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Preliminary Environmental Assessment
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Spring Valley Proposed Wind-Generating Facilities Project

Location:
Spring Valley, White Pine County, Nevada

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ACRONYMS AND ABBREVIATIONS

AADT	average annual daily traffic
ACEC	Area of Critical Environmental Concern
AFY	acre-feet per year
AUM	animal unit month
BLM	Bureau of Land Management
BMP	best management practice
BWEC	Bats and Wind Energy Cooperative
CFR	Code of Federal Regulations
CO_2	carbon dioxide
COM	Construction, Operation, and Maintenance
DOE	Department of Energy
EA	Environmental Assessment
EIA	Energy Information Administration
EO	Executive Order
EPA	U.S. Environmental Protection Agency
ESA	Endangered Species Act
FAA	Federal Aviation Administration
FONSI	Finding of No Significant Impact
GIS	geographic information system
GPD	gallons per day
GPS	global positioning system
HV	high voltage
IA	Interconnection Application
IM	Instructional Memorandum
KOP	Key Observation Point
kV	kilovolt
MBTA	Migratory Bird Treaty Act
met tower	meterological tower
mph	miles per hour
m/s	meters per second
MV	medium voltage
MVAr	megavolt ampere reactive
MW	megawatt
MWh	megawatt hour

NDOT	Nevada Department of Transportation
NDOW	Nevada Department of Wildlife
NEPA	National Environmental Policy Act
NNHP	Nevada's Natural Heritage Program
NO_x	nitrous oxides
NRS	Nevada Revised Statutes
O&M	operations and maintenance
OHV	off-highway vehicle
PEIS	Programmatic Environmental Impact Statement
POD	Plan of Development
RD	rotor diameters
RMP/FEIS	Resource Management Plan/Final Environmental Impact Statement
ROD	Record of Decision
ROS	Recreation Opportunity Spectrum
ROW	right-of-way
rpm	rotations per minute
RPS	Renewable Portfolio Standard
SCADA	Supervisory Control and Data Acquisition
SMP	suggested management practice
SNWA	Southern Nevada Water Authority
SO_2	sulfur dioxide
SR	State Route
SRMA	Special Recreation Management Area
SVW	Spring Valley Wind LLC
SVWEF	Spring Valley Wind Energy Facility
SWCA	SWCA Environmental Consultants
SWIP	Southwest Intertie Project
TAC	Technical Advisory Committee
TLUA	temporary linear use area
USGS	U.S. Geological Survey
VRM	Visual Resource Management
WTG	wind turbine generator

1.0 INTRODUCTION

This Environmental Assessment (EA) has been prepared to analyze Spring Valley Wind LLC's (SVW's) proposal to construct a wind energy generation facility. The EA is a site-specific analysis of potential impacts that could result from implementation of the Proposed Action. The EA assists the Bureau of Land Management (BLM) in project planning, in ensuring compliance with the National Environmental Policy Act (NEPA), and in making a determination whether any "significant" impacts could result from the analyzed actions. "Significance" is determined by the consideration of context and intensity of the impacts. If there is a Finding of No Significant Impact (FONSI), the context and intensity criteria are listed, along with the rationale for that determination in the FONSI document.

This document is tiered to, and incorporates by reference, both the Ely Proposed Resource Management Plan/Final Environmental Impact Statement (RMP/FEIS), released in November 2007 (BLM 2008b), and the BLM Wind Energy Development Programmatic Environmental Impact Statement (PEIS), released in June 2005 (BLM 2005). Should a determination be made that implementation of the Proposed Action would not result in significant environmental impacts or significant environmental impacts beyond those already disclosed in the existing NEPA documents, a FONSI would be prepared to document that determination and a Record of Decision (ROD) issued that provides a rationale for approving the selected alternative.

1.1 Background

In order to address the growing interest in developing wind energy resources and National Energy Policy recommendations to increase renewable energy production capability, the BLM began evaluating wind energy potential on public lands and developing a wind energy policy. In October 2003, the BLM started preparation of a PEIS to analyze the potential impacts of wind energy development to public lands and to minimize those impacts to natural, cultural, and socioeconomic resources. The PEIS was published in June 2005, and in December 2005 the ROD was signed to implement a comprehensive Wind Energy Development program on BLM-administered lands in the western United States. The program has established policies and best management practices (BMPs) to address the administration of wind energy development actions on BLM lands and identifies the minimum requirements for mitigation measures. The programmatic policies and BMPs of the Wind Energy Development program allow project-specific analysis to focus on the site-specific issues and concerns of individual projects. On August 24, 2006, the BLM Washington Office issued Instruction Memorandum (IM) 2006-216, *Right-of-Way Management, Wind Energy Land Use Plan Amendments, Wind Energy.* The IM provided guidance on issuing Rights-of-Way [ROWs] for Wind Energy Testing, Monitoring and Development. Until then, the BLM had an interim wind energy policy issued in 2002.

In January 2006, Babcock & Brown (since acquired by Pattern Energy), through SVW, applied for a testing and monitoring ROW in Spring Valley, east of Ely, Nevada. Since then, SVW has maintained anemometers to determine the suitability of the project for wind energy development. In October 2007, SVW applied for a wind energy development ROW grant from BLM. The ROW grant would be for the construction, operation, and maintenance of the 149.1-megawatt (MW) Spring Valley Wind Energy Facility (SVWEF) and associated facilities. Additionally, a mineral materials permit would be issued for gravel pits and associated access roads connected to the facility. The wind generation facility would be located on approximately 8,565 acres in the project area (Figure 1.1-1). Facilities for the Proposed Action would consist of wind turbine generators (WTGs), an underground electrical collection system, a substation, a switchyard, an operations and maintenance (O&M) building, and access roads.

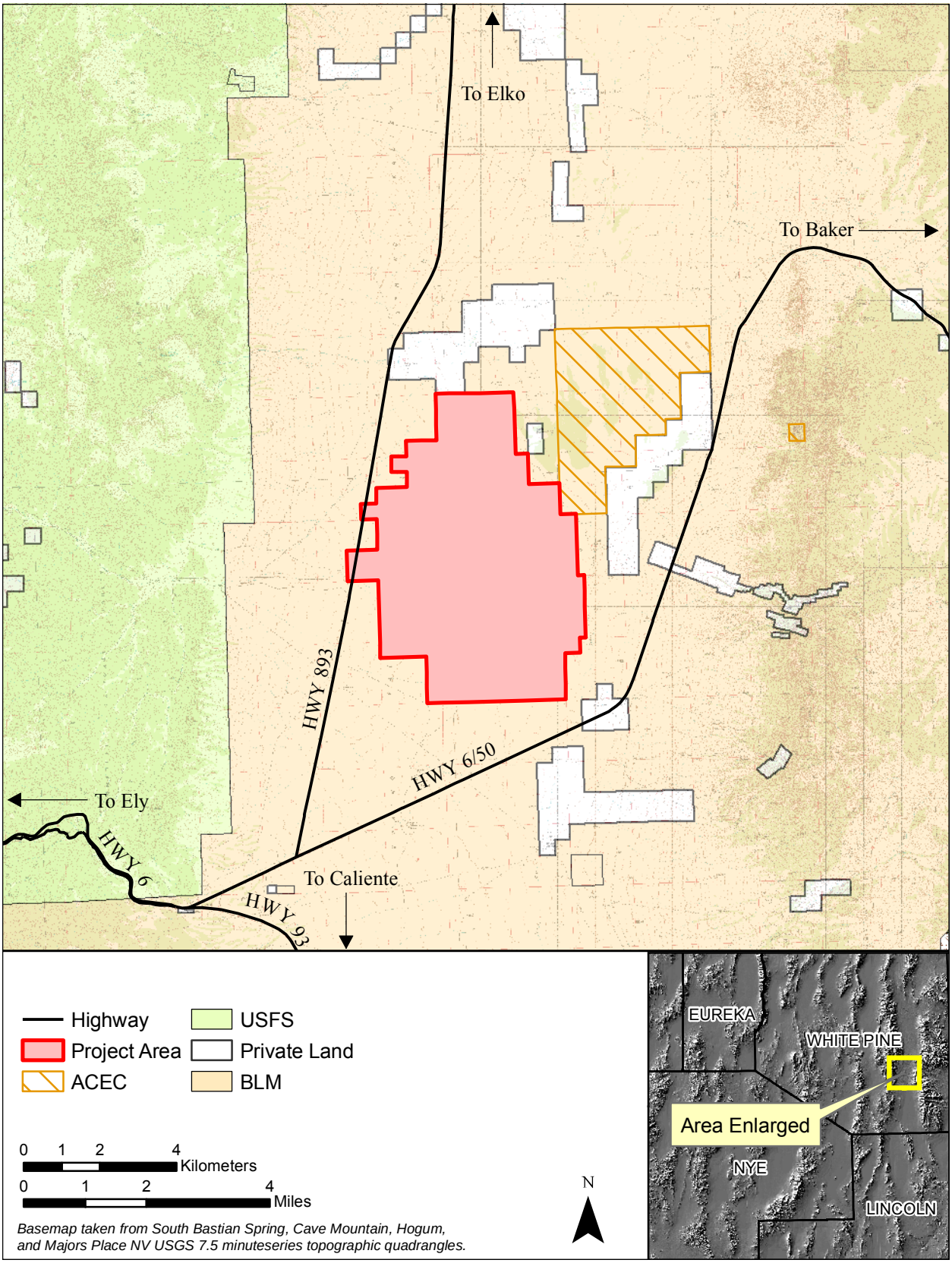

Figure 1.1-1. SVWEF location map.

In 2008, a new IM, 2009-044, was issued to update policy and give further guidance on processing wind energy facilities on BLM-administered lands. SVW updated its Plan of Development (POD) to comply with the new guidance. The POD was tentatively finalized in October 2009, but may change in response to comments on this preliminary EA.

1.2 Purpose

The purpose of the action is to provide appropriate public lands for the development of wind energy generation facilities. Legitimate uses of public lands are those that are authorized under the Federal Lands Management Policy of 1976 or other Public Land Acts and are consistent with guidance such as the BLM comprehensive Wind Energy Development Policy. The uses must meet the proponent's objective while preventing undue and unnecessary degradation to those physical, biological, and social resources present in the project area.

SVW's objective is to develop a wind energy facility on lands that it has determined are suitable for development following three years of wind monitoring. The justification for the project is as follows.

Recent national and regional electrical demand forecasts have predicted that the growing consumption of electrical energy would continue to increase into the foreseeable future and would require development of new resources to satisfy this demand. The Department of Energy (DOE) Energy Information Administration (EIA) has forecasted a 23.0% growth in electricity sales by 2030, including a projected increase of 19.8% in the residential sector, 38.3% in the commercial sector, and 7.1% in the industrial sector. This growth would require an increase in generating capacity of 231 gigawatts (231,000 MW) nationwide by the year 2030 (EIA 2009).

Executive Order (EO) 13212, signed in 2001, states that the production and transmission of energy in a safe and environmentally sound manner is essential to the well-being of the American people. Reports from the DOE postulate that wind power can provide 20% of the nation's electricity by 2030. The DOE report finds that achieving a 20% wind contribution to U.S. electricity supply would

- Reduce carbon dioxide emissions from electricity generation by 25% in 2030.
- Reduce natural gas use by 11%;
- Reduce water consumption associated with electricity generation by 4 trillion gallons by 2030;
- Increase annual revenues to local communities to more than $1.5 billion by 2030; and
- Support roughly 500,000 jobs in the United States, with an average of more than 150,000 workers directly employed by the wind industry.

Additionally, the State of Nevada has recognized the need for new and diverse energy resources, including renewable energy generation options. The Nevada Renewable Portfolio Standard (RPS) (Nevada Revised Statutes [NRS] 704.7821) was revised on July 1, 2009, by Senate Bill 358 to state that by calendar year 2025, no less than 25% of the total amount of electricity sold by NV Energy to its retail customers in Nevada must be from renewable energy resources. NV Energy is expecting to acquire renewable energy from multiple generating facilities to meet, at a minimum, the mandated RPS target of 12% of retail sales coming from renewable resources in 2009–2010, 15% in 2011–2012, 18% in 2013–2014, 20% in 2015–2019, 22% in 2020–2024, and 25% in 2025. As part of meeting the Nevada RPS, NV Energy has agreed to purchase wind energy produced from the SVWEF if it is constructed. U.S. greenhouse gas emissions rose by 17% between 1990 and 2007. Increases can be partially attributed to an increased consumption of fossil fuels to generate electricity (U.S. Environmental Protection Agency [EPA] 2009). Table 1.2-1 describes the emissions offset and natural resources that would be conserved by electric generation from wind generation resulting from the SVWEF Proposed Action, compared with coal, petroleum, and natural gas. This table assumes electric generation of 394,200 MW hours annually.

Table 1.2-1. Environmental Benefits and Emissions Offsets

Power Equivalence*		
Households Powered per Year†	32,850	Homes/Year
Emission Offsets		
Compared with Electric Generation from Coal		
CO_2 (greenhouse gas)[3]	431,949	tons/year
	69,112	cars and trucks/year
CO_2 Emission Equivalent[4]	315,323	acres of pine or fir forest
	493	square miles of pine or fir forest
SO_2 (acid rain)	2,050	tons/year
NO_x (acid rain and smog)	677	tons/year
Compared with Electric Generation from Petroleum		
CO_2 (greenhouse gas)[3]	411,197	tons/year
	65,792	cars and trucks/year
CO_2 emission equivalent[4]	300,174	acres of pine or fir forest
	469	square miles of pine or fir forest
SO_2 (acid rain)	2,083	tons/year
NO_x (acid rain and smog)	784	tons/year
Compared with Electric Generation from Natural Gas		
CO_2 (greenhouse gas)‡	218,949	tons/year
CO_2 emission equivalent¶	35,032	cars and trucks/year
	159,833	acres of pine or fir forest
	250	square miles of pine or fir forest
SO_2 (acid rain)	1.17	tons/year
NO_x (acid rain and smog)	220	tons/year
Natural Resources Preserved		
Coal	197,780	tons/year
Petroleum	656,414	barrels/year
Natural gas	3,258,040	million cubic feet/year
Freshwater§	7,726,997,054	gallons/year
	21,169,855	gallons/day
Freshwater equivalent‖	235,221	number of people supplied by 21,169,855 gallons/day

* Assuming monthly electric usage = 1 megawatt hour (MWh) per household

† Assuming annual net generation and an equivalent amount of power from fossil fuel generation
Source: EIA (www.eia.doe.gov)

‡ 0.16 passenger Cars and Light Trucks produce 1 ton of CO_2 per year
Source: U.S. Climate Technology Gateway (www.usctcgateway.net/tool/)

¶ 0.73 acre of pine or fir forest will store 1 ton of CO_2 per year
Source: U.S. Climate Technology Gateway (www.usctcgateway.net/tool/)

§ Based on 2005 Freshwater Consumption and Withdrawal Average for all Thermoelectric Generation
Source: National Energy Technology Laboratory, "Estimating Freshwater Needs to Meet Future Thermoelectric Generation Requirements," DOE/NETL- 2006/1235 (www.netl.doe.gov)

‖ Based on U.S. Geological Survey (USGS) estimation of 80–100 gallons/day (gpd) per capita water consumption (90 gpd used for this example)
Source: USGS "Water Q&A: Water use at home" (http://ga.water.usgs.gov/edu/qahome.html)

There is a growing interest and support for the development of new wind energy resources in the United States. Wind energy is now second only to natural gas plants in new power generation capacity added between 2005 and 2007. Additionally, up to 7,500 MW of new capacity has been added in 2008, contributing at least 35% of new power generation capacity (American Wind Energy Association 2009).

SVW has submitted an Interconnection Application (IA) with Sierra Pacific, dba NV Energy, totaling 149.1 MW in [January] 2006. For the application, a System Impact Study has been completed (conducted by Sierra Pacific and further confirmed by Nevada Power Transmission Personnel) that indicates the potential to inject up to 149.1 MW into the current Sierra Pacific 230-kV line without any significant upgrades (network or otherwise).

1.3 Need

The need for the action is established by the BLM's responsibility under §501 of the Federal Land Policy and Management Act of 1976 [43 United States Code 1761] to respond to requests to grant, issue, or renew ROWs over, upon, under, or through private lands for systems for generation, transmission, and distribution of electric energy. The need for action is further established by the BLM Wind Energy Development Policy IM No. 2006-216 and updated IM No. 2009-043 regarding ROW Management for Wind Energy. These policies state that the BLM encourages the development of wind energy within acceptable areas, consistent with the Energy Policy Act of 2005 and Energy and Mineral Policy (August 26, 2008).

1.4 Preliminary Issues

Coordination with relevant agencies and stakeholders was conducted in order to identify potential issues of concern relating to the Proposed Action. As a result of a stakeholder meeting conducted on October 20, 2008, and a BLM interdisciplinary scoping meeting conducted on March 9, 2009, with BLM and the Nevada Department of Wildlife (NDOW), the following issues were identified as possibly warranting review.

Areas of Critical Environmental Concern:

- The Proposed Action is adjacent to the Swamp Cedar Area of Critical Environmental Concern (ACEC). Visual impacts may affect the integrity of the historic values.
- Geotechnical studies and excavations for the tower foundations could disrupt the water source for the Swamp Cedars.

Environmental Justice:

- There are no low-income or minority populations in the vicinity that would be directly disproportionately affected by the Proposed Action. However, there is a potential effect on Native American burial sites.

Wildlife:

- The Proposed Action is within habitat for pronghorn antelope.
- Wind projects are known to have impacts to bird and bat species.

Land Use:

- The turbine arrays were required to be located outside the Southwest Intertie Project (SWIP) 500-kilovolt (kV) utility corridor.

Prime and Unique Farmlands:

- The E ½ of Section 12 within the proposed project area has been classified for Desert Land Entry (BLM 2008a).

Rangeland/Grazing:

- At least four towers with associated roads and underground transmission lines would be constructed within a cost-share range restoration project for the Bastian Creek Allotment performed in 2007. In addition, cows would have to be excluded from the restoration area until short-term disturbance areas have re-established vegetation.
- Cattle may need to be temporarily excluded from a portion of the Majors and Bastion Creek Allotments during the rehabilitation of short-term disturbances.

Recreation:

- The project area is within the Highway 50 Special Recreation Management Area (SRMA). There would be potential impacts to hunting and the physical/social setting.

Special-Status Species:

- The project area falls within greater sage-grouse (*Centrocercus urophasianus*) habitat. Also, an active lek exists approximately 2 miles northwest of the project area.
- The Proposed Action may affect pygmy rabbits (*Brachylagus idahoensis*).

Visual Resources:

- The proposed project has the potential to exceed the Visual Resource Management (VRM) objectives designated in the Ely RMP/FEIS.

2.0 PROPOSED ACTION AND ALTERNATIVES

The previous chapter presented the purpose of and need for the proposed project, as well as those elements that could be affected by implementation of the proposed project. To meet the purpose of and need for the proposed project and resolve the issues identified, the BLM has determined that only the Proposed Action, without a No-Action Alternative, is necessary for detailed analysis. The potential environmental consequences from the Proposed Action and No-Action alternatives are analyzed in Chapter 3 for each of the necessary resources and identified issues.

2.1 Proposed Action

SVW proposes to construct, operate, and maintain a 151.8-MW wind generation facility on approximately 8,565 acres in the SVWEF project area. Although the total generation potential of the proposed facility is 151.8 MW, only 149.1 MW would go into the existing system. The Proposed Action consists of the construction, operation, and decommissioning of WTGs and associated facilities necessary to successfully generate up to 149.1 MW allowed under the IA in Spring Valley, located in White Pine County, east of Ely, Nevada.

A more detailed description of the Proposed Action is provided in the SVWEF POD (SVW 2009) and is incorporated by reference. The Proposed Action incorporates the requirements of all applicable federal, state, and local laws, regulations, and permits, as specified in the POD. The Proposed Action also incorporates all applicable management actions prescribed in the BLM RMP/FEIS and Wind Energy PEIS, including BMPs (Section 2.2.3.2 of the PEIS), Standard Operating Procedures, and stipulations. Design measures are included in the Proposed Action to reduce the impacts to sensitive resources. These built-in measures include stormwater pollution prevention measures, weed control, proper waste disposal, and approved revegetation and reclamation methods; these are discussed in the POD and presented as an integral part of the Proposed Action.

2.1.1 Wind Energy Facility Construction

Construction of a wind project would be performed in accordance with applicable codes, laws, and engineering requirements. The actual long-term ground disturbance of the turbines and plant infrastructure (civil and electrical) would be approximately 1% of the total project area. Construction begins with installation of civil improvements, including site laydown areas for turbine and tower deliveries, access roads, underground runs for electrical cabling, turbine foundations, and crane pads for erection of the turbines. The second construction phase, in which some of the works would proceed in parallel with the civil works, includes installation of the electrical hardware (including cabling), construction of the Osceola switchyard, Spring Valley substation and pad-mount transformers, O&M building, and erection of the turbines. The third and final construction phase includes mechanical completion of all WTGs, substation and switchyard, and other facilities, followed by commissioning and testing of each turbine, utility interconnection, testing of the electrical system, and restoration of temporary construction areas, laydown areas, and turbine crane pads. Table 2.1-1 outlines a general construction schedule for the project.

2.1.1.1 WIND ENERGY FACILITY COMPONENTS

The principal components of the SVWEF would consist of WTGs, an underground electrical collection system for collecting the power generated by each WTG, electrical substation and switchyard, access roads, O&M building, temporary laydown and storage areas, concrete batch plant, sand and gravel source, fiber-optic communications, two permanent meteorological (met) towers, and a microwave tower. The short- and long-term disturbance areas for each of these components are described in Tables 2.1-2 and

2.1-3. The project area totals approximately 8,565 acres, all of which are on BLM land that is covered by the requested ROW for the Proposed Action. The total area estimated for use by the wind energy facility (including both short- and long-term disturbance) is approximately 756.2 acres, or approximately 8.8% of the total ROW.

2.1.1.2 PRECONSTRUCTION AND CONSTRUCTION ACTIVITIES

An overview of construction activities necessary for the development of a wind energy project is described in BLM's Wind Energy PEIS (BLM 2005). The following preconstruction and construction activities are specifically relevant to the proposed SVWEF.

2.1.1.2.1 Geotechnical Investigations

Geotechnical investigations have been completed within the project area to confirm constructibility and identify gravel sources. Prior to construction, additional geotechnical investigations would be completed at each turbine location, as needed, for establishing the final turbine layout and designing the final turbine foundations.

Table 2.1-1. Anticipated Project Construction Schedule

Task	Schedule
Engineering work starts	4th quarter 2009
Construction mobilization	3rd quarter 2010
Commence civil works (roads, underground electrical, foundations)	3rd quarter 2010
Turbine deliveries commence	2nd quarter 2011
Turbine deliveries completed	3rd quarter 2011
Main power transformer delivered	2nd quarter 2011
Substation and switchyard completed	2nd quarter 2011
Turbine commissioning, testing, and commercial operation	3rd quarter 2011
Wind energy facility commercial operation date	3rd quarter 2011

Table 2.1-2. SVWEF Components: Maximum Short-Term Disturbance Summary Table, Based on Construction of 75 Turbines

Facility Component	Disturbance Length (feet)	Disturbance Width (feet)	Short-Term Disturbance (acres)	% Project Area
Turbine foundations and crane pads (×75)	400[1]	N/A	216.3	0.03
Laydown, batching plant, and parking area	820	530	10.0	0.001
Temporary linear use area (including roads, collection system, and fiber-optic line)	145,200	200	666.7*	0.08
Gravel source(s) (×2)	660	660	20‡	0.002
Footprint Overlap	N/A	N/A	−280.4	−0.04
Total			**632.6**	**0.07**

[1] This measurement represents the diameter of the disturbance area.
* Grading is limited to 292.1 acres for roads (238.9 acres) and collection system (53.2 acres) within the temporary linear use area (TLUA).
† Included in TLUA acreage.
‡ One 10.0-acre gravel source is off-site.

Table 2.1-3. SVWEF Components: Maximum Long-Term Disturbance Summary Table, Based on Construction of 75 Turbines

Facility Component	Disturbance Length (feet)	Disturbance Width (feet)	Long-Term Disturbance (acres)	% Project Area
Turbine foundations and crane pads (×75)	75[1]	N/A	7.6	0.001
Access roads	145,200	28	93.3	0.01
Meteorological towers (×2)	50[1]	N/A	0.1	0.000
Spring Valley substation, Osceola substation, and O&M building	1,080	805	20.0	0.002
Footprint Overlap	N/A	N/A	−2.6	0.0
Total			**123.6**	**0.01**

[1] This measurement represents the diameter of the disturbance area.

2.1.1.2.2 Site Preparation

The centerline and exterior limits of the ROW would be surveyed and clearly marked by stakes and flagging at 200-foot intervals, or closer if necessary to maintain a sight line. Construction activities would be confined to these areas to prevent unnecessarily impacting sensitive areas. Stakes and flagging that are disturbed during construction would be repaired or replaced before construction continues. Stakes and flagging would be removed when construction and restoration are completed.

Vegetation would be removed from permanent facility sites, such as the O&M building and substation and switchyard. Vegetation clearing would be accomplished using bulldozers, road graders, or other standard earth-moving equipment. For the most part, the total area to be cleared of vegetation would be less than temporary work areas requested in order to minimize potential environmental impacts. In all areas of temporary and permanent disturbance where vegetation would be stripped, all possible topsoil would be removed and then bermed around temporary construction areas; stockpiled topsoil would be reused during restoration activities. No restoration would occur until all construction activities are completed. To re-establish healthy vegetation communities, a BLM-approved seed mix would be used and additional restoration measures would be developed as necessary. Grazing allotments within the project area would be temporarily closed to grazing until restoration is successful or 3 years following construction, whichever comes first. To address temporary loss of Animal Unit Months (AUMs) from allotment closures, SVW would compensate each allotment holder through purchase of feed for the removed cattle during the closure period.

2.1.1.2.3 Wind Turbine Layout, Installation, and Construction Processes

Since wind turbine technology is continually improving and the cost and availability of specific types of turbines vary from year to year, a representative range of turbine types that are most likely to be used for the project, including 2.3-MW 101 Siemens, 1.8-MW Vestas V90, and 2.0-MW RePOWER Wind Turbines, is being considered. Specifications for these three turbines are presented in Table 2.1-4. Based on wind energy potential in Spring Valley, 85 potential turbine sites have been identified; of these, 75 are identified as preferred turbine locations, and 10 are identified as alternate locations. Depending on the type of turbine used for the project, a range of 66 to 75 locations would make up the final layout. Figure 2.1-1 presents the site layout for all 85 locations. The final layout would be based on the type of wind turbine selected, with the total number of turbines generating no more than the 149.1 MW allowed under the IA. Additionally, the turbine sites selected would be those with the most energy potential (i.e., best wind resource) that minimize environmental impacts. The final site layout would be in accordance with industry standards, safety measures, and appropriate guidance as stated in the BLM's Wind Energy PEIS/ROD. The final layout would ideally use the preferred 75 turbine sites but may include any

configuration of the 85 potential locations in order to avoid potential significant impacts identified from analysis.

Table 2.1-4. Wind Turbine Specifications

Turbine	Hub Height	Rotor Diameter	Total Height	Rated Capacity Wind Speed	Rotor Speed	Tower Base Diameter
2.3-MW Siemens	80 m	101 m	130.5 m	12–13 m/s	6–16 rpm	14.76 feet (4.5 m)
1.8-MW V90 Vestas	80 m	90–100 m	125 m	12 m/s	9–14.9 rpm	< 15 feet
2.0MW Gamesa G90	80 m	90 m	125 m	15 m/s	9-19 rpm	13ft (4m)
RePower 2.0	80 m	92.5 m	126 m	12 m/s	9–18 rpm	13 feet (4.0 m)

Notes: m/s = meters per second; rmp = rotations per minute.

Turbines would be placed in a series of east-west-oriented rows (or arrays) to best use Spring Valley's north-south wind flows. Turbines within each array would be connected by gravel surface access roads and underground 34.5-kV collection circuits. To minimize downwind array losses, spacing between turbine rows would be at least 10× rotor diameters (RD) (1,010 m) and 3.0 to 3.5 RD (285−332.5 m) for in-row spacing. Turbine towers and foundations would be designed to survive a gust of wind more than 133.1 miles per hour (mph) with the blades pitched in their safest position. Turbine foundations would be approximately 8 feet deep, with a projection of approximately 6 inches above final grade, and would use approximately 350 cubic yards of concrete. Each tubular steel tower would have a maximum 15-foot-diameter (4.5-m-diameter) base.

Three to five WTGs can be erected weekly. Construction is expected to commence in the later part of 2010, with the final mechanical completion, commissioning, and testing expected to be completed by the 3rd quarter of 2011.

Turbine crane pads would be constructed for each wind turbine. Each turbine would require a 400-foot-diameter (2.9-acre) temporary construction area and a permanent 75-foot-diameter (0.3-acre) area for the tower within the temporary construction area. Clearing and grading would be accomplished using bulldozers, backhoes, and road graders.

The temporary work area for each site would be used for the crane pad, equipment laydown, and other construction-related needs. Within the area of temporary disturbance, an area of 75 × 150 feet with a maximum slope of 1% is required to support the crane used in lifting and erecting the turbine components. The crane pad would not be surfaced with concrete but would be compacted to provide a stable base for safe operation of cranes. To meet the necessary compaction standards as determined by geotechnical studies, it may be necessary for heavy weights to be dropped on the pad, and graders and bulldozers may be used to achieve the required levels and grades.

Within the temporary construction area, permanent foundations are excavated, compacted, and constructed of structural steel and reinforced concrete designed to meet turbine supplier and geotechnical engineer's recommendations. The WTGs' freestanding tubular towers would be connected by anchor bolts to the concrete foundation at the pedestal. The towers would have a maximum 15-foot-diameter (4.5-m-diameter) base. The area immediately surrounding the concrete pedestal would be covered with a gravel ring, followed by roads to provide a stable surface for future maintenance vehicles accessing the turbine and as required by electrical codes. After construction, all temporary disturbances associated with the turbine installation would be reclaimed.

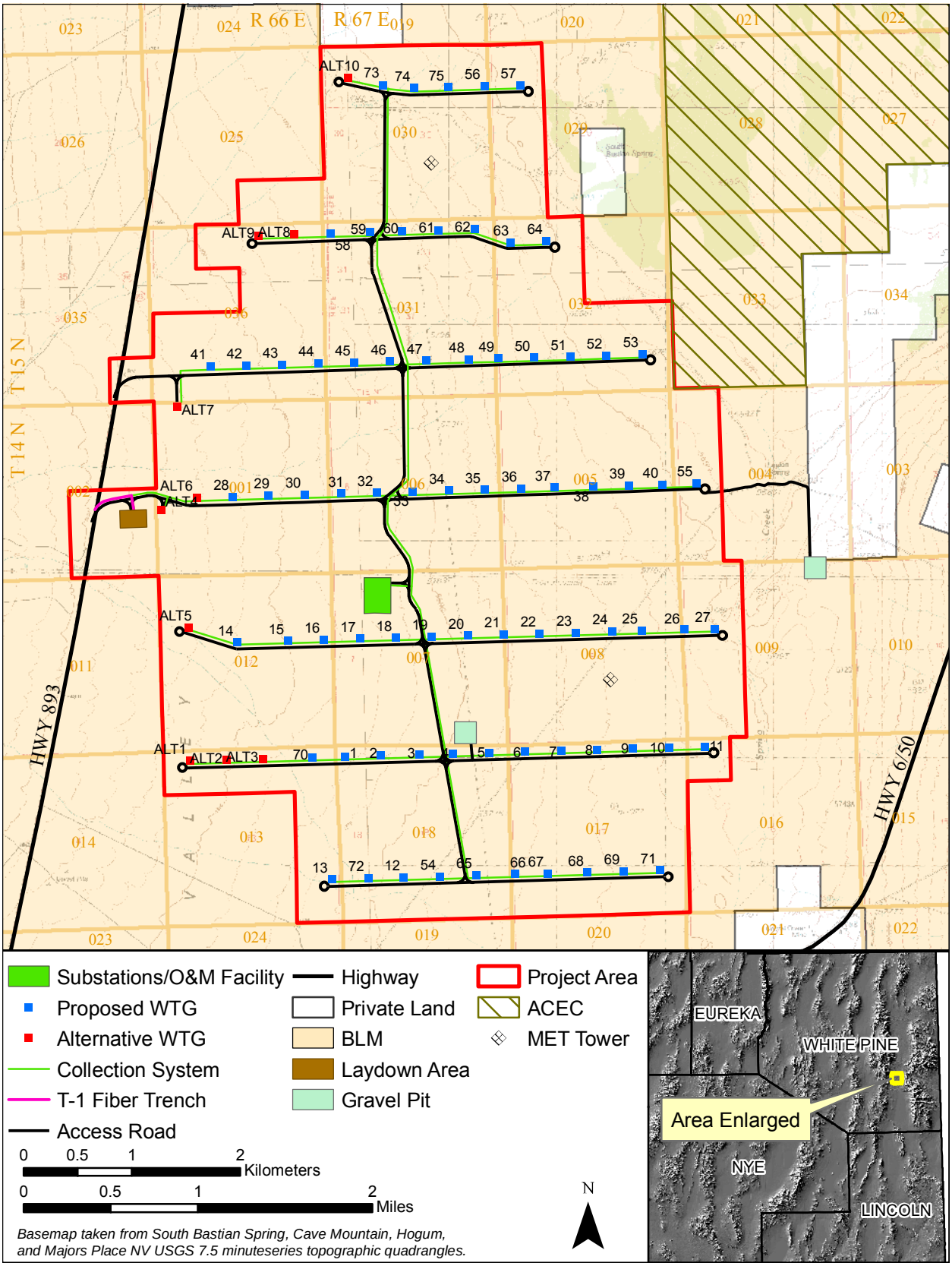

Figure 2.1-1. Site layout.

2.1.1.2.4 Wind Turbine Components and Assembly

WTGs consist of three main components: the turbine tower, the nacelle, and the rotor, which consists of the hub and the blades. The nacelle is the portion of the wind turbine mounted at the top of the tower, and it houses the generator, converter, gearbox, and electronic control systems. Turbine hub heights and RD for the potential turbines may vary but for purposes of analysis would not exceed the 2.3-MW turbine specifications.

The towers would be a tapered tubular steel structure manufactured in three or four sections, depending on the tower height, and approximately 15 feet (4.5 m) in diameter at the base. The towers would be painted an off-white matte color to be visually less obtrusive. A service platform at the top of each section would allow for access to the tower's connecting bolts for routine inspection. A ladder inside the structure would ascend to the nacelle to provide access for maintenance. The tower would be equipped with interior lighting and a safety glide cable alongside the ladder. The towers would be fabricated and erected in sections.

The nacelle steel-reinforced fiberglass shell houses the main mechanical components of the WTG; the drive train, gearbox, and generator control the electronics and cables. The nacelle would be equipped with an anemometer that signals wind speed and direction information to an electronic controller. A mechanism would use electric motors to rotate (yaw) the nacelle and rotor to keep the turbine pointed into the wind to maximize energy capture.

Modern wind turbines have three-bladed rotors. The diameter of the circle swept by the blades would be no more than 323 feet (101 m). If the maximum number of 75 turbines were constructed, a total rotor-swept area of 600,584.3 m^2 (148.4 acres) would be used. Generally, larger WTGs have slower rotating blades, but the specific rotation-per-minute (rpm) values depend on aerodynamic design and vary between machines. Based on the turbines considered, the blades would turn at no more than 18 rpm.

Each turbine is equipped with a state-of-the-art control system to monitor variables such as wind speed and direction, air and machine temperatures, electrical voltages, currents, vibrations, blade pitch, and yaw (side-to-side) angles.

Power generation controlled at the bus cabinet inside the base of the tower include operation of the main breakers to synchronize the generator with the grid as well as control of ancillary breakers and systems. The control system would always operate to ensure that the machines operate efficiently and safely.

Each turbine would be connected to a central Supervisory Control and Data Acquisition (SCADA) system. The SCADA system allows for controlling and monitoring individual turbines and the wind energy facility as a whole from a central host computer or a remote personal computer. The SCADA system transmits critical information from the turbine via fiber optics to a central control server located in the O&M building and to all other locations as required. The SCADA system would also send signals to a fax, pager, or cell phone to alert operations staff.

Turbines would be equipped with a braking system to stop or release the rotor. The braking system is designed to bring the rotor to a halt under all foreseeable conditions. The turbines also would be equipped with a parking brake used to keep the rotor stationary during maintenance or inspection.

2.1.1.2.5 Temporary Construction Workspace, Yards, Materials Storage, and Staging Areas

One 10-acre temporary laydown area with a batch plant and parking area would be required to stage and store construction equipment and materials, to prepare concrete, and for construction staff parking (see

Figure 2.1-1). During construction, the laydown area would be fenced and gated to control access. The laydown area may be graveled, depending on the soil conditions and project needs. After construction, all temporary disturbances associated with the laydown area would be reclaimed.

A temporary linear use area (TLUA) would be designated to accommodate roads, crane travel paths, and the underground circuits. The TLUA would include a 15-foot buffer off the outside edge of the road and off the outside edge of the collection system, plus the area in between, with a typical total width of 200 feet. Grading and clearing would only occur within the 68-foot-wide road and 20-foot-wide collection system alignments (292.1 acres). The remaining portions of the TLUA would be subject to disturbance from cross-country travel and temporary laydown sites. The total approximate area within the TLUA would be 458.7 acres.

2.1.1.2.6 Access Roads

The project scope would include a network of 28-foot-wide roads that would provide access to each turbine location, the substation, the switchyard, and to the project's O&M building. During the course of construction, access roads would have an additional temporary disturbance of up to 40 feet (68 feet wide total) to facilitate the travel of large trucks and cranes. These disturbed areas would be graded and compacted for use and then decompacted and stabilized at the conclusion of the project. In addition to the crane travel paths, the underground collection system and fiber-optic lines would also parallel the access roads.

Public access roads would incorporate existing BLM standards regarding road design, construction, and maintenance such as those described in the 2005 Wind Energy PEIS/ROD (BLM 2005), BLM Manual 9113 (BLM 1985), and the *Surface Operating Standards for Oil and Gas Exploration and Development* (U.S. Department of the Interior and the U.S. Department of Agriculture 2007) (i.e., the Gold Book). Additionally, any public access roads would conform to all applicable county road regulations, as well as the Nevada State Fire Marshal's fire safety regulations.

A new, approximately 0.3-mile-long, long-term site access road would be constructed approximately 2 miles from the existing transmission line access road; a second permanent access road, approximately 0.4 mile long, would be constructed approximately 1.5 miles north of the primary access road. During the construction phase of the project, site and turbine access roads would be up to 68 feet wide to facilitate the travel of large trucks and heavy equipment, ditching, and topsoil storage. This would be reduced to 28 feet after construction is completed to include the permanent driving surface and ditches, for maintenance access during the operations phase; the remaining 40-foot-wide area of short-term disturbance would be reclaimed. The two long-term site access roads would enable construction and postconstruction operational personnel to easily access the center and northern sections of the project area, including the Spring Valley substation and Osceola switchyard.

There would be up to a total of 27.5 miles of new access roads, including the two site access roads described above and the turbine access roads. All new access roads where a crane walk would be required would be 68 feet wide during the construction phase and 28 feet wide during the operations phase and would include a turnaround at the end of each turbine array to allow for large-vehicle maneuvering. Access roads for gravel pits (1.1 miles) would be along existing roads that would be improved, with a maximum expansion to 28 feet wide. Because the gravel pit access roads already exist, they would not be restored after construction is completed. There would be up to 93.3 acres of total long-term disturbance from new road construction. The TLUA to construct these access roads and the electric collection system would be designed to include the temporary widths for the roads and electrical collections system, plus the area in between. The TLUA would average 200 feet wide to accommodate crane movement and material delivery and would encompass up to 452.3 acres of short-term temporary disturbance. The final long-term roads would be compacted and surfaced with gravel aggregate from BLM-permitted sources.

2.1.1.2.7 Electrical System

The existing NV Energy 230-kV transmission line, which passes from east to west through the project site, would be the primary power transmission line for the SVWEF. A 34.5-kV underground electrical collector system would be installed to connect the turbines to the Spring Valley substation. Power generated at each turbine, approximately 690 volts, would be transmitted to a pad-mounted transformer; there would be a transformer on the ground next to each turbine. The pad-mounted transformer would step up the power from 690 volts to 34.5-kV, which is considered to be medium voltage (MV). Approximately five to 10 pad mount transformers (turbines) would be interconnected, and one MV cable (homerun circuit) would transmit the power from those turbines to the substation. A total of eight such MV circuits are planned. The power from all eight circuits would be stepped up by the main transformer at the Spring Valley substation to 230 kV high voltage (HV). The HV system would then be interconnected to the Osceola switchyard and the grid. Approximately 27 miles of collector cables and fiber-optic cables would be placed underground in trenches that are either adjacent to access roads or, in some cases, run cross-country within the ROW area. Vaults and splice boxes would be placed aboveground at locations as needed. There would be several aboveground junction boxes that would be used in various locations. Junction boxes are approximately 4 feet wide × 6 feet long × 4 feet high.

Spring Valley Substation

A 250 × 480–foot substation would be located adjacent to the O&M building within the 20-acre facility area. The substation would have a radial layout with one 230-kV circuit breaker, one 34.5-/230-kV step-up transformer, and a single 34.5-kV bus-bar, where the collection circuits would be connected by means of 34.5-kV circuit breakers. Each line terminal would consist of one dedicated circuit breaker and one shared circuit breaker, along with any associated relays, switches, and lightning arrestors. A 230-kV aboveground connector transmission line would connect the Spring Valley substation to the Osceola switching station, which would then connect to the NV Energy 230-kV transmission line. No disturbance outside the 20-acre facility area is expected. Construction of this substation would last approximately 4 to 6 months and would involve two primary stages: 1) site preparation; and 2) structural and electrical construction.

Construction of the substation would begin with clearing of vegetation and organic material from the site. The site would then be graded to subgrade elevation; exporting and importing of suitable materials may be necessary. Structural footings and underground utilities, along with electrical conduit and grounding grid, would be installed, followed by aboveground structures and equipment. A chain-link fence would be constructed around the new substation for security and to restrict unauthorized persons and wildlife from entering the substation. The site would be finish graded and gravel surfaced, and reclamation would be completed to minimize the visual appearance of the substation.

Control buildings would be added to the substation and would more than likely be constructed of prefabricated material. Major equipment to be installed inside the control buildings would consist of relay and control panels, alternating current and direct current load centers to provide power to equipment inside and outside the control building, a battery bank to provide a back-up power supply, a heating/cooling system to prevent equipment failure, and communications equipment for remote control and monitoring of essential equipment.

Steel structures would be erected on concrete footings to support switches, electrical buswork, instrument transformers, lightning arrestors, and other equipment, as well as termination structures for incoming and outgoing transmission lines. Structures would be fabricated from tubular steel and galvanized or painted a BLM-approved color to blend in with predominant vegetation and soil types. Structures would be grounded by thermally welding one or more ground wires to each structure.

Major equipment would be set by crane and either bolted or welded to the foundations to resist seismic forces. Oil spill containment basins would be installed around major oil-filled transformers and other equipment. Smaller equipment, including air switches, current and voltage instrument transformers, insulators, electrical buswork, and conductors would be mounted on the steel structures.

Control cables would be pulled from panels in the control building, through the underground conduits and concrete trench system, to the appropriate equipment. After the cables are connected, the controls would be set to the proper settings, and all equipment would be tested before the transmission line is energized.

Osceola Switchyard

The Osceola switchyard, operated by NV Energy, would be constructed adjacent to the Spring Valley substation within the 20-acre facility area. This switchyard would be 510 × 360 feet. Construction of the Osceola switchyard and components within it would include a 5 breaker and a breaker-and-a-half substation with three 230-kV line terminals, one of which would also have a 230-kV, 25-megavolt ampere reactive (MVAr) line reactor. Each line terminal would consist of one dedicated circuit breaker and one shared circuit breaker, along with any associated relays, switches, and lightning arrestors. This switchyard would connect to the existing NV Energy 230-kV line and would not be decommissioned with the rest of the project. Construction of this switchyard would last approximately 7 to 10 months and would involve the same two primary stages (site preparation and structural and electrical construction) as were previously described for the Spring Valley Substation; however, reclamation is not anticipated for this site.

2.1.1.2.8 Communications System Requirements (Microwave, Fiber Optics, Hard Wire, Wireless)

Fiber-optic cable for communications would also be necessary. Approximately 21.7 miles of fiber-optic cables and collector cables would be placed underground in trenches adjacent to access roads. Additionally, approximately 0.3 mile of T-1 fiber-optic cable for communications would be placed underground, running from the O&M building to State Route (SR) 893. Within the 200-foot-wide TLUA, trenches would be excavated up to 20 feet wide (to accommodate multiple circuits) and 3 to 5 feet deep. The cables would then be placed in the trench. Placement of 0.3 mile of T-1 fiber-optic line would require temporary disturbance to 0.6 acre of land. Following placement of the cables, the trench would be backfilled, any topsoil set aside during excavation would be placed on top, and the area would be restored.

A 100-foot-tall microwave tower would be located within the Osceola switchyard area. The tower would be placed where it has a direct line of site, and WTGs would not interfere with it. Fiber-optic cable would also be placed on NV Energy's 230-kV line structures from the Osceola switching station, stretching west to the east side of SR 893, where a box would be placed to intercept existing conduit.

2.1.1.2.9 O&M Building

An O&M building within the 20-acre facility area would be located in the southern portion of the project area (see Figure 2.1-1). The O&M building and yard would be constructed to store critical spare parts and provide a building for the operations and maintenance services. A concrete foundation would be required for the maintenance facility, and the area immediately surrounding the building would be covered with gravel for vehicle parking. Any area within the fence not covered by concrete would be covered with gravel to minimize erosion and surface runoff. A permanent 7-foot-high security fence surrounding the O&M facility and directional lighting would be installed. For communications, a T-1 fiber-optic line would be installed from the O&M facility and trenched approximately 0.3 mile underground to connect to a local communication company ROW along SR 893 (see Section 2.1.2.1.12 below).

2.1.1.2.10 Gravel, Aggregate, Concrete Needs, and Sources

Construction of access roads, facility foundations, and temporary laydown areas associated with the Proposed Action would require access to sand and gravel. Up to 14,875 cubic yards of sand, 152,562 cubic yards of gravel, and 7,500 cubic yards of cement are expected to be used during the course of construction. Sand and gravel sources within and adjacent to the project area have been identified by a construction contractor and would be permitted through a mineral materials permit issued by the BLM.

Gravel and concrete aggregate would come from two 10-acre locations—one within the project area and one outside the project area (see Figure 2.1-1). Some rock materials for making concrete would be purchased from an existing stockpile location. The materials would be trucked to the batching plant and placed into stockpiles. Access to the site outside the project area would be along an existing road. Cement would be delivered on trucks from a source to be identified and stored in two to five silos on-site. Approximately 250 tons of sand per foundation, 400 tons of gravel per foundation, and 120 tons of cement per foundation would be needed for each turbine site. Based on a maximum of 75 turbines installed and the additional needs for construction of the substation and switchyard and O&M building, 20,400 tons of sand, 32,000 tons of gravel, and 9,600 tons of cement would be used.

2.1.1.2.11 Concrete Batch Plant

A 5-acre site within the laydown area would be allocated to install a batch plant for preparing and mixing the concrete used for the WTG foundations, transformer, and equipment foundations at the substation and switchyard, O&M building foundation and floor slab, and other project facilities (see Figure 2.1-1). Prior to installation of the batch plant facilities, a portion of the area would be covered with gravel. The batch plant complex would consist of a mixing plant, areas for sand and gravel stockpiles, and truck load-out and turnaround areas. The batch plant itself would consist of cement storage silos, water and mixture tanks, gravel hoppers, and conveyors to deliver different materials. During construction, materials would be taken from stockpiles and dumped into hoppers with front-end loaders, where they would be mixed together in the mixing plant and then loaded into ready-mix trucks in the truck loading area. The concrete would be delivered to each turbine site, the substation and switchyard, the O&M building, and other locations as needed using ready-mix trucks. Concrete ready-mix trucks would be washed out at designated locations that have been designed for that purpose. At those locations, all effluent would be contained, and refuse concrete would be reclaimed. Following completion of construction, all components of the batch plant would be demobilized, and the site would be reclaimed.

2.1.1.2.12 Water Usage, Amounts, Source

Because no new water rights in Spring Valley are available, SVW would not drill a new well as part of the proposed project. All necessary water would be obtained through a temporary lease with an existing water rights holder in Spring Valley north of the project area, trucked to the site, and put to immediate use or held in tanks within the laydown area. A final agreement has been reached between SVW and the Church of Jesus Christ of Latter-Day Saints, an existing water rights holder in Spring Valley. The peak usage is estimated to be approximately 200,000 gallons per day. An elevated 30,000-gallon storage tank would be used at the water source. All water would be delivered by truck from the existing source to the batch plant and project area. Up to 2,000 vehicle trips would be required for water delivery.

The largest needs for water are batching concrete for turbine foundations and dust suppression. Water would also be used for washing equipment, road maintenance, and potable water. The quantity of water needed by SVW Project during the construction period will vary from approximately 5 million gallons (15.3 acre-feet) under normal conditions to approximately 10 million gallons (30.7 acre-feet) under the worst-case scenario of excessive drought and dry land. In order to achieve proper compaction of backfill at foundations, collection trenches, and road base material, water must be added. The amount of water

necessary to reach an optimal value for compaction is variable and will depend on moisture conditions at the time of construction. The large range of water use is necessary to account for the potential conditions.

In normal conditions, a total of about 20,000 gallons of water per turbine would be needed for batching concrete; however, Pattern Energy may need to increase the moisture content by as much as 10%. Based on the maximum of 75 turbines, a total of 3,300,000 gallons of water would be needed for turbines. Of the remaining 6,700,000 gallons, 60%–70% would be used for dust suppression, and the balance (5,280 gallons a week) would be necessary for potable uses thoroughout the construction period.

2.1.1.2.13 Aviation Lighting (Wind Turbines)

Turbines would be lit as required by the Federal Aviation Administration (FAA). Based on the FAA Obstruction Marking and Lighting Advisory Circular (AC70/7460-1K), no structural markings or alternative colors are proposed for the WTGs. For nighttime visibility, two flashing red beacons would be mounted on the nacelle. Lights would not be placed on all turbines; only those turbines at each end of the array would have lights to mark the extent of the facility. A detailed Lighting Plan would be prepared as part of the Construction, Operation, and Maintenance (COM) Plan for the project.

2.1.1.2.14 Site Stabilization, Protection, and Reclamation Practices

All restoration for the project would follow the guidance in the Restoration Plan, prepared as part of the COM Plan for the project. Upon completion of the construction aspect of the project, all soils disturbed by short-term access roads and facilities would be reclaimed by stabilization and rehabilitation. Reseeding and fertilization would take place in accordance with specifications provided by BLM, and access to ROWs would be limited to the public, using gates and signs where necessary to allow for the germination and establishment of replanted sites. After construction activities are complete, SVW would restore temporary disturbance areas. In areas with potential seed-bearing soils, all available topsoil recovered during construction activities would be set aside and reapplied to temporary surface disturbances during restoration. To re-establish healthy vegetation communities, a BLM-approved seed mix would be used.

2.1.1.2.15 Construction Workforce Numbers, Needs, and Vehicles

Up to 175 workers would be employed during a 9- to 12-month construction period. There are several trailer parks nearby (Majors Junction is the closest) that could provide temporary living facilities for construction personnel; there is also housing in Ely and Baker, Nevada. During construction, potable water and sanitary facilities at the site would be necessary to support the construction crews. Potable water during construction would consist of bottled water (5-gallon reusable containers); there would be a small non-potable water storage tank for restroom facilities. A temporary septic holding tank would be installed to support the restroom use at the laydown area.

Temporary facilities would be available at the laydown area, and permanent facilities would be available at the O&M building. No more than 225 employee vehicles are anticipated to be on-site at any one time.

2.1.1.2.16 Construction Materials and Components Transportation

Trucks transporting turbines, towers, and other construction materials would travel along U.S. Highways 50 and 93, accessing the project area directly from SR 893. Most of the materials and components would be delivered from the south along U.S. Highway 93.

2.1.1.2.17 Waste and Hazardous Materials Management

All construction-related waste would be transported to and stored within the temporary use area until collected for transport to a final landfill destination by a licensed hauler. Materials that can be recycled would be stored and transported separately. SVW will coordinate with the Ely landfill prior to the start of construction. Hazardous materials are typically limited for a project of this nature. However, the following materials are anticipated to be used or produced during construction and operation of the Proposed Action:

- Fuel (diesel and unleaded) for construction equipment and vehicles
- Lubricants and mineral oils
- Cleaners
- Industrial material

These substances will be transported, stored, and, when necessary, disposed of in accordance with local, state, and federal regulations.

Fuel, grease, and oil for equipment and vehicles would be stored at the temporary use area. If any spillage occurs, the area would be cleaned up in accordance with the requirement of the hazardous materials plan and applicable permit requirements. Use of turbine lube oil will be handled in accordance with any necessary permit requirements or hazardous materials plan. Any concrete left over would be buried (if approved by BLM) or would be hauled and disposed of at a permitted site. Sanitary waste would be handled by a licensed sanitary waste vendor. For postconstruction operations, a septic system will be installed for the O&M building.

2.1.2 Wind Energy Facility Operation

2.1.2.1 OPERATIONS, WORKFORCE, EQUIPMENT, AND FACILITY MAINTENANCE NEEDS

Once the project has been constructed, the SVWEF would be monitored and operated year-round by SVW and would have a permanent staff of 10 to 12 full-time technicians. Each year, prior to the onset of the migratory bird breeding season (March 15 to July 30), raptor nests within 0.5 mile of a turbine would be checked to ensure there are no nesting raptors using these nests. If a nest is found to be in use, the Technical Advisory Committee (TAC) would determine necessary action based on the Wildlife Mitigation and Monitoring Plan (Appendix A).

The computer control system for each turbine would perform self-diagnostic tests, allowing a remote operator to ensure that each turbine is functioning at peak performance. Routine maintenance activities, consisting of visual inspections, oil changes, and gearbox lubrication, would result in regular truck traffic on project access roads throughout the year. Project access roads would be graded as necessary to facilitate operations and maintenance.

Annual maintenance activities that require the shutdown of turbines would be coordinated to occur during periods of little or no wind to minimize the impact to the amount of overall energy generation. Annual maintenance procedures would consist of inspecting WTG components and fasteners.

2.1.2.2 MAINTENANCE ACTIVITIES, INCLUDING ROAD MAINTENANCE

All equipment used in the operation of this project would be maintained and inspected regularly by authorized and trained facility staff. A complete schedule would be established before the start of operations.

The access roads built and used during the construction phase would be maintained throughout commercial operations. During operations, all project access roads would be evaluated and graded as necessary to facilitate operations and maintenance. In addition to grading, the application of new gravel may be necessary to maintain road surfaces.

2.1.3 Wind Energy Facility Decommissioning

Decommissioning involves the removal and disposal of infrastructure and facilities associated with a wind energy facility. SVW anticipates that the SVWEF would have a usable lifespan, after which continued operation would not be cost-effective. This is expected to occur after approximately 30 years of operation. Once the usable lifespan of the wind energy facility has been reached, the goal is to return the site to as close to preconstruction conditions as is possible. Prior to decommissioning, a detailed plan would be prepared to address specific needs of the project consistent with the BLM policy and would be approved by the BLM. The BMPs and stipulations that have been developed for construction activities would be applied to similar activities completed during decommissioning.

Generally, decommissioning involves disassembling WTGs and associated infrastructure and salvaging any valuable materials such as steel and copper. Unsalvageable materials would be disposed of at authorized locations. Following removal of facilities, turbine foundations would be partially removed to below grade, and pads and access roads would be recontoured and reseeded. Ground disturbance and impacts associated with decommissioning would be similar to those associated with construction activities.

2.1.4 Design Criteria (Mitigation Measures) Included in the Proposed Action

2.1.4.1 FACILITY COMMITMENTS

- Alternate Turbine Locations – 85 potential turbine locations would be analyzed, but a range of 66 to 75 sites would be developed, allowing selection of the best wind sites and avoidance of environmentally sensitive areas.
- Use of Tubular Conical Steel Turbine Towers – Tubular towers do not provide locations for raptors to perch, which decreases the risk of collisions with turbine blades.
- Underground Collection System – Reduces the visual impact of overhead transmission as well as the potential impact to avian and bat species from collisions.
- Setbacks – Turbines would be set back from public roads at least 1.1× total turbine height and would be set back 1.5× total turbine height from any property lines and ROW boundary.

2.1.4.2 CONSTRUCTION COMMITMENTS

- Best management practices – For example, construction vehicle movement within the project boundary would be restricted to predesignated access, contractor-required access, and public roads. In construction areas where ground disturbance is unavoidable, surface restoration would

consist of returning disturbed areas back to their natural contours (if feasible) and reseeding with native seed mix. A full list of BMPs would be developed and included in the project's COM Plan.

- A Transportation Plan shall be developed, particularly for the transport of turbine components, main assembly cranes, and other large pieces of equipment. The plan shall consider specific object sizes, weights, origin, destination, and unique handling requirements and shall evaluate alternative transportation approaches. In addition, the process to be used to comply with unique state requirements and to obtain all necessary permits shall be clearly identified.
- A Traffic Management Plan shall be prepared as part of the Transportation Plan for the site access roads to ensure that no hazards would result from the increased truck traffic and that traffic flow would not be adversely impacted. This plan shall incorporate measures such as informational signs, flaggers when equipment may result in blocked throughways, and traffic cones to identify any necessary changes in temporary lane configuration. Additionally, SVW would consult with local planning authorities regarding increased traffic during the construction phase, including an assessment of the number of vehicles per day and their size and type. Specific issues of concern (e.g., location of school bus routes and stops) shall be identified and addressed in the Traffic Management Plan.

2.1.4.3 RESOURCE CONSERVATION MEASURES

- Direct avoidance of any eligible cultural resources.
- Monitoring by a BLM-approved archaeologist would be required during excavation and earth-moving activities associated with the construction phase.
- Any measures determined through Native American consultation will be implemented.
- Wildlife Mitigation and Monitoring Plan – A wildlife mitigation and monitoring plan has been prepared and is available in Appendix A. The plan describes postconstruction monitoring requirements, initial mitigation requirements, and an adaptive mitigation strategy. The plan uses a tiered approach that would result in different levels of mitigation being implemented based on the findings of postconstruction monitoring.
- Facilities shall be designed to discourage their use as perching or nesting substrates by birds. For example, power lines and poles shall be configured to minimize raptor electrocutions and discourage raptor and raven nesting and perching.
- Migratory birds – If construction is planned between March 15 and July 30, migratory bird clearance surveys would be conducted. Evidence of active nests or nesting would be reported immediately to the BLM to determine appropriate minimization measures (i.e., avoidance buffer would be established until birds have fledged the nest) on a case-by-case basis.
- Where appropriate, permitted activities would be restricted from March 1 through May 15 within 2 miles of an active greater sage-grouse lek.
- Where appropriate, permitted activities would be restricted from November 1 through May 15 within greater sage-grouse winter range. If activities must occur during that time, a survey would occur prior to work to determine whether greater sage-grouse are present. If individuals are not present, work may commence; if individuals are present, the BLM would determine necessary action such as restricted work areas until sage grouse have left the project area.
- Develop a Stormwater Management Plan for the site to ensure compliance with applicable regulations and prevent off-site migration of contaminated stormwater or increased soil erosion.
- Restoration Plan – A plan would be prepared as part of the COM Plan. The plan would describe restoration methods and requirements for temporary disturbance areas.

- For soil-disturbing actions that would require reclamation, salvage and stockpile all available growth medium prior to surface disturbances. Seed stock piles if they are to be left for more than one growing season. Recontour all disturbance areas to blend as closely as possible with the natural topography prior to revegetation. Rip all compacted portions of the disturbance to an appropriate depth based on site characteristics. Establish an adequate seed bed to provide good seed to soil contact.
- Do not allow bristlecone pine, limber pine, or swamp cedar to be harvested except for education, scientific, and research purposes.
- Develop a plan for control of noxious weeds and invasive species, which could occur as a result of new surface disturbance activities at the site. The plan shall address monitoring, education of personnel on weed identification, the manner in which weeds spread, and methods for treating infestations. The use of certified weed-free mulching shall be required. If trucks and construction equipment are arriving from locations with known invasive vegetation problems, a controlled inspection and cleaning area shall be established to visually inspect construction equipment arriving at the project area and to remove and collect seeds that may be adhering to tires and other equipment surfaces.
- If pesticides are used on the site, an integrated pest management plan shall be developed to ensure that applications would be conducted within the framework of BLM and U.S. Department of the Interior policies and entail only the use of EPA-registered pesticides. Pesticide use shall be limited to non-persistent, immobile pesticides and shall only be applied in accordance with label and application permit directions and stipulations for terrestrial and aquatic applications.
- All straw, hay, straw/hay, or other organic products used for reclamation or stabilization activities must be certified that all materials are free of plant species listed on the Nevada noxious weed list or specifically identified by the Ely District Office. Inspections would be conducted by a weed scientist or qualified biologist.
- Where appropriate, vehicles and heavy equipment used for the completion, maintenance, inspection, or monitoring of ground-disturbing activities; for emergency fire suppression; or for authorized off-road driving would be free of soil and debris capable of transporting weed propagules. Vehicles and equipment would be cleaned with power or high-pressure equipment prior to entering or leaving the work site or project area. Vehicles used for emergency fire suppression would be cleaned as a part of check-in and demobilization procedures. Cleaning efforts would concentrate on tracks, feet, or tires and on the undercarriage. Special emphasis would be applied to axles, frames, cross members, motor mounts, on and underneath steps, running boards, and front bumper/brush guard assemblies. Vehicle cabs would be swept out, and refuse would be disposed of in waste receptacles. Cleaning sites would be recorded using global positioning systems (GPS) or other mutually acceptable equipment and provided to the Ely District Office Weed Coordinator or designated contact person.
- Prior to the entry of vehicles and equipment to a planned disturbance area, a weed scientist or qualified biologist would identify and flag areas containing weeds. The flagging would alert personnel or participants to avoid areas of concern whenever possible.
- To minimize the transport of soil-borne noxious weed seeds, roots, or rhizomes, infested soils or materials would not be moved and redistributed on weed-free or relatively weed-free areas. In areas where infestations are identified or noted and infested soils, rock, or overburden must be moved, these materials would be salvaged and stockpiled adjacent to the area from which they were stripped. Appropriate measures would be taken to minimize wind and water erosion of these stockpiles. During reclamation, the materials would be returned to the area from which they were stripped.

2.2 No-Action Alternative

Under the No-Action Alternative, the BLM would not issue a ROW grant for the construction and operation of WTG facilities in the project area. Wind resources in Spring Valley would remain undeveloped, and a project contributing to the Nevada state and federal RPS would not occur.

2.3 Alternatives Considered but Eliminated from Detailed Analysis

During the period of additional data collection and preparation of the POD, SVW coordinated with the BLM to consider a variety of project layouts that would meet both the BLM's purpose and need and SVW's objective while avoiding or minimizing impacts to resources of concern identified by stakeholders and the BLM interdisciplinary team. The following two alternatives were considered but eliminated from detailed analysis.

2.3.1 Alternate Project Area One

SVW considered an alternative location directly north of the Proposed Action area that included some proposed development on private lands. Through ongoing studies of the wind resource in Spring Valley, SVW determined that the wind resource in this area is not an economically viable option at this time. In addition, there was a greater potential to affect sensitive cultural resources, and the WTGs associated with this area would have been clearly visible from private residences on Sacramento Pass and campsites in the Cleve Creek Recreation Area.

2.3.2 Alternate Project Area Two

SVW considered a location north and east of the Proposed Action area, including lands within and directly adjacent to the Swamp Cedar ACEC. Because of the greater potential to affect sensitive cultural resources and wildlife use associated with the ACEC, this project area was eliminated from further detailed analysis.

2.4 Conformance with BLM Land Use Plan

The Proposed Action is in conformance with Management Action RE-1 identified in the Ely RMP, which directs the BLM to "Review proposed renewable energy developments on a project-specific basis, considering potential resource conflicts and mitigation measures. Areas of high potential for wind and solar energy development are identified but no specific areas are designated for such development" (BLM 2008b). Additionally, the Proposed Action is in conformance with the following BLM goals and objectives for renewable energy:

- "provide opportunities for development of renewable energy sources such as wind, solar, biomass, and other alternative energy sources while minimizing adverse impacts to other resources" (BLM 2008b); and
- "be responsive to applications for renewable energy sites and associated rights of way, as encouraged by current BLM policy" (BLM 2008b).

2.5 Relationship to Statutes, Regulations, or Other Plans

The issuance of a ROW for the Proposed Action is consistent with the terms, conditions, and decisions of the White Pine County Public Lands Policy Plan as adopted by the White Pine County Board of County Commissioners (Public Land User Advisory Committee 2007). Although the plan does not include specific policies related to renewable energy development, the Proposed Action is consistent with Policy 11-2: "All energy proposals should attain the lowest feasible emissions, the highest feasible efficiencies and the highest possible standards using Best Available Control Technology."

This EA also complies with the *BLM Final Wind Energy Development Policy* (IM No. 2009-043).

The issuance of a ROW for the Proposed Action is also consistent with all relevant federal, state, and local statutes, regulations, and plans. The known federal, state, and local agencies' approvals, reviews, and permitting requirements that are anticipated to be needed for these new electrical facilities are described in detail in the SVW POD (SVW 2009).

3.0 AFFECTED ENVIRONMENT/ENVIRONMENTAL IMPACTS

3.1 Introduction

This chapter presents the potentially affected existing environment (i.e., the physical, biological, social, and economic values and resources) of the impact area.

While many issues may arise during scoping, not all of the issues raised warrant detailed analysis. Issues raised through scoping are analyzed if

- Analysis of the issue is necessary in order to make a reasoned choice between alternatives;
- The issue is significant (an issue associated with a significant direct, indirect, or cumulative impact, or where necessary to determine the significance of impacts); or
- There is a disagreement about the best way to use a resource or resolve an unwanted resource condition or potentially significant effects of a Proposed Action or alternative.

Potential impacts to the following resources/concerns were evaluated in accordance with criteria listed above to determine whether detailed analysis was required. Consideration of some of these items occurs in order to ensure compliance with laws, statutes, or EOs that impose certain requirements on all federal actions. Other items are relevant to the management of public lands in general or to the Ely District BLM in particular.

In response to the preliminary issues identified, further surveys/studies were conducted and reports prepared. The following reports were completed and used in preparation of the analysis of this document:

- *Spring Valley Wind Biological Resources Report* (SWCA Environmental Consultants [SWCA] 2009a)
- *Spring Valley Wind Power Generating Facility Final Preconstruction Survey Results Report for Birds and Bats* (SWCA 2009b)
- *A Study on the Use of Rose Guano Cave, Nevada, by Mexican Free-Tailed Bats* (Tadarida brasiliensis) (Sherwin 2009)
- *Class III Cultural Resources Inventory of the Spring Valley Wind Facility in White Pine County, Nevada* (SWCA 2009c)
- *Ethnographic Investigations for the Spring Valley Wind Facility in White Pine County, Nevada* (SWCA 2009d)
- *Spring Valley Wind Visual Resource Assessment* (SWCA 2009e)
- *Inventory of Historic Architectural Resources within 5 Miles of the Spring Valley Wind Facility in White Pine County, Nevada* (SWCA 2009f)
- *Preliminary Geotechnical Engineering Evaluation Report: Proposed Spring Valley Wind Farm, White Pine County, Nevada* (Kleinfelder 2009a)
- *Borrow Study Investigation and Thermal Resistivity Testing Letter Report: Spring Valley Wind Farm Project, White Pine County, Nevada* (Kleinfelder 2009b)

Many times, a project would have some degree of effect on a resource or concern, but that effect does not approach any threshold of significance, nor does it increase cumulative impacts by a measurable

increment. Such effects are described as negligible in the rationale for dismissal from analysis. Table 3.1-1 documents the evaluation and rationale for dismissal from analysis for each resource/concern.

Table 3.1-1. Resource/Concern Evaluation

Resource	Analysis Required		Rationale for Dismissal from Detailed Analysis or Issue(s) Requiring Detailed Analysis
	Yes	No	
Air Resources			
Air Quality*		√	Impacts to air quality from a typical wind energy facility are discussed in Section 5.4 of the PEIS. Site-specific evaluation did not indicate any additional impacts than those already disclosed. There may be temporary increased particulate matter (dust) and heavy machinery emissions resulting from construction activities. The affected area is not within an area of non-attainment or areas where total suspended particulates or other criteria pollutants exceed Nevada air quality standards. BMPs from Section 2.2.3.2 of the PEIS are incorporated by reference and are adequate for controlling particulates and criteria pollutants. Direct, indirect, and cumulative impacts would not likely approach a level of significance. Detailed analysis is not required.
Water Resources			
Water Quality Drinking/Ground*		√	Impacts to water quality from a typical wind energy facility are discussed in Section 5.3 of the PEIS. Site-specific evaluation did not indicate that any additional impacts other than those already disclosed would occur as a result of the Proposed Action. BMPs from Section 2.2.3.2 of the PEIS are incorporated by reference and are adequate. Detailed analysis is not required.
Water Resources (Water Rights)		√	Impacts to water resources from a typical wind energy facility are discussed in Section 5.3 of the PEIS. Site-specific evaluation did not indicate any additional impacts than those already disclosed would occur as a result of the Proposed Action. BMPs from Section 2.2.3.2 of the PEIS are incorporated by reference and are adequate. Detailed analysis is not required.
Soil Resources			
Farmlands, Prime and Unique*		√	Potential impacts to geological resources from a typical wind farm are discussed in Section 5.10.1 of the Wind Energy PEIS and are consistent with impacts to prime and unique farmlands anticipated for this project. Within the project area, two soil associations exist that qualify portions of the project area for prime farmland status as well as for desert land entry. No unique farmland or land of state or nationwide importance occurs within the project area. The E ½ of Section 12 has been classified for Desert Land Entry. Because prime farmlands within the project area are not currently being used and require the removal of excess salts and irrigation in order to be used, impacts are considered negligible and detailed analysis is not required.
Vegetation Resources			
Forest Health*		√	Forest Resources occur at negligible levels within the project area and will not be affected by the Proposed Action.
Rangeland Standards and Guidelines*		√	This is not a grazing or restoration action.
Wetlands/Riparian Zones *		√	The project has been designed to avoid riparian and wetland areas.
Vegetation		√	Impacts to vegetation are discussed in Sections 5.9.2.1, 5.9.3.1, and 5.9.3.1.3 of the PEIS. Site-specific evaluation did not indicate any additional impacts that would occur as a result of the Proposed Action. BMPs from Section 2.2.3.2 of the PEIS are incorporated by reference and are adequate. Detailed analysis is not required.

Table 3.1-1. Resource/Concern Evaluation (Continued)

Resource	Analysis Required		Rationale for Dismissal from Detailed Analysis or Issue(s) Requiring Detailed Analysis
	Yes	No	
Fish and Wildlife			
Fish and Wildlife	√		In early scoping, the NDOW presented the issue that the project area is important habitat for pronghorn antelope. The Ely RMP/FEIS defines "priority" habitat for pronghorn as crucial winter habitat. Geographic information system (GIS) overlays of the project area on crucial winter range for pronghorn revealed that there would be no effect on priority habitat for the species. Section 4.6 (pages 4.6-9 through 10) of the RMP/FEIS (incorporated by reference) discloses impacts to terrestrial wildlife from renewable energy. Impacts to pronghorn, big-game species, and other terrestrial wildlife species are anticipated to be negligible because habitat in this area is not critical to any of the species. Impacts to wildlife from a typical wind farm operation are also discussed in Section 5.9 of the Wind Energy PEIS. BMPs for the protection of wildlife species are listed in Section 2.2.3.2 of the PEIS and Section 3 of the Ely RMP.
Migratory Birds*	√		Site-specific analysis is incuded to disclose the impacts from the Proposed Action to migratory birds.
Special-Status Species			
U.S. Fish and Wildlife Listed, Threatened, or Endangered Species or Critical Habitat*		√	No listed, threatened, or endangered species or critical habitat occurs in the project area.
Special-Status Animal Species	√		Impacts from renewable energy projects in general to the bald eagle and other sensitive species are discussed in Section 4.7 (pages 4.7-21 and 4.7-22) of the RMP/FEIS (incorporated by reference). Impacts to wildlife from a typical wind farm operation are discussed in Section 5.9 (incorporated by reference) of the Wind Energy PEIS. Sage-grouse and bats are specifically discussed in Section 5.9.3.2 (incorporated by reference). BMPs for the protection of special-status species were developed in Section 2.2.3.2 of the PEIS and Section 3 of the Ely RMP/FEIS. In addition, design features of the Proposed Action, as well as a bat/bird monitoring and mitigation plan committed to by the proponent, would reduce impacts to special-status species. However, additional analysis should be conducted to disclose the residual impacts from the Proposed Action to greater sage-grouse, bats that use the Rose Guano Cave, and pygmy rabbits.
Special-Status Plant Species	√		Although no potential habitat for Parish phacelia was identified in the project area, analysis should be conducted to disclose the potential impacts from the Proposed Action.
Wild Horses			
Wild Horses		√	Not present. There are no herd management areas within the area of analysis.
Cultural Resources			
Cultural Resources*		√	Impacts to cultural resources from a typical wind energy facility are discussed in Section 5.12 of the PEIS. A Class III intensive cultural resource inventory was conducted on all portions of the project area that might be subject to ground-disturbing actions. All known cultural resource sites eligible for the National Register of Historic Places would be avoided. If any cultural resource sites were discovered during implementation of this project, all work would cease within 100 yards of the site and the BLM Archaeologist would be contacted immediately.
Heritage Special Designations		√	The only heritage special designation potentially affected by the Proposed Action is the Pony Express Trail. The Proposed Action is located 50 miles south of the Pony Express Trail and is not in the viewshed. Detailed analysis is not required.

Table 3.1-1. Resource/Concern Evaluation (Continued)

Resource	Analysis Required		Rationale for Dismissal from Detailed Analysis or Issue(s) Requiring Detailed Analysis
	Yes	No	
Paleontological Resources			
Paleontological Resources		√	Impacts to paleontological resources from a typical wind energy facility are discussed in Section 5.2 of the PEIS. After evaluation of the geological and sedimentary context of the project area, it has been determined unlikely that paleontological resources exist, and no surveys or additional research is necessary. If any resources were discovered during implementation of this project, all work in the vicinity would cease and the BLM Archaeologist/ Paleontologist would be contacted immediately.
Visual Resources			
Visual Resources	√		Impacts to visual resources in Spring Valley would occur from the introduction of large WTGs and associated facilities to a predominantly undeveloped landscape.
Land and Realty/Renewable Energy			
Land Uses		√	A Case Recordation Geo report with customer search was conducted on November 4, 2009, using BLM's GeoCommunicator and LR 2000 database. Six authorized ROW grants are located within the project area. The project has been designed to avoid impacts to existing ROWs, and further analysis is not required.
Travel Management			
Transportation/Access	√		The Proposed Action calls for new roads to be constructed through the project area.
Recreation			
Recreation Uses, including Backcountry Byways, Caves, and Rockhounding Areas	√		The project area is within the U.S. 50 SRMA. There is a potential for impacts to hunting, as well as a change in the physical and social setting of the project area.
Livestock Grazing			
Grazing Uses/Forage (Bastian Creek Allotment and Majors Allotment)	√		At least four towers with associated roads and underground transmission lines would be constructed within a cost-share range restoration project that was performed in fall 2007. In addition, cows would have to be excluded from the project area until short-term disturbance areas have re-established vegetation.
Forest and Woodland Products			
Forest/Woodland and other vegetative products (Native seeds, yucca and cactus plants)		√	No forest/woodland products of concern are present in project area.
Geology and Mineral Extraction			
Mineral Resources		√	Impacts to mineral resources from a typical wind energy facility are discussed in Section 5.1 of the PEIS. Site-specific evaluation did not indicate any additional impacts that would occur as a result of the Proposed Action. BMPs from Section 2.2.3.2 of the PEIS are incorporated by reference and are adequate. Detailed analysis is not required.
Watershed			
Soils/Watershed		√	Impacts to soil resources from a typical wind energy facility are discussed in Section 5.1 of the PEIS. Impacts to vegetation are discussed in Sections 5.9.2.1, 5.9.3.1, and 5.9.3.1.3. Site-specific evaluation did not indicate any additional impacts that would occur as a result of the Proposed Action. BMPs from Section 2.2.3.2 of the PEIS are incorporated by reference and are adequate. Detailed analysis is not required.
Floodplains*		√	Although there are low-lying areas where water can pool, there are no floodplains in the project area.

Table 3.1-1. Resource/Concern Evaluation (Continued)

Resource	Analysis Required		Rationale for Dismissal from Detailed Analysis or Issue(s) Requiring Detailed Analysis
	Yes	No	
Fire			
Fuels		√	No fuels projects are planned for the project area.
Emergency Stabilization and Rehabilitation		√	No emergency stabilization and rehabilitation projects occur within the project area.
Noxious and Invasive Weeds			
Non-native Invasive and Noxious Species*		√	A Weed Risk Assessment was completed by the BLM for the Proposed Action in March 2009. The risk rating for this project was determined to be moderate, and preventive measures for noxious and invasive weeds are necessary. The project could potentially increase and introduce non-native invasive and noxious species to the area. With the implementation of preventive measures identified in the Weed Risk Assessment, and BMPs referenced in the Proposed Action (Section 2.1.4 above), the effect would be negligible, and detailed analysis is not required.
Special Designations			
ACECs*		√	Concerns were raised about the potential for construction activities to excavate or drill to levels that may puncture the perched water table, which supports the rare vegetation found in the Swamp Cedar ACEC. Geotechnical evaluations would be done for each WTG site, and foundations would be engineered to eliminate the risk of puncturing the water table. Effects would be negligible, and a detailed analysis is not required.
Wilderness/WSA*		√	Not present.
Wild and Scenic Rivers		√	Not present.
Other Concerns			
Human Health and Safety*		√	Herbicides may be used for noxious weed control. With proper use of herbicides and implementation of safety measures and BMPs referenced in the Proposed Action (Section 2.1.4 above), the effect on human health would be negligible, and detailed analysis is not required.
Noise		√	Noise impacts from a typical wind energy facility are discussed in Section 5.5 of the PEIS. During operations, sources of noise would consist of mechanical and aerodynamic noise of WTGs; transformer and switchgear noise from the substation and switching yard; corona noise from transmission lines; vehicular traffic noise, and noise from the O&M building. These sources are not expected to contribute more than a negligible amount to the ambient noise level in the project area, and a detailed analysis is not required.
ACECs designated for cultural resources, Native American Religious Concerns		√	The only ACEC for cultural resources potentially affected by the Proposed Action is the Swamp Cedar ACEC. In early scoping, concerns were raised about Native American burials in the ACEC and in the vicinity of the affected area. An ethnographic report was prepared, and an avoidance area was delineated that included the ACEC. The Proposed Action was modified to address these concerns, and a detailed analysis is not required. Further consultation revealed no additional concerns from tribes with ancestral ties to the area.
Wastes, Hazardous or Solid*		√	Impacts from hazardous wastes associated with a typical wind energy facility are discussed in Sections 5.6, 5.9.2.1.3, 5.9.2.2.7, 5.9.2.3.4, 5.9.3.1, and 5.9.3.2.5 of the PEIS. No hazardous or solid wastes have been observed or are known to occur in the project area. BMPs from Section 2.2.3.2 of the PEIS are incorporated by reference and are adequate. Detailed analysis is not required.
Public Safety		√	The project could potentially result in increased public safety issues during the construction phase. With the implementation of safety measures and BMPs referenced in the Proposed Action (Section 2.1.4 above), the effect on public safety would be negligible, and detailed analysis is not required.
Environmental Justice*		√	No minority or low-income groups would be disproportionately affected by health or environmental effects.

Table 3.1-1. Resource/Concern Evaluation (Continued)

Resource	Analysis Required		Rationale for Dismissal from Detailed Analysis or Issue(s) Requiring Detailed Analysis
	Yes	No	
Socioeconomics	√		Impacts from a long-term increase in employment opportunities, as well as long-term beneficial impacts from an increase in property tax and indirect long-term beneficial impacts from an increase in sales and income tax from operation of a typical wind energy facility, are discussed in Section 5.13.1 of the Wind Energy PEIS. Additional analysis should be conducted to disclose the site-specific impacts from the Proposed Action to local socioeconomic conditions.

* Nevada Supplemental Authority.

3.2 Resources /Concerns Analyzed

3.2.1 Fish and Wildlife

Wildlife found in the project area are those species typically associated with Inter-Mountain Basins Mixed Salt Desert Scrub (mixed salt desert scrub), Inter-Mountain Basins Big Sagebrush Shrubland (big sagebrush shrubland), and Great Basin Xeric Mixed Sagebrush Shrubland (mixed sagebrush shrubland), which account for 99% of the project area (U.S. Geological Survey [USGS] 2004). These plant communities provide habitat for a variety of wildlife species ranging from common reptiles, birds, and mammals, to species of management concern, such as migratory birds or special-status species. This section discusses specific wildlife of concern that have the potential to occur within Spring Valley. A detailed discussion of migratory birds and special-status species is included below in Section 3.2.3, Migratory Birds, and Section 3.2.4, Special-Status Species. A detailed analysis of all biological resources of concern within and in the vicinity of the project area can be found in the *Spring Valley Wind Biological Resources Report* (SWCA 2009a).

General wildlife observations were made by SWCA biologists throughout the course of approximately 2 years of bird and bat surveys conducted at the SVW project area. Throughout these surveys, biologists noted all general wildlife species that were observed. The observed general wildlife species are listed in Table 3.2-1 below; however, bird and bat species have been excluded, as they are discussed in greater detail below.

Table 3.2-1. General Wildlife Observed in Project Area

Common Name	Scientific Name
Amphibians	
Great Basin spadefoot toad	*Spea intermontana*
Reptiles	
Great Basin rattlesnake	*Crotalus lutosus*
Striped whipsnake	*Masticophis taeniatus*
Gophersnake	*Pituophis catenifer*
Sagebrush lizard	*Sceloporus graciosus*
Western fence lizard	*Sceloporus occidentalis*
Northern side-blotched lizard	*Uta stansburiana*

Table 3.2-1. General Wildlife Observed in Project Area (Continued)

Common Name	Scientific Name
Mammals	
White-tailed antelope ground squirrel	*Ammospermophilus leucurus*
Pronghorn antelope	*Antilocapra americana*
Mule deer	*Odocoileus hemionus*
Coyote	*Canis latrans*
Black-tailed jackrabbit	*Lepus californicus*
Desert woodrat	*Neotoma lepida*
Cottontail	*Sylvilagus audubonii*

3.2.1.1 BIRDS

SWCA conducted approximately 2 years of preconstruction bird studies in the project area. Ninety-two species of bird were observed during surveys, including 12 species of raptors. Of these species, only the European starling (*Sturnus vulgaris*) is not protected under the Migratory Bird Treaty Act (MBTA). The remaining 91 bird species are discussed in Section 3.2.3, Migratory Birds, below.

3.2.1.2 BATS

Extensive acoustic bat surveys of the project area were initiated July 2007 and continued through December 2008 using AnaBat acoustic detectors. AnaBat detectors were placed within different habitat types and near water resources which were expected to attract high numbers of bats. Both perennial and ephemeral water resources typically have concentrated bat activity and can generate substantial volumes of data (O'Farrell and Gannon 1999), which can be useful for creating a complete species inventory.

Acoustic surveys identified 12 of the 23 bat species, from the Verspertilionidae and Molossidae families, known to occur in Nevada. However, survey results indicate that approximately 91% of all recorded activity could be attributed to four bat species: western small-footed myotis (*Myotis ciliolabrum*), long-eared myotis (*Myotis evotis*), little brown bat (*Myotis lucifugus*), and Brazilian free-tailed bat (*Tadarida brasiliensis*). The high activity levels associated with these four species indicate that they are relatively common within the project area, at least seasonally. Of the 12 species observed, the Brazilian free-tailed bat, the little brown bat, big-brown bat (*Eptesicus fuscus*), silver-haired (*Lasionycteris nocitvagans*), hoary (*Lasiurus cinereus*), and western red bat (*Lasiurus blossevilli*) have been documented as mortalities at other wind energy facilities in the western United States (BLM 2005; Kerlinger et Al. 2006) and therefore should be considered to be at increased risk of mortality.

Variation in bat activity levels between AnaBat monitoring stations indicates that bat use of the project area is not homogeneous and that higher activity occurs near water sources and areas in close proximity to Rocky Mountain juniper (*Juniperus scopulorum*) (SWCA 2009a). However, bats may be found throughout the project area on any particular night. Additionally, bat activity varied greatly between different seasons, with total activity peaking during summer months. A detailed examination of these study results is presented in SWCA (2009a).

3.2.1.3 PROPOSED ACTION

3.2.1.3.1 Site Construction

Potential impacts to wildlife from a typical wind energy facility are described in Section 5.9.2.2 of the Wind Energy PEIS. The impacts to wildlife associated with construction of wind energy facilities would occur from 1) habitat reduction, alteration, or fragmentation; 2) introduction of invasive vegetation; 3) injury or mortality of wildlife; 4) decrease in water quality from erosion and runoff; 5) fugitive dust; 6) noise; 7) exposure to contaminants; and 8) interference with behavioral activities. Site-specific impacts associated with the Proposed Action are described below.

Birds

Impacts to birds would be the same as those described for migratory birds, presented in Section 3.2.3.1.1 below.

Bats

Construction activities associated with the Proposed Action would result in 632.6 acres of temporary habitat disturbance (7.4% of the project area). All areas of temporary habitat disturbance would be reclaimed after construction activities. Construction activities are expected to last 9 to 12 months and impacts are anticipated to be low. Measures identified as part of the Proposed Action in Section 2.1.4 above would further reduce any impacts.

3.2.1.3.2 Site Operation

Potential impacts to wildlife from the operation and maintenance of a typical wind energy facility are described in Section 5.9.3.2, Operational Effects on Wildlife, of the Wind Energy PEIS. The impacts to wildlife associated with the operation and maintenance of wind energy facilities would occur from 1) electrocution from transmission lines; 2) noise; 3) the presence of, or collision with, turbines, met towers, and transmission lines; 4) site maintenance activities; 5) exposure to contaminants; 6) disturbance associated with activities of the wind energy project workforce;
7) interference with migratory behavior; and 8) increased potential for fire. Site-specific impacts associated with the Proposed Action are described below.

Birds

Impacts to birds would be the same as those described for migratory birds, presented in Section 3.2.3.1.2 below.

Bats

Implementation of the Proposed Action would also include long-term removal of 123.6 acres of potential habitat as a result of construction of wind turbines and associated infrastructure. Specifically, operations located near water sources and in close proximity to Rocky Mountain juniper would result in moderate interference to bat behavior, as these are areas of greater activity (SWCA 2009b). Loss of juniper habitat would lead to a reduction in foraging and roosting areas for tree roosting species. This could lead to increased competition between bats and a subsequent decrease in fitness of individuals.

Indirect impacts are also described in the Wind Energy PEIS. Indirect impacts of specific concern to bats are covered in the PEIS in Section 5.9.3.2.3, Collisions with Turbines, Meteorological Towers, and Transmission Lines, and Section 5.9.3.2.7, Interference with Migratory Behavior. Wind energy development and effects on bats are further discussed on pages 5-70 and 5-71 of the Wind Energy PEIS.

Adverse impacts to bats would result from implementation of the Proposed Action. Results from postconstruction mortality studies conducted in western states at generation facilities similar to that proposed for Spring Valley were used to estimate impacts to bats as a result of the Proposed Action. Because 91% of bat activity on-site is attributed to four bat species (western small-footed myotis, long-eared myotis, little brown bat, and Brazilian free-tailed bat) and only two of those species (little brown bat, and Brazilian free-tailed bat) have been recorded as mortalities associated with other wind projects (SWCA 2009b), those species are considered to be most susceptible to mortality from this project. Mitigation measures identified as part of the Proposed Action, including those from the wind energy PEIS, would address impacts to most of the bat species observed on-site and keep impacts to low levels. To further address impacts to bats, the wildlife mitigation plan developed for the project (see Appendix A) provides measures to adaptively manage impacts as they are determined through monitoring. Based on those measures, impacts to bats would not exceed 179 individuals per year without additional mitigation measures being implemented to further reduce impacts. Mitigation measures would continue to be implemented until annual mortality levels were reduced to acceptable levels. The short-term impacts to bats may reach numbers exceeding the regional average; however, through this adaptive management process, long-term impacts would be minor and should not result in substantial impacts to populations. Additionally, over the long term, no substantial impacts to local and migratory populations are expected.

3.2.1.4 NO-ACTION ALTERNATIVE

Under the No-Action Alternative, the wind generation facility would not be constructed. Wildlife in the area would continue to be subject to existing conditions and local trends.

3.2.2 Migratory Birds

Based on existing data and preconstruction surveys (SWCA 2009b), the SVWEF does not occur within a major migration corridor. The regulatory framework for protecting birds includes the Endangered Species Act (ESA), the MBTA (which includes any part, nest, or egg), the Golden Eagle Protection Act of 1940, and EO 13186. The Wind Energy PEIS discusses the ESA in Section 4.6.5.1, and other regulations stated above are discussed in Section 4.6.2.2.6 of the PEIS.

SWCA conducted 2 years of preconstruction bird surveys in the proposed project area. Nearly all the birds that were observed within the project area are considered to be migratory birds. A total of 92 different bird species were identified during these surveys, including 12 species of diurnal raptors. Many of these species have already been recorded as mortalities at other wind energy–generating facilities in the western United States, including some of the most common mortalities, like horned lark (*Eremophila alpestris*), sparrows (family Emberizidae), and blackbirds (family Icteridae). During surveys, breeding bird point-counts identified 29 bird species. While direct evidence of breeding was not observed for all of these species, breeding bird point-counts were performed during the middle of the breeding season, and it is suspected that most or all of these species were breeding in or near the project area. In total, including incidental sightings, there were 11 species of birds confirmed to be breeding in the project area. In addition, a total of seven raptor nests were determined to be active during helicopter surveys of the project area in 2007 and 2008. The common raven, ferruginous hawk, and Swainson's hawk were the only identified species nesting during these surveys. Although the common raven is not a raptor, a buteo may later occupy a nest that a raven had used in the past. For an in-depth examination of the results of bird surveys in the project area, refer to the *Spring Valley Wind Power Generating Facility Final Pre-construction Survey Results Report* (SWCA 2009b).

Many species of migratory birds can be found within the proposed project area. To minimize unintentional take as defined by EO 13186, the BLM has issued IM No. 2008-050, Migratory Bird Treaty Act – Interim Management Guidance, to provide interim guidance to meet the BLM responsibilities under the MBTA. This provides the BLM with a consistent approach for addressing migratory bird populations

and habitats. The IM includes management actions for Species of Conservation Concern and management of habitat used by Species of Conservation Concern. Bird Species of Conservation Concern that were observed during avian surveys, or incidentally while biologists were in the project area, are listed in Table 3.2-2. Eight of these birds were observed during SWCA breeding bird point-count surveys (SWCA 2009b). These included Brewer's sparrow, ferruginous hawk, long-billed curlew, loggerhead shrike, northern harrier, pinyon jay, sage sparrow, and Swainson's hawk. Because of the timing of surveys, which were performed during the middle of the breeding season, it is assumed that most or all of the species observed during surveys were breeding in the general area. The results of these surveys are presented by SWCA (2009b).

Table 3.2-2. Avian Species of Conservation Concern Observed in the Project Area

Common Name	Scientific Name
Brewer's sparrow	*Spizella breweri*
Western burrowing owl	*Athene cunicularia hypugaea*
Ferruginous hawk	*Buteo regalis*
Golden eagle	*Aquila chrysaetos*
Long-billed curlew	*Numenius minutes*
Loggerhead shrike	*Lanius ludovicianus*
Northern harrier	*Circus cyaneus*
Pinyon jay	*Gymnorhinus cyanocephalus*
Prairie falcon	*Falco mexicanus*
Red-naped sapsucker	*Sphyrapicus nuchalis*
Sage sparrow	*Amphispiza belli*
Swainson's hawk	*Buteo swainsoni*
Willet	*Catoptrophorus semipalmatus*

3.2.2.1 PROPOSED ACTION

3.2.2.1.1 Site Construction

Potential impacts to wildlife from construction associated with a typical wind energy facility are described in Section 5.9.2.2 of the Wind Energy PEIS. Impacts would consist of injury or mortality, noise, interference with behavioral activities, and habitat disturbance. For this project, construction is only expected to last 9 to 12 months, and impacts are anticipated to be minimal. Measures identified as part of the Proposed Action in Section 2.1.4 above would further reduce any impacts.

There are many species of migratory birds known to nest in the project area, including four documented active and inactive raptor nests. In particular, turbines 58–61, 73–75, Alt 8, and Alt 10 are within 0.5 mile of known raptor nests and could increase the potential for temporary displacement during construction. However, the Proposed Action (Section 2.1.4 above) includes a measure to address potential impacts during nesting season that would reduce these impacts to low levels. Additionally, other migratory birds could nest in any of the vegetation communities found within the project area. During construction, there would be short-term disturbance to 632.6 acres of habitat lasting up to five years, which is 7.4% of total habitat within the project area. Temporary use areas would be reclaimed after construction and would result in negligible impacts. Long-term disturbance areas would include wind turbine pads, O&M

building, access road footprints, and associated infrastructure. Total long-term disturbance would include 123.6 acres of habitat, or 1.4% of the project area, for the life of the project. To reduce impacts associated with direct mortality and displacement of nesting birds during construction, construction activities should be restricted during nesting season, as identified in Section 5.9.5.3.2 of the Wind Energy PEIS.

There were 13 species of birds of Conservation Concern observed during avian studies (see Table 3.2-2), and 10 of these could nest in the project area. While the impacts discussed for all migratory birds would be the same as those for birds of Conservation Concern, their association with specific habitat types means they would realize differing levels of long-term impacts from the loss of their preferred habitat. Four of these birds of Conservation Concern (ferruginous hawk, pinyon jay, red-naped sapsucker, and Swainson's hawk) prefer nesting in pinyon-juniper habitat, and 0.1 acre would be removed upon implementation of the Proposed Action. Based on conservation measures in the Proposed Action, no Rocky mountain juniper (swamp cedar) trees will be removed. Brewer's sparrow, loggerhead shrike, and sage sparrow prefer big sagebrush habitat, and there would be 47.7 acres of long-term habitat loss for these species; in contrast, northern harrier would most likely be found near water, where there would be no long-term habitat disturbance. Long-billed curlew prefers to nest in short grasses and would also have no habitat loss. Western burrowing owl could potentially use all habitats within the project area to nest, which would total 123.6 acres of long-term disturbance.

3.2.2.1.2 Site Operation

Adverse impacts to birds as a result of wind-generation facility operations and maintenance would be consistent with those described for a typical wind energy facility in Section 5.9.3.2, Operational Effects on Wildlife, of the Wind Energy PEIS. Those impacts of particular concern to migratory birds consist of Electrocution (Section 5.9.3.2.1), Noise (Section 5.9.3.2.2), Collisions with Turbines, Meteorological Towers, and Transmission Lines (Section 5.9.3.2.3), and Interference with Migratory Behavior (Section 5.9.3.2.7). Impacts to raptors are specifically discussed in the text box titled Compatibility of a Wind Energy Development Project and Raptors, beginning on page 5-64 of the Wind Energy PEIS. In addition, those turbines located near known nest locations (58–61, 73–75, Alt 8, and Alt 10) would have potential increased impacts to raptors as a result of the increased potential for turbine strikes. If these turbines are selected, measures listed in the Proposed Action (Section 2.1.4 of this document) and mitigation measure 1 in Section 5.1.3 of the PEIS would be implemented to reduce impacts to moderate levels. Turbines installed near water sites (58–60, 73, 74, and Alt 10) would also have an increased potential for bird strikes; however, measures listed as part of the Proposed Action (Section 2.1.4 of this document) would ensure that impacts do not exceed moderate levels.

Adverse impacts to individual birds would result from implementation of the Proposed Action. However, while it is anticipated that most impacts to individual birds would be low, those specific turbines identified above would have potential moderate impacts to individual birds. Results from postconstruction mortality studies conducted in western states at generation facilities with similar habitat, abundance and diversity of bird species, and types of turbines proposed were used to estimate mortality levels for the Proposed Action. Because the project is not within a major migratory bird corridor (SWCA 2009b) and mitigation measures identified as part of the Proposed Action, including those from the wind energy PEIS, would address impacts to most of the bird species observed on-site, impacts are anticipated to be low. To further address impacts to birds, the wildlife mitigation plan developed for the project (see Appendix A) provides measures to adaptively manage impacts as they are determined through monitoring. Based on those measures, impacts to birds would not exceed 302 individuals per year, and that would be without additional mitigation measures being implemented to further reduce impacts. Mitigation measures would continue to be implemented until annual mortality levels were reduced to acceptable levels. The short-term impacts to birds may reach numbers exceeding the regional average; however, through this adaptive management process, long-term impacts would be minor and should not

result in substantial impacts to populations. Additionally, over the long term, no substantial impacts to local and migratory populations are expected.

3.2.2.2 NO-ACTION ALTERNATIVE

Under the No-Action Alternative, the wind generation facility would not be constructed, and special-status species in the area would continue to be subject to existing conditions and local trends.

3.2.3 Special-Status Species (Plant and Animal)

Species included on the protected species list for the state of Nevada, which is maintained by the Nevada Natural Heritage Program (NNHP), are protected under Nevada Revised Statutes (NRS) 501. Those native taxa that are neither federally listed, proposed, or candidate species under the ESA nor listed as protected by the State of Nevada yet meet the criteria provided in BLM Manual 6840.06 E are also considered sensitive species by the Nevada BLM (BLM 1998). There are no federally listed species that are known to occur in the project area. One plant species and several wildlife species listed as BLM Sensitive (Sensitive) occur or have the potential to occur in the project area.

3.2.3.1 SPECIAL-STATUS PLANT SPECIES

Parish phacelia (*Phacelia parishii*) is an annual plant that blooms from April to July. This plant is typically found in clay or alkaline soils of dry lake margins or creosote bush scrub (BLM 2009a). NNHP (2007) describes Parish phacelia habitat as salt-crusted silty-clay soils on valley bottoms, lake deposits, and playa edges, often near seepage and spring areas and surrounded by saltbush scrub vegetation. Based on field reconnaissance surveys and review of geographic information system (GIS) data, potential habitat for parish phacelia can be found in the project area within 250 feet of a spring site in the northern part of the project area. However, there is currently no record of species occurrence in the project area. Additionally, it should be noted that no individuals were observed during field reconnaissance surveys in spring 2009, a particularly wet season that would have promoted germination of these plants (personal communication, Paul Podborny, Ely BLM Wildlife Biologist, with SWCA, August 3, 2009).

3.2.3.2 SPECIAL-STATUS WILDLIFE SPECIES

Sensitive passerine and gruine bird species known to occur within the project area include juniper titmouse (*Baeolophus ridgwayi*), pinyon jay (*Gymnorhinus cyanocephalus*), loggerhead shrike (*Lanius ludovicianus*), long-billed curlew (*Numenius minutus*), vesper sparrow (*Pooecetes gramineus*), red-naped sapsucker (*Sphyrapicus nuchalis*), and greater sandhill crane (*Grus canadensis tabida*). Further description of sensitive bird species' habitat and density in the project area can be found in Section 3.2.3, Migratory Birds, above and in the *Spring Valley Wind Power Generating Facility Final Pre-construction Survey Results Report for Birds and Bats* (SWCA 2009b).

Sensitive raptors found in the project area include golden eagle (*Aquila chrysaetos*), long-eared owl (*Asio otus*), western burrowing owl (*Athene cunicularia hypugaea*), ferruginous hawk (*Buteo regalis*), Swainson's hawk (*Buteo swainsoni*), prairie falcon (*Falco mexicanus*), and bald eagle (*Haliaeetus leucocephalus*). Description of habitat used by these species within the project area is found in Section 3.2.3, Migratory Birds, above.

Greater sage-grouse (*Centrocercus urophasianus*) are sagebrush obligates that depend on sagebrush habitats for successful reproduction and winter survival (Connelly et al. 2004). There is a total of 3,643.2 acres of greater sage-grouse habitat within the project area. Additionally, greater sage-grouse habitat is common throughout the southern part of Spring Valley. A detailed discussion of greater sage-grouse

habitat and life history can be found in the *Spring Valley Wind Biological Resources Report* (SWCA 2009a).

No active or inactive leks occur with the project area and no individuals were observed during preconstruction avian surveys, although greater sage-grouse specific surveys were not conducted (SWCA 2009b). Recent data provided by the NDOW on greater sage-grouse indicates that the lek system in Spring Valley consists of 38 leks supporting 256 birds, most situated north of the project area (NDOW 2009). The closest lek, the Bastian Creek lek, is located approximately 2 miles west-northwest of the nearest proposed turbine. NDOW data for this lek indicate that it is regularly used and has averaged three birds per year for the past 10 years. Therefore, based on known greater sage-grouse activity, the project area is situated in a lower use area, compared with other sage-grouse breeding activity in Spring Valley.

Sensitive bats known to occur within the project area include pallid bat, Townsend's big-eared bat, big brown bat, silver-haired bat, western red bat, hoary bat, western small-footed myotis, long-eared myotis, little brown bat, long-legged myotis, Yuma myotis, and Brazilian free-tailed bat. See SWCA (2009a, 2009b) for discussion of bat habitat and density within the project area.

Pygmy rabbits use areas of tall, dense sagebrush, which provide both food and shelter. During pygmy rabbit surveys conducted for this project, both active and inactive burrows were located. Active burrows were identified by the presence of fairly fresh pellets and/or signs of recent use. Additionally, at least three individual pygmy rabbits were seen within three separate habitat patches, verifying that some of the sagebrush identified as potential habitat is in fact occupied by pygmy rabbits. Up to 3,553.6 acres of potential habitat was identified through GIS analysis of sagebrush vegetation communities. Additionally, 89.6 acres were identified as good habitat, 61.0 acres of which were considered occupied pygmy rabbit habitat based on the observation of pygmy rabbits or active burrow systems (SWCA 2009a). Based on the results of these surveys, pygmy rabbits are estimated to exist in low numbers in the project area. A more detailed description of survey results and the status of pygmy rabbit in the project area can be found in SWCA (2009a).

3.2.3.3 PROPOSED ACTION

3.2.3.3.1 Site Construction

Special-Status Plant Species

Impacts to vegetation, as well as to special-status plant species, from a typical wind farm construction are discussed in Sections 5.9.2.1 and 5.9.2.4 of the Wind Energy PEIS (incorporated by reference) and are consistent with those anticipated for this project. Those impacts from construction include injury or mortality of vegetation, fugitive dust, exposure to contaminants, and introduction of invasive vegetation. No special-status plant species have been identified in the project area, but turbines 59 and 73 are within 250 feet of a wetland area that provides potential habitat for parish phacelia. As a result of the limited potential for special-status plants in the project area, impacts to special-status plant species are anticipated to be negligible. Measures identified as part of the Proposed Action in Section 2.1.4 above would further reduce any impacts.

Special-Status Wildlife Species

Anticipated impacts to sensitive raptor, passerine, and gruine bird species within the project area would be similar to those impacts to birds and sensitive species from typical wind farm construction activities and are discussed in Sections 5.9.2.2 and 5.9.2.4 of the Wind Energy PEIS (incorporated by reference). Those impacts from construction described in the PEIS are consistent with those anticipated for this project and include injury or mortality, noise, interference with behavioral activities, and habitat

disturbance (reduction, alteration, or fragmentation). For this project, construction is only expected to last 9 to 12 months; therefore, the impacts are anticipated to be minimal. Measures identified as part of the Proposed Action in Section 2.1.4 above would further reduce any impacts.

The project area contains habitat for the greater sage-grouse but does not support any active or inactive leks and no individuals were observed in the project area during preconstruction surveys. Of the total approximately 310,409 acres of greater sage-grouse habitat in Spring Valley (based on ReGap sagebrush community data (USGS 2004, which does not consider loss of habitat as a result of recent fires) only 3,244.4 acres (1%) occur in the project area and would be disturbed either directly or indirectly. Of the approximately 416,988 acres of available winter range (BLM 2008b) in Spring Valley, only 8,058 acres (2%) occur in the project area and would be disturbed either directly or indirectly. This amounts of disturbance would be a minor impact to greater sage-grouse habitat, relative to the overall available habitat. Therefore, typical impacts to greater sage-grouse from construction of wind facilities (described in Sections 5.9.2.2 and 5.9.2.4 of the Wind Energy PEIS and incorporated by reference) would occur at only low levels. Additionally, long-term removal of up to 322.9 acres (8.8 %) of potential greater sage-grouse habitat would occur. Of the 322.9 acres, 275.2 acres (7.5 %) would be reclaimed following construction but would remain a long-term impact because of the time required for recovery of the habitat. The remaining 47.7 acres (1.3%) would undergo long-term removal for facility components such as turbines and maintenance roads. This would have a negligible impact to greater sage-grouse because it represents only 0.8% of the total greater sage-grouse habitat within the project area and it would occur outside any active lek sites. Three alternative turbine sites (Alt 8, Alt 9, and Alt 10) are proposed within 2 miles of an active lek, which could increase the potential for temporary displacement during construction. Because of the small number of birds at the lek, the project's distance from the lek, and the bisection of the lek and project area by SR 893 and a transmission corridor, impacts from displacement are anticipated to be minor. The Wind Energy PEIS specifically includes suggested management practices (SMPs) for wind energy development, the conservation of sagebrush habitat, and management of sage-grouse (found in the text box titled Compatibility of a Wind Energy Development Project and Gallinaceous Birds, beginning on page 5-73) that would substantially reduce impacts. Additionally, measures in the Proposed Action (Section 2.1.4 above) and mitigation measure 1 in Section 5.1.3 below would be implemented to further reduce the potential for impacts.

Impacts to special-status bat species during construction activities would be the same as those described in the bat impacts assessment in the wildlife section (Section 3.2.2.1.1 above).

Anticipated construction-related impacts to pygmy rabbit resulting from implementation of the Proposed Action would be similar to those impacts to small mammals and sensitive species from construction of a typical wind farm, which are discussed in Sections 5.9.2.2 and 5.9.2.4 of the Wind Energy PEIS, respectively (incorporated by reference). Three turbine locations (13, 59, and 60) and associated infrastructure under the Proposed Action occur in good or occupied pygmy rabbit habitat. Construction of those turbines would result in the removal of 26.6 acres (30.0%) of good or occupied pygmy rabbit habitat. Additionally, long-term removal of up to 322.9 acres (8.8 %) of potential pygmy rabbit habitat would occur. Of the 322.9 acres, 275.2 acres (7.5 %) would be reclaimed following construction but would still remain a long-term impact due to the time required for recovery of the habitat. Reclamation would be less effective for pygmy rabbits because they prefer tall, decadent stands of sage, but it would provide some cover and forage. Impacts to the species from habitat removal would be negligible because the species is mobile and can use other available habitat in the area and because measures identified as part of the Proposed Action (Section 2.1.4 above) would be implemented to reduce impacts. In particular, if turbines were constructed in occupied habitat, mitigation measure 2, described in Section 5.1.3 below would be implemented to reduce the potential for impacts to low levels. Incidentally, some of the SMPs in the Wind Energy PEIS that describe management efforts for the conservation of sagebrush habitat would also be beneficial to pygmy rabbits.

3.2.3.3.2 Site Operation

Special-Status Plant Species

Sections 5.9.3.1 and 5.9.3.4 of the Wind Energy PEIS (incorporated by reference) describe expected impacts to plant species, including special-status plants, resulting from operation and maintenance of a typical wind generation facility. Although potential habitat for Parish phacelia exists in the project area, it is unlikely that this habitat supports a population of these plants. If plants do occur, the potential habitat is outside the project's operational footprint. Therefore, operation and maintenance activities would not impact the species.

Special-Status Wildlife Species

Anticipated impacts to sensitive raptor, passerine, and gruine bird species within the project area during the operations and maintenance phase of the project would be similar to impacts to avian and sensitive species from typical wind farm construction activities and are discussed in Sections 5.9.3.2 and 5.9.3.4 of the Wind Energy PEIS (incorporated by reference). These impacts consist of injury or mortality, noise, interference with behavioral activities, and habitat disturbance (reduction, alteration, or fragmentation). These impacts would be minimized through the application of BMPs identified in Section 2.2.3.2.4 of the Wind Energy PEIS, as well as mitigation measures described in the wildlife mitigation plan developed for the project (see Appendix A).

The operations phase of the Proposed Action would have potential impacts to sage-grouse as described in Section 5.9.3.2 of the Wind Energy PEIS (incorporated by reference) for a typical wind energy project in sage-grouse habitat. These impacts include increased predation and interference with behavioral activities. Although impacts would occur, they would be negligible because the project area is situated in a lower use area, compared with other greater sage-grouse breeding and wintering activity in Spring Valley. If selected, turbine sites Alt 8 and Alt 10 would be located within 2 miles of an active lek, and if installed, there would be an increased potential to disturb sage-grouse and cause a decrease in lek success or even lek abandonment. However, there is currently a road and distribution line between the lek and the project area, and additional impacts from the project may be negligible as a result of the existing disturbance. The SMPs in the Wind Energy PEIS that describe management efforts for the conservation of sagebrush habitat would also help reduce impacts to sage-grouse during operation. Also, measures identified as part of the Proposed Action (Section 2.1.4 above) and mitigation measure 1 in Section 5.1.3 below would reduce impacts to sage-grouse, in particular those that would result from turbine placement. It is anticipated that overall impacts to sage-grouse from site operation would be low.

Impacts to special-status bat species during operation of the proposed facility would be the same as those described in the bat impacts assessment in the wildlife section (Section 3.2.2.2 above).

Expected impacts to pygmy rabbit would be similar to those described in the Wind Energy PEIS (Section 5.9.3.2) for a typical wind energy project in small-mammal habitat and are incorporated by reference. Those impacts include noise, increased predation, and interference with behavioral activities. However, it is anticipated that impacts to pygmy rabbit during operations of the proposed facility would be low because the species is mobile and would be able to move away to avoid most mortality associated with daily operations such as crushing by vehicles. The SMPs in the Wind Energy PEIS that describe management efforts for the conservation of sagebrush habitat would also help reduce impacts to pygmy rabbit during operation. Furthermore, measures identified as part of the Proposed Action (Section 2.1.4 above) and mitigation measure 2 in Section 5.1.3 below would further reduce impacts to pygmy rabbit during operations.

3.2.3.4 NO-ACTION ALTERNATIVE

Under the No-Action Alternative, the wind generation facility would not be constructed, and special-status species in the area would continue to be subject to existing conditions and local trends.

3.2.4 Visual Resources

The BLM uses a VRM system to inventory and manage visual resources on public lands. The primary objective of VRM is to maintain the existing visual quality of BLM-administered public lands and to protect unique and fragile visual resources. The VRM system uses four classes to describe different degrees of modification allowed to the landscape. VRM classes are visual ratings that describe an area in terms of visual or scenic quality and viewer sensitivity to the landscape (the degree of public concern for an area's scenic quality). Once an area has been assigned a VRM class, the management objectives of that class can be used to analyze and determine visual impacts of proposed activities and to gauge the amount of disturbance an area can tolerate before it exceeds the visual management objectives of its VRM class (BLM 1980).

The BLM has designated lands in the project area as VRM Class III (BLM 2008a). The Class III management objective "is to partially retain the existing character of the landscape. The level of change to the characteristic landscape should be moderate. Management activities may attract attention, but should not dominate the view of the casual observer. Changes should repeat the basic elements found in the predominant natural features of the characteristic landscape" (BLM 1980).

VRM class designations are based on the area's visual sensitivity and are the result of a combination of factors, including the degree of visitor interest in and public concern for the area's visual resources, the area's public visibility, the level of use by the public, and the type of visitor use the area receives (BLM 1992).

3.2.4.1 VISUAL CHARACTER

The dominant landscape characteristic within and surrounding the proposed project area is typical of the basin and range, with the broad valley floor extending north and south to the horizons flanked by the steep, rugged Schell Creek Range to the west and the Snake Range to the east, defining and containing the views. Vegetation typical of the Great Basin environment occurs throughout the project area. Sagebrush is interspersed with greasewood, shadscale, rabbitbrush, and other shrubs and grasses that contribute to the scenic quality of the area. Naturally exposed white, buff, and tan-colored soils also add scenic contrasts and scenic quality to the area. Additional vegetation consists of the darker green rocky mountain juniper or swamp cedars present on the valley floor. The existing landscape has been only somewhat modified through past and current human habitation, highway and road development, ranching and mining activities, and transmission lines.

3.2.4.2 KEY OBSERVATION POINTS

The primary public views of the Proposed Action would be from two travel routes, U.S. 50 and SR 893. Five Key Observation Points (KOPs) were selected to represent effects of the project as seen from public areas that permit a high degree of visibility of the project area (SWCA 2009e). Other potential KOPs that were considered included the campground at Cleve Creek, the private property at Sacramento Pass, and Wheeler Peak within Great Basin National Park. After evaluation of the three points, it was determined that the Proposed Action would be visible from Wheeler Peak but not from Sacramento Pass or Cleve Creek. For that reason, the KOPs at Sacramento Pass and Cleve Creek were dropped from further evaluation.

3.2.4.3 PROPOSED ACTION

3.2.4.3.1 Site Construction

Potential impacts to visual resources from a typical wind energy facility are described in Section 5.11.2 of the Wind Energy PEIS and are consistent with this project. Impacts to visual resources associated with construction activities would result from new road development and other ground-disturbing actions. New roads would introduce linear contrasts in the landscape. In addition, construction equipment, vehicles, and associated project activities, including restoration, would be temporarily visible during construction activities. All areas of temporary disturbance would be reclaimed after construction activities are completed. Construction activities are expected to last 9 to 12 months, and temporary impacts to visual resources would be minimal.

3.2.4.3.2 Site Operation

Potential impacts to visual resources from typical wind energy facility operations are described in Section 5.11.3 of the Wind Energy PEIS and are consistent with this project. Impacts to visual resources associated with operation of a wind energy facility would result from the introduction of large WTGs into a largely undeveloped and natural setting. The visual evidence of the proposed WTGs in Spring Valley cannot be reduced or concealed as a result of their size and exposed location.

A visual resource assessment was completed for the Proposed Action, including visual simulations and visual contrast ratings from each of the five KOPs (SWCA 2009e). Although there are visible contrasts apparent from each of the KOPs, four of the KOPs occur along high-speed travel routes and contrasts would be visible for only limited periods of time, no more than 10 minutes. KOP 4 is representative of those locations. KOP 4 is located on SR 893, just south of the Southern Nevada Water Authority ranch property. From this location, the view is to the southeast and looks out over the wide open valley floor. Low shrubs and grasses cover the valley floor, interspersed with patches of darker green juniper. The rugged horizon line of the Snake Range occurs in the middle ground and background. A strong linear contrast would result from the Proposed Action. Additionally, moderate contrasts in form and color would occur. From this section of SR 893, the project would be in view for approximately 8 miles against the backdrop of the Schell Creek Range. Viewers traveling at the 50 mph posted speed limit would view the project for no more than 16 minutes.

Wheeler Peak is located approximately 11 miles southeast of the project area. Views of the project area from Wheeler Peak include the valley floor, covered in vegetation and crisscrossed with roads and transmission lines. The rugged horizon line of the Schell Creek Range occurs in the background. The visual assessment indicated that the turbines would be faintly visible (SWCA 2009e). The apparent visual contrast would be minor as a result of the distance (11 miles) and the higher angle of observation. At this distance, the turbines would appear as points on the valley floor connected by the faint linear lines of the access roads. Additionally, the valley floor is not the dominant view from the summit. Views to the south, east, and north of the rugged Snake Range are more scenic to visitors at the summit.

Implementation of the project would result in moderate contrasts to the existing landscape and would attract the attention of viewers traveling through Spring Valley in a manner consistent with Class III management objectives.

3.2.4.4 NO-ACTION ALTERNATIVE

Under the No-Action Alternative, the wind-generation facility would not be constructed, and there would be no impact to visual resources.

3.2.5 Transportation and Access

Numerous roads, tracks, and paths for motorized travel occur within or near the project area. These include SR 893, a north-south-trending, two-lane highway located immediately west of the project area that crosses the project boundary at two locations along the far west end, for a combined approximate length of 0.75 mile. U.S. 6/50 is located approximately 0.5 mile to the south and east of the project area and provides access to Great Basin National Park, Rose Guano Cave, and Sacramento Pass and serves as a connector route between the towns of Ely and Baker, Nevada. Additionally, approximately 20 miles of existing roads and tracks are located within the project area boundary. These consist primarily of an unpaved road network associated with an existing transmission line, along with various unimproved roads and tracks used for ranching and dispersed recreation activities. Average annual daily traffic (AADT) volume within the project vicinity is low (Nevada Department of Transportation [NDOT] 2009). An AADT of 40 vehicles was measured along SR 893, 0.2 mile north of U.S. 6/50.

3.2.5.1 PROPOSED ACTION

3.2.5.1.1 Site Construction

Impacts to transportation associated with a typical wind farm construction are identified in Section 5.6.2 of the Wind Energy PEIS and are consistent with those anticipated for this project. Under the Proposed Action, approximately 27.5 miles of new roads would be constructed within the project area to provide construction and delivery personnel with access to turbine sites and associated project facilities. Site construction activities would involve vehicular traffic associated with turbine erection, turbine and ancillary facility construction, and access road construction.

Short-term adverse impacts associated with project construction would consist of increased traffic volume along SR 893 and U.S. 6/50, possibly impeding access for travelers in the area. However, existing traffic volumes within the project location are generally low (NDOT 2009), and these impacts would only occur periodically during the construction phase. BMPs for general construction activities, and specifically for roads and ground transportation, are outlined in Section 2.2.3.2.3 of the Wind Energy PEIS, and their incorporation into the Proposed Action would minimize impacts. Additionally, measures identified as part of the Proposed Action (Section 2.1.4 above) and mitigation measure 1 in Section 5.1.5 below would further reduce adverse impacts.

3.2.5.1.2 Site Operation

Impacts to transportation associated with a typical wind farm operation and maintenance are identified in Section 5.6.3 of the Wind Energy PEIS and are consistent with those anticipated for this project. The access roads built and used during the construction phase would be maintained throughout commercial operations. Some access roads would be redundant with existing tracks and routes through the project area. Long-term adverse impacts to transportation during project operation would be negligible. BMPs outlined in Section 2.2.3.2.4 of the Wind Energy PEIS for general operations activities, and specifically those for roads and ground transportation, would minimize impacts. Moreover, measures identified as part of the Proposed Action in Section 2.1.4 would further reduce impacts. As a result, project implementation would not result in long-term adverse impacts to transportation resources within or near the project area.

3.2.5.2 NO-ACTION ALTERNATIVE

Under the No-Action Alternative, the Proposed Action would not be constructed, and there would be no impacts to transportation within or near the project area.

3.2.6 Recreation Uses

3.2.6.1 SPECIAL RECREATION MANAGEMENT AREA

The BLM manages recreation on public lands by identifying SRMAs. SRMAs have a distinct recreation market and corresponding management strategy. BLM-managed public lands not delineated as SRMAs are managed as extensive recreation management areas and do not require a specific management strategy or activity-level planning. Recreation on public lands is also managed through the Recreation Opportunity Spectrum (ROS). The ROS is the framework used for planning and managing recreational experiences and the recreation setting. The BLM Ely District Office has identified the project area as within the Loneliest Highway SRMA managed for a broad ROS to ensure a balance of recreation experiences (BLM 2008a). The Loneliest Highway SRMA extends north of U.S. 50 to the Elko County Line and encompasses 675,123 total acres. A site-specific recreation area management plan for the Loneliest Highway SRMA has not been prepared.

3.2.6.2 DEVELOPED RECREATION SITES

There are currently two BLM developed recreation sites near the project area: Cleve Creek campground and Sacramento Pass. Cleve Creek campground is located approximately 6 miles northwest of the project area on the east side of the Schell Creek Range. The campground has both individual and group camping sites. There are opportunities for hunting, fishing, horseback riding, hiking, and off-highway vehicle (OHV) riding on existing roads and trails. Sacramento Pass is located approximately 7 miles east of the project area along U.S. 50. There is a small pond stocked with fish, and there are several camping and picnic areas. There are opportunities for horseback riding, mountain biking, hiking, and wildlife observation.

3.2.6.3 DISPERSED RECREATION

Roads and trails in the project area are used for dispersed recreation on a limited basis. Dispersed recreation can occur on undeveloped BLM land that is open to the public for camping and general recreation. These areas do not include any developed amenities or recreation facilities.

SWCA observed evidence of recreation activities in the project area consisting of spent shotgun shells and multiple OHV tracks.

3.2.6.4 HUNTING

The project area occurs within NDOW Hunt Unit 111. Within this unit, elk (*Cervus canadensis*), mule deer (*Odocoileus hemionus*), and pronghorn antelope (*Antilocapra americana*) are hunted by permit. Hunts for these game species occur in the fall; elk hunts occur from November to December, mule deer hunts occur from August to November, and pronghorn hunts occur from late August to early September. Spring Valley is a recommended hunting area for pronghorn antelope. While a considerable number of elk are harvested from Hunt Unit 111, Spring Valley was not included in the recommended hunting area for the species (NDOW 2009).

3.2.6.5 GREAT BASIN NATIONAL PARK

Great Basin National Park, which encompasses 77,180 acres, is located approximately 12 miles southeast of the project area in the Snake Range. Within the park, recreation opportunities include interpretive programs at the visitor center, tours of Lehman Caves, overnight camping at six established campgrounds, and more than 60 miles of trails for hiking. Other recreation opportunities include biking, bird watching, caving, fishing, horseback riding, picnicking, and pine nut gathering (National Park Service 2007). These

recreation opportunities are primarily located on the east side of the Snake Range. However, there are outstanding opportunities for dispersed recreation on the west side of the Snake Range.

3.2.6.6 PROPOSED ACTION

3.2.6.6.1 Site Construction

Potential impacts to recreational users from a typical wind energy facility are described in Section 5.10.4 of the PEIS and are consistent with this project. Recreation uses would be adversely impacted in the short term as a result of construction activities specific to the Proposed Action. Impacts would consist of a loss of public access and dispersed recreational opportunities within a portion of the Loneliest Highway SRMA, displaced hunters, and temporary impeded access to Cleve Creek. The majority of construction impacts would be minor and would not result in any long-term changes to recreation sites, uses, experiences, or opportunities. Additionally, the short-term impacts of construction activities are not expected to result in the permanent displacement of recreation user groups to other recreation sites or areas. BMPs identified in Section 2.2.3.2.3 of the PEIS for minimizing resource impacts during the construction phase would also reduce impacts specific to recreation and would be implemented during development of the Proposed Action.

3.2.6.6.2 Site Operation

Recreation uses would also be adversely impacted in the long term as a result of operation of the proposed wind energy facility. The introduction of large WTGs would result in decreased scenic quality, affecting recreation opportunities within this portion of the Loneliest Highway SRMA. The project area is visible from the west side of the Snake Range, Wheeler Peak, and portions of Wheeler Peak Trail, although distance and angle of observation minimize the amount of potential contrast that would be apparent from the Proposed Action. Visual resource impacts are further discussed in Section 3.2.5.1.2 above. Due to the low level of permanent disturbance anticipated from operation and maintenance of the proposed facility, long-term adverse impacts to hunting or dispersed recreation activities within or near the project area would be negligible.

Indirect beneficial impacts to recreation that would result from the Proposed Action consist of improved motorized access for dispersed recreational activities across Spring Valley. There would be 27.5 miles of new roads constructed and maintained through the project area.

While short- and long-term adverse impacts to recreation would occur under the Proposed Action, a permanent loss of developed recreation facilities or displacement of recreation users would not occur.

3.2.6.7 NO-ACTION ALTERNATIVE

Under the No-Action Alternative, the wind generation facility would not be constructed, and there would be no impacts to recreation.

3.2.7 Grazing Uses

Livestock grazing and production is the dominant land use in and around the project area (Estep Environmental 2007). Spring Valley has primarily been used as a rangeland, both historically and presently, for cattle and sheep grazing. Rangelands are divided into allotments for management purposes. The proposed project area would be constructed within two existing grazing allotments, the Majors Allotment and the Bastian Creek Allotment. Grazing use for both of these allotments must be in accordance with the *Fundamentals of Rangeland Health and Standards and Guidelines for Grazing for*

Nevada's Northeastern Great Basin Area (Title 43 Code of Federal Regulations [CFR] 4180, Appendix C: Northeastern RAC Standards and Guidelines).

The Majors Allotment (Allotment No. 10126) totals 104,861 acres. This allotment contains 99,193 acres of BLM land and 5,668 acres of private land (BLM 2009b). There are 12,535 permitted and active AUMs on this allotment, which is grazed by both cattle and sheep (BLM 2009b). This allotment occurs in the western portion of the project area. Approximately 2,552 acres (less than 3%) of the Majors Allotment occurs in the project area. Forage within this area includes Inter-Mountain Basin big sagebrush shrubland (98.6 acres) and Great Basin Xeric mixed sagebrush shrubland (484.6 acres), which make up 22.8% of the allotment within the project area. The remaining vegetation is Great Basin Pinyon-Juniper Woodland (1.8 acres), Inter-Mountain Basin Greasewood Flat (5.0 acres), and Inter-Mountain Basins mixed salt desert scrub (1,962.1 acres).

The Bastian Creek Allotment (Allotment No. 10121) totals 13,527 acres on public land (BLM 2009b). There are 1,778 permitted and active AUMs within this allotment, which is grazed by cattle (BLM 2009b). Approximately 6,012 acres, or 44% of the allotment, occurs within the eastern portion of the project area. Forage within this area includes Inter-Mountain Basin big sagebrush shrubland (2,628.6 acres) and Great Basin Xeric mixed sagebrush shrubland (431.3 acres), which make up 50.9% of the allotment within the project area. The remaining vegetation is Great Basin Pinyon-Juniper Woodland (6.0 acres), Inter-Mountain Basin Greasewood Flat (12.5 acres), and Inter-Mountain Basin mixed salt desert scrub (2,934.0 acres). A 575.9-acre treatment area developed to provide better forage is also present within this allotment.

3.2.7.1 PROPOSED ACTION

3.2.7.1.1 Site Construction

Impacts to vegetation and land uses from construction activities associated with a typical wind farm facility are described in Sections 5.9.2.1 and 5.9.10 of the Wind Energy PEIS and are consistent with impacts to grazing uses anticipated for this project. Impacts would consist of loss of forage, increased fugitive dust, exposure to contaminants, introduction of invasive and/or poisonous vegetation, and temporary removal of livestock from the project area. Short-term disturbances to forage would total 195.4 acres within the Majors Allotment. This would temporarily reduce forage in the allotment by 7.6 %. Short-term disturbances within the Bastian Creek Allotment would total 437.3 acres. This would temporarily reduce forage in the allotment by 7.3 %. Of this disturbance, 41.1 acres would occur within the Bastian Creek treatment area. There is a higher potential for the introduction of new and spread of existing noxious and invasive species from construction activities within the Bastian Creek treatement area, than in the overall grazing allotment. Mitigation measure 1 in Section 5.1.7 below would address the temporary loss of vegetation in treatment area. All short-term disturbances would be reclaimed after construction. Implementation of construction-phase BMPs for ecological resources, as outlined in Section 2.2.3.2.3 of the Wind Energy PEIS, would further reduce adverse impacts, including those from the spread of noxious and invasive species. Additionally, mitigation measures to reduce impacts to ecological resources listed in Sections 5.9.5.3, 5.9.5.4, and 5.9.5.5 of the Wind Energy PEIS would also reduce impacts to grazing uses. Additional management decisions from the Ely RMP would also protect rangeland resources. Implementation of these measures would reduce impacts to low levels.

Short-term availability of rangeland would decrease during project construction due to temporary closures, as described in Section 5.10.1 of the Wind Energy PEIS. This would result in a loss of AUMs available in the allotment in the short term. However, construction is projected to last 9 to 12 months, and only small, active construction areas would be restricted. Additionally, as described in the proposed action, SVW would compensate allotment holders for loss of AUMs and reduce impacts to negligible levels.

3.2.7.1.2 Site Operation

Sections 5.9.3.1 and 5.10.1 of the Wind Energy PEIS (incorporated by reference) describe the expected long-term, indirect adverse impacts to vegetation and land use resulting from operation and maintenance of a typical wind generation facility; these are consistent with impacts to grazing uses. Development of WTGs and associated facilities would directly remove 63.3 acres of rangeland from grazing use. Specifically, 29.8 acres within the Majors Allotment would be removed. This would result in a long-term reduction in forage by 1.2 % within the Majors Allotment. A total of 93.8 acres within the Bastian Creek Allotment would be removed. This would result in a long-term reduction in forage by 1.6 % within the Bastian Creek Allotment. Of this disturbance, 6.6 acres would occur within the Bastian Creek treatment area. Mitigation measure 3 in Section 5.1.8 below would address the long-term loss of vegetation in treatment area. This would represent 1.2 % of the entire restoration area and would result in a minor impact to the restoration efforts within this allotment. Overall, the long-term removal of vegetation would be limited to a very small amount of the available forage within these allotments. Measures listed in the Wind Energy PEIS and Ely RMP for construction would also reduce impacts during operation.

In conclusion, impacts from implementation of the Proposed Action would not lead to a long-term reduction in AUMs for the allotments in the project area once elements of the Proposed Action and mitigation measure 1 in Section 5.1.7 below are implemented. Impacts would be further reduced by the implementation of operations-phase BMPs for ecological resources as outlined in Section 2.2.3.2.4 of the Wind Energy PEIS.

3.2.7.2 NO-ACTION ALTERNATIVE

Under the No-Action Alternative, SVWEF would not be constructed, and rangeland resources in the area would continue to be subject to existing conditions and local trends.

3.2.8 Socioeconomics

With a population of 9,181, the primary industries in White Pine County are government services, mining, agriculture, and tourism (U.S. Census Bureau 2000; White Pine County Tourism and Recreation Board 2008). White Pine County contains nearly 400 businesses offering a variety of products and services, including restaurants, hotels, and construction services (White Pine County Tourism and Recreation Board 2008). The median household income in the county is $36,688. While the project area itself does not contain any residential areas, residences do occur as near as 8 miles, in Sacramento Pass. There are 4,439 housing units within White Pine County. Of these units, 2,515 are owner occupied, 767 are renter occupied, and 1,157 are vacant. The U.S. Census Bureau reports the median value of an owner-occupied home in White Pine County to be $70,000 (U.S. Census Bureau 2000).

White Pine County relies on revenues from a variety of taxes to fund essential services. Real property and personal property taxes levied at the county level include taxes on personal property, residential, commercial, and industrial property. In 2008, the projected White Pine County government expenditures totaled $60,698,361 (Nevada Department of Taxation 2009).

Located approximately 25 miles (40 km) from the project area and containing approximately 45% of the population of White Pine County, the town of Ely, Nevada, has a population of 4,041. The median household income in Ely is $36,408. With 2,025 housing units within the town of Ely, 46% of the county's housing units are located here. Of these units, 1,229 units are owner occupied, 498 units are renter occupied, and 478 are vacant. The median value of an owner-occupied home in Ely is $71,300 (U.S. Census Bureau 2000).

While the U.S. Census Bureau does not provide data for the town of Baker, Nevada, which occurs 30 miles from the project area, it does provide data for the zip code in which Baker is located. In the year 2000, this zip code (89311) had a population of 160 people, which is 1.7% of the population of White Pine County. Here, the median household income was $26,875. Within this zip code, there are 139 housing units, which equates to 3.1% of the county's housing units. Of these units, 54 are owner occupied, 27 are renter occupied, and 58 are vacant. The median value of an owner-occupied home in this zip code is $151,000 (U.S. Census Bureau 2000).

3.2.8.1 PROPOSED ACTION

Impacts to socioeconomics are consistent with impacts from a typical wind farm facility, as described in Section 5.13.1 of the Wind Energy PEIS. Impacts to socioeconomics associated with construction and operation of a wind energy facility would occur from changes in employment, income, tax revenues, ROW rental receipts, and changes to property values.

3.2.8.1.1 Site Construction

Construction activities associated with the Proposed Action would result in the addition of up to 150 new construction-related jobs in the area. It is assumed that a portion of construction staff would be hired from outside White Pine County. Because of the short-term nature of the construction activities, it is assumed that workers from out of the area would not relocate with their families. This short-term increase in population would result in an increased demand for hotel rooms, rental properties, and local services (restaurants, grocery stores, etc.). Because workers would not be accompanied by families, there would be minimal impacts to community facilities and services (schools, hospitals, etc.).

3.2.8.1.2 Site Operation

The impacts to socioeconomics associated with the operation and maintenance of a wind energy facility would occur from changes in the local economy. Activities that would result in impacts to the local economy consist of increased local employment, increased purchase of materials and supplies from local vendors, increased expenditures by workers for lodging, restaurants, and recreation, and increased property tax revenue to White Pine County.

Employment associated with the operation of the proposed wind energy facility would total 12 new long-term jobs. This would be a minor beneficial impact. Impacts to employment, housing, population, community facilities, and services would be minor during operations.

Nevada assesses property taxes on WTGs based on the WTGs' being personal and not real property. Annual personal property tax revenues would accrue to White Pine County. A typical turbine costs $3,500,000 installed (Windustry 2009). Based on a maximum of 75 turbines installed, the project would have an approximate value of $260,000,000. The current tax rate is 3.66% of the assessed project value × 35%. In addition, there is a 50% tax abatement in place for wind projects. Accordingly, if the project was assessed at $260 million, the first year's personal property taxes would be $1,655,300 ($260,000,000 × 3.66% × 35% × 0.5 = $1,655,300) (personal communication, George Hardie, SVW, November 4, 2009). These tax revenues would decline each year as the value of the facility components depreciate.

Studies of the indirect impacts to property values of areas surrounding and nearby the typical wind farm operation are described in Section 5.13.2 of the Wind Energy PEIS. The studies described concluded no adverse impacts to property values for the majority of wind projects considered. Only two parcels of private property lie adjacent to the project area, and a decline in property values is not expected to occur as a result of the Proposed Action.

3.2.8.2 NO-ACTION ALTERNATIVE

Under the No-Action Alternative, the wind generation facility would not be constructed, and socioeconomic conditions in the vicinity of the project area would continue to be subject to existing conditions and local trends.

4.0 CUMULATIVE IMPACTS

As required under NEPA and the regulations implementing NEPA, this section analyzes potential cumulative impacts from past, present, and reasonably foreseeable future actions, combined with the Proposed Action within the area analyzed for impacts in Chapter 3 specific to the resources for which cumulative impacts may be anticipated. A cumulative impact is defined as "the impact which results from the incremental impact of the action, decision, or project when added to other past, present, and reasonably foreseeable future actions, regardless of what agency (federal or non-federal) or person undertakes such other actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time" (40 CFR 1508.7). The resource values analyzed for the SVW facility, which may involve a cumulative impact with other past, present, and reasonably foreseeable future actions, consist of prime and unique farmlands, fish and wildlife, migratory birds, special-status species, visual resources, transportation, recreation, grazing uses, and socioeconomics.

The geographic area of cumulative impacts analysis is generally based on the natural boundaries of the resource affected. For all resources analyzed, a review of past, present, and reasonably foreseeable future actions was completed within the Spring Valley watershed boundary, an approximately 7,167-acre area in Spring Valley between the Schell Creek Range to the west and the Snake Range to the east. Spring Valley was determined to be a large enough geographic area to encompass all affected resources considered for cumulative impacts. The cumulative impact analysis area is primarily undeveloped and used for grazing, recreation, roads, and transmission corridors.

Table 4.0-1 summarizes past, present, and reasonably foreseeable future actions. Past actions are considered those that have occurred within the past 50 years. Present actions are considered those occurring at the time of this evaluation and during implementation of this Proposed Action. Future actions are those that are in planning stages with a reasonable expectation of occurring over the anticipated life of the project, or the next 30 years. These actions were identified through correspondence with the Ely BLM District Office. There are several other wind energy project areas identified within the Schell Field Office area. However, no applications or PODs have been submitted for development; therefore, these projects are not considered reasonably foreseeable and would not contribute to cumulative impacts. Should those projects move forward, SVWEF would be considered as part of those projects' cumulative impact analyses.

4.1 Fish and Wildlife

The cumulative impacts to wildlife, particularly birds and bats, from the construction and operation of wind energy facilities are an issue. The types of impacts that are of particular concern include direct mortality from collisions with WTGs, loss of habitat, and displacement. Past and present actions have contributed to injury, mortality, loss of habitat, habitat fragmentation, avoidance, and displacement. In particular, aerial features such as transmission lines crossing Spring Valley have likely contributed to collisions and increased injury and mortality of bird and bat species. Similar types of impacts can be expected from the Spring Valley lateral pipeline.

The incremental impacts of the Proposed Action, when added to these other actions, consist of injury and mortality, loss of habitat, habitat fragmentation, and displacement of wildlife species. Impacts from the Proposed Action would contribute to additional injury and mortality of bird and bat species resulting from collisions with WTGs and associated facilities. Wind energy has the lowest overall risk to wildlife when considering resource extraction through decommissioning, compared with all other electricity generation methods (Newman et al. 2009). Additionally, research regarding avian mortalities associated with WTGs estimates that between 0.01% and 0.02% of total avian mortalities resulting from collisions with human structures can be attributed to WTGs (Erickson et al. 2001). Therefore the addition of the Proposed

Action is expected to result in only a small percent increase in cumulative avian mortality. Cumulative impacts to bats are anticipated to be similar to those described for birds; however, because of the proximity to Rose Guano Bat cave, there is the potential for a somewhat larger percent increase in mortality to Brazilian free-tailed bats.

Table 4.0-1. Past, Present and Reasonably Foreseeable Future Actions Considered for Cumulative Impact Analyses

Action	Description	Resources Affected	Area of Impact (acres)[1]
Past Actions			
Grazing	Grazing has occurred throughout the cumulative impacts area on both BLM and private lands. Grazing can result in impacts to vegetation and soils.	Wildlife and special-status species	204,054
Power transmission and distribution lines	There are several transmission lines crossing the project area, including the SWIP corridor.	Visual resources, migratory birds, wildlife, and special-status species	242 (estimated)
Present Actions			
Southern Nevada Water Authority (SNWA) – Water Rights	In 2007, the State Engineer granted SNWA 60,000 acre-feet per year (AFY) of groundwater from Spring Valley, the pumping of which is limited to 40,000 AFY for the first 10 years. SNWA began acquiring various properties in Spring Valley in 2006. In addition to land holdings, SNWA acquired surface and groundwater rights associated with the properties. To date, SNWA has acquired approximately 34,000 AFY of surface water rights, 6,000 AFY of groundwater rights, and 24,000 AFY of supplemental water rights (SNWA 2009).	All	7,167 (Spring Valley Watershed)
Grazing	Grazing is currently occurring throughout the cumulative impacts area on both BLM and private lands. Grazing can result in impacts to vegetation and soils.	Wildlife and special-status species	Same as past actions
Reasonably Foreseeable Future Actions			
SNWA – Spring Valley Lateral Pipeline	The Spring Valley lateral pipeline would be located on the west side of SR 893. The lateral pipeline would end approximately 1 mile north of Bastian Creek. The Spring Valley lateral pipeline permanent ROW that would be needed is approximately 38 miles long × 100 feet wide. The temporary ROW would be the same (SNWA 2008).	All	462

The area of direct wildlife habitat disturbance from past, present, and reasonably foreseeable future actions is approximately 704 acres. The area of indirect wildlife habitat disturbance from past, present, and reasonably foreseeable future actions is approximately 211,221 acres. The Proposed Action would contribute 756.2 acres (short term and long term) of ground disturbance to the cumulative direct habitat disturbance in Spring Valley. In addition, past and present actions have contributed to declining habitat quality in Spring Valley from the introduction of aerial features (i.e., transmission structures) and habitat fragmentation. Similar types of impacts to habitat quality can be expected from the Spring Valley lateral pipeline. The incremental impacts of the Proposed Action, when added to these other actions, consist of habitat fragmentation and displacement of individual animals.

4.2 Migratory Birds

Cumulative impacts to migratory birds would be similar to those described for fish and wildlife in Section 4.1.2 above.

4.3 Special-Status Species (Plant and Animal)

Cumulative impacts to special-status species would be similar to those described for fish and wildlife in Section 4.1 above.

4.4 Visual Resources

BLM lands in the cumulative impacts area are designated VRM Class III. Past and present actions have contributed to visual contrasts on the landscape from the addition of linear roads, transmission lines and support towers, and associated building and structures. The Spring Valley lateral pipeline can be expected to result in visual contrasts similar to those caused by roads and other linear surface disturbances such as allotment fence lines.

The incremental impacts of the Proposed Action, when added to these other actions, consist of contrasts to the form, line, and texture of the natural landscape. The installation of up to 75 WTGs and associated facilities as part of the Proposed Action would contribute moderate contrasts to the cumulative visual contrasts in Spring Valley.

4.5 Transportation and Access

Past and present actions have contributed to the existing road network within Spring Valley. The Spring Valley lateral pipeline can be expected to include a parallel dirt surface access road that would further contribute to the existing road network. The Proposed Action would contribute 27 miles of new improved access roads to the existing road network, resulting in a minor cumulative increase in the road network in Spring Valley.

4.6 Recreation Uses

Past and present actions have contributed to the short-term displacement of dispersed recreation opportunities from within the Loneliest Highway SRMA and impacts to the natural landscape and scenery enjoyed by visitors to the SRMA and Great Basin National Park. Similar impacts can be expected from reasonably foreseeable actions. The Proposed Action would contribute to visual contrasts with the natural landscape as described in Section 4.4 above. Additionally, the Proposed Action would contribute to the displacement of dispersed recreation opportunities (i.e., hunting, OHV touring) in Spring Valley.

4.7 Grazing Uses

Past and present actions have contributed to the loss of forage in both the Majors and Bastian Creek Allotments from direct removal during construction activities, fugitive dust, and increased erosion. Similar impacts can be expected from the reasonably foreseeable action. The long-term incremental impacts of the Proposed Action, when added to these other actions, consist of a direct loss of forage. The Proposed Action would contribute to the direct loss of 29.8 acres of forage in the Majors Allotment and 93.8 acres of forage in the Bastian Creek allotment. This represents a 1.4 % loss of acreage from both allotments; therefore, the Proposed Action would result in a negligible contribution to the cumulative loss of forage.

4.8 Socioeconomics

Past and present actions have resulted in a minor number of additional jobs and tax revenue to the county, contributing to cumulative beneficial impacts to local economic conditions. There are currently no large employers located within Spring Valley, although in 2008 the total employment in White Pine County was 4,009 (Nevada Department of Taxation 2009). Similar beneficial impacts can be expected from reasonably foreseeable future actions. The Proposed Action would contribute 12 to 15 permanent positions to the local workforce, which would be a minor impact to the cumulative employment numbers in White Pine County. In addition, the Proposed Action would result in a substantial contribution to White Pine County personal property tax revenue over the life of the project.

5.0 MITIGATION MEASURES

5.1 Resource Measures

Numerous mitigation and conservation measures are included as part of the Proposed Action (Section 2.1.4). Additionally, all relevant BMPs and mitigation measures listed in the Wind Energy PEIS (BLM 2005) and Ely RMP/FEIS (BLM 2008b) are incorporated by reference. Therefore, most potential impacts are addressed as part of the Proposed Action and do not require additional mitigation. A third-party construction monitor will be employed to ensure compliance with all BMPs, mitigation, and conservation measures identified in this EA. The measures below were developed to mitigate impacts resulting from the Proposed Action that were not addressed as part of construction or operation design. If implemented, these measures would reduce all impacts to acceptable levels.

5.1.1 Fish and Wildlife

Mitigation measures presented in Section 5.1.3 for special-status species would incidentally also provide mitigation for fish and wildlife. No other mitigation measures are needed.

5.1.2 Migratory Birds

No mitigation measures are needed for Migratory Birds beyond those described in the Proposed Action.

5.1.3 Special-Status Species (Plant and Animal)

1. If turbines Alt 8, Alt 9, and/or Alt 10 are selected, construction activities should not occur during sage-grouse breeding season between March 1 and May 15 (BLM 2008b).
2. If turbines 13, 59, and/or 60 are selected, clearance surveys for pygmy rabbit at those locations would be conducted prior to any ground-breaking activities, and on-site monitoring would be performed during construction.

5.1.4 Visual Resources

No mitigation measures are needed for visual resources.

5.1.5 Transportation and Access

1. New roads constructed as part of the Proposed Action may be reclaimed upon decommissioning, including the use of scarifying and reseeding with a BLM-approved seed mix, and would be consistent with the Transportation Planning requirements identified in the BLM Ely RMP/FEIS (BLM 2008b).

5.1.6 Recreation Uses

No mitigation measures are needed for recreation uses.

5.1.7 Grazing Uses

1. Turbines 48–51 and 61–64 occur within the restoration area and require additional mitigation. If these turbines and associated roads are constructed, a new restoration area will be prepared at a ratio of 2:1 for acreage removed, as required on page 40, SS10, of the Ely RMP/FEIS under Special Species Habitat.

5.1.8 Socioeconomics

No mitigation measures are needed for socioeconomics.

6.0 CONSULTATION AND COORDINATION

6.1 Introduction

The issue identification section of Chapter 1 provides the rationale for issues that were considered but not analyzed further and identifies those issues analyzed in detail in Chapter 3. The issues were identified through the public and agency involvement process described in Section 6.3 below.

6.2 Persons, Groups, and Agencies Consulted

- White Pine County
- Nevada Department of Wildlife
- Great Basin National Park
- Southern Nevada Water Authority
- Delamar Valley Cattle
- Cave Valley Cattle
- Goshute Tribe

6.3 Summary of Public Participation

On Monday, October 20, 2008, the BLM Ely District staff facilitated a stakeholder meeting. The purpose of the meeting was to provide the project proponent, SVW, the opportunity to present information on the proposed SVW project to stakeholders identified by the BLM, and for those stakeholders to get information, ask questions and better understand the proposed project, what tasks have been completed, and what tasks remain to be completed.

Meeting materials included a PowerPoint presentation by SVW, stationary displays describing biological and cultural resource studies completed to date, a map of the project area and proposed developments, a diagram of wind turbine technology, and a visual simulation of proposed developments displayed as a video in Google Earth.

Stakeholders were given 15 minutes at the beginning of the meeting to review meeting materials and stationary displays posted in the conference room. Following an introduction by the BLM, SVW gave a brief presentation on the company, wind energy, and the proposed Spring Valley project. Following the presentation, stakeholders had the opportunity to ask questions of the BLM and the proponent related to the project proposal and process. At the conclusion of the meeting, stakeholders were given additional time to review the meeting materials and stationary displays. During that time, BLM staff and SVW staff remained available to answer further questions.

6.4 List of Preparers/Reviewers

Name	Title	Affiliation	Responsibility
BLM			
Wells McGiffert	Renewable Energy Project Manager	BLM	Project Management
Sheri Wysong	NEPA Coordinator	BLM	NEPA Review, Environmental Justice
Brenda Linnell	Realty Specialist	BLM	Lands and Realty, Socioeconomics
Dave Jacobson	Wilderness Specialist	BLM	ACECs
Shawn Gibson	Archaeologist	BLM	Cultural and Paleontological Resource, Native American Concerns, and Environmental Justice
Paul Podborny	Wildlife Biologist	BLM	Wildlife and Special-Status Species
Elvis Wall	Native American Coordinator	BLM	Native American Concerns and Environmental Justice
Elizabeth Townley	Outdoor Recreation Planner	BLM	Recreation and Visual Resources
Mindy Seal	Noxious and Invasive Weeds Coordinator	BLM	Noxious Weeds and Invasive Species
Dave Davis	Geologist	BLM	Geology
Craig Hoover	Rangeland Management Specialist	BLM	Rangeland and Grazing
Mark D'Aversa	Hydrologist	BLM	Soil Resources and Watershed
Gary Medlyn	Assitant Field Manager, Non Renewable Resources	BLM	Document Review
Zach Peterson	Forester	BLM	Forestry
Non-BLM Preparers			
Eric Koster	Project Manager	SWCA	Project Management, Document Quality Assurance/Quality Control, Final Document Production
Steve Leslie	Assistant Project Manager	SWCA	Chapters 1 and 2, Visual Resources, Recreation, Socioeconomics and Environmental Justice
Justin Streit	Environmental Specialist/Avian Ecologist	SWCA	Wildlife, Special-Status Wildlife Species, and Migratory Birds
Matt Villaneva	Environmental Specialist/Botanist	SWCA	Special-Status Plant Species, Grazing
Lesley Hanson	Environmental Specialist/Biologist	SWCA	Wildlife, Special-Status Wildlife Species
Michael Swink	Environmental Planner	SWCA	Prime and Unique Farmlands, ACECs, Transportation and Access
Greg Seymour	Archaeologist	SWCA	Cultural and Paleontological Resources; Native American Concerns and Environmental Justice
Camille Ensle	Publication Specialist	SWCA	Formatting of Document
Heidi Orcutt-Gachiri	Technical Editor	SWCA	Technical Editing of Document

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APPENDIX A

Proposed Wildlife BMPs, Monitoring, and Mitigation for the Spring Valley Wind Project

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Siting Guidance

- Where possible, do not install wind turbines in areas within 2 miles of an active sage-grouse lek.
- Where possible, do not construct new roads within 2 miles of an active sage-grouse lek.
- Avoid or minimize habitat fragmentation and habitat disturbance by minimizing construction of new roads, power lines, and fences.
- Locate material stockpile sites, turnaround areas, and staging areas in previously disturbed areas to the greatest extent feasible.

Best Management Practices during Construction

- If construction occurs during the migratory bird breeding/nesting period, the area of proposed disturbance shall be surveyed for breeding and nesting activity. If breeding/nesting activity is found, the construction activity would be delayed until the birds have fledged or moved to another site within the project area where there is no breeding/nesting activity.
- All areas to be disturbed will have boundaries flagged before beginning the activity, and all disturbances will be confined to the flagged areas. All project personnel will be instructed that their activities must be confined to locations within the flagged areas. Disturbance beyond the actual construction zone is prohibited without site-specific surveys.
- If disturbance must occur outside of the flagged areas, a BLM-approved biologist must survey the area to be impacted prior to disturbance. If sensitive wildlife is found within the area to be disturbed, a BLM representative must be notified prior to disturbance.
- Cross-country travel and travel outside construction zones is prohibited.
- Where possible, install power lines underground.
- Spray water or an approved dust suppressant on the surface of dirt roads, turnaround areas, and construction sites within the ROW.
- Maintain a maximum speed limit of 25 mph while traveling in construction areas.
- Trash and food items will be disposed of promptly in containers with resealing lids, and waste will be removed from the area and disposed of in an approved off-site landfill. Construction waste including, but not limited to, broken parts, wrapping material, cords, cables, wire, rope, strapping, twine, buckets, metal or plastic containers, boxes, and welding rods will be removed from the site regularly and disposed of properly.
- Ensure that any fences built meet BLM specifications to allow safe passage for wildlife.
- Avoid lighting that attracts birds or bats.

Postconstruction Monitoring

Prior to project operations, a monitoring plan will be developed by the proponent, in cooperation with a TAC set up for the project that includes at a minimum, a representative from the BLM, NDOW, U.S. Fish and Wildlife Service, and the proponent and the proponent's consultant. The TAC will also invite at least one representative from a university or other technical expert group such as Bat Conservation International or Hawkwatch International. Reasonable efforts will be made to ensure participation by the above parties, not withstanding failure of any of these representatives to respond or agree to participate; the TAC shall be formed prior to project operations.The postconstruction monitoring plan will include

procedures for mortality surveys/carcass counts or other procedures as recommended by the TAC. The plan will identify the number, size, and location of mortality plots; frequency of monitoring; and methods for enhancing searcher efficiency. Minimum standards to be included in the plan shall be as follows:

- Mortality surveys will follow the currently accepted protocols recommended by the Bats and Wind Energy Cooperative (BWEC).
- Mortality survey will be conducted from April through November for at least the first two consecutive years of operation, and if mortality thresholds are exceeded, the TAC will determine future reasonable mortality survey requirements and mitigation measures.
- At a minimum, mortality monitoring plots will be established for at least one-third of the number of turbines, including those on the extremities of the project.
- At a minimum, plots will have a radius at least as large as the length of the turbine blades.
- Scavenger removal rates will be determined prior to the start of the mortality surveys, and will be determined for the different seasons and for the different habitat types found within the project area. Once scavenger removal rates are determined, the frequency of mortality surveys will be established.
- Data to be collected in the field during mortality surveys will include date of survey, weather, vegetation type, species killed (if identification is possible), estimated time since death, cause of injury (if known), distance to nearest turbine or other structure, and UTM coordinate. Remains will be photodocumented.
- Carcasses will be removed from the site (to avoid attracting golden eagles, other raptors, or any scavengers), identified to species (if possible), placed in cold storage, and transferred to a location specified by the TAC.
- Searcher efficiency trials shall be conducted twice within the first year of operation and yearly thereafter, or in the event of employee turnover, to establish searcher-carcass detection rates.
- The number of carcasses/kW/year and carcasses/turbine/year shall be calculated to estimate rate of kill while accounting for searcher efficiency and scavenger removal rates. This information shall be included in an annual report to the TAC.

Mitigation

Mortality Threshold Standard for Bats and Birds. If any of the criteria below are met, the TAC will meet to determine what mitigation, if any, should be recommended for implementation. In some cases, mitigation may not yet be warranted or very specific measures may be needed. Therefore, the TAC shall consider species impacted, timing of impacts, and other pertinent information collected during mortality surveys as part of their mitigation determination. The TAC should also utilize the phased mitigation approach described below. The mitigation criteria include:

- Average mortality across all turbines in the wind generation facility exceeds 2.70 birds per turbine per year (fatality number is based on a regional average from 11 currently operating projects in similar habitats [Table A1]).
- Average mortality across all turbines in the wind generation facility exceeds 1.48 bats per turbine per year (fatality number is based on a regional average from 11 currently operating projects in similar habitats [Table A1]).
- Mortality at any single wind turbine exceeds 10.0 bats and/or birds per year.

If any of the criteria below are met, mitigation will be required and the TAC will meet to determine the appropriate measure to take.

- Average mortality across all turbines in the wind generation facility exceeds one standard deviation above the regional average for bird mortality per turbine per year (4.03).
- Average mortality across all turbines in the wind generation facility exceeds one standard deviation above the regional average for bat mortality per turbine per year (2.38).
- A species detected in the project area becomes listed as Threatened or Endangered under the Endangered Species Act.

After each successive year of mortality surveys, impacts will be analyzed and the necessity for additional mitigation will be evaluated by the TAC. In the event that mortality levels exceed established thresholds, the TAC will determine if further mitigation requirements are needed. Additionally, the TAC will review current data and determine if threshold numbers need to be adjusted for subsequent surveys. To the extent practicable, decisions by the TAC will be made using best available science as determined by the TAC. In the event that decisions cannot be made by consensus, decisions of the TAC will be made my simple majority vote. Prior to making any decision based on TAC recommendations, the BLM shall review the recommendations of, or any other information provided by, any of its voting members.

Table A.1. Comparison of 11 Operating Wind Projects with Habitat Types Similar to Spring Valley

Reference	WGF Study Area Location	Dates of Study	Turbines in WGF	Turbine/ Project MW	Mortality per Turbine per year	
					Avian	Bats
Young et al. (2003)	Foote Creek Rim, WY	11/98–6/02	69	600 kW / 41.4 MW	1.50	1.34
Erickson et al. (2003)	Nine Canyon, WA	09/02–08/03	37	Bonus 1.3 MW / 48.1 MW	3.59	3.21
Erickson et al. (2004)	Stateline, OR/WA	01/02–12/03	454	Vestas 660 kW / 299.64 MW	1.93	1.12
Johnson et al. (2003)	Klondike, OR	02/02–02/03	16	Enron 1.5 MW / 24 MW	1.42	1.16
Erickson et al. (2000)	Vansycle, OR	01/99–12/99	38	Vestas 660 kW / 24.9 MW	0.63	0.74
TRC (2008)	Judith Gap, MT	Fall 06–Spring 07	90	GE 1.5SLE / 135 MW	4.52	13.40*
NWC and WEST (2007)	Klondike II, OR	2006	50	GE / 75 MW	4.71	0.63
Young et al. (2006)	Combine Hills, OR	02/04–02/05	41	Mitsubishi MWT-1000A /41 MW	2.56	1.88
Kronner et al. (2008)	Big Horn, WA	2006–2007	133	GE / 199.5 MW	3.81	2.86
Erickson et al. (2008)	Wild Horse, WA	01/08–12/08	127	V80 / 229 MW	2.79	0.71
Young et al. (2007)	Hopkins Ridge, WA	01/06–12/06	83	Vestas / 150 MW	2.21	1.13
				Average	**2.70**	**1.48**

*13.40 is a statistical outlier and is not included in the average calculation.

Phase 1 Mitigation. If mitigation is required after one year of mortality surveys, then one of the following measures may be implemented, as decided upon by the TAC. In place of the listed mitigation measures, other measures of similar type (i.e. cost, level of effort, utility) may also be implemented at the discretion of the TAC.

- Implement seasonal changes to cut-in speeds to reduce bat and/or bird mortality.
- Implement periodic feathering of wind turbines on low wind nights to reduce bat and/or bird mortality.
- Implement technological improvements, and/or initiate research studies to examine the efficacy of other methods for reducing or eliminating bat and/or bird mortality. For example: The use of high-intensity ultrasound deterrent devices (Szewczak & Arnett 2008), if they become proven as acceptable deterrents.

Avian and/or bat population studies for Spring Valley should also be considered by the TAC to better determine thresholds and understand implications of impacts from the wind facility.

Phase 2 Mitigation. If additional mitigation is required after one year of mortality surveys, and Phase 1 mitigation has already been initiated, one of the following measures may be implemented as decided on by the TAC. In place of the listed mitigation measures, other measures of similar type (i.e. cost, level of effort, utility) may also be implemented at the discretion of the TAC. Additionally, uninitiated mitigation measures from previous levels may be employed.

- Implement diurnal or time of day shutdowns of specific "problem" turbines on a nightly or hourly (i.e. near sunset) basis to reduce mortality.
- Implement seasonal, diurnal or time of day changes to the cut-in speed of wind turbines. The turbine(s) shall be feathered or locked in place whenever ambient wind speeds are below 6 mps (13.5 mph) or other standard determined by the TAC, and during periods of maintenance. (Arnett et al. 2009).
- If appropriate, the proponent shall have the option to develop an off-site mitigation plan in coordination with the TAC.

Phase 3 Mitigation. If additional mitigation is required after one year of mortality surveys, and Phase 1 and 2 mitigation measures have already been initiated, one of the following measures may be implemented as decided on by the TAC. In place of the listed mitigation measures, other measures of similar type (i.e. cost, level of effort, utility) may also be implemented at the discretion of the TAC. Additionally, uninitiated mitigation measures from previous levels may be initiated.

- Implement seasonal shutdowns of one or more turbines to reduce bat mortality. If any single turbine within a two-week period exhibits a mortality rate greater than 10 bats and/or birds, the turbine shall be locked during specific hours each day. Turbine shutdowns would be limited to the actual hours of each day during which time the targeted wildlife is active or was previously impacted at the wind development site. Shutdown not to exceed 15% of total number of turbines.
- The proponent shall develop an off-site mitigation plan in coordination with the TAC.

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