	35	Yes	FACW
2. *Typha latifolia*	30	Yes	OBL
3. *Lactuca serriola*	15	Yes	FACU
4. *Agropyron repens*	5	No	FAC
5. *Dipsacus fullonum ssp. sylvestris*	5	No	FAC
6. *Asparagus officinalis*	1	No	FACU
7.			
8.			
Total Cover:	91		
Woody Vine Stratum			
1.			
2.			
Total Cover:	0		

% Bare Ground in Herb Stratum 5 % Cover of Biotic Crust 0

Dominance Test worksheet:
Number of Dominant Species That Are OBL, FACW, or FAC: (excludes FAC-) 3 (A)
Total Number of Dominant Species Across All Strata: 3 (B)
Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of		Multiply by:	
OBL species		x 1=	
FACW species		x 2=	
FAC species		x 3=	
FACU species		x 4=	
UPL species		x 5=	
Column Totals:	(A)		(B)

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:
X Dominance Test is >50%
___ Prevalence Index is ≤3.0[1]
___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes X No _____

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: Irrigation Ditch

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix. [2]Location: PL=Pore Lining, RC=Root Channel, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ____ Histosol (A1)
- ____ Histic Epipedon (A2)
- ____ Black Histic (A3)
- ____ Hydrogen Sulfide (A4)
- ____ Stratified Layers (A5) (LRR C)
- ____ 1 cm Muck (A9) (LRR D)
- ____ Depleted Below Dark Surface (A11)
- ____ Thick Dark Surface (A12)
- ____ Sandy Mucky Mineral (S1)
- ____ Sandy Gleyed Matrix (S4)
- ____ Sandy Redox (S5)
- ____ Stripped Matrix (S6)
- ____ Loamy Mucky Mineral (F1)
- ____ Loamy Gleyed Matrix (F2)
- ____ Depleted Matrix (F3)
- ____ Redox Dark Surface (F6)
- ____ Depleted Dark Surface (F7)
- ____ Redox Depressions (F8)
- ____ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ____ 1 cm Muck (A9) (LRR C)
- ____ 2 cm Muck (A10) (LRR B)
- ____ Reduced Vertic (F18)
- ____ Red Parent Material (TF2)
- ____ Other (Explain in Remarks)
- ____
- ____
- ____

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes X **No** ____

Remarks: Due to the steepness of the banks of the ditch no soil test hole was done. Following the protocol for Difficult Wetland Situation in Arid West-Problematic hydric soils, Step 4(e) the soils along the banks of the canal are considered hydric if the canal contains water for more than 14 days during the growing season and has done so for more than 5 years.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- X Surface Water (A1)
- ____ High Water Table (A2)
- ____ Saturation (A3)
- ____ Water Marks (B1)
- X Sediment Deposits (B2)
- ____ Drift Deposits (B3)
- ____ Surface Soil Cracks (B6)
- ____ Inundation Visible on Aerial
- ____ Water-Stained Leaves (B9)
- ____ Salt Crust (B11)
- ____ Biotic Crust (B12)
- ____ Aquatic Invertebrates (B13)
- ____ Hydrogen Sulfide Odor (C1)
- ____ Oxidized Rhizospheres along Living Roots (C3)
- ____ Presence of Reduced Iron (C4)
- ____ Recent Iron Reduction in Plowed Soils (C6)
- ____ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ____ Water Marks (B1) (Riverine)
- ____ Sediment Deposits (B2) (Riverine)
- ____ Drift Deposits (B3) (Riverine)
- ____ Drainage Patterns (B10)
- ____ Dry-Season Water Table (C2)
- ____ Thin Muck Surface (C7)
- ____ Crayfish Burrows (C8)
- ____ Saturation Visible on Aerial Imagery (C9)
- ____ Shallow Aquitard (D3)
- ____ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes X	No ____	Depth (inches): 18	
Water Table Present?	Yes ____	No X	Depth (inches): ____	
Saturation Present? (includes capillary fringe)	Yes X	No ____	Depth (inches): 0	

Wetland Hydrology Present? Yes X No ____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: water is leaking from a culvert in the canal making water present throughout the growing season when the canal system is in use.

APPENDIX B

Plant List

Common Name	NWI/FWS Scientific Name (1988/Reg 9 Suppl)	Current Scientific Name (ITIS)	Region 9 Indicator
Asparagus	*Asparagus officinalis*	No change	FACU
Brookgrass	*Catabrosa aquatic*	No change	OBL
Cattail	*Typha latifolia*	No change	OBL
Common teasel	*Dipsacus fullonum ssp. sylvestris*	No change	FAC
Flix weed	*Descurainia sophia*	No change	UPL
Prickly lettuce	*Lactuca serriola*	No change	FACU
Quack grass	*Agropyron repens*	No change	FAC
Reed canarygrass	*Phalaris arundinacea*	No change	FACW

Indicator status definitions:

OBL - Obligate Wetland Plants: Plants that occur almost always (estimated probability >99 percent) in wetlands under natural conditions, but which may also occur rarely (estimated probability<1 percent) in nonwetlands.

FACW - Facultative Wetland Plants: Plants that occur usually (estimated probability >67 percent to 99 percent) in wetlands, but also occur (estimated probability 1 percent to 33 percent) in nonwetlands.

FAC - Facultative Plants: Plants with a similar likelihood (estimated probability 33 percent to 67 percent) of occurring in both wetlands and nonwetlands. This includes FAC+ and FAC- plants.

FACU - Facultative Upland Plants: Plants that occur sometimes (estimated probability 1 percent to <33 percent) in wetlands, but occur more often (estimated probability >67 percent to 99 percent) in nonwetlands.

(USACE. 1998)

APPENDIX C

Maps

Soil Map—Wood River Area, Idaho, Gooding County and Parts of Blaine, Lincoln, and Minidoka Counties

Soil Map–Wood River Area, Idaho, Gooding County and Parts of Blaine, Lincoln, and Minidoka Counties

MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils
- Soil Map Units

Special Point Features
- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other

Special Line Features
- Gully
- Short Steep Slope
- Other

Political Features
- Cities

Water Features
- Oceans
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

MAP INFORMATION

Map Scale: 1:798 if printed on A size (8.5" × 11") sheet.

The soil surveys that comprise your AOI were mapped at 1:24,000.

Please rely on the bar scale on each map sheet for accurate map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL: http://websoilsurvey.nrcs.usda.gov
Coordinate System: UTM Zone 11N NAD83

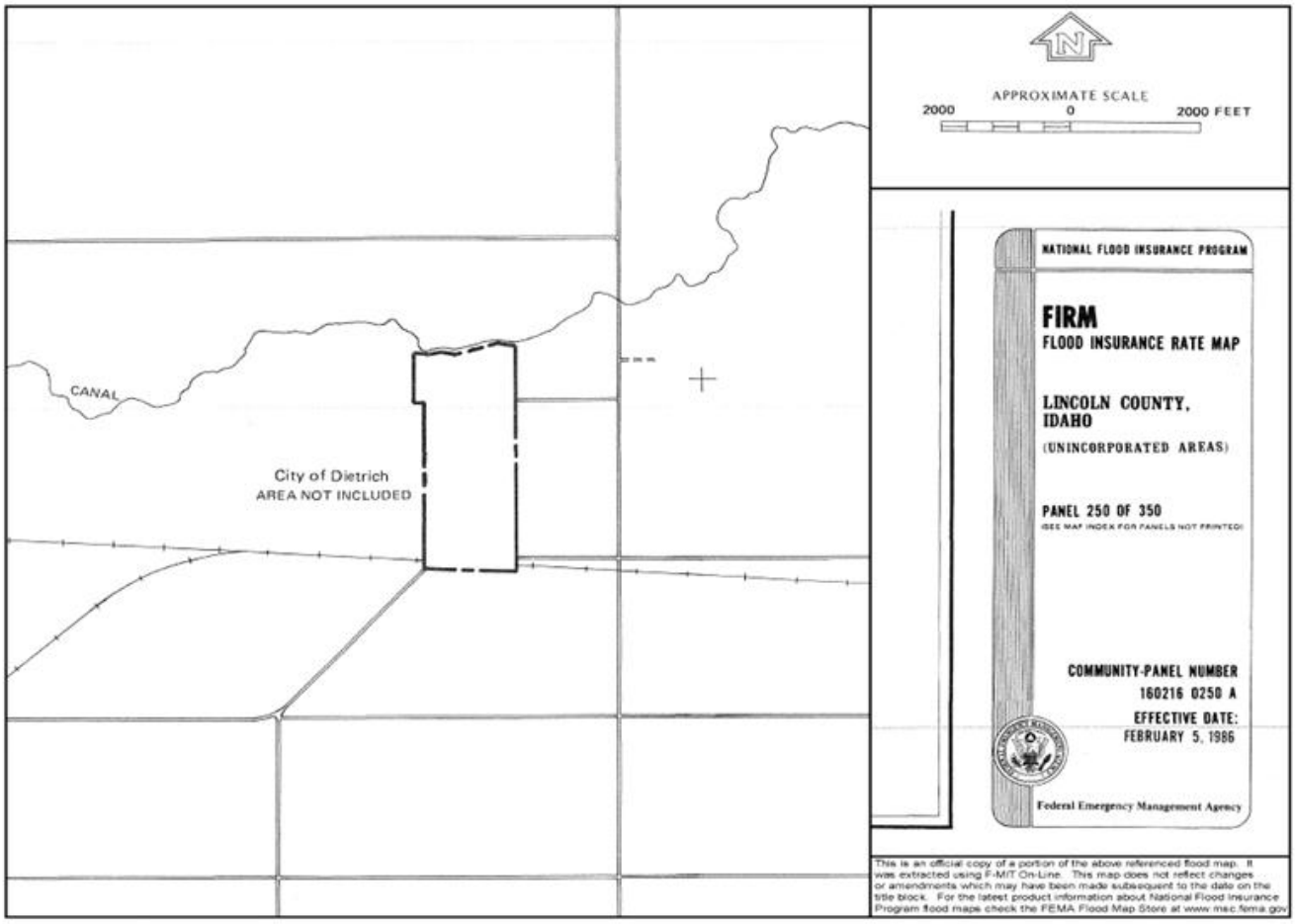
This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Wood River Area, Idaho, Gooding County and Parts of Blaine, Lincoln, and Minidoka Counties
Survey Area Data: Version 9, Aug 26, 2010

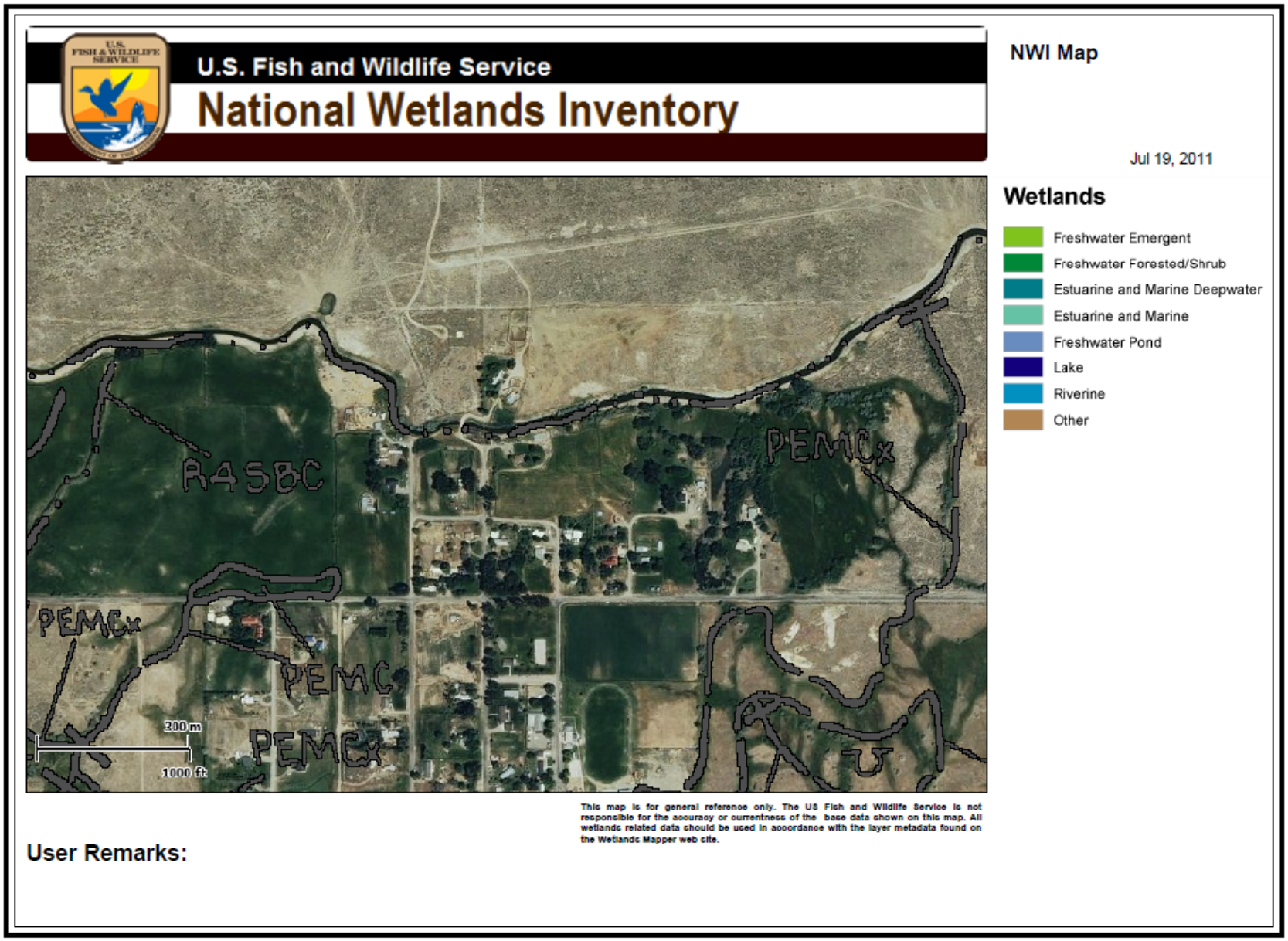
Date(s) aerial images were photographed: 9/9/2004

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

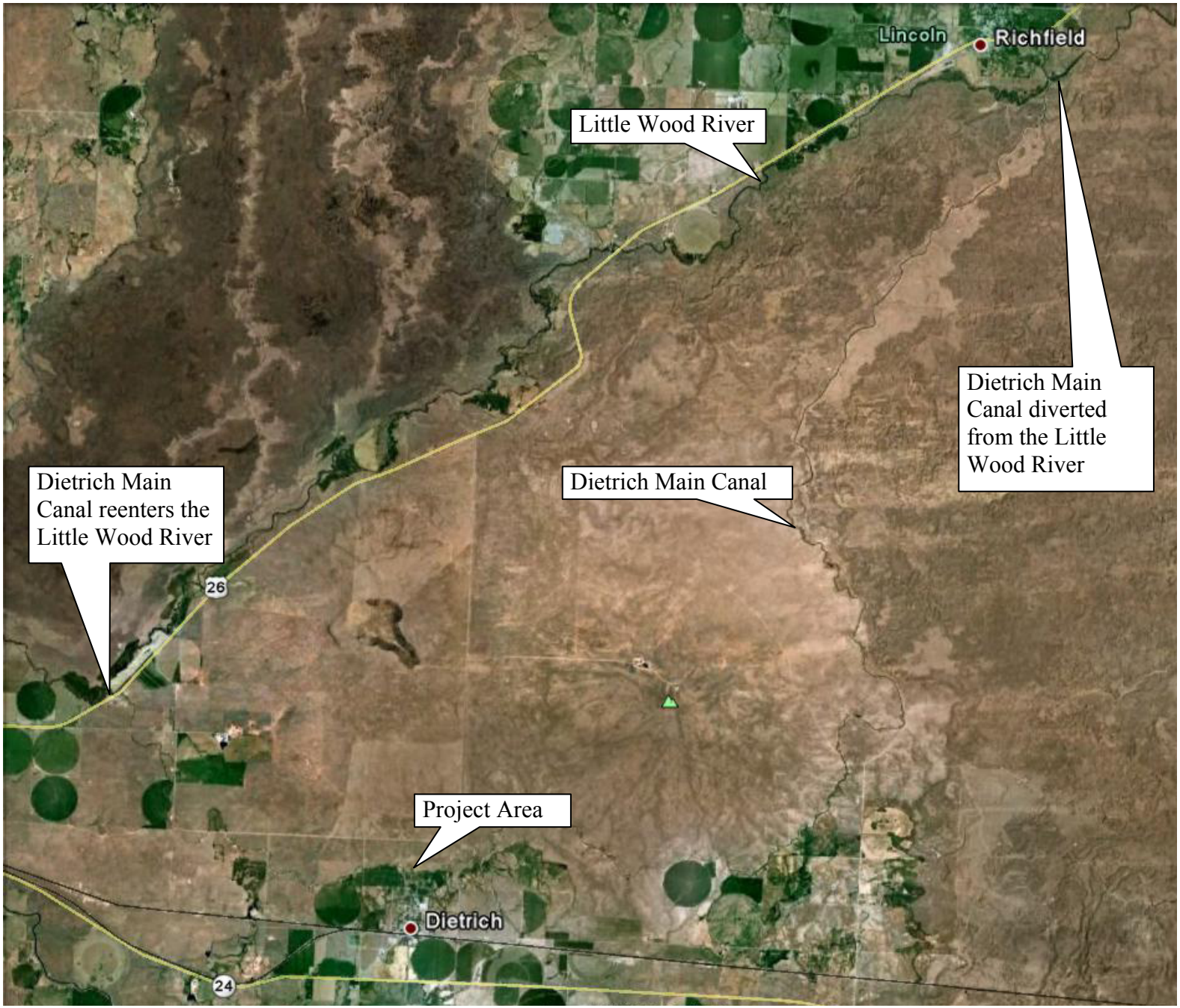
Map Unit Legend	
Map Unit Symbol	**Map Unit Name**
174	Snowmore-Minveno-Hoosegow complex, 2 to 10 percent slopes
177	Snowmore-Wako-Harsan complex, 1 to 4 percent slopes



FIRM of the project area.



National Wetland Inventory (NWI) Map of project area.



Water Flow Patterns

Appendix G

CULTURAL SURVEY

CITY OF DIETRICH

CLASS III INVENTORY OF THE DIETRICH WATER LINE, LINCOLN COUNTY, IDAHO

Prepared for
City of Dietrich

By North Wind Resource Consulting, *a CIRI Company*
Idaho Falls, Idaho

August 29, 2011

ARCHAEOLOGICAL AND HISTORICAL SURVEY REPORT
ARCHAEOLOGICAL SURVEY OF IDAHO

A. KEY INFORMATION

1.	**Project Name:**	Dietrich Water Line
2.	**Project Number:**	Cultural Resource Permit No. ID-I-37070
3.	**Agency Name:**	Bureau of Land Management, Shoshone Field Office
4.	**Report Author:**	William M. Harding
5.	**Date:**	August 24, 2011
6.	**County:**	Lincoln County
7.	**Township, Range, Section:**	T6S, R18E, Sections 1 and 12
8.	**Acres Surveyed:**	6, intensive (30 meter or less interval)

B. PROJECT DESCRIPTION

1. **Description of project and potential direct and indirect impacts to known or suspected historic properties:**

The proposed project is the construction of 2,000 feet of C900 PVC pipe on BLM property that will run parallel with the existing 10-inch water main from the storage tank south to the City's distribution system. A contractor with a public works license will be hired to construct the water main in accordance with State standards. It is anticipated that the contractor will use trackhoes, dump trucks, skidsters, and backhoes to install the pipeline. Shallow rock elevations are anticipated. Rock removal measures will likely be needed which could include rock sawing, rock hammering, or potentially rock blasting. After the pipe is installed, pipe bedding will be installed around the pipe and then the trench will be backfilled with native soil. The City of Dietrich plans to open-cut trench across the Dietrich Main canal to install the pipe and then bury the pipe and recontour the canal. The expected construction depth is down to 6 ft below existing ground elevation and the canal. The expected trench width is approximately 4.5 ft wide. The surface ground disturbance will be a 50 ft strip centered on the pipeline that will have significant surface disturbance with wheel traffic from equipment, but no subsurface disturbance.

The proposed project includes a new 350,000 gallon bolted or welded steel tank with an approximate diameter of 55' and a height of 20'. The new tank is estimated to be constructed within 500 feet of the existing concrete tank. The tank site will be cleared and grubbed. A concrete foundation will be constructed that is approximately the diameter of the tank. The shell of the tank will be erected with cranes, trackhoes, dump trucks, and skidsters. Once completed, the site will be cleaned up. A gravel surface will be constructed immediately around the tank to control drainage and plant growth. Additionally, a new well site was also surveyed. A 500 ft radius around the existing well was inventoried in preparation of this portion of the undertaking.

2. **Description of Area of Potential Effects with reference to attached map:**

The project area occurs in the northern Snake River plain north of Dietrich, Idaho (Figures 1 and 2). The area is located just north of Dietrich on a mixture of aeolian and residual deposits composed of light brown sandy silt with subangular basalt cobbles. Vegetation is composed of big sagebrush, rabbitbrush, tumble mustard, Russian thistle, Sandberg bluegrass, cheatgrass and other unidentified forbs and grasses. The proposed water line runs from the water purification building to a water tank for a distance of 0.47 mi.

3. **Project Acres:** 6 acres
4. **Owners of land in the project area:** Federal (BLM)

C. STATEMENT OF OBJECTIVES FOR SURVEY

The objective of this cultural resource inventory is to identify and evaluate cultural properties within the project's area of potential effects (APE) in accordance with 36 CFR 800. Information pertaining to prehistoric cultures and European-American activities was sought.

D. LOCATION AND GENERAL ENVIRONMENTAL SETTING

1. **USGS topographic map:** Dietrich (1987), 7.5' USGS quadrangle.
2. **Setting:**

The project area is located in the northern portion of the central Snake River plain. Bedrock in the area is basalt. Small shield volcanos, from which the lava erupted, occur sporadically across the landscape. Pressure ridges, lava blisters, and other tumuli (n.b., in the geologic sense) characterize the setting, which is gently rolling. Elevations range from approximately 4,160 ft to 4,250.

Soils consists of basalt bedrock outcrops and aeolian sandy loams in the the area of potential effects (APE). As expected, most of the soils are aridisols with some entisols.

Vegetation is sagebrush-steppe. Observed plants include shrubs such as big sagebrush and rabbitbrush. Forbs include aster, phlox, vetch, halogeton, tumblemustard, tansy mustard, knapweed, skeletonweed, globemallow, salsify, mullein, and several others. Grasses include Sandberg bluegrass, bluebunch wheatgrass, Idaho fescue, and Indian ricegrass.

The average annual temperature is 49.9° F with an annual average high temperature of 61.9°F and an average annual low of 37.9°F. The warmest month is July with an average maximum temperature of 90.4°F; the coldest month is December with an average minimum temperature of 21.4°F. The region receives an average of 9.52 inches of precipitation per year with most of the precipitation falling in April and May with the least occurring in September.

E. PRE-FIELD RESEARCH

1. **Sources of information checked:**

- ☒ Overviews
- ☒ National Register
- ☒ Archaeological site records/map
- ☒ Architectual site records/maps
- ☒ Survey records
- ☐ Ethnographic studies
- ☒ Historical records/maps (list)
- ☐ Individuals/Groups with special knowledge (list)
- ☐ Other (list)

2. **Summary of previous studies in the general area:**

Seven projects have occurred along the proposed APE. The projects range in size from a few acres up to 705 acres. Table 1 lists the results of the file search (File Search No. 11300) through the State Historic Preservation Office (SHPO) by report number. The file search was conducted for 0.5 mi on each side of the proposed water line. Suzanne Henrikson inventoried the original water line in 1992.

Table 1. Previous Studies Conducted in the Area

SHPO Report No.	Report Title	Author	Date	Acres
1992/73	Crater Butte Greenstrip	Lytle, John	1991	525

SHPO Report No.	Report Title	Author	Date	Acres
1992/1182	Dietrich Water System	Henrikson, S.	1992	4
1996/700	Dietrich Idaho Waste Water Project	Murphey, Kelly	1996	60
1997/574	Lorenzo Bollar Animal Waster	Ames, Dale F.	1997	1
1998/393	Crater Butte Seeding	Henrikson, S.	1998	600
2001/667	Dietrich Highway Dept. Road Right of Way	Cresswell, L.	2001	2
2006/230	American Falls Reservoir District No. 2, Proposed Title Transfer	TEC, Inc.	2005	705

3. **Description and evaluation of projects in E.2 with regard to survey design, methods, personnel and results:**
   Those projects performed after 1986 used current and standard archaeological methods.

F. EXPECTED HISTORIC AND PREHISTORIC LAND USE AND SITE SENSITIVITY

1. **Are cultural properties known in this area?** ☐ **No** ☒ **Yes**
   A total of five sites have been previously recorded. They are listed in Table 2. None occur within the current APE

Table 2. Previously Recorded Sites within the Project Area

Field No.	Site No.	Type of Property	Artifacts/Features	NRHP Eligibility	NRHP Criteria
	10LN34	Lithic scatter	Flakes, tool fragment	Unevaluated	--
	10LN670	Historic trash dump	1935-1950s-cans, ceramics, glass, metal, brick, car parts	Not eligible	--
	10LN671	Historic debris scatter	1920-1970-glass, cans	Not eligible	--
	63-11124	Building	Stone & brick school	Eligible	A,C
	63-11125	Building	One story lava rock bldg	Eligible	C

2. **Are cultural properties expected?** ☒ **Yes** ☐ **No**
3. **What cultural themes/contexts are expected within the survey area? Check at least one theme in the first two columns and at least one time period in the third column.**

Theme		Time Period
☒ Prehistoric Archaeology	☐ Military	☒ Prehistoric
☒ Agriculture	☐ Mining	☐ Historic Native American
☒ Architecture	☒ Native Americans	☐ Exploration: 1805-1860
☒ Civilian Conservation Corp	☐ Public Land Mngt./Conserv	☒ Settlement: 1855-1890
☐ Commerce	☒ Recreation/Tourism	☒ Phase I Statehood: 1890-1904
☐ Communication	☐ Settlement	☒ Phase II Statehood: 1904-1920
☐ Culture and Society	☐ Timber Industry	☒ Interwar: 1920-1940
☐ Ethnic Heritage	☐ Transportation	☒ Pre-Modern: 1940-1958
☐ Exploration/Fur Trapping	☐ Other (list)	☐ Modern: 1958-present
☐ Industry		

4. **Brief description of where cultural properties associated with expected themes might be found with respect to landforms, water, vegetation, slope, fauna, and historical documentation:**

   Because the APE has been previously inventoried, very few sites of any type are anticipated.

   Prehistoric cultural resources will consist of lithic scatters and open camps.

   Historical resources will most likely be agricultural-related and will consist of canals and other structures and buildings.

G. FIELD METHODS

1. **Areas examined and type of coverage:**
   All areas were examined by a crew of two archaeologists who surveyed the entire line using parallel transects
2. **Description of ground surface conditions:**
   Ground visibility was good and averaged about 75%.
3. **Areas not examined and reasons why:** None
4. **Names of personnel participating in the survey in the field:** William M. Harding, Grant Fahnestock
5. **Dates of survey:** August 20, 2011
6. **Problems encountered:** None

H. RESULTS

1. **Listing of all cultural properties (including previously recorded) in the APE:** ☐ **None**
   Only one site occurs within the APE. The Dietrich Main Canal (SiteD1) is located in the southern portion of the APE. It is recommended as eligible for inclusion on the National Register of Historic Places (NRHP) under Criteria A and C.
2. **Summary of important characteristics or properties listed above:**
   The Dietrich Main Canal (Site D1) measures about 30 ft wide. Depth is indeterminable because it was filled with water at the time of recording. A partial pole and timber bridge crosses the canal just east of the APE. The timbers are 12 by 2 inches and the bridge is 3.5 ft wide and is only present on the north bank of the canal. A recent timber stringer bridge is located west of the APE. The canal was built as a result of the Carey Act in 1909 by the Idaho Irrigation Company. It originates near Richfield from the Little Wood River and flows through Dietrich before terminating west of Dietrich.
3. **Recommendations for National Register eligibility of each cultural property:**

The Dietrich Main Canal is recommended as eligible for inclusion on the NRHP under Criteria A and C. Under Criterion A, it is associated with irrigation of the arid west. Under Criterion C, it is associated with early engineering practices.

4. **Recommendations for further investigations needed to evaluate cultural properties:** None
5. **Cultural Properties noted but not formally recorded:** None

I. CONCLUSIONS AND RECOMMENDATIONS

1. **Brief summary of relevance of cultural properties to contexts listed under F, discussing potential contributions to these contexts:**
   The single site (D1) is related to agriculture during the Phase II Statehood period.
2. **Discussion of potential threats to the integrity of the cultural properties and recommendations for future investigations or protective actions:**
   Only a 4.5 ft trench will be used to install the pipe through the canal. The canal is approximately 16 miles long; therefore, less than 0.5 percent of the canal will be impacted.
3. **For 106-related surveys, discussion of relationship of each cultural property to direct and indirect project impacts. Specifically state project's effect (no effect, no adverse effect, or adverse effect) upon each cultural property:** ☐ **No Properties**
   Only a small portion of Site D1 affected (less than 0.5 percent). There will be no adverse effect resulting from the trenching; however, the impact will be minimal to a canal that had undergone maintenance for decades.
4. **For 106-related surveys affecting cultural properties, discussion of avoidance or mitigation options for each property:**
   The canal will be trenched. Only a small portion of Site D1 affected (less than 0.5 percent). There will be no adverse effect resulting from the trenching; however, the impact will be minimal to a canal that had undergone maintenance for decades.
5. **For 106-related surveys, recommendations for additional information gathering or survey, avoidance measures, mitigation, and future management:** ☒ **None**
   Cultural resource clearance with no further work is recommended for the Dietrich Water Line Project subject to the following stipulations:
   1) All disturbances will be restricted to within the inventoried areas.
   2) If evidence of prehistoric or historic sites is discovered during the ground-disturbing activities, all activities within a 100-ft (30-m) radius of the site will cease immediately, and the appropriate personnel within the BLM should be notified.
   3) All construction and maintenance personnel will be instructed of the confidentiality of site locational information and that the collection of cultural material is prohibited.

ATTACHMENTS

1. **Appropriate forms attached for each site?** ☒ **Yes**
2. **Maps attached?** ☒ **Yes**
3. **Other attachments? (List)** ☒ **Photos**

REPOSITORY

Original survey records, field notes, and photographs are located at North Wind's Idaho Falls, Idaho office.

CERTIFICATION OF RESULTS

I certify that this investigation was conducted and documented according to the Secretary of Interior's Standards and Guidelines and that the report is complete and accurate to the best of my knowledge.

William M. Hardin	August 29, 2011
Signature of Reporter/Principal Investigator	Date

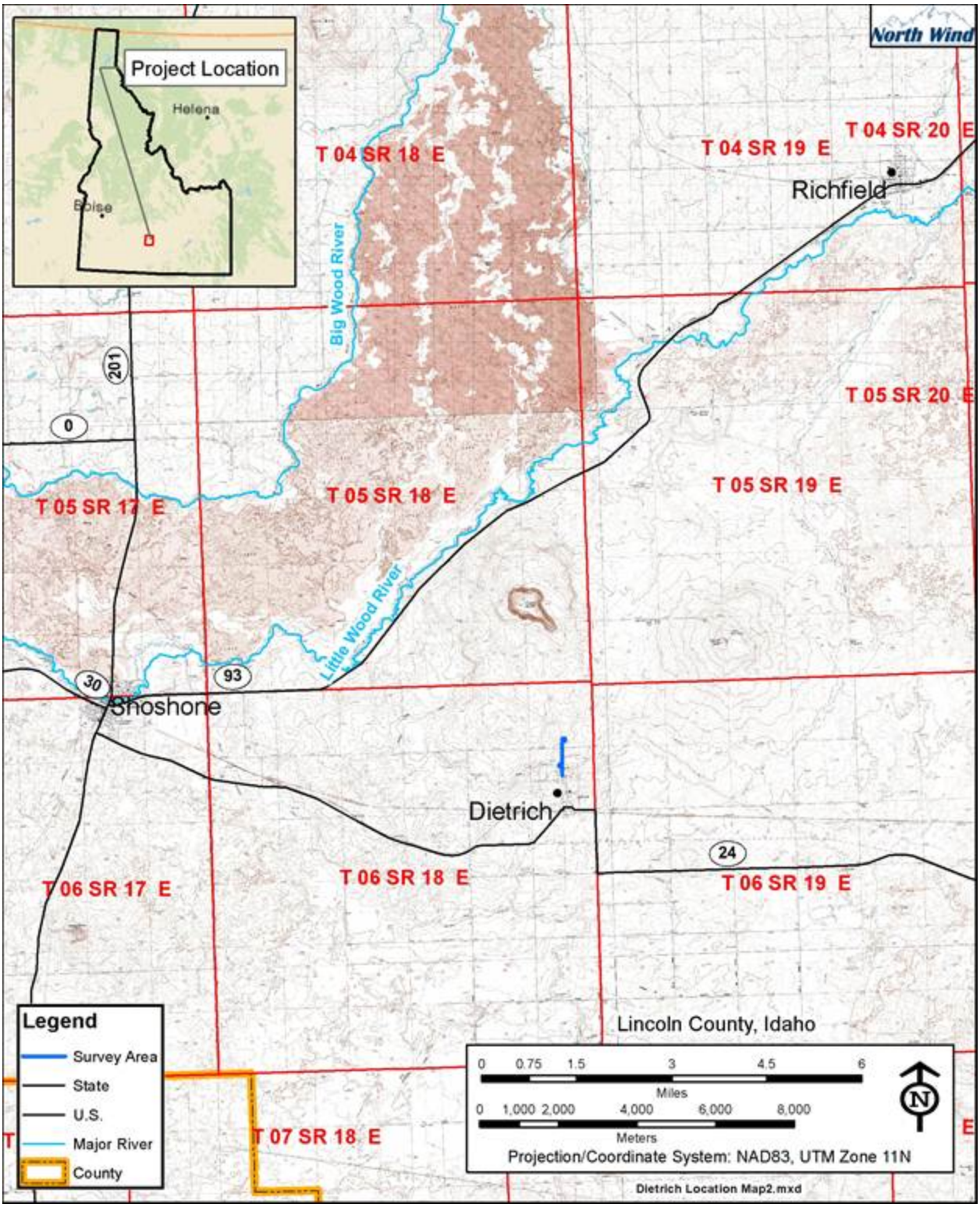


Figure 1. Map showing the general location of the project area.

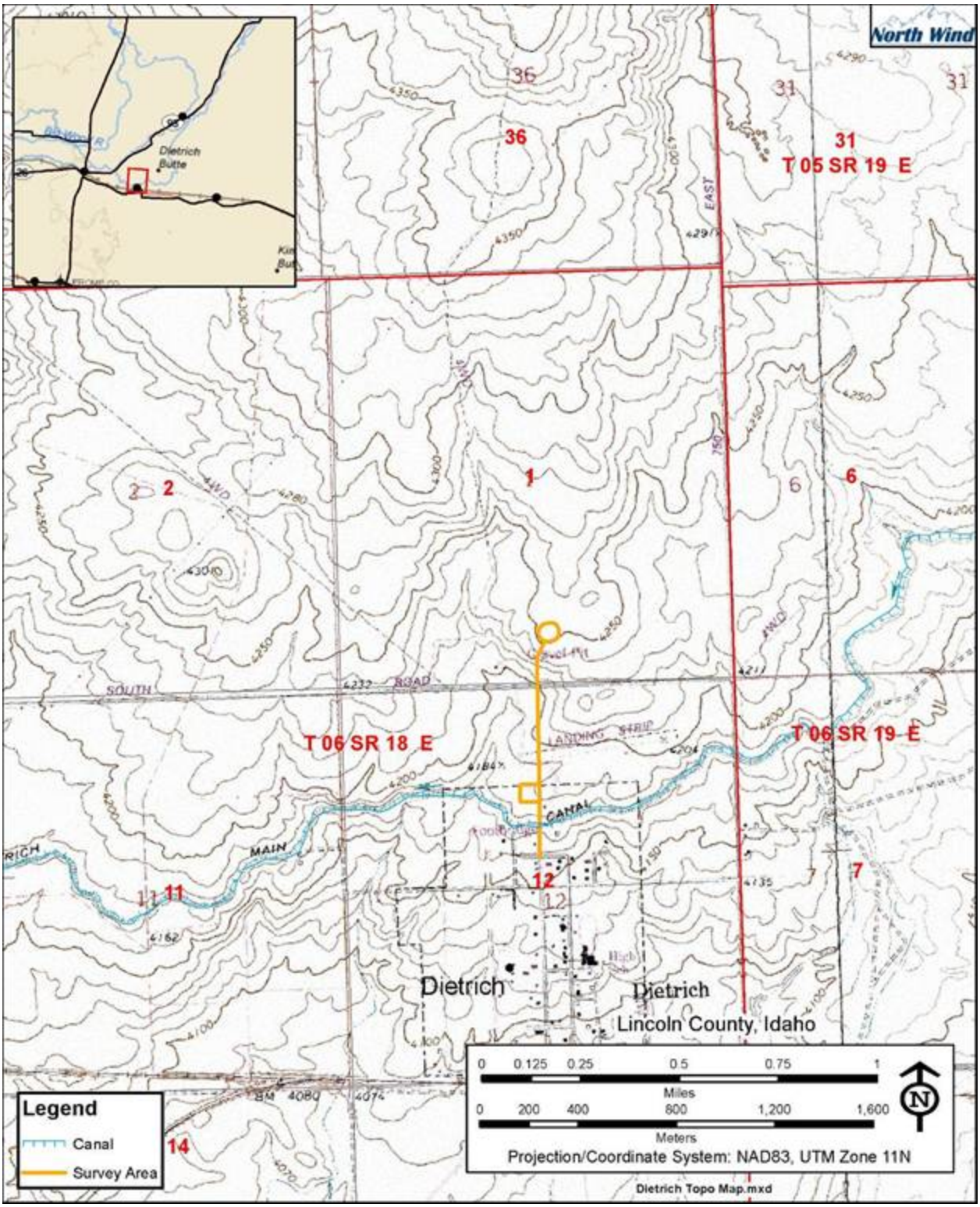
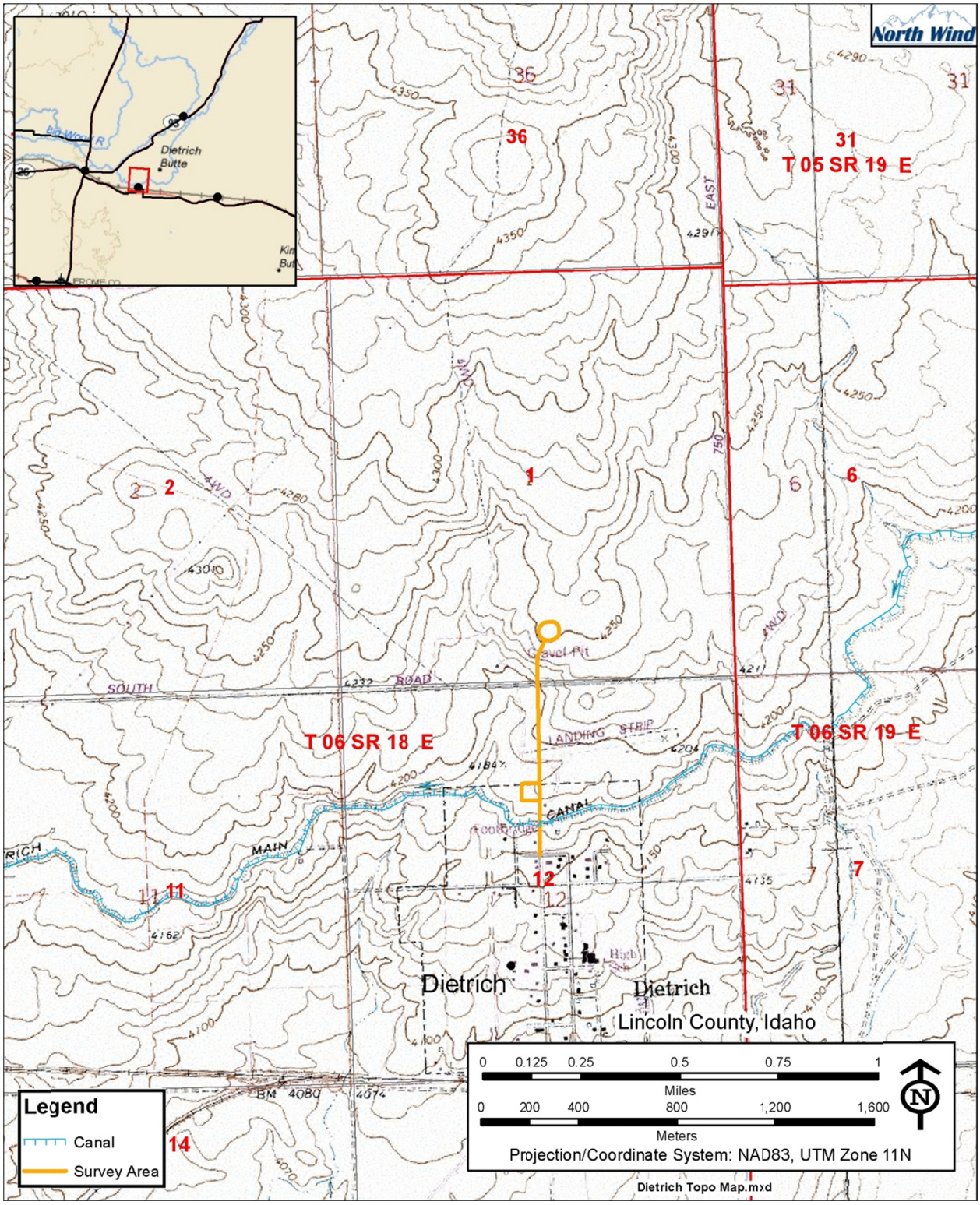
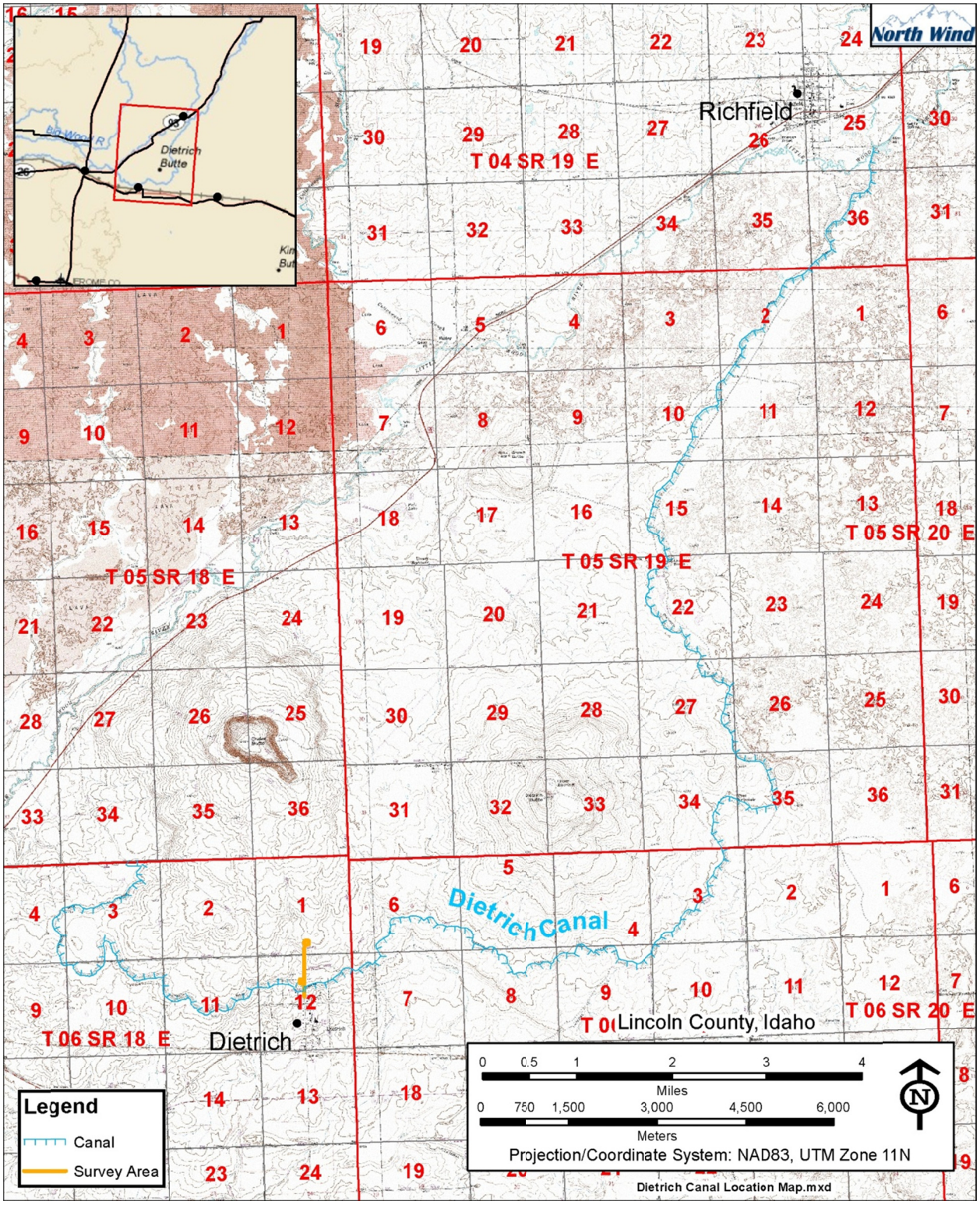


Figure 2. Map Showing Location of the Project Area. Taken from the Dietrich (1987) Quadrangle, USGS 7.5' Series (1:24,000 Scale).

Figure 3. Overview of the project area looking south.



Map Showing Location of the Project Area. Taken from the Dietrich (1987) Quadrangle, USGS 7.5' Series (1:24,000 Scale).



Topographic map showing location of the Dietrich Main Canal in Lincoln County.

View west of Site D1, Dietrich Main Canal.

View southeast showing Site D1, Dietrich Main Canal, and headgate.

View south of old bridge crossing Site D1, Dietrich Main Canal.

IDAHO HISTORIC SITES INVENTORY FORM

PROPERTY NAME: Dietrich Main Canal | FIELD#: D1
STREET: | RESTRICT: ☐
CITY: Dietrich | VICINITY: ☑ | COUNTY CD: | COUNTY NAME: Lincoln
SUBNAME: | BLOCK: | SUBLOT: | ACRES: 5 | LESS THAN: ☑
TAX PARCEL: | UTMZ: 11 | EASTING: 723177 | NORTHING: 4755327
TOWNSHIP: 6 | N_S: N | RANGE: 18 | E_W: E | SECTION: 12 | SE 1/4 | NW 1/4
QUADRANGLE: Dietrich | OTHERMAP:
SANBORN MAP: | SANBORN MAP#: | PHOTO#:

PROPERTY TYPE: Structure | CONST/ACT1: Original Construction | ACTDATE1: 1909 | CIRCA1: ☐
CONST/ACT2: Significant Construction | ACTDATE2: 1910 | CIRCA2: ☐
ASSOCIATED FEATURES: | TOTAL # FEATURES:

ORIGINAL USE: Agriculture/Subsistence | WALL MATERIAL: EARTH
ORIGSUBUSE: Irrigation Facility | FOUND. MATERIAL: EARTH
CURRENT USE: Agriculture/Subsistence | ROOF MATERIAL:
CURSUBUSE: Irrigation Facility | OTHER MATERIAL:
ARCHSTYLE: No Style | PLAN: linear | CONDITION: Good

NR REF #: | NPS CERT: | ACTIONDATE: | FUTURE ELIG DATE:
DIST/MPLNAME1: | DIST/MPLNAME2:

Individually Eligible ☑ | Contributing in a potential district ☐ | Noncontributing ☐ | Future eligibility ☐
Not Eligible ☐ | Multiple Property Study ☐ | Not evaluated ☐

CRITERIA A ☑ B ☐ C ☑ D ☐ | CRITERIA CONSIDERATION A ☐ B ☐ C ☐ D ☐ E ☐ F ☐ G ☐
AREA OF SIGNIF: Agriculture | AREA OF SIGNIF: Engineering

COMMENTS: The Dietrich Main Canal (Site D1) measures about 30 ft wide. Depth is indeterminable because it was filled with water at the time of recording. A partial pole and timber bridge crosses the canal just east of the APE. The timbers are 12 by 2 inches and the bridge is 3.5 ft wide and is only present on the north bank of the canal. A recent timber stringer bridge is located west of the APE. The canal was built as a result of the Carey Act in 1909 by the Idaho Irrigation Company. It originates near Richfield from

PROJ/RPT TITLE: Dietrich Water Line Class III Cultlural Resource Inventory | SVY DATE: 8/20/2011 | SVY LEVEL: Intensive
RECORDED BY: William Harding | PH: 557-7843 | ADDRESS: 1425 Higham St., Idaho Falls, ID 83402
SUBMITTED PHOTOS ☑ NEGS ☐ SLIDES ☐ SKETCH MAP ☑

SVY RPT #: | ******** FOR ISHPO USE ONLY ******** | IHSI#: D1
MS RPT #: | SITS#:
IHPR #: | HABS NO. ID-: | HAER NO. ID-: | REV#:

CS #: | IHSI# REF: | NR REF# 2: | REV# REF:
SVY RPT# 1: | SVY RPT# 2: | SVY RPT# 3: | MS RPT# 1: | MS RPT# 2:

ADD'L NOTES:
ATTACH ☑
MOREDATA ☐

OF PHOTOS: | NEGBOX#: | # OF SLIDES: | SHPO DETER: | DETER DATE:
INITIALLED: | ENTRY DATE: | REVISE1: | REVISE2: | REVISE3:

REV# | SITS# | IHSI#

IDAHO HISTORIC SITES INVENTORY FORM - ATTACHMENT

PROPERTY NAME Dietrich Main Canal IHSI# D1

FIELD# D1 COMMENTS: COUNTY NAME Lincoln

The Dietrich Main Canal (Site D1) measures about 30 ft wide. Depth is indeterminable because it was filled with water at the time of recording. A partial pole and timber bridge crosses the canal just east of the APE. The timbers are 12 by 2 inches and the bridge is 3.5 ft wide and is only present on the north bank of the canal. A recent timber stringer bridge is located west of the APE. The canal was built as a result of the Carey Act in 1909 by the Idaho Irrigation Company. It originates near Richfield from the Little Wood River and flows through Dietrich before terminating west of Dietrich. The Dietrich Main Canal is recommended as eligible for inclusion on the NRHP under Criteria A and C. Under Criterion A, it is associated with irrigation of the arid west. Under Criterion C, it is associated with early engineering practices.

ATTACH ☑

IHSI#

SITS#

REV#