

**Plan of Development
For the Gateway West Transmission Line
Project**

Geotechnical Study, Phase I

Submitted to:

**United States Department of the Interior
Bureau of Land Management**

Wyoming State Office
5353 Yellowstone Ave
Cheyenne, Wyoming 82009

Prepared by:

Tetra Tech

3380 Americana Terrace, Suite 201
Boise, Idaho 83706

Submitted by:

Idaho Power Company

1221 West Idaho Street
Boise, Idaho 83702

and

Rocky Mountain Power

1407 S West Temple,
Salt Lake City UT 84115

August 31, 2010

TABLE OF CONTENTS

ABBREVIATIONS AND ACRONYMS	i
1.0 INTRODUCTION.....	2
1.1 Purpose of Plan.....	2
1.2 Phase 1 Project Description	3
2.0 Geotechnical Activities	10
3.0 NEPA Compliance	11
3.1 Role of the Environmental Inspector within the Kemmerer Field Office.....	14

LIST OF APPENDICES

Appendix A	Detailed Maps of Bore Locations and Access
Appendix B	Location of Roads on BLM Lands for Access to Boreholes

LIST OF TABLES

Table 1. Number of Boreholes and Miles of Overland Travel on Public Lands by Field Office for the Gateway West Project	3
Table 2. Non-BLM and BLM boreholes requiring overland travel on BLM lands and the associated distances for the Gateway West Project	3
Table 3. Phase 1 Boreholes Locations on BLM Lands by Field Office.....	4
Table 4. Phase 1 Environmental Protection Measures	14

LIST OF FIGURES

Figure 1. General Location Map	6
Figure 2. Segment D Map	8
Figure 3. Example of drill rig in operation	10
Figure 4. Example of track mounted drill rig	11

ABBREVIATIONS AND ACRONYMS

APE	Area of Potential Effect
BLM	Bureau of Land Management
BMP	Best Management Practices
CPM	Compliance Project Manager
EA	Environmental Assessment
FO	Field Office
FONSI	Finding of No Significant Impact
GIS	Geographic Information System
kV	Kilovolt
MW	Megawatt
NEPA	National Environmental Policy Act
NF	National Forest
ROW	Right-of-way
TUP	Temporary Use Permit
USFS	United States Forest Service

1.0 INTRODUCTION

The overall Gateway West Transmission Line Project consists of the construction, operation, and maintenance of approximately 1,150 miles of high voltage, above ground, alternating current power lines with a capacity of approximately 3,000 megawatts (MW), to the service areas of the Companies. The project consists of 11 transmission line segments that will run between nine existing, proposed, or expanded substations.

Various segments will range from single-circuit 230 kilovolt (kV), single- and double-circuit 500 kV, and combination 230kV/500kV lines. The lines will be supported by steel H-frame structures or steel lattice towers. The distance between H-frames will average approximately 700 feet. The steel lattice structures will be spaced approximately every 1,200 to 1,300 feet.

1.1 Purpose of Plan

Idaho Power and Rocky Mountain Power (the Companies) are conducting investigation and permitting activities necessary to construct transmission lines from the planned Windstar Substation in Converse County, Wyoming, to the planned Hemingway Substation in Owyhee County, Idaho; known as the Gateway West Transmission Line Project. The project overview map (**Figure 1**) shows the proposed project alignment. As part of the investigation process, the Companies plan to conduct approximately 912 soil borings using truck or track-mounted drill rigs on public and private lands. Phase 1 of the drilling includes 39 drill sites on public land in Wyoming managed by the BLM and 1 in Idaho. In addition, another four drill sites are on private land, but require overland travel through Federal land.

There is considerable uncertainty as to the location of the preferred route for this project. Numerous alternatives to the proposed route have been developed. In those locations where there is more certainty, for example, segments that have no alternatives or small route variations, the Companies have made the decision to move forward with the geotechnical investigations. The purpose of the soil borings is to collect hydrogeologic and geotechnical soil properties for engineering design. The Companies have requested the short term right-of-way (ROW) grant be issued in two phases as shown on **Figure 2**. Phase 2 will be addressed at a later date.

Drill rig access will be necessary from the nearest existing road to the actual drill site. No new permanent or temporary roads will be constructed. To minimize disturbance, existing roads will be utilized as access points to the drill sites. In the case of drill sites located near existing roads, these sites will be no more than 100 feet off the road surface, just far enough that traffic is not impeded and drilling site workers are safe from traffic and disturbance is minimized. Where overland travel is necessary, vehicles will avoid concentrations of thick vegetation, drainage bottoms, surface water, wetlands, steep slopes, and other sensitive areas to minimize environmental impacts. Prior to drilling, field crews will receive a series of site maps, showing existing roads and cleared overland travel routes from the existing road to the drill site. **Appendix A** presents site maps, showing the locations of soil borings and overland travel access routes to the drill sites located on BLM lands as well as those drill sites that require overland travel on BLM lands.

The purpose of this Plan of Development (POD) is to describe the drilling procedures to facilitate receipt of temporary ROW permit to drill the borings on Federal land, and to drill the borings on state and private land requiring access over Federal land. The Wyoming State Office of the BLM is the lead Federal agency for the project. To conduct the drilling, the BLM

requires the Companies to submit a permit application. If the application is approved, BLM will issue a short-term ROW grant for boreholes and access on public lands.

1.2 Phase 1 Project Description

The proposed drilling is necessary to investigate the soil properties along the proposed routes. The soil properties are an important consideration in design of foundations and support structures for the transmission line, as well as substation and other associated building foundations. Details of the drilling necessary to complete the soil investigation are presented in Section 2.0. **Table 1** summarizes the number of boreholes and the approximate distance (in miles) of overland travel on Federal lands. In several instances, overland travel on BLM land will be required to reach a borehole located on non-BLM lands. **Table 2** identifies those boreholes and the distance of overland travel on BLM lands required to get to these boreholes as well as boreholes located on BLM lands. **Table 3** identifies the location of the boreholes by BLM field office and **Appendix B** provides the location of the access roads to the boreholes.

Table 1. Number of Boreholes and Miles of Overland Travel on Public Lands by Field Office for the Gateway West Project

Office	Number of Boreholes on Federal Land	Approximate Miles of Overland Travel on Federal Lands
Wyoming		
Casper BLM Field Office (FO)	3	0.0
Rawlins BLM FO	24	1.69
Rock Springs BLM FO	12	0.01
Kemmerer BLM FO	1	0.0
Idaho		
BLM Idaho Falls District, Pocatello FO	1	0.0
Total	41	1.70

Table 2. Non-BLM and BLM boreholes requiring overland travel on BLM lands and the associated distances for the Gateway West Project

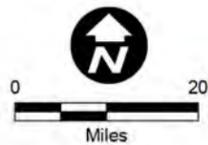
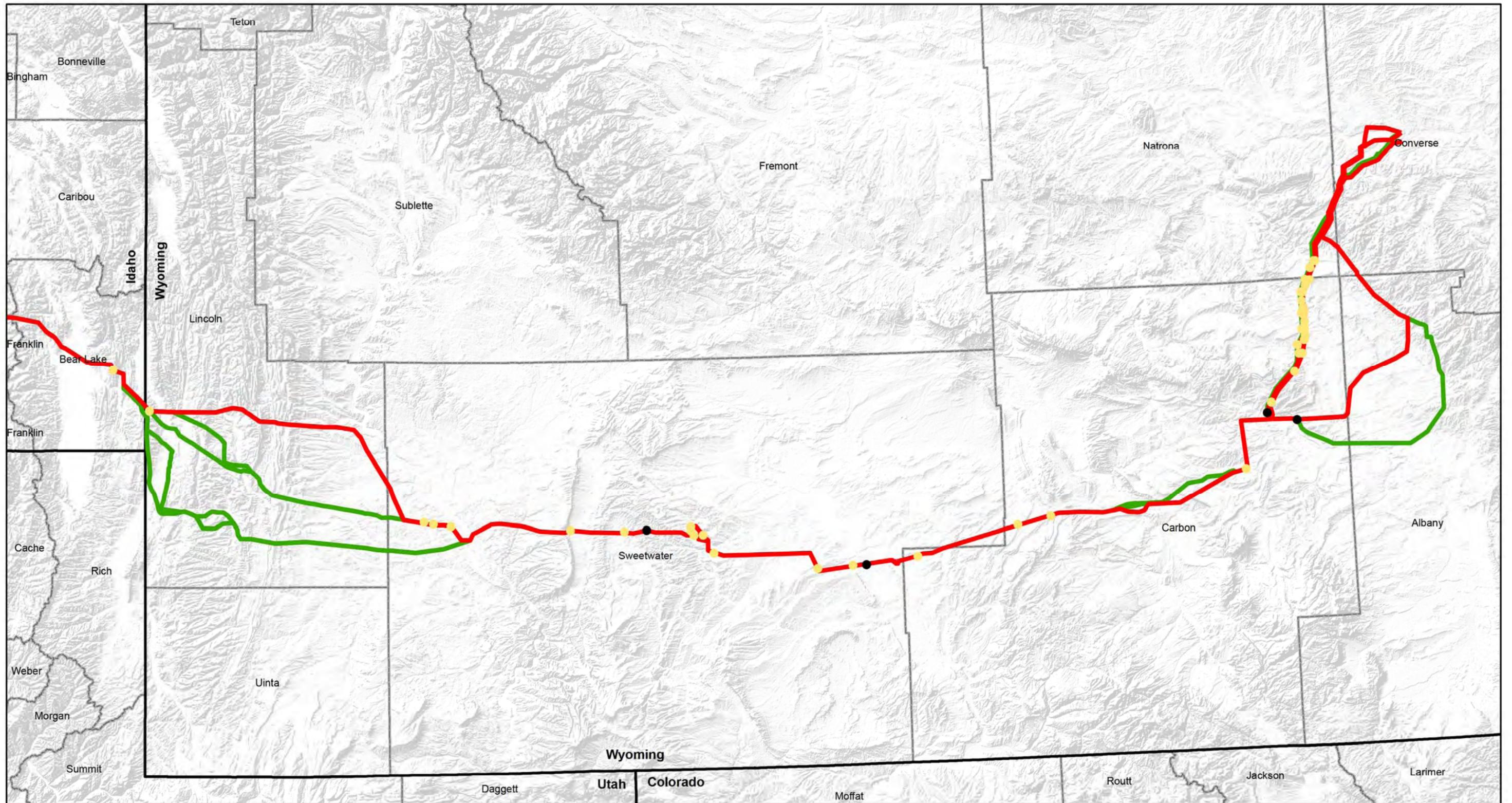
Surface Ownership	Borehole ID	Approximate Miles of Overland Travel on Federal Lands
Non-BLM	02-40	0.68
Non-BLM	02-92	0.06
Non-BLM	03-151	0.60
Non-BLM	04-173	0.01
BLM	02-50	0.17
BLM	02-107	0.16
BLM	02-692	0.03
Total		1.70

Table 3. Phase 1 Borehole Locations on BLM Lands by Field Office

ID	Borehole Location							
	Longitude	Latitude	Township Range	Sec	Sub	County	State	BLM Field Office
02-50	106° 15' 51.991" W	42° 13' 49.991" N	T26N R79W	14	NE¼NE¼	Carbon	WY	Rawlins
02-53	106° 14' 33.497" W	42° 16' 40.210" N	T27N R79W	25	SE¼SE¼	Carbon	WY	Rawlins
02-56	106° 14' 24.101" W	42° 19' 36.059" N	T27N R78W	7	L 2	Carbon	WY	Rawlins
02-59	106° 13' 2.831" W	42° 25' 47.438" N	T28N R78W	5	L 9	Carbon	WY	Rawlins
02-61	106° 11' 38.192" W	42° 27' 57.076" N	T29N R78W	21	NW¼SE¼	Natrona	WY	Casper
02-107	106° 30' 7.512" W	41° 51' 33.240" N	T22N R81W	22	NE¼SE¼	Carbon	WY	Rawlins
02-144	107° 52' 7.318" W	41° 38' 2.282" N	T19N R93W	10	NW¼SW¼	Carbon	WY	Rawlins
02-594	107° 18' 58.594" W	41° 44' 27.449" N	T21N R88W	34	SE¼SE¼	Carbon	WY	Rawlins
02-595	107° 27' 11.238" W	41° 43' 8.324" N	T20N R89W	8	NW¼SW¼	Carbon	WY	Rawlins
02-641	106° 10' 16.496" W	42° 29' 8.146" N	T29N R78W	15	L 3	Natrona	WY	Casper
02-642	106° 10' 36.437" W	42° 29' 10.766" N	T29N R78W	15	SE¼NW¼	Natrona	WY	Casper
02-661	106° 13' 56.802" W	42° 20' 34.202" N	T27N R78W	6	SE¼NW¼	Carbon	WY	Rawlins
02-662	106° 14' 15.011" W	42° 21' 50.792" N	T28N R78W	30	L 8	Carbon	WY	Rawlins
02-663	106° 13' 49.661" W	42° 23' 26.763" N	T28N R78W	19	L 5	Carbon	WY	Rawlins
02-664	106° 13' 4.753" W	42° 24' 37.962" N	T28N R78W	8	NW¼SW¼	Carbon	WY	Rawlins
02-666	106° 11' 57.408" W	42° 25' 42.877" N	T28N R78W	4	L 9	Carbon	WY	Rawlins
02-668	106° 14' 14.518" W	42° 23' 29.256" N	T28N R78W	18	L 4	Carbon	WY	Rawlins
02-674	106° 16' 53.667" W	42° 8' 56.475" N	T25N R79W	10	NE¼SE¼	Carbon	WY	Rawlins
02-685	106° 13' 46.171" W	42° 19' 57.824" N	T27N R78W	7	NW¼NE¼	Carbon	WY	Rawlins
02-686	106° 13' 54.275" W	42° 19' 11.986" N	T27N R78W	7	SE¼SW¼	Carbon	WY	Rawlins
02-687	106° 13' 46.046" W	42° 17' 55.494" N	T27N R78W	19	SW¼NE¼	Carbon	WY	Rawlins
02-688	106° 13' 50.109" W	42° 16' 39.349" N	T27N R78W	30	SE¼SW¼	Carbon	WY	Rawlins
02-689	106° 14' 1.637" W	42° 14' 40.967" N	T26N R78W	7	NE¼NW¼	Carbon	WY	Rawlins
02-691	106° 13' 45.801" W	42° 15' 29.533" N	T26N R78W	6	L 2	Carbon	WY	Rawlins
02-692	106° 15' 34.468" W	42° 12' 16.834" N	T26N R79W	24	SW¼SW¼	Carbon	WY	Rawlins
02-693	106° 14' 40.031" W	42° 12' 14.724" N	T26N R79W	24	SE¼SE¼	Carbon	WY	Rawlins
02-698	106° 23' 3.782" W	42° 3' 28.562" N	T24N R80W	14	NW¼NW¼	Carbon	WY	Rawlins
03-152	108° 8' 8.923" W	41° 36' 47.344" N	T19N R95W	20	NE¼NW¼	Sweetwater	WY	Rawlins
03-169	108° 45' 3.791" W	41° 43' 11.262" N	T20N R101W	12	SW¼SW¼	Sweetwater	WY	Rock Springs
03-602	108° 16' 50.988" W	41° 36' 24.660" N	T19N R97W	24	L 3	Sweetwater	WY	Rawlins
03-606	108° 42' 27.014" W	41° 39' 47.027" N	T20N R100W	32	SE¼SW¼	Sweetwater	WY	Rock Springs
03-717	108° 48' 0.313" W	41° 44' 45.280" N	T21N R101W	36	SW¼SW¼	Sweetwater	WY	Rock Springs
03-718	108° 47' 59.708" W	41° 44' 1.784" N	T20N R101W	4	SW¼SE¼	Sweetwater	WY	Rock Springs
04-176	109° 4' 24.989" W	41° 44' 5.892" N	T20N R103W	6	SE¼SW¼	Sweetwater	WY	Rock Springs
04-182	109° 17' 44.192" W	41° 44' 32.204" N	T20N R105W	6	L 13	Sweetwater	WY	Rock Springs
04-199	109° 53' 50.891" W	41° 46' 32.834" N	T21N R110W	28	NW¼NW¼	Sweetwater	WY	Rock Springs
04-239	111° 1' 45.743" W	42° 7' 26.555" N	T25N R120W	25	L 14	Lincoln	WY	Kemmerer
04-246	111° 10' 49.833" W	42° 14' 58.698" N	T13S R45E	34	SE¼NW¼	Bear Lake	ID	Pocatello
04-574	108° 47' 16.519" W	41° 43' 10.187" N	T20N R101W	10	SW¼SW¼	Sweetwater	WY	Rock Springs

This page intentionally left blank.

This page intentionally left blank.

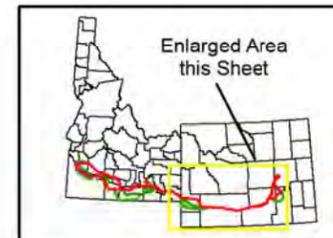


Project Features

- Bore Hole Location
- Bore Hole Location (Non BLM)
- Proposed Route
- Alternative Route

Administrative

- State Boundary
- County Boundary



8/01/10
SEGMENT D OVERVIEW
 GATEWAY WEST
 TRANSMISSION LINE PROJECT
FIGURE 2

This page intentionally left blank.

2.0 GEOTECHNICAL ACTIVITIES

This section describes the preconstruction activities that must occur to allow for final detailed engineering design for all structures that will be installed on the Gateway West Transmission Line Project. It is not necessary to test the soil and subsoil conditions at every structure location—rather, tests are important at each structure that must withstand larger stresses (typically corner structures or those supporting very long spans) and also periodically along the ROW to determine general subsurface conditions and the structural engineering needed to safely construct a transmission line structure in those conditions. Geotechnical site investigations, laboratory testing and engineering analyses will be completed to determine the engineering properties of the soil and bedrock, and will be used to design the foundations for the transmission line towers and associated equipment. Since the transmission line will primarily use four-legged lattice steel towers, the geotechnical data will be used to determine the appropriate depth requirements for the pier foundations at each leg.

The geotechnical site investigations will consist of drilling borings from which soil and/or bedrock samples will be taken for laboratory testing and analysis. The boring depths will typically be 40 feet (deeper where soils with weaker strength properties are encountered). Similarly, depths could be less where bedrock is encountered. The drilling equipment needed to perform the drilling and sampling activities will include a truck mounted, track mounted or all-terrain drill rig, water truck, 4WD support vehicle including an air compressor, and a 4WD vehicle for the field engineer. The type of rig used will depend on accessibility of boring locations, and practicality of using continuous flight hollow-stem auger, mud rotary, or ODEX drilling techniques to advance the borings. The time required per boring averages approximately one-half day per hole. Possible types of drilling equipment are listed below:

Conventional two-ton or larger truck with a drill rig mounted on the chassis (**Figure 3**).

- A 30,000 pound gross vehicle weight (gvw) 6-wheeled truck, about 30 feet long, with or without 4WD capabilities.
- All-terrain vehicle consisting of a similar drilling rig mounted on a lighter framed, shorter vehicle equipped with oversized low-pressure tires. Track mounted drilling rigs place varying sizes of drilling machinery on a tracked vehicle with low (about 10 psi) ground pressure (**Figure 4**).



Figure 3. Example of drill rig in operation

The borings will be approximately 6 to 8 inches in diameter and they will be advanced with continuous flight hollow-stem auger, mud rotary, or ODEX drilling techniques. If mud rotary drilling is used, all drill fluids will be temporarily stored in an above ground container, as opposed to excavating a mud pit. The drill fluid will be recycled during drilling to minimize water runoff at the drill site. When the drilling is completed, the stored water will be placed on the ground and allowed to infiltrate. The solids will be spread thinly on the ground.

Where bedrock is encountered, standard rock coring techniques will be used.

Samples will be collected by driving a sampling device into the undisturbed soils just below the augers. Where necessary, rock core samples will also be taken using a rock coring barrel. Upon completion and before leaving each site, the soil boring will be backfilled with the cuttings removed from it during drilling. At the end of a work shift no open holes will be left unattended, and all holes will be fully backfilled before moving to the next boring.

In addition to the drilling rig, typically there will be an auxiliary four wheel drive pickup truck to haul water if needed for drilling and/or rock coring, haul extra drilling supplies, and to transport personnel. A third four wheel drive vehicle may be used by the geotechnical engineer overseeing the drilling program and logging the borings.

Access to each of the drill sites was considered in selecting the drill locations. Locations that could be accessed with existing roads were selected where available, to minimize the length of overland travel. Most of the drill sites are less than one mile off the nearest unimproved road. **Table 1 and 2** summarize the approximate travel distances for overland travel for borings on BLM lands.



Figure 4. Example of track mounted drill rig

The area of disturbance will include crushing of vegetation as the drilling equipment moves overland to and from the drill site. Existing roads will be utilized where possible. In some cases the vehicles make one trip in, and one trip out. At other borings, the water truck or other vehicles may come and go from the drill sites to deliver water or other supplies. At the drill location, the actual boring is only 6 to 8 inches in diameter. However, at each boring location a work area of approximately 40 feet by 40 feet will be established. Within the work area, surface disturbance may occur, due to parked vehicles including the drill rig and support vehicles. Extra foot traffic will

occur at the back of the drill rig as the drill crew moves between the drill and support vehicles during drilling (time required approximately one-half day per hole). During rotary drilling and rock coring, water is used during the drilling process. Some excess drill water may exit the hole. A small ditch (less than 6-inches deep and 12 inches wide, and less than 10 feet long) is sometimes necessary beginning at the borehole to a downhill location to move the excess drill water away from the work area. This ditch will be backfilled when the work is complete. All drill water that exits the boring will be allowed to infiltrate into the ground surface. Although excavated soil is proposed to be returned to the boring following drilling, some excess is typically generated. A shovel will be used to thin-spread excess soil behind the drill truck. The area of thin soil spreading is usually less than 10 feet by 10 feet and just a few inches thick.

3.0 NEPA COMPLIANCE

The Environmental Assessment for the Gateway West Geotechnical Drilling Project was completed and the Decision Record was signed August 4, 2010, completing the NEPA requirements. The Environmental Assessment and Biological Assessment identified required environmental protection measures for drilling and overland travel.

Table 4 lists the environmental protection measures that will be included into the Phase 1 bid package for the geotechnical contractor and enforced during the geotechnical operations. Other phases may have additional measures based on the location of the boreholes.

Table 4. Phase 1 Environmental Protection Measures

Boreholes or overland travel to which measure applies	Environmental Protection Measure Description
All*	Drillers will comply with EPA and DEQ standards for drill rig engines.
All	The drill rig will drive directly over vegetation during overland travel, which may result in temporary crushing damage to plants. The driller will attempt to minimize the temporary plant damage by driving around thick pockets of vegetation. The driller will also avoid driving over drainage bottoms, surface water, steep slopes, prairie dog towns and other sensitive areas.
All	No access will be made through wetlands or other wetted areas.
All	Shrub habitat will be avoided to reduce impacts to nesting raptors and migratory birds.
All	Activities or surface use are not allowed from February 1 to July 31 within one-half mile of a raptor nest (or within one mile of ferruginous hawk nests) for the protection of raptor nesting.
All	Surface disturbing and human activities within one mile of an active bald eagle nest will be restricted from February 1 to August 15.
All	Surface disturbing and disruptive activity will be prohibited within ½ mile of burrowing owl nesting habitat from April 1 through August 15.
All	From March 15 to September 1, if a migratory bird nest is present and active, monitoring will be done until the young have fledged for the protection of migratory bird nests in accordance with the Migratory Bird Treaty Act. A BLM wildlife biologist will be contacted prior to conducting nest surveys.
All	No surface disturbing activities would take place in mountain plover habitat between April 10 and July 10 without prior presence / absence surveys, as required.
All	No access or drilling would occur through or in wetlands or riparian areas, thus eliminating the potential effects to yellow-billed cuckoo, Columbia spotted frog, and Ute ladies'-tresses.
All	To reduce the spread/introduction of noxious and invasive weed species, drill rigs and transport vehicles would be power washed weekly or when moving from one BLM weed management area to another. An air compressor would accompany the drill rig and used daily to remove weed parts and seed from all vehicles.
All	The Spill Prevention, Containment, and Countermeasures Plan would outline spill prevention practices and requirements for refueling and equipment operation near water bodies, procedures for emergency response and incident reporting, and training requirements.
See Appendix A of the EA	Pre-construction surveys of previously identified active raptor nests within ½ miles of proposed borehole locations will be conducted several weeks in advance of drilling to confirm nest activity (see Appendix A of the EA for a list of previously documented active nests within ½ miles of borehole locations). This will allow adequate time for adjustments in the drilling schedule. Surveys will be conducted in the appropriate agency approved survey window for each raptor species. To ensure that surveyors have the best chance of documenting active raptor nesting, surveys will be conducted towards the middle of the survey window to capture any late-nesting birds. If nest activity is documented, agency-approved timing restrictions on drilling activity within specified nest buffers will be implemented to avoid disturbance to nesting raptors. On the day of drilling at cleared boreholes, raptor nests will be checked once more to confirm inactivity.
All	Drilling vehicles traveling overland routes will off-set their travel so as not to create a two-track road.
02-144 03-152 03-169 03-602 03-718 04-182 04-199 04-239 04-574	Vehicles will avoid disturbing areas of large sagebrush to protect pygmy rabbit habitat.

Table 4. Phase 1 Environmental Protection Measures

Boreholes or overland travel to which measure applies	Environmental Protection Measure Description
All But Borehole # 04-246	To avoid effects on black-footed ferrets, mountain plover, and burrowing owls, surveys for prairie dog towns will be conducted before drilling. Prairie dog towns identified during surveying will be flagged and avoided by at least 50 feet.
All	All seasonal restrictions associated with BLM RMPs would be followed on BLM administered lands. If the Companies desire to operate within areas of seasonal restrictions, the process for requesting and granting exceptions will be followed, as to protocol established by governing BLM field offices.
All	In any locations where surveys are required, the Companies will conduct these clearances using qualified professional biologists and botanists, in communication with Field Office BLM biologists and botanists, and using BLM-approved survey protocol or procedures.
All	To minimize disturbance, existing roads will be utilized as access points to the drill sites. In the case of drill sites located near existing roads, these sites will be no more than 100 feet off the road surface, just far enough that traffic is not impeded and drilling site workers are safe from traffic and disturbance is minimized.
All	Any cultural and/or paleontological resource (historic or prehistoric site or object) discovered by the holder, or any person working on his behalf, shall be immediately reported to the authorized officer. Holder shall suspend all operations in the immediate area of such discovery until written authorization to proceed is issued by the authorized officer. An evaluation of the discovery will be made by the authorized officer to determine appropriate actions to prevent the loss of significant cultural or scientific values. The holder will be responsible for the cost of evaluation and any decision as to proper mitigation measures will be made by the authorized officer after consulting the holder.
04-239	A third party environmental inspector is required during project implementation in the Kemmerer Field Office area to ensure compliance with all conditions of the permit.
All	All personnel involved in the geotechnical investigations will be instructed on site avoidance and protection measures, including information on the statutes protecting cultural resources. This training will be conducted for all personnel prior to initial site mobilization and will be provided to new geotechnical personnel on their first day of work.
All	In the event that previously unidentified cultural resources are discovered during the geotechnical investigations, the drill crews will immediately cease operations and notify the contract archaeologist and the BLM in accordance with BLM's standard stipulation for cultural resources. The drilling operations will be redirected to the next area that has been cleared for cultural resources. The contract archaeologist will record, evaluate, and determine the effects on the resource due to the drilling operation. A qualified archaeologist will complete a letter report to assess and document a discovery each time the drilling operations are redirected for such a discovery.
All	Human remains and associated artifacts may be discovered during inventory or drilling operations. If human remains are discovered under any circumstances, all activities will immediately cease, and the remains will be secured and protected until appropriate disposition has been determined, in accordance with applicable local, state, and Federal statutes. If necessary, the Companies will provide 24-hour on-site security for Native American Graves Protection and Repatriation Act (Public Law 101-601; 25 U.S.C. 3001 et seq.) associated discoveries and for other discoveries as determined by the BLM. The BLM, along with the appropriate law enforcement representative and county coroner will be immediately notified by phone by the Companies' representative or their consultant. This will be followed by written notification to the BLM, of any discoveries of human remains, associated and unassociated funerary objects, sacred objects, or objects of cultural patrimony. The BLM will be responsible for compliance with the Native American Graves Protection and Repatriation Act and its implementing regulations (43 CFR 10) for all related inadvertent discoveries and discovery situations.
All	Truck traffic will not occur when wet conditions would result in wheel rutting greater than 2 inches in depth.
All	Vehicles with low ground pressure, such as rubber tracked equipment or balloon tires would be used in areas or conditions where rutting, soils displacement, or compaction could occur.
All	Construction spills will be promptly cleaned up and contaminated materials hauled to a disposal site that meets local jurisdictional requirements.

Table 4. Phase 1 Environmental Protection Measures

Boreholes or overland travel to which measure applies	Environmental Protection Measure Description
All	If an upland spill occurs, berms will be constructed with available equipment to physically contain the spill. Absorbent materials will be applied to the spill area. Contaminated materials will be excavated and temporarily placed on and covered by plastic sheeting in a containment area a minimum of 100 feet away from any wetland or waterbody, until proper disposal is arranged (EPA 2006).
All	If a spill occurred beyond the scope of on-site equipment and personnel, an Emergency Response Contractor will be identified and available to further contain and clean up the spill.
All	For spills in standing water, floating booms, skimmer pumps, and holding tanks will be used as appropriate to recover and contain released materials on the surface of the water.
All	If pre-existing contamination is encountered during drilling, work will be suspended in the area of the suspected contamination until the type and extent of the contamination is determined. The type and extent of contamination; the responsible party; and local, state, and federal regulations will determine the appropriate cleanup method(s) for these areas.
All	Materials such as fuels, other petroleum products, chemicals, and hazardous materials including wastes will be located in upland areas at least 500 feet away from streams and/or 200 feet from private wells (400 feet from public wells).
All	All vehicles will be equipped with a working fire extinguisher and a shovel. Drill rigs will be equipped with a filled water tank during periods of high, very high, or extreme fire danger.
All	Smoking will be prohibited.
All	Campfires or uncontained fires of any kind will be prohibited.
All	The crew contingency plan will include a fire communications protocol for contacting fire-fighting personnel.
All	Utility clearances will be conducted on every borehole before entry to the site. Clearances will be conducted by a certified utility locator. It will be up to the discretion of the utility locators as to whether a site visit is necessary for any borehole.
All	Any fences that need to be cut for access will be repaired to their original conditions before the drilling crew leaves the area, or immediately if livestock are present.
All	All vehicles and construction equipment will use working mufflers to minimize equipment-related noise.
All	Drillers will develop a Health and Safety Plan which includes the following information (at a minimum): identification of responsible parties; identification of potential physical, chemical, or environmental hazards and relevant health and safety precautions; required personal protective equipment; emergency evacuation procedures; location and content of warning signs to be posted; local emergency telephone numbers will be posted at drilling locations.
All	All vehicles will travel on existing roads, with the exception of minor off-road traverses (less than 0.7 mile) to access drill site locations.
04-246 and 04-239**	Water from the North Platte River and Colorado River basins will not be used for drilling in other watersheds in order to minimize water usage from these two basins. Water tanks will be filled from gas stations and other public water supplies with permission.
All	Contractors will avoid driving, drilling, or parking in weedy areas.

* Indicates all overland travel on BLM lands identified in Appendix B, and all boreholes identified in Table 3.

** These two boreholes are located outside the North Platte and Colorado River Basins.

3.1 Role of the Environmental Inspector within the Kemmerer Field Office

The Environmental Inspector (EI) will ensure the geotechnical drilling contractor abides by the terms and conditions of the permit.

The EI will also ensure the geotechnical drilling contractor remains within the limits of the approved footprint for the borehole. Once drilling has begun, it is the environmental inspector's responsibility to immediately report any cultural and/or paleontological resource (historic or prehistoric site or object) discovered by the permit holder (the Companies), or any person working on their behalf (geotechnical drilling contractor), to the BLM Project Manager (Mr. Walt

George). The Companies shall suspend all operations in the immediate area of such discovery until written authorization to proceed is issued by the BLM Project Manager. An evaluation of the discovery will be made by the BLM KFO staff to determine appropriate actions to prevent the loss of significant cultural or scientific values. The Companies will be responsible for the cost of evaluation. Kemmerer FO Staff will make recommendations for needed mitigation measures to the BLM Project Manager and BLM Project Manager will issue any needed mitigation measures to the Companies in writing.

The EI will maintain a daily log and at the completion of oversight will provide a brief letter report of their observations to the BLM Project Manager with a copy to the Kemmerer FO Manager and the Cultural Resource Specialist.

**APPENDIX A
DETAILED MAPS OF BORE
LOCATIONS AND ACCESS**

**APPENDIX B
LOCATION OF ROADS ON BLM LANDS
FOR ACCESS**

Borehole ID	Access ID	Field Office	TR	Sec	Subdivision	Seg	Type
02-642	102	Casper	T29N R78W	15	Lots 3, 6, SE $\frac{1}{4}$ NW $\frac{1}{4}$, E $\frac{1}{2}$ SW $\frac{1}{4}$, SW $\frac{1}{4}$ SW $\frac{1}{4}$	1	Existing Road
02-641	103	Rawlins	T29N R78W	21	S $\frac{1}{2}$ NE $\frac{1}{4}$, W $\frac{1}{2}$ SE $\frac{1}{4}$	1	Existing Road
02-61	105		T29N R78W	28	W $\frac{1}{2}$ NE $\frac{1}{4}$, SE $\frac{1}{4}$ NW $\frac{1}{4}$, E $\frac{1}{2}$ SW $\frac{1}{4}$	1	Existing Road
02-667	1977		T29N R78W	33	NE $\frac{1}{4}$ NW $\frac{1}{4}$, W $\frac{1}{2}$ SW $\frac{1}{4}$	1	Existing Road
	1978		T28N R78W	5	Lots 5, 6, 11	1	Existing Road
02-59	County Road						
02-666	County Road						
02-664	109	Rawlins	T28N R78W	5	Lots 9, 10, E $\frac{1}{2}$ SW $\frac{1}{4}$, SW $\frac{1}{4}$ SW $\frac{1}{4}$	1	Existing Road
02-663	111		T28N R78W	7	SE $\frac{1}{4}$ SE $\frac{1}{4}$	1	Existing Road
02-668	112		T28N R78W	8	W $\frac{1}{2}$ W $\frac{1}{2}$	1	Existing Road
	113		T28N R78W	18	W $\frac{1}{2}$ SE $\frac{1}{4}$	1	Existing Road
	115		T28N R78W	19	Lots 1-6, E $\frac{1}{2}$ SW $\frac{1}{4}$	1	Existing Road
	116		T28N R78W	30	Lot 1	1	Existing Road
	118						
02-662	119	Rawlins	T28N R78W	30	Lot 8	1	Existing Road
			T28N R78W	31	Lots 8-10, 15-16	1	Existing Road
02-661	1976	Rawlins	T27N R78W	6	SE $\frac{1}{4}$ NW $\frac{1}{4}$	1	Existing Road
02-685	1670	Rawlins	T27N R78W	6	SE $\frac{1}{4}$ SW $\frac{1}{4}$	1	Existing Road
			T27N R78W	7	NW $\frac{1}{4}$ NE $\frac{1}{4}$, NE $\frac{1}{4}$ NW $\frac{1}{4}$	1	Existing Road
02-56	1975	Rawlins	T27N R78W	7	Lot 2, SE $\frac{1}{4}$ NW $\frac{1}{4}$, NE $\frac{1}{4}$ SW $\frac{1}{4}$	1	Existing Road
02-686	Highway						
02-687	127	Rawlins	T27N R78W	19	SW $\frac{1}{4}$ NE $\frac{1}{4}$, SE $\frac{1}{4}$ NW $\frac{1}{4}$	1	Existing Road
02-688	Highway						
02-53	129	Rawlins	T27N R78W	30	Lot 4, SE $\frac{1}{4}$ SW $\frac{1}{4}$	1	Existing Road
			T27N R79W	25	SE $\frac{1}{4}$ SE $\frac{1}{4}$	1	Existing Road
02-691	2587	Rawlins	T27N R78W	31	SE $\frac{1}{4}$ SW $\frac{1}{4}$, SW $\frac{1}{4}$ SE $\frac{1}{4}$	1	Existing Road
			T26N R78W	6	Lot 2	1	Existing Road
02-689	133	Rawlins	T26N R78W	6	Lot 7	1	Existing Road
			T26N R78W	7	Lot 1, NE $\frac{1}{4}$ NW $\frac{1}{4}$	1	Existing Road
02-50	134	Rawlins	T26N R79W	13	SW $\frac{1}{4}$ NW $\frac{1}{4}$	1	Existing Road
	135		T26N R79W	14	E $\frac{1}{2}$ NE $\frac{1}{4}$	1	Existing Road
	137		T26N R79W	14	NE $\frac{1}{4}$ NE $\frac{1}{4}$	1	Overland Access
02-692	2759	Rawlins	T26N R79W	24	SW $\frac{1}{4}$ SW $\frac{1}{4}$	1	Overland Access
02-693	139	Rawlins	T26N R79W	24	S $\frac{1}{2}$ SE $\frac{1}{4}$	1	Existing Road
	1484		T26N R79W	25	NW $\frac{1}{4}$ NE $\frac{1}{4}$, E $\frac{1}{2}$ NW $\frac{1}{4}$, SW $\frac{1}{4}$ NW $\frac{1}{4}$	1	Existing Road
02-42	146	Rawlins	T25N R79W	2	Lot 1, SW $\frac{1}{4}$ NE $\frac{1}{4}$, E $\frac{1}{2}$ SW $\frac{1}{4}$, SW $\frac{1}{4}$ SW $\frac{1}{4}$	1	Existing Road
02-675	1965		T25N R79W	10	SE $\frac{1}{4}$ NE $\frac{1}{4}$, SE $\frac{1}{4}$ SW $\frac{1}{4}$, N $\frac{1}{2}$ SE $\frac{1}{4}$, SW $\frac{1}{4}$ SE $\frac{1}{4}$	1	Existing Road
02-674	147						
02-682	148						
02-696	2590						

Borehole ID	Access ID	Field Office	TR	Sec	Subdivision	Seg	Type
02-47	156	Rawlins	T25N R79W	28	NW¼NW¼	1	Existing Road
02-681	154		T25N R79W	32	NW¼NW¼	1	Existing Road
02-680	158		T24N R80W	2	Lots 2-4, SE¼NW¼, N½SW¼, SW¼SW¼	1	Existing Road
02-672	1962		T24N R80W	10	N½NE¼, SW¼NE¼, SE¼NW¼, N½SW¼	1	Existing Road
02-673							
02-698	1964	Rawlins	T24N R80W	14	NW¼NW¼	1	Existing Road
02-92	1957	Rawlins	T23N R79W	2	SW¼SW¼	1	Existing Road
	1483		T23N R79W	4	Lots 1-2, SE¼NE¼	1	Existing Road
			T23N R79W	4	Lot 1	1	Overland Access
02-40	166	Rawlins	T24N R80W	28	SE¼NE¼, SE¼SW¼, N½SE¼, SW¼SE¼	1	Overland Access
02-107	257	Rawlins	T22N R81W	22	SE¼NE¼, E½SE	2	Existing Road
	2599		T22N R81W	22	E½SE	2	Overland Access
	2601		T22N R81W	26	NW¼NW¼	2	Existing Road
			T22N R81W	26	NW¼NW¼	2	Overland Access
02-123	279	Rawlins	T21N R86W	34	NE¼NE¼, S½NE, S½NW	2	Existing Road
02-124	283		T21N R86W	32	S½N½	2	Existing Road
02-126	282		T21N R87W	26	S½SE	2	Existing Road
	284		T21N R87W	34	E½NW, N½SW	2	Existing Road
	287						
02-594	County Road						
02-129	1993	Rawlins	T20N R88W	6	NW¼SE¼, S½SE	2	Existing Road
	1993		T20N R88W	8	NW¼NW¼	2	Existing Road
02-595	1997	Rawlins	T21N R89W	28	SW¼SE¼	2	Existing Road
02-132	296		T21N R89W	34	N½N½	2	Existing Road
02-133	294		T20N R89W	4	Lots 2-3, NE¼SW¼, S½SW¼	2	Existing Road
02-134	297		T20N R89W	8	N½NE¼, SW¼NE¼, SE¼NW¼, SW¼	2	Existing Road
	298		T20N R89W	18	Lots 3-4, E½NE¼, SW¼NE¼, NW¼SE¼	2	Existing Road
	1998		T20N R89W	30	W½NE¼, N½SE¼, SE¼SE	2	Existing Road
	2760		T20N R89W	32	W½NW¼, SE¼NW¼, NE¼SW¼, NW¼SE¼	2	Existing Road
	1999		T20N R90W	12	S½S½	2	Existing Road
	304		T20N R90W	14	N½N½, SW¼NW¼	2	Existing Road
	1498		T20N R90W	22	W½NW¼	2	Existing Road
			T20N R90W	20	S½NE¼, NW¼, NE¼SE¼	2	Existing Road
			T20N R90W	8	NW¼NW¼	2	Existing Road
			T20N R90W	18	Lots 3-4	2	Existing Road
			T20N R91W	12	SE¼SE¼	2	Existing Road
02-135	301	Rawlins	T20N R91W	24	S½NE¼, SE¼NW¼, N½SW¼	2	Existing Road
02-136	305		T20N R91W	22	SE¼SW¼, S½SE¼	2	Existing Road
02-137	306		T20N R91W	28	NE¼, S½NW¼	2	Existing Road
02-138	2619		T20N R91W	30	Lot 4, SE¼SW¼, N½SE¼, SW¼SE¼	2	Existing Road
02-139	1365		T20N R92W	34	SE¼NE¼, NE¼SE¼	2	Existing Road
	309		T19N R92W	2	Lots 2-3, S½NW¼	2	Existing Road

Borehole ID	Access ID	Field Office	TR	Sec	Subdivision	Seg	Type
02-140	310	Rawlins	T19N R92W	4	N½S½	2	Existing Road
02-141	314		T19N R92W	8	NW¼NW¼	2	Existing Road
02-144	315		T19N R92W	6	Lots 6-7, E½SW¼, SE¼	2	Existing Road
	2000		T19N R93W	12	W½NE¼, N½NW¼, SE¼NW¼, N½SE¼	2	Existing Road
	311		T19N R93W	2	SE¼SE¼	2	Existing Road
	318		T19N R93W	10	SW¼, N½SE¼	2	Existing Road
	323		T19N R93W	16	E½NE¼, SW¼NE¼, N½SW¼, NW¼SE¼	2,3	Existing Road
	2001		T19N R93W	8	N½SW¼, SE¼SW¼	3	Existing Road
	323		T19N R93W	6	Lots 5-6, E½SW¼, SW¼SE¼	3	Existing Road
	320						
	2624						
03-151	1371	Rawlins	T19N R95W	12	SW¼SW¼	3	Existing Road
03-152	1372		T19N R95W	14	SE¼SW¼, S½SE¼	3	Overland Access
	1768		T19N R95W	10	S½N½	3	Existing Road
	334		T19N R95W	4	W½SW¼	3	Existing Road
			T19N R95W	16	W½NW¼	3	Existing Road
		T19N R95W	20	NW¼NE¼, NE¼NW¼	3	Existing Road	
03-602	2003	Rawlins	T19N R96W	18	S½SE¼	3	Existing Road
			T19N R97W	24	Lots 2-3	3	Existing Road
03-159	2004	Rawlins	T19N R97W	2	SW¼NW¼	3	Existing Road
	2005		T19N R97W	10	E½NE¼	3	Existing Road
03-161	345	Rock Springs	T19N R97W	8	E½E½	3	Existing Road
03-164	348	Rock Springs	T19N R98W	10	NW¼NE¼, S½NE¼	3	Existing Road
03-165	349		T19N R98W	4	SW¼NE¼, S½NW¼, N½SE¼	3	Existing Road
	350		T19N R98W	6	Lots 9-11, S½NE¼	3	Existing Road
	351		T19N R99W	2	Lots 5, 8	3	Existing Road
	352		T19N R99W	4	S½NE¼, SE¼NW¼	3	Existing Road
03-167	357	Rock Springs	T19N R100W	4	Lot 8, S½NW¼, NE¼SW¼, N½SE¼, SE¼SE¼	3	Existing Road
03-605	2006		T20N R100W	34	N½SW¼, SW¼SW¼, W½SE¼	3	Existing Road
03-606	2629		T20N R100W	32	NW¼SW¼, S½SW¼, SW¼SE¼	3	Existing Road
03-168	360		T20N R101W	36	NE¼NE¼	3	Existing Road
03-607	2631	Rock Springs	T20N R100W	18	Lot 8, SE¼SW¼	3	Existing Road
03-169	363		T20N R101W	12	SW¼SW¼	3	Existing Road
03-715	2007		T20N R101W	14	SE¼NE¼	3	Existing Road
03-717	371	Rock Springs	T21N R101W	36	SW¼SW¼	3	Existing Road
			T20N R101W	4	Lots 1-2, NE¼SE¼	3	Existing Road
03-718	368	Rock Springs	T20N R101W	10	NW¼NW¼	3	Existing Road
04-170	369		T20N R101W	4	S½S½	3,4a	Existing Road
04-611	373						
04-574	1765	Rock Springs	T20N R101W	10	S½NE¼, NE¼SW¼, S½SW¼, W½SE¼	04a	Existing Road
	1816						
04-172	377	Rock Springs	T20N R102W	8	SE¼SE¼	04a	Existing Road

Borehole ID	Access ID	Field Office	TR	Sec	Subdivision	Seg	Type	
04-173	382	Rock Springs	T21N R102W	30	SW¼SE¼	04a	Existing Road	
	1761		T21N R102W	32	Lots 2-3, SW¼NW¼, N½SW¼	04a	Existing Road	
	2635		T21N R102W	32	Lot 3	04a	Overland Access	
04-175	384	Rock Springs	T20N R103W	6	Lots 4-5, E½SW¼	04a	Existing Road	
04-176	2009		T20N R103W	8	S½N½, NW¼NW¼, N½SW¼	04a	Existing Road	
	385 2636							
04-179	390	Rock Springs	T20N R105W	12	Lot 4	04a	Existing Road	
04-182	393	Rock Springs	T20N R105W	6	Lots 13-14, NE¼SE¼	04a	Existing Road	
04-186	398 400	Rock Springs	T21N R106W	36	S½S½	04a	Existing Road	
04-187	401	Rock Springs	T21N R106W	34	N½N½	04a	Existing Road	
04-575	403		T21N R106W	28	S½SW¼, SW¼SE¼	04a	Existing Road	
	406		T21N R106W	30	Lot 4, SE¼SW¼, S½SE¼	04a	Existing Road	
	2013		T21N R107W	26	SW¼NW¼, SW¼, N½SE¼	04a	Existing Road	
04-192	2015	Rock Springs	T21N R108W	32	SE¼SE¼	04a	Existing Road	
04-193			T20N R109W	2	Lots 5-8	04a	Existing Road	
			T20N R109W	10	NW¼NW¼	04a	Existing Road	
04-199	2019 2645	Rock Springs	T21N R110W	28	N½N½	04a	Existing Road	
04-201	426	Kemmerer	T21N R111W	26	N½NW¼, SE¼NW¼, N½S½	04a	Existing Road	
04-202	425		T21N R111W	28	S½NS½, NW¼SW¼	04c	Existing Road	
	2022		T21N R111W	30	E½NE¼, NE¼SE¼, W½SE¼	04c	Existing Road	
	2023		T20N R112W	4	SE¼SE¼	04c	Existing Road	
	2024		T20N R112W	22	NW¼NW¼	04c	Existing Road	
	1078 2761							
04-239	2060	Kemmerer	T25N R119W	32	Lots 9, 15, tracts 50-51	04c	Existing Road	
	2061		T24N R119W	7	Lots 37, 39	04c	Existing Road	
	2057		T25N R120W	25	Lot 14	04c	Existing Road	
	2062							
04-240	2156	Pocatello	T14S R46E	32	NW¼SE¼	04c	Existing Road	
04-241	2155		T14S R46E	28	NW¼SW¼	04c	Existing Road	
	2159		T14S R45E	25	Lot 3	04c	Existing Road	
04-246	2165	Pocatello	T14S R45E	3	SW¼NE¼, SE¼NW¼, W½SE¼	04c	Existing Road	
	2664		T14S R45E	10	NW¼NE¼	04c	Existing Road	
			T13S R45E	34	SE¼NW¼, NE¼SW¼	04c	Existing Road	
04-259	2174	Pocatello	T12S R42E	13	NE¼NW¼	04c	Existing Road	
04-261			T12S R42E	24	NW¼NW¼	04c	Existing Road	
04-262								
04-260								
04-264								

Borehole ID	Access ID	Field Office	TR	Sec	Subdivision	Seg	Type
04-265	2182	Pocatello	T12S R41E	9	SE $\frac{1}{4}$ NW $\frac{1}{4}$, E $\frac{1}{2}$ SW $\frac{1}{4}$, W $\frac{1}{2}$ SE $\frac{1}{4}$	04c	Existing Road
04-270	2698	Pocatello	T12S R40E	20	NW $\frac{1}{4}$ NW $\frac{1}{4}$	04c	Existing Road
04-271	2194		T12S R40E	28	N $\frac{1}{2}$ NW $\frac{1}{4}$, SE $\frac{1}{4}$ NW $\frac{1}{4}$	04c	Existing Road
	2196		T12S R40E	18	Lots 2-3, E $\frac{1}{2}$ SW $\frac{1}{4}$	04c	Existing Road
04-277	2209	Pocatello	T12S R37E	2	SW $\frac{1}{4}$ SE $\frac{1}{4}$	04c	Existing Road