

---

---

**APPENDIX E**  
**Coordination**



JUN 22 2007

ALB-186  
ENV-1.10

Honorable Raymond Gachupin  
Governor, Pueblo of Jemez  
P.O. Box 100  
Jemez Pueblo, NM 87024

Subject: Invitation of Government-to-Government Consultation Regarding the Bureau of Reclamation's Environmental Assessment (EA) for the Pecos River Habitat Restoration Project (Project)

Dear Governor Gachupin:

The Bureau of Reclamation is preparing an EA for the Project and requests government to government consultation to identify any potentially affected Indian Trusts Assets or other concerns the Pueblo may have regarding tribal resources. The Project would be entirely within the boundaries of the Bitter Lake National Wildlife Refuge (BLNWR) near Roswell, New Mexico, which is managed by the US Fish and Wildlife Service (Service). The purpose of the proposed Project is to improve riparian and in-channel habitat, extending the reach of connected good quality habitat for the benefit of native aquatic and riparian plant and animal communities. Reclamation and the Service would improve habitat for the Pecos bluntnose shiner (shiner) by restoring parts of the river to more natural flow conditions within the context of the modern hydrologic regime, including reconnecting the river to the floodplain. A variety of restoration techniques may be used such as removing vegetation, lowering banks, changing the channel morphology, and restoring flow into historic meanders. Some or all of these techniques may be implemented, and work may be conducted in phases by agencies and entities other than Reclamation.

As part of the consultation process under the Endangered Species Act, the Service issued a Biological Opinion (2006 – 2016) (BO) on the selected alternative from the Carlsbad Project Water Operations Environmental Impact Statement. One of the provisions of the BO was for Reclamation to partner with Federal, state, and private entities to participate and assist in the completion of ongoing habitat improvement projects on the Pecos River and to restore 1-1.5 miles of quality habitat within the Farmlands reach by 2009 and another 1-1.5 miles by 2014. According to the BO, activities that restore and optimize the interaction of river channel and floodplain habitats with available flows will be most successful in mitigating the observed displacement of shiner eggs. The reach that would provide the most benefit for the shiner is from the BLNWR south to Hagerman where flows are perennial due to inflow from the Roswell Basin and habitat is degraded.

The need for restoration actions is to correct or improve degraded ecological conditions within the BLNWR section of the Pecos River caused by excavating straight channels, encroaching nonnative vegetation, and reservoir control of flows. The Project would support Reclamation's need to satisfy Federal requirements under the BO to restore quality habitat on the Pecos River and to participate and assist in the completion of ongoing habitat improvement projects. The Project would also support the need of the Service to implement BLNWR Comprehensive Conservation Plan goals and objectives, and would support broad Service mandates to restore, preserve, and enhance riparian habitat and the overall mission of the National Wildlife Refuge System.

The EA will evaluate the potential environmental and socioeconomic impacts from the project, from taking no action, and from any alternatives that may be identified. Reclamation is in the planning stage

A

for the proposed Project.

Reclamation requests government-to-government consultation and invites your participation to identify any potentially affected Indian Trust Assets, other tribal resources or sacred sites. Reclamation wants to ensure that you have an opportunity to express any concerns. For any additional information you need or to request a meeting, please call Ms. Marsha Carra, Environmental Protection Specialist at 505-462-3602.

Sincerely,

**Steve Hanson**

☞ Connie L. Rupp  
Area Manager

Identical letter sent to persons on next page.

Identical Letter Sent To:

Honorable Robert Benavides  
Governor, Pueblo of Isleta  
P.O. Box 1270  
117A Tribal Road 40  
Isleta, NM 87022

Honorable Mark R. Chino  
President, Mescalero Apache Tribe  
P.O. Box 227  
Mescalero, NM 88340

Mr. George Daingkau  
Kiowa NAGPRA Coordinator  
Route 2, Box 74  
Fort Cobb, OK 73038

Honorable Billy Evans Horse  
Chairman, Kiowa Tribe of Oklahoma  
P.O. Box 369  
Carnegie, OK 73015

Mr. Bobby Jay  
Tribal Administrator  
Apache Tribe of Oklahoma  
P.O. Box 1220  
Anadarko, OK 73005

Mr. Lawrence Morgan  
Speaker, Navajo Nation Council  
P.O. Box 3390  
Window Rock, AZ 86515

Honorable Arturo Senclair  
Governor, Ysleta del Sur Pueblo  
P.O. Box 17579-Ysleta Station  
El Paso, TX 79917

Mr. John Sorrell  
Hydrology, Pueblo of Isleta  
P.O. Box 1270  
117A Tribal Road 40  
Isleta, NM 87022

Mr. Johnny Wauqua  
Chairman,  
Comanche Tribal Business Committee  
P.O. Box 908  
Lawton, OK 73502

Mr. Rick Casada  
Cultural Resources Coordinator  
Ysleta del Sur Pueblo  
P.O. Box 17579-Ysleta Station  
El Paso, TX 79917

Honorable Wallace Coffey  
Chairman, Comanche Indian Tribe  
P.O. Box 908  
Lawton, OK 73502

Honorable Todd Honyaoma  
Vice Chairman, Hopi Tribe  
P.O. Box 123  
Kykotsmovi, AZ 86039

Honorable Jeff Houser  
Chairman, Fort Sill Apache Tribe of Oklahoma  
Route 2, Box 121  
Apache, OK 73006

Mr. Leigh Kuwanwisiwma  
Director  
Hopi Tribe Cultural Preservation Office  
P.O. Box 123  
Kykotsmovi, AZ 86039

Honorable Levi Pesata  
President, Jicarilla Apache Nation  
P.O. Box 507  
Dulce, NM 87528

Honorable Joe Shirley  
President, Navajo Nation  
P.O. Box 9000/Navajo Tribal Hill  
Window Rock, AZ 86515

Ms. Donna Stern-McFadden  
Tribal Historic Preservation Office  
Mescalero Apache Tribe  
P.O. Box 227  
Mescalero, NM 88340

Mr. Earl Yeahquo  
Chairman  
Kiowa Business Committee  
P.O. Box 369  
Carnegie, OK 73015

WBR:MCarra:ronchaga:06/20/07:505-462-3602

G:\SecFiles\Envi\Carra, Marsha\NA Tribal Letters final -- 062007.doc



IN REPLY REFER TO:

ALB-192  
ENV-3.00

# United States Department of the Interior

BUREAU OF RECLAMATION

Albuquerque Area Office  
555 Broadway Blvd. NE, Suite 100  
Albuquerque, NM 87102-2352

085047



AUG 15 2008



Ms. Lisa Meyer  
New Mexico State Historic Preservation Office  
Historic Preservation Division, Bataan Memorial Building  
407 Galisteo Street, Suite 236  
Santa Fe, NM 87501

Subject: Section 106 Consultation for the Pecos River Channel Restoration at the Bitter Lake National Wildlife Refuge, Chaves County, New Mexico

Dear Ms. Meyer:

In accordance with 36 CFR Part 800, Section 106 of the National Historic Preservation Act, the Department of the Interior, the Bureau of Reclamation, and the U.S. Fish and Wildlife Service (Service) are consulting with you regarding the above-referenced project. Reclamation and the Service are proposing to restore portions of the river channel at the Bitter Lake National Wildlife Refuge (NWR) in phases. Reclamation and the Service are joint lead federal agencies for this undertaking. The Bitter Lake NWR is approximately nine miles northeast of Roswell, New Mexico, in Chaves County, and consists of 24,536 acres in three noncontiguous units along the Pecos River (Figure 1).

Through phased proposals funded by Reclamation, the Service, the World Wildlife Fund-Chihuahuan Desert Program, (WWF) and the New Mexico Interstate Stream Commission, (NMISC) over the next ten years Reclamation and the Service seek to improve the riparian and in-channel habitat along approximately seven river miles of the Pecos River in the Middle Tract of the Bitter Lake NWR by restoring the river flows to dynamic conditions. The undertaking is a combination of restoration techniques which include removing vegetation, lowering banks, changing the channel morphology, restoring flow into historic oxbows, and revegetation. These techniques would be designed to work within the changed physical context of the river that includes lower peak flood flows, irrigation withdrawals, channelized river segments, non-native plant incursions, and protection of farmland and floodplain infrastructure. The undertaking will improve riparian and in-channel habitat, extending the reach of connected good quality habitat for the benefit of native aquatic and riparian plant and animal communities. The restoration would improve habitat by restoring parts of the river to more natural flow conditions within the context of the modern hydrologic regime, including reconnecting the river to the floodplain. Additionally, the undertaking will satisfy federal requirements under a Biological Opinion to restore quality habitat on the Pecos River and to participate and assist in the completion of ongoing habitat improvement projects. The project would also support the need of the Service to implement the Bitter Lake NWR Comprehensive Conservation Plan goals and objectives and would support broad Service mandates to restore, preserve, and enhance riparian habitat and the overall mission of the National Wildlife Refuge System.

Two phases of the restoration have been defined in detail and are considered ready for Section 106 consultations as undertakings. Phase I would be conducted in Reach 4 by Reclamation in collaboration with the Service. Restoration techniques proposed for Phase I include plugging and diverting the river into a historic oxbow, excavating a meandering channel within the oxbow, removal of non-native vegetation, lowering banks, and revegetation. The anticipated restoration disturbance footprint and staging areas would total approximately 270 acres. Primary site access would be through refuge roads

and include an existing unimproved parking area. There would be some off-road travel within the restoration footprint. As a future action, the Service is also proposing to develop an auto loop pullout, viewing platform, and interpretive site within the disturbance footprint. The viewing platform and interpretive signage would afford the public the opportunity to observe the oxbow lake and learn about the river restoration. The proposed location and maximum disturbance footprint is shown on Figure 2. It is anticipated that parking would be provided for up to ten vehicles. The design would be similar to existing facilities elsewhere on Bitter Lake NWR. No final design, timetable for construction, or funding is in place for this project.

Phase II of the restoration seeks to repair floodplain connectivity in Reaches 2 and 3. The Service, in its role of refuge manager, is leading a collaborative partnership with the WWF and the NMISC to conduct this work as the managers of the refuge. Restoration actions proposed for Phase II include bank lowering, removal of non-native vegetation from bank levees and bars, reconnection of a small oxbow lake, and revegetation. The anticipated maximum disturbance footprint and river access/staging areas are defined in Figure 3. Primary site access would be through refuge roads, although there would be some off-road travel within the project footprint. The Service will determine priorities for staging the restoration within the Phase II project area based on refuge needs, resource protection, and efficient use of available funds, staffing, and equipment. Tentative actions planned would include experimental work with combinations of restoration techniques on 50 acres within Reaches 2 and 3. It is anticipated that later restoration based on the experimental work would include a minimum of 100 acres of active restoration on the floodplain and 75 acres on point bars, encouraging passive restoration improvements within Reaches 2 and 3. Additional restoration actions, primarily mechanical non-native vegetation removal, are planned as funding becomes available. The anticipated maximum disturbance footprint for staging and river access would total approximately 40 acres and the river channel and active floodplain restoration area could total up to 450 acres.

Restoration techniques may be applied in the future in the refuge portions of Reaches 1-4. These are not fully developed as proposals and undertakings. Additional consultation with your office would be needed for full implementation as these projects are developed.

An Environmental Assessment is being prepared by Reclamation to address the environmental effects of this proposed action, including those on cultural resources. To assist your office in the evaluation of this project, I have enclosed a map of the Area of Potential Effect (APE) (Figure 2). Reclamation and the Service would not conduct any ground disturbing activities beyond the level analyzed in this document without additional environmental review.

A records search through the New Mexico Cultural Resource Information System identified no sites within the APE. There are two old records (LA 8834, LA 8835) with poor locational information of lithic and lithic/ceramic scatters approximately 1400 and 1900 meters to the west of the APE. Lithics and ceramics have also been recorded as close as two miles away on top of a large mesa above the floodplain. This mesa has been extensively surveyed for cultural resources as a result of oil exploration and development. Federally recognized tribes and pueblos with potential ties to the project area were notified via letter of the proposed project. The only responses received requested notification should archaeological resources or human remains be found during restoration. No concerns or traditional cultural properties were identified by the parties consulted. Potentially affected tribes and pueblos will be contacted again and invited to consult during the EA process.

With the exception of the staging and river access locations, work would be conducted in active or recently active floodplains, channels, or oxbows. The APE has experienced episodic flooding, refuge maintenance actions, channel diversion and shaping, parking, and associated earthmoving activities over the years resulting in a highly disturbed setting. Portions of the APE are inaccessible due to dense vegetation and/or perennial water. The APE for restoration staging and river access locations is enlarged so that sensitive plant resources and wet locations can be avoided, if necessary. The staging and river

access would total approximately 40 acres. Reclamation will have an archaeologist on site to monitor Phase I of construction on the staging and the river access areas.

Based on the above, Reclamation and the Service have determined that a pedestrian survey of the APE would not be needed or be useful for this undertaking and one has not been conducted. However, should unforeseen cultural resources be discovered during the course of restoration, provisions for halting work in the vicinity of any unanticipated discoveries have been incorporated into the proposed project. Maps of the restoration footprint and the following stipulations would be included in materials provided to restoration personnel:

**Archaeological Discoveries.** Should evidence of possible scientific, prehistoric, historic, or archeological data be discovered during the course of this action, work shall cease at that location and the Refuge Manager and Service archaeologist shall be notified by phone immediately with the location and nature of the findings. Care shall be exercised so as not to disturb or damage artifacts or fossils uncovered during operations, and the proponents shall provide such cooperation and assistance as may be necessary to protect the location and 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 lands must provide immediate telephone notification of the inadvertent discovery, with written confirmation, to the Refuge Manager and Service archaeologist who will report to the responsible agency 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. Should evidence of suspected human remains be discovered during the course of this action, work shall cease in the vicinity and the location protected until a decision is made regarding removal or other disposition by the Government.

Based on this analysis, Reclamation and the Service seek your concurrence of our finding of "No Historic Properties Affected" (36 CFR §800.4) by the proposed undertaking. If you have any questions or require any additional information regarding this proposed action, please contact Mark Hungerford at 505-462-3644. Thank you for your assistance and we look forward to your response within the next 30 days.

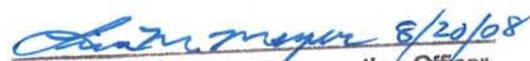
Sincerely,



John R. Poland  
Area Manager

Enclosures – 2

No Historic Properties Affected.



for NM State Historic Preservation Officer

ORIGINAL



DEPARTMENT OF THE ARMY  
ALBUQUERQUE DISTRICT, CORPS OF ENGINEERS  
4101 JEFFERSON PLAZA NE  
ALBUQUERQUE NM 87109-3435

|   |          |     |
|---|----------|-----|
| RECEIVED BOR<br>ALBUQUERQUE AREA OFFICE<br>OFFICIAL FILE COPY |          |     |
| JUN 20 '08  |          |     |
| Class   | ENR-6.00 |     |
| Prj   | GF       |     |
| Cntr #  |          |     |
| Fldr #  |          |     |
| Date  | Initial  | To  |
| 6/20  | EFM      | 186 |
|   |          | 187 |
|   |          |     |
|   |          |     |
|   |          |     |
|   |          |     |

June 17, 2008

Regulatory Division  
New Mexico/Texas Branch

Mr. Jeff Howland  
Refuge Manager  
USFWS-Bitter Lake National Wildlife  
Refuge  
4605 Bitter Lake Road  
Roswell, New Mexico 88201

Dear Mr. Howland:

This is in reference to your application dated May 22, 2008, for the proposed Pecos River Restoration Project on the Pecos River east of Roswell, Chaves County, New Mexico, Action No. SPA-2007-00653-ABQ.

By a letter dated June 6, 2008, the Albuquerque District, U.S. Army Corps of Engineers (Corps), notified you that we were evaluating this project under the terms of Section 404 Nationwide Permit No. 27 for aquatic habitat, restoration, establishment, and enhancement activities.

After reviewing the project in accordance with the Nationwide Permit pre-construction notification procedures (General Condition No. 27), the Corps has determined that the proposed work will not result in more than minimal individual or cumulative adverse environmental effects. The public interest would best be served by allowing the work to proceed under Nationwide Permit No. 27. A summary of this permit (including regional conditions) can be found at our website at [www.spa.usace.army.mil/reg/](http://www.spa.usace.army.mil/reg/). If you are unable to access this website, please notify our office for a hardcopy of these documents.

The U.S. Fish and Wildlife Service (USFWS)-Bitter Lake National Wildlife Refuge is therefore authorized to proceed under authority of Nationwide Permit No. 27 for aquatic habitat, restoration, establishment, and enhancement activities. You must insure compliance with all conditions of the permit, including submittal of the enclosed Compliance Certification required by General Condition No. 26.

In addition to the General Conditions of Nationwide Permit No. 27, the following special condition must also be satisfied:

a. The USFWS must comply with any measures to avoid impacts to endangered and threatened species that result from coordination of the Pecos River Restoration Project under Section 7 of the Endangered Species Act.

b. The USFWS must comply with any measures required to minimize or avoid impacts to cultural resources that are developed as a result of the Pecos River Restoration Project's cultural resource coordination under the requirements of Section 106 of the National Historic Preservation Act.

The proposed project is located within the Pecos River, a perennial river. The New Mexico Environment Department (NMED) must issue a Section 401 water quality certification for the project prior to the commencement of work. The NMED is currently reviewing the project for compliance with the appropriate water quality standards for this portion of the Pecos River.

General Condition No. 17 requires that no activity is authorized under any Nationwide Permit which is likely to jeopardize the continued existence of a listed or proposed threatened or endangered species, as identified under the Federal Endangered Species Act, or which is likely to destroy or adversely modify the critical habitat of such species. As stated above in Special Condition a., the USFWS must comply with any measures to avoid impacts to endangered and threatened species that result from coordination of the Pecos River Restoration Project under Section 7 of the Endangered Species Act.

Please note under Further Information in the nationwide permit that this verification does not grant any property rights or privileges. The USFWS must possess the authority, including property rights, to undertake the work described in his application.

This verification will be valid for 2 years unless the nationwide permit is modified, reissued or revoked. The verification will remain valid if, during that time, the nationwide permit is reissued without modification or the activity complies with any subsequent modification of the nationwide permit authorization. If the nationwide permit authorization expires, is suspended, revoked, or modified such that the activity would no longer comply with the terms and conditions of the nationwide permit, the provisions of 33 CFR 330.6(b) will apply.

If you have any questions regarding this verification or these regulations, please feel free to contact Mr. James Wood at (505) 342-3280 or by e-mail at [james.a.wood@usace.army.mil](mailto:james.a.wood@usace.army.mil). Also, please complete and return the attached Customer Service Survey at your convenience.

Sincerely,



Donald Borda  
Chief, Regulatory Division

2 Enclosures

1. Compliance Certification form
2. Customer Service Survey

Copies furnished:

Mr. Christopher M. Canavan  
NMED-Surface Water Quality Bureau  
Las Cruces Field Division  
1170 N. Solano Drive, Suite M  
Las Cruces, NM 88001

Mr. Paul Tashjian  
Hydrologist  
USFWS-Resource Management Branch  
P.O. Box 1306  
Albuquerque, NM 87103-1306

Ms. Marsha Carra ✓  
Bureau of Reclamation-Albuquerque  
Area Office  
555 Broadway Blvd. NE, Suite 100  
Albuquerque, NM 87102-2352



NEW MEXICO  
ENVIRONMENT DEPARTMENT



*Surface Water Quality Bureau*

BILL RICHARDSON  
Governor  
DIANE DENISH  
Lieutenant Governor

Harold Runnels Building, N2050  
1190 South St. Francis Drive (87505)  
P.O. Box 26110, Santa Fe, NM 87502  
Phone (505) 827-0187 Fax (505) 827-0160

RON CURRY  
Secretary  
JON GOLDSTEIN  
Deputy Secretary

www.nmenv.state.nm.us

November 10, 2008

CERTIFIED MAIL NO. 7004 0750 0001 3214 3531

Mr. Jeff Howland  
Refuge Manager  
U.S. Fish and Wildlife Service  
Bitter Lake National Wildlife Refuge  
4065 Bitter Lakes Drive  
Roswell, New Mexico 88201

Subject: Clean Water Act Section 401 Water Quality Certification for *NMED SWQB File 2008-LC007*: Pecos River Restoration Project, Chaves County, New Mexico.

Dear Mr. Howland,

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. The project is located in Townships 9 and 10 South, Range 25 East, Sections 2, 3, 10, 11, 14, 15, 21, 22, 23, 26, 27, 28, and 34. According to the application, this project involves the re-connection of an oxbow lake to the main stem of the Pecos River, and the removal of tamarisk, floodplain levees, lowering floodplains, re-connecting historic river sections, and establishing native plants.

The U.S. Army Corps of Engineers (USACE) will regulate this project under Nationwide Permit No. 27 for Aquatic Habitat Restoration, Establishment, and Enhancement Activities (USACE Action #2007-00653-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 of New Mexico 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) as amended August 1, 2007). A Section 401 Water Quality Certification is also required to comply with General Condition 21 (Water Quality) and General Condition 13 (regional and Case-By-Case Conditions) of the Nationwide Permits. According to the water quality standards this segment of Pecos River is designated for the following uses:

- Secondary contact
- Irrigation
- Wildlife habitat
- Warmwater aquatic life
- Livestock watering

Standards and applicable criteria for this segment of the Pecos River and relevant to your project include:

20.6.4.8 Antidegradation Policy and Implementation Plan  
20.6.4.13 General Criteria

- A. Bottom Deposits and Suspended or Settleable Solids: Surface waters of the state shall be free of water contaminants including fine sediment particles (less than two millimeters in diameter), precipitates or organic or inorganic solids from other than natural causes that have settled to form layers on or fill the interstices of the natural or dominant substrate in quantities that damage or impair the normal growth, function or reproduction of aquatic life or significantly alter the physical or chemical properties of the bottom.
- B. Floating Solids, Oil and Grease: Surface waters of the state shall be free of oils, scum, grease and other floating materials resulting from other than natural causes that would cause the formation of a visible sheen or visible deposits on the bottom or shoreline, or would damage or impair the normal growth, function or reproduction of human, animal, plant or aquatic life.
- F. Toxic Pollutants: Surface waters of the state shall be free of toxic pollutants from other than natural causes in amounts, concentrations or combinations that affect the propagation of fish or that are toxic to humans, livestock or other animals, fish or other aquatic organisms, wildlife using aquatic environments for habitation or aquatic organisms for food, or that will or can reasonably be expected to bioaccumulate in tissues of fish, shellfish and other aquatic organisms to levels that will impair the health of aquatic organisms or wildlife or result in unacceptable tastes, odors or other health risks to human consumers of aquatic organisms.
- I. Temperature: Maximum temperatures for each classified water of the state have been specified in 20.6.4.101 through 20.6.4.899 NMAC. However, the introduction of heat by other than natural causes shall not increase the temperature, as measured from above the point of introduction, by more than 2.7°C (5°F) in a stream, or more than 1.7°C (3°F) in a lake or reservoir. In no case will the introduction of heat be permitted when the maximum temperature specified for the reach would thereby be exceeded. These temperature criteria shall not apply to impoundments constructed off stream for the purpose of heat disposal. High water temperatures caused by unusually high ambient air temperatures are not violations of these standards.
- J. Turbidity: Turbidity attributable to other than natural causes shall not reduce light transmission to the point that the normal growth, function or reproduction of aquatic life is impaired or that will cause substantial visible contrast with the natural appearance of the water. Turbidity shall not exceed 10 NTU over background turbidity when the background turbidity is 50 NTU or less, or increase more than 20 percent when background turbidity is more than 50 NTU. Background turbidity shall be measured at a point immediately upstream from the turbidity causing activity. However, limited-duration activities necessary to accommodate dredging, construction or other similar activities and that cause criterion to be exceeded may be authorized provided all practicable turbidity control techniques have been applied and all appropriate permits and approvals have been obtained.

- 20.6.4.206 PECOS RIVER BASIN – The main stem of the Pecos River from the headwaters of Brantley Reservoir upstream to Salt Creek (near Acme), perennial reaches of the Rio Peñasco downstream from State Highway 24 near Dunken, perennial reaches of the Rio Hondo and its tributaries below Bonney Canyon and perennial reaches of the Rio Felix.
- 20.6.4.900 Standards Applicable to Attainable or Designated Uses

This is only a partial list of standards for the Pecos River. For a complete list of the water quality standards that apply to your project, refer to the following sections of the Standards for Interstate & Intrastate Surface Waters, New Mexico Water Quality Control Commission, 20.6.4 NMAC (as amended August 1, 2007). These standards are available on the web at:

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 #2007-00653-ABQ: Pecos River Restoration Project. This certification is subject to conditions to reasonably assure that the activity is consistent with state law, will be conducted in a manner that will not violate applicable State of New Mexico water quality standards, and implements the Water Quality Management Plan, including Total Maximum Daily Loads (TMDLs), the Continuing Planning Process, and the Antidegradation Policy and Implementation Plan.

Therefore, this Certification is not valid unless the following conditions are adhered to:

1. Erosion control measures for all portions of the project area that drain toward surface water must be properly selected, installed, inspected, repaired, and maintained. Erosion and sediment control structures (e.g., silt fences, sediment basins, etc.) must be inspected after significant storm events and repaired as necessary. Sediment must be removed from erosion control structures when the sediment reaches one-half the height of the structure or wet storage volume is reduced by one-half.
2. 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. Report all spills immediately to the SWQB 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, call 866-428-6535 (voice mail, twenty-four hours a day). For emergencies only, call 505-827-9329 twenty-four hours a day (NM Dept of Public Safety).
3. 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. Refuel equipment at least 100 feet from surface water.
4. 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. Releases from dams must be incorporated into the work schedule 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.
5. Temporary protective mats are required for heavy equipment working in wetlands to minimize impacts to soil and vegetation and are to be removed when no longer necessary. Wetland crossings must be restricted to a single location and constructed perpendicular to and at a narrow point of the wetland. 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. Ditches or culverts in wetlands must have properly designed, installed and maintained siltation or sedimentation structures at the outfall.
6. Excavated trenches must be backfilled and compacted to match the bulk density and elevation of the adjacent undisturbed soil.

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 conditions. 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, but by the end of first full growing season following construction. Native woody riparian and/or wetland species must be used in areas that support such vegetation. Measures to prevent damage by beavers, wildlife, or livestock are required until trees are established. Plantings must be monitored and replaced for an overall survival rate of at least 80 percent. Once established, native plants adapted to the site must be able to thrive with no supplemental water or treatment.
8. 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.
9. The SWQB must be notified at least five days before starting construction, to allow time to schedule monitoring or inspections.

Violations of State of New Mexico 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 New Mexico Water Quality Act 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 of New Mexico water quality standards. If you have any questions regarding this Section 401 Water Quality Certification please feel free to contact Chris Canavan of my staff at (575) 647-7926. Thank you for your cooperation.

Sincerely,



Glenn Saums, Acting Bureau Chief  
Surface Water Quality Bureau

GS: cmc

xc: NMED District IV Manager, Roswell  
Edward L. Paulsgrove, U.S. Army Corps of Engineers  
Tom Nystrom, Wetlands, Region 6, USEPA  
Matthew Wunder, NM Department of Game and Fish  
Brian Millsap, U.S. Fish and Wildlife Service  
401 Certification File 2008-LC007

**INTRA-SERVICE SECTION 7 BIOLOGICAL EVALUATION FORM**

Originating Person: Jeffrey Sanchez  
Telephone Number: 575-625-4018  
Date: 9/23/2008

- I. Region: 2
- II. Service Activity (Program): Refuges and Wildlife
- III. Pertinent Species and Habitat:
- A. Listed species and/or their critical habitat within the action area:  
Interior least tern (*Sterna antillarum*)  
Koster's springsnail (*Juturnia kosteri*)  
Noel's amphipod (*Gammarus desparatus*)  
Pecos assiminea (*Assimineia pecosensis*)  
Pecos bluntnose shiner (*Notropis simus pecosensis*)  
Pecos gambusia (*Gambusia nobilis*)  
Pecos sunflower (*Helianthus paradoxus*)  
Roswell springsnail (*Pyrgulopsis roswellensis*)  
Southwestern Willow Flycatcher (*Empidonax traillii extimus*)
- B. Proposed species and/or proposed critical habitat within the action area:
- C. Candidate species within the action area:  
Lesser Prairie Chicken (*Tympanuchus pallidicinctus*)
- D. Include species/habitat occurrence on a map: see attachments 1-4
- IV. Geographic area or station name and action:**
- Restore portions of functioning Pecos River channel at Bitter Lake National Wildlife Refuge in Chaves County, New Mexico.
- V. Location (attach map):
- A. Ecoregion Number and Name: 6, Pecos
- B. County and state: Chaves County, New Mexico
- C. Section, township, and range (or latitude and longitude): Parts of sections 14, 22, 23, 26, 27, and 34 of T9S, R25E and sections 2, 3, 10, 11, 14, 15, 21, 22, 27, and 28 of T10S, R25E.

- D. Distance (miles) and direction to nearest town: Approximately 10 miles west to Roswell
- E. Species/habitat occurrence:

**Southwestern willow flycatcher** (*Empidonax traillii extimus*) is restricted to dense riparian association of willow, cottonwood, buttonbush, tamarisk, baccharis, and other deciduous shrubs and trees. This habitat occurs in riparian areas along rivers, streams, or other wetlands that are often small and/or linear, and widely separated by expanses of arid lands (USDA, *et al.* 2005). The breeding range of the southwestern willow flycatcher (SWIFL) includes parts of southern California, southern Nevada, southern Utah, Arizona, New Mexico, western Texas, southwestern Colorado, and extreme northwestern Mexico. The wintering grounds of this species are not well known, but the most likely areas are in Mexico, Central America, and perhaps northern South America (Oberholser, 1974; Wauer, 1985).

Southwestern willow flycatchers are rarely observed at Bitter Lake National Wildlife Refuge (BLNWR) and the Pecos River system. They migrate through saltcedar infested areas along the Pecos River but do not breed there and historically breeding has never been recorded there (De Loach, *et al.*, 2003). The nearest southwestern willow flycatcher territory exists approximately 150 miles to the west along the Rio Grande riparian zone near San Marcial, New Mexico.

**Interior least terns** (*Sterna antillarum*) nest on large, bare river sandbars, beaches and islands of large reservoirs and alkali flats near water in the central and northern Great Plains. Bare substrate is essential for nesting upon, within which they dig a small scrape to hold a clutch of 2 or 3 eggs. The semi-precocial chicks leave the nest within 24 hours of hatching and seek isolated clumps of vegetation for concealment and protection from the sun/predators. The parents feed their chick's small fish and invertebrates.

Least terns begin arriving at BLNWR in early May and initiate nesting a few weeks after arrival. They usually nest in small numbers (usually 10-12 pairs), primarily utilizing Unit 16 and the Bitter Lake Playa. After fledging, the young may be observed on shorelines or islands of Bitter Lake and wetlands where foraging is favorable. By mid-August most fledglings and adults have departed the refuge.

**Pecos gambusia** (*Gambusia nobilis*) inhabits shallow, alkaline waters with aquatic vegetation for cover. It occurs near spring-heads exhibiting flowing water, and near the shorelines of sinkholes. The species feeds on the surface and at mid-water, primarily on Culicidae and Corixidae (Sublette, 1990). It appears to have a fairly narrow temperature tolerance, inhabiting waters between 21° and 30° C (Gehlbach *et al.* 1978). Although it inhabits sites with a wide range of salinities (low at spring heads, high in sinkholes), a level of 30 ppt may be the upper limit for the species (Echelle and Echelle, 1980).

Historically, Pecos gambusia occurred in springs and other isolated habitats within the Pecos River Valley, and utilized the Pecos River primarily for dispersal. As a result of habitat loss associated with the lowering of the water table and reduced flows along the Pecos River Valley, its range has been restricted. It currently occurs only on the refuge (Bitter Creek, Sago Springs, Dragonfly Springs, and several other sinkholes), at Blue Springs in Eddy County, New Mexico,

and at two sites in Texas (Toyah Creek and Leon Creek). A few Pecos gambusia and western mosquitofish (*G. affinis*)/Pecos gambusia hybrids have been found in Units 3 and 5 (Echelle and Echelle, 1980). It is unlikely that pure Pecos gambusia reside there today. Additionally, Pecos gambusias are thought to inhabit the Unit 6 spring ditch and several other spring ditches throughout the refuge. Further presence/absence investigation is required.

**Pecos bluntnose shiner** (*Notropis simus pecosensis*) prefers open river channels with limited aquatic vegetation, sandy substrates, and low velocity laminar flows within healthy meandering river systems. It is most common below obstructions in the river, but not in stagnant pools. Spawning is believed to peak during summer in response to high flows following storm events, but may also occur in the fall (Sublette, 1990). This species is apparently carnivorous-omnivorous, utilizing a wide range of organisms. Habitat alterations resulting from dams and other dewatering projects have been the primary reason for its decline.

Historically, *N. s. pecosensis* was found in the Pecos River and lower reaches of its major tributaries from Santa Rosa, NM south to just north of Carlsbad, NM. Its distribution is currently restricted at the northern and southern extremes of its historical range (Sublette, 1990). BLNWR currently harbors Pecos bluntnose shiners along the Pecos River (none of which is included in the Critical Habitat designation for the Pecos bluntnose shiner).

**Pecos puzzle sunflowers** (*Helianthus paradoxus*) grow in moist, saline soils adjacent to permanent water or in areas seasonally flooded. It is an annual which sets seed in September, and is believed to germinate mostly in February and March. Seedlings have been found as early as the first week in March. Pecos sunflowers have six known major areas of occurrence; five in New Mexico and one in Texas. Within the Pecos Valley, it occurs near Santa Rosa and east/southeast of Roswell within Bottomless Lakes State Park, Dexter National Fish Hatchery, and BLNWR. The refuge population occurs along Bitter Creek, south to hunter marsh, and on the refuge farm, mostly around the small wetland complex west of the Hondo River.

Since first discovered on the refuge in 1991, the estimated area of Pecos sunflower occupancy has increased by more than three-fold due to water and fire management prescriptions (Annual Narrative Report, 1996). The refuge Pecos sunflower population fluctuates from year to year due to climatic factors, though the Pecos sunflower appears to be ever-increasing. Drawing down wetlands in the spring has provided additional sites for sunflower seed germination, while at the same time lowering soil salinity levels. Fall and winter burning has apparently provided a favorable environment for seed germination and plant growth by removing litter and providing a flush of nutrients. The removal of saltcedar over-story, by burning or cutting, has also led to the establishment of sunflowers beneath the former canopy.

**Koster's springsnail** (*Juturnia kosteri*) is an extremely small gastropod (family: Hydrobiidae) endemic to Chaves County, New Mexico. The snail is totally aquatic, living in low-velocity springs and streams with soft, organic substrates. It presumably feeds on the fine film associated with the substrate (NMDGF, 1988). The Koster's springsnail currently persists only within scattered sites on the refuge. It is believed to be extirpated from the Roswell Country Club where an off-refuge population existed at one time. Population density estimates range from 704-89,472/meter-squared for Bitter Creek (including Dragonfly Springs) and from 75-512/meter-squared for Sago Springs (Lang, 1998). In the summer of 1998, Dr. Mark Gordon

discovered several isolated populations on the western shoreline of the refuge impoundments extending from unit 3 to hunter marsh (Gordon, 1998, pers. com.). He also found a population in Lake St. Francis which is a relatively freshwater sinkhole (Gordon, 2001, pers. com.).

**Noel's amphipod** (*Gammarus desparatus*) is a small shrimp-like crustacean that is generally active at night, and endemic to Chaves County, New Mexico. They inhabit cool, unpolluted waters with an abundance of oxygen (NMDGF, 1988). They are omnivorous, feeding on algae and organic debris (NMDGF, 1988). The last known populations occur within the refuge, on Bitter Creek, Sago Springs, the ditch on the west side of Units 6 and 7, in Hunter Marsh and the adjacent City of Roswell property (discovered in 2004). The population from the Roswell Country Club could not be located in 1988 or 2004 and the Lander Spring population is apparently extinct. Lang (1998) estimated densities of 64-8768/meter-squared in Bitter Creek and 26-575/meter-squared in Sago Springs. Density estimates have not been made for the more recently discovered populations.

**Roswell springsnail** (*Pyrgulopsis roswellensis*) is a tiny, aquatic gastropod (family: Hydrobiidae) endemic only to Chaves County, New Mexico (NMDGF, 1988). It requires perennially flowing water where it feeds on algae and organic detritus (NMDGF, 1988). Until the summer of 1998 it was known only to occur within North Spring at the Roswell Country Club, Bitter Creek, and Sago Springs. However, Dr. Gordon found it persisting in the ditch west of Unit 6 (1998, pers. com.), and Lang found it in the ditch on the west side of Unit 7 (2002, pers. com). A survey of the Roswell Country Club spring-head during the summer of 2004, found no rare invertebrates (2004, pers. com). Lang (1998) estimated densities in Sago Springs at 1,125-27,924/meter-squared and in Bitter Creek at 64-512/meter-squared.

**Pecos assiminea snail** (*Assiminea pecosensis*) is a very small, amphibious gastropod (family: Assimineidae) occurring only at one site in Texas and in Bitter Creek (NMDGF, 1998). These snails reside mostly in moist substrate or vegetation within a few inches of flowing water. They presumably consume bacteria, fungi, algae, and associated items (NMDGF, 1988). Lang (2000) collected a few individuals from the ditch on the west side of Unit 7, Bitter Creek, and numerous individuals from the edge of Sinkhole 32, which is hydrologically connected to Sago Springs. Additionally, Dr. Gordon (2001) identified Pecos assiminea snails within the southwest corner of Unit 15. Populations at one time existed within the Roswell Country Club, and a seepage area along Unit 6 (Lang, 1998), but have since been extirpated from both sites. It is believed that additional isolated populations exist on the west side of BLNWR wetland units among spring habitats.

**Lesser prairie chickens** (*Tympanuchus pallidicinctus*) currently occupy western Kansas, western Oklahoma (panhandle), north and northwestern Texas, southeastern New Mexico, and southeastern Colorado. They require native rangeland in different stages of plant succession, consisting of a diversity of native, short to mid-height grasses and forbes interspersed with low-growing shrubby cover (USDA 1999). They nest in shallow depressions lined with grass usually concealed in grass or shrubs among open habitats. Lesser prairie chickens feed on seeds, catkins, acorns, leaves, buds of forbes, waste grain and insects seemingly preferring grasshoppers.

The current populations occupy <10% of the range occupied prior to the 1900s (Ehrlich 1988). At one time, the birds range likely extended throughout BLNWR and neighboring grasslands.

There have been only 2 documented prairie chicken observations within the refuge, one in May, 1977, and more recently in October, 2005, by refuge manager J. Howland (photographed).

## **VI. Description of proposed action (attach additional pages as needed):**

The proposed actions are to restore portions of the Pecos River channel in separate phases (I and II) within the middle tract of BLNWR, starting in 2008. Phase I (reach 4 only) would probably be conducted first, followed by Phase II (reaches 1, 2, and 3). These actions are an effort to restore a more natural stream morphology and floodplain geometry to the reach of the Pecos River within the refuge in order to benefit native aquatic and riparian plant and animal communities (Comprehensive Conservation Plan, 1998). Additionally, this effort should enhance diversity and productivity of the Pecos River, promoting a dynamic native system for the benefit of the Pecos bluntnose shiner and other native fishes and riparian species. To accomplish this, management prescriptions include the lowering of river banks, removal of vegetation, and restoration of flow into several historic oxbows and floodplain backwaters in conjunction with re-vegetation of native plants. Refuge personnel and/or anyone involved with these projects will not utilize heavy equipment within the current active Pecos River channel (including all phases). The only activity that will occur within the current active channel is the placement of a sediment plug downstream of the Oxbow 4 inlet (refer to section VII-Pecos bluntnose shiner).

This proposed project is broken up into 5 reaches (see attachment 5) which require separate management actions due to current and past morphology/geometry of the floodplain. Detailed management actions for all reaches include:

**Reach 1** (parts of sections 14, 22, 23, 26, 27 and 34 of T9s, R25E). The proposed action within reach 1 (see attachment 6) includes the lowering of river banks/levees and removal of vegetation thus allowing natural interaction between the river and its floodplain.

With the use of excavators and other heavy equipment, most levees/banks would be lowered allowing for natural movement of an estimated 150 foot wide Pecos river channel. Levees/banks would not be lowered in areas where natural terrace erosion is occurring. These actions would re-connect the restored area during flows greater than 1,200 cfs, as a result enhancing the dynamics of this system. Additionally, non-native vegetation would be removed by use of bulldozers and other heavy equipment by exposing/cutting off root crowns and eliminating trunks from banks/levees. Excess excavated material would be spread throughout the upland area. Saltcedar brush piles would be burned after completion of this project.

**Reach 2** (parts of sections 3, 2, 10, and 11 of T10s, R25E). The proposed action within Reach 2 includes the lowering of river banks/levees, removal of vegetation, and diversion of the Pecos river into a historic meander, thus restoring approximately 160 acres of Pecos River valley.

With the use of excavators and other heavy equipment, the levees/banks would be lowered allowing for natural movement of an estimated 150 foot wide Pecos river channel. As in reach 1, this action would re-connect the restored area during flows greater than 1,200 cfs, as a result enhancing the dynamics of this system. Non-native vegetation would be removed by use of bulldozers and other heavy equipment by exposing/cutting off root crowns and eliminating trunks from banks/levees.

Additionally (if funding becomes available), a small meander located at the north end of reach 2 (see attachment 7) would be re-connected with the Pecos river channel. Non-native vegetation would be removed by use of bulldozers and other heavy equipment by exposing/cutting off root crowns and eliminating trunks. A 40 foot wide (estimate) pilot channel would be excavated (capable of maintaining flows of 300cfs) prior to removal of the current sediment plug at north end of the meander.

Additional actions pertaining to all projects within reach 2 include the burning of saltcedar brush piles and the spread of excess excavated material taken from banks, levees, and plugs throughout the surrounding uplands.

**Reach 3** (parts of sections 14, 15, 21, and 22 of T10s, R25E). The proposed actions within reach 3 includes the lowering of banks/levees, removal of vegetation, and re-connection of oxbow 1999, thus restoring approximately 260 acres of Pecos River valley.

The activities outlined within reach 2 would be conducted simultaneously with this action in order to maximize funding/resources. Non-native vegetation would be removed by use of bulldozers and other heavy equipment thus exposing/cutting off root crowns and eliminating trunks from banks/levees. These levees/banks would also be lowered allowing for natural movement of the estimated 150 foot wide Pecos river channel. Use of heavy equipment would not occur within the current river channel. Excess excavated material from the levees/banks would be spread throughout the upland area or used as additional buffer against erosion events (block releases) which could scour toward areas of refuge concern.

Additionally, oxbow 1999 (see attachment 8) would be reconnected as back water habitat at flows greater than 100 cfs. Non-native vegetation would be removed by use of bulldozers and other heavy equipment thus exposing/cutting off root crowns and eliminating trunks. An estimated 40 foot wide pilot channel would be excavated (capable of maintaining flows of 300cfs) prior to removal of the current sediment plug at the north end of oxbow 1999.

Additional actions pertaining to all projects within reach 3 include the burning of saltcedar brush piles and the spread of excess excavated material taken from banks, levees, and plugs throughout the surrounding uplands.

**Reach 4** (parts of sections 27 and 28 of T9s, R25E). The proposed action within reach 4 (see attachment 9) includes the plugging and diversion of the Pecos river into a portion of an historic oxbow (meander 4) thus excavating a new oxbow channel, removing non-native vegetation, lowering banks/levees, and re-vegetating native flora.

With the use of bulldozers, excavators, and other heavy equipment, a ditch would be excavated amid select areas of the historic oxbow in order to drain spring/seep water currently held within meander 4. When the oxbow dries enough for safe entry of heavy equipment, a pilot channel (approximately 12 feet bottom width and 44 feet top width, between 3-8 feet in depth) within meander 4 would be excavated either through or slightly east of the historic channel eventually re-connecting with the current main stem of the river at the historic (meander 4) outflow location. As outlined within the Draft E.A. (2007), the combined width of the channel and floodplain

would be excavated to be at least 350 feet. This minimum width provides room for a 150-foot-wide channel and adequate floodplain. The terrace may need to be excavated in some spots to create a 350-foot-wide floodplain. The new channel would replace approximately 3000 feet of the current incised channel with approximately 7000 feet of new channel within or adjacent to the historic oxbow.

Since the oxbows within reach 4 were formed prior to upstream/downstream dam construction, the banks and levees would be lowered by means of bulldozers, excavators, and other heavy equipment. This action would compliment the current river hydrology corresponding to a water surface elevation of 1,200 cfs. Non-native vegetation such as salt cedar and Russian olive (*Elaeagnus angustifolia*) would be removed up to 2,500 feet from the oxbow channel and river banks. Non-native invasive plants would be removed utilizing a bulldozer by exposing/cutting off its root crowns, and eliminating trunks. Native vegetation would be left in place, and brush piles burned. Some dead brush may be used to create slow water habitat and shelter for fish species such as the Pecos bluntnose shiner.

With the use of heavy equipment, the incised section of the river would then be plugged approximately 250 meters down river of the meander 4 historic oxbow entrance. At the same time, the oxbow entrance would be opened in order to connect the current river channel with the excavated pilot channel. Material excavated from the meander 4 pilot channel and/or taken from the dredge piles adjacent to the current incised river channel would be used as plug material. Excess excavated material would be spread throughout the upland area or used as additional buffer against erosion events (block releases) which could scour toward areas of refuge concern. In addition, rip-rap would be buried by use of backhoe, dump truck, and other heavy equipment at the northwestern and southwestern most bend of meander 4, in order to protect the refuge tour loop road, wetland impoundments, and a population of Pecos puzzle sunflowers. This action requires the digging of three ditches (up to 300 feet long and 15 feet wide, as directed by engineers) radiating eastward from the tour road, and two ditches (up to 300 feet long by 15 feet wide, as directed by engineers) extending northeast from the sunflower population. These ditches would be filled with rip-rap and re-covered with earth. Additionally, native plant species such as honey mesquite (*Prosopis glandulosa*) would be planted along buried rip-rap beds in order to provide an aesthetically pleasing buffer against erosion.

The result of these actions would also create backwater habitat within the current incised river channel that should benefit native fishes, waterfowl, and insects/invertebrates.

After completion of this project, the Service is proposing to develop an auto loop pullout, trail, viewing platform, and interpretive site on the west side of meander 4 when funding becomes available. This trail would be created along the buried rip-rap jetties extending up to the rivers edge where a viewing platform would be constructed. Interpretive signs would be set in place for public use.

**Reach 5** (parts of sections 33 and 34 of T10s, R25E, and sections 4 and 3 of T11s, R25E). There are no actions proposed for this reach (attachment 10). Monitoring of effects from upstream restoration actions may occur.

## **VII. Determination of Effects:**

- A. Explanation of effects of the action on species and critical habitat in items III A, B, and C (attach additional pages as needed):

**Southwestern willow flycatchers** are not known to nest along the Pecos River drainage in New Mexico, though they have been observed migrating through BLNWR. This action may benefit SWIFL's during migration, thus providing an increased diversity of prey items throughout the Pecos River after saltcedar has been successfully removed from the system, and native vegetation persists and recovers. The effort should benefit this species due to increased available acreages of native riparian habitat, providing additional willow baccharis (*Baccharis salicina*) and sandbar willow (*Salix exigua*) stands that should harbor flycatcher prey items. There are no nesting SWIFL pairs within 150 miles of any proposed action, therefore only positive effects are expected from this action.

**Interior least terns** may benefit from this action. Dead saltcedar stands (including brush piles), once burned, will not harbor striped skunks or raccoons, which are potential predators of nesting terns. The action should enhance tern prey (fish and invertebrate) abundance and/or accessibility. It is hoped that saltcedar removal and increased floodplain habitat will ultimately increase native fish populations by improving the quantity and quality of refuge waters. There are no nesting tern colonies within 330 yards of any proposed action, therefore no negative affects are expected from this action.

The areas to be restored along the Pecos River may provide additional feeding/loafing areas for the interior least tern among backwater areas and small sandbars (sandbars usually do not extend beyond 20 feet from rivers edge). Since interior least terns here at Bitter Lake Refuge nest primarily on large vegetatively challenged playa lake/salt flats, it is highly unlikely that they will relocate to additional small sandbars (unsuitable for least tern nesting) along the Pecos River which should occur as a result of this project. These additional sandbars should be similar to the existing sandbars currently located along nearby stretches of river, in which no tern nesting activity has been documented. In order to monitor least tern activity along the Pecos River within these restored areas, Refuge personnel/volunteers will conduct a weekly tern survey to document tern use of the restored river channel during their active breeding season (May - August).

**Pecos gambusia** may benefit from this action. Further removal of saltcedar from the Pecos River drainage should increase spring flow and quantity and quality of fish habitat within surrounding systems. Since Pecos gambusia requires unique clear spring-head and/or sinkhole habitats and there is no suitable habitat within the action area, these actions should not negatively affect this species.

**Pecos bluntnose shiners** should benefit from this action. The Pecos River is a very dynamic, disturbance prone system that the shiner is adapted to. Such restoration actions would allow these reaches of river to progress into a continuous meandering system exhibiting sandy substrates, and low velocity laminar flows favorable to the Pecos bluntnose shiner.

The actions within reach 4 would create additional shiner habitat (approximately 7,000 feet) that is far more favorable for shiner use than that of the current incised channel. After re-connection

of meander 4, the incised channel would likely be utilized as a nursery/breeding backwater for the shiner during high flows. Alterations of reaches 1, 2, and 3 would also influence the ever-changing river to create plunge-pools, backwater, and open water areas providing optimal shiner habitat.

Additionally, this fish species is adapted to block releases and storm events culminating in flows greater than 3,500 cfs in which the increased turbulence results in additional sediment loads carried throughout the water column. It is believed that increased sediment loads due to disturbances created by these actions would not negatively affect shiners currently residing downstream of the proposed action area. In support of this, sediment and water samples were taken from several locations within Oxbow 4 in order to screen for PCBs, pesticides or toxic metals. (Refer to attachment 11-*certificate of analysis*). All sample results exhibited no PCBs or pesticides present. The water sample had trace amounts of arsenic (0.090ug/L) and barium (0.021ug/L). The sediment samples had concentrations of arsenic (~100mg/kg), and chromium (~9mg/kg). These concentrations are at or below average New Mexican background concentrations for these elements (Refer to attachment 12). As stated by contaminants biologists of the U.S. Fish and Wildlife Service Ecological Services Field Office, "the sediments that these samples represent would NOT likely pose a risk to aquatic life, nor to any endangered species should they be disturbed during proposed restoration efforts in Oxbow 4" (see attachment 13).

Additional efforts will be implemented in order to limit negative effects to the Pecos bluntnose shiner. Service personnel will set up nets (barriers) approximately 200 feet upstream and downstream of the sediment plug site (approximately 250 meters downstream of the meander 4 inlet), during a time when the river flow is below 50 cfs. Personnel will then seine the enclosed site in order to remove fish from that area. Native fish (including bluntnose shiners) will then be quickly identified and measured prior to being placed into buckets where they will only remain for a few minutes during transport upstream of the enclosed area. This effort will ensure that Pecos shiners do not get buried beneath the sediment plug.

After the plug is in place and water is diverted into the oxbow 4 (meander 4) channel, service personnel will search the river below the plug to locate and seine isolated pockets/holes occupied by shiners that may become stranded due to these actions. Any Pecos bluntnose shiners captured will again be quickly transported and released upstream of the sediment plug. Since the section of river channel below the plug will still be connected to the outflow of oxbow 4 (i.e. the new location of the Pecos River), we do not anticipate complete drainage of this section of the former channel. In fact, it is believed that a backwater area will be created thus providing a nursery for native fish species including the shiner.

**Pecos puzzle sunflower** should benefit from this action. Saltcedar competes with the sunflower for space, light, moisture and nutrients. Sunflowers often establish themselves beneath the former canopy of saltcedars once it has been top-killed by fire or otherwise removed. Gradually reduced soil salinities, as a result of saltcedar removal, should also promote the germination and growth of sunflowers.

Currently there is one population of Pecos sunflowers (including critical habitat) bordering unit 17, located southwest of the Oxbow 4 channel reconnection project. This population is in line with the projected erosion footprint of meander 4 if/when restoration efforts are completed. In

order to avoid negative impacts to these Pecos sunflowers, two or three 150 foot by 4 foot (estimate) jetty structures will be set in place in order to block and re-route the river away from this sunflower stand. Construction of these jetties will occur outside of the designated Pecos sunflower critical habitat. Prior to use of heavy equipment near sunflower critical habitat, refuge staff will search for and flag any individual sunflower plants that could be affected by such work. Equipment operators will then be notified of sunflower locations and instructed to avoid any disturbance to the marked plants/areas.

**Koster's springsnail, Noel's amphipod, Roswell springsnail, and Pecos assiminea** may benefit from this action. The removal of saltcedar along the river should increase water quantity and quality in the springs/ditches in surrounding areas, upon which all four species depend. Increasing spring flows to more historic levels may allow populations to expand into presently unoccupied habitat.

Since none of these species occur within 833 yards of any proposed action, it is believed that no adverse effects would occur to any of the four species above.

**Lesser prairie chickens** occur rarely at BLNWR. In most cases, refuge habitat does not correlate to desirable prairie chicken habitat due to a taller grassland component and lack of desirable seed, acorn, catkin, forbe, and grain sources. Prairie chickens are not associated with riparian habitats within the refuge, and are not expected to be affected at all by these actions.

B. Explanation of actions to be implemented to reduce adverse effects:

A jetty (up to 300 feet long and 15 feet wide) would be buried beneath the ground, buffering potential erosion of the unit 17 Pecos sunflower critical habitat from the effects of phase I (meander 4) restoration project. Individual sunflower plants will be flagged and avoided during construction of jetty structures near unit 17 critical habitat.

The burning of saltcedar brush piles/standing dead trees will be conducted during the winter (November– February), prior to germination of Pecos puzzle sunflowers and after plants have dried/dropped seeds.

No human activity (including this action) will take place near least tern nesting colonies or populations of Koster's springsnails, Noel's amphipods, Roswell springsnails, and/or Pecos assimineas.

Personnel will enclose the area of Pecos River that will be filled with sediment, in order to remove Pecos bluntnose shiners from harm by relocating them upstream, outside of the action area. Personnel will search out and seine Pecos bluntnose shiners from river pockets that become isolated due to the Oxbow 4 diversion plug and relocate seined fish upstream of the sediment plug.

**VIII. Effect determination and response requested: [\* = optional]**

A. Listed species/designated critical habitat:

Determination

Response Requested

No effect:

**Southwestern willow flycatcher**

✓ Concurrence

May affect: not likely to adversely affect species:

**Interior least tern**

✓ Concurrence <sup>PE</sup>

No effect:

**Pecos gambusia**

✓ Concurrence <sup>NTM</sup>

May affect: not likely to adversely affect species:

**Pecos bluntnose shiner**

✓ Concurrence <sup>NTM</sup>

May affect: not likely to adversely affect species/critical habitat:

**Pecos sunflower**

✓ Concurrence <sup>PE</sup>

No effect:

**Koster's springsnail**

✓ Concurrence <sup>NTM</sup>

No effect:

**Noel's amphipod**

✓ Concurrence <sup>NTM</sup>

No effect:

**Roswell springsnail**

✓ Concurrence <sup>NTM</sup>

No effect:

**Pecos assiminea**

✓ Concurrence <sup>NTM</sup>

B. Proposed species/proposed critical habitat:

C. Candidate species:

No effect:

**Lesser prairie chicken**

✓ Concurrence

Jeff M. Howland

9/23/08

Signature  
Refuge Manager, Bitter Lake NWR

Date

**IX. Reviewing ESFO Evaluations:**

- A. Concurrence: ✓ Nonconcurrency: \_\_\_\_\_
- B. Formal consultation required: \_\_\_\_\_
- C. Conference required \_\_\_\_\_
- D. Informal conference required \_\_\_\_\_
- E. Remarks (attach additional pages as needed):

*Consultative # 22420-2008-I-0100*

E. W. A.

10/21/08

Acting Field Supervisor  
Signature  
[Title/office of reviewing official]

Date

## CITATIONS

- Bitter Lake National Wildlife Refuge Annual Narrative Report. 1996. Refuge files. 164 p.
- Bitter Lake National Wildlife Refuge Final Comprehensive Conservation Plan and Environmental Assessment. 1998. Refuge files. 64 p.
- DeLoach, C.J., R.I. Carruthers, and T.L. Dudley. 2003b. Request to U.S. Fish and Wildlife Service for additional new sites for release of the leaf beetle, *Diorhabda elongate* from Eurasia, for biological control of saltcedar (*Tamarix spp.*) in seven western states. February 14, 2003. 121 pp.
- DeLoach, C.J., R.I. Carruthers, J.E. Lovich,, T.L. Dudley, & S.D. Smith. 2000. Ecological interactions in the biological control of saltcedar (*Tamarix spp.*) in the United States: toward a new understanding. Pp. 819-873 in Spencer, N.R., ed. Proceedings of the X International Symposium on Biological Control of Weeds, Bozeman, MT. Sidney, MT: USDA-ARS. 1029 p.
- Dudley, T.L., C.J. DeLoach, J.E. Lovich, & R.I. Carruthers. 2000. Saltcedar invasion of western riparian areas: impacts and new prospects for control. Pp. 345-381 in McCabe, R.E. & S.E. Loos, eds. Transactions of the 65<sup>th</sup> North American Wildlife and Natural Resource Conference, Rosemont, IL. Washington, DC: Wildlife Management Institute.
- Echelle, A.A. and A.F. Echelle. 1980. Status of the Pecos gambusia (*Gambusia nobilis*). U.S. Fish and Wildlife Service, Albuquerque, New Mexico. Endangered Species Report No. 10. 1-73.
- Ehrlich, P.R., Dobkin, D.S., Wheye, D. 1988. The Birders Handbook a Field Guide to the Natural History of North American Birds. Simon & Schuster Publications, Inc., New York, NY. 785 pp.
- Gehlbach, F.R., C.L. Bryan and H.W. Reno. 1978. Thermal ecological features of *Cyprinodon elegans* and *Gambusia nobilis*, endangered Texas fishes. Tex. J. Sci. 30:99-101.
- Gordon, M.E. 1998. Personal communication.
- Gordon, M.E. 2001. Personal communication.
- Lang, B.K. 1998. Status of Aquatic Mollusks of New Mexico. Final Report submitted to the USFWS.
- Lang, B.K. 2000. Personal communication.
- Lang, B.K. 2002. Personal communication.
- Lang, B.K. 2004. Personal communication.
- McDonald, C. Personal communication.

New Mexico Department of Game and Fish. 1988. Handbook of Species Endangered in New Mexico. A-650:1-2.

New Mexico Department of Game and Fish. 1988. Handbook of Species Endangered in New Mexico. B-295:1-2.

New Mexico Department of Game and Fish. 1988. Handbook of Species Endangered in New Mexico. B-300:1-2.

New Mexico Department of Game and Fish. 1988. Handbook of Species Endangered in New Mexico. B-306:1-2.

Oberholser, H.C., 1974. The bird life of Texas. Austin, TX: University of Texas Press.

Owen, J.C. & M.K. Sogge. 2002. Physiological condition of southwestern willow flycatchers in native and saltcedar habitats. US Geological Survey report to the Arizona Department of Transportation, Phoenix, AZ. 27 p.

Sublette, J., M.D. Hatch and M. Sublette. 1990. The Fishes of New Mexico. University of New Mexico Press. 393 p.

United States Department of Agriculture. 1999. NRCS. Fish and Wildlife Habitat Management Leaflet for Lesser Prairie-Chicken (*Tympanuchus pallidicinctus*). Number 6. September 1999.

United States Department of Agriculture. 2005. APHIS. Request to U.S. Fish and Wildlife Service for concurrence of Biological Assessment for Biological control of Saltcedar (*Tamarix spp.*) in Fifteen States. March 30, 2005.

United States Department of the Interior. 1995. Fish and Wildlife Service. Endangered and threatened wildlife and threatened wildlife and plants. Final rule determining endangered status for the Southwestern willow flycatcher. Federal Register, Vol. 60, p. 10694, February 27, 1995

Wauer, R.H., 1985. A field guide to the birds of Big Bend. Austin, TX: Texas Monthly Press. 283 p.