

RECLAMATION

Managing Water in the West

**Sediment Plug Removal at
Bosque del Apache National Wildlife Refuge
Middle Rio Grande Project,
New Mexico**

**Environmental Assessment and
Finding of No Significant Impact**



U.S. Department of the Interior
Bureau of Reclamation
Albuquerque Area Office
Environment Division
Albuquerque, New Mexico

September 2008

MISSION STATEMENTS

The mission of the Department of the Interior is to protect and provide access to our Nation's natural and cultural heritage and honor our trust responsibilities to Indian Tribes and our commitments to island communities.

The mission of the Bureau of Reclamation is to manage, develop, and protect water and related resources in an environmentally and economically sound manner in the interest of the American public.

U.S. Department of the Interior

BUREAU OF RECLAMATION
Albuquerque, New Mexico

Albuquerque Area Office

Finding of No Significant Impact
Environmental Assessment

Sediment Plug Removal at
Bosque del Apache National Wildlife Refuge

Middle Rio Grande Project
New Mexico



Manager, Environment Division

9/26/08

Date



Area Manager, Albuquerque Area Office

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AAO-08-010
FONSI Number

Background

The Bureau of Reclamation has authority for maintenance of the Rio Grande channel between Velarde, New Mexico, and Caballo Reservoir under the *Flood Control Acts of 1948 and 1950* [33 United States Code (U.S.C.) 701s, 701f-2]. Under this authority, Reclamation works to control sedimentation and flooding in the Rio Grande.

During the 2008 spring runoff, a sediment plug, approximately 2.2 miles in length, developed in the Rio Grande near Bosque del Apache National Wildlife Refuge (BDANWR) in Socorro County, New Mexico. Sediment plugs typically form when flows and conditions are such that the channel reaches a bankful state causing overbank flooding. When overbank flooding occurs for a period of time, the water velocity in the river channel is lessened along with its ability to convey sediment. The sediment then falls out of the water column, allowing sediment plugs to form.

The sediment plug has caused water to back up as well as overbank into the nearby riparian vegetation causing potential water delivery loss downstream. After reviewing literature and consulting with technical experts, the area is considered conducive to sediment plug formation. Additional sediment plugs may form in the future within this general river reach and are not limited to the current plug location. Presently there appears no simple solution to this issue and a thorough analysis of the conditions is appropriate. Therefore, a multi-phase approach will be taken with this project, starting with a short term solution which can be implemented quickly to establish a pilot channel for more efficient water delivery while allowing river flows to assist in the plug removal. Work will also begin to address the long term solution for preventing sediment plugs within this river reach.

Summary of the Proposed Action

Reclamation proposes to excavate a 25 foot wide pilot channel through 2 to 3.5 miles of the sediment plug. If flows are sufficient, some plug material may be carried away by the river. Access to the project site would be via existing roads within BDANWR to the levee which parallels the Rio Grande. Work would include installing an access road from the existing levee to the project site which would be 30 feet wide and 875 feet long. Sediment material removed would be hauled and placed on a levee to improve the road surface for approximately one mile. The project has been broken down into three phases, i.e.,

Phase I(a) – Pilot Channel: Excavation of a 25-foot wide pilot channel through 2 to 3.5 miles of sediment plug. Work would begin upon receipt of the required environmental documents and permits, and must be completed prior to BDANWR migratory bird restrictions (November 1, 2008).

Phase I(a) work would also include vegetation clearing to provide an access route for the amphibious excavators needed to excavate the sediment plug. The width of clearing would be 30 feet for a distance of 875 feet. The access route is shown in Figures 2 and 5.

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The location may be adjusted by approximately 100 feet, to the north or south, for the purpose of avoiding native trees. Figure 1 shows the general location of the sediment plug and Figure 2 shows the Phase 1 work overview.

Phase I(b) – Hauling & Levee Improvements: Work would include hauling material excavated for the pilot channel to the levee and constructing (widening and raising) the levee embankment for up to two miles. To provide a suitable surface for the hauling equipment, the road alignment cleared of vegetation for the Phase I(a) work, would be improved with fill material for the Phase I(b) work.

Work is anticipated to begin at the end of BDANWR migratory bird restrictions (March 1, 2009), and must be completed prior to the start of the spring runoff, or for some areas by May 1, 2009, due to the endangered Southwestern Willow Flycatcher restrictions.

Phase II – Pilot Channel Monitoring: Each year, after the spring runoff, Reclamation will conduct an inspection of the pilot channel to assess the progress that the river has made toward widening the channel to the original (pre-sediment plug) width.

Phase III – Long-term Solution: Complete analysis of conditions that may contribute to sediment plug formation within the general reach of river within the BDANWR, development of several potential alternatives, and implementation of the selected alternative. Realignment of the river to the east will be given consideration as a potential alternative.

Environmental Impacts Related to the Resources of Concern

The effects of implementing the proposed action and reasons for a Finding of No Significant Impact are addressed within the Environmental Assessment and summarized below:

Air quality - No significant impacts are foreseen between the No Action and Proposed Alternative. The project area is not in a non-attainment zone.

Cultural Resources - Previously disturbed project location; no cultural resources are known to be present.

Environmental Justice – The proposed action would not disproportionately affect poorer components of the community.

Farmlands, Prime/Unique – None

Floodplains/Riparian Zone – The floodplain would be altered when excavated fill, from the pilot channel, is temporarily placed on the sediment bar. This fill material, when dried out, would be removed and placed on the adjacent levee road and embankment prior to the 2009 spring runoff. The embankment slope would be widened with the fill to add additional protection to the levee.

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Hazardous materials – None

Indian Sacred Sites – None present

Indian Trust Assets – None

Federally listed threatened and endangered species/critical habitat – Proposed work could potentially affect the Rio Grande silvery minnow during construction and therefore, a take statement was obtained from the U.S. Fish and Wildlife Service (Service) (Consultation # 22420-2008-F-145; September 23, 2008). Agreed upon measures between Reclamation and the Service would be taken to minimize potential effects. A “may affect, not likely to adversely affect” determination was made for the Southwestern Willow Flycatcher and its habitat. Protection and restoration of flycatcher habitat will occur as a result of Phase III work.

Water Quality – Effects would be temporary and short in duration. Best Management Practices (BMPs) would be followed and Section 401 requirements would be followed.

Wetlands - None are present where work is scheduled to be performed.

Environmental Commitments

Reclamation proposes the following conservation measures to minimize or avoid adverse effects of the project work:

1. Species Monitoring. Reclamation will continue to conduct annual flycatcher surveys following established protocol and will conduct fish community surveys annually. Results of 2008 surveys have been considered prior to initiating construction.
2. Construction Best Management Practices (BMPs). Reclamation will incorporate best management practices, for example all equipment used in the project area must be pressure washed and/or steam cleaned before the start of the project and inspected daily for leaks. A written log of inspections and maintenance must be completed. Leaking equipment must not be used in or near surface water.
3. Fuel Spill Protection: Equipment will be fueled on the dry channel utilizing an amphibious personnel carrier equipped with a fuel tank containing appropriate spill cleanup material. When not in use, the personnel carrier (with fuel tank) would be stored on the levee road or in the upland area to the west of the levee. There will be no storage of fuel at the site.
4. The project’s temporary road access and vegetation stockpile area will be reseeded with native grasses or plants suitable to the area. This vegetation will help to stabilize the area and will be planted at the earliest practicable date following construction.
5. Coordination and consultation with the Service, Corps of Engineers (Section 404), and New

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Mexico Environment Department (Section 401) as needed and required.

6. All Reasonable and Prudent Measures found within the Biological Opinion (Consultation #22420-2008-F-145) and discussed above shall be followed. In addition, Reclamation shall strive to meet the following Conservation Recommendations as written within the Biological Opinion:

“Section 7(a) (1) of the ESA directs Federal agencies to utilize their authorities to further the purposes of the ESA by carrying out conservation programs for the benefit of endangered and threatened species. Conservation recommendations are discretionary agency activities to minimize or avoid adverse effects of a proposed action on listed species or critical habitat, to help implement recovery plans, or to develop information. The Service recommends the following conservation activities:

1. Encourage adaptive management of flows and conservation of water to benefit listed species.
2. Work to secure long-term water sources to support habitat restoration activities in the Middle Rio Grande.
3. Work to further conduct habitat/ecosystem restoration projects in the Middle Rio Grande to benefit the silvery minnow and flycatcher in the San Acacia Reach.
4. Monitor, maintain, and expand flycatcher habitat restoration areas.

7. Should evidence of possible scientific, prehistorical, historical, or archeological data be discovered during the course of this action, work shall cease at that location and the Area archaeologist shall be notified by phone (505-462-3644) immediately, with the location and nature of the findings. Care shall be exercised so as not to disturb or damage artifacts uncovered during operations, and the proponents shall provide such cooperation and assistance as may be necessary to preserve the findings for removal or other disposition by the Government.

-Discovery of Human Remains. Any person who knows or has reason to know that he or she has inadvertently discovered human remains on Federal or tribal lands, must provide immediate telephone notification of the inadvertent discovery, with written confirmation, to the responsible Federal agency official with respect to Federal lands, and, with respect to tribal lands, to the responsible Indian tribe official. The requirement is prescribed under the Native American Graves Protection and Repatriation Act (P.L. 101-601; 104 Stat. 3042) of November 1990 and National Historic Preservation Act, Section 110(a)(2)(E)(iii) (P.L. 102-575, 106 Stat. 4753) of October 1992.

Note: There are no environmental enhancements planned for Phases I and II of this project at this time. Environmental enhancements will be identified in Phase III, as complete analysis of conditions will be performed and potential long-term solutions will be identified at that time.

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CONCLUSION

In accordance with the National Environmental Policy Act of 1969 (NEPA), as amended, and based on the analysis in the EA, the Bureau of Reclamation has determined that implementing the preferred plan presented in the attached EA would not result in significant impact on the human environment and does not require preparation of an Environmental Impact Statement (EIS).

BUREAU OF RECLAMATION

UPPER COLORADO REGION
ALBUQUERQUE AREA OFFICE
Environmental Assessment

EA Number: AAO-08-010
**Sediment Plug Removal at
Bosque del Apache National Wildlife Refuge**

Location of Proposed Action:

The proposed project site is located on the Rio Grande adjacent to the Bosque del Apache National Wildlife Refuge (BDANWR) in a portion of Township 5 South, Range 1 East, New Mexico Principal Meridian, Socorro County, New Mexico.

I. Introduction

The Bureau of Reclamation has authority for maintenance of the Rio Grande channel between Velarde, New Mexico, and Caballo Reservoir under the *Flood Control Acts of 1948 and 1950* [33 United States Code (U.S.C.) 701s, 701f-2]. Under this authority, Reclamation works to control sedimentation and flooding in the Rio Grande.

A. Background

During the 2008 spring runoff, a sediment plug, approximately 2.2 miles in length, developed in the Rio Grande near Bosque del Apache National Wildlife Refuge (BDANWR) in Socorro County, New Mexico. Sediment plugs typically form when flows and conditions are such that the channel reaches a bankful state causing overbank flooding. When overbank flooding occurs for a period of time, the water velocity in the river channel is lessened along with its ability to convey sediment. The sediment then falls out of the water column, allowing sediment plugs to form.

B. Purpose and Need for Proposed Action

The sediment plug has caused water to back up as well as overbank into the nearby riparian vegetation causing potential water delivery loss downstream. After reviewing literature and consulting with technical experts, the area is considered conducive to sediment plug formation. Additional sediment plugs may form in the future within this general river reach and are not limited to the current plug location. Presently there appears no simple solution to this issue and a thorough analysis of the conditions is appropriate. Therefore, a multi-phase approach will be taken with this project, starting with a short term solution which can be implemented quickly to establish a pilot channel for more efficient water delivery while allowing river flows to assist in the plug removal. Work will also begin to address the long term solution for preventing sediment plugs within this river reach.

II. Description of Proposed Action and Alternatives

A. No Action Alternative

The no action alternative would involve not taking measures to open up the river channel, allowing flows to disperse resulting in water loss and potentially affecting water delivery downstream.

B. Proposed Action/Preferred Alternative

Reclamation proposes to excavate a 25 foot wide pilot channel through 2 to 3.5 miles of the sediment plug. If flows are sufficient, some plug material may be carried away by the river. Access to the project site would be via existing roads within BDANWR to the levee which parallels the Rio Grande. Work would include installing an access road from the existing levee to the project site which would be 30 feet wide and 875 feet long. Sediment material removed would be hauled and placed on the adjacent levee to improve the road surface for approximately one mile. The project has been broken down into three phases, i.e.,

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Phase III – Long-term Solution: Complete analysis of conditions contributing to sediment plug formation within the general reach of river at BDANWR, development of several potential alternatives, and implementation of the selected alternative. Realignment of the river to the east will be given consideration as a potential alternative.

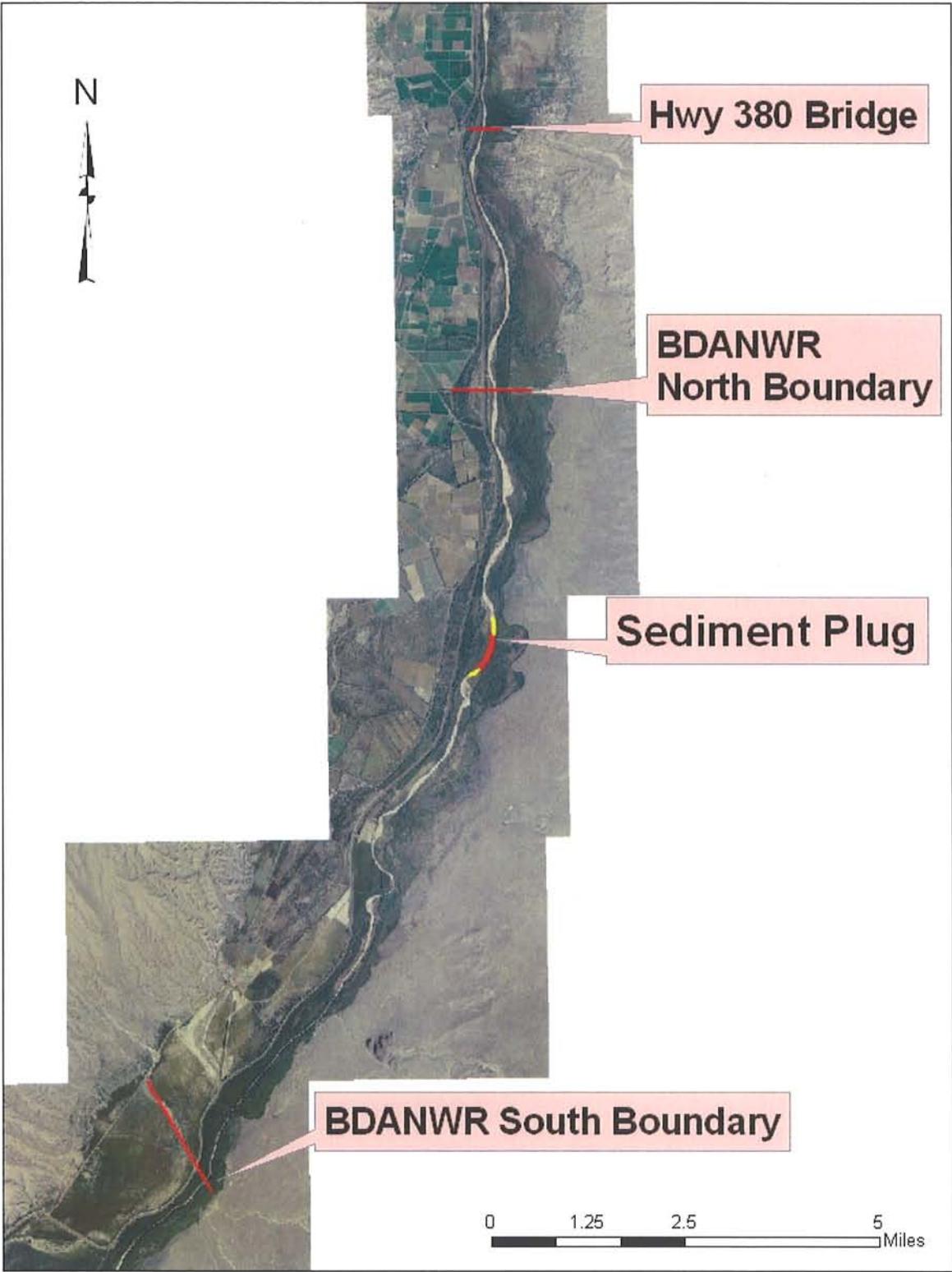


Figure 1: Project Location Map

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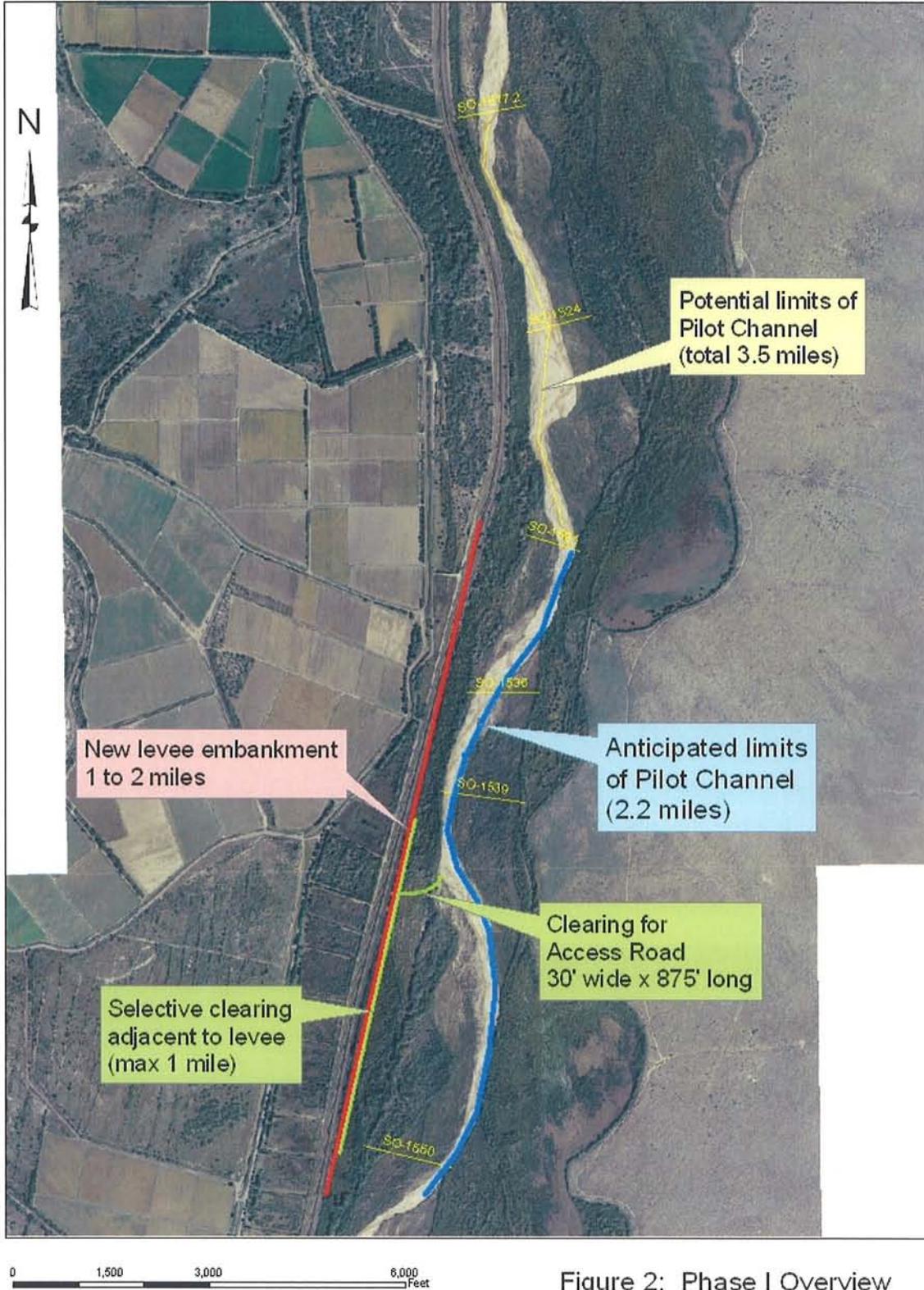


Figure 2: Phase I Overview

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This EA will focus on the Phase I work, i.e., excavating a pilot channel as a short term solution. Because of the potential for additional sediment plug growth in the upstream direction prior to the start of the work, it is difficult to predict the extent of Phase I work. At present, the length of the pilot channel required to reconnect the river is 2.2 miles, but it is possible that estimates of the upstream growth may prove low and require cutting a pilot channel up to 3.5 miles. For this EA, discussions generally assume a length of 2.2 miles, unless otherwise noted, and this length is used for “anticipated” quantities. The length of 3.5 miles is used for “maximum” quantities.

Phase I(a) work would involve excavating a pilot channel through the sediment plug. The pilot channel would be located on the easterly side of the plugged river channel and excavated material would be placed in a spoil berm along the west side of the pilot channel. Several months after completion of Phase I(a), material from the spoil berms would be hauled to the Low Flow Conveyance Channel levee (levee), located to the west of the river, and used to raise and widen one to two miles of the levee. This levee work would be Phase I(b), and by waiting several months between the pilot channel excavation and levee improvements, the western floodplain can dry out, minimizing the need for haul road improvements. Although unlikely, it is also possible that floodplain conditions would permit hauling some or all of the excavated pilot channel material to the levee in conjunction with the Phase I(a) work.

The planned approach for the Phase I(a) work is to excavate a 25-foot wide channel. If time permits, a 10-foot wide channel, within the 25-foot wide may be dug to better match the existing channel profile. Figure 4 shows a typical cross-section of the pilot channel using this channel configuration. The volume of excavation for the 25-foot wide channel (assuming a 2.2 mile length) would be approximately 30,000 cubic yards and the 10-foot wide channel an additional 6,000 cubic yards.

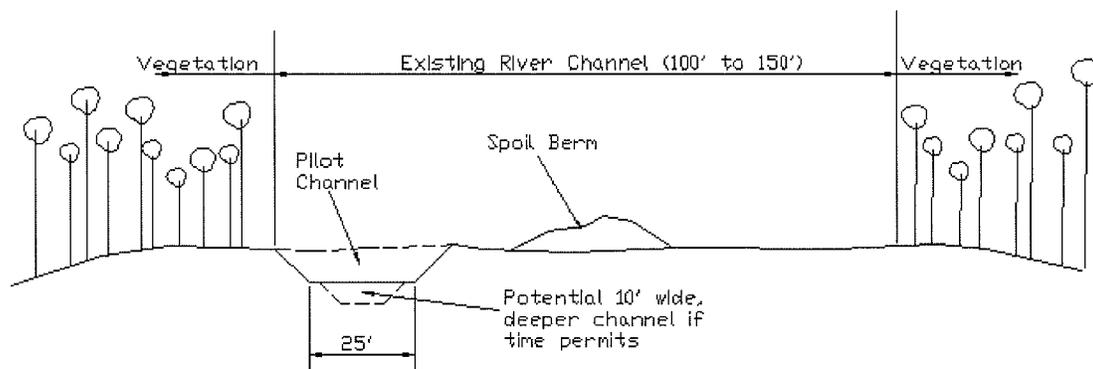


Figure 4: Typical Pilot Channel Cross-Section

The pilot channel configuration shown above is based on assumed sediment plug conditions and based on an assumed period of time available for excavation of the channel. This plan may be

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adjusted depending on actual conditions at the time of the work. The most likely adjustment will be a reduction in size of the pilot channel, to reduce the volume of excavation to that which can be performed within the amount of time available. It is possible that the time available for excavation of the pilot channel will allow for excavation of a channel much narrower than 25 feet and only one to two feet in depth, with the hope that the river will increase the width and depth. However, it is more likely that a narrow, shallow channel would become plugged. If this should happen, the pilot channel would be reexcavated as part of the Phase I(b) work.

Phase I(b): In February 2009, an inspection of the pilot channel and spoil berms will be conducted. Phase I(b) work would begin, if needed, when BDANWR access restrictions are lifted (approximately March 1, 2009). If the inspection indicates sediment has started to accumulate within the pilot channel, additional excavation work would be performed to provide a 25-foot wide channel, using a conservative channel profile. If the spoil berms have not been removed by the river, then Phase I(b) work would include hauling the berm material to the levee. If the spoil berms have been partially removed, a decision would be made, in cooperation with BDANWR, as to whether hauling of the remaining material is warranted.

If the February 2009 inspection indicates that little or no progress has been made by the river in removing the spoil berms, and floodplain conditions do not allow for hauling of that material to the levee prior to the spring runoff, then amphibious excavators would be brought in to excavate breaks in the spoil berms at several locations to ensure that the berms do not inhibit overbank flooding during the runoff. These breaks will be placed at locations where there appears to have been concentrated overbank flows in the past.

As noted earlier, during Phase I(a) access would be created for the amphibious excavators to access the work area (Figures 2 and 5) which would require selective vegetation clearing. A clearing for a temporary vegetation stockpile, a maximum of 0.5 acres, would be created adjacent to the access road (Figure 5). Clearing would be accomplished with the amphibious excavators, by pulling trees out and placing them in the temporary stockpile area.

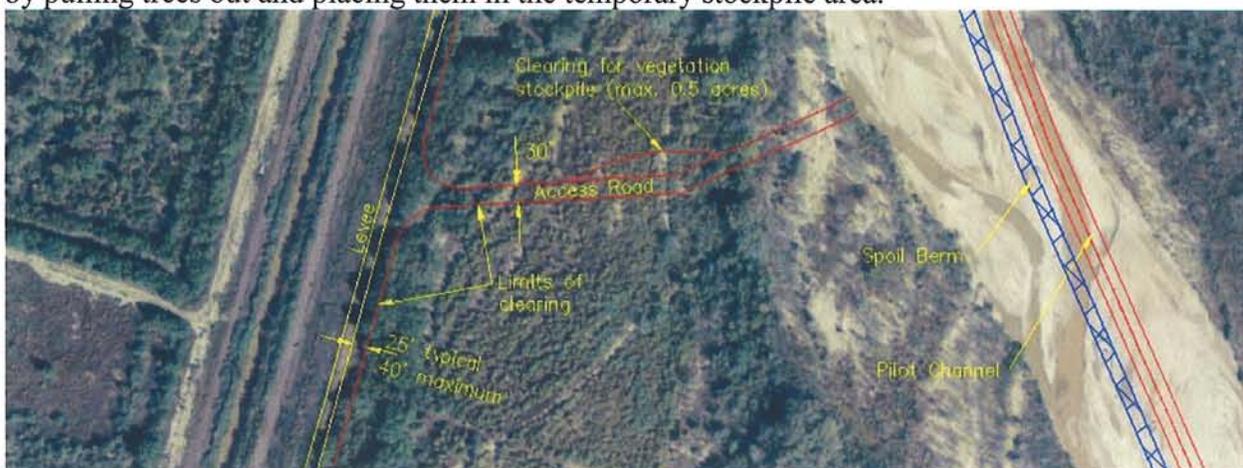


Figure 5: Vegetation Clearing Plan

The vegetation will then be hauled to the levee as part of the Phase I(b) work (after the road is improved) and chipped. Wood chips would be spread over the west slope of the levee, after

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placement of new fill material is complete, or to the north of the levee work. Root balls may be left in piles on the levee slope, for future burning by BDANWR staff.

Approximately one mile of the levee would receive new embankment as part of the Phase I(b) work, requiring clearing of a strip of vegetation along the levee's east side (Figures 2 and 4). The maximum width of the strip would be 25 feet except for 600 feet of the levee which may have a maximum clearing width of 40 feet. Within the two mile length of levee, receiving additional embankment, is an area where emergency levee repairs were performed in June 2008. A strip of vegetation was cleared adjacent to the levee for this work, approximately 40 feet in width and 900 feet in length. The 600 feet of levee that may have up to a 40-foot width of new clearing will be in the same vicinity as the emergency work, leaving a total length of 1,500 feet of clearing to a maximum width of 40 feet.

The majority of the width, proposed to be cleared adjacent to the levee, is the existing levee embankment slope primarily vegetated with saltcedar. The remaining clearing would be on the floodplain, which is a mixture of cottonwood, willow and saltcedar. Clearing within the 25-foot (or 40-foot) zone would be selective, and generally only the saltcedar would be removed, along with some of the smaller cottonwoods and willows. Cottonwoods and willows, greater than 15 feet in height, would be left in place with fill material pushed around them. Attempts will be made to avoid removal of smaller native trees also. Trees would be removed with excavators, working from the levee surface, pulled to the levee and then trucked to the area north of SO-1539 for chipping and spreading. Dead trees within the 25/40-foot zone will also be removed and chipped, or stockpiled for BDANWR use in other habitat projects, upon their request.

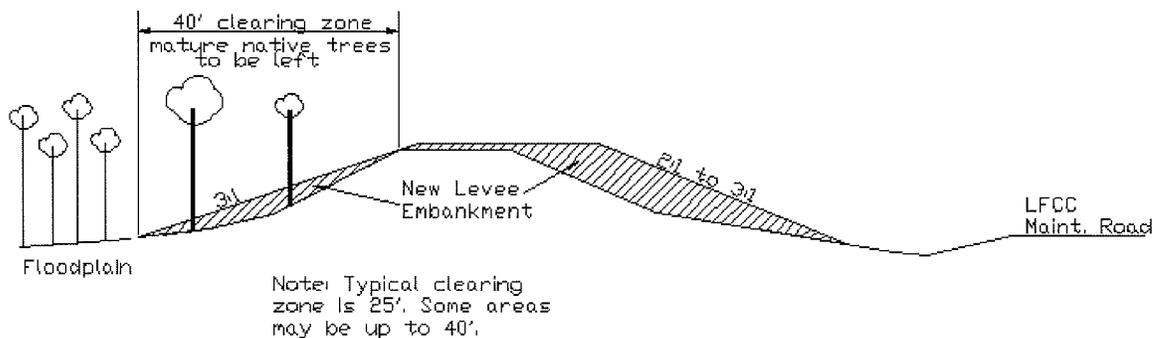


Figure 6: Typical Levee Improvement Cross-Section

Pilot Channel Excavation

The pilot channel will be excavated through the eastern portion of the sediment plug and excavated material spoiled to the west of the channel. As described earlier, the basic plan for the pilot channel configuration is a channel with a bottom width of 25 feet and top width of 35 to 50 feet. The top width will be based on the depth of excavation and stable slope of the excavated material. A deeper 10-foot wide channel may also be excavated within the 25-foot wide channel. The average depth of the pilot channel is anticipated to be 2 to 4 feet, with a maximum depth of

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up to 6 feet.

The pilot channel would be excavated using amphibious excavators, which would be walked in from the levee along the cleared access route. Prior to beginning excavation of the pilot channel, flows in the river channel at the upstream end of the pilot channel would be diverted to the western floodplain, as described below. Once the diversion of river flows is complete, there should be very limited conditions under which river water could enter the pilot channel excavation. These conditions are: (1) an increase in river discharge to the extent that the diversion berms are breached; or, (2) a heavy, localized rainstorm to the east of the plug area that would cause water to enter the excavation from the floodplain. However, because of the perched condition of the plugged river channel relative to the floodplain, it is extremely unlikely that water from the floodplain would enter the excavation area. Additionally, if the excavation is performed during the period of September through October, high river flows or heavy rain are likely. If river water should enter the excavation area, excavation work would stop in the wetted area until the water could be seined for minnows.

Figure 7 shows the diversion plan, assuming the start of the pilot channel to be at rangeline SO-1531 (Station 0+00). This is the best estimate of the starting point at this time, but the actual starting point may vary depending on actual conditions at the time that work begins.

It is anticipated that when the pilot channel work is performed, flows in the river will be less than 500 cfs and that all, or nearly all, of this flow will be leaving the river channel before or at rangeline SO-1539 (Sta. 42+32) and flowing to the western floodplain. Therefore, the plan is to divert the remaining flows in the river somewhere between SO-1536 (Sta. 25+42) and SO-1539. If there is a small amount of water below the point of diversion, then that reach of river will need to be seined for minnows after the diversion has been made. Seining should not be required farther south than Sta. 72+44, as the river channel downstream of that point was completely plugged and dry in July 2008 and will almost certainly be so at the time work is performed.

The process of temporarily diverting river flows will be as described below, based on assumed conditions for the time when work will begin. If the size of the sediment plug has increased more than what was assumed, the diversion will be moved farther upstream.

- A location such as SO-1539 will be selected for diversion of remaining flows in the river channel to the western floodplain. The location selected will be one where flows are already leaving the river channel, and some additional excavation of the natural berm on the west side of the river channel may be performed to increase the flows to the floodplain. A diversion berm would be constructed across the western portion of the river channel, so that all flows leave the river channel to the west floodplain at this point.
- If the river thalweg is not along the western side of the channel from Sta. 0 to the diversion point, excavation would be performed in that segment to establish the river thalweg along the west bank. This excavation will be performed in wet conditions, but will be done in a manner so as to ensure that fish are not trapped in pools.
- A berm would be constructed at Sta. 0 to protect the pilot channel excavation area from high flows.

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- Upon completion of the above diversion, the portion of the river channel between the diversion and the solid sediment plug (Sta. 72+44) may need to be seined for minnows.

Excavation of the pilot channel would be performed by three or four amphibious excavators, with each working a segment of the pilot channel excavation. Approximately 100 feet of sediment plug would be left in place at the start and end of the pilot channel excavation, and between the excavated segments. Leaving these areas in place, until the pilot channel excavation is complete, will isolate the excavation areas in case river water should enter the pilot channel and help lessen the extent of excavation requiring seining.

When the entire length of pilot channel excavation is complete, the last 100 feet of channel will be excavated, then the first 100 feet of channel, at which time the river flows will enter the pilot channel. The area for the excavated diversion channel (example SO-1539) would then be filled to the original condition.

If additional pilot channel excavation is required under Phase I(b), a diversion channel would be reestablished in the same general manner as described above, so that river flows do not enter the pilot channel excavation.

Levee Improvements

Material excavated from the pilot channel would be hauled and used to widen and raise one to two miles of levee. Hauling would be accomplished utilizing trucks or scrapers. This work would be completed several months after excavation of the pilot channel, to allow drying of the floodplain.

The haul road would be located on the same line that was cleared for access by the amphibious excavators for Phase I(a) work. The road alignment would be cleared of vegetation for the Phase I(a) work and will then be improved with fill material for the Phase I(b) work, to provide a suitable surface for the hauling equipment. It is estimated that approximately 1,000 cubic yards of fill material will need to be imported from Valverde Pit to allow trucks initial access to the river, and the remaining fill will be obtained from the pilot channel spoil berms. The majority of road fill will be used to form the ramp to the levee and to cross a natural channel within the floodplain that has formed at the toe of the levee. Fill required over the remainder of the floodplain should average a depth of 1 to 2 feet. At the natural channel near the levee, two or more culverts will be installed to allow water in the floodplain to pass through the access road embankment. There should be no overbanking of river flows at the time of the hauling, but the culverts will be installed as a precaution. Figure 7 shows the access road ramp at the levee, and the culverts. The majority of fill material placed on the floodplain will be removed at the end of the hauling work so as to minimize impacts to flow patterns within the floodplain. Fill material left in place will be no more than one foot higher than the adjacent floodplain.



Figure 7: Access Road Ramp to Levee

Widening of the levee will be performed on both the east and west sides, but with the majority of widening to the west side. Some portions of the levee will be raised up to two feet. New embankment will be placed on the levee as follows.

East Side: Up to one mile of levee will have some fill material placed on the east side of the levee, in the floodplain. The maximum 25-foot (or 40-foot) width of vegetation disturbance (measured from the east top of levee) and presence of mature willows or cottonwoods, would be the limiting factors to determine the amount of new embankment placed on the east side. In some areas there would be no widening of the levee to the east, and only placement of material to flatten the existing embankment slope to 3:1. In some areas the top width of the levee would be increased up to five feet to the east, with a 3:1 embankment slope.

West Side: The existing ditch along the west toe of the levee would be the limiting factor for new embankment construction. The levee would be widened to west an average of 10 to 20 feet, with a new embankment slope of between 2:1 and 3:1. The sparse layer of vegetation (grasses and weeds) on the west slope of the levee would be removed prior to beginning placement of embankment, and then spread over the top of the new embankment.

C. Alternatives Considered, But Eliminated from Detailed Analysis

Various methods to remove sediment plug have been considered in the past (explosives, dredging, utilizing different equipment) but were eliminated. Other alternatives considered would involve additional cost, time, or effort while not being as environmentally friendly. Utilizing a pilot cut through the channel, less material is handled, which saves on labor and fuel costs, while minimizing impacts. Different channel configurations were considered. Ultimately, due to time constraints, the channel configuration selected involves less excavation and could be less reliable in terms of the pilot channel remaining open. Hopefully river flows will assist in removing additional sediment downstream as it widens the pilot channel to the full natural channel width.

III. Environmental Impacts

A. Construction Related Effects

Impacts of the proposed project include temporary construction effects: dust, noise, water quality impacts, increased vehicle traffic to and from the site, and visual impacts. These impacts are considered temporary and/or short in duration. None of these temporary impacts are significant on a local or regional scale. The following associated work impacts are defined below.

B. Vegetative Impacts

	<u>Anticipated</u>	<u>Maximum</u>
<u>Phase I(a):</u>		
Clearing for access road	1.1 acres	1.5 acres
<u>Phase I(b):</u>		
Selective thinning of vegetation for levee improvements*	3.5 acres	4.0 acres

If no Phase I(b) work is required, vegetation would be pulled to the levee with excavators for chipping. Maximum numbers of native trees to be removed:

Height greater than 15 feet: 25 trees
Height 10 to 15 feet: 10 trees (rough estimate)
Height 4 to 10 feet: 75 trees (rough estimate)

The maximum number of mature cottonwoods or willows to be removed, over the entire one mile of levee to be improved is as follows (does not include June 2008 emergency work):

Height greater than 15 feet: 1 tree (goal will be none)
Height 10 to 15 feet: 3 trees
Height 4 to 10 feet: 10 trees

With the river channel being plugged, the resulting flooding may be advantageous to the riparian vegetation and wildlife in the area, but it is potentially detrimental to fish that may not be able to survive in shallow and/or pooled water. The resulting condition, with its associated water loss, may potentially affect water deliveries downstream.

C. Construction Related Effects

Impacts of the proposed project include temporary construction effects: dust, noise, minor water quality impacts, increased vehicle traffic to and from the site, and visual impacts. These impacts are considered temporary and/or short in duration. None of these temporary impacts are significant on a local or regional scale.

D. Endangered Species

As part of the Endangered Species Act - Section 7 consultation process, Reclamation prepared a Biological Assessment for the U.S. Fish and Wildlife Service (Service) to address the effects of the proposed action on the Rio Grande silvery minnow (*Hybognathus amarus*) (silvery minnow) and the Southwestern Willow Flycatcher (*Empidonax traillii extimus*) (flycatcher).

This proposed action tiers off the Reclamation and U.S. Army Corp of Engineers' 2003 Programmatic Biological Assessment and the Service's Biological Opinion and Conference Report entitled, *Bureau of Reclamation's Water and River Maintenance Operations, Army Corps of Engineers' Flood Control Operation, and Related Non-Federal Actions on the Middle Rio Grande, New Mexico* (2003 Middle Rio Grande Biological Opinion).

Rio Grande Silvery Minnow

It is possible that silvery minnows will be present in the project area based upon October 2007 sampling approximately six miles above the sediment plug which resulted in capture of 13 fish with a sampling effort of 648.5 m², although sampling approximately two miles below the sediment plug during that same sampling period resulted in the capture of no silvery minnows from an effort of 570.5 m². The construction techniques in the proposed action minimize contact with fish and minimize potential for harm or harassment, once the water flow is diverted out of the main river channel. If minnows are present, there is potential to result in stranding of minnows in isolated pools in the floodplain once the pilot channel is completed and water is no longer forced out of the channel. When breaching the final 100 ft segment of sediment at the top of the pilot channel, it is likely that minnows present near the work area would be able to freely move away from contact with the equipment and disturbance within the river channel.

Silvery minnows may be present at the time equipment is operating in the river, thus minnows will likely be temporarily harassed in the project area during construction, although diversion of flows from the river should remove minnows from most of the pilot channel excavation.

Construction of the pilot channel would take place in fall (late-September to October) when flows are expected to be low, less than 500 cfs. If the river is still flowing during construction, dewatering of off-channel areas during pilot channel construction could "adversely affect" individual silvery minnows that become stranded in pools. It is expected that silvery minnows will move with flows as part of the dewatering of the off-channel areas and end up in the river downstream of the sediment plug. It is likely, although unknown to what extent, that silvery minnows may become stranded in off-channel or floodplain areas. Reclamation will continue to coordinate with the Service on identifying the need for silvery minnow rescue in the BDANWR

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sediment plug area, as well as other areas along the middle Rio Grande.

Monitoring of the pilot channel through the winter may indicate that further excavation will be required during the months of March through May 2009. Limited excavation in the pilot channel “may affect and is likely to adversely affect” minnows during construction activities only and “may affect is not likely to adversely affect” minnow habitat.

The effects determination of this proposed action is largely dependent on whether flows exist in the river or adjacent off-channel areas during construction or not. Diverting flows out of the main river channel and onto the floodplain during the excavation of the pilot channel “may affect, is not likely to adversely affect” the silvery minnow, as river flow is already being diverted around the existing solid sediment plug.

There may be adverse effect to minnows in the immediate area of construction and possibly off-channel due to dewatering, however, as most of the flows are naturally flowing into the western floodplain around the existing sediment plug, diversion of all flow to the floodplain is unlikely to increase impact to minnows. Once flows are diverted out of the main river channel, and if the pilot channel excavation remains dry during construction, and the diverted flows return to the river without isolated ponds stranding minnows below the sediment plug, the proposed action “may affect, is not likely to adversely affect” the silvery minnow.

Because silvery minnow are likely to occur in the vicinity of the proposed project, Reclamation has determined that the proposed action “may affect, and is likely to adversely affect” during construction. Since silvery minnow could be incidentally harmed during construction activities, Reclamation has requested an Incidental Take Statement for Phases I(a) and I(b) of the project. A determination has been made that the proposed project “may affect, not likely to adversely affect” silvery minnow critical habitat due to potentially reducing available minnow habitat in the area of removal of the sediment plug.

Southwestern Willow Flycatcher

Flycatcher surveys have been conducted in the proposed project area for several consecutive years. The most recent flycatcher survey effort (summer 2008) found two nesting pairs and a pair without a nest within the proposed project area. Initially the use of the rangeline for the haul road was considered since it would involve less clearing, but this location was determined undesirable based on the nesting locations. The access road alignment shown in Figure 5 was selected to prevent any impacts to the flycatchers and to minimize removal of mature native trees.

Construction of the proposed access road would take place when flycatchers are not present and will be located such that the smallest amount of potentially-suitable flycatcher habitat will be affected. Further, this access road will be located >1/4 mile south of the existing flycatcher nests along the river. Thus, the construction of this road will have “no effect” on flycatchers or their habitat.

Clearing of a narrow linear strip of vegetation, 25 to 40 feet wide, along the levee, to the west of the river, will be restricted to not occur within 500 feet of the flycatcher nest on the west side of the Rio Grande. Clearing the vegetation will not affect individual flycatchers at the time it is

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proposed to take place and will occur outside of the time in which flycatchers are present (May – August). Mature, native tree species will likely be left in place and will continue to provide a tree canopy in some locations. Further, the narrow width of the proposed clearing is minimal in the context of the wider riparian corridor that ranges from 350 feet to well over 2000 feet in this reach of the river.

Considering the extent of the proposed project, the timing of the project (when flycatcher are not in residence), Phase I(a) “may affect, but will likely not adversely affect” the flycatcher or its habitat. Diverting water from the river channel to the west side of the riparian floodplain should benefit the habitat through additional water supply, nutrient deposition, salt flushing, and aid in seed dispersal and seedling establishment. Phase I(b) may affect flycatcher habitat by clearing a narrow strip of vegetation along the levee. All other actions will have “no effect” to individuals or populations of Willow Flycatchers in the project area. Therefore, Reclamation has determined that the proposed project “may affect, but will likely not adversely affect” the flycatcher or its habitat.

The Service has concurred with Reclamation’s determinations for the silvery minnow and flycatcher (Consultation # 22420-2008-F-145; September 23, 2008). The Service established an incidental take statement that anticipates that take in the form of harassment may affect up to 57,915 silvery minnow during project construction. The Service does not expect any direct mortality to occur due to sediment plug removal activities. To minimize impact of incidental take of silvery minnow due to activities associated with the proposed project, the following Reasonable and Prudent (RPMs) are necessary:

1. Minimize take of silvery minnow due to sediment plug removal.
2. Minimize take of silvery minnow in the form of loss of habitat due to channel reconfiguration.
3. Minimize take of silvery minnow due to recurring plug formation and plug removal projects in this reach.

Reclamation will be responsible to comply with the following terms and conditions in order to be exempt from the prohibitions of Section 9 of the ESA and are non-discretionary.

To implement RPM 1, Reclamation shall:

- 1.1 Construct a minimum of four embayments on the west side of the pilot channel to promote channel widening to recent pre-plug dimensions. Embayment design will be completed during the winter of 2008. Embayment construction will be completed during Phase I(b).

Dimensions of embayments will be approximately 30 to 50 feet in width and 50 to 70 feet in length. Limits of embayments will be limited to the plugged river channel and will not extend beyond the vegetation line. The depth of the embayments will be such that the

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invert of the embayments will be above the water surface in the pilot channel at the time of construction, so that the excavation can be completed in the dry. If the river has widened the pilot channel to the extent that the majority of the spoil berms have been eroded and it is determined, in conjunction with BDANWR, that hauling of the remaining spoil berm material to the levee is not warranted, then embayment construction will not be necessary.

To implement RPM 2, Reclamation shall:

2.1 Reclamation will collect the following data for four years following excavation of the pilot channel, to monitor channel degradation/aggradation and overbanking patterns:

- Every year, cross section data of the river channel from the north boundary of BDANWR to San Marcial Railroad Bridge.
- At least one time during the four years, cross-section data of the river channel and floodplains taken on 25 existing rangeline, between the north boundary of BDANWR and the San Marcial Railroad Bridge. Cross-sections will extend between existing endpoints for these rangelines.
- Every year, during spring runoff, observations to determine where overbanking is occurring (to the east and west). During each spring runoff, Reclamation will make at least two inspections of the river channel, by boat, during the period of the runoff when overbanking first begins with the reach. Specific locations where there is concentrated flow to the overbank areas will be documented by GPS.

2.2 Reclamation will analyze data collected under 2.1 each year, comparing the data to 2002 and 2005 cross-section data, to assess changes to the riverbed thalweg and channel geometry, including width/depth ratio. Coordination with the Service (New Mexico Ecological Services Field Office and BDANWR) will occur by Reclamation providing the yearly data and analysis, and through discussions with the Service.

To implement RPM 3, Reclamation shall:

3.1 Complete an in-depth analysis of alternatives to pilot channel construction within the Reach of river between Highway 380 and the San Marcial Railroad Bridge (Phase III). The alternative analysis should include a minimum of three different strategies to address the following:

- Sediment transport through the reach
- Maintenance of connected un-vegetated river bars
- Opportunities for river realignment following sand plug formation

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- River connectivity during low flows
- River/floodplain surface connectivity
- Surface water supplies to adjacent wetlands
- Effects on threatened, endangered, or candidate species

This analysis must be conducted in coordination with the Service (New Mexico Ecological Services Field Office and BDANWR) and initiated within six months of the completion of Phase I(b). The final document must be completed within three years and will be used in all future sediment plug removal or maintenance projects with BDANWR.

Table 1. Environmental impact analysis; summary of significant impacts between the No Action and Proposed Alternative (significant impact is defined by CEQ regulation).

ENVIRONMENTAL COMPONENT	ALTERNATIVE		DISCUSSION
	NO ACTION	PROPOSED	
Air Quality	No	No	Project area is not in a non-attainment zone.
Cultural Resources	No	No	Previously disturbed project location; no cultural resources are known to be present.
Environmental Justice	No	No	The proposed action would not disproportionately affect poorer components of the community.
Farmlands, Prime/Unique	No	No	None
Floodplains/Riparian Zone	No	Yes	The floodplain would be altered when excavated fill, from the pilot channel, is temporarily placed on the sediment bar. This fill material, when dried out, would be removed and placed on the adjacent levee road and embankment prior to the 2009 spring runoff. The embankment slope would be widened with the fill to add additional protection to the levee.
Hazardous Materials	No	No	None
Indian Sacred Sites	No	No	None present
Indian Trust Assets (ITAs) <small>(ITAs are legal interests in property held in trust by the United States for Indian tribes or individuals. Examples of things</small>	No	No	None

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that may be trust assets are lands, minerals, hunting and fishing rights, and water rights. This trust responsibility requires that all federal agencies, including Reclamation, take all actions reasonably necessary to protect trust assets. This duty requires Reclamation to carry out its activities in a manner which avoids adverse impacts to ITAs when possible).			
Federally listed threatened and endangered species/critical habitat	Yes	Yes	Proposed work could potentially affect the Rio Grande silvery minnow during construction. A take statement was obtained from the Service. Agreed upon measures between Reclamation and the Service would be taken to minimize potential effects. A “may affect, not likely to adversely affect” determination was made for the Southwestern Willow Flycatcher and its habitat.
Water Quality	No	Yes	Effects would be temporary and short in duration. Best Management Practices (BMPs) would be followed and Section 401 requirements would be followed.
Wetlands	No	No	None are present where work is scheduled to be performed.

E. Cumulative Effects

Cumulative effects include the effects of future state, tribal, local or private actions that are reasonably certain to occur in the action area. Phase III, the long term solution, will provide a complete analysis of conditions that contribute to sediment plug formation and will consider a variety of alternatives that address the effects on fish and wildlife, vegetation, adjacent wetlands, human water supply, etc.

Presently, no specific state, tribal, local or private actions are proposed within the Bosque del Apache reach of the Rio Grande.

AFFIDAVIT OF PUBLICATION

STATE OF NEW MEXICO)
) SS.
COUNTY OF SOCORRO)

Melissa Montoya, being first duly sworn, deposes and says that she is Business Manager of "El Defensor Chieftain"; that said "El Defensor Chieftain" is a semi-weekly newspaper of general paid circulation in the County of Socorro, State of New Mexico, which is entered under the second class postal privilege and is published in Socorro, Socorro County, New Mexico; that said "El Defensor Chieftain" is a newspaper duly qualified in all respects for the purpose of publishing legal notices and advertisements in Socorro County, New Mexico; that the publication, a copy of which is hereto attached was published in the regular and entire issue of every number of said newspaper during the period of publications, and that said notice was and published in the newspaper proper and to a supplement thereof of 1 time(s); the first publication began on the 9/20/08, 2008 and the last publication on the 9/28/08, 2008.

Melissa Montoya
Affiant

Subscribed and sworn to before me this 3rd day of October 2008.

Angela Esquivel
Notary Public
NOTARY PUBLIC
STATE OF NEW MEXICO
Commission Expires: 6/01/2012

SOCORRO COUNTY

Legals

DRAFT ENVIRONMENTAL ASSESSMENT AND FINDING OF NO SIGNIFICANT IMPACT

Sediment Plug Removal at Bosque del Apache National Wildlife Refuge Bureau of Reclamation Albuquerque Area Office The Bureau of Reclamation has completed a draft environmental assessment (EA) and draft Finding of No Significant Impact (FONSI) for the Sediment Plug Removal at Bosque del Apache National Wildlife Refuge (Refuge). The EA was prepared under the provisions of the National Environmental Policy Act (NEPA) of 1969 (42 U.S.C. 4321 et. Seq.) and the Council on Environmental Quality regulations (40 CFR 1500).

A sediment plug formed during the 2008 spring runoff in the Rio Grande within the Refuge causing flows to disperse to the east and west floodplains, resulting in water loss and potentially affecting water delivery downstream.

The proposed action is for Reclamation to excavate a 25 foot wide pilot channel through 2 to 3.5 miles of the sediment plug. Excavation of the pilot channel would be done in the dry and a temporary access road to the project site would be constructed. Sediment material excavated from the pilot channel would be hauled and placed on the adjacent levee to improve the road surface for approximately one mile. Some plug material will eventually

be carried downstream by the river.

Reclamation is currently conducting Endangered Species Act Section 7 consultation with the Fish and Wildlife Service. Reclamation is also obtaining a Section 404 Individual Permit from the Army Corps of Engineers and a Section 401 Water Quality Certification from the New Mexico Environment Department. Full coordination has taken place with the Refuge. No work will be performed until all environmental compliance documents have been obtained and approved.

The key potential environmental effect associated with the proposed work is impact to endangered species. In accordance with the NEPA, and based on the analysis in the EA, Reclamation has determined that implementing the preferred plan presented would not result in significant impact on the human environment and does not require preparation of an Environmental Impact Statement.

For further information, contact Nancy Umbreit at Reclamation's Albuquerque Area Office, (505) 462-3599 or e-mail numbreit@uc.usbr.gov.

Published on September 20, 2008.

DEPARTMENT OF THE ARMY PERMIT

Permittee Bureau of Reclamation

Permit No. SPA-2008-00354-ABQ

Issuing Office Albuquerque District Corps of Engineers

NOTE: The term "you" and its derivatives, as used in this permit, means the permittee or any future transferee. The term "this office" refers to the appropriate district or division office of the Corps of Engineers having jurisdiction over the permitted activity or the appropriate official of that office acting under the authority of the commanding officer.

You are authorized to perform work in accordance with the terms and conditions specified below.

Project Description: To discharge approximately 74,000 cu.yds. of dredged channel sediment, impacting approximately 29.7 acres of river channel, in the construction of a sediment plug pilot channel. The project is located within a 3.5 mile reach of the Rio Grande, within the Bosque del Apache National Wildlife Refuge (BDANWR), near San Antonio, Socorro County, New Mexico. The pilot channel will be trapezoidal, 35' wide across the top of the channel bed, 25' wide along the bottom of the channel, and from 2' to 6' deep. The channel will extend along the length of the plug, approximately 3.5 miles.

Excavated sediment will be placed along the west and adjacent to the excavated channel and will function as a diversion berm. A maximum of 75,000 cy. of sediment will be excavated. A total of up to 29.7 acres of jurisdictional waters will be impacted. The project includes at least two earthen diversion berms across the width of the river channel to be located at the sediment plug's upstream and downstream terminus locations. Also included will be a 30' wide by 875' long access road extending from the west levee to the river channel. Creating the access road will require vegetation clearing within the road boundaries as well as a 0.2 acre area adjacent to the road alignment for vegetation stockpiling. The project will be constructed in accordance with the attached drawings, entitled, "Sediment Plug Pilot Channel, in the Rio Grande, near San Antonio, Socorro County, Rio Grande River near San Antonio, Socorro County, New Mexico, Application by Bureau of Reclamation, Application No. SPA-2008-00354-ABQ," sheets 1 through 6, dated August 29, 2008.

Project Location: In the Rio Grande River, near San Antonio, Socorro County, New Mexico

Permit Conditions:

General Conditions:

1. The time limit for completing the work authorized ends on December 31, 2018 . If you find that you need more time to complete the authorized activity, submit your request for a time extension to this office for consideration at least one month before the above date is reached.
2. You must maintain the activity authorized by this permit in good condition and in conformance with the terms and conditions of this permit. You are not relieved of this requirement if you abandon the permitted activity, although you may make a good faith transfer to

a third party in compliance with General Condition 4 below. Should you wish to cease to maintain the authorized activity or should you desire to abandon it without a good faith transfer, you must obtain a modification of this permit from this office, which may require restoration of the area.

3. If you discover any previously unknown historic or archeological remains while accomplishing the activity authorized by this permit, you must immediately notify this office of what you have found. We will initiate the Federal and state coordination required to determine if the remains warrant a recovery effort or if the site is eligible for listing in the National Register of Historic Places.

4. If you sell the property associated with this permit, you must obtain the signature of the new owner in the space provided and forward a copy of the permit to this office to validate the transfer of this authorization.

5. If a conditioned water quality certification has been issued for your project, you must comply with the conditions specified in the certification as special conditions to this permit. For your convenience, a copy of the certification is attached if it contains such conditions.

6. You must allow representatives from this office to inspect the authorized activity at any time deemed necessary to ensure that it is being or has been accomplished in accordance with the terms and conditions of your permit.

Special Conditions:

After a detailed and careful review of all of the conditions contained in this permit, the permittee acknowledges that, although said conditions were required by the Corps of Engineers, nonetheless the permittee agreed to those conditions voluntarily to facilitate issuance of the permit; the permittee will comply fully with all the terms of all the permit conditions.

I. The Permittee shall monitor the area within the project boundary for one year to ensure the non-proliferation of exotic and/or noxious vegetative species. The Permittee shall take all appropriate measures as necessary to ensure noxious and exotic vegetative species do not proliferate within the project boundaries. The one-year timeframe shall begin March 15, 2009. A monitoring report shall be provided at the end of the one-year period. The report shall comply with the US Army Corps of Engineers, Albuquerque District Annual Monitoring Report Format.

II. The U.S. Fish and Wildlife Service outlined three Reasonable and Prudent Measures (RPM) to be implemented by the Permittee. The Corps agrees with the measures and the implementing action items and has included the Service's requirements as special conditions for this permit. The measures are:

1. Minimize take of silvery minnow due to sediment plug removal.
2. Minimize take of silvery minnow in the form of loss of habitat due to channel reconfiguration.
3. Minimize take of silvery minnow due to recurring plug formation and plug removal plug removal projects in this reach.

The Service included action items to implement the RPMs as follows:

To implement RPM 1, the Permittee shall:

- 1.1 Construct a minimum of four embayments on the west side of the pilot channel to promote channel widening to recent pre-plug dimensions. Embayment design shall

be completed during the winter of 2008. Embayment construction shall be completed during Phase I(b).

Dimensions of embayments shall be approximately 30 to 50 feet in width and 50 to 70 feet in length. Limits of embayments shall be limited to the plugged river channel and shall not extend beyond the vegetation line. The depth of the embayments shall be such that the invert of the embayments shall be above the water surface in the pilot channel at the time of construction, so that the excavation can be completed in the dry. If the river has widened the pilot channel to the extent that the majority of the spoil berms have been eroded and it is determined, in conjunction with BDANWR, that hauling of the remaining spoil berm material to the levee is not warranted, then embayment construction shall not be necessary.

To implement RPM 2, Permittee shall:

- 2.1 Permittee shall collect the following data for four years following excavation of the pilot channel, to monitor channel degradation/aggradation and overbanking patterns:
 - Every year, cross section data of the river channel from the north boundary of BDANWR to San Marcial Railroad Bridge.
 - At least one time during the four years, cross-section data of the river channel and floodplains taken on 25 existing rangeline, between the north boundary of BDANWR and the San Marcial Railroad Bridge. Cross-sections shall extend between existing endpoints for these rangelines.
 - Every year, during spring runoff, observations to determine where overbanking is occurring (to the east and west). During each spring runoff, Permittee shall make at least two inspections of the river channel, by boat, during the period of the runoff when overbanking first begins with the reach. Specific locations where there is concentrated flow to the overbank areas shall be documented by GPS.
- 2.2 Permittee shall analyze data collected under 2.1 each year, comparing the data to 2002 and 2005 cross-section data, to assess changes to the riverbed thalweg and channel geometry, including width/depth ratio. Coordination with the Service (New Mexico Ecological Services Field Office and BDANWR) shall occur by Permittee providing the yearly data and analysis, and through discussions with the Service.

To implement RPM 3, Permittee shall:

3.1 Complete an in-depth analysis of alternatives to pilot channel construction within the reach of river between Highway 380 and the San Marcial Railroad Bridge (Phase III). The alternative analysis should include a minimum of three different strategies to address the following:

- Sediment transport through the reach
- Maintenance of connected un-vegetated river bars
- Opportunities for river realignment following sand plug formation
- River connectivity during low flows
- River/floodplain surface connectivity
- Surface water supplies to adjacent wetlands
- Effects on threatened, endangered, or candidate species

This analysis must be conducted in coordination with the Service (New Mexico Ecological Services Field Office and BDANWR) and initiated within six months of the completion of Phase I(b). The final document must be completed within three years and shall be used in all future sediment plug removal or maintenance projects with BDANWR.

III. Your responsibility to complete the required compensatory mitigation as set forth in Special Condition No. II shall not be considered fulfilled until you have demonstrated mitigation success and have received written verification from the U.S. Army Corps of Engineers.

Further Information:

1. Congressional Authorities: You have been authorized to undertake the activity described above pursuant to:

() Section 10 of the Rivers and Harbors Act of 1899 (33 U.S.C. 403).

(X) Section 404 of the Clean Water Act (33 U.S.C. 1344).

() Section 103 of the Marine Protection, Research and Sanctuaries Act of 1972 (33 U.S.C. 1413).

2. Limits of this authorization.

a. This permit does not obviate the need to obtain other Federal, state, or local authorizations required by law.

b. This permit does not grant any property rights or exclusive privileges.

c. This permit does not authorize any injury to the property or rights of others.

d. This permit does not authorize interference with any existing or proposed Federal project.

3. Limits of Federal Liability. In issuing this permit, the Federal Government does not assume any liability for the following:

a. Damages to the permitted project or uses thereof as a result of other permitted or unpermitted activities or from natural causes.

b. Damages to the permitted project or uses thereof as a result of current or future activities undertaken by or on behalf of the United States in the public interest.

c. Damages to persons, property, or to other permitted or unpermitted activities or structures caused by the activity authorized by this permit.

d. Design or construction deficiencies associated with the permitted work.

e. Damage claims associated with any future modification, suspension, or revocation of this permit.

4. Reliance on Applicant's Data: The determination of this office that issuance of this permit is not contrary to the public interest was made in reliance on the information you provided.

5. Reevaluation of Permit Decision. This office may reevaluate its decision on this permit at any time the circumstances warrant.

Circumstances that could require a reevaluation include, but are not limited to, the following:

- a. You fail to comply with the terms and conditions of this permit.
- b. The information provided by you in support of your permit application proves to have been false, incomplete, or inaccurate (See 4 above).
- c. Significant new information surfaces which this office did not consider in reaching the original public interest decision.

Such a reevaluation may result in a determination that it is appropriate to use the suspension, modification, and revocation procedures contained in 33 CFR 325.7 or enforcement procedures such as those contained in 33 CFR 326.4 and 326.5. The referenced enforcement procedures provide for the issuance of an administrative order requiring you to comply with the terms and conditions of your permit and for the initiation of legal action where appropriate. You will be required to pay for any corrective measures ordered by this office, and if you fail to comply with such directive, this office may in certain situations (such as those specified in 33 CFR 209.170) accomplish the corrective measures by contract or otherwise and bill you for the cost.

6. Extensions. General condition 1 establishes a time limit for the completion of the activity authorized by this permit. Unless there are circumstances requiring either a prompt completion of the authorized activity or a reevaluation of the public interest decision, the Corps will normally give favorable consideration to a request for an extension of this time limit.

Your signature below, as permittee, indicates that you accept and agree to comply with the terms and conditions of this permit.



(PERMITTEE)



(DATE)

This permit becomes effective when the Federal official, designated to act for the Secretary of the Army, has signed below.


Lesley McWhirter
Chief, Texas/New Mexico Branch

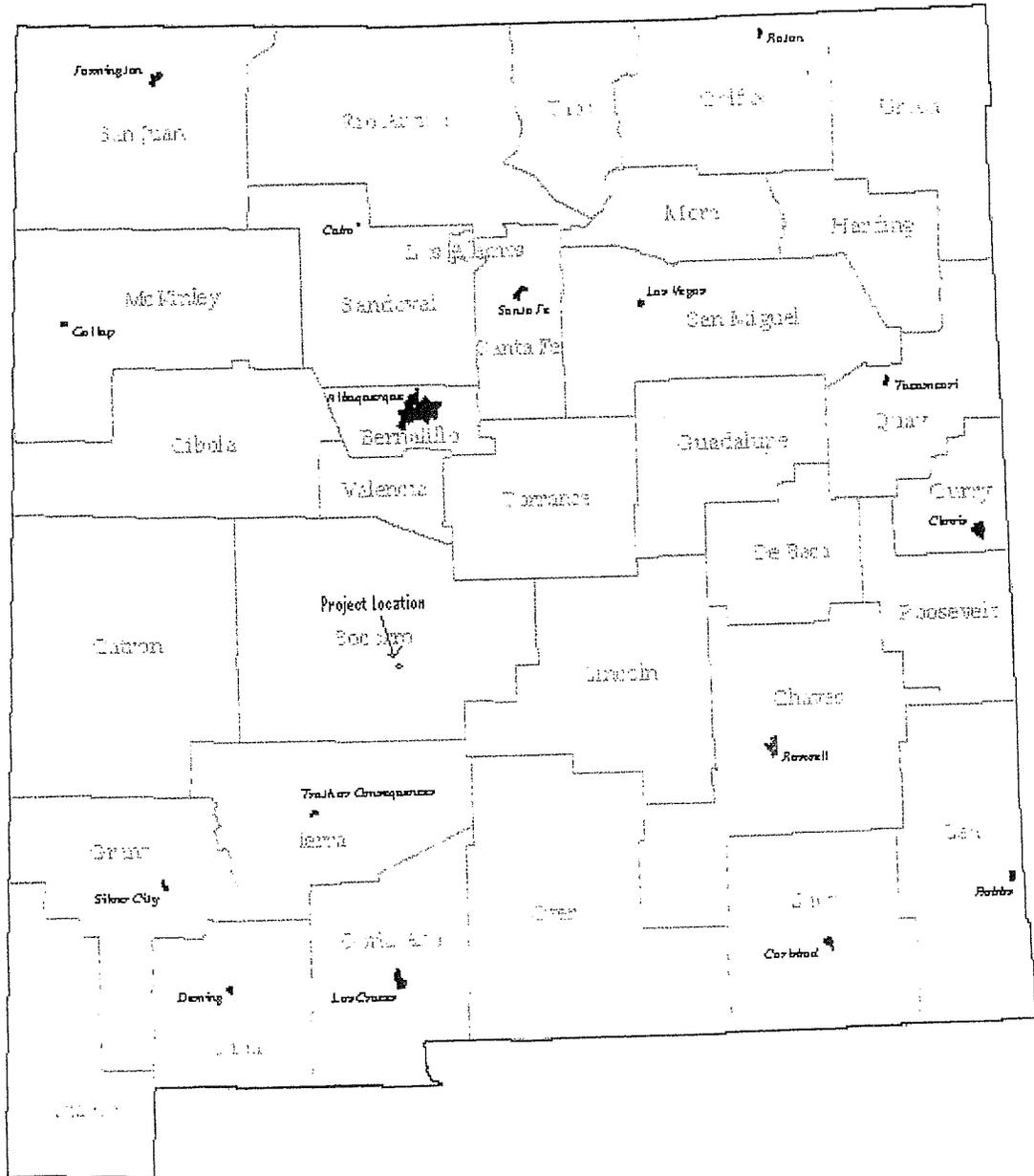

(DATE)

When the structures or work authorized by this permit are still in existence at the time the property is transferred, the terms and conditions of this permit will continue to be binding on the new owner(s) of the property. To validate the transfer of this permit and the associated liabilities associated with compliance with its terms and conditions, have the transferee sign and date below.

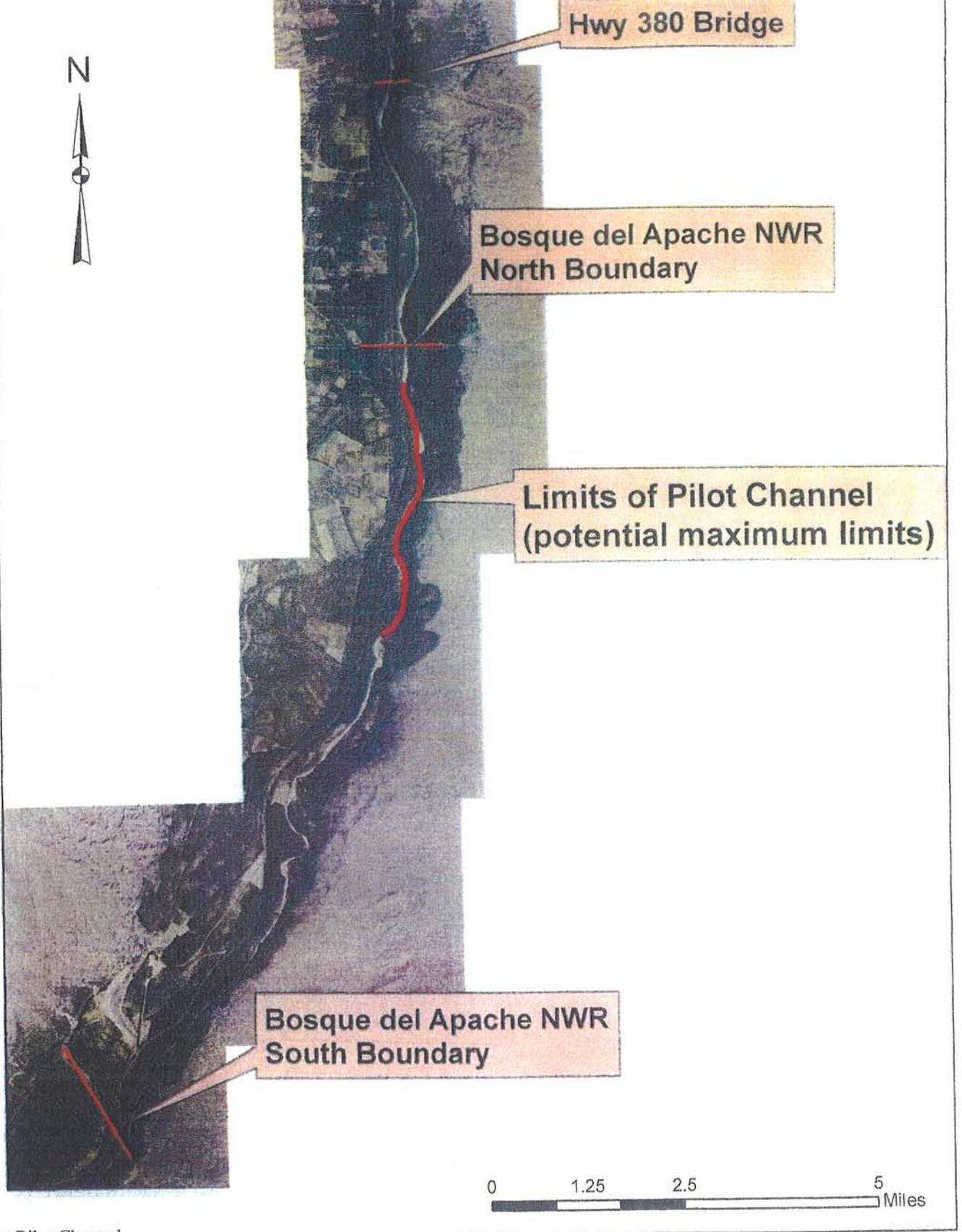
(TRANSFEREE)

(DATE)

Location Map



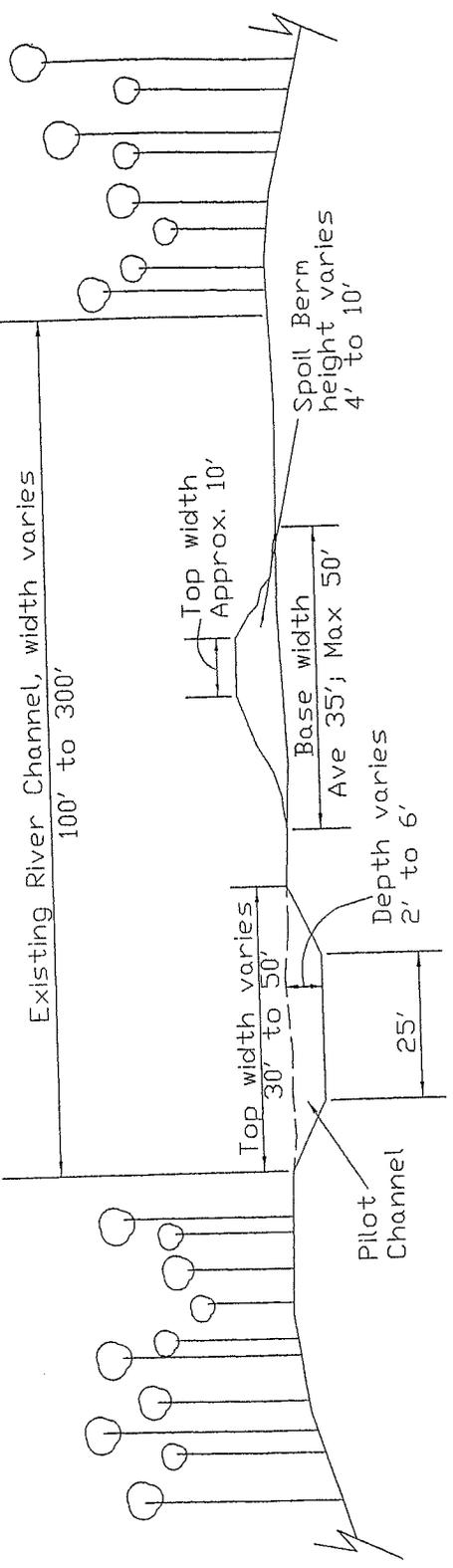
Sediment Plug Pilot Channel
Rio Grande, Bosque del Apache, Socorro Co., New Mexico
Location Map
Application by Bureau of Reclamation
Application No. SPA-2008-00354-ABQ
Sheet 1 of 6 August 29, 2008



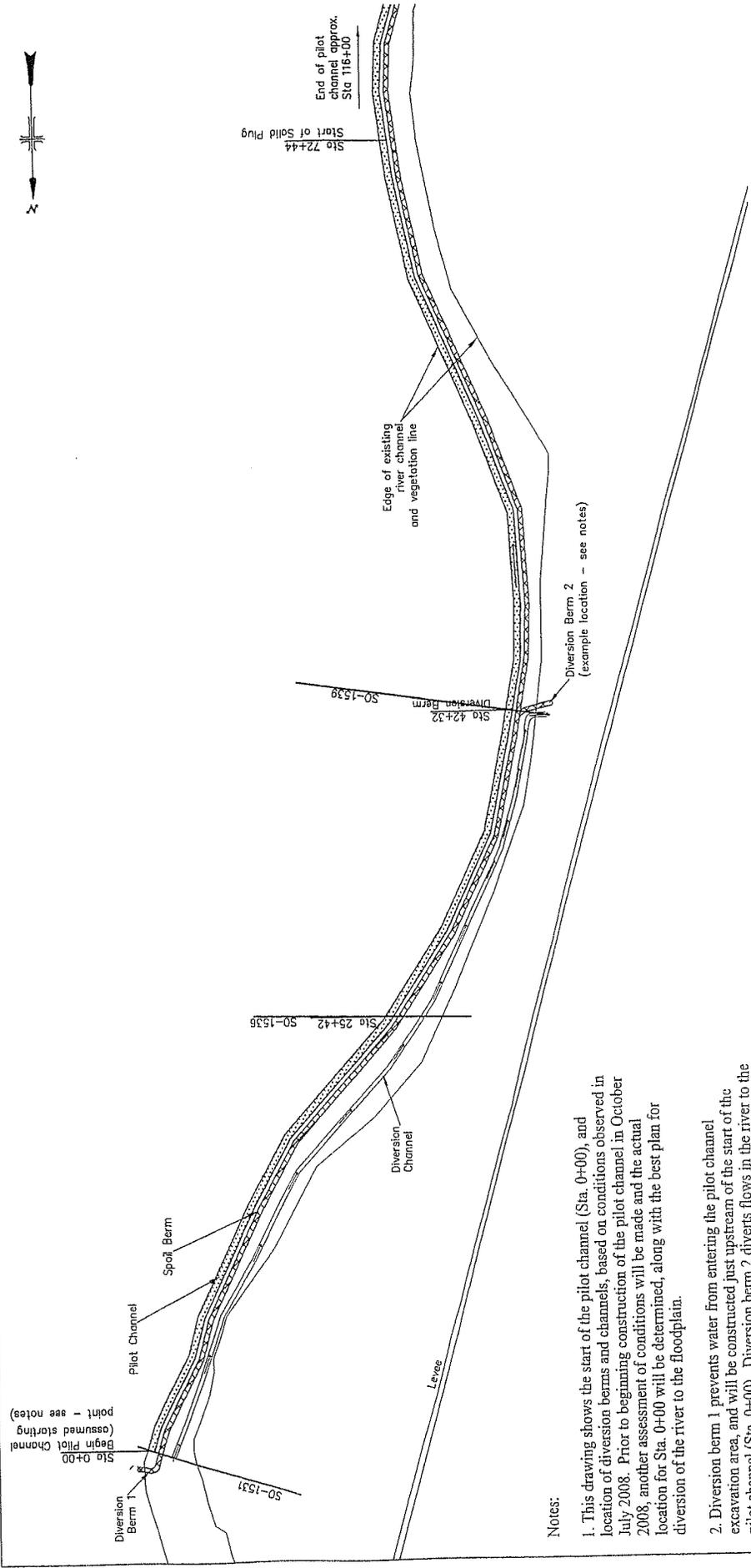
Sediment Plug Pilot Channel
Rio Grande, Bosque del Apache, Socorro Co., New Mexico
Vicinity Map
Application by Bureau of Reclamation
Application No. SPA-2008-00354-ABQ
Sheet 2 of 6 August 29, 2008

Bosque del Apache NWR Sediment Plug Removal
Phase 1(a) - Pilot Channel

Distance to levee varies,
200' to 1,700'

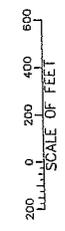


Sediment Plug Pilot Channel
Rio Grande, Bosque del Apache, Socorro Co., New Mexico
Typical Pilot Channel Cross Section
Application by Bureau of Reclamation
Application No. SPA-2008-00354-ABQ
Sheet 3 of 6 August 29, 2008



Notes:

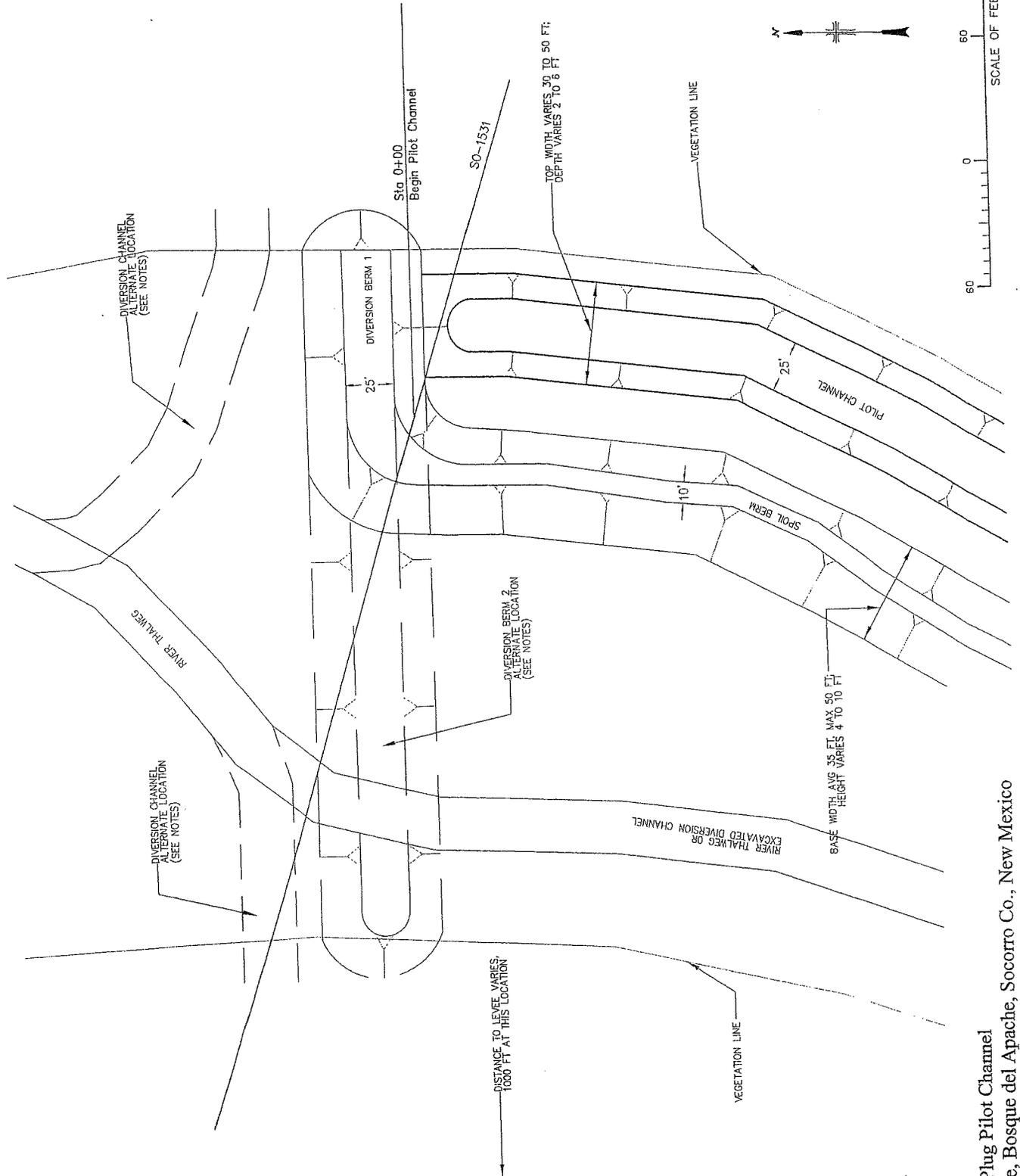
1. This drawing shows the start of the pilot channel (Sta. 0+00), and location of diversion berms and channels, based on conditions observed in July 2008. Prior to beginning construction of the pilot channel in October 2008, another assessment of conditions will be made and the actual location for Sta. 0+00 will be determined, along with the best plan for diversion of the river to the floodplain.
2. Diversion berm 1 prevents water from entering the pilot channel excavation area, and will be constructed just upstream of the start of the pilot channel (Sta. 0+00). Diversion berm 2 diverts flows in the river to the floodplain, and the location for this berm will be determined just prior to the start of pilot channel construction.
3. This drawing shows diversion berm 2 at rangeline SO-1539 (Sta. 42+32), but the actual location will be somewhere between Sta. 0+00 and 72+44. See Figures 5 and 6 for more detail on diversion plan.



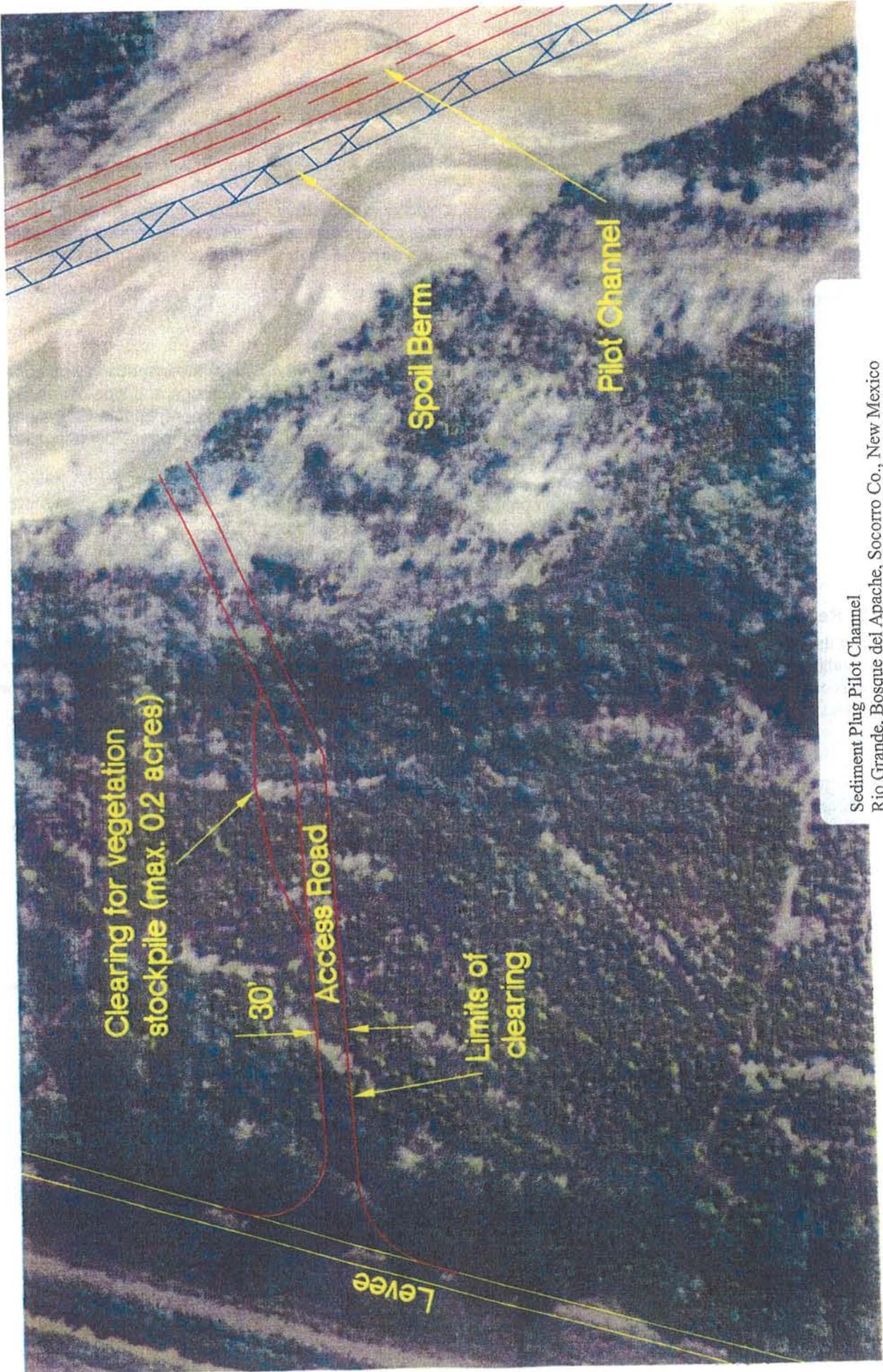
Sediment Plug Pilot Channel
 Rio Grande, Bosque del Apache, Socorro Co., New Mexico
 Typical Pilot Channel Plan View
 Application by Bureau of Reclamation
 Application No. SPA-2008-00354-ABQ
 Sheet 4 of 6 August 29, 2008

Notes:

1. Diversion berm 1 will be constructed just upstream of the start of the pilot channel (Sta. 0+00), on the east side of the river channel, and will prevent water from entering the pilot channel excavation area.
2. Diversion berm 2 will provide for diversion of flows in the river to the floodplain, and the location for this berm will be determined just prior to the start of pilot channel construction, depending on conditions at that time.
3. If diversion berm 2 is located at the start of the pilot channel (Sta. 0+00), as shown in dashed lines, then a short diversion channel will be excavated through the natural berm at the vegetation line, to divert water to either the east or west floodplain. This excavated diversion channel will end just beyond the vegetation line and flows in the river will be diverted to natural channels within the floodplain.
4. If diversion berm 2 is located downstream of Sta. 0+00, it will be across the western portion of the river channel for diversion of river flows to the west floodplain. A diversion channel will be excavated along the west side of the partially plugged river channel between Sta. 0+00 and the location of diversion berm 2. Figure 6 shows diversion berm 2 at a downstream location.
5. Diversion Channel will be existing river thalweg where possible. Some locations may require excavation to deepen and/or relocate thalweg to the west.



Sediment Plug Pilot Channel
 Rio Grande, Bosque del Apache, Socorro Co., New Mexico
 Diversion Plan Detail
 Application by Bureau of Reclamation
 Application No. SPA-2008-00354-ABQ



Clearing for vegetation stockpile (max. 0.2 acres)

30'

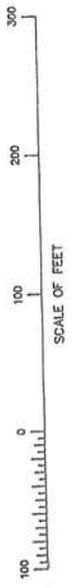
Access Road

Limits of clearing

Levee

Spoil Berm

Pilot Channel



Sediment Plug Pilot Channel
 Rio Grande, Bosque del Apache, Socorro Co., New Mexico
 Layout of Access Road
 Application by Bureau of Reclamation
 Application No. SPA-2008-00354-ABQ
 Sheet 6 of 6 August 29, 2008

9/25/06

US ARMY CORPS OF ENGINEERS, ALBUQUERQUE DISTRICT
ANNUAL MONITORING REPORT FORMAT

Reference Regulatory Guidance Letter No. 06-03, dated August 3, 2006. Monitoring Reports are required for all compensatory mitigation projects. Electronic submittals are encouraged. Large, bulky reports that provide general information are discouraged. Annual monitoring reports must follow this 10-page maximum report format.

1. Project Overview (1 page)

- a. Corps of Engineers Permit Number.
- b. Name and contact information of permittee and consultant.
- c. Name of party responsible for conducting the monitoring and the date(s) the inspection was conducted.
- d. A summary paragraph defining the purpose of the approved project, acreage and type of aquatic resources impacted, and mitigation acreage and type of aquatic resources authorized to compensate for the aquatic impacts.
- e. Written description on the location and any identifiable landmarks of the compensatory mitigation project including information to locate the site perimeter(s).
- f. Directions to the mitigation site.
- g. Dates compensatory mitigation commenced and/or was completed.
- h. Short statement on whether the performance standards are being met.
- i. Dates of any recent corrective or maintenance activities conducted since the previous report submission.
- j. Specific recommendations for any additional corrective or remedial actions.

2. Requirements (1 page)

List the monitoring requirements and performance standards, as specified in the approved mitigation plan and special conditions of the permit, and evaluate whether the compensatory mitigation project site is successfully achieving the approved performance standards or trending towards success. A table is one option for comparing the performance standards to the conditions and status of the developing mitigation site.

3. Summary Data (maximum of 4 pages)

Summary data must be provided to substantiate the success and/or potential challenges associated with the compensatory mitigation project. Photo documentation may be provided to support the findings and recommendations referenced in the monitoring report and to assist the Corps' project manager in assessing whether the compensatory mitigation project is successful for the monitoring period. Submitted photos must fit on standard 8-1/2" x 11" sheet of paper, dated, and clearly labeled with the direction from which the photo was taken. Several photos per sheet are recommended. The photo sites must also be identified on the appropriate maps.

4. Maps (maximum of 3 pages)

Maps must be provided to show the location of the compensatory mitigation site relative to other landscape features, habitat types, locations of photographic reference points, transects, sampling data points, and/or other features pertinent to the mitigation plan. In addition, the submitted maps must clearly delineate the mitigation site perimeter(s), which will assist Corps' project managers in locating the mitigation area(s) during subsequent site inspections. Each map or diagram must fit on a standard 8-1/2" x 11" sheet of paper and include a legend and the location of any photos submitted for review.

5. Conclusions (1 page)

A general statement must be included describing the conditions of the compensatory mitigation project. If performance standards are not being met, a brief explanation of the difficulties and potential remedial actions proposed by the permittee, including a timetable, must be provided. The Corps of Engineers will ultimately determine if the mitigation site is successful for a given monitoring period.



NEW MEXICO
ENVIRONMENT DEPARTMENT



Surface Water Quality Bureau

BILL RICHARDSON
Governor
DIANE DENISH
Lieutenant
Governor

1190 South St. Francis Drive, Room N2050
P.O. Box 26110, Santa Fe, NM 87502-6110
Phone (505) 827-0187 Fax (505) 827-0160
www.nmenv.state.nm.us

RON CURRY
Secretary
JON GOLDSTEIN
Deputy Secretary

CERTIFIED MAIL 7004 0750 0001 3214 3470

September 10, 2008

Mr. John R. Poland, Area Manager
U.S. Bureau of Reclamation, Albuquerque Area Office
555 Broadway Blvd., N.E., Suite 100
Albuquerque, NM 87102-2352

Subject: Clean Water Act Section 401 Water Quality Certification for **NMED SWQB File No. 2008-SC009** (444): Bosque del Apache NWR Sediment Plug Removal Project, Socorro County, New Mexico

Dear Mr. Poland;

The Surface Water Quality Bureau (SWQB) of the New Mexico Environment Department has examined the application for the project indicated above under Sections 404 and 401 of the federal Clean Water Act. According to the application, this project involves the removal of a sediment plug within the channel of the Rio Grande. The project requires excavating a 25-foot wide pilot channel through 2 to 3.5 miles of sediment plug. The proposed project is located in the Bosque del Apache National Wildlife Refuge in Socorro County, New Mexico (Township 5 South, Range 1 East, in Section 33 and Township 6 South, Range 1 East, in Section 4).

The U.S. Army Corps of Engineers (USACE) will regulate this project under an Individual Permit (USACE Action No. SPA-2008-00354-ABQ). A state Water Quality Certification is required by Section 401 of the federal Clean Water Act to ensure that the project complies with the state Water Quality Standards (State of New Mexico, Standards for Interstate & Intrastate Surface Waters, New Mexico Water Quality Control Commission, 20.6.4 New Mexico Administrative Code (NMAC) amendments through February 16, 2006). A Section 401 Water Quality Certification is also required to comply with General Condition 21 (Water Quality) and General Condition 23 (Regional and Case-By-Case Conditions) of the Nationwide Permits.

The state Water Quality Standards applicable to the project, which are available on the web at <http://www.nmenv.state.nm.us/swqb/Standards/20.6.4NMAC.pdf>, include but are not limited to:

- 20.6.4.8 Antidegradation Policy and Implementation Plan
- 20.6.4.13 General Criteria

20.6.4.900 Standards Applicable to Attainable or Designated Uses

20.6.4.105 RIO GRANDE BASIN – The main stem of the Rio Grande from the headwaters of Elephant Butte Reservoir upstream to Alameda Bridge (Corrales Bridge) and intermittent water below the perennial reaches of the Rio Puerco that enters the main stem of the Rio Grande.

A. Designated Uses:

Irrigation, marginal warmwater aquatic life, livestock watering, wildlife habitat, and secondary contact

B. Criteria:

(1) In any single sample: pH within the range of 6.6 to 9.0 and temperature 32.2°C (90°F) or less. The use-specific numeric criteria set forth in 20.6.4.900 NMAC are applicable to the designated uses listed above in Subsection A of this section.

(2) The monthly geometric mean of E. coli bacteria 126 cfu/100 mL or less; single sample 410 cfu/100 mL or less (see Subsection B of 20.6.4.14 NMAC).

[20.6.4.503 NMAC - Rp 20 NMAC 6.1.2503, 10-12-00; A, 05-23-05]

General Criteria in 20.6.4.13 NMAC for bottom deposits and suspended or settleable solids; floating solids; oil and grease; toxic pollutants; temperature; and turbidity are applicable to the discharge of dredge or fill material.

401 Water Quality Certification with Conditions:

Pursuant to Section 401 of the Clean Water Act and 40 Code of Federal Regulations Part 121, the SWQB hereby issues a conditional Section 401 Water Quality Certification for USACE Action No. SPA-2008-00354-ABQ: Bosque del Apache NWR Sediment Plug Removal Project. This certification is subject to conditions to reasonably ensure that the activity is consistent with state law, will be conducted in a manner that will not violate applicable state Water Quality Standards, and implements the Water Quality Management Plan, including Total Maximum Daily Loads (TMDLs), the Continuing Planning Process, and Antidegradation Policy Implementation Plan. **Therefore, this Certification is not valid unless the following conditions are adhered to:**

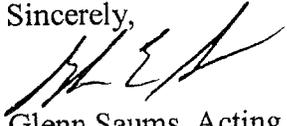
1. Fuel, oil, hydraulic fluid, lubricants, and other petrochemicals must not be stored within the 100-year floodplain and must have a secondary containment system to prevent spills. Appropriate spill clean-up materials such as booms and absorbent pads must be available on-site at all times during construction.
2. All heavy equipment used in the project area must be pressure washed and/or steam cleaned before the start of the project and inspected daily for leaks. A written log of inspections and maintenance must be completed. Leaking equipment must not be used in or near surface water.
3. Avoid working within the channel during spring runoff season or summer thunderstorm flows. Local weather forecasts must be monitored to avoid working in high water. Work in the stream channel should be limited to periods of no flow when practicable, and must be limited to periods of low flow.

4. Temporary crossings must be restricted to a single location and perpendicular to and at a narrow point of the channel to minimize disturbance. Heavy equipment must not be parked within the stream channel.
5. Flowing water must be temporarily diverted around the work area but provide for aquatic life movement. Diversion structures must be capable of carrying anticipated stream flows during the construction period. All man-made materials must be removed from the diversion channel and water returned to the original channel in a manner that avoids or minimizes turbidity.
6. Work or the use of heavy equipment in wetlands must be avoided or minimized. Construction activities in wetlands must be scheduled during low water or winter (frozen) conditions. Wetland crossings must be restricted to a single location and constructed perpendicular to and at a narrow point of the wetland. Wetland vegetation and excavated material (top soil) must be retained and reused to improve seeding success. Flows to wetlands must not be permanently disrupted. Permeable fills should be designed and installed, when practicable. Fill materials must be clean and consist of coarse material with minimal fines.
7. All areas adjacent to the watercourse that are disturbed because of the project, including temporary access roads, stockpiles and staging areas, must be restored to pre-project elevations. Disturbed areas outside the channel that are not otherwise physically protected from erosion must be reseeded or planted with native vegetation. Stabilization measures including vegetation are required at the earliest practicable date. Native woody riparian and/or wetland species must be used in areas that support such vegetation.
8. Report all spills immediately to the NMED as required by the New Mexico Water Quality Control Commission regulations (20.6.2.1203 NMAC). For non-emergencies during normal business hours, call 505-428-2500. For non-emergencies after hours, call 866-428-6535 or 505-428-6535 (voice mail, twenty-four hours a day). For emergencies only, call 505-827-9329 twenty-four hours a day (NM Dept of Public Safety).
9. A copy of this Section 401 Water Quality Certification must be kept at the project site during all phases of construction. All contractors involved in the project must be provided a copy of this certification and made aware of the conditions prior to starting construction. The SWQB must be notified at least five days before starting construction to allow time to schedule monitoring or inspections.

Violations of state Water Quality Standards could lead to penalties under the New Mexico Water Quality Act. Section 74-6-10.1 B of the Act states, "Any person who violates any provision of the Water Quality Act [Chapter 74, Article 6 NMSA 1978] other than Section 74-6-5 NMSA 1978 or any person who violates any regulation, water quality standard or compliance order adopted pursuant to that act shall be assessed civil penalties up to the amount of ten thousand dollars (\$10,000) per day for each violation."

The SWQB specifically reserves the right to amend or revoke this conditional Section 401 Certification at any time to ensure compliance with the state Water Quality Standards. If you have any questions regarding this conditional certification please feel free to contact David Menzie of my staff at (575) 956-1548. Thank you for your cooperation.

Sincerely,



Glenn Saums, Acting Chief
Surface Water Quality Bureau

GS: dm

xc: NMED District V Manager, Grants
Edward L. Paulsgrove, U.S. Army Corps of Engineers
Tom Nystrom, Region 6, USEPA
Matthew Wunder, NM Department of Game and Fish
Brian Millsap, U.S. Fish and Wildlife Service
401 Certification File 2008-SC009 (444)



UNITED STATES DEPARTMENT OF THE INTERIOR
FISH AND WILDLIFE SERVICE

Bosque del Apache National Wildlife Refuge

SPECIAL USE PERMIT

Station No. to be Credited	Permit Number
Date	
Period of Use (inclusive)	
From	20
To	20

Permittee Name
Cheryl Rolland
U.S. Bureau of Reclamation
Albuquerque Area Office

Permittee Address
555 Broadway NE
Albuquerque, NM 87102

Purpose (specify in detail privilege requested, or units of products involved)
Excavation of pilot channel through sediment plug in Rio Grande main channel from approximately River Mile 80.5 to 82.5. See attached document titled "Pilot Channel Excavation Plan" dated 9/19/08 for more details.

Description (specify unit numbers; metes and bounds, or other recognizable designations)

Amount of fee 0 If not a fixed payment, specify rate and unit of charge: _____
 Payment Exempt -Justification:
 Full Payment
 Partial Payment -Balance of payments to be made as follows:

Record of Payments

Special Conditions

This permit is issued by the U.S. Fish and Wildlife Service and accepted by the undersigned, subject to the terms, covenants, obligations, and reservations, expressed or implied herein, and to the conditions and requirements appearing on the reverse side.

Permittee Signature
/s/ Cheryl Rolland 9/24/08

Issuing Officer Signature and Title
Supervisor Biologist



UNITED STATES DEPARTMENT OF THE INTERIOR
FISH AND WILDLIFE SERVICE

Bosque del Apache National Wildlife Refuge

SPECIAL USE PERMIT

Station No. to be Credited

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Permittee Name

Cheryl Rolland

U.S. Bureau of Reclamation

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555 Broadway NE

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Permittee Signature

Cheryl Rolland 9/24/08

Issuing Officer Signature and Title

General Conditions

1. Payments

All payments shall be made on or before the due date to the local representative of the U.S. Fish and Wildlife Service by a postal money order or check made payable to the U.S. Fish and Wildlife Service.

2. Use limitations

The permittee's use of the described premises is limited to the purposes herein specified; does not unless provided for in this permit allow him/her to restrict other authorized entry on to his/her area; and permits to the Service to carry on whatever activities are necessary for (1) protection and maintenance of the premises and adjacent lands administered by the Service and (2) the management of wildlife and fish using the premises and

3. Damages

The United States shall not be responsible for any loss or damages to property including but not limited to growing crops, animals, and machinery; or injury to the permittee, or his/her relatives, or to the officers, agents, employees, or any others who are on the premises from instructions or by the sufferance of the permittee or his/her associates; or for damages or interference caused by wildlife or employees or representatives of the Government carrying out their official responsibilities. The permittee agrees to save the United States or any of its agencies harmless from any and all claims for damages or losses that may arise or be incident to the flooding of the premises resulting from any associated Government river and harbor, flood control, reclamation, or Tennessee Valley Authority activity.

4. Operating Rules and Laws

The permittee shall keep the premises in a neat and orderly condition at all times, and shall comply with all municipal, county, and State laws applicable to the operations under the permit as well as all Federal laws, rules, and regulations governing National Wildlife Refuges and the area described in this permit. The permittee shall comply with all instructions applicable to this permit issued by the refuge officer in charge. The permittee shall take all reasonable precautions to prevent the escape of fires and to suppress fires and shall render all reasonable assistance in the suppression of refuge fires.

5. Responsibility of Permittee

The permittee, by operating on the premises, shall be considered to have accepted these premises with all the facilities, fixtures, or improvements in their existing condition as of the date of this permit. At the end of the period specified or upon earlier termination, the permittee shall give up the premises in as good order and condition as when received except for reasonable wear, tear, or damage occurring without fault or negligence. The permittee will fully repay the Service for any and all damage directly or indirectly resulting from negligence or failure on his/her part, or the part of anyone of his/her associates, to use reasonable care.

6. Revocation Policy

This permit may be revoked by the Regional Director of the Service without notice for noncompliance with the terms hereof or for violation of general and/or specific laws or regulations governing National Wildlife Refuges or for nonuse. It is at all times subject to discretionary revocation by the Director of the Service. Upon such revocation the Service, by and through any authorized representative, may take possession of the said premises for its own and sole use, or may enter and possess the premises as the agent of the permittee and for his/her account.

7. Compliance

Failure of the Service to insist upon a strict compliance with any of this permit's terms, conditions, and requirements shall not constitute a waiver or be considered as a giving up of the Service's right to thereafter enforce any of the permit's terms, conditions, or requirements.

8. Termination Policy

At the termination of this permit, the permittee shall immediately give up possession to the Service representative, reserving, however, the rights specified in paragraph 9. If he/she fails to do so, he/she will pay the Government, as liquidated damages, an amount double the rate specified in this permit for the entire time possession is withheld. Upon yielding possession, the permittee will still be allowed the reenter as needed to remove his/her property as stated in paragraph 9. The acceptance of any fee for liquidated damages or any other act of administration relating to the continued tenancy is not to be considered as an affirmation of the permittees action nor shall it operate as a waiver of the Government's rights to terminate or cancel the permit for the breach of any specified condition or

9. Removal of Permittee's Property

Upon the expiration or termination of this permit, if all rental charges and/or damage claims due to the Government have been paid, the permittee may within a reasonable period as stated in the permit or as determined by the refuge officer in charge but not to exceed 60 days, remove all structures, machinery, and/or other equipment, etc., from the premises for which he/she is responsible. Within the period the permittee must also remove any other of his/her property including his/her acknowledged share of products or crops grown, cut, harvested, stored, or stacked on the premises. Upon failure to remove any of the above items within the aforesaid period, they shall become the property of the United States.

10. Transfer of Privileges

This permit is not transferable, and no privileges herein mentioned may be sublet or made available to any person or interest not mentioned in this permit. No interest hereunder may accrue though lien or be transferred to a third party without the approval of the Regional Director of the U.S. Fish and Wildlife Service and the permit shall not be used for speculative purposes.

11. Conditions of Permit not Fulfilled

If the permittee fails to fulfill any of the conditions and requirements set forth herein, all money paid under this permit shall be retained by the Government to be used to satisfy as much of the permittee's obligation as possible.

12. Official Barred from Participating

No Member of Congress or Residential Commissioner shall participate in any part of this contract or to any benefit that may arise from it, but this provision shall not pertain to this contract if made with a corporation for its general benefit.

13. Nondiscrimination in Employment

The permittee agrees to be bound by the equal opportunity clause of Executive Order 11246, as amended.

Privacy Act Statement--Special Use Permit

NOTICE: In accordance with the Privacy Act of 1974, 5 U.S.C. 552a, please be advised that:

1. The issuance of a permit and collection of fees on lands of the National Wildlife Refuge System is authorized by the National Wildlife Refuge System Administration Act (16 U.S.C. 668dd - 668ee), and the Refuge Recreation Act, (16 U.S.C. 460k-3); implemented by regulations in 50 CFR 25-36.
2. Information collected in issuing a permit may be used to evaluate and conclude the eligibility of, or merely document, permit applicants.
3. Routine use disclosures may also be made (1) to the U.S. Department of Justice when related to litigation or anticipated litigation; (2) of information indicating a violation or potential violation of a statute, regulation, rule, order or license, to appropriate Federal, State, local or foreign agencies responsible for investigating or prosecuting the violation or for enforcing or implementing the statute, rule, regulation, order or license; (3) from the record of the individual in response to an inquiry from a Congressional office made at the request of that individual; (4) to provide addresses obtained from the Internal Revenue Service to debt collection agencies for purposes of locating a debtor to collect or compromise a Federal claim against the debtor, or to consumer reporting agencies to prepare a commercial credit report for use by the Department (48FR 54716; December 6, 1983).
4. Any information requested is required to receive this permit. Failure to answer questions may jeopardize the eligibility of individuals to receive permits.

To bina 9/19

**Bosque del Apache NWR Sediment Plug
Pilot Channel Excavation Plan**

Rolland
9/19/08

1. General Plan and Schedule

- Equipment mobilization to the levee area will begin the week of 9/22. Work will start, with clearing of the access road, on 9/27 provided that all permits have been received by that time.
- The goal is for completion of all pilot channel work by 11/1, and 11/8 at the latest. Chipping of cleared vegetation will be accomplished in March 2009.
- The work schedule will typically be Monday-Saturday, 10 hours per day.
- Equipment to be used:
 - 4 amphibious excavators
 - 1 amphibious personnel carrier
 - 1 or 2 land tamers to serve as a backup to the personnel carrier
 - 1 or 2 ATVs, which will be used to transport personnel between the amphibious excavators working on the pilot channel
- Fueling of equipment will be accomplished by bringing fuel to the site by truck, and transferring it to an amphibious personnel carrier at the levee. The amphibious personnel carrier will then transport fuel to each of the working amphibious excavators.
- A copy of Reclamation's Safety Plan will be submitted prior to the start of work.

2. Construction Activities

2.1 Vegetation Removal

An access route will be cleared to allow access to the river channel for the amphibious excavators. The access route is approximately 1,500 feet south of rangeline SO-1539 and the alignment was located to minimize removal of mature native trees. The width of clearing will be 30 feet, plus a widened area (not to exceed 0.2 acres in size) for temporary stockpiling of cleared vegetation.

Clearing will be accomplished with the amphibious excavators, by pushing trees over, and for the larger trees, placing them in the temporary stockpile. The larger vegetation will then be hauled to the levee in March, after the floodplain has dried, and will be chipped. Wood chips will be spread over the west slope of the levee. Root balls may be left in piles on the levee slope, for future burning by BDANWR staff.

2.2 Pilot Channel Excavation

The pilot channel will be excavated through the eastern portion of the sediment plug and excavated material placed in a spoil berm to the west of the channel. The basic plan for the pilot channel configuration is a channel with a bottom width of 25 feet and top width of 35 to 50 feet. The top width will be based on the depth of excavation and stable slope of the excavated material. The average depth of the pilot channel is anticipated to be 2 to 4 feet, with a maximum depth of up to 6 feet.

Prior to beginning excavation of the pilot channel, a diversion berm will be constructed just downstream of the point where the current river flows leave the channel. Once the diversion berm is in place, surface water will not enter the pilot channel excavation. The initial phase of the pilot channel excavation will be downstream of the diversion berm. Conditions, including time remaining to do the work, will be assessed when that portion of the pilot channel is nearing completion. If the pilot channel is to be extended to the north, then the diversion berm will be moved to the north so that pilot channel work can be performed without surface water in the excavation.

Excavation of the pilot channel will be performed by four amphibious excavators, which will each work a segment of the pilot channel excavation. Approximately 100 feet of sediment plug will be left in place at the start and end of the pilot channel excavation, and between the excavated segments. Leaving these areas in place until the pilot channel excavation is complete will isolate the excavation areas in case river water should enter the pilot channel and will help lessen the extent of excavation that will need to be seined.

As the pilot channel is being excavated, the vegetation debris piles that have accumulated at several locations along the east side of the pilot channel will be removed, and the material placed to the west of the pilot channel.