

Appendix I – Actions to Minimize Effects

Introduction

A key factor in successful construction and operation of this Intake Project would be the implementation of actions to minimize effects and monitoring. If a Finding of No Significant Impact (FONSI) is signed, to ensure that Intake Project activities are completed concurrently and in full compliance with all environmental commitments, Reclamation and the Corps will establish the Environmental Review Team (ERT) to implement management practices to avoid, minimize or mitigate adverse impacts to Intake Project area resources. This team will be comprised of federal, state, and local entities, which will develop the specific actions and monitoring programs and provide input to Reclamation and the Corps. This team could include technical representatives of the following agencies:

- Bureau of Reclamation
- U.S. Army Corps of Engineers
- Lower Yellowstone Irrigation Project Board of Control
- Montana Department of Environmental Quality
- Montana Department of Natural Resources and Conservation
- Montana Fish, Wildlife & Parks
- U.S. Fish and Wildlife Service
- The Nature Conservancy
- Montana State Historic Preservation Officer
- Other technical entities as deemed important to the process

When construction affects private lands or lands administered by agencies other than those listed above, landowners or specialists representing other agencies will be invited to participate on the team for the components that potentially affect their lands.

The ERT will use adaptive management principles and other methods to monitor the effectiveness of actions to minimize effects. The purpose of this team is to ensure that Intake Project activities are completed concurrently and in compliance with all environmental commitments in NEPA documents, such as the Final EA and FONSI decision. This team will also address other relevant state and federal environmental rules and regulations, such as the Clean Water Act and the National Historic Preservation Act.

ERT Responsibilities, Goals, and Objectives may include:

- Review and evaluate project construction plans and specifications to assist in identifying, avoiding, minimizing, or mitigating potential impacts to resources. Annually or as needed, the team will review modifications to the construction plans.

- Conduct field reviews (annually or as needed) prior to construction to identify environmentally sensitive areas where site-specific mitigation may be required.
- Review construction plans to determine if all required field surveys within the appropriate survey periods have been completed prior to Intake Project disturbance.
- Review previous construction activities to determine if required mitigation measures are sufficient and have been accomplished and prepare an annual environmental mitigation/progress report for the Intake Project.

Recognizing that the details of Intake Project impacts cannot be fully identified until the final engineering stage, many of the environmental commitments (identified below) are general in nature. Depending upon the alternative selected in the FONSI, the following commitments will be implemented to avoid adverse impacts to resources. Some of these commitments are not applicable to every alternative. The FONSI will list the environmental commitments applicable to the selected alternative.

Adaptive Management

- Reclamation and the Corps recognize that there is uncertainty in addressing natural resource issues. To manage this uncertainty Reclamation and the Corps will develop an adaptive management plan. The plan will be developed in accordance with the Department of the Interior Policy guidance (Order 3270) and the report *Adaptive Management, The U.S. Department of Interior Technical Guide* (Williams et al., 2007).
- Reclamation and the Corps will follow the Adaptive Management Strategy outlined in Appendix J. Prior to completing construction, a specific Adaptive Management Plan for the selected alternative will be completed.
- All constructed features will be monitored in accordance with an adaptive management plan to ensure that these are operating as designed to improve fish passage and reduce entrainment.

Air Quality

- Dust suppression techniques, such as sprinkling problem sites with water, will be used during construction activities.

Geomorphology

- River morphology will be monitored to assess changes to the stream channel resulting from construction of the selected alternative. The ERT will be consulted regarding specific measures to mitigate impacts if substantive changes are determined to have been caused by the Intake Project.

Surface Water Quality

- Equipment for handling and conveying materials during construction shall be operated to prevent dumping or spilling the materials into wetlands and waterways.
- Discharges of dredge or fill material into waters of the U.S. will be carried out in compliance with provisions of Section 404 of the Clean Water Act, the permit requirements of the Corps, and requirements contained in the Section 401 water quality certification issued by the Montana Department of Environmental Quality.

- Erosion control measures will be employed where necessary to reduce wind and water erosion. Erosion and sediment controls will be monitored daily during construction for effectiveness, particularly after storm events, and the most effective techniques will be used.
- Silt barriers, fabric mats, or other effective means will be placed on slopes or other eroding areas where necessary to reduce sediment runoff into stream channels and wetlands until vegetation is re-established. This will be accomplished either before or as soon as practical after disturbance activities.
- Contamination of water at construction sites from spills of fuel, lubricants, and chemicals would be prevented by following safe storage and handling procedures in accordance with state laws and regulations.
- Hazardous materials will be handled and disposed of in accordance with a hazardous waste plan.
- Contractor will be required to have an approved construction storm water management plan to control runoff.

Aquatic Communities

General

- All work in the river will be performed in a manner to minimize increased suspended solids and turbidity, which may degrade water quality and damage aquatic life outside the immediate area of operation.
- All areas along the bank disturbed by construction will be seeded with native vegetation to minimize erosion.
- All contractors will be required to inspect, clean and dry all machinery, equipment, materials and supplies to prevent spread on Aquatic Nuisance Species.

Fish

- To avoid potential impacts, cofferdam construction and in-stream heavy equipment activity will be coordinated with fishery experts from the Service, Montana Fish, Wildlife & Parks (MFWP), Reclamation and the Corps to avoid and or minimize potential impacts.
- All pumps will have intakes screened with no greater than ¼-inch mesh when dewatering cofferdam areas in the river channel. Pumping will continue until water levels within the contained areas are suitable for salvage of juvenile or adult fish occupying these areas. Fish will be removed by methods approved by the Service and MFWP prior to final dewatering.
- The ability of native fish to access the Yellowstone River upstream of Intake will be monitored and addressed through AM.

Federally-Listed Species and State Species of Special Concern

Whooping Crane

- Reclamation will monitor the Service's whooping crane sighting reports to ensure that whooping cranes are not in the Intake Project area during construction. If any are sighted within the Intake Project area, Reclamation will consult with the Service regarding appropriate actions.

Interior Least Tern

- Visual surveys will be conducted weekly from May 15 to August 15 at all potential least tern nesting areas (sparsely vegetated sandbars) within line of site of the construction area.
- All surface-disturbing and construction activities will be restricted from May 15 to August 15 within 0.25 miles or the line of site of any active interior least tern nest.

Pallid Sturgeon

- A physical model will be constructed to provide additional velocity and turbulence data needed for final design.
- Reclamation and the Corps will consult with the BRT during the design of the selected alternative, including but not limited to reviewing results and making recommendations on the physical model, hydraulic modeling, and final alternative design.
- The construction activities will be monitored by a qualified fisheries biologist to avoid direct impacts to adult or juvenile pallid sturgeon. In-stream construction activities will cease if the fisheries monitor determines there is potential for direct harm or harassment of pallid sturgeon, until the potential for direct harm or harassment has passed. This will mainly be accomplished by coordination with MFWP regarding its observation of movements of radio-tagged pallid sturgeon and other monitored native fish during the construction season.
- Any in-stream construction activity will be conducted during periods most likely to minimize the potential impact to the pallid sturgeon. The months to avoid and/or minimize impacts to pallid sturgeon are June and July.

Species of Special Concern

- Before every construction season, the ERT will meet with MFWP to determine procedures to minimize impacts to species of special concern. Surveys for species likely to occur in the Intake Project area may be required as some of these species could be potentially harmed by construction activities. Survey requirements will be coordinated with Montana Natural Heritage Program and MFWP prior to any construction activities. These species could require surveys: bald eagle, grasshopper sparrow, red-headed woodpecker, greater sage grouse, Sprague's pipit, Townsend's big-eared bat, nine-anther clover, pale-spiked lobelia, and silky-prairie clover.

Lower Yellowstone Irrigation Project

Modification of the original engineering design to incorporate an additional screen and phasing construction would avoid interruptions in water deliveries to the irrigation districts during the irrigation season.

- If the Rock Ramp Alternative is selected, construction of the north half of the concrete weir and rock ramp will start after completing the headworks and canal extension to continue diversion of flows for uninterrupted operation of the irrigation districts.

Recreation

- In order to minimize impacts to recreationists, the construction contractor will implement dust abatement activities on all dirt or gravel roads within or leading to the construction zone, on both sides of the river.
- To allow access to recreation areas, the construction contractor will grade, on an as needed basis, all dirt or gravel roads within or leading to the construction zone, on both sides of the river, except in areas with historic properties.
- The construction contractor will use “flaggers” during periods of time when large volumes of vehicles cross the entrance road to the campground and picnic/day use area.
- The construction contractor, Reclamation, and the MFWP will meet to evaluate and coordinate closures at the fishing access site (FAS) and Joe’s Island to recreational use, including closure of construction zones to swimming, fishing, boating, hiking, camping, hunting, etc. within or on both sides of the river.
- The construction contractor, Reclamation, and the MFWP will identify a “portage” route around or through the construction zone to allow boaters to hand-carry or drag their boats past the construction zone.
- The construction contractor will clearly post and sign any areas within any designated construction zones. Signs will include warnings limiting or prohibiting certain recreational uses within the zone, such as swimming, fishing, boating, hiking, camping, etc. Signs will be posted upstream and downstream of the Intake Diversion Dam to warn boaters of construction activity.
- The MFWP will designate access corridors through the existing Intake FAS campground and picnic/day use area that could be used to access the river by foot or to launch boats under “primitive” conditions.
- To the extent possible, construction activities will cease during the paddlefish season or until the paddlefish season is closed at Intake FAS.

For the Rock Ramp Alternative, Reclamation and the MFWP will evaluate and the Corps will construct either:

- a new boat ramp at the existing Intake FAS, or
- a new boat ramp immediately adjacent to the existing Intake FAS, or
- a new boat ramp at a site near the existing Intake FAS on the west side of the Yellowstone River and accessible by Highway 16.

Reclamation and the MFWP will develop a public notification plan to include:

- Signs on the road leading to the FAS or Joe’s Island advising the public of closures or restrictions

- Signs indicating the location of other recreation sites including campgrounds, picnic/day use areas and boat ramps

Lands and Vegetation

General

- The ERT will play a role in oversight of actions to minimize effects for land and vegetation.
- Before every construction season, Reclamation and Corps will meet with the Service and the appropriate state wildlife agencies to determine a procedure to minimize impacts to lands and vegetation. A reconnaissance survey of construction easements will be conducted to identify and verify wetlands, grasslands, woodlands, and riparian areas subject to disturbance and/or destruction in the Intake Project area during construction activities. The ERT will be consulted, as necessary, to determine appropriate avoidance and/or protection measures. If adverse impacts cannot be avoided, appropriate procedures and requirements for minimizing or mitigating effects will be discussed with the ERT.
- All areas temporarily impacted during construction will be returned to pre-construction conditions. Any actions taken to minimize disturbance will be limited to the project area.
- Disturbance of vegetation will be minimized through construction site management (e.g., using previously disturbed areas and existing easements when feasible and designating limited equipment/materials storage yards and staging areas). It will be limited to that which is absolutely necessary for construction of the Intake Project.
- All contractors will be required to inspect, clean and dry all machinery, equipment, materials and supplies to prevent spread on Aquatic Nuisance Species.
- All areas disturbed or newly created by the construction activity will be seeded with vegetation indigenous to the area for protection against subsequent erosion and noxious weed establishment.
- All equipment tracks and tires working on Joe's Island or other noxious weed infested areas will be cleaned daily to reduce potential transportation to an uninfested site.
- An integrated weed plan will be developed and approved by the ERT. It will identify best management practices to control the spread or introduction of any noxious weeds or plants. The weed plan will be implemented during and subsequent to construction.
- Erosion control measures will be employed where necessary to reduce wind and water erosion. Erosion and sediment controls will be monitored daily during construction for effectiveness and only effective techniques will be used.
- No permanent or temporary structures will be located in any floodplain, riparian area, wetland or stream that would interfere with floodwater movement, except for those described in chapter two of the Intake Final EA.

Wetlands

- Prior to beginning construction through Conservation Reserve Program lands or program wetlands, the Natural Resources Conservation Service, Consolidated Farm Services Agency, and respective landowners will be consulted to ensure that landowner eligibility in farm subsidy programs (if applicable) will not be jeopardized and that Sodbuster or Swampbuster requirements will not be violated by construction.

- The disposal of waste material, topsoil, debris, excavated material or other construction related materials within any wetland, drainage way, stream or aquatic system would be minimized to the extent possible. Where impacts cannot be avoided, and restoration of affected wetland habitats is necessary as determined by the ERT, wetland soils will be stockpiled for use when constructing new areas.
- Discharges of fill material associated with unavoidable crossings of wetlands or intermittent streams will be carried out in compliance with provisions of Sections 401 and 404 of the Clean Water Act and the nationwide and/or Intake Project-specific permit requirements of the Corps.
- Rock quarry materials will come from sites with no potential to impact wetlands or other protected resources.
- The ERT will play a role in oversight of actions to ensure compliance with Sections 401 and 404 of the Clean Water Act and will recommend actions to minimize effects to wetlands.
- Willow plantings/mats will be used for stabilization and rehab where feasible.

Grasslands

- Grasslands temporarily affected during construction will be restored with similar native species.
- Temporarily disturbed native grassland will be reseeded with native species with the seed mix being determined by the ERT. Planted grassland will be reseeded with a seed mixture appropriate for the site and watered, if necessary, until establishment. Reseeding may require mulching in order to be successful.
- Topsoil will be removed and conserved from the bypass channel construction site. Topsoil not returned to the bypass channel banks will be used to cover excavation waste piles and then seeded consistent with the following requirements:
 - Seed would be certified as cheatgrass and weed free and “blue tag;” this is especially important in areas where weedy or invasive species are already present. There are no seed lots that are free of all weeds; however, requests can be made to specify the type of weed that you would like excluded. The seed company will provide a letter of certification for the seed that would list any noxious weeds or other weed seeds in the lot of seed being provided. This information comes directly from the seed test analysis provided by certified seed testing labs. The seed used on the site can be guaranteed to be cheatgrass free. It is recommended that the seed be tested independently, if necessary, to verify that there are no cheatgrass or noxious weed seeds present.
- Two methods of seeding should be utilized for reclamation areas. Seeds will either be drilled or broadcast based on the species being planted. Drill seeding is recommended for most grasses and large-seeded shrubs and forbs that need to be planted at least ¼ inch deep. Drill seeding is preferred for soil to seed contact, positive depth control, proper seeding rate (once calibrated), and minimum amount of seed usage. Broadcast seeding is recommended for very small and fluffy seeds that need to be planted 1/16 to 1/8 inches deep. Modern range drills may be capable of drill and broadcast seeding.
- Areas requiring re-vegetation will be seeded and mulched during the first appropriate season after redistribution of topsoil. If reseeded cannot be accomplished within 10 days

of topsoil replacement, erosion control measures will be implemented to limit soil loss. Local native grass species would be used (mixture to be reviewed by the ERT).

- Seeding should take place the first appropriate season following topsoil replacement. Seeding between October 15 and April 15 is the most effective throughout Montana because late winter/early spring is the most reliable period for moist soil conditions. In general, fall seeding (between October 15 and when the frost line is deeper than four to six inches) in eastern Montana has been more successful than spring seeding. Some seed may require cold stratification to germinate. However, spring seeding may be considered if timing of construction warrants.
- To reduce erosion, water bars will be installed at specified intervals, depending upon soil type, grade, and terrain on disturbed slopes with grades of 6% or greater.
- Vegetation and soil removal will be accomplished in a manner that will prevent erosion and sedimentation.
- Noxious weeds will be controlled, as specified under state law, within the construction footprint during and following construction. Herbicides will be applied in accordance with labeled instructions and state, federal, and local regulations.
- Grass seeding will be monitored for at least three years. Where grasses do not become adequately established, areas will be reseeded with appropriate species.

Woodlands, Shrublands, and Riparian Areas

- The disposal of waste material, topsoil, debris, excavated material or other construction related materials within riparian areas would be minimized to the extent possible. Woodland and riparian areas will be avoided where practical when constructing permanent facilities.
- Woodland and riparian areas impacted by the Intake Project will be restored with native species.
- Native trees and shrubs will be replaced with similar native species. Long-term success of plantings will be reviewed and approved by the Environmental Review Team.
- Willows will be established along the bypass channel to provide wildlife habitat and channel stability.
- Weed growth in tree plantings will be controlled, and tree plantings will be monitored for at least three years. Where plantings are not successful, they will be replanted with appropriate species.
- Where practicable, replanted riparian areas will be watered to ensure survival of planted vegetation. Long-term success of plantings will be reviewed and approved by the ERT.

Wildlife

Mammals and Migratory Birds

- Before each construction season, the ERT will meet with MFWP to determine procedures for avoiding and minimizing impacts to nesting or migrating birds.
- Areas potentially hazardous to wildlife will be adequately protected (e.g., fenced, netted) to prevent access to wildlife.
- To protect wildlife and their habitats, Intake Project-related travel will be restricted to existing roads and Intake Project easements. No off-road travel will be allowed, except when approved through the ERT.

- Wildlife-proof fencing will be used on reclaimed areas, if it is determined that wildlife species and/or livestock are impeding successful vegetation establishment.
- A migratory bird management plan will be developed in cooperation with the Service and MFWP to minimize potential impacts to breeding birds during construction activities.
- Removal of mature trees will be minimized to the maximum extent practicable to minimize potential effects to potential northern long-eared bat roosting habitat.

Amphibian and Reptiles

- All riverbank disturbance areas will be inventoried for potential turtle nesting habitat. If turtle nesting habitat or evidence of turtle nesting is found in construction areas, construction in these areas will be restricted during June and July, or mitigation measures approved by the ERT will be implemented.

Historic Properties

Reclamation proposes to implement the following actions to offset any adverse effects to historic properties:

- Engineering drawings and photographs of affected buildings and structures, if available, will be filed with the State Historic Preservation Office (SHPO) and the National Archives.
- If engineering drawings and photographs are not available, the buildings and structures will be recorded in accordance with the Historic American Buildings Survey and the Historic American Engineering Record, as appropriate.
- If practicable, historic buildings or structures that must be moved for construction will be returned to their original locations after construction of the Intake Project is completed. If that is not feasible, Reclamation will seek a party willing and able to adopt the historic structure or building with appropriate preservation covenants.
- Reclamation will develop and implement a data recovery plan in consultation with the Montana SHPO, Advisory Council on Historic Preservation, and other interested parties, as appropriate, for mitigation of the Headworks Camp (24DW447).
- One or more signs will be installed at or near the Intake FAS to summarize the history of the Lower Yellowstone Irrigation Project.
- A fence will be installed around the Old Cameron and Brailey Sub-Camp (24DW298) to protect it from disturbance by unloading and storage of rock or other construction activities.
- All construction activities will avoid using the road through the late plains archaic campsite (24DW430).
- All gravel, fill, and rock materials will be obtained from a source approved by Reclamation to ensure compliance with Section 106 of the NHPA.
- Reclamation will continue consultation with the Montana State Historic Preservation Office on the preparation of a formal memorandum of agreement stipulating the mitigation and treatment plan.

Indian Trust Assets

- Reclamation will continue to consult with the Bureau of Indian Affairs and tribes to identify potential Indian trust assets and any adverse effects to them.

