Draft Environmental Assessment for the Realignment of the Northern Portion of the San Juan Lateral

WCAO-DUR-EA-2022-03

Navajo-Gallup Water Supply Project

New Mexico - Arizona

Upper Colorado Basin: Interior Region 7
Mission Statements

The mission of the Department of the Interior is to protect and manage the Nation’s natural resources and cultural heritage; provide scientific and other information about those resources; and honor its trust responsibilities or special commitments to American Indians, Alaska Natives, and affiliated island communities.

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

The Bureau of Indian Affairs’ mission is to enhance the quality of life, to promote economic opportunity, and to carry out the responsibility to protect and improve the trust assets of American Indians, Indian tribes, and Alaska Natives.

The Bureau of Land Management’s mission is to sustain the health, diversity, and productivity of public lands for the use and enjoyment of present and future generations.
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Upper Colorado Basin: Interior Region 7

Prepared for Reclamation by Ecosphere Environmental Services, Inc in conjunction with Upper Colorado Basin: Interior Region 7, Western Colorado Area Office, Eric Creeden.
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<thead>
<tr>
<th>Abbreviation</th>
<th>Description</th>
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<tbody>
<tr>
<td>AD</td>
<td>Anno Domini</td>
</tr>
<tr>
<td>AF</td>
<td>acre-feet</td>
</tr>
<tr>
<td>Alpine</td>
<td>Alpine Archaeological Consultants, Inc.</td>
</tr>
<tr>
<td>AMSL</td>
<td>above mean sea level</td>
</tr>
<tr>
<td>BA</td>
<td>Biological Assessment</td>
</tr>
<tr>
<td>BIA</td>
<td>Bureau of Indian Affairs</td>
</tr>
<tr>
<td>BLM</td>
<td>Bureau of Land Management</td>
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<tr>
<td>BMP</td>
<td>best management practice</td>
</tr>
<tr>
<td>BP</td>
<td>Before Present</td>
</tr>
<tr>
<td>CEQ</td>
<td>Council on Environmental Quality</td>
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<tr>
<td>CFR</td>
<td>Code of Federal Regulations</td>
</tr>
<tr>
<td>cfs</td>
<td>cubic feet per second</td>
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<td>CWA</td>
<td>Clean Water Act</td>
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<td>EA</td>
<td>Environmental Assessment</td>
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<tr>
<td>Ecosphere</td>
<td>Ecosphere Environmental Services, Inc.</td>
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CHAPTER 1 – INTRODUCTION

This Environmental Assessment (EA) has been prepared to disclose and evaluate the potential environmental effects of the United States (US) Bureau of Reclamation’s (Reclamation’s) proposed Realignment of the Northern Portion of the San Juan Lateral (Project or Proposed Action) of the Navajo-Gallup Water Supply Project (NGWSP). This EA was developed in conjunction with the Bureau of Indian Affairs (BIA) Navajo Region and the Bureau of Land Management (BLM) Farmington Field Office (FFO) and in coordination with NGWSP cooperating agencies including the Navajo Nation, City of Gallup, New Mexico, Indian Health Service, Jicarilla Apache Nation, Navajo Tribal Utility Authority, and State of New Mexico. The NGWSP was authorized for construction by Omnibus Public Land Management Act in 2009 (Public Law [PL] 111-11). Reclamation prepared a Planning Report and Final Environmental Impact Statement (PR/FEIS) for the NGWSP, and the Record of Decision for that document was signed by the Secretary of the Interior in July 2009. The 2009 NGWSP PR/FEIS provided an analysis of the overall NGWSP and did not consider the effects of the newly designed pipeline reaches and facility infrastructure associated with the Proposed Action. This EA tiers to and incorporates by reference the information and analysis from the 2009 NGWSP PR/FEIS (Reclamation 2009).

The following proposed federal actions are evaluated in this EA.

- Acquisition and upgrade of select lands and facilities associated with the Public Service Company of New Mexico’s (PNM) San Juan Generating Station (SJGS) water intake, conveyance, and storage systems.
- A water conveyance agreement with PNM to convey a maximum flow of 4 cubic feet per second (cfs) not to exceed 1,500 acre-feet (AF)/year of non-NGWSP (non-project) water from the San Juan River to the SJGS Reservoir and other points of delivery along the system.
- Acquisition of private lands and rights-of-way (ROW)/easement agreements for the realignment and construction of the northern reaches of the NGWSP’s San Juan Lateral water pipeline, including its associated pumping plants, water storage facilities, and water treatment plant.
- Connection of pumping plants, water storage facilities, and San Juan Lateral Water Treatment Plant (SJLWTP) to nearby transmission lines for project power.

Reclamation has applied for ROW with the BIA Navajo Region/Navajo Nation and BLM FFO to construct the Proposed Action. Reclamation has also applied for ROW with the New Mexico State Land Office (NMSLO) and New Mexico Department of Transportation (NMDOT) and would enter into easement agreements with private landowners to develop the Proposed Action.

This document has been prepared in compliance with the National Environmental Policy Act (NEPA), as amended, and the requirements of the Council on Environmental Quality’s (CEQ’s) implementing NEPA regulations at 40 Code of Federal Regulations (CFR) Parts 1500-1508 (2020). If potentially significant impacts on environmental resources are identified, a supplement to the 2009 NGWSP PR/FEIS will be prepared. A Finding of No New Significant Impact (FONNSI) will be issued if no new significant impacts are identified.
1.1 – Project Location and Legal Description

The Proposed Action is in San Juan County, New Mexico and located on private and Navajo Nation Tribal Trust lands, as well as public lands managed by the NMSLO, NMDOT, San Juan County, and BLM. The project area is in northwestern New Mexico, near the communities of Fruitland, Nenahnezad, and Waterflow. The Proposed Action is approximately 3 miles west of Fruitland and 1.75 miles east of Waterflow. The project extends from the SJGS south to US Highway 491 (Appendix A, Map 1).

The legal description of the Proposed Action is:

Township 30 North, Range 15 West, Sections 19, 29, 30, and 32; Township 29 North, Range 15 West, Sections 3, 4, 5, 7, 8, 18, and 19; Township 29 North, Range 16 West, Sections 13, 14, 15, 20, 21, 22, 23, 24, 29, and 30; Township 29 North, Range 17 West, Sections 23, 25, 26, and 35; Township 28 North, Range 17 West, Sections 12, 13, 23, 24, 26, 34, and 35; Township 27 North, Range 17 West, Sections 3, 4, 9, 16, 17, 19, and 20; Township 27 North, Range 18 West, Sections 24, 25, 35, and 36; and Township 26 North, Range 18 West, Sections 2, 11, and 14.

1.2 – Purpose and Need

Reclamation is the lead federal agency, the BLM and BIA as federal cooperating agencies, and the Navajo Nation and other entities are non-federal cooperating agencies on the project. Reclamation’s purpose and need of the Proposed Action is fulfill Reclamation’s responsibility under the Omnibus Public Land Management Act to construct the NGWSP as a component of the 2005 Navajo Nation San Juan River Basin Water Rights Settlement Agreement and to provide long-term supply, treatment, and transmission of municipal and industrial water to the Navajo Nation and the City of Gallup, New Mexico. The Proposed Action would result in enhanced water quality, reduced operational risk, increased operational flexibility, capital cost savings, and potential annual operating cost savings for the NGWSP.

The BIA’s and Navajo Land Department’s purpose and need of the Proposed Action is to allow Reclamation access to Tribal Trust lands to construct and operate the water pipeline and associated pumping plants, water storage facilities, and water treatment plant as established by the agency’s authority under 25 CFR 169 to respond to ROW applications.

The BLM’s purpose and need of the Proposed Action is to allow Reclamation access to public lands to construct and operate a portion of the Reach 2 water pipeline and reassign PNM’s existing water pipeline and potentially electric powerline ROWs to Reclamation as established by the BLM's authority under Title V of the Federal Land Policy and Management Act, as amended (43 United States Code [USC] 1761-1771), to respond to ROW applications.

1.3 – Decisions to be Made

Reclamation will decide whether to acquire lands and facilities associated with PNM’s SJGS water intake, conveyance, and storage systems; enter into a water conveyance contract with PNM; acquire private lands and obtain ROW and easement agreements to construct the realigned northern reaches of the NGWSP's
San Juan Lateral water pipeline, including its associated pumping plants, water storage facilities, and water treatment plant; and connect facilities to nearby power sources.

The BIA and Navajo Land Department will decide whether to approve and issue the ROWs associated with the Proposed Action and, if approved, under what terms and conditions.

The BLM FFO will decide whether to approve and issue the water pipeline ROWs (NMNM 144245, NMNM 144245-01) and reassign PNM’s existing ROWs (NMNM 125466 [water pipeline]) associated with the Proposed Action and, if approved, under what terms and conditions.

1.4 – Background

The NGWSP is in varying stages of completion. The Cutter Lateral of the NGWSP is near full completion and began delivering water to Navajo communities along the US Highway 550 corridor in 2021. The Reach 24.1 Lybrook Connection is the final reach of the Cutter Lateral and is currently in the planning and development stage. The main trunk of the San Juan Lateral is being constructed south to north, with current construction activities near the Navajo communities of Little Water and Sanostee. Branches of the San Juan Lateral planned to deliver water to the communities of Crownpoint, New Mexico, and Window Rock, Arizona, are in the planning and construction phases of development, respectively. Other smaller reaches near the City of Gallup and the Shiprock Connection are also in the construction and/or planning phases of development.

The Congressionally mandated completion date for the NGWSP is December 31, 2024 and needs to be extended to accommodate the current project construction schedule. A proposal to extend the NGWSP construction time frame to 2029 is in development with New Mexico congressional representatives. Completion extension is authorized under PL 111-11 with the approval of the Navajo San Juan River Basin in New Mexico Water Rights Settlement Agreement signatory parties (Navajo Nation, State of New Mexico, and the US Department of the Interior). NGWSP cooperators have reduced schedule delay impacts to the City of Gallup by making Twin Lakes well water available to NGWSP facilities and looking into conjunctive groundwater funds to build additional wells in the area.

In 2018, PNM, faced with the potential decommissioning of the SJGS water conveyance system, inquired if Reclamation would be interested in incorporating the system into the NGWSP. At this time, Reclamation was considering using the Hogback Diversion Canal area for the San Juan Lateral’s intake and associated facilities, however, major concerns existed regarding operational risk and the location of facilities in the San Juan River’s floodplain. Reclamation conducted a “fatal flaw” analysis to determine the feasibility of incorporating the SJGS water conveyance system and found that the project schedule would be impacted by 9 to 18 months initially to conduct an in-depth analysis. Additional time would be needed for design work, ROW acquisition, environmental compliance, cultural resources investigations and clearances, necessary agreements and contracts, and other work if a decision was made to incorporate the SJGS facilities into the Proposed Action. In 2019, Reclamation and project cooperators decided to move forward with incorporating the SJGS lands and facilities into the Proposed Action as it was thought to result in enhanced water quality, reduced operational risk, increased operational flexibility, capital cost savings, and potential annual operating cost savings for the NGWSP.

Reclamation completed background studies and research related to incorporating the SJGS lands and facilities into the NGWSP. A preliminary analysis on the potential of incorporating the SJGS river diversion and reservoir facilities, inspection report, and reservoir survey were completed in 2019, followed by a
comprehensive review of the SJGS Dam in 2020. An appraisal design report, cost comparison of operation and maintenance costs, and value planning study were completed in 2021. Reclamation has collected water samples at the San Juan River and SJGS Reservoir since 2019. The US Geological Survey (USGS) was contracted to complete an evaluation of groundwater flow and chemistry associated with the SJGS Reservoir and collect SJGS Reservoir sediment cores in 2021. Reclamation also completed sampling for invasive mussels in the SJGS Reservoir in 2021; no mussels were detected. Phase I and Phase II Environmental Site Assessments have been or are being completed for the project and will be updated as appropriate before acquisition of any property. A property appraisal would also be completed prior to acquisitions.

In April 2021, the Navajo Nation, New Mexico Environment Department (NMED), and the US Environmental Protection Agency (USEPA) signed a Memorandum of Understanding (MOU) to support the NGWSP. The MOU describes the roles and responsibilities under the existing law of the three agencies with regulatory oversight obligations under that law. Due to the length of the pipelines and resulting long retention times of water in the pipelines, agencies anticipate that byproducts of chlorination (disinfection byproducts) are likely to be formed within the transmission mains and the Consecutive Distribution System. Therefore, treatment, monitoring, and compliance are expected to be required at different places within the NGWSP project to produce consistently compliant and safe water as required by the Safe Drinking Water Act. The Safe Drinking Water Act provides that states and tribes approved for treatment in a similar manner as a state may be approved to have primary implementation and enforcement authority for the drinking water systems within their jurisdictions. The Navajo Nation Environmental Protection Agency (NNEPA) has assumed this authority and implements the Navajo Nation Safe Drinking Water Act.

Regarding the Proposed Action, under current regulation, the San Juan Lateral Treatment Plant would be subject to NNEPA’s application requirements and Public Water Systems Supervision Program. Similarly, the NNEPA is the regulating entity for all San Juan Lateral components of the NGWSP within the formal Navajo Nation Reservation, but NMED is the regulating entity for San Juan Lateral components of the NGWSP on federal, state, and privately-owned land outside the formal Navajo Nation Reservation in the State of New Mexico. Eventually, the Navajo Nation intends to obtain regulatory authority over all or additional components of the NGWSP, at which time the MOU would be terminated or modified accordingly.

1.5 – Relationship to Other Projects

Several large-scale projects planned, occurring, or associated with Reclamation in the vicinity of the Proposed Action are listed below.

PNM and SJGS

In 2017, PNM recommended to the New Mexico Public Regulatory Commission that PNM retire its shares in the SJGS effective June 30, 2022, based on an economic analysis and to meet the requirements of the Energy Transition Act. In February 2022, the Commission agreed that PNM could continue operating unit four of the SJGS after July 1 to prevent power shortages during the summer peak. A shutdown extension was granted until September 30, 2022. All other owners in the SJGS, except for the City of Farmington, have indicated they will divest their ownership shares in the SJGS. Effectively, this means that the SJGS will be retired and shut down unless the City of Farmington determines that it is feasible for Farmington and Enchant Energy to take ownership of the SJGS and continue operation following the installation of carbon capture technology.
City of Farmington/Enchant Energy Carbon Capture Project

The City of Farmington and Enchant Energy are assessing the viability of taking over ownership of the SJGS and using carbon capture technology to continue operating the SJGS and meet the stricter emission targets required by the New Mexico Energy Transition Act. If Reclamation acquires PNM’s SJGS water conveyance system as described in this document and the City of Farmington/Enchant Energy carbon capture project moves forward and desires to also use the SJGS water conveyance system, a contract with Reclamation for non-NGWSP water carriage through and storage within the newly acquired federal facilities would be required. The potential water carriage contract is planned to be analyzed in a future NEPA document in conjunction with other federal actions associated with the carbon capture project.

PNM and San Juan Coal Company Consent Decree

In 2010 the Sierra Club filed a lawsuit against PNM and the San Juan Coal Company. The Sierra Club claimed that the defendants violated the Surface Mining Control and Reclamation Act, the New Mexico state regulatory program, and the Resource Conservation and Recovery Act. The defendants denied the claims. The lawsuit resulted in a March 2012 Consent Decree, which required, among other things, that PNM design, install, and operate a groundwater recovery system downstream of the SJGS Reservoir and the power plant drainages in the Shumway Arroyo. The recovery system captures groundwater and pumps it to an evaporation pond north of the reservoir.

PNM is required to continue monitoring and operating the recovery system until either:

- Surface and alluvial groundwater monitoring for parameters set forth in the Consent Decree establishes that for a period of 12 consecutive months that (1) no Surface Water Base Flow is present at the location of the Recovery System, and (2) alluvial groundwater captured by the Recovery System occurs only in direct response to precipitation; or
- PNM and San Juan Coal Company demonstrate that conditions downstream of the Recovery System…do not or will not present an imminent and substantial endangerment to health or the environment as set forth at 42 USC § 6972(a)(1)(B) and applicable case law (US District Court Case No. 10-cv-00332-MCA-LAM).

The Shumway Arroyo water recovery system would remain the responsibility of PNM and the San Juan Coal Company.

San Juan Mine

Westmoreland San Juan Mining, LLC’s San Juan Mine is located east of the SJGS and supplies coal to the SJGS. Future mining operations or reclamation of the mine would depend on the operational status of the SJGS.

Fish Passage at PNM’s San Juan River Diversion

The Navajo Nation owns and operates a fish passage on the south side of the San Juan River at PNM’s SJGS diversion weir that allows fish to bypass the weir structure. PNM entered a lease agreement with the Navajo Nation to construct the fish passage and operates and maintains the fish passage with the Navajo Nation through reimbursement by the San Juan River Basin Recovery Implementation Program (SJRBRIP). If the PNM diversion facilities are sold, it is anticipated that the SJRBRIP would continue to fund the operation and maintenance of the fish passage.
Navajo Nation Municipal Pipeline

The Navajo Nation Municipal Pipeline, associated with Reclamation’s Animas-La Plata Project, was recently impacted by a landslide on Bluff Road that caused the road’s closure and prevents use of the water pipeline. The landslide occurred south of the San Juan River in the Upper Fruitland Chapter of the Navajo Nation and near the Proposed Action. In coordination with project partners, Reclamation is analyzing options to repair the impacted reach of pipeline.

Future NGWSP Actions

Multiple projects associated with the NGWSP (listed below) are in preliminary planning phases and may require additional supplemental analysis under the NEPA as well as completion of consultation with various entities.

- San Juan River Water Quality Monitoring Station
  - A water quality monitoring station is planned at the existing USGS Fruitland Bridge station or a new station further upstream but below the confluence of the Animas and San Juan Rivers to provide data on high suspended solids events in the San Juan River and help guide decision making on when to divert water to the SJGS Reservoir.
- Reach 24.1 Lybrook Connection
  - Would connect Reach 24 (constructed) to the community of Lybrook.
- Reach 12.3
  - Would connect Reach 12.2 (under construction) to Window Rock, Arizona.
- Shiprock Connection
  - Planned as a smaller diameter lateral pipeline and connection along Navajo Route N36 that was the former alignment of the San Juan Lateral trunk pipeline.
- Various reaches and pumping plants associated with the City of Gallup, New Mexico.
- Removal of the Navajo Depletion Guarantee from the 2009 NGWSP PR/FEIS and Biological Opinion.

1.6 – Scoping

Reclamation’s NGWSP design and coordination efforts with project partners includes day to day correspondence, biweekly and monthly coordination and design meetings, quarterly Project Construction Committee meetings, a quarterly newsletter that is posted on the NGWSP website and distributed to Chapter Houses and others on the Navajo Nation, and a Project Issue Notice system that documents major project decisions. Tribal outreach and Navajo Chapter House visits are frequently conducted by Reclamation’s Navajo Outreach Coordinator and various staff members during planning periods and before major project activities and construction.

Reclamation has conducted various internal and external scoping efforts during the project’s planning stages to identify the potential environmental and human-environment issues and concerns associated with implementing the Proposed Action or Alternatives. Reclamation held a project-specific scoping meeting for the Proposed Action on October 27, 2021, and invited scoping comments from October 27, 2021, through November 30, 2021. Invites to the meeting were sent by Reclamation to agencies and organizations included in the above-mentioned design and coordination efforts and as listed below. No substantive comments were received during the meeting or during the month-long scoping period.
• NGWSP Cooperating Agencies
  
  • BIA Navajo Region
  • City of Gallup, New Mexico
  • Indian Health Services Navajo Area
  • Jicarilla Apache Nation
  • Navajo Nation
    ▪ Office of the President and Vice President
    ▪ Washington Office
    ▪ Department of Water Resources
    ▪ Heritage and Historic Preservation Department (NNHHHPD)
    ▪ Environmental Protection Agency (NNEPA)
    ▪ Department of Justice
    ▪ Department of Natural Resources
    ▪ Water Rights Commission
    ▪ Navajo Tribal Utility Authority (NTUA)
  • State of New Mexico
  • Associated Federal Agencies
    • USEPA Regions 6 and 9
    • USGS New Mexico Water Science Center
  • Associated State Agencies
    • New Mexico Office of the State Engineer
    • New Mexico Interstate Stream Commission
    • New Mexico Environment Department
  • Local Government
    • City of Farmington
  • Other Entities Involved with the NGWSP
    • DePauli Engineering
    • Enchant Energy
    • Greater Gallup Economic Development Corporation
    • PNM
    • Souder, Miller & Associates
    • Stelzner Law Firm
    • Wood

Reclamation has implemented additional external scoping efforts for the Proposed Action. Reclamation sent a description of the Proposed Action and a list of preliminary topics to be discussed in detail to the BLM FFO and BIA Navajo Region with a request for review and comments. A BLM FFO interdisciplinary team completed a checklist of potential resource issues relevant to the project, which is incorporated into this EA
General discussions between Reclamation and the US Fish and Wildlife Service (USFWS) SJRBRIP have occurred since the 2009 Biological Opinion. Previous informal discussions from 2015 to 2019 explored the potential of using the Hogback Canal diversion area as a location for the NGWSP San Juan River intake and water treatment plant. Additional informal discussions, site visits, and presentations were held from 2019 to 2022 regarding the use and potential modification of the SJGS diversion and facilities and fish weir design options. Reclamation has also had brief discussions about permitting options for the Proposed Action with the US Army Corps of Engineers (USACE). Right of entry permissions were secured with landowners before completing cultural, environmental, and other data collection and the survey information was dispersed to the relevant agencies and organizations. Agencies and organizations not previously listed above and consulted with during the planning of the Proposed Action are listed below.

- Cooperating Federal Agencies (Proposed Action)
  - BLM FFO
- Associated Federal Agencies
  - USFWS (Ecological Services and SJRBRIP)
  - USACE Albuquerque District
  - Western Area Power Administration (WAPA)
- Associated State Agencies
  - NMSLO
  - NMDOT
  - New Mexico Historic Preservation Department

1.6.1 – Resources Eliminated from Further Analysis

The following resources were determined to be insignificant, were previously analyzed in the 2009 NGWSP PR/FEIS with no further changes from the Proposed Action, or are not applicable. These resources are not analyzed in greater detail within this EA. Resources determined to be of potential significance and requiring further analysis are discussed in Chapter 3.

Table 1. Resources Eliminated from Further Analysis

<table>
<thead>
<tr>
<th>Resource</th>
<th>Rationale for Elimination from Further Analysis</th>
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<tbody>
<tr>
<td>Recreation</td>
<td>Effects on recreation from the NGWSP were analyzed in Chapter 5 of the 2009 NGWSP PR/FEIS (pp. V93-V104). There are no designated recreation areas in the proposed project area. Dispersed recreation is limited, and public access is restricted from private lands. Recreation would continue to be restricted from the SJGS Reservoir. The PNM diversion weir in the San Juan River would remain in place and continue to block passage for river users. No further analysis is needed.</td>
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<tr>
<td>Soils</td>
<td>Effects on soils from the NGWSP were analyzed in the 2009 NGWSP PR/FEIS (pp. V114-V119). Soils within the realigned portions of the project area are like other soils throughout the NGWSP analysis area and are erosive, nutrient-limited, and require special care during construction and reclamation activities. Best management practices (BMPs) were discussed in the 2009 NGWSP PR/FEIS and incorporated into the NGWSP’s environmental commitments to</td>
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<tr>
<td>Resource</td>
<td>Rationale for Elimination from Further Analysis</td>
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<tr>
<td></td>
<td>avoid or limit potential effects on soils. No substantial changes would occur from the Proposed Action as previously described in the 2009 NGWSP PR/FEIS; no further analysis is needed.</td>
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<tr>
<td>Geology</td>
<td>As described in the 2009 NGWSP PR/FEIS (pp. V119-V122), the NGWSP would have no effect on geology. No substantial changes would occur from the Proposed Action; no further analysis is needed.</td>
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<tr>
<td>Paleontology</td>
<td>Effects on paleontology resources from the NGWSP were analyzed in the 2009 NGWSP PR/FEIS (pp. V122-V125). New areas of disturbance associated with the Proposed Action are not documented as known areas of paleontological resources, and no major changes would occur from the Proposed Action as previously described in the 2009 NGWSP PR/FEIS. No further analysis is needed.</td>
</tr>
<tr>
<td>Air Quality and Noise</td>
<td>Effects on air quality and noise from the NGWSP were analyzed in the 2009 NGWSP PR/FEIS (pp. V125-V128). No substantial changes would occur from the Proposed Action as previously described in the 2009 NGWSP PR/FEIS. All areas in San Juan County, New Mexico, are in attainment with National Ambient Air Quality Standards (NAAQS). No further analysis is needed.</td>
</tr>
<tr>
<td>Hydrologic Variability and Climate Change</td>
<td>Potential effects of climate change on the hydrology of the San Juan Basin and NGWSP were discussed in the 2009 NGWSP PR/FEIS (pp. V144-145). Conservation measures regarding climate change impacts to threatened and endangered fish were incorporated into the NGWSP's Biological Opinion (USFWS 2009) and environmental commitments. No substantial changes would occur from the Proposed Action as described in the 2009 NGWSP PR/FEIS.</td>
</tr>
<tr>
<td>Socioeconomics</td>
<td>Effects on socioeconomics from the NGWSP were analyzed in the 2009 NGWSP PR/FEIS (pp. V128-V133). While the construction phase may extend beyond the timeline analyzed in the FEIS, no substantial changes would occur from the Proposed Action as described in the 2009 NGWSP PR/FEIS. No further analysis is needed.</td>
</tr>
<tr>
<td>Visual Resources</td>
<td>There are no visual resource guidelines for Navajo Nation. Construction of the water pipeline would meet the management objectives of BLM Visual Resource Management Class IV and III areas. Reclamation would implement dark sky lighting specifications for the pumping plants and water treatment plant and use paint colors to match the surrounding environment. No further analysis is needed.</td>
</tr>
<tr>
<td>Wildlife (Terrestrial)</td>
<td>Effects on terrestrial wildlife from the NGWSP were analyzed in the 2009 NGWSP PR/FEIS (pp. V50-V56). Effects on terrestrial wildlife from implementing the Action Alternatives would be similar to those analyzed in the PR/FEIS under the Preferred Alternative. There would be no permanent loss of key wildlife habitats beyond what was identified in the PR/FEIS, and no further analysis is needed. Effects on special status species are analyzed in Section 3.2.5.</td>
</tr>
<tr>
<td>Aquatic Resources</td>
<td>Effects on aquatic resources from the NGWSP were analyzed in the 2009 NGWSP PR/FEIS (pp. V56-V70). The FEIS evaluated the effects on hydrology in the San Juan River, change in the native fish community, and deterioration of trout habitat from Navajo Dam to Blanco, New Mexico. The Proposed Action would have no effects on San Juan River hydrology or trout habitat from Navajo Dam to Blanco beyond what was analyzed in the 2009 NGWSP PR/FEIS. The FEIS determined that implementing the Preferred Alternative would not</td>
</tr>
</tbody>
</table>
 CHAPTER 2 – PROPOSED ACTION AND ALTERNATIVES

Alternatives evaluated in this EA include the No Action Alternative (2009 NGWSP PR/FEIS preferred alternative), Proposed Action, Nanofiltration (NF) with Ultrafiltration (UF) Pretreatment (UF-NF) Alternative, and Pumping Plant 1 Northern Alternative. The UF-NF and Pumping Plant 1 Northern Alternatives are substantially similar to the Proposed Action except for utilizing a different water treatment method and a different location of Pumping Plant 1, respectively.

2.1 – Comparison of Proposed Action to 2009 NGWSP PR/FEIS

Several major changes are planned in the Proposed Action that differ from what was analyzed in the 2009 NGWSP PR/FEIS. These changes are briefly summarized and compared in Table 2.

Table 2. General Comparison of Proposed Action to the 2009 Navajo-Gallup Water Supply Project Planning Record/Final Environmental Impact Statement

<table>
<thead>
<tr>
<th>Project Feature</th>
<th>2009 NGWSP PR/FEIS</th>
<th>Proposed Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>PNM Facilities and Lands Acquisition and Upgrade and Water Conveyance Agreement</td>
<td>Not included</td>
<td>Acquisition and upgrade (as necessary) of PNM’s water intake, conveyance, storage facilities, and selected lands associated with the SJGS. Water conveyance agreement with PNM.</td>
</tr>
<tr>
<td>Private Lands Acquisition</td>
<td>Not included</td>
<td>Acquisition of several private parcels along pipeline alignment.</td>
</tr>
<tr>
<td>San Juan Lateral Pipeline (Reaches 1 through 4)</td>
<td>Approximately 35 miles from San Juan River south to Navajo Route N36, then west to and south along US Highway 491.</td>
<td>Approximately 32 miles from SJGS Reservoir south across the San Juan River then west along Navajo Route N36 before traveling cross-country to water treatment plant and eventually south along US Highway 491.</td>
</tr>
<tr>
<td>Project Feature</td>
<td>2009 NGWSP PR/FEIS</td>
<td>Proposed Action</td>
</tr>
<tr>
<td>---------------------------------------------</td>
<td>----------------------------------------------------------------------------------</td>
<td>-----------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>San Juan Lateral Pumping Plants and Water Storage</td>
<td>Two pumping plants (one located just south of the San Juan River and one located just south of the intersection of Navajo Route N36 and US Highway 491).</td>
<td>Two pumping plants (one located just south of the San Juan River and one located at the junction of Reaches 4A and 4B) and a surge tank site along Navajo Route N36 just north of Morgan Lake.</td>
</tr>
<tr>
<td>San Juan Lateral Water Treatment Plant</td>
<td>Located near the existing PNM diversion just north of the San Juan River.</td>
<td>Located approximately 10.5 miles southwest of San Juan River, just south of Navajo Route N36.</td>
</tr>
<tr>
<td>San Juan Lateral Annual Diversion from San Juan River</td>
<td>33,119 AF/year</td>
<td>33,119 AF/year (no change in diversion amount or depletions).</td>
</tr>
<tr>
<td>San Juan Lateral Diversion Rate from San Juan River</td>
<td>59 cfs</td>
<td>71 cfs</td>
</tr>
<tr>
<td>San Juan Lateral Intake</td>
<td>New intake just upstream of PNM intake with water diverted through a self-cleaning fish screen with 3/32-inch openings and a through-screen velocity of less than 0.5 feet per second to a sump where low-head pumps lift the raw water into settling ponds for removal of suspended sediment.</td>
<td>Modification of existing PNM diversion and intake to include a new outer trash rack; removal of the inner trash rack and hoist framing; and installation of radial and dual-leaf gates, and fish barrier weir.</td>
</tr>
</tbody>
</table>

Note: PNM = Public Service Company of New Mexico; SJGS = San Juan Generating Station.

2.2 – Alternatives Considered but Not Carried Forward

Reclamation considered several alternatives for the project since the completion of the 2009 NGWSP PR/FEIS. These alternatives were eliminated from detailed analysis per 40 CFR 1502.14. These alternatives included a Hogback Alternative, Gravity Alignment Alternative, and alternative designs for PNM’s San Juan River diversion and intake.

2.2.1 – Hogback Intake Alternative

The Hogback Intake Alternative was explored by Reclamation and project partners generally from 2015 to 2019. Project features of this alternative are similar to the Proposed Action south of Navajo Route N36; however, the main difference was the location of the intake, a pumping plant, and major sediment handling facilities located near the Hogback Diversion and in the flood zone of the San Juan River. Two potential water treatment plant sites, including the location included in the Proposed Action, were explored in detail while this alternative was being considered. This alternative was dismissed from further evaluation because of concerns about sediment removal efficiency as well as it being considered a high-risk/high-cost option to pursue further.
2.2.2 – Gravity Alignment Alternative
The Gravity Alignment Alternative was explored by Reclamation and project partners generally from 2019 to 2021 while exploring the potential use of the San Juan Generating Station lands and facilities. Reclamation and project partners evaluated multiple pipeline alignment options while this alternative was being considered. The potential to connect the proposed gravity alignment features to the New Mexico Municipal Pipeline was explored to provide interim water to the NGWSP during construction. This alternative was dismissed from further evaluation because it was determined that impacts on local farms and residences in the San Juan River valley would be high. The ability to obtain ROW for pipeline construction was also determined to be challenging and likely to negatively impact targeted construction timeframes and deadlines.

2.2.3 – Alternative Designs for the San Juan River Diversion and Intake
Reclamation considered several design options for upgrading the San Juan River diversion and intake before selecting the design described in the Proposed Action. A 73-foot-long weir with 5.5-inch-tall water column was initially designed but eliminated because the water column flowing overtop the weir was considered too high. A design with a screen installed on the top of the weir was also considered but eliminated because of the potential for the screen to freeze and block water passage in winter months. Installation of a 3/32-inch fish screen within the intake structure was considered but dismissed due to the need to markedly alter the existing diversion and intake structure. Lastly, several radial and dual-leaf gate options were considered and eliminated due to potential negative impacts on fish.

2.3 – No Action Alternative
Under the No Action Alternative, Reclamation would construct the NGWSP’s remaining unconstructed San Juan Lateral project features north of Reach 4C and Pumping Plant 3 as described in the 2009 NGWSP PR/FEIS preferred alternative (Appendix A, Map 2).

2.4 – Proposed Action
Components of the Proposed Action are listed below and described further in Chapter 2 of this EA. The Proposed Action is shown on US Geological Survey 7.5-minute quadrangles on Maps 3 to 13 in Appendix A.

- Acquisition and upgrade of select lands and facilities associated with PNM’s SJGS water intake, conveyance, and storage systems.
- A water conveyance agreement with PNM to convey a maximum flow of 4 cfs not to exceed 1,500 AF/year of non-NGWSP (non-project) water from the San Juan River to the SJGS Reservoir and other points of delivery along the system.
- Acquisition of private lands and ROWs/easement agreements for the realignment and construction of the northern reaches of the NGWSP’s San Juan Lateral water pipeline, including its associated pumping plants, water storage facilities, and water treatment plant.
- Connection of pumping plants, water storage facilities, and SJLWTP to nearby transmission lines for project power.
2.4.1 – PNM Facilities Acquisition and Upgrade

Reclamation proposes to acquire and upgrade (as necessary) the following existing facilities from PNM to provide additional water storage capacity and improve the flexibility and resiliency of the NGWSP system. Reclamation would execute an asset purchase contract with PNM (representing the nine owners of the SJGS) in compliance with applicable federal acquisition laws and policies.

2.4.1.1 – San Juan River Diversion Weir

PNM’s existing San Juan River diversion weir pools river water to be diverted into the intake works. The diversion weir was built in 1971 and is an approximately 170-foot-long by 20-foot-wide concrete structure spanning the San Juan River. The structure also provides low water vehicular crossing for transporting heavy equipment and large loads across the river. River flows are concentrated near the mid-span of the weir, with the tailwater dissipated in a concrete stilling basin downstream of the weir. Reclamation evaluated the weir in 2019 and found it in good condition with substantial service life remaining and little maintenance and repair work anticipated in the near term.

2.4.1.2 – San Juan River Diversion and Intake

PNM’s existing San Juan River diversion and intake diverts water from the river to an adjacent pumping facility (River Station) that pumps water to the SJGS Reservoir, where it is then used for cooling operations at the SJGS. The San Juan River diversion and intake is a large concrete structure where water is first diverted through an outer trash rack with bar spacing of approximately 8 inches. Before entering the main diversion channel, water flows into a small basin and through an inner trash rack. Stop logs sit just upstream of the inner trash rack and are used if water needs to be blocked from entering the channel. A hoist frame (currently damaged) is used to move the stop logs and inner trash rack up and down. Water then flows through the channel until it is either sent to the River Station to be pumped to the SJGS Reservoir or passed through the return channel back to the San Juan River. PNM currently uses vertical traveling screens (0.25-inch gaps) at the entrance of the River Station to reduce debris entering the project works. Roller gates are positioned at the entrance of the return channel near the River Station.

While the diversion and intake were evaluated to be in good condition, Reclamation proposes the following upgrades at the facility (see Figure 1, below).

- Removal and replacement of the outer trash rack with new 4-inch by 4-inch bar spacing.
- Removal of the inner trash rack and damaged hoist framing.
- Replacement of the slide gate infrastructure to allow sluicing through the diversion weir.
- Installation of a radial gate below the inner trash rack to limit water intake during flood flows.
  - Option 1: a single 9-foot-wide radial gate and adjacent slide gate.
  - Option 2: two 9-foot-wide radial gates separated by a 2-foot-wide pier with one of the radial gates closed during most normal operations).
- Installation of a new headwall with two pairs of dual-leaf gates (LOPAC brand) at the entrance of the return channel to help control the flow of water through the diversion and intake structure and maintain a consistent water surface elevation behind a fish barrier weir for pumping operations.
- Installation of a 123-foot-long concrete fish barrier weir with 4-inch-tall water column flowing overtop into the pumping forebay of the River Station.
- Installation of a guide wall along the south side of the return channel.

The dual-leaf gate openings would allow fish, debris, and sluicing back to the river during normal pumping operations. Dual-leaf gates and radial gates would be operated automatically but could also be controlled locally. Regular channel sluicing would be needed for operations and maintenance. During sluicing,
pumping would stop, and the dual-leaf and radial gates would be fully opened. Slide gates would also be installed upstream and downstream of the weir and be opened during sluicing to clear sediment from behind the weir. The existing roller gate located at the entrance of the return channel would be open except during sluicing to exclude the tailwater in the return channel downstream.

The fish barrier weir design would be similar to the weir used on the San Juan River at the Hogback Diversion Canal and would be designed to pump up to 71 cfs of water to the SJGS Reservoir. The proposed weir would be designed to be operated at flows of 500 to 10,000 cfs in the San Juan River. Water entering the diversion and intake structure and not passing overtop the weir would flow into the return channel and back to the river. The newly installed radial gate(s) would be fully open during low flows and closed to a 12-inch-tall minimum opening during flood flows to limit water diversion into the intake channel.

NGWSP water diversion from the San Juan Lateral would remain at 33,119 AF/year at full use, as previously analyzed in the 2009 NGWSP PR/FEIS.

Figure 1. River Intake and Pumping Plant Design
Through coordination with the SJRBRIP, a remotely operated Passive Integrated Transponder (PIT) tag monitoring system may be installed during or after the construction of the fish barrier weir to monitor endangered fish (Colorado pikeminnow [Ptychocheilus lucius] and razorback sucker [Xyrauchen texanus]) use of the intake and potential entrainment within the SJGS water conveyance system. The USFWS, through the SJRBRIP, would be responsible for the operation, maintenance, and data collection of the remote PIT-tag monitoring system.

Most diversion and intake improvements would occur within the existing structure. Removal and replacement of the outer trash rack and construction of the bottom of the fish raceway would occur at the interfaces of the diversion and intake structure and the San Juan River. Temporary cofferdams would be installed around the outer trash rack (approximately 85 feet long by 15 feet wide [0.03 acre]) and bottom of the fish raceway (approximately 50 feet long by 15 feet wide [0.02 acre]) to exclude water during construction activities.

2.4.1.3 – San Juan River Station

PNM’s existing River Station takes water from the intake and pumps it to the SJGS Reservoir. Reclamation evaluated the River Station and found it in generally fair condition, with much of the electrical and mechanical components near the end of their service lives. Civil and site features at the River Station are generally in good condition. Among other components, Reclamation would upgrade and/or replace the River Station’s vertical shaft pumps, motors, electronics, controls, and portions of the building to meet the demands of the NGWSP. An additional two-bay sump, pumps, motors, and metal building system would be added onto the River Station to increase pumping capacity to 71 cfs resulting in increased operational flexibility. A new air chamber building with a slight realignment of the River Station’s discharge pipeline would also be constructed. Reclamation would reconstruct the River Station and diversion and intake structure without using variable speed infrastructure to not interfere with PIT-tag systems that monitor fish in the San Juan River.

2.4.1.4 – Raw Water Pipeline (River Station to SJGS Reservoir)

An existing 4.8-mile-long and 42-inch-diameter raw water pipeline brings water from the River Station to the SJGS Reservoir. The pipeline was constructed in 2010-2011 to replace a 36-inch diameter water pipeline that was abandoned in place. The water pipeline was found to be in good condition, with initial maintenance work focused on replacing valves, flanges, and appurtenant features as necessary.

The pipeline was installed within a 20- to 80-foot-wide construction area across various land jurisdictions, including the BLM FFO, NMSLO, multiple private landowners, and within San Juan County and NMDOT ROWs. Existing ROW widths for this pipeline vary from 20- to 50-feet. Reclamation would seek to transfer the existing ROW to federal control where possible and acquire new ROW where necessary. Acquired ROW widths by Reclamation may vary depending on land ownership and management allowances, topography, or other factors.

A limited amount of new ground disturbance is anticipated to install required hydraulic controls to allow the existing pipe to handle additional conveyance capacity. A terminal weir structure (approximately 21-feet-long by 14-feet-wide by 10-feet-tall) would be built above the crest of the SJGS dam to provide a steady water surface elevation for the river station to pump against. Additionally, a 20-foot-long by 20-foot-wide disturbance zone would be needed to install an orifice plate in the existing pipeline approximately 400 feet downstream of the terminal weir structure (Figure 2). Lastly, an approximately 32-foot-long by 38-foot-wide air chamber building would be constructed adjacent to the River Station to protect the raw water pipeline and pumping units at the River Station from hydraulic transients (Figure 1).
2.4.1.5 – SJGS Reservoir and Dam

Reclamation would acquire PNM’s existing SJGS Reservoir and Dam and associated structures as part of the Proposed Action. Reclamation’s evaluations of the dam conclude that it has been well designed, constructed, and operated. Bathymetric survey data collected by Reclamation in 2019 estimates the reservoir’s storage capacity at water surface elevation 5,277 feet above mean sea level (AMSL) (maximum operating pool) to be 2,783.6 AF with a surface area of 132.8 acres. Storage within the SJGS Reservoir would provide operational flexibility in the pumping regime from the San Juan River.

Reclamation would upgrade the SJGS Reservoir and Dam facilities (Figure 2). Erosional fills on the dam face would be repaired, and the dam's crest would be regraded to improve surface runoff. Riprap and bedding of the dam would be updated to Reclamation design standards, and weather and animal proofing would occur on select facilities. Additional upgrades proposed for the SJGS Reservoir inlet and outlet areas are described below.

- The SJGS Reservoir inlet dumps water from the 42-inch raw water pipeline into the reservoir. Reclamation would replace the old, flanged rubber check valve at the inlet to minimize unwanted animal invasion of the pipe. The existing concrete headwall and riprap erosion control may also be replaced or repaired if needed. Construction within the ordinary high water mark of the SJGS Reservoir would be limited to the minimum size necessary and is estimated at approximately 0.02 acre.
- The SJGS Reservoir outlet and discharge send water from the reservoir through twin 36-inch diameter steel outlet pipes to PNM’s SJGS Reservoir Lake Station. Reclamation would raise the intake sill elevation of the reservoir by 10 feet to further limit the amount of sediment that may be mobilized into the project pipeline and replace the slide gate at the reservoir outlet works structure. The SJGS Reservoir would be drawn down in elevation, and a temporary cofferdam (approximately 40 feet in diameter [0.03 acre]) would be installed around the outlet works structure to exclude water during construction activities. In addition, the downstream valve in the Lake Station would be replaced.

Access to the SJGS Reservoir and Dam would be restricted to Reclamation personnel, the NGWSP operator, authorized PNM staff, and others authorized by Reclamation.

Following acquisition, water would be conveyed from the San Juan River to the SJGS Reservoir using existing infrastructure until Reclamation's proposed construction and upgrades to the system are completed (2 to 3 years).
2.4.1.6 – 12.5-Kilovolt Powerline and Fiber Optic Line

Reclamation may seek to acquire (or lease) an existing 12.5-kilovolt (kV) powerline and fiber optic line that begins at the San Juan River Station and terminates near the SJGS Reservoir and currently provides power to multiple SJGS water conveyance facilities.

2.4.1.7 – Ancillary Facilities Not Being Acquired

Ancillary facilities near the Proposed Action not being acquired include the fish passage on the south side of the San Juan River at the PNM diversion, PNM’s SJGS Reservoir Lake Station, and an abandoned 36-inch pipeline from the San Juan River to the SJGS Reservoir.

2.4.2 – Land Acquisitions

Reclamation proposes to acquire a PNM-owned property surrounding the SJGS Reservoir as well as the PNM property housing the San Juan River diversion, intake, and River Station. These lands are summarized below.

- SJGS Reservoir Property
  - San Juan County Parcel Number: 2090175132404
  - San Juan County Account Number: R6001798
  - Location: Section 19, T30N, R15W; Section 29, T30N, R15W; Section 30, T30N, R15W
  - Approximate acreage: 631.6 (with proposed division)
• San Juan River Diversion, Intake, and River Station Property
  • San Juan County Parcel Number: 2087173493100
  • San Juan County Account Number: R4005913
  • Location: Section 3, T29N, R15W
  • Approximate acreage: 21.0

Reclamation may also acquire several privately owned lands that are within the project area and that may be left otherwise unusable after project construction activities. These lands are summarized below.

• Weathers Property
  • San Juan County Parcel Number: 2089173502212
  • San Juan County Account Number: R0082148
  • Location: Section 5, T29N, R15W
  • Approximate acreage: 17.9

• Shaw/Dickerson Property (1)
  • San Juan County Parcel Number: 2089173439436
  • San Juan County Account Number: R0081049
  • Location: Lot 6 of Section 5, T29N, R15W
  • Approximate acreage: 9.7

• Shaw/Dickerson Property (2)
  • San Juan County Parcel Number: 2089173495496
  • San Juan County Account Number: R0081048
  • Location: Lot 7 of Section 5, T29N, R15W
  • Approximate acreage: 5.0

Reclamation would execute contracts with the private landowners to acquire the needed lands for the NGWSP in compliance with applicable federal acquisition laws and policies.

2.4.3 – Water Conveyance Agreements
Under the Proposed Action, Reclamation would acquire the SJGS water intake, conveyance, and storage system and would convey both NGWSP and non-NGWSP (non-project) water from the San Juan River to the SJGS Reservoir and other points of delivery along the system. PL 111-11 Section 10602(h) allows for the carriage of non-project water through NGWSP facilities so long as capacity is available without impairing any water delivery to a NGWSP participant and the non-project water beneficiary has the right to use the water; agrees to pay operation, maintenance, and replacement costs for the use of NGWSP facilities; and agrees to pay a fee for the recovery of capital costs. Following the acquisition, water would be conveyed from the San Juan River to the SJGS Reservoir using existing infrastructure until Reclamation’s proposed construction and upgrades to the system are completed (2 to 3 years).

As part of the Proposed Action, Reclamation would enter into a contract with PNM to convey a maximum flow of 4 cfs not to exceed 1,500 AF/year. The contract would be effective upon the date that the deed to the United States is recorded, which conveys title to the federal project facilities through December 31,
2040, unless renewed or terminated by mutual agreement by both parties. Storage in the SJGS Reservoir would be allocated based on annual demand projections and contracting would follow federal laws and policies.

2.4.4 – San Juan Lateral Pipeline Realignment
Reclamation proposes to realign approximately 32 miles of the San Juan Lateral water pipeline from the southern terminus of Reach 4B to the northern terminus of Reach 2 at the SJGS Reservoir. The water pipeline may vary from 36 to 54 inches in diameter and would be made of either cement mortar-lined steel, ductile iron, high-density polyethylene (HDPE), or poly vinyl chloride (PVC), depending on pressure. Where possible, the pipeline alignment was modified to avoid sensitive cultural and environmental resources and parallels existing roads, two-tracks, and other linear infrastructure. Sections of the pipeline would be bored or use horizontal directional drilling to go under wetlands, water features, roads, or ditches.

The pipeline would have necessary appurtenances for operation and maintenance, such as air valves, blowoffs, access maintenance holes, and isolation valves. These features would be installed directly on the buried pipe and protected by buried concrete vaults. Surface markers, bollard posts, and metal guard rails would be located directly above the pipe at the surface to protect any air vents or concrete vault lids that extend to the surface. More information on construction is provided in Section 2.4.8.

Reclamation would require a 150-foot-wide corridor for safe and efficient pipeline construction. The corridor would generally include an 80-foot-wide permanent ROW centered on the pipeline and 70 feet of temporary construction easement (35 feet on each side of the permanent ROW). On BLM lands, Reclamation would request a 50-foot-wide permanent ROW centered on the pipeline and 50 feet of temporary construction easement (25 feet on each side of the permanent ROW). The final permanent ROW and/or temporary construction easement has been and may be further restricted on one or both sides of the pipeline to avoid disturbance to sensitive cultural and environmental resources or not interfere with adjacent infrastructure. The construction ROW and temporary construction easement would be used to allow storage of topsoil and spoils, fill material, stockpiled pipe and other materials, vehicular access, and the staging and use of heavy construction equipment. Further details about the individual pipeline reaches are listed below.

2.4.4.1 – Reach 1
Reach 1 includes PNM’s existing 42-inch diameter raw water pipeline from the San Juan River to the SJGS Reservoir and the existing twin 36-inch diameter steel outlet pipes that bring water from the reservoir to PNM’s SJGS Reservoir Lake Station.

2.4.4.2 – Reach 2
The 42- to 54-inch diameter Reach 2 water pipeline would begin at the SJGS Lake Station and head southward for approximately 5.4 miles crossing the San Juan River and eventually terminating at the proposed Morgan Lake Surge Tank site along Navajo Route N36. The proposed pipeline would use horizontal directional drilling underneath the San Juan River, Yellow Man Irrigation Siphon, and Shumway Arroyo. Pipeline jack and boring would occur underneath US Highway 64, the Jewett Valley Ditch just north of US Highway 64, under County Roads 6800 and 6820, and under PNM’s existing raw water pipeline, however, trenching through roadways may be completed if traffic impacts can be alleviated sufficiently at final design and approved by the road owner. Reclamation would trench through the seepage-created wetland area below the SJGS Reservoir and Dam using a restricted construction corridor 80 feet in width.
2.4.4.3 – Reach 3
The 42-inch diameter Reach 3 water pipeline would begin at the proposed Morgan Lake Surge Tank site and travel westward for approximately 8.6 miles to the proposed location of the SJLWTP. Pipe diameter may be reduced to 36 inches if deemed suitable during the final design. The pipeline would parallel Navajo Route N36 before crossing the road and traveling southwest toward Chaco Wash and the Hogback. The pipeline would go underneath Chaco Wash and the Hogback via horizontal directional drilling (approximately 1,500 feet) and then continue westward to the water treatment plant. An approximately 1,750-foot-long and 200-foot-wide area (8.0 acres) west of the Hogback was identified for staging and pulling pipe through the horizontal directional drill area. Pipeline jack and boring would occur underneath Navajo Route N36 and a local Navajo road crossing, however, trenching through these roadways may be completed if traffic impacts can be minimized sufficiently at final design and approved by the road owner.

2.4.4.4 – Reach 4A
The 42-inch diameter Reach 4A water pipeline would begin at the SJLWTP and travel approximately 7.0 miles south to the proposed location of Pumping Plant 2. An approximately 11.2-acre staging area is proposed just west of Pumping Plant 2.

2.4.4.5 – Reach 4B
The 42-inch diameter Reach 4B water pipeline would begin at the proposed Pumping Plant 2 location and travel southwestward for approximately 5.5 miles before reaching and paralleling US Highway 491. Reach 4B then travels south and parallel to the highway for another 5.4 miles before terminating at Reach 4C. Reach 4C is currently under construction and nearing completion. A single section of horizontal directional drilling (approximately 750 to 800 feet long) is planned under an unnamed waterway and volcanic dike. One short section of pipeline jack and the bore is proposed at the southern end of Reach 4B to reduce impacts to cultural resources. An approximately 7.6-acre staging area is proposed where Reach 4B begins to parallel U.S. Highway 491. Additionally, a large salt wash/drainage area near the southern terminus of Reach 4B may contain groundwater under certain hydrologic conditions and may require dewatering and discharge from the pipeline trench during construction. Initial testing of this location, however, did not encounter groundwater. If necessary, appropriate BMPs would be installed to limit erosion and sedimentation downstream of the discharge site.

2.4.5 – Pumping Plants and Water Storage
Multiple pumping plants and water storage facilities would be required to collect, stage, and optimally pump the required amount of water through the NGWSP pipeline system. These features are described below.

2.4.5.1 – Pumping Plant 1 (Southern Option)
Pumping Plant 1 is proposed to be constructed abutting the bluffs south of the San Juan River and outside the river’s mapped flood zone. An approximately 6.8-acre area of fallow fields was identified as an initial location for the pumping plant. The initial construction footprint and final design of Pumping Plant 1 are not yet finalized; however, the pumping plant would be similar in size and features to other NGWSP pumping plants. The final fenced and graded footprint of the pumping plant would not exceed 2.0 acres and no more than 300 feet of new access road (24-foot-wide graveled running surface) would be constructed.

Pumping Plant 1 would house a 12,000 square foot pumphouse building that contains four 15.7 cfs pumps, five air chambers, compressor system, control room, electrical room, backup diesel engine generator for safe shutdown operation if primary power is lost, and a heating, ventilation, and air conditioning (HVAC) system. An underground vault would house a strainer with bypass and a magnetic flowmeter.
2.4.5.2 – Pumping Plant 2 (Tsé Da’azkání)

Pumping Plant 2 is proposed to be constructed at the junction of Reaches 4A and 4B and would be capable of pumping 33.28 million gallons/day (mgd) (51.5 cfs) through the NGWSP water pipeline system. An approximately 520-foot-long by 390-foot-wide area (4.6 acres) would be disturbed during initial construction, and the pumping plant's final fenced and graveled footprint would be approximately 273 feet long by 262 feet wide (1.6 acres). An approximately 238-foot-long new access road would be constructed with a 24-foot-wide graveled running surface (0.1 acre). Approximately 3.3 miles of existing road (ISR 8720) would be used from U.S. Highway 491 to the start of the proposed access.

Pumping Plant 2 would house a 6,445 square foot pumphouse building that contains four 12.87 cfs pumps, four air chambers, compressor system, control room, backup diesel engine generator for safe shutdown operation if primary power is lost, and a HVAC system. The site would also include a chlorine residual sampling vault and two 1-million-gallon water storage tanks (28 feet tall and 82 feet in diameter). A single water storage tank would be used until NGWSP water requirements necessitate installation and use of the second tank.

2.4.5.3 – Morgan Lake Surge Tank

The Morgan Lake Surge Tank is proposed to be constructed at the junction of Reaches 2 and 3 near Navajo Route N36 and Morgan Lake. This location is the high point between the SJGS Reservoir and the proposed SJLWTP. The initial disturbance for the surge tank facility would be an approximately 120-foot-long by 100-foot-wide area (0.3 acre). The surge tank facility's final fenced and graveled footprint would be approximately 80 feet long by 60 feet wide (0.1 acre). An approximately 250,000-gallon surge tank with associated buried isolation valves, air valves, and blowoff in buried concrete vault would be housed on-site. Under the Proposed Action, an approximately 400-foot-long new access road would be constructed with a 24-foot-wide graveled running surface to connect the surge tank site to Navajo Route N36 (0.2 acre).

2.4.6 – San Juan Lateral Water Treatment Plant (SJLTWP)

The proposed SJLWTP would be relocated approximately 10.5 miles southwest of the location in the 2009 NGWSP PR/FEIS and away from the San Juan River. It would be capable of treating 37.6 mgd (58.2 cfs). The plant would be constructed in two phases; Phase 1 would operate at approximately 22 mgd (34.0 cfs) capacity, and Phase 2 would operate at full capacity.

A 180-acre site just south of Navajo Route N36 was initially identified for the location of the SJLWTP, and construction of the plant is anticipated to disturb no more than 100 acres of the site. Phase 1 project work is anticipated to occur in an approximately 1,800-foot-long by 1,000-foot-wide area (41.3 acres). The footprint of Phase 2 at full buildout is anticipated to be slightly larger than at Phase 1 (1,975-foot-long by 1,150 area [52.1 acres]). Depending on the treatment process, facilities would include 5 to 6 buildings, 2 to 6 lined and unlined ponds, a septic system, and 3 to 6 tanks/vaults.

At full buildout using a conventional treatment method and granular activated carbon, like the process used at the NGWSP Cutter Lateral Water Treatment Plant, plant facilities would consist of an approximately 17-acre sludge drying bed, 6-acre backwash pond, 1.1-acre stormwater retention pond, 3.5-acre space for maintenance facilities, flocculation and sedimentation basins, and buildings for media filtration, granular activated carbon contact, chemical storage, clearwell and treated water pump station, and administrative area. An appraisal level design and initial view of the site and building layout is provided in Appendix C.

The total organic carbon treatment driven granular activated carbon process would be proceeded by conventional coagulation, flocculation, sedimentation, and filtration. Decant from solids drying beds may be
recycled upstream of the rapid mix through the treatment process or surface discharged and solids hauled off-site.

Up to 6 percent of water to the SJLWTP would be used for treatment and discharged off-site where it would flow overland or be absorbed by the soil depending on site conditions. A rock-lined or concrete spillway may be constructed to dissipate discharge flows and limit erosion from the discharge site.

2.4.7 – Power Supply

Newly constructed pumping plants and the SJLWTP would be connected to nearby transmission lines for project power. Construction of new transmission lines, where necessary, would be funded by Reclamation through agreement(s) with the WAPA, City of Farmington, or another regulatory agency. In coordination with Reclamation, WAPA has determined that contracting with the NTUA for transmission service to deliver power to the relevant project loads located on the Navajo Nation is the most reasonable, cost-effective, and economical method to provide electrical power to the project facilities. The NTUA would be responsible for securing ROW and performing environmental and cultural resources reviews if located outside of the surveyed areas of the Proposed Action. Pumping Plant 1 (Northern Alternative) and facilities associated with the SJGS are located north of the San Juan River and within the City of Farmington’s retail power jurisdiction. Power supplied to these features would be negotiated with the City of Farmington via wheeling agreement(s) and could need additional environmental and cultural analysis.

2.4.8 – Construction

Construction would follow the general workflow outlined below. The contractor would meet Occupational Safety and Health Administration requirements during construction, including subpart 29 CFR 1926.650-652 for trench safety.

The proposed estimated surface disturbance is summarized in Table 3, based on Reclamation’s current design. Short-term disturbance would be reclaimed after construction, with long-term disturbance remaining for the project’s life.

Table 3. Proposed Action Summarized Estimated Disturbance

<table>
<thead>
<tr>
<th>Component</th>
<th>Short-Term Disturbance (acres)</th>
<th>Long-Term Disturbance (acres)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pipelines</td>
<td>574.1</td>
<td>0</td>
</tr>
<tr>
<td>Directional Drilling Bore Pits</td>
<td>6.2</td>
<td>0</td>
</tr>
<tr>
<td>Water Treatment Plant and Pumping Plants</td>
<td>up to 111.7</td>
<td>55.8</td>
</tr>
<tr>
<td>Access Roads</td>
<td>0.0</td>
<td>0.4</td>
</tr>
<tr>
<td>Total</td>
<td>692.0</td>
<td>56.2</td>
</tr>
</tbody>
</table>

2.4.8.1 – Vegetation Clearing (Clearing and Grubbing)

Much of the project area occurs in sparsely vegetated desert scrub grasslands and barren lands, with smaller sections of agricultural and residential areas within the San Juan River valley. Vegetation clearing and grubbing in these areas would remove any trash and waste material detrimental to reclamation. The project generally avoids riparian tree and shrub vegetation due to planned pipeline jack and boring and horizontal directional drilling; however, small trees and larger shrubs are scattered in the San Juan River valley. Trees larger than 3 inches in diameter would be cut, de-limbed, and removed from the ROW or delivered to local residents for firewood use. Trees and shrubs smaller than 3 inches in diameter, slash, and brush would be chipped and spread in the project area or hauled to an appropriate disposal site. Chipped material would be distributed to not interfere with future reclamation efforts.
2.4.8.2 – Topsoil Management
Reclamation may complete soil testing in the project area to help determine the characteristics of disturbed soils and the applicability of adding soil amendments in the reclamation process. Soil testing may include an analysis of pH, electrical conductivity, texture, topsoil depth and overall soil depth, carbonates (reactivity), organic matter, and Sodium Absorption Ratio, among others. Organic and/or inorganic amendments may be added to help with project reclamation. A "soil amendment" is a material added to a soil to improve its physical properties, such as water retention, permeability, water infiltration, drainage, aeration, nutrition, and structure.

Following clearing and grubbing, a minimum of 6 inches of topsoil (if present) would be stockpiled and stored on the edge of the pipeline ROW and plant facilities. Topsoil would be stored separately from subsurface materials. Stockpiled topsoil would not be compacted, driven on, have equipment stored on, or be otherwise disturbed during construction. To prevent fugitive dust, a dust palliative that is biodegradable, water-based, and does not inhibit revegetation may be applied to stockpiled topsoil piles. Topsoil would be redistributed across the disturbed project areas before reseeding.

2.4.8.3 – Erosion Control and Stormwater Management
During construction, the project contractors would place erosion controls following each project’s Stormwater Pollution Prevention Plan as required by the USEPA’s National Pollutant Discharge Elimination System (NPDES) Construction General Permit. Reclamation and the project contractor would follow the general conditions of any USACE Nationwide Permit or NNEPA permit obtained for the project. Standard best management practices for erosion control and stormwater management would be implemented during construction. Potential erosion control or water management features that may be used include water bars, sediment traps, check dams, erosion control blankets, and wattles, among others.

2.4.8.4 – Construction
The Proposed Action would include the new construction of multiple pumping plants, SJLWTP, pipeline, and weir. In addition, multiple facilities (including the SJGS Reservoir Dam) would be upgraded and supplied with new equipment. Reclamation would complete pre-construction geotechnical testing of underlying soils and bedrock. Construction activities would be confined to established and approved ROWs and temporary construction easements.

Construction of the pipeline trench would reach a maximum depth of 20 feet in some areas (drainage crossings) but would typically average 6 to 7 feet in depth. The width of the trench would be approximately 20 feet wide but may vary depending on the depth of excavation, type of bedding, embedment requirements, and side slope safety requirements, including the use of trench boxes, benching, or other methods.

Horizontal directional drilling and jack and boring would be used to pipe underneath wetland and riparian areas, near roads and other infrastructure, and avoid otherwise sensitive resources.

Construction of the plant facilities would include grading, excavation, sub-foundation earthwork, fabrication of water storage tanks and other facilities, and storage of materials and equipment. New facilities would be lighted using dark sky lighting techniques to minimize skyglow, glare, and light trespass. Surface water runoff and drainage from the tank sites would discharge to existing ditches/swales adjacent to the sites. Periodic discharges of chlorinated or non-chlorinated water from the tanks may occur when disinfecting, flushing, filling, or emptying the tanks and associated piping and would follow methods in the facilities’ approved discharge, stormwater, and other permits.
2.4.8.5 – Equipment
Construction of the proposed pipeline and plant facilities would use heavy equipment, including bulldozers, scrapers, track hoes, bore equipment, and potentially trenchers. A ripper may be used to break up sandstone and other hard features. No blasting is anticipated.

For horizontal directional drilling and jack and boring, equipment and pumps would include a horizontal drilling rig, drilling mud, reclamation equipment, pumps, control cab, vacuum trailer, excavators, storage tanks, and pipe cradles.

2.4.8.6 – Access
Reclamation and their project contractors would use existing access roads to access project construction areas. New access roads would be constructed as 24-foot-wide graveled roads to access the project’s pumping plants, SJLWTP, and other facilities (Appendix A; Maps A-3 to A-13). The pipeline corridor would be used for vehicular travel during construction.

2.4.8.7 – Staging and Borrow Areas
Staging and borrow areas would generally be within the proposed pipeline and plant facility ROWs or use existing disturbed areas. Two large staging areas are proposed along the Reach 4A and 4B alignment. Additional staging would be used at pipeline horizontal directional drilling and jack and bore locations to place pipe and equipment.

2.4.8.8 – Fencing
Existing fences removed during construction, would be braced and secured before being cut. Temporary fencing, cattle guards, and gates may be installed during construction at the discretion of Reclamation and the landowner to facilitate access. These features would be kept closed to manage livestock and unauthorized access in the project area. Gates may be permanently installed in select areas to allow access for future operations and maintenance activities and would be kept locked unless otherwise agreed upon. Fences would be rebuilt to match or improve upon the existing adjacent fence.

Regarding the 2009 NGWSP PR/FEIS commitment to fencing the pipeline ROW; Reclamation, the BIA, and Navajo Nation determined in the 2019 Revegetation Plan for the NGWSP (Reclamation 2019) that if acceptable ground cover conditions are not achieved within 3 years, fencing may be necessary to achieve ground cover criteria identified in the site-specific revegetation plan.

2.4.9 – Operation, Maintenance, and Replacement
Reclamation would conduct periodic inspections and maintenance on NGWSP infrastructure and facilities to ensure properly functioning infrastructure and equipment as well as safe working and operating conditions for the NGWSP. Portable instrumentation would likely perform monitoring of water quality in the SJGS Reservoir. SJGS Reservoir outlet water quality would be monitored through a monitoring point on the outlet pipe.

2.4.10 – Reclamation
Areas disturbed during construction of the Proposed Action, except for project footprints needed for the continuous operation and maintenance of the project (e.g., fenced tank sites and the water treatment plant), would be reclaimed and reseeded. Landowners would be notified of reclamation activities, with the BLM FFO and Navajo Land Department notified at least 48 hours before work begins. Removal of riparian and wetland vegetation would not occur between March 15 and August 15 to avoid the potential effects on migratory nesting birds. Impacted riparian or wetland habitat would include acre-per-acre replacement or enhancement of 3 acres for each acre lost.

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2.4.10.1 – Site Recontouring and Soil Preparation

Drainage in the project area generally flows towards the San Juan River. Areas that require recontouring would be recontoured to match pre-disturbance conditions and blend in with the surrounding landform. Subsoils would be redistributed evenly across the project area and would be ripped, tilled, disked on contour, or otherwise prepared for reseeding. Stockpiled topsoil free of trash and weeds would then be respread evenly across the project area. Final seedbed preparation would include raking or harrowing the top few inches of topsoil to promote a firm seedbed.

2.4.10.2 – Reseeding

The general NGWSP-specific goal for revegetation is to meet 70 percent of the pre-construction vegetative cover or better within 3 years of reseeding. If pre-disturbance vegetative cover is below 25 percent, the goal of revegetation is to meet pre-disturbance levels within that time frame.

Reseeding would be performed as soon as possible following construction and testing and immediately after topsoil has been replaced and the site prepared. The general time frame for reseeding would be July 15 to November 15 and would coincide with conditions when ambient temperatures are above 38 °F, when the ground is not snow covered or frozen, and when there is a greater potential for moisture. Reseeding in the winter and spring may be completed depending on suitable conditions.

A disk-type seed drill would primarily be used for reseeding with drill rows spaced 1 foot or less apart. Seed drilling would be performed on the contour, perpendicular to slopes to minimize runoff, rilling, and erosion. In areas where the slope is too steep to drill seed; hand broadcasting, mechanical broadcasting, hydroseeding, or other seeding methods may be utilized. Broadcast reseeding rates would be double that of drill seeding rates. Smaller seeds would be planted at a depth of 0.25 to 0.5 inch, whereas larger seeds would be planted at 1 to 2 inches. Improper planting depth can be especially problematic for successful reseeding and planting too shallow is generally better than planting too deep. Broadcast seeds would be covered in the appropriate depth of topsoil immediately after broadcasting using a hand rake or float.

Much of the proposed project area can be characterized as a desert scrub grassland, with sparsely vegetated barren lands near the Hogback, agricultural and developed areas in the San Juan River valley, some scattered grasslands, and riparian areas along water features. One general seed mix (Table 4) is proposed to be used for the majority of the proposed project. Areas of potential and suitable habitat for Mesa Verde cactus would have a separate seed mix (Table 5) as would impacted wetlands (Table 6). Revegetating private lands would include additional landowner-specific requests. Seed mixes were developed using regional knowledge, the BLM FFO’s Bare Soil Reclamation Procedures (BLM 2013), and the Navajo Nation/BIA Navajo Region’s 2018 NGWSP Recommended Seed Species for Bare Soils/Invasive Weed Infested Sites. Seed mixes and seeding rates may deviate from the tables below based on the availability of seed and other materials at the time of reseeding, as well as further site-specific analysis in the project area.
Table 4. General Seed Mix

<table>
<thead>
<tr>
<th>Common Name</th>
<th>Scientific Name</th>
<th>Variety</th>
<th>Season</th>
<th>Form</th>
<th>Pure Live Seed (PLS) lbs/acre*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sterile triticale</td>
<td>*Triticum aestivum X Secale cereale ‘Quickguard’</td>
<td>VNS</td>
<td>-</td>
<td>-</td>
<td>2.0</td>
</tr>
<tr>
<td>Fourwing saltbush</td>
<td><em>Atriplex canescens</em></td>
<td>VNS</td>
<td>-</td>
<td>Shrub</td>
<td>3.0</td>
</tr>
<tr>
<td>Shadscale</td>
<td><em>Atriplex confertifolia</em></td>
<td>VNS</td>
<td>Cool</td>
<td>Shrub</td>
<td>2.0</td>
</tr>
<tr>
<td>Indian ricegrass</td>
<td><em>Achnatherum hymenoides</em></td>
<td>Paloma or Rimrock</td>
<td>Cool</td>
<td>Bunch</td>
<td>3.0</td>
</tr>
<tr>
<td>Western wheatgrass</td>
<td><em>Pascopyrum smithii</em></td>
<td>Arriba</td>
<td>Cool</td>
<td>Sod</td>
<td>2.0</td>
</tr>
<tr>
<td>Galleta</td>
<td><em>Pleuraphis jamesii</em></td>
<td>Viva or florets</td>
<td>Warm</td>
<td>Bunch/Sod</td>
<td>2.0</td>
</tr>
<tr>
<td>Purple threeawn</td>
<td><em>Aristida purpurea</em></td>
<td>VNS</td>
<td>Warm</td>
<td>Bunch</td>
<td>2.0</td>
</tr>
<tr>
<td>Sand dropseed</td>
<td><em>Sporobolus cryptandrus</em></td>
<td>VNS</td>
<td>Warm</td>
<td>Bunch</td>
<td>0.25</td>
</tr>
<tr>
<td>Alkali sacaton</td>
<td><em>Sporobolus airoides</em></td>
<td>VNS</td>
<td>Warm</td>
<td>Bunch</td>
<td>0.25</td>
</tr>
<tr>
<td>Scarlet globemallow</td>
<td><em>Sphaeralcea coccinea</em></td>
<td>VNS</td>
<td>Warm</td>
<td>Forb</td>
<td>0.25</td>
</tr>
<tr>
<td>Narrowleaf penstemon</td>
<td><em>Penstemon angustifolius</em></td>
<td>VNS</td>
<td>Cool</td>
<td>Forb</td>
<td>0.25</td>
</tr>
<tr>
<td>Rocky Mountain beeplant</td>
<td><em>Cleome serrulata</em></td>
<td>VNS</td>
<td>Warm</td>
<td>Forb</td>
<td>0.25</td>
</tr>
<tr>
<td>Hairy false goldenaster</td>
<td><em>Heterotheca villosa</em></td>
<td>VNS</td>
<td>Warm</td>
<td>Forb</td>
<td>0.25</td>
</tr>
</tbody>
</table>

Notes: VNS=variety not specified.
*Based on 60 PLS per square foot, drill seeded. Double this rate (120 PLS per square foot) if broadcast or hydroseeded.

Table 5. Seed Mix in Mesa Verde Cactus Habitat

<table>
<thead>
<tr>
<th>Common Name</th>
<th>Scientific Name</th>
<th>Variety</th>
<th>Season</th>
<th>Form</th>
<th>Pure Live Seed (PLS) lbs/acre*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mat saltbush</td>
<td><em>Atriplex corrugata</em></td>
<td>VNS</td>
<td>-</td>
<td>Shrub</td>
<td>2.0</td>
</tr>
<tr>
<td>Shadscale</td>
<td><em>Atriplex confertifolia</em></td>
<td>VNS</td>
<td>Cool</td>
<td>Shrub</td>
<td>2.0</td>
</tr>
<tr>
<td>Indian ricegrass</td>
<td><em>Achnatherum hymenoides</em></td>
<td>Paloma or Rimrock</td>
<td>Cool</td>
<td>Bunch</td>
<td>2.0</td>
</tr>
<tr>
<td>Galleta</td>
<td><em>Pleuraphis jamesii</em></td>
<td>Viva or florets</td>
<td>Warm</td>
<td>Bunch/Sod</td>
<td>2.0</td>
</tr>
<tr>
<td>Blue grama</td>
<td><em>Bouteloua gracilis</em></td>
<td>Alma or Hachita</td>
<td>Warm</td>
<td>Sod</td>
<td>2.0</td>
</tr>
<tr>
<td>Purple threeawn</td>
<td><em>Aristida purpurea</em></td>
<td>VNS</td>
<td>Warm</td>
<td>Bunch</td>
<td>2.0</td>
</tr>
<tr>
<td>Sand dropseed</td>
<td><em>Sporobolus cryptandrus</em></td>
<td>VNS</td>
<td>Warm</td>
<td>Bunch</td>
<td>0.25</td>
</tr>
<tr>
<td>Scarlet globemallow</td>
<td><em>Sphaeralcea coccinea</em></td>
<td>VNS</td>
<td>Warm</td>
<td>Forb</td>
<td>0.25</td>
</tr>
<tr>
<td>Narrowleaf penstemon</td>
<td><em>Penstemon angustifolius</em></td>
<td>VNS</td>
<td>Cool</td>
<td>Forb</td>
<td>0.25</td>
</tr>
</tbody>
</table>

Notes: VNS=variety not specified.
*Based on 60 PLS per square foot, drill seeded. Double this rate (120 PLS per square foot) if broadcast or hydroseeded.
### Table 6. Seed Mix in Wetland Areas

<table>
<thead>
<tr>
<th>Common Name</th>
<th>Scientific Name</th>
<th>Wetland Indicator Status</th>
<th>Variety</th>
<th>Season</th>
<th>Form</th>
<th>Pure Live Seed (PLS) lbs/acre*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Inland saltgrass</td>
<td>Distichlis spicata</td>
<td>FAC</td>
<td>LKS17f</td>
<td>Warm</td>
<td>Sod-forming</td>
<td>5.00</td>
</tr>
<tr>
<td>Canada wildrye</td>
<td>Elymus canadensis</td>
<td>FAC</td>
<td>Mandan</td>
<td>Cool</td>
<td>Bunch</td>
<td>4.55</td>
</tr>
<tr>
<td>Switchgrass</td>
<td>Panicum virgatum</td>
<td>FACW</td>
<td>Kanlow</td>
<td>Warm</td>
<td>Sod-forming</td>
<td>7.15</td>
</tr>
<tr>
<td>Western wheatgrass</td>
<td>Pascopyrum smithii</td>
<td>FAC</td>
<td>Arriba</td>
<td>Cool</td>
<td>Bunch</td>
<td>0.60</td>
</tr>
<tr>
<td>Alkali sacaton</td>
<td>Sporobolus airoides</td>
<td>FAC</td>
<td>VNS</td>
<td>Warm</td>
<td>Bunch</td>
<td>0.65</td>
</tr>
</tbody>
</table>

Notes: FAC=facultative, FACW=facultative wetland, VNS=variety not specified.

*Based on 120 PLS per square foot, broadcast or hydroseeded.

#### 2.4.10.3 – Mulching

Approximately 1 to 2 tons/acre of certified weed-free straw or native grass hay mulch would be mechanically crimped into the soil within 24 hours of seeding. Mulching generally protects against erosion and can increase the chance of successful revegetation. A mulch component would be incorporated into the slurry mix if hydroseeding is used. Mulching materials and rates may deviate from the above based on the availability of materials at the time of reclamation, and further site-specific analysis in the project area.

#### 2.4.10.4 – Noxious and Invasive Weed Control

Halogeton (*Halogeton glomeratus*) and Russian thistle (*Salsola tragus*) would likely continue to be widespread in the project area following project construction, given their pre-construction abundance. Reclamation would implement noxious weed control efforts following methodology in the Revegetation Plan for the NGWSP if successful revegetation proves problematic.

#### 2.4.10.5 – Monitoring, Reporting, and Adaptive Management

Site monitoring and reporting would follow methods described in the Reclamation’s Revegetation Plan for the NGWSP and/or the BLM FFO’s 2013 Bare Soil Reclamation Procedures. Progress in the attainment of reclamation standards would be assessed, and adaptive management actions for the project would be adopted as necessary.

#### 2.4.11 – Construction Timeframe

Project construction for the Proposed Action is anticipated to occur through 2029. Project features are in various stages of design. Reaches 4A and 4B and Pumping Plant 2 are near final design, whereas the remaining project features are closer to initial design and may be further refined or realigned. If the final design of project features changes from that described in this EA, Reclamation would initiate supplemental surveys, consultation(s), and NEPA for modified project features as appropriate. Table 7 gives a schedule breakdown for individual project features.

### Table 7. Projected Construction Timeframe

<table>
<thead>
<tr>
<th>Project Feature</th>
<th>Start</th>
<th>Finish</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reach 1 Pipeline</td>
<td>January 2025</td>
<td>November 2026</td>
</tr>
<tr>
<td>Reaches 2 and 3 Pipeline</td>
<td>June 2024</td>
<td>June 2026</td>
</tr>
<tr>
<td>Reaches 4A and 4B Pipeline</td>
<td>February 2023</td>
<td>January 2025</td>
</tr>
<tr>
<td>Pumping Plant 1</td>
<td>June 2025</td>
<td>October 2027</td>
</tr>
<tr>
<td>Pumping Plant 2</td>
<td>October 2022</td>
<td>August 2025</td>
</tr>
</tbody>
</table>
### Project Feature Schedule

<table>
<thead>
<tr>
<th>Project Feature</th>
<th>Start</th>
<th>Finish</th>
</tr>
</thead>
<tbody>
<tr>
<td>San Juan River Station</td>
<td>January 2025</td>
<td>November 2026</td>
</tr>
<tr>
<td>San Juan Lateral Water Treatment Plant</td>
<td>July 2025</td>
<td>June 2028 (end of testing June 2029)</td>
</tr>
<tr>
<td>San Juan River Intake</td>
<td>January 2025</td>
<td>November 2026</td>
</tr>
</tbody>
</table>

#### 2.5 – Nanofiltration (NF) with Ultrafiltration (UF) Pretreatment (UF-NF) Alternative

This alternative is the same as the Proposed Action except that water at the SJLWTP would be treated using a nanofiltration (NF) with ultrafiltration (UF) pretreatment (UF-NF) method. The combined UF-NF process removes both particulate and dissolved constituents. Generally, the UF process removes particulate species, and the NF process removes dissolved species. Using UF upstream of NF provides better protection of the NF membranes than media filtration processes by improving the removal of particulate and colloidal species.

A preliminary site configuration and process flow diagram for the UF-NF treatment facility is provided in Appendix C. The UF-NF process is expected to require a main process building, administrative building, chemical storage facility and tankage, a septic system, membrane residuals, and stormwater pond. A clearwell and treated water pump station would be located outside the main buildings. Chemicals required for the process may include hydrochloric acid for pH adjustment, sodium hypochlorite for disinfection and membrane cleaning, and other membrane cleaning chemicals such as sodium hydroxide, citric acid, and hydrochloric acid. Facilities would be similar to those described in the Proposed Action; however, the overall footprint of the site would likely be smaller (approximately 40 acres). Up to 10 percent of water for treatment would be discharged off-site as a concentrated brine, which would need regulatory approval. Discharged water would flow in a similar path as described in the Proposed Action.

#### 2.6 – Pumping Plant 1 Northern Alternative

This alternative is similar to the Proposed Action except that under this Alternative Reclamation would construct Pumping Plant 1 just south of PNM’s SJGS Reservoir Lake Station. An approximately 550-foot-long by 350-foot-wide area (4.4 acres) would be disturbed during initial construction, and the final fenced and graveled footprint of the pumping plant would be approximately 400 feet long by 200 feet wide (1.8 acres). An approximately 0.4-mile-long existing road leads to Pumping Plant 1 and would be upgraded to a 24-foot-wide graveled running surface. The pumping plant’s building and facilities would be the same as described in the Proposed Action.

The proposed pipeline’s overall alignment would not change, however, the lengths and types of pipe for Reaches 1 and 2 would be altered.

A weir site rather than a surge tank facility would be constructed at the junction of Reaches 2 and 3 near Morgan Lake. The weir structure would be approximately 21-feet-long by 14-feet-wide by 10-feet-tall. An approximately 91-foot-long by 84-foot-wide area (0.2 acre) would be disturbed during initial construction, and the final fenced and graveled footprint of the weir structure would be about 65 feet long by 58 feet wide (0.1 acre). An approximately 400-foot-long new access road would be constructed with a 24-foot-wide graveled running surface to connect the weir site to Navajo Route N36.
2.7 – Permits and Authorizations

Authority to conduct water resources planning and land and facilities acquisition activities associated with this EA is in conformance with the Act of Congress of June 17, 1902 (32 Stat. 388), and acts amendatory thereof and supplementary thereto, all of which acts are commonly known and referred to as Reclamation Laws, and particularly Section 10602 of PL 111-11, as amended. Authority to enter into contracts to convey non-project water in NGWSP facilities is in conformance with Section 10602(h) of PL 111-11. PL 92-199 of 1971 authorized Reclamation to conduct feasibility studies for the potential Gallup water resource development project in McKinley, Valencia, and San Juan Counties in New Mexico.

If the Proposed Action were selected, the following permits would be required prior to project implementation:

- USACE Clean Water Act (CWA) Section 404 permit(s)
- NNEPA discharge permit for the SJLWTP
- CWA NPDES construction general permit(s)
- NMED and NNEPA CWA Section 401 Water Quality Certification(s)
- NMED Storage and Diversion permits
- Federal acquisition laws and policies

Compliance with the following laws and Executive Orders is required before and during project implementation:

2.7.1 – Natural Resource Protection Laws

- Clean Air Act, as amended (PL 88-206; 42 USC § 7401 et seq.)
- CWA, as amended (PL 107-303; 33 USC § 1251, et seq.)
- Endangered Species Act, as amended (16 USC 1531-1544, 87 Stat. 884)
- Migratory Bird Treaty Act, as amended (16 USC §§ 703-712; 50 CFR Part 21)
- Bald and Golden Eagle Protection Act of 1940 (16 USC 668- 668c)
- Safe Drinking Water Act, as amended (42 USC § 300f et seq.)
- National Primary Drinking Water Regulations (40 CFR Part 141 and 142)
- National Secondary Drinking Water Regulations (40 CFR Part 143)
- Navajo Nation Safe Drinking Water Act (22 NNC §§ 2501-2586)
- New Mexico Drinking Water Regulations (Title 20, Chapter 7, Part 10 of New Mexico Administrative Code)

2.7.2 – Cultural Resource Laws

- Antiquities Act of 1906, as amended (PL 52-209; 16 USC 431-433)
- Archaeological Resources Protection Act of 1979 (PL 96-95; 93 Stat. 721; 16 USC § 470aa et seq.), as amended (PL. 100-555; PL 100-588)
• Archaeology and Historic Preservation: Secretary of the Interior’s Standards and Guidelines (48 Federal Register 44716)

2.7.3 – Paleontological Resource Laws

2.7.4 – Other Laws
• Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970, as amended (Uniform Act; 42 USC 4601-4655)
• Regulations of the Attorney General Governing the Review and Approval of Title for Federal Land Acquisitions (2016)
• Uniform Appraisal Standards for Federal Land Acquisitions (Interagency Land Acquisition Conference 2016)

CHAPTER 3 – AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES

3.1 – Introduction

This chapter discusses resources that may be affected by the Action Alternatives. For each resource, the potentially affected area and/or interests are identified, existing conditions described, and potential environmental consequences analyzed under the Action Alternatives. This section is concluded with a summary of environmental consequences and a list of environmental commitments in Chapter 4.

The 2009 NGWSP PR/FEIS analyzed the affected environment and environmental consequences from the No Action Alternative to the resources described in this chapter and is incorporated by reference throughout.

3.2 – Affected Environment and Environmental Consequences

3.2.1 – Water Uses and Resources

Affected Environment

Chapter 5 of the 2009 NGWSP PR/FEIS described the affected environment of the NGWSP with water uses and resources outlined on pages V5-V18 detailing Navajo Reservoir capacity; San Juan River flow volumes and timing; Native American water rights; and Colorado River, La Plata River, and Animas-La Plata compacts.
Bathymetric survey data collected by Reclamation in 2019 estimates the SJGS Reservoir's storage capacity at water surface elevation 5,277 feet AMSL (maximum operating pool) to be 2,783.6 AF with a surface area of 132.8 acres.

**Environmental Consequences of the No Action Alternative**

Chapter 5 of the 2009 NGWSP PR/FEIS described the environmental consequences of the NGWSP with water uses and resources outlined on pages V5-V18.

**Environmental Consequences of the Proposed Action**

Environmental consequences to water uses and resources from the Proposed Action would not create any new significant site-specific effects nor contribute to cumulative significant impacts not already described in the 2009 NGWSP PR/FEIS.

The Proposed Action would not change Navajo Reservoir levels or San Juan River flows as described in the 2009 NGWSP PR/FEIS. Reclamation would continue to operate Navajo Dam and Reservoir under the flow recommendations derived by the SJRBRIP (Reclamation 2006) and there would be no changes to the underlying NGWSP diversion (San Juan Lateral 33,119 AF/year) as analyzed in the 2009 NGWSP PR/FEIS.

Under the Proposed Action, Reclamation would acquire and upgrade PNM’s SJGS water intake, conveyance, and storage system and would be able to convey both NGWSP and non-NGWSP (non-project) water from the San Juan River to the SJGS Reservoir and other points of delivery along the system. Proposed upgrades to the San Juan River Station would increase pumping capacity to 71 cfs. Reclamation would also enter into a contract with PNM to convey a maximum flow of 4 cfs (not to exceed 1,500 AF/year) to the SJGS Reservoir for which PNM would use its existing water depletion rights. The conveyance of 1,500 AF/year of PNM-related non-project water through and storage in NGWSP facilities would have no significant effects on water use since the Proposed Action would have an adequate design capacity to meet these demands. PNM would continue to use its existing water depletion rights with or without Reclamation acquiring the PNM water conveyance facilities.

Storage in the SJGS Reservoir would provide operational flexibility in the San Juan River pumping regime. Pumping may be temporarily shut down to limit excess sediment uptake into NGWSP project features, reduce sedimentation into the SJGS Reservoir during high turbidity flow events, and avoid water use during periods of poor water quality. Use of the SJGS Reservoir to supply water to the SJLWTP would provide storage and settling capacity to the NGWSP and would reduce the operations and maintenance burden at the SJLWTP.

Any additional storage and conveyance of non-project water in NGWSP facilities would be negotiated in a separate water carriage contract. Storage in the SJGS Reservoir would be allocated based on annual demand projections. Contracting would be in compliance with federal laws and policies. Future water conveyance contracts would be contingent upon the completion of any required environmental permitting and compliance associated with the project(s).

**Environmental Consequences of the UF-NF Pretreatment Alternative**

Environmental consequences on water uses and resources would be the same as those described under the Proposed Action.
Environmental Consequences of the Pumping Plant 1 Northern Alternative

Environmental consequences on water uses and resources would be the same as those described under the Proposed Action.

3.2.2 – Indian Trust Assets

Affected Environment

Chapter 5 of the 2009 NGWSP PR/FEIS described the affected environment of the NGWSP with Indian trust assets outlined on pages V18-V32. Indian trust assets, or resources, are defined as legal interests in assets held in trust by the US Government for Native American Indian tribes or individual tribal members. Examples of Indian trust assets are lands, minerals, water rights, other natural resources, money, or claims. Secretarial Order 3175 and Reclamation policy requires the assessment of effects on Indian trust assets. Based on scoping for the 2009 NGWSP PR/FEIS, Indian trust assets potentially affected by the proposed federal action are water rights and land use (easements, including trust lands and tribal allotments, necessary for project construction and operation).

The affected environment for the NGWSP includes the northern and eastern portion of the Navajo Nation, including 43 Chapters within the service area; the Navajo Indian Irrigation Project service area; lands served along the Hogback, Fruitland-Cambridge, and Cudei irrigation projects; and irrigation along the tributaries to the San Juan River. The 2009 NGWSP PR/FEIS further details Navajo Nation water rights and major existing and future tribal uses of San Juan basin water, the Navajo Indian Irrigation Project, San Juan River irrigation projects, and the Navajo Nation Municipal Pipeline authorized under the Animas-La Plata Project. The 2009 NGWSP PR/FEIS also discusses the Jicarilla Apache Nation and Colorado Ute Tribes and their respective water rights settlements.

Environmental Consequences of the No Action Alternative

Chapter 5 of the 2009 NGWSP PR/FEIS described the environmental consequences of the NGWSP with Indian trust assets outlined on pages V18-V32.

Environmental Consequences of the Proposed Action

Environmental consequences on Indian trust assets from the Proposed Action would not create any new significant site-specific effects nor contribute to cumulative significant impacts not already described in the 2009 NGWSP PR/FEIS.

The Proposed Action would not directly affect the Navajo Agricultural Products Industry, Navajo Indian Irrigation Project, Navajo Nation Municipal Pipeline, or San Juan River Irrigation projects. Effects on Jicarilla Apache, Southern Ute Tribe, and Ute Mountain Ute Tribe Indian trust assets would be the same as those described in the 2009 NGWSP PR/FEIS.

Under the Proposed Action, the SJLWTP would be located on tribal trust land, rather than private land. Approximately 52.1 acres of tribal trust land would be converted from rangeland to an industrial use for the water treatment plant. Pumping Plants 1 and 2, the Morgan Lake Surge Tank site, and their new access roads would convert approximately 4.1 acres of rangeland to industrial use. Compared to the No Action Alternative, the Proposed Action would convert about 33.2 more acres of tribal trust rangeland to industrial use; however, based on the scale of these effects, they would not be significant.
Environmental Consequences of the UF-NF Pretreatment Alternative

Effects on Indian trust assets would be similar to those described under the Proposed Action, however, the SJLWTP would require a slightly smaller footprint encompassing approximately 40 acres under this alternative. The total tribal trust rangeland converted to industrial use would be approximately 44.1 acres compared to 56.2 acres under the Proposed Action. Effects on Indian trust assets from this alternative would not be significant.

Environmental Consequences of the Pumping Plant 1 Northern Alternative

Effects on Indian trust assets would be similar to those described under the Proposed Action. However, Pumping Plant 1 would be located on private land under this alternative. The total tribal trust rangeland converted to industrial use would be approximately 54.1 acres compared to 56.2 acres under the Proposed Action and 44.1 acres under the UF-NF Pretreatment Alternative. Effects on Indian trust assets from this alternative would not be significant.

3.2.3 – Water Quality

Affected Environment

Chapter 5 of the 2009 NGWSP PR/FEIS described the affected environment of the NGWSP with water quality outlined on pages V32-V42.

Perennial waters in the action area include the SJGS Reservoir and the San Juan River. Ephemeral and intermittent waters include the Shumway Arroyo, Chaco River, and several unnamed drainages. San Juan River flows peak in the spring and remain low from summer to fall, marked by short-duration peaks resulting from storm events. PNM’s San Juan River diversion and intake is located at river mile 167 near Waterflow, between Farmington and Shiprock, New Mexico.

San Juan River Water Quality

The State of New Mexico has listed reaches of the San Juan River where water quality does not meet intended uses. Turbidity, fecal coliform, and bottom sediments impact the designated uses of the river most often, including the stretch of the river from the confluence of the Animas River to the Hogback (NMED 2021). Several water quality standards are periodically exceeded in the San Juan River in the project area, and there are a few historical exceedances in the San Juan River for aluminum, mercury, selenium, cadmium, and lead. The number of exceedances increases between Farmington and Shiprock, New Mexico, including several for copper and zinc (Reclamation 2009).

Reclamation, along with the USGS and USEPA, has actively sampled the San Juan River since the 2009 NGWSP PR/FEIS and in response to the 2015 Gold King Mine spill. A suite of water quality analyses was completed for in-situ and grab samples collected by Reclamation and the USGS at the Hogback Diversion on the San Juan River from 2014 to 2016 to develop design data for the SJLWTP (Reclamation 2016). Reclamation has collected and analyzed water samples from the San Juan River at PNM’s SJGS diversion and intake since 2019 and has also gathered USGS water quality data at the Hogback Canal and Fruitland bridge locations on the San Juan River (Reclamation 2021).

Reclamation conducted a water quality study to evaluate the impacts of four storm events between 2017 and 2018 in the San Juan River. During the river responses caused by these storms, high levels of suspended sediment and total/dissolved metals were observed. Aluminum and iron were the only dissolved metals that
exceeded Safe Drinking Water Act standards. Total aluminum, iron, lead, and manganese exceeded maximum contaminant level (MCL) limits during all four storm events. Total beryllium exceeded the MCL for three storm events. Total barium exceeded the MCL during two storm events. Total antimony, arsenic, cadmium, chromium, thallium, and uranium exceeded limits during one storm event. However, the suspended sediment from all four storms had similar metals content (Reclamation 2020).

**SJGS Reservoir Water Quality**

The watershed of the SJGS Reservoir is relatively small and is not subject to large fluctuations in sediment loading and adverse water quality changes during runoff and storm events. Reclamation collected new data and evaluated existing data to determine the SJGS Reservoir's suitability as a drinking water storage supply for the NGWSP. PNM provided Reclamation with historical water quality information collected at the San Juan River diversion and intake as well as SJGS Reservoir. Reclamation has collected and analyzed water quality samples since 2019 from several locations and at various depths at the SJGS Reservoir (Reclamation 2021).

The water quality data provided by PNM indicated the presence of regulated total suspended metals above National Primary Drinking Water Standards. Reclamation confirmed the exceedance of regulated parameters in one of the five samples collected during Reclamation's initial sampling effort in 2019. A summary of Reclamation’s water quality sampling results at PNM’s San Juan River intake and the SJGS Reservoir with drinking water MCL and secondary MCL (SMCL) exceedances are provided in Table 8 (Reclamation 2021). Water samples analyzed from PNM’s San Juan River intake were observed to exceed the respective MCLs for arsenic, barium, beryllium, cadmium, chromium, lead, thallium, and uranium, however, no MCL exceedances were noted at the SJGS Reservoir. SMCL exceedances were documented at PNM’s San Juan River intake for aluminum, chloride, color, iron, manganese, total dissolved solids (TDS), and sulfate. SMCL exceedances at the SJGS Reservoir were noted for aluminum, iron, manganese, and pH.

Table 8. Percentage of Maximum Contaminant Level (MCL) and Secondary MCL (SMCL) Exceedances From Reclamation Water Sampling at PNM’s San Juan River Intake and Reservoir From 2019-2021

<table>
<thead>
<tr>
<th>Contaminant Level (MCL)</th>
<th>Constituent</th>
<th>Total (San Juan River)</th>
<th>Total (SJGS Reservoir)</th>
<th>Dissolved (San Juan River)</th>
<th>Dissolved (SJGS Reservoir)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maximum Contaminant Level (MCL)</td>
<td>Arsenic</td>
<td>6%</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>MCL</td>
<td>Barium</td>
<td>6%</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>MCL</td>
<td>Beryllium</td>
<td>18%</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>MCL</td>
<td>Cadmium</td>
<td>1%</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>MCL</td>
<td>Chromium</td>
<td>4%</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>MCL</td>
<td>Lead</td>
<td>41%</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>MCL</td>
<td>Thallium</td>
<td>1%</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>MCL</td>
<td>Uranium</td>
<td>2%</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Secondary MCL (SMCL)</td>
<td>Aluminum</td>
<td>99%</td>
<td>67%</td>
<td>19%</td>
<td>6%</td>
</tr>
<tr>
<td>SMCL</td>
<td>Chloride</td>
<td>1%</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>SMCL</td>
<td>Color</td>
<td>82%</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>SMCL</td>
<td>Iron</td>
<td>95%</td>
<td>21%</td>
<td>4%</td>
<td>-</td>
</tr>
<tr>
<td>SMCL</td>
<td>Manganese</td>
<td>95%</td>
<td>21%</td>
<td>2%</td>
<td>2%</td>
</tr>
</tbody>
</table>
Surface Water and Groundwater Dynamics Near the SJGS

The SJGS Reservoir lies in a small unnamed drainage that merges with the Westwater Arroyo approximately 0.6 miles downstream of the reservoir and then merges with the Shumway Arroyo approximately 1.1 miles downstream of the SJGS Reservoir. Both the Westwater and Shumway arroyos run through the SJGS and San Juan Mine area. PNM collects seepage water from the SJGS Reservoir prior to it reaching the Westwater Arroyo and pumps it back into the reservoir. PNM also utilizes several evaporation ponds throughout the SJGS. As a result of a Sierra Club lawsuit, PNM installed and operates a groundwater recovery system in the Shumway Arroyo downstream of the SJGS and reservoir that captures groundwater and pumps it to evaporation ponds north of the SJGS Reservoir.

Reclamation solicited the USGS to collect and analyze water and sediment samples from four groundwater wells and one pond at and around the SJGS in 2021 to characterize water quality and evaluate if water seeping from the SJGS Reservoir is affecting downgradient groundwater quality (Blake et al. 2021a, 2021b). Water from the reservoir seepage areas was similar to San Juan River water and different than samples taken in the Westwater and Shumway Arroyos which generally had higher concentrations of sulfate, chloride, uranium, and other constituents.

Total Organic Carbon

The most common drinking water disinfection method is through the addition of chlorine. Chlorine can react with organic materials in water to form disinfection byproducts, which are regulated in drinking water. All public water systems that disinfect must routinely test their treated water for total organic carbon to determine if regulated disinfection byproducts are present and at what levels. Total organic carbon has no health implications; however, high concentrations in water can damage equipment when left unchecked and untreated. By measuring total organic carbon, facilities can implement the proper treatment to reduce the formation of disinfection by-products to comply with regulatory requirements.

Environmental Consequences of the No Action Alternative

Chapter 5 of the 2009 NGWSP PR/FEIS described the environmental consequences of the NGWSP with water quality outlined on pages V32-V42.

Environmental Consequences of the Proposed Action

Environmental consequences on water quality from the Proposed Action would not create any new significant site-specific effects nor contribute to cumulative significant impacts not already described in the 2009 NGWSP PR/FEIS.

Removal and replacement of the outer trash rack and construction at the PNM diversion and intake would require construction activities within the San Juan River. Additional modifications to the PNM diversion...
and intake, and installation of the proposed weir would occur within the previously constructed concrete structure. Equipment working in or near the river could create the potential for direct water-quality impacts from temporary increases in turbidity (sediment), equipment leaks, or spills. The potential for water quality impacts during construction would be avoided or minimized by implementing BMPs and design measures. Temporary cofferdams would be installed around the outer trash rack and bottom of the return channel to exclude water during construction activities. Placement of the cofferdams before construction and removal after construction would temporarily increase downstream turbidity. Construction effects on water quality would be short term and not significant.

Up to 6 percent of water to the SJLWTP would be used for treatment and discharged off-site where it would flow overland or be absorbed by the soil depending on site conditions. A discharge permit from the NNEPA would be required. A rock-lined or concrete spillway may be constructed to dissipate discharge flows and limit erosion from the discharge site. The continuous water discharge would likely create wetland conditions at the discharge site. Residuals from the coagulation-granular activated carbon process (primarily from backwash and sludge decant) would have a lower salinity than those from the UF-NF process (primarily UF backwash and NF concentrate).

Use of the SJGS Reservoir for the NGWSP would provide a buffer to fluctuations in particulate matter and allow for raw water storage and pumping over a wider range of turbidity/particulate levels compared to a direct intake from the San Juan River. Reclamation found improved water quality at the SJGS Reservoir compared to the San Juan River through water sampling and analysis (Reclamation 2021). Use of the SJGS Reservoir would enhance the NGWSP’s storage and settling capacity and improve the quality of raw river water before being treated at the SJLWTP. Based on water quality sampling and analysis Reclamation anticipates that the water treatment process at the SJLWTP would remove contaminants and meet applicable federal, state, and/or tribal water quality standards.

Reclamation concluded that groundwater contamination downstream of the SJGS Reservoir is likely to originate in the Westwater and Shumway Arroyos. Continuing operation of the SJGS Reservoir would not contribute to downstream surface water and groundwater contamination with PNM continuing operation of the groundwater recovery system as required as part of the Sierra Club and PNM consent decree.

Based on bench-scale tests, conventional coagulation, sedimentation, and filtration followed by granular activated carbon are expected to remove total organic carbon to at least 0.8 milligram/liter (mg/L) to alleviate formation of disinfection byproducts in the distribution system. Ferric chloride would be used as the primary coagulant, and free chlorine would be used for disinfection.

**Environmental Consequences of the UF-NF Pretreatment Alternative**

Environmental consequences on water quality from the UF-NF Pretreatment Alternative would not create any new significant site-specific effects nor contribute to cumulative significant impacts not already described in the 2009 NGWSP PR/FEIS. Construction effects on water quality and the ability to meet water quality standards would be similar to those described under the Proposed Action.

This water treatment method has the potential to reduce the long-term operation costs of the NGWSP. A loose NF membrane provides good rejection of total organic carbon while allowing non-target ions (e.g., sodium, chloride) to pass, thereby reducing energy requirements. The UF-NF process configuration would be designed to achieve a treated water total organic carbon concentration of 0.9 mg/L to alleviate the formation of disinfection byproducts in the distribution system. To help determine the efficacy of the UF-NF process, further testing to determine total organic carbon rejection using SJGS Reservoir water is
anticipated if the design progresses through a pilot study of this treatment method at the SJGS Reservoir in 2022.

If a UF-NF method is utilized rather than the granular activated carbon method, up to 10 percent of water to the SJLWTP would be used for treatment and discharged off-site as a concentrated brine. Residuals from the UF-NF treatment method would have a higher salinity compared to those from the granular activated carbon process.

**Environmental Consequences of the Pumping Plant 1 Northern Alternative**

Environmental consequences on water quality and the ability to meet water quality standards would be the same as described under the Proposed Action.

**3.2.4 – Vegetation Resources**

**Affected Environment**

Chapter 5 of the 2009 NGWSP PR/FEIS described the affected environment of the NGWSP with vegetation resources outlined on pages V42-V50. Special status plants are discussed in Section 3.2.7.

In the 2009 NGWSP PR/FEIS, 20 vegetation classifications were identified by the New Mexico Natural Heritage Program (NMNHP) and Arizona Natural Heritage Program within the proposed project area. Specific vegetation classifications developed by the NMNHP were used to classify vegetation within the 500 feet of the proposed pipeline routes. These vegetation community classifications are described in Attachment K of the 2009 NGWSP PR/FEIS. Pedestrian biological surveys of the project area were conducted in the spring and summer of 2021. No additional vegetation community classifications were identified in the realigned portion of the Proposed Action or the SJGS facilities to be acquired.

During the 2021 biological surveys, eight noxious weed species as listed by the State of New Mexico were observed (NMDA 2020). Class A species are currently not present in New Mexico or have limited distribution. The highest priority is to prevent new infestations of these species and eradicate existing infestations. Class B species are limited to portions of the state. In areas with severe infestations, management should be designed to contain the infestation and stop any further spread. Class C species are widespread in the state. Management decisions for these species should be determined at the local level, based on the feasibility of control and level of infestation (NMDA 2020). Noxious weeds identified in the area included the Class A species Canada thistle (*Cirsium arvense*); Class B species halogoten and spiny cocklebur (*Xanthium spinosum*); and Class C species cheatgrass (*Bromus tectorum*), Russian olive (*Elaeagnus angustifolia*), saltcedar (*Tamarix* sp.), Russian knapweed (*Acroptilon repens*), and Siberian elm (*Ulmus pumila*). Canada thistle, spiny cocklebur, Russian olive, saltcedar, and Siberian elm were typically located along drainages. Cheatgrass and halogoten are pervasive and widespread throughout the project area.

The USACE and USEPA jointly define wetlands as those areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs, and similar areas.

For the 2009 NGWSP PR/FEIS, delineations identified three separate wetlands within the San Juan River site: (1) 12.86 acres of palustrine shrub-scrub wetland, (2) 11.39 acres of persistent emergent palustrine wetland, and (3) 1.54 acres of persistent, palustrine emergent wetland. In the absence of a final design, the PR/FEIS noted that potential jurisdictional wetlands and/or other waters of the United States associated
with crossing of intermittent or ephemeral streams may occur along the proposed water pipeline route (Reclamation 2009).

Wetland delineations in the proposed project area were conducted, and the ordinary high water mark of the San Juan River was delineated at the PNM diversion weir and intake in March 2022 (Ecosphere 2022a). One persistent emergent palustrine wetland (0.08 acre in size within the Reach 2 pipeline alignment) was delineated at the base of the SJGS Reservoir and Dam. An approximately 6.25-acre persistent emergent palustrine wetland occurs north of the San Juan River within and extending outside the construction ROW. This wetland was not formally delineated but was recorded in the field. The National Wetland Inventory has mapped freshwater forested/shrub wetlands within the Chaco River in the project area. Additionally, 10 ephemeral drainages with defined ordinary high water marks were recorded in the water pipeline alignments. These drainages are typically small, shallow, and less than 6 inches deep by 1 to 4 feet wide.

**Environmental Consequences of the No Action Alternative**

Chapter 5 of the 2009 NGWSP PR/FEIS described the environmental consequences of the NGWSP with vegetation resources outlined on pages V42-V50.

**Environmental Consequences of the Proposed Action**

Environmental consequences from the Proposed Action related to vegetation resources would not create any new significant site-specific effects nor contribute to cumulative significant impacts not already described in the 2009 NGWSP PR/FEIS. Up to 692 acres of land would be disturbed as part of the Proposed Action.

Eight noxious weed species listed by the New Mexico Department of Agriculture occur in the project area. Noxious weeds could be introduced into the project area or further spread during construction and operation. Seeds of noxious species could unknowingly be carried on vehicles, heavy equipment, and on the clothing and shoes of personnel. Roads and pipelines can be a conduit for the spread of noxious weeds or undesirable plants (Gelbard and Belnap 2002). Noxious weeds can affect soil temperature, soil salinity, water availability, nutrient cycles and availability, native seed germination, water infiltration, and precipitation runoff (DiTomaso 2000). Disturbance could allow seeds of noxious species already present in the soil to germinate and grow without competition from native plant species. The establishment of invasive species could reduce the success of reclamation efforts and create a source of future colonization and degradation of adjacent, undisturbed areas. Reclamation and/or project cooperators and contractors would attempt to control noxious weeds in disturbed areas and implement other BMPs during construction and operation to avoid further introduction and/or spread of noxious weeds.

The Proposed Action would not convert wetlands or riparian areas to upland areas. Approximately 0.08 acre of palustrine emergent wetland below the SJGS Reservoir and Dam would be temporarily disturbed by Reach 2 water pipeline installation. Construction in this wetland would require an approved restoration/monitoring plan from the USACE and would be reseeded with the seed mix listed in Table 6. The wetland complex surrounding the San Juan River would be avoided during construction by horizontal directional drilling. The proposed water pipeline would also bore/horizontal directional drill under Shumway Arroyo and the Chaco River (intermittent) to avoid impacts on these waterways and adjacent wetlands. Crossings of ephemeral drainages would comply with USACE Nationwide and/or Regional General Permits. With the implementation of avoidance measures and BMPs, effects on wetlands and other waters of the US would be short term and not significant.
Environmental Consequences of the UF-NF Pretreatment Alternative

Environmental consequences from this alternative would be the same as those described under the Proposed Action.

Environmental Consequences of the Pumping Plant 1 Northern Alternative

Environmental consequences from this alternative would be the same as those described under the Proposed Action.

3.2.5 – Special Status Species

Affected Environment

Chapter 5 of the 2009 NGWSP PR/FEIS described the affected environment of the NGWSP with special status species outlined on pages V70-V93 and aquatic resources outlined on pages V56-V70. Special status species include federally listed threatened, endangered, or proposed species and those listed as threatened or endangered by the Navajo Nation and State of New Mexico, and BLM sensitive species. A Biological Assessment (BA) was prepared in 2005 to analyze the effects of the NGWSP (Keller-Bliesner Engineering and Ecosystems Research Institute 2005). In 2022, a Biological Assessment/Evaluation (BA/E) was prepared to analyze the effects of the Proposed Action (Ecosphere 2022b). Reclamation reinitiated formal section 7 consultation with the USFWS for the NGWSP in April 2022 due to modifications to the NGWSP design that were not considered under the USFWS 2009 Final Biological Opinion for the Navajo-Gallup Water Supply Project, New Mexico, No. 2-22-01-F-532 (USFWS 2009).

Since the 2005 BA was prepared, there have been changes in agency species listings, with some species delisted and others listed. More details about species’ life histories, habitat, distribution, and status in the project area can be found in the BA/E on file with Reclamation (Ecosphere 2022b). Endangered Species Act and biological resources compliance is ongoing, and compliance documentation will be provided in Appendix D before finalizing the EA.

Of the 10 federally listed species known to occur or that have the potential to occur within the project area, seven were eliminated from further consideration. The proposed PNM diversion and intake modifications and weir installation is within designated Colorado pikeminnow critical habitat within and adjacent to the San Juan River. Colorado pikeminnow and its designated critical habitat, razorback sucker, and Mesa Verde cactus (*Sclerocactus mesae-verdae*) occur in the project area (Ecosphere 2022b).

Not including federally listed species, 40 other special status species have the potential to occur in San Juan County. In the BA/E, 25 species were eliminated from detailed consideration. Two special status species were observed in the action area during the biological surveys—Gunnison’s prairie dog (*Cynomys gunnisoni*) (BLM Sensitive) and burrowing owl (*Athene cunicularia*) (Navajo Nation and BLM Sensitive). Additionally, the Navajo Natural Heritage Program (NNHP) identified eight species previously recorded within 1 and 3 miles of the project area (Ecosphere 2022b).

Reclamation and the SJRBRIP have evaluated fish entrainment at the San Juan River's Hogback Diversion Canal which has shown mixed results across species and sampling events. Larval entrainment of razorback sucker averaged 39% (Brandenburg et al. 2017) and entrainment of non-larval fish ranged from 0.7 to 47 percent during sampling events (Brandenburg et al. 2017; Durst [USFWS] personal communication, January 26, 2022; McKinstry [USBR], personal communication, July 2021).
Environmental Consequences of the No Action Alternative

Chapter 5 of the 2009 NGWSP PR/FEIS described the environmental consequences of the NGWSP on special status species outlined on pages V70-V93 and aquatic resources outlined on pages V56-V70 including federally listed threatened and endangered species as well as other special status species.

Environmental Consequences of the Proposed Action

Environmental consequences from the Proposed Action related to special status species would not create any new significant site-specific effects nor contribute to cumulative significant impacts not already described in the 2009 NGWSP PR/FEIS. Reclamation would continue to operate Navajo Dam and Reservoir under the flow recommendations derived by the SJRBRIP to assist in conserving endangered fish in the San Juan River as described in the Navajo Reservoir Operations FEIS and Record of Decision (Reclamation 2006).

Federally Listed Species

The Proposed Action would continue to may affect, likely to adversely affect the Colorado pikeminnow and its designated critical habitat, razorback sucker, and the Mesa Verde cactus. While termed adverse, impacts to these species would be negligible and are not considered significant. No effect on southwestern willow flycatcher is anticipated. Reclamation would follow the conservation measures, reasonable and prudent measures, terms and conditions, and conservation recommendations being developed as part of a reissuance of the NGWSP Biological Opinion that incorporates the Proposed Action. The Proposed Action would continue to be not likely to jeopardize the continued existence of the Mesa Verde cactus, Colorado pikeminnow, and razorback sucker and not likely to destroy or adversely modify the fishes’ designated critical habitat in the San Juan River.

Colorado Pikeminnow: The Proposed Action would modify the PNM diversion and intake to allow pumping of up to 71 cfs from the San Juan River. No additional NGWSP diversion above the 33,119 AF/year analyzed in the 2009 NGWSP PR/FEIS would occur, however, an additional 1,500 AF/year would be pumped to meet PNM’s needs using PNM’s existing water depletion rights. The modified PNM diversion and intake structure would include installation of a new outer trash rack, fish barrier weir, and other small modifications; and would not completely exclude fish. Direct effects could include mortality or injury from entrainment or impingement. The potential installation of a PIT tag system could increase knowledge of fish use in and around the PNM diversion and intake. Reclamation could potentially shut down pumping operations temporarily to reduce potential entrainment of endangered fishes if suitable operating conditions exist.

Potential entrainment of larval Colorado pikeminnow was calculated assuming pumping is constant over the July to August spawning period and was estimated for low, average, and high flows from 2010-2020 in the San Juan River (USGS 2021). Potential entrainment was calculated for the existing PNM diversion as well as the Proposed Action. Approximately 20.6 percent of the adult pikeminnow population capable of spawning (age 7+) was estimated to be at or above the PNM diversion weir based on a yearly average of 37 adult pikeminnow documented at PNM via PIT tag data from the USFWS and an estimated adult population of 180 individuals in the San Juan River (USFWS 2020). The PNM diversion was estimated to divert approximately 12.6, 8.1, and 2.7 percent of the San Juan River’s flow during low, average, and high flows resulting in approximately 2.6, 1.7, and 0.6 percent of larval San Juan River pikeminnow being potentially entrained into PNM’s existing diversion works and potentially into the River Station. Installation of the Proposed Action’s weir would reduce potential entrainment of larval San Juan River pikeminnow to
approximately 1.0, 0.7, and 0.2 percent during low, average, and high flows based on larval entrainment values documented at the Hogback Diversion Canal on the San Juan River (39 percent).

The 2009 NGWSP Biological Opinion did not address potential entrainment of juvenile, subadult, and adult fish because using a 3/32-inch fish screen would have largely excluded impacts on these life stages. The Proposed Action’s fish barrier weir was designed to minimize fish impingement and entrainment and is similar to the weir Reclamation and the SJRBRIP installed at the Hogback Diversion Canal on the San Juan River.

Potential entrainment of non-larval Colorado pikeminnow was calculated assuming pumping is year-round at an average San Juan River flow of 1,352.9 cfs (USGS 2021). Potential entrainment was calculated for the existing PNM diversion as well as the Proposed Action. Approximately 9.9 percent of the San Juan River’s pikeminnow population was estimated to be at or above the PNM diversion weir based on PIT tag data provided by the USFWS, and the PNM diversion was estimated to divert approximately 7.3 percent of the San Juan River’s flow resulting in approximately 0.7 percent of San Juan River pikeminnow being potentially entrained into PNM’s existing diversion works and potentially into the River Station. An additional inner trash rack is installed at the PNM diversion, however, Reclamation could not verify how often it is used or if it could impinge fish. Installation of the Proposed Action’s weir would reduce potential entrainment of San Juan River pikeminnow to approximately 0.01 to 0.3 percent based on entrainment values documented at the Hogback Diversion Canal on the San Juan River (0.7 to 47 percent).

Approximately 0.05 acre of Colorado pikeminnow critical habitat would be disturbed during construction activities which is less than 0.5 percent of the total designated critical habitat in the San Juan River. Removal and replacement of the outer trash rack and construction at the PNM intake and diversion would require construction activities within the San Juan River and create the potential for direct water-quality impacts from temporary increases in turbidity (sediment), equipment leaks, or spills. Additional modifications to the PNM intake and diversion and installation of the proposed fish barrier weir would occur within the previously constructed concrete structure. Increased human and heavy equipment activity and noise during construction may cause fish to avoid the project area. These activities would be temporary and non-significant and would not result in take of Colorado pikeminnow. BMPs would be implemented to avoid and minimize impacts from construction.

**Razorback Sucker:** Environmental consequences of construction near the San Juan River were discussed above for Colorado pikeminnow.

Potential entrainment of larval razorback sucker was calculated assuming pumping is constant over the March to July spawning period and was estimated for low, average, and high flows in the San Juan River (USGS 2021). Approximately 10.7 percent of the adult razorback sucker population capable of spawning (age 4+) was estimated to be at or above the PNM diversion weir based on a yearly average of 308 adult razorback sucker documented at PNM via PIT tag data from the USFWS and an estimated adult population of 2,892 individuals in the San Juan River (Schleicher et al. 2019, 2021). The PNM diversion was estimated to divert approximately 20.8, 5.6, and 1.5 percent of the San Juan River’s flow during low, average, and high flows resulting in approximately 2.2, 0.6, and 0.2 percent of larval San Juan River razorback sucker being potentially entrained into PNM’s existing diversion works and potentially into the River Station. Installation of the Proposed Action’s weir would reduce potential entrainment of larval San Juan River razorback sucker to approximately 0.9, 0.2, and 0.06 percent during low, average, and high flows based on larval entrainment values documented at the Hogback Diversion Canal on the San Juan River (39 percent).

Potential entrainment of non-larval razorback sucker was calculated assuming pumping is year-round at an average San Juan River flow of 1,352.9 cfs (USGS 2021). Potential entrainment was calculated for the
existing PNM diversion as well as the Proposed Action. Approximately 17.3 percent of the San Juan River’s razorback sucker population was estimated to be at or above the PNM diversion weir based on PIT tag data from the USFWS, and the PNM diversion was estimated to divert approximately 7.3 percent of the San Juan River’s flow resulting in approximately 1.3 percent of San Juan River razorback sucker being potentially entrained into PNM’s existing diversion works and potentially into the River Station. An additional inner trash rack is installed at the PNM diversion; however, Reclamation could not verify how often it is used or if it could impinge fish. Installation of the Proposed Action’s weir would reduce potential entrainment of San Juan River razorback sucker to approximately 0.01 to 0.6 percent based on entrainment values documented at the Hogback Diversion Canal on the San Juan River (0.7 to 47 percent).

**Mesa Verde Cactus**: Mesa Verde cactus and suitable habitat occur along the proposed Reach 2 pipeline alignment, primarily on NMSLO lands, a PNM-owned parcel, and BLM FFO lands. During pedestrian surveys conducted in the spring and summer of 2021, 156 live and 9 dead Mesa Verde cactus were recorded within a 100-foot buffer of the project footprint (Ecosphere 2022b). Reclamation revised the pipeline alignment and construction ROW to avoid Mesa Verde cactus recorded in 2021 so that no individuals would be directly impacted by the Proposed Action.

The project was designed to avoid cacti; however, there is the possibility that cacti are not visible (are mostly below ground) and may occur in the ROW or may colonize the project area prior to construction. Pre-construction surveys for Mesa Verde cacti would be conducted in suitable habitat in the blooming period (April/May) of the year preceding the initiation of construction activities to identify if any new cacti are in the project area. Reclamation developed a Mesa Verde Cactus Construction Plan for avoiding and minimizing disturbance to cacti and suitable habitat to the greatest extent possible.

Fugitive dust from construction activities could settle on nearby plants resulting in decreased photosynthesis and a decline in overall health, which could affect survivorship. Water would be used to control fugitive dust during construction. Additionally, ground disturbance may alter natural drainage patterns in and adjacent to the construction area. Disturbed soils would be subject to greater erosion, which could impact nearby individuals by exposing roots or smothering stems. BMPs would be implemented during construction to minimize erosion from the construction area.

Based on the distribution of cacti recorded during the biological surveys and the quality of habitat, approximately 3.2 acres of suitable but unoccupied habitat occurs within the project footprint. Some of this suitable but unoccupied habitat has been previously disturbed by pipelines, roads, and transmission lines. Soil disturbance in suitable but unoccupied habitat could result in a loss of seed viability and decrease the success of recolonization. Topsoil (upper 6 inches or what is available) would be stripped before construction and stockpiled separately for use in reclamation to minimize impacts on the seedbed and suitable habitat.

**Other Special Status Species**

Environmental consequences on other special status species project area are described below. While the project would result in habitat loss for some species as well as temporary effects during construction and reclamation activities, effects are considered negligible and not significant.

**Gunnison’s Prairie Dog**: This is a BLM sensitive species. Approximately 329 acres of active and inactive prairie dog towns were recorded in the survey area, most of which extend outside the project footprint. The largest town (251 acre) was recorded at the proposed SJLWTP of which 52.1 acres would be removed. Scattered burrows occurred along most of the pipeline alignments south of the San Juan River. Direct effects on prairie dogs would include the potential for injury or mortality during construction. Prairie dogs...
would likely disperse to adjacent habitat for the duration of construction. Direct effects on individuals would be greater between March and May during breeding and reproduction when young may not be able to vacate the burrow. Along Reach 3, 4A, and 4B, approximately 180 acres of non-contiguous prairie dog towns with several hundred active and inactive burrows could be destroyed during construction. Following construction, prairie dogs would likely return to the area. Reclamation of the disturbed areas would minimize effects on Gunnison’s prairie dog.

**Kit Fox (Vulpes macrotis):** The kit fox is a Navajo Endangered Species List (NESL) Group 4 species. Suitable habitat in the action area for this species is generally south of the San Juan River. Several fox dens (species unknown) were identified during the biological surveys, but no kit fox were observed. Increased human activity during construction would result in avoidance of the area. Disturbance may result in alterations in foraging and breeding behavior. Some individuals would be temporarily displaced to adjacent, undisturbed habitat, while some may permanently emigrate from the area. This impact would be greater during significant periods of annual life cycles, such as the breeding or whelping season. Fox dens in the project footprint would be destroyed or damaged during construction. Young and nursing adult females may be harmed during construction activities if natal burrows are destroyed. Direct effects on individuals would be greater between March and May. Potential vehicle-wildlife collisions could also impact the kit fox. The destruction or damage to kangaroo rat (Dipodomys sp.) burrows in the project footprint would decrease the prey base for kit fox.

**Bald Eagle (Haliaeetus leucocephalus):** No nest or roost sites are documented within or adjacent to the project area and no habitat loss would occur. Wintering eagles that forage along the San Juan River may be temporarily displaced by construction activity near the PNM diversion and intake. These eagles would likely use other areas of the river during construction or use the project area when equipment is idle.

**Belted Kingfisher (Ceryle alcyon):** This is a NESL Group 4 species. Suitable nesting and foraging habitat is present on the San Juan River, however, direct impacts would be avoided as the pipeline would be horizontal directionally drilled under the San Juan River. Temporary avoidance near the PNM diversion and intake could occur during construction.

**Bendire’s Thrasher (Toxostoma bendirei):** This is a BLM sensitive species. Most of the area south of the San Juan River provides suitable nesting and foraging habitat for Bendire’s thrasher, however, there are no records of the species occurring in the project area. Effects to Bendire’s thrasher could include temporary avoidance during construction. This impact would be greater during the breeding and nesting season. Approximately 56.2 acres of foraging and nesting habitat would be lost at the SJLWTP and other facilities.

**Burrowing Owl (Athene cunicularia):** In 2021, a pair of burrowing owls were observed in the Reach 4B alignment, and an individual burrowing owl was flushed from a burrow along Reach 3. Suitable habitat occurs where kangaroo rat or prairie dog burrows are located, mainly south of the San Juan River on the Navajo Nation. Effects on burrowing owls would include temporary avoidance during construction. This may result in alterations in foraging and breeding behavior. Disturbance or construction during breeding season could result in unsuccessful mating, nest abandonment, or an unsuccessful reproductive effort. Direct effects on burrowing owl would be avoided with species-specific surveys to determine presence and potential implementation of timing limitations for construction. Approximately 56.2 acres of foraging and nesting habitat would be lost at the SJLWTP and other facilities.

**Ferruginous Hawk (Buteo regalis):** One ferruginous hawk nesting territory occurs in the action area (approximately 0.3 mile from the Reach 3 pipeline). This territory is monitored annually and was active in 2017, 2018, and 2020 (Ecosphere 2022b). There would be no effects on suitable ferruginous hawk nesting habitat. Approximately 692 acres of suitable foraging habitat would be disturbed of which approximately
56.2 acres would be lost at the SJLWTP and other facilities. Increased human activity during construction would result in avoidance of the area. Disturbance may result in short-term alterations in foraging and breeding behavior. This impact would be greater during the breeding and nesting season. Construction would negatively affect prairie dog, kangaroo rat, and other rodent populations in the project footprint, decreasing the prey base for ferruginous hawk in the short term. Effects on the ferruginous hawk would be avoided with species-specific surveys to determine the presence and implementation of avoidance measures.

**Golden Eagle (Aquila chrysaetos):** The proposed project area provides suitable foraging habitat for golden eagles, but individuals were not observed during the 2021 biological surveys (Ecosphere 2022b). Effects on golden eagles would include temporary avoidance during construction. Construction would negatively affect prairie dog, kangaroo rat, and other rodent populations in the project footprint, decreasing the prey base for golden eagle in the short term. Approximately 692 acres of suitable foraging habitat would be disturbed of which approximately 56.2 acres would be lost at the SJLWTP and other facilities.

**Mountain Plover (Charadrius montanus):** There are no records of this species occurring in the project area. Portions of the project area south and west of the Hogback exhibit the habitat characteristics preferred by mountain plover. Effects on mountain plover could include temporary avoidance during construction. This impact would be greater during the breeding and nesting season. The effects on mountain plover would be avoided with species-specific surveys to determine the presence and implementation of avoidance measures. Approximately 56.2 acres of foraging and potential nesting habitat would be lost at the SJLWTP and other facilities.

**Sora (Porzana carolina):** Suitable habitat occurs along the San Juan River. This species was not observed during biological surveys in 2021 (Ecosphere 2022b). Suitable nesting and foraging habitat occurs on the San Juan River, however, direct impacts would be avoided as the pipeline would be horizontal directionally drilled under the San Juan River. Temporary avoidance near the PNM diversion could occur during construction.

**Bluehead Sucker (Catostomus discobolus):** This is a NESL Group 4 and BLM sensitive species. A portion of the bluehead sucker population in the San Juan River would remain vulnerable to entrainment and impingement by the modified PNM diversion and intake, however, potential entrainment is anticipated to decrease with the installation of a fish barrier weir.

**Mottled Sculpin (Cottus bairdi):** This is a Group 4 NESL species. Suitable habitat for this species is the San Juan River. A portion of the mottled sculpin population in the San Juan River would remain vulnerable to entrainment and impingement by the modified PNM diversion and intake, however, potential entrainment is anticipated to decrease with the installation of a fish barrier weir.

**Roundtail Chub (Gila robusta):** This is a NESL Group 2, state endangered, and BLM sensitive species. Suitable habitat for this species is the San Juan River. A portion of the roundtail chub population in the San Juan River would remain vulnerable to entrainment and impingement by the modified PNM diversion and intake, however, potential entrainment is anticipated to decrease with the installation of a fish barrier weir.

**Northern Leopard Frog (Lithobates pipiens):** This is a NESL Group 3 and BLM sensitive species. The San Juan River, Chaco River, and other water sources in the project area provide suitable habitat, however, direct impacts would be limited to the small wetland area below the SJGS Reservoir and Dam as all other wetland and riparian areas would be avoided with the use of horizontal directional drilling and jack and boring. Impacts in this wetland area are anticipated to be temporary.
Parish’s Alkali Grass (*Puccinellia parishii*): This is a NESL Group 4, state endangered, and BLM sensitive species. The Chaco River in the project area provides suitable habitat, however, direct impacts would be avoided with the use of horizontal directional drilling.

**Environmental Consequences of the UF-NF Pretreatment Alternative**

**Federally Listed and Other Special Status Species**

Environmental consequences on federally listed and other special status species under the UF-NF Pretreatment Alternative would be the same as those described under the Proposed Action.

**Environmental Consequences of the Pumping Plant 1 Northern Alternative**

**Federally Listed and Other Special Status Species**

Environmental consequences on federally listed and other special status species under the Pumping Plant 1 Northern Alternative would be the same as those described under the Proposed Action.

**3.2.6 – Land Use**

**Affected Environment**

Chapter 5 of the 2009 NGWSP PR/FEIS described the affected environment of the NGWSP with land use outlined on pages V104-V111.

The Proposed Action is located on private and Navajo Nation Tribal Trust lands and on public lands managed by the NMSLO, NMDOT, and BLM in San Juan County, New Mexico. Project area land uses include electrical energy generation and transmission, residential and commercial development mainly along the US Highway 64 corridor, agriculture along the San Juan River, grazing, and oil/natural gas development with associated pipelines and roads. Lands south of the San Juan River are tribal trust, while private, BLM, and state-managed lands occur north of the river. Tribal trust land in the project area and outside the San Juan River corridor has limited residential use and some livestock grazing but no livestock forage production values are available.

**Environmental Consequences of the No Action Alternative**

Chapter 5 of the 2009 NGWSP PR/FEIS described the environmental consequences of the NGWSP with land use outlined on pages V104-V111.

**Environmental Consequences of the Proposed Action**

Environmental consequences from the Proposed Action related to land use would not create any new significant site-specific effects nor contribute to cumulative significant effects not already described in the 2009 NGWSP PR/FEIS.

Acquisition and upgrade of the SJGS water intake, conveyance, and storage system would result in continued land use. The proposed water pipeline would require ROW/easement agreements on Navajo Nation, BLM, private, NMDOT, and NMSLO managed lands; however, current land uses would be compatible and generally unchanged.
Reclamation may need to acquire up to three private parcels (32.6 acres) in the Reach 2 pipeline alignment that would otherwise be unsuitable for other uses after project construction activities and considering long-term operations and maintenance needs. These properties are located adjacent to County Road 6800 and between US Highway 64 and County Road 6700. One of the properties houses a private residence, while the others have several outbuildings and have the potential for commercial development. Relocation assistance would be offered to the affected residents that would be displaced by the construction of the pipeline with relocation and acquisition following applicable laws and policies. Additionally, the Reach 2 pipeline would be constructed through several other private parcels in the San Juan River corridor, potentially limiting future uses on the properties. No relocation of residences would be required for these properties, and Reclamation would negotiate easement agreements with these landowners before construction.

The water pipeline extending south under the San Juan River would cross a Navajo farming area; however, the field would still be available for farming or grazing once the pipeline is installed. Reclamation would negotiate an agreement with the landowner(s) before construction.

As discussed in Section 3.2.2 – Indian Trust Assets, the SJLWTP, Pumping Plants 1 and 2, and the Morgan Lake Tank Site would be located on tribal trust land resulting in the conversion of 56.2 acres of tribal trust rangeland to industrial use. The reduction in forage is not expected to modify current grazing allotment carrying capacity.

**Environmental Consequences of the UF-NF Pretreatment Alternative**

Environmental consequences from the UF-NF Pretreatment Alternative related to land use would not create any new significant site-specific effects nor contribute to cumulative significant effects not already described in the 2009 NGWSP PR/FEIS. Effects on land use would be similar to those described under the Proposed Action except that the SJLWTP would be smaller in size.

**Environmental Consequences of the Pumping Plant 1 Northern Alternative**

Environmental consequences from the Pumping Plant 1 Northern Alternative related to land use would not create any new significant site-specific effects nor contribute to cumulative significant effects not already described in the 2009 NGWSP PR/FEIS. Effects on land use would be similar to those described under the Proposed Action except that Pumping Plant 1 would be located on private land rather than tribal trust land.

**3.2.7 – Hazardous Materials**

**Affected Environment**

Chapter 5 of the 2009 NGWSP PR/FEIS described the affected environment of the NGWSP with hazardous materials outlined on pages V111-V114.

A Phase I Environmental Site Assessment (ESA) was completed in 2020 for SJGS infrastructure and lands associated with the Proposed Action and noted three recognized environmental condition (REC) locations (SWCA 2020). RECs were documented at former mine operations upgradient of the SJGS, the SJGS, and an approximately 0.33-acre uncontrolled dumping site within a dry wash approximately 900 feet north of the San Juan River Station property. Reclamation reported the uncontrolled dumping site to the NMED for cleanup. The SJGS is listed twice as a Superfund Enterprise Management System (SEMS, or “Superfund”) Archive site, which has no further interest under the Federal Superfund Program based on the available information (SWCA 2020).
A follow-up Phase II ESA was completed near the SJGS Reservoir and evaporation ponds and collected/analyzed 20 soil and one water sample from the SJGS Reservoir area for potential heavy metal contamination at the site (BRIC 2022). Initial soil and water samples were collected in March 2021. An additional five soil borings/temporary groundwater monitoring wells were drilled in August 2021 between the SJGS Reservoir and evaporation ponds to a depth of 30 feet with samples collected at 15, 20, 25, and 30-foot depths; groundwater was not encountered in any of the locations. Soil sampling found levels of thallium (one sample) and arsenic (multiple samples) above applicable NMED soil screening levels for residential soil exposure but well below soil screening levels for industrial/occupational and construction worker soil exposures. The water sample did not reveal concentrations for dissolved metals or semi-volatile organic compounds above NMED screening levels (BRIC 2022). The Phase II ESA concluded that arsenic is likely accumulated in the entire vicinity of the SJGS due to mining and ore processing operations, the operation of the SJGS coal-burning power plant, and waste disposal. Additionally, the SJGS evaporation ponds do not appear to be leaking or capable of contaminating the SJGS Reservoir (Blake et al. 2021a, 2021b; BRIC 2022).

Reclamation contracted the USGS to collect sediment core samples at the SJGS Reservoir in 2020. The core samples were analyzed for organic compounds with most results below laboratory reporting limits, however results were not compared to regulatory levels (Blake 2021).

Reclamation documented and verified that asbestos-containing material is present in Reaches 4A and 4B where old helium pipeline(s) are or were previously located. Much of the pipeline has been removed from the project area by locals and reused for fencing and other projects with the asbestos wrapping stripped and discarded in the project area. Preliminary site data has determined that helium pipelines cross the Reach 4 ROW at a minimum of seven locations. This asbestos-containing material was not previously analyzed in the 2009 NGWSP PR/FEIS. A Phase I ESA is planned to record and visually evaluate the ROW for asbestos-containing material and research the locations of helium pipelines in the region. Following the Phase I ESA, Reclamation is planning a Phase II ESA with a plan for sampling soils across the proposed project area to determine the extent of asbestos contamination. Additionally, small amounts of oil and gas infrastructure are present in the general region of the project.

Environmental Consequences of the No Action Alternative

Chapter 5 of the 2009 NGWSP PR/FEIS described the environmental consequences of the NGWSP with hazardous materials outlined on pages V111-V114.

Environmental Consequences of the Proposed Action

Environmental consequences from the Proposed Action related to hazardous material sites would not create any new significant site-specific effects nor contribute to cumulative significant effects not already described in the 2009 NGWSP PR/FEIS.

Acquisition of the SJGS water intake, conveyance, and storage system is not expected to result in significant public or environmental health risks since the facilities would be used for industrial/occupation purposes and the SJGS Reservoir’s water quality (analyzed in Section 3.2.3) was determined to be acceptable and meet safe drinking water act standards following treatment at the SJLWTP. The uncontrolled dumping site near the water treatment plant would not pose a significant health risk to the public or environment and was reported to the NMED for cleanup. Phase I and II ESAs for the SJGS lands and facilities would be updated following laws and policies prior to acquisitions.
Reclamation would complete Phase I and Phase II ESAs to determine the extent of asbestos contamination from helium pipelines and remediate asbestos-containing material within the project area to the appropriate mandated levels prior to project construction. No new significant impacts are anticipated, regardless of the outcome of the Phase I and Phase II ESAs, as Reclamation would identify hazardous infrastructure and avoid or remediate the hazards before construction thus minimizing public and environmental health risks.

While Reclamation does not expect to dredge the SJGS Reservoir in the next fifty years, sediment concentrations and constituents could affect the type of sediment disposal required when or if the reservoir is dredged.

**Environmental Consequences of the UF-NF Pretreatment Alternative**

Environmental consequences from this alternative would be the same as those described under the Proposed Action.

**Environmental Consequences of the Pumping Plant 1 Northern Alternative**

Environmental consequences from this alternative would be the same as those described under the Proposed Action.

3.2.8 – Environmental Justice

**Affected Environment**

Chapter 5 of the 2009 NGWSP PR/FEIS described the affected environment of the NGWSP with environmental justice outlined on pages V133-V134.

Executive Order 12898 (59 Federal Register 7629), Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations, requires that federal agencies identify and address, as appropriate, disproportionately high, and adverse human health or environmental effects of their programs and activities on minority and low-income populations.

The project area is in San Juan County, New Mexico. The county has a total population of 121,661 of which 41 percent are Native American. In 2020, the median household income was $47,643, whereas the median household income for New Mexico was $51,243. Approximately 21.7 percent of county residents are below the poverty level (USCB 2022). Within the NGWSP service area, Gallup is in McKinley County with a total population of 72,902 of which 78 percent are Native American. The median household income is $36,179, and 35.2 percent of residents are below the poverty level (USCB 2022).

The 2009 NGWSP PR/FEIS noted that more than 40 percent of the Navajo people living in the proposed project service area have no access to piped water and, consequently, haul water sometimes from distant sources. Some of the water consumed is from non-potable sources and does not comply with water quality standards.

**Environmental Consequences of the No Action Alternative**

Chapter 5 of the 2009 NGWSP PR/FEIS described the environmental consequences of the NGWSP with environmental justice outlined on pages V133-V134.
Environmental Consequences of the Proposed Action

Environmental consequences from the Proposed Action related to environmental justice would not create any new significant site-specific effects nor contribute to cumulative significant effects not already described in the 2009 NGWSP PR/FEIS. The Proposed Action would not have a disproportionate effect on minority and low-income populations. Environmental justice issues would generally concern either socioeconomic conditions or health risk exposures.

The Proposed Action would benefit minority and low-income populations in the service area by providing access to a reliable, safe water supply. Additionally, short-term employment opportunities related to construction of the NGWSP would increase in the region, and the project’s permanent facilities such as the SJLWTP would provide long-term employment opportunities.

Reclamation may need to acquire up to three parcels of private land (32.6 acres) that may be left otherwise unusable after project construction activities and during long-term operations and maintenance. These properties are located adjacent to County Road 6800 and between US Highway 64 and County Road 6700. One of the properties houses a private residence, while the others have several outbuildings and have the potential for commercial development. While the properties would be used to install the water pipeline, they would no longer be usable for private or commercial development. Reclamation would provide relocation assistance to the residence displaced by the construction of the Proposed Action. During construction, noise impacts would be temporary and concentrated primarily at the site of the SJLWTP, other facilities, and pipeline corridor during construction.

Environmental Consequences of the UF-NF Pretreatment Alternative

Environmental consequences on minority and low-income populations would be the same as those described under the Proposed Action.

Environmental Consequences of the Pumping Plant 1 Northern Alternative

Environmental consequences on minority and low-income populations would be the same as those described under the Proposed Action.

3.2.9 – Cultural Resources

Affected Environment

Chapter 5 of the 2009 NGWSP PR/FEIS described the affected environment of the NGWSP with cultural resources outlined on pages V134-V142. Cultural resources are physical or other expressions of past human activity or occupation. Such resources include culturally significant landscapes, prehistoric and historic aged archaeological sites, and isolated artifacts or features, structures, human burials, sacred sites, and traditional cultural properties (TCPs). TCPs are sites or areas of important cultural value to existing communities, which may or may not have actual physical remnants associated with their existence.

Following Navajo Nation policies, contemporary or recently abandoned residences and features or areas (in-use areas) on Navajo Nation land are also considered historic sites. Additionally, a number of contemporary Native American Tribal Nations have ancestral and traditional ties to the proposed project area. Archaeological data provide some information about prehistoric and historic use of the region; however, each Tribe or community has its own account of the area's traditional use.
Legislation mandates that federal agencies such as Reclamation are responsible for identifying and protecting cultural resources. In compliance with Section 106 of the NHPA of 1966, as amended, and its implementing legislation, CFR Title 36 Part 800, Reclamation is required to assess cultural resources that could potentially be affected by the Proposed Action. Historic properties are defined as properties determined eligible for listing on the National Register of Historic Places (NRHP).

The proposed alternatives lie in the San Juan River Basin, an area well known for its archaeology and contemporary/historical Native American culture. More than 10,000 years of human existence are represented in the area (Reclamation 2009). The cultural history of the area contains numerous historically overlapping cultural groups. The following summarizes the cultural history of the project area based on NGWSP cultural inventory reports.

**PaleoIndian:** The Paleoindian period dates between approximately 10,000 and 5,000 BC. Their presence across the landscape was presumably small and dispersed, and evidence of their occupation is nebulous.

**Archaic:** The region's archaic period is typified by an adaptation to new environmental conditions and change from a big-game hunting emphasis to the hunting of smaller, modern game and the intensive collection of plant foods. Most sites of this period date between 5000 and 1000 BP (Before Present).

**Basketmaker:** The Basketmaker culture was named for its finely woven baskets and lack of pottery. The Basketmaker II period is generally characterized as a more sedentary population than their Archaic forbearers, utilizing hunting and farming and gathering, occupying shallow pit houses, and utilizing food storage features. Basketmaker II sites appear to date between AD 200 and 400. The Basketmaker III period (AD 400–700) marks the beginning of a more sedentary agricultural lifestyle and the use of ceramics, and the adoption of the bow and arrow.

**Pueblo I-IV:** The Pueblo I period (AD 750–900) is well represented, with small hamlets scattered across the proposed project area. During this period, surface structures, identified as pueblos, become increasingly common. The Pueblo II and Pueblo III periods (AD 900–1300) are characterized by larger pueblos that usually included masonry roomblocks and larger semicircular pit structures. They are the ruins familiar to most modern visitors to the area, such as the sites on display at Chaco Canyon National Historic Park. The Pueblo II and Pueblo III periods are well represented in the proposed project area. The end of the Pueblo III period is characterized by regional depopulation and drought extending into the Pueblo IV period.

**Protohistoric to Modern-Day:** The protohistoric Navajo occupation of northwestern New Mexico has been split into three phases: the Dinétah phase (AD 1500–1650), the Gobernador phase (AD 1650–1765), and the Cabezon phase (AD 1765–1863).

Multiple cultural resources survey efforts were completed for the Proposed Action. Records searches were conducted with the NNHHPD in Window Rock, Arizona and Class I survey, Class III survey, and ethnographic fieldwork was conducted between 2011 and 2021. Alpine Archaeological Consultants, Inc. (Alpine 2021) completed a Class III cultural resource inventory for the Reach 1 and 2 pipeline corridors, SJGS lands and facilities, and various spots on Reach 3 and 4B. Woods Canyon Archaeological Consultants, Inc. (Woods Canyon 2019a, 2019b) completed Class III inventories and ethnographic summaries for the Reach 4A and 4B realignments, pieces of the SJLWTP, and other added parcels. PaleoWest Archaeology (PaleoWest) completed a Class III inventory and ethnographic summary for Reaches 3–8 (PaleoWest 2015) and Class III inventory for Reach 3 and the SJLWTP (PaleoWest 2017). Additional surveys are planned to cover the entirety of the proposed land and infrastructure acquisitions associated with the SJGS, where no ground-disturbing actions are currently proposed. Additionally, supplemental cultural work and consultation would be required if features of the Proposed Action are modified before reaching final design.
A summary of cultural sites, isolated occurrences, in-use sites, sites recommended eligible for inclusion in the National Register of Historic Places (NRHP), and management recommendations documented in and around the Proposed Action is summarized in Table 9. The table gives a summary of sites inventoried for various past and current NGWSP project features near but not necessarily within the area of potential effect for the currently Proposed Action, as well as additional sites and burial locations Reclamation was informed of during ongoing consultation efforts.
Table 9. Summary of Cultural Inventory Results Near the Proposed Action

| Source                  | Project Area                                                                 | Cultural Sites | Isolated Occurrences | In-Use Sites | TCPs and Jishchaa’ Sites Recommended Eligible for Inclusion in National Register of Historic Places (NRHP) | Management Recommendations |
|-------------------------|------------------------------------------------------------------------------|----------------|-----------------------|--------------|----------------------------------------------------------------*****************************************|----------------------------|
| Alpine (2021)           | Reaches 1 and 2, SJGS lands and facilities, Spots on Reaches 3 and 4B        | 14             | 22                    | 2            | 1 (San Juan River)                                                                                     | Avoidance or Mitigation    |
| Woods Canyon (2019a)    | Reaches 4A and 4B reroutes, SJLWTP, Other project features                 | 16             | -                     | 1            | 5                                                                                                     | Avoidance or Mitigation    |
| Woods Canyon (2019b)    | SJLWTP, Pumping Plant 2, Southern portion Reach 4B                           | 4              | 17                    | 3            | 1                                                                                                     | Avoidance and Preservation |
| PaleoWest (2015)        | Reaches 3 through 8, Hogback Diversion, Shiprock Connection (Reaches 4C-8 constructed and not part of Proposed Action) | 150            | 431                   | 43           | 36                                                                                                     | Dependent upon treatment technique, Avoidance, Testing, Mitigation, or Preservation |
| PaleoWest (2017)        | Reaches 1 (former) and 3, Shiprock Connection                               | 4              | 80                    | 8            | 4                                                                                                     | Avoidance or Mitigation    |
| Additional Consultation and Local Resident Input | Southern Portion of Reach 4B                                           | -              | -                     | -            | 3                                                                                                     | Avoidance and Mitigation    |
Environmental Consequences of the No Action Alternative

Chapter 5 of the 2009 NGWSP PR/FEIS described the environmental consequences of the NGWSP with cultural resources outlined on pages V134-V142.

Environmental Consequences of the Proposed Action

Environmental consequences from the Proposed Action related to cultural resources would not create any new significant site-specific effects nor contribute to cumulative significant effects not already described in the 2009 NGWSP PR/FEIS. Reclamation would obtain cultural resources clearance prior to construction on the Navajo Nation and other lands.

Reclamation developed a Programmatic Agreement with the Advisory Council on Historic Preservation, New Mexico SHPO, Navajo Nation, BLM, and BIA that defined the process regarding the consideration and management of effects on historic properties arising from the construction of the NGWSP (Reclamation 2011). Reclamation and the Programmatic Agreement work group’s preferred approach to the mitigation of adverse effects resulting from the construction of the NGWSP to historic properties and TCPs within the project ROW is through avoidance. Invasive archaeological investigations are proposed only if there is no other way to avoid direct effects on identified sites. Reclamation would have contracts in place for archaeological monitoring and discovery mitigation during construction. Pursuant to Reclamation’s Programmatic Agreement, the area of potential effect for direct physical effects on historic properties includes all lands within 125 feet of the initially planned 150-foot construction ROW for a total width of 400 feet.

Following stipulations in Sections IV and V of Reclamation’s Programmatic Agreement, historic properties and TCPs would be, to the extent possible, avoided with the implementation of design features such as but not limited to reduction of construction areas, temporary barriers, and site monitoring. If historic properties and TCPs cannot be avoided Reclamation or its contractors would prepare, in consultation with the consulting parties to the Programmatic Agreement, a treatment plan for all properties it determines are subject to adverse direct and indirect effects by the action and treatment would be consistent with the Secretary of the Interior's Standards for the Treatment of Historic Properties and with the Advisory Council on Historic Preservation’s guidelines.

Per the NGWSP Programmatic Agreement, Reclamation developed a site-specific treatment plan and obtained cultural resources clearance for Reaches 4A and 4B, Pumping Plants 2 and 3, and the SJLWTP that limits testing and data recovery efforts while requiring site protection measures that include constricted ROW, avoidance fencing, archaeological monitoring, and potential unanticipated discovery mitigation during all NGWSP ground-disturbing activities. Impacts to TCP areas would be addressed by constricting the pipeline ROW, moving appurtenant pipeline features, fencing around the sites, monitoring, and horizontally directionally drilling the pipeline. This approach was recommended in consultation and coordination with the NNHHPD. Additional site-specific treatment plans would be developed for remaining project areas and cultural resources clearances would be obtained prior to construction.

Environmental Consequences of the UF-NF Pretreatment Alternative

Environmental consequences on cultural resources would be the same as those described under the Proposed Action.
Environmental Consequences of the Pumping Plant 1 Northern Alternative

Environmental consequences on cultural resources would be the same as those described under the Proposed Action.

3.2.10 – Summary
Table 10 summarizes environmental consequences of the Action Alternatives for the resources evaluated in these EA. Environmental consequences of the No Action Alternative were summarized in the 2009 NGWSP PR/FEIS on pages V158-V163.
Table 10. Summary of Environmental Consequences for the Action Alternatives

<table>
<thead>
<tr>
<th>Resource</th>
<th>Proposed Action</th>
<th>UF-NF Alternative</th>
<th>Pumping Plant 1 Northern Alternative</th>
</tr>
</thead>
<tbody>
<tr>
<td>Water Resources</td>
<td>Reclamation would continue to operate Navajo Dam and Reservoir under the flow recommendations derived by the SJRBRIP. The diversion rate from the San Juan River would be 71 cfs. Reclamation would contract with PNM to convey a maximum flow of 4 cfs (not to exceed 1,500 AF/year) to the SJGS Reservoir. Water storage in the PNM Reservoir would allow pumping to be temporarily shut down to limit excess sediment uptake into NGWSP project features, reduce sedimentation into the SJGS Reservoir during high turbidity flow events, and avoid water use during periods of poor water quality.</td>
<td>The same as those described under the Proposed Action.</td>
<td>The same as those described under the Proposed Action.</td>
</tr>
<tr>
<td>Indian Trust Assets</td>
<td>Approximately 56.2 acres of tribal trust land would be converted from rangeland to industrial use.</td>
<td>Approximately 44.1 acres of tribal trust land would be converted from rangeland to industrial use.</td>
<td>Approximately 54.1 acres of tribal trust land would be converted from rangeland to industrial use.</td>
</tr>
<tr>
<td>Water Quality</td>
<td>Construction at the PNM diversion and intake would temporarily increase turbidity (sediment) and increase the chance of equipment leak or spills. Water treatment processes are expected to remove total organic carbon to at least 0.8 milligram/liter (mg/L) in the distribution system. Up to 6 percent of water to the SJLWTP would be used for treatment and discharged off-site where it would flow overland or be absorbed by the soil. Residuals would have a lower salinity compared to those from the UF-NF process. The SJLWTP would remove contaminants and meet applicable federal, state, and/or tribal water quality standards. Continuing operation of the SJGS Reservoir would not contribute to downstream surface water and groundwater contamination with</td>
<td>Construction effects on water quality, the ability to meet applicable water quality standards, and surface/groundwater near the SJGS would be the same as the Proposed Action. This water treatment method would reduce the long-term operation costs of the NGWSP. Up to 10 percent of water to the SJLWTP would be used for treatment and discharged off-site where it would flow overland or be absorbed by the soil. Residuals would have a</td>
<td>The same as those described under the Proposed Action.</td>
</tr>
<tr>
<td>Resource</td>
<td>Proposed Action</td>
<td>UF-NF Alternative</td>
<td>Pumping Plant 1 Northern Alternative</td>
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<tr>
<td></td>
<td>PNM continuing operation of the groundwater recovery system as required as part of the Sierra Club and PNM consent decree. Water treatment processes are expected to remove total organic carbon to at least 0.8 milligram/liter (mg/L) in the distribution system.</td>
<td>higher salinity compared to those from the granular activated carbon process. Water treatment processes are expected to remove total organic carbon to at least 0.9 milligram/liter (mg/L) in the distribution system.</td>
<td></td>
</tr>
<tr>
<td>Vegetation Resources</td>
<td>Noxious weeds may be introduced or spread within the project area during construction and operation. Approximately 0.08 acre of palustrine emergent wetland below the SJGS Reservoir Dam would be temporarily disturbed.</td>
<td>The same as those described under the Proposed Action.</td>
<td>The same as those described under the Proposed Action.</td>
</tr>
<tr>
<td>Federally Listed Species</td>
<td>Approximately 1.0, 0.7, and 0.2 percent potential entrainment of larval San Juan River pikeminnow during low, average, and high flows. Approximately 0.01 to 0.3 percent entrainment of non-larval pikeminnow. No adverse modification of designated critical habitat. Approximately 0.9, 0.2, and 0.06 percent potential entrainment of larval San Juan River razorback sucker during low, average, and high flows. Approximately 0.01 to 0.6 percent entrainment of non-larval razorback sucker. Approximately 3.2 acres of suitable and unoccupied Mesa Verde cactus habitat (no individual cacti) disturbed by construction. No effects on southwestern willow flycatcher.</td>
<td>The same as those described under the Proposed Action.</td>
<td>The same as those described under the Proposed Action.</td>
</tr>
<tr>
<td>Other Special Status Species</td>
<td>Removal of approximately 56.2 acres of potential Gunnison’s prairie dog, Bendire’s thrasher, burrowing owl, mountain plover, golden eagle, and ferruginous hawk habitat. Temporary disturbance effects during construction on kit fox, bald eagle, belted kingfisher, sora, and northern leopard frog. Potential entrainment for mottled sculpin, bluehead sucker, roundtail chub, and other San Juan River fishes at the water intake.</td>
<td>The same as those described under the Proposed Action except the SJLWTP would be smaller in size resulting in less habitat loss.</td>
<td>The same as those described under the Proposed Action.</td>
</tr>
<tr>
<td>Resource</td>
<td>Proposed Action</td>
<td>UF-NF Alternative</td>
<td>Pumping Plant 1 Northern Alternative</td>
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</tr>
<tr>
<td>Land Use</td>
<td>Approximately 32.6 acres of private land may need to be acquired. One residence</td>
<td>The same as those described under the Proposed Action except that approximately 44.1 acres of tribal trust land would be converted from rangeland to industrial use.</td>
<td>The same as those described under the Proposed Action except that approximately 54.1 acres of tribal trust land would be converted from rangeland to industrial use.</td>
</tr>
<tr>
<td></td>
<td>would be relocated. Approximately 56.2 acres of tribal trust land would be converted from rangeland to industrial use. Temporary effects on Navajo farmlands along the San Juan River. Slight reduction in the amount of available livestock forage.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hazardous Material</td>
<td>Health risks to the public and environment would be minimized with avoidance and remediation measures. Asbestos-containing material would be remediated to the appropriate mandated levels before project construction.</td>
<td>The same as those described under the Proposed Action.</td>
<td>The same as those described under the Proposed Action.</td>
</tr>
<tr>
<td>Environmental Justice</td>
<td>No disproportionate adverse effects on minority or low-income populations. Reclamation would provide relocation assistance to a private residence. Provides access to a reliable, safe water supply. Increase in short- and long-term employment opportunities.</td>
<td>The same as those described under the Proposed Action.</td>
<td>The same as those described under the Proposed Action.</td>
</tr>
<tr>
<td>Cultural Resources</td>
<td>AVOIDS cultural sites to the maximum extent possible and follows the NGWSP’s Programmatic Agreement.</td>
<td>The same as those described under the Proposed Action.</td>
<td>The same as those described under the Proposed Action.</td>
</tr>
</tbody>
</table>
CHAPTER 4 – ENVIRONMENTAL COMMITMENTS

This section discusses the environmental commitments developed to protect and limit impacts on resources. The environmental commitments will be included as appropriate in the contractor bid specifications for construction.

4.1 – 2009 NGWSP ROD

The ROD of the NGWSP PR/FEIS designates the environmental commitments for the NGWSP that would be followed (if applicable) for the Proposed Action. These environmental commitments were also described in Chapter VI (Environmental Commitments and Mitigation Measures) of the 2009 NGWSP PR/FEIS. These environmental commitments are hereby incorporated into the Proposed Action.

4.2 – Additional Environmental Commitments

Additional environmental commitments developed for the Proposed Action to reduce impacts on resources are listed in the Table 1 below.

Table 11. Proponent Developed Environmental Commitments

<table>
<thead>
<tr>
<th>Resource Category</th>
<th>Commitment</th>
</tr>
</thead>
<tbody>
<tr>
<td>General</td>
<td>• Reclamation will comply with all applicable federal, State of New Mexico, Navajo Nation, and local laws and regulations.</td>
</tr>
<tr>
<td>Vegetation</td>
<td>• Where tree cutting is required, usable trees shall be removed and left on the roadside for local residents to collect and use as firewood or delivered to a nearby Navajo Chapter House. Smaller woody plants not suitable for use as firewood shall be chipped and spread on the ROW during the revegetation process.</td>
</tr>
<tr>
<td>Wildlife</td>
<td>• Vegetation removal will be completed outside the migratory bird nesting season of March 15 to August 15. If vegetation needs to be removed during this window, migratory bird nesting surveys will be conducted by a Reclamation approved individual(s) using the approved survey protocol for a maximum of 1 week before scheduled removal. If nests are found, the appropriate species buffer will be applied to the nest with no disturbance allowed in the buffer zone until approved by a Reclamation biologist. Nest monitoring may be required to determine nesting status.</td>
</tr>
<tr>
<td>Special Status Species</td>
<td>• If inventoried threatened or endangered species are discovered during construction, construction activities shall be halted in that area, and the contractor will move work as necessary until work can begin again.</td>
</tr>
<tr>
<td>Resource Category</td>
<td>Commitment</td>
</tr>
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</tbody>
</table>
| • Reclamation will modify PNM’s San Juan River diversion and intake, including but not limited to the installation of a fish barrier weir, to minimize potential entrainment and impingement of San Juan River fish.  
• Reclamation will coordinate with the SJRBRIP to test and potentially install a remotely operated Passive Integrated Transponder (PIT) tag monitoring system at PNM’s SJGS diversion and intake on the San Juan River to monitor endangered fish use of the structure and assess potential entrainment associated with the water conveyance system’s newly installed fish barrier weir.  
• Reclamation will reconstruct PNM’s existing San Juan River Station and diversion and intake structure without using variable speed infrastructure to not interfere with Passive Integrated Transponder (PIT) tag systems.  
• Reclamation, in coordination with the SJRBRIP, will develop a basis of design for pumping water from the San Juan River that documents the ability to and plan for temporarily shutting down operations to reduce potential entrainment of endangered fishes into PNM’s SJGS water conveyance system. The initial basis of design will be developed prior to San Juan Lateral water delivery and will be periodically updated by Reclamation (in coordination with the SJRBRIP) based on projected NGWSP water demands, fish population dynamics, water quality monitoring, and other relevant topics. |
| Land Use | • Reclamation will provide relocation assistance following federal laws for acquired private properties.  
• Regarding the 2009 NGWSP PR/FEIS commitment of fencing the NGWSP pipeline ROW; Reclamation, the BIA, and Navajo Nation determined in the 2019 Revegetation Plan for the NGWSP (Reclamation 2019) that if acceptable ground cover conditions are not achieved within 3 years, fencing may be necessary to achieve ground cover criteria identified in the site-specific revegetation plan. |
| Hazardous Materials | • Reclamation will assess hazardous materials present in the vicinity of the Proposed Action, and remediation efforts (if necessary) would be implemented before project construction. |
| Air Quality and Noise | • Construction and reclamation activities near residences will be expedited and limited to 7 am to 7 pm working hours. |
| Cultural Resources | • All cultural resources stipulations will be followed. These stipulations may include, but are not limited to, temporary or permanent fencing or other physical barriers, monitoring of earth disturbing construction, Proposed Action area reduction and/or specific construction avoidance zones, and employee education. All employees, contractors, and sub-contractors of the project would be informed by the project proponent that cultural sites are to be avoided by all personnel, personal vehicles, and company equipment, and that it is illegal to collect, damage, or disturb cultural resources, and that such activities are punishable by criminal and or administrative penalties under the provisions of the Archaeological Resources Protection Act (16 USC 470aa-mm).  
• If in its operations, an operator/holder discovers any previously unidentified historic or prehistoric cultural resources, work in the vicinity of the discovery would be suspended and the discovery promptly reported to Reclamation and... |
<table>
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<tr>
<th>Resource Category</th>
<th>Commitment</th>
</tr>
</thead>
</table>
| Visual Resources  | • New and existing acquired facilities will be lighted following dark sky lighting techniques to minimize skyglow, glare, and light trespass.
|                   | • Aboveground facilities such as water tanks and buildings will be painted to match the color of the surrounding environment. |

### 4.3 – Requirements in the 2009 NGWSP Biological Opinion

The Biological Opinion for the 2009 NGWSP PR/FEIS (USFWS 2009) included conservation measures, reasonable and prudent measures, terms and conditions, and conservation recommendations. Reclamation initiated formal consultation with the USFWS for the Proposed Action in April of 2022 and will update these measures as necessary following the completion of consultation and the reissuance of a Biological Opinion for the NGWSP that incorporates the Proposed Action.

### 4.4 – Additional Design Measures

Additional design measures to reduce effects on resources may be developed during ongoing cultural and natural resources consultations with the Navajo Nation and other agencies. Developed design measures will be incorporated into the final EA after completing consultation(s).

### CHAPTER 5 – CONSULTATION AND COORDINATION

#### 5.1 – Introduction

Reclamation’s public involvement process presents the public with opportunities to obtain information about a given project and allows interested parties to participate in the project through written comments. This chapter discusses public involvement activities taken to date for the Proposed Action.

#### 5.2 – Public Involvement

In compliance with the NEPA, this Draft EA will be made available for a 30-day public comment period and hosted on Reclamation’s Upper Colorado Basin website that houses environmental documents (www.usbr.gov/uc/DocLibrary/ea.html). The NGWSP website (https://www.usbr.gov/uc/progact/navajo-gallup/index.html) provides additional information on the status of the NGWSP. Public
comments received during the comment window will be addressed as appropriate in the Final EA. Reclamation distributed a letter to the individuals, organizations, and agencies listed in Appendix E notifying them of the Proposed Action, availability of the Draft EA, and details on how to comment on the project. Publicly available electronic versions of the Draft EA meet the technical standards of Section 508 of the Rehabilitation Act of 1973, so that the documents can be accessed by people with disabilities using accessibility software tools.

CHAPTER 6 – PREPARERS

The following list contains the individuals who participated in preparing this EA.

Table 12. List of Preparers

<table>
<thead>
<tr>
<th>Name</th>
<th>Title</th>
<th>Areas of Responsibility</th>
</tr>
</thead>
<tbody>
<tr>
<td>Eric Creeden</td>
<td>General Biologist</td>
<td>NEPA, Biological Resources, Threatened and Endangered Species</td>
</tr>
<tr>
<td>Kristin Bowen</td>
<td>Environmental and Cultural Group Chief</td>
<td>Archaeology, Cultural Resources</td>
</tr>
<tr>
<td>Bart Deming</td>
<td>Construction Engineer</td>
<td>Action Alternatives, NGWSP Design</td>
</tr>
<tr>
<td>Myles Lytle</td>
<td>Planner and Environmental Specialist (BIA Navajo Region)</td>
<td>NEPA</td>
</tr>
<tr>
<td>Ryan Joyner</td>
<td>Planning &amp; Environmental Coordinator (BLM FFO)</td>
<td>NEPA</td>
</tr>
<tr>
<td>Joey Herring</td>
<td>Senior Biologist (Ecosphere)</td>
<td>NEPA, Threatened and Endangered Species, Water Resources</td>
</tr>
<tr>
<td>Andrea Santoro</td>
<td>Geographic Information Systems Specialist (Ecosphere)</td>
<td>Mapping and analysis</td>
</tr>
<tr>
<td>Mike Fitzgerald</td>
<td>Environmental Specialist (Ecosphere)</td>
<td>Content Review</td>
</tr>
<tr>
<td>John Dodge</td>
<td>Biologist (Ecosphere)</td>
<td>Biological Resources</td>
</tr>
<tr>
<td>Jerusha Rawlings</td>
<td>Senior Biologist (Ecosphere)</td>
<td>Content Review Biological Resources</td>
</tr>
<tr>
<td>Cindy Lancaster</td>
<td>Technical Editor (Ecosphere)</td>
<td>Technical Editing</td>
</tr>
</tbody>
</table>
CHAPTER 7 – REFERENCES

Alpine Archaeological Consultants, Inc. 2021. The Navajo-Gallup Water Supply Project: A Class III Cultural Resource Inventory of Reaches 1 and 2 Corridors and Reach 3 Realignment and Horizontal Directional Drilling Pipe Lay-Down Areas of the San Juan Generating Station Alternative, and a Reach 4b Groundwater Discharge Well in San Juan County, New Mexico. Montrose, CO.


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Woods Canyon. 2019b. The Navajo-Gallup Water Supply Project: Class III Inventory and Ethnographic Summary for Pumping Plant 3 and San Juan Lateral Added Parcels, Navajo Nation and San Juan County, New Mexico. Cortez, CO.
Map 1. Proposed realignment of the Northern Portion of the San Juan Lateral and Vicinity
Map 2. 2009 Preferred Alternative for the San Juan Lateral
Map 3. Proposed realignment of the Northern Portion of the San Juan Lateral Overview
Map 4. Proposed realignment of the Northern Portion of the San Juan Lateral project area (page 1)
Map 5. Proposed realignment of the Northern Portion of the San Juan Lateral project area (page 2)
Map 6. Proposed realignment of the Northern Portion of the San Juan Lateral project area (page 3)
Map 7. Proposed realignment of the Northern Portion of the San Juan Lateral project area (page 4)
Map 8. Proposed realignment of the Northern Portion of the San Juan Lateral project area (page 5)
Map 9. Proposed realignment of the Northern Portion of the San Juan Lateral project area (page 6)
Map 10. Proposed realignment of the Northern Portion of the San Juan Lateral project area (page 7)
Map 11. Proposed realignment of the Northern Portion of the San Juan Lateral project area (page 8)
Map 12. Proposed realignment of the Northern Portion of the San Juan Lateral project area (page 9)
Map 13. Proposed realignment of the Northern Portion of the San Juan Lateral project area (page 10)
APPENDIX B – BUREAU OF LAND MANAGEMENT INTERDISCIPLINARY TEAM CHECKLIST
**INTERDISCIPLINARY (ID) TEAM CHECKLIST**

**Farmington Field Office**

(EAs & DAs) - The purpose of this checklist is to document which resource issues need analysis in the NEPA document and to identify the ID team for the NEPA document. Responsible staff will make an initial determination and provide rationale for that determination, which is subject to manager review and concurrence. If warranted, issues or determinations may be changed during the NEPA process (e.g., after external scoping, during review, etc.), but changes must be documented and have Authorized Officer concurrence. All elements need a determination, assigned specialist, rationale, initials, and date. The ID team will include all specialists with a "PI" in the table below, and resources with a "PI" will be addressed in Ch. 3 of the EA.

(CXs) - The purpose of this checklist is to identify the ID team for the categorical exclusion (CX). The ID team will help the project lead develop mitigation measures and determine if extraordinary circumstances apply. **DO NOT enter a determination, initials, or date for CX projects.** Specialists may provide mitigation measures or extraordinary circumstances in the "Rationale for Determination" column, but it is not necessary at this time.

**Project Title:** Reach 2 Navajo-Gallup Water Pipeline  
**NEPA Number:** DOI-BLM-NM-F010-2022-0040-EA (IT4RM) & 2022-0025-EA (ePlanning)  
**File/Serial Number:** NMNM 144245 (Pipeline) & NMNM 144245 01 (Short-Term ROW)  
**Project Leader:** Monica Tilden

**DETERMINATION OF STAFF:** (Choose one of the following abbreviated options for the left column)

- **PI** - Present with potential for relevant impacts that need to be analyzed in Ch. 3 of the EA.
- **NP** - Not present in the area impacted by the proposed or alternative action.
- **NI** - Present, but not impacted to a degree that an analysis is required in Ch. 3 of the EA.
- **NC** - (Discussed only) Actions and impacts not changed from those disclosed in the existing NEPA documents cited in Section D of the DNA form. The Rationale column may include NI and NP discussions.

<table>
<thead>
<tr>
<th>Determination</th>
<th>Resource</th>
<th>Assigned Specialist (X)</th>
<th>Rationale for Determination</th>
<th>Initials</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>NI</strong></td>
<td>Air Quality/</td>
<td>X) W. Thomas (J) Tafoya</td>
<td>Any air impacts due to dust during construction activities will be mitigated using a dust management plan additionally the proposed project is small in scale and therefore construction activities will be short lived. Due to the short duration of construction activities emissions associated with construction will be de minimis and therefore will not require any detailed analysis.</td>
<td>WT</td>
<td>3/15/2022</td>
</tr>
<tr>
<td><strong>NI</strong></td>
<td>Greenhouse Gas Emissions</td>
<td>X) W. Thomas (J) Tafoya</td>
<td>Due to the short duration of construction activities emissions associated with construction will be de minimis and therefore will not require any detailed analysis.</td>
<td>WT</td>
<td>3/15/2022</td>
</tr>
<tr>
<td></td>
<td>Cultural Resources</td>
<td>K. Adams E. Simpson C. Lowry</td>
<td>Waiting to receive cultural report</td>
<td>KA</td>
<td>2/22/2022</td>
</tr>
<tr>
<td></td>
<td>Native American Religious and other Concerns</td>
<td>K. Adams E. Simpson C. Lowry</td>
<td>The project goes through known TCPs. We have notified BOR of this and are awaiting a response. BOR is lead agency for Section 106 on this project</td>
<td>ES</td>
<td>4/15/2022</td>
</tr>
<tr>
<td><strong>NI</strong></td>
<td>Paleontology</td>
<td>S. Landon C. Wenman</td>
<td>The proposed pipeline is located in an area mapped as PFYC 5, meaning paleo resource occurrence potential is high based on the surface geologic formation. However, no mapped paleo localities exist within the project area. BOR has indicated in their design features that work will cease and BLM will be contacted if paleo resources are encountered during construction, which would minimize impacts in ease of accidental discovery.</td>
<td>CW</td>
<td>3/2/2022</td>
</tr>
<tr>
<td><strong>NI</strong></td>
<td>Areas of Critical Environmental Concern</td>
<td>S. Allison D. McKim (R) Joyner</td>
<td>There are no Areas of Critical Environmental Concern (ACECs) or Specially Designated Areas (SDAs) occurring within the project impact area.</td>
<td>RJ</td>
<td>3.10.22</td>
</tr>
<tr>
<td><strong>NP</strong></td>
<td>Lands with Wilderness Characteristics</td>
<td>S. Allison D. McKim</td>
<td>Proposed project not in an area determined to be eligible for LWC during 2016 signed LWC Inventory.</td>
<td>SA</td>
<td>2/22/2022</td>
</tr>
</tbody>
</table>
## INTERDISCIPLINARY (ID) TEAM CHECKLIST

### Farmington Field Office

<table>
<thead>
<tr>
<th>Determination</th>
<th>Resource</th>
<th>Assigned Specialist(s)</th>
<th>Rationale for Determination</th>
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<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>NP</td>
<td>Wilderness</td>
<td>(X) S. Allison, D. McKim</td>
<td>Proposed project not in proximity to either the Ibisi/De-Na-Zin or Ah-shi-shi-De-pah Wilderness.</td>
<td>SA</td>
<td>02/22/2022</td>
</tr>
<tr>
<td>NI</td>
<td>Visual Resources</td>
<td>(X) S. Allison, D. McKim</td>
<td>Proposed project is a buried pipeline that will result in a weak short term visual contrast that is consistent with VRM11V goals.</td>
<td>SA</td>
<td>02/22/2022</td>
</tr>
<tr>
<td>NP</td>
<td>Recreation</td>
<td>(X) D. McKim, S. Allison</td>
<td>No impacts to dispersed recreation</td>
<td>DM</td>
<td>02/16/2022</td>
</tr>
<tr>
<td>NP</td>
<td>Fuels/Fire Management</td>
<td>(X) J. Quintana, R. Joyner</td>
<td>No impacts to Fire/Fuels</td>
<td>JQ</td>
<td>02/22/2022</td>
</tr>
<tr>
<td>NP</td>
<td>Geology</td>
<td>(X) C. Wenman</td>
<td>No geologic resources managed under the 2003 BLM FFO RMP exist within the proposed project area.</td>
<td>CW</td>
<td>3/2/2022</td>
</tr>
<tr>
<td>NI</td>
<td>Solid Mineral Resources</td>
<td>(X) C. Wenman</td>
<td>The project is located adjacent to the San Juan Underground Mine, and overlaps with their lease boundary. Ensure that the coal mine is aware of the project and attends the onsite if necessary to ensure the pipeline ROW does not interfere with coal mining operations and safety.</td>
<td>CW</td>
<td>3/2/2022</td>
</tr>
<tr>
<td>NI</td>
<td>Oil and Gas / Energy Production</td>
<td>(X) R. Joyner, C. Wenman</td>
<td>The proposed project overlaps existing oil and gas lease NNMNM-013059, which is currently held by production and has active wells on it. If the ROW is planned to avoid existing infrastructure then no impacts to current or future potential development of fluid minerals exist.</td>
<td>CW</td>
<td>3/2/2022</td>
</tr>
<tr>
<td>NI</td>
<td>Lands/Access</td>
<td>(X) V. Barber, M. Brown, M. Tilden</td>
<td>The proposed project area could possibly interfere with existing ROWs or Realty actions. Any proposals for future ROW projects within the proposed project area would be reviewed on a site-specific basis. Coordination with existing FNM ROW holder and application of standard operating procedures, design features, BMPs and stipulations would ensure protection of existing ROW corridors. The proposed H2O pipeline would follow existing FNM H2O pipeline ROW NNMNM 018685, and cross FNM H2O pipeline ROWs NNMNM 018685 &amp; NNMNM 125446. An existing access road would be utilized therefore lands or access would not be impacted.</td>
<td>MT</td>
<td>4/15/2022</td>
</tr>
<tr>
<td>NI</td>
<td>Wastes (hazardous or solid)</td>
<td>(X) W. Thomas, R. Joyner, C. Wenman</td>
<td>The proposed project will not produce any waste.</td>
<td>WT</td>
<td>3/15/2022</td>
</tr>
<tr>
<td>NP</td>
<td>Livestock Grazing</td>
<td>(X) B. Witmore, C. Gould, N. Craun, R. Culp</td>
<td>There are no livestock grazing allotments within the project area.</td>
<td>JNC</td>
<td>02/22/2022</td>
</tr>
<tr>
<td>NI</td>
<td>Public Land Health Standards</td>
<td>(X) B. Witmore, C. Gould, N. Craun, R. Culp</td>
<td>The reclamation plan is expected to mitigate any impact to Public Land Health Standards.</td>
<td>JNC</td>
<td>02/22/2022</td>
</tr>
<tr>
<td>NI</td>
<td>Invasive Species/Noxious Weeds</td>
<td>(X) H. Perry</td>
<td>Noxious weeds will be treated if revegetation efforts are not successful. The project will follow the weed management outlined in the NGWSRP Revegetation Plan. Any noxious weed that were not previously identified on site shall be managed for immediate eradication.</td>
<td>HP</td>
<td>4/13/2022</td>
</tr>
<tr>
<td>NI</td>
<td>Vegetation Excluding USFWS Designated Species</td>
<td>(X) B. Witmore, C. Gould, N. Craun, R. Culp</td>
<td>The project area contains badland/rock/wash and grassland vegetation communities. These communities are abundant in the surrounding area and the project Reclamation Plan is expected to be sufficient in restoring appropriate species to the project area upon project completion.</td>
<td>JNC</td>
<td>02/22/2022</td>
</tr>
<tr>
<td>NP</td>
<td>Special Status Plant Species and Animal Species</td>
<td>(X) J. Kendall</td>
<td>No known BLM sensitive species habitat known within PPA.</td>
<td>JK</td>
<td>4/19/22</td>
</tr>
</tbody>
</table>

Project Title: Reach 2 Navajo Gallup Pipeline
# INTERDISCIPLINARY (ID) TEAM CHECKLIST

**Farmington Field Office**

<table>
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<tr>
<th>Determination</th>
<th>Resource</th>
<th>Assigned Specialist(s)</th>
<th>Rationale for Determination¹</th>
<th>Initials²</th>
<th>Date³</th>
</tr>
</thead>
<tbody>
<tr>
<td>PI</td>
<td>Threatened, Endangered or Candidate Plant and Animal Species</td>
<td>(X) J. Kendall</td>
<td>Section 7 consultation under ESA required</td>
<td>JK</td>
<td>4/19/22</td>
</tr>
<tr>
<td>NI</td>
<td>Migratory Birds</td>
<td>(X) J. Kendall</td>
<td>Nesting habitat withing PPA is minimal. Active nests will be avoided</td>
<td>JK</td>
<td>4/19/22</td>
</tr>
<tr>
<td>NI</td>
<td>Wildlife</td>
<td>(X) R. McBee</td>
<td>This project not anticipated to have significant impact on big game wildlife</td>
<td>RM</td>
<td>2/22/22</td>
</tr>
<tr>
<td>NI</td>
<td>Wildlife-aquatic</td>
<td>(X) R. McBee</td>
<td>This project not anticipated to have significant impact on aquatic wildlife</td>
<td>RM</td>
<td>2/22/22</td>
</tr>
<tr>
<td>NP</td>
<td>Wetlands/Riparian Zones</td>
<td>(X) H. Perry</td>
<td>There are no wetlands or riparian areas identified in the project area</td>
<td>HP</td>
<td>4/13/2022</td>
</tr>
<tr>
<td>NI</td>
<td>Water Resources/Quality (drinking/surface/ground)</td>
<td>(X) W. Thomas</td>
<td>The amount of water required to suppress dust during construction activities of the proposed project will be determinate and therefore not require any detailed analysis.</td>
<td>WT</td>
<td>3/15/2022</td>
</tr>
<tr>
<td>NI</td>
<td>Soils</td>
<td>(X) W. Thomas</td>
<td>Soils will be mitigated through a reclamation plan that will stabilize soils and reduce potential of erosion during the reclamation activities.</td>
<td>WT</td>
<td>3/15/2022</td>
</tr>
<tr>
<td>NP</td>
<td>Wild Horses and Burros</td>
<td>(X) R. Culp, B. Whitmore, C. Gould, (X) N. Cunn</td>
<td>There are no Congressionally-designated Wild Horses or Burros in the project area.</td>
<td>IJC</td>
<td>2/22/2022</td>
</tr>
<tr>
<td>NI</td>
<td>Socio-Economics</td>
<td>(X) R. Joyner</td>
<td>The impacts associated with implementation of the project are not anticipated to be directly linked with socio-economic conditions in the region.</td>
<td>RJ</td>
<td>3.10.22</td>
</tr>
<tr>
<td>PI</td>
<td>Environmental Justice</td>
<td>(X) R. Joyner</td>
<td>How will the introduction of greater access to water effect the quality of life for individuals living in impacted EJ communities?</td>
<td>RJ</td>
<td>3.10.22</td>
</tr>
</tbody>
</table>

¹ Rationale for Determination is required for all "NI" and "NP." Write brief issue statements for "PIs."

² The appropriate resource specialist or Authorized Officer or NEPA Coordinator entering the determination should enter their initials. Typically, the assigned specialist should enter initials. If a senior specialist or the Authorized Officer assigns a resource specialist to the NEPA project, the senior specialist or Authorized Officer shall enter their initials in this column after making a determination. If the assigned specialist is making the determination from an off-site location (i.e., state office), the project lead may enter their own initials as long as the determination is documented (i.e., e-mail, conversation record, etc.). DO NOT enter someone else's initials.

³ The date entered should be the date the determination was made by the assigned specialist, senior specialist, or Authorized Officer.

### PROJECT-ASSIGNED SPECIALISTS REVIEW:

<table>
<thead>
<tr>
<th>Reviewer Title</th>
<th>Initials⁴</th>
<th>Date</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>NEPA Coordinator or Supervisor</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

⁴ Initials in this column indicates that the NEPA Coordinator has reviewed the assigned specialists column and agrees that the specialists that have been assigned or that have entered PIs (for EAs) will be included in the ID Team for the project. This section is typically initiated at the initial project presentation meeting.

### INITIAL DETERMINATION REVIEW (EA or DNA only):

<table>
<thead>
<tr>
<th>Reviewer Title</th>
<th>Initials⁵</th>
<th>Date</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>NEPA Coordinator or Supervisor</td>
<td></td>
<td></td>
<td></td>
</tr>
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</table>

Project Title: Reach 2 Navajo Gallup Pipeline
INTERDISCIPLINARY (ID) TEAM CHECKLIST

Farmington Field Office

1. Initials in this column indicate that the Authorized Officer or NEPA Coordinator has reviewed the completed checklist after the ID Team entered initial determinations, and the project lead may continue the NEPA process. Initials will not be made here for categorical exclusions (CEs).
APPENDIX C – SAN JUAN LATERAL WATER TREATMENT PLAN APPRAISAL LEVEL DESIGN
SJLWTP Appraisal Level Design - Initial View of Site & Building Layout

Steve Dundorf, Technical Service Center - Water Treatment & TSC Design Team
Comparison
Conventional / GAC
Conventional / GAC
Conventional / GAC
Conventional / GAC
Conventional / GAC
UF / NF
APPENDIX D – ENDANGERED SPECIES ACT AND BIOLOGICAL RESOURCES COMPLIANCE DOCUMENTATION

(Currently undergoing consultation. Documentation to be included in the Final EA)
APPENDIX E – ENVIRONMENTAL ASSESSMENT DISTRIBUTION LIST
NGWSP Cooperating Agencies

- BIA Navajo Region
- City of Gallup, New Mexico
- Indian Health Service Navajo Area
- Jicarilla Apache Nation
- Navajo Nation
  - Office of the President and Vice President
  - Washington Office
  - Department of Water Resources
  - Heritage and Historic Preservation Department
  - Environmental Protection Agency
  - Department of Justice
  - Department of Natural Resources
  - Water Rights Commission
  - Navajo Tribal Utility Authority
- Northwest New Mexico Council of Governments
- State of New Mexico

Cooperating Federal Agencies (Proposed Action)

- BLM FFO

Associated Federal Agencies

- USACE Albuquerque District
- USEPA Regions 6 and 9
- USFWS New Mexico Ecological Services and SJBRIP
- USGS New Mexico Water Science Center
- WAPA

Associated State Agencies

- New Mexico Office of the State Engineer
- New Mexico Interstate Stream Commission
- New Mexico Environment Department
- NMSLO
- NMDOT
- New Mexico Historic Preservation Department
- New Mexico Energy, Minerals, and Natural Resources Department Forestry Division

Local Government / Navajo Nation Chapters

- City of Farmington
- San Juan County
- Town of Kirtland
- Unincorporated communities of Waterflow and Fruitland
• Nenahnezad, Upper Fruitland, Tse Daa K’aan (Hogback), San Juan, Shiprock, and Tse Alnaozti’i’ (Sanostee) Chapters of the Navajo Nation

▪ Agencies and Tribes Participating in the NGWSP Cultural Programmatic Agreement (if not already listed)

• Signatories
  ▪ Advisory Council on Historic Preservation
  ▪ New Mexico State Historic Preservation Office

• Concurring Parties
  ▪ Hopi Tribe
  ▪ Pueblo of Acoma
  ▪ Pueblo of Jemez
  ▪ Pueblo of Zuni
  ▪ Santa Clara Pueblo
  ▪ Ute Mountain Ute Tribe

• Other Consulting Parties
  ▪ Hualapai Tribe
  ▪ Pueblo of Ohkay Owingeh
  ▪ Pueblo of Pojoaque
  ▪ Pueblo of Santa Ana
  ▪ Pueblo of Zia
  ▪ Southern Ute Indian Tribe

▪ Other Entities

  • DePauli Engineering
  • Enchant Energy
  • Farmington Electric Utility System
  • Greater Gallup Economic Development Corporation
  • Lower Valley Water Users
  • PNM
  • San Juan River Dineh Water Users, Inc.
  • San Juan Water Commission
  • Souder, Miller & Associates
  • Stelzner Law Firm
  • Wood

▪ Adjacent landowners

  • Dr. Christine Benally
  • Emma Saul
  • Tracey Irwin
  • Nancy Dickerson and Garan Shaw
  • Justin and Amanda Decker
• Marilyn Perez
• Marcela Valencia
• Carol Onita Romine
• Valeria Duran
• Robin Ridgeway
• Damian Duran Arias
• Regina and Donald J. Chitty, Sr.
• Larry Don Chitty
• Open Bible Baptist Church
• Lou Brandy
• Ryan Vincent Mitchell Aragon
• Johnson and Joanne Muskett
• Perry and Rena Joe
• Deborah Mitchell
• James and Mary Rogers
• Eugene and Betty Frank
• Zach and Jamie Lyn Rogers
• Leroy and Velda Ortiz
• Michael and Jennifer Sanisya
• Joshua Benally and Stephanie Hamm
• Victoria Anderson
• Damita Clawson
• Sean Bekis
• Rex and Margie Ogden
• Uriah Simpson
• Silvia Garcia
• Vince Tsosie
• Tommy and Treva Lee
• Jim and Ethel Clyde
• Percella Nagle
• Lingley Thomas
• Donald and Carol Lasley
• Anne Donato
• Wesley Cobb
• Brent and Jenelle Young
• Luis Adan Vargas
• Fred and Janice Hennrich
• Everett and Suzanna Tsosie
• Maurice Martinez
• Dennis and Phoebe Carlson
• Tashina and Charlie Vance
• Corey and Kymberlie Topaha
• Justin and Carrie Bowman
• Erica and Ronson Clani
• Donald Paul Hetrick
• Tileda Harry
• William Bruce Jr.
• Nolan Silversmith