GMP Dynamic Sourcebook - Appendix I: Impact Analysis
I.3 Example of Mitigation Measures Commonly Used in GMP Action Alternatives

Cultural Resources

The National Park Service would preserve and protect, to the greatest extent possible, resources that reflect human occupation of _____ National Park. Specific mitigating measures include the following:

- Continue to develop inventories for and oversee research about archeological, historic, and ethnographic resources to better understand and manage the resources, including historic and ethnographic cultural landscapes. Conduct any needed archeological or other resource specific surveys, prepare national register evaluations, and identify recommended treatments. Incorporate the results of these efforts into the park's resource stewardship strategy and site-specific planning and compliance documents. Continue to manage cultural resources and collections following federal regulations and NPS guidelines and the Director's Order 24 "Museum Collection Management." Inventory the park's collection and keep in a manner that would meet NPS curatorial standards.
- Follow site-specific planning and compliance procedures, in accordance with the ***Secretary of the Interior's Standards for Archeology and Historic Preservation***. Locate projects in previously disturbed or existing developed areas to avoid or minimize adverse impacts to archeological resources. Use screening and/or sensitive design that would be compatible with historic resources and cultural landscapes and avoid development adjacent to ethnographic resources. If adverse impacts could not be avoided, these impacts would be mitigated by strategies determined through a consultation process with all interested parties.
- Conduct archeological site monitoring and routine protection. Conduct data recovery excavations at archeological sites threatened with destruction, where protection or site avoidance during design and construction is infeasible. Strictly adhere to NPS standards and guidelines on the display and care of artifacts. This would include artifacts used in exhibits in the visitor center. Irreplaceable items would be kept above the 500-year floodplain.
- Mitigative measures for structures and landscapes include documentation according to standards of the Historic American Buildings Survey/Historic American Engineering Record/Historic American Landscape Survey (HABS/HAER/HALS). The level of this documentation, which includes photography, archeological data recovery, and/or a narrative history, would depend on significance (national, state, or local) and individual attributes (an individually significant structure, individual elements of a cultural landscape, etc.) and be determined in consultation with the state historic preservation officer, tribal historic preservation officer(s), local community(ies), and/or other interested parties. When demolition of a historic structure is proposed, and following thorough documentation, architectural elements and objects may be salvaged for reuse in rehabilitating similar structures, or they may be added to the park's museum collection. In addition, the historical alteration of the human environment and reasons for that alteration would be interpreted to national park visitors.
- Continue ongoing consultations with culturally associated groups and American Indian tribes. Protect sensitive traditional use areas to the extent feasible by avoiding or mitigating impacts on ethnographic resources and continuing to provide access to traditional use and spiritual areas. Mitigation could include identification of and assistance in accessing alternative resource gathering areas and screening new development from traditional use areas.
- Encourage visitors through the park's interpretive programs to respect and leave undisturbed any inadvertently encountered archeological resources as well as to respect and leave undisturbed any offerings placed by American Indians.

Natural Resources

Air Quality

- Implement a dust abatement program. Standard dust abatement measures could include the following elements: water or otherwise stabilize soils, cover haul trucks, employ speed limits on unpaved roads, minimize vegetation clearing, and revegetate after construction.

Water Resources

- To prevent water pollution during construction, use erosion control measures, minimize discharge to water bodies, and regularly inspect construction equipment for leaks of petroleum and other chemicals. Minimize the use of heavy equipment in a waterway.
- Build a runoff filtration system to minimize water pollution from larger parking areas.

Wetlands

- Delineate wetlands by qualified NPS staff or certified wetland specialists and clearly mark the wetlands before construction work.
- Perform construction activities in a cautious manner to prevent damage caused by equipment, erosion, siltation, etc.

Soils

- Build new facilities on soils suitable for development.
- Minimize soil erosion by limiting the time that soil is left exposed and by applying other erosion control measures, such as erosion matting, silt fencing, and sedimentation basins in construction areas to reduce erosion, surface scouring, and discharge to water bodies.
- Once work was completed, revegetate construction areas with native plants in a timely period.

Nonnative (Exotic) Species

- Implement a noxious weed control program. Standard measures could include the following elements: ensure construction-related equipment arrives on-site free of mud or seed-bearing material; certify all seeds and straw material as weed-free; identify areas of noxious weeds pre-construction; treat noxious weeds or noxious weed topsoil before construction (e.g., topsoil segregation, storage, herbicide treatment); and revegetate with appropriate native species

Threatened and Endangered Species and Species of Concern

Mitigation actions would occur during normal park operations as well as before, during, and after construction to minimize immediate and long-term impacts on rare, threatened, and endangered species. These actions would vary by specific project and area of the national park affected, and additional mitigations will be added depending on the specific action and location. Many of the measures listed above for vegetation and wildlife would also benefit rare, threatened, and endangered species by helping to preserve habitat. Mitigation actions specific to rare, threatened, and endangered species would include the following:

- Conduct surveys for rare, threatened, and endangered species as warranted.
- Locate and design facilities/actions to avoid adverse effects on rare, threatened, and endangered species. If avoidance is infeasible, minimize and compensate for adverse effects on rare, threatened, and endangered species as appropriate and in consultation with the appropriate resource agencies. Conduct work outside of critical periods for the specific species.
- Develop and implement restoration and/or monitoring plans as warranted. Plans should include methods for implementation, performance standards, monitoring criteria, and adaptive management techniques.
- Implement measures to reduce adverse effects of nonnative plants and wildlife on rare, threatened, and endangered species.

Vegetation

- Monitor areas used by visitors (e.g., trails) for signs of native vegetation disturbance. Use public education, native plants to revegetate disturbed areas, erosion control measures, and barriers to control potential impacts on plants from trail erosion or social trailing.
- Designate river access/crossing points, and use barriers and closures to prevent trampling and loss of riparian vegetation.
- Develop revegetation plans for the disturbed area and require the use of native species. Revegetation plans should specify seed/plant source, seed/plant mixes, soil preparation, etc. Salvage vegetation should be used to the extent possible.

Wildlife

- Employ techniques to reduce impacts on wildlife, including visitor education programs, restrictions on visitor activities, and park ranger patrols.
- Implement a natural resource protection program. Standard measures would include construction scheduling, biological monitoring, erosion and sediment control, the use of fencing or other means to protect sensitive resources

adjacent to construction, the removal of all food-related items or rubbish, topsoil salvage, and revegetation. This could include specific construction monitoring by resource specialists as well as treatment and reporting procedures.

Visitor Safety and Experiences

- Implement a traffic control plan, as warranted. Standard measures include strategies to maintain safe and efficient traffic flow during the construction period.
- Implement measures to reduce adverse effects of construction on visitor safety and experience.
- Implement an interpretation and education program. Continue directional signs and education programs to promote understanding among park visitors.
- Conduct an accessibility study to understand barriers to park programs and facilities. Based on this study, implement a strategy to provide the maximum level of accessibility.

Hazardous Materials

- Implement a spill prevention and pollution control program for hazardous materials. Standard measures could include hazardous materials storage and handling procedures; spill containment, cleanup, and reporting procedures; and limitation of refueling and other hazardous activities to upland/ nonsensitive sites.

Noise Abatement

- Implement standard noise abatement measures during construction. Standard noise abatement measures could include the following elements: a schedule that minimizes impacts on adjacent noise-sensitive uses, the use of the best available noise control techniques wherever feasible, the use of hydraulically or electrically powered impact tools when feasible, and the location of stationary noise sources as far from sensitive uses as possible.

Mitigating measures would be applied to protect the natural sounds in the park. Specific mitigating measures include the following:

- Implement standard noise abatement measures during park operations. Standard noise abatement measures could include the following elements: a schedule that minimizes impacts on adjacent noise-sensitive uses, use of the best available noise control techniques wherever feasible, use of hydraulically or electrically powered impact tools when feasible, and location of stationary noise sources as far as possible from sensitive uses.
- Site and design facilities to minimize objectionable noise.
- Work with _____ to find ways to minimize the noise from _____.
- Encourage users of snowmobiles and personal watercraft to use the new quieter vehicles currently being produced.
- Explore options to reduce the sounds of _____.