



National Park Service  
U.S. Department of the Interior  
Yellowstone National Park  
Wyoming, Montana, Idaho

## **Finding of No Significant Impact Lamar Buffalo Ranch Sustainable Energy Plan**

### **Background**

In compliance with the National Environmental Policy Act (NEPA), the National Park Service (NPS) prepared an Environmental Assessment (EA) to evaluate a proposal for sustainability improvements at the Lamar Buffalo Ranch in Yellowstone National Park. The Ranch is a historic district with an adjacent Yellowstone Institute cabin complex. The EA examined various alternatives and environmental impacts associated with the proposal. Proposed changes include: replacing the existing photovoltaic system, improving and insulating the building envelopes to reduce energy demand, installing a micro hydro system, adding a solar thermal heating system in the existing bathhouse, and adding energy monitoring displays in the buildings. The NPS also proposes to relocate and update the existing weather station, move one existing sleeping cabin, and expand the existing bookstore to allow for administrative offices. All changes would occur within the existing development footprint of the Lamar Buffalo Ranch within the northeast portion of Yellowstone National Park.

The purpose of the project is to improve off-grid environmental stewardship and education at the Lamar Buffalo Ranch by reducing energy demand and increasing on-site renewable energy production with a long-term goal at the ranch of zero fossil fuel use for daily operations. The need for the project arises from existing equipment failure and aging infrastructure and a desire by the NPS to reduce energy costs and greenhouse gas emissions. Currently, half of the storage batteries of the battery bank for the existing photovoltaic system are offline due to old age, low storage capacity and cracked or bulging batteries. The photovoltaic array is undersized for current needs and the aging propane-powered generators are nearing the end of their useful life due to extended run times. Office space for NPS rangers is non-existent, and rangers must use their residences for this function. Most of the buildings have little or no insulation and use excess quantities of fuel to heat.

The Lamar Buffalo Ranch Historic District was constructed in the early 1900's and was originally used to manage bison. The ranch was listed on the National Register of Historic Places in 1982 and is nationally significant under criterion A for its role in the history of wildlife management and preservation of bison in the United States. Since its construction the ranch has been used as housing and administrative space for Lamar district rangers. In 1979, the Yellowstone Institute, an educational arm of the Yellowstone Association (a non-profit partner of the park), began hosting extended learning classes at the ranch. In 1981, 18 cabins were moved adjacent to the historic district from Fishing Bridge for students to sleep in. In 1993, the entire facility underwent an upgrade and rehabilitation including the addition of the existing solar array.

### **Selected Action**

The NPS examined two alternatives: Alternative A (No Action), and Alternative B (Sustainability Improvements). Alternative B is the preferred alternative and NPS's selected action because it best

meets the purpose and need for the project as well as the project objectives to 1) increase renewable energy production and efficiency at the Lamar Buffalo Ranch, 2) reduce energy consumption and decrease reliance on propane generator use, 3) contribute to goals established by Yellowstone National Park's Strategic Plan for sustainability including energy reduction, greenhouse gas emissions reduction, waste and water reduction and increasing renewable energy, 4) improve monitoring and tracking of energy use and demand, and 5) increase opportunities to educate students about sustainable living and energy footprints by providing firsthand exposure to sustainable energy conservation practices.

**Under the selected action:** All phases of construction for the selected action will occur during the time frames identified following in this section assuming funding for each phase is secured. In the event that funding is not available for any given phase, or complete phase, work would then shift farther out into the future. The first phase of this project will be scheduled to begin late summer/fall 2014. The first phase will expand the existing photovoltaic (PV) array from 14 kilowatts (kW) to approximately 45 kW and cover about 0.3 acres with approximately 5 rows of PV panels. The battery banks (for storing electrical power) will be replaced with new hybrid vehicle batteries that will be sized to store approximately two days' worth of extra power. The new battery banks will be placed within the current log generator shed that houses the storage batteries, control, and two backup generators. In order to house the new equipment, an expansion of the existing building extending out approximately 15 feet will be constructed on the back (east side) of the current log generator shed.

A new 5 kW single phase, 60 hertz (Hz) generator micro hydro system will be installed to assist in charging the battery banks when solar power is not available. The micro hydro turbine will receive water from upper Rose Creek via an existing underground 6-inch pipe that is located directly north of the Buffalo Ranch development. This pipe currently provides water for domestic use at the ranch and will be connected to provide water to the micro hydro turbine system. No work is anticipated within Rose Creek itself for construction of the micro hydro system. The outlet from the turbine will be a 12-inch pipe (buried culvert). The installation of this pipe will require excavation of material approximately 150 feet in length and three feet deep. The outlet will include a rip-rap treatment of eight-inch natural stone salvaged from excavation work, 16 inches deep. Topsoil and vegetation will be removed and rip-rap placed under the pipe to the bottom of the bank extending out into the floodway (20 - 30 square feet). Water from the outlet will then flow across the rip-rap treated area to meet the middle fork of Rose Creek. Maximum flow through the turbine will be 320 gallons per minute (gpm), depending on resource conditions. Prior to initiating use of the micro hydro system, an operations plan will be developed in coordination with resource managers to minimize impacts to native fish, other aquatic species, and hydrologic processes within Rose Creek. The plan may include seasonal operation restrictions and/or limits to the amount of water diverted for use by the system. Monitoring of in stream flows and native fish responses to changes in water flows may also be initiated prior to construction and during operational periods of the system.

Also under Phase 1, a new log structure of approximately 14 x 20 feet will be constructed to house the turbine equipment. This building will be located outside the historic district at the top end of the ranch, east of the uppermost sleeping cabins. It will be designed similar to the existing cabins. In addition a new weather station will be installed and fenced.

Phase 2 will be scheduled to occur in 2016 and will include upgrading the energy efficiency of the building envelopes (walls, windows, floors, and ceilings) to reduce air infiltration, seal holes and cracks, and add insulation. Solar thermal panels will be installed on the south side of the existing bath house to provide hot water that can be used directly, and for supplemental heat.

Phase 3 will be scheduled to occur in 2020. In this phase, replacement of propane-fueled heaters and appliances and further expansion of the PV array to approximately 100 kW will occur. Energy monitoring equipment will be installed on some buildings to track and manage energy use and loads, while providing information for education purposes. Existing buildings, both historic and non-historic, will receive renovations with an emphasis on improving the building envelope for energy conservation and green building practices. A building addition will be constructed onto an existing administrative building to allow for office space for park rangers and the Yellowstone Institute campus manager. A sleeping cabin on the upper end of the ranch will be moved approximately 10-20 feet to the north of its existing location. This will allow for widening of the road at this location to improve clearance for snow plowing operations in winter months and allow larger vehicles more room to pass through this constricted point. Future alternative energy improvements and testing will continue to be explored to work toward a long-term goal of zero emissions for daily operations at the ranch.

## **Mitigation Measures**

### General Construction

To minimize the amount of ground disturbance, staging and stockpiling areas would be located in the parking area, or in previously disturbed sites, away from core visitor use and residential areas to the greatest extent possible. All staging and stockpiling areas would be returned to pre-construction conditions following construction.

Construction zones would be identified and fenced with construction tape, snow fencing, or some similar material prior to any construction activity. Fencing would define the construction zone and confine activity to the minimum area required for construction. All protection measures would be clearly stated in the construction specifications and workers would be instructed to avoid conducting activities beyond the construction zone as defined by the construction zone fencing.

Fugitive dust generated by construction would be controlled by spraying water on the construction site if necessary. Any water used for dust control would be taken from hydrants in park administrative areas, or a local source approved by the park.

To minimize possible petrochemical leaks from construction equipment, the contractor would regularly monitor and check construction equipment to identify and repair any leaks.

### Soils

Topsoil conservation measures would be employed prior to construction in accordance with Yellowstone's Vegetation Management Guidelines. Topsoil would be stripped and replaced wherever possible to enhance revegetation following the construction phase.

Disturbed soils are more susceptible to erosion and until revegetation takes place, standard erosion control measures such as silt fences and/or sandbags would be used to minimize any potential soil erosion.

During installation of the outlet pipe for the micro hydro system, a rip-rap treatment of eight-inch natural stone placed 16 inches deep will be installed. Topsoil and vegetation will be removed and rip-rap placed under the pipe to the bottom of the bank extending out into the floodway (20 - 30 square feet).

### Vegetation

Disturbance to existing native vegetation at the site would be avoided to the greatest extent possible.

Revegetation and recontouring of disturbed areas would take place following construction and would be designed to minimize the visual intrusion of any proposed new structures on the landscape.

The construction site would be monitored and non-native species control methods implemented if necessary to minimize the introduction of noxious weeds.

Equipment used at the site would be cleaned using NPS protocols for reducing the spread of any non-native plant species.

### Wildlife

All outdoor food storage would adhere to park policies already in place to ensure no unattended food sources are available to wildlife.

All contractors and employees would be educated about working in bear country and briefed on proper food storage and safety measures.

Prior to implementing use of the micro hydro system, an operations plan will be developed in coordination with resource managers to minimize impacts to native fish, aquatic species, and hydrologic processes within Rose Creek. The plan may include seasonal operation restrictions and/or limits to the amount of water diverted for use by the system. Monitoring of Rose Creek would occur to determine any changes in stream flow due to operation of the proposed micro hydro turbine. If stream flow reductions are observed that cause concern to native species of the creek, water flow to the turbine would be decreased or halted.

### Soundscapes and Air Quality

To reduce noise and emissions, construction equipment would not be permitted to idle for more than 10 minutes while not in use according to the Superintendent's Compendium, based on CFR 36 § - 5.13 Nuisances.

The proposed cabin to house the micro hydro turbine would be insulated to reduce noise during times the turbine is operating.

### Historic Resources

Designs for new buildings within the boundaries of the landmark and historic districts, or in close proximity to the districts, would be well executed and sensitive to the cultural and natural environment. The NPS would identify the district's character-defining features in its design planning process, and use a project-specific design recognizing the unique visual and cultural features that qualified the district for listing in the National Register of Historic Places.

New construction would be consistent with the Secretary of the Interior's Standards for the Treatment of Historic Properties, and the Secretary of the Interior's *Standards for Rehabilitation & Illustrated Guidelines on Sustainability for Rehabilitating Historic Buildings* would be contingent upon completion of Section 106 responsibilities including consultation with the Wyoming SHPO.



Should construction unearth previously undiscovered cultural resources, work would be stopped in the area of the discovery and the park would consult with the Wyoming SHPO and the Advisory Council on Historic Preservation, as necessary, according to §36 CFR 800.13, Post Review Discoveries. In the unlikely event that human remains are discovered during construction, provisions outlined in the Native American Graves Protection and Repatriation Act (1990) and NPS Director's Order 28 would be followed.

The NPS would ensure that all contractors and subcontractors are informed of the penalties for illegally collecting artifacts or intentionally damaging archeological sites or historic properties. Contractors and subcontractors would also be instructed on procedures to follow in case previously unknown archeological resources are uncovered during construction.

Should operations uncover or find any paleontological remains, operations would immediately be suspended and the park geologist notified. Any paleontological remains found within the project area are the property of the NPS and would be removed only by the NPS staff or designated representatives.

#### Visual Quality

Siting of the proposed PV array expansion would be done in such a way as to keep new panels within the topographic swale and behind existing fences that currently screen the array from the Lamar Buffalo Ranch Historic District and the Northeast Entrance Road Historic District. Installation of the array would be accomplished in such a manner that would not cause adverse impacts to these historic districts, and not be visually obtrusive to the rustic nature of this area.

#### Visitor Use and Experience

All construction activities would be conducted during daylight hours, to avoid loud and disruptive work at night.

### **Alternatives Considered**

Two alternatives were evaluated in the EA, including the no-action alternative and an action alternative.

Under Alternative A (No Action) the PV array would not be replaced, the existing building structures would not be rehabilitated to improve energy efficiency, and a micro hydro system would not be installed. Equipment to monitor energy use would not be installed and an administrative building would not be expanded. All other current conditions would remain at the ranch.

Alternative B, Sustainability Improvements, is the preferred alternative and selected action and is described in detail in the previous section.

### **Environmentally Preferable Alternative**

According to the CEQ regulations implementing NEPA (43 CFR 46.30), the environmentally preferable alternative is the alternative "that causes the least damage to the biological and physical environment and best protects, preserves, and enhances historical, cultural, and natural resources. The environmentally preferable alternative is identified upon consideration and weighing by the Responsible Official of long-term environmental impacts against short-term impacts in evaluating what is the best protection of these resources. In some situations, such as when different alternatives impact different resources to different degrees, there may be more than one environmentally preferable alternative."

Alternative B (Sustainability Improvements) is the environmentally preferable alternative for several reasons: 1) Sustainable power sources (photovoltaic array and micro hydro turbine) will drastically

reduce the operating times required from propane-powered generators, thus reducing greenhouse gas emissions; 2) Sound associated with the propane-powered generators will be reduced considerably. The generators are only expected to be operated during maintenance activities when the photovoltaic array and micro hydro would be shut down; 3) An education component of this alternative will work towards improved understanding of energy conservation and alternative power sources that visitors to the ranch can apply outside of the park; and 4) sustainable improvements to the power generating system will decrease the need for fossil fuel based energy. It was also identified as achieving the best balance of minimizing impacts, providing for visitor use and education, and improving park operations. For these reasons, Alternative B causes the least damage to the biological and physical environment and best protects, preserves, and enhances historical, cultural, and natural resources, thereby making it the environmentally preferable alternative.

By contrast, Alternative A (No Action) would not increase renewable energy production and efficiency at the Lamar Buffalo Ranch. As more components of the existing photovoltaic system fail due to age and inefficiency, propane generator hours would increase to cover the gap. This increases noise, carbon emissions, and maintenance costs for the NPS and opportunities for educations of visitors are lost. This alternative would not contribute to goals established by Yellowstone National Park's Strategic Plan for Sustainability or help attain the ultimate long-term energy goal for the ranch is to eliminate the use of fossil fuel in daily operations. Alternative A is not the environmentally preferable alternative because, although there will be no construction or ground disturbing activities that will impact some elements of the biological and physical environment, the existing energy system at the Lamar Buffalo Ranch is old and losing efficiency; the existing buildings are poorly insulated, or not insulated at all, increasing energy demand for heating; and this alternative does not address impediments to operational inefficiencies due to the lack of formal office spaces to perform required work from resident NPS ranger staff.

### **Why the Selected Action Will Not Have a Significant Effect on the Human Environment**

As defined in 40 CFR §1508.27, significance is determined by examining the following criteria:

***Impacts that may be both beneficial and adverse. A significant effect may exist even if the Federal agency believes that on balance the effect will be beneficial.***

Implementation of the preferred (selected) alternative will result in some adverse impacts; however, the overall benefit of the project, particularly to park operations, outweighs these negative effects. The adverse effects are summarized as follows:

- Ground disturbance activities associated with construction of the micro hydro, photovoltaic array, weather station, expansion of the generator shed, bathhouse, and administrative building, staging, moving one of the sleeping cabins, and widening the road will disturb soil in the project area to a negligible degree.
- Minor impacts to vegetation will occur due to removal of ground cover from construction operations and will increase the potential suitable stratum for establishment of invasive plants.
- Impacts to wildlife will be negligible to moderate for the wildlife present within the immediate vicinity of the project area. An increase in human presence from construction crews will temporarily displace some species; although wildlife present within the immediate vicinity of the proposed activities are habituated to human activity. Impacts from construction are expected to be negligible. Moderate impacts to the bat colony may occur

following the work to improve the energy efficiency of the ranch buildings. To mitigate adverse impacts to native fish and aquatic species, monitoring of Rose Creek will be implemented to establish baseline data and thresholds for operation of the micro hydro turbine.

- Impacts to special status species will be negligible to minor due to lack of occurrence in the project area.
- Negligible to minor impacts on the historic district will occur from expansion of the PV array, installation of a weather station, expansion of an administrative building and from the building rehabilitations.
- The expanded PV array, an expansion in size of the generator building, installation of solar thermal panels to the south side of the bathhouse building, construction of a cabin to house the micro hydro turbine, and ground excavation will have negligible to minor impacts to the visual quality of the area.
- Views of construction, construction related noise and equipment and an increase in vehicle traffic will have adverse negligible to minor impacts to visitor experience. After construction, minor beneficial impacts will occur from the solar and micro hydro system showcasing and providing education information about renewable energy.
- Energy-saving conservation measures, installation of an automated weather station, and addition of an office space for park personnel will have beneficial moderate impacts to park operations.

***The degree to which the proposed action affects public health or safety***

The preferred alternative will have an overall beneficial effect on public health and safety, for the Lamar Buffalo Ranch area employees and the Yellowstone Institute students. Renovations that focus on energy conservation will ensure buildings have insulated walls, ceilings and floors, and air filtration is minimized. Skirting and sealing of the buildings will deter bats, ground squirrels, badgers, and other animals from entering the attic and crawl spaces. The addition to the administrative building will provide a joint work space for NPS staff and the Yellowstone Institute campus manager. Participants' health and safety at the ranch will also be enhanced due to a formalized pedestrian pathway to the back of the bunkhouse.

***Unique characteristics of the geographic area such as proximity to historic or cultural resources, park lands, prime farmlands, wetlands, wild and scenic rivers, or ecologically critical areas***

The preferred alternative will not impact unique characteristics of the area including park lands, prime farmlands, wild and scenic rivers, or ecologically critical areas because these resources do not exist in the project area.

Wetland vegetation along Rose Creek corridor is not expected to change. The micro hydro turbine will receive water from upper Rose Creek via an existing underground 6-inch pipe that is located directly north of the Buffalo Ranch development. This pipe currently provides water for domestic use at the ranch and will be connected to provide water to the micro hydro turbine system. No work is anticipated within Rose Creek itself for construction of the micro hydro system. The outlet from the turbine will be a 12-inch pipe (buried culvert). The installation of this pipe will require excavation of material approximately 150 feet in length and three feet deep. The outlet will include an 80-foot rip-rap treatment of eight-inch natural stone salvaged from excavation work, buried 16 inches deep. Topsoil and vegetation will be removed and rip-rap placed under the pipe to the

bottom of the bank extending out into the floodway (20 - 30 square feet). Impacts of implementation of the selected action on wetlands and wetland functions was evaluated in the EA and found to be negligible to minor. For these reasons, under exception 4.2.1 e., no wetlands statement of findings was prepared.

Expansion of the existing PV system, the expansion of the generator shed, bathhouse, and administrative building, the new micro hydro turbine and weather station, and relocation of the sleeping cabin are all located outside of the Lamar Buffalo Ranch and the Northeast Entrance Road District.

Renovations to the Lamar Buffalo Ranch Ranger Station, Lamar Buffalo Ranch Residence, and the Lamar Buffalo Ranch Bunkhouse will follow the Secretary of the Interior's Standards for Historic Building and Preservation and Rehabilitation and the Secretary of the Interior's Standards for Rehabilitation & Illustrated Guidelines on Sustainability for Rehabilitating Historic Building. All activities proposed under the preferred and selected action will have no effect on historic resources listed or eligible for listing on the National Register of Historic Places. The Wyoming State Historic Preservation Officer (WY SHPO) concurred with the park's no effect determination under Section 106 of the National Historic Preservation Act (NHPA) in a letter dated August 20, 2014.

***The degree to which the effects on the quality of the human environment are likely to be highly controversial***

Throughout the environmental process, the proposal to implement sustainable energy improvements at the Lamar Buffalo Ranch was not highly controversial, nor are the effects expected to generate future controversy. Most comments received from the public were in favor of the project.

***The degree to which the possible effects on the quality on the human environment are highly uncertain or involve unique or unknown risks***

The effects of constructing an expanded PV array, a micro-hydro generator, insulating buildings, and adding office space are fairly straightforward and do not pose uncertainties. The environmental process has not identified any effects that may involve highly unique or unknown risks.

***The degree to which the action may establish a precedent for future actions with significant effects or represents a decision in principle about a future consideration***

The preferred alternative is not expected to set a precedent for future actions with significant effects, nor does it represent a decision in principle about a future consideration. A PV array has been used at the Lamar Buffalo Ranch since 1996. Renewable energy is used in several places throughout the park including the Bechler Administrative Area (solar energy) and the Mammoth Administrative Area (micro hydro).

***Whether the action is related to other actions with individually insignificant but cumulatively significant impacts. Significance exists if it is reasonable to anticipate a cumulatively significant impact on the environment. Significance cannot be avoided by terming an action temporary or by breaking it down into small component parts.***

No significant cumulative impacts were identified in the EA analysis.

***The degree to which the action may adversely affect districts, sites, highways, structures, or objects listed in or eligible for listing in the National Register of Historic Places or may cause loss or destruction of significant scientific, cultural, or historical resources.***

Two historic districts are located in close proximity to the selected action. The Lamar Buffalo Ranch Historic District (48YE680) and the Northeast Entrance Road Historic District (48 YE 821). Five historic structures are present within the Lamar Buffalo Ranch Historic District: Lamar Buffalo Ranch Corral (HS-0999), Lamar buffalo ranch Ranger Station (HS-0106), Lamar Buffalo Ranch Bunkhouse (HS-0107), Lamar Buffalo Ranch Residence (HS-0108), and the Lamar Buffalo Ranch Horse Barn (HS-0109).

Rehabilitations to the Lamar Buffalo Ranch Ranger Station, Lamar Buffalo Ranch Bunkhouse, and the Lamar Buffalo Ranch Residence will involve re-insulating ceilings, walls, floors, and foundations and adding or replacing windows. While some minor adverse impacts would occur, the selected action will *not adversely affect* historic structures or the historic districts under Section 106.

In accordance with §106 of the National Historic Preservation Act, the NPS initiated consultation with the Wyoming State Historic Preservation Office (WY SHPO) in May 2014. In August 2014, the NPS provided the WY SHPO with a copy of the EA and sought a “no adverse effect” determination on the historic districts for the actions proposed under the preferred alternative. A letter dated August 20, 2014 from the WY SHPO concurred with the park’s determination that the proposed undertaking will have “no adverse effect” on historic properties.

***The degree to which the action may adversely affect an endangered or threatened species or its habitat that has been determined to be critical under the Endangered Species Act of 1973.***

In accordance with Section 7 of the Endangered Species Act of 1973, the NPS sent a letter (July 25, 2014) to the United States Fish and Wildlife Service (USFWS) to solicit their comments regarding potential occurrences of federally listed threatened and endangered species within the project area.

The USFWS on August 26, 2014 concurred with the NPS determination for federally listed threatened and endangered species. The preferred alternative “may affect, but [is] not likely to adversely affect” grizzly bears, and will have “no effect” on Canada lynx and designated critical habitat for lynx. Park resource specialists were consulted regarding state listed species and determined that there would be no significant impacts to any state listed species.

The Wyoming Fish and Game Department was notified of the project and given the opportunity to comment, no comments were received.

***Whether the action threatens a violation of Federal, State, or local law or requirements imposed for the protection of the environment***

The action will not violate any federal, state, or local laws or environmental protection laws.

### **Public Involvement and Native American Consultation**

The EA was made available for public review and comment during a 30-day period ending August 15, 2014. To notify the public of this review period, a postcard was mailed to stakeholders and interested parties, and a press release was distributed to approximately 200 media outlets, numerous local chambers of commerce, local visitor centers, public officials, social media, and posted on the park’s website. Copies of the document were sent to certain agencies during the scoping period; and posted on the NPS PEPC website at <http://parkplanning.nps.gov/LamarEA>. A total of 17 individuals submitted correspondence that included 33 substantive comments. The vast majority of these comments were in favor of Alternative B (the selected action). Substantive comments centered on five topics: suggestions for educating visitors about various conservation

measures, suggested actions to further reduce energy demand, suggestions regarding actions that might improve the alternative, avoiding impacting amphibians, and opinions that the NPS should not expand facilities or the footprint of the ranch. These comments are addressed in the "Response to Comments" attached to this FONSI. The FONSI, Errata Sheets, and Response to Comments will be posted and available to all commentors.

### **Native American Consultation**

Consultation letters were mailed to 73 tribal members of Yellowstone's 26 associated tribes in April 2014, to solicit concerns and comments for the proposed project. The same tribal members were sent a second letter in July 2014 notifying them of completion of the EA and soliciting any comments on the project. The park did not receive any comments from Native American tribes.

### **Conclusion**

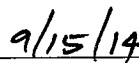
As described above, the preferred alternative does not constitute an action meeting the criteria that normally require preparation of an environmental impact statement (EIS). The preferred alternative will not have a significant effect on the human environment. Environmental impacts that could occur are limited in context and intensity, with generally adverse impacts that range from localized to widespread, short- to long-term, and negligible to moderate. There are no unmitigated adverse effects on public health, public safety, threatened or endangered species, sites or districts listed in or eligible for listing in the National Register of Historic Places, or other unique characteristics of the region. No highly uncertain or controversial impacts, unique or unknown risks, significant cumulative effects, or elements of precedence were identified. Implementation of the action will not violate any federal, state, or local environmental protection law.

Based on the foregoing, NPS has determined that an EIS is not required for this project and thus will not be prepared.

Approved:



Sue Masica  
Regional Director, Intermountain Region, National Park Service



Date

# Errata Sheets

## Lamar Buffalo Ranch Sustainable Energy Plan

### Yellowstone National Park

According to NPS policy, substantive comments are those that 1) question the accuracy of the information in the EA, 2) question the adequacy of the environmental analysis, 3) present reasonable alternatives that were not presented in the EA, or 4) cause changes or revisions in the proposal.

Some substantive comments may result in changes to the text of the EA, in which case, they are addressed in the *Text Changes* section of the Errata Sheets. Other substantive comments may require a more thorough explanatory response and are addressed in the *Response to Comments* section. NPS responds to all substantive comments in either or both of these sections.

Of the 49 comments that were received during public review of the EA, 33 of them are considered substantive. Substantive comments for this EA centered on 5 topics: suggestions for educating visitors about various conservation measures, suggested actions to further reduce energy demand, suggestions regarding actions that might improve the alternative, avoid impacting amphibians, and concerns were voiced that the NPS not expand facilities or the footprint of the ranch. These concerns resulted in minor changes to the text of the EA and are also explained more thoroughly in the *Response to Comments* section.

#### Text Changes

**Page 3, in paragraph 1, line 1, Introduction 1.1:** YNP encompasses 2.2 million...., Change YNP to Yellowstone National Park (YNP).

**Page 6, Section 1.3 Purpose;** Change "The purpose and need of the proposed action..." to "The purpose of the proposed action..."

**Page 6, Section 1.3 Purpose, paragraph 1:** Change "...with a long-term goal of zero fossil fuels for daily operations." to "...with a long-term goal of using zero fossil fuels for daily operations."

**Summary page, paragraph 2, line 17:** decapitalize the word 'Grants'.

**Page 4, paragraph 2, line 8:** Change sentence starting "The roof extends additional 5-feet..." to "The roof extends an additional 5-feet..."

**Page 7, paragraph 2, line 3;** Change "The existing array is not as efficient at today's technology..." to "The existing array is not as efficient as today's technology..."

**Page 10, Ethnographic Resources, line 10:** Change "Because ethnographic resources...." to "Because effects to ethnographic resources...."

**Page 12, Chapter 2 Alternatives, line 2:** Close space between water/ waste reduction.

**Page 13, paragraph 2, line 4:** Change "...and installing a new 5 kW micro hydro system." to "...and installing a new 5kW micro hydro system and log structure to house it."

**Page 13, Figure 3:** Change word on figure from "staggering" to "staging".

**Page 14, Figure 4:** Change word on figure from "staggering" to "staging".

**Page 16, Battery Bank, line 8:** Change "...be placed within the currently log generator shed that currently houses..." to "...be placed within the existing log generator she that currently house..."

**Page 17, Micro Hydro Turbine and Building, paragraph 1, line 10:** Add "alternating current" prior to AC.

**Page 17, Micro Hydro Turbine and Building, paragraph 1, line 11:** Add "direct current" prior to DC.

**Page 17, Micro Hydro Turbine and Building, paragraph 1, line 2:** Replace "throughout the year." with "throughout 2013."

**Page 19, Add New Heading and Description:** Add heading "Parking" and add text description "Two to three new parking spaces would be constructed in front of or near the relocated bookstore. These parking spaces would be used by staff and visitors. No new use is anticipated due to these parking spaces. Parking already occurs in this area, these spaces would help to formalize and organize that use."

**Page 23, Alternatives Considered but Dismissed:** Insert into this section: "Adding rooftop solar panels were considered, but the square footage of south facing rooftop space on existing buildings was not nearly enough. Visual quality throughout the valley and from the historic districts of the Lamar Buffalo Ranch and Northeast Entrance Road were also important concerns due to potential glare, and non-historic elements added to the views from the historic districts. Maintenance costs would increase from multiple "mini-arrays" rather than from one larger array that requires less trenching and associated equipment. Adding roof-top solar collectors to the historic buildings would not follow the Secretary of the Interior's Standards for Rehabilitation and Illustrated Guidelines on Sustainability for Rehabilitating Historic Buildings. Therefore alternative was dismissed."

Other potential elements the project considered were to install an electric vehicle (EV) charging station for a plug-in hybrid and/or all-electric vehicle. This was rejected because, in the past, the park has attempted to use a small electric vehicle at Lamar for limited administrative use. However, the vehicle was moved to Mammoth because the charging needs of the vehicle were too taxing to the existing small electrical grid. While the new electrical grid will be more robust than the current system, energy produced there will still be fairly limited and has been planned to meet the existing needs of the facilities as described in the environmental assessment. Also the small size of the ranch does not necessitate such a vehicle at this location. The past electric vehicle did not get much use and was re-located to an area with more of a need. The park's priority is to convert propane loads for heating and hot water to electric prior to considering an electric vehicle again.

Numerous smaller PV arrays located throughout the ranch were considered but rejected. The reason for rejecting smaller arrays operating either individually, or tied together into one system would not be as efficient or as easy to maintain as one larger system. For one, more equipment would be needed. Each system would need its own charge controller, inverters, batteries, and backup generators. If all were tied into a single system, there would be much more trenching to connect all the subsystems into a larger all-encompassing system. The smaller systems would be more visible as they would be spread among the buildings and visible from the Lamar Buffalo Ranch Historic district and the Northeast Entrance Road Historic District. The existing PV array and the site of the expanded array proposed in Alternative B would be almost totally hidden by existing topography.



Use of PV panels as a canopy cover in one or more of the parking areas was considered, but rejected as covered parking was not a goal or objective of this plan. While not specifically stated in the objectives in Chapter one, it is the intent of this plan to minimize any new development or structures at the ranch. As the parking structures would add a means of supporting the PV panels, it would also increase the number of structures visible from the historic districts, and would have the same constraints discussed in the previous paragraph re: numerous smaller arrays. For these reasons PV panels atop parking shade structures was rejected.

**Page 25:** Insert after Table 2-2: "The Affected Environment and Environmental Consequences chapter provides a more detailed explanation of the impacts in Table 2-2."

**Page 31, 3.1.1, Cumulative Effects, line 2:** Add "Environmental class use" in the sentence "would continue at the ranch...."

**Page 34: Typo:** Change "3.4" Water Quality header to "3.3"

**Page 44, Typo:** Bold heading should read "Yellowstone Cutthroat Trout".

**Page 45, 3.5.2 Impacts of ALT B:** Prior to 'Grizzly Bear' heading add "Yellowstone Cutthroat Trout: Yellowstone Cutthroat Trout is a Yellowstone species of concern. A description of its presence and impacts from the proposed project are described in the Wildlife section of this EA. Note: discussions of fish include Cutthroat Trout."

**Page 51, 3.6.1:** Delete first sentence, this is redundant with the last sentence of this section.

**Page 53 3.6.2:** Capitalize 'h' in 'Proposed Micro hydro Powerhouse' header

**Numbering of the sections** of this document have inadvertently left out section 3.7: section jumps from 3.6 Historic Structures to 3.8 Visual Quality. There is no missing text due to this error.

**Page 65, Internal Scoping, line 1:** The 'e' in environmental Assessment should be capitalized.

**Page 65, External Scoping, 2nd bullet:** change "parks" to "park", insert: "the news release was sent to approximately 200 media outlets and various stakeholders of the park."

**Page 66, 4.2 Consultation, Agency Consultation, second paragraph, line 3:** Change "... will provide the Wyoming State Historic Preservation Officers..." to "...will provide the Wyoming State Historic Preservation Office...."

# Appendix A – Response to Comments

## Lamar Buffalo Ranch Sustainable Energy Plan Yellowstone National Park

**Comment 1:** I would not like to see a great increase in Park Service vehicles do [sic] to the administrative office you will be adding to the Ranch.

**Response 1:** *Approximately ten years ago, park and Yellowstone Association managers agreed that the activities and facilities at the ranch would not expand in future years, with the exception of an office being added. This has been a need at the ranch for a long time. The intent of this office is not to offer any increase in visitor services, but rather to provide space for functions that staff at the ranch are already fulfilling. The NPS rangers living at the ranch currently conduct office work from their personal residences, and Yellowstone Association guests currently have no initial contact point when checking into classes and cabins. This office is intended to alleviate confusion and better facilitate the ranch's current functions, and will not be used to increase any administrative or other work done at the ranch. Additionally, an increase in vehicles to the ranch is not expected to occur from the addition of 2-3 parking spaces in front of the existing administrative building. Vehicles already use this general location as a short-term parking area and these spaces would formalize parking which already occurs in the area.*

**Comment 2:** No mention is made of roof-top solar collectors. While these may be unfeasible because of aspect, historical preservation requirements, or technical constraints, it is distressing to see that the amount of space needed for solar collectors increases dramatically. Roof top solar might reduce the need for more collector space on the ground.

**Response 2:** *The EA states that visual quality throughout the valley and from the historic districts of the Lamar Buffalo Ranch and Northeast Entrance Road are important and should be maintained. Therefore we have opted to screen solar panels to the greatest extent possible. Concerns include the modern look of the PV panels, the potential for reflection and glare, and the fact that part of the ranch is considered an historic district with a period of significance that precedes the introduction of the panels. Additionally, roof-top solar collectors are not feasible for this project as the square footage of solar array needed for the ranch greatly exceeds square footage of the south facing roof pitches of the existing cabins. Only the south facing roof slopes would provide the solar aspect needed for the solar panels. Additionally many of the cabins and buildings in the Lamar Buffalo Ranch development are historic and situated on the ranch in a way where solar panels would be visible and have an impact on the character-defining features of these buildings. Adding roof-top solar collectors to the historic buildings would not follow the Secretary of the Interior's Standards for Rehabilitation and Illustrated Guidelines on Sustainability for Rehabilitating Historic Buildings.*

**Comment 3:** The EA makes no mention of the impacts of hydro-power development on the four species of amphibians known to inhabit Yellowstone. It is rumored that a fifth species, the Spadefoot toad, was found recently in the Fairy Creek vicinity. While that is far from the Lamar, someone might want to look into the matter of impacts on amphibians

**Response 3:** *The third to last paragraph on page 39 of the EA states "If operated at full power continuously, the micro hydro system would have the potential to cause moderate, long-term, adverse impacts to fish, amphibian, and aquatic species that inhabit Rose Creek." To ensure*

*aquatic wildlife impacts will be no greater than minor, an operations plan for the micro hydro system will be developed to ensure the protection of native aquatic species and may include seasonal operation restrictions and limiting the amount of water diverted for use of the micro hydro system. Further monitoring of the instream flows and responses of native aquatic species to the potential change in flows will be conducted. Should monitoring indicate an increase in adverse impacts to these species, operation of the micro hydro will be stopped until mitigations can be implemented to reduce those impacts.*

**Comment 4:** I oppose the plans to enlarge the Lamar Buffalo Ranch. Oppose the idea of enlarging existing structures in such a fragile area as the Lamar Valley. The energy efficiency needs to be done without enlarging the Ranch and without providing for future enlargement of the Ranch

**Response 4:** *This plan does not propose to enlarge the Lamar Buffalo Ranch area. All of the actions proposed within the plan will occur within the existing developed footprint of the ranch. The only existing structure that is proposed to expand is an administrative building that is located outside of the historic district. Expansion of this building will provide office space for NPS personnel and the Yellowstone Institute campus manager, who currently perform these functions from within their residences (also located at the ranch). The number of cabins for participants at the ranch will not increase.*

**Comment 5:** Educational program participants may be told there is a PV system and encouraged to conserve, but the system (wherever it is located) should be accessible so folks can easily walk to see it, touch it, and read signage explaining how it works and what it does. Page 3 states that this project is intended to create a model for off-grid environmental stewardship and education in Yellowstone National Park. It will not be much of a model if people cannot see and experience what makes LBR more sustainable.

**Response 5:** *Education materials will be included in the scope of the project. The intent is to describe the system through graphics and or video that can be viewed on dashboards as represented in the project description and/or static exhibits. Guests will be able to go into the buildings to view the machinery and view the energy used/being generated on computer dashboards. We also hope to film aspects of the project for educational purposes in explaining how the systems work.*

**Comment 6:** Provide website links and/or a handout with fact-based, neutral resources from entities such as the EPA and DOE. And, let them know the sustainable elements seen and used at LBR are widely available today.

**Response 6:** *Our long-term goal is to have the information described above shared on the YNP website for everyone to see. We will also develop other related resources for energy conservation and renewable energy generation as staff time and funding allows.*

**Comment 7:** Consider a solar hot water system for the managers cabin. Pair it with an on-demand water heater to serve the bathroom and kitchen.

**Response 7:** *This is mentioned on page 18 of the EA and is something we intend to further research regarding the best applications, but particularly to augment hot water used in the bath house.*

**Comment 8:** Solar Water Heating Evacuated Tubes? The EA did not specifically say, but the picture on Page 59, Figure 20 looks like evacuated tubes. I suggest this set-up is not appropriate for several reasons: a near-the-ground mount with a solid backing will get covered with winters deep snow, bison and other large animals could step on and break the tubes, and hail and/or a passing vehicles tires could throw a rock and break a tube. Evacuated tubes are so efficient at holding heat (internally) that the exterior does not always get warm enough to melt snow that gets in between. Snow build-up would impede their efficiency (the tubes need to be exposed to direct sunlight/rays).

**Response 8:** *As yet, we have not determined the exact technology to be used for the solar thermal aspects of this project. The existing bath house has a high demand for hot water will be the first priority for installation of a solar thermal system. Each system has its own pros and cons and different maintenance concerns related to winterizing/freezing/snow/ice. Any solar system we install will not be at ground level or within reach of the wildlife – the graphic is conceptual and intended to show a shed roof on the south end of the bathhouse building to support the system.*

**Comment 9:** Additional Office/Administrative Building: where it makes sense to place this makes it challenging for taking advantage of the sun's skypath. Consider this: extend the bookstore (and thus its southeast-facing roof) toward the northeast. Then build the rest of the extension toward the northwest. Think of it as an L-shaped building where most of the roof faces southeast. Since the building cannot get much low-in-the sky winter sun on its walls due to shading from the managers cabin, you can use roof space for solar air collectors to get south/southeast sun (for morning heat) and a little southwest sun for (afternoon) space heating. The northwest-facing roof could be fitted with skylights or Kalwalls translucent material for natural daylighting in order to reduce the lighting load

**Response 9:** *Good ideas – we will certainly look at passive solar and natural light opportunities when designing this addition. It can be adjusted on the site to take advantage of the sun's energy. Though it will be a small space any passive solar gain would be beneficial and minimize energy demands.*

**Comment 10:** Possible Pilot Project? When you relocate the sleeping cabin, re-orient it to where the solid wall and roof face south so that it can be fitted with a solar air collector for free space heat from the sun.

**Response 10:** *We can consider this along with how the cabin sits in the landscape and ties into the overall circulation. The power house cabin roof will also face south. We do have to be careful with maintaining the overall rustic appearance of the structures and the visual quality of the development in the Lamar Valley but would like to explore other renewable energy opportunities within the scope of this project.*

**Comment 11:** Heating is typically the largest or 2nd largest energy use (after lighting) in most buildings in our cold climate. I suggest you consider using the sun to heat air/space for as many buildings as possible. Proper orientation during design is the best strategy for taking advantage of the sun's skypath, but with existing buildings we can still use the sun

**Response 11:** *As you mention, other than the small office addition, there will not be any new structures so this opportunity is very limited. We will not be changing the size of historic window openings on any of the historic structures in order to maintain the overall appearance. We will continue to track advancing technologies and consider applications that would not affect visual quality or historic integrity.*

**Comment 12:** Near the bookstore, install an electric vehicle (EV) charging station for a plug-in hybrid and/or all-electric vehicle that can be powered by the small tracking array.

**Response 12:** *In the past, the park has attempted to run a small electric vehicle at Lamar for limited administrative use. However, the vehicle was moved to Mammoth because the charging needs of the vehicle were too taxing to the small electrical grid. While the new electrical grid will be more robust than the current system, energy produced there will still be fairly limited and has been planned to meet the needs of the facilities as described in the environmental assessment. Also the small size of the ranch does not necessitate such a vehicle at this location. The past electric vehicle did not get much use and was re-located to an area with more of a need. The park's priority is to convert propane loads for heating and hot water to electric prior to considering an electric vehicle again.*

**Comment 13:** Consider a tracking system for a smaller array near the expanded bookstore (where Page 15s Figure 5 says to add 2-3 parking spaces).

**Response 13:** *The PV array will be more efficient and easier to maintain if it is not broken into smaller micro-arrays that are spread out on the site. While tracking technology can reduce the size of the array, it comes with additional cost and maintenance. The PV array is also sited remotely from the historic district to reduce impacts on the district.*

**Comment 14:** Use PV panels as a canopy cover in one or more of the parking areas. It would create shade for vehicles and the vans and folks loading up for the summer programs.

**Response 14:** *For the reasons stated in 'response 13' we need to be careful to maintain the rustic and historic appearance of the Lamar Buffalo Ranch and will not be including any solar PV systems that affects visual quality in this district. As Lamar Valley is important for natural beauty and wildlife watching, any panels that are in the line of sight could create disturbing glare and visual intrusion to the visitor experience. Any new structure would have to be constructed in keeping with the historic buildings. Though this is possible we don't think it would be an appropriate addition to the remote ranch at this time. There are other places in Yellowstone with less visual quality issues that we could consider this application.*

**Comment 15:** Install EPA WaterSense-labeled toilets, showerheads, faucets, kitchen spray nozzles, etc. - With no landscape watering (I assume), toilets probably use the most water at LBR. See if its possible to collect rain water on the bathhouse roof to use in toilets during the warmer months. - Consider installing one composting toilet as a pilot project as it relates to water conservation as well as sewage-related costs.

**Response 15:** *Some of the facilities already have these and we will certainly ensure they are included in all building renovations. The Lamar area doesn't get much rain. We have assessed rain water collection and it is marginal as to whether the infrastructure is worth the benefits. While composting toilets have their place they take a structure and maintenance and we are trying to minimize both at Lamar.*

**Comment 16:** Produce signage where water is used to remind visitors of the importance of conservation and provide tips: wash full loads of clothes and dishes; after wetting your tooth brush, turn-off the water while you brush, etc.

**Response 16:** *This is a good suggestion as education is critical to reducing energy use, water use, waste production, etc., and can mean that guests take environmentally friendly behavior to their own homes. There are actually several conservation messages posted in the ranch at present and more will be added with this project. As part of this project, we will evaluate what messages are already in place and consider additional messages that would be appropriate. Guests do not have access to a clothes washer (the washer is used only for residents of the ranch) and there is no dishwasher at Lamar.*

**Comment 17:** Reduce stand-by power which is also referred to as phantom energy loads. It seems like a small amount of energy, but it adds-up quickly. Encourage folks to conserve by unplugging chargers when not in use (because they still draw electricity). Use Auto-Off Surge Protectors in offices and the Bunkhouse/Community Center where you might have connected computer and media equipment.

**Response 17:** *Guests have limited ability to charge appliances. There are no outlets in sleeping cabins to charge cell phones, etc., the only places where guests have access to electrical outlets are in the bathhouse and bunkhouse. In the bathhouse, there are reminders by the outlets to refrain from using hairdryers as they have a high energy demand. As part of this project, we will evaluate what messages are already in place and consider additional messages that would be appropriate. All computer equipment at the ranch is on surge protection. All new electrical appliances will be assessed for best practices in energy conservation.*

**Comment 18:** Energy and/or Heat-Recovery Ventilation Systems transfer exhausted air's heat energy (in winter) to incoming fresh air. I would consider this technology for all buildings especially since you are reducing air leaks.

**Response 18:** *This technology is a possible application for building improvements if it can be implemented without affecting historic integrity. We will assess a wide range of energy conservation measures.*

**Comment 19:** Consider re-tractable clotheslines for the sleeping cabins.

**Response 19:** *Guests do not have the access to a washing machine while at the ranch.*

**Comment 20:** consider light sensors that can work in conjunction with the motion sensors.

**Response 20:** *All outdoor lighting is already on light sensors. We will install these where appropriate.*

**Comment 21:** Use Light Emitting Diodes (LEDs) wherever feasible.

**Response 21:** *Many of the lights at Lamar have already been switched over to LEDs. All of the sleeping cabin lights have been changed to LEDs. During Phase II, many of the other buildings will be getting energy retrofits, and any lights that have not already been switched to LEDs will be at that point.*

**Comment 22:** How do the buildings get fresh air? Energy or Heat Recovery Ventilation might be one solution. You might also consider mini-splits for electric heat to replace propane heaters.

**Response 22:** *We state in the EA that we will be assessing and implementing best practices for energy conservation including converting as much of the propane loads to electric loads as possible. Mini splits are one system we are considering.*

**Comment 23:** Any time you replace equipment, appliances, windows, and fixtures, purchase those with the Energy Star and WaterSense labels.

**Response 23:** *These types of appliances will be used on this project, and is a practice that is required of the federal government.*

**Comment 24:** Make sure to further encourage participation in your recycling program by explaining that in addition to raw materials being conserved, energy and water are also conserved.

**Response 24:** *This is an ongoing goal for Yellowstone's sustainability program.*

**Comment 25:** For both energy and water efficiency measures, make them highly visible and explain via signage.

**Response 25:** *As stated above energy and water conservation measures and methods are and will be shared as part of the education messaging and included in overall efforts to make Lamar a center for sustainability.*

**Comment 26:** Communicate the important role visitors play in conserving energy and water.

**Response 26:** *The Yellowstone National Park Website, has a section labeled "What you can do" found near the bottom of the page at the following web link:  
<http://www.nps.gov/yell/parkmgmt/sustainability-contents.htm> as well as the park's "Strategic Plan for Sustainability", we will continue to broaden these concepts.*

**Comment 27:** With your stated long-term goal of zero fossil fuel use for daily operations, I encourage you to publicly state this as an official goal for what's called Net Zero Energy (NZE) and be recognized by the New Buildings Institute (NBI). This would entail energy and water conservation and efficiency measures that allow 100% other needed energy to be provided by the renewable energy systems over the course of a year.

**Response 27:** *Thank you for the suggestion. The federal government has its own goals for Net Zero Energy projects. Yellowstone will concentrate on meeting Executive Order goals and those set forth in the NPS Green Park's Plan and Yellowstone's Strategic Plan for Sustainability.*

**Comment 28:** My suggestions entail making LBRs sustainability measures more visible to where someone just stopping to ask if this is the valley where the wolves are commonly seen will leave with an increased awareness just as much as those taking classes. There is the potential for the ripple effect to take place and both visitor types to learn how they can follow in LBRs footsteps and incorporate sustainable measures at home, work, or in their communities.

**Response 28:** *The visual resources of the park need to be protected as much as possible. The PV panels have a surface that can be reflective when viewed from some areas depending on where the sun is in the sky. The panels will be placed in a topographic swale that hides the panels from almost all views yet allows sunshine to strike their surface. The park does not intend to place them*

*in an area that would be more visible.*

**Comment 29:** I am concerned that your proposed purpose to improve environmental stewardship somewhat conflicts with the purpose to also educate. I see the conflict with efforts to hide, screen, and conceal the PV system. It may be that many of my suggestions will not be considered due to the historic preservation guidelines you need to consider.

**Response 29:** *We are aware of this concern. Our intent is to ensure that the PV panels will not be visible from the park road in order to protect this pristine setting and wildlife viewing opportunities.*

**Comment 30:** Excellent idea! Place one interactive monitor near the bookstore where the general public is welcome. Make it user-friendly and interactive with colorful graphics. Let them discover how much energy the bookstore used that day and how much electricity the array produced yesterday.

**Response 30:** *The bookstore is one location stated in the EA. We will track the energy production and use with automated sensors and will display on dashboards with graphics unique to Yellowstone as funding and time allows. Our focus for displays will be the bunkhouse as this is the main facility for the education programs. Lamar does not provide general visitor services.*

**Comment 31:** Visitor Education Program: I always consider conservation first, and while it is not as sexy as efficiency and renewable energy technology, it becomes the most important issue once you have achieved an ultra-low EUI or net zero energy goal.

**Response 31:** *Energy conservation measures are generally considered and implemented before renewable energy measures in the park. At Lamar, the decision to replace parts of the renewable energy system before the major building retrofits is a utilitarian due to the failure of the current electrical infrastructure there.*

**Comment 32:** Typical water heaters keep water heated at all times, which wastes energy. On-demand water heaters only use energy to heat the water once a tap is turned on or an appliance starts. They can be used anywhere heated water is needed. It can also be part of a solar hot water system.

**Response 32:** *The Buffalo Keepers House already has on demand hot water. We will look at the potential for other opportunities as building renovations and improvements are carried out.*

**Comment 33:** As per the issues with the PV system batteries, make sure the log generator shed provides the appropriate temperature for optimal battery performance. They can't get too cold and operate efficiently.

**Response 33:** *This has been considered in the design of the generator shed. There is a back-up propane heater with thermostat as well as louvers and correct exhausting.*



## Appendix B – Non-Impairment Finding

National Park Service's *Management Policies, 2006* require analysis of potential effects to determine whether or not actions will impair park resources. The fundamental purpose of the national park system, established by the Organic Act and reaffirmed by the General Authorities Act, as amended, begins with a mandate to conserve park resources and values. National Park Service managers must always seek ways to avoid, or to minimize to the greatest degree practicable, adversely impacting park resources and values.

However, the laws do give the National Park Service the management discretion to allow impacts to park resources and values when necessary and appropriate to fulfill the purposes of a park, as long as the impact does not constitute impairment of the affected resources and values. Although Congress has given the National Park Service the management discretion to allow certain impacts within park, that discretion is limited by the statutory requirement that the National Park Service must leave park resources and values unimpaired, unless a particular law directly and specifically provides otherwise. The prohibited impairment is an impact that, in the professional judgment of the responsible National Park Service manager, would harm the integrity of park resources or values, including the opportunities that otherwise would be present for the enjoyment of those resources or values. An impact to any park resource or value may, but does not necessarily, constitute an impairment. An impact would be more likely to constitute an impairment to the extent that it affects a resource or value whose conservation is:

- necessary to fulfill specific purposes identified in the establishing legislation or proclamation of the park;
- key to the natural or cultural integrity of the park; or
- identified as a goal in the park's general management plan or other relevant NPS planning documents.

An impact would be less likely to constitute an impairment if it is an unavoidable result of an action necessary to pursue or restore the integrity of park resources or values and it cannot be further mitigated.

The park resources and values that are subject to the no-impairment standard include:

- the park's scenery, natural and historic objects, and wildlife, and the processes and conditions that sustain them, including, to the extent present in the park: the ecological, biological, and physical processes that created the park and continue to act upon it; scenic features; natural visibility, both in daytime and at night; natural landscapes; natural soundscapes and smells; water and air resources; soils; geological resources; paleontological resources; archeological resources; cultural landscapes; ethnographic resources; historic and prehistoric sites, structures, and objects; museum collections; and native plants and animals;
- appropriate opportunities to experience enjoyment of the above resources, to the extent that can be done without impairing them;
- the park's role in contributing to the national dignity, the high public value and integrity, and the superlative environmental quality of the national park system, and the benefit and inspiration provided to the American people by the national park system; and
- any additional attributes encompassed by the specific values and purposes for which the park was established.

Impairment may result from National Park Service activities in managing the park, visitor activities, or activities undertaken by concessioners, contractors, and others operating in the park. The NPS's threshold for considering whether there could be an impairment is based on whether an action will have significant effects.

Impairment findings are not necessary for visitor use and experience, socioeconomics, public health and safety, environmental justice, land use, and park operations, because impairment findings relates back to park resources and values, and these impact areas are not generally considered park resources or values according to the Organic Act, and cannot be impaired in the same way that an action can impair park resources and values.

After dismissing the preceding topics, topics remaining to be evaluated for impairment include geology and soils, vegetation and rare plants, wildlife, special status wildlife species and Yellowstone species of management concern, soundscape management and historic structures. These topics are detailed as follows:

- **Soils** – The Lamar Buffalo Ranch sits at the base of an alluvial fan. To the northeast of the ranch the surface geology is made up of landslide deposits. The footprint of all aspects of the preferred alternative will be located within previously disturbed areas. Impacts from the preferred alternative will result in approximately 11,300 square feet (0.26 acres) of direct temporary impacts and approximately 2,400 square feet (0.06 acre) of permanent impacts from building additions, parking spaces, trenching, and moving one sleeping cabin. To minimize impacts to soils mitigation measures such as topsoil salvage and replacement will be used to reduce impacts on soils and allow for revegetation. Monitoring for noxious weeds will be done and treatments will be implemented if needed. Overall, impacts to soils will be negligible, short-and long-term and adverse and there will be no impairment to soil resources.
- **Vegetation and Wetlands** – As stated above, the footprint of all aspects of the selected action will be located within previously disturbed areas. Impacts will occur from trenching and use of heavy equipment will result in 650 feet of trenching under existing road and pathways which is devoid of vegetation. Between Rose Creek and the cabins, 350 feet will be trenched. Although this will occur in previously impacted areas the additional disturbance creates conditions conducive to establishment and spread of non-native vegetation. Mitigation measures as described above will be implemented.
- The selected action will install a micro hydro turbine to divert water at a spring which flows into Rose Creek. The micro hydro turbine will receive water from upper Rose Creek via an existing underground 6-inch pipe that is located directly north of the Buffalo Ranch development. This pipe currently provides water for domestic use at the ranch and will be connected to provide water to the micro hydro turbine system. No work is anticipated within Rose Creek itself for construction of the micro hydro system. The outlet from the turbine will be a 12-inch pipe (buried culvert). The installation of this pipe will require excavation of material approximately 150 feet in length and three feet deep. The outlet will include an 80-foot rip-rap treatment of eight-inch natural stone salvaged from excavation work, buried 16 inches deep. Topsoil and vegetation will be removed and rip-rap placed under the pipe to the bottom of the bank extending out into the floodway (20 - 30 square feet). Water from the outlet will then flow across the floodway to meet the middle fork of Rose Creek, which currently terminates upland of the Lamar River. Maximum flow through the turbine will be 320 gallons per minute (gpm), depending on resource conditions. Wetland vegetation along the corridor of Rose Creek is not expected to change. Overall,

impacts on vegetation and wetlands will be adverse, short-and long-term, and negligible to minor. There will be no impairment to vegetation and wetlands.

- **Water Quality** –The micro hydro system is the only component likely to affect water quality. Use of the micro hydro system at full power will divert 320 gpm of water from a spring that feeds Rose Creek to an existing enclosed underground pipe for a distance of approximately 2900'. In order to determine the operating parameters and an acceptable amount of water flow to be diverted for power generation at various seasons and stream flows, the NPS will establish an operations plan and monitoring for this location to better understand the impacts of the operation of the micro hydro turbine on water quality factors. Data collected on water quality parameters will include water temperature and flow rate. Information will be used to establish baseline information for water quality characteristics within this watershed. Therefore, impacts to water quality will be no greater than minor, adverse, short-and long-term and there will be no impairment.
- **Wildlife** – An increase in human presence from construction crews while the proposed sustainability improvements are underway will temporarily displace some species. Adverse effects on these animals as a result of the activities the preferred alternative are generally expected to be negligible because of the human presence that already occurs there. The species that use this area will be temporarily displaced by construction activity and equipment, but will be expected to return following completion of the project.

The attic rafters in the bunkhouse serve as maternity roost for little brown bats during late spring to late summer. Insulation to the bunkhouse attic floor is not expected to affect bats, but modifications to the rafters that support the ceiling in the bunkhouse could. However, this project will not include modifications to the rafters but will include closing access to the rehabilitated buildings. To ensure impacts to the existing colony are mitigated, renovations on the buildings will occur when bats are typically not found in buildings (November to April). In the event that bats are able to access the rehabilitated buildings, mitigation measures will be in place to allow for appropriate maintenance practices (use of drop cloths and making sure the rafters are accessible for humans to clean up droppings) and safe clean-up procedures.

Rose Creek is an important Yellowstone cutthroat trout spawning tributary in the lower Lamar River drainage. Complete spawning surveys have not been conducted in the valley. If operated at full power continuously, the micro hydro system will have potential to cause moderate, long-term, adverse impacts to fish, amphibian, and aquatic species that inhabit Rose Creek. In order to mitigate adverse impacts, an operations plan for the micro hydro system will be developed in coordination with resource managers to ensure the protection of sensitive native fish and other aquatic species within Rose Creek. The plan may include seasonal operation restrictions and/or limits to the amount of water diverted for use by the system. Monitoring of in stream flows and native fish responses to changes in water flows will also be initiated prior to construction and during operational periods of the system. If data suggests a threshold or trigger point is reached, the amount of water used may be adjusted or the micro hydro system shut down during critical periods. To establish baseline data and establish thresholds, monitoring of fish habitat will be conducted by NPS personnel during winter months, stream flow data will be collected every two weeks or as conditions warrant, spawning success evaluated in spring and early summer. Because the preferred alternative is expected to have short-and long-term, negligible to moderate, adverse impacts to park wildlife and mitigation measures will be followed, there will be no impairment to wildlife.

- **Special Status Species**– Yellowstone National Park is home to the federally listed Threatened and Endangered grizzly bear, Canada lynx, and Canada lynx critical habitat. The U.S. Fish and Wildlife Service concurred with the NPS determination for listed species on August 26, 2014. The preferred alternative “may effect, but [is] not likely to adversely affect” grizzly bear, and will have “no effect” to Canada lynx and designated critical habitat for lynx. Special status wildlife species are not expected to occur within the project area due to the existing level of habitat disturbance and human use. Due to this lack of occurrence, the preferred alternative will have negligible to minor, adverse, short-term effects on special status species. With the implementation of mitigation measures listed in this EA, no impairment of special status species will occur. The Wyoming Game and Fish Department was notified of the document availability and did not comment on the project with regard to Wyoming’s Species of Greatest Conservation Need.
- **Historic Structures** – The preferred alternative to replace the existing photovoltaic system, install a micro hydro system, add a solar thermal heating system in the existing bathhouse, expand an administrative building, relocate and update the weather station, and move one existing sleeping cabin will be outside the Lamar Buffalo Ranch and the Northeast Entrance Road Historic District. The selected action will *not adversely affect* historic structures or the historic districts. Rehabilitations to

the Lamar Buffalo Ranch Ranger Station, Lamar Buffalo Ranch Bunkhouse, and the Lamar Buffalo Ranch Residence will involve re-insulating ceilings, walls, floors, and foundations and adding or replacing windows and will be the same as the rehabilitations that received consultation and concurrence in 2009/2011 that *no historic properties would be adversely affected* from the WYSHPO in both (SHPO file #120BHB007) and in 2011 (SHPO file #1011BAB001). The preferred alternative will have negligible to minor adverse impacts\* on the structures, but with consultation with Wyoming SHPO this will not affect the Lamar Buffalo Ranch historic district. For these reasons, historic districts and contributing structures will not be impaired.

*\*Note that NEPA’s definition of “adverse impact” does not necessarily correlate to adverse effect per the National Historic Preservation Act. Adverse impacts may exist under NEPA without rising to the level of adverse effect per NHPA.*

- **Visual Quality** – Implementation of the preferred alternative will have a negligible to minor, long-term, adverse impact to visual quality. The expanded PV array will have minor long-term impacts. All other impacts associated with the preferred alternative will be negligible. Figures depicting the proposed changes may be seen in the visual simulations in Figures 8-20 of the EA. Because the proposed action will have no greater than minor impacts, there will be no impairment to visual quality.

In conclusion, as guided by this analysis, good science and scholarship, advice from subject matter experts and others who have relevant knowledge and experience, and the results of public involvement activities, it is the Yellowstone National Park Superintendent’s professional judgment that there will be no impairment of park resources and values from implementation of the preferred alternative.