Restoration Plan

Addendum to the Restoration Plans for the Atchison Topeka and Santa Fe Tie-Treater and South Valley Superfund Sites

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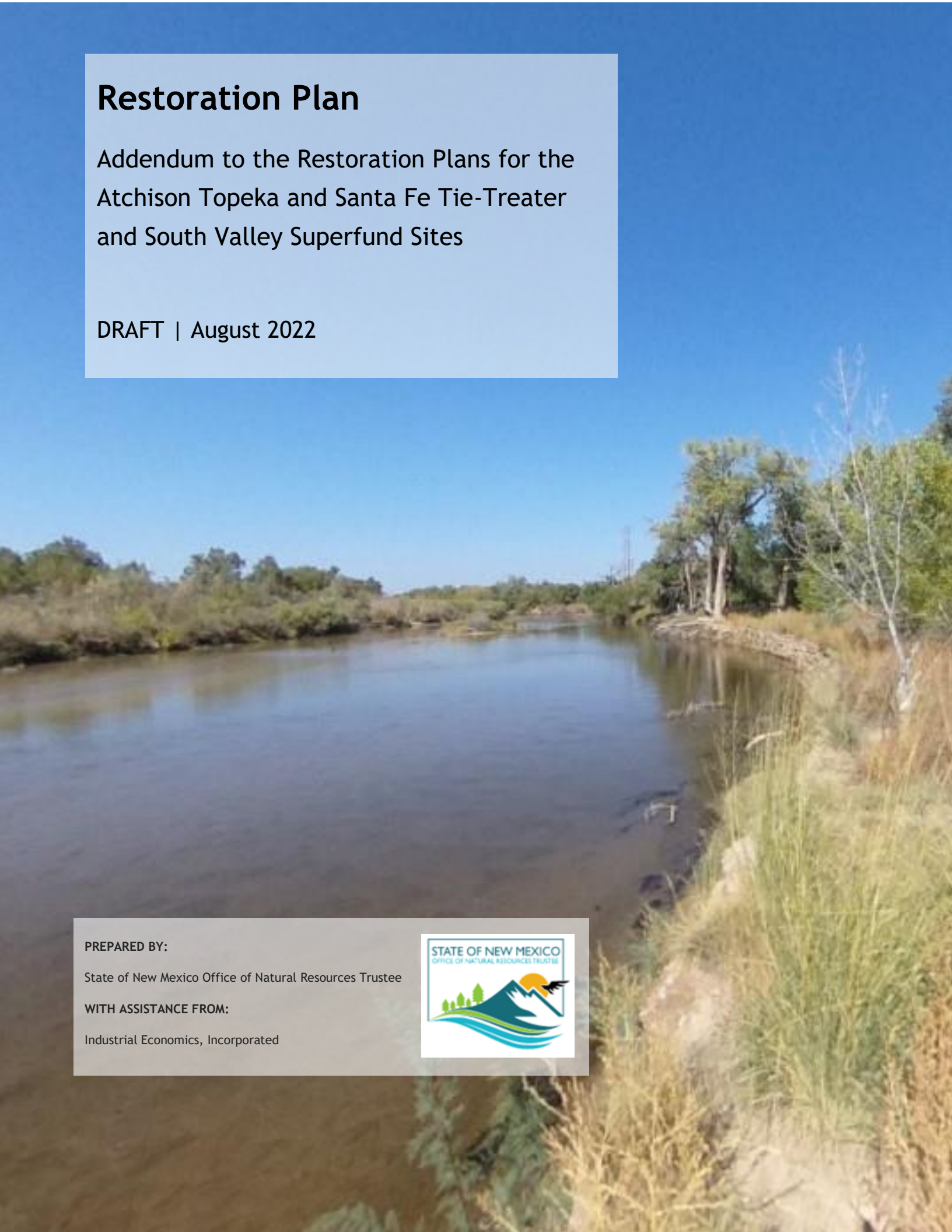

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LIST OF EXHIBITS

LIST OF ACRONYMS

ATSF	Atchison Topeka and Santa Fe
ATSF Site	Atchison Topeka and Santa Fe Tie-Treater Superfund Site
BNSF	Burlington Northern and Santa Fe Railway Company
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
C.F.R.	Code of Federal Regulations
CWA	Clean Water Act of 1970
DOI	Department of the Interior
DNAPL	Dense Non-Aqueous Phase Liquid
EPA	U.S. Environmental Protection Agency
NPL	National Priorities List
NRDA	Natural Resource Damage Assessment
ONRT	Office of Natural Resources Trustee
OSD	Open Space Division
SWRP	Southside Wastewater Reclamation Plant
USACE	U.S. Army Corps of Engineers
U.S.C.	United States Code
USFWS	United States Fish and Wildlife Service
WWCA	Whitfield Wildlife Conservation Area

EXECUTIVE SUMMARY

ES.1 INTRODUCTION AND PURPOSE

The Atchison Topeka and Santa Fe Tie-Treater ("ATSF Site") and the South Valley Sites are two Superfund Sites in Albuquerque, New Mexico. The ATSF Site operated as a railroad tie treating plant where the use of wood treatment products resulted in contamination and natural resource injuries to groundwater and wildlife habitats. The South Valley Site was used for industrial operations beginning in the 1950s, and releases of volatile organic compounds led to the contamination of soil and groundwater resources. The two sites are in close proximity to each other in the southside of Albuquerque.

The State of New Mexico, acting through the New Mexico Office of Natural Resources Trustee (ONRT), conducted a natural resource damage assessment for each of the sites to evaluate the natural resource injuries and plan restoration. After reaching settlements with the responsible parties for each site, ONRT (and the Department of the Interior, co-Trustee for the ATSF Site), developed restoration plans in the early 2000s and implemented several restoration projects (ONRT 2007a, ONRT 2007b, USFWS and ONRT 2007). After implementing the selected restoration projects, ONRT determined that approximately $566,000 in restoration funding remains from groundwater projects implemented from both settlements. As such, additional restoration is needed to provide sufficient groundwater benefits to compensate for the losses at these two sites.

ES.2 PROPOSED RESTORATION

As part of the restoration planning process, ONRT reached out to local groups to solicit restoration project ideas that were consistent with the Trustee's restoration objectives. Based on this project solicitation process, one project was identified, the Southside Wastewater Reclamation Plant Outfall Restoration project. This project is the Trustees' preferred restoration alternative. The available groundwater restoration funds would contribute to improvements upstream and downstream of the Albuquerque Bernalillo County Water Utility Authority's Southside Wastewater Reclamation Plant outfall channel, located in the southside of Albuquerque. Overall, the proposed project would improve surface water quality, provide seasonal benefits to the connected groundwater systems, enhance public access, and improve the riparian and floodplain habitats in and along the Rio Grande in the area of the Southside Wastewater Reclamation Plant, including habitat for the Rio Grande silvery minnow.

ES.3 PUBLIC INVOLVEMENT

Public participation and review are an integral part of the natural resource damage assessment restoration planning process. A copy of this document is available for download from ONRT's website (https://onrt.env.nm.gov/) and ONRT encourages the public to review and provide comment during the comment period. The public comment period will be open from August 29, 2022 through September 30, 2022. ONRT will accept public comments on the draft plan via email, mail, and an online portal (see details in Section 1.5). Any comments received by September 30, 2022 will be evaluated and incorporated, as appropriate, into a final version of this document.

CHAPTER 1 | INTRODUCTION

1.1 INTRODUCTION AND PURPOSE OF THIS DOCUMENT

The Comprehensive Environmental Response Compensation and Liability Act (CERCLA; 42 U.S.C. § 9601 *et seq.*) establishes a liability regime for the release of hazardous substances that injure natural resources and the ecological and human use services those resources provide. Pursuant to CERCLA, designated Federal and state agencies and federally recognized tribes act as trustees on behalf of the public to assess injuries and plan for restoration to compensate for those injuries (i.e., conduct natural resource damage assessments and restoration).[1] CERCLA further instructs the designated trustees to develop and implement a plan for the restoration, rehabilitation, replacement, or acquisition of the equivalent of injured natural resources under their trusteeship (hereafter collectively referred to as "restoration"). Federal agencies are designated as natural resource trustees pursuant to section 107 of CERCLA (42 U.S.C. § 9607(f)(2)(A)), Executive Order 12777, and the National Contingency Plan (40 C.F.R. § 300.600) and state agencies are designated as natural resource trustees by the governors of each state pursuant to section 107 of CERCLA (42 U.S.C. § 9607(f)(2)(B)).

The State of New Mexico, acting through the New Mexico Office of Natural Resources Trustee (ONRT), is a Trustee, pursuant to the New Mexico Natural Resources Trustee Act (New Mexico Statutes Annotated [NMSA] 1978, §§ 75-7-1 *et seq.*). Starting in the late 1990s, ONRT conducted natural resource damage assessments (NRDAs) for two Superfund sites located in the proximity of each other in Albuquerque, New Mexico: the Atchison Topeka and Santa Fe Tie-Treater Superfund Site and the South Valley Superfund Site. For both NRDA cases, ONRT entered into a negotiated financial settlement with the responsible parties and developed a restoration plan. In the case of the ATSF Site, ONRT worked closely with co-trustees, the United States Department of the Interior (DOI) Fish and Wildlife Service (USFWS). Restorations for each site were completed in 2007 (ONRT 2007a, ONRT 2007b, USFWS and ONRT 2007). The restoration plans summarized the assessment, settlement, and selected restoration projects (Exhibit 1-1). After implementing the selected restoration projects, ONRT determined that a total of approximately $566,000 in restoration funding will remain from groundwater projects implemented under the settlements. As such, additional restoration is needed to provide sufficient groundwater benefits to compensate for the losses at these two sites.

[1] Natural resource damage assessment regulations, guiding the Trustees, are contained in Chapter 43 of the Code of Federal Regulations (C.F.R.), Part 11.

EXHIBIT 1-1 LOCATIONS OF ATSF AND SOUTH VALLEY SUPERFUND SITES

ONRT has prepared this restoration plan (this "plan" hereafter), as an addendum to the two groundwater restoration plans completed previously for each site, to address the additional restoration planning efforts needed to expend the remaining restoration funds from the two NRDA settlements. This plan provides background information on the settlements and NRDAs, a summary of restoration progress completed to-date, and describes and evaluates the restoration project ONRT proposes to implement with the remaining restoration funds.

1.2 SUMMARY OF THE TWO SETTLEMENTS

As noted above, this document provides restoration planning information pertaining to two previous NRDA settlements, described briefly below.

1.2.1 ATSF SUPERFUND SITE

The Atchison Topeka and Santa Fe Tie-Treater Site ("ATSF Site") is located in Albuquerque, New Mexico, near the Rio Grande and the Rio Grande State Park. The ATSF Site operated as a railroad tie treating plant from 1908 to 1972. The agents used to treat wood products contained hazardous substances, which resulted in injuries to groundwater and wildlife habitat resources. The site was placed on the National Priorities List (NPL) by the United States (U.S.) Environmental Protection Agency (EPA) in December 1994. In 2004, the Trustees, including ONRT and the DOI, acting through the USFWS, entered into a negotiated settlement with the Burlington Northern and Santa Fe

Railway Company (BNSF) and the U.S. Department of the Treasury (on behalf of the U.S. Railroad Administration), in the amount of $1,090,000 for natural resource damages to the site. The settlement resulted in a Consent Decree for natural resource damages being filed in the United States District Court (District of New Mexico) between the Trustees and BNSF (Case No. 04-CV-1101).

As mandated by the Consent Decree, approximately $1,051,193 of the settlement funds were designated for use by the Trustees to plan and implement natural resource restoration. A total of $396,230.66 was for ONRT and DOI to plan and implement projects specific to wildlife habitat damages and $654,961.94 was for ONRT to plan and implement groundwater restoration. The remaining settlement funds were paid to DOI and the State of New Mexico for costs previously incurred to assess the injuries and loss of natural resources. After implementation of two habitat projects and two groundwater projects, approximately $144,000 in groundwater funds remains for additional restoration. Additional information on the restoration planning effort is provided in Section 1.3, and a summary of the completed habitat and groundwater projects is provided in Chapter 2.

1.2.2 SOUTH VALLEY SUPERFUND SITE

The South Valley Superfund Site ("South Valley Site") is located in Albuquerque, New Mexico and spans approximately two square miles of the South Valley area. The South Valley Site was used for industrial operations beginning in the 1950s. Releases of volatile organic compounds led to the contamination of soil and groundwater resources. In 1979, the South Valley Site contamination caused the closure of over 20 private wells and two Albuquerque municipal wells in the area (EPA 2020). The site was then placed on the NPL by the EPA in 1983.

In 1998, the State of New Mexico filed a natural resource damages claim for contamination of State resources at the South Valley Site under both State and Federal laws, including the Clean Water Act (CWA) and CERCLA. The State identified the Department of Energy, Department of Defense, United States Air Force, General Electric, ACF Industries, Chevron USA, Chevron Pipeline, Co., Texaco Pipeline, Texaco Refining and Marketing and Phillips Pipeline Co., West Emerald Pipeline Corp., Diamond Shamrock, the ATA Group, Giant Industries Arizona Inc., Duke City Distributing Co., and Whitfield Tank Lines as potentially responsible parties (State of New Mexico v General Electrical Company et al. Case Nos. 99-CV-1254, 99-CV-1470 and 99-CV-1118). In early 2006, a settlement was reached with some of the parties potentially responsible for the groundwater contamination.[2] As a result of the settlement, ONRT received $4.8 million for restoration planning and implementation to restore groundwater injuries and lost services. The restoration funds were used on one groundwater project, and after implementation of the project ended in 2018, approximately $422,000 in groundwater restoration funds remains for additional restoration. Additional information on the restoration planning effort is provided in Section 1.3, and a summary of the completed groundwater project is provided in Chapter 2.

1.3 PREVIOUS RESTORATION PLANS AND RELATIONSHIP TO THIS DOCUMENT

After the settlements described above were reached for the ATSF Site and the South Valley Site, the Trustees for each Site initiated restoration planning efforts. This included developing three restoration

[2] The settlement was reached between the State of New Mexico and Chevron defendants which included Chevron U.S.A. Inc., Chevron Pipeline Company, Texaco Inc., and Texaco Downstream LLC, as successor to Texaco Refining and Marketing Inc.

plans (two for the ATSF Site and one for the South Valley Site) to provide information regarding the affected environments, restoration alternatives considered, and the process the Trustees undertook to evaluate and, ultimately, select restoration projects designed to compensate the public for injuries that occurred to natural resources resulting from releases of hazardous substances at the Sites.

The two restoration plans developed for the ATSF Site include: 1) the *Final Wildlife Habitat Restoration Plan*, completed in February 2007 by ONRT and the USFWS, which addresses ecological injuries and wildlife restoration projects (USWFS and ONRT 2007), and 2) the *Groundwater Restoration Plan*, completed in November 2007 by ONRT, which addresses groundwater injuries and restoration projects (ONRT 2007a). ONRT completed the restoration plan for the South Valley Site in 2007. The plan was titled the *Natural Resources Restoration Plan for the South Valley Superfund Site*, and addressed groundwater injuries and restoration projects (ONRT 2007b).

This document, developed by ONRT, serves as an addendum to the two groundwater restoration plans listed above, and includes information on additional restoration planning efforts necessary to expend remaining groundwater restoration funds from the two NRDA settlements discussed in Section 1.2. Note that the Trustees are required to use the settlement monies to plan and implement restoration actions designed to compensate the public for natural resource injuries. As such, through this restoration plan, ONRT proposes one additional restoration project that would provide groundwater benefits as well as habitat and other resource benefits. This proposed project would expend the remaining restoration funds and compensate the public for remaining groundwater injuries that resulted from hazardous substance releases at the ATSF Site and the South Valley Site. Implementation of the proposed restoration project is contingent on approval of the court for use of the remaining settlements funds.

1.4 COMPLIANCE WITH OTHER AUTHORITIES

In addition to CERCLA, other legal requirements may apply to NRDA planning or implementation. ONRT will ensure compliance with all authorities, as applicable. Whether and to what extent an authority applies to a particular restoration action depends on the specific characteristics of that action. The subset of authorities listed below includes those likely most relevant for the restoration project proposed in this plan.

- National Environmental Policy Act (42 U.S.C. §§ 4331 *et seq.*)[3],
- Endangered Species Act (16 U.S.C. §§ 1531 *et seq.*),
- National Historic Preservation Act (16 U.S.C. §§ 470 *et seq.*),
- Federal Water Pollution Control Act (Clean Water Act, 33 U.S.C. §§ 1251 *et seq.*), and
- Bald and Golden Eagle Protection Act (16 U.S.C. 668-668c).

1.5 PUBLIC PARTICIPATION

During the development of the restoration plans previously completed for the ATSF Site and the South Valley Site, the Trustees held public comment periods for each plan. The public comment periods for the ATSF Site Wildlife Habitat and Groundwater Restoration plans were held in January

[3] Note that the restoration project proponent would address all National Environmental Policy Act requirements in a separate document.

and October 2007, respectively. No dissenting public comments or alternative restoration suggestions were received for either plan. The public comment period for the South Valley Restoration Plan began in September and ended in October 2007. In addition to a public comment period for the South Valley Restoration Plan, the Trustees held a public meeting on September 12, 2007, to provide additional opportunities for the public to learn about the restoration planning process, ask questions, and provide feedback. Alternative restoration possibilities were received from a variety of organizations as well as private citizens.

Public participation and review are an integral part of the NRDA restoration planning process. As such, a copy of this document is available for download from the ONRT website at https://onrt.env.nm.gov. In accordance with the NRDA regulations promulgated under CERCLA, ONRT encourages the public to review and comment on this draft document during the public comment period. The public comment period will be open from August 29, 2022 through September 30, 2022. ONRT will accept public comments during the comment period by one of the following methods:

- **E-mail** to nm.onrt@state.nm.us with "Restoration Plan Comments" in the subject line.
- **Mail**, hard copy addressed to Maggie Hart Stebbins, New Mexico Office of Natural Resources Trustee, 121 Tijeras Avenue, NE, Suite 1000, Albuquerque, NM 87102.
- **Online comment portal**, accessible at https://nmed.commentinput.com/comment/search.

Any comments received during the comment period will be evaluated and incorporated, as appropriate, into a final version of this document. A summary of public comments and ONRT's responses to those comments will be included in the final document. In addition, a copy of the final document will be available for download from the ONRT website.

1.6 ORGANIZATION OF THIS DOCUMENT

The remainder of this document is organized as follows:

- **Chapter 2** provides additional information on the Sites and NRDAs.
- **Chapter 3** presents ONRT's restoration objectives and describes the restoration planning and evaluation process.
- **Chapter 4** summarizes the restoration alternatives evaluated by ONRT, including the Preferred Restoration Alternative, and describes the results of the screening and evaluation process.
- **Chapter 5** provides a general overview of monitoring frameworks for restoration projects and includes a summary of proposed project-specific monitoring efforts for the Preferred Restoration Alternative.

CHAPTER 2 | ATSF AND SOUTH VALLEY SUPERFUND SITES, NATURAL RESOURCE INJURIES, AND RESTORATION PLANNING

This chapter provides background and summary information on the ATSF Site and the South Valley Site and injured resources, remedial actions and status, restoration progress completed to-date, and finally a summary of remaining funds and current restoration planning efforts.

2.1 BACKGROUND ON EACH SITE AND NATURAL RESOURCE INJURIES

2.1.1 ATSF SUPERFUND SITE

The ATSF Site operated as a wood treating plant from 1908 to 1972. The agents used to treat wood products contained hazardous substances, which resulted in injuries to groundwater and wildlife habitat resources. More than eight thousand tons of contaminated soil was removed from the ATSF Site in 1990. Migratory birds attracted to the ATSF Site were injured both directly, through physiological damage caused by the contaminants, and indirectly by the resulting loss of suitable habitat. The site was added to the EPA's NPL in December 1994. EPA executed a Record of Decision in 2002 requiring soil and groundwater cleanup operations to begin at the Site.

2.1.2 SOUTH VALLEY SUPERFUND SITE

The South Valley Site was used for industrial operations beginning in the 1950s. Releases led to the contamination of soil and groundwater resources with volatile organic compounds (EPA 2020). The site was then placed on the NPL by the EPA in 1983. In 1988, the EPA began remediation work for the affected wells to meet the Federal and State drinking water standards. Finally, in 1996, the Federal responsible parties and General Electric began to address the groundwater contamination, including halocarbons and aromatics.

2.2 SUMMARY OF REMEDIAL ACTIONS AND CURRENT STATUS

In a process distinct from the NRDA activities undertaken by Trustees, removal and remedial actions (or cleanup/response actions) are overseen by EPA or State regulatory agencies with the objective of controlling exposure to released hazardous substances to protect human health and the environment.

The distinction between remedial activities and NRDA is important, particularly since both sets of activities often operate concurrently. Remedial actions, as defined in 42 U.S.C. § 9601(24), are:

> *Those actions consistent with permanent remedy taken instead of or in addition to removal actions in the event of a release or threatened release of a hazardous substance into the environment, to prevent or minimize the release of hazardous substances so that they do not migrate to cause substantial danger to present or future public health or welfare or the environment.*

Remedial efforts are typically funded by the potentially responsible parties, the Superfund program, or a combination of both. Remedial activities can range from dredging and capping operations to

removal and disposal of contaminated materials in landfills, for example. These efforts often re-expose site resources to the hazardous substances of concern for a short time-period or may permanently alter habitat structure. It is an anticipated risk that is tempered by the knowledge that long-term benefits will be obtained through remediation of the hazardous substances.

NRDA, however, as defined in 43 C.F.R. §11.10:

> *… provides a procedure by which a natural resource trustee can determine compensation for injuries to natural resources that have not been nor are expected to be addressed by response actions …*

NRDA accounts for the losses the public has incurred due to the release of hazardous substances as well as additional injuries resulting from remedial activities addressing such releases. A NRDA aims to compensate the public for these natural resource losses and lost human uses of the site (e.g., foregone or diminished recreational fishing trips and tribal lost use). Damages calculated through the NRDA process allow trustees to restore injured natural resources and compensate for resource services that have been lost. To the extent possible, NRDA and remedial activities should be coordinated (43 C.F.R. §11.31(a)(3)).

After the ATSF Tie-Treater plant was dismantled in 1972, only the wastewater reservoir and sump remained on site. In July 1990, over 8,000 tons of creosote-contaminated soil and debris were removed from the ATSF Site. In 2011, EPA completed construction to allow for in-place solidification, stabilization, and phytoremediation of contaminated soils. Ongoing long-term groundwater remedial efforts include inspections, groundwater treatment and groundwater monitoring, capping, surface water management, excavation and off-site incineration of dense non-aqueous phase liquid (DNAPL)-contaminated soil, removal of DNAPL sources, treatment of hot spots, and implementation of institutional controls.

Groundwater cleanup for the South Valley Site has been ongoing since 1989. Based on its background, the site was divided into two portions and remedial actions were selected for each portion to meet Federal and State drinking water standards. Long-term remedial efforts include monitoring and treatment of groundwater. In September 2019, EPA approved the partial deletion of the site from the NPL of contaminated sites.

2.3 RESTORATION PROGRESS TO-DATE

2.3.1 OVERVIEW OF NRDA RESTORATION PLANNING

NRDA is a process by which Trustees of natural resources determine what types of, and how many, restoration actions are necessary to compensate the public for injuries to natural resources. Restoration compensates for natural resource injuries that occurred before any cleanup activities, and for any residual natural resource injuries that may still exist after cleanup. Further, the money recovered in NRDA settlements[4] can only be used to restore, rehabilitate, replace, or acquire the equivalent of the natural resources injured, destroyed, or lost as a result of the release of hazardous substances [42 USC § 9607(f)]. The amount of restoration required to compensate for the resource injuries depends on the size of the area, what types of resources are injured, the overall severity of the

[4] See Section 1.2 for more information regarding the ATSF and South Valley NRDA Settlements.

injuries, and the time-period over which the resources are injured, including any injury that remains after cleanup.

2.3.2 PROGRESS ACROSS RETORATION PROJECTS IMPLEMENTED TO-DATE

As described in Section 1.3 above, the Trustees developed two restoration plans for the ATSF Site and one for the South Valley Site. The *Final Wildlife Habitat Restoration Plan* for the ATSF Site selected two restoration projects for implementation: the City of Albuquerque Open Space Division (OSD) Bosque Re-vegetation Project and the Whitfield Wildlife Area Riparian Zone Project. The *Groundwater Restoration Plan* for the ATSF Site also selected two restoration projects: the Bosque Non-Native Phreatophyte Vegetation Removal project and the Domestic Connections to Municipal Sanitary Sewer and/or Water Systems project. For the South Valley Site, ONRT developed one restoration plan, *Natural Resources Restoration Plan for the South Valley Superfund Site*, that selected one restoration project: the South Valley Groundwater Nitrate Plume Project, also known as the Mountain View Nitrate Plume Project. Each of these restoration plans provides additional details regarding the restoration planning and evaluation process.

Exhibit 2-1 provides the current status of each of the restoration projects implemented to-date, and a summary of each project is provided below.

EXHIBIT 2-1 STATUS OF RESTORATION PROJECTS IMPLEMENTED TO-DATE

SITE	RESTORATION PROJECT	STATUS
ATSF SITE	City of Albuquerque Open Space Division Bosque Re-vegetation Project	Completed in 2009
	Whitfield Wildlife Area Riparian Zone Project	Completed in 2011
	Bosque Non-Native Phreatophyte Vegetation Removal Project	Completed in 2010
	Domestic Connections to Municipal Sanitary Sewer and/or Water Systems Project	Completed in 2009
SOUTH VALLEY SITE	Mountain View Nitrate Plume Project	Completed in 2019

City of Albuquerque Open Space Division Bosque Re-vegetation Project

The City of Albuquerque OSD Bosque Re-vegetation Project was selected to enhance habitat in Rio Grande State Park through revegetation efforts. The City of Albuquerque OSD carried out the design, implementation, and monitoring of this restoration project. The actual selection of plants was dependent on the site-specific conditions; however, the vegetation planted included over 7,000 native trees and shrubs and native mix grasses that re-create a historical bosque[5] as well as provide food, shelter, and nesting opportunities to resident wildlife. The variety of plant community types re-vegetated include forest, shrub thicket, and open meadow. In addition, three existing ponds were enhanced, and several swales were constructed to support moist soil plants and shrubs, and to attract more wildlife. The project was completed by ONRT in November 2009 and resulted in the revegetation of approximately 200 acres within the park.

[5] Bosque refers to native cottonwood and riparian forests that border the Rio Grande in New Mexico; bosque habitat, unique and diminishing, provides valuable resources for animals and plants in this otherwise arid region.

Whitfield Wildlife Area Riparian Zone Project

The Whitfield Wildlife Area Riparian Zone Project resulted in the revegetation of approximately 57 acres within the Whitfield Wildlife Conservation Area (WWCA) in Valencia County, New Mexico. As part of the floodplain of the Rio Grande, restoration for the WWCA provides an opportunity to restore the backwater wetlands of the Rio Grande, thus benefitting the native species of these habitats such as migratory birds and waterfowl. The project was completed in 2011 and over 3,500 native trees and shrubs were planted to restore riparian habitat within the WWCA.

Bosque Non-Native Phreatophyte Vegetation Removal Project

The Bosque Non-Native Phreatophyte Vegetation Removal Project aimed to preserve groundwater by removing phreatophytes such as tamarisk (also known as “saltcedar"), Russian olive, and Siberian elm. These invasive plant species use a higher rate of water than the plant species native to the area. ONRT estimated that one acre-foot per acre per year can be saved by the removal of non-native phreatophyte plants. Other benefits likely include the reduction of fire danger to the project area. This project took place in the Pueblo of Isleta bosque and resulted in the expansion of native vegetation, enhanced wildlife habitat, and greater opportunities for recreation. The Mid-Region Council of Governments was the principal partner for this restoration project and worked to coordinate restoration efforts with other engaged entities. Removal methods included a combination of mechanical extraction and stump cut with herbicide application where needed. The project was completed in 2010 and the Pueblo of Isleta continues to maintain the suppression of invasive plants.

Domestic Connections to Municipal Sanitary Sewer and/or Water Systems Project

ONRT partnered with Bernalillo County for the Domestic Connections to Municipal Sanitary Sewer and/or Water Systems Project. The project provided connections to the municipal sanitary sewer and/or water systems for residents who used septic systems or domestic drinking water wells and did not qualify for the Bernalillo County Partners in Improvement and Protection of the Environment assistance program. Reducing the use of septic systems also reduces the risk of groundwater contamination. After completion in 2009, the project supported the installation of a sewer trunk line and connected 11 households to municipal sewer and water systems, therefore protecting groundwater from future contamination and decreasing overall demand for groundwater in the area.

Mountain View Nitrate Plume Project

The goal of the Mountain View Nitrate Plume Project was to clean up nitrate-contaminated groundwater from the former location of a farm that operated from the late 1940s to the 1970s and to prevent future contamination of groundwater at the Site. This project proposed a phased approach beginning with assessment and evaluation and then cleanup of groundwater using *in-situ* biodenitrification technology. In the assessment phase of the project, it was determined there were two groundwater hot spots. Project implementation at the southern-most hot spot began in October 2014 after the construction of an enhanced bio-denitrification groundwater remediation system. The system was expanded in 2016 and was eventually shutdown in March 2019. The northern-most hot spot was found to be a much smaller plume with lower nitrate concentrations than initially anticipated. The construction of a similar bio-denitrification system at this location was deemed impractical and prohibitively expensive. Overall, this restoration project resulted in the removal of approximately 20 million gallons of nitrate-contaminated groundwater. Natural attenuation is the remediation option currently pursued at the site.

2.4 SUMMARY OF REMAINING FUNDS AND CURRENT RESTORATION PLANNING EFFORTS

As mentioned above, the State of New Mexico and the DOI reached a settlement with BNSF for the ATSF Site. This settlement included funds for past assessment costs and funds for both wildlife and habitat restoration and groundwater restoration. The funds for planning and implementing wildlife restoration projects have been fully expended on the City of Albuquerque OSD Bosque Re-vegetation and Whitfield Wildlife Area Riparian Zone Projects. A total of $654,961.94 was designated for use by ONRT to plan and implement groundwater restoration projects, including the Bosque Non-Native Phreatophyte Vegetation Removal and Domestic Connections to Municipal Sanitary Sewer and/or Water Systems Projects. However, the Domestic Connections to Municipal Sanitary Sewer and/or Water Systems Project ended in late 2009 due to a lack of public support from the affected community and did not expend the full proposed budget. As a result, over $108,000 remained in the budget. Due to additional interest earned over time, remaining funds are currently approximately $144,000.

As a result of the settlement for the South Valley Site, ONRT received approximately $4.8 million for groundwater restoration planning and implementation. Much of the restoration funds were spent on the Mountain View Nitrate Plume Project; however, upon completion of remedial activities at the Site, approximately $422,000 remains (including accrued interest).

Combining remaining funds from each settlement results in a total of $566,000 available for implementation of additional restoration actions.[6] In accordance with NRDA regulations, any preferred project(s) should have a nexus to groundwater resources (to compensate for the losses incurred) and should be located in or near the Sites. As such, ONRT has prepared this restoration plan as an addendum to the existing groundwater restoration plans for each Site to address the restoration planning efforts needed to expend the remaining funds, describe the process for identifying and evaluating additional potential restoration actions, and to summarize ONRT's proposed restoration alternative.

Additional details on the restoration planning process are provided in Chapter 3 and a description and evaluation of the restoration alternatives considered by ONRT in this plan is provided in Chapter 4.

[6] An additional approximately $30,000 of funds remains from the two settlements that are being used by ONRT to fund planning and oversight for the additional restoration.

CHAPTER 3 | RESTORATION PROJECT IDENTIFICATION, SCREENING, AND EVALUATION PROCESS

To restore injuries to natural resources and associated service losses caused by releases of hazardous substances at the ATSF Site and the South Valley Site, the Trustees began restoration planning efforts in the early 2000s. As described in Chapters 1 and 2, several restoration projects have been completed. However, approximately $566,000 in settlement funds remain for additional restoration. As such, ONRT identified a need to continue restoration planning for groundwater resources, to compensate the public for remaining groundwater injuries. As such, ONRT began additional restoration planning efforts with the development of this plan. This chapter describes the process ONRT used to identify, screen, and evaluate potential restoration actions.

ONRT's overall restoration objective is to compensate the public for remaining groundwater injuries through implementation of a restoration project that provides comparable services to those lost. According to the guidance provided by NRDA regulations [43 CFR § 11.82(d)], the selected alternative is to be feasible, safe, cost-effective, address injured natural resources, consider actual and anticipated conditions, have a reasonable likelihood of success, and be consistent with applicable laws and policies.

3.1 DEVELOPING RESTORATION PROJECT IDEAS

As part of the restoration planning process, ONRT reached out to local stakeholders (e.g., the U.S. Army Corps of Engineers [USACE], the Middle Rio Grande Conservancy District, elected officials from the affected area, and the Albuquerque Bernalillo County Water Utility Authority [Water Authority]) to solicit restoration project ideas that were consistent with the Trustee's restoration objectives. Based on this project solicitation process, one project was identified, the Southside Wastewater Reclamation Plant (SWRP) Outfall Restoration project. This project was identified as ONRT's preferred restoration alternative and is evaluated in Chapter 4.

3.2 SCREENING AND EVALUATION PROCESS

ONRT implemented a two-tiered process to ensure that the project proposal met initial criteria (screening criteria) before being fully evaluated by a second set of criteria (evaluation criteria). The screening criteria were used to identify whether the proposed project met the general requirements outlined by ONRT to ensure the project meets ONRT's objectives. Since the project proposal met all of the screening criteria, it was compared against the evaluation criteria.

The screening and evaluation criteria together represent factors important to ONRT and ensure projects satisfy the requirements outlined in CERCLA for evaluating and selecting restoration projects (43 C.F.R. § 11.82(d)).

3.2.1 SCREENING CRITERIA

The screening criteria are listed below.

- Consistent with ONRT's mission (see www.onrt.state.nm.us/).
- Results in a net overall improvement of natural resources and/or benefit to the public in terms of increased resource services.
- Technically and administratively feasible, as demonstrated through the use of established or previously implemented approaches.
- Unlikely to proceed without ONRT funding.
- Complies with applicable and relevant federal, state, local, and tribal laws and regulations.
- Has feasible and cost-effective provisions for operations, maintenance, and monitoring; and has a demonstrated source of funds for those ongoing costs, as relevant.
- Includes all the information necessary to evaluate the project.

3.2.2 EVALUATION CRITERIA

The evaluation criteria are listed below.

- The project is close to where the injury occurred (i.e., the South Valley in Albuquerque).
- The project is consistent with regional planning and federal and state policies, if applicable.
- The project has the capacity to benefit multiple natural resources.
- The project would be unlikely to proceed without NRDA funding and/or leverages other funds to enhance project size and/or benefits.
- The project has feasible and cost-effective provisions for operations, maintenance, and monitoring, including a low ratio of planning to restoration costs.
- The project is cost effective and provides more benefits than costs.
- The project is likely to provide benefits quickly after project implementation.
- The project has a high potential for long-term success and sustainability and a low risk of failure.

CHAPTER 4 | EVALUATION OF THE RESTORATION ALTERNATIVES

This chapter describes ONRT's evaluation of two alternatives, including the evaluation of the proposed restoration project. The proposed project met the screening and evaluation criteria and comprises the Trustee's Preferred Restoration Alternative.

4.1 PROPOSED ALTERNATIVES AND THE PREFERRED RESTORATION ALTERNATIVE

The alternatives that ONRT evaluated as part of this draft restoration plan include the following:

- Alternative A: No Action – Natural Recovery.
- Alternative B: Southside Wastewater Reclamation Plant (SWRP) Outfall Restoration.

The Preferred Restoration Alternative consists of one project (Alternative B) that would compensate the public for remaining groundwater injuries. ONRT's evaluation of Alternatives A and B are provided in the sections below. A summary of the results of the screening and evaluation process for both alternatives is provided in Exhibit 4-1.

EXHIBIT 4-1 RESULTS OF THE SCREENING AND EVALUATION PROCESS

PROJECT NAME	SCREENING SUMMARY	EVALUATION SUMMARY	PROJECT COST
ALTERNATIVE CONSIDERED BUT NOT RECOMMENDED			
Alternative A: No Action – Natural Recovery	Did not pass	Not Applicable	Not Applicable
PREFERRED RESTORATION ALTERNATIVE (PROJECT RECOMMENDED FOR FUNDING)			
Alternative B: Southside Wastewater Reclamation Plant Outfall Restoration	Passed	High	$566,000[1]

[1] This cost represents the contribution from ONRT and does not cover the full cost of the proposed project.

4.2 ALTERNATIVE A | NO ACTION – NATURAL RECOVERY

NRDA regulations specify that the natural resource trustee must consider an alternative that involves "minimal management actions" to restore natural resources or resource services or compensate for interim losses (43 C.F.R. § 11.82(c)(2)). The No Action - Natural Recovery Alternative would not include any direct actions to restore injured natural resources or resource services, and any improvement would occur through natural recovery alone. While it is possible that natural resources may improve to baseline conditions over time, the public would not be compensated for losses that occurred in the interim (i.e., the time between the hazardous substance releases in the ATSF and South Valley Superfund Sites and the return to baseline conditions). The No Action – Natural Recovery Alternative would not utilize settlement monies for restoration or acquisition of the equivalent of lost resources and resource services, which is the purpose of NRDA. In addition, the No Action – Natural Recovery Alternative does not meet the screening criteria, as described further in Exhibit 4-2. As such, the No Action – Natural Recovery Alternative would not make the public whole, and ONRT does not further evaluate the No Action – Natural Recovery Alternative in this draft plan.

EXHIBIT 4-2 NO ACTION – NATURAL RECOVERY ALTERNATIVE: ASSESSMENT AGAINST SCREENING CRITERIA

SCREENING CRITERIA	PROJECT DESCRIPTION	ASSESSMENT[1]
1. Is consistent with ONRT's mission.	Alternative A does not compensate for interim losses.	Does Not Pass
2. Results in a net overall improvement of natural resources and/or benefit to the public in terms of increased resource services.	It is not clear that Alternative A would result in an overall improvement.	Does Not Pass
3. Technically and administratively feasible, as demonstrated through the use of established or previously implemented approaches.	No actions would be implemented.	Not Applicable
4. Unlikely to proceed without ONRT funding.	No funding would be utilized.	Not Applicable
5. Complies with applicable, relevant federal, state, local, and tribal laws and regulations.	Does not use settlement monies for restoration, which would not comply with CERCLA NRDA regulations.	Does Not Pass
6. Has feasible and cost-effective provisions for operations, maintenance, and monitoring; and a demonstrated source of funds, as relevant.	No actions would be implemented.	Not Applicable
7. Includes all the information necessary to evaluate the project.	No project materials were submitted.	Not Applicable
Table Note. 1. Several screening criteria are not applicable, given the nature of the No Action Alternative.		

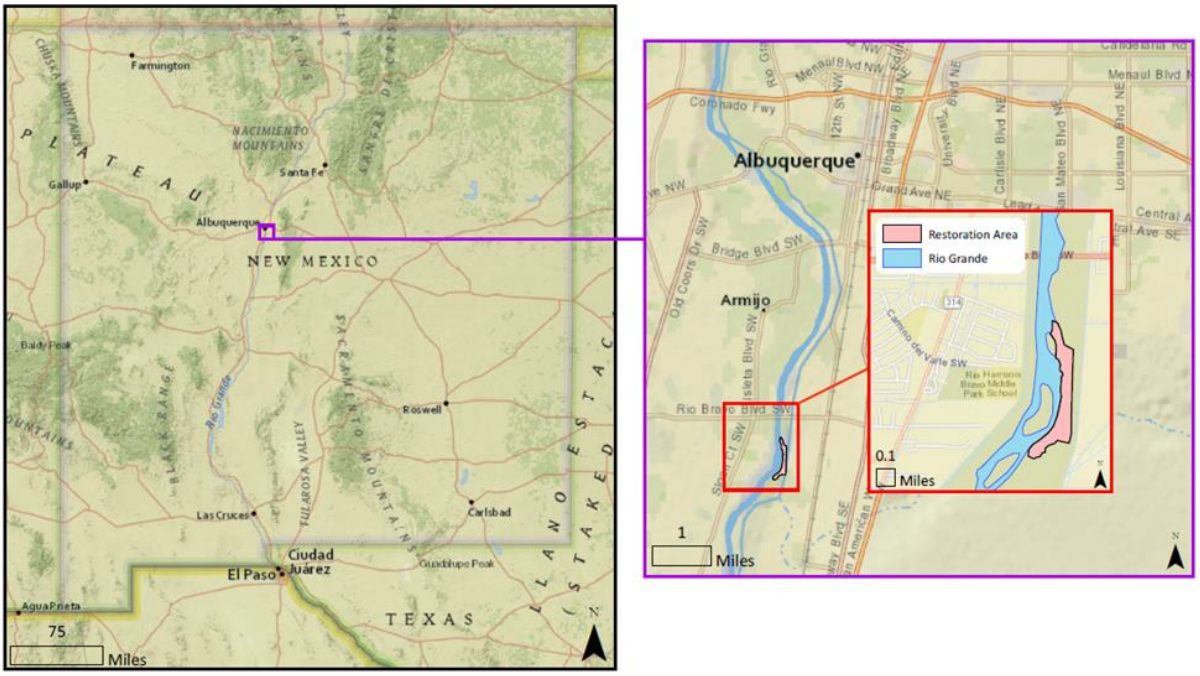
4.3 ALTERNATIVE B | SOUTHSIDE WASTEWATER RECLAMATION PLANT OUTFALL RESTORATION

The Preferred Restoration Alternative consists of the SWRP Outfall Restoration project (Alternative B), proposed by the Albuquerque Bernalillo County Water Utility Authority (Water Authority). The following sections provide a description of the project including information on project benefits, size, cost, longevity, funding sources, and timing; a summary ONRT's assessment of the project against the screening and evaluation criteria; and a summary of the alternative.

4.3.1 DESCRIPTION OF THE PREFERRED RESTORATION ALTERNATIVE

Implementation of the Preferred Restoration Alternative (Alternative B) would include partial funding for improvements to riparian and floodplain habitat upstream and downstream of the SWRP outfall location in the southside of Albuquerque, New Mexico (Exhibit 4-3). The proposed project would provide surface water quality and in turn, groundwater, and habitat benefits and is described in more detail below.

EXHIBIT 4-3 PREFERRED RESTORATION ALTERNATIVE PROJECT LOCATION



The SWRP Outfall Restoration project (Alternative B) will enhance the area surrounding the SWRP outfall to improve water quality, public access, and the surrounding habitats. The primary objective of the project is to improve water quality in the Rio Grande, and in turn provide seasonal water quality benefits to the connected groundwater systems. Additional benefits of the project include increasing and enhancing public access to the bosque surrounding the outfall and improving habitat for the following threatened and endangered species:

- Rio Grande Silvery Minnow (*Hybognathus amarus*) – Endangered.
- Southwestern Willow Flycatcher (*Empidonax traillii extimus*) – Endangered.
- Mexican Spotted Owl (*Strix occidentalis lucida*) – Threatened.
- Yellow-billed Cuckoo (*Coccyzus americanus occidentalis*) – Threatened.

The project would include the following activities:

- *Improve Water Quality and Habitat*. Improvements to the outfall channel, streambank stabilization, floodplain reconnection, and creation of floodplain habitat along the bosque;
- *Enhance Riparian Vegetation*. Enhancements to riparian habitat through invasive species management and establishment of diverse, native riparian species; and,
- *Enhance Public Access*. Development of new public trails for access to the bosque and increased access for maintenance of the trails and habitat areas.

The SWRP outfall is located along the Rio Grande on the southside of Albuquerque, New Mexico (Exhibit 4-3). The SWRP, operated by the Water Authority, treats approximately 55 million gallons per day of wastewater and serves the greater Albuquerque area. The SWRP's treated effluent is continuously released to the Rio Grande via an outfall channel located on the east bank of the river.[7] The public currently utilizes the area surrounding the SWRP outfall for recreational activities including hiking, biking, fishing, and occasionally swimming.

As noted above, implementation of this alternative would create floodplain habitat upstream and downstream of the outfall, resulting in at least 1.5 acres of habitat along the bosque (and up to 14.5 acres), at least two acres (and up to 18 acres) of enhanced riparian habitat by improving vegetative communities through invasive species management and establishment of diverse, multi-strata native riparian species, and at least 4,800 linear feet of new trails for the community, including maintenance access along the bosque (Exhibit 4-4). This alternative also includes the construction of at least 1,100 linear feet of rootwad revetments that will create instream habitats for the Rio Grande silvery minnow.[8] Depending on the amount of floodplain habitat created, the habitat could connect to existing willow swale restoration to the north and south of the SWRP outfall.

Benefits

This alternative would primarily provide water quality, groundwater, habitat, and public access benefits. The stream restoration actions and floodplain reconnection that would be achieved through this project would result in water quality benefits including reductions in erosion and pollutant loads. Specific benefits to pollutant loads could include a reduction in tens to hundreds of tons per year in total suspended solids, tens to hundreds of pounds per year of total nitrogen and total phosphorous, and associated reductions in fecal coliform and *Escherichia coli* (Hazen & Sawyer 2021).

Riparian vegetative communities would be improved through invasive species management and the establishment of diverse, multi-strata native riparian species. The instillation of rootwad revetments would stabilize the streambank of the Rio Grande and provide shelters for insects and aquatic organisms as well as provide habitat for the endangered Rio Grande silvery minnow. Broadly, the enhanced floodplain and riparian habitats would provide habitat benefits to native flora and fauna,

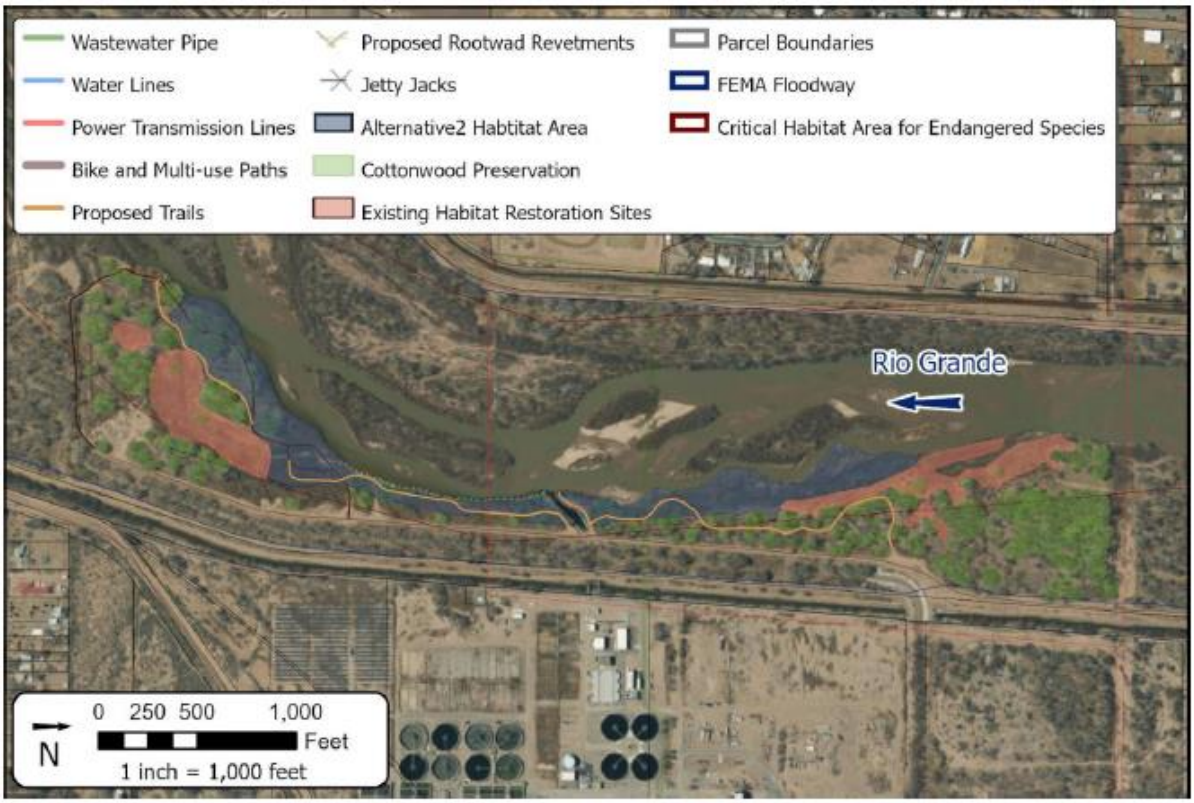
[7] The land surrounding the outfall is owned by the Middle Rio Grande Conservancy District and is jointly managed with the U.S. Bureau of Reclamation (Hazen & Sawyer 2021).

[8] Rootwad revetments are structures constructed from interlocking root mass or root ball (commonly called a rootwad) and tree materials, sometimes in combination with rocks and biotechnical methods. These structures are continuous and resistive type methods intended to resist erosive flows and provide bank protection. Rootwad revetments are designed such that the rootwads are oriented upstream into the stream flow and are frequently placed against each other for continuous armoring along the length of the meander bend. In addition to providing continuous, resistive bank protection, rootwad revetments also function as a redirective method that moves the current line away from the streambank so the bank is less susceptible to erosion through hydraulic forces.

including the threatened and endangered species listed above, and would also provide water quality benefits to the Rio Grande and seasonal water quality benefits to the connected groundwater systems. The additional trails would provide enhanced public access to the bosque and surrounding habitats and provide recreational benefits to the public. Further, the habitat improvements and benefits in the Rio Grande would benefit the Rio Grande silvery minnow.

Final project design would accommodate environmentally sensitive areas and disturbances to the cottonwood trees would be minimized.

EXHIBIT 4-4 PREFERRED RESTORATION ALTERNATIVE CONCEPTUAL DESIGN ELEMENTS



Source: Hazen & Sawyer 2021

Cost and Scalability

The Water Authority is currently working with its consultant to complete final design of the full-scale project and design deliverables will include scalable construction documents. This alternative is scalable such that the amount of floodplain habitat constructed can be included or excluded based on available funding. As noted under the project description, floodplain habitat could range from 1.5 to 14.5 acres, riparian habitat enhancement could range from two to 18 acres, and new community trails could range from 1,300 to 4,800 linear feet. The alternative also includes up to 1,100 linear feet of rootwad revetments along the Rio Grande.

The project proponent, the Water Authority, currently has approximately $1.07 million in funds for the project. These funds are under contract for project design and permitting. The Water Authority is currently in the process of applying for additional funds, including a grant from the New Mexico River Stewardship Program which could provide the $1.6 million needed to fully fund the project, if obtained. Any funds provided as part of this NRDA restoration plan would be applied to the

construction phase of the project and any additional funds from the New Mexico River Stewardship Program or other grants would allow the project to be constructed to the maximum design scale of 14.5 acres of new habitat, 18 acres of improvements to riparian vegetations communities, 4,800 linear feet of new trails for the community, and 1,100 linear feet of rootwad revetments.

4.3.2 ASSESSMENT OF THE PREFERRED RESTORATION ALTERNATIVE AGAINST TRUSTEE SCREENING AND EVALUATION CRITERIA

The SWRP Outfall Restoration project (Alternative B) would include direct actions to restore injured natural resources and resource services. By implementing this project, the public would be compensated for losses that occurred in the interim (i.e., the time between the hazardous substance releases in the ATSF and South Valley Superfund Sites and the return to baseline conditions). Implementation of Alternative B would utilize settlement monies for restoration of lost resources and resource services, which is the purpose of NRDA, as compared to Alternative A which does not include any restoration actions and only natural recovery. In addition, Alternative B meets the screening criteria, as described further in Exhibit 4-5. As such, Alternative B is further compared to the trustee evaluation criteria (Exhibit 4-6).

EXHIBIT 4-5 SOUTHSIDE WASTEWATER RECLAMATION PLANT OUTFALL RESTORATION PROJECT: ASSESSMENT AGAINST SCREENING CRITERIA

SCREENING CRITERIA	PROJECT DESCRIPTION	ASSESSMENT
1. Is consistent with ONRT's mission.	Alternative B compensates for interim losses.	Pass
2. Results in a net overall improvement of natural resources and/or benefit to the public in terms of increased resource services.	Alternative B would result in an overall net improvement in terms of increased resource alternatives.	Pass
3. Technically and administratively feasible, as demonstrated through the use of established or previously implemented approaches.	The Trustees and project proponents have previously, and successfully, completed restoration projects in the region.	Pass
4. Unlikely to proceed without ONRT funding.	The project partially relies on funding from ONRT.	Pass
5. Complies with applicable, relevant federal, state, local, and tribal laws and regulations.	Uses settlement monies for restoration and would comply with CERCLA NRDA regulations.	Pass
6. Has feasible and cost-effective provisions for operations, maintenance, and monitoring; and a demonstrated source of funds, as relevant.	The project is cost-effective and has provisions for operations, maintenance, monitoring and funds.	Pass
7. Includes all the information necessary to evaluate the project.	Detailed Project materials were submitted.	Pass

The assessment of Alternative B against the Trustee's evaluation criteria is described below. Exhibit 4-6 summarizes the evaluation and provides an assessment rank (i.e., high, medium, low) for each evaluation criterion.

The preferred restoration alternative, the SWRP Outfall Restoration project, would be implemented adjacent to the Rio Grande in the South Valley area of Albuquerque, close to the ATSF and South Valley sites (just west of the sites). The project's scope is consistent with regional, state, and federal policies. Further, the project would provide benefits to multiple natural resources including surface water quality, groundwater, habitat, and recreational use benefits. As described in Section 4.3.1, enhancements to riparian and floodplain habitat in the Rio Grande and in the bosque, such as invasive species management, streambank stabilization, and habitat restoration, would result in benefits to water quality and connected groundwater systems, provide shelter for insects and aquatic organisms, and provide benefits to threatened and endangered species, including the endangered Rio Grande silvery minnow. The additional trails would increase public access to the bosque and surrounding habitats and provide recreational benefits to the public.

As described above, the Water Authority has some existing funds for this project. The New Mexico legislature has committed approximately $1.07 million in capital outlay funding from fiscal years 2022 and 2023. Further, the Water Authority is also applying for a grant with the New Mexico River Stewardship Program to obtain the $1.6 million needed to fund the fully constructed project and is planning to submit an application for a grant from the New Mexico Water Trust Board. The project is partially reliant on the remaining restoration funds from the ATSF and South Valley NRDA settlements addressed in this restoration plan to ensure the project can be successful and achieve the maximum natural resource benefits possible. The remaining NRDA settlement funds would support the construction phase of the project. Project costs do not include planning or administrative costs, which results in a low ratio of planning to restoration costs. The Water Authority has existing habitat restoration sites and maintenance programs, which would be utilized to oversee and maintain this project, increasing cost efficiencies. Further, the grant funds, if secured, would supplement the project budget, providing significant leveraging funds to expand the project and result in greater surface water, habitat, and recreational use benefits.

Project benefits would include improved water quality through enhancements to the areas upstream and downstream of the SWRP outfall channel including streambank stabilization, reconnections of floodplain habitat, and associated reductions in pollutant loads (e.g., total suspended solids, total nitrogen, total phosphorous). These benefits would lead to seasonal water quality benefits to the connected groundwater systems. In addition to water resource benefits, the project would increase public access to the bosque surrounding the SWRP outfall and provide additional habitat for the endangered Rio Grande silvery minnow. The project would likely be readily utilized by the pubic, as the area is already popular for hiking, biking, fishing, and occasionally swimming, increasing the benefits of this project for the public.

The project has a high likelihood of being implemented successfully and in a timely manner. Initial project designs and construction have been developed and the Water Authority has initiated full project design that is anticipated to be complete in Spring 2023. Design of the project would utilize regional floodplain habitat data as well as information from the Water Authority's successfully implemented existing habitat restoration sites on the Rio Grande. For example, spring monitoring data collected from the Water Authority's two existing habitat restoration sites (Paseo del Norte East and Paseo del Norte West) have been used to evaluate effectiveness of the sites for Rio Grande silvery minnow spawning and nursery habitat, and results have indicated that the sites provide a positive benefit to minnow populations and help to improve reproductive success (Valdez et al. 2019). This further demonstrates the Water Authority's ability to successfully implement similar projects. The

Water Authority continues to oversee and maintain these similar restoration projects in the area, demonstrating their experience, and the efficiencies that will be gained through monitoring and coordination across the suite of projects overseen by the Water Authority.

As noted above, this project would be added to the Water Authority's existing habitat restoration monitoring and maintenance program and the Water Authority has been coordinating with the City of Albuquerque Open Space and USACE regarding the possibility of incorporating their adjacent restoration sites into a broader restoration maintenance program. This would ensure consistent, cohesive maintenance of the habitat restoration sites along the reach of the Rio Grande up- and downstream of the SWRP outfall, and further increase the likelihood of successful implementation of this project, the potential for long-term success and sustainability, and the probability of achieving the anticipated natural resource benefits.

The project proponent has begun coordination with necessary government agencies and collaborators, including the USACE, U.S. Bureau of Reclamation, and the U.S. Fish and Wildlife Service and therefore, has a comprehensive understanding of site-specific permitting requirements, desirable project elements, and lessons learned from other implemented projects along the bosque. Further, the project proponent has developed a detailed project implementation schedule to ensure all necessary steps are followed in a timely manner.

Lastly, the likelihood for adverse environmental impacts is low. The Water Authority's consultant will be initiating an Environmental Assessment, a requirement under the National Environmental Policy Act, in Fall 2022, and the Water Authority anticipates that this project will result in a Finding of No Significant Impact (FONSI) as part of the final Environmental Assessment. The project proponent would require biological surveys to identify sensitive habitat areas and adjust design and/or construction activity accordingly and has started collecting baseline (pre-construction) data for long-term performance analysis.

Alternative B would compensate for groundwater, surface water, and habitat losses due to hazardous substance releases in the ATSF and South Valley Sites. The project proponent has clearly articulated the goal, benefits, and construction plans, and has secured significant leverage in the form of additional funds and long-term maintenance of the project site. As such, this project has been identified as the preferred restoration alternative.

EXHIBIT 4-6 SOUTHSIDE WASTEWATER RECLAMATION PLANT OUTFALL RESTORATION PROJECT: ASSESSMENT AGAISNT EVALUATION CRITERIA

EVALUATION CRITERIA	PROJECT DESCRIPTION	ASSESSMENT RANK
1. Geographically close to where the injury occurred	The proposed project is within the South Valley area in Albuquerque and would provide natural resource benefits to the area injured by the two sites.	High
2. Consistent with policies	The proposed project is consistent with relevant policies.	High
3. Benefits multiple natural resources	The proposed project has a high capacity to benefit multiple natural resources. Improvements to the area surrounding the outfall channel and floodplain and riparian habitat creation in the bosque would improve water quality in the Rio Grande, and in turn provide seasonal water quality benefits to the connected	High

	groundwater systems. Additional benefits of the project include increasing and enhancing public access to the bosque surrounding the outfall and improving habitat for the Rio Grande silvery minnow (*Hybognathus amarus*) and other threatened and endangered species in the Middle Rio Grande.	
4. Need for NRDA funding / Availability of leverage	The project proponent has $1,072,500 in funding and is applying for an additional grant to obtain the remaining $1,556,500 to fully fund the project; thereby leveraging funds in addition to the NRDA funding to enhance the overall project. The addition of the NRDA funding would allow the project to begin the construction phase.	High
5. Operations, maintenance, planning costs	Planning and administrative costs would likely be less than 10 percent of the total cost. Further, operations, maintenance, and monitoring would be conducted by the Water Authority as part of an existing maintenance program, increasing the cost efficiency of these actions.	High
6. Relationship of costs to benefits	The budget requests $566,000 from ONRT. The estimated costs are in the range expected for this type of project, and the project proponent brings significant leverage in terms of cash and maintenance. The project would result in numerous benefits including water quality, public access, and habitat benefits.	High
7. Likely to provide benefits quickly	The proposed project would likely be implemented in a timely manner. However, permits would need to be acquired first and this process is currently underway. If the project proceeds as described, benefits should follow quickly after implementation.	Medium-High
8. High potential for long-term success and low risk of failure	The proposed project would follow standard practices and the Water Authority has implemented similar projects successfully, so has a high potential for success. However, regular maintenance would be required to ensure long-term success.	Medium-High

4.3.3 SUMMARY OF PREFERRED RESTORATION ALTERNATIVE

For each proposed restoration alternative, ONRT completed a screening and evaluation process that met the requirements of of CERCLA (43 C.F.R. § 11.82(d)). Each restoration alternative received a rank of high, medium, or low for each evaluation criterion, based on the project's stated goals and methods and ONRT's assessment of how closely the project met the criterion. A summary of the evaluation is presented in Exhibit 4-6.

Alternative B provides a suite of benefits including water quality and groundwater improvements, enhanced public access to the bosque surrounding the SWRP outfall, and additional habitat benefits for the endangered Rio Grande silvery minnow. The project meets the evaluation criteria (Exhibit 4-5), would be located close to the ATSF and South Valley Sites, is consistent with known policies, and would leverage funds to enhance project benefits. Furthermore, Alternative B has a high likelihood of quickly providing benefits after project implementation, high potential for long term success, and low risk of failure. Therefore, under the selected alternative, ONRT would fund Alternative B to compensate the public for remaining injuries and service losses from historic activities at the ATSF and South Valley Sites.

Implementation of the selected restoration alternative may vary slightly from that described in this plan based on factors that affect the available funding and timing. The actual costs and design of the project may vary based on field conditions, final design plans, construction costs, and the availability of matching funds, among other factors.

CHAPTER 5 | MONITORING

Monitoring can help ensure the success of a restoration project (Williams et al. 1997). A well-designed monitoring plan includes a detailed description of monitoring approaches, goals and objectives, performance metrics and criteria, and potential corrective actions. Performance criteria enable the assessment of project success, help the Trustees to determine whether the restoration project met its objectives, and provide a mechanism for altering restoration actions as needed during the course of a project (e.g., through corrective actions and adaptive management). Restoration monitoring may also provide insight into ecosystem or infrastructure function which will benefit future restoration actions (Williams et al. 1997, Rieger et al. 2014).

Monitoring efforts do not need to be expensive or time intensive, though ideally, they should be integrated into an adaptive management framework (Williams and Brown 2012) to ensure the data gathered are used to inform and improve subsequent restoration actions (Gregory et al. 2006). ONRT has restoration planning experience and an available body of literature to enable efficient restoration project planning (see Section 2.3), which will be helpful in developing an adaptive management framework.

This chapter outlines a general approach and framework that ONRT will consider when implementing the selected restoration project and use to guide monitoring any implemented restoration projects.

5.1 GENERAL NRDA RESTORATION MONITORING FRAMEWORK

ONRT has outlined a monitoring framework as a guide for any restoration project covered under this plan. The monitoring plan proposed for this project would include performance criteria, or measures to assess the progress of restoration sites toward project goals. This would allow ONRT to determine which project attributes are not on target, and what actions or course corrections may be needed to achieve project success. ONRT may also use monitoring information as an outreach tool to provide information to the public on continued success over time.

Various types of monitoring exist to answer different questions (Williams et al. 1997, Roni 2005). The most appropriate type of monitoring is decided on a project-specific basis and is influenced by available funding, the question to be answered, and the overall need to reach project goals.

- **Pre-project monitoring** is designed to characterize the specific condition of the habitat prior to restoration implementation. It should be adequate to document habitat degradation specific to the goals and objectives of the restoration program and will likely include photographing the restoration site. In many cases, this information is collected as part of normal project operations.
- **Implementation monitoring** would occur after project implementation and helps to determine if the restoration effort was implemented properly. Implementation monitoring

may focus on the field techniques used, and documents if corrections are needed. Implementation monitoring may be undertaken during project maintenance and management.

- **Effectiveness monitoring** focuses on whether the restoration action was effective in attaining the desired future conditions and in meeting project objectives. Effectiveness monitoring would determine, for example, whether target organisms are responding to restoration as expected or if the restored habitat is functioning as anticipated. This type of monitoring is more complex than implementation monitoring and requires an understanding of physical and biological factors. Effectiveness monitoring can be accomplished with qualitative methods (e.g., through site descriptions) rather than more quantitative methods (e.g., population surveys of target species). This information is often some of the most useful in illustrating how a particular restoration program is working.
- **Validation monitoring** is rigorous, specialized, and verifies assumptions made during effectiveness monitoring. It is usually accomplished through ecological research. Effectiveness and validation monitoring together may be needed to evaluate adaptive management designs.

Exhibit 5-1 provides an example of a generic monitoring framework. The framework can be used to develop a monitoring plan for the restoration project.

EXHIBIT 5-1 GENERAL MONITORING FRAMEWORK

MONITORING COMPONENTS	MONITORING STEP			
	PRE-PROJECT MONITORING	IMPLEMENTATION MONITORING	SHORT-TERM EFECTIVENESS MONITORING	VALIDATION MONITORING
OBJECTIVE: What is the objective of the monitoring step?	Document pre-construction conditions.	Document if project implementation occurred according to design plans.	Document if the ecological or human-use outcome was achieved.	Document if the ecological or human use outcome persists into the future.
MONITORING: Describe the plan for each monitoring action.	For each monitoring action, describe the approach, methods, and amount of data that will be collected and assessed.			
PERFORMANCE STANDARDS: What are the performance standards?	For each monitoring action, include a specific performance criterion to evaluate progress as monitoring progresses.			
RESPONSIBILITIES: Who is responsible for the monitoring?	For each monitoring action, document the person or organization that is responsible for conducting the monitoring as well as any related assessment or analysis of monitoring data or oversight.			
SCHEDULE: How does monitoring fit into the project schedule?	For each monitoring action, outline a schedule for completion. In general, pre-project monitoring would occur before restoration begins; implementation monitoring would occur immediately following the completion of restoration actions; and short-term effectiveness and validation monitoring would use time-frames specific to the selected project.			

5.2 PROPOSED PROJECT-SPECIFIC MONITORING AND MAINTENANCE ACTIVTIES

If selected, the Preferred Restoration Alternative evaluated in this restoration plan (Alternative B, the SWRP Outfall Restoration project) would be incorporated into the Water Authority's existing habitat restoration monitoring and maintenance program. The Water Authority would also be able to leverage partnerships with local stakeholders and existing citizen science programs, to reduce the financial burden and engage with the local community, to implement long-term monitoring.

Currently, the Water Authority has two habitat restoration sites, Paseo del Norte Southeast and Paseo del Norte Southwest, that are part of the Water Authority's 2004 Biological Opinion with the USFWS. These sites are floodplain habitat sites that were designed and are maintained as part of the Middle Rio Grande efforts for the endangered Rio Grande silvery minnow survival and recovery. Both the Paseo del Norte Southeast and Paseo del Norte Southwest restoration sites are currently maintained through agreement with the City of Albuquerque OSD. The Water Authority would update their agreement with the City of Albuquerque OSD to add the SWRP Outfall Restoration project so that it would be maintained consistent with the Paseo del Norte sites, utilizing geomorphic analysis and the results of habitat monitoring to ensure the sites are meeting the design criteria for endangered species habitat, including the Rio Grande silvery minnow survival and recovery. Additionally, the Water Authority is coordinating with the USACE to incorporate their adjacent restoration sites into a broader restoration maintenance program with the City of Albuquerque OSD to support consistent, cohesive maintenance of the habitat restoration sites along the reach of the Rio Grande up- and downstream of the SWRP outfall.

The Water Authority currently conducts annual Spring habitat monitoring at its Paseo del Norte restoration sites as part of a collaboration with the New Mexico Interstate Stream Commission. The SWRP Outfall Restoration project would be added as an additional site in that monitoring program. Habitat restoration monitoring includes monitoring for Rio Grande silvery minnow eggs (using seine nets, dip nets, and Moore egg collectors) as well as the collection of habitat variables such as water temperature, water velocity, canopy coverage percentage, instream cover percentage, substrate characterization, and documentation of vegetation type. Additionally, the Water Authority regularly monitors water quality of its SWRP effluent, and this data would be incorporated into the SWRP Outfall Restoration project monitoring and reporting. Any additional monitoring requirements that may come out of project permitting requirements would be written into the project monitoring program as well.

Pre- and post-restoration implementation monitoring activities for the SWRP Outfall Restoration project, in addition to those described above, may include the following:

- Collecting water quality samples above and below the proposed project area to evaluate pollutant load reductions for sediment, nutrients, and pathogens;
- Riverbank surveys at set locations to quantify pre- and post-restoration erosion rates;
- Vegetation surveys of plots or transects to measure vegetation composition, abundance, and survivability of planted material; and/or
- Fish surveys to assess trends in species composition, abundance, size and age structure, and fecundity.

Anticipated ongoing maintenance activities would likely include repairing structures and streambanks where erosion occurs; removing unwanted sediment accumulation and pedestrian amenities; replacing planted native vegetation as needed; and removal of any trash, debris, or invasive species.

REFERENCES

EPA (United States Environmental Protection Agency). 2020. AT&SF Albuquerque, NM Cleanup Progress. Accessed at https://cumulis.epa.gov/supercpad/SiteProfiles/index.cfm?fuseaction=second.schedule&id=0600879. (September 2020)

Gregory, R., Ohlson, D., and J. Arvai. 2006. Deconstructing adaptive management: Criteria for applications to environmental management. Ecological Applications 16(6):2411-2425.

Hazen & Sawyer. 2021. Technical Memorandum: Southside Wastewater Reclamation Plant Outfall Realignment Evaluation Project Conceptual Alternatives. To Albuquerque Bernalillo County Water Utility Authority.

Kimball, S., Ludlow, M., Sorenson, Q., Balazs, K., Fang, Y., Davis, S.J., O'Connell, M., and T.E. Huxman. 2015. Cost-effective ecological restoration. Restoration Ecology 23(6):800-810.

Kondolf, G.M. and E.R. Micheli. 1995. Evaluating stream restoration projects. Environmental Management 19(1):1-15.

ONRT (New Mexico Office of Natural Resources Trustees). 2007a. Groundwater Restoration Plan for the AT&SF Tie-Treater Superfund Site, New Mexico. November.

ONRT. 2007b. Natural Resources Restoration Plan for the South Valley Superfund Site, Albuquerque, New Mexico. October.

Rieger, J., J. Stanley, and R. Traynor. 2014. Project planning and management for ecological restoration. Island Press, Washington, DC. 320 p.

Roni, P. 2005. Monitoring stream and watershed restoration. American Fisheries Society Press. Bethesda, MD. 350 p.

USFWS (United States Fish and Wildlife Service) and ONRT. 2007. Final Wildlife Habitat Restoration Plan for the AT&SF Tie-Treater Superfund Site, New Mexico. February.

Valdez, R.A., Haggerty, G.M., Richard, K., and D. Klobucar. 2019. Managed spring runoff to improve nursery floodplain habitat for endangered Rio Grande silvery minnow. *Ecohydrology* June 2019. https://doi.org/10.1002/eco.2134.

Williams, B.K. 2011. Adaptive management of natural resources--framework and issues. Journal of Environmental Management 92(5):1346-1353.

Williams, B.K. and E.D. Brown. 2012. Adaptive Management: The U.S. Department of the Interior Applications Guide. Adaptive Management Working Group, U.S. Department of the Interior, Washington, D.C. 136 p.

Williams, J.E., Wood, C.A., and Dombeck, M.P. (eds.). 1997. Watershed restoration: Principles and Practices. American Fisheries Society Press. Bethesda, MD. 549 p.