National Park Service
U.S. Department of the Interior

Yellowstone National Park
Wyoming, Montana, Idaho

FINDING OF NO SIGNIFICANT IMPACT
National Ecological Observatory Network
Northern Rockies, Domain 12 - Core Site

Recommended:

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Superintendent, Yellowstone National Park

Approved:

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INTRODUCTION

In compliance with the National Environmental Policy Act (NEPA), the National Park Service (NPS) prepared an Environmental Assessment (EA) to examine alternative actions and environmental impacts associated with permitting the proposed project from the National Ecological Observatory Network (NEON) to create an ecological research and monitoring site on Blacktail Deer Plateau within Yellowstone National Park (YNP). The project will collect long-term data on biogeochemical cycles, infectious diseases, and a suite of local taxa to characterize patterns, dynamics, and linkages in terrestrial ecosystems that is representative of the Northern Rockies over the next 30 years. NEON is a facility project funded by the National Science Foundation Major Research Equipment and Facilities Construction Program.

The park will have access to all of the information collected to support the management of resources (e.g., wildlife populations, ecosystem process information within the context of the Greater Yellowstone Ecosystem, landscape perspective on productivity and species composition, invasive species, and wildland fire ecology, among other results of research conducted by NEON).

The statements and conclusions reached in this finding of no significant impact (FONSI) are based on documentation and analysis provided in the EA and associated decision file. To the extent necessary, relevant sections of the EA are incorporated by reference below.

SELECTED ALTERNATIVE AND RATIONALE FOR THE DECISION

Based on the analysis presented in the EA, NPS selected Action Alternative Option 2 (pages 38-45 in the EA).

The selected alternative will install the NEON Northern Rockies Domain (Domain 12) core ecological research and monitoring site on Blacktail Deer Plateau in YNP. The tower height will be 59 feet. Aquatic observations will be collected at nearby Blacktail Deer Creek, approximately 2.5 miles west of the proposed tower location. Data associated with aquatic and terrestrial biota, including soils, will also be collected. An annual flyover by plane will be conducted to collect ecological data remotely.

Tower construction will take approximately four to six months for a crew of six to ten workers. Once constructed, the tower will be visited by two NEON personnel approximately every two weeks, to ensure that computers, sensors, and other equipment are functioning properly and to conduct routine maintenance. A Domain Manager based in Salt Lake City, Utah, will oversee all activities at the core site. An Assistant Manager and all other NEON personnel will be based in Bozeman, Montana. Operations at the site will include the following categories or subsystems: (1) maintenance of atmospheric and soil instrumentation, (2) aquatic observations and maintenance of aquatic instrumentation, (3) airborne observations, and (4) terrestrial observations.

The following infrastructure at the tower site will include the following: (1) tower with sensors and communications satellite dish; (2) electrical service conduit; (3) power junction box; (4) instrument hut; (5) precipitation collection system with fencing, known as a double fence intercomparison reference (DFIR); (6) soil array plots; (7) power distribution; and (8) soil horizon (temporary pit).

The tower and associated infrastructure will be accessed from the west via Frog Rock Pit Road. Access paths onsite will be designed to direct NEON personnel along routes for construction and operational use. Access to the tower site will be signed, designating the area for administrative use only, to deter unauthorized access by visitors. An unimproved footpath for operations and long-term use will be

maintained to 18 inches (1.5 feet) and will be approximately 2,396 feet long. A previously cleared area near the Frog Rock gravel pit, west of the tower site, will become the long-term parking area for operations personnel.

Construction access for the aquatic site will be obtained via the Grand Loop Road, then south on an existing maintained road used to access the Blacktail Cabin. Infrastructure at the aquatic site will include in-stream sensor suites containing two water quality sensors, a meteorological station, groundwater observation wells, and electrical power. Equipment will be carried by hand or wheeled to the installation sites. Drilling for wells will be conducted using a hand drill and other portable equipment carried or wheeled into the site; no vehicle access will be allowed, and no new construction (temporary) roads or footpaths will be established. Parking for NEON staff will occur in a small parking lot just off of the Grand Loop Road, and operational access will originate from Blacktail Deer Road; however, no established footpath(s) will be created. The EA provides a schedule for aquatic observations (Appendix 4).

Airborne surveys will typically last eight days, with a maximum of four hours per flight day, which includes three flight days and five additional days set aside as contingency in case of bad weather. Terrestrial observations will utilize field staff to collect data. Prior to the first year of field observations, NEON personnel will visit potential areas where observations and sampling will occur. The proposed locations that meet NEON scientific and logistical criteria will be delineated with a combination of permanent primary (one to two per plot, point, or grid) and secondary markers (three to seven per plot or grid) that will facilitate repeat visits to the plots over time. During any given sample period (April to October), it is expected that four to ten technicians grouped into crews of two to six individuals will be deployed daily (i.e., no overnight stays within the park will occur) to collect observations and/or samples from one to ten plots per day. The EA (Appendix 5) provides a proposed schedule for terrestrial observations.

Upon completion of NEON's activities at the site, all infrastructure features will be removed, including the tower, tower pad, instrument hut, instrument hut foundation, groundwater wells, and utility conduit. All areas will be returned to as natural a condition as possible. Any materials removed during these processes will be reused, recycled, or properly disposed of. Disturbed ground will be stabilized with biodegradable materials and revegetated with species native to the area, appropriate for site-specific conditions, and in coordination with the park. NEON will conform to all NPS construction best management practices (BMPs), requirements outlined in a research permit, and requirements outlined in the memorandum of understanding (MOU), an agreement between the park and NEON.

RATIONALE

Action Alternative Option 2 was selected to be permitted because it best meets the project purpose and objectives (page 5-6 in the EA) most relevant to YNP to:

- continue the well-established tradition of scientific research that exists within the park,
- facilitate the creation of a continental-scale ecological observatory to enable scientific research,
- enable a long-term set of Yellowstone-specific ecosystem data to be made available for tracking changes within the Park,
- adhere to the park's Wireless Communications Plan regarding tower height,

- provide representative ecosystems, landscapes, and aquatic processes to best address key research themes for the domain,
- provide opportunities for education and outreach,
- avoid sensitive viewshed areas, and
- provide easy access for construction and operational activities with minimal resource impacts.

MITIGATION MEASURES

Refer to Appendix A below for a complete list of all Best Management Practices and mitigation measures that will be implemented for the selected alternative.

PUBLIC INVOLVEMENT/AGENCY CONSULTATION

Initial public scoping for the project occurred from November 21, 2014, through December 21, 2014. The EA was made available for public review and comment from June 16, 2017, through July 18, 2017. Twenty-three public comments were received. Comments were categorized into the following three categories: Purpose and Need (18 comments), Support (3 comments), and Visual (2 comments). Substantive comments are addressed in the Errata and Response to Public Comments.

In accordance with §106 of the National Historic Preservation Act, the NPS initiated consultation with the Wyoming State Historic Preservation Office (WYSHPO) in January 2010. Cultural resource surveys of monitoring sites were conducted in July 2011. The NPS determined that no historic properties were located in the direct area of potential effect and that the project will result in no historic properties being affected. The WYSHPO concurred with the findings of the NPS's determination of effect for the Blacktail Deer Creek Aquatic Monitoring Site on February 23, 2013, and on the Frog Rock Terrestrial Monitoring Site determination of effect on May 27, 2015. The NPS provided WYSHPO with a copy of the EA for review on July 21, 2017, and asked for any comments that the WYSHPO might have on the final EA. On August 2, 2017, the WYSHPO responded via e-mail stating that their previous concurrence with Park's findings of eligibility and effect remain valid and that they had no further comment on this undertaking (Appendix 1 in the EA).

A biological assessment was prepared and sent to the U.S. Fish and Wildlife Service (USFWS) in February 2017 (Appendix 7 in the EA). On May 27, 2017, a letter was received from USFWS that concurred with the park's determination that the selected alternative "may affect, but is not likely to adversely affect" federally listed species and designated critical habitat.

Tribal consultation was conducted with the park's 26 associated tribes in November 2014 to solicit concerns and comments for the project. The park did not receive any responses. In June 2017, the tribes were each provided information on the completion of the EA. No comments were received.

FINDING OF NO SIGNIFICANT IMPACT

The Council on Environmental Quality (CEQ) regulations at 40 Code of Federal Regulations Section 1508.27 identify ten criteria for determining whether the selected action will have a significant effect on the human environment. The NPS reviewed each of these criteria given the environmental impacts described in the EA and determined there will be no significant impacts for any of the criteria.

The following impacts topics were dismissed in the EA because they were found to have no potential for significant impacts, including geothermal, wetlands, floodplains, air quality, soundscapes, lightscapes, wild and scenic rivers, paleontological resources, historic structures, cultural landscapes, archeological

resources, ethnographic resources, Indian trust and sacred sites, socioeconomics, environmental justice, and climate change.

As described in the EA, the selected alternative has the potential for beneficial and adverse impacts on geology, soils, water resources, vegetation, wildlife resources, special status species, visual resources/visitor experience, and wilderness; however, no potential for significant adverse impacts was identified.

Implementing the selected alternative will adversely affect geology, as foundation blocks will extend down to the bedrock. The four foundation tower anchors will be installed to a depth of two feet and measure sixteen square feet total. However, there are no unique geologic features associated with the site; most of the site contains basalt and intrusive rock.

The selected alternative will disturb soil in the project area as a result of grading, compacting, and soil disturbance associated with the tower installation and the aquatic site construction. At the tower site, soil disturbance will be approximately 0.14 acres. At the aquatic site, soil disturbance from construction will be 2, 276 square feet. After construction, the trench disturbance will be reclaimed, resulting in long-term disturbance of 187 square feet from construction and monitoring equipment. Initial soil characterization at the tower site will disturb up to 89 cubic feet. Monitoring activities within the terrestrial observation system (TOS) will disturb 16 cubic feet of soil over the lifetime of the project. Four square feet of soil disturbance will also occur at ten plots associated with beetle pit fall traps. For soil disturbance associated with operational activities, refer to page 50 in the EA.

Construction activities of the tower and aquatic site are not anticipated to adversely affect water resources. Short-term disturbance (approximately two weeks) of in-stream sediment and increased turbidity could result from installation of the in-stream sensors in the creek bed at the aquatic site. Operations and maintenance of the tower, aquatic sites, and TOS activities could increase erosion into Blacktail Deer Creek and loss of vegetation near the creek. BMPs and mitigation measures provided in the EA will be implemented to minimize impacts to water resources.

Implementing the selected alternative will result in 0.14 acres of vegetation removal and/or disturbance for construction of the tower and 0.004 acres for the aquatic site installation. Three lodgepole pine trees will be cut down. Over the 30-year life of the project, operational activities may result in the creation of social trails. The potential spread of non-native weed species exists; however, the loss of native vegetation is not expected to affect viability of local plant populations. BMPs and revegetation efforts will be implemented to minimize impacts to the extent possible.

The selected alternative will result in habitat loss (vegetation removal) as described for vegetation resources. Construction activities will include temporary visual and acoustic disturbance impacts that will result in reduced use of the site. Small animals may be inadvertently harmed or displaced. Larger animals will likely avoid the area during construction, then return to the site or relocate in adjacent areas. The project area is a small component of a much more extensive and common sagebrush habitat and lodgepole pine forest that provides available habitat. Operations and maintenance of the site will have impacts due to increased human activity. These impacts will be localized and/or affect individual animals. Park or regional wildlife species populations will not be impacted.

Impacts for special status species are similar to those described for wildlife resources. Special status species were evaluated for impacts (page 64-68 in the EA), and consultation was conducted by NPS and a Biological Assessment developed for USFWS review and concurrence (Appendix 7 in the EA).

Visual Resources/Visitor Experience adverse impacts will occur temporarily during construction, sampling, and surveying, or maintenance. The viewshed where the 59 foot tower will be visible to Park visitors is approximately 960 acres (refer to illustration on page 71 in the EA). Impacts to visitors driving or using pull-outs along the Grand Loop Road, Blacktail Plateau Drive, or the administrative road will be minimal due to integrating BMPs and mitigation measures.

The selected alternative will not construct the tower within the boundaries of recommended wilderness. However, wilderness qualities will be adversely impacted because the tower will be visible for approximately 378 acres of recommended wilderness. Visitors to recommended wilderness areas in the vicinity of the project may observe intermittent operational activities. A subset of TOS plots will be located within recommended wilderness and accessed by crews according to sampling protocols discussed in Chapter 2 of the EA (page 13-38). To lessen these impacts, BMPs and mitigation measures will be implemented to minimize the effects.

CONCLUSION

As described above, the selected alternative does not constitute an action meeting the criteria that normally requires preparation of an environmental impact statement (EIS). The selected alternative will not have a significant effect on the human environment in accordance with Section 102(2)(c) of NEPA.

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

APPENDIX A: BEST MANAGEMENT PRACTICES AND MITIGATION MEASURES

The following best management practices and mitigation measures will minimize the degree and/or extent of adverse impacts and will be implemented during the project.

General BMPs

- Construction and operation protocols will adhere to NEON's Operations Field Safety and Security Plan (provided in the EA) and will include language stating that all personnel will avoid contact with wildlife to ensure a safe, clear distance. In consultation with Park staff, appropriate interpretive signage will also be installed in and around the site, to increase awareness of research activities taking place and restrictions, as applicable.
- The park will require NEON to follow protocol outlined in a Field Safety and Security Plan, to identify hazards and potential hazards that exceed the safety standard requirements of the Occupational Safety and Health Administration and the Neon's Site Specific Environment/Health/Safety Policy and Program Manual.
- The MOU (an agreement between the park and NEON) will describe all communication protocols for the project.
- Car- and/or van-pooling will be implemented to minimize the number of vehicles travelling within and to/from the park.
- The park will require all NEON employees and contractors to be housed outside of the park.
- Long-term use of plot markers will be based on site conditions and on park preferences and recommendations. Potential markers could include stakes made of aluminum, PVC, or wood, or buried magnetic markers.
- The park will require NEON to avoid entry into Bear Management Areas (BMAs) when restrictions are in place; however, in situations where a work-around is not feasible, exceptions to the restriction will be considered. As this area is close to the road, entry may be granted for a short duration, upon coordination with the park.
- NPS fire response or defense of infrastructure or instrumentation in the event of a wildland fire will not be required, as NEON's objective is to monitor natural occurrences at wildland sites. This will alleviate potential increased workloads on wildland fire crews, unless NPS determines that human life or other health and safety concerns supersede this protocol.
- The park will require NEON to obtain a research permit and MOU (an agreement between the Park and NEON) prior to the commencement of construction.

Vegetation, Water Resources, Geology, and Soils

- Standard BMPs will be applied during construction of the tower and associated infrastructure to prevent soil erosion and sedimentation of creeks and streams, including implementation of an erosion, sedimentation, and pollution control plan; silt fencing; retention areas; energy dissipaters; slope breaks; conservation of top soil; and use of geotextile blankets or jute mesh on slopes.
- The park will require that the park geologist be contacted and drilling stopped, if water temperatures of 50 degrees Fahrenheit or greater are encountered at depths greater than 5 feet with regard to the ground water monitoring wells at the proposed aquatic site.

- Parking for NEON staff will occur within the already disturbed areas of the Frog Rock Pit (proposed construction staging area); therefore, no new ground disturbance for parking will occur.
- No off-road travel during construction or decommissioning phases will be allowed by vehicles without prior approval by park personnel.
- A footpath will be utilized to access the tower, instrument hut, and soil sampling (array) plots. The footpath will be widened during construction, then restored to a width of 18 inches (1.5 feet) during operations.
- The park will require areas of temporary surface disturbance created during construction to be revegetated with local, native, weed-free seed mix upon completion of construction-related activities.
- In an effort to combat the introduction of weeds during construction, crews monitored by NEON and the park will salvage existing topsoil and vegetation, as feasible, and stockpile it to one side of the trench or pathway. This material will be saved and replaced as part of rehabilitation efforts. NPS crews may be employed to re-seed or supervise re-seeding efforts by NEON staff or contractors, with native seed gathered onsite or from adjacent sites; mulch may also be required. Native seed will be collected as early as June for grasses, and at other times as appropriate for other species. NEON will monitor revegetation activities during operations and coordinate any further efforts necessary with park staff. NEON will employ a local landscaping crew to assist in revegetation and reclamation activities.
- Some social trails will likely develop from accessing TOS plots and aquatic monitoring equipment. To minimize the potential creation of such trails, NEON will instruct personnel to tread lightly and avoid repeated travel by the same routes when implementing protocols where established footpaths do not exist.
- Approximately three trees will need to be removed to create the required cleared space for the DFIR near the tower site. Tree cutting selection will be conducted in coordination with the park.
- All equipment used for ground-disturbing activities required for construction will be required to be clean (i.e., free of mud, dirt, and other debris that could contain or hold seeds) prior to entering the park.
- Where soil is removed as part of the TOS collection, soil in and around the resulting 1- to 4-inch hole will be lightly compressed at the surface, allowing the holes to refill with native material. Due to the freeze/thaw cycle in the Park, it is anticipated that only a small depression will remain after one to two seasons.
- Certified seed-free mulch, as well as certified weed-free gravel, rock, and soil backfill material, will be used to minimize the potential spread of exotic or invasive plant species following construction.
- The park will require NEON to provide prompt control of any invasive exotic species that become established on areas disturbed during construction. NEON will be required to work with the park vegetation specialist and adhere to the 2013 Invasive Vegetation Management Plan. NEON would incur the costs associated with these activities.
- If noxious weeds are found in the proposed project areas, the park vegetation specialist, in consultation with NEON personnel, will determine whether weed treatment is needed prior to construction or during subsequent operation of the facility.

- Aquatic sampling of benthic invertebrates, aquatic plants, and algae will not be conducted directly following stream flooding, when flow rate exceeds channel capacity.
- NEON personnel will install groundwater wells using a powered hand auger or small track-mounted drilling rig, taking care to avoid Blacktail Deer Creek. Additionally, the meteorological station will be mounted on a tripod and set away from the stream.
- The in-stream sensors at the aquatic site will be placed within the creek bed by hand to minimize stirring up sediment in the creek bed.
- Upon decommissioning, the park will require NEON to remove all infrastructure. Reclamation and revegetation of the site will be accomplished with native species. An assurance letter from the National Science Foundation will be required to ensure this work prior to construction.

Wildlife Resources

- No trees with active bird nests will be removed during bird breeding season (season dates to be defined by park personnel). If construction is scheduled to occur during bird nesting periods, in compliance with the Migratory Bird Treaty Act, any trees to be removed would be first checked to guarantee they do not contain active bird nests. Likewise, the ground surface will be checked for ground-nesting bird nests prior to initiation of ground-disturbing activities. Should an active nest be located in trees or on the ground, park personnel will be consulted as to how to proceed.
- Utility conduit will be installed in accordance with park guidelines and recommendations to reduce ground disturbance and deter wildlife interactions. Conduit will be buried where trenching will result in minimal resource damage and revegetation would be successful. Conduit will be anchored to the ground when not buried (e.g., rocky areas with near-surface bedrock).
- Structures to deter nesting and perching will be installed on the tower to discourage nesting raptors. The landscape within 0.5 mile of the proposed tower will be inventoried for raptor nests in coordination with the park. Construction will be timed and/or conducted to mitigate potential disturbance or destruction of any active raptor nests in coordination with the park.
- If construction activities are initiated during avian nesting times, sweeps for nesting birds will be conducted within 72 hours of construction. If any are located, those areas will be avoided or construction delayed until songbirds fledge. Monitoring of active nests and noise mitigation will be employed as necessary in coordination with the park as to not disturb nesting eagles or raptors.
- NEON will be required to work closely with the Institutional Animal Care and Use Committee (IACUC) office to remain in compliance with collections, archives, and animal-handling standards for the duration of the project based on approved protocols. NEON has already coordinated with the IACUC for all sites located in National Parks (i.e., Yellowstone, Rocky Mountain, and Great Smoky Mountains national parks) and will need to obtain approval from both the IACUC and YNP.
- Since 1996, gray wolves have denned on Blacktail Deer Plateau near the proposed NEON construction site. Should an active den be located within a range of possible disturbance (as determined by park staff), park personnel will be consulted as to how to proceed. Plots within the BMA in the vicinity of the tower will not be sampled when closures and/or restrictions are in place (March 10 through June 30 closure for the BMA), providing protection for wolf packs that may have established dens during that period. However, as the aquatic site is close to the road, entry may be gated for a short duration, upon coordination with and approval from the park.
- The park will require NEON to avoid entry into the BMA when closures and/or restrictions are in place (March 10 through June 30 closure for the BMA); however, in situations where a work-

around is not feasible, the park will consider exceptions to this restriction. As this area is close to the road, entry may be granted for a short duration, upon coordination with and approval from the ark. If bears are encountered, NEON personnel will be required to move away from the site.

- The park will require NEON to contact the park's Research Permit Office prior to each sampling season for designation and visiting of observation/sampling plots distributed outside of the BMAs, to discuss any potential issues with sensitive species or wildlife in general.
- The park will require NEON to re-evaluate sampling methodology and protocols or employ adaptive management techniques in coordination with the park if unanticipated interactions with wildlife occur. Adaptive management refers to a system of management practices based on clearly identified outcomes and monitoring to determine whether management actions are meeting desired outcomes and if not, facilitating management changes that will best ensure that outcomes are met or re-evaluated. If management changes are recommended, additional compliance might be necessary.

Visual Resources/Visitor Experience

- Parking for NEON staff at the Frog Rock Pit is located in an administrative area not open to the public. No camping or recreational vehicles will be allowed in this area.
- The park will require the tower and instrument hut surface to be painted to blend into surroundings to minimize potential visual contrast. Specific colors will be chosen in the field.
- The electrical conduits will be buried near roads and installed above ground when out of sight, depending on site and subsurface conditions to minimize impacts at the direction of Park management and based on site conditions.
- Sounds from operations equipment will not be allowed to exceed 60 decibels (dBA) at a distance of 50 feet. If equipment were to exceed the dBA limit, NEON would be required to mitigate the noise.

Wilderness

- Aquatic sensors and groundwater wells will be located outside of the recommended wilderness, which will eliminate impacts to recommended wilderness and preserve wilderness character.
- Sampling will be scheduled to minimize the number of trips to the site, which will reduce anthropogenic activity in the area, thus preserving recommended wilderness and wilderness character.
- No material will be left behind, aside from the plot markers (previously described), beetle cups, mosquito traps, mammal traps on nights they are out, tree tags, and litter traps. This will reduce evidence of anthropogenic activity in the area, thus preserving recommended wilderness and wilderness character.
- The park will require NEON to develop a protocol and site-specific plan that specifies actions to minimize trailing and trampling at sites prior to construction and operations. This will reduce evidence of creation of trails in the area, thus preserving recommended wilderness and wilderness character.

RESPONSE TO PUBLIC COMMENTS ERRATA

These errata are to be attached to the National Ecological Observatory Network EA dated June 2017. There were no corrections or statements to clarify in the EA. Response to public comments address substantive comments that were received during the public review period.

Many comments addressed issues already adequately covered in the EA. No comments warranted development of an additional alternative or reconsideration of alternatives that were considered but dismissed. Therefore, the alternatives remain as described in the EA, and no changes were made in the assessment of environmental consequences.

Comments and responses are provided below.

Comment Topic: Tower Inside the Park

Commenters suggested moving the infrastructure outside of the park.

Park Response:

Prior to choosing the preferred NEON site within the park, sites were evaluated outside of the park. These sites were either not representative of the area, inaccessible, or too close to human influence. The proposed core site location within the park represents an ideal wildland site for this area because it is highly representative of continental ecoregions within the Northern Rockies. All native vertebrates are present in the park; and natural disturbances, native species, and ecological processes interact with relatively little human intervention.

Comment Topic: Resource Protection

Commenters expressed concerns about protection of the park ecosystem.

Park Response:

The park has identified ecosystem data and planning needs to help manage resources. Many of these needs will be provided by the NEON project as discussed in the EA (page 13-38).

Impacts on park resources were found to be small, and most impacts will be temporary. NEON staff will adhere to all park restrictions, including seasonal restrictions in the bear management area (BMA), and are required to coordinate all visits to the site with park personnel, who will provide information about wildlife restrictions and special sensitivities.

Comment Topic: Visual Resources

Comments on visual quality focused on the intrusiveness of the tower structure.

Park Response:

The viewshed where the 59 foot tower will be visible to park visitors is approximately 960 acres and is illustrated on page 71 in the EA. Impacts to visitors driving or using pull-outs along the Grand Loop Road, Blacktail Plateau Drive, or the administrative road will be minimal. The top of the tower will be visible from two locations in proposed wilderness and from Blacktail Plateau Drive and Grand Loop Road but will not be a significant feature on the landscape.

NON-IMPAIRMENT DETERMINATION
National Ecological Observatory Network
Northern Rockies, Domain 12- Core Site

By enacting the NPS Organic Act of 1916 (Organic Act), Congress directed the U.S. Department of the Interior and the National Park Service to manage units "to conserve the scenery, natural and historic objects, and wild life in the System units and to provide for the enjoyment of the scenery, natural and historic objects, and wild life in such manner and by such means as will leave them unimpaired for the enjoyment of future generations" (54 U.S.C. 100101). NPS Management Policies 2006, Section 1.4.4 explains the prohibition on impairment of Park resources and values:

"While Congress has given the Service the management discretion to allow impacts within parks, that discretion is limited by the statutory requirement (generally enforceable by the federal courts) that the Park Service must leave park resources and values unimpaired unless a particular law directly and specifically provides otherwise. This, the cornerstone of the Organic Act, establishes the primary responsibility of the National Park Service. It ensures that park resources and values will continue to exist in a condition that will allow the American people to have present and future opportunities for enjoyment of them."

An action constitutes impairment when its impacts "harm the integrity of park resources or values, including the opportunities that otherwise will be present for the enjoyment of those resources or values" (NPS 2006, Section 1.4.5). To determine impairment, the NPS must evaluate the "particular resources and values that will be affected; the severity, duration, and timing of the impact; the direct and indirect effects of the impact; and the cumulative effects of the impact in question and other impacts. An impact on any park resource or value may constitute impairment, but 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 to opportunities for enjoyment of the park; or
- identified in the park's general management plan or other relevant NPS planning documents as being of significance" (NPS 2006, Section 1.4.5).

Fundamental resources and values for Yellowstone National Park are identified in the enabling legislation for the park, the Foundation for Planning and Management Statement, and the Long Range Interpretive Plan. Based on a review of these documents, the fundamental resources and values for Yellowstone National Park come from the park's geologic wonders; the abundant and diverse wildlife; the 11,000-year-old continuum of human history; and providing for the benefit, enjoyment, education, and inspiration of this and future generations. Resources that were carried forward for detailed analysis in the EA and are considered necessary to fulfill specific purposes identified in the establishing legislation or proclamation of the Park are key to the natural or cultural integrity of the park; and/or resources identified as a goal in relevant NPS planning documents include soils and vegetation, wildlife, threatened and endangered species, historic structures, and visual resources. Non-impairment determinations are not necessary for human health and safety or visitor use and experience because impairment findings relate back to park resources and values, and these impact topics are not generally considered park resources or values according to the Organic Act.

This non-impairment determination has been prepared for the selected alternative, as described in the Findings of No Significant Impact for the National Ecological Observatory Network Environmental Assessment.

Geology

There are no unique geologic features in the project area. The underlying geology in the project area includes mostly basalt flows and intrusive igneous rocks The underlying geology in the vicinity of the aquatic site includes mostly undivided alluvium, colluvium, and glacial and landslide deposits, with some rhyolite flows, tuff, and intrusive igneous rocks (Love and Christiansen 1985).

During construction, which will occur in late fall of 2017, four foundation tower anchors will be installed to a depth of 2 feet and measure 16 square feet. The 16 square feet of surface rock that will be impacted is very small (0.001%) in comparison to the geologic resource on the Blacktail Deer Plateau, which is approximately 12,336 acres and much smaller as compared to the total park geologic resources. The operations and maintenance phase of the project will not impact geologic resources. When the project is complete, the footers will be removed and the area reclaimed. The selected alternative will not impair geology resources.

Soil

Soils in the vicinity of the project area are glacial tills with some colluvium and slopes that are medium to fine textured sandy loam, loam, and loamy sands. These soil types are not unique in the park or in the project area.

The selected alternative will impact soils in the project area because of grading, compacting, and soil disturbance. Approximately 0.144 acres of soil will be disturbed, which equates to less than 1% of the soils in the project area. Some disturbed areas will be reclaimed after construction. Operations and maintenance activities will impact approximately 105 cubic feet and four square feet of soil from sampling activities. BMPs will be used to minimize erosion and disturbance to soils reducing adverse impacts. Impacts will result mostly in the physical disturbance, while effects to soil chemistry and composition are not expected. The park has determined that the selected alternative will not result in impairment of soil quality or function.

Water Resources

The tower site is located in the western portion of the Oxbow Creek watershed (a tributary to Yellowstone River). The aquatic site lies within the Blacktail Deer Creek watershed. Construction activities from tower and aquatic site installations are not anticipated to adversely affect water resources because the proposed site is about 650 feet from Oxbow Creek (on relatively flat ground and separated from the Creek by two roads). BMPs, including erosion control barriers, will prevent sediment and other materials from reaching Oxbow Creek. There will be no construction impacts from the TOS activities.

In-stream sensors at the aquatic site will be placed by hand within the creek bed over a five-day period to minimize stirring up sediment in the creek bed. Installation of in-stream infrastructure and sensors will require two personnel wading in the stream for up to 1 day per station. Sediment disturbance will be limited to driving a single steel anchor into the streambed at each of the two sensor stations and personnel wading in the stream. This activity will result in short-term disturbance (approximately two weeks) of in-stream sediment and could temporarily increase turbidity, reducing light availability for primary productivity and potentially resulting in lower dissolved oxygen impacting aquatic life.

From implementation of BMPs and mitigation measures, the park has determined that the selected alternative will not result in an impairment of water resource quality or function.

Vegetation

The tower site lies in a transitional zone between Douglas fir forest and middle successional lodgepole pine forest, while the aquatic site lies within a sage-grassland and willow ecotone. These vegetative communities are common throughout the TOS and are not unique within the Blacktail Deer Plateau or park.

Construction activities will adversely affect vegetation in the project area in the short- and long-term because of trampling, permanent vegetation loss, and increased potential for non-native weed species to occupy areas where vegetation will be removed. Construction of the tower and aquatic instrumentation will require the removal and/or disturbance of vegetation for the tower foundation, device posts, soil-sampling array, and instrument hut totaling 0.14 acres and 0.004 acres at the aquatic site. Ground disturbance at the aquatic site will total 0.07 acres over a two- to seven-day period for the meteorological station, upland sensors, in-stream sensors, and groundwater wells.

It is not expected that the selected alternative will adversely alter the vegetation quality or quantity in the park. Implementation of BMPs and mitigation measures will lessen impacts to vegetation. The selected alternative will not result in an impairment of vegetation.

Wildlife Resources

Construction impacts include temporary visual and acoustic disturbance impacts that will cause sensory disturbance to wildlife and result in some reduced use of the site during construction. Destruction of small animal dens, nests, or runways could result during construction activities due to the short- and long-term loss of vegetation. It is expected that any wildlife temporarily disturbed by construction activities will easily return to the site or relocate in adjacent areas with of plentiful habitat. Operations and maintenance activities will have long-term disturbance effects due to increased human activity at the tower, aquatic, and sampling locations.

Accidental vertebrate mortality could occur resulting from small mammal trapping, pitfall trapping, and other research activities. However, protocols for both small mammal trapping and beetle pitfall trapping and the scientific research permit between the Park and NEON will require any mortality to be closely monitored and protocols modified if an agreed-upon threshold is exceeded. Therefore, it has been determined that the selected alternative will not result in an impairment to wildlife species.

Special Status Species

Special status species are described in detail in Chapter 3 of the EA (page 59). Special status wildlife is expected to avoid the area, at least temporarily during construction, operations, and maintenance. Some species will return to the area after disturbance, while others will occupy new locations. Species currently listed as threatened or endangered under the Endangered Species Act are considered in a separate Biological Assessment (BA) provided as Appendix 7 of the EA. The selected alternative will not result in an impairment of special status species or habitat.

Wilderness

The park is managed as recommended wilderness. The tower may be visible from Wilderness Area #4 to the north (Appendix 8 of the EA). This wilderness boundary edge is approximately 3,000 feet from the tower site. The tower may also be visible from Wilderness Area #3 to the south (Appendix 8 of the EA). Impacts to visitors to recommended wilderness could include temporary seeing or hearing impacts due to construction activities in the vicinity. No construction activities will be conducted in recommended wilderness.

The *untrammeled, natural*, and *undeveloped* wilderness qualities will be degraded because the tower will be visible from 378 acres of recommended wilderness. The opportunities for *solitude* and *primitive* and *unconfined recreation quality* could be temporarily degraded because NEON personnel could be encountered by visitors to recommended wilderness. However, this will be intermittent, and operations will be scheduled to reduce the number of trips. Some sampling activities will occur within the recommended wilderness and may include observation or collection.

NEON personnel will access recommended wilderness intermittently when on-the-ground observations within the TOS area are scheduled (Appendix 5 of the EA). Activities such as mammal trapping could be detected over two to four day periods, six times per year because traps will be left out. Impacts to this wilderness quality will be intermittent and very short-term. The park has determined that the selected alternative will not result in impairment of wilderness.

Conclusion

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 Superintendent's professional judgment that there will be no impairment of park resources and values from implementation of the selected alternative. The NPS has determined that implementation of the selected alternative will not constitute an impairment of the resources of values of Yellowstone National Park. This conclusion is based on consideration of the Park's purpose and significance, a thorough analysis of the environmental impacts described in the EA, comments provided by the public and others, and the professional judgment of the decision maker guided by the direction of NPS Management Policies 2006.