Draft Supplemental Environmental Assessment

of the

Revised Mitigation Plan

for the

Tamaya Drainage Project,

Pueblo of Santa Ana,

Sandoval County, New Mexico

Prepared by

U.S. Army Corps of Engineers

Albuquerque District

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US Army Corps of Engineers®
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Draft Finding of No Significant Impact of the Revised Mitigation Plan for the Tamaya Drainage Project, Pueblo of Santa Ana, Sandoval County, New Mexico

The U.S. Army Corps of Engineers (USACE), Albuquerque District, in collaboration with and at the request of the Pueblo of Santa Ana, completed the *Implementation Report with Integrated Environmental Assessment for the Tamaya Drainage Project, Sandoval County, New Mexico* (IR/EA), in April 2013. A Finding of No Significant Impact (FONSI) was signed on April 19, 2013. The IR/EA included an analysis of measures to alleviate the ponding of stagnant water adjacent to the Pueblo of Santa Ana ancestral village of Tamaya. The pond is caused by seepage of groundwater behind the Santa Ana Pueblo Protection Works levee, which is part of the USACE's Jemez Canyon Dam and Reservoir Project. As part of the Tamaya Drainage Project IR/EA, USACE proposed mitigation to compensate for the loss of wetland functions due to the project.

In 2016, USACE completed a Supplemental Environmental Assessment (SEA) which describes a revised wetland mitigation plan. The revised plan would create a compensatory wetland mitigation pond in an upland site along the Jemez River approximately 3.1 miles upstream from Tamaya Village. The mitigation wetland would be created prior to filling the pond at Tamaya Village. The wetland would have an area of 2 acres and would be constructed by excavating the area, lining the excavation with a geosynthetic clay liner, and installing native wetland plants. Water would be provided by pumping from an existing well. The created wetland would provide a permanent source of water for wildlife, mitigating for wetland function that would otherwise be lost.

Five initial alternatives for the created wetland mitigation site were analyzed in the IR/EA and included different locations and wetland sizes. The alternative that was selected in the IR/EA included two components: preservation of a wet sedge meadow and construction of a permanent wetland pond. The preservation component is unchanged; only the location of the constructed wetland is changed and is addressed in the SEA.

The USACE has worked intensively with the Pueblo of Santa Ana to coordinate planning efforts and project-related activities. Consultation has taken place between the USACE and the Pueblo of Santa Ana Tribal Historic Preservation Office (THPO). On February 25, 2015, the THPO concurred with the USACE's determination that there would be no adverse effect to historic properties from construction of the revised mitigation plan.

As required by the Endangered Species Act, the USACE has determined that the revised plan would have no effect on any threatened or endangered species, or designated or proposed critical habitat, receiving protection under the Endangered Species Act.

The revised mitigation plan is compliant with the requirements of the Endangered Species Act, the Clean Water Act, the Clean Air Act, and the National Historic Preservation Act, as well as pertinent Tribal Council resolutions and policies. There would be no significant adverse social or economic effects to the tribal and regional community by the implementation of the revised mitigation plan. The project would benefit the Pueblo's wildlife management efforts, and would fulfill the USACE's agreement with the Pueblo to mitigate for lost wetland functions.

Best management practices to avoid or minimize adverse environmental impacts that would be implemented as part of the revised plan are the same as those proposed in the IR/EA, and include measures required to comply with the Section 404 of the Clean Water Act, and with Section 401 Water Quality Certification issued by the U.S. Environmental Protection Agency.

- Project construction would occur outside the migratory bird nesting season to avoid indirect effects to any birds that may migrate through or forage in the general vicinity of the project.
- Following construction, the soil would be stabilized and all disturbed areas would be revegetated with appropriate native species.
- Access roads and disturbed soil will be wetted.
- All vehicles involved in transporting fill material, rubble and spoil to or from the project site will be covered and would have required emission control equipment.
- Stockpiles of debris, soil, sand, or other materials that could produce dust will be watered or covered.

The revised mitigation plan would not change or affect water rights. The plan would result in only minor or temporary adverse effects to soils, air quality, aesthetics, noise levels, and wildlife species and habitat during construction. Long-term benefits to wetlands, wildlife species and habitat, and land use would increase as the mitigation area's vegetation matures. The following elements were analyzed and would not be significantly affected by the revised mitigation plan: climate, geology, hydrology and hydraulics, water quality, floodplains, special status species, and Indian Trust Assets.

The revised mitigation plan has been fully coordinated with federal and tribal agencies with jurisdiction over the ecological, cultural, and hydrologic resources of the proposed project area. Construction activities may be temporarily suspended for tribal ceremonies or special functions as requested by the Pueblo. Temporary work suspensions would be coordinated through all appropriate points-of-contact.

In consideration of the analysis presented in the SEA, the revised mitigation plan is found to have no significant impacts on the human environment and is recommended for implementation. Therefore, an Environmental Impact Statement will not be prepared for this mitigation plan.

_____ _____

Date

Patrick J. Dagon
Lieutenant Colonel, U.S. Army
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Contents

1 - Background 1
1.1 Purpose, Scope, Authority, and Need for Action 1
1.2 Regulatory Compliance 5
2 - Descriptions of the Revised Mitigation Plan and Alternatives 6
2.1 Alternatives Considered in Original Mitigation Plan 6
2.2 Revised Mitigation Wetland Location 6
2.3 Proposed Mitigation Wetland Design 6
3 - Existing Environment and Foreseeable Effects of the Proposed Mitigation and Original 2013 Alternative 9
3.1 Physical Environment 9
3.1.1 Geology, Topography and Soils 9
3.1.2 Hydrology 13
3.1.3 Groundwater 14
3.1.4 Air Quality 15
3.2 Climate and Climate Change 16
3.3 Biological Resources 17
3.3.1 Vegetation 17
3.3.2 Wildlife 19
3.3.3 Special Status Species: Federally Threatened and Endangered Species 19
3.3.4 Noxious Weeds and Invasive Species 20
3.4 Floodplains 20
3.5 Wetlands and Clean Water Act compliance 21
3.6 Hazardous, Toxic or Radioactive Wastes 21
3.7 Cultural Resources 21
3.8 Land Ownership 23
3.9 Indian Trust Assets 23
3.10 Socioeconomic Considerations and Environmental Justice 24
3.10.1 Demographics 24
3.10.2 Land Use 24
3.10.3 Environmental Justice 25

3.11 Aesthetics and Noise 25
4 - Conclusions and Summary 25
5 - Preparation and Quality Control.....28
6 - Coordination and Public Review.....29
6.1 Agency Consultation and Coordination.....29
6.2 Mailing List for Draft SEA 30
7 - References.....31

List of Figures

Figure 1: Location map, Tamaya Village, mitigation sites, and landmarks discussed in report 3
Figure 2: Project Locality Map 4
Figure 3: Proposed created wetland mitigation site design 8
Figure 4: Surface Geology 10
Figure 5: Soil Classification (U.S. Department of Agriculture, NRCS).....12
Figure 6: Aerial view of proposed mitigation site 18

List of Tables

Table 1: Comparison of alternatives and their effects 27

List of Appendices

Appendix A – Cultural Resources Coordination

Appendix B – Clean Water Act Section 404 compliance:
Wetland Mitigation Plan
404(b)(1) Analysis
Water Quality Certification

Appendix C – Technical Appendix
Geotechnical boring logs
Well Data

1 - Background

1.1 Purpose, Scope, Authority, and Need for Action

The U.S. Army Corps of Engineers (USACE), Albuquerque District, completed the *Implementation Report with Integrated Environmental Assessment* for the *Tamaya Drainage Project, Sandoval County, New Mexico* (IR/EA), in April 2013. The document is available at: http://www.spa.usace.army.mil/Missions/Environmental/EnvironmentalComplianceDocuments/EnvironmentalAssessmentsFONSI.aspx. A Finding of No Significant Impact (FONSI) was signed on April 19, 2013. The IR/EA included an analysis of measures to alleviate the health, safety, and aesthetic concerns associated with the ponding of stagnant water adjacent to the Pueblo of Santa Ana ancestral village, Tamaya. The pond is caused by seepage of groundwater and surface flows behind the Santa Ana Pueblo Protection Works levee, which is part of the USACE's Jemez Canyon Dam and Reservoir Project. In the IR/EA for the Tamaya Drainage Project, USACE proposed to fill the pond to improve the health, safety and aesthetic concerns for the Pueblo of Santa Ana. The selected plan for resolving these concerns has not changed and remains as described in the IR/EA.

USACE has proposed mitigation to compensate for the loss of wetlands associated with the Tamaya Drainage Project. The original mitigation plan was contained in Appendix B of the 2013 IR/EA. This Supplemental Environmental Assessment (SEA) describes a proposed change in the wetland mitigation plan. The implementation of the revised mitigation plan is the sole action addressed in this SEA. .

The Jemez Canyon Dam and Reservoir (JCDR) Project was authorized for flood and sediment control purposes under the Flood Control Acts of 1948 (P.L. 80-858) and 1950 (P.L. 81-516). The JCDR is located on the Jemez River 2.8 miles upstream from its confluence with the Rio Grande. The dam is situated approximately 4.5 miles downstream from Tamaya Village, and is about five miles northwest of Bernalillo and about 20 miles north of Albuquerque. As described in the 2013 IR/EA, all lands associated with the JCDR are located entirely within the boundaries of the Pueblo of Santa Ana, a federally recognized Native American Tribe. Jemez Canyon Dam and appurtenant works were completed and placed into operation in October 1953. The proposed wetland mitigation plan described here would be conducted under USACE's operation and maintenance authority for the dam.

The history of the extensive planning effort to correct the drainage problems near Tamaya Village is detailed in the IR/EA, along with alternatives considered for the project and their effects. The planning effort for the Tamaya Drainage project and the wetland mitigation plan included extensive involvement by and collaboration with the Pueblo. Pueblo involvement has included participating in the project team, providing data, and participating in and facilitating site visits and field work. Additionally, the USACE has made presentations to the Governor and Tribal Council at critical decision points.

The originally proposed wetland mitigation site was located near the Jemez weir ("original mitigation site" in Figure 1:). The revised mitigation proposal places the mitigation site in an upland location approximately 3.1 miles upstream from the Village (Figure 2). After the IR/EA

was completed, it became evident that the originally proposed wetland mitigation site would be subject to damage from flooding, sedimentation, and other normal riverine processes. Therefore, the wetland mitigation site was re-situated in a stable, upland site in order for the Tamaya Drainage Project to proceed.

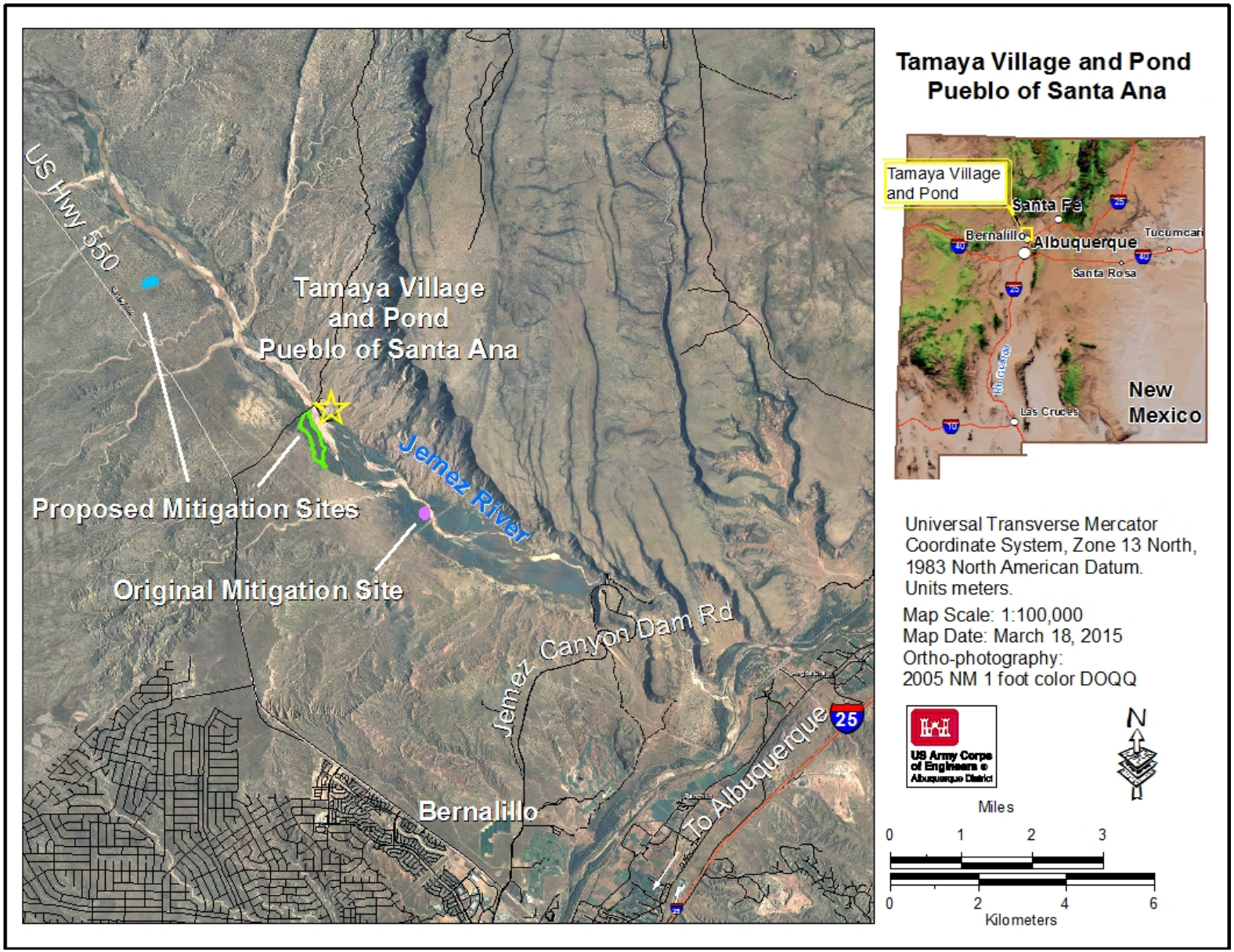

Figure 1: Location map, Tamaya Village, mitigation sites, and landmarks discussed in report

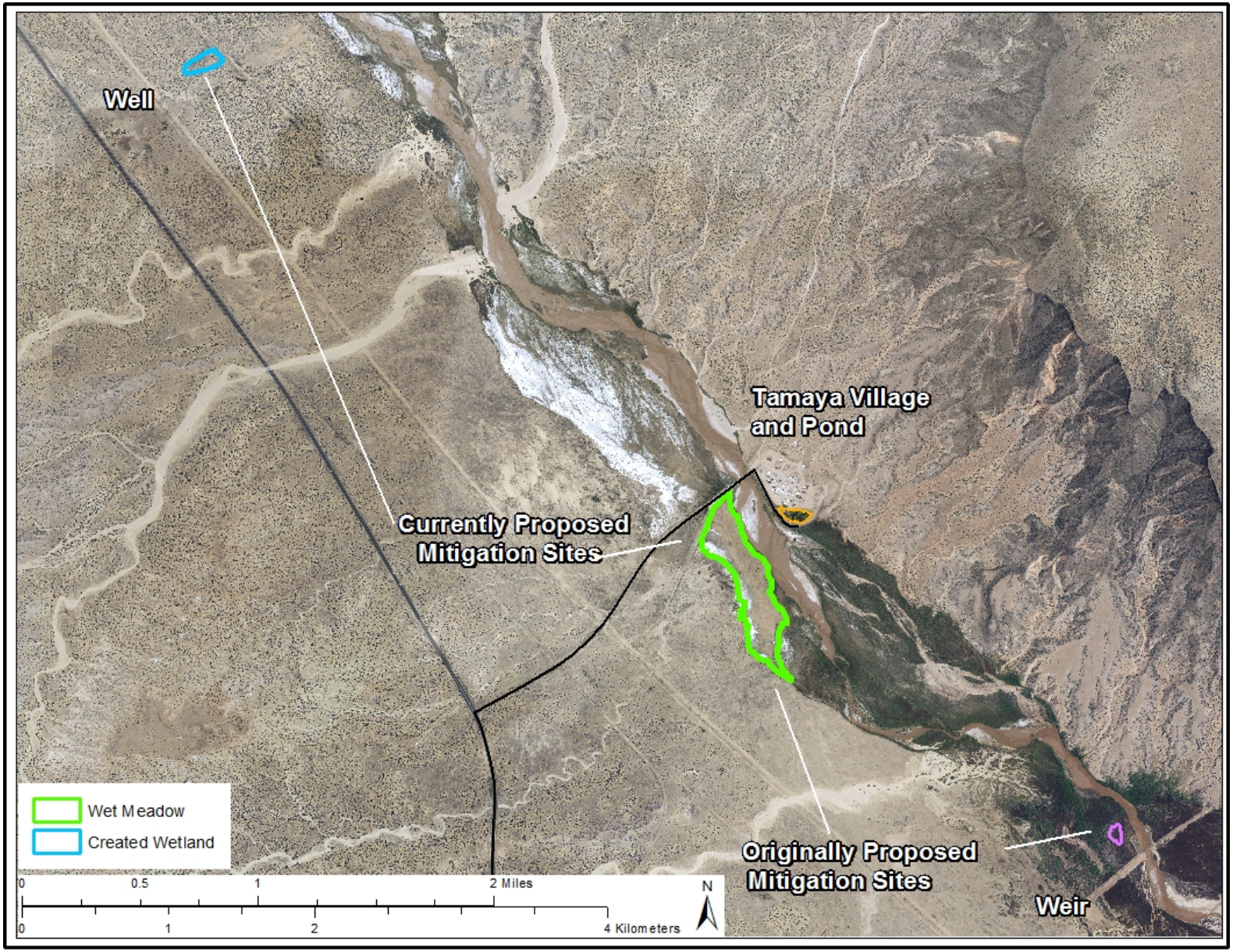

Figure 2: Project Locality Map

1.2 Regulatory Compliance

This Implementation Report/Environmental Assessment (IR/EA) was prepared by USACE, Albuquerque District, in compliance with all applicable Federal statutes, regulations, and Executive orders, including the following:

- Archaeological Resources Protection Act (16 U.S.C. 470aa *et seq*.)
- CEQ Regulations for Implementing the Procedural Provisions of NEPA (40 CFR Part 1500 *et seq*.)
- Clean Air Act (42 U.S.C. 7401 *et seq.*)
- Clean Water Act (33 U.S.C 1251 *et seq.*)
- Endangered Species Act (16 U.S.C. 1531 *et seq*.)
- Energy Independence and Security Act of 2007, P.L. 110-140, Section 438, 121 Stat. 1492, 1620
- Farmland Protection Policy Act (7 U.S.C. 4201 *et seq.*)
- Federal Noxious Weed Act (7 U.S.C. 2814)
- Fish and Wildlife Coordination Act, 48 Stat. 401; 16 USC 661 *et. seq.*
- Migratory Bird Treaty Act, 16 U.S.C. 703, *et seq.*
- National Environmental Policy Act (42 U.S.C 4321 *et seq*.)
- National Historic Preservation Act (16 U.S.C. 470 *et seq*.)
- Native American Graves Protection and Repatriation Act (25 U.S.C. 3001 *et seq*.)
- U.S. Army Corps of Engineers' Procedures for Implementing NEPA (33 CFR Part 230; ER 200-2-2)
- Executive Order 11593, Protection and Enhancement of the Cultural Environment
- Executive Order 11988, Floodplain Management
- Executive Order 11990, Protection of Wetlands
- Executive Order 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low Income Populations
- Executive Order 13112, Invasive Species
- Executive Order 13524, Federal Leadership in Environmental, Energy, and Economic Performance

2 - Descriptions of the Revised Mitigation Plan and Alternatives

2.1 Alternatives Considered in Original Mitigation Plan

The original IR/EA for the Tamaya Drainage Project (USACE 2013) considered several alternatives for wetland mitigation. A mitigation plan that combined preservation and wetland creation was selected as the most cost-effective alternative that satisfied USACE Regulatory Program requirements for mitigation under Section 404 of the Clean Water Act and provided the benefits of a permanent wetland. Preservation of the wet meadow (location shown in Figure 2) remains a component of the mitigation plan and is unchanged from the 2013 IR/EA.

Several alternative sites for the created wetland component of the mitigation plan were considered in the original plan formulation process. An upland location was considered, but was not selected initially because it was evaluated as being more costly and less sustainable than a groundwater-fed site. Sites close enough to the Jemez River to be able to be fed by groundwater would need to be located within or immediately adjacent to the floodplain. Such sites were ultimately removed from consideration because the Jemez River floodplain is so dynamic that any site within the floodplain would be subject to damage from flooding, sedimentation, and other normal riverine processes. The site originally selected for the groundwater-fed created wetland was located adjacent to the Jemez Weir, which was thought at the time to provide a stable location. This site is referred to in this document as the “original site” (location shown in Figure 1: and Figure 2). Under the 2013 plan, a groundwater-fed wetland would have been constructed in this original site by excavating ten to twelve feet to reach groundwater.

2.2 Revised Mitigation Wetland Location

Given the problems of sustained functionality with floodplain sites and the failure of the weir discussed above, the revised mitigation plan focused on sites outside the active river channel. The mitigation wetland location considered in this SEA is an upland site located approximately 2,600 feet (800 meters) from the Jemez River channel and 3.1 miles upriver and northwest of Tamaya Village (Figure 2). The site was selected because of its proximity to an existing well, sparse existing vegetation, and lack of cultural or natural resource concerns. Additionally, the location up-slope from an old railroad grade berm provides an existing topographic feature that already causes ponding of water (Figure 3). A mitigation checklist from the Regulatory Program was revised for this mitigation plan and is included in Appendix B. Based on the calculations in the mitigation checklist, a created wetland of 2.0 acres is required.

2.3 Proposed Mitigation Wetland Design

The wetland would be created by excavating a depression in the sandy soil and lining it with a geosynthetic clay liner. The created wetland would be supplied with water pumped from an existing well and piped into the wetland pond. The pump would be powered by a solar photovoltaic (PV) array. A float valve would control the water level in the pond. The wetland’s hydrology would be permanently wet, with an outlet to allow for periodic draw-down for

maintenance or adaptive management purposes. The wetland would have approximately one-third of its area at a water depth of five feet to provide an area of open water; the remaining two-thirds would be a transition zone sloping to the outer shallow water (0-2 ft.) zone vegetated with emergent wetland plants. The shallow water planting area and outer slope of the wetland would be gently sloped (1 vertical:10 horizontal) to afford easy entry for wildlife (Figure 3). The area surrounding the created wetland would be planted with riparian grasses and shrubs. A wildlife-friendly fence would be erected to keep feral horses from damaging the vegetation. Native wildlife such as pronghorn and elk would be able to pass under or jump over the fence.

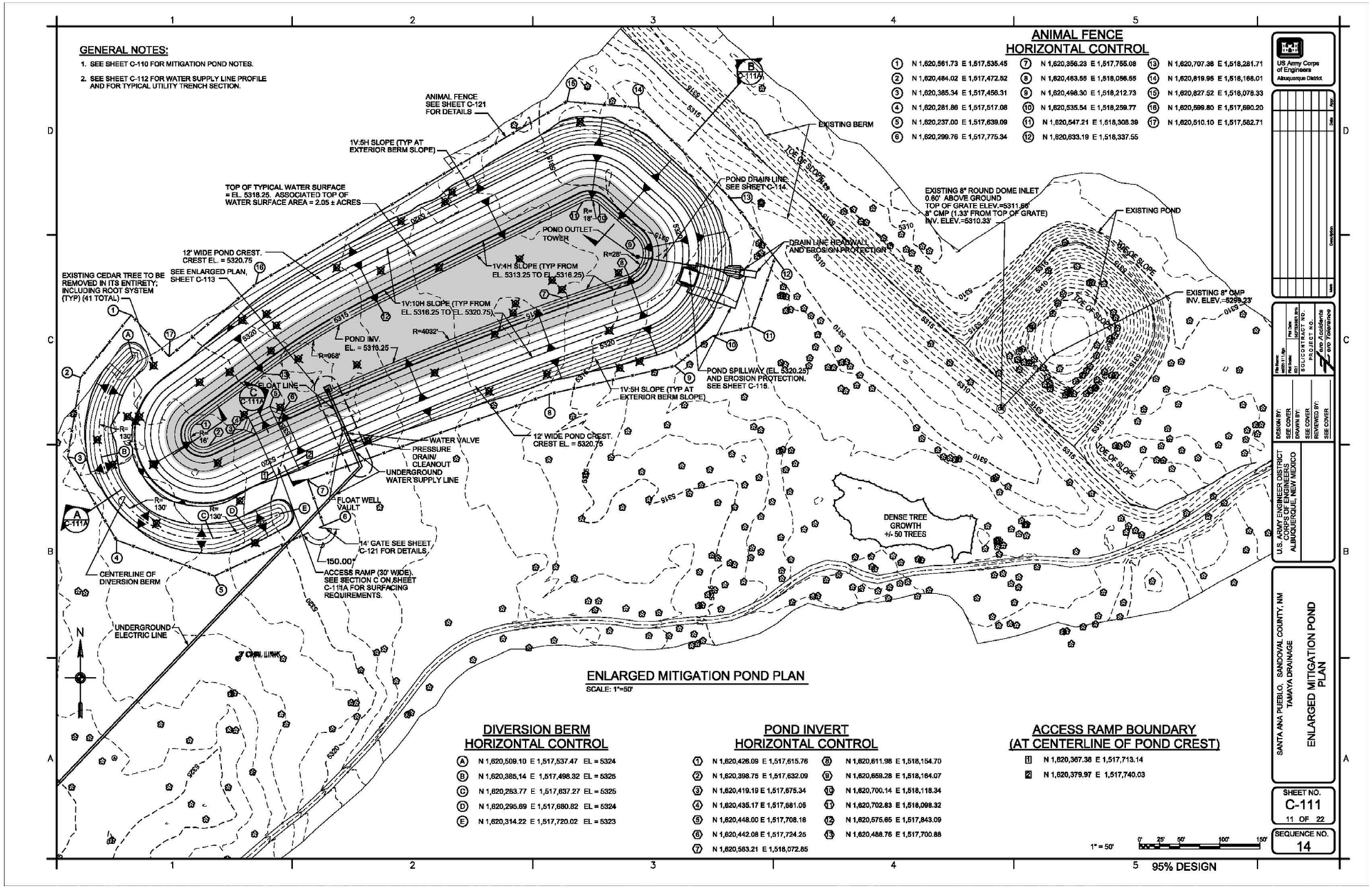

Figure 3: Proposed created wetland mitigation site design

3 - Existing Environment and Foreseeable Effects of the Proposed Mitigation and Original 2013 Alternative

Environmental conditions at the JCDR, along the Jemez River, and in Pueblo lands have been described in numerous documents (Mattingly and LeCuyer 1972; Milford, Muldavin, and Chauvin 2012; Pueblo of Santa Ana Department of Natural Resources 2012; U.S. Army Corps of Engineers 2000, 2003, 2008, 2013). This SEA focuses on conditions at the proposed created wetland mitigation site and compares the environmental effects of the original and revised mitigation plans.

3.1 Physical Environment

3.1.1 Geology, Topography and Soils

3.1.1.1 Geology

The Tamaya Drainage Project site, including the proposed mitigation site, is located within the Middle Rio Grande Basin. The mitigation wetland site is located on the U.S. Geologic Survey (USGS) Bernalillo NW Quadrangle geologic map (Personius 2002; see

Figure 4). The mitigation wetland is located in the mid-eastern portion of the quadrangle. In this part of the quadrangle, surficial geology along the Jemez River and the site of the mitigation wetland comprises unconsolidated sedimentary deposits of the Santa Fe group and Quaternary alluvium. The proposed wetland mitigation site is located entirely within the unconsolidated Quaternary alluvium.

Geological conditions in the project area would not be affected by the revised mitigation plan or the original 2013 plan.

3.1.1.2 Topography

The topography of the mitigation site is depicted in Figure 3. The area slopes gently towards the northeast and the floodplain of the Jemez River. The slope is interrupted by an abandoned, historic railroad grade berm. The mitigation site would be excavated in this slope using a balanced cut and fill design. The wetland slopes would be 1:10 to allow a broad zone for wetland plant growth.

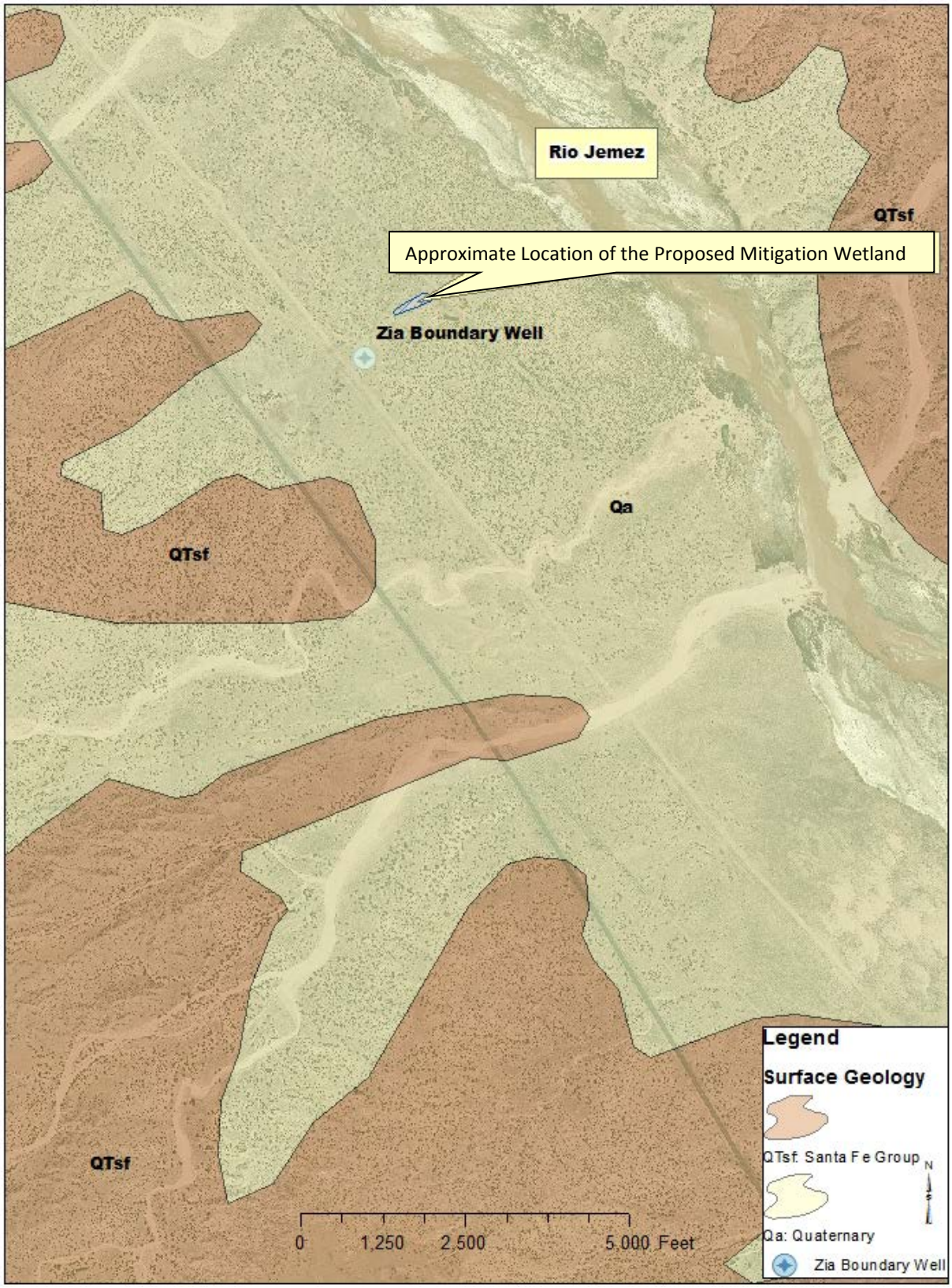

Figure 4: Surface Geology

3.1.1.3 Soils

A review of the U.S. Department of Agriculture, Natural Resource Conservation Service (NRCS) soil survey was conducted to provide an overview of soil type, including soil characteristics and chemical and physical properties in the project area (NRCS 2014). Soils found at the proposed mitigation site, and adjacent to the site, are predominately sandy and fall into two major components or Map Units: Zia-San Mateo association (Map Unit 114), and Pinavetes loamy sand (Map Unit 120). The Zia-San Mateo association is found along the weakly defined flow path through the area. The parent material of Zia soil is eolian deposits over fan alluvium derived from sandstone. This fine sandy loam soil is well drained, nonsaline and has up to 15 percent calcium carbonate.

San Mateo soil is forming in stream alluvium parent material derived from sandstone and shale. This is a slightly saline to strongly saline soil type (5.0 to 30.0 mmhos/cm) with up to ten percent calcium carbonate. The A horizon is sandy loam, whereas the C horizon is stratified sandy loam to clay loam to silty clay loam.

Pinavetes loamy sand occurs over a wider area around the site. Its parent material is eolian deposits derived from sandstone. This excessively drained, sandy soil is nonsaline with only five percent of calcium carbonate.

Because all soil types at the mitigation site are sandy, a liner is needed for the site to hold water.

There would be a minor short-term adverse effect to soils during construction of the revised mitigation plan. The soils on site would be excavated to construct the wetland basin. Excavated material would be used as fill to create the outside slopes of the wetland basin. A small berm would also be constructed with the excavated soils to deflect any surface runoff. The wetland construction is planned to balance cut and fill so that little or no soil would be removed from or imported to the project area. Over the long term, the soil would revegetate and stabilize. Wetland soils would develop over time within the mitigation pond, a beneficial long-term effect. As part of the planting plan, soil would be moved with plants from the existing Tamaya Pond to the mitigation site to introduce beneficial organisms and improve the performance of the mitigation.

Under the 2013 plan there would be a similar minor adverse effect to soils at the original mitigation site from basin excavation.

Best Management Practices (BMPs) to minimize effects to soils include:

- A Stormwater Pollution Prevention Plan (SWPPP) would be required and would minimize erosion from the site
- Following construction, the area would be seeded and planted with native grasses and shrubs to stabilize the soil.

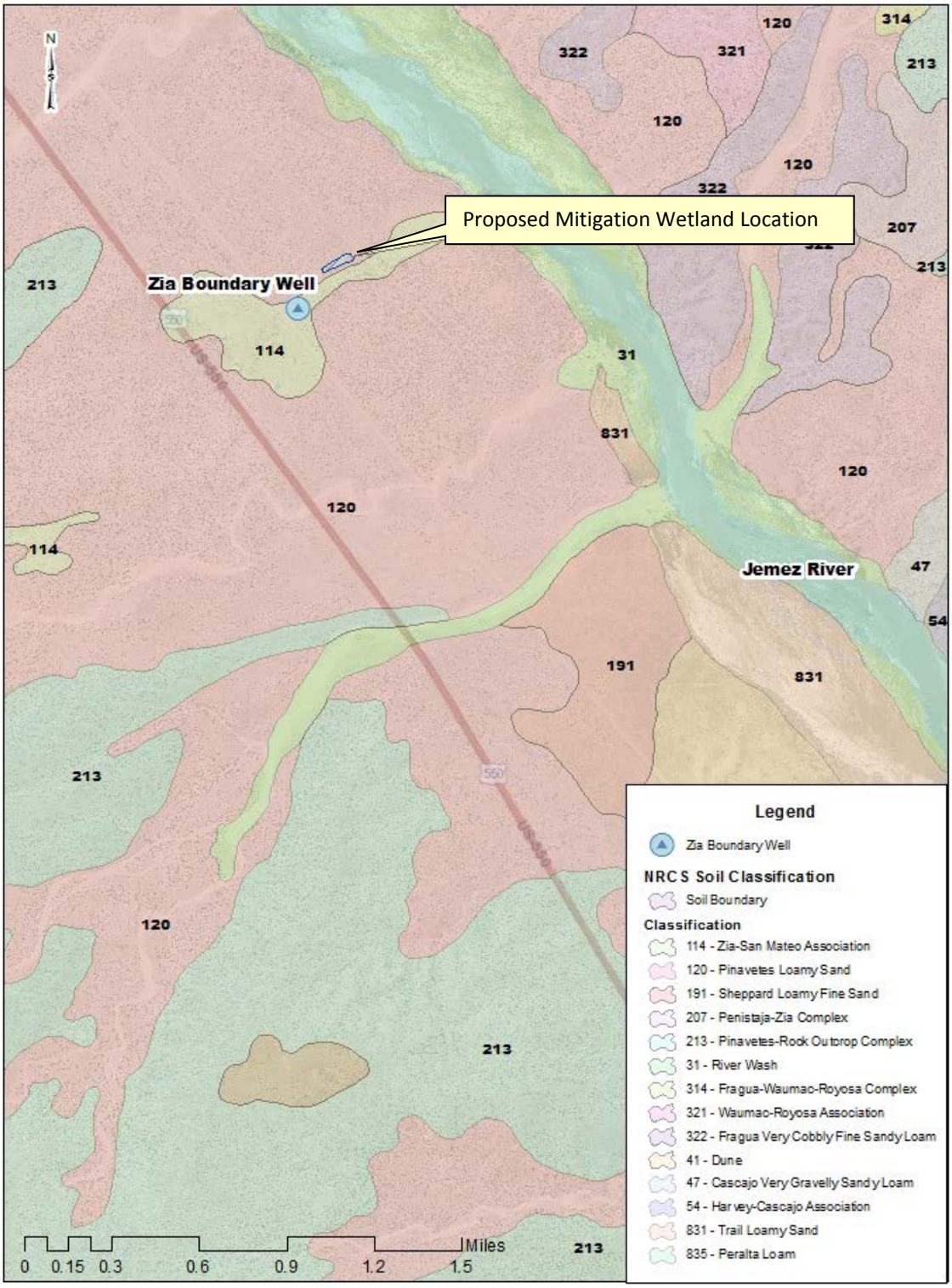

Figure 5: Soil Classification (U.S. Department of Agriculture, NRCS)

3.1.2 Hydrology

3.1.2.1 Surface Water Hydrology

The proposed wetland mitigation site is located outside the 0.2% annual chance exceedence floodplain of the Jemez River. Surface water in the area of the mitigation site is present only as runoff after heavy rains. The majority of the runoff that passes adjacent to the mitigation site comes from a 400 acre watershed southwest of Highway 550. Storm runoff from this watershed passes under the highway in a set of culverts with weakly defined flow paths. For the 100-year storm, approximately 150 to 200 cfs of this flow converges and continues north adjacent to the mitigation site with depths less than one foot and velocities of 2 feet per second or less. The wetland pond is situated to avoid this flow path and the ponded area adjacent to the railroad grade (Figure 3). Therefore, changes in surface water hydrology would be negligible under with-project conditions.

3.1.2.2 Mitigation Wetland Hydrology

The proposed mitigation wetland would be lined with a bentonite or geosynthetic clay liner to enable it to hold water. Water would be supplied from the Zia Boundary well and piped into the wetland pond. The pump would be powered by a solar PV array. A float valve would control the water level in the pond. The wetland's hydrology would therefore be permanentlyinundated, with a relatively constant water level. The vegetated margin of the pond would be temporarily saturated. An adjustable float valve would be installed to allow the water level to change seasonally if desired or for adaptive management. Additionally, an outlet would be provided to allow for periodic draw-down for maintenance or adaptive management purposes. The wetland would have approximately one-third of its area at a water depth of five feet to provide an area of open water. The remaining two-thirds would transition into shallow water vegetated with native emergent wetland plants. The planting area and outer slope of the wetland would be gently sloped (1 vertical:10 horizontal) to provide a wide zone for emergent plants and to afford easy entry for wildlife.

3.1.2.3 Sedimentation and Erosion

Sediment from storm runoff is not anticipated to be a significant issue at the proposed mitigation site because the meandering and poorly defined flow paths will pick up very little sediment and will likely deposit it where the velocities are low. The flow path that is adjacent to the proposed mitigation pond is not expected to contain a significant amount of sediment since it is shallow concentrated flow with relatively low velocities. In the current existing condition, whatever sediment the flow path along the southeast side of the pond may contain will settle out at the ponding area adjacent to the railroad grade. This condition would not change under either the original 2013 alternative or the currently proposed mitigation. Construction of the proposed mitigation site would not significantly alter the current flow paths and may inconsequentially lessen the amount of sediment carried in the flow paths with the addition of vegetation to the area. Therefore, there would be no effect to sediment from either the revised or the 2013 mitigation plans.

3.1.3 Groundwater

3.1.3.1 Water Supply

The mitigation wetland would be supplied with water by an existing well referred to as the Zia Boundary (ZB) well. The ZB well was installed in 1985 by the Bureau of Indian Affairs. The well is managed by the Pueblo of Santa Ana. The ZB well is not currently in use; it has recently been scrubbed to rehabilitate it and a pump test has been run demonstrating that its capacity is more than adequate (data provided in Appendix C).

The amount of groundwater that the ZB well will have to produce must at least equal the estimated water total losses of the mitigation wetland. Wetland water losses are from transpiration, evaporation, and the loss due to infiltration through the geotextile liner placed at the bottom of the wetland. These losses are estimated at 32,596 gallons/day (gpd) during hottest months of the year, which is equivalent to 35.26 acre-feet per year or 23 gallons per minute (gpm). The ZB well was re-developed in August of 2015. Initial pump tests indicated that the performance of the well had decreased since it was initially drilled and constructed. The U.S. Army Corps of Engineers performed a step test to determine the current specific capacity (SC) of the ZB well The SC of the ZB well was estimated to be 1.07 gpm per foot of drawdown. When initially installed, the ZB well had a SC of 3.2 gpm per ft of drawdown. This is a significant capacity reduction to 33% of its initial capacity. As a result, the well was rehabilitated to remove sediment that had settled to the bottom of the screen. After well rehabilitation, another step pump test was performed on the ZB well. The SC increased to 2.04 to 1.65 gpm per ft of drawdown (1.65 was measured at 300 gpm, while 2.04 was measure at 150 gpm) The rehabilitation of the well doubled its capacity, but the capacity is still approximately 66% of its original capacity. Even at this capacity, the ZB well can produce a sufficient amount of water to supply the wetland. For additional information related to water balances, see Appendix C (Tamaya Mitigation Wetland Water Supply Requirement Calculations).

Aquifer test data collected from the ZB well in 1985 indicate that the aquifer in this area is capable of producing enough water to supply the wetland. The aquifer's transmissivity was estimated at approximately 3500 gallons per day per foot (gpd/ft). This is more than what is required for a domestic well. Driscoll (1986) suggests that wells having transmissivity of less 1,000 gpd/ft should only be used for domestic purposes, and wells having transmissivity of more than 10,000 gpd/ft can be used for industrial or municipal purposes. The Zia Boundary well transmissivity falls between these two parameters. Typical domestic water use is somewhat less than 23 gpm, but given the peak use vs. months where total evaporative losses will decrease significantly, USACE assumes that the annual use of the Zia Boundary well will be similar to a well used for domestic purposes. The productivity of the aquifer should sustain a 23-gpm withdrawal rate, indefinitely. Therefore, there would be no effect to the aquifer from the revised mitigation plan. The original 2013 plan would not withdraw groundwater and therefore it also would not affect the aquifer. For additional information related to aquifer and pump tests, see Appendix C (Design Considerations).

3.1.3.2 Depth to Groundwater

The depth of groundwater at the ZB Well is approximately 32.5 feet below ground surface. The depth to groundwater decreases towards the mitigation wetland due to its relative proximity to the Jemez River. Drilling was performed near the wetland mitigation site using a CME 75 Hollow Stem Auger. Boreholes were drilled to 10 to 15 feet below the ground surface. No groundwater was encountered (see Appendix C, Geotechnical Boring Logs). Groundwater is expected to be below the bottom of the mitigation wetland. Therefore, a water supply will be required to maintain the wetland pool.

3.1.3.3 Groundwater Quality

Groundwater chemistry is related to the geochemical properties of the surrounding geology and soil. The degree to which the groundwater is affected by the surrounding geologic material is mostly a function of residence time, the length of time groundwater is in contact with minerals (Driscoll 1986). Other chemical and physical properties of groundwater, such as pH and temperature, also affect how groundwater dissolves minerals of the surrounding geological environment (Driscoll 1986).

The Pueblo of Santa Ana implemented a groundwater quality monitoring program in 2012 and 2013. Field test parameters included temperature, pH, specific conductance, turbidity, and dissolved solids. Laboratory analytical parameters included conductivity, salinity, Total Dissolved Solids (TDS); anions for alkalinity, bromide, fluoride, nitrite, nitrate, total phosphorus, and sulfates; and for metals, aluminum, arsenic, calcium, iron, manganese, magnesium, potassium, selenium, and sodium. The results of this effort indicate that water quality from the ZB well is adequate to supply the mitigation wetland. For detailed information related to the groundwater quality, refer to appendix C (Design Considerations).

In summary, the ZB well and the aquifer in this area can produce water of sufficient quality and quantity to supply the mitigation wetland indefinitely. There would be no effect to groundwater quality from either the revised or the original 2013 mitigation plan.

3.1.4 Air Quality

Air quality information reported in the IR/EA remains the same under this SEA. Sandoval County, which surrounds the trust lands of the Pueblo, is in attainment status for National Air Quality Standards for priority pollutants (particulate matter, sulfur oxides, nitrogen dioxide, carbon monoxide, ozone, and lead), meaning that ambient air quality meets or exceeds State and Federal standards (USEPA 2012). Generally, the only air pollutant of concern in the area is particulate matter (blowing dust during periods of high winds). In the State's Prevention of Significant Deterioration program administered by the New Mexico Environment Department (NMED), the region is designated Class II, which allows for moderate development and associated air emissions (NMED 2012).

Both the proposed mitigation plan and the original 2013 plan would cause minor, temporary effects to air quality during construction. Both plans would result in a temporary but negligible, localized increase in suspended dust (fine particles) from construction activities.

BMPs to be followed during construction to minimize dust include the following:

- Access roads and disturbed soil will be wetted.
- All vehicles involved in transporting fill material, rubble and spoil to or from the project site will be covered and would have required emission control equipment.
- Stockpiles of debris, soil, sand, or other materials that could produce dust will be watered or covered.
- Following construction, the soil would be stabilized and revegetated with appropriate native plant species.

These practices would minimize dust and emissions-related air quality impacts during construction. Once construction is complete, neither plan would have any further long-term effects on air quality. Therefore, air quality at Tamaya Village and in Sandoval County would not be affected by the proposed project or by the original 2013 alternative.

3.2 Climate and Climate Change

Climate of the Jemez River Basin is broadly described in the IR/EA and therefore includes the currently proposed mitigation site, and will not be described or analyzed further.

Climate change refers to any significant change in measures of climate such as temperature or precipitation patterns lasting for an extended period (decades or longer). As a result of climate change, summer air temperatures in the Southwestern United States are predicted to rise considerably from 2011 through 2039, average annual precipitation is expected to decrease, and mountain snowpacks are predicted to decrease significantly (USEPA 2010). These future changes are anticipated regardless of whether the proposed wetland mitigation plan is implemented. The original 2013 alternative would also have no effect on climate.

The construction phase of the proposed mitigation plan and the original 2013 plan would produce carbon emissions. However, the contributions to greenhouse gas emissions that cause climate change would be negligible. The wetland created by the proposed plan would sequester a small amount of carbon, but this amount is not expected to be significant. Therefore, neither proposed mitigation plan would have a detectable effect on climate in the short or long term.

The effect of climate change on groundwater hydrology and possible change in water table at the well that would supply water to the created wetland is unknown. If there is an adverse change, it would be addressed through adaptive management, a component of the Wetland Mitigation Plan (Appendix B).

3.3 Biological Resources

3.3.1 Vegetation

General vegetation in the Jemez River corridor was described in the IR/EA. Vegetation at the proposed mitigation site and most of the surrounding area consists of a sparse one-seed juniper (*Juniperus monosperma*)/shrub savanna. Woody vegetation includes juniper, four-wing saltbush (*Atriplex canescens*), rabbitbrush (*Ericameria nauseosa*) and cholla (*Cylindropuntia imbricata*). Grasses in this community include galleta (*Pleuraphis jamesii*), sand dropseed (*Sporobolus cryptandrus*), alkali sacaton *(S. airoides*), and mesa dropseed *(S. flexuosus*). Russian thistle (*Salsola tragus*) is common throughout the area.

Downslope from the proposed mitigation site, an area of ponding associated with the old railroad (RR) grade is barren, but supports a dense stand of juniper immediately adjacent to the south. On the riverward side of the old RR grade a pond was constructed in the past and is surrounded by saltcedar and Russian olive (*Elaeagnus angustifolia*) as well as junipers. A flow path proceeds from below this pond towards the river (Figure 6). At the lower end of the flow path, wolfberry (*Lycium pallidum*) and Jimmyweed (*Isocoma pluriflora*) are important shrubs. Saltcedar (*Tamarix*) in this area is declining or decadent, perhaps in part due to the influx of *Diorhabda* beetles in recent years. Saltgrass (*Distichlis spicata*) is also common near the river.

The proposed wetland preservation site, a wet sedge meadow on the right bank of the Jemez River, was described in the IR/EA and has not changed.

In the future under the original 2013 plan, upland vegetation would persist at the site that is now proposed as the mitigation site, and wetland vegetation would increase at the original mitigation site.

Under the proposed mitigation plan, a wetland would be created and two acres of upland vegetation would be converted to wetland vegetation and open water. This would be a beneficial change because wetlands and sources of permanent surface water are scarce in the project area. The proposed project would have the following effects on vegetation:

- At the proposed mitigation site, upland vegetation would be replaced by a 2-acre wetland. Wetland vegetation would be transplanted from the existing pond at Tamaya village to the mitigation site. Species would include bulrushes, spikerushes, yerba mansa, Baltic rush, saltgrass and scratchgrass. Other wetland species would be planted from nursery-grown plants to increase diversity (complete list provided in Appendix B).

- Native riparian shrubs and upland grasses would be planted on the higher slopes surrounding the wetland. Species would include golden currant, baccharis, sumac, New Mexico olive, alkali sacaton, dropseeds, galleta, and Indian ricegrass.

There would be a minor, long-term loss of upland vegetation due to construction of the wetland basin. The long-term result of the proposed project would be an increase in the amount of native emergent wetland vegetation. This would be a beneficial effect to native plants and wildlife, aesthetics, and land use.

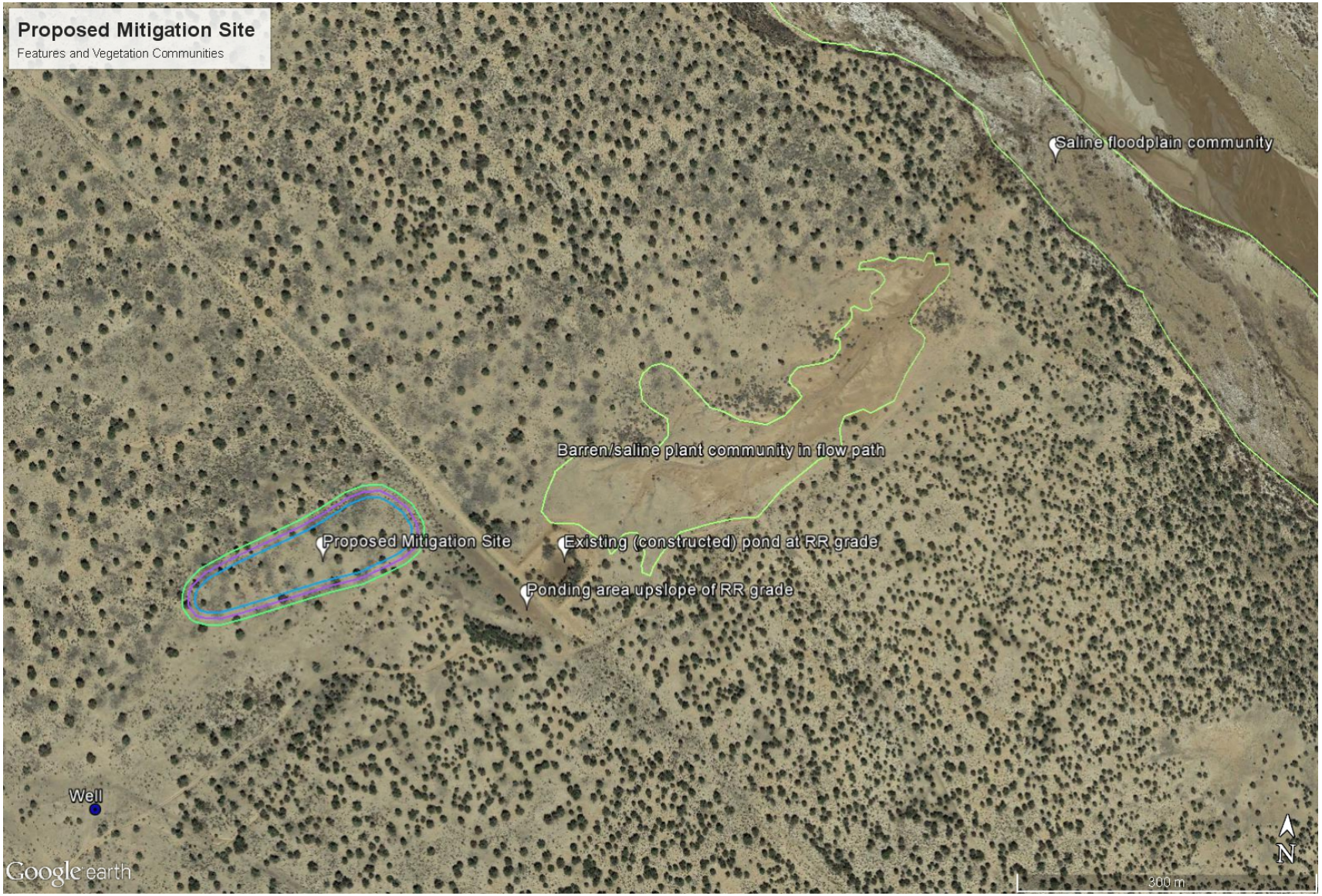

Figure 6: Aerial view of proposed mitigation site

3.3.2 Wildlife

Mammals expected to occur in the general area were listed in the IR/EA. The proposed mitigation site is in an upland area and is used by wildlife, but because of its small size and sparse vegetation, the proposed site is not expected to have significant populations of resident wildlife.

Under the proposed mitigation plan, there would be a minor, short-term adverse effect to wildlife. Terrestrial mammals, herptiles and birds would be displaced due to disturbance during construction. Over the long term, wildlife use of the mitigation site is expected to increase due to the presence of water and increased amount of vegetation. A fence would be necessary to prevent feral horses from trampling and destroying the vegetation. The fence would be designed at the proper height to exclude horses but allow access to elk, which are able to jump a fence that horses cannot.

Over the longer term, the created wetland would provide habitat for aquatic animals, mitigating for effects to animals displaced from the existing pond at Tamaya Village. Waterfowl would be attracted to the mitigation site and would bring eggs of aquatic animals such as salamanders attached to their feet. Aquatic microorganisms would be brought to the mitigation site when wetland plants are transplanted from the existing pond. Terrestrial wildlife would be attracted to the mitigation site as a source of water. With the mitigation pond in place, effects to wildlife would be beneficial. Therefore, there would be a long-term beneficial effect to wildlife populations from the proposed mitigation.

The original 2013 plan would have a similar long-term beneficial effect, but at a different location. Under the 2013 plan, there would be no effect on or change in wildlife populations in the currently proposed project area. There would be short-term minor impacts and a long-term beneficial effect to wildlife at the original site if the mitigation wetland were created there.

To minimize effects to wildlife during construction, the following BMPs would be implemented:

- Project construction would occur outside the migratory bird nesting season to avoid indirect effects to any birds that may migrate through or forage in the general vicinity of the project.
- All disturbed areas would be revegetated with appropriate native species.

3.3.3 Special Status Species: Federally Threatened and Endangered Species

Special status species were reviewed in the IR/EA. Because the proposed mitigation site is in upland habitat, there is no suitable habitat present for any of the listed species with potential to occur in the area: Rio Grande silvery minnow (*Hybognathus amarus*), Southwestern Willow Flycatcher (*Empidonax traillii extimus*), Yellow-billed Cuckoo (*Coccyzus americanus*), or New Mexico meadow jumping mouse *(Zapus hudsonius luteus)*. Because the site is not in close proximity to any areas of suitable habitat, none of these species are expected to move into the area in the future. No designated or proposed critical habitat is present in the proposed mitigation area. Therefore, pursuant to the Endangered Species Act of 1973, the USACE has determined

that there would be no effect to special status species or designated or proposed critical habitat under the proposed mitigation.

The original 2013mitigation plan was evaluated in the IR/EA. Pursuant to the Endangered Species Act of 1973, the USACE determined that the construction of a mitigation wetland in the weir area would have no effect on listed species.

3.3.4 Noxious Weeds and Invasive Species

Invasive species that occur in the general area of the proposed mitigation site include Russian olive (*Elaeagnus angustifolia*), salt cedar (*Tamarix sp.*), and Russian thistle (*Salsola tragus*). Of these, only Russian thistle is present within the mitigation site footprint and would be removed during construction. Salt cedar is prevalent in the Jemez River watershed and its control likely would be required at the mitigation site following construction. In 2011, the salt cedar leaf beetle (*Diorhabda* sp.) arrived in the area. USACE and Pueblo of Santa Ana biologists have observed extensive areas of defoliated salt cedar on Pueblo lands.

Under either mitigation plan, due to the recent arrival of the salt cedar leaf beetle, there would likely be a reduction in the number and vigor of salt cedar trees in the general area. Under the 2013 plan, salt cedar would have been removed from the original site during construction. This would not occur under the currently proposed mitigation plan.

To minimize the potential for invasive species to become established at the proposed site, the project design includes planting native species within the wetland mitigation site following excavation and filling of the pond. Grasses would be planted in the upland disturbed areas surrounding the mitigation wetland. These native plantings will reduce the bare ground available for invasive species to establish. Additionally, weeds and salt cedar would be controlled both during construction and as a component of maintenance and management of the created wetland mitigation site in perpetuity.

To prevent introduction of invasive species and noxious weeds into the proposed mitigation site, all construction equipment will be cleaned with a high-pressure water jet before entering and upon leaving the project area to prevent introduction or spread of invasive plant species. Equipment that was previously used in a waterway or wetland will be disinfected to prevent spread of aquatic disease organisms such as chytrid fungus. Disinfection water will be contained in a tank or approved off-site facility and will not be allowed to enter water ways or to be discharged prior to being treated to remove pollutants. Waste water will be tested and disposed of in accordance with all federal, state, and local regulations.

3.4 Floodplains

Executive Order 11988, Floodplain Management, directs Federal agencies to evaluate the potential effects of any actions it may take in a floodplain to restore and preserve the natural and beneficial values served by floodplains.

The mitigation site is outside the 0.2% annual chance exceedence floodplain of the Jemez River. There would be no effect to floodplains from the proposed project since the mitigation area is not

in a floodplain. The original 2013 plan would create a wetland within the Jemez River floodplain; this would be a beneficial effect because a wetland would replace invasive vegetation (saltcedar).

3.5 Wetlands and Clean Water Act compliance

Wetlands in the project area include the impact site (Tamaya Pond) and the proposed wet meadow preservation area. Tamaya Pond is a jurisdictional wetland; the Tamaya Drainage Project would result in filling this wetland, an adverse effect to wetlands which requires mitigation. Effects to these sites were analyzed in the 2013 IR/EA. With mitigation in place, effects to wetlands from the Tamaya Drainage Project were determined to be minimal. A detailed wetland mitigation plan is presented in Appendix B and has been updated, including an updated 404(b)(1) analysis to reflect the currently proposed mitigation site.

The currently proposed created wetland site is located in an upland. Therefore, there would be no effects to wetlands from the proposed new mitigation site.

Water quality and quantity in the created wetland would be monitored for three to five years following construction. After assessing any changes following construction, a longer term monitoring and adaptive management plan will be developed to ensure that the created wetland continues to meet the requirements of the mitigation plan.

3.6 Hazardous, Toxic or Radioactive Wastes

The proposed mitigation site area is rural and undeveloped with no known industries and/or hazardous waste sites or issues. There was no surface evidence to indicate hazardous waste disposal practices. Additionally, Environmental Engineering staff reviewed the Pueblo's chemical database for results of water samples collected from the well (Pueblo of Santa Ana groundwater study unpublished data). Results of these water samples do not indicate releases of hazardous wastes or substances to the environment. Based on all available information, no HTRW issues appear to be associated with the proposed mitigation site. To the best of our knowledge, the project site is free of any HTRW issues. Neither the proposed mitigation plan nor the original 2013 plan would create HTRW issues if implemented.

3.7 Cultural Resources

The USACE is the lead Federal agency for the proposed Tamaya Drainage Project and for consultation purposes under 54 U.S.C. § 306108 ("Section 106") of the National Historic Preservation Act of 1966 (16 U.S.C. § 470 et seq. re-codified under 54 U.S.C. § 300101 et seq. on December 19, 2014). The USACE is continuing our Section 106 consultation with the Pueblo's Tribal Historic Preservation Officer (THPO) regarding the Tamaya Drainage Project; for the newly added upland wetland mitigation site location.

Pursuant to 36 CFR 800.2, consulting parties in the Section 106 process for the Tamaya Drainage Project and the new upland wetland mitigation pond project area include USACE, the

Pueblo of Santa Ana THPO, and the U.S. Bureau of Indian Affairs. Since the project is located entirely within Pueblo lands, scoping letters were not sent to other tribes.

On December 10, 2013, a USACE archaeologist conducted a literature search and review of the New Mexico Cultural Resources Inventory System database and map server (NMCRIS). The project area is located within the south 1/2 of Section 7 and the north 1/2 of Section 18, Township 14 North, Range 3 East of the New Mexico Prime Meridian, as shown on USGS 7.5-Minute quadrangle map: Bernalillo NW (35106-d6). Several archaeological surveys have been conducted in the vicinity of the proposed wetland mitigation pond project area. These include the survey for the U.S. Highway 550 right-of-way, and surveys sponsored by the U.S. Bureau of Land Management and Bureau of Indian Affairs for the alignments of utility pipelines that cross Pueblo lands (NMCRIS No's. 58, 48964, 52635, 55159, and 71831). Two archaeological sites are near the project area: the LA116084 archaeological site, a small lithic scatter, is reported to occur near the mitigation site's access road and the old 1920s-1940s railroad grade of the historic, abandoned Santa Fe Northwestern Railway (LA138836) is located near the proposed mitigation pond. Searches of the State Register of Cultural Properties, National Register of Historic Places, and the NMCRIS database found that there are no other historic properties reported to occur within or immediately adjacent to the project area.

The LA116084 site, located near the access road, is reported to be a small lithic scatter that consists of lithic debitage from stone tool manufacturing and fire-cracked rock. The site has partially been disturbed in the past and no eligibility determinations have been made. The USACE would make no modifications to the access road near this location and therefore, is of the opinion that use of the access road to access the project area would result in no adverse effect to the LA116084 site.

The north side of the proposed mitigation pond will be constructed near the south side of the old 1920s-1940s railroad grade (LA138836) of the historic, abandoned Santa Fe Northwestern Railway (SFNW), a branch line of the Atchison, Topeka, and Santa Fe (AT&SF) Railroad (Glover 1990; Myrick 1970:175-176). Several segments of the old SFNW railroad grade have been previously recorded with site numbers including LA57408, LA74777, LA78691, LA109131, as well as LA138836, the location where the Jemez Weir access road crosses the grade (Everhart 2001). Previous consultation on other Pueblo projects between Pueblo of Santa Ana tribal representatives, the Pueblo's Department of Natural Resources, Earth Analytic Inc. (a cultural resources contractor to the Pueblo) and USACE has determined that the Pueblo of Santa Ana has no concerns regarding the old railroad grade (NMHPD Consultation No. 63237 and USACE Consultation letter to the NM State Historic Preservation Officer dated July 21, 2003; Appendix A). The Pueblo of Santa Ana has sparingly and traditionally utilized portions of old railroad grade as an access road since the railroad was abandoned in the early 1940s. By "old railroad grade," we mean the previously disturbed area that includes the old railroad grade and its service road. The Pueblo uses this old grade/service road for activities such as monitoring cattle and reservation property. The USACE has been using the archaeological site number LA138836 to represent the entire railroad grade alignment that is located within the Pueblo of Santa Ana Reservation.

The construction of the proposed mitigation pond requires excavation and construction of a berm to enclose the new wetland pond at a location a short distance south of the LA138836 railroad

grade. An existing pipe located nearby that drains storm water flows from the south side of the railroad grade, under the LA138836 railroad grade, to a detention basin on the north side of the railroad grade needs to be replaced. The proposed project calls for the installation of a new 8-inch corrugated metal pipe with a round dome inlet. The USACE is of the opinion that construction of the proposed wetland mitigation pond and installation of the new pipe would result in no adverse effect to the historic railroad grade and associated detention pond.

On January 22, 2014, USACE met with Pueblo representatives including the THPO to conduct a site visit of the new wetland mitigation pond project area. The THPO indicated that the Pueblo previously conducted an archaeological survey of the proposed project area and that their survey did not document any new historic properties or previously recorded sites. At that time, the THPO was also of the opinion that use of the access road for access to the project area would result in no adverse effect to the LA116084 site and that construction of the pond and installation of the culvert would result in no adverse effect to the LA138836 railroad grade and associated detention pond. During project planning, consultation with the THPO indicated that no traditional cultural properties would be affected by the project.

Based upon the cultural resources information noted above, the USACE is of the opinion that use of the existing access road and construction of the pond and installation of the culvert would result in No Adverse Effect to Historic Properties. On February 20, 2015, the USACE submitted a Section 106 consultation letter to the Pueblo's THPO seeking concurrence with our determinations of effect. On February 25, 2015, the THPO concurred with the USACE determinations (Appendix A). Similarly, the 2013 plan would have resulted in no adverse effects to historic properties, as reported in the IR/EA.

Pursuant to 36 CFR 800.13, should previously unknown artifacts or cultural resource manifestations be encountered during construction, work would cease in the immediate vicinity of the resource. A determination of significance would be made, and further consultation with the Pueblo, other tribes, if necessary, and others that may be interested in the project area would be conducted to determine the best course of action.

3.8 Land Ownership

Mitigation would take place on Tribal (Pueblo of Santa Ana) land under either plan. Implementation of either wetland mitigation project would not require or result in any change in land ownership. USACE would obtain permission from the Pueblo for implementation of the mitigation plan and future operation and maintenance of the wetland.

3.9 Indian Trust Assets

Indian Trust Assets (ITAs) are a legal interest in assets held in trust by the United States Government for Indian tribes or individuals. The United States has an Indian Trust Responsibility to protect and maintain rights reserved by or granted to Indian tribes or individuals by treaties, statues, Executive orders, and rights further interpreted by the courts. The Secretary of the DOI, acting as the trustee, holds many assets in trust. Some examples of ITAs

are lands, minerals, water rights, hunting and fishing rights, titles and money. ITAs cannot be sold, leased, or alienated without the express approval of the United States Government. The Indian Trust Responsibility requires that all Federal agencies take all actions reasonably necessary to protect such trust assets. The Department of Defense's American Indian and Alaska Native Policy, signed by Secretary of Defense William S. Cohen on October 20, 1998, and DOI's Secretarial Order 3175 and the Bureau of Indian Affairs (BIA) ITA Policy require that USACE, as the project's Lead Federal Agency, and BIA, as the Federal Land Managing Agency, consult with tribes and assess the impacts of its projects on ITAs. If any ITAs are identified and are to be impacted, further consultation on measures to avoid or minimize potential adverse effects will take place. If the project results in adverse impacts, consultation regarding mitigation and/or compensation will take place.

Since the proposed wetland mitigation project is within Pueblo Reservation lands, the Pueblo has similar cultural resources and ITA concerns under both plans. USACE has worked intensively with the Pueblo to coordinate planning efforts and project related studies. Any areas of tribal concern will be avoided during construction. No other tribal entities have been consulted regarding the proposed project. Construction of the project will address USACE concerns for trust responsibility to the Pueblo.

3.10 Socioeconomic Considerations and Environmental Justice

3.10.1 Demographics

Demographic and socioeconomic conditions at the Pueblo of Santa Ana have not substantively changed since the completion of the IR/EA. Construction of the proposed project would have no effect on socioeconomic conditions or demographics of the Pueblo. There may be a minor, temporary beneficial effect to socioecomonics if the Pueblo is contracted to perform some of the work. This would be true for either mitigation plan.

3.10.2 Land Use

Land use in the area of the proposed mitigation site is primarily for wildlife habitat. No livestock are currently allowed to graze in the JCDR project area. Nevertheless, an occasional breach of fencing occurs with resultant short-term utilization of the area by cattle. Feral horses are also present. Tribal members utilize the area near the proposed mitigation site for hunting, hiking, fishing, horseback riding, and ceremonial activities.

The proposed mitigation plan would have a beneficial effect on the Pueblo's land use and wildlife management, which is of economic importance. Providing an additional source of water in the uplands would allow for improved wildlife use of the upland area.

The original 2013 mitigation plan would also have a beneficial effect to land use because there would be a decrease in invasive vegetation and corresponding increase in native vegetation, as described in the IR/EA. Additionally, either mitigation plan would allow the Tamaya Drainage

Project to proceed, which would have a beneficial effect on land use by eliminating the nuisance ponding of water at Tamaya Village.

3.10.3 Environmental Justice

Executive Order 12898 states that to the extent practicable and permitted by law, "each Federal agency shall make achieving environmental justice part of its mission by identifying and addressing, as appropriate, disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority populations and low-income populations." The Pueblo, as a recognized Native American Tribe, is a minority community, and analysis of the proposed project and the alternative must address any disproportionate health or environmental effects to the Pueblo.

Mitigating for the lost wetland functions of the pond at Tamaya Village is required by Section 404 of the Clean Water Act in order for the Tamaya Drainage Project to proceed. Either the revised mitigation plan or the original 2013 plan would satisfy mitigation requirements and allow the project to proceed. A failure to implement either alternative would prevent the drainage project from taking place, which would constitute an environmental justice issue, as explained in the IR/EA.

3.11 Aesthetics and Noise

The proposed mitigation site is situated in gently rolling sandhills along the Jemez River in a quiet, natural setting. Views of the surrounding landscape and sky are unobstructed. The area generally has little human presence.

If the proposed mitigation project plan were constructed, there would be temporary adverse effects to aesthetics and a temporary increase in noise in the project area, due to the presence and operation of construction equipment. Construction would produce unavoidable temporary impacts to the area around the mitigation site from trucks hauling fill, grading, and other construction activities. Similar temporary impacts would result from implementation of the 2013 plan. To minimize short-term impacts under either plan, construction would be halted during ceremonial or other occasions as requested by the Pueblo. Long-term effects from either plan would be beneficial due to the increase in native vegetation and presence of a permanent water source.

4 - Conclusions and Summary

A summary of resources of concern and the effects of the revised mitigation plan and the original 2013 mitigation plan are presented in Table 1. The revised plan, creating a mitigation wetland in an upland site near the existing well, is similar to the 2013 plan in its potential effects to the human environment and its benefits. Construction of a mitigation wetland at either the currently proposed site or the original 2013 site would fulfill wetland mitigation requirements and allow the Tamaya Drainage Project to proceed. However, the unstable and dynamic nature of the

Jemez Weir area makes the weir site a high-risk site and technically infeasible. The Project Team therefore recommends implementing the revised mitigation plan in the upland site as the only viable alternative.

Table 1: Comparison of alternatives and their effects

Plan / Item Assessed	2013 Mitigation Plan: Create Mitigation Wetland at Weir Site		Revised Mitigation Plan: Create Mitigation Wetland at Upland Site	
	Short-term effects	**Long-term effects**	**Short-term effects**	**Long-term effects**
Stability of Site	**No**	**No**	**Yes**	**Yes**
Cultural Resources	No effect	No effect	No effect	No effect
Soils and Geology	Minor adverse effect to soils during construction	Minor beneficial effect to wetland soils	Minor adverse effect to soils during construction	Minor beneficial effect to wetland soils
Hydrology	No effect	No effect	No effect	No effect
Water Quality	No effect	No effect	No effect	No effect
Air Quality	Minor adverse effect during construction	No effect	Minor adverse effect during construction	No effect
Climate and Climate Change	No effect	No effect	No effect	No effect
Floodplains and Wetlands	No effect during construction	Beneficial effect	No effect during construction	Beneficial effect
HTRW	No effect	No effect	No effect	No effect
Vegetation and Wildlife	Minor adverse effect during construction	Beneficial effect	Minor adverse effect during construction	Beneficial effect
Special Status Species	No effect	No effect	No effect	No effect
Noxious Weeds and Invasive Species	Potential minor adverse effect	No effect if management is implemented	Potential minor adverse effect	No effect if management is implemented
Aesthetics and Noise	Minor adverse effect during construction	No effect	Minor adverse effect during construction	No effect
Socioeconomics, Environmental Justice	Minor beneficial effect	Beneficial effect	Minor beneficial effect	Beneficial effect
Land Ownership, Indian Trust Assets	No effect	No effect	No effect	No effect

5 - Preparation and Quality Control

This Supplemental Environmental Assessment was prepared by the U.S. Army Corps of Engineers, Albuquerque District. Personnel primarily responsible for preparation include:

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6 - Coordination and Public Review

6.1 Agency Consultation and Coordination

Agencies and entities that were consulted formally or informally in preparation of this Supplemental Environmental Assessment include:

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- Mr. William Walker, Director of Southwestern Region, Bureau of Indian Affairs
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