

DRAFT

GENERAL REEVALUATION REPORT AND

SUPPLEMENTAL ENVIRONMENTAL

IMPACT STATEMENT II:

RIO GRANDE FLOODWAY,

SAN ACACIA TO BOSQUE DEL APACHE UNIT,

SOCORRO COUNTY, NEW MEXICO

APPENDIX B

Section 404(b)(1) Guidelines Evaluation

APPENDIX B

SECTION 404(b)(1) GUIDELINES EVALUATION

Section 404 (b)(1) Guidelines Evaluation for the Recommended Plan

I. Project Description

- a. **Location:** Rio Grande channel, Socorro County, New Mexico. The total project area extends from the San Acacia Diversion Dam downstream for approximately 47.5 river-miles.
- b. **General Description:** The proposed project would remove approximately 43 miles of spoil bank adjacent to the Rio Grande floodway and replace it with an engineered levee capable of containing at least the 1%-chance flood event (approx. 29,900 cfs at San Acacia).
Three activities relating to proposed work below the Ordinary High water Mark (OHWM) are described in detail in this evaluation: 1) earthen levee construction; 2) placement of riprap along the riverward slope and toe of the levee; 3) a temporary river crossing (to access the east side of the river to excavate a terrace above the OHWM).
- c. **Authority and Purpose:** The project's single purpose is flood risk management. Construction of the San Acacia to Bosque del Apache Project was authorized by Congress in 1948. In 1993, a Record of Decision was signed for the 1992 Supplemental EIS and the ROD and EIS was submitted to Congress. An appendix in 1992 SEIS included an evaluation of effects and a Finding of Compliance relative to Section 404(b)(1) of the Clean Water Act; therefore, meeting the requirements for an exemption under §1344(r) of the Act.

This current re-evaluation updates this evaluation and compliance with §1344(r).

- d. **Definition of Ordinary High Water:** Throughout the project area, the Rio Grande occupies a physically well-defined channel; however, flows regularly reach a magnitude to inundate portions of the overbank area adjacent to the channel. Therefore, for the purposes of this evaluation, the Ordinary High Water Mark (OHWM) was defined as the extent of the 50%-exceedance discharge (colloquially termed the "2-year" discharge).

The 50%-exceedance discharge was determined by Tetra Tech, Inc., (and is described in Parametrix [2008]¹), and was based on daily mean discharge values at the San Acacia and San Marcial streamflow gages for the period 1974 through 2002. The 50%-exceedance flows were determined to be 5,660 cfs at San Acacia and 4,170 cfs at San Marcial.

The Parametrix (2008) investigation also modeled and mapped these flows using the FLO2-D two-dimensional hydraulic model. The mapped extent of inundation for the attenuated 5,660-cfs discharge at San Acacia served as the basis for determining the OHWM throughout the project reach.

- e. **Description of Activities and Fill Material**

(1) Earthen Levee Construction:

The existing spoil bank will be removed (approximately one mile at a time) with bulldozers, scrapers, or excavators; and the materials for the proposed levee will be

¹ Parametrix. 2008. Restoration Analysis and Recommendations for the San Acacia Reach of the Middle Rio Grande, NM. Prepared for the U.S. Bureau of Reclamation, Albuquerque, and the Middle Rio Grande Endangered Species Collaborative Program.

stockpiled and mixed within the footprint of the levee alignment. Material consists of poorly sorted sand and gravel.

From the mapped extent of the modeled 5,660-cfs discharge, all areas of the existing spoil bank / future levee footprint that would be below the water surface of the OHWM were identified (Table B-1). These are limited to two relatively small areas between San Acacia and Highway 380; and a nearly 14.4-mile-long portion starting about 1.5 mile north of Bosque del Apache NWR (BDANWR) downstream to about 1.5 miles south of BDANWR.

Throughout its entire length, the existing spoil bank is fairly similar in height and base width. The proposed new levee increases in height and width from north to south. Therefore, there are extensive areas where the new levee would be smaller than the existing spoilbank, resulting in newly exposed substrate, and increasing the area of the floodway. Conversely, where the base of the new levee would extend riverward of the toe of the existing spoil bank (especially near the southern end), the area of the active floodway would be reduced. Over the entire length of the proposed levee, the project would result in a net gain of 73.7 acres of floodway area; however, only a portion of this is below the OHWM. Within the segments identified as being below the OHWM, the proposed levee would expose 12.3 acres of new substrate and fill 8.8 acres, resulting in a net gain of 3.6 acres (Table B-1).

All of the affected area below the OHWM is located on the terrace (overbank) of the floodway, and is currently occupied by the spoil bank or dense riparian shrubs (primarily salt cedar). Soils within the affected area are mapped as Typic Ustifluvents (SCS 1988), a non-hydric soil type. No wetlands as defined in Section 404b1 of the Clean Water Act occur within the affected area of the proposed project. No activities associated with earthen levee construction would occur within, nor would it affect, the clearly defined active Rio Grande channel.

Table B-1. Locations, length, and affected area below OHWM for earthen levee construction.

Corps station	Length		USBR River-mile (approx)	New levee is smaller than existing spoil bank: gain in 5,660-cfs flow area (acres exposed)	New levee is larger than existing spoil bank: loss of 5,660-cfs flow area (acres filled)	Net (acres)
	(feet)	(miles)				
375+00 to 385+00	1,000	0.19	108.0 to 108.2	3.44	0.00	3.44
668+00 to 701+00	3,300	0.63	104.4 to 102.0	3.66	0.00	3.66
1451+00 to 2213+00	76,000	14.39	72.6 to 85.5	5.19	-8.71	-3.53
Sum or Net	80,996	15.21		12.29	-8.71	3.58

(2) Riprap Erosion Protection for Earthen Levee:

The riverward slope of selected segments of the proposed levee would be blanketed with riprap to protect it from erosion and scouring during the design event. Riprap will consist of basalt obtained from a local source, and would vary in diameter and thickness depending on the location of placement. The three levee segments where rock would be placed below the OHWM are listed in Table B-2. At all three locations, the proposed levee is set back from

the active channel. New riprap along the toe of these segments would be buried in the terraced overbank. The depth to which riprap will be buried varies from 7 to 10 feet. In all, riprap would be placed along 2.54 miles of the area below the OHWM, entailing 16.3 acre-feet of rock and 2.1 acres. Because riprap would be buried by earthen material, this activity does not result in a decrease in the area flooded by 5,660 cfs (*i.e.*, the area below the OHWM).

Table B-2. Locations, length, and affected area below OHWM for riprap placement.

Corps Station	Length		USBR River-mile (approx)	Volume of rock below OHWM		Area of rock below OHWM (ac.)
	(feet)	(miles)		(CY)	(acre-feet)	
1522+19 to 1552+70	3,051	0.58	84.3 to 83.75	3,079	1.91	0.49
1729+68 to 1801+42	7,174	1.36	80.8 to 79.6	7,277	4.51	1.15
2181+49 to 2213+00	3,151	0.60	72.6 to 73.0	15,874	9.84	0.43
Sum	13,376	2.54		26,230	16.26	2.07

(3) Soil Cement Embankment

From the San Acacia Diversion Dam, a soil cement wall will be placed along the west side river embankment. A new, engineered levee is not required though most of this segment; however, the existing bank must be armored to protect the adjacent railroad and safely convey the 1%-chance flood event. The wall will begin at the dam and extend downstream for approximately 5,690 feet. Along most of this extent, the base of the soil cement wall will be buried in the terrace above the OHWM. However, along approximately 1,000 feet, the existing bank is nearly vertical and the base quickly transitions to the active river channel. The base of the soil cement wall will, therefore, be buried below the OHWM along this 1,000-foot segment. The soil cement wall will be constructed in lifts (horizontal layers) of 1-foot thickness and 10 feet wide. The buried base of the wall will extend approximately 20 feet below the OHWM, and entail approximately 7,407 CY of soil-cement material. The area occupied by soil-cement fill below the OHWM will be approximately 0.56 acres.

Construction would occur during the winter months when the Rio Grande is experiencing the lowest annual flows. The construction area will be separated from the river by a portable dam / coffer, and the excavation area will be dewatered with pumps. Following placement of the soil cement wall, the extracted earth material will be used to refill the remaining excavated area to grade.

(4) East Bank Excavation and Access:

Immediately downstream from the San Acacia Diversion Dam, the eastern bank of the river will be excavated to form a terrace that would be inundated at flows above 15,000 cfs. This feature is necessary to reduce the velocity of the 1%-chance flood event and its potential to scour the western bank through this curved reach. All excavation would occur on the terrace above the OHWM. Of the total 12.4 acres of excavation, approximately 3.1 acres will likely be inundated by the 5,660-cfs flow (*i.e.*, be below the OHWM) following construction. All excavated material (sand and gravel) would be disposed of in an upland location. Following construction, coyote willow (approx. 1.1 acres; 300 stems/acre) would be planted along the channel edge to stabilize the excavated bankline.

To access the East Bank Excavation area, a temporary crossing would be placed across the channel of the Rio Grande. The crossing would be 300 feet long with a top-width of 15 feet. The crossing would entail 1,000 CY of earthen material (from a portion of the previously excavated spoil bank) and six 60-inch-diameter, 30-foot-long corrugated metal pipes. The majority of these materials would be below the OHWM.

(5) Summary of alterations to acreage below the OHWM:

Table B-3. Summary of alterations below the OHWM.

Type of fill material	Filled area below OHWM (ac.)	Area below OHWM created (ac.)
Earthen levee / spoilbank	8.71	12.29
Soil cement	0.56	0
Eastside bank excavation	0	3.08
Subtotal	9.27	15.37
Net change		6.10

(6) Schedule of activities:

Project construction would begin in October 2012, and continue in phases for 14 years to complete all associated construction. Construction of the earthen levee would proceed from north to south.

All proposed work below the OHWM, as described above, would occur between August 15 and March 15 when flows are relatively low in the Rio Grande.

(7) Best Management Practices:

The following best management practices would be employed during construction to prevent or minimize the potential for erosion or degradation of water quality:

Stream flow would be maintained at all times during construction and the streambed contoured so that fish can migrate through the project area during and after construction.

Silt curtains, cofferdams, dikes, straw bales and other suitable erosion control measures would be employed to prevent sediment-laden runoff or contaminants from entering the watercourse.

Work would be performed below the ordinary high water elevation only during low-flow periods. No erodible fill materials would be placed below the ordinary high water elevation.

Poured concrete in forms and would be contained to prevent discharge into the river. Wastewater from concrete batching, vehicle washdown, and aggregate processing would be contained and treated or removed for off-site disposal.

Fuels, lubricants, hydraulic fluids and other petrochemicals would be stored outside the 1%-chance floodplain, if practical. At the least, staging and fueling areas would be located

west of the Low-Flow Conveyance Channel and include spill prevention and containment features.

Construction equipment would be inspected daily to ensure that no leaks or discharges or lubricants, hydraulic fluids or fuels occur in the aquatic or riparian ecosystem. Any petroleum or chemical spills would be contained and removed, including any contaminated soil.

Only uncontaminated earth or crushed rock for backfills would be used.

Water quality would be monitored during construction to ensure compliance with state water quality standards for turbidity, pH, temperature, and dissolved solids.

II. Factual Determination (Section 231.11)

This evaluation is an appendix to the *General Reevaluation Report / Supplemental Environmental Impact Statement II, Rio Grande Floodway, San Acacia to Bosque del Apache Unit, Socorro County, New Mexico*. Additional details and the effects of the overall project are described in this GRR/SEIS-II.

a. Physical Substrate Determinations

- (1) Substrate Elevation and Slope: Channel slope would not be affected. Substrate elevation would be altered (lowered) over approximately 3.1 acres in the East Bank Excavation area, and over approximately 12.3 acres where the spoilbank levee would be removed. Substrate elevation would increase over 8.7 acres due to new levee fill.
- (2) Sediment Type: Sediment gradations would not change.
- (3) Dredged/Fill Material Movement: Not applicable.
- (4) Physical Effects on Benthos (burial, changes in sediment type, etc.): As a result of the East Bank Excavation, the benthic area may increase by 2.00 to 3.1 acres.
- (5) Actions Taken to Minimize Impacts (Subpart H): Work would be performed during the annual low-flow period. See section I.e.(6) above for best management practices to be employed.

b. Water Circulation, Fluctuation and Salinity Determinations

- (1) Water
 - (a) Salinity: No effect.
 - (b) Water Chemistry (Ph, etc.): No effect.
 - (c) Clarity: No effect.
 - (d) Color: No effect.
 - (e) Odor: No effect.
 - (f) Taste: No effect.
 - (g) Dissolved Gas Levels: No effect.
 - (h) Nutrients: No effect.

- (i) Eutrophication: No effect.
- (2) Current Patterns and Circulation
 - (a) Current Patterns and Flow: Current patterns would only be altered for flood events exceeding 11,800 cfs at San Acacia—the minimum probable failure point of the existing spoil bank. Currents patterns of flows below this magnitude would not change.
 - (b) Velocity: Velocities in the floodway would only be altered for flood events exceeding 11,800 cfs at San Acacia—the minimum probable failure point of the existing spoil bank. Velocities of flows below this magnitude would not change.
 - (c) Stratification: No effect.
 - (d) Hydrologic Regime: Along the bank of the East Bank Excavation area, 3.1 acres would be inundated more frequently following excavation. This Intermittently Flooded area would become Temporarily Flooded. For the project overall, a net increase in approximately 6.1 acres below the OHWM would result.
- (3) Normal Water Level Fluctuations: No effect.
- (4) Salinity Gradients: No effect.
- c. Suspended Particulate/Turbidity Determinations
 - (1) Expected changes in suspended particulates and turbidity levels in vicinity of disposal site: Bed material within where excavation would occur along the channel bank downstream from the San Acacia Diversion Dam is primarily coarse sand with some gravel and only a small percentage of suspendable fine particles. The initial reflooding of buried riprap and the excavated eastern bank would only slightly increase turbidity downstream. This temporarily elevated turbidity would be similar to, or less than, levels occurring annually in the Rio Grande during the spring runoff period.
 - (2) Effects (degree and duration on Chemical and Physical properties of the water column)
 - (a) Light Penetration: No effect.
 - (b) Dissolved Oxygen: No effect.
 - (c) Toxic Metals and Organics: No effect.
 - (d) Pathogens: No effect.
 - (e) Aesthetics: No effect.
 - (f) Others as Appropriate: No effect.
 - (3) Effects on Biota
 - (a) Primary Production, Photosynthesis: No effect.
 - (b) Suspension/Filter Feeders: No effect.
 - (c) Sight Feeders: No effect.

d. Contaminant Determinations: Prior to the start of work, the substrate in the East Bank Excavation area would be analyzed for concentrations of metals and potential contaminants to verify that the material is suitable for disposal.

e. Aquatic Ecosystem and Organism Determinations

- (1) Effects on Plankton: No effect.
- (2) Effects on Benthos: A slight increase in benthic area would result.
- (3) Effects on Nekton: No effect.
- (4) Effects on Aquatic Food Web (refer to section 230.31): No effect.
- (5) Effects on Special Aquatic Sites (discuss only those found in project area or disposal site)
 - (a) Sanctuaries and Refuges: Portions of the proposed work below the OHWM would be located on Sevilleta and Bosque del Apache National Wildlife Refuges. The Corps will obtain a Determination of Compatibility from the respective refuge managers for the proposed construction; and will minimize potential impacts to these lands and resources.
 - (b) Wetlands (refer to section 230.41): Not applicable.
 - (c) Mud Flats (refer to section 230.42): Not applicable.
 - (d) Vegetated Shallows (refer to section 230.43): Not applicable.
 - (e) Coral Reefs (refer to Section 230.44): Not applicable.
 - (f) Riffle and Pool Complexes (refer to section 230.45): Not applicable.
- (6) Threatened and Endangered Species: Section 6.4 of the GRR/SEIS-II evaluates the potential effects to listed species and their designated or proposed critical habitats in the project area. The following determinations were made:
 - Pecos sunflower: no effect.
 - Interior Least Tern: no effect.
 - Southwestern Willow Flycatcher and its designated / proposed critical habitat: may affect, but will likely not adversely affect.
 - Rio Grande silvery minnow and its designated critical habitat: may affect, and will likely adversely affect.

Pursuant to Section 7 of the Endangered Species Act, the Corps is currently conducting formal consultation with the U.S. Fish and Wildlife regarding the proposed project. This evaluation will be revised to include reasonable prudent alternatives formulated by the Service to avoid jeopardy to list species.
- (7) Other Wildlife: All clearing or removal of vegetation would be limited the period between August 15 and March 15. Wildlife in and adjacent to the construction area may be temporarily displaced during active construction periods.

f. Proposed Disposal Site Determinations

- (1) Mixing Zone Determination (consider factors in section 230.22(f)(2))
- (2) Determination of compliance with applicable water quality standards: Water quality would be monitored during construction to ensure compliance with state water quality standards for turbidity, pH, temperature, and dissolved solids.

- (3) Potential effects on human use characteristic
 - (a) Municipal and Private water supply: No effect.
 - (b) Recreational and commercial fisheries: Not applicable.
 - (c) Water related recreation: No effect.
 - (d) Aesthetics: No effect.
 - (e) Parks, National and Historic Monuments, National Seashores, Wilderness Areas, Research Sites, and similar preserves (refer to section 230.54): Not applicable.

g. Determination of Cumulative Effects on the Aquatic Ecosystem: None.

h. Determination of Secondary Effects on the Aquatic Ecosystem: No effect.

III. Findings of Compliance or Non-Compliance with the restrictions on discharge

a. Adaptation of the Section 404(b)(1) Guidelines to this Evaluation: None.

b. Evaluation of Availability of Practicable Alternatives to the Proposed Discharge site which would have less adverse impact on the aquatic ecosystem: Alternatives evaluated included two levee heights, a 4-mile extension of the proposed levee, and a setback alignment for approximately one mile of the proposed levee (see Chapter 5 of the GRR/SEIS-II). The recommended plan was determined to be the most cost-effective solution while meeting environmental compliance requirements.

c. Compliance with applicable State Water Quality Standards: The Corps will obtain State Water Quality Certification from the New Mexico Environment Department prior to the start of construction activities.

d. Compliance with applicable toxic effluent standard or prohibition under Section 307 of the Clean Water Act: Not applicable.

e. Compliance with Endangered Species Act of 1973: Pursuant to Section 7 of the Endangered Species Act, the Corps will formally consult with the U.S. Fish and Wildlife regarding the proposed project.

f. Compliance with specified protection measures for marine sanctuaries designated by the Marine Protection, Research and Sanctuaries Act of 1972: Not Applicable

g. Evaluation of Extent of Degradation of the Waters of the United States

(1) Significant adverse effects on human health and welfare:

- (a) Municipal and private water supplies: Not applicable.
- (b) Recreation and commercial fisheries: Not applicable.
- (c) Plankton: None.
- (d) Fish: None.
- (e) Shellfish: None.
- (f) Wildlife: None.

- (g) Special Aquatic sites: Not applicable.
- (2) Significant adverse effects on life stages of aquatic life and other wildlife dependent on aquatic ecosystems: None.
- (3) Significant adverse effects on aquatic ecosystem diversity, productivity and stability: None.
- (4) Significant adverse effects on recreational, aesthetic, and economic values: None.
- h. Appropriate and practicable steps taken to minimize potential adverse impacts of the discharge on the aquatic ecosystem: See section I.e.(6) above for best management practices to be employed.
- i. On the basis of the guidelines, the proposed discharge of dredged or fill material is specified as complying with the requirements of these guidelines

References

Soil Conservation Service (SCS). 1988. Soil Survey of Socorro County Area, New Mexico. 328 pp. + maps. Digital and updated soil survey information is available at:
<http://soildatamart.nrcs.usda.gov/SDM%20Web%20Application/Survey.aspx?County=NM053>

Finding of Compliance
for
San Acacia to Bosque del Apache Unit, Socorro County, New Mexico

1. No significant adaptations of the guidelines were made relative to this evaluation.
2. The planned disposal of dredged material at would not violate any applicable State water quality standards.
3. Use of the selected disposal site will not harm any endangered species or their critical habitat.
NOTE: Potential adverse impacts to the endangered silvery minnow have been identified. Formal Section 7 consultation with the USFWS is pending, and will incorporate reasonable and prudent alternatives to avoid jeopardy.
4. The Proposed disposal of dredged material will not result in significant adverse effects on human health and welfare, including municipal and private water supplies, recreation and commercial fishing, plankton, fish, shellfish, wildlife, and special aquatic sites. The life stages of aquatic life and other wildlife will not be adversely affected. Significant adverse effects on aquatic ecosystem diversity, productivity and stability, and recreational, aesthetic and economic values will not occur.
5. Appropriate steps to minimize potential adverse impacts of the discharge on aquatic systems include
 - Continuous stream flow would be maintained.
 - Suitable erosion control measures would prevent sediment-laden runoff or contaminants from entering the watercourse.
 - Work would be performed below the OHWM elevation only during low-flow periods.
 - Poured concrete in forms and would be contained to prevent discharge into the river.
 - Fuels, lubricants, hydraulic fluids and other petrochemicals would be stored outside the 1%-chance floodplain, if practical. At the least, staging and fueling areas would be located west of the Low-Flow Conveyance Channel and include spill prevention and containment features.
 - Construction equipment would be inspected daily to ensure that no leaks or discharges of lubricants, hydraulic fluids or fuels occur in the aquatic or riparian ecosystem
 - Only uncontaminated earth or crushed rock for backfills would be used.
 - Water quality would be monitored during construction to ensure compliance with state water quality standards.
6. On the basis of the guidelines the proposed disposal site for the discharge of dredged material is specified as complying with the inclusion of appropriate and practical conditions to minimize pollution or adverse effects to the aquatic ecosystem.