Appendix C

Mitigation Plans

- Appendix C-1 – Historic Properties Treatment Plan
- Appendix C-2 – Draft Framework for Compensatory Mitigation for and Monitoring of Unavoidable Impacts to Waters of the U.S.
- Appendix C-3 – Greater Sage-grouse Avoidance, Minimization, and Mitigation Measures

Appendix C-1

Historic Properties Treatment Plan

DRAFT
HISTORIC PROPERTIES TREATMENT PLAN

for the

GATEWAY WEST TRANSMISSION LINE PROJECT
Case File Numbers:
IDI-35849, Idaho
WYW-174598, Wyoming

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ABBREVIATIONS AND ACRONYMS

ACHP	Advisory Council on Historic Preservation
APE	Area of Potential Effect
BLM	Bureau of Land Management
CFR	Code of Federal Regulations
CRM	Cultural Resources Monitor
CRS	Cultural Resources Specialist
EIS	Environmental Impact Statement
FAR	fire-affected rock
HABS	Historic American Building Survey
HAER	Historic American Engineering Record
HALS	Historic American Landscape Survey
HPTP	Historic Properties Treatment Plan
kV	kilovolt
NAGPRA	Native American Graves Protection and Repatriation Act
NHPA	National Historic Preservation Act of 1966
NHT	National Historic Trail
NPS	National Park Service
NRHP	National Register of Historic Places
NTP	Notice to Proceed
PA	Programmatic Agreement
Project	Gateway West Transmission Line Project
Companies	PacifiCorp (Rocky Mountain Power) and Idaho Power Company
ROW	right-of-way
SHPO	State Historic Preservation Office
Segment Plan	Segment Historic Properties Treatment Plan
THPO	Tribal Historic Preservation Office
USFS	United States Forest Service
VCR	visual contrast rating form
VRM	Visual Resources Management

1.0 INTRODUCTION

This Project-wide Historic Properties Treatment Plan (HPTP) is the first step in preparing mitigation measures for properties eligible for or listed on the National Register of Historic Places (NRHP) that would be adversely affected during construction of the Gateway West Transmission Line Project (Project). It is required by the Programmatic Agreement (PA) for the Project and will be approved by the signatories and invited signatories of that PA in consultation with the Concurring Parties. This first draft was prepared by PacifiCorp (doing business as Rocky Mountain Power) and Idaho Power Company, collectively known as the Companies, as specified in the PA. It has not been reviewed or approved by any agency or the Parties to the PA. It will be considered final after review and approval by the Bureau of Land Management (BLM) and the Idaho and Wyoming State Historic Preservation Offices (SHPOs).

The purposes of this HPTP are to be applicable Project-wide and to:

- Serve as the framework document for subsequent site-specific treatment plans, prepared as a series of Segment Historic Properties Treatment Plans (Segment Plans, to be appended to this HPTP as each is approved)(appended to Attachment D);
- Provide a summary and overview of the Project itself, the Area of Potential Effects (APE), and previous research conducted in the area;
- Summarize methods for determination and documentation of effects that have been used on this Project and will be used in the event of additional discoveries;
- Document the measures that the Companies have already taken or will take to avoid and minimize impacts to properties eligible for or listed on the NRHP;
- Provide treatment guidelines for certain categories of adversely affected Historic Properties;
- Present a Monitoring Plan (Attachment A) including guidelines for how avoidance and minimization measures will be employed in the field during construction and operation, how their success will be documented, procedures for halting construction, including agency notification in the event of unanticipated discoveries during construction and under what circumstances cultural resources monitors will be present where previously undetected cultural resources may be found;
- Present an Inadvertent Discovery Plan (Attachment B), which specifies the procedures to follow in the event that cultural resources are found during construction or operation which were not detected during the various surveys conducted prior to ground-disturbing activities;

- Present a plan for compliance with the Native American Graves Protection and Repatriation Act (NAGPRA) (Attachment C) and how its terms will be employed on federally managed lands

1.1 HPTP and the Programmatic Agreement

In consultation and with the active participation of the Advisory Council on Historic Preservation (ACHP), the BLM developed a PA for the Project to guide Project compliance with the National Historic Preservation Act (NHPA) (BLM 2012). The PA Stipulation V.A. requires the Companies to prepare this document. The Companies will submit this HPTP to the BLM for review and comment. When the BLM has approved the HPTP they will distribute the document to the signatories, invited signatories, and consulting parties for a 20-day review period. They will revise the document and its appendices based on review comments and submit a revised HPTP to the same reviewers for a final 10-day review. The HPTP will be revised if needed and the BLM will submit the final HPTP with comments to the SHPO for review and comment for 30 days. The BLM will incorporate any changes and provided to the SHPO for final approval.

The Companies will develop a site-specific treatment plan for each work element for which they wish a separate Notice to Proceed (NTP) from the BLM (PA Stipulation X.B). The schedule and details for Segment Plan preparation are found in Section 4.4 of this document. As each is prepared and approved, it will be appended to this document.

If there appears to be a discrepancy between the stipulations in the PA which have been summarized, described, or interpreted in this Plan, the conditions and stipulations, as written in the PA, supersede interpretations in this Plan.

1.2 Organization of the HPTP

Section 1 of this HPTP is the Introduction. Section 2 is the project history and description. Section 3 presents the previous research and site types within the Project analysis area. Section 4 presents the methods, roles and responsibilities, and schedule for the determination of effects. Section 5 outlines the sequence of project-related tasks. Section 6 outlines the proposed mitigation for classes of affected Properties. Section 7 is a list of references cited in this HPTP.

2.0 PROJECT AND APE DESCRIPTION

This section provides a brief project description and history of the Project and defines the Area of Potential Effects.

2.1 Project Description

The Companies are proposing to develop approximately 1000 miles of new 230-kilovolt (kV) and 500-kV alternating current electric transmission system consisting of 10 segments between Windstar Substation at Glenrock, Wyoming, and the Hemingway Substation approximately 30 miles southwest of Boise, Idaho. The Companies applied to the BLM for a right-of-way (ROW) grant to use the National System of Public Lands for portions of the Project. See Figures 1a and b for Project Maps.

2.2 Area of Potential Effect (APE)

The Area of Potential Effects (APE) is the geographic area, regardless of land ownership, within which an Undertaking (in this case, the Project) may directly or indirectly cause alterations in the character or use of historic properties, if such properties exist. The BLM, in consultation with appropriate Signatories, Invited Signatories and Concurring parties, has defined and documented the APE based on direct, indirect, and cumulative effects from the Project. The APE includes federal, state, tribal, and private lands that may be affected by the Project's transmission line corridor, and staging areas, access roads, borrow areas, transmission substations, and other related transmission infrastructure. The APE, as defined and documented, is a baseline for survey and inventory. If BLM determines that unforeseen changes to the Undertaking may cause direct, indirect, or cumulative effects to historic properties beyond the extent of the established APE, then BLM shall adjust the APE using the process set forth in the PA (Stipulation I.B.3).

2.2.1 Direct Effects

The APE for direct effects is the area within which historic properties may sustain physical alteration or destruction as a result of the Project. The following APEs take into account ground-disturbing activities associated with the Project:

- For transmission lines, the APE will be 500 feet (250 feet on either side of centerline for the right-of-way).
- The APE for access roads, except for existing crowned and ditched or paved roads and service roads, will be 100 feet on either side of the centerline for a total width of 200 feet.
- The APE for staging areas, borrow areas, substations, and other transmission infrastructure will include the footprint of the facility and a buffer of 200 feet around the footprint of the proposed activity.
- The APE for pulling/tensioning sites that fall outside the right-of-way will be the footprint of the site plus a 250-foot radius around these points.

- The APE for boreholes is a five acre area centered on the borehole.

2.2.2 Indirect Effects

The APE for indirect effects on historic properties considers visual, audible, and atmospheric elements that could diminish the integrity of the properties for which setting, feeling and/or association are qualifying characteristics of NRHP eligibility. The indirect APE for the Project extends for five miles, or to the visual horizon, whichever is closer, on either side of the proposed routes and alternatives. The indirect APE may extend beyond the five-mile convention to encompass properties that have traditional religious and cultural importance or other historic properties when effects have been determined to extend beyond this distance. The assessment of visual effects will incorporate a Geographic Information System viewshed assessment as well as BLM Visual Resource Management (also referred to as VRM) concepts (discussed in the PA, Stipulation II.C.2).

Figure 1a Regional Location Map and Transmission Line Routes and Alternatives – Wyoming

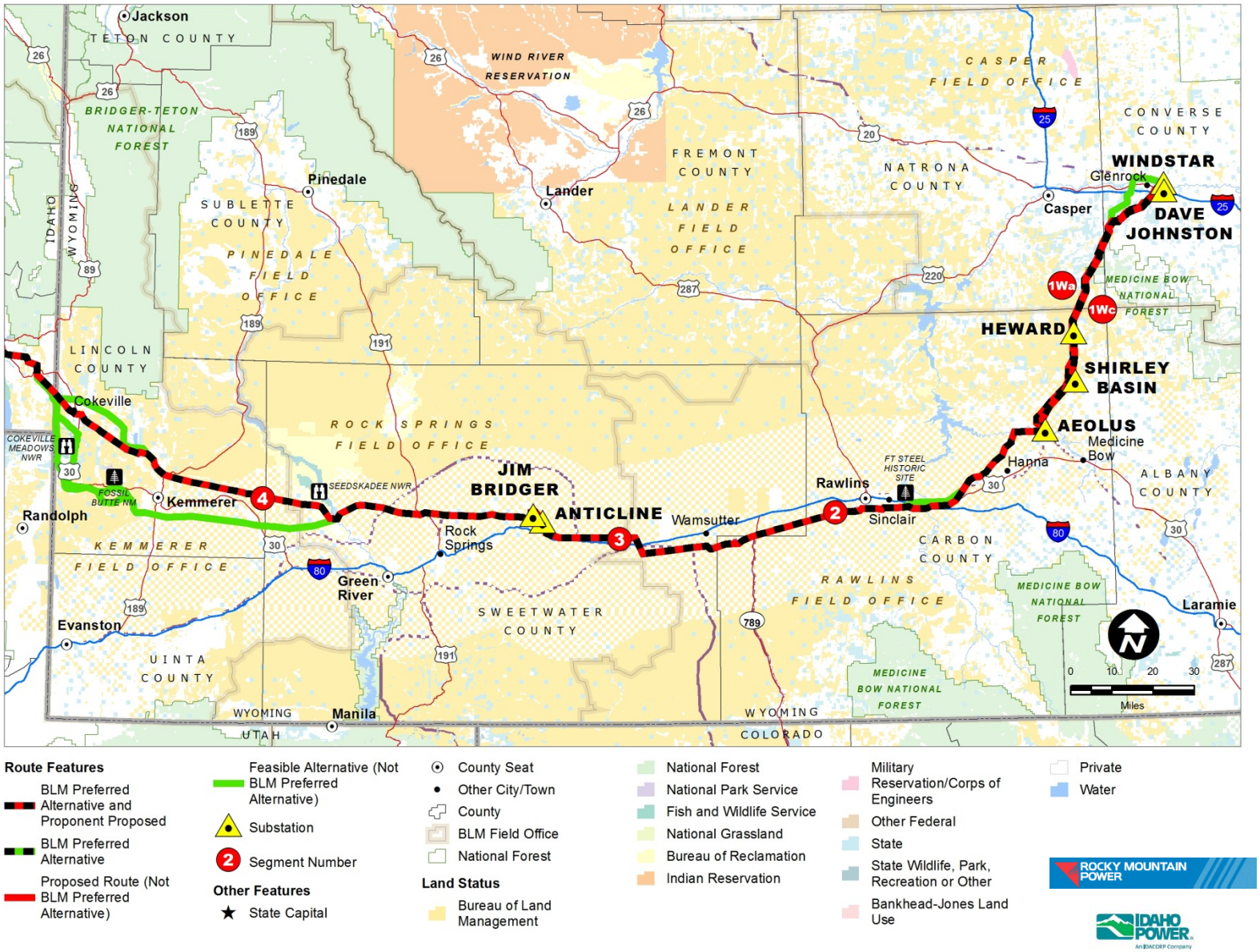
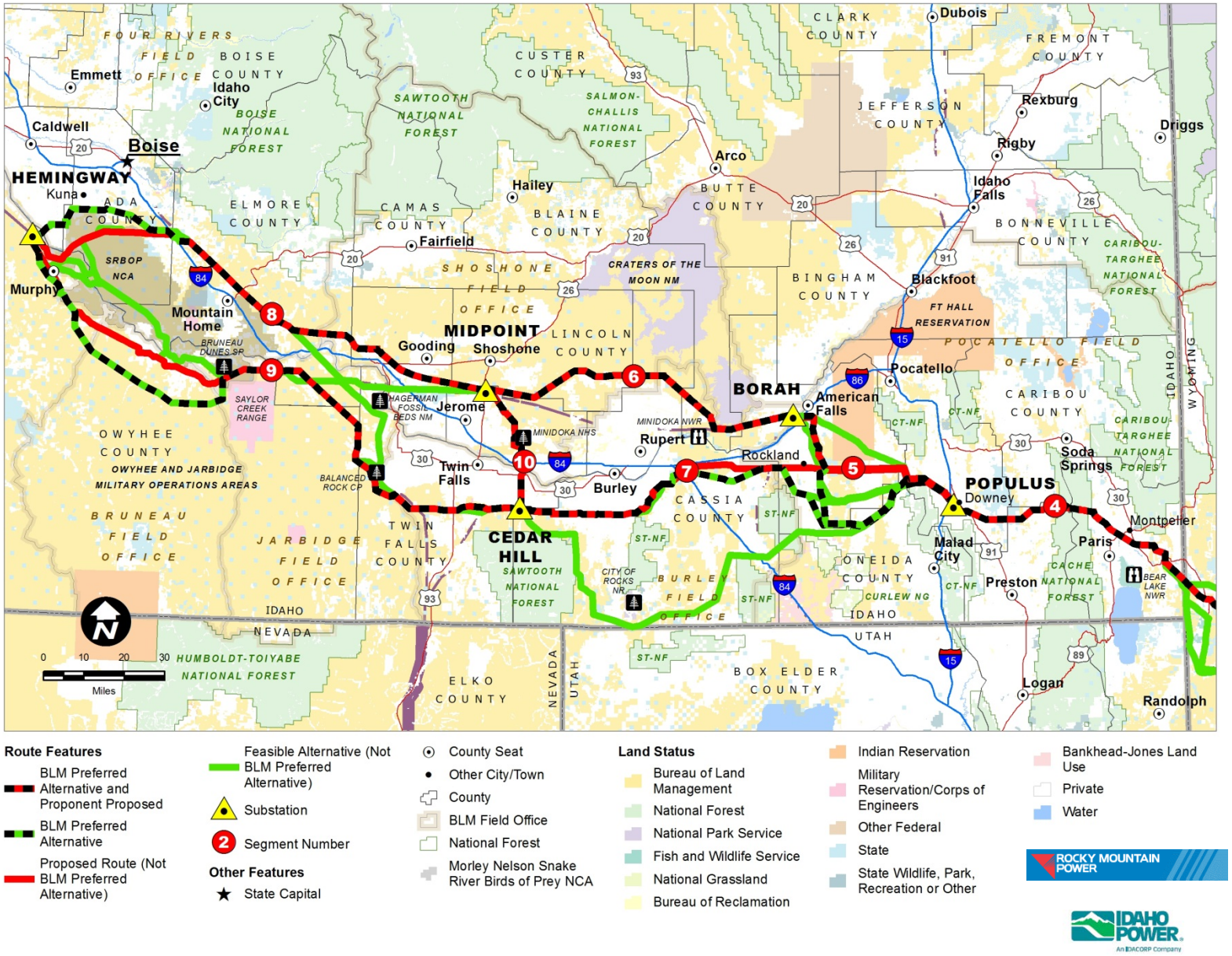


Figure 1b Regional Location Map and Transmission Line Routes and Alternatives – Idaho



3.0 PREVIOUS RESEARCH AND CULTURAL RESOURCES TYPES IDENTIFIED WITHIN THE PROJECT AREA

This section discusses the identification of resources and briefly discusses previous literature review, pedestrian field survey, and research conducted for the Project. It also identifies cultural resources types within the project area. Because of the phased nature of the Project, surveys will be conducted up to construction, and where changes in Project footprint occur, surveys will be conducted during construction. The agreed methods for conducting these surveys, reporting on them, documenting sites, determining eligibility, determining effects, and finally determining needed mitigation or treatment where impacts cannot be avoided, is provided in Section 4 and requires the context of previous research and cultural resource types identified in this section.

3.1 Identification and Evaluation of Historic Properties

This HPTP is based on the results of cultural resource inventories, consisting of background records and literature research and intensive pedestrian surveys for the Project. Similarly, the Segment Plans will also rely upon previous surveys (see Section 4.4). The PA outlines six phases in which the Companies have and will continue to conduct cultural resources inventory and identification of Historic Properties for this Project. The BLM will ensure that all work undertaken for this project will: satisfy the terms of the PA; meet the Secretary of Interior's Standards for Archeology and Historic Preservation (48 FR 44716); meet the requirements outlined in BLM Manual 8110; meet state SHPO standards, including guidance and standards found in respective BLM and SHPO state protocols; and meet the individual state BLM permitting requirements. The six phases are outlined in the PA and can be found in Section II.C.1-6.

3.2 Archival Research and Results

The Companies' team of archaeological consultants preformed a literature and records review encompassing 0.5 mile area on either side of the Proposed and Alternative Project Routes. Available existing records of previously recorded sites and studies/inventories were gathered by an official file records request to each state SHPO. In addition, other data sources included published and unpublished literature, chronologies, cultural and historical contexts, and information provided by the BLM, United States Forest Service (USFS), and the National Park Service (NPS) Trails Office. The literature and records review (Phase I) was analyzed and developed into a comprehensive cultural narrative overview and synthesis of data on prehistoric and historic resources for a management focused technical report. The technical report of this analysis is filed as a confidential document in the Idaho and Wyoming BLM Field Offices that the Proposed Route crosses (Henderson et al. 2009; Nilsson et al. 2009). Table 1, below, summarizes the record search results for the Project analysis area.

Table 1. Literature Review Results for the Project Analysis Area

State	Previous Inventories	Total Sites	Prehistoric	Historic	Multicomponent
Wyoming	1,200	3,000	2850	150	<10%
Idaho	1,550	600	480	120	<10%
Nevada[1]	2	200	200	0	0

3.3 Field Survey Methods and Results

The Companies' team of archaeological sub-consultants conducted an intensive pedestrian survey of 15 percent of the length of the Proposed and Alternative Project routes located on federal land in 2008, 2009, and 2010. This survey consisted of randomly selected 500-foot-wide by 1-mile long sample segments (areas previously surveyed in the last 5 years, 25 percent slopes, or exhibited recent disturbance were excluded) (BLM 2011). The consultant used 30-meter interval pedestrian linear survey transects across each sample. In addition, a Class III inventory was completed for the geotechnical locations (5-acre blocks centered on the borehole location). The inventory report is filed as a confidential document at the appropriate Idaho and Wyoming BLM Field Offices. Table 2, below, provides inventory results reported in the Gateway Project Draft Environmental Impact Statement (EIS):

Table 2. Field Survey Results reported in the Draft EIS 2011

State	Acres Surveyed	Total Archaeological Sites
Wyoming -15% Sample	5,818	40
Idaho-15% Sample	11,514	131

Each Segment Plan will contain a table listing archaeological sites that will be avoided and sites that require a prescribed treatment within that segment.

3.4 Ethnographic Studies

In an effort to identify and protect Tribal contemporary and ongoing use of culturally significant areas and/or sites and to assist the BLM with their Tribal consultation requirements by law, the Shoshone-Paiute, Shoshone-Bannock, Eastern Shoshone, and Northern Ute Indian Tribes requested ethnographic studies be conducted for the Project analysis area. The ethnographic studies will combine cultural resource literature review results and ethnographic interviews to identify any culturally sensitive resources. The BLM will treat all information confidentially and the Tribes will control the distribution of their respective reports. One study has been completed

[1] The Nevada routes have been dropped from consideration. This information reflects work conducted prior to the elimination of these alternatives.

for the Shoshone-Paiute Tribes and another is in progress. No traditional cultural properties have been identified as of December 2012.

3.5 Trails Report

A study of visual impacts to historic trails and trail-related historic properties was conducted for the Project analysis area and discusses impacts to visual resources on Public lands and specifically analyzes the impacts of the Project on the setting of these historic properties where appropriate. The report is on file with the Idaho and Wyoming state BLM field offices.

3.6 Definition of Cultural Resources Site Types

The following is a summary of the different cultural resource site types found in Wyoming and Idaho. This list is included in the draft Project EIS and was derived from the state SHPO databases and literature review.

3.6.1 Prehistoric Resources

Prehistoric resources found in the Project analysis area include**:**

Open Camps are minimally defined by the presence of one or more hearth features. The resource type includes open camps, stone circle sites, ceramic sties, and bone beds/kill sites.

- Stone Circle Sites—Although evidence suggests that many of these sites are habitation sites, the function of stone circles cannot often be inferred from the available archaeological data and is often determined through Native American consultation.
- Ceramic Sites—open camps that exhibit the presence of prehistoric pottery. Such temporally diagnostic artifacts are useful in determining not only the age of an occupation, but the cultural affiliation of the occupants.
- Bone Beds/Kill Sites/Impoundments—are location where large and medium-sized animals were killed and butchered. Sites typically consist of a large scatter of animal bones in association with lithic scatters.

Ritual Sites are places where formalized ceremonies took place or are natural features on the landscape that have religious significance. In the Project area, stone alignments and cairns are the most visible remnants of ritual localities. The most dramatic example of such sites is the "medicine wheel," which consists of concentric circles of stones, radiating lines or spokes, and an altar stone or cairn in the center (BLM 2011).

Sheltered Camps generally consist of a rock overhang or cave, with evidence of human occupancy such as smoke-stained ceilings, artifact scatters, or other features.

Rock Art Sites include pictographs or petroglyphs, which are respectively drawn or inscribed on rock faces. The images often depict events such as battles, spiritual visions, environmental observations, hunting activities, deaths and burials, geometric shapes, or simply the visitation of an individual or group at that location.

Mortuary Sites are locations where a body has been interred or is related to burial practices.

Limited Activity Sites are short-term camps where a specialized activity took place. They include lithic scatters, lithic landscapes, quarry sites, and vegetal processing sites.

- Lithic Scatters—consist of stone materials that remain from lithic procurement activities or stone tool manufacture, and may include bifaces, unifaces, and flaking debris.
- Lithic Landscapes—cover many miles and are areas or regions where aboriginal peoples habitually tested and procured tool stone and lithic materials. The result is a cultural landscape created by thousands of years of repeated use.
- Quarry Sites—are lithic procurement locations where prehistoric peoples extracted lithic materials from primary or secondary geological contexts.
- Vegetal Processing Sites—are locations where diagnostic artifacts indicate the collection of processing of floral remains without evidence of occupation. They are often separated from other sites because they identify a specific type of resource extraction activity.

3.6.2 Historic Resources

Historic Resources identified within the Project analysis area include:

Trails—the Native Americans had developed extensive trail networks for travel and trade prior to the Euro-American westward migration. Many Native American trails were used by emigrants and are now more widely recognized as historic trails such as the Oregon National Historic Trail and the California National Historic Trail (NHT).

- Historic Trails—includes historic trails, stage roads, and freight roads, such as, Emigrant Trails and National Historic Trails. Trails can range from faint swales to ruts, two-tracks, or modern roads.

Agricultural/Animal Husbandry Sites are locations, features, or structures associated with cultivating land, raising crops, feeding, breeding, or tending to domestic animals and raising livestock.

Exploration/Resource Extraction—the growing number of westward migrating emigrants in the 19th century began to actively explore for, prospect, and exploit natural resources within the Project analysis area. Resources for this site type include:

- Lumbering Sites—are buildings, structures, objects, sites, or districts associated with cutting or preparing lumber.
- Mining Sites—include any buildings, structures, objects, sites, or districts associated with natural resources extraction, such as oil, gas, coal, or other mineral. Mining sites are identified by single and multi-family houses (made out of milled wood, brick, stone, or logs), bunk and boarding houses, concrete and stone foundations, commercial buildings (saloons, stores, and warehouses), industrial buildings (machine shops and warehouses),

mining-related buildings (pump and fan houses, elevator and hoist houses, changing rooms, tool storage houses), cisterns, wells, privies, and railroad features (trestles, spurs, switching equipment, lights, and yards). Mining-related features include adits, shafts, air shafts, hoist frames, and trestles. Artifacts include domestic materials (glass, clothing items, ceramics, food and beverage containers, and tools), machinery (pumps, fans, hoist and elevator equipment), and miscellaneous items such as head lamps, lunch pails, pipes, and other personal items.

- Power Transmission Sites—are locations, features, or structures involved with the movement of energy from one place to another. Until recently, transmission lines have not been widely recorded as historic sites. The historic context statement written for the Bonneville Power Administration (BLM 2011), and a report prepared for the Western Area Power Administration that was submitted to the Colorado and Wyoming SHPOs (BLM 2011), contain detailed historic context on the design and construction of electrical transmission systems in the western U.S.

Transportation Sites include buildings, structures, objects, sites, or districts that are associated with the movement of people and their belongings from one place to another. These sites can be related to air, rail, water, road, or pedestrian travel (BLM 2011). Resources within this category include historic roads, bridges, railroads, and airfield features.

Waterworks Sites consist of buildings, structures, objects, sites, or districts that that store and supply water to its point of use.

Other Historic Sites – This category comprises the remaining resource types that do not share a related socioeconomic theme. These resource types include inscriptions, military sites, and urban and rural sites:

- Inscriptions—sites where historical, religious, or other records are cut, impressed, painted, or written on stone, brick, metal, or other hard surface.
- Military—sites can include buildings, structures, objects, sites, or districts that are associated with any activity that occurred to support military action or where military activities have taken place. Sites can include, but are not limited to, arms storage, fortification, facilities, battle sites, and roads (BLM 2011).
- Urban—sites are locations, features, or structures associated with human settlement in a town or city.
- Rural—sites include buildings, structures, objects, sites, or districts associated with human settlement in the non-urban setting.

4.0 METHODS FOR DETERMINATION AND DOCUMENTATION OF ELIGIBILITY, AND EFFECTS

This section discusses the methods to be used to determine effects and presents the review and revision requirements as specified in the PA.

4.1 Determination of Eligibility

The NHPA is the principal federal law guiding BLM action with respect to the treatment of cultural, archaeological, and historic resources. Section 106 (16 United States Code [U.S.C.] 470f) of the NHPA requires that federal agencies take into account the effects of their undertakings on historic properties listed or eligible for listing on the NRHP, and give the ACHP and SHPO a reasonable opportunity to comment on the undertaking. Historic properties are "any prehistoric or historic district, site, building, structure, or object included in, or eligible for inclusion in the National Register of Historic Places" (16 U.S.C. 470w [5]). The criteria used to evaluate NRHP eligibility of properties affected by federal agency undertakings are contained in 36 Code of Federal Regulations (CFR) Part 60.4.

The Companies' Project archeologist(s) will include recommendations of eligibility for cultural resources identified within the Project APE as a result of Phase 2-6 reporting. The BLM, in consultation with the signatories, invited signatories, and concurring parties, will determine the NRHP eligibility pursuant to 36 CFR 800.4(c)(1) for each property identified within the APE of the Project (see PA, Section II, D, a and b).

For each site, the determination of eligibility will be completed prior to an assessment of effects.

4.2 Determination of Effects

Each site that meets the NRHP eligibility will be evaluated to determine if the project will adversely affect it. An effect occurs if there is a potential to alter the site's attributes that contribute to its NRHP eligibility status. The BLM, in consultation with the signatories of the PA, makes determinations of effect consistent with 36 CFR 800.4(d); identifies any adverse effects for each historic property within the APE in accordance with the criteria established in 36 CFR 800.5(a)(1) and (a)(2)(i)-(ivv); and provides appropriate Signatories, Invited Signatories and Concurring parties with the results of the findings following CFR 800.11(e)(4)-(6).

These determinations of effects will serve as the basis for the development of the HPTP Segment Plans. The BLM will also utilize the Visual Contrast Rating (also referred to as VCR) system assessment to determine the indirect visual effects of the proposed Project on historic properties. In addition, The BLM will, in consultation with the signatories to the PA, broadly assess cumulative effects under Section 106 in order to identify reasonably foreseeable, potentially adverse effects as a result of the proposed Project (PA Section II[E][1-3]).

4.3 Site Recording and Evaluation Methods

Several efforts have been made to avoid cultural resources. If previously unidentified archaeological resources are discovered within the project APE during construction, the procedures outlined in the Monitoring Plan (Attachment A) will be followed. In general, the Cultural Resource Specialist (CRS), or Cultural Resource Monitor (CRM)[2] will halt construction within 200 feet of the find, notify the BLM and/or SHPO, and record and map the isolated find or archaeological site to the appropriate state standards for submittal to the agencies. Construction can resume when the BLM approves the CRS evaluation of the find as ineligible or mitigation measures are approved by the relevant BLM and SHPO offices.

Additional archaeological field staff (e.g. field director, crew chief, etc.) may be required to assist and complete archaeological site recording, testing, and data recovery for large complex sites, if the CRS and/or CRM(s) are needed in other areas were construction is continuing and ongoing, and/or in an effort to complete the work within a scheduled amount of time (as not to delay construction for too long). All archaeological field crews will work under the supervision of the CRS. The roles and responsibilities of all cultural resource's personnel are detailed in Attachment A, Monitoring Plan.

4.3.1 Site Recording Methods

The CRS or CRM will record cultural resources on the appropriate state archaeological site form (Attachment A, Monitoring Plan, Attachment 2). The site area will be recorded and evaluated to determine whether it requires further testing or other mitigation measures. A tape measure and compass or Global Positioning System (GPS) will be used to record the distance and bearing of surface artifacts from the site datum and to prepare a detailed scale map of prominent site features. This map will show landmarks, artifacts, and test unit (as appropriate) locations. The site will also be plotted on a United States Geological Survey 7.5' topographic map. All activities will be confined to the Project APE.

The CRS, CRM, or archaeological field crew (if additional staff other than the CRS/CRM are needed to assist with recording) will also photograph the site and record standard site information about the topography, physiography, vegetation, location, and artifacts and features (mapped in plan view and/or profile, as appropriate), and produce stratigraphic profiles of selected trench walls (if find is located during construction trenching of linear line) in which cultural materials are exposed for the archaeological site form. Soil colors will be recorded using the Munsell soil color charts. No artifacts will be collected for curation unless at the request of the BLM Archaeologist or the Native American Monitor. An eligibility recommendation will be made for the resource on the form. A permanent site number will be obtained from the appropriate state SHPO. The draft site form, along with maps and photos, will be submitted to

[2] The roles and responsibilities of cultural resources personnel are detailed in Attachment A, Monitoring Plan

the BLM for review and approval. Any potential human remains must be treated as described in the NAGPRA Plan (see Attachment C).

4.3.2 Site Evaluation Methods

Site avoidance will be the preferred method of dealing with cultural resources during construction of the Project. However, if a newly discovered resource is potentially significant and if avoiding the resource proves infeasible (as determined though consultation between the CRS, BLM, SHPO, and Companies), then site evaluation will proceed.

Evaluation methods for a site will consist of assessing the integrity of the site, inventorying and identifying surface artifacts for analysis (non-collection of artifacts is preferred, if possible analysis of surface artifacts will be conducted in the field) and determining whether or not sub-surface deposits exist, conducting any necessary test investigations to determine whether the site has a subsurface artifact component, and conducting data recovery excavations if necessary.

Site investigations under this plan will take place in two stages. The first stage, test investigations, will help determine the extent, depth, and contents of the site. The purpose of the test investigation phase will be to recover information about the site and whether or not it would meet NRHP criteria for eligibility. Test units consist of shovel test units (STUs) and test excavation units (TEUs). If the archaeological site is exposed within a construction trench, then test units may consist of column samples.

Based on the results of the test excavation, the CRS in consultation with the BLM and SHPO, will determine either that full-scale data recovery is necessary, or that test investigation has exhausted the research potential of the site. If data recovery excavations are warranted, the structure of this HPTP and information gathered during the test investigations will be used to develop a Treatment/Data Recovery Plan. In addition, the plan will be completed in consultation and agreement among the signatories of the PA.

The general evaluation procedures that would be used to examine newly discovered sites, including surface investigations, test investigations, and data recovery, are briefly described as follows. The Wyoming BLM Field Guide for Evaluative Testing of Archaeological Sites is also provided in Attachment E as a reference for sites within the state of Wyoming. The Project Archaeologist will consult with the BLM and SHPO regarding appropriate procedures for testing.

Remote Sensing—Remote sensing techniques include magnetometry, gradiometry, soil resistivity, and ground penetrating radar. Remote sensing is most useful on specific site type deposits that contain more than one burred feature such as buried hearths, pit houses, or burials. If remote sensing would be useful in evaluating the site, the project Team would prepare a research and work plan which contains strategies for grid coverage and anomaly evaluation and testing. Remote sensing is the least site disturbing technique and may be the quickest way to obtain archaeological evidence.

Surface collection—The project team would first attempt to gather as much information as possible without formal excavation. Non-collection of artifacts is preferred, and when possible and/or feasible, analysis of surface artifacts will be conducted in the field. Surface sample collection often provides considerable information about the site's artifactual constituents. Soil augering can provide stratigraphic information, particularly when coupled with phosphate analysis of soil samples taken at various depths in the auger cores. A 3-inch diameter soil core or larger bucket auger will be used (BLM 2003). Soil phosphate analysis assesses the quantity of phosphate chemicals in soils, which is a strong correlate, under most conditions, of artifact density. The use of these techniques must be considered in relation to their potential benefits and cost.

Shovel test units—The field crew will excavate STUs to determine the depth and artifact density of the deposit. STUs are systematic units excavated in discrete, arbitrary levels. The STUs will be 30-35 cm in diameter and will be evenly distributed at major points on a square grid pattern where the squares are 5 or 10 meters (depending on site type) on a side so that the intervals between STUs will be 5 or 10 meters. Some STUs will be placed near the perceived center of the site, and others near the probable site boundaries. STUs will be placed farther out from the center of the site until no debitage/cultural material is recovered. Shorter intervals, both along and between transects, may be necessary to confirm the subsurface site boundary. STUs will be excavated in levels 10-cm or 20-cm thick, to a depth at least 20 cm below surface for STUs that do not contain subsurface artifacts, or to a depth one level (10-20 cm) below the last level in which artifacts are found for STUs that contain subsurface artifacts. If the site deposits are sufficiently deep that excavation in an STU becomes impractical, the excavators will use a bucket auger from the lower limit of feasible excavation to gauge the deposit's depth. All excavations will be restricted within the Project APE.

All excavated materials will be screened using 1/8-inch mesh or 1/4-inch mesh. They Wyoming site testing protocol request 1/8-inch mesh be used for sand and loose soils and where small artifacts (e.g. seeds, charcoal, retouched flakes, small animal bones) are expected. The Wyoming protocol also suggest ¼-inch mesh in instances where soils consists of heavy and wet clays and/or the mesh size can recover the types of artifacts the site is likely to contain (BLM 2003). Material will be sorted into cultural classes (e.g., flaked stone, ground stone, bone, shell, charcoal, etc.) and for historics (e.g., glass, metal, ceramic, etc.). The material will be collected and cataloged by level. The field crew will record the soil, stratigraphy, site disturbances, and artifact contents of the STU levels on standard STU level forms. They will describe soil color using the Munsell Soil Color Chart and will describe soil texture using standard U.S. Department of Agriculture Natural Resource Conservation Service terminology.

Test excavation units—TEUs will be excavated if the site exhibits subsurface midden or concentrations of material. The stratigraphy will be assessed to evaluate the integrity of the deposit, and a profile will be drawn if stratigraphy is apparent. For the preliminary excavation phase, the field crew would first establish a grid of Cartesian coordinates relative to the site's

permanent datum so that crew members can accurately describe any location on the site in terms of metric units east and north of the grid's off-site origin (relative to the site's baseline). Next, they will choose TEUs from within the areas greatest concentration, placing the units in relatively undisturbed areas. The number of units will depend upon site size, following the formula of 1 unit per 2,000 square meters of site. The units would be 50 x 50 centimeters or 1 x 1 meter units, excavated in 10-cm levels.

The field crew will excavate, keeping detailed notes on each level's contents, and collecting each level's artifacts and materials separately. The notes will be taken on standard level-note forms, printed on acid-free paper. The CRS and or Archaeological Field Director will also keep a notebook for recording general observations and impressions about the site and excavation. Excavation will proceed using sharpened shovels and masonry trowels. The crew will screen all dirt through ⅛-inch mesh and will collect all artifacts and possible ecofacts such as animal bones, shell, and charcoal, and bagging each material type separately, with a separate catalog number. The crew will photograph each excavation and draw a scale map of each level's floor. If fire-affected rock (FAR) is encountered, the crew will count and weigh the FAR from each level, but will discard in the tailings and returned to the excavated unit upon completion of work and upon backfilling. Excavation will continue to and beyond the boundary with the culturally sterile site soil matrix (confined within the Project APE). Each unit will be backfilled after completion.

Column sampling instead of a complete excavation unit may be appropriate if an archaeological deposit is exposed in a construction trench where access is restricted. The field crew would first use trowels and other implements to smooth the trench profile and reveal the natural and cultural stratigraphy. The crew would then lay out an excavation unit on the surface, 1 m wide (or the width of the trench if less than 100 cm) and 50 cm deep. Any non-cultural overburden would be visible in the trench profile and would be removed without screening. The remaining cultural stratigraphy would be removed from the profile by natural levels, if apparent, and screened through ⅛-inch mesh. This sample would be analyzed to determine the density, contents, and integrity of the deposits.

For sites of the historic era, test excavation would be most appropriate within ruined structures, refuse pits, and privy types. Otherwise, test excavation methods used would be similar to those used for prehistoric sites, except that ¼-inch screen would be more appropriate.

Data recovery excavation—Planning for full-scale data recovery excavation to mitigate the loss of substantial and significant archaeological deposits will be guided by data gathered during the test investigations and by the research design (site specific treatment plan or HPTP Segment Plan). The CRS will consult with the BLM, SHPO, and concerned regional Native Americans, regarding data recovery excavations. In addition, design and execution of data recovery would be done in consultation and agreement among the signatories of the PA for cultural resources.

Sampling for data recovery excavations will follow standard statistical sampling methods, but will be confined to the direct impact area (facility site, access road, spur road, tower location,

laydown area, etc.). The CRS may choose the units for excavation by consulting a table of random numbers, or the first unit may be chosen at random and the remainder located at some regular interval in relation to this unit (systematic sample). If structural features are present or are found, additional units will be placed non-randomly to expose the features. Depending on the site, the site-specific research design, and data needs to address specific research questions, different sampling techniques might be appropriate.

Excavation, collection, and cataloging methods will be similar to those used for the TEUs. All structural features discovered during excavation will be carefully excavated. After profiling the feature (excavating one-half of it), the feature will be drawn and photographed. If the feature is a hearth, storage pit, or ash dump, the field crew will collect its contents for flotation to recover floral samples.

The field crew will make every attempt to locate and collect datable carbon. Charcoal features will be carefully excavated to preserve and document the association of separate pieces so that the laboratory can use the standard method of radiocarbon assay. Very small pieces will also be collected, so that these can be submitted for dating using the accelerator mass spectroscopy (AMS) method, if necessary, for prehistoric sites.

For sites of the historic era, very similar techniques would apply, except that large-scale excavations would take place in and around ruined structures and refuse deposits within the Project APE.

4.3.3 Preliminary Data Analysis Methods

This analysis will all be conducted in accordance with BLM and state protocols and guidelines. Preliminary descriptive analyses of artifacts will begin once the collection has been catalogued and prepared for storage. The laboratory director and crew will then count and weigh all cataloged items in the collection. They will enter this basic information into a computerized database (such as Microsoft Access) by site, grid unit, and level. They will take the counts and weights for FAR from the unit level forms.

For prehistoric sites, the laboratory director and crew will also conduct preliminary analyses of raw material type and stone tool waste category for lithic debris.

For ground stone, the preliminary analysis will include a count of raw material type and descriptions of the shapes of ground stone surfaces and the patterns of wear found on them. Preliminary bone and/or shellfish analyses will include sorting into bird, mammal, shell, and fish bone, and counting and weighing by these categories.

The preliminary analysis of manufactured items such as shell beads, chipped stone tools, and cores and core choppers will be more detailed. The laboratory director and crew will weigh these and measure each major dimension for recording in the computerized database. The illustrator will prepare a scale drawing of all diagnostic stone tools, or a reasonable and representative sample if these are numerous.

Analysis of historic period artifacts will begin with separation into major artifact categories, including glass, ceramics, cans, nails, metal, buttons, coins, leather, cloth, other materials, and other metal artifacts.

4.3.4 Specialized Data Analysis Methods

The preliminary analysis phase will complete the basic inventory of artifacts and materials collected so that the CRS can begin to prepare a basic summary of the excavation and its results. Also, by examining the preliminary descriptive results of the excavations, the CRS can begin to discern patterns in the occurrence of the artifacts and materials that will guide additional analyses and help in interpreting the site. Specialized analyses will follow these preliminary and descriptive analyses. These analyses may involve both the application of very specialized techniques by specially trained experts and the execution of analyses designed to answer specific research questions regarding a particular site.

4.3.4.1 Lithic Analysis

The goal of the extended lithic analysis will in most cases be to infer from the stone tool waste present on a site the kinds of tool manufacture or maintenance activities undertaken at a site and the relative importance or frequency of different activities. This, combined with other information, might lead to an interpretation of the role of a site in a settlement-subsistence system.

Lithic analysis will be conducted by the field crew (under the supervision of the CRS) and will include identification of raw material and reduction stage for debitage, and functional and wear patterns analysis for tools. An attempt will be made to identify the sources of lithics used; if obsidians are found, they will be submitted for source identification through x-ray fluorescence, and dated through obsidian hydration analysis.

4.3.4.2 Sedimentology

Samples of sediment will be subjected to textural analysis at a commercial laboratory and the results used along with stratigraphic descriptions to interpret the sedimentary history of the site.

4.3.4.3 Blood and Plant Residue Analysis

Blood and plant residues on stone artifacts can be used to determine how manos, metates, and other plant processing tools might have been used or to determine the species of animal that was butchered or killed using a particular projectile point, knife, or utilized flake. This analysis requires that the artifacts not be washed and that control samples of soil and unutilized cobbles are collected with the artifact to be analyzed.

4.3.4.4 Bead and Ornament Analysis

Shell, steatite, or schist beads or ornaments can be analyzed for stylistic type and variation within type. Beads are sometimes sensitive time indicators and can also provide information about long distance trade networks in prehistory.

4.3.4.5 Faunal Analysis

The faunal collection (bones and shells) may be sent to a zooarchaeological specialist for identification and quantification. Wherever possible, the faunal analyst identifies the age, sex, and season of death of the specimen. The analyst counts the number of identifiable specimens per taxon, minimum number of individuals per taxon (based on the fact a single individual may be represented by several bone or shell specimens), and weight per taxon by unit and level. According to these procedures, the minimum number of individuals is calculated for each stratigraphic unit or feature, not for the entire site.

The faunal analyst also examines each specimen for evidence of cultural modification, such as butchering marks, burning, staining, painting, and unusual breakage (such as spiral fracture for bone marrow extraction). Deer teeth and fish otoliths are sectioned to assess seasonality of death and gather evidence for the seasonality of site use.

4.3.4.6 Floral Analysis

The heavy and light fraction flotation samples may be sent to an archaeobotanical specialist for the identification of charred seeds. This analysis is a simple count of the various taxa represented by unit and level or feature. Large pieces of wood charcoal may also be sent to the archaeobotanist for identification. These data, which must be interpreted in light of the modern vegetation surrounding the site, can be used to address significant research questions regarding patterns of foraging for wild plant foods, seasonality of site use, changes in land use, and changes in the prehistoric environment over time.

4.3.4.7 Radiocarbon Assay

Radiocarbon dating will be performed by an outside laboratory, to determine site age and age of stratigraphically associated artifacts, where appropriate. Charcoal or soil from hearths or dense midden areas may be analyzed. Single samples producing at least 10 grams of datable carbon will be analyzed using the standard method. If samples this large are not available, very small samples of charcoal will be analyzed using the AMS method.

4.3.4.8 Historic Artifacts

Specialized analyses for historic artifacts will include background research on ceramic makers marks, buttons, and other trade marks on tin cans and other items to determine age of manufacture, and analysis of materials and manufacturing techniques to determine age and use. Other specialized analyses could include analysis of ethnic artifact origin or use and analysis of social class and income, based on artifact quality and relative cost when new.

4.3.4.9 Ceramic Analysis

Special analyses for prehistoric ceramics will include categorization of the sherds into established typologies, thin sectioning, and neutron activation to determine clay sources and

chemical constituents. Vessel form and function may be determined through morphological analyses.

4.3.5 Field Equipment

Supplies for site mapping available to the CRS include GPS equipment, surveyor's transit, and compass for preparing archaeological site maps, digital and conventional film cameras for photography, and standard archaeological excavation tools such as shovels, screens, masonry trowels, and line levels.

Other standard supplies include archival quality (4-mil) locking plastic bags to hold artifacts, acid-free paper, and acid-free boxes for long-term artifact storage.

4.4 Cultural Resources Report Preparation and Documentation and Review

All cultural resource reports prepared for this Project whether during the planning process, as a result of monitoring, or as a result of mitigation work prescribed by a Segment Plan, will be consistent with the appropriate current state and BLM guidelines, requirements, and formats including determination of eligibility and effect. At the conclusion of each Phase of work, the Companies will submit copies of the draft report to the lead BLM office for distribution to the appropriate BLM District or Field office in each state and PA signatories (see PA Section III for reporting and review).

4.5 Segment Historic Properties Treatment Plans

As specified in Section 1.1, above, the PA for this Project calls for site-specific treatment plans to be developed prior to the initiation of any construction phase of the Project. The intent of this HPTP is to specify the general terms of avoidance, monitoring, and a framework for mitigation planning. The purpose of each Segment Plan is to supplement this HPTP with site-specific information, including treatment plans for unavoidable direct and indirect effects. The HPTP will cover, with its project-wide trails mitigation plan, indirect effects to trails and trail-related resources. The Companies will develop a Segment Plan for each work element for which they wish a separate NTP from the BLM (PA Section X.B). Note that while the project is divided into linear Segments 1-10 for the purposes of project description and permitting, the Companies may request that one or more segments be combined into a single NTP, or may request an NTP for one or more portions of segments. For the purposes of this HPTP and the subsequent Segment Plans, "segment" means the portion of the project for which the Companies request an NTP.

Each Segment Plan will contain at least the following (PA, Section V.C.):

- A description of the Segment or element action, including maps
- A table of Historic Properties that have been identified within each Segment, including those avoided, by land ownership and by state (if the requested NTP covers more than one state).
- An assessment of effects and how adverse effects to the specific characteristics of the Historic Properties that make it eligible for the NRHP will be resolved.

- Documentation of the measures that the Companies have already taken or will take to avoid and minimize impacts to properties eligible for or listed on the NRHP
- A clear definition of the specific mitigation strategies proposed to address the direct, indirect, and cumulative effects of the Segment/element for individual Historic Properties
- Preparation of a site-specific Monitoring Plan to supplement the general Monitoring Plan (Attachment A of this HPTP).
- Property-specific treatment method documentation and proposed mitigation reporting
- Identification of the responsible parties involved in the mitigation and their roles.
- Adherence to ACHP guidance, Secretary of Interior's Professional Standards, Historic American Buildings Survey (HABS)/Historic American Engineering Record (HAER)/Historic American Landscapes Survey (HALS) guidance, and appropriate state guidelines.

Upon final approval by the SHPOs and acceptance by the BLM, each Segment Plan will be attached as an Attachment to the HPTP.

5.0 PROPOSED MITIGATION PLAN

This HPTP presents the general framework for resolution of adverse effects from the Project on cultural resources eligible for or listed on the NRHP (historic properties). It first deals with avoidance as the preferred strategy for resolution and then outlines the Project approach to mitigation where adverse effects cannot be avoided. It also provides a specific project-wide plan for Historic Trails and trail-related resources.

5.1 Avoidance

The Companies have designed the Project to avoid historic properties to the extent feasible. Cultural resources were identified within or near the project area early in Project planning phase through literature reviews, documentation of previous surveys, and Project-specific pedestrian surveys. The Project design was altered where feasible to avoid effects to known significant cultural resources. For example, if a proposed access road would affect a prehistoric site, the road was redesigned to avoid the site boundaries. The Companies made numerous revisions to the proposed transmission line routes to avoid effects to known historic properties.

In many cases direct effects to historic properties will be avoided by relocating a Project facility, but the proposed facility may be installed near the site. In order to avoid physical damage to the site, the site would be flagged, fenced, or staked, including a buffer (established on a site-by-site basis) determined by the BLM and appropriate state SHPO, and marked for avoidance on maps and on the ground. In some cases with large sites or complexes of sites, only that part of the site near the construction activities would need to be marked for avoidance.

Each Segment Plan will include a table that lists Historic Properties that have been identified within the APE of the specific segment. The table will list Historic Properties that need to be flagged and avoided and those that require specific treatment.

Construction monitoring to assure planned site avoidance is successful and to watch for subsurface discoveries during grading, blading, excavation, and other initial mechanical ground-disturbing activities, will be conducted as detailed in the Monitoring Plan, Attachment A.

During construction it is possible that surface and/or subsurface resources, not identified during 100% pedestrian surveys in the various phases prior to construction could be discovered. Attachment B, Inadvertent Discovery Plan, details the required response of the cultural monitoring team and the contractor to such a discovery.

5.2 General Mitigation Measures for Historic Properties

Adverse effects to historic properties cannot be entirely avoided by this Project. Even if the Project could be redesigned to avoid all direct effects through ground disturbance, the substantial change in the setting of some important resources where setting is an aspect of integrity, including National Historic Trails, due to the construction and operation of the Project, cannot be

entirely avoided. In addition, there may be surface resources that due to their critical location or size cannot be entirely avoided.

5.2.1 Mitigation for Direct Effects to Surface or Subsurface Historic Properties

The Project has been designed to avoid direct effects to trails eligible for or listed on the NRHP, to trail-related resources, and to historic buildings, including fences, corrals, and outbuildings. Therefore, the only historic properties that would likely be adversely directly affected by the Project are prehistoric or historic era resources whose surface or subsurface features or artifacts cannot be entirely avoided. For sites determined eligible under 36 CFR 60.4(d), significant data could be recovered through excavation, research, and analysis, as summarized in Table 3, below:

Table 3. Treatment Classes for Unavoidable Direct Impacts

Historic Property Category	**Example Site Types** (not a complete list)	**Treatment Classes for impacts to sites without a subsurface component (i.e. surficial sites)**	**Treatment Classes for impacts to sites with subsurface features or artifacts**
Prehistoric	Surface lithic and ceramic scatters, campsites, hearth and features, quarry, rock alignments, petroglyphs	Data Recovery that includes: • Surface Collection or in-field artifact analysis and recording • Detailed Surface mapping • Geomorphological studies • Photo documentation • Curation	Data Recovery that includes: • Surface Collection or in-field artifact analysis and recording • Detailed Surface mapping • Geomorphological studies • Controlled scientific excavation • Laboratory analysis • Photo documentation • Curation
Historic Era	Trash scatters, structural debris, rock cairn, rock alignment	Data Recovery that includes: • Recording • Surface Collection or in-field artifact analysis • Detailed surface mapping • Photo documentation	Data Recovery that includes: • Recording • Surface Collection or in-field artifact analysis • Detailed surface mapping • Controlled scientific excavation • Laboratory analysis • Photo documentation

5.2.2 General Mitigation for Indirect Effects to Historic Properties

Although the Project's construction and operation will avoid direct effects to trails and historic buildings, the indirect effect on properties that would be eligible under 36 CFR 60.4 criteria a, b, or c, would be treated differently from direct effects. For these properties, data recovery may also include historic documentation, photographic documentation, collection of oral histories,

architectural, landscape, or engineering documentation. Table 4 lists treatment classes for unavoidable indirect effects to historic properties.

Table 4. Treatment Classes for Unavoidable Indirect Effects

Historic Property Category	**Example Site Types** (not a complete list)	**Treatment Classes for Indirect Effects**
Trails (NHT, stage trails, freight roads, etc.)	Stations Corrals Trail traces Burial Burial Inscriptions	• Recording—including HABS/HAER/HALS • Additional literature or archival review (e.g. historic maps, local papers). • Metal detector surveys
Historic Structures	Farms and ranch sites, buildings, utility lines, water conveyance systems, mining, bridges, etc.	• Photo documentation and scale drawings • HABS/HAER/HALS documentation Additional archival and literature review • Restoration of historic structure • Relocation of historic structure
Traditional Cultural Properties	Types could include ceremonial areas, vision quest or gathering areas	• Additional literature/archival review • Ethnographic documentation • Oral histories

Additional treatment measures for direct, indirect, and cumulative effects can include (but are not limited to) the following (per PA, Section V.B):

- Completion of NRHP nomination forms.
- Conservation easements.
- Historic American Landscape Survey (HALS) documentation.
- Historic American Building Survey (HABS) documentation.
- Historic America Engineering Record (HAER) documentation.
- Purchase of land containing NHT segments or other historic properties for transfer to public ownership.
- Partnership and funding for pubic archaeology projects.
- Print publication (brochure/book).
- Video media publication (website/podcast/video).

5.2.3 Proposed Project-Wide Historic Trails Mitigation Program

The Companies, in consultation with the Wyoming SHPO and BLM, are actively pursuing a conservation easement with interested Wyoming landowners with important emigrant trail resources on parcels they own. A Memorandum of Agreement is being negotiated to allow public disclosure of the location. The Companies anticipate that this conservation easement

would be held and managed by the Wyoming Stockgrowers Land Trust and would adequately compensate for all project indirect effects on historic roads and trails. The Companies will continue to work closely with the BLM and the Wyoming and Idaho SHPOs to complete a compensatory mitigation package satisfactory to those parties and proportional to the Project's adverse effects on those historic properties.

6.0 SEQUENCE OF PROJECT-RELATED TASKS

There are a series of tasks that should be completed to assure that historic properties eligible for or listed on the NRHP are avoided during construction or, if avoidance is not feasible, fully treated as specified in each Segment Plan. These tasks are conveniently identified as those that must take place before construction, the signing and monitoring activities conducted during construction, and those post construction tasks needed to complete reporting and curation, if needed.

The Monitoring Plan (Attachment A) defines procedures that will be followed during Project construction activities to avoid and minimize impacts to known cultural resources. The objectives of monitoring are to protect extant significant historic buildings, structures, sites, or objects from construction impacts, to identify at the time of discovery any archaeological materials exposed during ground disturbance, and to protect such resources from damage while recommendations of eligibility for the NRHP are made by the CRS and provided to the BLM archaeologist for review and approval.

6.1 Pre-Construction Tasks

Pre-construction tasks include completion, submittal, and approval of the project-wide HPTP (this document) and Segment Plans for each work element the Companies identify as agreed in the PA. The BLM may issue NTP(s) to the Companies for individual construction phases as defined by the Companies in their construction plans, under the following conditions identified in the PA, Section X.B.1-4:

- If the BLM, in consultation with the SHPO/THPO, determines that no historic properties are present within the APE for that segment; or
- If the BLM, in consultation with SHPO/THPO, determines that historic properties are present but will not be affected within the APE for that segment; or
- The Segment Plan mitigation has been implemented for that construction phase or if incomplete, a 300-foot construction buffer for avoidance is clearly marked in the field until completion, and cultural resources monitoring, if required, is in place as outlined in the HPTP.

Additional pre-construction tasks include the selection of the CRS and needed CRMs and NAMs where indicated as part of the third-party environmental compliance team. The Companies must also provide the CRS and BLM, with maps and/or drawings of the project APE. As specified in the monitoring plan, the CRS and the CRMs are responsible for ensuring avoidance measures (e.g. sensitive resource flagging, complete avoidance) are in place where needed. Sites will be only flagged or staked as exclusion areas or “Environmentally Sensitive Area (ESA)” and will not be identified as to content or type to avoid vandalism or theft of site objects. In addition, a

cultural resource training program will be incorporated into the overall environmental training program for all Gateway West project construction staff.

6.2 Construction Phase Tasks

Construction phase tasks include providing ongoing environmental training to construction staff, keeping current with the project schedule and monitoring activities for cultural resources, ensuring and documenting that avoidance measures for specific sites have been maintained. Monitoring tasks are described in the Monitoring Plan, Attachment A, and mitigation tasks are generally described in Section 6 and will be further detailed in the Segment Plans. Additional construction phase tasks include maintaining daily monitoring logs and providing weekly summaries and monthly compliance reports of cultural resources monitoring and mitigation activities within each NTP area of the Project.

6.3 Post-Construction Phase Tasks

Post-construction phase tasks include preparing the final reports, completing test investigation or data recovery analysis and reports if buried sites are discovered during construction, preparing artifacts and other cultural materials for curation, and transferring these materials to the approved curation facility.

7.0 REFERENCES CITED

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ATTACHMENT A

MONITORING PLAN

ATTACHMENT A
DRAFT
MONITORING PLAN

of the

DRAFT HISTORIC PROPERTIES TREATMENT PLAN
for the
GATEWAY WEST TRANSMISSION LINE PROJECT
Case File Numbers:
IDI-35849, Idaho
WYW-174598, Wyoming

Prepared by

Rocky Mountain Power

and

Idaho Power Company

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Attachments

1.0 INTRODUCTION

This initial Draft Monitoring Plan (Plan) specifically addresses monitoring for cultural resources (including but not limited to historic properties determined to be eligible for the NRHP) during construction of the Gateway West Transmission Line Project (Project). This Plan provides details regarding roles and responsibilities of various personnel in the field in coordination with the Project-wide environmental Compliance Plan, itself a part of the Project's Plan of Development (POD). The Programmatic Agreement (PA) developed by the Bureau of Land Management (BLM) as lead agency under National Historic Preservation Act (NHPA) in close cooperation with the Advisory Council on Historic Preservation, tribes, other federal agencies, and other interested parties, requires the development of this Plan as part of the Historic Properties Treatment Plan (HPTP). This plan, prepared by PacifiCorp (doing business as Rocky Mountain Power) and Idaho Power Company (Companies), has not been reviewed or approved by agencies or the Parties to the PA. When it is reviewed, revised as needed, and approved by the BLM and the State Historic Preservation Offices (SHPOs) it will be attached to the approved HPTP.

The purpose of this Plan is to specify:

- how avoidance of known resources will be assured and documented during construction,
- how monitors will interact with other environmental compliance staff as well as with the construction personnel, and
- how monitors will employ the Unanticipated Discovery Plan and, if necessary, the Plan of Action for compliance with Native American Graves Protection Act (NAGPRA).

This Plan, as part of the Project-wide HPTP, will be supplemented with a set of confidential maps and site-specific resource avoidance details for each segment Plan. This Plan presents the roles and responsibilities of the cultural resource team as well as specifies the procedures to be followed during construction activities.

Any discussion, summary, or paraphrasing of the BLM's PA measures in this Plan is intended as general guidance and as an aid to the user in understanding the stipulations and their implementation. If there appears to be a discrepancy between the stipulations in the PA which have been summarized, described, or interpreted in this Plan, the conditions and stipulations, as written in the PA, supersede interpretations in this Plan.

2.0 CULTURAL RESOURCES TEAM

The Cultural Resources Team is a part of the Construction Contractor's environmental inspection/monitoring team and will report to the Construction Contractor's Lead Environmental Inspector as outlined in the Environmental Compliance Monitoring Plan (ECMP). The ECMP is provided as Appendix C to the Plan of Development submitted by the Companies to the BLM, itself Appendix B of the EIS for the Project. The Construction Contractor's Cultural Resource Team will conduct cultural resource field monitoring, ensure compliance with requirements within the HPTP and implement treatment as prescribed within the Segment Plans. Such activities will be monitored and observed by the Compliance Inspection Contractor (CIC) as identified in the ECMP. The following sections describe the qualifications, roles, and responsibilities of each member of the Cultural Resources Team.

2.1 Cultural Resources Specialist (Principal Investigator)

Qualifications—The Cultural Resource specialist (CRS) must meet, at a minimum, the Secretary of the Interior's Professional Qualifications Standards for archaeology, history, or architectural history as published in Title 36 CFR part 61, and in addition must have:

- At least 5 years of archaeological resource mitigation and field experience and
- At least 3 years of experience in a decision-making capacity on cultural resources projects, and the appropriate training and experience to knowledgably make recommendations regarding the significance of cultural resources.

In addition, the CRS must hold a current (or be able to obtain) the appropriate state BLM Cultural Use Permit and Field Authorizations. If an alternate CRS is considered that person must also meet the same requirements as the originally-named CRS.

The Companies will confirm to the BLM in writing the availability of the CRS and provide his or her qualifications no less than 75 days prior to the start of ground disturbance. At least 15 days prior to ground disturbance, the CRS will provide a letter naming anticipated Cultural Resource Monitors (CRMs), including sufficient alternates to account for absences, for the project and demonstrating that the identified CRMs meet the minimum qualifications for cultural resource monitoring.

Responsibilities—The CRS will be the primary point of contact between the Companies' Project Manager(s), Construction Contractor's Project Manager, the CIC, and the BLM Project Manager and Archaeologist. The CRS will also be responsible for the analysis and the overall quality of the monitoring reports and discovery reports, if any. The CRS is responsible for the planning, execution, completion, and quality of the cultural resources monitoring tasks undertaken just prior to and during the Project construction.

The CRS, as a member of the Construction Contractor's Cultural Resources Team, will be responsible for obtaining construction plans and schedules from the Construction Contractor(s) for tasking field personnel to monitor construction and evaluate or conduct data recovery excavations for any archaeological sites discovered during construction. The CRS will be responsible for notification of the Companies' Project Manager(s), Construction Contractor's Project Manager, the CIC, and the BLM Project Manager and Archaeologist regarding cultural resources related issues.

The CRS will direct the preparations for and execution of day-to-day construction monitoring activities:

- Present the cultural resources section of the environmental training program (an employee training program for all construction personnel prior to ground disturbing activities). Cultural resource training will include the proper procedures to follow in the event that cultural resources are encountered during project ground disturbance. The environmental training program may include a BLM-approved video, training pamphlets, or other media resources.
- Direct the CRM(s) regarding where and when to monitor Project construction activities.
- Daily, review of the CRM's daily monitoring log(s).
- Prepare a monthly summary report during active construction on the progress or status of cultural resources-related activities and submit to the Companies' Project Manager, the CIC, and the BLM Archaeologist. The summary will include any new archaeological site forms (appropriate state form) for any finds identified under the monitoring program (see Attachment 2 for state isolate and/or archaeological site forms).
- Notify the Companies' Project Manager, the CIC, and the BLM Archaeologist, by telephone or e-mail of any unanticipated discoveries of any cultural resources within 24 hours of becoming aware of the situation.
- Notify the Companies' Project Manager, the CIC, and BLM Archaeologist by telephone or e-mail, of any incidents of noncompliance with any cultural resources within 24 hours of becoming aware of the situation, and recommend corrective action to resolve the problem or achieve compliance with the conditions of certification.
- Where indicated, make a good-faith effort to obtain Native American Monitors (NAMs).
- Obtain additional technical specialists or additional monitors, if warranted or required.
- Obtain appropriate specialist (e.g. qualified backhoe operator, Project Prehistoric Archaeologist, Historical Archaeologist, Geoarchaeologist), as needed, to guide and conduct the evaluation of cultural resources that are discovered if needed.
- Oversee curation required for the Project.
- If an archaeological site is discovered within the Project Area of Potential Effect (APE) during construction, the CRS will:

- Halt construction within 200 feet of the discovery.
- Notify the CIC, the Companies' Project Manager, and the BLM Archaeologist as soon as feasible.
- Conduct a non-invasive preliminary field assessment of the find.
- Evaluate any cultural resources that are newly discovered for eligibility in the NRHP.
- Submit a recommendation to the BLM Archaeologist regarding NRHP eligibility of the discovered site.

- The CRS will oversee the completion of site form and other appropriate documentation of the discovery.
- If the site is determined eligible for the NRHP, the CRS will consult with the Companies' Project Manager, the CIC, and the BLM Archaeologist, to develop a treatment plan for the resource(s) if it is not covered by the HPTP or relevant Segment Plan.
- Determine the scope, methods, and techniques to be used for test investigations or data recovery and analysis of artifacts and other materials.
- Oversee the completion of any necessary test excavations or data recovery excavations.
- Oversee the completion of reports of tests excavations or data recovery excavations and ensure that the reports meet PA requirements and the appropriate state Office of Historic Preservation standards for completeness and quality.

2.2 Cultural Resource Monitors

CRMs will conduct the daily archaeological construction monitoring (as needed and/or specified by specific land owners). Preference will be given to monitors that are familiar with the types of historic and prehistoric resources in the area. The qualifications and responsibilities of the CRM are as follows.

Qualifications—CRM will either:

- Have a Bachelor of Science (BS) or Bachelor of Arts (BA) degree in anthropology, archaeology, historic archaeology, or a related field, at least 2 years of experience conducting archaeological fieldwork under direction of a professional archaeologist with at least 3 months of archaeological construction monitoring experience;
- Have an Associates of Arts (AA) or Associates of Science (AS) degree in anthropology, archaeology, historic archaeology, or related field and at least 4 years of experience conducting archaeological fieldwork under the direction of a professional archaeologist with 3 months of archaeological construction monitoring experience;
- Be enrolled in upper division classes pursuing a degree in the field of anthropology, archaeology, or historic archaeology and 2 years of archaeological construction monitoring experience.

Responsibilities—The CRM will be present full time at the Project construction site, as directed by the CRS, to watch ground-disturbing construction activities and inspect cleared ground and excavation trenches for signs of previously undiscovered archaeological resources during construction as indicated in the Segment Plan or until monitoring reduction has been approved by the BLM.

The CRM will provide daily documentation of construction activity and any findings. The monitor will prepare a daily monitoring log, briefly describing the field conditions, construction progress and activities, non-compliance activities, and record any finds of archaeological material. This daily log will include a report of the presence and activity of any NAM teaming with the CRM where one or more NAMs are assigned.

The CRM will be responsible for implementing the requirements of the environmental training program. If the CRM or other construction personnel discover archaeological finds during construction, the monitor will have authority to halt construction in the vicinity of the find and will notify the CRS.

2.3 Native American Monitors

Native American Monitors (NAMs) will be obtained to monitor ground disturbance (if applicable and specified in the Segment Plan). All reasonable efforts will be made to contact and schedule NAMs. If NAMs are not available, construction may proceed after notification of the CIC and the BLM. Each NAM will be assigned to work closely with a CRM as a team. NAMs shall have the authority to temporarily divert, redirect or halt the ground disturbance activities to allow for the evaluation of prehistoric resources (i.e. unanticipated discoveries) through coordination with the onsite CRM.

Qualifications—Native American Monitors will be selected for the Project to monitor ground disturbance in areas where ground disturbing activities occur. Preference in selecting a monitor shall be given to Native Americans with traditional ties to the Project area. The monitor will be selected based on the BLM's recommendations. Preferred qualifications for NAM(s) include:

- Knowledge of village sites, cultural, religion, ceremony, and burial practices within the project region, traditional ties, and familiarity with the Project area
- Knowledge and understanding of the Native American Graves Protection Act (NAGPRA) and ability to communicate the meaning of these laws and codes to project personnel
- Ability to work with local law enforcement officials and the BLM to ensure compliance with NAGPRA
- Ability to travel to Project sites within traditional tribal territory

- Familiarity and/or knowledge of and understanding of Section 106 of the NHPA, as amended.
- Ability to read a topographical map and be able to locate sites
- Knowledge and understanding of archaeological practices, including the phases of archaeological investigation (formal education in an appropriate field, such as anthropology, archaeology, or ethnology may be substituted for experience).
- Experience as a tribal cultural resources monitor on similar projects.

Responsibilities—The designated NAM(s) will participate in the evaluation of Native American artifacts. In addition, the NAM(s) will be invited to be on site at prehistoric site locations when construction is taking place and will be invited to assist with excavation and recording of any find of prehistoric cultural resources. In the event that data recovery excavation is necessary, the NAM will be invited to assist in excavation and site recording.

2.4 Management of Unanticipated Discoveries

If a discovery is made in the field, additional archaeological field staff (e.g. field director, crew chief, etc.) may be required to assist and complete archaeological site recording, testing, data recovery, and analysis depending on the mitigation plan as an amendment to the relevant Segment Plan, for large complex sites, if the CRS and/or CRM(s) are needed in other areas were construction is continuing and ongoing, and/or in an effort to complete the work within a scheduled amount of time. All archaeological field crews will work under the supervision of the CRS.

2.4.1 Field Director

Qualifications—The Field Director will have a BS or BA degree in anthropology, archaeology, historic archaeology, or a related field and meet the Secretary of the Interior's Qualification Standards for Archaeologists and/or be listed on the state BLM Cultural Use Permit as a Principal Investigator and/or Field Director (as approved by the BLM State Office).

Responsibilities—The Field Director, under the supervision of the CRS, will be responsible for the day-to-day activities of the testing and data recovery investigations, including management of field personnel and coordination of crews. The Field Director will also be responsible for compiling and ensuring the quality of the field data on a daily basis. Additionally, the Field Director will coordinate the work of sub-consultants or other contractors participating in the archaeological field investigations, and will be responsible for implementing the requirements of the environmental training, including daily safety briefings.

2.4.2 Crew Chiefs

Qualifications—The Crew Chief will have a BS or BA degree in anthropology, archaeology, historic archaeology, or a related field and at least 2 years of experience as an archaeological crew chief.

Responsibilities—The Crew Chiefs will, in consultation with the Field Director, be responsible for implementing the field strategies at individual sites. The Crew Chief will direct field crew, lay out excavations, and compile collections and field documentation on a daily basis. Additionally, the Crew Chief will be responsible for implementing on-site safety procedures and/or environmental training.

2.4.3 Field Crew

Qualifications—The field crew for any field recording or excavation activities will have a BS or BA degree in anthropology, archaeology, historic archaeology, or a related field, and field school experience; or an AA or AS degree in anthropology, archaeology, historic archaeology, or related field, and archaeological field school experience.

Responsibilities—Field crew members will conduct surface examinations and hand excavations, and monitor mechanical test investigation excavations. Each crew member will operate under the direct supervision of the Crew Chief and will conduct basic documentation of field operations, including completing excavation-level records, bag labeling, and trench monitoring forms.

2.4.4 Laboratory Director

Qualifications—The laboratory director will have a BS or BA degree in anthropology, archaeology, historic archaeology, or a related field and field school experience; or an AA or AS degree in anthropology, archaeology, historic archaeology, or related field, archaeological field school experience, and have previous experience managing a laboratory for a data recovery project.

Responsibilities—The Laboratory Director will be responsible for directing all phases of laboratory processing of the data recovery collections, including check-in, cleaning, sorting, cataloguing, analyzing, distributing special samples, and preparing for curation. The Laboratory Director will coordinate closely with the CRS to ensure that the appropriate data are documented and compiled.

3.0 MONITORING AND AVOIDANCE PROCEDURES

This section describes the monitoring procedures that will apply project-wide. Where warranted, the Segment Plans will include additional site-specific monitoring requirements. The objectives of monitoring are to assure and document avoidance of extant significant historic buildings, structures, sites, or objects during Project construction, to identify at the time of discovery any archaeological materials exposed during ground disturbance, and to protect such resources from damage while recommendations of eligibility for the NRHP are made by the CRS and provided to the BLM Archaeologist for review and approval.

3.1 Cultural Resource Construction Monitoring

Cultural resource monitoring for the Project will be conducted Project-wide, unless otherwise specified by the landowner, land management agency or in the Segment Plans. For the purposes of this HPTP Monitoring Plan, archaeological construction monitoring is defined as on-the-ground, close-up observation by a CRS or CRM, meeting the qualifications prescribed in Section 2.0 – Cultural Resources Team.

The CRS and/or CRM will observe the ground during mechanical scraping, grading, excavating, and similar activities for archaeological remains that might be exposed by these activities. Cultural resource monitoring will not be required once initial ground disturbance is completed or if equipment or vehicles are traveling over previously disturbed surfaces. Routine travel on existing or disturbed roads or across disturbed transmission structure pads will not be monitored for cultural resources. However, new ground disturbance by additional blading or excavating will be monitored for cultural resources, even on previously-graded or bladed areas. Activities that do not require motorized equipment will not be monitored for cultural resources. These activities may include but are not limited to installing fencing, silt fencing, or barriers to protect sensitive resources.

The CRM will maintain daily monitoring logs (Attachment 1) of Project-related construction monitoring activities. Logs will reflect the daily monitoring activities and will include:

- Date, time of work, and amount of time spent at a construction monitoring location
- Area of work
- Type of work, equipment present, and name of crew being monitored
- Construction activities being performed
- Documentation of successful resource avoidance
- Activities in which there are cultural resource problems, non-compliances, or other concerns

- Identification of an unanticipated discovery
- Name of NAM(s), if present
- Color digital photographs shall be taken (as appropriate) to document construction and monitoring activities and submitted as attachments to the daily log.
- CRMs will provide their monitoring logs daily to the CRS. The CRS will maintain weekly and monthly summary reports of construction progress, monitoring (monitor name, dates worked, finds, issues, etc.), and status of cultural resource related issues. The CRS will direct the preparation and distribution of a Cultural Monitoring Results report and an archaeological report to BLM project Manager and archaeologist and state standards of findings for any archaeological test excavation or data recovery program that takes place.
- If the CRS determines that full-time monitoring is not necessary in certain construction locations and that monitoring will be conducted on an "as needed" intermittent schedule, the CRS will provide a detailed letter or email to the BLM archaeologist (at least 24 hours prior to implementing any change) explaining the decision to reduce the level of monitoring.
- The CRS shall review each CRM's daily monitoring log. If no unanticipated discoveries were identified that day, provide the appropriate state BLM archaeologist a statement, via email or other acceptable form of communication, to that effect. The CRS will notify the BLM archaeologist at least 24 hours prior to reducing or ending the daily reporting.
- If a discovery was made, the notification procedures found in the **Inadvertent Discovery Plan** (HPTP Attachment B) shall be followed.
- If human remains are discovered on federal land the **Native American Graves Protection and Reparation Act Plan of Action** will be adhered to (HPTP Attachment C).
- The CRS shall prepare a monthly summary report (while monitoring is on-going) on the progress or status of cultural resources-related activities and supply this to the CIC and BLM Archaeologist. In addition, the summary shall include any new archaeological site forms for finds for which such forms are required by the relevant State Historic Preservation Office policy and identified under the monitoring program.
- If requested by a Native American group/tribe, the CRS shall send the appropriate Native American representative a notification (via letter or email) following the discovery of Native American cultural materials other than those considered isolates. If such notification is transmitted, the CRS shall copy the CIC and the BLM. If any comments are received from the Native American representative regarding the

discovery, the CRS shall submit copies of all received comments within 15 days of receipt to the CIC and the BLM archaeologist.

- The CRS and/or CRMs will maintain the flagging and staking of sensitive resources (e.g. archaeological sites) to ensure that they are avoided, unless otherwise directed by BLM.

3.2 Authority to Halt Construction

The CR and the CRM(s) will have the authority to temporarily halt construction operations within 200 feet (60 meters) of a find or exposed resource to determine if significant or potentially significant cultural resources are present and if they will be adversely affected by continuing construction operations. The NAM(s), if present, may also coordinate with the CRS or the CRM to temporarily halt construction. The CRS or CRM will be responsible for delineating the area within which construction will halt using flagging tape, rope, or some other means as necessary. The CRS will notify the Companies' Project Manager, the CIC, the BLM Project Manger and archaeologist, and interested Native American (groups that have expressed an interest to be notified of such a discovery) of the find and work stoppage within 24 hours of the find. Construction will not take place within the delineated find area until the CRS has completed field notes, measurements, and photography for a site record (unless the find can be treated prescriptively), and the CRS, in consultation with the CIC and BLM Archaeologist, can inspect and evaluate the find and determine whether or not further mitigation is required, and the BLM has agreed to the recommended evaluation and treatment.

3.3 Flagging, Fencing, and Signage Measures

For Project construction activities, the CRM will flag or provide signage for previously recorded and newly identified sensitive areas that are within 30 meters of Project construction, to assure such resources are avoided and that ground disturbing construction activities do not impact flagged site boundaries or unanticipated discoveries. The use of "Environmentally Sensitive Area" signage will be used for culturally and biologically sensitive areas during construction. The signage will be posted around (immediately outside) the cultural resource sensitive area by the cultural resource monitor 1 day prior (as practical) to construction in the area (to avoid drawing attention to the area prior to construction).

The CRS and/or a CRM will field check and maintain signage and assure that it remains in place while construction activities in the vicinity are active. The CRS or CRM will remove the signs following the completion of Project-related construction activities in the vicinity.

3.4 Monitoring Locations and Schedule

The CRS and/or a CRM will observe ground disturbance as specified in Section 3.1 – Cultural Resource Construction Monitoring.

As part of the Construction Contractor's Cultural Resource Team, the CRS will obtain a construction schedule prior to the start of ground disturbing activities (preferably a two week look ahead to ensure proper staffing). The CRS will then establish a schedule for the CRM(s) and NAM(s) teamed with each CRM, as appropriate, to follow and a protocol for communication with the CIC and the Construction Contractor(s) who will confer with the CRS on any changes to construction dates. Daily updates or changes to the construction schedule will be provided by the Construction Contractor to the CRS and the CIC as appropriate.

The CRS shall ensure that adequate monitors (including NAMs where applicable) are available as work load fluctuates during construction.

As described in Section 2.3 – Native American Monitors, a NAM or NAMs will be obtained (as applicable) and be present to monitor ground disturbing activities Project-wide, unless otherwise specified by the landowner, land management agency or in the Segment Plans. In general, a NAM will be teamed with a CRM in the field. The intent is to have an adequate number of NAMs on contract, where NAMs are indicated, to allow for rotation to ensure the interests of various tribes are represented and to allow for substitute NAMs should particular individuals become unable to fulfill those responsibilities at particular point in time.

3.5 Construction Compliance

The CRS and CRM(s) will coordinate with the CIC to monitor and report problem areas and non-compliances. The CRS will then notify the Companies' Project Manager(s), Construction Contractor's Project Manager, the CIC, and the BLM Project Manager and Archaeologist.

Procedures as specified in the ECMP will be followed. If the noncompliance includes unauthorized or unmonitored ground disturbance, cultural resource surveys to determine presence of or damage to cultural resources will be required, and effects determinations and mitigation also completed if indicated, before construction could be allowed to continue in the noncompliance area.

3.6 Construction Change Management

During construction, unforeseen or unavoidable site conditions can result in the need for changes from approved mitigation measures and construction procedures. Additionally, the need for route realignments, extra workspaces, or access roads outside of the previously approved construction work area may arise (e.g. to avoid an inadvertent discovery), resulting in the need to prepare a variance request. The CIC will consult with the CRS for any variances requested by the Construction Contractor to assure cultural resource avoidance. All applicable procedures as specified in the ECMP will be followed.

If a new area outside the previously-surveyed APE is proposed for ground disturbance, a pedestrian survey (Phase 6, PA Section II.C.6) for cultural resources must be conducted and a report documenting lack of surface resources submitted as part of the variance approval process. If cultural resources are found, effects determinations and mitigation must be completed before ground disturbance could be permitted.

ATTACHMENT 1

DAILY CULTURAL RESOURCE MONITORING LOG

Gateway West Transmission Line Project

Cultural Resource Monitor Daily Report Date ____ /____ /____

Monitor: _____	Start Time: _____ Stop Time: _____
Transmission Line Segment/MP#_____	Attachments:_____
Weather Conditions.: _____	Photographs: Yes No (if yes, see page 2)

Construction Areas and Activities Monitored

Area#: _____ Time :_____ Construction Crew: _____Construction Supervisor: _____

Activity : _____

Monitor Checklist

General	Yes	No	N/A	Comments Attach Supplemental Report if needed
Native American Monitor present?				Name:
Biological Monitor present?				Name:
Workspace limits verified and properly marked?				
All activities within approved workspace limits?				
Only approved access roads utilized for ingress and egress?				
Environmental signs in place? (e.g. access roads, sensitive area)				
Trash and debris contained and disposed of in proper manner?				

Work Site Conditions

Visibility (circle one)	Excellent	Good	Fair	Poor	Explain, if necessary:
Soils:	Desert Pavement	Aeolian Sand	Dunes	Other, explain:	

ATTACHMENT 2

STATE ARCHAEOLOGICAL SITE FORMS

ARCHAEOLOGICAL SURVEY OF IDAHO
SITE INVENTORY FORM

Part A – Administrative Data

1. State No._____
2. Agency No._____
3. Temporary No._____

4. Site name(s)_____ **5. County**_____

6. Class:
❑ Prehistoric ❑ Historic ❑ Traditional Cultural Property ❑ Undetermined

7. Land owner_____ **8. Federal admin. unit**_____

9. Project_____ **10. Report No.**_____

11. Recorder(s)_____

12. Organization_____ **13. Date**_____

14. Attachments and associated records:
- ❑ Topographic map (required)
- ❑ Site map (required)
- ❑ Photos with labels/log (required)
- ❑ Artifact illustrations
- ❑ Feature drawings
- ❑ Stratigraphic profiles
- ❑ Rock art attachment
- ❑ Historical records
- ❑ Assoc. IHSI forms_____
- ❑ Other_____

15. Elevation (site datum)_____(ft)

16. Site dimensions:_____m X _____m Area_____m^2

17. UTM at site datum: Zone____ _____m Easting _____m Northing using NAD 1983.

18. UTM source:
❑ Corrected GPS/rectified survey (<5m error) ❑ Uncorrected GPS ❑ Map template ❑ Other explained under comments

19. Township_____, Range_____, Section_____; _____1/4 of _____1/4 of _____1/4
Additional legals listed on an attachment. ☐

20. USGS 7.5' map reference_____
Additional maps listed on an attachment. ☐

21. Access_____

22. Site description_____

23. Site type:

❑ Historic building*	❑ Rockshelter/cave	❑ Mortuary	❑ Faunal
❑ Historic structure*	❑ Stacked/placed rocks	❑ Rock art	❑ Culturally modified trees
❑ Historic object*	❑ Quarry/lithic source	❑ Feature(s)	❑ Other_____
❑ Prehistoric residential	❑ Linear	❑ Artifact(s)	

*Following definition for the National Register of Historic Places.

24. Specify themes and time periods:

Themes			Time Periods		
❑ Prehistoric archaeology	❑ Military		❑ Prehistoric-general	❑ Settlement: 1855-1890	
❑ Agriculture	❑ Mining industry		❑ Paleoindian	❑ Phase 1 statehood: 1890-1904	
❑ Architecture	❑ Native Americans		❑ Archaic-general	❑ Phase 2 statehood: 1904-1920	
❑ Civilian Conservation Corps	❑ Politics/government		❑ Early Archaic	❑ Interwar: 1920-1940	
❑ Commerce	❑ Public land management		❑ Middle Archaic	❑ Premodern: 1940-1958	
❑ Communication	❑ Recreation/tourism		❑ Late Archaic	❑ Modern: 1958-present	
❑ Culture and society	❑ Settlement		❑ Late Prehistoric-general	❑ Historic/Modern-general	
❑ Ethnic heritage	❑ Timber industry		❑ Protohistoric/Contact	❑ Unknown	
❑ Exploration/fur trapping	❑ Transportation		❑ Historic Native American		
❑ Industry	❑ Other _____		❑ Exploration: 1805-1860		

25. National Register of Historic Places (NRHP) evaluation: *

❑ Individually eligible ❑ Contributing in a district ❑ Not eligible ❑ Insufficient information to evaluate

*Evaluation subject to review by SHPO.

26. NRHP criteria used:

❑ A: Event ❑ B: Person ❑ C: Design and construction ❑ D: Information potential

27. Comments on significance_____

_____

_____

28. If not eligible, explain why_____

_____

_____

29. Condition (prehistoric component):

❑ Excellent ❑ Good ❑ Fair ❑ Poor

Condition (historic component):

❑ Excellent ❑ Good ❑ Fair ❑ Poor

30. Impact agents:

❑ Agricultural use	❑ Development project	❑ Mining/quarrying	❑ Road/highway	❑ Vandalism
❑ Building alteration	❑ Erosion	❑ No information	❑ Rodent damage	❑ Other_____
❑ Deflation	❑ Grazing	❑ Recreation use	❑ Structural decay	
❑ Demolished	❑ Looting	❑ Research excavation	❑ Timber harvest	

Comments on impact agents_____

31. Surface collection:

❑ None ❑ Previously collected ❑ Grab sample ❑ Designed sample ❑ Complete

32. Sediments:

❑ Absent ❑ 0-20 cm ❑ 21-100 cm ❑ >100 cm ❑ Suspected but not tested

Explain how this was determined_____

33. Excavation status:

❑ Unexcavated ❑ Auger/probe ❑ Test unit ❑ Backhoe, etc.
❑ Surface scrape ❑ Shovel test ❑ Block excavation

Describe collection/testing/excavation_____

_____

_____

34. Excavation volume (indicate liters or cubic meters) _____ Screen mesh_____

35. Additional comments_____

_____

_____

_____

_____

_____

_____

Part B – Environmental Data

36. Distance to permanent water_____m

37. Water source:

❑ Spring, seep ❑ River/stream ❑ Lake ❑ Other_____

38. On-site vegetation (estimate percentage of total vegetation for each class and identify species):

Trees: _____% Species:_____

Shrubs: _____% Species:_____

Forbs: _____% Species:_____

Grasses: _____% Species:_____

Lichens/mosses: _____% Species:_____

Describe_____

_____

39. Visible surface area:

❑ 0% ❑ 1-25% ❑ 26-50% ❑ 51-75% ❑ 76-100%

40. Landform (Describe, including lithology, form, and soil, using locally or regionally appropriate terms, eg. arroyo, playa, moraine, etc.)_____

_____

_____

_____

_____

_____

_____

Part C – Prehistoric Sites

41. Phase/period_____

42. How classified_____

43. Maximum artifact density_____m^2

44. Individual artifacts:

Count	Category	Description

45. Lithic Debitage – Estimated Quantity:

❑ None ❑ 1-9 ❑ 10-25 ❑ 25-100 ❑ 100-500 ❑ 500+

Flaking Stages (not present, rare, common, or dominant):

Decortication_____ Secondary_____ Tertiary_____ Shatter_____

46. Material types_____

_____

_____

47. Additional description_____

_____

_____

_____

_____

_____

_____

_____

_____

48. Features:

Count	Category	Description

49. Additional description_____

_____

_____

_____

_____

Part D – Historic Sites

50. Cultural affiliation_____

51. Oldest date_____ **Recent Date**_____

52. How determined_____

53. Maximum artifact density_____m^2

54. Individual artifacts:

Count	Category	Description

55. Additional description_____

_____

_____

_____

_____

_____

_____

56. Features:

Count	Category	Description

57. Additional description_____

_____

_____

_____

_____

_____

8A . ARTIFACTS AND DEBRIS ASSOCIATED WITH PREHISTORIC COMPONENTS

Component age* and identifier:_____
*Time Periods – Unknown Prehistoric, Paleoindian, Early Archaic, Middle Archaic, Late Archaic, Archaic (general), Late Prehistoric, Protohistoric;

Instructions: Check to indicate artifacts present. Preferably, put in an estimated count for each artifact class in parentheses where appropriate. Keywords for types or forms are used in the data system to enhance finding specific sorts of artifacts (e.g., "drill", "preform", "Duncan", "Folsom"). Artifacts diagnostic of time period or cultural affiliation should be listed in the table. Describe artifacts in the site narrative (7) or below. As appropriate, diagnostics should be illustrated or photographed with scale and labeled as to type identification. Additional sheets and analytical data may be attached.

GENERAL
___ Time diagnostics
___ Affiliation diagnostics

CHIPPED STONE
___ Lithic sources
___ Debitage
___ Cores (____)
___ Projectile points (____)
___ Bifaces (____)
___ Scrapers (____)
___ Other formal tools (____)
___ Modified flakes (____)
___ Core tools (____)
___ Hammerstones (____)

___ **OBSIDIAN**

___ **FIRE-ALTERED ROCK**

DEBITAGE FREQUENCY
(check only one)
___ unknown
___ none
___ 1-10
___ 11-100
___ 101 –1000
___ 1001-10,000
___ >10,000

DEBITAGE COMPOSITION
___ % Primary
___ % Secondary
___ % Tertiary

GROUND STONE
___ Manos (____)
___ Metates (____)
___ Unk. ground stone (___)
___ Other ground stone (____)

CERAMICS/STEATITE
___ Ceramics (___)
___ Steatite (___)

BONE AND ORGANIC
___ Bone (unknown size/type)
___ Large mammal
___ Medium mammal
___ Small mammal
___ Amphibian, bird, or reptile
___ Fish
___ Egg shell
___ Mollusc shell
___ Organic debris
___ Other (describe below)

OTHER ARTIFACTS
___ Shaped bone/bone tool(___)
___ Cordage(___)
___ Metal Points/Items(___)
___ Basketry(___)
___ Beads(___)

__bone__shell__glass__other
___ Other Decorative Items(___) (describe)
___ Other (describe)

HUMAN REMAINS
___ Human remains
___ Artifacts associated w/remains

Estimated total assemblage size: ___ 0-10, ___ 11-100, ___101-1000, ___1001-10,000, ___>10,000

ARTIFACT KEYWORDS:

DIAGNOSTIC ARTIFACT INVENTORY (diagnostic artifacts should be plotted on site sketch map): List temporal-cultural diagnostic artifacts below. Use general ages from site age matrix, and list specific diagnostic type. (e.g., Middle Archaic for general age, "Duncan" for type, "McKean" for complex). General ages are: Paleoindian, Early, Middle, and Late Archaic, Archaic (undifferentiated); Late Prehistoric; Protohistoric; unknown age. See "Users Guide" for definitions and examples of technological-cultural complex. Expand table as necessary.

General Age	Type name	Materials (if known)	Count	Collected y/n	Technological or cultural complex	Description

__ Check here if artifacts are described in site narrative. Otherwise, describe in table above.

8B. FEATURES ASSOCIATED WITH PREHISTORIC COMPONENT

Component age* and identifier:_____
*Time Periods – Unknown Prehistoric, Paleoindian, Early Archaic, Middle Archaic, Late Archaic, Archaic (general), Late Prehistoric, Protohistoric

Instructions: Check to indicate features present. Preferably, also put in an estimated count for each feature class where appropriate. Features should be listed and described in the feature inventory table below. Keywords are used in the database to aid in searching for specific feature types – enter as appropriate (e.g., "slab-lined hearth", "wickiup", "antelope trap"). Describe features in the site narrative or below. NOTE that agency reporting requirements may require specific feature enumerations. Additional sheets and analytical data may be attached.

___ Hearths (___)
___ Fire-altered rock concentrations (___)
___ Localized fire-related stain (___)
___ Roasting pit (___)
___ Storage pit (___)
___ Pit (___)
___ Post hole (___)
___ Pit house/House pit (___)
___ Stone circle (___)
___ Cairn (___)
___ Bonebed (___)
___ Alignment (___)
___ Quarry feature (___)
___ Rock art panel (___)
___ Organic structure(___)
(e.g. lean-to, wickiup, corral - describe)
___ Other (describe)

FEATURE KEYWORDS:

FEATURE INVENTORY (feature # should key to site sketch map):

Feat. #	Feature Description	Check if more info attached
_____	_____	___
_____	_____	___
_____	_____	___
_____	_____	___
_____	_____	___
_____	_____	___
_____	_____	___
_____	_____	___
_____	_____	___
_____	_____	___
_____	_____	___

___ check here if this list is continued on a continuation form (expand on word processor as needed)

___ check here if features are described in site narrative, otherwise describe in table above.

8C. ARTIFACTS ASSOCIATED WITH HISTORIC COMPONENT

Component age* and identifier:_____

*Periods – Protohistoric (1720-1800) Early Historic (1801-1842) Pre-territorial (1843-1867) Territorial (1868-1889); Expansion (1890-1919); Depression (1920-1939) ; WWII-era (1940 to 1946); Post-WWII (1947 to 1955); Modern (1956-present); use exact dates if known

Presence/Absence of common time-diagnostics:

___purple glass (UV altered)
___aqua glass
___clear glass
___auto machine bottles
___hand applied finish bottles
___makers' marks
___solder dot cans
___hole-in-top cans
___sanitary cans
___cut nails
___wire nails
___ceramic trademarks
___other (describe)

Presence/Absence of common artifact classes:

___plate glass
___bottle glass
___ceramics
___metal
___nails
___tin cans
___tobacco tins
___bottle caps
___wire
___furniture hardware
___silverware/cutlery
___lamp parts
___corrugated metal
___stove parts
___wood
___furniture
___leather
___sawn lumber
___wagon parts
___car parts
___bone
___toys
___building hardware
___firearm-related
___clothing-related
___other (describe)

Estimated total assemblage size: ___ 0-10, ___ 11-100, ___101-1000, ___1001-10,000, ___>10,000

ARTIFACT KEYWORDS:

HISTORIC ARTIFACTS

Instructions: Use lines below to list artifacts associated with this component. The IMACs user's guide provides a fairly comprehensive list of artifact types but its use is optional. Alternatively, you may attach a substitute format, so long as it tallies the artifact content adequately.

Artifact Type	Count
_____	____
_____	____
_____	____
_____	____
_____	____
_____	____
_____	____
_____	____
_____	____
_____	____
_____	____

__ check here if this list is continued on a continuation form (expand with word processor as needed) or provided in an alternate format

__ check here if artifacts are described in site narrative section, otherwise use space below for general notes on historic artifacts

8D. FEATURES ASSOCIATED WITH HISTORIC COMPONENT

Component age* and identifier:_____

* Periods – Protohistoric (1720-1800) Early Historic (1801-1842) Pre-territorial (1843-1867) Territorial (1868-1889); Expansion (1890-1919); Depression (1920-1939) ; WWII-era (1940 to 1946); Post-WWII (1947 to 1955); Modern (1956-present); use exact dates if known

Instructions: Plot features, labeled by number, on site sketch map. Attach photographs, images, drawings, notes, other recording materials as appropriate, labeling each with feature number.

Human Remains:

___ Human remains (describe – include presence/absence of marker)
___ Suspected grave
___ Artifacts associated with human remains

FEATURE KEYWORDS:

FEATURE INVENTORY (feature # should key to site sketch map):

Feat. #	Feature Description	Check if more info attached
_____	_____	___
_____	_____	___
_____	_____	___
_____	_____	___
_____	_____	___
_____	_____	___
_____	_____	___
_____	_____	___
_____	_____	___
_____	_____	___
_____	_____	___

___ check here if this list is continued on a continuation form (expand on word processor as needed)

___ check here if features are described in site narrative, otherwise describe in table above.

Comments and Continuation (note any relevant historic documentation searches performed)

WYOMING ISOLATED RESOURCE FORM (WYIRF)

Consultant Project No.	Agency No.
Review/Compliance No.	WYCRO No.

1) Resource Type: _____ 2) Field No.: _____

3) Project Name: _____

4) Name of Recorder: _____ Date: _____

Company/Institution: _____

5) Landowner: (specify agency, if private give name and address):

6) Collections? [ ] Yes [ ] No Repository: _____

7) Catalog No(s): _____

8) LOCATION:
County _____ USGS Map Code (7.5') _____

USGS 7.5' Map Name, Date _____

Township _____.___ Range _____.___ Section _____ 1/4 _____

Elevation (ft) _____

UTM: Zone _____ E _____m N _____m
Datum used to calculate: _____NAD27 _____NAD 83

UTM source: ____ corrected GPS/rectified survey (<5m error)
____ uncorrected GPS ____ map template
____ other: _____

9) Environmental Description (Discuss topography, vegetation, soils, slope, hydrology, on-site depositional environment):

10) Resource Description (Describe and discuss artifact type(s), observed raw material(s), dimensions, function, time period):

11) Optional attachments may include drawings or photographs with scale of representative diagnostic artifacts, sketch map, and/or a setting photograph.
12) Required attachments are 7.5' USGS map showing resource location, and photographs or illustrations of collected artifacts.

ATTACHMENT B

INADVERTENT DISCOVERY PLAN

ATTACHMENT B
DRAFT
INADVERTENT DISCOVERY PLAN

of the

DRAFT HISTORIC PROPERTIES TREATMENT PLAN
for the
GATEWAY WEST TRANSMISSION LINE PROJECT
Case File Numbers:
IDI-35849, Idaho
WYW-174598, Wyoming

Prepared by

Rocky Mountain Power

and

Idaho Power Company, Inc.

.

December 2012

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1.0 INTRODUCTION

This initial Draft Plan for Inadvertent Discovery of historic properties describes the measures that Rocky Mountain Power and Idaho Power Company (Companies) will take to ensure the protection of historic properties, in the event that historic properties are discovered during construction of the Gateway West Transmission Line Project (Project). The Companies have developed this initial draft as required by the Programmatic Agreement (PA), Section V.A and VIII. Although cultural inventories of the Project were completed, it is possible that previously unknown archaeological resources could be discovered during Project construction activities. This document details protocols and outlines procedures that will be followed in the event that previously unknown historic properties are inadvertently discovered or if unanticipated effects occur to known historic properties as a result of any construction activities associated with the Project. This Plan, together with the Project-wide Historic Properties Treatment Plan (HPTP), will be reviewed by the Interested Parties of the PA. The Companies will revise the document at and a final Plan will be made a part of the approved Project-wide HPTP.

1.1 Inadvertent Discovery Plan and the Programmatic Agreement

The Bureau of Land Management (BLM) is the lead federal agency for National Historic Preservation Act (NHPA) compliance. In consultation and with the active participation of the Advisory Council on Historic Preservation (ACHP), the BLM developed a PA for the Project to guide Project compliance with the NHPA.

This Inadvertent Discovery Plan was developed as required by the Project PA, Section V.A. and VIII. Upon final approval by the BLM, this Plan will be appended as Attachment B to the HPTP. PA Section V.C. and PA, Section 7 states:

> *The BLM will implement the Inadvertent Discovery Plan if potential historic properties are discovered or if unanticipated effects occur to known historic properties.*

If there appears to be a discrepancy between the stipulations in the PA which have been summarized, described, or interpreted in this Plan, the conditions and stipulations, as written in the PA, supersede interpretations in this Plan.

2.0 INADVERTENT DISCOVERY DEFINITIONS AND PROCEDURES

This section addresses procedures and mitigation for resources discovered during Project construction. Since it is not possible to predict which kinds of sites might be found during construction monitoring, the mitigation measures described in this section are necessarily generic. The mitigation strategy may vary depending on the type of adverse effect.

The Project will avoid and protect historic properties assumed eligible for, or listed on the National Register of Historic Places (NRHP) by monitoring, fencing, and other measures. Subsequent HPTP Segment Plan(s) will provide tables that identify historic properties within each segment of the Project and outline mitigation procedures to be followed for specific sites within each segment. Avoidance is the preferred strategy and may involve redesign or relocation of specific components of the project.

In the event that historic properties are inadvertently discovered or affected during construction, data recovery may be considered as one of several possible means to mitigate those effects. Site evaluation, and the design and execution of data recovery or other mitigation measures (treatment) will be completed in consultation with the Construction Contractor's Cultural Resource Specialist (CRS), the Companies, the Compliance Inspection Contractor (CIC), BLM, and SHPO, and if applicable and appropriate, the Native American Monitor[1] (NAM).

In the case of inadvertent discovery of cultural items on federally managed lands, the BLM will notify and consult with culturally affiliated tribes regarding the treatment and/ or mitigation of effects to historic properties, or sites of traditional religious and cultural importance.

All activities conducted for the Project under the PA, project-wide HPTP, and HPTP Segment Plans will be in accordance with the protocols, contexts, and guidelines of the relevant state BLM office and relevant state SHPO.

2.1 Definition of Inadvertent or Unanticipated Discoveries

For the purpose of this Plan, an inadvertent or unanticipated discovery is a discovery of historic properties where they had not been previously documented and that occurs during construction. Examples of inadvertent or unanticipated discoveries are:

- Artifacts or cultural material discovered on the surface or in a subsurface context as the direct result of project excavation, grading, auguring or other soil disturbance.

[1] Acronyms are introduced and indexed in the HPTP.

- A single artifact or lithic scatters, prehistoric habitation sites, refuse scatters, military related activities, etc.
- Additional distinct artifacts or cultural materials that have the potential to provide additional data for an archaeological site that was previously determined to be ineligible for further treatment.
- Artifacts or cultural materials within archaeological sites previously determined to be eligible for further treatment, which are qualitatively different from artifacts and cultural materials previously identified and/or investigated in the impacted portion of the site and which indicate that the impacted portion of the site has the potential to contribute to the eligibility of the site based on its potential to provide data relevant to the sorts of research issues defined in the project research design.
- Any evidence of human remains regardless of context of discovery. All discoveries of bone are to be treated by construction personnel as potential human remains until a determination can be made by a qualified CRS, CRM, or osteologist (if required) as described below.

Inadvertent discoveries may be prehistoric, historic, or both prehistoric and historic. Typical indicators of these sites follow.

PREHISTORIC: Indicators of prehistoric cultural occupation by Native Americans include artifacts and human bone, as well as soil discoloration, shell, animal bone, cobbles, rock features, ashy areas, and baked or vitrified clays. Prehistoric materials may include:

- **Human Bone**—either intact burials or isolated bones, including teeth or fragmentary pieces of bone.
- **Habitation**—occupation sites as interpreted from rock rings/features, distinct ground depressions, differences in compaction (e.g., house floors).
- **Artifacts**—such as chipped stone objects, projectile points, bifaces, and debitage; ground stone artifacts such as manos, metates, mortars, pestles, grinding stones, and hammerstones; ceramics; and bone artifacts including ornaments and beads (ornaments and beads were often interred with the deceased, and are considered indicative of potential human remains).
- **Features—**such as a hearth (fire-affected rock; baked and vitrified clay, ash), artifact caches, midden deposits, rock rings, rock cairns, hunting blinds, petroglyphs, faunal remains, and distinctive changes in soil stratigraphy indicative of prehistoric activities.
- **Trails—**Native American trails/footpaths, including trail markers (e.g. ceramic fragments, pot drops)
- **Ceremonial Structures**—rock cairns or medicine wheels, including large circular stone formations, sometimes with “spokes” or linear alignment of stones that radiate from the center.

HISTORIC: Within the Project area, an inadvertent discovery of historic cultural materials may potentially require data recovery or avoidance if those finds include sites that are greater than 50 years old. Historic materials may include:

- **Structural—**remnants or portions of foundations (bricks, cobbles/boulders, stacked field stone, postholes, etc.)
- **Refuse Scatters—**including trash pits and associated artifacts
- **Military—**related activities (e.g. ration can scatters, gun shell casings, fox holes. etc.)
- **Historic Trails—**evidence of trails and/or related activities.
- **Human Remains—**bone and associated burial objects (e.g. coffin hardware)

2.2 Definition of Finds

2.2.1 Definition of Isolated Finds

The definition of an isolated find varies by state. For the purposes of the Project, the definitions used by the SHPOs in each state will be employed in that state. They are:

- IDAHO: the presence of one artifact where no buried materials or features are thought to exist (two artifacts would be considered a site).This excludes isolated features with or without artifacts, such as, peeled trees, cache pits, hearths, housepits, rockshelters, cairns, historic mining ditches, petroglyphs, or dendroglyphs. A statement of why the isolate is considered non-significant should be included on the ID isolate form (Idaho SHPO).
- WYOMING: the presence of fewer than 14 prehistoric artifacts where no buried cultural materials or features are thought to exist and fewer than 49 historic artifacts where no buried cultural material or features exist (Wyoming SHPO).

Isolated finds are *a priori* considered ineligible for inclusion on the NRHP, unless the artifact itself is of exceptional significance. Diagnostic and exceptional isolated prehistoric or historic finds that are unique, associated with a specific setting or environment, or may contribute to the understanding and appreciation of prehistory and history, may be eligible for the NRHP and will be considered under their own merit as historic properties. The following list includes examples of potential diagnostic isolated artifacts that could be considered eligible for the NRHP in spite of being isolated finds:

- **Prehistoric—**ceramics (decorated, rim, or basal sherds, lugs, figurines, complete vessels) and lithics (projectile points, exceptional/unusual ground stone, exceptional/unusual chipped-stone artifacts).
- **Historic—**Rare or exceptional ceramic (makers marks, complete vessels), glass (complete vessels), buttons, marbles, pipes, figurines) and identifiable metal (tools, gun parts, machine parts, buckles, flatware, wagon hardware, horse tack) that are clearly 50 years of age or older.

2.2.2 Types of Unanticipated Discoveries Where Avoidance Is Not Required—Prescribed Treatment

Unanticipated discoveries that are considered to hold no potential to be exceptional or eligible for the NRHP include:

- Isolated, non-diagnostic, unexceptional prehistoric flaked stone and ground stone artifacts, burned rock, or non-human bone clearly outside the boundaries of previously defined archaeological sites.
- Isolated, non-diagnostic and unexceptional historic artifacts clearly outside the boundaries of previously defined archaeological sites.
- Prehistoric and historic artifacts or materials within archaeological sites previously evaluated as ineligible for the NRHP, and that are qualitatively consistent with the materials previously identified at the site.

Isolates such as those listed above will be reported to the BLM and the appropriate SHPO but will be assumed ineligible for the NRHP and therefore not subject to further mitigation.

2.3 Plan of Discovery Procedures

Upon the inadvertent discovery of prehistoric cultural items not considered as categorically ineligible isolates as specified in Section 2.2, above, BLM will consult with tribes to determine if additional mitigation measures are necessary to treat the items in an appropriate manner and/or mitigate effects to the items.

The Monitoring Plan (Attachment A of the HPTP) defines the Project monitoring procedures and the roles and responsibilities of the monitoring team. The Construction Contractor's Cultural Resources Team, including CRS and/or CRM and NAM (when applicable), will be present during Project ground disturbing construction activities (e.g. mechanical scraping, grading, excavating, etc.) to ensure all known historic properties sites are protected and to monitor construction activities for unanticipated discoveries. The CIC will also observe such activities to ensure compliance as described in the Monitoring Plan. In addition, the CRS and CRM will ensure the procedures outlined in this Plan, the Monitoring Plan, the HPTP, Subsequent HPTP Segment Plan(s), and the Native American Graves Protection and Repatriation Act (NAGPRA) Plan of Action (Attachment C of the HPTP) are followed.

In the case of an inadvertent discovery, the following procedures will be followed:

- The CRS and/or CRM(s), and the NAM(s), if present through coordination with the CRS or CRM, will have the authority to temporarily halt construction operations within 200 feet (60 meters) of a find or exposed resource to determine if historic properties are present and if they will be adversely affected by continuing construction operations.
- The CRM will immediately notify the construction supervisor, CRS and CIC of the find.

- The CRS will notify the Construction Contractor's Project Manager and the Companies' Project Manager of the find and of the stop work activity.
- The CRM will inspect the area for additional resources. The CRM will use flagging tape, rope, or some other means necessary to delineate the area of the find within which construction will halt (this may also include any piles of dirt or rock spoil from that area). If a NAM is present, the NAM will accompany and observe the CRM during these procedures.
- If the find qualifies as an isolate that requires no avoidance, the CRM will record the find on an applicable archaeological isolate site form, provide a detailed description of the item, a photograph, a location map, and record the geographic location with the use of Global Positioning System (GPS). Once the isolate is recorded and no other cultural material or features are observed, the CRS will inform the construction supervisor that construction may proceed.
- The CRS will notify the appropriate lead BLM archaeologist, SHPO, and Native American Representative(s), via telephone and/or email within 24 hours of any unanticipated discovery (including isolates)
- Construction can resume when the BLM approves the CRS evaluation of the find as ineligible or mitigation measures are approved by the relevant BLM and SHPO offices.
- No invasive archaeological testing/excavation will occur and no artifacts will be collected without BLM approval.
- All finds will be documented and included in the Cultural Resources Monitoring report, monthly compliance reports, and/or within the final monitoring report for the entire project.

If the find does not qualify as an isolate as described in Section 2.2, the CRS will provide sufficient information regarding the find (e.g. type of site, description of visible surface artifacts and/or features, potential of subsurface deposits, etc.), an eligibility recommendation, and photographs of the discovery to the CIC, BLM Archaeologist, SHPO, and interested Native American Representative(s) (if requested). Construction within 200 feet of the find will be prohibited until the CRS, CIC, BLM, and SHPO have conferred and determined what, if any, data recovery or other mitigation is needed. These parties will meet or hold a conference call to discuss the find and mitigation measures within 5 working days of notifying the BLM of the find. If they agree that it is infeasible to avoid the resource, then the prohibition on construction in the vicinity of the resource will remain in force until the field work for data recovery or other mitigation is completed.

2.4 Identification of Human Remains

Although every effort has been made during the planning phase of the project to avoid sensitive resources, human remains and/or funerary objects may be discovered during Project construction activities. If human remains are discovered, construction will stop immediately within the

vicinity of the find, the remains will not endure further disturbance, and the remains will be protected in accordance with applicable local, state, and federal statutes.

If skeletal remains (e.g. bones) are inadvertently discovered during Project construction, the CRS or CRM and NAM (if applicable) will perform the following initial tasks:

- STOP CONSTRUCTION ACTIVITIES
    - Immediately halt construction within 200 feet radius of the remains and notify the Construction Contractor's Project Manager, Companies' Project Manager, CIC and BLM Archaeologist.
    - The area will be protected with flagging or by posting a monitor or construction worker to ensure that no additional disturbance occurs
    - Remains are not to be touched, moved, photographed, or further disturbed until assessed by the CRM in consultation with the BLM, the CRS, and the CIC
    - Consult with the CRS and identify whether or not the remains are human, the CRS may consult with a physical anthropologist (as appropriate).
    - If the skeletal remains are non-human and no other archaeological objects or features are associated with the find, the CRS and/or CRM will inform the construction supervisor that construction may proceed.
    - If the skeletal remains are human, the appropriate agency officials will be notified as specified by land ownership, below.
- HUMAN REMAINS NOTIFICATON PROCEDURES ON NON-FEDERAL LAND

  Idaho State Statues 18-7027 and 18-7028 makes it unlawful to decimate and/or remove graves and/or associated funerary objects and doing so is a felony punishable by imprisonment and/or fines. Wyoming State Statue 6-4-501 states that it is unlawful to disturb human remains and doing so is punishable by a fine (see Attachment 1 for full text of the laws of each state).

  If the human remains are identified on non-federal land, the CRS and/or CRM will notify the appropriate state official as follows: in Idaho, the local county sheriff, and in Wyoming the local coroner. They will also notify the landowner, the appropriate SHPO archeologist, and the nearest Federal agency archeologist

  The appropriate state official will report non-forensic finds to the appropriate SHPO and State Physical Anthropologist. The SHPO will then handle all notifications, consultation with affected parties, and will authorize work resumption.
- HUMAN REMAINS NOTIFICATON PROCEDURES ON FEDERAL LAND

  The NAGPRA Plan of Action will be followed for remains found on federally managed lands.

Phone numbers for the key contacts in the event of an emergency discovery will be provided in the segment HPTPs and will be included in the proposed employee-training brochure.

2.5 Site Recording and Evaluation Methods

If a site containing historic properties, other than an isolated find, is discovered within the Project APE during construction, the CRS or CRM will record and map the site to the appropriate state standards. The site form will be immediately submitted to the BLM for review and approval following its completion. The BLM will determine whether the site requires further testing or other mitigation measures. If the site is in danger of being destroyed and cannot remain in situ and data recovery is the chosen method for mitigation, site-specific field methods (e.g. type and number of excavation units, in-field analysis, etc.) will be developed in consultation with the Companies' Project Manager, Construction Contractor's Project Manager, CRS, CIC, BLM, SHPO, and consulting Tribes in accordance with the HPTP and/or Segment Plan.

2.5.1 Site Recording Methods

The CRS or CRM will record cultural resources on the appropriate state archaeological site form. The site area will be recorded and evaluated as to whether it requires further testing or if mitigation measures are required. The site recording will include the completed archaeological site form. GPS will be used to record the location of surface artifacts and to prepare a detailed scale map of prominent site features. This map will show landmarks and artifact and locations. The site will also be plotted on a United States Geological Survey 7.5' topographic map. Where the site boundaries appear to extend beyond 1320 feet (400 meters) of the APE, the site description will be limited to that within 1320 feet of the APE, in consultation with the BLM and SHPO.

The field crew will photograph the site and record standard site information about the topography, physiography, vegetation, location, and artifacts and features (mapped in plan view and/or profile, as appropriate), and produce stratigraphic profiles of selected trench walls (if find is located during construction trenching) in which cultural materials are exposed. Soil colors will be recorded using Munsell soil color charts. No artifacts will be collected for curation except as instructed by the BLM. An eligibility recommendation will be made for the resource on the form. A permanent site number will be obtained from the appropriate state SHPO. The draft site form, along with maps and photos, will be submitted upon completion to the BLM for review and approval. Potential human remains will be treated as described in the NAGPRA Plan.

2.6 Confidentiality of Historic Property Information

Historic properties confidentiality is subject to the provisions of Section 304 of the NHPA relating to the nondisclosure of information about the location, character, and ownership of a historic property, including historic properties of traditional religious and cultural importance to Indian tribes. All sensitive cultural resource information (e.g. site records, inventory reports, maps with site location data) is confidential and not for public distribution. Where data sharing agreements are in place between the BLM and the Companies, the terms of those agreements

will be upheld by the CRS and CRM. In the field during construction, the CRM(s) will have copies of all the site records and maps for known historic properties within the vicinity of the Project area being monitored. The CRM will ensure all data is kept confidential.

ATTACHMENT 1

STATE LAWS FOR THE DISCOVERY OF HUMAN REMAINS

Attachment 1

Wyoming State Statue 6-4-501

ARTICLE 5 - DESECRATING GRAVES AND BODIES

6-4-501. Opening graves and removing bodies; penalty; exception.

(a)A person who opens a grave or tomb and removes a body or remains of a deceased person for any purpose without the knowledge and consent of near relations of the deceased commits a misdemeanor punishable by a fine of not more than seven hundred fifty dollars ($750.00).

(b)This section does not prohibit exhumation if ordered by a court of competent jurisdiction.

Idaho State Statutes

18-7027. DESECRATION OF GRAVE, CEMETERY, HEADSTONE OR PLACE OF BURIAL PROHIBITED.

It shall be unlawful for any person, not acting in full compliance with all the terms of the law to desecrate or molest in any way any portion of any grave, cemetery, headstone, grave marker, mausoleum, crypt, or any other place of burial, whether of whole bodies, or ashes, or other evidence of remains of a deceased human body.

Any person convicted or found guilty of violating the provisions of this section is guilty of a misdemeanor.

18-7028. UNLAWFUL REMOVAL OF HUMAN REMAINS--MALICE--INTENT TO SELL.

Every person who removes any part of any human remains from any place where it has been interred, or from any place where it is deposited while awaiting interment, with intent to sell it or to dissect it, without authority of law, or from malice or wantonness is guilty of a felony punishable by imprisonment in the state penitentiary for not more than five (5) years, by a fine not greater than ten thousand dollars ($10,000) or by both such fine and imprisonment.

27-501. DEFINITIONS.

For the purpose of sections 27-501 through 27-504, Idaho Code:

(1) "Cairn" means a heap of stones or other material piled up as a memorial or monument to the dead.

(2) "Grave" means an excavation for burial of a human body.

(3) "Indian tribe" means any Idaho Indian tribe recognized by the Secretary of the Interior.

(4) "Professional archaeologist" means a person who has extensive formal training and experience in systematic, scientific archaeology.

27-502. PROHIBITED ACTS.

(1) Except as provided in Section 27-503, Idaho Code, no person shall willfully remove, mutilate, deface, injure or destroy any cairn or grave.

Persons disturbing graves through inadvertence, including by construction, mining, or logging, shall cause the human remains to be reinterred. The expense for such reinternment shall be at least partially borne by the State Historical Society.

(2) No person shall:

(a) Possess any artifacts or human remains taken from a cairn or grave on or after January 1, 1984, in a manner other than that authorized under Section 27-503, Idaho Code.
(b) Publicly display or exhibit any human remains.
(c) Sell any human artifacts or human remains taken from a cairn or grave.

(3) The provisions of this section do not apply to:

(a) The possession or sale of artifacts discovered in or taken from locations other than cairns or graves or artifacts that were removed from cairns or graves by other than human action; or
(b) Actions taken in the performance of official law enforcement duties.

27-503. PERMITTED ACTS--NOTICE.

(1) If action is necessary to protect the burial site from foreseeable destruction and upon prior notification to the director of the State Historical Society and to the appropriate Indian tribe in the vicinity of the intended action if the cairn or grave contains remains of an Indian, a professional archaeologist may excavate a cairn or grave and remove material objects and human remains for subsequent reinternment following scientific study.

Reinternment shall be under the supervision of the appropriate Indian tribe if the cairn or grave contained remains of an Indian.

(2) Except as provided in subsection (1) of this section, any proposed excavation by a professional archaeologist of a native Indian cairn or grave shall be initialed only after prior written notification to the director of the State Historical Society and with prior written consent of the appropriate Indian tribe in the vicinity of the intended action. Failure of a tribe to respond to a request for permission within sixty (60) days of its mailing by certified mail, return receipt requested, shall be deemed consent. All material objects and human remains removed during such an excavation shall, following scientific study, be reinterred at the archaeologist's expense under the supervision of the Indian tribe.

(3) In order to determine the appropriate Indian tribe under this section and Section 27-502, Idaho Code, a professional archaeologist or other person shall consult with the director of the State Historical Society who shall designate the appropriate tribe.

27-504. CIVIL ACTION--TIME FOR COMMENCING ACTIONS--VENUE--DAMAGES--ATTORNEY FEES.

(1) Apart from any criminal prosecution, any person shall have a cause of action to secure an injunction, damages or other appropriate relief against any person who is alleged to have violated the provisions of Section 27-502, Idaho Code. The action shall be brought within two (2) years of the discovery of the violation by the plaintiff. The action may be filed in the district court of the county in which the subject grave or cairn, remains or artifacts are located, or within which the defendant resides.

ATTACHMENT C

NATIVE AMERICAN GRAVES PROTECTION AND REPATRIATION ACT (NAGPRA) PLAN OF ACTION

ATTACHMENT C
DRAFT
NATIVE AMERICAN GRAVES PROTECTION AND REPATRIATION ACT PLAN OF ACTION

of the

DRAFT HISTORIC PROPERTIES TREATMENT PLAN
for the
GATEWAY WEST TRANSMISSION LINE PROJECT
Case File Numbers:
IDI-35849, Idaho
WYW-174598, Wyoming

Prepared by

Rocky Mountain Power

and

Idaho Power Company, Inc.

.

December 2012

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1.0 INTRODUCTION

This Draft Plan of Action (POA) provides an initial framework for the procedures for the treatment and disposition of Native American human skeletal remains, associated funerary objects, objects of cultural patrimony, and sacred objects (hereinafter, cultural items) for inadvertent discoveries during construction of the Gateway West Transmission Line Project (Gateway West or the Project) on Public Lands administered by the Bureau of Land Management (BLM) in Wyoming and Idaho, on lands managed by the USDA Forest Service in Wyoming and Idaho, on lands managed by the US Army Corps of Engineers, and on lands managed by the USDI Bureau of Reclamation. This POA, when completed and approved, will comply with the requirements of the Native American Graves Protection and Repatriation Act (NAGPRA), 25 U.S. Code (USC) 3001 et seq. and its implementing regulations as set forth in 43 Code of Federal Regulations (CFR) Part 10 (Specifically § 10.5[e]), and the Archaeological Resources Protection Act (ARPA), 16 USC 470aa-mm, with its implementing regulations (43 CFR Part 7). The BLM, as lead federal agency, will develop and manage the final NAGPRA POA in collaboration and consultation with affected Tribes. As specified in the PA, the final Plan will be reviewed by the Interested Parties of the PA.

1.1 Project Description

Rocky Mountain Power and Idaho Power Company, collectively known as the Companies, are proposing to develop approximately 1000 miles of new 230-kilovolt (kV), 345-kV, and 500-kV alternating current electric transmission system consisting of 10 segments between Windstar Substation near Glenrock, Wyoming, and the Hemingway Substation approximately 30 miles southwest of Boise, Idaho.

1.2 Native American Consultation

The BLM is the lead federal agency for government-to-government consultation with identified Indian tribal governments, tribal individuals, and tribal organizations, pursuant to 36 CFR 800.2(c)(2). The following Tribes have been contacted to review and comment on the Project: the Northern Arapaho, the Northern Cheyenne, the Eastern Shoshone, the Shoshone-Bannock, the Northern Ute, the Shoshone-Paiute, the Northwest Shoshone Band, the Southern Arapaho, the Southern Cheyenne, and the Oglala Sioux.

BLM initiated consultation with the tribes for this Project in 2008. The BLM has continued Tribal consultation to date with letters, phone calls, and meetings to or with each of the parties listed above. The BLM will continue consultation throughout the planning and execution of the Project and specifically will consult with affected tribes on protocols for carrying out the BLM's obligations under NAGPRA.

2.0 PLAN OF ACTION

This section discusses the NAGPRA Plan of Action. This initial draft was prepared by the Companies as specified in the PA for the Gateway West Project. The BLM, as lead federal agency, will develop and manage the final plan in collaboration and consultation with affected Tribes and will be reviewed by the Interested Parties of the PA.

2.1 Applicability of this Plan of Action

NAGPRA applies on federally managed and tribal lands. Human remains, funerary objects, sacred objects, and objects of cultural patrimony located on state and privately held lands will be managed according to the laws of the state in which they are found. In addition to NAGPRA, the BLM and other federal agencies are required under the laws of each of the states crossed by the Project to notify law enforcement if human remains of any description are found.

Upon discovery of human remains, the Cultural Resource Specialist (CRS), the Cultural Resource Monitor (CRM), or construction staff must immediately notify the appropriate state law enforcement officer: in Idaho, the local county sheriff and in Wyoming, the local county coroner. The full text of the laws of each state is found in Attachment 1 of the Inadvertent Discovery Plan. The names and contact information for the appropriate law enforcement contacts will be listed in Table 1 of each segment Historic Properties Treatment Plan (HPTP). The notification of law enforcement will occur at the same time as the activation of this POA. The decision of the law enforcement official regarding whether the remains fall under the jurisdiction of law enforcement or NAGPRA will determine the subsequent management of the remains. Only after the appropriate law enforcement decision has been rendered may the terms of this POA take effect.

2.2 Objects to be Considered as Cultural Items

For the purpose of this plan, the objects considered as cultural items are defined in 43 CFR 10.2 (d) and are as follows:

1. *Human Remains:* means the physical remains of a human body of a person of Native American ancestry. The term does not include remains or portions of remains that may reasonably be determined to have been freely given or naturally shed by the individual from whose body they were obtained, such as hair made into ropes or nets or individual teeth. For the purposes of determining cultural affiliation, human remains incorporated into a funerary object, sacred object, or object of cultural patrimony, as defined below, must be considered as part of that item (43 CFR 10.2[d][1]).
2. *Funerary Objects:* means items that, as part of the death rite or ceremony of a culture, are reasonably believed to have been placed intentionally, at the time of death or later, with or near individual human remains. Funerary objects must be identified by a preponderance of evidence as having been removed from a specific burial site of an individual affiliated with a particular Indian tribe or Native Hawaiian organization, or as

being related to specific individuals or families or to known human remains. The term *burial site* means any natural or prepared physical location, whether originally below, on, or above the ground into which, as part of the death rite or ceremony of a culture, individual human remains were deposited, and includes rock cairns or pyres that do not fall within the ordinary definition of a gravesite. For purposes of completing the summary requirements in §10.8 and the inventory requirements of §10.9 (43 CFR 10.2[d][2]), funerary objects can be further defined as follows:

a. Associated funerary objects means those funerary objects for which the human remains with which they were placed intentionally are also in the possession or control of a museum or Federal agency. Associated funerary objects also mean those funerary objects that were made exclusively for burial purposes or to contain human remains.

b. Unassociated funerary objects mean those funerary objects for which the human remains with which they were placed intentionally are not in the possession or control of a museum or Federal agency. Objects that were displayed with individual human remains as part of a death rite or ceremony of a culture and subsequently returned or disturbed according to traditional custom to living descendants or other individuals are not considered unassociated funerary objects.

Funerary objects found in prehistoric burials include, but are not limited to: projectile points, shell beads, pendants, ceramic pots, and arrow shaft straighteners.

3. *Sacred Objects:* means items that are specific ceremonial objects needed by traditional Native American religious leaders for the practice of traditional Native American religions by their present-day adherents. While many items, from ancient pottery shreds to arrowheads, might be imbued with sacredness in the eyes of an individual, these regulations are specifically limited to objects that were devoted to a traditional Native American religious ceremony or ritual and that have religious significance or function in the continued observance or renewal of such ceremony. Traditional religious leader means a person who is recognized by members of an Indian tribe or Native Hawaiian organization (43 CFR 10.2[d][3]) as follows:

a. Being responsible for performing cultural duties relating to the ceremonial or religious traditions of that Indian tribe or organization , or

b. Exercising a leadership role in an Indian tribe or Native Hawaiian organization based on the tribe or organization's cultural ceremonial or religious practices.

4. *Objects of cultural patrimony:* means items having ongoing historical, traditional, or cultural importance central to the Indian tribe itself, rather than property owned by an individual tribe or organization member. These objects are of such central importance that they may not be alienated, appropriated, or conveyed by an individual tribal or organization member. Such objects must have been considered inalienable by the culturally affiliated Indian tribe or native Hawaiian organization at the time the object was separated from the group (43 CFR 10.2 [d][4]).

2.3 Specific Information to Determine Custody

BLM will specify in the final version of the NAGPRA plan, in collaborative consultation with affected tribes, how the requirements of NAGPRA regarding custody determination will be

developed for this Project. The following points are the elements of NAGPRA requiring consideration for custody determination:

1. Information provided by a lineal descendant(s) that can trace his or her direct relationship, without interruption, between themselves and the deceased by means of the traditional kinship system of the appropriate Indian tribe (43 CFR 10.2[b] and 43 CFR 10.14[b]).
2. Information provided by a Native American tribe, people, or culture that is indigenous to the United Sates, and that can establish cultural affiliation by means of a relationship of shared group identity that can reasonably be traced historically or prehistorically between members of a present day Indian tribe and an identifiable earlier group (25 USC 3001[9], 43 CRF 10.2[e] and 43 CFR 10.14[c]).
3. The Federal agency official will determine cultural affiliation between a present-day individual or Indian tribe by a preponderance of evidence based on geographical, kinship, biological, archaeological, anthropological, linguistic, folkloric, oral traditional, historical, or other relevant information or expert opinion (25 USC 3005 [a][4], 43 CFR 10.2[e], and 43 CFR 10.14[e]).
4. Priority order of custody of the cultural materials will be consistent with 43 CFR 10.6 (a) as follows:
    a. In the case of human remains and associated funerary objects, in the lineal descendant of the deceased individual as determined pursuant to Sec. 10.14 (b);
    b. In cases where a lineal descendant cannot be ascertained or no claim is made, and with respect to unassociated funerary objects, sacred objects, and objects of cultural patrimony:
        i. In the Indian tribe on whose tribal land the cultural items were excavated;
        ii. In the Indian tribe that has the closest cultural affiliation with the cultural items as determined pursuant to Sec. 10.14 (c); or
        iii. In circumstances in which the cultural affiliation of the cultural items cannot be ascertained, BLM is unable to prove a right of possession as defined at 43 CFR 10.10(a)(2), and the materials were excavated or removed from Federal land that is recognized by a final judgment of the Indian Claims Commission or the United States Court of Claims as the aboriginal land of an Indian tribe:
            1. In the Indian tribe aboriginally occupying the Federal land on which the cultural items were excavated, or
            2. If it can be shown by a preponderance of the evidence that a different Indian tribe has a stronger cultural relationship with the cultural items, in the Indian tribe that has the strongest demonstrated relationship with the objects.

BLM intends to repatriate human remains and associated funerary objects when cultural affiliation can be determined. If human remains and associated funerary objects whose cultural affiliation cannot be determined [43 CRF 10.9 (d)] are discovered, the BLM will consult with the

Review Committee created by NAGPRA. The Review Committee is authorized under 25 USC 3006(c)(5) to make recommendations, "in consultation with Indian tribes, Native Hawaiian organizations, agency, and/or appropriate scientific and museum groups", as to how these remains and objects will be handled.

2.4 Planned Treatment, Care, and Handling of Human Remains

If human skeletal remains are discovered on federal or tribal land as a result of the Gateway West project construction or archaeological investigations, the CRS, CRM, or other project personnel will halt all activities within 200 feet of the remains and associated objects, protect them from further disturbance by placing exclusionary fencing in a 50-foot radius around the discovery, and provide immediate notification to local law enforcement and to the BLM of the discovery.

All discovered remains will be treated with respect and dignity. Specific steps for managing remains will be developed by the BLM in collaboration and consultation with affected tribes.

1. The Companies are responsible for ensuring the security of in situ cultural items from vandalism or other disturbance through employment of security personnel, fencing, and other appropriate measures, as needed. Additional measures, where needed, will be specified by the BLM
2. The Project will not resume construction in the buffer area surrounding the discovery until it has received written authorization to proceed based on procedures established in the final NAGPRA plan and the PA.

2.5 Planned Archaeological Recording and Reporting of the Human Remains and Cultural Materials

BLM will specify in the final version of the NAGPRA plan, the terms for recordation and reporting of any remains or cultural objects through collaboration and consultation with the affected tribes.

2.6 Analysis Planned for the Human Remains and Cultural Materials

BLM will specify in the final version of the NAGPRA plan, in consultation with affected tribes, any analyses of human remains and cultural materials including consultation regarding removal.

2.7 Planned Disposition of Human Remains Pursuant to 43 CFR 10.6

BLM will specify details on planned disposition of human remains in the final version of the NAGPRA plan, in consultation with affected tribes.

2.8 Native American Monitor Role

If Native American Monitors (NAMs) are used for a particular segment, then they may notify the approved CRS about items they feel are funerary objects, sacred objects, and/or objects of cultural patrimony. The CRS will notify BLM within 24 hours that monitors identified funerary

objects, sacred objects, and/or objects of cultural patrimony. The report will include a description of the find(s), photograph(s) or drawing(s) were applicable, artifact(s) numbers or identification were applicable, and a description of the tribal monitor's opinion(s).

2.9 Federal Personnel and Tribal Representatives Involved in this POA

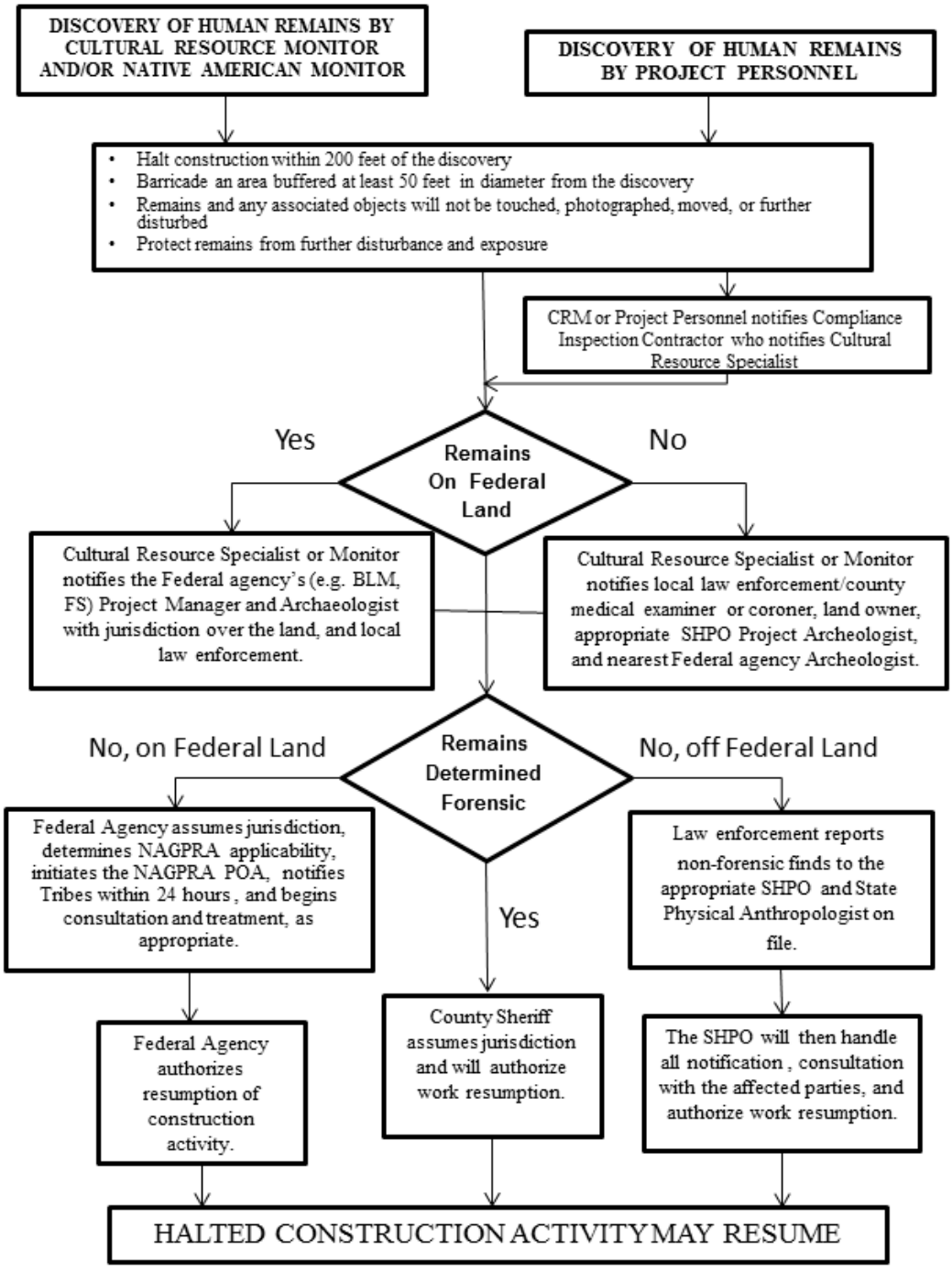
Each Segment HPTP will list federal agency and tribal contacts and will include the names and contact information for the CRS, CRMs, and NAMs where appropriate.

ATTACHMENT 1

DISCOVERY OF HUMAN REMAINS FLOW CHART

ATTACHMENT 1

INADVERTENT DISCOVERY OF HUMAN REMAINS



ATTACHMENT D

SEGMENT HISTORIC PROPERTIES TREATMENT PLAN (PLACE HOLDER)

ATTACHMENT E

THE WYOMING BUREAU OF LAND MANAGEMENT FIELD GUIDE FOR EVALUATIVE TESTING OF ARCHAEOLOGICAL SITES

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A Supplement to the Wyoming Bureau of Land Management Cultural Resources Handbook

September 2003

BUREAU OF LAND MANAGEMENT
FIELD GUIDE FOR EVALUATIVE TESTING OF ARCHEOLOGICAL SITES

Introduction
Field archeologists should be prepared to test sites where insufficient surface evidence exists to determine the presence of information important to prehistory. Limited subsurface testing may be required for the following purposes:

1. Testing to evaluate significance, usually under Criterion D.
2. Testing to assess the effects of an undertaking on an eligible site.
3. Testing to look for buried cultural remains when there is reason to expect a great potential for significant cultural resources where surface evidence is absent.
4. Testing to develop a data recovery plan for an affected National Register eligible site.

Methods used for all four purposes may be the same or in some situations may differ. It may be possible to conduct two or more kinds of testing at the same time or part of the testing may be useful for two or more goals, while additional testing may be needed to meet a second goal. The archeologist should clearly specify the reasons for testing and which methods and procedures were used.

Poor testing may lead to inaccurate evaluations of eligibility and effect. This in turn may lead to discoveries that result in costly project delays and extra work and expense to mitigate sites that might have been avoided if properly identified. Damaging a site because of an inadequate identification effort is contrary to the intent of historic preservation laws and regulations.

I. Evaluating sites for National Register eligibility.

Evaluating sites for National Register eligibility requires assessing the potential of the site to contain data that contribute to answering important research questions. The following research questions provide examples to stimulate the thinking of the site evaluator. These research questions are only a partial list of possible research values for eligible sites. Historic context (if available) should be referred to for more specific research questions.

Site evaluations must specify what kinds of evidence the site contains and what research questions those data will help answer. Without this information, the archaeologist has not completed a site evaluation. Sites cannot be evaluated without the archeologist interpreting the surface and testing data collected.

A. Research Questions

1. Does the site contribute a better understanding of cultural chronology or a particular cultural phase?

2. Does the site contribute data on subsistence strategies and practices?

3. Does the site contribute data on settlement patterns, landscape use strategies, duration of occupation, seasonal migration round, or mobility strategies?

4. Does the site contribute data on the functions of site structures, such as hearth types and their uses, house types and their uses and duration of use?

5. Does the site contribute data on lithic procurement, processing (reduction strategies), transport, role in settlement strategies and seasonal rounds, selectivity for specific tasks, and/or discard patterns?

6. Does the site contain data on paleoenvironments and adaptations to changing environments?

7. Does the site contribute information on religious concepts or practices?

Additional questions about the nature of the site can help the archeologist assess its potential for contributing data that answer important research questions, such as those above.

This checklist of questions helps the archeologist evaluate the site integrity and assess the nature of the site data. A "yes" answer to any of these questions does not constitute a site evaluation. The investigator must go on to determine what research questions may be answered with these data.

1. Is the site datable? Does the site contain carbon or charcoal or temporally diagnostic artifacts, and/or does it have associated historical records that place the site in time. If datable evidence is not present on the surface of a site, testing may be needed to explore for datable materials.

2. Is the site stratified vertically or horizontally? Does the stratigraphic context retain sufficient integrity in at least one stratum or area to produce information that is discrete to that occupation (note: only one discrete unit is necessary)?

3. Does the site have artifacts that allow interpretation of site function?

4. Does the site have definable activity areas?

5. Are there multiple components that are segregated vertically or horizontally such that relative dating is possible?

6. Does the site have artifacts or features that are unique to the area or time period?

7. Does the site have features? If so, what types and how can they contribute to understanding prehistory?

8. What is the site's environmental location in relation to other sites in the area?

9. What is the site's overall size, complexity, and artifact density, compared to other sites in the area?

10. Does the site contain complete tool kits?

11. Do features have good integrity?

12. Are floral or faunal remains preserved?

B. Site Integrity

The issue of site integrity is complex yet essential for determining site eligibility. Evaluations of National Register eligibility require an assessment of seven criteria of integrity: location, design, setting, materials, workmanship, feeling, and association. Within an archaeological context only some of these criteria may apply, however under the National Register guidelines archeologists need to be aware of all the criteria when considering the complex issue of site integrity.

Specifically, archeologists must become aware the factors that could influence the nature and condition of the cultural deposits. These could be, bioturbation, subsidence, slope wash, wind erosion and other post depositional processes. Knowledge of the local geomorphological conditions is essential in assessing site integrity.

C. Methods of Evaluative Testing

A phased approach progresses from minimal to greater impact on the site. The amount of data recovered generally also increases with greater impact methods, except for backhoe trenching. Phases need not be completed in a specified order. Environmental indicators, such as soil type, geomorphology, and topography, may suggest going immediately to a later 'phase' to maximize the most efficient and cost effective recovery of useful data, depending on professional judgment. Evaluation based on surface evidence, shovel or auger probes and to a limited extent formal excavation units can be carried out under the BLM permit for survey and limited testing. Any effort beyond this must be coordinated with the BLM Field Office archeologist and the project proponent. Testing above that specified in the BLM permit must involve consultation with SHPO.

Method 1: Evaluation from Surface Evidence

Evaluations from surface evidence should use existing exposures of profiles, such as cutbanks, zones of deflation, like blowouts or the windward side of some dunes, naturally occurring disturbances, like animal burrows/backdirt, entrenched animal trails, and ant beds, and man-made disturbances, such as roads. Frequently, an archeologist can evaluate a site based solely on surface evidence if he/she provides sufficient rationale to justify the evaluation. Often, evaluation from surface evidence leads to an ineligible evaluation because it is easier to assume that National Register

qualities are absent than to recover incontrovertible evidence of information important in prehistory.

Many sites can be evaluated by surface evidence alone, given adequate knowledge of the site and its context. If the existing site conditions do not provide sufficient evidence to answer the basic research questions and information needs, however, some sort of subsurface investigation should be made using one or more or the following methods. The *assumption* that no subsurface deposits are present because the vegetation cover is sparse is not acceptable. Similarly, the assumption that no subsurface deposits are present because of dense vegetation cover, such as in a hay meadow, is not acceptable.

Method 2: Remote Sensing

Archeologists are beginning to use remote sensing techniques for evaluating locating and evaluating sites. As the technique becomes more refined it may enjoy a broader application. Remote sensing is most useful for specific kinds of site types and deposits. For example, if the archeologist thinks the site has a high probability to contain one or more buried hearth(s) or pit house(s), remote sensing would be the least site disturbing technique and may be the quickest way to obtain the evidence.

In terms of site testing and identification, remote sensing techniques may be most useful for preventing discovery situations and searching for buried cultural deposits in contexts lacking surface cultural evidence. Remote sensing techniques like magnetometry, gradiometry, soil resistivity and ground penetrating radar require a research plan which contains strategies for grid coverage and anomaly evaluation and testing. Follow-up construction monitoring to assess the reliability of the method used may be required. See Section III (Testing for buried cultural remains) for a review of remote sensing techniques.

Method 3: Shovel Testing or Auger Probing

This method is characterized by small diameter probes to identify the depth, nature, and extent of cultural deposits, and as an efficient means of determining where further testing may be conducted. This technique uses small-diameter soil cores, augers, or shovels to probe sites, resulting in the least impact while providing information about buried site potential. The method is useful for mapping depth and extent of deposits and serves as an efficient means of determining where further testing efforts will be conducted, if necessary. The method also works well for probing known buried sites to map the extent of buried cultural components for development of data recovery plans.

The degree of success in applying this technique depends on the type of tool employed and the ability of the archeologist to interpret the results. A 3" diameter soil core or larger bucket auger works well, while power screw augers do not. A method which recovers a core that can be analyzed for soil stratigraphy, inspected for depth of artifacts, and screened or troweled to recover the artifacts provides more information that a screw auger that churns up the soil and provides only an artifact count, lacking depth and context information. Shovel tests allow observations about stratigraphy and other aspects of the deposits that auger probes do not always provide. Inspecting larger amounts of soil in shovel tests than in small diameter probes increases the chances that the test will encounter cultural remains that are present in the subsurface. The spacing of the probes, the manner by which

augered sediments are examined, and the way positive results of probes are interpreted affect how decisions are made about continued testing based on those results. The spacing and pattern of probes is critical to the viability of the method, as is size of screen mesh used to sift deposits--closer interval probes produce more reliable information and smaller mesh size increases potential for positive recovery of data.

Major drawbacks for shovel and auger probing are the limited depth the archeologist can reach with shovel tests and some types of augers. Testing deeper deposits may require the archeologist to select Method 4 (controlled tests) instead. If the archeologist has a high expectation that the site is eligible, but simply needs evidence of subsurface deposits, he/she should excavate a small-sized controlled test pit because the test will recover significantly more data that a shovel of auger probe. Augering or shovel test probes frequently do not recover sufficient horizontal and vertical data on the remains. Small diameter probes or larger auger or shovel tests on large sites can by chance completely miss the subsurface evidence because the volume of soil inspected compared with the site=s total volume is extremely minimal. The most frequent error in testing is not placing the units in the best possible locations. The locations should be selected based on the site geomorphology, patterns of prehistoric land use, and other factors. The archeologist must justify the rationale chosen for the probe locations.

The type of testing pattern depends on the site. For example, sand sheets need a grid pattern, whereas sand dunes may need probes along the dune topography. Probe spacing must vary with site expectations. Activity areas produced by hearth-tethered hunter-gatherers tend to occupy about a 4 m radius around the hearth. A 10 m interval may not serve the purpose of identifying significant cultural remains, while a 5 m interval will have more likelihood of succeeding. Procedures should be discussed with the BLM archeologist during the fieldwork, to minimize discoveries and return field trips and to maximize confidence in the validity of testing results. Deposits from probes will normally be screened through 1/8 inch mesh in sand and loose soils and where small finds are expected, such as seeds, charcoal, retouch flakes, or small animal bones. A 1/4 inch mesh may be used depending on the characteristics of the deposits, such as heavy or wet clay or in contexts where larger mesh is expected to recover the type of remains the site is likely to contain.

During the testing process, investigators make decisions concerning how to proceed--whether to tighten the testing interval, dig formal test units, or terminate the effort due to sufficient information collected. Decisions on continuing or terminating a testing program should be made with attention to the area of potential effect (APE), the portion of the site containing intact deposits, and the present and future effects, direct and indirect, to that portion of the site.

The combined surface data and site probing results should be interpreted to determine what kinds of archeological evidence are present or expected and what research questions they can help answer. The probing should also be designed to provide information about the site integrity. An evaluation of site integrity is necessary to establishing the probability that the site will contribute to answering important research questions.

Method 4. Controlled Formal Test Units

Formal test units are usually more labor-intensive and impact a greater area of the site, but provide the most reliable and accurate information to answer the research questions and evaluation needs. However, use of formal test units may require a BLM testing permit. The method calls for careful excavation using archeological techniques that provide controlled data on vertical and horizontal reference points so that original locations of artifacts and features can be reconstructed. Formal testing, in which the test units are carefully located, often provides significantly more information about a site than probing. By providing more intensive data, one or a few formal tests can be used instead of a series of probes for evaluating some sites. If a few formal tests can replace a series of probes, the two methods may not vary greatly in labor intensity.

Specific circumstances may necessitate formal testing or make it the most useful method. Soil depth will often necessitate a test unit, because of the limitations of probing tools. If deposits over one meter deep are known or suspected, it may be prudent to start testing with a formal unit. If during probing, a buried component or deposit is suspected but not confirmed, a formal unit is standard procedure. Other surface indications, such as topography, geomorphology, or the presence of features may be reasons to choose formal test units instead of probing. If buried deposits are suspected, a single formal test, such as a 50 x 50 cm or 1 x 1 m unit, may be sufficient to establish the site eligibility and additional testing would be unnecessary. If auger or shovel testing identified evidence of a cultural feature like a hearth, the probe should be expanded to a formal test unit to provide information about the integrity of the old surface from which the feature emanates.

In deposits less than one meter in depth, a small-sized formal unit, such as a 50 x 50 cm or 1 m x 50 cm unit, can efficiently provide more information about a site than a series of probes because data about the horizontal and vertical locations of cultural remains and soil stratigraphy are recovered. These tests also provide data on the volume/density of cultural materials. By testing a larger volume of soil, formal units increase the chances that the test will recover artifacts, features, or contexts that indicate what kinds of data the site contains. For the portion of the site evaluation that determines whether the site contains data that may answer research questions, formal tests are often the best testing methods. Shovel/auger probes often become merely a check for presence or absence of artifacts or an artifact count with no information on depth or location of cultural remains. If the surface data already provide information about the site's potential to contribute data to research questions, then shovel/auger probing may provide all the additional information needed to complete the site evaluation. If surface data and initial probing do not provide adequate data on the nature of the site for answering research questions, then formal testing should be conducted.

Depending upon the size and nature of the site, formal testing may entail enough additional time and expense that the applicant may want a role in the decision to take that step. For most sites, four person-days may be needed to accomplish limited formal testing. If more than four person days are expected, the BLM archeologist should be consulted and may decide what further steps should be taken.

Determining how much testing is enough, whether using Method 3 or Method 4, depends upon understanding the local and regional archeological expectations for site structure. A context for site structure is consequently necessary for a reliable prediction of the amount of testing necessary for concluding that a site is eligible or not eligible. The context would need to include (1) estimated site size and shape, (2) expected density of artifacts and features, and (3) the distribution patterns of artifacts and features.

Few syntheses of such data are currently available for Wyoming although comparisons with other regions are helpful. For example, calculations based on Eastern Woodlands Archaic sites showed a density of 0.23 artifacts per square meter and 0.004 features/square meter for one site and 0.54 artifacts versus 0.005 features/square meter for another site (McMannamon 1984). The expectation of encountering a feature or high density of artifacts for either site in only a few tests would be extremely low. Because of the aggregation of artifacts and features, a hunter-gatherer site would normally have considerable empty space within the site boundary. Thomas (1986) calculated, based on excavation data and ethnoarcheological analogies, that a hunter-gatherer camp occupied by 2-7 nuclear families would have a nuclear area 5-7 meters in diameter surrounded by a peripheral activity zone which is 50% empty space. Yellen's Bushman camps had cultural debris occupying only 19 to 47.6% of the space within the site area. A sampling interval greater than 8-10 meters would generally miss the core area of an occupation and would have a high probability of producing no artifacts or a low density of artifacts.

The factors to be decided in determining how much testing is enough include (1) the volume tested (size of test pits), (2) the sampling interval, and (3) the sampling geometry. Until regional contexts of site structure are developed for Wyoming, the archeologist testing the site must provide a research design giving the rationale for the amount of testing conducted. The archeologist must conduct enough testing to insure that he/she has not examined only the empty space or low density portions of the site. The testing research design should be submitted with the application for a testing permit. In a number of states, this is called a Phase 2 survey.

Method 5. Mechanized Testing

The use of heavy machinery, such as a backhoe, is not a standard technique to evaluate a site for National Register eligibility. However, it may be appropriate for specific sites, particularly those in alluvium or deep aeolian or colluvial deposits. Mechanized testing involves considerable site disturbance which could destroy National Register qualities and will be carried out only with an approved backhoe testing and discovery plan. Backhoe trenching is always inappropriate for testing sites with a shallow stratigraphy.

Backhoe testing is most commonly used to investigate site stratigraphy or geomorphology. Backhoe trenches through cultural deposits largely destroy all data within the trench disturbance. Backhoes are useful for finding visually obvious cultural deposits such as major charcoal-stained lenses, hearth features, and bone beds. Less visually apparent remains often cannot be seen on the disturbed walls of the trench. Mechanized testing is consequently appropriate as a testing method largely where

time is limited and the site will be impacted. Most BLM projects are not of this nature. Sometimes, information about site stratigraphy and geomorphology may be important to establishing site eligibility and backhoe trenching may be used to collect or establish the presence of such data. Geoarcheologists and soils scientists may use backhoe trenches in their geomorphic work. The backhoe has useful applications in energy development projects where heavy equipment is easily available. Nonetheless, heavy equipment work on archeological sites presents real hazards to both the site and to the archeologist, so use of a backhoe should be supervised only by qualified archeologists in close coordination with the BLM.

II. Testing sites to assess the effects of an undertaking on an eligible site.

Following a determination of eligibility, it may be necessary to conduct additional testing to evaluate the potential effect of an undertaking on the site. Particularly when the site was determined to be eligible based on evidence outside the APE, it may be necessary to test for effect within the APE. Prior to assessing effects, the investigator must adequately evaluate the entire site. The portion of the site in the APE cannot be considered non-contributing if the site has not been fully evaluated.

Method 1: Evaluation from Surface Evidence

For some sites, surface evidence may be adequate to determine that subsurface deposits are not present or are too disturbed to retain adequate data to contribute to important research questions (see Examples B and C in Appendix A). An assessment based on surface evidence must be adequately justified (see I.C, Method 1).

Method 2: Shovel/Auger Probing

If the site has already been determined to be eligible, limited shovel or auger probing may establish the presence of subsurface deposits of similar nature to those identified when collecting evidence for the site eligibility. A few probes may be all that are necessary to determine an adverse effect on the site area within the APE. Establishing that the APE portion of the site does not contribute to the site's eligibility generally requires more work because a few probes can miss the areas with intact deposits. Probes should be placed where surface evidence indicates the likelihood of intact soil deposits and knowledge of settlement strategies suggests that cultural remains are likely. Placing probes in spots where they are unlikely to encounter cultural remains will not be considered sufficient for establishing the absence of significant deposits.

Method 3: Formal Test Units

In some cases, shovel/auger probes may be inconclusive in establishing the presence or absence of significant cultural remains in the APE. Particularly when probes locate a few artifacts, but do not provide sufficient information about the nature and integrity of the deposits, formal test units should be excavated. Formal test units can provide more information about site integrity because more data on soil stratigraphy and the contexts of artifacts or features are recovered. For example, if the normal soil profile on the site has horizons A1, A2, B2, and C, and the cultural remains are in the A2

horizon, but the tested APE contains only an A, C profile, the investigator may conclude that the site integrity has been destroyed. A single, well-placed formal test unit may be sufficient to establish the presence of significant deposits, whereas one or a few test units can, because of sampling error, miss the intact area(s) of a site. More test units necessary to establish the absence of significant deposits. The interpretation that significant deposits are absent must be adequately justified in the report.

The discussion of how much testing is enough in Section I.C. Method 4 applies also to determining whether a portion of the site is contributing or non-contributing. The archeologist must take into consideration the expected site size, expected artifact and feature density, and expected distribution patterns of artifacts and features. For example, on a project to modify a segment of a road, a 1 x 1 meter test unit produced 3 tools and 2 flakes in a subsurface context. The agency concluded that this portion of an extensive site was non-contributing. The sampling interval was about 100 meters to the nearest test pit. If sites in the region have expected artifact densities of, for example, 0.25 artifacts/square meter, the amount of testing conducted for the project was inadequate to determine that this portion of the site was non-contributing. Additional testing or monitoring of construction should have been conducted.

Method 4: Monitoring

If a reasonable amount of testing has been conducted in the APE, but the results are inconclusive, it may be advisable to stop testing and monitor the construction instead. The decision to monitor should be a part of the determination of effect. Monitoring may take many forms and will usually require an approved monitoring/discovery plan. For large or long linear projects, it may be more cost effective to test site areas within the APE using remote sensing, or another evaluative method prior to monitoring. Adequately evaluating the APE via techniques such as remote sensing can avoid costly discovery situations, which frequently result from poorly planned or conceived monitoring.

III. Testing to check high potential areas for buried cultural remains where surface evidence is absent.

Several geographic contexts in Wyoming are likely to contain buried sites that lack surface manifestations. Failure to identify these areas during inventory may result in unexpected discoveries and result in all the inherent problems with their management. Known geographic contexts include but are not limited to sand dune fields and extensive aeolian deposits, interior basins that lack drainage outlets, alluvium along drainages, colluvium along slopes and scarps, and forest soils under thick vegetation. If you are unfamiliar with the area you will need to contact the BLM Field Office archeologist to determine if any special evaluative treatments are needed. Each context may require a different testing methodology.

Method 1: Remote Sensing

In recent years, remote sensing techniques have been used to aid in evaluative testing efforts. Remote sensing techniques can offer a relatively nondestructive, nonintrusive and highly efficient

technology for identifying subsurface cultural materials or features threatened by development. Magnetometer or gradiometer surveys, ground penetrating radar, soil conductivity, resistivity and various forms of infrared and conventional aerial photography have found archeological evaluation applications. Remote sensing usually employs running a sensor over the surface and obtaining readings that report anomalies or irregularities in subsurface soil characteristics. These anomalies are then interpreted as being of cultural or other origin. This interpretation can, and usually does, take the form of excavation of a test unit, either a shovel probe or a formal unit. Some remote sensing techniques can be sophisticated, require technical expertise and equipment, and are of variable utility, depending on many factors.

Important factors that affect the success or failure of remote sensing applications include soil type, differences in soil strata, nature, depth, density and composition of the target cultural deposit, past disturbances to the surface and subsurface, presence of impurities or contaminants that affect anomaly identification, and other factors. Remote sensing projects frequently employ more than one technique; use of two (or more) systems is currently in vogue, e.g., use of a gradiometer survey in consort with resistivity.

A moderate amount of technical knowledge is needed to assess the utility of such technology. Generally, historic period sites can benefit from magnetometry, gradiometry, resistivity and conductivity. Voids such as are associated with burials, coffins, mine shafts and other open spaces may be detected with ground penetrating radar. Expansive surface features such as trail ruts, ditches roads and linear mounds can be enhanced using infrared or other low or high level vertical aerial photography. Magnetometer and gradiometer surveys are directly affected by certain magnetic metals, such as iron. Since historic period sites may or usually do contain metal (and iron is common), the effect of the presence of metal on-site needs to be evaluated. If the location of metal objects is desired, then magnetometry may be eminently suited as a locational technique. However, if scattered historic metal is considered to have contaminated the site, or is so omnipresent on-site (as in some mines, historic debris scatters, dumps, etc.) then the presence of metal may have severe negative effects.

Depth of penetration into the substrate is a critical element in assessing the utility of remote sensing strategies. Most modern gradiometer, magnetometer, resistivity and conductivity instruments can penetrate to a depth of 1 to 1.5 meters only. If the target stratum is buried deeper than this, then remote sensing may be inapplicable. The exception is ground penetrating radar, which can penetrate several meters below surface. Trial and error are frequently needed to properly define a successful remote sensing strategy.

Method 2: Hand Excavation

Locating buried sites that lack surface manifestations by subsurface testing depends on two factors. One is the probability of intersecting a site by a given testing methodology. The testing factors that need to be decided are test pit size, spacing, and layout (Shott 1989). Test pit size has a complex relationship with site density and other factors (Nance and Ball 1989). A rough estimate of the minimum site size likely to be discovered by a particular interval spacing of test pits can be

calculated. The formula is: site radius = interval spacing divided by the square root of 2 (Krakker, Shott, and Welch 1983; Lightfoot 1986). To intersect a site of 30 meters diameter or greater, the space between test probes would need to be 21.2 meters (Zeidler 1995). Theoretical and experimental studies of sampling layout indicate greater effectiveness of offset or hexagonal grids compared with square grids (Shott 1989).

Actually finding a site, however, depends also on the probability of detecting a site. Test pits falling in the blank spaces between artifact and feature clusters will fail to detect a site. Both the artifact density and the distribution are key factors affecting detection. As stated earlier, we need to develop regional contexts of site structure in order to design effective subsurface testing strategies.

A. Thick Vegetation Contexts

Where the surface vegetation cover is > 90%, the archeologist should consult the BLM Field Office archeologist about the need for subsurface testing and, if needed, prepare a testing research design. Such contexts include heavy timber with understory vegetation or forest floor litter and dense grasslands, whether natural grasses or cropland, such as hayfields. Archeologists who have conducted experimental and theoretical studies of subsurface testing in dense ground cover contexts are not in agreement on the effectiveness of subsurface testing, particularly in relation to the cost. Sites in forested contexts in Wyoming are usually small in size and consequently are difficult to detect. Subsurface testing to search for unexposed sites in this context should be conducted only in the areas where the greatest disturbances are expected, including logging roads, landings, slash burial pits, and other places where the subsurface will be significantly disturbed. Grassland areas with low visibility are much more limited in areal extent. If the probability of finding a site in these contexts is high, subsurface testing should be conducted to search for buried sites.

For either context, shovel tests are the most common testing method. The interval between probes should take into consideration the expected site diameter and other factors discussed above.

B. Colluvial Deposits

Colluvial deposits along slopes and in draws are one of the least easy to predict contexts. The Carter Kerr-McGee site was on a ridgeslope in a colluvial deposit that ranged up to about 85 cm deep. It contained occupations dating from Goshen, Folsom, Agate Basin/Hell Gap, and Cody times. The Hawken site is in colluvium within an arroyo. Sometimes the unexcavated portion of the bison bone beds are exposed, and at other times, fill completely obscures the deposits. Locally, one portion of a slope may be eroded, while another contains accumulated deposits. Checking soil survey maps for expected soil depth in a survey parcel should be a required first step prior to conducting a survey. More detailed information about local and regional geomorphology is also needed. Effective testing strategies require regional geoarcheology contexts. A geoarcheology study would tell us the depth and nature of colluvial deposits, but not the probability of finding archeological sites in those deposits. For the latter, regional settlement pattern contexts are needed. In particular, we need to know the regional site density and the locations of sites on the landscape. If the site densities in an area are low, the probability of finding a site in a colluvial deposit may also be low. If site densities

are high or sites are commonly located where the colluvial deposits are situated, subsurface testing to search for buried sites will be required.
Sites that are buried up to 50 cm below the surface often have some surface exposure if the landform is adequately dissected or eroded, or has blowouts. Where colluvial deposits are greater than 50 cm in depth, the survey archeologist must consult the BLM Field Office archeologist for the need to conduct subsurface testing to search for buried sites. The size of colluvial deposits often is not extensive and testing the deposits would not be cost prohibitive. The archeologist should test the full depth of the Holocene and terminal Pleistocene deposits if possible. For deposits greater than 50 cm in depth, 1 x 1 meter test units are most appropriate. Larger units may be needed for deeper deposits. For deposits greater than 1 meter in depth, other methods besides hand testing may be used, such as mechanized testing or remote sensing.

C. Alluvial Deposits

Alluvial deposits are common along creeks and rivers in Wyoming. Both flowing streams and intermittent drainages contain extensive alluvium. More geomorphological studies are available for helping predict the locations and nature of alluvial deposits than for colluvium, but not enough synthesis is available to design subsurface testing strategies. Regional geoarcheological contexts must also cover alluvial deposits.

Prior to beginning field work, the archeologist should study topographic maps and soil survey maps to determine where alluvial deposits are expected. The probability of archeological sites being located in alluvium is high. Subsurface testing should be conducted in all alluvial deposits which lack exposed manifestations of sites, unless bank or other exposures provide an adequate area of inspection and the width of the alluvial deposits is small.

Because of the depth of most alluvial deposits, hand excavated test units will generally be 1 x 1 meter or larger units. The tests should extend to the full depth of the Holocene and terminal Pleistocene deposits if feasible. The spacing between hand excavation units shall be based on the expected site size and density for the local area. The research design for the testing shall be submitted with the request for a testing permit.

Alternative methods for testing alluvial deposits can also be developed in the research design, such as remote sensing or mechanized testing. Most mechanized testing methods do a poor job of locating buried sites. Backhoe trenches generally obscure all but the most obvious cultural remains. A series of cores is an appropriate method for studying the geomorphology, but usually fails to find archeological sites.

Method 3: Mechanized Testing

The most common form of mechanized testing employs use of a backhoe. The backhoe can be a useful tool for conducting subsurface evaluations in deep soil situations, dunal and eolian contexts, and in areas lacking surface cultural material but where buried sites are suspected. The backhoe is useful when large surface areas are to be impacted such as well pads, plant sites, pipeline complexes.

Deposits such as large sand dunes, lee and falling dunes, other eolian deposits and deep alluvial or colluvial soils may be best suited for backhoe testing. An understanding of topography, and how topography affects soil buildup is necessary to effectively place test trenches where they may encounter buried deposits. Shallow soils should be excluded from backhoe testing, as less intrusive methods can probe these deposits.

A Backhoe Testing Plan is necessary and should include a project map depicting the landforms to be tested and where linear trenches will be excavated. The plan must outline methodology for evaluating any cultural materials identified. The plan must address the contingincy that if the objective of the testing is met by excavation of less that the total number of trenches proposed, the effort should be terminated. The plan must also address safety and reclamation measures. Only the area of direct effect, plus a reasonable buffer (25 to 50 ft. adjacent to larger development areas such as well pads) shall be subject to backhoe testing. Backhoe testing of linear projects like pipelines will be limited to the R/W width.

IV. Testing to develop data recovery plans.

Data recovery plans are developed with reference to specific research designs. Testing to develop a data recovery plan requires obtaining specific kinds of additional information. The nature of the site affects what kinds of archeological methods to specify in the plan. Does the site have floral or faunal remains, features, charcoal, lithic workshop debris, pollen, or phytolyths? The depth, thickness, and density of cultural deposits affects the amount of work required. It may be necessary to establish the locations and sizes of intact deposits, places where materials are most concentrated, or number and locations of features in order to determine the size and location of data recovery excavation units.

When approaching this level of testing, most sites should already have had sufficient data documented to evaluate them and assess that the undertaking will have an adverse effect on their National Register qualities. While these previously collected data may be sufficient to reach conclusions about eligibility and effect, they usually are not adequate to develop a specific data recovery plan and research design that state exactly which data will be collected from which areas and how they will answer the research questions. Further testing is usually needed to develop useful plans, and that level of testing may employ any of the methods identified above, depending on the project circumstances and site type(s).

Testing to develop an adequate data recovery plan must consider a number of factors, including:

1. The type(s) of site(s) under investigation;
2. The area(s) of potential effects within the site(s);
3. The research questions identified in the specific research design and relevant historic context;
4. The data needed to answer the questions;
5. The data recovery sample relative to total site area and the APE;
6. The ability of the identified sample to meet the goals of the plan; and

7. The manner by which data are documented in the field, analyzed, and reported in order to provide useful information that meets the goals of the plan.

Testing to develop data recovery plans will build on the information from evaluative testing and focus further efforts on areas where the National Register qualities, or significant information, are documented. Testing may proceed in the same sequence outlined for other testing programs, and terminate when sufficient data are collected. Bearing in mind the high cost of data recovery programs, the investigators should recognize that this effort will probably require much more detailed information acquired from fairly extensive test units in order to justify a valid, well defined data recovery. For example, probes or shovel tests may provide clues about the location and horizontal extent of buried cultural occupations, but controlled test units may be needed to acquire sufficient evidence to justify inclusion of the area in the data recovery plan.

In new sites that are identified through construction monitors or open trench inspections, where no surface evidence was originally identified and little information exists, testing will usually start with hand excavation of controlled test units to evaluate the exposed evidence. If the site is determined to be appropriate for further data recovery, additional testing must be conducted in undisturbed areas adjacent to the discovered evidence in the same sequence outlined for other testing programs. These discovery sites will probably require more data collection at this stage because no other information exists.

V. Site Testing Report Requirements

Inventory reports documenting site testing will contain the following information:

1. If site was not tested, state why testing was not necessary.

2. Site map showing location of tests in relation to exposed features, artifact concentrations, tools, datum, etc.; positive and negative test results must be indicated on the map.

3. A discussion of the testing strategy used with emphasis on why that particular strategy was employed.

4. A specific discussion of the results. This includes:

    a. Description of soil profiles from test units;

    b. Depth and thickness of sedimentary strata encountered;

    c. Sizes and depths of test units and why they were terminated;

    d. Total area tested and percentage of site tested;

e. Illustrated profiles and plan views from formal excavation units, and profiles of backhoe trenches;

f. Plan views and profiles of exposed cultural features (if applicable);

g. Photographs of excavated and profiled features, test units and trenches;

h. Discussion of special samples recovered and results of their analyses (radiocarbon, flotation, etc.);

i. Discussion of the relationship of the soil profile and cultural material;

j. Discussion and full report of the cultural materials recovered: their depth, densities and locations in the test units; the types of tools and debitage and their materials; bone identifications and descriptions; and description of any other evidence relevant to the cultural occupation (raw data may be presented in summary tabular format).

5. Conclusions and recommendations about site eligibility, effects and further work.

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Appendix C-2

Draft Framework for Compensatory Mitigation for and Monitoring of Unavoidable Impacts to Waters of the U.S.

DRAFT

FRAMEWORK FOR COMPENSATORY MITIGATION FOR AND MONITORING OF UNAVOIDABLE IMPACTS TO WATERS OF THE U.S.

Gateway West Transmission Line

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May 2011 updated December 2012

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ACRONYMS AND ABBREVIATIONS

BLM	Bureau of Land Management
BMP	Best Management Practice
CGP	Construction General Plan
Companies	Idaho Power and Rocky Mountain Power
CWA	Clean Water Act
DEIS	Draft Environmental Impact Statement
EPM	Environmental Protection Measure
EPC	Engineering, Procurement and Construction
GIS	Geographic Information Systems
HUC	Hydrologic Unit Code
IDEQ	Idaho Department of Environmental Quality
IDWR	Idaho Department of Water Resources
ILF	In-Lieu Fee Program
IRT	Interagency Review Team
IM	Instructional Memorandum
kV	Kilovolt
MW	Megawatt
NDEP	Nevada Department of Environmental Protection
NEPA	National Environmental Policy Act
NERC	North American Electric Reliability Corporation
NPDES	National Pollutant Discharge Elimination System
NTP	Notice To Proceed
O&M	Operations and Maintenance
POD	Plan of Development
Project	Gateway West Project
RMP	Rocky Mountain Power
ROD	Record of Decision
ROW	Right-of-Way
SPCC	Spill Prevention, Control, and Countermeasures Plan
SWPPP	Storm Water Pollution Prevention Plan
TMDL	Total Maximum Daily Load
USACE	U.S. Army Corps of Engineers
USEPA	U.S. Environmental Protection Agency
USFWS	U.S. Fish and Wildlife Service
USFS	U.S. Forest Service
USGS	U.S. Geologic Survey
WDEQ	Wyoming Department of Environmental Quality
WECC	Western Energy Coordinating Council
WWEC	West-Wide Energy Corridor

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1.0 INTRODUCTION

This *Compensatory Mitigation Plan for Unavoidable Impacts to Waters of the U.S.* presents the next step in the process that Rocky Mountain Power and Idaho Power (Companies) have undertaken for the mitigation and compensation of impacts to waters of the U.S. due to the construction and operation of the Gateway West Transmission Line Project (Project). That process was first presented in the *Aquatic Permitting Program* (Idaho Power Company and Rocky Mountain Power, 2010, incorporated by reference) that proposes a phased approach to aquatic permitting that is appropriate for a multi-state, 1,000 plus mile long transmission line. The Program was followed by a *Framework for Compensatory Mitigation for and Monitoring of Unavoidable Impacts to Waters of the U.S. (May 2011)* submitted by the Companies to the United States Army Corps of Engineers (USACE) and to the Bureau of Land Management (BLM).

This document describes the Companies' proposed approach for mitigating impacts to waters of the U.S. that would result from the proposed Project and is intended to satisfy the mitigation requirements of the USACE[1]. The overall objective is to ensure that there would be no net loss of function or area of waters of the U.S. resulting from construction and long-term operation and maintenance (O&M) of the Project. The Project's currently estimated permanent impacts to wetlands and riparian areas are approximately 23.8 acres for the Proposed Route. Temporary impacts to wetlands and riparian areas are currently estimated at 166.5 acres for the Proposed Route. Other alternative routes, suggested by agencies, local groups, and cooperating agencies, have different and sometimes larger impacts to wetlands and riparian areas. Impact estimates are based on indicative (desktop) design and would decrease as site-specific design engineering is completed.

Other federal (e.g., Bureau of Land Management [BLM]) or state (e.g., Idaho Department of Water Resources [IDWR], Department of Environmental Quality [IDEQ]) agencies may also require additional mitigation for impacts to aquatic resources beyond those required for the Clean Water Act (CWA) Section 404 permit from the USACE. As those requirements are specified, they would be incorporated into this Framework.

This Framework represents the commitment on the part of the Companies to work with the USACE and other agencies to develop a wetland mitigation program, and provides the structure for reaching agreement on the program. This Framework, together with the other proposed environmental protection measures, other plans, and project avoidance, minimization, and mitigation measures, comprises the Companies' commitment to wetland mitigation.

1.1 Project Description, Purpose, and Need

The Companies are proposing to construct and operate approximately 1,000 miles of new 230-kilovolt (kV), 345-kV, and 500-kV alternating current electric transmission system consisting of 10 segments between the Windstar Substation at Glenrock, Wyoming, and the Hemingway Substation approximately 30 miles southwest of Boise, Idaho (**Figures 1 and 2**). The proposed transmission line is needed to supplement existing transmission lines in order to relieve operating limitations, increase capacity, and improve reliability in the existing electric transmission grid, allowing for the delivery of up to 1,500 megawatts (MW) of additional energy for the Companies' larger service areas and to other interconnected systems. The Project includes ground disturbing activities associated with the construction of above-ground, single-circuit transmission lines involving structures, access roads, multi-purpose areas, fly yards,

[1] 40 CFR 230; Compensatory Mitigation for Losses of Aquatic Resources; Final Rule; April 10, 2008 Federal Register

pulling sites as well as associated substations, communication sites, and electrical supply distribution lines. The Project crosses private land and public lands administered by the BLM, the Bureau of Reclamation (BOR), U.S. Forest Service (Forest Service), and the states of Idaho and Wyoming.

A more detailed description of the Project is provided in the Plan of Development (POD) (Idaho Power Company and Rocky Mountain Power, 2012, incorporated herein by reference). The POD provides more detailed information on the purpose and need; proposed route; project-related facilities; details associated with construction, operation, and maintenance of the Project; and applicant-proposed environmental protection measures (EPMs). The POD is Appendix B of the Final Environmental Impact Statement (Final EIS). **Table 1** provides a brief summary of the segments and their lengths, both Proposed and BLM-Preferred, as presented in the EIS.

Table 1. Segment Summary

Segment #	Proposed Length	BLM-Preferred Length	Originating Substation	Terminating Substation
1W(a)	73.8	73.8	Windstar	Aeolus
1W(c)	73.6	73.6	Dave Johnston 230kV	Aeolus
2	91.9	91.9	Aeolus	Creston
3	45.9	45.9	Creston 1/	Anticline
3A	5.1	5.1	Anticline	Jim Bridger 345-kV
4	197.6	197.6	Anticline	Populus
5	55.7	73.3	Populus	Borah
6 2/	0.5	0.5	Borah	Midpoint
7	118.2	130.2	Populus	Cedar Hill
8	131.5	132.0	Midpoint	Hemingway
9	162.2	171.4	Cedar Hill	Hemingway
10	34.4	34.4	Cedar Hill	Midpoint
TOTALS	**990.4**	**1029.7**		

1/ Creston Substation has been eliminated from the Project but its location still serves as the terminus for Segments 2 and 3

/2 Segment 6 disturbance limited to substations and approaching structures only

The Companies have advised BLM that they intend to build this Project in phases. Phase 1 encompasses Segments 1 – 4, from Windstar near Glenrock, WY to Populus, near Downey, ID. Phase 2 encompasses the remaining segments. The Companies anticipate that construction will begin mid-2015 for Segments 1 – 4 and mid-2017 for the remaining segments. The Companies are still refining their schedule and may develop distinct work elements within Segments 1 – 4 for staged construction. The Companies will advise the USACE and the BLM of any further changes in schedule.

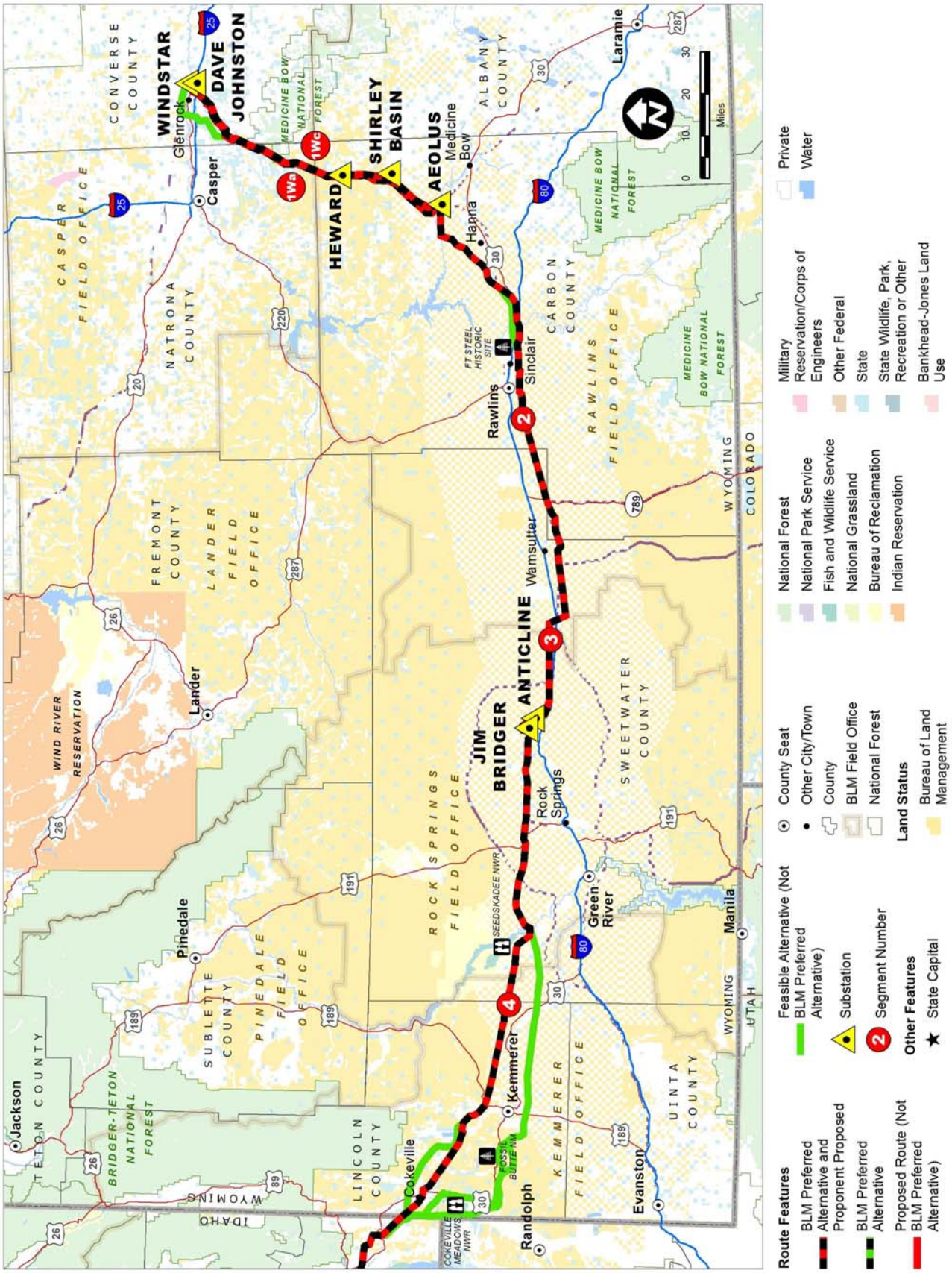

Figure 1. Wyoming Overview Map

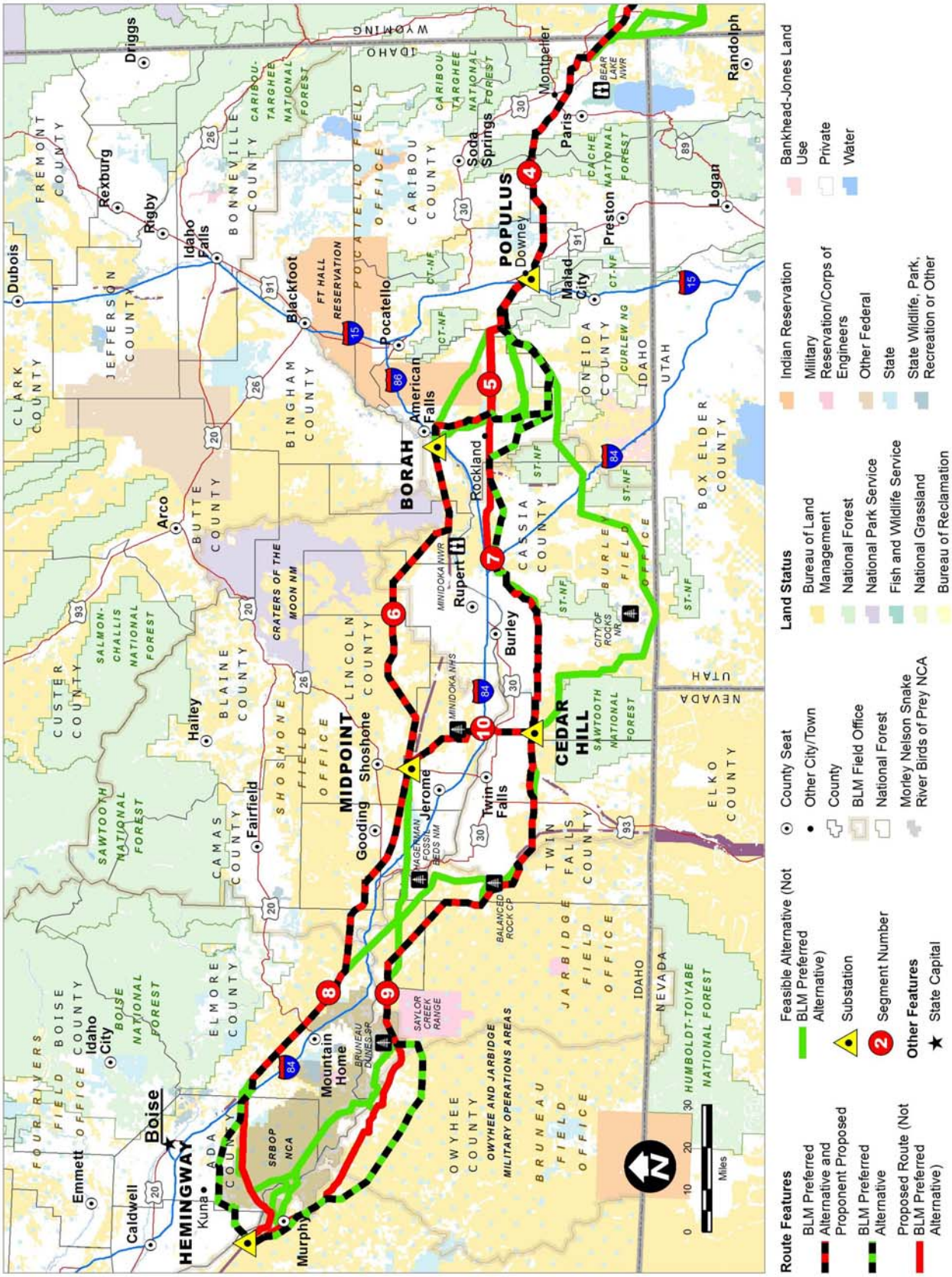

Figure 2. Idaho Overview Map

1.2 Plan Updates

This Plan is a living document. It has been updated to reflect the BLM-Preferred Alternative routes and now contains a more focused and site-specific proposal for compensatory mitigation for Segments 1 - 4. It will be updated to include the following when available and appropriate:

- Recommendations from the USACE, BLM, and state agencies on compensatory mitigation for impacts to waters of the U.S.;
- Other federal and state agency requirements when specified;
- Revised impact calculations based on avoidance and minimization measures, including changes in road or route alignment;
- Further details on the Companies' proposed compensatory mitigation for unavoidable impacts to waters of the U.S., including a package for Segments 5 – 10 when the construction for that phase is firmly scheduled.

2.0 AQUATIC RESOURCE REGULATIONS

Construction, operation, and maintenance of the Project includes ground disturbing activities that could impact aquatic resources. The following regulations and associated permits and authorizations would be required for the Project.

The Clean Water Act (CWA ((33 USC Section 1251 et seq., formerly the Federal Water Pollution Control Act of 1972)), was enacted with the intent of restoring and maintaining the chemical, physical, and biological integrity of the waters of the United States. The CWA requires states to set standards to protect, maintain, and restore water quality through the regulation of point source and certain non-point source discharges to surface water. The CWA also requires the USACE to administer permits for dredge or fill in waters of the U.S. Specific sections of the CWA that apply to the Project are described below, followed by a brief description of other aquatic resource permits required for the Project.

2.1 CWA - Section 303(d) List of Impaired Waters

Section 303(d) of the CWA establishes requirements for states and tribes to identify and prioritize water bodies that do not meet water quality standards through current technology-based regulations and controls. A water quality standard defines the designated beneficial uses of a water segment and the water quality criteria necessary to support those uses. Currently, both IDEQ and Wyoming Department of Environmental Quality (WDEQ) are required to conduct a comprehensive analysis of their respective state's water bodies every two years to determine if they meet water quality standards and develop a list of impaired or threatened waters that require Total Maximum Daily Load (TMDLs). The Project will implement measures to avoid and / or reduce the potential that it would contribute to the listing of a water body as impaired or be inconsistent with an adopted TMDL.

2.2 CWA - Section 130.7 Total Maximum Daily Load

Section 130.7 of the CWA requires states to establish TMDL programs, which are approved by the USEPA for streams and lakes that do not meet adopted water quality standards. A TMDL includes a quantitative assessment of water quality problems, contributing sources, and load reductions or control actions needed to restore and protect water bodies. A TMDL budget takes into account loads from point, nonpoint, and natural background sources. National Pollutant Discharge Elimination System (NPDES) permits address point-source pollution to surface

waters. Non-point source pollution is addressed by the application of Best Management Practices (BMPs), EPMs, and mitigation measures.

In compliance with the federal CWA, the IDEQ and the WDEQ have identified Section 303(d) water quality limited streams and lakes for development of TMDL criteria. TMDLs have been established for surface waters in Idaho. WDEQ has developed few TMDLS at this time as they are just beginning to implement the TMDL program; they are currently working on eight TMDLs. WDEQ projects that from the time of listing a waterbody as impaired, a TMDL for that waterbody would be developed within 1-5 years.

Stream segments within the Project Area that have been identified on 303(d) lists as impaired due to either sedimentation (sediment-impaired streams) or high temperatures (temperature-impaired streams), are listed in Attachment A for the Proposed Route. Note that there are no impaired streams in Segments 1 – 4.

2.3 CWA - Section 401 Water Quality Certification

Pursuant to section 401 of the federal CWA, any permit or license issued by a federal agency for an activity that may result in a discharge into waters of the U.S. requires certification from the state in which the discharge originates. This requirement allows each state to have input into federally approved projects that may affect its waters (rivers, streams, lakes, and wetlands) and to ensure the projects would comply with state water quality standards and any other water quality requirements of state law. State certification ensures that the project would not adversely impact impaired waters (waters that do not meet water quality standards) and that the project complies with applicable water quality improvement plans (TMDLs). The States must grant, deny, or waive section 401 certification for a project before a federal permit or license can be issued. The Departments of Environmental Quality for both Idaho and Wyoming must provide Section 401 Water Quality Certifications for the federally issued permits, including the 404 permits in both states and 402 permits issued in Wyoming. The USEPA has 402 jurisdiction in Idaho.

2.4 CWA - Section 402 NPDES Permits

The NPDES program requires facilities discharging from a point source into waters of the U.S. to obtain discharge permits. A point source is a conveyance such as a pipe, storm drain or other point. USEPA is responsible for permitting and enforcing all NPDES permits in Idaho. NPDES permits are administered by the WDEQ in Wyoming. Most storm water discharges are considered point sources and require coverage by a NPDES permit. The Project will need to obtain coverage under existing construction storm water programs in Idaho and Wyoming.

The NPDES Stormwater Program requires operators of construction sites that disturb one acre or more to obtain authorization to discharge stormwater under an NPDES construction stormwater permit. In Idaho and Wyoming, the EPA and WDEQ, respectively, have issued Construction General Permits (CGP). In order to be covered under the CGP, a site-specific Storm Water Pollution Prevention Plan (SWPPP) must be developed. The operator files a Notice of Intent which indicates the operator will comply with the CGP. The site operator must document the erosion, sediment, and pollution controls that will be used during construction and operation, inspect the controls periodically, and maintain the controls throughout the life of the project. If a TMDL has been established for the water body where a project will discharge, and the TMDL indicates that it applies to construction or stormwater discharges, then the SWPPP must be consistent with the requirements of that TMDL.

If hazardous materials, including fuels and lubricants, are used or stored in quantities exceeding certain quantities, a Spill Prevention, Control and Countermeasure (SPCC) Plan is required. Section 311(j)(1)(c) of the CWA contains the regulations preventing discharge of oil to surface water. The SWPPP also contains measures regarding the handling and storage of such materials.

2.5 CWA - Section 404 Waters of the U.S. Permits

Section 404 of the CWA authorizes the USACE to regulate the discharge of dredged or fill material to the waters of the United States. Discharges are authorized through issuance of nationwide permits or individual permits for specific activities. The USACE jurisdiction over non-tidal waters of the United States extends to the "ordinary high water mark provided the jurisdiction is not extended by the presence of wetlands" (33 CFR § 328.4); and under Title 40 CFR § 230.3 (s)(1). Waters of the United States are defined as:

> *"All waters which are currently used, or were used in the past, or may be susceptible to use in interstate or foreign commerce, including all waters which are subject to the ebb and flow of the tide, all interstate waters including interstate wetlands, all other waters such as intrastate lakes, rivers, streams (including intermittent streams), mudflats, sandflats, wetlands, sloughs, prairie potholes, wet meadows, playa lakes, or natural ponds, the use, degradation or destruction of which would affect interstate or foreign commerce, including such waters which are or could be used by interstate or foreign travelers for recreational or other purposes, or from which fish or shellfish are or could be taken and sold in interstate or foreign commerce, or which are used or could be used for industrial purposes by industries in interstate commerce; all impoundment of waters otherwise defined as waters of the United States interstate commerce, tributaries of waters identified in paragraphs 1-4 of this section, the territorial seas; and wetlands adjacent to waters."*

Many wetlands are protected under the CWA as waters of the U.S. and special aquatic sites. Wetlands are defined by the USACE based on the presence of wetland vegetation, wetland hydrology, and hydric soils. In addition, Executive Order 11990, Protection of Wetlands (42 Federal Register 26961), directs all federal agencies to minimize the destruction, loss, or degradation of wetlands, and to enhance the natural and beneficial values of wetlands. Federal regulation and management of wetlands follows a "no net loss" policy. Under Section 404, the USACE issues a number of nationwide permits for different types of activities that result in minimal individual and cumulative adverse effects on the aquatic environment and individual permits for larger and more complex impacts.

Nationwide permits. A nationwide permit is a general permit that authorizes a category of activities throughout the nation by streamlining the approval process for certain types of activities that have minimal impacts to aquatic resources. These permits are valid only if the conditions applicable to the permit are met. If the conditions cannot be met, a regional or individual permit would be required Section 404 Nationwide Permit 12 (77 *Federal Register* 10271-10272 February 2012) covers construction, maintenance, and repair of utility lines in all waters of the U.S. provided that there is no change in pre-construction contours. This nationwide permit also covers related facilities including substations, structure foundations, and roads; provided that these activities do not result in the loss of greater than 0.5 acre of waters of the U.S. Nationwide Permit 12 also authorizes temporary structures, fill, and work necessary to conduct utility line activities as long as (1) appropriate measures are taken to maintain normal downstream flows and minimize flooding, (2) structures and fill consist of materials that would

not be eroded by high flows, and (3) structures and fill are removed in their entirety and the affected areas are returned to pre-construction elevations and re-vegetated as appropriate upon project completion. Impact limitations for Nationwide Permit 12 cover all disturbances at a single crossing of a wetland or stream, or multiple crossings of the same wetland or stream.

Any permanent impacts over 0.1 acre to waters of the U.S. require full mitigation, regardless of permit type. Permanent loss of more than 0.5 acres of a water of the U.S. requires an individual (General) permit rather than coverage under a Nationwide Permit.

Nationwide Permits contain general conditions that address potential impacts to the environment that could result from dredge or fill of waters of the U.S., such as adverse effects to soils, migration and spawning habitats, endangered species, or historic properties. Supplemental documentation may be required as part of a pre-construction notification package (e.g. plant and wildlife survey reports, cultural resource survey reports) to support compliance with the general conditions of the Nationwide Permit. Compliance with the National Historic Preservation Act and the Endangered Species Act is being addressed in the Environmental Impact Statement currently being prepared for this Project.

Individual Permits. Individual Permits are issued following a full public notice interest review of an individual application for a Department of Army permit. A public notice is distributed to all known interested persons. After evaluating all comments and information received, a final decision on the application is made. The final decision is made on a case-by-case evaluation and is generally based on the outcome of the public notice process and a determination of project benefits versus detriments (losses).

2.6 Rivers & Harbors Act of 1899, Sections 9 and 10

Section 9 of the Rivers and Harbors Appropriation Act of 1899 (33 U.S.C. 403; Chapter 425, March 3, 1899; 30 Stat. 1151) (Act) prohibits the construction of any bridge, dam, dike or causeway over or in navigable waterways of the U.S. without Congressional approval. Administration of section 9 has been delegated to the Coast Guard. Structures authorized by State legislatures may be built if the affected navigable waters are totally within one State, provided that the plan is approved by the Chief of Engineers and the Secretary of Army (33 U.S.C. 401).

Under section 10 of the Act, the building of any wharfs, piers, jetties, and other structures is prohibited without Congressional approval, and excavation or fill within navigable waters requires the approval of the Chief of Engineers. Authority of the USACE to issue permits for the discharge of refuse matter into or affecting navigable waters under section 13 of the 1899 Act (33 U.S.C. 407; 30 Stat. 1152) was modified by title IV of P.L. 92-500, October 18, 1972, the Federal Water Pollution Control Act Amendments of 1972 (33 U.S.C. 1341-1345; 86 Stat. 877), as amended, which established the National Pollutant Discharge Elimination System Permits.

The Fish and Wildlife Coordination Act (16 U.S.C. 661-667e; 48 Stat. 401), as amended, provides authority for the U.S. Fish and Wildlife Service (USFWS) to review and comment on the effects on fish and wildlife of activities proposed to be undertaken or permitted by the USACE. USFWS concerns include contaminated sediments associated with dredge or fill projects in navigable waters.

2.7 Other Federal Permits and Programs

Executive Order 11988 requires federal agencies to avoid to the extent possible the long- and short-term adverse impacts associated with the occupancy and modification of floodplains and

to avoid direct and indirect support of floodplain development wherever there is a practicable alternative. In accomplishing this objective, "each agency shall provide leadership and shall take action to reduce the risk of flood loss, to minimize the impact of floods on human safety, health, and welfare, and to restore and preserve the natural and beneficial values served by flood plains in carrying out its responsibilities."

2.8 Idaho Permit

An Idaho State Stream Alteration Permit must be obtained prior to altering any stream as defined by Idaho Administrative Code (37.03.07) which includes "… to obstruct, diminish, destroy, alter, modify, or change the natural existing shape of the channel or to change the direction of flow of water of any stream channel within or below the mean high water mark."

3.0 AVOIDANCE AND ENVIRONMENTAL PROTECTION MEASURES

To the greatest extent possible, the Project has been sited and designed to avoid and minimize, impacts to waters of the U.S., as well as other resources, including historic properties listed on the National Historic Register and species listed under the Endangered Species Act. This section describes the siting process for the Project, the environmental protection measures that the Companies will implement, and the road standards used by the Companies to minimize impacts where waterbodies must be crossed.

3.1 Siting

The identification of an initial proposed route for the Project was constrained by the purpose and need for the project, which includes interconnecting substations between Glenrock, Wyoming and the Hemingway Substation located southwest of Boise, Idaho.

The Companies originally proposed a series of segments, each of which must begin and end at a particular substation to meet the segments and Project's purpose and need. The route between substations was identified with the intent of avoiding as many environmental constraints as possible. Since the initial siting effort in 2008, reported in the Siting Study (IPC and RMP 2008, updated 2009), the Companies have been in continuous conversation with agencies and landowners and have substantially modified their initial Proposed Route to avoid important resources as knowledge of them became available, to accommodate landowner routing preferences where feasible, and to conform to a changing series of regulations and policies, including but not limited to the Wyoming Governor's Executive Order (2011-005) declaring sage-grouse core areas and permissible corridors through those areas in which transmission lines are to be sited.

Agencies and other groups identified concerns with the route proposed by the Companies and proposed partial or complete alternatives for that segment to the BLM. The BLM considered those alternatives and included them in the DEIS where the BLM determined that they met the BLM's purpose and need. The Companies worked closely with advocates of the alternative routes and conducted siting activities within the generally proposed alternative corridor to avoid known resource impacts where feasible, using the same tools and techniques used to determine the Proposed Route.

3.2 BLM Preferred Alternative

In December 2012, the BLM identified its modified Preferred Alternative for each of the segments. For Segments 1 – 4, the BLM identified the Proposed (as modified through

consultation) as the Preferred Route (with the exception of the adoption of 4G, a route proposed by the Forest Service in the Caribou-Targhee National Forest in Idaho). The routes for these four segments also represent the State of Wyoming's Preferred Route.

For Segments 6 and 10 in Idaho, the BLM also identified the Proposed as the Preferred. For Segment 5, the BLM identified Alternative 5B as its Preferred, which includes about 33 miles of the proposed route to the east and west of that alternative. For Segment 7, the BLM identified Alternatives 7B (to avoid the Deep Creek mountains), 7C (to avoid an important historic trail area, 7D, and 7G, in addition to the needed portions of the originally Proposed Route to connect the two substations. For Segment 8, the BLM identified the Proposed Route for most of its length, but preferring Alternative 8B, which avoids the Morey Nelson Snake River Birds of Prey NCA. For Segment 9, the BLM identified the Proposed Route from Cedar Hill to just south of Bruneau Dunes State Park, then selected 9E as modified, which dips south into the Owyhee foothills to avoid most of the NCA.

3.3 Environmental Protection Measures and Plans

The Companies have produced a series of framework plans and have submitted them to the BLM for inclusion as part of the Project Description for consideration during the NEPA analysis. Those plans were submitted as appendices to the Companies' POD and are incorporated herein by reference. The Companies plan that their Engineer, Procure, and Construct (EPC) contractor(s) will provide the site-specific detail needed for these plans after final engineering is complete and impacts are known. The EPC contractors will be responsible for submitting the final Plans to the BLM, USFS, and other appropriate agencies with regulatory authority for review and approval before receiving a Notice to Proceed (NTP) to begin construction. Many of these plans provide protection to wetlands either directly or indirectly. As submitted in 2012, the Plans reference the comprehensive list of Environmental Protection Measures (EPMs) found in Appendix Z of the POD. When finalized, relevant measures will be moved into each of the plans. Plans that are currently proposed and that will provide protection to waters of the U.S. are listed in Table 2, below:

Table 2. Framework Plans Contributing to the Protection of Waters of the US

Framework Plan	Preliminary Plan or Environmental Protection Measures
The Environmental Compliance Management Plan will be the primary guidance document that states how the Companies will uphold, document, and manage compliance with the right-of-way grant, the POD, landowner agreements, and all federal, state, and local permits. It is a centralized Project environmental compliance reference and is thereby intended to facilitate environmental compliance across the entire Project.	Included in POD as Appendix C.
The Framework Reclamation Plan will include site-specific construction mitigation, reclamation, and re-vegetation measures for each land management area crossed by the ROW within BLM-managed and National Forest lands. It will combine the Companies' BMPs with site-specific mitigation developed in consultation with agencies. Some measures will apply Project-wide, while others will be designed for specific areas.	Included in POD as Appendix D. Environmental protection measures (EPMs) provided in Appendix Z.
The Framework Noxious Weed Plan will provide methods to control the potential occurrence/infestation of noxious and invasive weeds during and following construction of the Project. The purpose of the plan is to ensure noxious weeds are identified and controlled during the construction of project facilities and all federal, state, county, and other local requirements are satisfied.	Included in POD as Appendix E. EPMs provided in Appendix Z.
The Framework Stormwater Pollution Prevention Plan will include measures for temporary and permanent erosion and sediment control that will be used during construction, operation, and maintenance of the transmission line and ancillary facilities.	Included in POD as Appendix F. EPMs provided in Appendix Z.
The Framework Spill Prevention, Containment, and Countermeasures Plan will include measures for spill prevention practices, requirements for refueling and equipment operation near waterbodies, procedures for emergency response, and incident reporting, and training requirements.	Included in POD as Appendix G. EPMs provided in Appendix Z.
The Framework Plant and Wildlife Conservation Measures Plan will present the measures proposed by the Companies for avoidance and minimization of impacts to special status plant and wildlife species as related to construction activities for the Project and outlines specific conservation measures to be implemented in the event that state or Federally listed species, BLM sensitive species, or Forest Service special status species or their habitats are identified within or adjacent to the Project right-of-way.	Included in POD as Appendix H. EPMs provided in Appendix Z. Compensatory mitigation plan for impacts to sage-grouse habitat submitted to the BLM under separate cover.
The Framework Stream, Wetland, Well, and Spring Protection Plan will provide measures to protect these resources from potential impacts during construction, operation, and maintenance activities. The goals of this plan are to control Project-related erosion and sedimentation into streams and wetlands and minimize disturbance and erosion of streambeds and banks and protect springs and wells in the Project area from impacts due to blasting and hazardous materials contamination.	Included in POD as Appendix I. EPMs provided in Appendix Z.
The Framework Blasting Plan will outline methods to prevent adverse impacts to human health and safety, property, and the environment that could potentially result from the use of explosives during project construction and mitigate risks and potential impacts associated with blasting procedures that may be required for construction. The plan will provide all levels of construction personnel project-specific information concerning blasting procedures, including the safe use and storage of explosives.	Included in POD as Appendix M. EPMs provided in Appendix Z.
The Framework Hazardous Material Management Plan will reduce the risks associated with the use, storage, transportation, production, and disposal of hazardous materials (including hazardous substances and wastes). This Plan will identify Project-specific mitigation measures and other specific stipulations and methods to address spill prevention, response, and cleanup procedures for the Project.	Included in POD as Appendix P. EPMs provided in Appendix Z.
The Framework Operations, Maintenance, and Emergency Response Plan will include measures to be employed while conducting routine, corrective, and emergency operations and maintenance activities. Measures identified will be in compliance with applicable state and federal laws and policies; ensure consistency across and within federal jurisdictions; and allow for the Companies to access the transmission line and ancillary facilities in a timely, cost effective, and safe manner.	Included in POD as Appendix R. EPMs provided in Appendix Z.

3.4 Road and Waterbody Crossing Standards

The Companies plan to use existing roads and waterbody (e.g., channel, river, and streambed) crossings where practicable and feasible. The Companies conducted siting and design engineering to avoid new crossings of perennial streams, rivers, or artificial water conveyances such as canals, where possible. New roads have been planned to cross waterbodies only where avoidance is infeasible and largely where waterbodies are ephemeral or intermittent.

New road construction, which includes widening existing roads where necessary, would occur between existing roads to the ROW and each individual facility, including all transmission structures within the ROW. Repair or maintenance of existing roads was not included in impact calculations if the original road prism is not proposed to be enlarged. Examples of road crossing and culvert standards are found in Attachment B. The specific loads and the stream conditions will dictate the type of stream crossing.

Where constructing a new waterbody crossing is impractical or would require a bridge or a very large (>48-inch-diameter) culvert, existing waterbody crossings will be used and access redesigned to avoid a new crossing. All canals and ditches will be avoided by using existing crossings, as would all large perennial bodies like rivers. The following waterbody crossings would be used where avoidance is not possible:

- **Type 1—Drive through:** Crossing of a channel with only minimal vegetation removal and no cut or fill needed. This is typical for much of the low-precipitation sagebrush country with rolling topography and streams that rarely flow with water.
- **Type 2—Ford:** Crossing of a channel that includes grading and stabilization. Stream banks and approaches will be graded to allow vehicle passage and stabilized with rock or other erosion control devices. The stream bed will in some areas be reinforced with coarse rock material, where approved by the land-management agency, to support vehicle loads, prevent erosion and minimize sedimentation into the waterway. The rock will be installed in the stream bed such that it would not raise the level of the streambed, thus allowing continued movement of water, fish, and debris. A ford crossing results in an average disturbance profile of 25 feet wide (along the waterbody) and 50 feet long (along the roadway) for 1,000 square feet or 0.02 acre at each crossing. Disturbance amount is estimated based on need to get equipment into the riparian area to build the 14-foot-wide travelway and protect it from erosion by adding armoring.
- **Type 3—Culvert:** Crossing of a waterbody that includes installation of a culvert and a stable road surface established over the culvert for vehicle passage. Culverts are designed and installed under the guidance of a qualified engineer who, in collaboration with a hydrologist and aquatic biologist where required by the land management agency, recommends placement locations; culvert gradient, height, and sizing; and proper construction methods. Culvert design considers bedload and debris size and volume. The disturbance footprint for culvert installation is estimated to be 50 feet wide (along the waterbody) and 150 feet long (along the road) for 7,500 square feet or 0.17 acre at each crossing. Ground-disturbing activities will comply with Agency-approved BMPs. Construction will occur during periods of low water or normal flow. The use of equipment in streams will be minimized. All culverts will be designed and installed to meet desired riparian conditions, as identified in applicable unit management plans. Culvert slope will not exceed stream gradient. Typically,

culverts are partially buried in the streambed to maintain streambed material in the culvert. Sandbags or other non-erosive material are placed around the culverts to prevent scour or water flow around the culvert. Adjacent sediment control structures such as silt fences, check dams, rock armoring, or riprap may be necessary to prevent erosion or sedimentation. Stream banks and approaches may be stabilized with rock or other erosion control devices. Culverts will be inspected and maintained annually for the life of the Project (estimated at 50 years or longer) for proper operation and to protect water quality.

The performance of low water stream crossings will be monitored for the life of the access road, and maintained or repaired as necessary to protect water quality.

The Companies have a standard set of BMPs in their road and construction manuals (examples in Attachment B) and will use additional BMPs where required by land-managing agencies during construction.

For waterbodies that are primarily dry, the crossing options include Type 1 through 3, and require agency consultation for crossings on Federal lands. For 303(d) listed streams with sediment as the primary contaminant of concern, additional erosion and sediment control devices (e.g., turbidity curtains) will be used if flow is present during installation of in-stream structures and other BMPs are not effective.

3.5 Wetlands Crossings with Access Roads

During construction and for routine and emergency operations, access across wetlands to each structure location is necessary. Two methods of minimizing impact to wetlands were evaluated but are not proposed:

- Constructing at-grade roads with geotextiles and road materials which allow for water through-flow. This type of road would be below water during certain times of the year which would make locating the roads difficult, and the depth of the water over the drivable surface may make travel over the submerged road surface impractical or not feasible.
- Constructing using helicopters in wetlands. The single-circuit 500kV towers will be designed such that they can be erected by helicopter if needed. In each case, the use of ground based vehicles is still required, thus not eliminating the need for an access road to each structure to complete construction or during inspections and live-line maintenance activities.

A combination of methods for road construction in wetlands is proposed:

- Construction of permanent above-grade roads that will be utilized during construction, operation, and maintenance. This will typically entail placement of permanent fill in wetlands such that the travel surface would be higher in elevation than the ordinary high water level. The construction of above-grade access roads allows for the use of the types of equipment needed for construction, operation, maintenance; and for expedited access for emergency restoration throughout the year.
- Construction or use of temporary roads during construction, followed by restoration of the disturbance after construction. The Companies only propose this approach in the area of extensive wetlands in the Bear River Plain, in part because it is feasible to store the amount of matting needed for emergency

access in the immediate vicinity. Smaller wetland and riparian area crossings will be constructed using permanent crossing methods because it would not be feasible to provide for temporary crossing materials for scattered crossings along a thousand miles of the Project. Where feasible in areas where temporary roads will be used, construction equipment may travel overland if the area is dry. If construction occurs when the ground is solidly frozen, ice roads could be constructed.

If construction must occur when the ground is wet, temporary matting materials will be installed to allow access for heavy vehicles and equipment. The mats typically come in the form of heavy timbers bolted together. They are often used over a geotextile that is applied directly over the wet soil surface. When construction use is complete, the mats are removed and the geotextile taken up. This approach will be used where feasible, since it further reduces vegetation damage and compaction and reduces the time for full restoration. Mats spread the concentrated axle loads from equipment over a much larger surface area than the tires alone, thereby reducing the bearing pressure on fragile soils. Matting has a limited service life before replacement is required and must be stored for maintenance and emergency restoration activities. Table 3 shows an estimate of miles of temporary roads for construction access in the three largest wetland areas crossed by the Proposed Route. Though exact locations may change during final design, the Companies are committed to using temporary crossings wherever feasible in these three important wetland areas. They are able to make this commitment only in the Bear River area because they already have storage facilities near enough to the area where mats would be used to allow for quick deployment in case of emergency.

Table 3. Access Road Wetland Crossings in the Bear River Plain

Location	Segment 4 Mileposts	Approximate Miles			
		Total New or Improved Access Roads	New or Improved Access Road in Uplands	Proposed for Permanent Fill in Wetlands	Proposed for Temporary Access in Wetlands
Cokeville	123.0-126.8	2.2	1.3	0.0	0.9
Bear River	133.5-134.5	1.8	0.0	0.0	1.8
Montpielier	148.0-153.6	7.9	5.1	0.0	2.8

Where temporary road access is utilized, road areas will be rehabilitated after construction. Any geotextiles and matting used will be removed and wetland vegetation allowed to re-vegetate. No permanent roads will be available for routine operations inspections or repairs. Operational inspections and repairs will be scheduled for times when the ground is dry or frozen and access will be overland along the road alignment by ATV. Emergency repairs requiring heavy equipment will access the damaged area using matting if necessary. After emergency repairs are completed, matting will be removed and the wetland areas allowed to restore naturally.

4.0 PRELIMINARY ESTIMATION OF IMPACTS TO WATERS OF THE U.S.

Preliminary impacts were identified through detailed remote sensing and image interpretation with ground-truthing. More detailed mapping, field verifications, and jurisdictional determinations have been conducted on Segments 1 – 4 where access was granted in 2012. Additional field

work will be needed in 2013 to complete delineations, functions and values evaluations, and impact calculations for Segments 1 – 4 once engineering design is further refined.

4.1 Methods

Waters of the U.S. were identified through multi-spectral imagery, National Wetland Inventory datasets, existing GIS hydric soil layers, and field verification. Details of this survey are presented in the *Revised Habitat Baseline Technical Report* (Tetra Tech 2010). Survey data were used to produce a baseline map of current vegetation that is consistent across ownership, can be used to route the project outside of sensitive resources to the extent practical, and provides the basis for impact assessment in the EIS.

The results of the remote sensing effort were validated using data obtained during systematic field sampling. Before mapping commenced, biologists field-sampled vegetation communities on accessible public lands. Field plot data were not made available to the crews that conducted field mapping or remote sensing interpretation; they were used as an independent way to check the accuracy of the field and remote sensing efforts. The same biologists that collected field data also participated in the mapping and quality control effort; therefore, they were familiar with the vegetation communities within the Project area.

To determine the acreage of impacts that could potentially occur to waters of the U.S., the Project's construction and operational footprints were overlain onto the wet areas that were mapped through remote sensing. Areas where the Project's construction or operational footprints were co-located with mapped waters of the U.S. were considered to be a direct impact and the acreage of impact was calculated using GIS.

4.1.1 Indicative vs. Design Engineering

Initial estimates of construction and operational footprints were determined through indicative engineering design. Indicative engineering used an initial project route and road layout that was developed based on aerial images, topographic maps, and road and environmental constraint data. The majority of roads and structure locations would be adjusted following field review and an iterative process that assesses potential siting constraints and opportunities. For example, Project components would be sited outside of wetlands during the final siting process whenever possible as a standard engineering practice. In addition, the impacts resulting from tower pads were estimated by applying a standard width buffer to each indicative tower location for a construction work area. During engineering design, structure locations would be refined to further avoid and minimize impacts to waters of the U.S. where feasible. Preliminary engineering design has been completed for Segments 1 – 4, and wetland delineations conducted in 2012 and 2013 have and will rely on that design for determining impacts for the purposes of the 404 permit application. Preliminary engineering design for Segments 5 – 10 will be conducted when state and local as well as federal permits are in place.

4.2 Impacts to Water of the U.S.

The Project comprises critical infrastructure for the Companies and the western U.S. electrical grid. Limiting the potential for, and duration of, unplanned outages, and planning for the use of live line maintenance techniques to minimize the requirement for any outages, is an important part of the design, construction, and O&M requirements for the Project. Because of the need to operate this line almost continuously and to avoid unplanned outages, permanent access to the line and structures is a critical component of the project. The Companies propose to use permanent fill to construct above-grade service roads in waters of the U.S. except in the Bear River Plain as explained in Section 3.5, above. This provides the most flexibility for construction and O&M activities and expedited access for emergency restoration throughout the year.

Service and access roads account for the majority of unavoidable impacts to waters of the U.S. for this Project. Required vegetation management for the safe O&M of the line also contributes to wetland impacts.

Where avoidance through engineering design was not possible, impacts are being minimized where feasible through relocation or redesign of project features. For example, impacts have been minimized by reducing desired vegetation management areas and road width to the minimum needed for safe operation and compliance with regulatory requirements. Permanent and temporary direct and indirect impacts to waters of the U.S. that would result from construction and O&M activities are similar in nature but tend to vary in extent. Removal of vegetation and the introduction of fill material to waters of the U.S. could directly alter their ability to serve as wildlife habitat; their ability to trap sediment and nutrients; and their ability to moderate flood flow or facilitate surface water flow. This could also result in indirect impacts such as increased water and soil temperatures and/or alteration of species composition (which can also change the function) within these areas. Any blasting that may occur within or adjacent to a waters of the U.S. could fracture the bedrock and alter the hydrology of a perched water table and potentially lead to drier conditions that impair re-vegetation efforts. Withdrawal of water for use during construction may temporarily impact waters of the U.S. by reducing the water input that they would normally receive.

Service road maintenance and vegetation management could result in minor impacts to wetlands or riparian areas. Vehicle traffic in wetlands and riparian areas has the potential to permanently alter soil characteristics and drainage patterns unless proper precautions are taken. Indirect impacts during maintenance may include compaction of soils, alteration of drainage patterns, erosion, and sedimentation. Erosion control and sedimentation runoff measures such as water bars, culverts, sediment basins, or perimeter control would be installed as required to minimize erosion.

Although some Project-related disturbances to vegetation would be temporary and associated with construction activities, long-term impacts would occur in forested wetlands because of ongoing vegetation management and the time it takes for re-vegetation efforts to mature. Construction impacts in forested wetlands and forested riparian areas would generally involve a conversion to a different wetland type (i.e., a change to shrub or herbaceous type), rather than a loss of wetland or riparian acreage. The Companies would not actively restore forested wetlands because of the potential for trees to interfere with the transmission line. It is likely that recovery would be fairly rapid in herbaceous and shrub wetlands, and construction in these types is not likely to cause a conversion to a different wetland type.

5.0 MITIGATION FRAMEWORK

The USACE recognizes three mechanisms for providing compensatory mitigation for unavoidable permanent impacts to waters of the U.S. Temporarily impacted areas would be restored to pre-disturbance conditions and are not included in the Framework. Listed in order from most favorable (preferred by the USACE) to least favorable, these include mitigation banks, in-lieu fee programs, and permittee-responsible compensatory mitigation. Both mitigation banks and in-lieu fee (ILF) programs involve off-site compensation activities that are conducted by a mitigation bank or an in-lieu fee program sponsor. Permittee-responsible mitigation is the most traditional form of compensation and continues to represent the majority of compensation acreage provided each year (USACE 2008a). As its name implies, the permittee retains responsibility for ensuring that required compensation activities are completed and successful. Compensatory projects can be located at or adjacent to the impact site (i.e., on-site

compensatory mitigation) or at another location generally within the same watershed as the impact site (i.e., offsite compensatory mitigation).

Project impacts would be largely confined to the requested ROW for the transmission line and roads, occur in multiple locations, and would generally be less than 0.5 acre at each site. The Companies are presently considering multiple locations on Company-owned property where wetland enhancement, restoration, or creation may be feasible.

5.1 Mitigation Banks

The USACE prefers the use of mitigation banks, but has indicated that the Project does not fall within the service areas of any approved and operational mitigation banks (Johnson 2010; Joyner 2010). In addition, it is unlikely any approved mitigation banks would be operational within service areas appropriate for this Project on a schedule that would allow for timely Project permitting. The Companies are not considering creating a mitigation bank as part of this Project and recognize that creating a bank may take more time than the construction schedule would allow.

5.2 In-lieu Fee Program

The Companies will consider the use of ILF programs to mitigate unavoidable impacts to waters of the U.S. if programs are available and applicable. Second in preference for meeting compensatory mitigation requirements, ILF programs have been developed in some parts of the U.S., but few are present in the project area. Two examples of how the in lieu fee program was executed in Idaho are found in Attachment C. The Companies are also considering a combination of ILF and permittee-responsible mitigation including a combination of restoration, enhancement of existing wetlands, and creation of new wetlands. In most locations, the Companies do not have qualified staff to provide long-term maintenance and monitoring for permittee-responsible projects and plan to engage a responsible third party through binding contracts to provide these services. The Companies also consider that a conservation easement instrument will be appropriate to commit the portions of those properties belonging to the Companies to “in perpetuity” wetland uses.

The creation of a conservation easement and an “in perpetuity” agreement with the conservation easement manager to also provide maintenance and monitoring for the project provides the equivalent of an in-lieu fee situation. Suitable sponsors for an ILF program include national non-governmental organizations such as The Nature Conservancy, Ducks Unlimited, Trout Unlimited, or the Rocky Mountain Elk Foundation, state organizations such as the Wyoming Wildlife Federation, or local land trusts.

The proposed framework and resulting mitigation would provide mitigation at a larger scale, with a greater likelihood of long-term success, and an opportunity to provide increased functions over smaller, isolated on-site mitigation. The proposed ILF mitigation provides a more robust approach to ensure long-term success of mitigation goals, i.e., full replacement of lost wetland functions and values.

5.2.1 ILF Mitigation Parameters

Whether the Companies are able to use existing ILF programs or they must develop one or more in partnership with an organization capable of managing it, the following information would be provided for each separate ILF sponsor:

- A description of the sponsor’s experience and qualifications with respect to providing compensatory mitigation;

- Potential site locations, baseline conditions at the sites, and general plans that indicate what kind of wetland compensation can be provided (*e.g.*, wetland type, restoration or other activity, proposed time line, *etc.*);
- Geographic service area;
- Accounting procedures;
- Methods for determining fees and credits including the allocation of advance credits;
- A schedule for conducting the activities that would provide compensatory mitigation or a requirement that projects would be started within a specified time after impacts occur;
- Performance standards for determining ecological success of mitigation sites;
- Reporting protocols and monitoring plans;
- Financial, technical and legal provisions for remedial actions and responsibilities (*e.g.*, contingency fund);
- Financial, technical and legal provisions for long-term management and maintenance (*e.g.*, trust);
- Provision that clearly states that the legal responsibility for ensuring mitigation terms are fully satisfied rests with the organization accepting the fee; and
- Review by the Interagency Review Team (IRT) as established by the district engineer in accordance with 40 CFR part 230, and public review and comment.

Attachment D contains proposed language for an ILF instrument.

5.3 Permittee Responsible Mitigation

The Companies may use permittee responsible mitigation by itself or in combination with an ILF program. While the USACE guidance (FR Vol. 65, No. 216; Nov 7, 2000) states a preference for on-site and in-kind mitigation, the Companies would propose mitigation that would likely result in off-site mitigation that includes in-kind and out-of-kind activities either near the impact site or in the same watershed/HUC unit. The Companies are not likely to propose on-site mitigation because of the need to access structures and associated facilities over the life of the project. The comprehensive mitigation plan that would be developed for permittee responsible mitigation would include the following:

Objectives—This section would discuss:

- The resource type(s) and amounts that would be provided by the mitigation project;
- The method of compensation (i.e., restoration, establishment, enhancement, and/or preservation); and
- The manner in which the resource functions of the mitigation project would address the needs of the watershed, ecoregion, physiographic province, or other geographic area of interest.

Site Selection—This section would discuss the factors considered during the site selection process, such as:

- Needs of affected watersheds;
- On-site alternatives (where applicable); and

- The practicability of accomplishing an ecologically self-sustaining aquatic resource at mitigation project site.

Site Protection Instrument — This section would describe measures that would be used to ensure the long-term protection of the mitigation project site; including legal arrangements and instruments, as well as site ownership.

Baseline Data—This section would discuss or include:

- Historic and existing plant communities of the proposed mitigation site and the impact site(s);
- Historic and existing hydrology of the proposed mitigation site and the impact site(s);
- Soil conditions of the proposed mitigation site and the impact site(s);
- Map(s) showing the locations of the impact and mitigation site(s) or the geographic coordinates for those site(s); and
- Other site characteristics appropriate to the type of resource proposed as compensation, including delineation.

Mitigation Ratios—This section would describe the number of acres of mitigation wetlands to be preserved/created/enhanced based on determined mitigation ratios and total impact acres of the Project.

Monitoring—This section would include the following:

- A description of parameters to be monitored in order to determine if the mitigation project is on track to meet performance standards, or if adaptive management is needed;
- A schedule for monitoring and reporting to the responsible agency; and
- A description of the length of the monitoring period and responsible party (minimum of 5 years and until success criteria or ecological performance standards are met).

Financial Assurances—This section would describe the financial assurances in-place and how these assurances are sufficient to ensure a high level of confidence that the mitigation project would be successfully completed, in accordance with its performance standards. The USACE may require additional information as necessary to determine the appropriateness, feasibility, and practicability of the mitigation project.

Ecological Performance Standards—This section would describe the ecologically-based standards that would be used to determine whether the mitigation project is achieving its objectives.

5.3.1 Compensatory Mitigation Sub-plans

The following sub-plans would also be included as part of the Comprehensive Mitigation Plan:

1. **Work Plan**—This plan would describe the following:
    - Geographic boundaries of the mitigation area(s) (including watershed size);

- Construction methods, timing, and sequence;
- Source(s) of water, including connections to existing waters and uplands;
- Methods for establishing the desired plant community;
- Plans to control invasive plant species;
- Proposed grading plan, including elevations and slopes of the substrate including plan-form geometry, channel form, and design discharge;
- Soil management measures; and
- Erosion control measures.

2. **Maintenance Plan**—This plan would include a description and schedule for the maintenance requirements to support continued viability of the resource once initial construction is completed.
3. **Long-Term Management Plan**—This plan would include a description of how the mitigation project would be managed after performance standards have been achieved in order to ensure the long-term sustainability of the resource, including long-term financing mechanisms and the party responsible for long-term management.
4. **Adaptive Management Plan**—This plan would include a description of how the mitigation plan would be revised and implemented if changes arise. This plan would also identify the party or parties responsible for implementing adaptive management measures.

5.4 Location of Required Mitigation and Known Mitigation Opportunities

Previous discussion with the USACE have indicated that offsite compensatory mitigation, if employed, must be located in the watershed in which the disturbance has taken place and that the watersheds must be 6th order Hydrologic Unit Code (HUC) or smaller. **Figure 3** identifies the 6th order HUC boundaries crossed by the project. **Table 4** lists the potential impacts from operation and maintenance in wetland and riparian areas by 6th order HUC.

Table 4. Acres of Wetland and Riparian Impacts by 6th Order HUC across the Project

6th Order HUC Name	6th Order HUC Number	Acres of Wetland Impacts	Acres of Riparian Impacts	Total
North Platte	101800	5.3	5.8	11.1
Upper Green	140401	0.7	1.3	2.0
Great Divide Closed Basin	140402	0.2	0.2	0.4
White-Yampa	140500	0.0	0.0	0.0
Upper Bear	160101	0.6	3.3	3.9
Lower Bear	160102	1.3	2.2	3.5
Upper Snake	170402	0.1	0.5	0.6
Middle Snake-Boise	170501	0.7	1.6	2.3
Totals		8.9	14.9	23.8

Note: Acreages within the table are inclusive of un-vegetated waters that are associated with wetland or riparian areas. Un-vegetated waters such as intermittent drainages are not included in this table.

Initial estimates by Proposed and BLM Preferred Routes for Segments 1 – 4 are found in **Table 5**, below.

Table 5. Estimated Impacts to Riparian and Wetland Areas (from FEIS, BLM 2011)

Proposed and BLM Preferred Route	Acres Permanent Impact		
	Riparian	**Wetland**	**Total**
Segment 1W(a)	2.3	2.4	**4.7**
Segment 1W(c)	2.2	2.7	**4.9**
Segment 2	1.4	0.2	**1.6**
Segments 3 and 3A	0.4	0.2	**0.6**
Segment 4	6.6	2.5	**9.1**
Totals	**12.9**	**8.0**	**20.9**

In the event ILF options do not meet the needs of the Companies, are not available when the Companies require them, or cannot be developed within these watersheds, the Companies would be responsible for the mitigation as described in Section 5.3. To identify land suitable for mitigation, priority would be given to sites exhibiting the following:

- Stable, predictable water table;
- Beneficial habitat features, such as, “in-kind” community design and connectivity to other protected or important habitats;
- Proximity to other wetlands;
- Existing functional features (e.g. flood detention);
- Imminent risk for destruction or degradation from development;
- Sufficient land area to provide ecologically meaningful upland buffer; and
- Previously degraded wetlands.

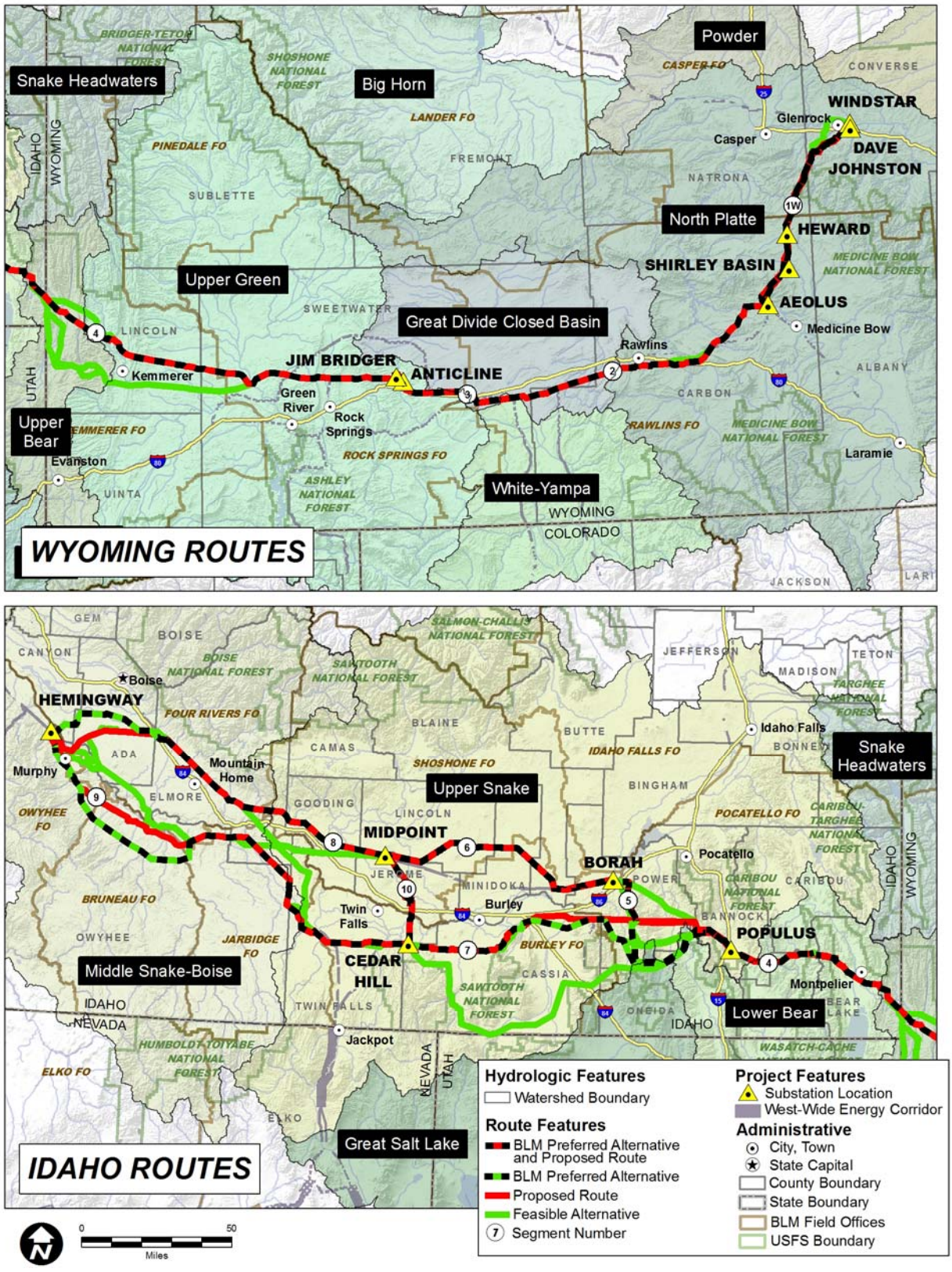

Figure 3. 6th Order HUCs across the Project

Priorities for preservation or protection of existing wetlands are as follows:

- Contiguous with existing preserved or important habitat areas;
- Adjacent to areas with low potential for development;
- Probability for sustained ecological biodiversity value for foreseeable future (low probability for future development);
- Connects two or more preserved or important habitat areas; and
- Contains important wetlands—significant in maintaining water quality, stream flow, and aquatic habitat in a contiguous or downstream watercourse, contains habitat, or has the potential for creation of habitat, for sensitive wildlife.

5.5 Site-Specific Compensatory Mitigation Planning

5.5.1 Bear River Plain

PacifiCorp Energy (affiliated with RMP) owns several large parcels of land west of Montpelier, ID, as part of the Bear River Hydroelectric Project (**Figure 4**). Relicensed for 30 years in 2003, the Bear River Project is subject to a Settlement Agreement. The Settlement Agreement and new license require the provision of recreational enhancements, instream flows to benefit aquatic resources, and various funds to conserve and benefit natural resources near the project. Therefore, PacifiCorp Energy has dedicated staff and resources that already manage various natural resources projects in the vicinity of the Gateway West Project. One of the properties owned by PacifiCorp and leased for meadow hay and grazing operations to a local rancher, is found on Ovid Creek, to the west of the main Bear River but within the larger Bear River Plain.

The property was purchased in the 1980s to allow PacifiCorp to better control the flooding in the Bear River Plain that occurred during very high runoff periods. Ovid Creek, from which PacifiCorp owns irrigation water rights, runs adjacent to and through the parcel. The parcel is flood irrigated every spring/summer using those rights. Water is conveyed through ditches and by manipulation of water levels at the Bern Dam control structure. The lessee manages irrigation to produce one or two cuttings of hay. During the fall and winter months, the parcel is used to graze and winter cattle.

Through PacifiCorp's Hydro Resources Management group, PacifiCorp approved a Property Transaction Notice and Approval Form in late 2010 to allow a portion of this property to be transitioned from its current land use to use as a site for wetland restoration and enhancement. As part of its commitment to develop this portion of the property as a wetland mitigation site to compensate for unavoidable adverse impacts to waters of the US within the Bear River drainage, the Companies have begun the following activities:

- Install a series of piezometers across the parcel to periodically monitor shallow groundwater (December 2012);
- Research existing water rights owned by PacifiCorp to determine if any changes in beneficial use or location need to be recorded to assure a perpetual supply of water for the proposed wetland restoration project (December 2012);
- Conduct a detailed topographic survey of the parcel (one foot contour interval) to assist in the development of a mitigation site plan (March – May 2013);
- Conduct a wetland delineation on the parcel (May/June 2013); and
- Conduct a functions and values assessment of the parcel (May/June 2013).

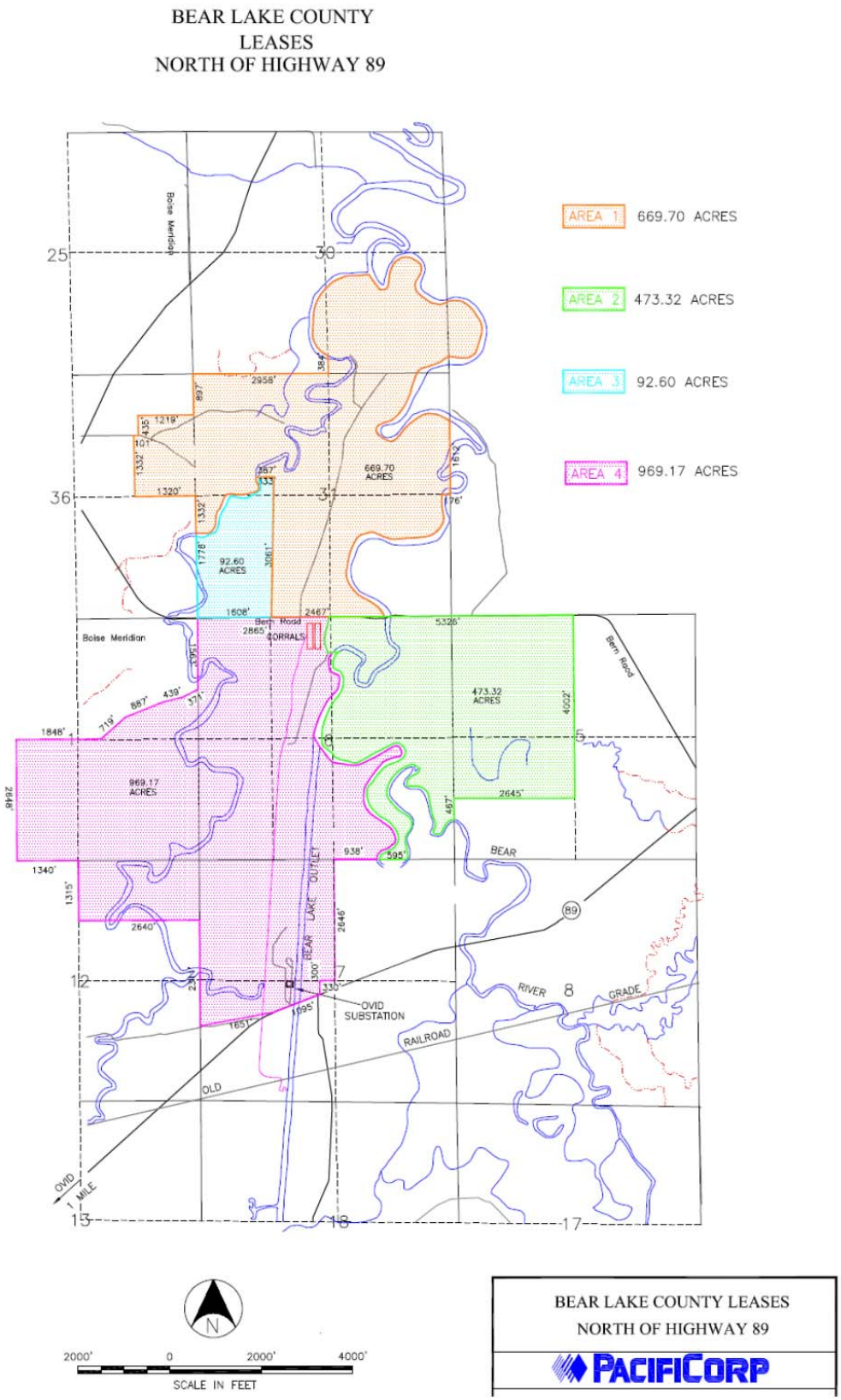

Figure 4. Bear Lake County Leases

The report that results from these activities will form the basis of a site-specific mitigation plan. That plan will also include a written commitment from PacifiCorp Hydro to monitor and maintain the restored wetland so that it continues to provide the established functions and values into the future.

5.5.2 Other Company-Owned Properties

There are properties owned by PacifiCorp near the Dave Johnston Power Plant and also near the Jim Bridger Power Plant in the vicinity of impacts from Segments 1 and 4, respectively. These properties include wetlands that have been degraded by open livestock grazing and other historic land uses. There are possibilities for improvements, restoration, enhancement, or creation of wetlands on these properties. Unlike the properties in the Bear River Plain, there is no equivalent in-house natural resource staff to manage long-term monitoring, reporting, and management. Pursuit of projects on these properties will be accompanied by long-term conservation easements or similar legal instruments with third parties to provide for such long-term services as well.

5.5.3 Riparian and Stream-related Wetland Crossings

The general conditions for Nationwide 12 indicate that compensatory mitigation at a minimum one-for-one ratio will be required for all wetland losses that exceed 1/10-acre and require pre-construction notification, unless the district engineer determines in writing that either some other form of mitigation would be more environmentally appropriate or the adverse effects of the proposed activity are minimal, and provides a project-specific waiver of this requirement. For wetland losses of 1/10-acre or less that require pre-construction notification, the district engineer may determine on a case-by-case basis that compensatory mitigation is required to ensure that the activity results in minimal adverse effects on the aquatic environment. The Companies plan to work with the district engineer to use the functions and values assessment of the wetlands and waters of the US permanently impacted by the Project to determine the needed size and number of offsite mitigation projects to fully compensate for losses based on the functions and values restored or contributed by each project.

Mitigating for loss of riparian habitat in an area such as Wyoming where open livestock grazing is common can be achieved in many locations simply by fencing out cattle from the riparian area and providing off-stream water by piping gravity-fed water to a trough or other watering device in an adjacent upland area. The Companies will search for a third-party sponsor to help it identify reaches of creeks and streams within each watershed impacted by the Project where willing landowners may be found and where such fencing activities could substantially improve the riparian conditions, particularly streams listed under 303d as having impaired water quality.

Where there is landowner interest, the Companies will enter into an agreement with the third-party sponsor, similar to the in-lieu fee program draft found as Attachment D to fund the project once land-use permits on public and private lands are in place, with the intent of executing the mitigation in 2015, just prior to construction. Those landowner agreements will include a means of financing ongoing fence and watering system maintenance and may include some form of conservation easement, held by the third-party sponsor, that will ensure the ability to conduct in-perpetuity management.

6.0 CONCLUSION

The Companies have sited and designed the Project to avoid Waters of the US, including wetlands, to the greatest extent feasible. The BLM and other permitting agencies, not the

Companies, select the final route to be permitted. The Companies are therefore limited in their options for avoidance and minimization to the route, and often times to the specific roads, required by the permitting agencies.

Where feasible and within the constraints dictated by the BLM and other agencies' Preferred Route, the transmission structures, access roads, and ancillary facilities have been sited and designed to avoid water features including wetlands and wet creek crossings. Where not feasible to entirely avoid such crossings, the Companies have designed the road network to use existing crossings wherever feasible. The proposed crossings are the smallest possible impact given the need to safely and quickly access each structure in the event of a failure.

In one instance, the Companies have been willing to reduce their standard of a permanent above-grade road to each structure and facility to minimize permanent loss of wetlands. In the Bear River Plain, the Companies have nearby storage available for geotextiles, timber mats, and the equipment and resident staffing to place and remove such temporary road structures in an emergency if needed. In addition, in that area, routine maintenance can be conducted from ATVs during the dry season without permanent roads. These unusual conditions pertain only in this area and do not apply to the rest of the Project, where riparian or wetland crossings are isolated and far from any facility in an emergency.

All crossings of waters and wetlands have been designed and field-checked to avoid new crossings where feasible and to minimize the impact of proposed crossings where total avoidance is not possible. For example, crossings are routinely designed to cross as close to perpendicular to the water body as possible to minimize impacts.

Impacts from the Project to waters and wetlands have been avoided and minimized wherever feasible. The small remaining unavoidable impacts represent the least damaging practicable alternative for the safe and compliant construction and operation, including emergency access, for the Project. These remaining impacts will be fully compensated for as coordinated with, and ultimately approved by, the USACE.

7.0 REFERENCES

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ATTACHMENT A
WATERBODIES LISTED AS IMPAIRED ALONG THE PROPOSED ROUTE

Waterbodies Listed as Impaired along the Proposed Route

Waterbody Name	Segment	Mile-post	303d_List	TMDL List (Cat4a)	TMDL Citation*
Bear River - Idaho/Wyoming border to railroad bridge (T14N, R45E, Sec. 21)	Segment 4	139.9	Sediment		ID16010102BR001_05
Sheep Creek - source to mouth	Segment 4	144.0	Sediment		ID16010102BR008_02
Sheep Creek - source to mouth	Segment 4	144.9	Sediment		ID16010102BR008_02
Bear River -railroad bridge (T14N, R45E, Sec. 21) to Alexander Reservoir	Segment 4	148.2	Sediment		ID16010201BR002_02
Bear River -railroad bridge (T14N, R45E, Sec. 21) to Alexander Reservoir	Segment 4	148.7	Sediment		ID16010201BR002_02
Bear River -railroad bridge (T14N, R45E, Sec. 21) to Alexander Reservoir	Segment 4	149.1	Sediment		ID16010201BR002_02
Bear River -railroad bridge (T14N, R45E, Sec. 21) to Alexander Reservoir	Segment 4	149.8	Sediment		ID16010201BR002_02
Bear River -railroad bridge (T14N, R45E, Sec. 21) to Alexander Reservoir	Segment 4	152.9	Sediment		ID16010201BR002_02
Swan Lake Creek Complex	Segment 4	192.9	Sediment		ID16010202BR018_02b
Marsh Creek - source to mouth	Segment 4	195.7	Temperature	Sediment	ID17040208SK006_03a
Marsh Creek - source to mouth	Segment 4	200.0	Temperature	Sediment	ID17040208SK006_03
Marsh Creek - source to mouth	Segment 4	201.2	Temperature	Sediment	ID17040208SK006_03
Marsh Creek - source to mouth	Segment 5	5.2	Temperature	Sediment	ID17040208SK006_04a
Hawkins Creek - Hawkins Reservoir Dam to mouth	Segment 5	6.5		Sediment	ID17040208SK011_02
Hawkins Creek - Hawkins Reservoir Dam to mouth	Segment 5	7.6		Sediment	ID17040208SK011_02
Hawkins Creek - Hawkins Reservoir Dam to mouth	Segment 5	8.5		Sediment	ID17040208SK011_03
Hawkins Creek - source to Hawkins Reservoir	Segment 5	12.7		Sediment	ID17040208SK013_02
Hawkins Creek - source to Hawkins Reservoir	Segment 5	13.6		Sediment	ID17040208SK013_02a
Hawkins Creek - source to Hawkins Reservoir	Segment 5	14.9		Sediment	ID17040208SK013_02
Bannock Creek - source to American Falls Reservoir	Segment 5	23.1	Sediment		ID17040206SK002_02
Bannock Creek - source to American Falls Reservoir	Segment 5	23.4	Sediment		ID17040206SK002_03
Bannock Creek - source to American Falls Reservoir	Segment 5	25.8	Sediment		ID17040206SK002_02
Bannock Creek - source to American Falls Reservoir	Segment 5	26.7	Sediment		ID17040206SK002_02
West Fork Bannock Creek - source to mouth	Segment 5	27.8	Sediment		ID17040206SK008_02
West Fork Bannock Creek - source to mouth	Segment 5	29.5	Sediment		ID17040206SK008_02
West Fork Bannock Creek - source to mouth	Segment 5	29.6	Sediment		ID17040206SK008_02
West Fork Bannock Creek - source to mouth	Segment 5	30.7	Sediment		ID17040206SK008_02
East Fork Rock Creek - source to mouth	Segment 5	33.2		Sediment	ID17040209SK010_02

Waterbody Name	Segment	Mile-post	303d_List	TMDL List (Cat4a)	TMDL Citation*
East Fork Rock Creek - source to mouth	Segment 5	35.2		Sediment	ID17040209SK010_03
East Fork Rock Creek - source to mouth	Segment 5	36.0		Sediment	ID17040209SK010_02
East Fork Rock Creek - source to mouth	Segment 5	36.8		Sediment	ID17040209SK010_02
East Fork Rock Creek - source to mouth	Segment 5	37.4		Sediment	ID17040209SK010_02
Marsh Creek - source to mouth	Segment 7	4.8	Temperature	Sediment	ID17040208SK006_04a
Hawkins Creek - Hawkins Reservoir Dam to mouth	Segment 7	6.4		Sediment	ID17040208SK011_02
Hawkins Creek - Hawkins Reservoir Dam to mouth	Segment 7	7.4		Sediment	ID17040208SK011_02
Hawkins Creek - Hawkins Reservoir Dam to mouth	Segment 7	10.5		Sediment	ID17040208SK011_02
Hawkins Creek - Hawkins Reservoir Dam to mouth	Segment 7	11.2		Sediment	ID17040208SK011_02
Hawkins Creek - source to Hawkins Reservoir	Segment 7	13.2		Sediment	ID17040208SK013_02
Hawkins Creek - source to Hawkins Reservoir	Segment 7	13.5		Sediment	ID17040208SK013_02
Hawkins Creek - source to Hawkins Reservoir	Segment 7	13.9		Sediment	ID17040208SK013_02b
Hawkins Creek - source to Hawkins Reservoir	Segment 7	16.8		Sediment	ID17040208SK013_02b
Hawkins Creek - source to Hawkins Reservoir	Segment 7	17.4		Sediment	ID17040208SK013_02b
Bannock Creek - source to American Falls Reservoir	Segment 7	21.2	Sediment		ID17040206SK002_02
Bannock Creek - source to American Falls Reservoir	Segment 7	22.3	Sediment		ID17040206SK002_02
Bannock Creek - source to American Falls Reservoir	Segment 7	23.1	Sediment		ID17040206SK002_02
Bannock Creek - source to American Falls Reservoir	Segment 7	23.5	Sediment		ID17040206SK002_03
Bannock Creek - source to American Falls Reservoir	Segment 7	23.6	Sediment		ID17040206SK002_02
Bannock Creek - source to American Falls Reservoir	Segment 7	26.4	Sediment		ID17040206SK002_02
Bannock Creek - source to American Falls Reservoir	Segment 7	27.6	Sediment		ID17040206SK002_02
West Fork Bannock Creek - source to mouth	Segment 7	30.6	Sediment		ID17040206SK008_02
East Fork Rock Creek - source to mouth	Segment 7	33.5		Sediment	ID17040209SK010_02
East Fork Rock Creek - source to mouth	Segment 7	35.4		Sediment	ID17040209SK010_02
East Fork Rock Creek - source to mouth	Segment 7	35.7		Sediment	ID17040209SK010_02
East Fork Rock Creek - source to mouth	Segment 7	37.4		Sediment	ID17040209SK010_02
South Fork Rock Creek - source to mouth	Segment 7	40.8		Sediment	ID17040209SK009_04
Raft River - Heglar Canyon Creek to mouth	Segment 7	59.4		Sediment	ID17040210SK001_05
Unclassified Waters in CU 17040212	Segment 7	110.3		Sediment	ID17040212SK000_02

Waterbody Name	Segment	Mile-post	303d_List	TMDL List (Cat4a)	TMDL Citation*
Unclassified Waters in CU 17040212	Segment 7	111.0		Sediment	ID17040212SK000_02
Unclassified Waters in CU 17040212	Segment 7	111.3		Sediment	ID17040212SK000_02
Dry Creek - source to mouth	Segment 7	114.2	Temperature	Sediment	ID17040212SK022_03
Malad River - confluence of Black Canyon Creek and Big Wood River to mouth	Segment 8	19.2		Sediment	ID17040219SK001_06
Malad River - confluence of Black Canyon Creek and Big Wood River to mouth	Segment 8	19.4		Sediment	ID17040219SK001_06
Unclassified Waters in CU 17040212	Segment 8	29.6		Sediment	ID17040212SK000_02
Clover Creek - Pioneer Reservoir Dam to mouth	Segment 8	39.0	Temperature	Sediment	ID17040212SK034_04
Little Canyon Creek - source to mouth	Segment 8	47.7		Sediment	ID17050101SW012_03a
Little Canyon Creek - source to mouth	Segment 8	48.2		Sediment	ID17050101SW012_02
Cold Springs Creek - source to mouth	Segment 8	52.9		Sediment	ID17050101SW014_03
Indian Creek - source to Sugar Ave.(T03N, R02W, Sec. 15)	Segment 8	90.1	Sediment		ID17050114SW003_02
Indian Creek - source to Sugar Ave.(T03N, R02W, Sec. 15)	Segment 8	91.2	Sediment		ID17050114SW003_02
Indian Creek - source to Sugar Ave.(T03N, R02W, Sec. 15)	Segment 8	92.0	Sediment		ID17050114SW003_02
Indian Creek - source to Sugar Ave.(T03N, R02W, Sec. 15)	Segment 8	92.8	Sediment		ID17050114SW003_02
Indian Creek - source to Sugar Ave.(T03N, R02W, Sec. 15)	Segment 8	93.5	Sediment/ Temperature		ID17050114SW003_03
Indian Creek - source to Sugar Ave.(T03N, R02W, Sec. 15)	Segment 8	93.8	Sediment		ID17050114SW003_02
Indian Creek - source to Sugar Ave.(T03N, R02W, Sec. 15)	Segment 8	95.0	Sediment		ID17050114SW003_02
Indian Creek - source to Sugar Ave.(T03N, R02W, Sec. 15)	Segment 8	95.4	Sediment		ID17050114SW003_02
Indian Creek - source to Sugar Ave.(T03N, R02W, Sec. 15)	Segment 8	98.8	Sediment		ID17050114SW003_02
Indian Creek - source to Sugar Ave.(T03N, R02W, Sec. 15)	Segment 8	99.6	Sediment		ID17050114SW003_02
Indian Creek - source to Sugar Ave.(T03N, R02W, Sec. 15)	Segment 8	100.9	Sediment		ID17050114SW003_02
Indian Creek - source to Sugar Ave.(T03N, R02W, Sec. 15)	Segment 8	101.0	Sediment		ID17050114SW003_02
Indian Creek - source to Sugar Ave.(T03N, R02W, Sec. 15)	Segment 8	101.1	Sediment		ID17050114SW003_02
Indian Creek - source to Sugar Ave.(T03N, R02W, Sec. 15)	Segment 8	101.7	Sediment		ID17050114SW003_02
Indian Creek - source to Sugar Ave.(T03N, R02W, Sec. 15)	Segment 8	102.9	Sediment/ Temperature		ID17050114SW003_03
Indian Creek - source to Sugar Ave.(T03N, R02W, Sec. 15)	Segment 8	103.4	Sediment		ID17050114SW003_02
Indian Creek - source to Sugar Ave.(T03N, R02W, Sec. 15)	Segment 8	104.5	Sediment		ID17050114SW003_02

Waterbody Name	Segment	Mile-post	303d_List	TMDL List (Cat4a)	TMDL Citation*
Indian Creek - source to Sugar Ave.(T03N, R02W, Sec. 15)	Segment 8	105.6	Sediment		ID17050114SW003_02
Indian Creek - source to Sugar Ave.(T03N, R02W, Sec. 15)	Segment 8	106.3	Sediment		ID17050114SW003_02
Indian Creek - source to Sugar Ave.(T03N, R02W, Sec. 15)	Segment 8	107.1	Sediment		ID17050114SW003_02
Snake River - C.J. Strike Dam to river mile 425 (T02N, R04W, Sec. 02)	Segment 8	118.0	Temperature		ID17050103SW006_07b
Rock Creek - Fifth Fork Rock Creek to river mile 25 (T11S, R18E, Sec. 36)	Segment 9	2.3		Sediment	ID17040212SK016_04
McMullen Creek - source to mouth	Segment 9	3.8	Temperature	Sediment	ID17040212SK015_02
McMullen Creek - source to mouth	Segment 9	4.3	Temperature	Sediment	ID17040212SK015_02
McMullen Creek - source to mouth	Segment 9	5.5	Temperature	Sediment	ID17040212SK015_02
McMullen Creek - source to mouth	Segment 9	6.0	Temperature	Sediment	ID17040212SK015_02
McMullen Creek - source to mouth	Segment 9	6.1	Temperature	Sediment	ID17040212SK015_03
Cottonwood Creek - source to mouth	Segment 9	8.9		Sediment	ID17040212SK014_04
Cottonwood Creek - source to mouth	Segment 9	9.0		Sediment	ID17040212SK014_04
Salmon Falls Creek - Salmon Falls Creek Dam to Devil Creek	Segment 9	32.5		Temperature	ID17040213SK003_06
Devil Creek - source to mouth	Segment 9	37.2		Temperature	ID17040213SK002_04
Deadman Creek - source to mouth	Segment 9	48.5	Sediment		ID17050101SW008_02
Deadman Creek - source to mouth	Segment 9	49.0	Sediment		ID17050101SW008_02
Deadman Creek - source to mouth	Segment 9	49.5	Sediment		ID17050101SW008_02
Deadman Creek - source to mouth	Segment 9	51.4	Sediment		ID17050101SW008_03
Deadman Creek - source to mouth	Segment 9	51.7	Sediment		ID17050101SW008_02
Deadman Creek - source to mouth	Segment 9	53.1	Sediment		ID17050101SW008_02
Deadman Creek - source to mouth	Segment 9	61.3	Sediment		ID17050101SW008_02
Deadman Creek - source to mouth	Segment 9	62.6	Sediment		ID17050101SW008_02
Deadman Creek - source to mouth	Segment 9	72.2	Sediment		ID17050101SW008_02
Deadman Creek - source to mouth	Segment 9	76.5	Sediment		ID17050101SW008_03
Sailor Creek - source to mouth	Segment 9	82.1	Sediment		ID17050101SW006_04
Sailor Creek - source to mouth	Segment 9	82.7	Sediment		ID17050101SW006_02
Browns Creek - source to mouth	Segment 9	87.6	Sediment		ID17050101SW003_04
Sugar Valley Creek - source to mouth	Segment 9	104.5		Sediment	ID17050102SW008_04
Jacks Creek - confluence of Little and Big Jacks Creeks to C.J. Strike Reservoir	Segment 9	104.8	Temperature	Sediment	ID17050102SW002_05

Waterbody Name	Segment	Mile-post	303d_List	TMDL List (Cat4a)	TMDL Citation*
Birch Creek - source to mouth	Segment 9	126.8	Sediment		ID17050103SW021_03
Castle Creek - source to mouth	Segment 9	131.6		Sediment/ Temperature	ID17050103SW014_04
Sinker Creek - source to mouth	Segment 9	143.8		Sediment/ Temperature	ID17050103SW012_04
Snake River - Milner Dam to Twin Falls	Segment 10	23.5	Temperature	Sediment	ID17040212SK020_07
Unclassified Waters in CU 17040212	Segment 10	26.9		Sediment	ID17040212SK000_02
Unclassified Waters in CU 17040212	Segment 10	27.0		Sediment	ID17040212SK000_02
Unclassified Waters in CU 17040212	Segment 10	27.5		Sediment	ID17040212SK000_02
Unclassified Waters in CU 17040212	Segment 10	28.0		Sediment	ID17040212SK000_02
Unclassified Waters in CU 17040212	Segment 10	28.3		Sediment	ID17040212SK000_02
Unclassified Waters in CU 17040212	Segment 10	29.0		Sediment	ID17040212SK000_02
Unclassified Waters in CU 17040212	Segment 10	29.6		Sediment	ID17040212SK000_02

*From Idaho Department of Environmental Quality Working Principles and Policies for the 2008 Integrated (303[d]/305[b]) Report

Category 1 waters are attaining water quality standards and no uses are threatened.
Category 2 waters are attaining some designated uses, and no uses are threatened, but there is insufficient (or no) data and information available to determine if the remaining uses are attained or threatened.
Category 3 waters have insufficient data (or no data) and information to enable determining if designated uses are being attained.
Category 4 waters do not support (or threaten) a standard for one or more designated uses, but they do not require the development of a Total Maximum Daily Load (TMDL). There are three subcategories under Category 4:

- *Category 4a* waters have had a TMDL completed and approved by EPA.
- *Category 4b* waters have had pollution control requirements placed on them other than a TMDL—and these waters are reasonably expected to attain the water quality standard in the near future.
- *Category 4c* waters are those waters for which nonsupport of the water quality standard is not caused by a pollutant.

Category 5 waters do not meet (or threaten) applicable water quality standards for one or more designated uses by one or more pollutants. Category 5 water bodies make up the 303(d) list of impaired waters.

NOTE: No impaired waterbodies occur within the project in Wyoming.

ATTACHMENT B
ROAD AND CULVERT CROSSING EXAMPLES

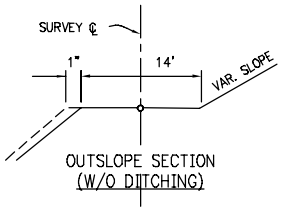
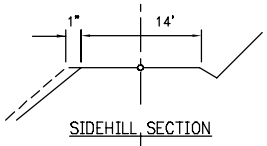
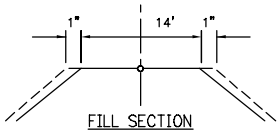
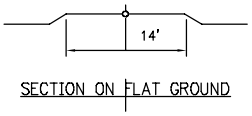
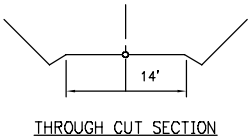
Roads—Construction

A. Scope

This standard provides information about constructing transmission line access. All road construction/improvements, fords, structure/equipment landings, and lay-down yards shall be held to a minimum. On level terrain, road construction may only require back-dragging a blade to remove brush to facilitate construction. In undulating or mountainous terrain the following standards shall apply.

B. Index

The index below provides a quick reference to detailed figures contained in this standard for road construction with varying slopes and conditions.

Referenced Road Cross Section	ACCESS ROAD SECTION
Figure 2	
Figure 3 Figure 4 Figure 5	
Figure 2	
Figure 2	
Figure 2	

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Standards Manager (G. Lyons): GS

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C. Planning

Before construction can take place. the road system must be planned and located properly. Poor planning or road location is associated with the following most common causes of road failure (Furniss et al. 1991):

- Improper placement and construction of road fills.
- Insufficient culvert sizes.
- Very steep road grades.
- Improper placement or sidecast of excess materials.
- Removal of slope support by undercutting.
- Altering drainage by interception and concentration of surface and subsurface flows.

A plan showing existing and new road locations shall be developed and shall be shown on the company's access road charts, plan maps, and transportation plan map. Road locations shall be marked on the ground by survey stakes and blue-and-white, striped flagging. GPS coordinates shall be obtained to define the road center–line. These coordinates shall be used to create the transportation plan map. Road information shall also be placed on transmission line plan maps.

In the event of conflict between the drawings and the staked locations, the latter shall take precedence and transportation plan maps and the transmission line plan maps shall be revised accordingly. Any culverts and gates listed in access road charts are required. Fords, drainage improvements, rip-rap fills and crushed rock requirements listed in the access road charts are anticipated; however, requirements will be determined based on actual site conditions encountered. If changes are made in the field, the maps shall be revised to show these changes.

Because roads are long-term features, their location must be carefully chosen to provide safe access, avoid long-term maintenance problems, reduce potential for degrading water quality, and minimize costs over the short and long term. For more information see the references in Section H.

D. Road Construction

Roads shall be constructed in a manner that will support equipment for construction of the transmission line and to provide access roads for line inspection and maintenance equipment after the line has been constructed.

All construction access roads on federally managed public lands are subject to approval prior to construction. Other federal, state, and local landowners may require approvals before road construction commences on their property. Where side slopes exceed 60 percent, a full bench cut will be reburied. No side-casting of material will be allowed in these areas; end-haul of material will be required to a designated location approved by the federal agency or other property owner. Close coordination with the federal agency will be required.

The detail drawings provided in this standard for completing cuts and fills, providing drainage, and installing culverts are furnished as guidelines for the road construction. Actual road construction cut slopes, fill slopes, drainage requirements, rip-rap, and

crushed rock needs will be determined during construction based on site conditions. Cut and fill quantities shall balance when possible, reducing the material removed or brought in for road completion.

During road construction, consideration shall be given to restoration required after construction completion, including re-vegetation, rock cover, and other drainage and erosion control factors. Clearing and grading shall be minimized to reduce the restoration requirements for disturbed areas. The visual impact of roads on the surrounding areas shall be considered at all times during construction.

Crushed rock shall be sound, hard, durable, angular, or sub-angular rock, suitable for road base courses. Crushed rock shall be well graded 2″ to 1/4″ size (3″ to minus-size skip-graded is a minimum acceptable substitute).

Rip Rap shall be sound, hard, durable, rock ranging in size from 2″ to 8″ as specified on drawings and as required by conditions.

Any improvements made, including spur roads, fords, bridges, equipment landings and lay-down areas, shall be held to a minimum. Following completion of the work, the removal of these improvements shall be at the discretion of company or its representative.

Roads shall be sufficiently wide, but not less than 14′ in width. The construction shall provide bench cuts, grading, filling, compaction, and ditches necessary to accommodate heavy construction equipment and other heavily loaded vehicles. Roads shall be installed in accordance with the figures in this standard.

All roads shall be constructed with a smooth, uniform surface and shall be outsloped where practical to provide drainage and minimum erosion. Avoid outsloped roads where they will direct runoff onto erodible fill, embankments, or where they would cause off-camber curves. Where outsloping is not practical, sufficient water dips, water bars, or ditching, shall be installed as shown in the Section E of this standard. See standards TA 503, *Roads—Water Bars and Water Dips* and TA 504, *Roads—Culvert Installation* for further detail on proper drainage.

Outsloping a road means building the road surface so that it is tilted outward 2-3 percent so water can run off the road surface (see Figure 1). Outsloping works well under the right conditions. The following conditions are favorable for use of outsloped roads with no ditch:

- Short back slopes.
- Terrain slope less than 20 percent.
- Road grades steeper than 3 percent.
- Seasonal road use.
- Light traffic.
- Fast re-vegetation of cut and fill slopes.

Outslopes become a problem if roads are not maintained when ruts begin to form. The ruts will then act as channels.

The following conditions are unfavorable for outsloping:

- Long back slopes.

- Terrain steeper than 20 percent.
- Steep, continuous road grade.
- Where ruts occur and allow water to concentrate and run along the road.
- Where winter hauling is required.

To minimize rutting and erosion of the right-of-way, road construction shall be completed during predominantly dry conditions. Fills, which will essentially consist of native soils, shall not be made when the moisture content of the soils will not permit adequate compaction.

As a minimum level of compaction, common fill shall be placed in 12″-thick, loose lifts and each lift compacted by walking or tracking in with a heavy dozer or rubber-tired (pneumatic) equipment. Each lift shall be compacted by at least four passes with the equipment.

In areas of dense vegetation, the surface organic material shall be stripped from the ground within the roadway and cut and fill areas. Stripping to a maximum depth of 6″ will be adequate unless otherwise directed by the company or its representative. Stripped and disturbed areas shall be compacted as specified above or as shown in the drawings or access road charts.

Personnel constructing the access road system shall be aware of the definition of a wetland such that potential wetlands may be identified before work is begun. In some cases where wetlands have been identified, road construction personnel shall comply with requirements as directed by the company or its representative.

Ditches, installed culverts, and/or installed surface drains to drain wet areas resulting from springs, seeps, or poor surface drainage may be required to construct the road. Drainage ditches shall be shallow, not to exceed 18″ in depth. The ditch bottom shall have a width of approximately 1′ and side slopes shall not exceed 1.5 to 1 (see Figure 5).

All earthwork and grading, cut and fill slopes, and other disturbed areas shall be re-vegetated with seed. Unless otherwise specified, the seed mix shall consist of 45 percent rye grass, 45 percent orchard or fescue grass, and 10 percent clover. The seed shall be applied at a minimum of 60 pounds per acre. At locations where the ground slope is greater than 10 percent, the seeds shall be covered with straw- or wood-fiber mulch applied at a rate of one ton of mulch per acre. The seed shall be spread in early fall when weather permits.

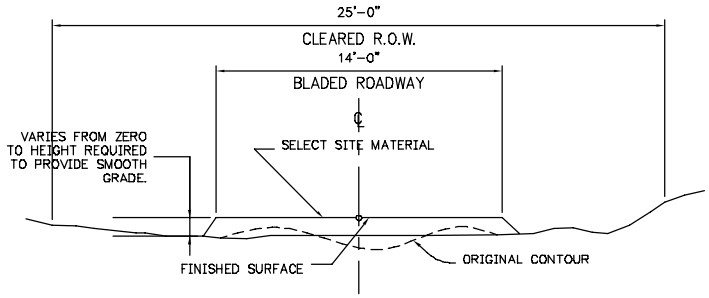
All phases of operation, including the construction of truck and tractor roads, shall be conducted to minimize as much as practical the damage to the soil and to prevent gullies and creation of other conditions conducive to soil erosion. Repair of all erosion damage shall be accomplished as soon as it occurs to prevent further loss of material into existing drainages. Cut slopes shall be stabilized. Care shall be taken to avoid creation of wet land conditions.

Crew movement on the right-of-way, including access routes, shall be limited so as to minimize damage to land or property. Crews shall endeavor to avoid marring the lands. Ruts and scars shall be obliterated, damage to ditches, terraces, roads and other features of the land shall be corrected, and the disturbed land beyond the access roads and structure landings shall be restored, as nearly as practical, to its original condition before final acceptance of the work.

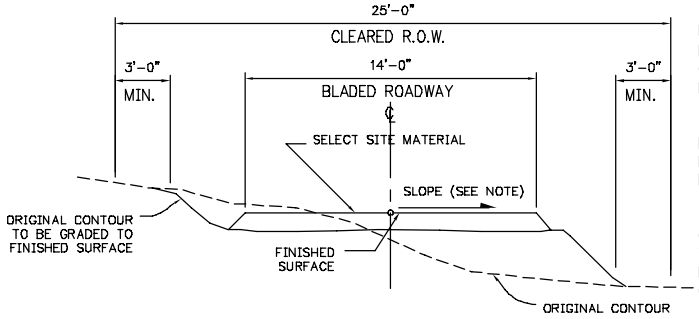
Erosion control measures shall be installed to minimize the transport of eroded sediments to streams and other waterways. Erosion control measures may include, but are not necessarily limited to, straw bales and silt fences.

E. Road Cross Sections

This section provides road cross sections, including required dimensions, cleared right-of-way width, and other information. See general road construction notes in Section G and references in Section H.

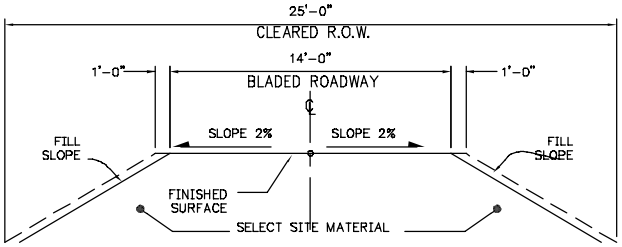


TYPICAL SECTION ON FLAT GROUND

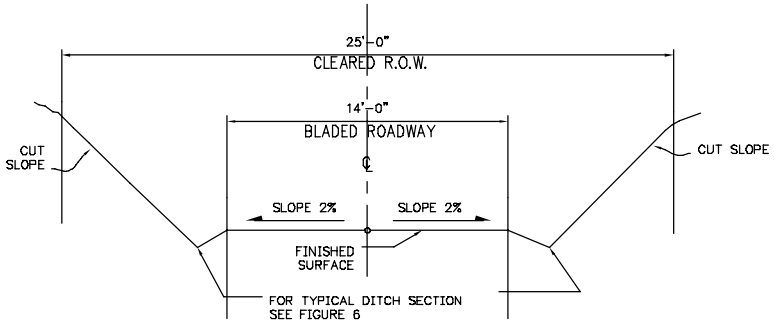


NOTE:
PROVIDE "OUTSLOPED" ROAD CROSS-SECTION, BY GRADING ROADS TO SLOPE IN THE SAME DIRECTION AS THE SURROUNDING TOPOGRAPHY. SO THAT THE UPHILL EDGE OF THE ROAD IS HIGHER THAN THE DOWNHILL EDGE. BESIDES ALLOWING RUNOFF TO EXIT THE ROADWAY IN AS SHORT A DISTANCE AS POSSIBLE. THIS ELIMINATES THE NEED FOR ROADSIDE DITCHES. PROVIDE A MINIMUM 2% OUTSLOPE ON ROADS WITH GRADES AS STEEP AS 15% ON STEEPER ROADS. PROVIDE 4% OUTSLOPE. AVOID OUTSLOPED ROADS WHERE THEY WOULD DIRECT RUNOFF ONTO ERODIBLE FILL, EMBANKMENTS OR WHERE THEY WOULD CAUSE OFF-CAMBER CURVES.

TYPICAL "OUTSLOPE" SECTION

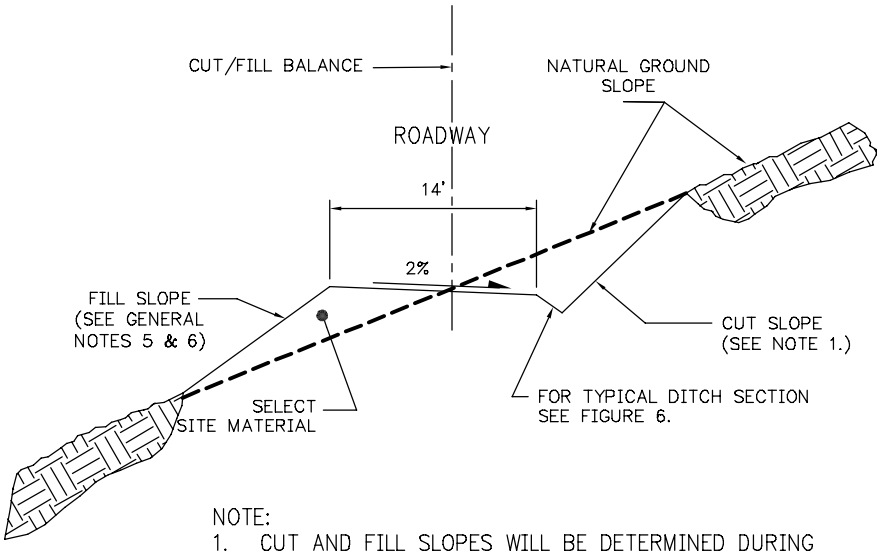


TYPICAL FILL SECTION



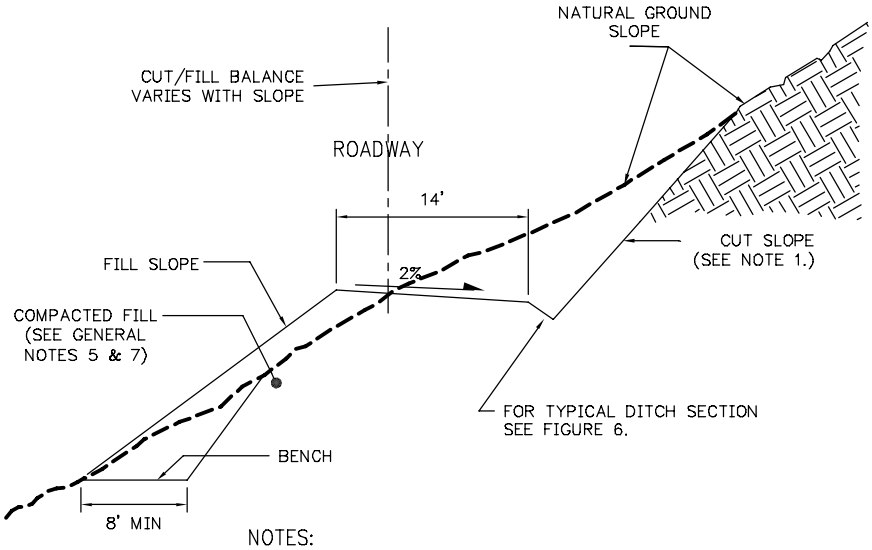
TYPICAL THROUGH CUT SECTION

Figure 1—Typical Road Sections for Different Terrains



NOTE:
1. CUT AND FILL SLOPES WILL BE DETERMINED DURING CONSTRUCTION, BASED ON SITE CONDITIONS ENCOUNTERED AND AS APPROVED BY COMPANY.

Figure 2—Typical Cut and Fill Insloped Road Section for Natural Side Slopes Less Than 30 Percent (15□)



NOTES:
1. CUT AND FILL SLOPES WILL BE DETERMINED DURING CONSTRUCTION, BASED ON SITE CONDITIONS ENCOUNTERED AND AS APPROVED BY COMPANY.

Figure 3—Typical Cut and Fill Insloped Road Section for Natural Side Slopes Greater Than 30 Percent (15□) and Less Than 60 Percent (30□).

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Standards Manager (G. Lyons): GS

Roads—Construction

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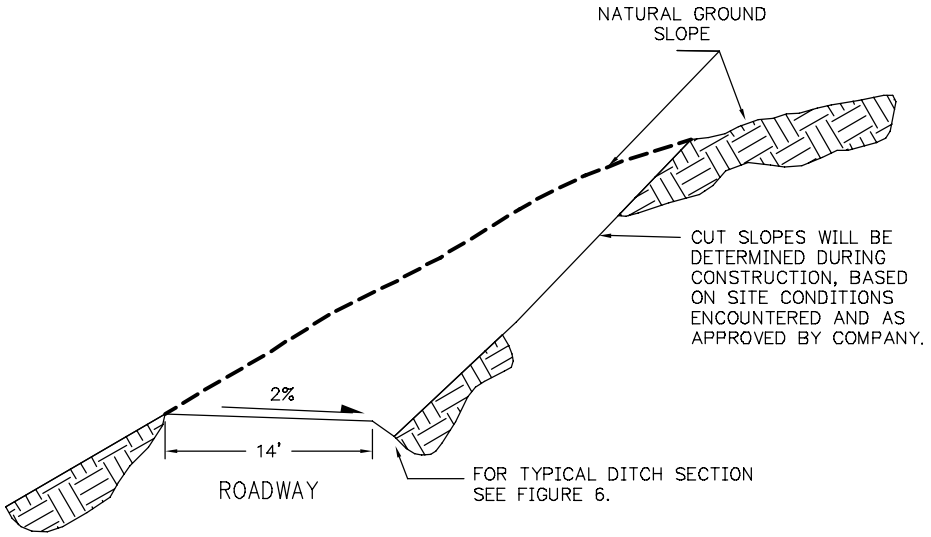

Figure 4—Typical Cut and Fill Section
for Natural Side Slopes Greater than 60 Percent (30□).

F. Typical Ditch Section

Typical ditch construction is depicted in Figure 6. Many of the road cross sections shown above use this ditch construction.

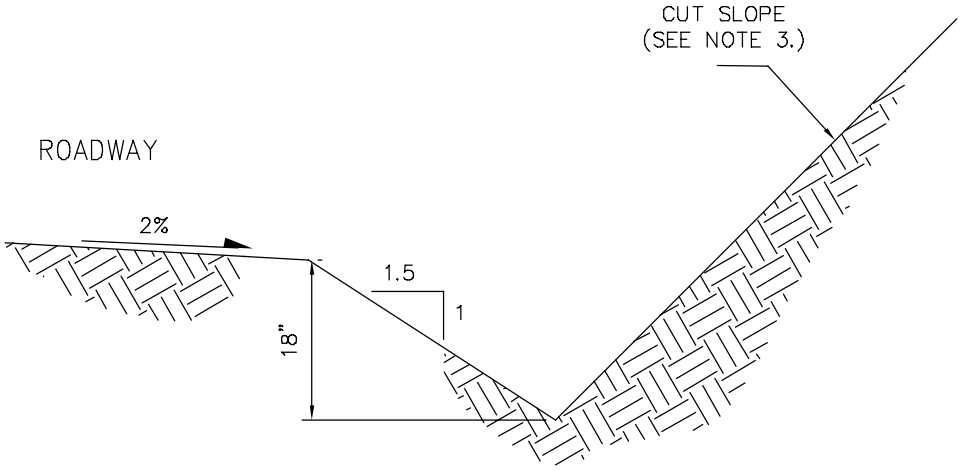

Figure 5—Ditch Section

Notes:

1. Slope the ditch so that it will drain; ditch shall have a minimum slope of 1 percent and not to exceed 3 percent.
2. Remove all soil, rock, and other material loosened by grading from ditch.
3. Cut slopes will be determined during construction based on site conditions and as approved by the company representative.

G. General Road Construction Notes

1. Roads shall follow natural contours as much as practical.
2. Maximum grade for roads shall be 10 percent. Grades up to 20 percent will be allowed for a distance of 1000 feet where unavoidable and approved by the company.
3. Radius of curves shall be 200 feet, with a minimum of 80 feet when approved by company. When curves are less than 200 feet, roadbed shall be widened as shown in Table 1.
4. Cut and fill slopes will be determined during construction based on site conditions encountered and as approved by the company.
5. Unless specified otherwise by the company, fill material shall consist of site material excavated from RG-1 cuts. Fill material shall have a maximum particle size of 12″.
6. Fills placed on side slopes of 30 percent or less shall be placed in nominal 9″ lifts and compacted by walking in with at least four passes of earthwork equipment.
7. Fills placed on side slopes greater than 30 percent shall be placed in nominal 12″-thick lifts and compacted to at least 90 percent of the maximum dry density as determined by the ASTM D 696 method of compaction.
8. Allow 1′ additional road width on fill slopes for sloughing. When fills are over 6′ high at shoulder, allow 2′ additional road width.
9. Road construction across wetland areas may require placement of fragmented 6″ minus rock. Rock shall be placed in 8″-thick lifts and compacted by a heavy dozer or vibratory roller until well keyed. RB-(1) rock will be provided and installed by the contractor. Proper construction shall be use in wetlands so conditions as shown in Figure 7 do not develop.
10. Geotextile fabric material shall consist of MIRAF1212 OHP or equivalent, as approved by the company.

Figure 6—Poor Road Construction in Wetland Area

Table 1—Road Width for Different Road Curves

Curve Radius (feet)	Roadbed Width (feet)
200 or >	14
150 to 200	16
100 to 150	18
80 to 100	20

H. References

1. *Handbook for Forest and Ranch Roads*, William E. Weaver, PHD. and Danny K. Hagans, 1994.

2 *A Landowner's Guide to Building Forest Access Roads,* United States Department of Agriculture, Forest Service, Northeastern Area State and Private Forestry, July 1998.

Roads—Culvert Installation

A. Scope

This standard provides information about the construction of surface drainage and the installation of culverts. It is impossible to over-emphasize the importance of drainage in maintaining stable roads and protecting water quality. Roads should be designed and constructed to cause minimal disruption of natural drainage patterns. Provisions for two components of road drainage should be included in every road project: 1) road-surface drainage (including drainage which *originates* from the cutbank, road surface, and fill-slope), and 2) hill-slope drainage (including drainage from large springs, gullies, and streams which *cross* the road alignment).

B. Determining Culvert Diameter

Use pipe no smaller than 24″ in diameter. A drainage table provides help in determining the proper size culvert (see Table 1 and Table 2). The following example illustrates how to choose pipe size (Table 1) using the drainage table (Table 2). To use this method, you will need information on slope, soils, and cover.

Example: The area to be drained is 70 acres on steep slopes with heavy soils and moderate cover. In Table 2 under C opposite 70, find area required: 10.3 square feet. Under the area table for round pipe (Table 1), the pipe size should fall between 42″ and 48″. Use 42″ pipe with an area of 9.6 square feet. If a wood or other type of box culvert is planned, one 3′ by 3.5′ pipe would furnish the required area.

Table 1—Size of Round Pipe Needed for Area of Waterway

Area (square feet)	Pipe diameter (inches)
1.25	24
1.80	24
3.10	24
4.90	30
7.10	36
9.60	42
12.60	48
15.90	54
19.60	60
23.80	66
28.30	72
33.20	78
38.50	84
44.20	90

Source: Figure 45, Haussman and Pruett 1978, p. 36

Table 2—Drainage Table Based on Talbot's Formula for Rainfall 1-1/4″ per Hour

Area required for waterway								
Acres	**Impervious 100% runoff** †C=1.00	**Steep slopes Heavy soils Moderate cover** C=0.80	C=0.70	**Moderate slopes Heavy to light soils Dense cover** C=0.60	C=0.50	**Gentle slopes Agricultural soil & cover** C=0.40	C=0.30	**Flatland Previous soils** C=0.20
Square Feet								
2	0.5	0.4	0.4	0.3				
4	0.9	0.7	0.6	0.5				
6	1.2	1.0	0.8	0.7	0.6	0.5		
8	1.5	1.2	1.0	0.9	0.7	0.6		
10	1.7	1.4	1.2	1.0	0.9	0.7	0.3	
20	2.9	2.3	2.0	1.8	1.5	1.2	0.5	
30	4.0	3.2	2.7	2.4	2.0	1.6	0.5	0.3
40	4.9	3.9	3.4	3.0	2.5	2.0	0.9	0.4
50	5.8	4.7	4.0	3.5	2.9	2.3	1.2	0.6
60	6.7	5.4	4.6	4.0	3.4	2.7	1.5	0.8
70	7.5	6.0	5.2	4.5	3.8	3.0	1.8	1.0
80	8.3	6.7	5.8	5.0	4.2	3.3	2.0	1.2
90	9.1	7.3	6.3	5.5	4.6	3.6	2.3	1.4
100	9.9	7.9	6.8	5.9	4.9	3.9	2.5	1.5
150	13.5	10.6	9.3	8.0	6.7	5.4	2.7	1.7
200	16.6	13.4	11.5	10.0	8.4	6.7	2.9	1.8
250	19.8	15.8	13.6	11.9	9.9	7.9	4.0	2.0
300	22.9	18.1	15.5	13.6	13.5	9.0	5.0	2.7
350	25.5	20.3	17.5	15.3	12.7	10.1	5.9	3.3
400	28.0	22.5	19.5	17.0	14.0	11.1	6.8	4.0
450	30.9	24.9	21.0	18.5	15.3	12.1	7.5	5.1
500	33.4	26.4	23.0	20.0	16.6	13.3	8.4	5.6
600	38.5	30.8	26.3	23.0	19.0	15.2	9.0	6.2
700	43.0	34.2	29.8	26.0	21.5	17.0	9.9	6.6
800	48.0	38.1	32.9	28.5	23.8	19.0	11.4	7.7
900	52.0	41.5	35.9	31.1	26.0	20.8	12.9	8.6
1000	56.5	45.0	38.9	34.0	28.3	22.5	14.3	9.5

* See Table 1 for size of pipe needed.

† C is the constant factor based on a combination of how much water the soil can hold, slope, and cover. C = .70 is adequate for most conditions prevailing in the Northeast. C = 1.00 represents complete runoff of precipitation (e.g., rock surfaces).

Table 3 provides a simplified method for determining culvert size. To use this table, determine the size of the drainage area (in acres) above the stream crossing as well as the expected life of the culvert. A private consultant may provide assistance determining the size of a culvert. Make sure they do not size the culverts for a 50- or 100-year storm, unless that is what is required. For low-traffic or temporary roads, a flood frequency of 20 years can be used.

Table 3—Culvert Sizes by Drainage Area

	Recurrence interval (years)		
	10	20	50
Area (acres)	**Culvert diameter (inches)**		
10	24	24	18
20	24	24	20
30	24	24	24
40	24	24	26
50	24	24	28
60	24	24	28
70	24	26	30
80	24	26	30
90	24	28	32
100	26	28	34
125	28	30	36
150	28	32	38
175	30	34	40
200	32	36	42

Source: Table 3, Helvey and Kochenderfer 1988, p. 125

C. Determining Culvert Lengths

The following simplified procedure can be used to determine culvert lengths needed for new stream crossings or ditch-relief drains. Refer to Figure 1 for specific locations and distances described in the step-by-step procedure. A complete example follows these instructions.

1. Estimate the depth of the fill (F) at the running surface on the inside of the road above the culvert inlet (point “a”).
2. Additional width (C) due to fill is then estimated as 1.5 times the fill depth (F) (that is, all fill slopes are assumed to be 1.5:1 in steepness).
3. Add half the road width (1/2 W) and the fill width (C). Measure this distance horizontally upstream from the center line of the road, and place stake at location A. The horizontal

Engineer (C. Wright): C2W
Standards Manager (G. Lyons): GS

distance must be converted to slope distance before you can tape it off on the ground. Use Table 4 to convert horizontal distance to slope distance (on-the-ground distance).

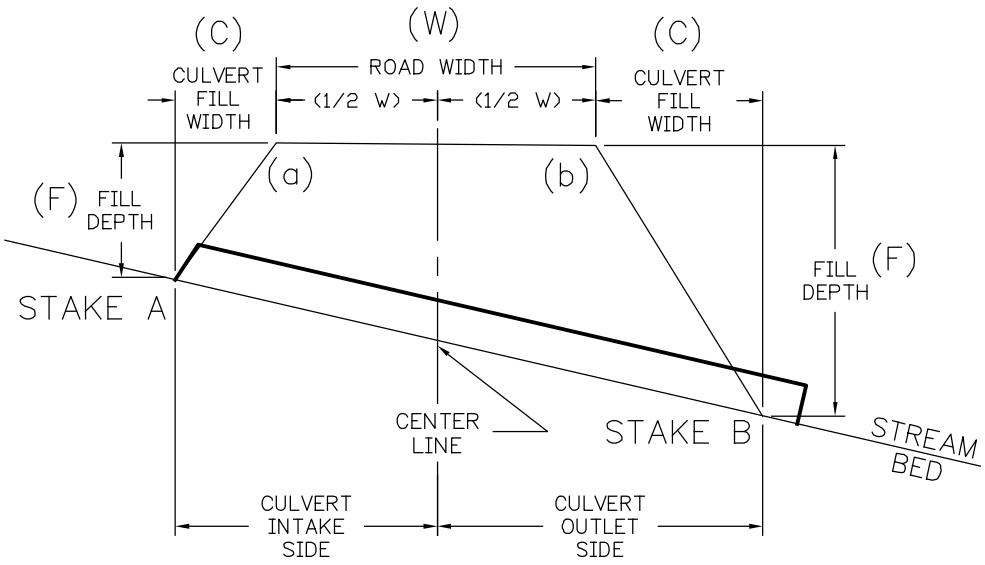

Figure 1—Culvert Length

4. Repeat steps 1 through 3 for the culvert outlet side of the crossing and place stake at location B.
5. Measure the slope length between stakes A and B. This measurement, plus two to four extra feet, is the length of culvert needed for the installation. The extra several feet are added to extend the inlet and outlet beyond the edge of the fill.

   Forty-four feet horizontal distance equals 52.4 feet slope distance on a 65 percent slope.

   horizontal distance × correction factor = slope distance

   (44ft) × (1.19) = 52.4′

   Example: What culvert length is needed for a 14′ wide road crossing a stream with a 55 percent gradient? The estimated inside fill-depth, above the culvert inlet, will be 6′ and the fill-depth above the outlet will be 13′.

   Step 1: Estimated depth of fill (F) at culvert inlet = 6′

   Step 2: (C) = 1.5 × 6′ = 9′

   Step 3: 14′ wide road (W), so 1/2 × 14′ = 7′

   Stake A (the location of the culvert inlet) should be placed on the ground a distance of (9′ + 7′) = 16 horizontal feet up the stream channel from the flagged centerline of the road. According to the correction table, 16 feet horizontally on a 55 percent slope is 18.2′ slope distance (16′ × 1.14 = 18.2′).

   Place the inlet stake (A) 18.2′ up the channel from the centerline of the road.

Step 4: Estimated depth of fill (F) at culvert outlet =13′

Step 5: (C) = 1.5 ×13′ = 20′

Step 6: 14′ wide road (W), so 1/2 × 14 = 7′

Stake B (the location of the culvert outlet) should be placed on the ground a distance of (13′ + 20′) = 33 horizontal feet down the stream channel from the flagged centerline of the road. According to the correction table, 33 feet horizontally on a 55 percent slope is 37.6′ slope distance (33′ × 1.14 = 37.6′0.

Place the outlet stake (B) 37.6 ′down the channel from the centerline of the road.

Step 7: Length of culvert needed = 18.2′ + 37.6′ = 55.8′ or about 56′.

Approximately 2′-4′ should be added to this length to make sure the culvert inlet and outlet extend sufficiently beyond the base of the fill.

Final culvert length to be ordered and delivered to the site = 56 ′+ 4 ′= 60 ′.

Table 4—Slope Correction Factors to (C) on Vertical-Horizontal Distance to Slope Distance

Hill slope or stream channel gradient (%)	Correction factor (multiplier)	Hill slope or stream channel gradient (%)	Correction factor (multiplier)
10	1.00[1]	45	1.10
15	1.01	50	1.12
20	1.02	55	1.14
25	1.03	60	1.17
30	1.04	65	1.19
35	1.06	70	1.22
40	1.08	75	1.25

[1] For a slope of 10 percent or less, no correction factor is needed.

D. Culvert Installation for Ditch Relief

Insloped roads should be constructed: 1) where road-surface drainage discharged over the fillslope would cause unacceptable erosion or discharge directly into stream channels, 2) where fillslopes are unstable, or 3) where outsloping would create unsafe conditions for use. It is generally preferable to outslope road surfaces in order to disperse road-surface runoff before it has a chance to concentrate.

Insloped roads should be built with an inside drainage ditch to collect and remove road surface runoff (TA 501, *Roads—Construction*). Roads steeper than about 8 percent may be too steep for an inside ditch because of the potential for gullying in the ditch. Inside ditches should also be drained at intervals sufficient to prevent ditch erosion or

outlet gullying, and at locations where water and sediment can be filtered before entering a watercourse. Filtering can be accomplished with thick vegetation, gentle slopes, settling basins, or filter windrows of woody debris and mulches secured to the slope.

As with outsloped roads, steep insloped road surfaces may be difficult to drain. Rolling dips (for permanent, surfaced roads and seasonal roads) or waterbars (for seasonal or temporary, unsurfaced roads) should be constructed at intervals sufficient to disperse road surface runoff from steep road segments. See TA 503, *Roads—Water Bars and Water Dips* for more information.

Ditches and culverts need occasional maintenance to maintain proper flow. Annual and storm-period inspection can prevent small problems from growing into large failures. When ditches become blocked by cutbank slumps, they need to be cleaned and the spoil deposited in a stable location. However, excessive maintenance (i.e., grading) can cause continuing and persistent erosion, sediment transport, and sediment pollution to local streams. It may also remove rock surfacing.

Ditch relief culverts should be designed and installed along the road at intervals close enough to prevent erosion of the ditch and at the culvert outfall, and at locations where collected water and sediment is not discharged directly into watercourses (Table 5).

Table 5—Maximum Suggested Spacing for Ditch Relief Culverts (ft)

Road grade	Soil Credibility				
(%)	Very High	High	Moderate	Slight	Very Low
2	600–800				
4	530	600–800			
6	355	585	600–800		
8	265	425	525	600–800	
10	160	340	420	555	
12	180	285	350	460	600–800
14	155	245	300	365	560
16	135	215	270	345	490
18	118	190	240	310	435

On new roads, ditch flow should be directed into a culvert and discharged into buffer areas and filter strips before it reaches a watercourse crossing. Ditches should neither be discharged directly into the inlet of a watercourse crossing culvert, nor should ditch relief culverts discharge into a watercourse without first directing flow through an adequate filter strip. In addition to installing ditch relief culverts on either approach to watercourse crossings, it is advisable to consider installing ditch drains before curves, above and below through-cut road sections, and before and after steep sections of the road.

If a ditch is capable of transporting and delivering sediment to a Class I or Class II watercourse during a flood event, it can be said to function the same as a Class III watercourse. It has a bed and a bank, and it can transport sediment. Ditches which drain directly into watercourse-crossing culverts should be treated and protected from disturbance and erosion, just as is a Class III watercourse. Ditch relief culverts should be installed across ditched roads before water course crossings so that water and sediment can be filtered before reaching the stream.

Ditch relief culverts do not need to be large, since they carry flow only from the cutbank, springs, and a limited length of road surface. In areas of high erosion and/or storm runoff, nominal ditch relief culvert sizes should be 18″, but ditch relief culverts should never be less than 15″ diameter. Smaller culverts are too easily blocked (Figure 2). Generally, culverts should have a grade at least 2 percent greater than the ditch which feeds it to prevent sediment buildup and blockage. Where possible, ditch relief culverts should be installed at the gradient of the original ground slope, so it will emerge on the ground surface beyond the base of the fill. If this is not possible, the fill below the culvert outlet should be armored with rock or the culvert fitted with an anchored downspout to carry erosive flow past the base of the fill. Culverts should never be "shot-gunned" out of the fill, thereby creating highly erosive road drainage waterfalls (Figure 3).

Figure 2—Undersized Culvert

Figure 3—Culvert Not Installed at the Existing Stream Gradient

A 10 percent grade to the culvert will usually be self-cleaning. The culvert should be placed at a 30° angle to the ditch to improve inlet efficiency and prevent plugging and erosion at the inlet. The pipe should be covered by a minimum of 18″ of compacted soil, or to a depth of 1.5 times the culvert diameter, whichever is greater. Finally, inlet protection such as rock armoring or drop structures can be used to help minimize erosion, slow flow velocity, and settle sediment before it is discharged through the pipe.

E. Culvert Installation for Stream Crossings

The importance of proper planning for stream crossings cannot be overstated. If stream crossings are not planned and located before road construction begins, serious problems may arise, including unintended damage to natural resources. Requirements for stream crossings vary from state to state. Often, a permit is required; check with the water division of the local natural resources agency.

Culverts can be considered dams that are designed to fail. The risk of culvert failure is substantial for most crossings, so *how* they fail is critical. In the upper sketch in

Figure 4, the crossing has failed and the road grade has diverted the stream down the road, resulting in severe erosion and downstream sedimentation. Such damage to aquatic habitats can persist for many years. Stream diversions are easy to prevent, as illustrated by the lower sketch, in which the road grade was such that a failed crossing caused only some loss of road fill.

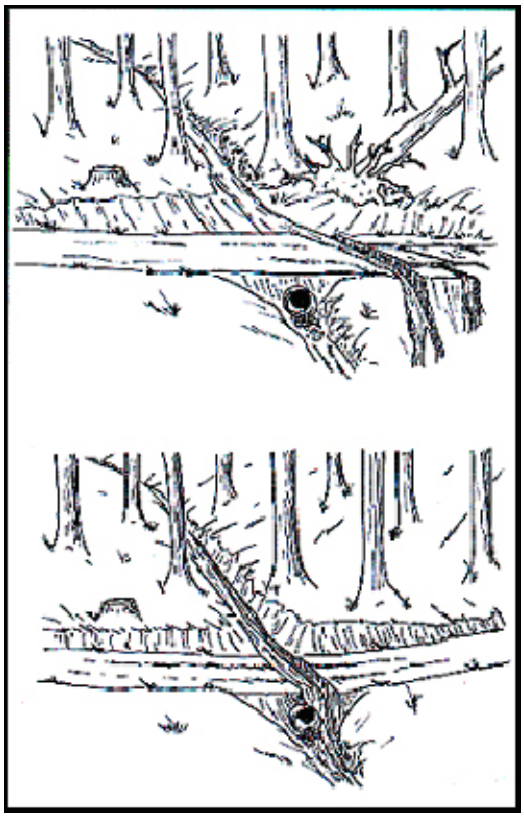

Figure 4—Stream Crossing Failures

Culverts should be installed as road work progresses. The culvert and its related drainage features should be installed via the following steps:

1. Place debris and slash to be used as a filter system, if needed.
2. Construct sediment ponds, if needed.
3. Complete downstream work first, such as energy dissipating devices and large rock riprap.
4. Route stream around work area until pipe is installed.
5. Construct pipe inlet structure.
6. Install culvert pipe.

A culvert inlet should be placed on the same level as the stream bottom. Where the culvert inlet has to be lower than the drainage gradient, a drop box can be constructed. The box provides a place for sediment to settle before water enters the culvert. Drop boxes require frequent maintenance.

Install culvert pipes as near as possible to the gradient of the natural channel and so there is no change in the stream bottom elevation (Figure 5). Culverts should not cause damming or pooling. Seat the culvert on firm ground and compact the earth at least halfway up the side of the pipe to prevent water from leaking. Pipe culverts must be adequately covered with fill; the rule is a minimum of 30″ or 1.5 times the culvert diameter, whichever is greater.

Figure 5—Culvert Installed at Channel Gradient

If adequate cover cannot be achieved, an arch pipe or two small culverts should be installed. The cover must also be compacted to prevent settling in the road. Debris-laden material should not be used to cover pipe culverts.

The following are additional guidelines for installing culverts in streams:

- Limit construction activity in the water to periods of low or normal flow.
- Minimize use of equipment in streams.
- Use soil stabilization practices on exposed soil at stream crossings. Seed/mulch and install temporary sediment control structures, such as silt fences made of straw bales or geotextiles, immediately after road construction. Maintain these practices until the soil is permanently stabilized.
- Use materials that are clean, non-toxic, and which do not erode.

To prevent erosion and under-cutting of the inlet end of the culvert, provide a headwall. Sandbags containing some cement mixed with the sand, durable logs, concrete, or hand-placed riprap are suitable.

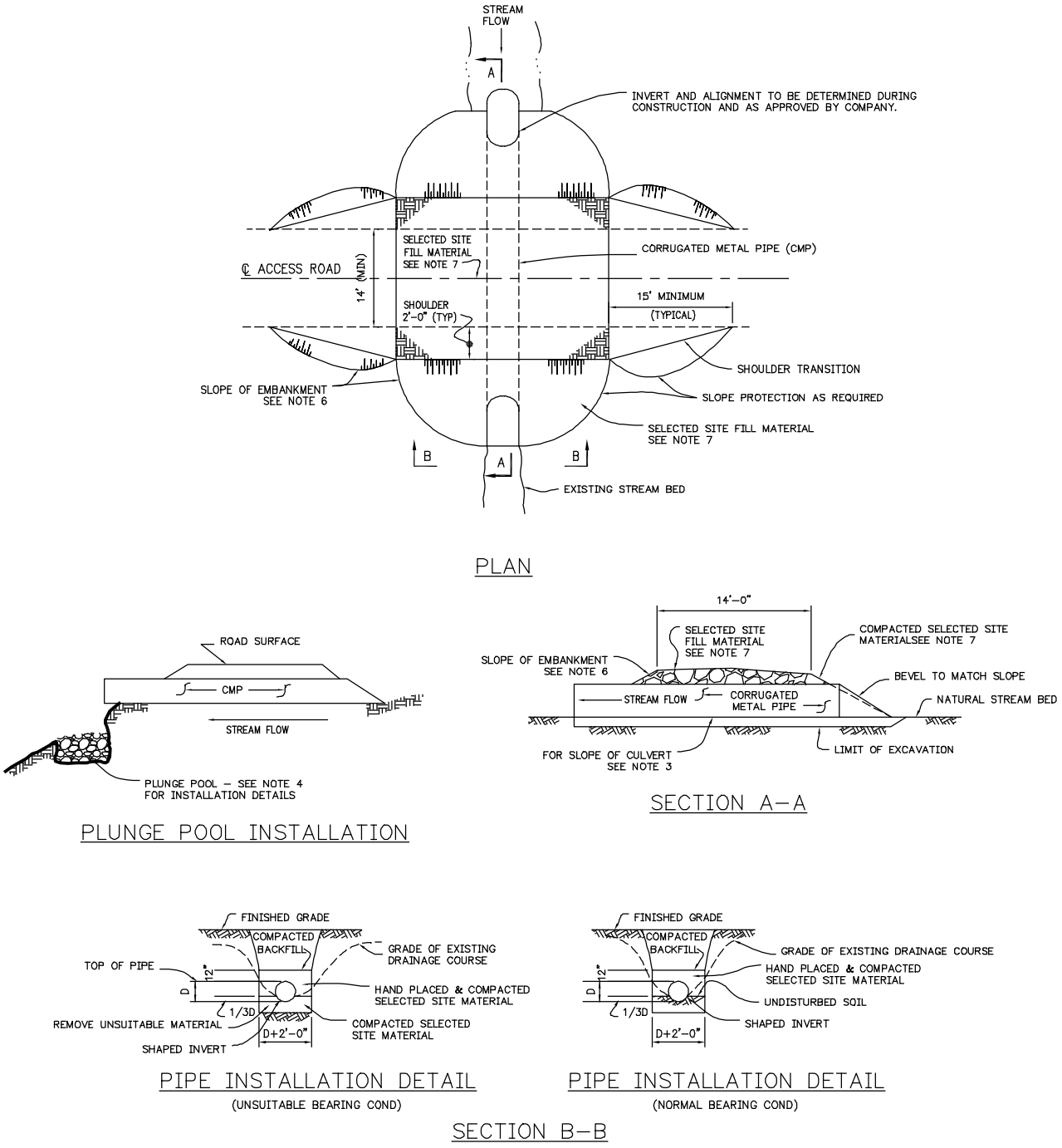

Figure 6—Stream Crossing Culverts

Installation Notes for Figure 6:

1. Culverts for existing drainage shall be aligned with the drainage.

2. Culverts for roadway and ditch drainage shall be oriented at an angle of 30° to 45° to the roadway. See TA 503, *Roads—Water Bars and Water Dips*, for installation instructions.
3. Culverts shall be sloped a minimum of 1 percent or at least 1 percent steeper than the existing drainage.
4. When the culvert outlet is above grade, a plunge pool shall be constructed with length and width equal to two pipe diameters and a depth of one pipe diameter. Line plunge pool with geotextile fabric filled with 2″ to 8″ rock.
5. Culvert clogging debris located within 50′ of a culvert inlet shall be removed.
6. Cut and fill slopes will be determined during construction based on site conditions and as approved by the company.
7. See TA 501, *Roads—Construction*, for general road construction information.
8. Cover over culverts shall be 18″ or 1.5 times the culvert diameter, whichever is greater. To minimize damage from culvert failure, height of fill over culverts shall be as close to minimum as practical.
9. Outlets on culverts with pipe slopes greater than 3 percent shall be protected with a 30′ × 10′ strip of geotextile fabric fastened to culvert as a bib. Fabric shall be weighted down with 6″to 8″ rock to slow runoff.
10. Bottom of culvert shall be cushioned with fine-grain site material when installed over large rocks.

F. Fords

A ford is an alternative way to cross a water course where the streambed has a firm rock or coarse gravel bottom; the approaches are low and stable enough to support traffic; the stream is small to medium-sized, with water depth less than three feet and stream flows not exceeding 6 fps; and vehicle traffic is light. Dry fords can often be installed and used with minimal impact to the channel system.

The following standards apply when constructing a ford:

1. Install wing ditches, water-bars, dips, and level spreaders before the crossing. These structures should disperse runoff into an established and stable stream buffer.
2. If corduroy, coarse gravel, or gabion is used to create a driving surface, it should be installed flush with the streambed to minimize erosion and to allow fish passage.
3. Crossings should be at right angles to the stream.
4. Stabilize the approaches by using non-erodible material. The material should extend at least 50 feet on both sides of the crossing.
5. Requirements for stream crossings vary from state to state. Often a permit is required; check with the water division of the local natural resources agency.
6. Fords shall be designed for a low-maintenance long-term life. Rock size and grading, depth of rock, fabric underlayment, etc. and approaches shall be designed for the equipment expected to use the road.

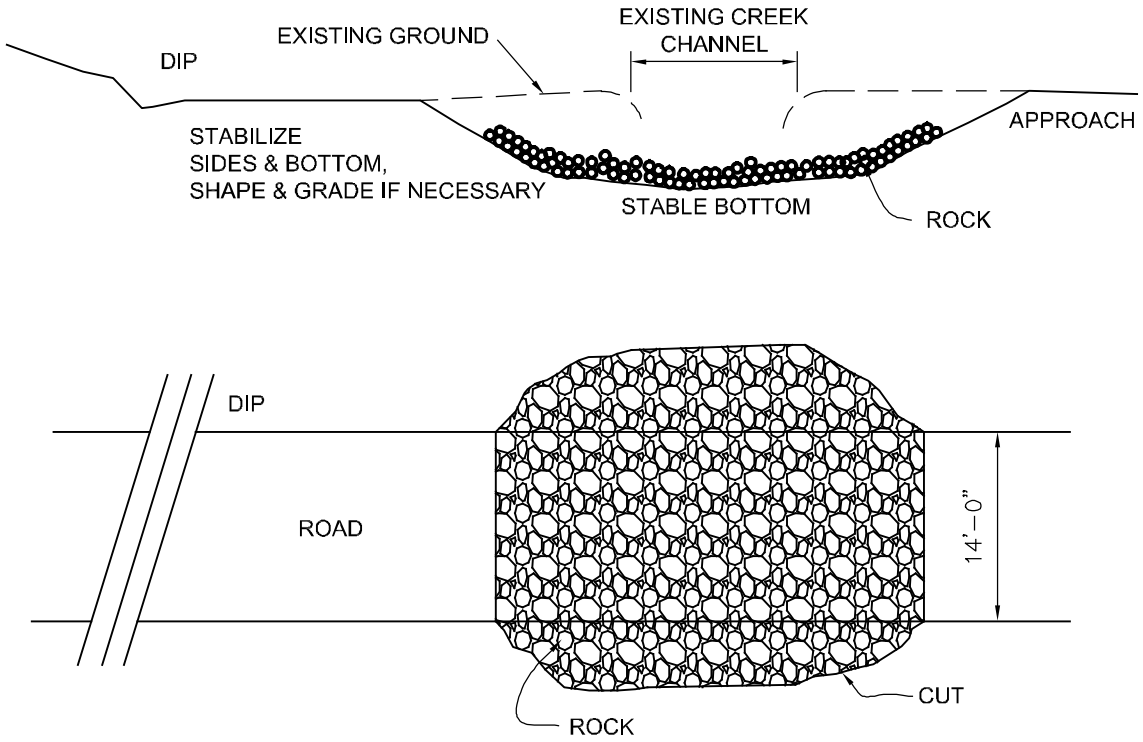

Figure 7 – Ford Stream Crossing

ATTACHMENT C
IN-LIEU FEE
EXAMPLES

The following two ILF programs were identified in Idaho and serve as an example of how to set up an in lieu:

Ducks Unlimited Program

State	ID
Corps District	Walla Walla
Program Type	Corps
Sponsor	Ducks Unlimited
Sponsor Requirements	Ducks Unlimited
Administrator	U.S. Army Corps of Engineers, Walla Walla District
Completed Projects	1
Pending Projects	0
Total Acres of Permitted Losses	1
Total Acres Replaced	100
Total Feet of Permitted Losses	0
Delineated Service Areas	No
Description of Service Area	The Corps tries to keep the restoration as local as possible. The projects have occurred in the same drainage basin as the impacts.
Contact Information	Mike Doherty
Contact Address	U.S. Army Corps of Engineers Walla Walla District 201 North 3rd Avenue Walla Walla, WA 99362-1876
Replacement Ratio Determination	Replacement ratios were not used. The Corps offered a project that it wanted done to the applicant and the applicant had a choice of whether to accept the project.
Fee Amount Calculated	For the Burlington Northern project, $265,000 was charged, based on the amount of money needed to complete the restoration project.
Success Criteria	The success criteria include vegetation planning, earthworks to ensure everything is at the right elevation, and required plantings. Monitoring for survival is required.
Protection Mechanisms	Project completed in federal wildlife refuge
Entity Holding Funds	Ducks Unlimited
Funds To Date	$265,000.00
Date of Information	8/30/2001

The Nature Conservancy In-Lieu-Fee Program

State	ID
Corps District	Walla Walla
Program Type	Corps
Sponsor	The Nature Conservancy
Sponsor Requirements	The Nature Conservancy
Administrator	U.S. Army Corps of Engineers, Walla Walla District
Completed Projects	1
Pending Projects	0
Total Acres of Permitted Losses	4
Total Acres Replaced	100.8
Total Feet Replaced	560
Delineated Service Areas	No
Description of Service Area	They try to keep the restoration as local as possible. The projects have occurred in the same drainage basin as the impacts.
Contact Information	Mike Doherty
Contact Address	USACE, Walla Walla District 201 North 3rd Avenue Walla Walla, WA 99362-1876
Replacement Ratio Determination	Replacement ratios were not used. The Corps offered a project that it wanted done to the applicant and the applicant had a choice of whether to accept the project.
Success Criteria	The success criteria include vegetation planning, earthworks to ensure everything is at the right elevation, and required plantings. Monitoring for survival is required.
Protection Mechanisms	conservation easement
Entity Holding Funds	Bonner Boundary Board
Funds To Date	$140,000.00
Date of Information	8/30/2001

ATTACHMENT D
PROPOSED IN-LIEU FEE MITIGATION INSTRUMENT

PROPOSED IN-LIEU FEE MITIGATION INSTRUMENT

The Companies would prepare a prospectus for the proposed ILF program that would include the following:

1. Objectives.
2. How the ILF would be established and operated.
3. Proposed service area(s).
4. Need and technical feasibility.
5. Ownership arrangements and long-term management strategy.
6. Sponsor qualifications.
7. Compensation planning framework.
8. Description of program account.

The prospectus would be provided to the USACE and the USACE is responsible for public notice and coordination with the IRT. If the USACE determines that the proposed ILF program has the potential to provide compensatory mitigation, the Companies would prepare a Draft Instrument. The Draft Instrument would include the following elements:

1. Service area.
2. Accounting procedures.
3. Provision stating legal responsibility to provide compensatory mitigation.
4. Default and closure provisions.
5. Reporting protocols.
6. Compensation planning framework.
    a. Geographic service area(s)
    b. Description of threats
    c. Analysis of historic resource loss
    d. Analysis of current resource conditions
    e. Goals and objectives
    f. Prioritization strategy
    g. Preservation justification
    h. Description of stakeholder involvement
    i. Long-term protection and management strategies
    j. Strategy for periodic evaluation and reporting
7. Advance credits.
8. Method for determining project specific credits and fees & draft fee schedule
9. In-lieu fee program account.
10. Transfer of long-term management responsibilities.
11. Financial arrangements for long-term management.
12. Other information deemed necessary by the USACE district engineer.

The Draft Instrument is not a ILF mitigation plan. The Companies would also develop an ILF mitigation plan, concurrent with, and dependent upon, the ILF Instrument. The ILF mitigation plan would include:

1. Objectives.
2. Site selection (further described in §332.3(d)).
3. Site protection instrument (further described in §332.7(a)).
4. Baseline information.
5. Determination of credits (further described in §332.3(f)).
6. Mitigation work plan.
7. Maintenance plan.
8. Performance standards (further described in §332.5).
9. Monitoring requirements (further described in §332.6).
10. Long-term management plan (further described in §§332.7 and 332.8(u)).
11. Adaptive management plan (further described in §332.7(c)).
12. Financial assurances (further described in §332.3(n)).

The ILF mitigation plan is not discussed further in this Appendix.

Proposed Draft ILF Instrument

1.0 Service Area

The geographic service area[2] for the (Gateway West ILF Program) is defined as (*specify the geographic unit*). Idaho Power Company (IPC) and Rocky Mountain Power (RMP) (the Companies) would provide compensatory mitigation for permitted impacts within the same geographic service area in which the impacts occurs unless the district engineer, in consultation with the IRT, has agreed to an exemption. [*Insert maps of project area, impacts, service area*.] This service area was selected because the Companies, in consultation with the district engineer, has concluded that the scale is appropriate to ensure that the projects selected would be able to effectively compensate for adverse environmental impacts across the entire service area. The Companies would not accept participation from other permittees; this ILF Program has been developed for the sole use of the Companies to mitigate for unavoidable impacts to waters of the U.S. resulting from the construction, operation, and maintenance of the Gateway West 500 Kilovolt Transmission Line Project. Individual mitigation projects would be proposed for specific service areas in project-specific mitigation plans.

2.0 Accounting Procedures

The Companies shall establish and maintain a system for tracking the production of credits, credit transactions, and financial transactions between the Companies and ILF sponsor. Credit production, credit transactions, and financial transactions must be tracked on a programmatic

[2] Service area is defined as: "the watershed, ecoregion, physiographic province and/or other geographic area within which the…in-lieu fee program is authorized to provide compensatory mitigation required by DA permits.

basis (i.e., the number of available credits for the entire program by service area) and separately for each individual project.

3.0 Provisions Stating Legal Responsibility to Provide Compensatory Mitigation

(*Program Sponsor*) assumes all legal responsibility for satisfying the mitigation requirements of the Corps/state permit for which fees have been accepted (i.e., the implementation, performance, and long-term management of the compensatory mitigation project(s) approved under this agreement and subsequent mitigation plans). The transfer of liability is established by: 1) the approval of this in-lieu fee instrument; 2) receipt by the district engineer of a credit sale form/letter/certificate that is signed by the (*Program Sponsor*) and the Companies and dated (see Section (X, "Reporting protocols"); and 3) the transfer of fees from the Companies to (*Program Sponsor*).

4.0 Default and Closure Provisions

If the Corps determines that (*Program Sponsor*) has failed to provide the required compensatory mitigation in a timely manner (i.e., (*Program Sponsor*) has failed to meet performance based milestones set forth in the project-specific mitigation plan, meet ecological performance standards, submit monitoring reports in a timely manner, establish and maintain an annual ledger report and individual ledgers for each project in accordance with the provisions in Section (X, "Accounting Procedures"), submit an annual financial assurances and long-term management funding report, report approved credit transactions, complete land acquisition and initial physical and biological improvements by the third full growing season after the first advance credit in that service area is secured by a permittee, and/or otherwise comply with the terms of the instrument), the district engineer must take appropriate action to achieve compliance with the terms of the instrument and all approved mitigation plans. Such actions may include suspending credit sales, decreasing available credits, requiring adaptive management measures, utilizing financial assurances or contingency funds, terminating the agreement, using the financial assurances or contingency funds to provide alternative compensation, directing the use of in-lieu fee program account funds to provide alternative mitigation (e.g., securing credits from another third party mitigation provider), or referring the non-compliance with the terms of the instrument to the Department of Justice.

Any delay or failure of (*Program Sponsor*) to comply with the terms of this agreement shall not constitute a default if and to the extent that such delay or failure is primarily caused by any force majeure or other conditions beyond (*Program Sponsor*)'s reasonable control and significantly adversely affects its ability to perform its obligations hereunder, such as flood, drought, lightning, earthquake, fire, landslide, condemnation or other taking by any governmental body. (*Program Sponsor*) shall give written notice to the district engineer and IRT if the performance of any of its in-lieu fee projects is affected by any such event as soon as is reasonably practicable.

Either party to this agreement may terminate the agreement within 60 days of written notification to the other party. In the event that the Gateway West ILF Program operated by (*Program Sponsor*) is terminated, (*Program Sponsor*) is responsible for fulfilling any remaining project obligations including the successful completion of ongoing mitigation projects, relevant

maintenance, monitoring, reporting, and long-term management requirements. (*Program Sponsor*) shall remain responsible for fulfilling these obligations until such time as the long-term financing obligations have been met and the long-term ownership of all mitigation lands has been transferred to the party responsible for ownership and all long-term management of the project(s).

Funds remaining in the Gateway West ILF Program accounts after these obligations are satisfied must continue to be used for the restoration, establishment, enhancement, and/or preservation of aquatic resources. The Corps shall direct Gateway West ILF Program to use these funds to secure credits from another source of third-party mitigation, such as another in-lieu fee program, mitigation bank, or another entity such as a governmental or non-profit natural resource management entity willing to undertake the compensation activities. The funds should be used, to the maximum extent practicable, to provide compensation for the amount and type of aquatic resource for which the fees were collected. The Corps itself cannot accept directly, retain, or draw upon those funds in the event of a default.

5.0 Reporting Protocols

The Companies must report to the district engineer and the IRT the following information:

1. Monitoring reports, on a schedule and for a period as defined by project specific mitigation plan(s).
2. Credit transaction notifications.
3. An annual program report summarizing activity from the program account (financial and credit accounting) as detailed below.
4. An annual financial assurances and long-term management funding report as detailed below.

Monitoring reports

Monitoring is required of all compensatory mitigation projects to determine if the project is meeting its performance standards and if additional measures are necessary to ensure that the compensatory mitigation project is accomplishing its objectives. If (*Program Sponsor*) fails to submit reports within 90 days of the deadlines outlined in the mitigation plan(s), the Corps may take appropriate compliance action (see Section (X, “Default and closure”)). Project-specific mitigation plans would detail the parameters to be monitored, the length of the monitoring period, the dates that the reports must be submitted (e.g., first of each month), the party responsible for conducting the monitoring, the frequency for submitting monitoring reports to the district engineer, and the party responsible for submitting those monitoring reports to the district engineer and the IRT. The level of detail and substance of the reports must be commensurate with the scale and scope of the compensatory mitigation project. The Corps is required to provide monitoring reports to interested federal, tribal, state, and local resource agencies, and the public, upon request.

Credit transaction notification

Section (X, “Provisions stating legal liability”) establishes the terms by which the legal responsibility for compensation requirements is transferred from the Companies to (*Program*

Sponsor). These terms require (*Program Sponsor*) to submit a credit sale form/letter/certificate to the Corps. The document must be signed by the (Program Sponsor) and the permittee and dated. The credit transaction form/letter/certificate must include the permit number(s) for which (*Program Sponsor*) is accepting fees, the number of credits being purchased, and resource type(s) (e.g., Cowardin class) of credits being purchased. (Program Sponsor) must submit the signed and dated credit transaction form/letter/certificate within 10 days of receiving the fees from the permittee. A copy of each credit transaction form/letter/certificate would be retained in both the Corps' and (*Program Sponsor's*) administrative and accounting records for the Gateway West ILF Program.

Annual program report

(*Program Sponsor*) must submit an annual report (annual ledger report) to the district engineer and the IRT. The report must be made available to the public upon request. The annual program report must be submitted no later than the last day of March, or the following business day if that date falls on a federal/state holiday or weekend. The annual report must include the following information:

Program account (financial) reporting:

- All income received and interest earned by the program account for the program and by service area.
- A list of all permits for which in-lieu fee program funds were accepted by service area, including (1) Corps permit number (and/or the state permit number); (2) service area in which the authorized impacts are located; (3) amount of authorized impacts; (4) amount of required compensatory mitigation; (5) amount paid to the in-lieu fee program; and (6) date the funds were received from the permittee.
- A description of in-lieu fee program expenditures/disbursements from the account (i.e., the costs of land acquisition, planning, construction, monitoring, maintenance, contingencies, adaptive management, and administration) for the program and by service area.

Ledger (credit) reporting:

- The balance of advance credits and released credits at the end of the report period for the program and by service area.
- The permitted impacts for each resource type.
- All additions and subtractions of credits.
- Other changes in credit availability (e.g., additional credits released, credit sales suspended).

Financial assurances and long-term management funding report

(Program Sponsor) must submit an annual report on financial assurances and long-term management to the district engineer and the IRT. (Program Sponsor) is required to give the Corps at least (XX days; to be determined by the sponsor in consultation with the Corps and IRT) advance notice if required financial assurances would be terminated or revoked. In addition, the financial assurance instrument must be written in such a way that it is the obligation of the bonding company or financial institution to provide the Corps notice. Inclusion of a summary of any changes to the financial assurances in the reporting year does not alter

this separate obligation. The financial assurances and long-term management funding report must include:

- Beginning and ending balances of the individual project accounts providing funds for financial assurance and long-term management.
- Deposits into and any withdrawals from the individual project accounts providing funds for financial assurance and long-term management.
- Information on the amount of required financial assurances and the status of those assurances, including their potential expiration for each individual project.

6.0 Compensation Planning Framework

The compensation planning framework must include the following ten elements:

1. The geographic service area(s), including a watershed based rational for the delineation of each service area.
2. A description of the threats to aquatic resources in the service area(s), including how the in-lieu fee program would help offset impacts resulting from those threats.
3. An analysis of historic aquatic resource loss in the service area(s).
4. An analysis of current aquatic resource conditions in the service area(s), supported by field documentation.
5. A statement of aquatic resource goals and objectives for each service area, including a description of the general amounts, types and locations of aquatic resources the program would seek to provide.
6. A prioritization strategy for selecting and implementing compensatory mitigation activities
7. An explanation of how any preservation objectives identified above satisfy the criteria for use of preservation.
8. A description of any public and private stakeholder involvement in plan development and implementation, including coordination with federal, state, tribal and local aquatic resource management and regulatory authorities.
9. A description of the long term protection and management strategies for activities conducted by the in-lieu fee program sponsor.
10. A strategy for periodic evaluation and reporting on the progress of the program in achieving the goals and objectives above, including a process for revising the planning framework as necessary.

7.0 Advance Credits

Upon approval of this instrument for Gateway West ILF Program, (*Program Sponsor*) is permitted to sell advance credits in the amount indicated in the chart below. The number of advance credits available for sale varies by service area, as indicated. The number of advance credits available for sale is specified by service area, as indicated in (*the chart*). As the milestones in the schedule are reached (i.e., restoration, creation, enhancement and/or preservation is implemented), advance credits convert to released credits. At a minimum, credits would not be released until (*Program Sponsor*) has obtained IRT approval of the mitigation plan for the site, has achieved the applicable milestones in the credit release schedule, and the credit releases have been approved by the district engineer.

Once (*Program Sponsor*) has sold all of its advance credits, no more advance credits may be sold until an equivalent number of credits has been released in accordance with the approved credit release schedule outlined in a project-specific mitigation plan. Once all advance credits are fulfilled, an equivalent number of advance credits may be made available for sale, at the discretion of the district engineer and IRT. (*Program Sponsor*) shall complete land acquisition and initial physical and biological improvements by the third full growing season after the sale of advance credits. If (*Program Sponsor*) fails to meet these deadlines, the district engineer must either make a determination that more time is needed to plan and implement an in-lieu fee project or, if doing so would not be in the public interest, direct (*Program Sponsor*) to disburse funds from the Gateway West ILF Program account to provide alternative compensatory mitigation to fulfill those compensation obligations.

8.0 Method for Determining Project-Specific Credits and Fees and Draft Fee Schedule

The draft fee schedule section should simply include a chart or list of the fees charged by the program per unit of credit and for each wetland type provided and in each service area in which the program operates. Fees for Gateway West ILF Program shall be determined based on an analysis of the expected costs associated with the restoration, establishment, enhancement, and/or preservation of aquatic resources in [*the state/region/watershed*]. The program costs included in this analysis are those related to land acquisition, project planning and design, construction, plant materials, labor, legal fees, monitoring, remediation or adaptive management activities, program administration, contingency costs appropriate to the stage of project planning, including uncertainties in construction and real estate expenses, the resources necessary for the long-term management and protection of the in-lieu fee project, and financial assurances (including contingency costs) that are expected to be necessary to ensure successful completion of in-lieu fee projects. These fees shall be reviewed annually and updated as appropriate. Credits generated by Gateway West ILF Program shall be based on [*an appropriate assessment*
method or other suitable metric] approved by the Corps. The standard mitigation ratios for wetlands are currently (*insert chart*). The standard mitigation ratios for streams are currently (*insert chart*).

9.0 In-Lieu Fee Program Account

Financial accounting

Reporting requirements for financial reporting are at Section (X, “Reporting Protocol.”) The Gateway West ILF Program account would track funds accepted from permittees separately from those accepted from other entities and for other purposes (i.e., fees arising out of an enforcement action, such as supplemental environmental projects). The account would be held at a financial institution that is a member of the Federal Deposit Insurance Corporation. Any and all interest accruing from the account would be used to provide compensatory mitigation for impacts to aquatic resources. The program account would be established after this instrument is approved and before any fees are accepted. If the Corps determines that the (Program Sponsor) is failing to provide compensatory mitigation by the third full growing season after the first advance credit is secured, the agency may direct the funds to alternative compensatory mitigation projects. Additional information on failure to fulfill the terms of the instrument is

discussed in Section (X, “Default & Closure”). The Corps has the authority to audit the program account records at any time. Funds paid into the Gateway West ILF Program account may only be used for the direct replacement and management of aquatic resources. This means the selection, design, acquisition (i.e., appraisals, surveys, title insurance, etc.), implementation, and management of in-lieu fee compensatory mitigation projects. This may include fees associated with securing a permit for conducting mitigation activities, activities related to the restoration, enhancement, creation, and/ or preservation of aquatic resources, maintenance and monitoring of mitigation sites, and the purchase of credits from mitigation banks. Use of fees is explicitly prohibited for activities such as upland preservation (other than buffers), research, education and outreach, or implementation of best management practices for wetlands unless these are directly associated with the success of the mitigation and have been identified in the mitigation plan. Up to (__%) of the fees paid into Gateway West ILF Program may be used for administrative costs. Such costs include bank charges associated with the establishment and operation of the program, staff time for carrying out program responsibilities, expenses for day to day management of the program, such as bookkeeping, mailing expenses, printing, office supplies, computer hardware or software, training, travel, and hiring private contractors or consultants.

Credit accounting

(*Program Sponsor*) shall establish and maintain an annual report ledger that tracks the production of released credits for Gateway West ILF Program and for each individual in-lieu fee project. Reporting requirements for the annual report ledger are at Section (X). On the income side, (*Program Sponsor*) shall track the fees and all other income received, the source of the income (i.e., permitted impact, penalty fee, etc.), and any interest earned by the program account. The ledgers shall also include a list of all the permits for which in-lieu fee program funds were accepted, including the appropriate permit number (Corps or state permit), the service area in which the specific authorized impacts are located, the amount (acreage or linear feet) of authorized impacts, the aquatic resource type impacted by Cowardin class, the amount of compensatory mitigation required, the amount paid to the in-lieu fee program for each of the authorized impacts, and the date the funds were received from the permittee. (*Program Sponsor*) shall establish and maintain a report ledger for Gateway West ILF Program that would track all program disbursements/expenditures and the nature of the disbursement (i.e., costs of land acquisition, planning, construction, monitoring, maintenance, contingencies, adaptive management, and administration). (*Program Sponsor*) may also track funds obligated or committed, but not yet disbursed. The ledger shall also include, for each project, the permit numbers for which the project is being used to offset compensatory mitigation requirements, the service area in which the project is located, the amount of compensation being provided by method (i.e., restoration, establishment, enhancement, or preservation), the aquatic resource type(s) represented (e.g., Cowardin class), the amount of compensatory mitigation being provided (acres and/or linear feet), and the number of credits certified by the IRT. The annual report ledger shall also include a balance of advance credits and released credits at the end of the report period for each service area.

10.0 Transfer of Long-Term Management Responsibilities

After securing approval from the district engineer, (*Program Sponsor*) shall transfer long-term management responsibilities to [*name a specific land stewardship entity or "a land stewardship entity, such as a public agency, non-governmental organization, or private land manager*"]. Transfer of long term stewardship responsibilities may occur before or after performance standards have been achieved. Once long term management has been transferred to land stewardship entity, said party is thereby responsible for meeting any and all long-term management responsibilities outlined in the project-specific mitigation plan. Until such time as long-term management responsibilities are transferred to another party, (*Program Sponsor*) would be considered responsible for long-term management of the mitigation project.

11.0 Financial Arrangements for Long-Term Management

If (*Program Sponsor*) chooses to transfer the responsibilities for long-term management to a long-term steward, (*Program Sponsor*) must seek Corps' approval. The Corps must be given the option of being a signatory to any contract or other arrangement assigning the rights and delegating the responsibilities to the steward. If long-term stewardship responsibilities are transferred to (*land stewardship entity*), (*Program Sponsor*) shall also transfer the long-term management funds/account for otherwise arrange for disbursements from such funds/account to the (*land stewardship entity*).

12.0 Signatures

_____ _____

Program sponsor Date

_____ _____

District Engineer Date

_____ _____

IRT members choosing to participate Date

Appendix C-3

Greater Sage-grouse Avoidance, Minimization, and Mitigation Measures

Gateway West Transmission Line Project: Detailed Outline for Offsite Compensatory Mitigation to Offset Project Impacts to Greater Sage-grouse

Prepared by:

PACIFICORP
A MIDAMERICAN ENERGY HOLDINGS COMPANY

and

IDAHO POWER
An IDACORP Company

June 15, 2012

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1. Introduction

1.1. Project Overview

Idaho Power Company and Rocky Mountain Power (Companies) propose to construct and operate approximately 1,000 miles of new 230-kilovolt (kV), 345-kV, and 500-kV electric transmission system consisting of 10 segments between the Windstar Substation at Glenrock, Wyoming, and the Hemingway Substation approximately 30 miles southwest of Boise, Idaho. The Project includes ground-disturbing activities associated with the construction of above-ground, single-circuit transmission lines involving, access roads, multi-purpose yards, fly yards, pulling sites as well as associated substations, communication sites, and electrical supply distribution lines. The Project is designed/sited to avoid greater sage-grouse (*Centrocercus urophasianus*) leks and adhere to lek buffers and use designated energy corridors. Portions of the Project will cross suitable habitat for greater sage-grouse. As a result, the Companies, in close coordination with the Bureau of Land Management (BLM), U.S. Fish and Wildlife Service (USFWS), Wyoming Game and Fish Department (WGFD), and Idaho Department of Fish and Game (IDFG) have developed a mitigation strategy to compensate for the unavoidable impact to sage-grouse habitat that may occur as a result of Project construction and operation.

1.2. Companies' Mitigation Goals

The Companies' mitigation goals include:

- identify mitigation opportunities that reduce or remove threats under the five listing factors used by the USFWS to assess the status of Endangered Species Act (ESA)-listed and candidate species,
- compliance with Wyoming Executive Order 2011-5 and other state regulatory mechanisms, and
- address primary and secondary threats identified in Idaho Executive Order 2012-02 and recommendations of the State of Idaho and the Idaho Task Force that may ultimately be adopted through regulatory mechanisms.

1.3. Mitigation Purpose

1.3.1. Mitigation Strategy for Known Impacts

Current literature identifies habitat loss/fragmentation (e.g., fire in Idaho) poses the greatest threat to sage-grouse however, the literature also indicates that conversion, noise, and human activity may also pose impacts to greater sage-grouse (refer to the Final Habitat Equivalency Analysis [HEA] report). Knowledge of the impacts of transmission structures and other tall structures on the landscape is currently lacking (Utah Wildlife in Need 2010). The Companies' mitigation strategy is to compensate for known impacts to greater sage-grouse that could occur as a result of Project construction and operation. This mitigation strategy is guided by the following:

- Sage-grouse habitat quality and quantity varies across the landscape. To ensure that habitat variability is fully captured, the HEA used a quantitative habitat metric to model the direct loss of habitat that would result from construction and operation of the Project.

- Sage-grouse habitat services lost or impacted due to the construction and operations of the Project will be replaced by either preserving at-risk habitat services or enhancing degraded habitat services through one or more methods either modeled during the HEA effort or approved by an Oversight Committee (see Section 2.4).
- Offsite compensatory mitigation projects will be defined in suitable locations as close to the Project area as possible in order to benefit the sage-grouse populations being impacted by project construction and operations but may also be directed to habitats where mitigation has greater value in providing long term benefit to sage-grouse.
- Mitigation projects that are approved and funded will result in:
    - Habitat conservation or protection in at-risk areas
    - an increase in long-term habitat availability, and/or
    - an increase in habitat quality
- The Companies will fund a program of maintenance and monitoring for each compensatory mitigation project to determine the effectiveness of the mitigation and provide guidance for future projects. Funding for maintenance and monitoring has been incorporated in the HEA and is therefore inherently part of the compensatory mitigation to be proposed.

2. Compensatory Mitigation for Gateway West

2.1. Approach to Determine Mitigation Obligation

2.1.1. Framework for Sage-grouse Impacts Analysis for Interstate Transmission Lines

The Companies have been actively working with agency personnel (refer to Appendix A for a list) to satisfy the requirements of the Framework for Sage-grouse Impacts Analysis for Interstate Transmission Lines (November 22, 2010, last revised October 22, 2011), Attachment 3.

The Framework specifies the use of a HEA, an economics model, to scale mitigation for the loss of habitat services. Habitat services include those ecosystem features (i.e., physical site-specific characteristics of an ecosystem) and ecosystem functions (i.e., biophysical processes that occur within an ecosystem) that support, in this case, greater sage-grouse populations.

The HEA for the Project produced an estimate of the permanent and interim loss of sage-grouse habitat services as a result of vegetation loss, noise, and human presence anticipated with project construction and operation. Once BLM has identified a preferred alternative, the HEA can be used to identify the sum total of modeled habitat services lost. The HEA also modeled feasible mitigation project types and incorporated their typical costs. The Companies will use the HEA-generated sum of modeled habitat services lost and develop a proposed set of mitigation projects, whose total habitat services gained can also be summed. The Companies can then use the estimated mitigation project cost for each project type to develop an estimated total cost for the entire Project's compensatory mitigation obligations (see Section 3.0). The suggested project mix and sum of habitat services provided by the mitigation project types will offset the sum of modeled habitat services lost, as specified in the HEA.

2.1.2. U.S. Fish and Wildlife Service Mitigation Recommendations

The USFWS Wyoming Office provided the Companies with recommendations regarding the development and implementation of a mitigation plan to address Project impacts on sage-grouse and its habitat (attached as Appendix B). Per these recommendations, the Companies will:

- Use the HEA's estimation of permanent and interim loss of habitat services to determine how many habitat services must be gained by a suite of projects. The sum of habitat services gained from mitigation projects selected will provide an estimate of how much compensatory mitigation will be offered by the Companies.
- Once the preferred alternative is selected and the ROD is issued, the Companies will select and submit to BLM a proposed set of projects (project mix), the sum of whose habitat services gained will equal the sum of the habitat services modeled as lost from the Project.
- Focus the majority of mitigation (project mix) on conservation of habitat, specifically on projects that protect habitat, enhance or maintain quality of habitat, and reduce fragmentation. Components of habitat conservation include preservation through easements, enhancements (such as juniper removal), and restoration. These habitat conservation projects may then be supplemented by a smaller portion of projects such as fence-marking or others.
- Develop an approach to ensure mitigation is implemented in a collaborative manner by establishing an "Oversight Committee" (see Section 2.4) that will support the in-lieu fee administrator (Section 3.1.4) and be composed of biologists working for BLM, USFWS, IDFG, and WGFD. The role of this team is to provide guidance and biological advice concerning the accomplishment of successful mitigation on the ground.

Additionally, the USFWS provided specific recommendations to ensure successful completion of mitigation projects that contribute to sage-grouse habitat conservation. Within these recommendations, the USFWS emphasizes the need to consider each mitigation site individually and provide a clear justification regarding the value of the treatment at that site. The Companies will establish mechanisms for receiving, reviewing and selecting proposals for projects through coordinated efforts between the Oversight Committee (that has been assembled for each state or regional area) and in-lieu fee administrator. Each proposed project will meet the intent of the mitigation, which is to protect, enhance, or maintain habitat quality for sage-grouse in order to receive funding. No projects will be funded that do not meet one of those goals.

2.1.3. Changes to the Plan

Given the dynamic nature of the current regulatory environment for sage-grouse, the Companies expect that there may continue to be changes in sage-grouse policies and guidance between submittal of this detailed outline, the final mitigation plan and final selection and implementation of mitigation projects. The Companies will consider new information as it becomes available and revise the Mitigation Plan if appropriate.

2.2. Siting Compensatory Mitigation Projects

Compensatory mitigation projects will be sited in the same state where the impact will occur and will be located using the following priorities:

First Priority: Projects will be located in polygons of Key Habitats/Core Areas (i.e., Preliminary Priority Habitats) that are intersected by the Project. Projects may be located in polygons of Key Habitat/Core (i.e., Preliminary Priority Habitats) that are *not* intersected by the Project but are within the region (e.g., Western Association of Fish and Wildlife Agencies' management zones) where the Oversight Committee agrees.

Second Priority: Projects may be located in areas outside of Key Habitat/Core (i.e., Preliminary Priority Habitats) where the Oversight Committee agrees that habitat connectivity may be restored.

The overarching goal and priority for siting mitigation projects is to locate projects where the greatest benefit to sage-grouse will be realized. The priorities stated above are a general rule for project siting, however, projects may be located elsewhere if the Oversight Committee (see Section 2.4) identifies specific opportunities that will provide a greater benefit to sage-grouse than those in the impacted region. Refer to Section 3.1.2 for additional discussion of mitigation project placement.

2.3. Timing for Financing of Mitigation Projects

There are three factors that influence the timing of financing and execution of mitigation projects. First, the best available estimates of disturbance of known habitat can only be made after the BLM establishes the preferred alternative for the Project and the Companies complete the design engineering for each segment based on that preferred alternative. Second, the Companies can only finance mitigation for a permitted project—that is, the mitigation investment can only be made after a permit is issued. While the Companies are willing to commit to making an appropriate investment if the permit is issued, mitigation funding would occur only after permits are in hand. Third, the Companies cannot know in advance what projects will be available in the timeframe between the issuance of permits and the desired start of construction. Flexibility is therefore required in the identification and financing of mitigation projects.

2.4. Oversight Committee

As described in the USFWS recommendations for mitigation approaches, an Oversight Committee consisting of agency biologists and other state and federal advisors, will be created to provide guidance to the in-lieu fee administering entity (see Section 3.1.4.) on the utilization of mitigation funds provided by the Companies. The Companies expect that both local and landscape level perspectives will be represented on the Oversight Committee, and that membership may shift as needed to consider local experts in each state or region. This will likely include local sage-grouse working groups, experts in the fields of mitigation, sage-grouse ecology, or other applicable disciplines. Committee members should be familiar with the Project area to help select mitigation projects locations and approve projects proposed by entities for use of mitigation funds.

The purposes of the Oversight Committee are to:

- Provide guidance to the in-lieu fee administering entity by:
  - Identifying and selecting mitigation projects;
  - Reviewing and approving projects proposed by other entities (proposals for use of mitigation funds);
- Employ experts as needed to determine the habitat services replacement value of project types not modeled in the HEA;
- Review proposed projects for compliance with the intent of the Framework and existing regulation and policy regarding compensatory mitigation;
- Validate the success of mitigation projects and their effectiveness at the local or landscape level; and
- Provide monitoring and oversight of project implementation and review of project monitoring results.

A selected committee member/entity will be identified who will be responsible for facilitating communications among Oversight Committee members and scheduling necessary review meetings to discuss mitigation projects and monitoring results. The roles and responsibilities of agency representatives, and other Oversight Committee members will vary by mitigation project type and location. Once final mitigation projects are identified, participants, roles and responsibilities within the Oversight Committee will be determined and assigned. Further detail will be presented in the final mitigation proposal regarding the Oversight Committee and mitigation project selection criteria.

3. Compensatory Mitigation Plan

3.1. Direct and Indirect Loss of Habitat Services Modeled in HEA

The avoidance (routing and siting criteria) and minimization measures (environmental protection measures and plans) undertaken by the Companies and discussed in the DEIS for the Project substantially avoid known impacts to greater sage-grouse and minimize impacts to their habitat. However, even with these measures in place, there are residual unavoidable impacts to habitat from the construction and operation of the Project. This Plan describes the Companies' plan to compensate for those impacts, as modeled in the HEA, by providing adequate funding (see Section 2.1.1 regarding discussion on "project mix" and Section 3.1.1) for one or more projects that the agencies agree replace habitat services lost due to the Project.

3.1.1. Mitigation Scaling

The HEA quantified the permanent and interim loss of habitat services resulting from ground-disturbing activities, construction related traffic and noise, and the footprint of the physical structures as defined by a habitat services metric (Table 7, HEA, Attachment 1). The HEA used the same habitat services metric to quantify the habitat services to be gained by implementing different types of habitat improvement measures (measured in service-acre-years). The habitat improvement measures,

summarized in Table 8 of the HEA, Attachment 1, that were selected by the interagency HEA Technical Advisory Team to model in the HEA are:

- fence marking or removal;
- sagebrush restoration and enhancement;
- juniper removal;
- seeding of a forb and bunchgrass understory; and
- purchase of conservation easements.

The analysis also produced a cost per service-acre-year gained for each habitat improvement measure based on the average cost of project implementation in Wyoming and Idaho (HEA Table 8, Attachment 1).

Compensatory mitigation will be applied to offset the modeled sage-grouse habitat service losses so that there is no net loss as a result of project construction and operation. Per the recommendations of the USFWS, the majority of conservation will focus on the conservation of habitat, specifically on projects that enhance or maintain quality of habitat and reduce fragmentation. The majority of the mitigation package will consist of habitat conservation easements (at 100% baseline habitat service level credit), sagebrush restoration and enhancement, which includes juniper removal, and fence marking or removal.

The Companies commit to selecting a set of projects that fully replace the habitat services lost, based on the preferred alternative when it is selected by the BLM. These portions will be identified as percentages of the overall mitigation package and will be applied to the total habitat services lost and multiplied by the cost per service acre gained by each conservation measure to estimate the mitigation dollars allocated to each measure, and then summed across measures to estimate the total compensatory mitigation obligations (mitigation funding to be provided by the Companies). After the Companies compensatory mitigation obligations are met (mitigation funding is provided to be managed by in-lieu fee administrator), the breakdown of mitigation project types (project mix) at the time of implementation is subject to change (under guidance of the Oversight Committee and in-lieu fee administrator) depending upon project availability and project benefit to sage-grouse and their habitat. However, the mitigation funding provided is fixed.

An example of how mitigation will be portioned among project types to offset the total habitat-service-acre-years lost in a hypothetical project segment is provided in Appendix C.

3.1.2. Mitigation Project Types

Descriptions of the mitigation project types modeled in the HEA are provided below. These projects are consistent with recommendations provided by the USFWS. The Companies are not limited to these project types for mitigation credit. Table 7 in the HEA (Attachment 1) presents total habitat services lost which could be replaced by the following mitigation project types.

Fence Marking and Removal

Based on Christiansen (2009) it has been demonstrated that each mile of fence within 2 miles of leks kills up to 53 greater sage-grouse per year. This threat can be eliminated by removing fences or significantly reduced by increasing the visibility of fences. Christiansen (2009) estimated a 70% reduction in mortalities could be expected along marked sections of fence. Stevens (2011) similarly predicted that marking fences with vinyl reflectors (flight diverters) reduced collision rates by up to 74%.

To eliminate the threat of collisions, fences would be removed or marked with flight diverters similar to those used in the Christiansen (2009), Wolfe (2009), and Stevens (2011) studies to increase fence visibility to greater sage-grouse. Fences will be removed where possible. Where removal is not possible, two flight diverters would be installed between each fence span (4 m post-to-post). Priority areas for fence removal and/or marking would be:

- Sections of fence known to cause sage-grouse collisions,
- Fences within 2 km (1.2 mi) of leks (Braun 2006; Stevens 2011) or other high risk area,
- Fences in areas with low slope and terrain ruggedness (Stevens 2011), and
- Fence segments bounded by steel t-posts with spans greater than 4 m (Stevens 2011).

Once fences have been removed or marked, local annual mortality due to fence collisions will be substantially reduced. As described in Section 2.2, all mitigation projects will be sited in the same state where the impact occurred and in a manner consistent with the priorities identified in the BLM's IM 2008-204.

The HEA calculated that 51,634 service-acre-years would be created for every mile of fence marked (with annual maintenance) or fence removed over the lifetime of the project. The Companies anticipate that this component will represent no more than 25% of the total habitat services gained when calculating the overall mitigation projects.

Sagebrush Restoration and Enhancement

Sagebrush restoration and enhancement creates new habitat for sage-grouse and can be used to create corridors between existing patches of sagebrush patches to produce larger patches of contiguous habitat. As described in Section 1.3, habitat for sage-grouse consists of a mosaic of plant communities dominated by sagebrush and a diverse grass and forb understory across the landscape (Wyoming Greater Sage-grouse Conservation Plan. 2003). This conservation measure increases the quality and quantity of habitat within the landscape, contributing to the long-term survival and success of the greater sage-grouse.

New habitat for sage-grouse would be created by establishing sagebrush and understory grasses and forbs in disturbed areas (e.g., roads, unreclaimed pipeline corridors, well pads, burned areas, etc.). Treatment for mitigation credit is not planned for areas of Project disturbance, which will be restored as described in the plan of development, but in other pre-existing areas of disturbance. Sagebrush can be seeded, planted as seedlings, or transplanted (i.e., containerized stems). Because seeded sagebrush takes a long time to grow to a size that provides habitat for sage-grouse, the HEA determined that

planting containerized stems was the most economical option. Sagebrush restoration and enhancement projects will include understory (grass and forb) treatments.

Where possible, projects will be placed strategically to decrease habitat fragmentation by connecting existing occupied habitats. All treatments will include monitoring plans and funding to conduct monitoring. Criteria that define "restoration" and "success" will be developed in coordination with the Oversight Committee.

Stripping of topsoil will be avoided in potential restoration areas, as it decreases the likelihood of treatment success. Any topsoil that is stripped will be stored properly in order to maintain biological viability of soil microbes that are necessary for sagebrush survival and growth. Soil structure should be maintained if it is stripped, and should be maintained when placed back within restoration areas prior to seeding or planting.

The value of sagebrush restoration depends on the method used; methods that result in faster plant establishment have higher value. The HEA calculated that for every acre of disturbance seeded with sagebrush and bunchgrass, 1,751 service-acre-years would be created over the lifetime of the project. For every acre of disturbance planted with containerized sagebrush stems and seeded with bunchgrass, 4,556 service-acre-years would be created. For every acre of disturbance planted with sagebrush seedlings and seeded with bunchgrass, 1,935 service-acre-years would be created. Because of the uncertain and delayed success rate and relatively high cost, the Companies do not anticipate selecting a substantial proportion of seeding or planting projects unless a cost-effective partnership opportunity arises that meets the approval of the Oversight Committee. The Companies anticipate that this component will represent no more than 5% of the total habitat services gained when calculating the overall mitigation projects.

Juniper Removal

Fire suppression and other post-settlement conditions have allowed western juniper to spread into areas previously dominated by grasses, forbs, and shrubs. Miller et al. (2005) reports that many areas have experienced an estimated 10-fold increase in juniper over the last 130 years. The expansion of juniper and other conifer species reduces habitat for sage-grouse and other sagebrush obligate species that depend on large patches of sagebrush-dominated vegetation. Sagebrush cover decreases with juniper encroachment as the vegetation transitions into woodland.

Most juniper communities are still in a state of transition. Miller et al. (2005) characterized three stages of woodland succession:

- Phase I (early) – trees are present but shrubs and herbs are the dominant vegetation that influence ecological processes (hydrologic, nutrient, and energy cycles) on the site;
- Phase II (mid) – trees are co-dominant with shrubs and herbs and all three vegetation layers influence ecological processes on the site;
- Phase III (late) – trees are the dominant vegetation and the primary plant layer influencing ecological processes on the site.

Sites in Phase I or II successional stages often retain a significant understory of sagebrush (i.e., grasses and forbs), so removal of Phase I or II can produce immediate habitat benefits for sage-grouse (NRCS 2010; USFWS recommendations).

Juniper/conifer removal projects used for mitigation will focus primarily on the early successive stages of conifer/juniper stands (i.e., Phase I or Phase II juniper) with no cheatgrass component. Removal of juniper/conifer will be done by mechanical means without the use of fire or chemicals:

- Phase I juniper/conifer will be treated by having a field crew walk from tree-to-tree, cutting them into pieces and scattering them on-site (lop and scatter).
- Phase II juniper/conifer will be treated by using a masticator, a large mechanical device that goes from tree-to-tree and demolishes the tree with whirling blades; debris is then left on site (mastication).

All juniper/conifer removal projects will include understory treatment, where needed, and vegetation monitoring until the understory vegetation is established. Locations of removal projects will be selected by the Companies with guidance from the Oversight Committee so that each treatment site provides value to the local sage-grouse population.

The value of juniper/conifer removal in the HEA depended on the successional stage of juniper removed (i.e., Phase I, Phase II, or Phase III juniper). The HEA calculated that 1,108 service-acre-years are created for every acre of Phase I juniper treated, 1,481 service-acre-years for every acre of Phase II juniper treated, and 1,751 service-acre-years for every acre of Phase III juniper treated with understory seeding over the lifetime of the project. Juniper The Companies anticipate that this component will represent approximately 30% of the total habitat services gained when calculating the overall mitigation projects.

Seeding of a Forb and Bunchgrass Understory

Bunchgrasses, as opposed to rhizomatous grasses, are recognized as an important component of sage-grouse nesting and brood-rearing habitats (Connelly et al. 2000; Crawford et al. 2004). The structure and abundance of bunchgrasses influence the quality of a sagebrush/bunchgrass community site for nesting sage-grouse. Tall, dense, residual grass in nesting habitat improves hatching success by providing cover for incubating females (Cagney et al. 2009). Herbaceous cover may provide scent, visual, and physical barriers to potential predators (DeLong et al. 1995, as cited in Connelly et al. 2000). In addition to providing cover from predators, forbs are an important food source for sage-grouse broods.

Sage-grouse nesting and brood-rearing habitat is improved by seeding native bunchgrasses and forbs into existing sagebrush stands or into adjacent disturbance, increasing nest and brood success. Understory seeding project sites will be selected by the Companies in coordination with the Oversight Committee to maximize the benefit of these projects for sage-grouse. Objectives for these projects and criteria for success will be developed in coordination with the Oversight Committee.

The HEA calculated that 56 service-acre-years are created for every acre of sage-brush vegetation that is overseeded with bunchgrass over the lifetime of the project. A greater number of service-acre-years are created when areas of disturbance (i.e., no vegetation) are seeded with bunchgrass: 282 per acre

seeded over the lifetime of the project. Because of the low habitat services gained, the uncertain and delayed success rate, and relatively high cost, the Companies do not anticipate using forb and bunchgrass understory seeding projects unless a cost-effective partnership opportunity arises that meets the approval of the Oversight Committee. The Companies anticipate that this component will represent no more than 5% of the total habitat services gained when calculating the overall mitigation projects.

Purchase of Conservation Easements

Conservation easements may be purchased and managed to remove the threats of specific land uses to sage-grouse. The purchase of easements can prevent future sage-grouse habitat destruction or degradation near urban areas or oil and gas development. With appropriate management, conservation easements can reduce fragmentation in species core areas and key habitats.

Conservation easements purchased for mitigation will be used in a strategic way with focus on areas/locations of highest demonstrable need leading to a reduction in habitat fragmentation. Conservation easements will be developed by the Companies in coordination with the Oversight Committee. Specific locations of conservation easements will depend on availability of easements for purchase. The Companies anticipate that this component will represent approximately 35% of the total habitat services gained when calculating the overall mitigation projects.

The HEA calculated that, on average, 747 service-acre-years would be created per acre of conservation easement purchased, assuming the easement is maintained over the life of the project. This total does not include the value of any subsequent habitat improvements to the property and assumes the Companies receive 100% credit for the baseline habitat-service level of the property.

3.1.3. Specific Mitigation Projects

Specific projects will be selected by the Oversight Committee in coordination with the in-lieu fee administrator as project applications/proposals are received or following the recommendations and guidelines provided by the states, BLM, and USFWS. They may be located on either public or private land. Although only five mitigation measures are modeled, utilization of the compensatory mitigation funding provided by the Companies is not bound to only those project types. However, other project types must be recognized by the Oversight Committee as providing sage-grouse population or habitat benefits.

Minimum Mitigation Project Criteria

The benefit of potential mitigation projects to sage-grouse will vary by type and location. The Oversight Committee will consider the criteria and strategy set forth in Sections 1.4, 1.5 and 2.2 of this plan in addition to the following priorities when selecting projects for implementation:

1. Implement activities to protect and maintain existing occupied habitats.
    a. Enhance existing occupied habitats.
2. Implement activities to conserve potential habitat and populations
    a. Enhance potential habitat that adjoins known habitat so that it can support sage-grouse, thereby increasing habitat patch size and overall habitat availability.

   b. Create vegetative corridors to reconnect occupied habitats and decrease habitat fragmentation.
   c. Restore degraded habitats that could support greater sage-grouse use.
3. Potential mitigation sites will be evaluated to determine their current state, the type of mitigation project that would be most beneficial, and the potential for that project to meet the success criteria defined by the Oversight Committee. Projects that confer the greatest potential benefit to sage-grouse and have a high probability of success will be given priority.

3.1.4. In lieu fees

The State of Wyoming, the State of Idaho (still under consideration), and the BLM provide a potential option for the Companies to employ an in-lieu fee approach to mitigation. The Companies can pay mitigation fees into accounts (managed by an in-lieu fee administrator) that will fund projects that will benefit sage-grouse and their habitats. Refer to Section 2.2 for general/minimum criteria for selection of mitigation projects that would utilize in-lieu fees.

As previously stated, the Companies will provide in-lieu fees to be utilized by projects proposed by other entities if they meet the required criteria. The habitat services gained by the in-lieu fee projects will be added to the services gained by any projects funded by the Companies to total the habitat services modeled as lost through construction and operation of the Project.

The Companies will work with the Oversight Committee to identify the appropriate organizations to receive and manage in-lieu fees (in-lieu fee administrator) in each state, as well as to set standards for the projects funded by those fees.

In-lieu Fee Administration

In Idaho, the Idaho SAC framework that describes the general outline for a sage-grouse compensatory mitigation program in Idaho is still in development. This program includes an “in-lieu fee” approach to compensatory mitigation through which a project developer would pay funds into an account managed by the mitigation program for performance of mitigation actions that provide measureable benefits for sage-grouse and their habitats within Idaho. The Companies will incorporate details from the SAC framework into this mitigation plan once it is finalized.

In Wyoming, entities such as the Wyoming Wildlife and Natural Resource Trust (WWNRT) have been identified as a potential organization that could receive and manage in-lieu fees for the Project. The WWNRT is an independent state agency governed by a nine-member citizen board appointed by the Governor and works closely with the WGFD and Wyoming state government. Opportunities with other entities such as the Intermountain West Joint Venture will be explored.

Requests for in-lieu funds (compensatory mitigation funding provided by Companies) must specify, at a minimum, the following:

- Objectives of the project, including specifically how the project will improve habitat for greater sage-grouse at the proposed location with specific and measurable success criteria.

- Discussion and documentation that the group requesting the in-lieu funds can successfully implement the mitigation project.
- Maps and descriptions of the geographic area of the mitigation project, including baseline habitat quality for sage-grouse and surrounding land uses. Maps should identify whether the project will be in a state-identified greater sage-grouse habitat (Core in Wyoming, Key/Restoration in Idaho).
- Detailed written specifications and work descriptions, including: timing and sequence, methods for establishing or enhancing vegetation, plans to control invasive plant species, erosion control measures, long-term maintenance, monitoring and reporting requirements, etc.
- Performance standards, including an adaptive management plan if performance standards are not met.

4. Monitoring and maintenance

For direct impacts, monitoring the success of mitigation measures and maintaining each measure to ensure continued success are important elements of the Companies' mitigation strategy. The HEA incorporated monitoring and maintenance costs. Each project that is selected for mitigation will require a monitoring and mitigation entity. This role could be filled by agencies, private landowners, NGOs, managers of conservation easements, environmental or reclamation contractors, the entity applying for funding or other appropriate monitoring entities.

The final monitoring and maintenance approach for each mitigation project will be formalized in a monitoring and maintenance strategy that will be reviewed annually, or as necessary, by the Oversight Committee with involvement of the monitoring entity. Monitoring duration will vary for each mitigation project type. Results of monitoring will be provided to the Oversight Committee. Frequencies of these reports may vary between project types and will be determined by the Oversight Committee. The monitoring and maintenance strategy will also include success criteria for each project and project type. Examples of success criteria might include:

- Increase in desired vegetation characteristics in a treated or enhanced area when compared to a suitable control area (trending towards desirable vegetation structure and composition with measurable goals)
- Adherence to conservation easement contract terms
- Removal of stated acreage of encroaching juniper stands
- Miles of fence marked

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Appendix A: Key Participants in Gateway West HEA

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Appendix B: U.S. Fish and Wildlife Service Recommendations on Mitigation for Impacts to Greater Sage-grouse Associated With the Gateway West Interstate Transmission Line

The U.S. Fish and Wildlife Service (Service) provides the following recommendations regarding development and implementation of a mitigation plan to address impacts of Gateway West Interstate Transmission Line on the Greater Sage-grouse and its habitat. These recommendations should not be construed as approval for any mitigation plan, nor do they shift the responsibility of successful mitigation for project-related impacts from the project proponent. Rather, these recommendations provided to the project proponents are guidelines that the Service believes will increase the likelihood that mitigation will succeed in off-setting project-related impacts to Sage-grouse habitat.

GENERAL APPROACH

1) The Habitat Equivalency Analysis (HEA) will provide a dollar figure estimate of cost to replace habitat services lost, on a one-to-one mitigation ratio basis. We recommend that the Project Proponent use that cost estimate to provide a general allocation of how it will be spent on mitigation in terms of specific actions or projects proposed for implementation. For example, a general breakdown should be provided regarding the amount of money going toward conservation easements, habitat enhancement projects, fence marking, research, etc.

The Service recommends that the majority of mitigation focus on conservation of habitat—projects that enhance or maintain quality of habitat and reduce fragmentation. Components of habitat conservation include preservation through easements, enhancements, and restoration. These habitat conservation projects may then be supplemented by a smaller portion of projects such as fence-marking, focused research in designated areas following specific guidelines, water developments, or others.

2) The HEA provides a standardized basis for a one-to-one ratio for habitat services lost/ habitat services mitigated. However, the following biological factors may provide justification for adjusting the minimal mitigation ratio beyond one-to-one.

(a) According to the best available science on the relative value of Sage-grouse populations, some local populations may contribute more to long-term species viability than others, justifying higher mitigation ratios. Such populations are located in: southwestern ID, central and northwestern NV, eastern OR, and WY populations contribute most to the long-term viability of the species;

(b) Regarding individual birds contributing to populations, hens have a much higher biological value than males;

(c) Localized habitats of high ecological value such as (but not limited to) those serving key functions in demographic, genetic, or seasonal connectivity, important wintering areas, or leks;

(d) Time lags for mitigation success such that habitat services in treatment areas are not immediately available to Sage-grouse.

3) The project proponent should follow specific recommendations listed below when implementing mitigation projects to ensure successful completion of such projects that contribute to Sage-grouse habitat conservation.

4) Mitigation will be implemented in a collaborative manner by working with members of an "oversight team" composed of biologists working for BLM, Service, Idaho Department of Fish and Game, and Wyoming Game and Fish Department. The role of this team is to provide guidance and biological advice concerning the accomplishment of successful mitigation on the ground.

SPECIFIC RECOMMENDATIONS- The following list is not exhaustive, and includes only projects that have been suggested as potential mitigation to date. Recommendations on other project types offered as mitigation will be made on a case by case basis as needed, and must be coordinated with oversight team (number 4 above).

Fence marking

At this time, there are only preliminary data that suggest the beneficial effects of fence marking on Sage-grouse. These data suggest that fence marking can be effective in specific problem areas within Sage-grouse habitat. So, while we support the use of fence marking on a limited and site-specific basis, fence marking should not be central focus of mitigation.

Sage-grouse habitat restoration

While restoration of sagebrush/Sage-grouse habitat can be accomplished with seeding and transplanting, all habitat restoration treatments must include consideration of understory (grass and forb) treatments. All restorations must have a short- and long-term follow-up treatment and monitoring plan to ensure success, and must be accompanied by adequate funding for implementation of these monitoring plans. Criteria that define “restoration” and “success” should be developed in coordination with the oversight team.

If top soil must be stripped from potential restoration areas, likelihood of success will be much lower and, therefore, should be avoided. All topsoil that is stripped must be stored properly in order to maintain biological viability of soil microbes that are necessary for sagebrush survival and growth. Soil structure should be maintained if it is stripped, and should be maintained when placed back within restoration areas prior to seeding or planting.

Conifer/juniper removal

There has been little scientific evidence (one study to our knowledge) that definitively shows positive response of Sage-grouse habitat to conifer/juniper removal. Evidence suggests that if removal occurs during the early growth stage of plants—that is, in an earlier stage of ecological succession within the conifer/juniper stand with little to now cheatgrass component—treatment will be more effective as the habitat is less likely to have been ecologically altered. While we are aware that NRCS did a study in 2011, no data from this study is currently available. There should be a clear justification regarding the value of such a treatment within any given conifer/juniper removal site in terms of beneficial effects to Sage-grouse habitat. Such treatments also should include a plan for active understory treatment to develop suitable habitat.

If conifer/juniper removal is done, all such treatment should be mechanical and without the use of fire to preclude loss of sagebrush. Slash removal also should be done without use of fire.

Grass/forb enhancement
All grass/forb restoration and/or enhancement should use native plant species. The primary objective of all such treatments must be on Sage-grouse habitat; i.e., there must be a demonstrable need on a site-specific basis concerning benefits to Sage-grouse habitat. While use of such enhancement sites may include other wildlife and livestock, all such uses remain as secondary priorities only, and should not drive any such restoration/enhancement mitigation projects.
Details of "enhancement", and criteria for success, should be developed in coordination with oversight team.

Fire reduction
Use of fire breaks for fire reduction should only be used in a focused, site-specific manner only. Fire reduction through the use of fire breaks should only be used in high fire risk areas, and not universally applied across the project area. The value of fire reduction through fuel breaks should be clearly demonstrated on any site where this treatment is being considered as mitigation. While fire breaks may include use of non-native vegetation, such non-natives are only justified in areas where the risk of fire is demonstrably high, and where native vegetation would compromise the value of the fire break. All fire breaks should be designed minimize habitat fragmentation, taking into consideration contours and characteristics of the natural landscape, and a review of other habitat fragmentation activities on the landscape. The density of firebreaks should not result in habitat fragmentation that negatively affects Sage-grouse.

Conservation easements
Conservation easements with appropriate management can reduce fragmentation in core areas. Easements should be used in a strategic way with focus on areas/locations of highest demonstrable need leading to a reduction in habitat fragmentation, and should be developed in coordination with the oversight team.

Water Development
Water developments are not necessarily good for Sage-grouse, and water development in areas where naturally-occurring water has not historically existed is not recommended. Any water development should have a clear need-based, site-specific justification in terms of benefits to local Sage-grouse, and should be accompanied by a plan to protect naturally-occurring wetland and riparian habitats. Certain types of developments may be more beneficial and appropriate for areas than others: for example, fencing off wetland or wet meadow habitat and replacing with upland water developments to keep livestock out of sensitive habitats susceptible to disturbance. Creating ponds and open water, on the other hand, could be more detrimental than beneficial if they facilitate mosquito reproduction and the spread of West Nile Virus. Thus, all water development projects need to be thought through in terms of site-specific needs for local Sage-grouse and clearly show how they benefit those birds, and coordinated with oversight team.

Herbicide Treatments
Any treatment of Sage-grouse habitat by herbicides must include a detailed, site-specific justification with clearly articulated objectives showing benefits to the Sage-grouse.

Larvicide Treatment
Use of larvicides could be considered in areas at high risk for West Nile virus.

Prescribed burning

Not recommended as mitigation.

[Prescribed burning must be approached very cautiously and conservatively, and only used on a strictly localized basis after analysis clearly shows a real need and benefit to Sage-grouse. For example, there may be some high elevation, mountain big sagebrush habitats in need of native grass and/or forb understory development. Generally, burning within Sage-grouse habitat is not supported by the Service, requiring a detailed site-specific analysis and justification regarding demonstrable benefits to Sage-grouse.]

Appendix C: Hypothetical Example of Scaling Mitigation

A hypothetical example of project scaling is provided to illustrate the process of balancing habitat-service losses with habitat-service gains from habitat conservation projects within the framework of the HEA. The Companies cannot commit to specific projects until the BLM has chosen a preferred alternative, design engineering has been completed, and the Project schedule has been finalized.

In the hypothetical Segment X, a total of 528,294 service-acre-years were lost in the analysis area over the lifetime of the project. This is the mean loss among the actual project segments based on the HEA. Within 18 km of the transmission line, there are opportunities for all of the conservation measures described in Table 6 of the HEA. As described in Section 3.1.1 of this plan, projects selected will focus on the conservation of habitat, specifically on projects that enhance or maintain quality of habitat and reduce fragmentation. Habitat conservation easements (at 100% baseline habitat service level credit) will make up the majority of the mitigation package, followed by sagebrush restoration and enhancement, including juniper removal. To a lesser degree, the remaining portion of the package will be split among fence marking and removal, and understory seeding for planning purposes.

The Companies and Oversight Committee worked together to allocate conservation projects in a way that is most beneficial to the sage-grouse habitat quality in Segment X (see Table D.1). In practice, the percentages allocated to each conservation measure would differ among segments to account for differences in project availability and to allow the Oversight Committee to select the most beneficial project types for a specific segment. Project sizes are calculated by dividing the habitat services to be replaced by a measure (Table D.1) by the habitat services created by that measure over the lifetime of the project. The HEA assumed that funding for mitigation projects would be provided in the first year of construction with projects completed 1-5 years after funding is received. If mitigation funding were provided later, the total mitigation package would increase.

The costs to implement each of the conservation measures can be most accurately calculated by multiplying the number of habitat services to be replaced by this measure by the cost per services gained. The cost to mitigate Segment X for direct and indirect impacts that were modeled in the HEA would be $653,763 (Table D.2). If suitable projects cannot be found to satisfy the project sizes specified in Table D.1, the remaining funds may be allocated to a different conservation measure.

Table D.1. Habitat conservation projects selected to offset impacts modeled in the HEA for Hypothetical Segment X.

Conservation Measure	General Method	Percent of Total Mitigation for Segment X	Habitat Services to Be Replaced by this Measure (service-acre-years)	Project Sizes Needed to Offset Loss
Fence removal and marking with flight diverters	Fence marking within 2 km of leks	5%	26,415	1 mile
Sagebrush restoration and improvement projects	Planting seedlings and seeding bunchgrass understory	20%	105,659	55 acres
Juniper/conifer removal	Cut-pile-cover or mastication of Phase II[2] juniper	20%	105,659	71 acres
Bunchgrass seeding projects	Seeding disturbed habitat to create grassland	5%	26,415	94 acres
Conservation easements	Land purchase 100 % service credit	50%	264,147	354 acres

Table D.2. Budget to implement projects selected for mitigation in Hypothetical Segment X.

Conservation Measure	General Method	Project Sizes Needed to Offset Loss	Estimated Cost to Implement Measure* (from Project HEA Report [SWCA 2012])	Estimated Project Costs
Fence removal and marking with flight diverters	Fence marking within 2 km of leks	1 mile	$1,400/mile for initial installation (materials, labor, and estimated indirect costs) plus $300/mile every year for maintenance (materials and labor)	$17,170
Sagebrush restoration and improvement projects	Planting seedlings and seeding bunchgrass understory	55 acres	$4,200/acre to grow and plant seedlings at one per 5 m^2 (materials and labor + 50% indirect costs)	$229,279
Juniper/conifer removal	Cut-pile-cover or mastication of Phase II^2 juniper	71 acres	$650/acre (materials, labor, and estimated indirect costs)	$46,490
Bunchgrass seeding projects	Seeding disturbed habitat to create grassland	94 acres	$1,200/acre (materials, labor, and indirect costs)	$112,527
Conservation easements	Land purchase 100 % service credit	354 acres	$580/acre average purchase price + $2,500/year for maintenance	$248,298
Total				$653,763

* Cost of implementation includes a 50% markup for indirect costs, which include contract writing, supervision, clearances, monitoring, inspections, and vehicle costs.

Appendix D: Idaho Power Letter to U.S. Fish and Wildlife Service concerning Greater Sage-Grouse Information Request

June 25, 2008

Brian Kelly, Field Supervisor
Wyoming Field Office
U.S. Fish and Wildlife Service
5353 Yellowstone Road, Suite 308A
Cheyenne, Wyoming 82009

Subject: Greater sage grouse information request

Dear Mr. Kelly:

Idaho Power Company (Idaho Power) submits this letter in response to the U.S. Fish and Wildlife Service's status review of the greater sage grouse. Idaho Power's service territory intersects much of the sage grouse habitat in southern Idaho. Electrical power lines have been identified as potential threats to sage grouse. As such, Idaho Power has evaluated the status of sage grouse in relation to our power grid—both transmission and distribution lines. In the following, I have summarized our findings.

Power lines are commonly hypothesized to result in the following impacts to sage grouse: 1) increased predation as a result of enhanced perching and nesting opportunities for raptors and corvids; 2) abandonment of leks because of an avoidance response to tall structures; and 3) habitat fragmentation. These perceptions, even in the absence of peer-reviewed journal publications supporting such effects, have resulted in regulatory and land management agencies proposing and adopting a variety of protection measures (e.g., buffers from leks, perch diverters, etc.)

In an attempt to evaluate the efficacy of these impacts associated within our service territory we used a geographic information system to evaluate our power lines in relation to sage grouse leks (the most complete sage grouse data available.) These analyses used current lek data from the Idaho Department of Fish and Game and Idaho Power data on power pole locations.

Lek Proximity to Power Lines

Establishing buffers between leks and power lines are a commonly used or suggested as measures to protect sage grouse. Theoretically, a buffer would address two hypothesized threats to sage grouse: 1) abandonment of leks because of the proximity of a tall structure and 2) increased predation of sage grouse on leks by raptors using perch substrated afforded by power line structures. Idaho Power hypothesized that if power lines would affect sage grouse leks, we would see fewer active leks proximate to our power lines.

As of 2007, 598 sage grouse lek locations are known to exist in Idaho Power's service territory: 238 active, 115 inactive, and 245 of unknown status. All reported leks in Idaho Power's service territory are within 18 km of a power line. There are a number data quality issues with 'unkown leks' that limits the usefulness of these data (e.g., location accuracy, survey frequency.)

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Forty-two active leks occur within 1 km of a power line and 28 inactive leks (Table 1). Of those leks within 1 km, and of known status, 60% are active. Between 1 and 5 km of a power line, there were 136 active leks and 62 inactive leks. However, the percentage of leks classified as inactive (25.5%) was highest in the 0-1 km distance category. Twenty-five active leks within 1 km of power line structures occur along power lines that have been present for more than 40 years (Table 2). Of the inactive leks within 1 km, 11 of the 28 leks were active for more than 20 years after the line was built. Another 8 were active for more than 10 years before being designated inactive.

Table 1. Lek status by distance from nearest power pole (percentage in parentheses).

	Distance from nearest power pole				
Lek Status[1]	0-1km	1-5km	5-10 km	10-18 km	Total
Active	42 (38.9)	136 (39.1)	52 (41.6)	8 (47.1)	238
Inactive	28 (25.9)	61 (17.5)	24 (19.2)	2 (11.8)	115
Unknown	38 (35.2)	151 (43.4)	49 (39.2)	7 (41.18)	245
Total	108	348	125	17	598

[1] As defined by Idaho Department of Fish and Game

Table 2. Number of leks, and status, within 1 km of power lines in relation to years since construction.

	Lek status		
Years	Active	Inactive[1]	Unknown
0-10	4	6	3
10-20	4	8	6
20-30	7	5	6
30-40	2	1	6
>40	25	5	9
Built after last active lek count[2]		3	8
Total	42	28	38

[1] The number of years a lek was active after construction of a line before becoming inactive.
[2] Line built after the last known active status date was established.

The average number of males observed at active leks (5-year average) was similar among the distance categories (Table 3.)

Table 3. Average number of males (5-year average, 2003-2007) observed at active leks, by distance category.

Lek distance from power line	Males/active lek
0-1 km	15.2
1-5 km	14.0
5-10	14.2
10-18 km	10.6
>18 km	

Observations

While we recognize that these analyses and results have not been peered reviewed, we offer the following observations for your consideration:

- The presence of power lines are not causing lek abandonment
- Hypotheses concerning causal mechanisms related to power lines, such as tall structures and raptor predation, are not validated by these data.

The loss and modification of sagebrush habitat, in terms of quantity and quality, is broadly recognized as a leading threat to sage grouse populations, and most likely the cause of historical population declines. Power lines are highly correlated with, and built in response to, economic development and expansion in wildlands, including the expansion of agriculture through development of irrigation projects, urban expansion, and the proliferation of ranchettes on the rural landscape, all of which convert sagebrush habitat and result in habitat fragmentation.

The factors affecting sage grouse populations are complex and variable. Idaho Power suggests, based on empirical evidence in southern Idaho presented here, that power lines alone do not impact the persistence of sage grouse lekking areas.

About Idaho Power

Idaho Power is an investor-owned utility with a service territory that covers a 24,000 square mile area in southern Idaho and eastern Oregon, with an estimated population of 982,000. IPC holds franchises in 71 cities in Idaho and nine cities in Oregon and holds certificates from the respective public utility regulatory authorities to serve all or a portion of 25 counties in Idaho and three counties in Oregon. As of December 31, 2007, IPC supplied electric energy to approximately 482,000 customers.

Thank you for the opportunity to comment on the Greater sage grouse status review. If you should have any questions regarding our comments, feel free to contact me at (208) 388-2330 or bdumas@idahopower.com.

Respectfully,

Brett Dumas
Environmental Supervisor

cc: Susan Giannettino, Idaho BLM
Walt George, Wyoming BLM
Tom Hemker, IDFG
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