United States Department of the Interior
Bureau of Land Management

Environmental Assessment – (ID-210-2008-284*)*

China Mountain Meteorological Tower Amendment

Location: **Jarbidge Field Office, Twin Falls County, Idaho**

Applicant/Address: **China Mountain Wind, LLC**
700 SW Taylor Street, Ste. 210, Portland, Oregon 97258

Prepared By: URS Corporation
1750 Front Street, Ste. 100, Boise, Idaho 83704

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March 2009

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CHINA MOUNTAIN METEOROLGICAL TOWER AMENDMENT ENVIRONMENTAL ASSESSMENT

1.0 PURPOSE AND NEED

1.1 INTRODUCTION

This Environmental Assessment (EA) has been prepared to disclose and analyze the environmental consequences of siting three temporary meteorological (met) towers on China Mountain as proposed by China Mountain Wind, LLC. The EA is a site-specific analysis of impacts that are expected as a result of implementing the proposed action or alternatives. The EA assists the Bureau of Land Management (BLM) in project planning and ensuring compliance with the National Environmental Policy Act (NEPA). An EA provides evidence for determining whether to prepare an Environmental Impact Statement (EIS) or a Finding of No Significant Impact (FONSI). If the decision maker determines that this project has significant impacts following the analysis in the EA, then an EIS would be prepared for the project. If not, a Decision Record may be signed for the EA approving the selected alternative, whether the proposed action or another alternative. A Decision Record, including a FONSI, documents the reasons why implementation of the selected alternative would not result in significant environmental impacts beyond those already addressed in the Jarbidge Resource Management Plan (March 23, 1987; Amended for Wind Energy in 2005).

1.2 BACKGROUND

In response to a recommendation in the President's 2001 National Energy Policy, the BLM prepared the BLM Wind Energy Development Programmatic EIS (PEIS) to evaluate issues associated with future wind energy development on Western public lands administered by the BLM. The PEIS analyzed a Wind Energy Development Program within the BLM. The Record of Decision (ROD) for the PEIS was signed on December 15, 2005 and established policies and best management practices for wind energy rights-of-way (ROW) authorizations. The ROD amended 52 BLM land-use plans, including the 1987 Jarbidge Resource Management Plan (RMP). The PEIS shows an area with high wind resource potential in the southeast portion of the Jarbidge Field Office. Instructional Memorandum (IM-2009-043) issued in 2008 clarifies BLM wind energy development policies and best management practices provided in the PEIS. Even though the BLM has completed a PEIS for implementation of a wind energy development program, site-specific environmental analyses are needed before implementing individual wind energy projects.

The proposed project is located in south-central Idaho near the Nevada border and includes the lands showing high wind resource potential in the PEIS. The met towers would be located in the BLM Jarbidge Field Office, southwest of the town of Rogerson in Twin Falls County, Idaho and northwest of the town of Jackpot, Nevada (Figure 1).

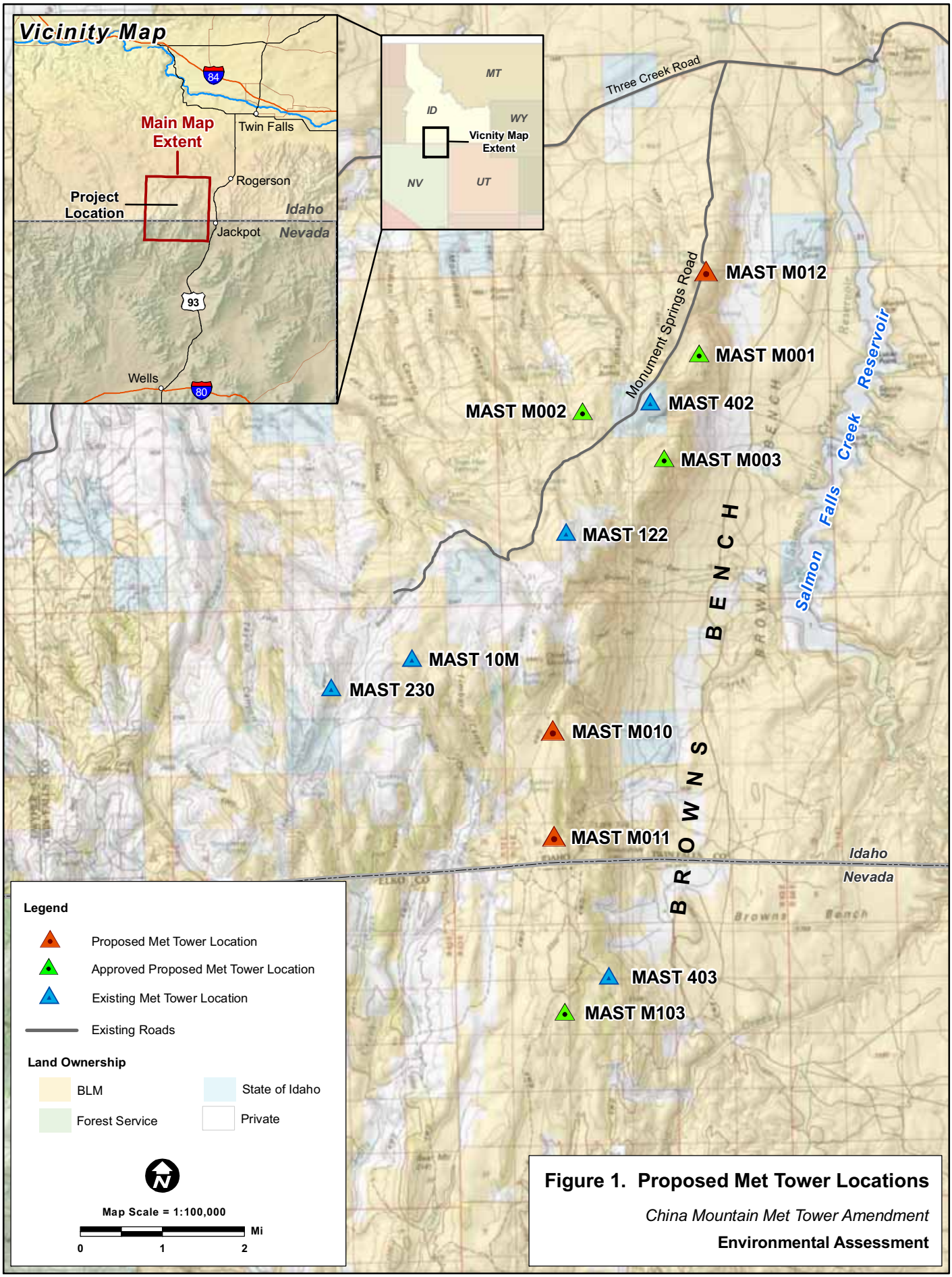


Figure 1. Proposed Met Tower Locations

China Mountain Met Tower Amendment

Environmental Assessment

On June 6, 2002, Renewable Energy Systems North America, LLC (RES) filed a ROW application to install six met towers in the China Mountain Area to obtain wind data in the project area. In response to the application, BLM prepared EA no. ID-02-079. Because most of the project location was on USGS quadrangle maps identified as Brown's Bench North Quad and Brown's Bench South Quad, the project was identified in the Brown's Bench area. The actual proposed location is west of the area in southern Idaho known as Brown's Bench. There is another area in Northern Nevada that is identified as Brown's Bench that is not associated with the project. To more accurately identify the project location and to avoid confusion the project location is referred to as China Mountain.

On October 6, 2003 the BLM signed a decision record approving installation of four met towers (Figure 1). Western Watersheds Project and Idaho Bird Hunters filed an appeal and sought a stay of the BLM Decision Record for the four met towers on November 20, 2003. The Interior Board of Land Appeals denied the appellants' petition to stay the decision on January 5, 2004. On January 25, 2007, the Interior Board of Land Appeals affirmed the October 6, 2003 Decision Record and concluded that the Field Office Manager properly decided to grant RES a ROW for four met towers (IBLA 2004-0060). The ROW was granted to RES in 2004.

One of the four approved met towers was constructed in the fall of 2005. A Determination of NEPA Adequacy (DNA) was conducted in 2007 for the installation of the previously approved met towers (BLM DNA no. ID-210-2007-DNA-3984, November 15, 2007). A notice to proceed was issued for the construction of the three remaining met towers on September 5, 2008. The remaining three met towers were installed in October 2008. A total of, eight met towers have been constructed in the China Mountain vicinity on private land, Idaho State Lands, and BLM Nevada and BLM Idaho managed lands. These met towers are collecting data that supplement the computer models and measure the wind in the area. In order to develop a commercial wind plant, a sustained wind without too much shear is required. The wind speed, wind variation by elevation, wind shear, and seasonal wind changes are measured by the met towers. The data would also be used to determine placement and type of turbines if a commercial wind farm were to be developed.

In 2002, the applicant also filed an application for a "preference right-of-way" which allowed the applicant to retain the interest in a larger project area for future potential development. The preference ROW was granted in May 2004.

On May 1, 2007, RES filed an application to construct and operate a commercial wind power generation facility (aka wind farm). The BLM Jarbidge Field Office is currently preparing an EIS for the proposed China Mountain Wind Project. If approved, the proposed wind farm would be located on 30,700 acres of public, state, and private lands in the China Mountain

area. In February of 2008, RES assigned the project to China Mountain Wind, LLC, a subsidiary of RES. In September 2008, China Mountain Wind, LLC sold 50 percent interest in the Proposed Project to Nevada Energy.

1.3 PURPOSE AND NEED FOR THE PROPOSED ACTION

On June 27, 2008, an application for purposes of amending the existing temporary ROW grant for wind monitoring and testing within a larger project area was submitted to the BLM (refer to Section 2.1 for exact coordinates). China Mountain Wind, LLC requested to amend the ROW grant to construct, operate, maintain, and remove three additional meteorological towers for a total of seven.

In accordance with 43 CFR 2800, BLM needs to process the application for a temporary ROW grant. If approved the grant would allow China Mountain Wind, LLC to conduct additional wind monitoring and testing. Before approving ROW applications, BLM policy requires that an analysis of the environmental impacts of the proposal be completed.

China Mountain Wind, LLC has also provided computer-generated models of wind potential in the Idaho-Nevada area. These models indicate the China Mountain area has sufficient wind resources to produce commercial-scale energy (Figure 2). Currently there are eight existing met towers in the project vicinity collecting wind data. The three proposed met towers would collect additional wind-related data to help substantiate the models and existing data. There is no substitute for on-site wind measurements. China Mountain Wind, LLC has indicated the three additional met towers are needed to further refine the wind data and the extent of the wind resource. The purpose of the additional met towers is to collect a more complete body of data regarding the wind resource. China Mountain Wind, LLC intends to use the data to refine their proposal to construct a commercial wind farm in the China Mountain area.

1.4 CONFORMANCE WITH BLM LAND USE PLAN(S)

Public lands involved in the siting of the proposed met towers are located within the Jarbidge Field Office and are currently managed under the jurisdiction of the Jarbidge RMP (BLM 1987). Decisions in the original 1987 Jarbidge RMP did not discuss specific projects such as the applications for wind energy. Page II-1, paragraph 2 states: Under this RMP, there would be 1,467,180 acres of public land open to ROW application for utility lines or other projects needed for public or private use. The majority of Multiple Use Area (MUA) 15, within the Jarbidge Field office, is open to ROW applications for utility lines (RMP, p. II-56). The proposed met towers are located within the area of MUA 15 that is open to ROW. The Jarbidge RMP was amended in December 2005 as part of the BLM Wind Energy

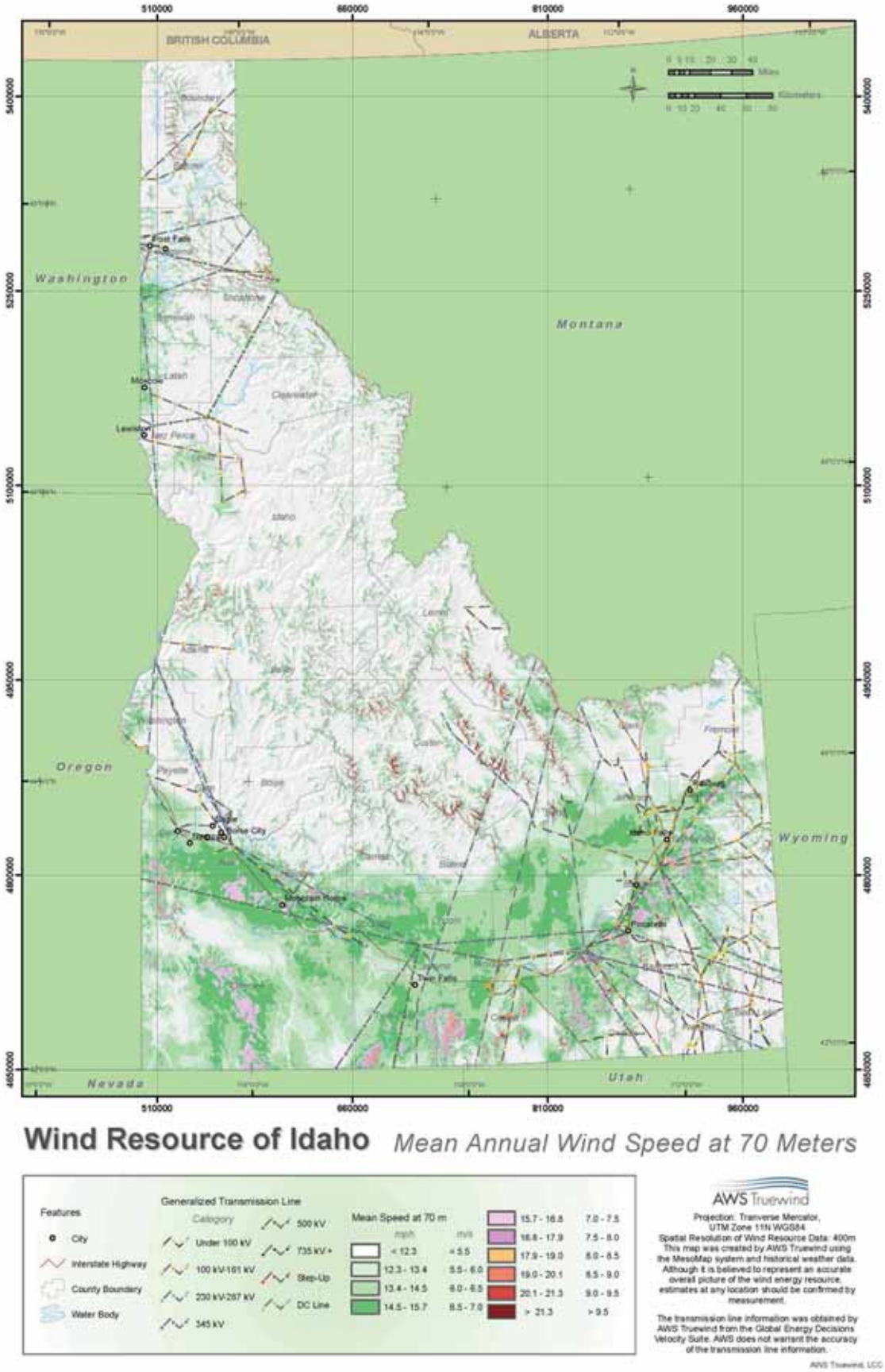


Figure 2. China Mountain Wind Power Suitability.

Development Program. As a result, the Jarbidge RMP was amended as follows: Wind energy development will be restricted from wildlife habitat where adverse effects cannot be mitigated; and programmatic policies and BMPs in the Wind Energy Development Program will be adopted (BLM 2005a, Appendix C, Table C-1).

The Jarbidge RMP has "No Occupancy Time Periods" for crucial wildlife habitats. The project area includes mule deer crucial winter range; antelope crucial winter and fawning range; and sage-grouse winter, breeding and nesting/brood rearing range. There are also nesting and wintering restrictions for other bird species. The "no occupancy" as defined in the RMP, indicates that construction and maintenance work will be scheduled to avoid or minimize disturbance to wildlife during specific periods by species. The time periods are identified on Table 1, page II-85 of the Jarbidge RMP (BLM 1987).

1.5 RELATIONSHIP TO STATUTES, REGULATIONS, OR OTHER PLANS

This EA is tiered to the Final PEIS for Wind Energy Development on Western Public Lands Administered by the BLM (BLM 2005a). These documents are kept on file at the BLM Jarbidge Field Office, 2536 Kimberly Road, Twin Falls, ID 83301.

The proposed action and alternatives comply with the relevant federal acts and state statutes that are discussed below:

- Federal agencies are required to protect and manage cultural resources and several federal laws mandate their protection. The proposed action and alternatives must comply with the following laws, including: Archaeological Resources Protection Act of 1979 as amended (16 U.S.C. §§ 470aa–470mm, 1979), National Historic Preservation Act of 1966 as amended (NHPA) (16 U.S.C. 1A §§ 470 *et seq*., 2001), Native American Graves Protection and Repatriation Act of 1990 (25 U.S.C. §§ 32–3001, 1990), and American Indian Religious Freedom Act of 1978 (42 USC 1966).

  Government-to-Government consultation (EO 13175) is on-going with the Duck Valley Shoshone-Paiute Tribes and the Shoshone-Bannock of the Fort Hall Reservation for this project.

- *Endangered Species Act (ESA) of 1973 as amended (16 USC 1531)*: Section 7 of the ESA outlines the procedure for federal interagency cooperation to conserve federally listed species and their designated habitats. Section 7(a) (2) of the ESA states that each federal agency shall, in consultation with Secretary, insure that any action they authorize, fund, or carry out is not likely to jeopardize the continued existence of a listed species or result in the destruction or adverse

modification of their habitats within the project area. No ESA listed species will be affected by the project.

- *Special Status Species Management Manual for the Bureau of Land Management (BLM Manual 6840)*: National policy directs BLM State Directors to designate sensitive species in cooperation with the state fish and wildlife agency. This manual establishes policy for management of species listed or proposed for listing pursuant to the ESA and Bureau sensitive species which are found on BLM-administered lands. Effects to special status species are analyzed in this EA.

- *Migratory Bird Treaty Act* and Executive Order (EO) 13186 dated January 11, 2001: EO 13186 outlines the responsibilities of federal agencies to protect migratory birds. Federal agencies including BLM are to include considerations for conserving migratory birds and their habitat, restore and enhance their habitat, prevent detrimental alteration of the environment, and design migratory bird habitat and population principles, measures and practices into agency plans and planning processes. Effects to migratory birds are analyzed in this EA.

- *Federal Noxious Weed Act* of 1974 as amended and EO 13112 on Invasive Species dated February 3, 1999. Project stipulations are included to address noxious and invasive weeds.

1.6 IDENTIFICATION OF ISSUES

This section describes the resources and animal/plant species of particular concern that were identified through the interdisciplinary planning process. BLM resource specialists identified resources to be carried forward for analysis in this EA. Site visits were conducted by the project team, and inventory worksheets were completed for fish and wildlife resources, plant resources, visual resources, and cultural resources. This information is available in the project record. The project was posted on the BLM NEPA web page in May 2008. One comment was received during that time.

1.6.1 Special Status Species

- *Greater Sage-Grouse* – The three proposed met towers are located within sage-grouse habitat that supports year-round use. Three active leks have been identified within 2 miles of the proposed M012 site, and eight active leks within 5 miles. There are four active leks within 5 miles of M010 and M011. Installation of three additional met towers and associated support guy wires could affect sage-grouse habitat and use of the area. Installation of the three proposed met towers could result in sage-grouse injury, mortality, displacement, and habitat degradation.

- *Columbian Sharp-Tailed Grouse* – Installation and maintenance of the three proposed met towers and associated support guy wires could affect sharp-tailed grouse habitat and use of the area.

- *Bats* – Installation of the three proposed met towers and associated support guy wires could create a collision risk to bats.

- *Simpson's Hedgehog Cactus* – This species has been observed at the proposed M011 site, and suitable habitat is present at M010. Installation of the three proposed met towers could affect suitable cactus habitat.

1.6.2 Migratory Birds

- Installation of the three proposed met towers and associated support guy wires could create a collision risk to migratory birds.

1.6.3 Visual Resources

- Installation of the proposed met towers could affect visual resources in the project area for the 3 year duration of the permit.

1.6.4 Cultural Resources

- Construction activities and ground disturbance associated with installation of the three proposed met towers could disturb cultural resources. Installation of the proposed met towers may be visible from historic properties within and adjacent to the project area.

1.6.5 Tribal Rights and Interests

- Installation and maintenance of the three proposed met towers could impact tribal interests and resources, including hunting, gathering botanical resources, wildlife and plant populations, and aboriginal archaeological and sacred sites.

1.6.6 Noxious Weeds

- Construction activities and ground disturbance associated with installation of the three proposed met towers and vehicle travel associated with maintenance of the towers could promote the introduction, establishment, and spread of noxious weeds.

1.7 DECISIONS TO BE MADE

The Field Manager for the Jarbidge Field Office will decide whether to grant the ROW, and if so, under what terms and conditions. In his decision, the Field Manager will determine whether to authorize one, two, or all three met towers as requested by the applicant.

2.0 DESCRIPTION OF ALTERNATIVES, INCLUDING PROPOSED ACTION

2.1 ALTERNATIVE A – PROPOSED ACTION

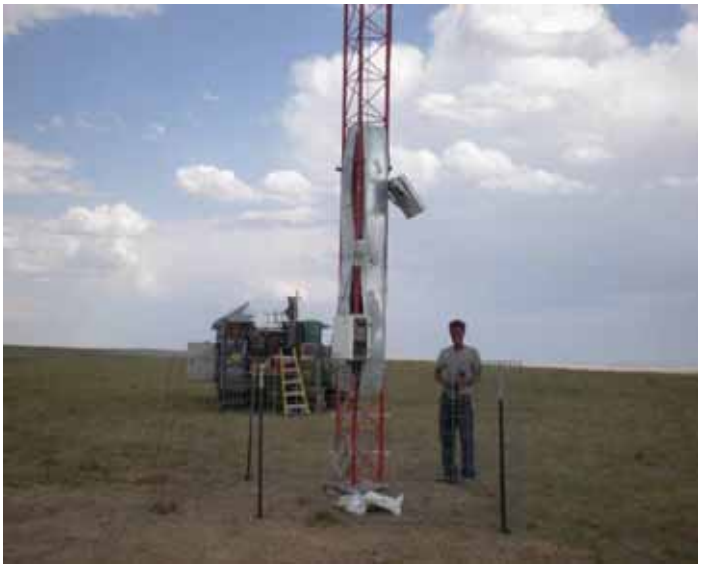
This met tower amendment proposes to add three new towers to the existing authorization (IDI35184, BLM EA no. ID-02-079, BLM DNA, No. ID-210-2007-DNA-3984, IBLA 2004-0060). The three new locations are identified as M010 (x-677723, y-4655867; UTM coordinates, North American Datum of 1983, zone 11 North), M011 (x-677696, y-4652725, and M012 (x-682258, y-4669444) (Figure 1). The amendment includes 4.18 miles of access on BLM identified existing roads and trails. No new road construction will be authorized under this action.

The site will be accessed with a 1-ton pickup and trailer to deliver the tower and related hardware. The crew will then lay out the site and mark areas to be dug for anchors and the foundation. This work is expected to occur on the first day of the project. In dirt or cobble, a rubber-tired backhoe or similar piece of equipment will be used to dig the anchor and foundation holes. In more rocky soil, a backhoe (or similar tracked vehicle) with a hammer may be needed to break up the rock. In solid rock, the most efficient means of excavation will be blasting. This method will utilize a small drill rig to drill a series of small holes around the perimeter of the excavation area. Small charges will be used to fracture the rock so that it can be scooped out by a machine. After excavation is complete, a simple rebar (steel reinforcing bars) structure will be made and placed in each hole. Then a concrete truck will access the site and pour concrete at each anchor and the foundation location. Soon after the concrete begins to set, the holes will be backfilled with native materials and the surface will be graded to match the surrounding landscape. The disturbed area surrounding each tower will be seeded with a seed mix specified by the Authorized Officer (see stipulations below).

Typical lattice tower. Photo: RES

After some preparation work on the ground, the crew will start to stack the tower. Usually, the first 30 to 40 feet will be set on the foundation using whatever digging machine is on site. Next, the first set of guy wires will be attached so the tower has a stable base. From that point, ten-foot sections will be added one at a time until the final height is reached. The temporary construction area for the met tower would be approximately 1.7 acres (a 154-foot radius from the tower base), including a temporary equipment lay-down area at the tower location (approximately 5 acres total for the three met towers). The tower lay-down area will be used while inserting the modular sections into each other in order to create the tower, and subsequently while attaching the guy wires to the tower. The lay-down period should be limited to 1 day for each tower. Typical installation duration is expected to be 1 to 2 days, depending on weather.

The met tower will be used to collect and record wind data within the project area (refer to Appendix A1 for design diagrams). Each met tower will be a three-sided lattice structure and each side will be18 inches in diameter. The towers will be approximately 180 feet tall. The met tower will support anemometers on booms at various intervals on the tower. Each boom will be fitted with anti-perching materials to prevent raptor and corvid perching. Aircraft cable guy wires will support the lattice tower; guy wires will be anchored at three locations and connected to the tower at 36 feet, 76 feet, 116 feet, 146 feet and 176 feet (15 total guy wires). Guy wire anchors require a 7 by 8 by 9.5-foot excavation. After the tower is fully stacked and anemometers installed, fencing, markings, and bird diverters will be added (see stipulations below). Fencing will be placed around guy wire anchor points and around the bases of the met tower. The tower base excavation will be 12 feet by 12 feet. The requested ground surface area for the three met tower base and guy wire foundations is 0.02 acres. Once constructed, the met towers will encumber approximately 1.7 acres each for a total project footprint of approximately 5 acres.

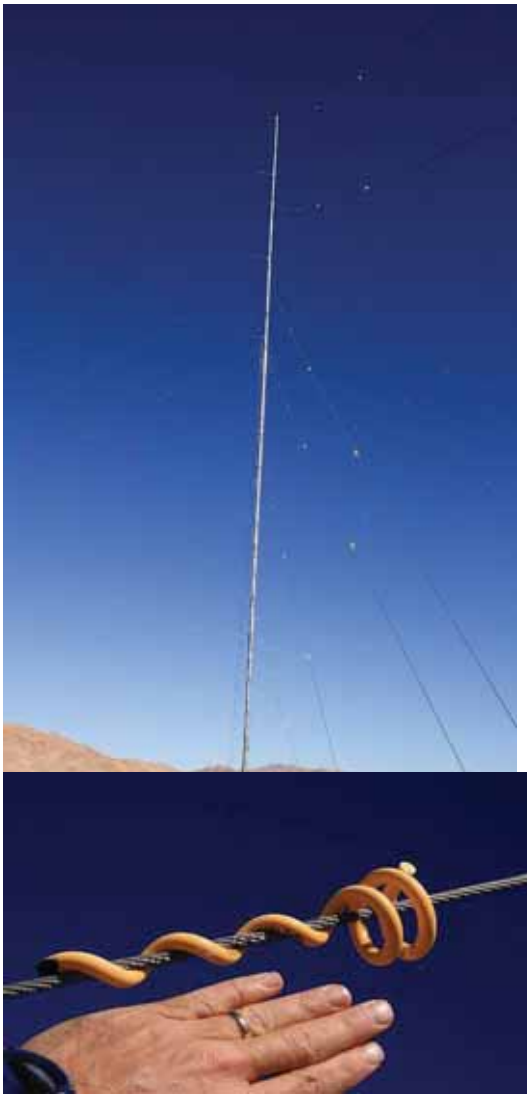


Site commissioning with typical fencing and a one-ton vehicle. Photo: RES

Power for the tower will be supplied by a small solar panel (6 inches by 6 inches) mounted on a control box at the base of the tower or by a standard 9-volt battery package. There will be a logger inside the control box that records the data. Data will be

collected remotely from each met tower. Occasionally a data card will need to be replaced, which would involve personnel walking to the tower from the nearest road. In the event that a met tower falls down or is damaged by snow or ice, a service truck may need to access the tower.

After 3 years, the ROW grant will expire and the met towers will be removed. Guy wires will be cut below ground and removed. The concrete anchors will remain in place under ground. The concrete tower foundation will be hand broken below grade, top soil will be brought in and the area will be seeded with a seed mix specified by the Authorized Officer (see Stipulations). None of the three met towers are being considered for future permanent status. However, if any of these sites was proposed for extended use or permanent status it would need to be proposed as a separate BLM action requiring additional NEPA analysis. The ROW does not allow for the construction of wind turbines. The applicant will construct the met towers as soon as possible after June 30, 2009.



Guy wire bird diverters. Photo: A. English

Stipulations for the proposed action are as follows:

1. The project area will be closed to construction and maintenance activities each winter and spring for a period designated in the Jarbidge RMP as a "No Occupancy Time Period" to minimize disturbance to wintering and breeding sage-grouse. The Jarbidge RMP also includes a no occupancy time frame for big game crucial winter and fawning range. The periods of closure are from December 1 through June 30. The applicant will have an installation window of July 1 through November 30. In the event an unforeseen emergency situation occurred at the location, the holder will contact BLM on when and how to access the met towers.

2. Anti-perching devices (to be selected and approved by the BLM) will be attached to the tower booms that support anemometers to eliminate the potential for predator perching.

3. Spiral bird flight diverters (or other BLM-approved diverters) will be attached to the supporting guy wires in key sage-grouse habitat over the entire length to minimize the potential for bird collision pursuant to the policy statement on the Implementation of the Conservation Plan for the Greater Sage-grouse in Idaho (IM ID-2009-006).

4. The holder will monitor met towers to determine if raptors (birds of prey) or corvids (crow family) are using the tower structures to perch and hunt for prey. Monitoring protocols are available in the project file.

5. The holder will conduct avian collision monitoring at the three proposed met tower sites to determine if birds are colliding with the tower or guy wires. Monitoring protocols are available in the project file.

6. The holder will conduct sage-grouse scat belt transects at each proposed met tower location to estimate seasonal use patterns of sage-grouse and if use levels are modified after installation occurs. Monitoring protocols are available in the project file.

7. All equipment used for construction and equipment maintenance will be cleaned of all soil and plant material prior to accessing each site to reduce the introduction and spread of noxious weed seeds.

8. The ROW area will be monitored annually for the presence of state-listed noxious weeds. Noxious weeds will be spot treated using an appropriate herbicide authorized for use on public lands and specified by the authorized officer. The use of herbicides will comply with the applicable federal and state laws, and will occur in accordance with their registered uses.

9. Blasting or explosives will follow BLM Twin Falls District BMPs (available in the project file), and would avoid sensitive wildlife and fish periods as regulated by Stipulation 1.

10. Occurrences of Simpson's hedgehog cactus will be avoided when placing each tower and guy wire support. A botanist or ecologist will either be present during the construction phase, or a high-level inventory will be conducted prior to

construction to identify and flag the locations of the species. Inventories will be conducted from May through June to maximize identification potential.

11. A seed mixture approved by the BLM Authorized Officer will be applied to all ground disturbance areas during the fall following installation of each tower. Seed will be broadcast over the disturbed area and raked lightly to cover the seed with soil.

12. All above-ground tower materials will be removed at the end of the 3-year period. Below-ground concrete materials will be covered with native soil and rock materials. All ground disturbance will be rehabilitated with a seed mixture approved by the BLM Authorized Officer.

13. The holder will notify the Jarbidge Field Office of the dates of construction. No construction will take place until a BLM employee has staked or flagged each construction site and the route to that site. The flags will be placed within 10 working days of notification from the holder of a construction date for each site. The holder and/or their agent will follow no other route than that route identified and flagged by BLM to each construction site. This ROW will be for the construction of three met towers only, M010, M011, and M012. There will be no right of development outside of the three met tower locations as shown in Figure 1. In no way is it to be construed this authorization will allow the holder to construct any portion of a wind farm, nor would this grant in any way guarantee the future authorization of a wind farm proposal.

14. Maintenance of the met towers will only be by advance permission of the Authorized Officer. During periods of wet weather (rain or snow), the holder will not access these sites by motorized vehicle unless specifically permitted by the Authorized Officer.

15. The access roads used by the holder will be those roads shown in Figure 1. The main roads are county maintained roads. The holder may use an existing 2-track road to get close to each site. This authorization does not give the holder permission to cross private property. The holder must secure private property permission separately.

16. There will be no road construction or maintenance of the existing roads by the holder. This ROW grant will allow for the use of the existing roads only. After construction of the three met towers is completed, data will be remotely

downloaded. The access needed for maintenance occasions will be addressed by the Authorized Officer on a case-by-case basis.

17. Prior to construction of the met towers, the holder will request and the Authorized Officer will issue a Notice to Proceed for each site.

18. Should the holder choose to relocate or add any towers, an amended ROW application will be submitted to the BLM with the new location shown. An amended application will be subject to NEPA requirements.

19. The holder will file proof of construction within 90 days of completion of construction but no later than 1 year after the date of the grant.

20. The holder will notify the Authorized Officer of any change of mailing address.

21. The United States will retain the right to authorize use of the ROW for other compatible uses (including the subsurface and air space).

22. The holder will indemnify the United States against any liability for damage to life or property arising from the occupancy or use of public lands under this grant or permit.

23. Any cultural and/or paleontological resource (fossil(s)) or historic or prehistoric site or object) discovered by the holder, or any person working on his behalf, on public land will immediately be reported to the Authorized Officer. The holder will suspend all operations in the immediate area of such discovery until written authorization to proceed is issued by the Authorized Officer. The holder will be responsible for the cost of evaluation. Any decision as to proper mitigation measures will be made by the Authorized Officer after consulting with the holder.

24. Pursuant to 43 CFR l0.4(b), the holder will notify the BLM Field Manager, by telephone, with written confirmation, immediately upon the discovery of human remains, funerary objects, sacred objects, or objects of cultural patrimony on federal land. Pursuant to 43 CFR l0.4(c), the holder will immediately stop any ongoing activities connected with the discovery and make a reasonable effort to protect the discovered remains or objects.

25. The holder(s) will comply with the Toxic Substances Control Act of 1976 as amended, 15 U.S.C. 2601 et seq. (1982) with regards to any toxic substances that are used, generated by or stored on the ROW or on facilities authorized under this

ROW grant. (See 40 CFR Part 702-799 and especially, provisions on polychlorinated biphenyls, 40 CFR 761.1-761.193.) Additionally, any release of toxic substances (leaks, spills, etc.) in excess of the reportable quantity established by 40 CFR Part 117 shall be reported as required by the Comprehensive Environmental Response, Compensation, and Liability Act, Section 102b. A copy of any report required or requested by any federal agency or state government as a result of a reportable release or spill of any toxic substances would be furnished to the Authorized Officer concurrent with the filing of the reports to the involved federal agency or state government.

26. The holder will agree to indemnify the United States against any liability arising from the release of any hazardous substance or hazardous waste (as these terms are defined in the Comprehensive Environmental Response, Compensation and Liability Act of 1980, 42 U.S.C. 9601, et seq. or the Resource Conservation and Recovery Act, 42 U.S.C. 6901, et seq.) on the ROW (unless the release or threatened release is wholly unrelated to the ROW holder's activity on the ROW), or resulting from the activity of the ROW holder on the ROW. This agreement will apply without regard to whether a release is caused by the holder, its agent, or unrelated third parties.

27. In the event the lands are required for hydroelectric project development, any structures or improvements placed thereon found to interfere with such development will be removed or relocated as necessary to eliminate such interference at no cost to the United States or its permittees or licensees.

2.2 ALTERNATIVE B – MONOPOLE TOWER DESIGN

This alternative includes a tilt-up monopole structure for the met tower, rather than the lattice towers proposed under Alternative A. The construction timeframe, wind data collection, site monitoring for special status species, and ROW stipulations are the same as Alternative A.

Each met tower will be 10 inches in diameter, 165 feet tall, weighing approximately one ton. Each tower will rest on a steel plate 2.5 feet long by 1.5 feet wide (see Appendix A2 for monopole diagrams). Aircraft cable guy wires will support the monopole tower; anchored at 12 locations on the ground (three every 90-degrees) and connected to the tower at 38 feet, 76 feet, 101 feet, 127 feet, and 153 feet (20 total guy wires). The lower two guy wires will be anchored at a 131-foot radius from the pole, the middle two anchored at a 147-foot radius, and the upper wire anchored at 164-foot radius. The guy wires will be secured by metal rods (less than 1 inch thick) pounded into the ground at each of the anchor points. Alternative B requires five additional guy wires compared to Alternative A.

Power supply, power storage, operation, and maintenance are the same as Alternative A. The temporary construction area required per tower would be approximately 1.9 acres (a 164-foot radius from the tower base), including a temporary equipment lay-down area at the tower location (approximately 6 acres total for the three proposed towers). The lay-down area would be used while inserting the modular tubes into each other in order to create the tubular tower, and subsequently while attaching the wires and cables to the tower. The assembly would be manual and the area needed would be limited to the length of the tower and the width of a person walking along the tower. Met tower installation would typically be accomplished in 1 to 2 days per tower depending on weather. The final step will be the clean up of any debris and the exit by the crew.

Existing Nevada monopole met tower at China Mountain. Photo: A. English

Each tower will be temporary and will be decommissioned when the ROW grant expires after 3 years. The towers, guy wires, and anchors will be removed.

The applicant would construct the met towers as soon as possible after June 30, 2009.

2.3 ALTERNATIVE C – NO ACTION

Under this alternative the application for three proposed met towers will not be approved and the proposed met towers will not be constructed on BLM National System of Public Lands. Alternative C will limit the applicants' ability to collect wind resource data at China Mountain.

2.4 ALTERNATIVES CONSIDERED BUT ELIMINATED FROM DETAILED STUDY

The BLM considered alternative structure and other types of wind data collection, such as non-guyed towers and sonic detection and ranging wind profilers (SODAR). Non-guyed met towers were not analyzed in detail for temporary structures due to the greater amount of excavation and foundation required to support the tower. SODAR was eliminated as an option because the technology is rarely used in areas that experience extensive snow and ice accumulation. Additionally, SODAR technology alone will not suffice for the purposes of power performance testing required by financial institutes for commercial wind project financing. It is often used as a supplement to anemometer data, but is not sufficient as a stand alone data source.

3.0 AFFECTED ENVIRONMENT

3.1 INTRODUCTION AND GENERAL ECOLOGICAL SETTING

This chapter presents a description of the affected environment. The affected environment is the baseline against which potential impacts caused by the proposed action and alternatives are assessed. A summary of resources not carried forward for further analysis is provided in the project file. A summary of the general ecological setting of the project area is included below. Section 3.2 describes the existing conditions of those resources brought forward for impact analysis in Chapter 4.

The project area is located in the northern part of the Basin and Range Province of the Great Basin in south-central Idaho near the Nevada border (Figure 1). The Proposed Project would be located in the Jarbidge Field Office of the BLM, southwest of the town of Rogerson in Twin Falls County, Idaho and north west of the town of Jackpot in Elko County, Nevada. The Jarbidge Resource Management Plan is currently being revised. Key findings of the current management situation state that: human uses and impacts on public lands are likely to increase in the future; and there is an increased demand for varying uses of the public lands including access, recreation (hunting, scenic driving, wildlife viewing, etc.), transportation routes, ROWs and renewable energy development (BLM 2007a).

The Jarbidge foothills and Brown's Bench contain some of the largest contiguous blocks of sagebrush-steppe habitat found in the region. Sagebrush-steppe occupies the lower elevations on China Mountain, which then transition into juniper, aspen and mountain mahogany with increasing elevation. The predominant plant species in the project area vary from low sagebrush to aspen to mountain mahogany and big sagebrush. Major native perennial grasses are Sandberg's bluegrass (*Poa secunda*), Idaho fescue (*Festuca idahoensis)* and bluebunch wheatgrass (*Pseudoroegneria spicata*), intermingled with various other grasses, forbs and shrubs.

Big game species use the general area and elk (*Cervus elaphus*) numbers are increasing from emigration of an expanding elk herd in Nevada. Crucial big game winter range has been identified in the project area. Mountain lion (*Felis concolor*) inhabit the general area and are presently classified as big game. The primary mammal predators include coyote (*Canis latrans*), bobcat (*Felis rufus*) and American badger (*Taxidea taxus*). Other mammalian wildlife in the area include yellow-bellied marmot (*Marmota flaviventris*), ground squirrel (*Spermophilus spp*.), least chipmunk (*Tamias minimus*), pocket gopher (*Thomomys townsendii*), vole (*Lemmiscus curtatus* or *Microtus montanus*), deer mouse (*Peromyscus maniculatus*), shrew (*Sorex spp.*), cottontail rabbit (*Sylvilagus nuttallii*) and black-tailed jackrabbit (*Lepus californicus*).

The most common raptors of the area include northern harrier (*Circus cyaneus*), red-tailed hawk (*Buteo jamaicensis*), American kestrel (*Falco sparverius*) and turkey vulture (*Cathartes aura*). Owl species associated with aspen stands in the area include long-eared (*Asio otus*), northern saw-whet (*Aegolius acadicus*) and great horned (*Bubo virginianus*) owls. Numerous other avian species have been observed in the project area. The northern flicker (*Colaptes auratus*) is the most common woodpecker. Blue-gray gnatcatchers (*Polioptila caerulea*), spotted towhee (*Pipilo maculatus*), Virginia warbler (*Vermivora virginiae*), black-throated gray warbler (*Dendroica nigrescens*) and chipping sparrow (*Spizella passerina*) are more closely associated with mountain mahogany stands. Green-tailed towhee (*Pipilo chlorurus*) and white crowned sparrow (*Zonotrichia leucophrys*) are commonly found in mountain shrub habitats. Yellow warbler (*Dendroica petechia*), yellow-rumped warbler (*Dendroica coronata*), MacGillivray's warbler (*Oporornis tolmiei*), red-naped sapsucker (*Sphyrapicus nuchalis*), northern flicker, Lewis woodpecker (*Melanerpes lewis*), tree swallow (*Tachycineta bicolor*), violet-green swallow (*Tachycineta thalassina*), house wren (*Troglodytes aedon*), pine siskin (*Carduelis pinus*), mountain bluebird (*Sialia currucoides*), hermit thrush (*Catharus guttatus*), American robin (*Turdus migratorius*), warbling vireo (*Vireo gilvus*), black-capped chickadee (*Poecile atricapilla*) and mountain chickadee (*Poecile gambeli*) are more commonly found in aspen patches. Brewer's sparrow (*Spizella breweri*), vesper sparrow (*Pooecetes gramineus*), sage thrasher (*Oreoscoptes montanus*), Western meadowlark (*Sturnella neglecta*) and horned lark (*Eremophila alpestris*) are common in the area and are typically associated with sagebrush habitats.

The low sagebrush sites where the towers are proposed have less vertical structure and herbaceous vegetation that sites containing Wyoming big sagebrush or mountain sagebrush. Low sagebrush communities have corresponding less use by most wildlife species. However, low sagebrush habitats do provide suitable nesting habitat for poor-will (*Phalaenoptilus nuttallii*), common nighthawk (*Chordeiles minor*) and greater sage-grouse (*Centrocercus urophasianus*). The north-south configuration of the topography suggests that the area might be used as a migration corridor for neo-tropical migrants and raptors.

3.2 AFFECTED RESOURCES

This section provides baseline information for the resources and issues identified in Section 1.6 that are potentially impacted by the proposed action and alternatives. The existing environment, conditions, and trends related to each resource for which there is an issue are described in detail. This narrative provides the indicators, and units of measure that are subsequently analyzed in Chapter 4.

3.2.1 Special Status Species

National policy directs BLM State Directors to designate sensitive species in cooperation with the state fish and wildlife agency (BLM manual 6840). The Idaho State BLM Office

updated these designations in 2003 (IM 2003-057). The sensitive species designation is normally used for species that occur on BLM public lands and for which BLM has the capability to affect the conservation status of the species through management. This policy (6840 Section 06.2) provides clear direction to further the conservation of special status species by stating that:

> BLM will conserve federally listed, proposed, candidate, sensitive and State listed species by fulfilling the requirements of the ESA and by using other authorized methods to ensure that the actions authorized by BLM are consistent with the conservation of such species and that they do not contribute to the need to list any special status species under provisions of the ESA, or designate additional sensitive species under provisions of this policy.

Animals and plants on the list are given a numeric ranking (from 1 to 5) based on several criteria including risk of extinction, population size, distribution, and trend. Species with the greatest threat are assigned a ranking of 1 and those with the least threat are assigned a ranking of 5. The Idaho BLM ranking system is different for animals and plants.

For **animals**, the ranking is as follows:

Type 1 – *Threatened, Endangered, Proposed and Candidate:* species listed by the US Fish and Wildlife Service (USFWS) or the National Marine Fisheries Service (NMFS) as threatened or endangered, or proposed or candidates for listing under the ESA.

Type 2 – *Rangewide/Globally Imperiled*: species that are experiencing significant declines throughout their range with a high likelihood of being listed in the foreseeable future due to their rarity and/or significant endangerment factors.

Type 3 – *Regional/State imperiled:* species that are experiencing significant declines in population or habitat and are in danger of regional or local extinctions in Idaho in the foreseeable future if factors contributing to their decline continues.

Type 4 – *Peripheral*: species that are generally rare in Idaho with the majority of their breeding range largely outside the state.

Type 5 – *Watch list*: these species are not considered BLM sensitive species and associated sensitive species policy guidance does not apply. Watch list species include species that may be added to the sensitive species list depending on new information concerning threats, species' biology or statewide trends.

For **plants**, the ranking is as follows:

Type 1 – *Threatened, Endangered, Proposed and Candidate:* species that are listed, proposed or candidates for listing under the ESA.

Type 2 – *Rangewide/Globally Imperiled – High Endangerment:* species that are experiencing declines throughout their range with a high likelihood of being listed under the ESA in the foreseeable future due to their rarity and significant endangerment factors.

Type 3 – *Rangewide/Globally Imperiled – Moderate Endangerment:* species that are globally rare with moderate endangerment factors. Their global rarity and inherent risks associated with rarity make them imperiled species.

Type 4 – *Species of Concern*: species that are generally rare in Idaho with currently low endangerment threats.

Type 5 – *Watch Species (not considered as sensitive species)*: species that are not considered Idaho BLM sensitive species but current population or habitat information suggests that species may warrant sensitive species status in the future.

Plant and wildlife inventories conducted by the Idaho BLM identified special status species that potentially occur within the project area. A complete list of all Idaho BLM sensitive species for the Jarbidge Field Office is available in the project file. Table 1 describes the special status species potentially found in the project area as identified by the inventory reports or resource specialist input. Species carried forward for analysis include those identified during field inventories and those that could be affected by the three proposed met towers. The rationale for why species are not carried forward for analysis is included in the last column of Table 1. Additionally, when the species is carried forward in analysis the section where the species is analyzed is included in the last column.

Table 1. Special Status Species that Potentially Occur in the Project Area.

Common Name	Scientific Name	BLM Type[1]	Rationale
Species potentially affected by the Proposed Project			
Animals			
Greater Sage-grouse	*Centrocercus urophasianus*	2	Addressed in Section 3.2.1, 4.2.1.1 & 4.2.2.1
Columbian Sharp-tailed Grouse	*Tympanuchus phasianellus columbianus*	3	Addressed in Section 3.2.1, 4.2.1.1 & 4.2.2.1
Peregrine Falcon	*Falco peregrinus*	3	Addressed in Section 3.2.2, 4.2.1.2 & 4.2.2.2 under Migratory Birds
Prairie Falcon	*Falco mexicanus*	3	
Northern Goshawk	*Accipiter gentilis*	3	
Ferruginous Hawk	*Buteo regalis*	3	
Calliope Hummingbird	*Stellula calliope*	3	
Willow Flycatcher	*Empidonax traillii*	3	
Hammond's Flycatcher	*Empidonax hammondii*	3	
Olive-sided Flycatcher	*Contopus cooperi*	3	
Loggerhead Shrike	*Lanius ludovicianus*	3	
Lewis' Woodpecker	*Melanerpes lewis*	3	
Brewer's Sparrow	*Spizella breweri*	3	
Sage Sparrow	*Amphispiza belli*	3	
Black-throated Sparrow	*Amphispiza bilineata*	4	
Golden Eagle	*Aquila chysaetos*	5	
Long-billed Curlew	*Numenius americanus*	5	
Western Burrowing Owl	*Athene cunicularia hypugaea*	5	
Pallid Bat	*Antrozous pallidus*	5	Addressed in Section 3.2.1, 4.2.1.1 & 4.2.2.1
Yuma Myotis (bat)	*Myotis yumanensis*	5	
Western Pipistrelle (bat)	*Pipistrellus hesperus*	5	
Plants			
Simpson's Hedgehog Cactus	*Pediocactus simpsonii var. robustior*	5	Addressed in Section 3.2.1, 4.2.1.1 & 4.2.2.1
Species considered but not analyzed			
Animals			
Columbia Spotted Frog	*Rana luteiventris*	1 (C)	No wetland, riparian or open water would be affected by the proposed met towers.

Table 1. Special Status Species that Potentially Occur in the Project Area.

Common Name	Scientific Name	BLM Type[1]	Rationale
Yellow-billed Cuckoo	*Coccyzus americanus*	1 (C)	Suitable habitat does not occur on China Mountain.
Pygmy Rabbit	*Brachylagus idahoensis*	2	Suitable habitat does not occur at the proposed met tower locations.
Bald Eagle	*Haliaeetus leucocephalus*	2	Open water habitats do not occur on China Mountain.
Piute Ground Squirrel	*Spermophilus mollis*	3	Suitable habitat does not occur at the proposed met tower locations.
Plants			
Two-headed Onion	*Allium anceps*	3	Field inventories determined that these species do not occur at the proposed locations.
Davis Peppergrass	*Lepidium davisii*	3	
Newberry's Milkvetch	*Astragalus newberryi*	4	
White-margined Wax Plant	*Glyptopleura marginata*	4	

[1] C = Candidates for federal listing.

Greater Sage-grouse

The greater sage-grouse is a sagebrush (*Artemesia spp.*) obligate species known to occur in the project area. Sage-grouse occur in suitable sagebrush habitats of Washington, Idaho, Montana, North and South Dakota, Wyoming, Colorado, Utah, Nevada, California, Oregon and Alberta, Canada. They occur in the southern half of Idaho, where sage-grouse numbers have declined by approximately 40 percent from historic population levels (Connelly and Braun 1997, Jarbidge Sage-Grouse Local Working Group 2007).

Greater Sage-grouse Photo: BLM / Oregon

Within the Jarbidge Field Office, lek attendance by male sage-grouse begins in early February and runs through early May (BLM 2007a). Sage-grouse leks typically occur in open areas surrounded by shrubs (Connelly et al. 2000). In the Jarbidge Field Office, leks are found on low sagebrush ridges, natural openings, edges of meadows or burns, road/jeep trail intersections,

salting areas, and near livestock water troughs or ponds (BLM 2007a). Females have been documented nesting from within 0.2 miles to more than 12 miles from the initial lek of capture (BLM 2007a). During the spring, the majority of females nest under sagebrush (BLM 2007a, Connelly et al. 2004, Connelly et al. 2000). Critical periods for the species include display/breeding (February 15 through May 10), nesting (March 20 through May 30), and winter (January 1 through March 15).

The Jarbidge foothills and Brown's Bench are noted as a population stronghold for sage-grouse, and provide connectivity with sage-grouse populations in Shoshone Basin to the east, northern Nevada to the south, and Owyhee Plateau to the west (BLM 2007a). The project area supports year-round sage-grouse use in terms of suitable nesting, brood-rearing, and wintering habitat. Additional sage-grouse leks occur in the region, notably on Brown's Bench between China Mountain and Salmon Falls Creek.

Sage-grouse were added to the Idaho BLM sensitive species list in 1996. Between the years 1999 and 2003, the USFWS received eight petitions to list various populations, purported subspecies, or species of sage-grouse as endangered or threatened. In April 2004, USFWS determined that three of the petitions provided substantial information that listing might be warranted, thus initiating a range-wide status review. On January 7, 2005, the USFWS Director announced that the species did not warrant protection under the Endangered Species Act at that time. Subsequent litigation led to another status review of the greater sage-grouse and a decision is anticipated in the Summer of 2009.

In 2006, the Idaho Sage-grouse Advisory Committee (ISAC) published the Conservation Plan for Greater Sage-grouse in Idaho. The primary goal of the plan is to maintain, improve, and where possible, increase sage-grouse populations and habitats in Idaho, while considering the predictability and long-term sustainability of a variety of other land uses. The plan does not specifically address met towers, but does address tall structures, which are defined as a structure taller than the native vegetation commonly found in a given area. The State Plan does not make specific recommendations to met towers, though there are recommendations for avoiding the use of guy wires on tall structures. Connelly and others (2000) recommend avoiding the placement of powerlines and other tall structures that provide perch sites for raptors within approximately 2 miles of seasonal sage-grouse habitats.

For the purposes of this document, sage-grouse leks are analyzed at two spatial scales: 1) within a 5-mile buffer of the proposed met towers, and 2) within a 2-mile buffer of the proposed met towers (Figure 3). Due to the uncertainty regarding met tower effects on sage-grouse, a 5-mile precautionary buffer distance has been recommended by BLM surrounding active leks, where feasible (ISAC 2006). Idaho BLM guidance requires that the siting of new

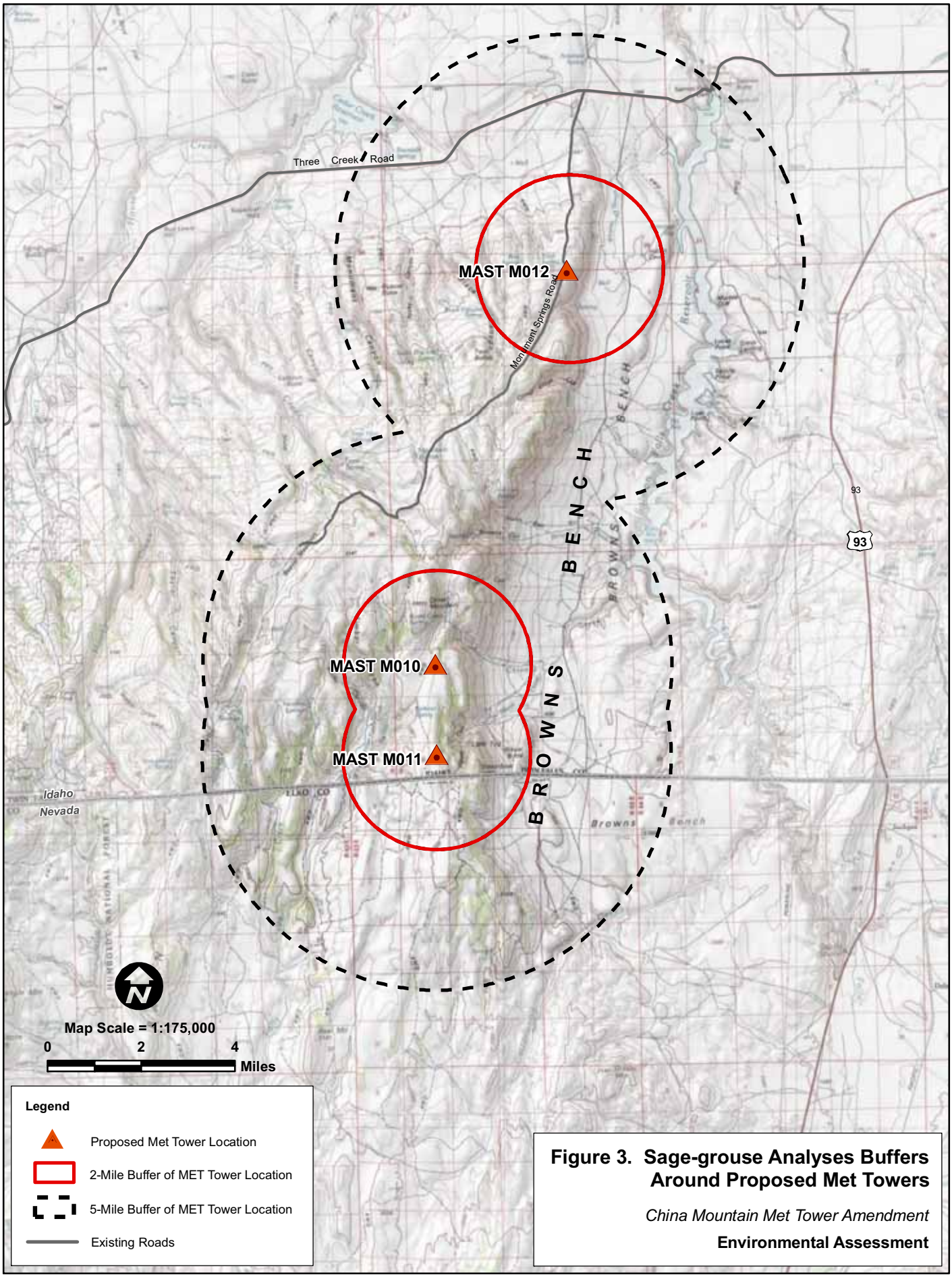


Figure 3. Sage-grouse Analyses Buffers Around Proposed Met Towers

China Mountain Met Tower Amendment

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temporary met towers (IM 2009-006) shall be avoided within 2 miles of active sage-grouse leks, unless they are out of the direct line-of-sight of the active lek. The BLM conservatively defines an active lek as one where at least two strutting male sage-grouse have been documented in at least 1 of the past 5 years (IM 2009-006). Connelly and others (2004) found that sage-grouse hens in Idaho nest an average of 2 to 3 miles from their lek of capture, but may move more than 11 miles (18 km) to nest. Welch (2005) recommends that disturbances and management activities should not occur within 2 miles of an active lek.

Two aerial lek surveys were conducted in 2008 by WEST, Inc. Many of the Brown's Bench area leks were surveyed by Idaho Department of Fish and Game (IDFG) in the spring of 2007 and 2008. There are 40 documented sage-grouse leks within 5 miles of the proposed met towers (Table 2; Figure 3). The lek status for 60 percent of these sites is either inactive or unknown. There are five documented lek sites within 2 miles of the proposed met towers, three of which are active near M012, and two that are inactive near M010 and M011. Lek locations are not displayed on figures due to the sensitivity of these data.

Belt transect study plots were established in October 2008 at the three proposed met tower sites and two control sites. The goal of the first year of sampling was to remove all sage-grouse scat along each transect. Subsequent years of sampling along these transects will illustrate sage-grouse presence prior to and after met tower installation. These data are not intended to estimate sage-grouse abundance, but to provide a crude measure of sage-grouse presence at each proposed site. Preliminary observations during scat collection in 2008 showed a small amount of sage-grouse presence at M010, a greater amount of use at M012, and the largest amount of use at M011 (Table 3). Abundance of pellets at M012 was similar to that observed at the two control sites. While sampling M011, 18 sage-grouse flushed from an island of big sagebrush approximately 150 feet away. Although no active leks are documented near M011, there is evidence that sage-grouse use this area during other periods of the year.

Table 2. Lek Activity within 5 miles of the Proposed Met Towers.

Proposed Met Tower	Lek ID	Status[1]	Last Activity[2]	No. of Males Counted During Last Activity	Distance to Nearest Proposed met tower (miles)[3]
M010	2T177	Active	2006	17	4.2
	2T128	Active	2007	34	4.4
	2T046	Unknown	--	--	2.9
	2T099	Inactive	1982	21	3.7
	2T148	Unknown	none	0	4.7
	2T159	Unknown	--	--	4.7
M011	WEST-406[4]	Active	2008	18	4.5
	WEST-212	Active	2008	13	4.8
	2T163	Inactive	2000	4	0.2
	NE023	Unknown	--	--	1.3
	NE022	Unknown	--	--	3.2
M012	2T111	Active	2008	11	1.5
	2T029	Active	2006	24	1.6
	2T032	Active	2006	2	1.6
	2T111a	Active	2008	15	2.3
	2T174	Active	2007	17	2.3
	2T025	Active	2002	15	2.6
	2T131	Active	2007	24	2.9
	2T130	Active	2007	27	3.1
	2T132	Active	2007	8	3.3
	2T172	Active	2002	7	4.1
	2T175	Active	2007	5	4.2
	2T202	Active	2008	6	4.3
	2T028	Inactive	1964	6	1.6
	2T027	Inactive	--	--	2.1
	2T161	Inactive	1968	87	2.2
	2T024	Inactive	1965	10	2.9
	2T026	Inactive	1958	2	2.9
	2T146	Inactive	--	--	3.3
	2T034	Inactive	--	--	3.5
	2T142	Inactive	1992	13	3.6
	2T100	Inactive	1992	4	3.7
	2T143	Inactive	--	--	3.8
	2T083	Inactive	--	--	4.1
	2T145	Inactive	--	--	4.2
	2T084	Inactive	1997	5	4.3
	2T031	Inactive	1951	6	4.3
	2T035	Inactive	--	--	4.5
	2T023	Inactive	1998	1	4.7
	2T065	Inactive	1978	22	4.7

SOURCE: BLM Idaho State Office - Sage-grouse Lek Data 2007.

[1] Active Lek: a lek where at least two strutting male sage-grouse have been documented in at least 1 of the past 5 years. Inactive Lek: no male sage-grouse observed displaying in the previous 5 years. Unknown Lek: insufficient survey data to determine active or inactive lek status.

[2] A dash symbol (--) means that the last documented displaying male was observed prior to 1951.

[3] This is horizontal distance, and does not factor in vertical changes in the landscape.

[4] WEST, Inc. sage-grouse survey data.

Table 3. Sage-Grouse Belt Transect Scat Data.

Site ID	Individual Scat Pellet	Pellet Cluster (> 3 Pellets Together)
M010	1	1
M011	119	63
M012	65	19
Control 1	95	6
Control 2	75	12

[1] Raw data available in project file.

IDFG has been monitoring sage-grouse near China Mountain and Brown's Bench since 2002. The main objectives of their study are to determine 1) micro-habitat use at nest sites, 2) lek attendance rates, 3) factors affecting attendance rates, and 4) variables affecting detection of attending birds to ultimately use leks counts for predicting abundance (Connelly and Musil 2007). Secondary objectives are to estimate survival of nests, chicks, juveniles, and adult birds; determine the sex ratio during the breeding season; and estimate the harvest rate of the study population (Connelly and Musil 2007). A cursory review of the data from this study indicates that sage-grouse breeding and nesting consistently occurs on Brown's Bench to the east of the project area. For some sage-grouse there appears to be a west-southwest movement pattern from the nesting and breeding grounds of Brown's Bench to upland summer and fall habitats near the proposed met tower sites on China Mountain. The connection of sage-grouse use between the bench and upland areas is expected to increase the likelihood of sage-grouse being affected by the met towers, such as collision and avoidance of tall structures.

Columbian Sharp-Tailed Grouse

The Sharp-tailed grouse occurs in southern Idaho. It occurs in grasslands (especially with scattered woodlands), arid sagebrush, brushy hills, oak savannas and edges of riparian woodlands. They are also found in upland winter wheat fields. Chicks eat insects and some berries and adults eat berries, grain, some insects, leaves, buds and flowers of wide variety of plants. Sharp-tailed grouse build concealed nests in depressions on the ground, in grass or near shrubs. Males engage in communal courtship displays at leks. Suitable habitat for sharp-tailed grouse is present in the project area and individuals have been sited; however, no known lek sites are present.

Bats

BLM currently has little information regarding bat species in the project area. Data are currently being collected in the project area with Anabat Bat Detectors that will provide

information on species presence. Special status bat species that potentially occur in the project area are described below.

Pallid Bat

The pallid bat potentially utilizes habitat in the vicinity of the project area or uses the area during migration between winter and summer roost sites. At this time, the presence of this species is unknown.

The range of the pallid bat in Idaho includes the western and southern section of the state. They inhabit arid or semi-arid shrub steppe, grasslands and, to a lesser extent, higher elevation coniferous forests. Pallid bats roost in rock crevices, mines, hollow cavities in trees, and occupied or vacant buildings. They may also roost in objects placed on the ground. Pallid bats captures prey on ground after aerial searches and also take prey in flight, within few meters of ground vegetation.

Yuma myotis

Yuma myotis occurs in the western half of Idaho. This species is found in wide variety of upland and lowland habitats, including riparian areas, desert scrub, and moist woodlands and forests, but usually found near open water where it forages for insects just above the water surface. Summer roosts include crevices in cliffs, old buildings, mines, caves, bridges, and abandoned cliff swallow nests.

Western pipistrille

The western pipistrille occurs in western Idaho. This species occurs in deserts and lowlands, desert mountain ranges, desert scrub flats, and rocky canyons, and sometimes in lower elevation mixed conifer forests. In Idaho, the pipistrille prefers cliffs and canyon walls close to water. They roost in crevices, in mines, and buildings emerging in the early evening, especially in canyon areas, where they are often seen foraging over slack water.

Simpson's Hedgehog Cactus. Photo: BLM / Oregon

Simpson's Hedgehog Cactus

Simpson's hedgehog cactus is known to occur in southern Idaho, Nevada, Utah, Wyoming, and Colorado. This species prefers rocky or sandy canyon rims that occur in low sagebrush and bud sage communities with Sandberg's bluegrass, typically ranging from 3,000 to 6,000 feet elevation (BLM 2007b). It is almost

perfectly round, up to 6 inches in diameter and is covered with smooth, relatively stiff spines. It blooms from early May to June. Flower color can be white, pink, magenta, yellow or yellow green.

A physical inventory of the proposed met tower sites was conducted on July 2, 2008. The occurrence of Simpson's hedgehog cactus was confirmed at met tower site M011. Met tower site M010 was also identified as suitable habitat for the species.

3.2.2 Migratory Birds

The remaining birds listed in Table 1 are migratory and may potentially utilize habitat in the project area or use the area as a migration route between winter and summer roost sites. These species are protected under the Migratory Bird Treaty Act. Executive Order 13186 outlined the responsibilities of federal agencies to protect migratory birds. The BLM Washington Office IM 2008-050 provides interim guidance for federal responsibilities under the Migratory Bird Treaty Act. Federal agencies including BLM are to include considerations for conserving migratory birds and their habitat, restore and enhance their habitat, prevent detrimental alteration of the environment, and design migratory bird habitat and population principles, measures and practices into agency plans and planning processes. The north-south orientation of the China Mountain topography is ideal for use by migrating birds.

The Jarbidge RMP (BLM 1987) has specific occupancy restrictions for various species covered under migratory birds. The seasonally restricted time is from December 1 through June 30 for nesting and wintering. Nesting restrictions are within specific distances of nests varying from 0.25 miles to 1 mile depending on the species.

3.2.3 Visual Resources

The BLM has developed the Visual Resource Management System to maintain the scenic values of public lands. The degree to which a management activity affects the visual quality of a landscape depends on the visual contrast created between a project and the existing landscape. A contrast rating is completed to determine the potential visual impact of the Proposed Project, including construction, operation, and reclamation/restoration phases of the Proposed Project. The project features are compared to the major features in the existing landscape using the basic design elements of form, line, color and texture. The contrast rating is then compared to the Visual Resource Management classification indentified in the RMP, to determine if it meets the objectives for that classification.

All of the proposed met towers would be located in a Class III visual management area (Figure 4). The objective for Class III areas is to partially retain the existing character of the landscape. The level of change to the characteristic landscape should be moderate.

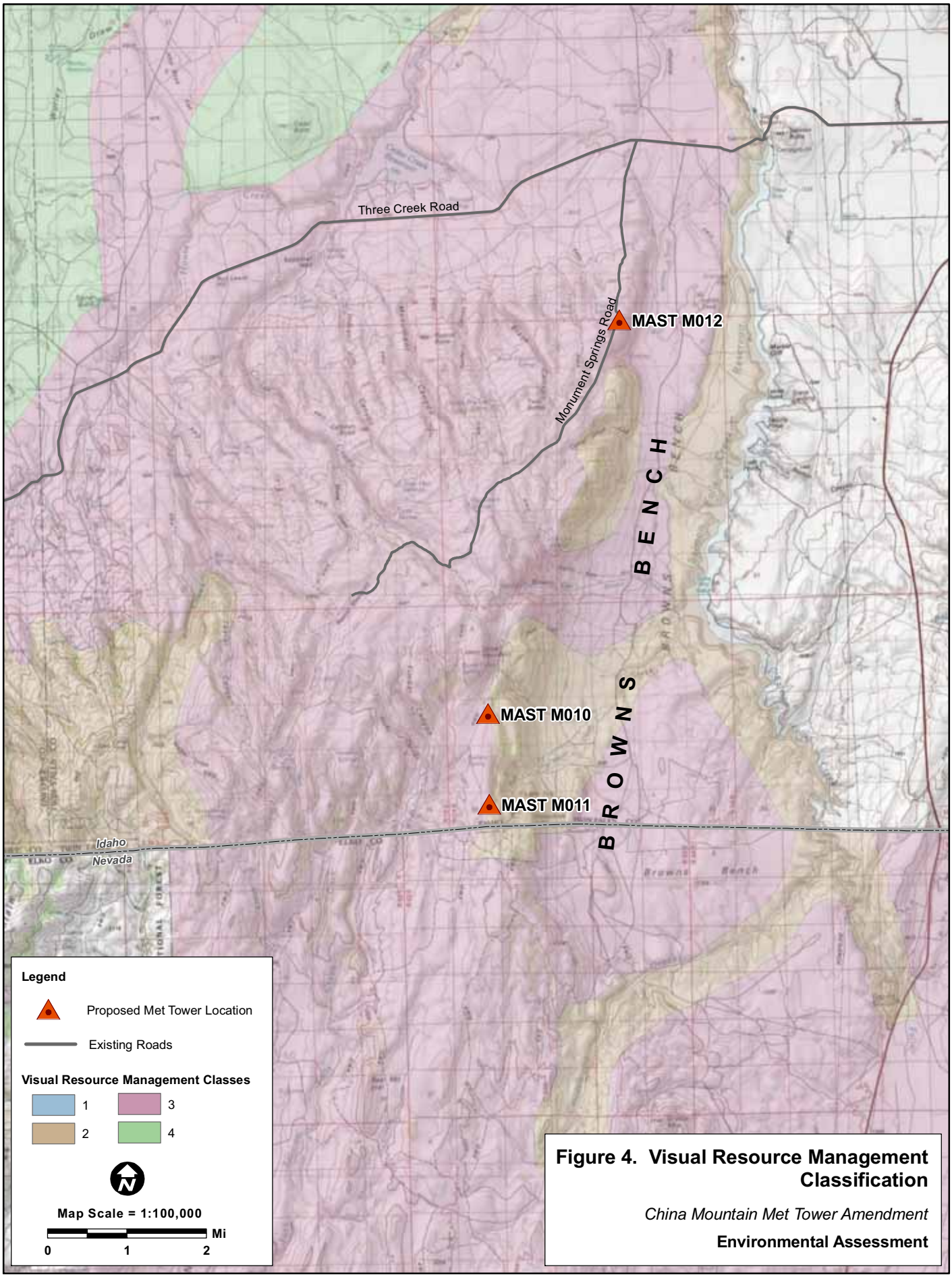

Figure 4. Visual Resource Management Classification

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3.2.4 Cultural Resources

Cultural resources consist of definite locations of human activity, occupation, or use identified through field inventory, historic documentation, or oral evidence (BLM 2007a). Common archeological sites in the general vicinity of the project area range from ancient aboriginal campsites to 20th century sheep camps. The general vicinity of the project area contains high densities of cultural resources. BLM conducted a cultural resources inventory for the Proposed Project (July 2, 2008) under the requirements of Section 106 of the National Historic Preservation Act. No archaeological sites were found within the three proposed met tower footprints or temporary construction areas; however, Tower M012 would be visible from portions of the Toana Road, an historic freight wagon road that was placed on the National Register of Historic Places in 2006.

3.2.5 Tribal Rights and Interests

The federal government has trust responsibility to American Indian Tribes which stems from agreements made by the United States in treaties, executive orders, and statutes. Part of the responsibility is to provide access to tribally important resources on public land and to consult with Tribes whose interests might be affected by land management decisions. Consultation and information sharing with the Shoshone-Paiute Tribes of the Duck Valley Reservation revealed that the project may affect a number of tribal interests including hunting, gathering wild food and medicinal plants and other natural products, healthy plant and wildlife populations (especially spiritually important sage-grouse and mule deer populations), as well as aboriginal archaeological sites and sacred sites. A staff-to-staff meeting with the Shoshone-Bannock Tribes revealed concerns about sage-grouse and big game, as well as potential effects to areas that may affect traditional uses and sacred sites. In addition, the Shoshone-Bannock Tribes also have treaty rights reserved in the Fort Bridger Treaty of 1868 which protects their right to hunt and fish on the unoccupied lands of the United States.

3.2.6 Noxious Weeds

'Noxious' is a legal designation given by the Director of the Idaho State Department of Agriculture to any plant having the potential to cause injury to public health, crops, livestock, land or other property (Idaho Statute 22-2402). Similarly, invasive plants are alien or native species whose proliferation is likely to cause economic or environmental harm or impact human health (Executive Order 13112). Noxious weeds and invasive plants are highly competitive and persistent, germinate under a wide variety of conditions, and often establish on disturbed ground. Noxious weeds and invasive plants displace native plants, degrade wildlife and plant habitat, reduce recreational opportunities, and impact water quality, runoff and sedimentation (BLM 2005b). Weeds can cause drastic changes in the composition, structure and productivity of vegetation communities (West 1999).

Noxious weeds have not been documented at the three proposed met tower locations. However, at least four noxious weed species have been documented in the China Mountain and Brown's Bench vicinity (BLM 2005a). These noxious weeds are Canada thistle (*Cirsium arvense*), diffuse knapweed (*Centaurea diffusa*), spotted knapweed (*Centaurea stoebe*) and saltcedar (*Tamarix parvifllora*).

4.0 ENVIRONMENTAL IMPACTS

4.1 INTRODUCTION

This chapter describes the potential environmental impacts on resources identified in Chapter 3 that are expected to result from the proposed action and alternatives.

There are three types of impacts:

- Direct impacts are caused by the action and occur at the same time and place.
- Indirect impacts are caused by the action and are later in time or farther in distance, but are still reasonably foreseeable.
- Cumulative impacts result from incremental impacts of the action when added to other past, present, and foreseeable future actions regardless of what person or agency (federal or non-federal) undertakes those actions.

Direct and indirect impacts are discussed in Section 4.2. Cumulative impacts are discussed in Section 4.3. For the purposes of this document, short-term effects would occur within 3 years of met tower installation, long-term effects would occur beyond 3 years.

4.2 DIRECT/INDIRECT IMPACTS

4.2.1 Alternative A – Proposed Action

4.2.1.1 Special Status Species

Greater Sage-grouse

The effects of met towers on sage-grouse populations have not been clearly identified and published in scientific literature, though potential direct and indirect impacts have been identified (BLM 2006, ISAC 2006, Manes et al. 2003, Braun et al. 2002). Potential impacts are summarized in Table 4. For this analysis, short-term duration refers to effects resulting from construction, operation, maintenance, and removal when a workforce is physically present at the site. This is typically 1 to 2 days. Mid-term duration refers to the 3 year duration of the right-of-way. Long term would be greater than 3 years. Installation of the three proposed met towers would result in a direct loss or alteration of approximately 5 acres of suitable habitat for sage-grouse (1.7 acres at each tower). Habitat loss or alteration would be mid term and localized in nature, as the proposed met towers would be removed after 3 years of operation. Subsequent habitat restoration is expected to result in a no-net-loss of sage-grouse habitat over the long term. Visual and noise disturbance during the installation and removal processes would result in the temporary displacement of sage-grouse. Installation, operation, maintenance and decommissioning would be done using existing roads. A minor amount of habitat disturbance would take place while personnel are on site

performing maintenance. This has the potential to cause temporary displacement of sage-grouse.

Indirect impacts resulting from the proposed met towers includes operation and maintenance effects; physical and visual presence of the structure on the landscape; predatory use of the structure by perching raptors and corvids; and temporary, short-term disturbance from blasting during installation (Table 4). Sage-grouse injury or mortality could occur through the collision with guy wires at each structure, though none has been observed at the existing met towers on China Mountain. The movement patterns observed by IDFG between Brown's Bench and China Mountain (Connelly and Musil 2007) likely increases the risk of collision. However, guy wires would be fitted with spiral bird flight diverters to increase visibility and reduce collision risk (Stipulation 2). A recent study found that avian collision fatalities associated with permanent met towers supported by guy wires were approximately 4 times higher than wind turbines of similar height that did not have guy wires; however, all avian fatalities were smaller passerines (songbirds), and no larger birds, such as sage-grouse, were killed (Young et al. 2003). Tall structures can also provide potential perches and nesting substrates for raptors and corvids (Steenhof et al. 1993). Predatory birds may use the tower and tower booms to perch and hunt, which could result in varying magnitudes of impacts for sage-grouse depending on the amount of perching taking place and the effectiveness of anti-perching devices (Stipulation 2). Preliminary monitoring of existing met towers has found limited to no perching use by raptors and corvids (Young 2008). Attachment of anti-perching devices to tower booms is expected to reduce the potential for perching by these birds (Stipulation 2).

Table 4. Potential Sage-Grouse Impacts from the Proposed Action.

Ecological Stressor	Associated Project Activity	Potential Effect	Effect Extent and Duration[1]	Stipulations to Avoid or Minimize Effects
Installation Impacts				
Habitat disturbance	Installation and removal of each tower.	Local reduction or alteration of habitat. Establishment of invasive or noxious plants from ground disturbance.	Local habitat reduction (1.7 acres at each site; ~5 acres total) for duration of project. Invasive/noxious plants would be present indefinitely if not treated.	Stipulations for restoration and weed control following installation. Weed prevention during construction (Stipulation 7) would reduce the introduction and spread of noxious weed seeds.
Noise	Installation and removal of each tower.	Potential disturbance of foraging and reproductive behaviors; habitat avoidance.	Short term and localized.	Would not occur between December 1 and June 30 (Stipulation 1).

Table 4. Potential Sage-Grouse Impacts from the Proposed Action.

Ecological Stressor	Associated Project Activity	Potential Effect	Effect Extent and Duration[1]	Stipulations to Avoid or Minimize Effects
Blasting	Excavation prior to tower installation.	Potential disturbance of foraging and reproductive behaviors; habitat avoidance.	Temporary, short term and localized.	Would not occur between December 1 and June 30 (Stipulation 1).
Interference with behavioral activities	Installation and removal of each tower.	Disturbance of movements, foraging, and reproductive behaviors; avoidance areas.	Short term and localized.	Would not occur between December 1 and June 30 (Stipulation 1).
Operation and Maintenance Impacts				
Noise	Monitoring and maintenance in the event that a tower falls down or data card fails.	Potential disturbance of foraging and reproductive behaviors; habitat avoidance.	Short term and localized.	Would not occur between December 1 and June 30 (Stipulation 1).
Collision with guy wires and above ground structure	Presence of guy wires and tower.	Injury or mortality.	Mid term and localized. Effects are expected to be greater if telemetry studies determine consistent seasonal movement near met tower sites.	Use of bird flight diverters to minimize collision potential (Stipulation 3).
Avian Predation (raptors and corvids)	Presence of guy wires and tower.	Increase in avian predators due to perch or nest sites on towers.	Mid-term duration; localized.	Use of anti-perching and bird diverters, and to monitor effectiveness (Stipulations 2 – 5).
Workforce presence	Occasional monitoring and maintenance activities.	Disturbance of nearby behavior; habitat avoidance.	Short term, localized and of low magnitude.	Would not occur between December 1 and June 30 (Stipulation 1).
Interference with behavioral activities	Presence of tower.	Disturbance of movements, foraging and reproductive behaviors; avoidance areas.	Mid term and localized to populations directly affected by the presence of the project.	Limited to the 3 year period of the grant (Stipulation 12).
Habitat disturbance	Road use during operation and maintenance.	Introduction, establishment and spread of noxious weeds.	Mid-term.	Weed prevention during maintenance (Stipulation 7) would inhibit the introduction of noxious weeds. Monitoring for and treating weeds would prevent their spread (Stipulation 8).

SOURCE: Modified version of potential sage-grouse effects from infrastructure development listed in WWEC (DOE & BLM 2008).

[1] Short-term duration refers to effects resulting from construction, operation and maintenance when a workforce is physically present at the site. This is typically 1 to 2 days. Mid-term duration refers to the 3 year duration of the right-of-way. Long term would be greater than 3 years.

It is unknown how sage-grouse, which are accustomed to a relatively low vegetative canopy, would respond to 180-foot tall structures (met towers) in the project area or on the landscape. A study of prairie chickens (a bird similar to sage-grouse) found that avoidance of tall structures did occur (Hagen 2004). Some scientists speculate that tall structures could displace sage-grouse hundreds of meters or even miles from their normal range (BLM 2006, ISAC 2006, NWCC 2004). If sage-grouse are displaced, it is unknown if birds may acclimate and return to historic sites. At a similar wind energy facility site in southern Idaho, anecdotal observation found that sage-grouse became accustomed to taller structures (BLM 2006). At this site, several males were observed displaying directly beneath a met tower and guy wires within several hundred meters of an active lek (BLM 2006). If sage-grouse on China Mountain were to avoid the met towers after installation, it would cause displacement from upland summer and fall habitats.

Sage-grouse attendance of active leks following the first met tower installation in 2002, and subsequent installations thereafter, is variable (Table 5). No consistent patterns are readily visible, and these data are limited by a small sample size and limited years of monitoring following tower installation. Conclusions cannot be made from these data whether the existing eight met towers in the project area are displacing sage-grouse.

Table 5. Male Sage-Grouse Attendance of Active Leks within 5 Miles of Existing China Mountain Met Towers (2001 – 2007).

Lek ID	Number of Male Sage-grouse Individuals Counted[1]							
	2008	2007	2006	2005	2004	2003	2002	2001
2T128	na	34	67	56	34	25	25	28
2T129	na	32	40	29	24	18	12	8
2T130	na	27	40	50	32	26	18	24
2T131	na	24	20	9	0	8	0	6
2T174	na	17	36	ns	18	ns	ns	ns
2T132	na	8	18	16	22	17	18	25
2T175	na	5	ns	10	7	ns	ns	ns
2T111	11	5	9	7	18	17	18	17
2T202	6	3	ns	ns	ns	ns	ns	ns
2T111a	15	0	37	25	14	ns	ns	ns
2T025	na	ns	ns	ns	ns	0	15	ns
2T177	na	ns	17	ns	ns	ns	ns	ns
2T029	na	ns	24	ns	ns	ns	ns	ns
2T032	na	ns	2	ns	ns	ns	ns	0
2T172	na	ns	0	ns	ns	ns	7	ns

Source: BLM Idaho State Office - Sage-grouse Lek Data 2007.
[1]na = 2008 data not currently available. ns = not surveyed.

A GIS viewshed analysis was conducted for the three proposed 180-foot tall met towers to determine the met tower visibility from the surrounding landscape (Figure 5). Figure 5 is based on a surface analysis model using the ArcGIS 9.2 spatial analysis viewshed extension. The model uses a 33-foot (10-meter) Digital Elevation Model (USGS National Elevation Dataset – 1:24,000-scale), and is based on 180-foot tall structures located at each proposed met tower location, which is the full height of the proposed towers. The model evaluated the viewshed from the ground surface elevation of the region (including each lek) compared to the top of the towers. The model does not account for atmospheric conditions, or the amount of each tower visible from each lek (only the top height used).

Met towers M010 and M011 are located more than 2 miles from any active sage-grouse leks. Therefore, the installation of these towers is not expected to result in avoidance of lek sites and is not expected to affect sage-grouse reproduction. Met tower M012 is located within the viewshed of two active leks (2T029 and 2T032) that are found within the 2-mile lek buffer. A third lek (2T111) is also located within 2 miles of M012, but the tower is visually obstructed from the lek by natural terrain, so avoidance impacts are expected to be negligible. The two leks near M012 are located on Brown's Bench below the ridgeline, approximately 1,000 feet lower in elevation. Cliff faces occur along the edge of China Mountain between tower M012 and the Brown's Bench leks. These cliff faces represent natural nesting and perching habitat for predatory raptors and corvids. Therefore, the potential for avian predators perching or nesting on M012 is considered a negligible increase in threat to the Brown's Bench sage-grouse leks given the presence of the cliff faces. There is the potential for avoidance impacts to nesting female sage-grouse, alteration of seasonal movement patterns and foraging behaviors, or potential displacement or abandonment. However, given the temporary nature (3 years) of the met towers, these impacts are expected to be localized and slight, not impacting the overall integrity of sage-grouse populations at China Mountain and Brown's Bench.

Columbia Sharp-tailed Grouse

Columbia sharp-tailed grouse, if present, are anticipated to be impacted in the same manner as that described for sage-grouse. Impacts to reproduction are not expected since leks for this species are not known to occur in or near the project area.

Bats

Bat collision mortalities have been documented at several vertical man-made structures, including wind turbines (Johnson et al. 2002, Erickson et al. 2002); however, no bat fatalities have been recorded at met tower sites (Young 2009). Bats echo-locate while foraging, but do not always echo-locate while migrating. It is possible that aerially migrating bats could strike met tower guy wires during flight, resulting in injury or mortality.

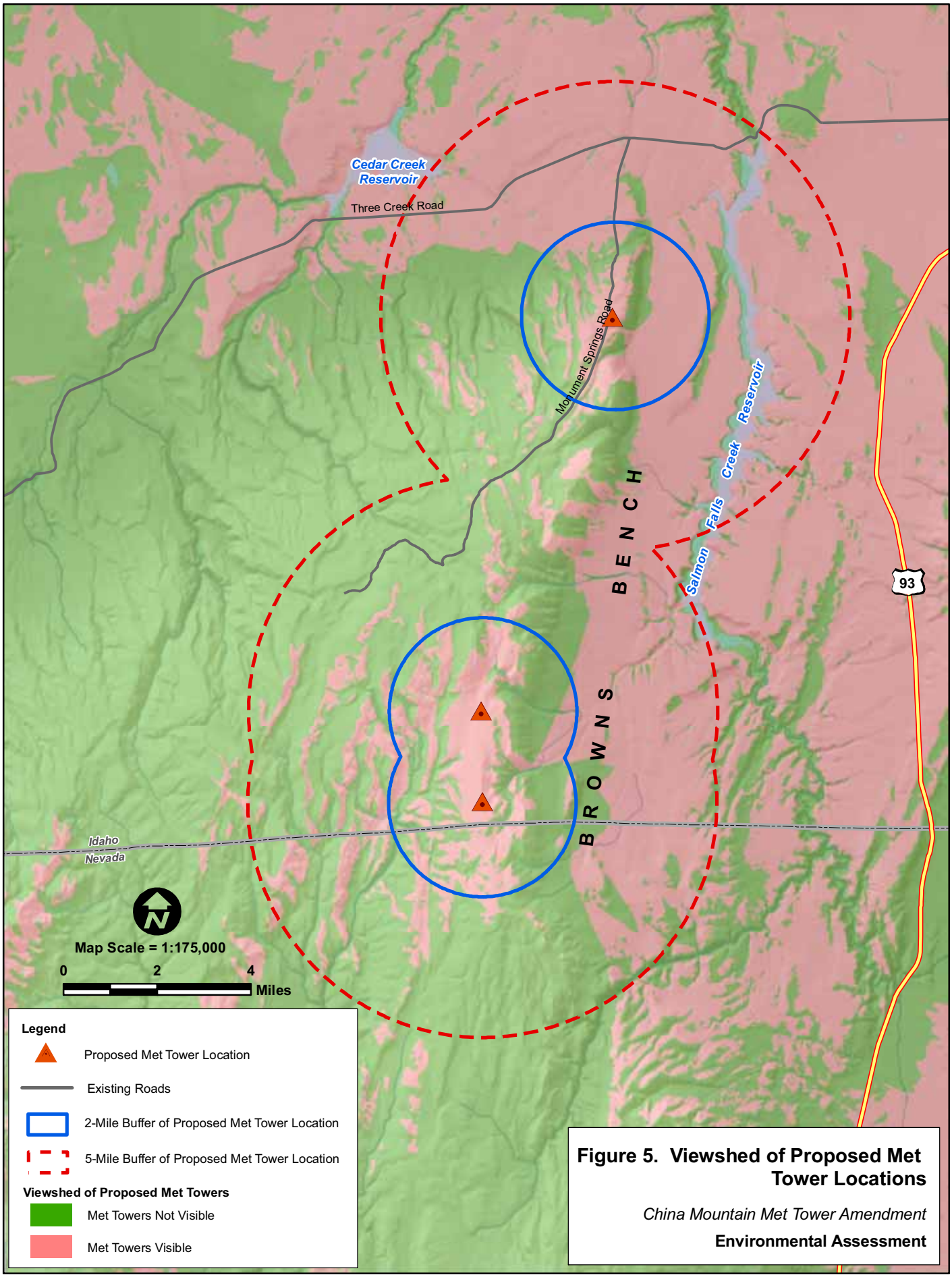

Figure 5. Viewshed of Proposed Met Tower Locations

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Simpson's Hedgehog Cactus

Simpson's hedgehog cactus was documented at M011 and suitable habitat exists at M010. The potential for direct mortality of this cactus species from vehicles, excavation, and foot traffic would exist within the temporary construction footprint and staging areas of these locations (1.7 acres per site). However, a qualified botanist would perform pre-construction surveys and flag any observations of the cactus, and the cactus would be avoided when placing each tower and guy wire support (Stipulation 10). Thus, the potential for mortality and disturbance to known occurrences would be avoided.

Indirect impacts include habitat degradation from the introduction of invasive or non-native plant species which would compete with the hedgehog cactus for space and resources. Project stipulations regarding noxious and invasive plants (Stipulations 7 and 8) would minimize these potential impacts. There would be a slight potential that public attraction to the met towers may result in cactus mortality from off-road motorized travel and foot traffic.

4.2.1.2 Migratory Birds

It is possible that aerially migrating birds could strike the guy wires supporting the met towers during flight, resulting in injury or mortality, with the greatest potential occurring in the spring and fall. Application of Stipulation 3, the installation of bird flight diverters on guy wires, would minimize the potential for migratory bird collision. Bird flight diverters have been shown to be up to 90 percent effective in reducing mortality at transmission lines (Morkill and Anderson 1991, Brown 1993, and Koops 1993). No studies to date have investigated the effectiveness of bird flight diverters on met tower guy wires (Strickland et al. 2003, Young 2009). However, it is predicted that their effectiveness would be similar in reducing bird collisions. Therefore, it is anticipated that the number of collisions and associated mortalities of migratory birds would be small. Monitoring of collision impacts at the three proposed met tower sites would provide information on the effectiveness of bird flight diverters (Stipulation 5), and results could be used, where necessary, to instigate a change in bird flight diverter type used. The risk of mortality caused by collisions with guy wires supporting the towers would be temporary, lasting the 3-year duration of the permit.

4.2.1.3 Visual Resources

Due to limited public access, limited visitation and topographic obstructions from the road, met towers M010 and M011 would meet the Class III visual management objectives because they would fall below a moderate visual contrast from roads in the project area.

Met tower M012 would represent a strong visual contrast from Monument Springs Road; however, the impact would be temporary (3 years). Public view while traveling on this portion of Monument Springs Road would be dominated by the structure due to the contrast

of the vertical tower with the surrounding natural landscape (Figure 5). While traveling along Monument Springs Road, the tower would be visible for an approximate distance of 1 mile in clear weather conditions.

4.2.1.4 Cultural Resources

The three proposed tower locations were sited to avoid archaeological and historic properties following cultural resource inventories at each location. Construction of the towers would not result in direct impacts to cultural resources. The potential for visual impacts to the setting of the historic Toana Freight Wagon Road was also evaluated. The Toana Road runs south to north along the base of the ridge below the project area. At their closest points, Tower M010 is located 2.25 miles west and 1,540 feet in elevation above the Toana Road; M011 is located 2 miles west and 1,160 feet in elevation above the road; and M012 is located 1.1 miles west and 960 feet in elevation above the road. M010 and M011 are not visible from the Toana Road and would have no adverse effect on the historic setting. M012 is visible and would have an effect on the viewshed along portions of the road between Corral Creek and Antelope Springs. This effect is reduced by distance and topography (similar towers in the general area are visually unobtrusive at distances greater than 1 mile) as well as structural design features of the towers (e.g., narrow profile, use of see-through lattice panels, no lights installed). In addition, M012 would be a temporary facility; after 3 years it would be dismantled. For these reasons, M012 would have no adverse effect on the historic setting of the Toana Road. If cultural resources are discovered during construction, operations would be suspended in the immediate area of such discovery until written authorization to proceed is issued by the authorized offices (Stipulation 23).

4.2.1.5 Tribal Rights and Interests

Granting the ROW for the temporary installation of three meteorological towers would not adversely affect important Tribal resources entrusted to the federal government for protection. Installing met towers would not limit access to the area or prevent Tribal members from pursuing traditional activities. The temporary, short term (3 year) of the ROW, plus the stipulations incorporated into the tower designs, would help prevent any long-term effects on sage-grouse (see Section 4.2.1.1) or other wildlife populations. In addition, no aboriginal archaeological sites would be directly affected by the project. Finally, while high points, generally speaking, are among the most spiritually sensitive features of the landscape in traditional religious practice, none of the specific tower locations have been identified as sacred sites as defined in Executive Order 13007.

4.2.1.6 Noxious Weeds

Potential vectors for transmitting noxious weeds into the proposed tower sites include seeds attached to vehicles, machinery, and personnel during the tower installation and maintenance

and from the public throughout the 3-year project duration. Project stipulations specific to noxious weeds would minimize the potential for noxious weed establishment and spread at the three proposed met tower locations. Washing vehicles and equipment prior to entering the project area would minimize the potential for transporting noxious weeds along roads and to the tower sites (Stipulation 7). Planting grasses and forbs after the installation process would minimize the ability for noxious weeds to establish on disturbed ground at each site (Stipulation 11). Monitoring each tower location for noxious weeds through the duration of the permit and treating any discovered noxious weeds would help control the potential for noxious weed establishment and spread (Stipulation 8).

4.2.2 Alternative B – Monopole Alternative

4.2.2.1 Special Status Species

Greater Sage-grouse

Sage-grouse effects resulting from installing three monopole towers under Alternative B would be similar to Alternative A (see Section 4.2.1.1 and Table 4). One minor difference between the two action alternatives is that there would be approximately 1 acre of additional temporary construction area associated with Alternative B. The primary differences between the two structure types are raptor and corvid perching potential and the number of required guy wires. A tilt-up monopole tower would eliminate the potential for raptor or corvid perching or nesting on the tower itself, whereas the lattice tower proposed under Alternative A would not prevent this. The threat of sage-grouse predation from avian predators perching or nesting on the tower would be eliminated under Alternative B. There is still the potential for avian predators to perch on the tower booms. However, attachment of anti-perching devises to the booms (Stipulation 2) would eliminate this risk.

The monopole structure under Alternative B would require five additional guy wires compared to Alternative A. The greater number of guy wires would represent a higher probability of sage-grouse injury or mortality from collision. However, as in Alternative A, project stipulations would require that all guy wires be fitted with appropriate bird flight diverters to increase visibility and reduce collision risk. The collision risk would be higher under Alternative B because of the higher number of guy wires; however, the use of bird flight diverters reduces the risk of sage-grouse injury or mortality.

Monopole towers are more susceptible to wind, snow and ice effects than lattice towers, which can result in the tower falling down more easily than a lattice tower. In the event that a tower falls down, increased vehicle trips would be required to put monopole towers back up, and could result in a higher level of sage-grouse disturbance and habitat disturbance than Alternative A. Sage-grouse habitat disturbance is expected to result from vegetation

trampling while accessing the site. The presence of a workforce may also result in sage-grouse temporarily avoiding the met tower sites.

In summary, the most important distinction between the two action alternatives is that there would be reduced opportunity for raptors and corvids to perch on the monopole towers proposed under Alternative B than on the lattice towers proposed for Alternative A. Therefore, since the tower design of Alternative B eliminates the potential for predator perching, combined with the attachment of anti-perch devices on the booms, there would be fewer overall potential predatory impacts to sage-grouse.

Columbian Sharp-tailed Grouse

Columbian sharp-tailed grouse would be impacted in the same manner as that described for sage-grouse. Impacts to reproduction are not expected since leks for this species are not known to occur in the project area.

Bats

Alternative B would have the same effect on bats as Alternative A.

Simpson's Hedgehog Cactus

Alternative B would have the same effect on Simpson's hedgehog cactus as Alternative A.

4.2.2.2 Migratory Birds

Each met tower would have five additional guy wires than the lattice towers in Alternative A. Because of the additional guy wires, there is a higher probability of bird injury or mortality from collision. As in Alternative A, all guy wires would be fitted with bird flight diverters to increase visibility and minimize collision risk (Stipulation 3).

4.2.2.3 Visual Resources

The monopole tower is more visible than the lattice structure because it has a wider single reflective surface as a pole, rather than the smaller lattice matrix that is less reflective. Alternative B would have five additional guy wires that are fitted with bird diverters, which would result is slightly higher visibility than Alternative A. Therefore, the Alternative B monopole would have a slightly higher visual impact than Alternative A.

4.2.2.4 Cultural Resources

Alternative B would have the same effect on cultural resources as Alternative A, with the exception that the monopole tower may be more visible than the lattice pole, but would have no adverse effect on the historic setting of the Toana Road.

4.2.2.5 Tribal Rights and Interests

Alternative B would have the same effect on tribal rights and interests as Alternative A.

4.2.2.6 Noxious Weeds

Potential vectors for transmitting noxious weeds into the project area would be the same as under Alternative A. Project stipulations to minimize or eliminate the potential for noxious weed establishment and spread would be applied (Stipulations 7 and 8) the same as Alternative A.

4.2.3 Alternative C – No Action

If neither alternative is authorized, there would be no direct, indirect or cumulative impacts related to special status species, migratory birds, visual and cultural resources, tribal rights and interests, and noxious weeds on China Mountain or its vicinity.

If the no action alternative is authorized the met towers would not be placed and the data would not be collected.

4.3 CUMULATIVE IMPACTS ANALYSIS

CEQ regulations require that the cumulative effects analysis consider the environmental impacts resulting from "the incremental impacts of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency or person undertakes such other actions" (40 CFR 1508.7). In this section, Alternatives A and B are analyzed together because the differences in direct and indirect impacts between the alternatives are small and would not affect the action's incremental impacts in the cumulative effects analysis.

The Idaho Sage-grouse Conservation Plan (2006) recommends a precautionary avoidance distance for infrastructure development of 5 miles from active sage-grouse leks. Manville (2004) also recommends a precautionary avoidance distance for infrastructure development of 5 miles from active prairie grouse leks. Therefore, a 5-mile buffer distance from all existing and proposed met towers at China Mountain represents the extent for analyzing sage-grouse cumulative impacts (Figure 6).

Cumulative effects for all other affected resources (other special status species, migratory birds, cultural, visual, and noxious weeds) are analyzed within an area approximately 10 miles surrounding the proposed met towers. General landmarks that define this boundary include US Highway 93 to the east, Cedar Mesa reservoir to the north, the Twin Falls County boundary to the west and Bear Mountain to the south.

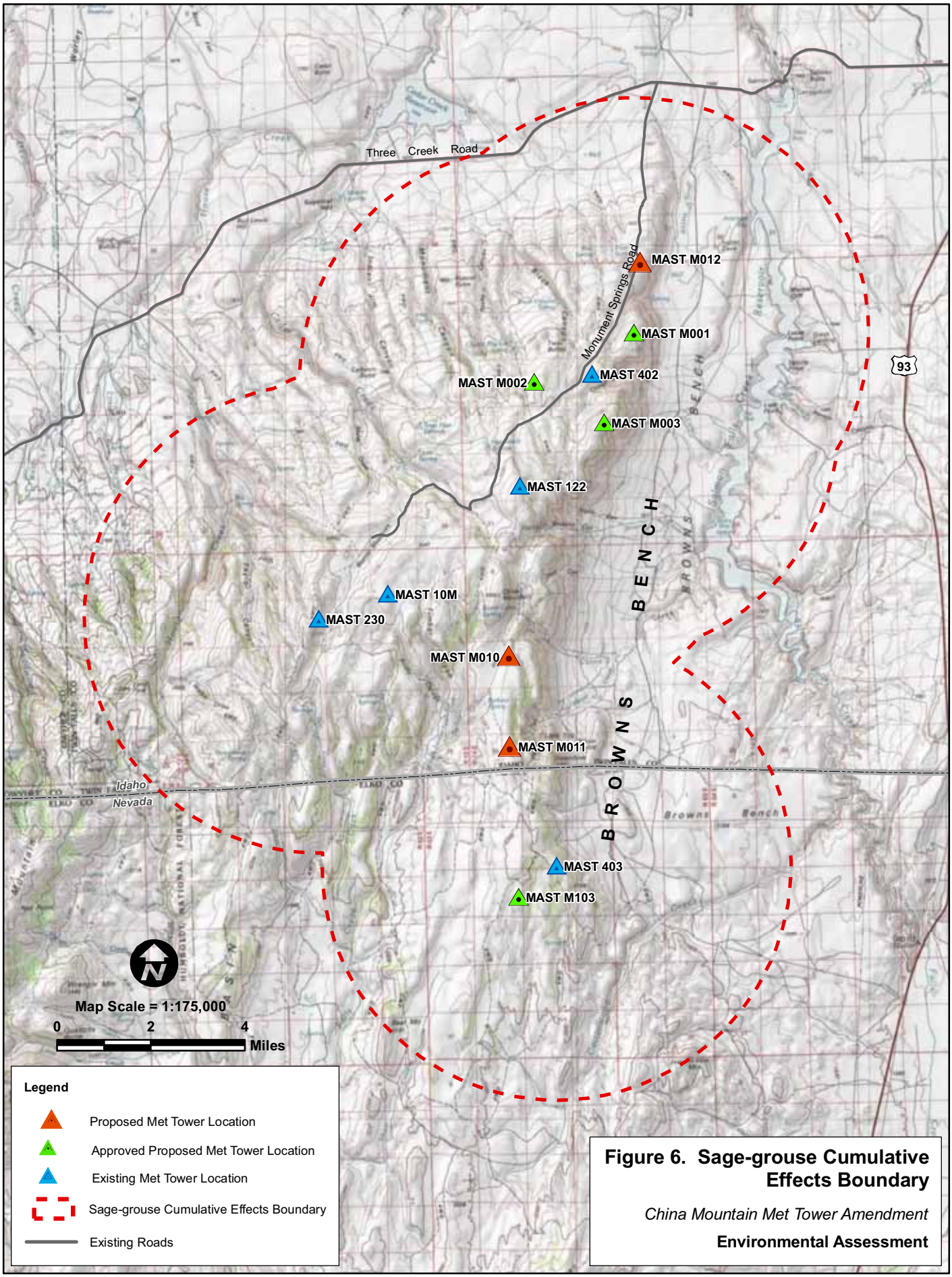

Figure 6. Sage-grouse Cumulative Effects Boundary

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4.3.1 Past, Present, and Reasonably Foreseeable Future Actions

Past and present actions that affect special status species habitat, visual resources, cultural resources, tribal rights and interests, and the establishment and spread of noxious weeds include:

- existing infrastructure and utility corridors (i.e., eight existing met towers, communication towers, transmission lines and roads).
- livestock grazing.
- recreation activities.
- wildfire.

Private land activities include livestock grazing, road construction and maintenance, and other potential human disturbances or activities. Actions occurring on Idaho state lands would be similar to BLM activities (recreation, grazing, potential wildfire, etc.).

A reasonably foreseeable future action to be considered on BLM lands is the ROW application for the China Mountain Wind Energy Project. This application is currently under review and an EIS is being prepared to evaluate environmental impacts.

4.3.2 Cumulative Impacts

Special Status Species

Greater Sage-grouse

No single impact or combination of impacts have been proven to have caused the decline in greater sage-grouse numbers over the past half-century, but the decline in greater sage-grouse populations is thought to be due to a number of factors including drought, wildfire, infrastructure, powerlines, predators, livestock grazing, alteration of fire regime and climate change (Connelly et al. 2000 and Crawford et al. 2004). For the purposes of this document, cumulative impacts are organized by indicators of sage-grouse impacts related to infrastructure development, including injury or mortality, displacement or avoidance and habitat modification or removal.

Injury or Mortality

As discussed in Chapter 4, infrastructure can directly impact sage-grouse by providing increased perching and nesting opportunities for raptors and corvids that prey upon sage-grouse (Steenhof et al. 1993). The risk of sage-grouse collision with guy wire-supported structures (met and communication towers) and livestock wire fencing also exists at China Mountain. There have been no recorded sage-grouse injuries or mortalities associated with the eight existing met towers. Mortality associated with increased predator perching or

nesting on existing infrastructure, or collisions associated with livestock fencing is unknown. The three proposed met towers are not anticipated to have an additive sage-grouse injury or mortality effect, primarily because of their temporary nature (3 years).

A general sage-grouse hunting season exists within the project area from September 20 to September 26. The bag limit is one bird daily and a possession limit of two sage-grouse total. During 2001-2006, the Magic Valley Region accounted for approximately 44 percent of the statewide sage-grouse harvest and hunters (Kemner et al. 2007). Wings from hunter-harvested sage-grouse (n = 965) were collected at 10 check stations and with wing barrels located at Shoshone Basin and Brown's Bench, and estimated harvest for the region has been relatively stable since 2000 (Kemner et al. 2007). It was estimated that 6,407 sage-grouse were harvested in the Magic Valley region, with an average of 0.7 birds per hunter per day (Kemner et al. 2007). The three proposed met towers are not anticipated to have an additive mortality effect on sage-grouse when combined with hunting.

West Nile virus has recently emerged as a regional concern for sage-grouse (Naugle et al. 2004). The virus has been implicated in sage-grouse mortality in some areas of Idaho, including western Owyhee County. Idaho documented eleven cases of the disease in 2006, seven of which were on the Duck Valley Indian Reservation (Gossett 2008). Sage-grouse mortality associated with West Nile virus has not been documented at China Mountain or within this cumulative effect analysis area.

Displacement or Avoidance

As discussed in Chapter 4, tall structures may cause temporary or long-term displacement of sage-grouse. Sage-grouse attendance at active leks following installation of the eight met towers in the analysis area was variable without a consistent pattern (Table 5). It is unlikely that the three proposed met towers would have an additive sage-grouse displacement effect in conjunction with the existing eight met towers because the three met towers are not expected to cause displacement or avoidance at leks.

Recreation activities on China Mountain can result in the displacement of sage-grouse. Recreation activities include activities such as hunting, bird watching, dispersed camping and OHV use. The primary displacement impact of recreation activities is temporarily flushing birds, which likely return to the area after the recreation activity ceases. Installation of the three proposed met towers is not anticipated to influence recreation activities at China Mountain and would not have an additive sage-grouse effect.

Habitat Modification or Removal

Transmission lines, pipelines and roads can adversely affect habitats important to sage-grouse by causing fragmentation, reducing habitat value or reducing the amount of habitat

available (Braun 1998). Approximately 46 percent of the acreage in the Jarbidge Field Office is no longer vegetated by sagebrush steppe (BLM 2007a). The largest contributing factor to the loss of suitable sagebrush-steppe habitat has been wildfire (Connelly et al. 2004). Throughout the past, natural and human-caused wildfire in the Jarbidge Field Office has acted as a major agent of change on the landscape. Two recent large wildfires in the vicinity of the project area have burned sagebrush-steppe habitat. Remaining unburned sagebrush-steppe habitat, including the China Mountain project area, are likely crucial to the maintenance and recovery sage-grouse and other sagebrush obligate species.

In 2007, the Murphy Complex Fire burned 483,000 acres in south-central Idaho, and was considered the largest fire in Idaho since 1910. The Murphy Complex Fire burned 23,149 acres, or 21 percent of the area within the 5-mile buffer of the three proposed met towers (Figure 7). Within the same 5-mile buffer, it is estimated that approximately 7,000 acres of designated key sage-grouse habitat were lost to wildfire during 2007. The approximate 5-acre temporary (3 year) footprint area associated with the three proposed met towers would not have a discernable additive effect to wildfire impacts.

Livestock grazing (cattle) occurs within the analysis area and in the vicinity of the proposed met towers. The higher elevation habitats at China Mountain are generally high quality. This is a product of stable rocky ground surfaces that can tolerate livestock hoof action better than deeper soils, shallow soils producing limited forage value, and steeper slopes inaccessible to livestock. The three proposed met towers exist in higher elevation habitats. Disturbance associated with tower installation would not have a discernable additive effect to livestock grazing effects on sage-grouse habitat in the project area.

As described in Chapter 4, recreation activities can affect sage-grouse habitats by removing and degrading vegetation, aiding noxious and invasive weed establishment and increasing wildfire ignition sources. Disturbance associated with installation and maintenance of the three proposed met towers are not anticipated to have an additive effect with recreation activities because the disturbance area would be small and habitat only altered during the 3-year project duration.

Columbian Sharp-tailed Grouse

Cumulative impact to Columbian sharp-tailed grouse would be similar to that described for sage-grouse. Impacts to reproduction are not expected since leks for this species have not been documented in the project area.

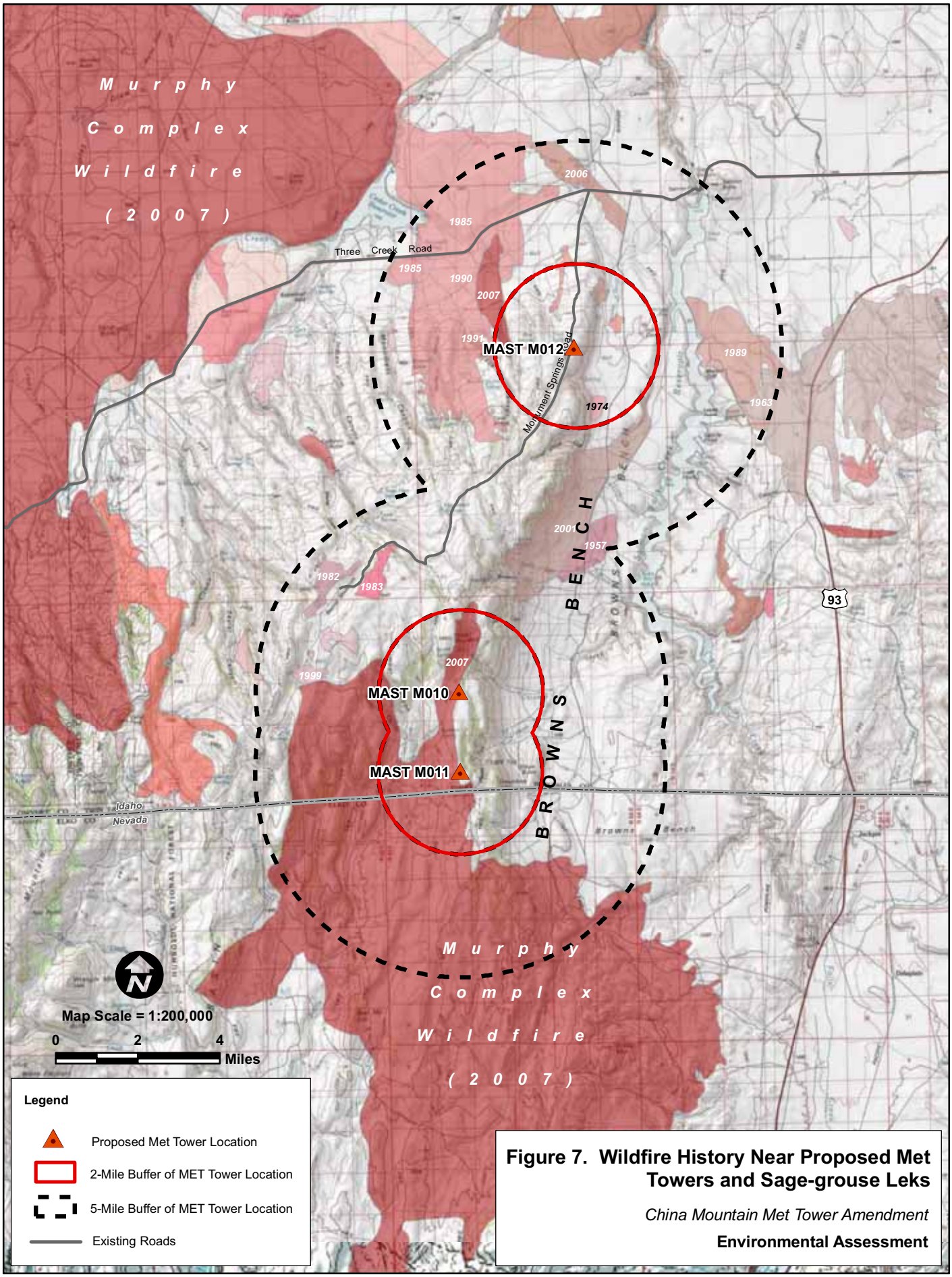

Figure 7. Wildfire History Near Proposed Met Towers and Sage-grouse Leks

China Mountain Met Tower Amendment

Environmental Assessment

Bats

Bats may collide with existing met tower guy wires, communication towers, or other infrastructure on the landscape. If bat collisions and mortalities were to occur at the three proposed met towers, it would result in a minor additive effect of the collision potential existing on the landscape from other structures.

Simpson's Hedgehog Cactus

Impacts to the soil surface and direct mortality from livestock trampling, recreation activities, and off-road travel represent the largest threat to Simpson's hedgehog cactus in the project. The proposed met towers would not have a noticeable additive effect because known occurrences of hedgehog cactus would be avoided during the installation and removal of the met towers.

Migratory Birds

Migratory birds may collide with existing met tower guy wires, communication towers, livestock fences, or other infrastructure on the landscape. Project stipulations requiring bird flight diverters would reduce the potential for migratory bird collisions with the guy wires on the three proposed met towers. If collisions and mortalities were to occur, it would result in a minor additive effect of the collision potential existing on the landscape from other structures.

Cultural Resources

Impacts to the soil surface from livestock hoof action affect cultural resources where livestock trail and congregate. This impact is heightened near water sources (i.e. troughs, wet meadows and springs). Recreation activities and infrastructure projects can have the same adverse effect on cultural resources when impacts to the soil surface are involved. Other recreational effects could include unauthorized collection or vandalism. The proposed met towers would not have a noticeable additive effect to these actions. With two similar meteorological towers (M001 and M003) already erected on the ridge system overlooking Brown's Bench, the addition of tower M012 would result in a temporary cumulative impact to the visual setting of the historic Toana Road. All three towers are or would be temporary structures and any effects to the viewshed would also be temporary.

Visual Resources

While the majority of the landscape is open near China Mountain, past developments have transformed parts of the viewshed from open space with expansive views, to a somewhat developed landscape. Infrastructure projects such as transmission lines, communication towers and U.S. Highway 93 represent the largest visual contrast near the proposed met

tower sites. The three proposed met towers would have a slight additive impact to these cumulative visual impacts due to the temporary nature of the structures.

Noxious Weeds

Project stipulations for noxious weeds would minimize noxious weed establishment, and the three proposed met towers would not have an additive weed cumulative impact in combination with livestock grazing, recreation activities, wildfire and other vectors of noxious weed establishment and spread.

The Proposed China Mountain Wind Project

China Mountain Wind, LLC, has submitted a ROW application to BLM to build a commercial wind power generation facility (aka wind farm) capable of generating up to 425 megawatts (MW) of electricity. Up to 185 wind turbines, each having a generating capacity between 2.3 and 3.0 MW, would be installed on an area covering approximately 30,700 acres in the Jarbidge Foothills. The actual footprint of the proposed China Mountain Wind Power Project would result in approximately 200 acres of permanent ground disturbance. The Jarbidge Field Office is currently preparing an EIS for the proposed China Mountain Wind Project to analyze the potential environmental impacts of the construction and operation of a proposed wind power generation facility, associated transmission facilities and access roads. If the ROW application is approved, the proposed wind farm would operate year-round for a minimum of 30 years.

The temporary met towers would be removed at the end of the 3-year grant. If a wind farm were developed prior to the met tower removal, they would contribute to a presence of tall structures on the landscape that would likely have a substantial impact on visual resources and wildlife. However, the extent of a proposed wind farm is not known at this time and will be analyzed in an EIS specific to the wind farm.

5.0 CONSULTATION AND COORDINATION

5.1 INTRODUCTION

The issue identification section of Chapter 1 identifies those issues analyzed in detail in Chapter 4. The rationale for issues that were considered but not analyzed further came from the Interdisciplinary Team. The issues were identified through the public and agency involvement process described in Sections 5.2 and 5.3 below.

5.2 PERSONS, GROUPS, AND AGENCIES CONSULTED

Table 6. List of Those Consulted for Purposes of this EA.

Adjacent Land Owners
Antelope Springs Ranch
Guerry, Inc.
Idaho Bird Hunters, Inc.
Idaho Department of Fish and Game
Idaho Department of Lands
Idaho Office of Energy Resources, Paul Kjellander, Administrator
Idaho Representative Jim Patrick (R), District 23, Twin Falls
Idaho Representative Leon E. Smith (R), District 24, Twin Falls
Idaho Representative Sharon L. Block (R), District 24, Twin Falls
Idaho Representative Stephen Hartgen (R), District 23, Twin Falls
Idaho Senator Bert Brackett (R), District 23, Rogerson
Idaho Senator Charles H. Coiner (R), District 24, Twin Falls
Idaho State Historic Preservation Office (SHPO)
Jarbidge Sage Grouse Working Group
Jim Risch US Senate
Kevin Lenane
Shoshone-Bannock Tribes
Shoshone-Paiute Tribes
Terri Kaminski
US Fish & Wildlife Service
US House of Representatives, Mike Simpson
US House of Representatives, Walt Minnick
US Senator Mike Crapo
Western Watersheds Project
Y-3 Ranch

5.3 LIST OF PREPARERS

Table 7. BLM Interdisciplinary Team.

Name	Title	Specialty
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Bonnie Ross	GIS Specialist	Document Figures
Dan Armichardy	Fisheries Biologist	Special Status Species, Aquatic
Daniel Strickler	Rangeland Management Specialist	Range
Ester McCullough	Project Manager	Coordination and Review
Fred Pence	Realty Specialist	ROW processes
Heather Tiel-Nelson	Public Affairs Specialist	Public Involvement
Jeff Ross	Archeologist	Cultural Resources
Jim Klott	Wildlife Biologist	Special Status Species, Wildlife
Julienne Hilty	Botanist	Special Status Species, Plants
Katherine Farrell	Planning & Environmental Coordinator	NEPA Process
Katharine Forster	Fisheries Biologist	Special Status Species, Aquatic
Max Yingst	Outdoor Recreation Planner	Visual Resources
Sheri Hagwood	Botanist	Special Status Species, Plants
Sheri Whitfield	Wildlife Biologist	Special Status Species, Wildlife

Table 8. Non-BLM Preparers.

Name	Title	Responsible for the Following Section(s) of this Document
Aaron English	Senior Biologist	Senior Review
Jarod Blades	Staff Biologist	Document Author
Rebecca Thompson	Staff Biologist	Technical and Editorial Review
Ryan Baum	GIS Specialist	Document Figures
Sandra Steele	Administrative Manager	Document Production

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APPENDIX A

METEOROLOGICAL TOWER DESIGN DESCRIPTIONS