

RECLAMATION

Managing Water in the West

Draft Environmental Assessment

Tulare Irrigation District Plum Basin Project – Phases II and III

EA-10-064



U.S. Department of the Interior
Bureau of Reclamation
Mid Pacific Region
South-Central California Area Office
Fresno, California

March 2011

Mission Statements

The mission of the Department of the Interior is to protect and provide access to our Nation's natural and cultural heritage and honor our trust responsibilities to Indian Tribes and our commitments to 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.

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List of Acronyms and Abbreviations

APE	area of potential effects
CAA	Clean Air Act
CDFG	California Department of Fish and Game
CFR	Code of Federal regulations
CH ₄	methane
City	City of Tulare
cm	centimeter
CO	carbon monoxide
CO ₂	carbon dioxide
CNDDB	California Natural Diversity Data Base
EA	Environmental Assessment
EPA	Environmental Protection Agency
FONSI	Finding of No Significant Impact
ft	feet
FWCA	Fish and Wildlife Coordination Act
GHG	greenhouse gases
IS	Initial Study
ITA	Indian Trust Assets
MBTA	Migratory Bird Treaty Act
MND	Mitigated Negative Declaration
NAHC	Native American Heritage Commission
NEPA	National Environmental Policy Act
NHPA	National Historic Preservation Act
NRHP	National Register of Historic Places
PM ₁₀	particulate matter less than 10 microns in diameter
Reclamation	Bureau of Reclamation
RGRCP	rubber-gasketed reinforced concrete pipeline
RSO	RSO Consulting
SCADA	Supervisory Control and Data Acquisition
SHPO	State Historic Preservation Officer
SIP	State Implementation Plan
SJVAB	San Joaquin Valley Air Board
SJVAPCD	San Joaquin Valley Air Pollution Control District
TID	Tulare Irrigation District
U.S.	United States
USFWS	U.S. Fish and Wildlife Services
VOC	volatile organic compounds

Section 1 Purpose and Need

1.1 Background

In January 2008, Tulare Irrigation District (TID) and the City of Tulare (City) purchased 154-acres of property consisting of plum orchards and fallowed ground. In a joint-effort with the City, TID prepared an Initial Study (IS) and finalized a Mitigated Negative Declaration (MND) in January 2009, in accordance with the California Environmental Quality Act, which analyzed the environmental impacts of converting the 154 acres into a three-cell recharge/regulation basin (Plum Basin Project), and which is hereby incorporated by reference (TID 2009). Due to lack of funding, the Plum Basin Project was separated into three, independent functioning phases, with each phase consisting of the construction and operation of one of three cells (Figure 1).

TID applied to the Bureau of Reclamation (Reclamation) for a 2009 Water for America Challenge Grant and was selected to receive federal funds to help develop Phase I of the Plum Basin Project. The environmental impacts associated with Phase I was analyzed in Environmental Assessment (EA) number, *EA-09-77 Tulare Irrigation District Plum Basin Project – Phase I*, and a Finding of No Significant Impact (FONSI) was signed in February 2010. Both EA and FONSI are hereby incorporated by reference (Reclamation 2010).

In order to fully build-out the Plum Basin Project, TID has applied for and has been selected as a potential recipient for federal funds through a 2010 WaterSMART Grant from Reclamation to help fund the construction of Phases II and III.

1.2 Purpose and Need

The purpose of the Plum Basin Project is to enhance water supply reliability in TID and the City in order help meet existing and future water needs during periods when surface water supplies fall short. The Plum Basin Project will regulate surface water supplies and enhance flexibility in TID's water distribution system by reducing water spillage due to fluctuations in irrigation cycles. In addition, the Plum Basin Project is intended to reduce the rate of groundwater overdraft by recharging the aquifer underlying TID and the City, conserve local water resources, and encourage conjunctive use.

1.3 Scope

Reclamation's approval is limited to the appropriations of grant money, which is administrative in nature; however, the grant money would be used to partially fund the construction of the Proposed Action and is the focus of this EA. Therefore, this EA will analyze construction of the 45 and 60-acre recharge/regulation basins in accordance with Section 102 of the National Environmental Policy Act (NEPA) of 1969 (42 U.S.C. 4321, et seq.), as amended. The Plum Basin Project is located within Tulare County, California (Figure 2) in Section 29, Township 19 South, Range 25 East, Mount Diablo Base & Meridian.

This EA has also been prepared to examine potential impacts associated with the No Action Alternative.

1.4 Potential Environmental Issues

This EA will analyze the affected environment in order to determine the potential direct, indirect, and cumulative impacts to the following resources:

- Water Resources
- Land Use
- Biological Resources
- Cultural Resources
- Indian Trust Assets (ITA)
- Indian Sacred Sites
- Socioeconomic Resources
- Environmental Justice
- Air Quality
- Global Climate

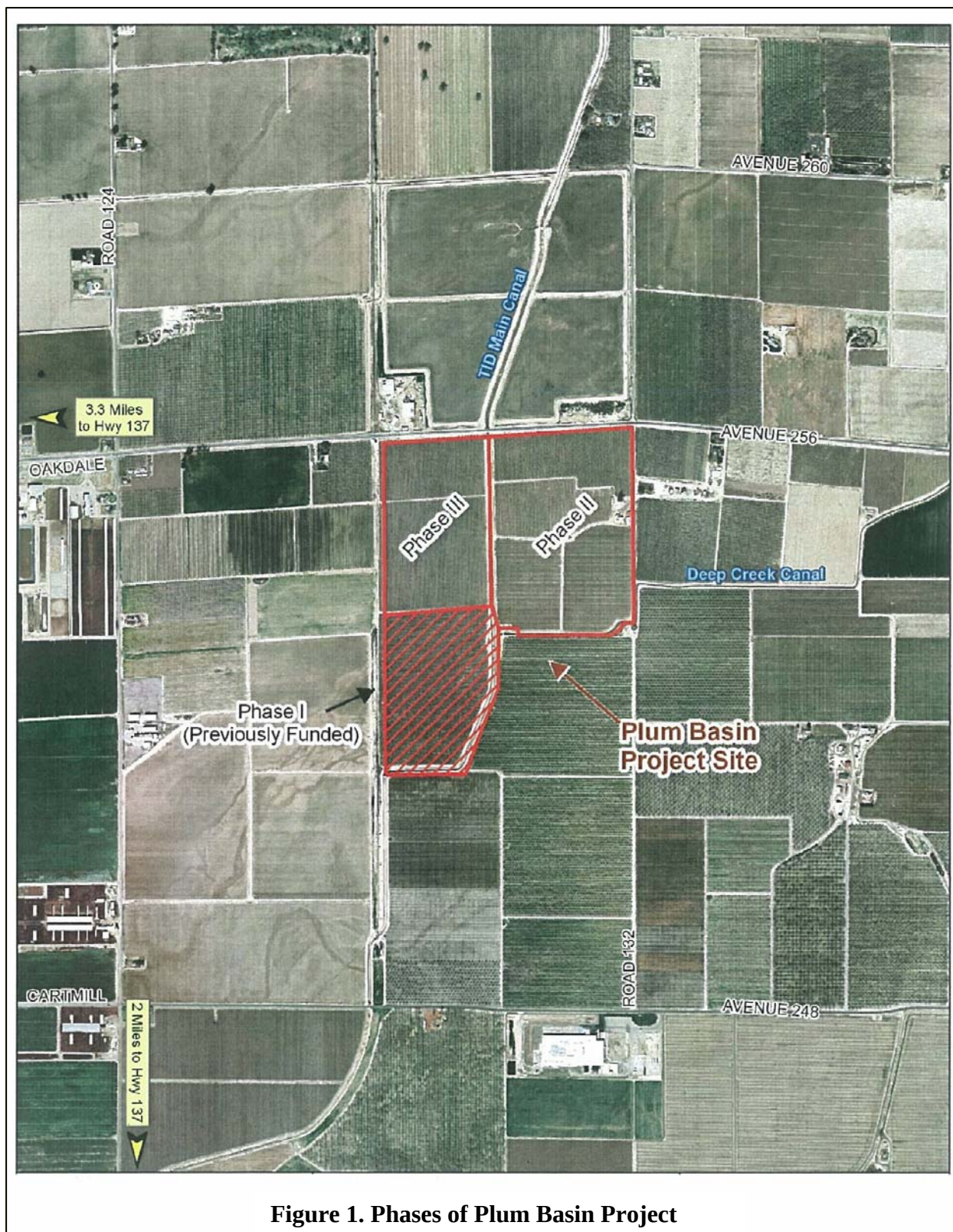
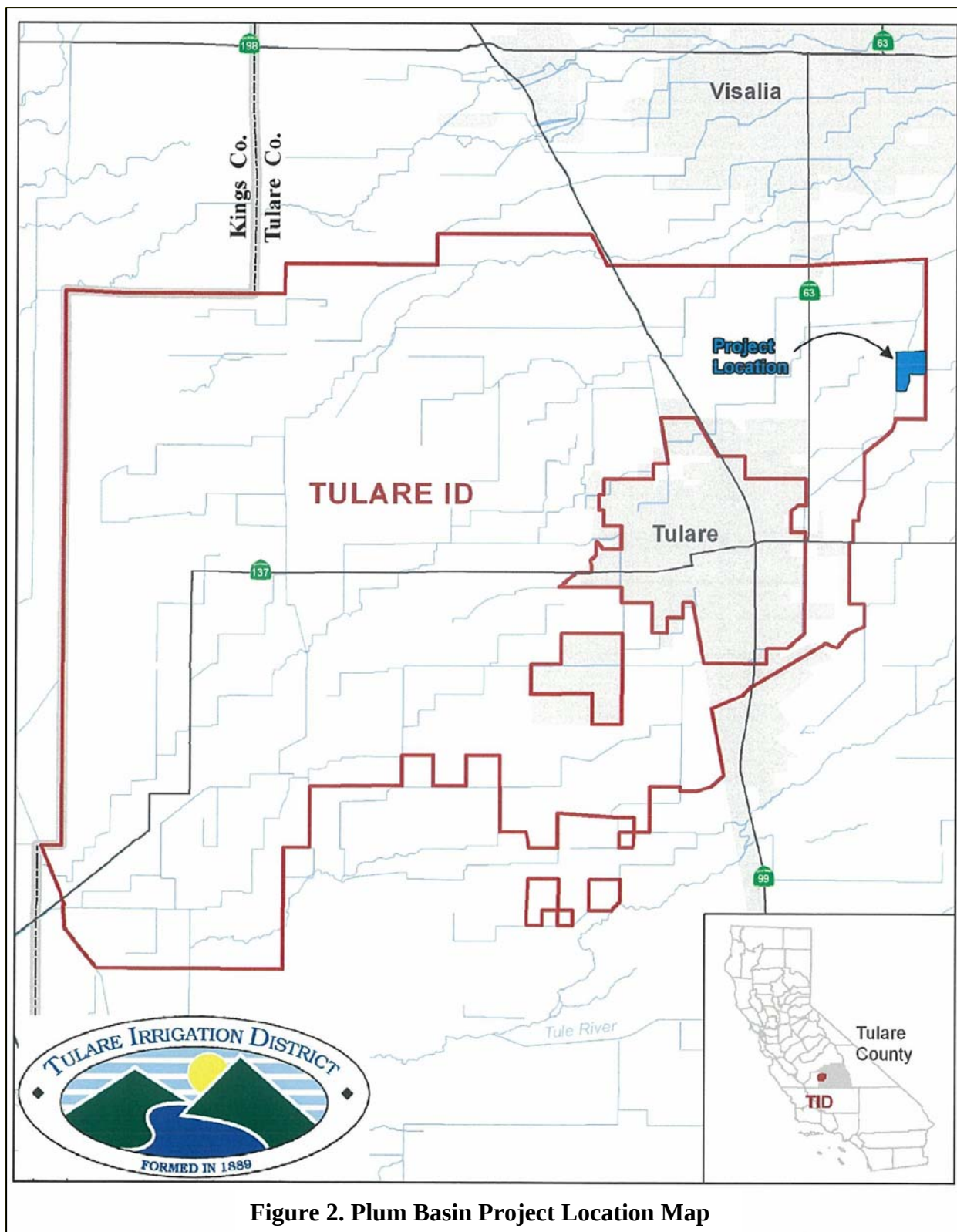


Figure 1. Phases of Plum Basin Project



Section 2 Alternatives Including The Proposed Action

This EA considers two possible actions: the No Action Alternative and the Proposed Action. The No Action Alternative reflects future conditions without the Proposed Action and serves as a basis of comparison for determining potential effects to the human environment.

Absent federal funding assistance, Phases II and III of the Plum Basin Project would, at a minimum, be delayed. It is TID's intent to eventually construct and operate Phases II and III; however, the timing would be speculative. Further, there is always the chance that these two remaining phases would never be built. The No Action Alternative could then have two possible scenarios: A) no change from existing conditions if the two phases would not be built; or B) no change from existing conditions for a period of time, where the length of time is unknown, after which the two phases would be built as described in Section 2.2 below and the impacts analyzed in Section 3 of this EA would be realized. In addition, the 2009 IS/MND analyzed the environmental impacts of constructing and operating the entire Plum Basin Project. Any other subsequent actions caused by scenario B of the No Action Alternative not covered under Section 2.2 of this EA or the 2009 IS/MND is speculative at best, is outside the scope of this EA, and may require additional environmental analysis. As a result, scenario A of the No Action Alternative will be analyzed from this point forward in order to reduce repeating information since scenario B mirrors the Proposed Action (but at a later date).

2.1 No Action Alternative

Under the No Action Alternative, Reclamation would not award a WaterSMART Grant to TID that would help fund the construction of Phases II and III of the Plum Basin Project. The property would remain as fallowed lands and conditions would remain the same.

2.2 Proposed Action

Reclamation proposes to award TID with a WaterSMART Grant for the development of Phases II and III of the Plum Basin Project (Proposed Action). The Proposed Action would include converting approximately 105 acres of fallowed land into 45 and 60-acre basins (cells #2 and #3), respectively, each with groundwater recharge and surface water regulating capabilities. Construction would also include inlet/outlet structures between the basin and TID's Main Canal (refer to Figures 3 and 4 for site plans of main construction features).

The Proposed Action area would be excavated approximately 6 feet (ft) deep. The excavated materials would be used to build 6-ft tall levees around the cells. The inner levee berm would be at a 6:1 slope and the outer levee berm would be at a 2:1 slope. The top of the levee would be about 15 ft wide for vehicle access and the bottom width of the levee would be approximately 63 ft. An estimated 522,598 cubic-yards of cut and 43,344 cubic-yards of fill material would be involved in the construction of cell #2. An estimated 210,490 cubic-yards of cut and 54,917 cubic-yards of fill would be involved in the construction of cell #3.

New turnout structures would be constructed from TID's Main Canal to each of the cells. Each structure would be roughly 6 ft tall, 6 ft wide and 6 ft long, and require approximately 3 cubic-yards of concrete. Each turnout structure would be outfitted with a control gate, a totalizing flowmeter, level sensors at each end, a Supervisory Control and Data Acquisition (SCADA) monitoring unit that can be remotely monitored through TID's existing SCADA system, and a screened outlet to minimize erosion on the cell side. A 36-inch diameter, 140 linear ft-long rubber-gasketed reinforced concrete pipe (RGRCP) would be installed to convey water from the Main Canal into each cell. New concrete outlet structures would be built to move water from the cells into the Main Canal for surface water regulation. The outlet structures would be built similar to the turnout structure in size and footprint. The outlet structures would be outfitted with a control gate and a totalizing flowmeter and would convey water through a RGRCP. The estimated excavation required for each structure is 22 ft wide, 16 ft long, and 8 ft deep. Excavation for the RGRCP would vary from 6 to 18 ft deep.

Equipment required to perform the construction include: long-boom excavators, backhoes, cranes, graders, scrapers, haulers, concrete trucks, water trucks, dump trucks, and pumper trucks. Construction would begin as soon as permitted and is anticipated to be completed by December 2012.

2.2.1 Environmental Protection Measures

TID would implement the following environmental protection measures to reduce environmental consequences associated with the Proposed Action (Table 1). Environmental consequences for resource areas assume the measures specified would be fully implemented.

Table 1. Environmental Protection Measures*	
<u>Resource</u>	<u>Protection Measure</u>
Biological Resources	United States Fish and Wildlife Service (USFWS) approved pre-construction protocol level surveys for San Joaquin kit fox shall be conducted no fewer than 14 days and no more than 30 days prior to the onset of any ground-disturbing activity (USFWS 2011). TID shall follow Standardized Recommendations for Protection of the San Joaquin kit fox prior to and during ground disturbance (USFWS 2011).
Biological Resources	A pre-construction nest survey for avian predators and other resident and migratory birds shall be conducted prior to project construction if any heavy equipment operations are to occur during the nesting season (February 15 through September 15). All trees, vegetation, and small mammal burrows on the site shall be inspected for nests and birds (using the guidelines from California Department of Fish and Game [CDFG] (1995) for western burrowing owls and CDFG (1994). If any occupied nests are observed, heavy equipment operations shall be minimized or avoided until the young have fledged and nesting has ceased (using the guidelines from CDFG (1995) for western burrowing owls and CDFG (1994) for Swainson's hawks). If this is not feasible, the USFWS and CDFG would need to be contacted for guidance on how to proceed. The USFWS would prescribe specific mitigation dependent upon the particular species involved and the manner in which heavy equipment operations are to be conducted.
*Protection measures for San Joaquin kit fox, Swainson's hawks and burrowing owls in further detail can be found in Appendix A.	



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all before you dig.

ABBREVIATIONS

BM	BENCHMARK
CP	CONTROL POINT
CY	CUBIC YARDS
DIA, Ø	DIAMETER
EG	EXISTING GRADE
ELEV, EL	ELEVATION
EXIST, EX	EXISTING
FG	FINISHED GRADE
FL	FLOW LINE
GB	GRADE BREAK
INV	INVERT
MIN	MINIMUM
PP	POWER POLE
S=	SLOPE
TYP	TYPICAL

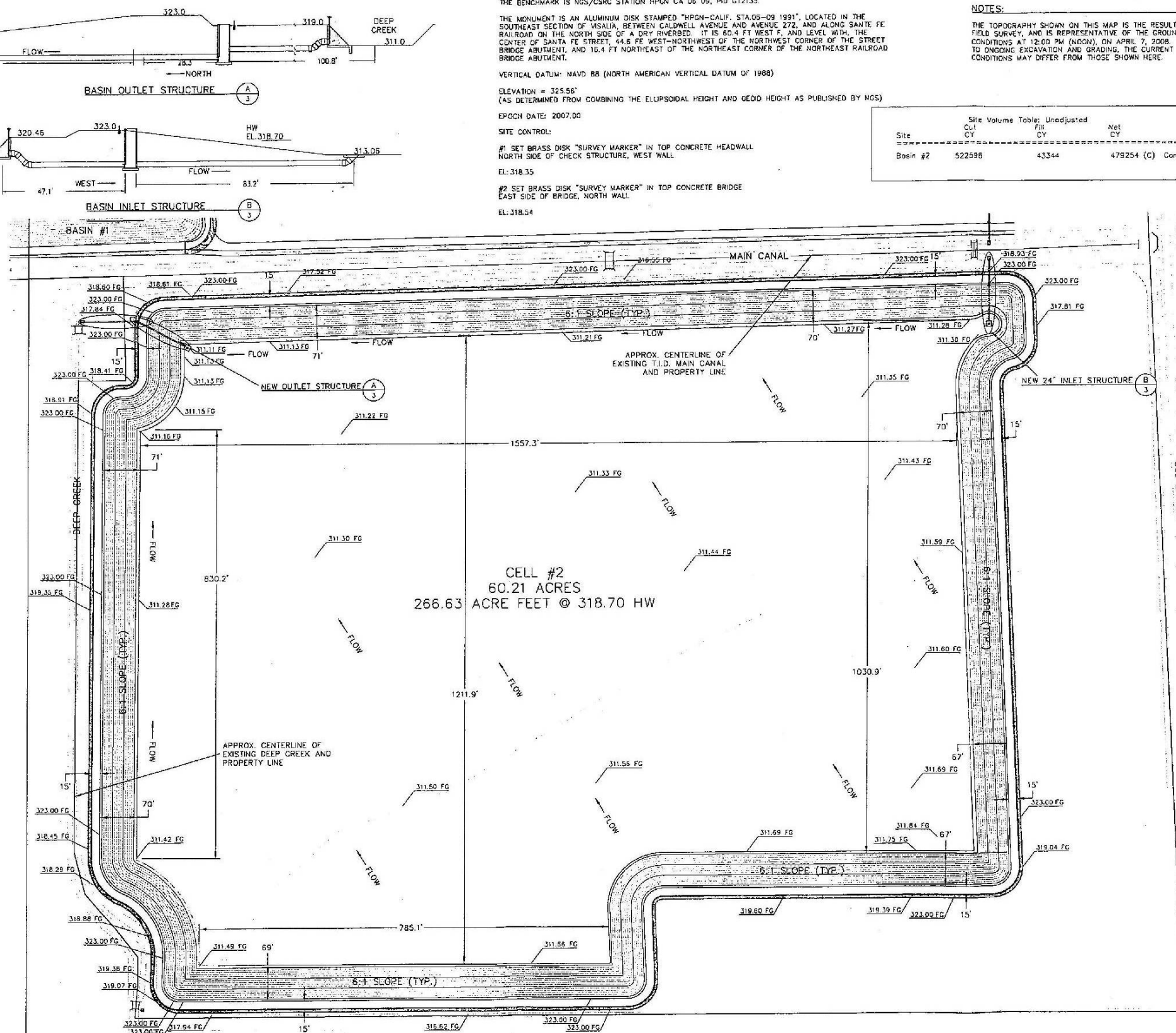
LEGEND

---	PROPERTY LINE
---	SECTION LINE
123	CONTOUR (MAJOR)
---	CONTOUR (MINOR)
---	FENCE (WIRE)
---	PAVEMENT
---	SWALE
---	IRRIGATION
UTL	UTILITY POLE
C	GUY ANCHOR
MB	MAILBOX
S	SIGN
Δ	CONTROL POINT
⊕	BENCHMARK
#	DETAIL NUMBER
SHT	SHEET NUMBER
●	EXISTING SURVEY POINT
○	PROPOSED GRADE POINT



Figure 3. Cell 2

GRADING PLAN WITH EXISTING CONTOURS



BENCHMARKS

THE BENCHMARK IS NGS/CSRS STATION HPGN CA 06 09, PID GT2135.

THE MONUMENT IS AN ALUMINUM DISK STAMPED "HPGN-CALIF, STA.06-09 1991", LOCATED IN THE SOUTHEAST CORNER OF VISALIA, BETWEEN CALDWELL AVENUE AND AVENUE 272, AND ALONG SANTA FE RAILROAD ON THE NORTH SIDE OF A DRY RIVERBED. IT IS 60.4 FT WEST OF, AND LEVEL WITH, THE CENTER OF SANTA FE STREET, 44.6 FT WEST-NORTHWEST OF THE NORTHWEST CORNER OF THE STREET BRIDGE ABUTMENT, AND 16.4 FT NORTHEAST OF THE NORTHEAST CORNER OF THE NORTHEAST RAILROAD BRIDGE ABUTMENT.

VERTICAL DATUM: NAVD 88 (NORTH AMERICAN VERTICAL DATUM OF 1988)

ELEVATION = 325.56'
(AS DETERMINED FROM COMBINING THE ELIPSOIDAL HEIGHT AND GEOID HEIGHT AS PUBLISHED BY NGS)

EPOCH DATE: 2007.00

SITE CONTROL:

#1 SET BRASS DISK "SURVEY MARKER" IN TOP CONCRETE HEADWALL NORTH SIDE OF CHECK STRUCTURE, WEST WALL

EL: 318.35

#2 SET BRASS DISK "SURVEY MARKER" IN TOP CONCRETE BRIDGE EAST SIDE OF BRIDGE, NORTH WALL

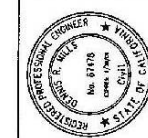
EL: 318.54

NOTES:

THE TOPOGRAPHY SHOWN ON THIS MAP IS THE RESULT OF A FIELD SURVEY, AND IS REPRESENTATIVE OF THE GROUND CONDITIONS AT 12:00 PM (NOON), ON APRIL 7, 2008. DUE TO ONGOING EXCAVATION AND GRADING, THE CURRENT CONDITIONS MAY DIFFER FROM THOSE SHOWN HERE.

Site Volume Table: Unadjusted			
Site	Cut CY	Fill CY	Net CY
Basin #2	522598	43344	479254 (C) Composite

PRELIMINARY
NOT FOR CONSTRUCTION
01/05/09



TULARE IRRIGATION DISTRICT
PLUM BASIN PROJECT
TULARE COUNTY, CA

124808V1 CELL #2 GRADING PLAN



DESIGN ENGINEER:
DENNIS MILLS

LICENSE NO:
67,478

DRAFTED BY: JAB
CHECKED BY: DRM

SCALE: AS SHOWN

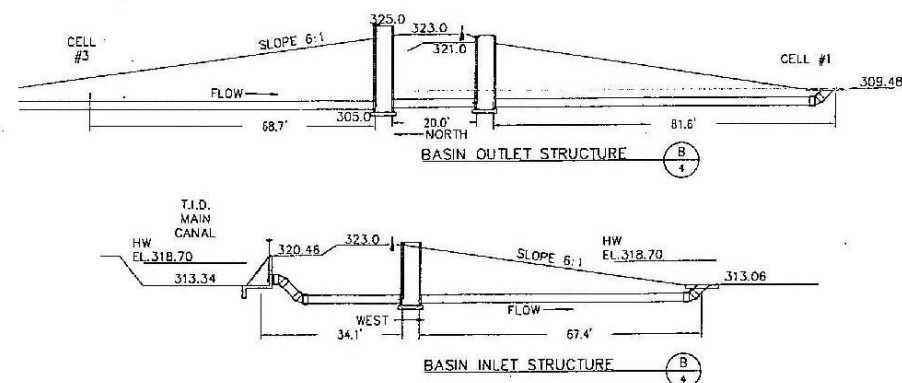
DATE: 12/30/08

JOB NO: 124808V1

DWG. NO:

SHEET

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ABBREVIATIONS

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FG	FINISHED GRADE
FL	FLOW LINE
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INV	INVERT
MIN	MINIMUM
PP	POWER POLE
S=	SLOPE
TYP	TYPICAL

LEGEND

---	PROPERTY LINE
---	SECTION LINE
---	CONTOUR (MAJOR)
---	CONTOUR (MINOR)
---	FENCE (WIRE)
---	PAVEMENT
---	SWALE
---	IRRIGATION
UT	UTILITY POLE
C	GUY ANCHOR
M	MAILBOX
S	SIGN
Δ	CONTROL POINT
+	BENCHMARK
1/4"	DETAIL NUMBER
1/4"	SHEET NUMBER
1/4"	EXISTING SURVEY POINT
1/4"	PROPOSED GRADE POINT

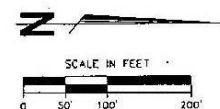


Figure 4. Cell 3

GRADING PLAN WITH EXISTING CONTOURS

BENCHMARKS

THE BENCHMARK IS NGS/CSRS STATION HPGN CA 08 09, PID GT2135.

THE MONUMENT IS AN ALUMINUM DISK STAMPED "HPGN-CALIF. STA.06-09 1991", LOCATED IN THE SOUTHEAST CORNER OF A DRY RIVERBED. IT IS 60.4 FT WEST F. AND LEVEL WITH THE CENTER OF SANTA FE STREET, 44.6 FT WEST-NORTHWEST OF THE NORTHWEST CORNER OF THE STREET BRIDGE ABUTMENT, AND 16.4 FT NORTHEAST OF THE NORTHEAST CORNER OF THE NORTHEAST RAILROAD BRIDGE ABUTMENT.

VERTICAL DATUM: NAVD 88 (NORTH AMERICAN VERTICAL DATUM OF 1988)

ELEVATION = 325.56'
(AS DETERMINED FROM COMBINING THE ELLIPSOIDAL HEIGHT AND GEOID HEIGHT AS PUBLISHED BY NGS)

EPOCH DATE: 2007.00

SITE CONTROL:

#1 SET BRASS DISK "SURVEY MARKER" IN TOP CONCRETE HEADWALL NORTH SIDE OF CHECK STRUCTURE, WEST WALL

EL: 318.35

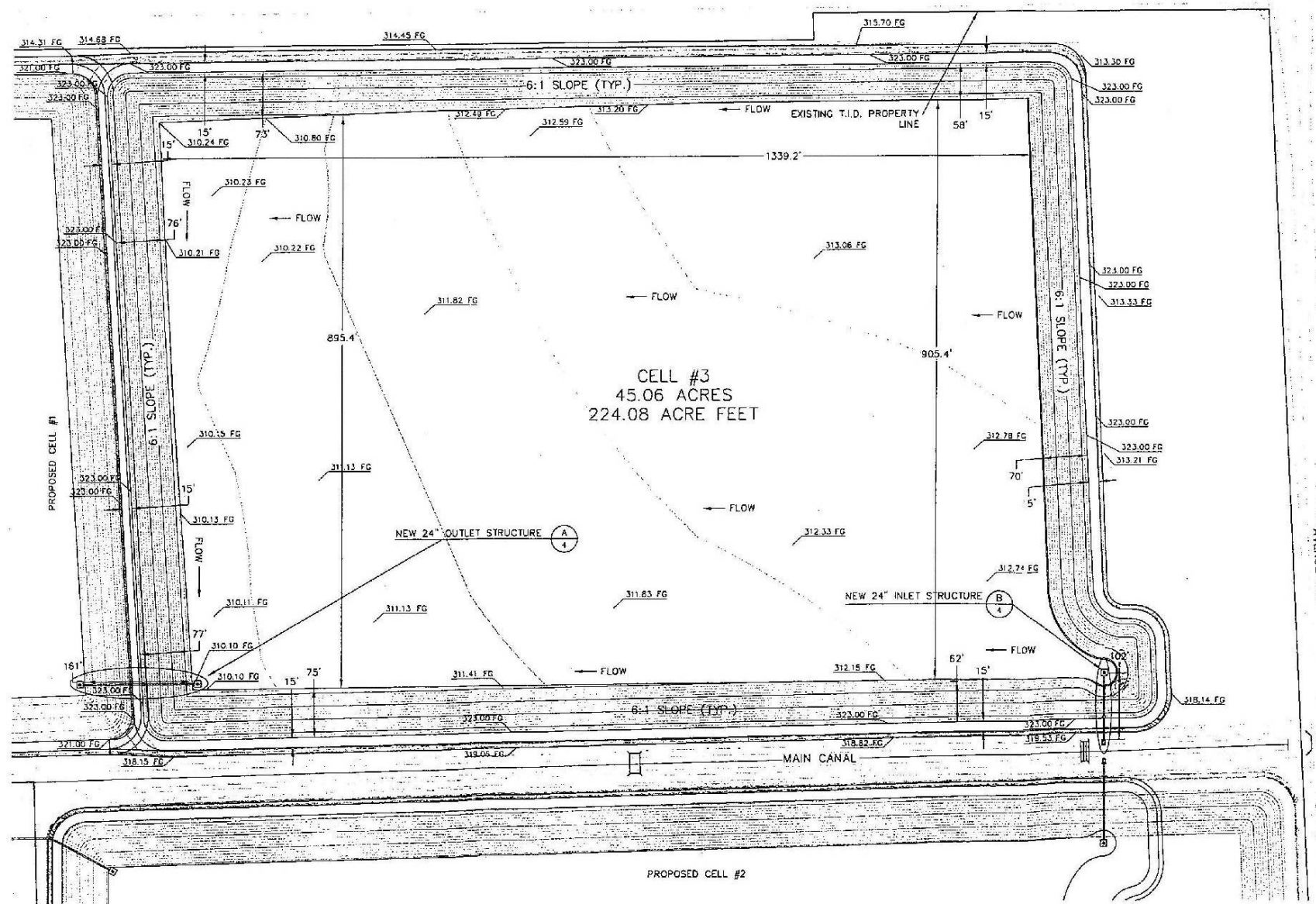
#2 SET BRASS DISK "SURVEY MARKER" IN TOP CONCRETE BRIDGE EAST SIDE OF BRIDGE, NORTH WALL

EL: 318.54

NOTES:

THE TOPOGRAPHY SHOWN ON THIS MAP IS THE RESULT OF A FIELD SURVEY, AND IS REPRESENTATIVE OF THE GROUND CONDITIONS AT 12:00 PM (NOON), ON APRIL 7, 2008. DUE TO ONGOING EXCAVATION AND GRADING, THE CURRENT CONDITIONS MAY DIFFER FROM THOSE SHOWN HERE.

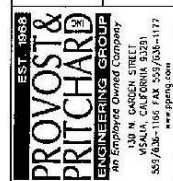
Site	Site Volume Table: Unadjusted	Fill	Net
	Cut	CY	CY
Basin #3	210,490	54,917	155,573 (C) Composite



PRELIMINARY
NOT FOR CONSTRUCTION
01/05/09



TULARE IRRIGATION DISTRICT
PLUM BASIN PROJECT
TULARE COUNTY, CA



DESIGN ENGINEER:
DENNIS MILLS
LICENSE NO:
67,478
DRAFTED BY: JAB
CHECKED BY: DRW
SCALE: AS SHOWN
DATE: 12/30/08
JOB NO: 124808V1
DWG. NO:
SHEET

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Section 3 Affected Environment & Environmental Consequences

3.1 Water Resources

3.1.1 Affected Environment

Tulare Irrigation District

TID's average annual surface water supply totals approximately 163,400 acre-feet per year (af/y) which is generated from two sources: Kaweah and St. John's Rivers pre-1914 water rights and a contract for agricultural surface water supplies (Class 1 and 2) with Reclamation from the Friant Division of the Central Valley Project. TID provides only agricultural water supplies to approximately 230 farms within its service area and does not serve municipal and industrial water. The district does not own or operate any groundwater extraction facilities; therefore, each individual landowner within TID must use private groundwater wells to sustain irrigation during periods when the district is not diverting surface water into its system.

TID's central conveyance facility, the Main Canal, begins northeast of the district and generally extends southwesterly to convey surface water throughout the district. The Proposed Action is located adjacent to the Main Canal where the newly created basin would be able to recharge/regulate the district's surface water supplies.

Groundwater Resources

The Proposed Action area overlies the Kaweah Groundwater Subbasin of the San Joaquin Valley Basin, and confined within the Tulare Lake Hydrologic Region. Major rivers and streams in the subbasin include the Kaweah and St. Johns Rivers, which account for most of the estimated 62,400 af/y of natural recharge to the subbasin. There is approximately 286,000 af/y of applied water recharge into the subbasin. Annual urban and agricultural extraction is estimated to be 58,800 af and 699,000 af, respectively. On average, the subbasin water level has declined about 12 feet total from 1970 through 2000 (DWR 2004).

3.1.2 Environmental Consequences

No Action Alternative

Under the No Action Alternative, Reclamation would not help fund construction of the basin. Groundwater levels underlying TID would not be able to benefit from the additional recharge and TID would not be able to further regulate its surface water supplies to control seepage losses. TID would continue to use its surface water supplies as has historically occurred.

Proposed Action

The Proposed Action would not generate a new supply of water; rather, it would improve the reliability of TID's water supplies by using surface water to recharge the underlying groundwater subbasin for use by private landowners within the district when groundwater pumping is necessary. The Proposed Action does not include additional groundwater pumping; instead, it would help to mitigate the water-level impacts associated with existing groundwater pumping. In particular, the increased ability to recharge available surface water supplies would help to mitigate the projected long-term decline in groundwater levels. The ability to regulate surface

water would help TID minimize seepage losses in its distribution system. Therefore, the Proposed Action would have slight beneficial impacts to TID's water resources.

3.2 Land Use

3.2.1 Affected Environment

Tulare Irrigation District

TID is comprised of roughly 70,000 acres, of which approximately 62,000 are irrigated to alfalfa, field corn, wheat, and cotton. The Proposed Action area used to contain plum orchards, which were fallowed in 2008 and actively disked for weed control, and is designated under the Williamson Act as prime agricultural land (40-acre minimum).

3.2.2 Environmental Consequences

No Action Alternative

Under the No Action Alternative, conditions related to the current use and operation of the fallowed lands would remain the same. There would be no impacts to land use.

Proposed Action

The Proposed Action would not result in adverse impacts to lands designated as prime agricultural land since the construction of water facilities have been determined to be compatible uses within any agricultural preserve. Therefore, no adverse impacts to land use would occur.

3.3 Biological Resources

3.3.1 Affected Environment

The Proposed Action area used to contain plum orchards, which were fallowed in November 2008 and have been actively disked for weed control.

Reclamation requested an official species list from USFWS via the Sacramento Field Office's website: http://www.fws.gov/sacramento/es/spp_lists/auto_list_form.cfm on December 16, 2010. The list is for the following USGS 7½ minute quadrangles: Tulare and Visalia (document number: 100210110402) and can be found in Appendix B. Reclamation further queried the California Natural Diversity Database (CNDDB) for records of protected species within 10 miles of the project location (CNDDB 2010).

Critical Habitat The Proposed Action does not fall within designated or proposed critical habitat for any species.

Swainson's hawk This species is listed as threatened under the California Endangered Species Act and protected under the federal Migratory Bird Treaty Act (MBTA). Swainson's hawks are found in the grasslands and agricultural lands of California's Central Valley during the spring and summer. They exhibit a high degree of nest site fidelity and nests are constructed in trees, and include Fremont cottonwood (*Populus fremontia*), willow (*Salix* spp.), Valley Oak (*Quercus lobata*), and eucalyptus (*Eucalyptus* spp.) (Bloom 1980). The nesting season for Swainson's hawk occurs from March 1 through September 15. This species spends large amounts of time soaring over grasslands and agricultural fields in the Central Valley and can travel up to 18

kilometers (11 miles) to forage for prey (Estep 1989). Swainson's hawks will forage for prey in row crops (Estep 1989) on small mammals, insects, and birds.

CNDDDB-recorded occurrences indicate Swainson's hawks occur within a 10 mile radius of the project area (CNDDDB 2010). There are three records; with the nearest report of a nest located in an oak tree approximately five miles southwest of the project area. Six miles southwest of the project area, a Swainson's hawk pair presumed to be nesting in Fremont cottonwood tree next to an alfalfa field was reported. The third report is of a nesting site with an adult pair and one juvenile in a large valley oak located just over six miles to the southwest of the project area.

San Joaquin kit fox The San Joaquin kit fox is federally listed as an endangered species and State listed as threatened. Critical habitat for this species has not been proposed. Their diet varies based on prey availability, and includes small to mid-sized mammals, ground-nesting birds, and insects. Kit foxes excavate their own dens, other animals, and human-made structures (culverts, abandoned pipelines, and banks in sumps or roadbeds).

San Joaquin kit fox currently inhabit western and southern San Joaquin Valley in grassland and scrubland communities. In Tulare County, kit foxes will inhabit irrigated agriculture (orchards and alfalfa) and urban development (USFWS 1998, Warrick et al. 2007). There are several CNDDDB-recorded occurrences of San Joaquin kit fox within 10-miles of the project area (CNDDDB 2010). However, because the project area occurs in actively cultivated fields and is much more than a mile away from good habitat, habitat quality for kit fox would be poor (Warrick et al. 2007).

3.3.2 Environmental Consequences

No Action Alternative

Under the No Action Alternative, conditions would remain the same as described above. There would be no impacts to biological resources since conditions would remain the same as existing conditions.

Proposed Action

The Proposed Action area consists of the recently fallowed land that is frequently disked for weed control. Although San Joaquin kit foxes have been reported in the area, disking for weed control has greatly degraded any habitat for denning. Swainson's hawks could forage in these fields. Preconstruction surveys would be conducted before any ground-disturbing activities are to begin. If the surveys detect the presence of listed species or migratory birds, then the Proposed Action would be paused until Reclamation completes any consultation with the USFWS that might be necessary, and until any additional protective measures are identified and incorporated for any migratory birds.

If preconstruction surveys find that no special-status species are present within the Proposed Action area, then Reclamation's determination of no effect remains and the project could move forward. By following Environmental Protection Measures listed in section 2.2.1, this would avoid or minimize any potential impacts to kit foxes or Swainson's hawk during construction. Therefore, the Proposed Action is anticipated to have no adverse impacts on biological resources.

3.4 Cultural Resources

A cultural resource is a broad term that includes prehistoric, historic, architectural, and traditional cultural properties. The National Historic Preservation Act (NHPA) of 1966 is the primary Federal legislation that outlines the Federal Government's responsibility to cultural resources. Section 106 of the NHPA requires the Federal Government to take into consideration the effects of an undertaking on cultural resources listed on or eligible for inclusion in the National Register of Historic Places (NRHP). Those resources that are on or eligible for inclusion in the NRHP are referred to as historic properties. For Federal projects, cultural resource significance can be evaluated in terms of eligibility for listing in the NRHP.

The Section 106 process is outlined in the Federal regulations at 36 Code of Federal Regulations (CFR) Part 800. These regulations describe the process that the Federal agency (Reclamation) takes to identify cultural resources and the level of effect that the proposed undertaking would have on historic properties. In summary, Reclamation must first determine if the action is the type of action that has the potential to affect historic properties. If the action is the type of action to affect historic properties, Reclamation must identify the area of potential effects (APE), determine if historic properties are present within that APE, determine the effect that the undertaking would have on historic properties, and consult with the State Historic Preservation Officer (SHPO), to seek concurrence on Reclamation's findings. In addition, Reclamation is required through the Section 106 process to consult with Indian Tribes concerning the identification of sites of religious or cultural significance, and consult with individuals or groups who are entitled to be consulting parties or have requested to be consulting parties.

3.4.1 Affected Environment

TID contracted RSO Consulting (RSO) to survey the Plum Basin Project area for cultural resources. RSO conducted a records search at the Southern San Joaquin Valley Historical Resources Information Center at California State University, Bakersfield on December 21, 2009. The records search identified no archaeological or historical sites, or cultural resources surveys, within, or adjacent to, the project area. A pedestrian survey of the project area was conducted on December 23 and 29, 2009, and January 6 and 12, 2010 by RSO Archaeologist Rebecca S. Orfila. Three cultural resources were identified within the project area: one isolated fragment of an obsidian projectile point, a portion of TID's earthen Main Canal, and the site of Swall Farms labor camp, coldbox, and packing sheds.

A medial portion of an obsidian projectile point was recorded within an open tilled field on the west side of TID's Main Canal. The isolate measures approximately 1.8 centimeters (cm) long, 2 cm wide, and 0.75 cm thick. The projectile point fragment was not associated with any other cultural materials.

The Proposed Action area is roughly divided by 2,000 linear ft of TID's Main Canal. The canal appears to be generally located along its 1892 route illustrated by Thompson (Thompson 1892), who recorded this alignment as the Kaweah Canal. Early construction projects included diversion works on the St. Johns River, the Main Canal heading at the river (including a large flume over the river), and the purchase of water rights of the Kaweah Canal and Irrigation Company, Rocky Ford Canal and Irrigation Company, and the Settlers Ditch Company. TID

subsequently proceeded with extensive improvements to the existing canal system, and the extension of the canal system to serve annexed areas. This work was conducted primarily between 1951 and 1964 and consisted of enlarging and/or relocating canals, constructing diversion structures, road crossings, check gates, siphons, and installing pipelines.

In 1884, the project area was a small part of a 1,700-acre farm owned by William Swall (Thompson 1892). The site of the Swall Farms workers residences (labor camp), coldbox, and packing sheds were located in the developed plum orchard and equipment area on the east side of TID's Main Canal. This site dates from about 1880 to the mid-1900s and includes two buildings and a scatter of historic materials. Fragments of crockery, glass, and other household materials are sparsely distributed over an approximately 60-acre area. Two structures stand on the east side of the artifact scatter: one is a metal building believed to be a packing shed and a brick building with a red barrel tile roof that dates back to the early 1930's. According to a neighbor, Abe Kazarian (age 85), the brick building was built by William Swall to serve as the first cold box for the workers' food supplies.

Reclamation applied the NRHP criteria of evaluation to the isolated obsidian projectile point fragment, the portion of the TID Main Canal within the project area, and the Swall Farms site. Reclamation determined that the isolated obsidian projectile point fragment does not exhibit the integrity or characteristics that demonstrate its eligibility for listing on the NRHP while the portion of TID's Main Canal within the project area and the Swall Farms site are eligible for listing on the NRHP.

3.4.2 Environmental Consequences

No Action

Under the No Action Alternative, there are no impacts to cultural resources since there would be no change in operations and no ground disturbance. Conditions related to cultural resources would remain the same as existing conditions.

Proposed Action

The Proposed Action is the type of activity that has the potential to affect historic properties. Reclamation analyzed the impacts to cultural resources for the full build-out of the Plum Basin Project in EA-09-77, of which the Proposed Action is a part. A records search, a cultural resources survey, and Tribal consultation identified historic properties within the APE. All project activities would avoid historic properties; therefore, there would be no adverse impacts pursuant to 36 CFR Part 800.5(b). Reclamation consulted with the State Historic Preservation Officer (SHPO) on May 13, 2010 regarding this determination pursuant to 36 CFR Part 800.5(b). The SHPO concurred with Reclamations' findings and determination on May 25, 2010. Since no historic properties would be affected, no cultural resources would be impacted by implementing the Proposed Action (see Appendix C for cultural resources determination).

3.5 Indian Trust Assets

ITA are legal interests in assets that are held in trust by the United States (U.S.) for Federally recognized Indian tribes or individuals. The trust relationship usually stems from a treaty, executive order, or act of Congress. The Secretary of the Interior is the trustee for the U.S. on

behalf of Federally recognized Indian tribes. “Assets” are anything owned that holds monetary value. “Legal interests” means there is a property interest for which there is a legal remedy, such as compensation or injunction, if there is improper interference. ITA cannot be sold, leased or otherwise alienated without the U.S.’ approval. “Assets” can be real property, physical assets, or intangible property rights, such as a lease, or right to use something; which may include lands, minerals and natural resources in addition to hunting, fishing, and water rights. Indian reservations, rancherias, and public domain allotments are examples of lands that are often considered trust assets. In some cases, ITA may be located off trust land. Reclamation shares the Indian Trust responsibility with all other agencies of the Executive Branch to protect and maintain ITA reserved by or granted to Indian tribes, or Indian individuals by treaty, statute, or Executive Order.

3.5.1 Affected Environment

The Proposed Action area is currently fallowed land that used to contain plum orchards for several years and does not contain any known ITA. The nearest ITA is a Public Domain Allotment approximately 24 miles north/northeast of the Proposed Action location.

3.5.2 Environmental Consequences

No Action

Under the No Action Alternative, there would be no impacts to ITA as there would be no ground-disturbing activities and conditions would remain the same as existing conditions.

Proposed Action

There are no tribes possessing legal property interests held in trust by the U.S. in the lands involved with the Proposed Action; therefore, this action does not have a potential to affect ITA (refer to Appendix C for ITA concurrence).

3.6 Indian Sacred Sites

Executive Order 13007 provides that in managing Federal lands, each Federal agency with statutory or administrative responsibility for management of Federal lands will, to the extent practicable and as permitted by law, accommodate access to and ceremonial use of Indian sacred sites by Indian religious practitioners, and avoid adversely affecting the physical integrity of such sacred sites.

3.6.1 Affected Environment

As analyzed in the 2009 IS/MND, Native American consultation activities consisted of a Sacred Lands File Search performed by the Native American Heritage Commission (NAHC); no resources were identified during this activity. Project notification letters and requests for consultation were sent to the designated Native American area contacts as identified by the NAHC. No responses were received from the Native American representatives regarding the Proposed Action.

3.6.2 Environmental Consequences

No Action

Under the No Action Alternative, there would be no impacts to Indian sacred sites since conditions would remain the same as existing conditions.

Proposed Action

Since no known Indian sacred sites have been identified, the Proposed Action would not impact known Indian sacred sites and/or prohibit access to and ceremonial use of this resource.

3.7 Socioeconomic Resources

3.7.1 Affected Environment

The agricultural industry in Tulare County contributes to the overall economic stability of the San Joaquin Valley. In addition, other industries include dairy and food processing. The market for seasonal workers on local farms draws thousands of migrant workers.

3.7.2 Environmental Consequences

No Action Alternative

Under the No Action Alternative, TID would not be able to regulate some of its surface water supply and conserve any potential losses. Local farmers rely on irrigation water from TID and could be impacted during years when surface water supplies are insufficient.

Proposed Action

The Proposed Action would increase the water reliability for TID. As a result, the viability of farming practices would also benefit from a more reliable irrigation water supply.

Design and construction of the Proposed Action would temporarily increase jobs. There would be slight beneficial impacts to socioeconomics.

3.8 Environmental Justice

Environmental justice refers to the fair treatment of peoples of all races, income levels, and cultures with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies. Fair treatment implies that no person or group of people should shoulder a disproportionate share of negative impacts resulting from the execution of Federal programs. Executive Order 12898, dated February 11, 1994, establishes the achievement of environmental justice as a Federal agency priority. The memorandum accompanying the order directs heads of departments and agencies to analyze the environmental effects of federal actions, including human health, economic, and social effects when required by NEPA, and to address significant and adverse effects on minority and low-income communities.

3.8.1 Affected Environment

Tulare County employs seasonal workers on local farms that include migrant workers, commonly of Hispanic origin. Approximately 57 percent of the population within Tulare County is of Hispanic origin (US Census Bureau 2008), and the communities in which they reside depend on the City of Tulare for municipal and industrial water.

3.8.2 Environmental Consequences

No Action Alternative

The Plum Basin Project would have helped to provide long-term water supply reliability through groundwater recharge and surface water regulation. Some of the surrounding communities rely upon groundwater provided by the City for municipal and industrial use and local farms depend on surface water delivered by TID for irrigation purposes; therefore, the No Action Alternative could result in slight adverse impacts to minority or low-income populations near the project location.

Proposed Action

To the extent that water supply reliability is improved in Tulare County, it would serve to support the continued viability of available municipal and industrial water to the surrounding communities and irrigation water for local farms. As a result, there would be slight beneficial impacts to minority and/or disadvantaged populations from implementation of the Proposed Action.

3.9 Air Quality

3.9.1 Affected Environment

The Proposed Action lies within the San Joaquin Valley Air Basin (SJVAB), the second largest air basin in the State. Air basins share a common “air shed”, the boundaries of which are defined by surrounding topography. Although mixing between adjacent air basins inevitably occurs, air quality conditions are relatively uniform within a given air basin. The San Joaquin Valley experiences episodes of poor atmospheric mixing caused by inversion layers formed when temperature increases with elevation above ground, or when a mass of warm, dry air settles over a mass of cooler air near the ground.

Despite years of improvements, the SJVAB does not meet some State and Federal health-based air quality standards. To protect health, the San Joaquin Valley Air Pollution Control District (SJVAPCD) is required by Federal law to adopt stringent control measures to reduce emissions. On November 30, 1993, the Environmental Protection Agency (EPA) promulgated final general conformity regulations at 40 CFR 93 Subpart B for all federal activities except those covered under transportation conformity. The general conformity regulations apply to a proposed Federal action in a non-attainment or maintenance area if the total of direct and indirect emissions of the relevant criteria pollutants and precursor pollutant caused by a proposed action equal or exceed certain emissions thresholds, thus requiring the Federal agency to make a conformity determination. Table 2 presents the emissions thresholds covering the project location’s overlying air basin.

Table 2. San Joaquin Valley Attainment Status and Emissions Thresholds for Federal Conformity Determinations			
Pollutant	Federal Attainment Status^a	(tons/year)^b	(pounds/day)
Volatile organic compounds (VOC) (as an ozone precursor)	Nonattainment/Serious (8-hour ozone)	50	274
Nitrogen oxides (NO _x) (as an ozone precursor)	Attainment/Unclassified	50	274
Inhalable particulate matter (PM ₁₀)	Attainment	100	548
Carbon monoxide (CO)	Attainment/Unclassified	100	548

^aSJVAPCD 2009

^b40 CFR 93.153

3.9.2 Environmental Consequences

No Action Alternative

Under the No Action Alternative, there would be no impacts to air quality since no construction would take place.

Proposed Action

Short-term air quality impacts would be associated with construction, and would generally arise from dust generation (fugitive dust) and operation of construction equipment. Fugitive dust results from land clearing, grading, excavation, concrete work, and vehicle traffic on paved and unpaved roads. Fugitive dust is a source of airborne particulates, including PM₁₀ and PM_{2.5}. Large earth-moving equipment, trucks, and other mobile sources powered by diesel or gasoline are also sources of combustion emissions, including nitrogen dioxide (NO₂), CO, carbon dioxide (CO₂), VOC, sulfur dioxide, and small amounts of air toxics. Table 2 provides attainment status and emissions thresholds, and Table 3 provides a summary of the estimated emissions during construction of the Proposed Action, which were calculated by subtracting emissions from Phase I of the Plum Basin Project (as analyzed in EA-09-77) from the estimated emissions from full build-out of the Plum Basin Project (Table 4).

Table 3. Estimated Phase II and III Emissions During Construction	
Pollutant	Estimated Project Emissions^a (tons/year)
VOC	2.97
NO _x	0.73
PM ₁₀	9.66
CO	0.22
CO ₂	68.55

^aURBEMIS 2007, Version 9.2.4

Comparison of the estimated Proposed Action emissions (Table 3) with the thresholds for Federal conformity determinations (Table 2) indicates that project emissions are estimated to be below these thresholds. The Proposed Action also involves the continued operation of electrically-driven pumps and motors. The air quality emissions from electrical power have already been considered in environmental documentation for the generating power plant; therefore, a conformity determination is not required. In addition, the electric pumps would be

used very infrequently; therefore, project construction and operations under the Proposed Action would not result adverse impacts to air quality beyond Federal thresholds.

3.10 Global Climate

Climate change refers to change in measures of climate (e.g., temperature, precipitation, or wind) lasting for decades or longer. Many environmental changes (changes in sun's intensity, changes in ocean circulation, deforestation, urbanization, burning fossil fuels, etc.) can contribute to climate change (EPA 2009a). Gases that trap heat in the atmosphere are often called greenhouse gases (GHG). Some GHG such as CO₂ occur naturally and are emitted to the atmosphere through natural processes and human activities. Other GHG (e.g., fluorinated gases) are created and emitted solely through human activities. The principal GHG that enter the atmosphere because of human activities are: CO₂, methane (CH₄), nitrous oxides, and fluorinated gasses (EPA 2009a). During the past century, humans have substantially added to the amount of GHG in the atmosphere by burning fossil fuels such as coal, natural gas, oil, and gasoline to power our cars, factories, utilities, and appliances. The added gases, primarily CO₂ and CH₄, are enhancing the natural greenhouse effect, and likely contributing to an increase in global average temperature and related climate changes. At present, there are uncertainties associated with the science of climate change (EPA 2009). More than 20 million Californians rely on regulated delivery of water resources such as the State Water Project and the CVP, as well as established water rights from rivers. Increases in air temperature may lead to changes in precipitation patterns, runoff timing and volume, sea level rise, and changes in the amount of irrigation water needed due to modified evapotranspiration rates. These changes may lead to impacts to the State's water resources and project operations. While there is general consensus in their trend, the magnitudes and onset-timing of impacts are uncertain and are scenario-dependent (Anderson et al. 2008).

3.10.1 Affected Environment

In 2002, with the passage of Assembly Bill 1493, the State launched an innovative and proactive approach to dealing with GHG emissions and climate change at the state level. Assembly Bill 1493 requires the California Air Resources Board to develop and implement regulations to reduce automobile and light truck GHG emissions. The State also adopted Assembly Bill 32, which identified GHG reduction goals and noted the effect of increased GHG emissions as they relate to global climate change. While the emissions of one single project will not cause global climate change, GHG emissions from multiple projects throughout the world could result in an adverse impact with respect to global climate change.

3.10.2 Environmental Consequences

No Action Alternative

Under the No Action Alternative, there would be no impacts to global climate change since no construction would take place.

Proposed Action

The Proposed Action would involve short-term impacts consisting of emissions during construction and long-term impacts are attributable to project operations and would involve the generation of electrical energy to power the electric motor pump drivers. These emissions would

vary annually, but have been estimated for CO₂ equivalences for all electric pumps and would be approximately 1.6 metric tons/year of CO₂. Short-term impacts would consist of CO₂ emissions during construction. These emissions have been calculated to be 68.55 tons/year (Table 3), and when added to the CO₂ emissions from the electric pumps, is still well-below the threshold for annually reporting GHG emissions (25,000 metric tons/year), which is a surrogate for a threshold of significance (EPA 2009). As a result, the Proposed Action would result in below *de minimis* impacts regarding global climate change.

3.11 Cumulative Impacts

The 2009 IS/MND analyzed the construction of a 154-acre recharge/regulation basin, of which this Proposed Action is a part, and is considered to be a related project that could contribute to cumulative impacts to environmental resources. As a result, this section will also analyze potential impacts to resources from the full build-out of the Plum Basin Project in order to determine overall cumulative impacts.

Biological resources would continue to be affected by other types of activities that are ongoing but unrelated to the Proposed Action. Impacts to biological resources from the implementation of the Proposed Action would occur only during construction activities. Pending results from the kit fox, burrowing owls and Swainson's hawk surveys, the Proposed Action, when added to other similar past, existing, and future actions would not contribute to cumulative adverse impacts to wildlife resources since construction activities are short-term.

While the emissions of one single project would not cause adverse impacts to the global climate, GHG emissions from multiple projects throughout the world could result in an adverse impact with respect to global climate change. Full build-out of the overall Plum Basin Project could contribute to global climate change impacts due to emissions of CO₂ during construction. However, the estimated CO₂ emissions from the Plum Basin Project is 162.2 tons/year (Table 4) and is well below the 25,000 metric tons per year threshold for reporting GHG emissions. As a result, the Proposed Action would not contribute to cumulative adverse impacts to global climate change.

Table 4. Estimated Cumulative Emissions for the Entire Plum Basin Project	
Pollutant	Estimated Emissions (tons/year)^a
VOC	4.01
CO	0.93
CO ₂	162.2
PM ₁₀	9.66
NO _x	1.77

^aURBEMIS Model, Version 9.2.4 2007

The Proposed Action would not contribute to cumulative adverse impacts to air quality since construction activities are short-term and operations would not result in cumulative adverse air quality impacts. According to Table 4, the estimated emissions from full build-out of the Plum Basin Project would still be below federal conformity thresholds (Table 2).

In recent years, land use changes in TID have involved the urbanization of agricultural lands. These types of changes are typically driven by economic pressures and are as likely to occur

without the Proposed Action as with it. While prime farmland would be converted into a recharge/regulation basin, such conversion is considered a compatible use with any agricultural preserve. In the long-term, improved water supply reliability would benefit other lands that are considered prime agricultural lands. Accordingly, no cumulative adverse impacts to land use would occur.

The Proposed Action would result in an increase in TID's surface water supply reliability and improve groundwater conditions. As a result of improved water resource conditions, there could be minor beneficial cumulative impacts in regards to socioeconomic resources and environmental justice. The Proposed Action would not impact cultural resources, ITA, and Indian sacred sites; therefore, it is not expected to contribute to cumulative impacts on these resources.

Section 4 Consultation and Coordination

Several Federal laws, permits, licenses and policy requirements have directed, limited or guided the NEPA analysis and decision making process of this EA.

5.1 Public Review Period

Reclamation intends to provide the public with an opportunity to comment on the Draft EA and Draft FONSI during a 30-day comment period.

5.2 Fish and Wildlife Coordination Act (16 USC § 661 et seq.)

The Fish and Wildlife Coordination Act (FWCA) requires that Reclamation consult with fish and wildlife agencies (Federal and State) on all water development projects that could affect biological resources. The amendments enacted in 1946 require consultation with the USFWS and State fish and wildlife agencies where the “waters of any stream or other body of water are proposed or authorized, permitted or licensed to be impounded, diverted or otherwise controlled or modified” by any agency under a Federal permit or license. Consultation is to be undertaken for the purpose of “preventing the loss of and damage to wildlife resources.”

Reclamation is proposing to fund the Proposed Action. Reclamation is not issuing TID a permit or license and the Proposed Action would not develop new water supplies. Therefore, the FWCA does not apply.

5.2 Endangered Species Act (16 USC § 1531 et seq.)

Section 7 of the Endangered Species Act requires Federal agencies to ensure that discretionary federal actions do not jeopardize the continued existence of threatened or endangered species or result in the destruction or adverse modification of the critical habitat of these species.

Reclamation has determined that the Proposed Action would not affect any special-status species. This determination is based on the information presented previously in Section 3.3.2 and is largely reliant on the absence of listed or proposed species and critical habitat from areas that would be affected by the Proposed Action. Pre-construction biological surveys would be conducted before any ground-disturbing activities are to begin to verify absence, and conservation measures would be implemented to avoid impacts. If pre-construction surveys confirm the absence of listed or proposed species and conservation measures are implemented, then the Proposed Action would have no effect on special-status species and consultation with the USFWS is not required.

5.3 National Historic Preservation Act (16 USC § 470 et seq.)

The NHPA of 1966, as amended, is the primary Federal legislation that outlines the Federal Government’s responsibility to consider the effects of their actions on historic properties. The 36 CFR Part 800 regulations that implement Section 106 of the NHPA describe how Federal

agencies address these effects. Additionally, Native American human remains, cultural objects, and objects of cultural patrimony are protected under the Native American Graves Protection and Repatriation Act of 1990 (25 USC 32) and its implementing regulation outlined at 43 CFR Part 10. The Archaeological Resources Protection Act of 1979 (16 USC 470aa), as amended, and its implementing regulations at 43 CFR 7, protects archaeological resources on Federal land.

The Proposed Action would not have any impact on cultural resources based on conclusions in Section 3.4.2, and which the SHPO concurred.

5.4 Migratory Bird Treaty Act (16 USC § 703 et seq.)

The MBTA implements various treaties and conventions between the U.S., Canada, Japan, Mexico, and the former Soviet Union for the protection of migratory birds. Unless permitted by regulations, the MBTA provides that it is unlawful to pursue, hunt, take, capture or kill, possess, offer to or sell, barter, purchase, deliver or cause to be shipped, exported, imported, transported, carried or received any migratory bird, part, nest, egg or product, manufactured or not. Subject to limitations in the MBTA, the Secretary of the Interior may adopt regulations determining the extent to which, if at all, hunting, taking, capturing, killing, possessing, selling, purchasing, shipping, transporting or exporting of any migratory bird, part, nest or egg will be allowed, having regard for temperature zones, distribution, abundance, economic value, breeding habits and migratory flight patterns.

The Proposed Action would convert fallowed lands to lands used as percolation basins. Any nesting Swainson's hawks that might occur in the Proposed Action area would be detected by preconstruction surveys and would be avoided. The basins may periodically be used by species of birds protected by the MBTA, although the Proposed Action is not expected to result in take of birds protected by the MBTA based on conclusions in Section 3.3.2.

5.5 Clean Air Act (42 USC § 176 et seq.)

Section 176 (c) of the Clean Air Act (CAA) (42 USC 7506 (c)) requires that any entity of the Federal government that engages in, supports, or in any way provided financial support for, licenses or permits, or approves any activity to demonstrate that the action conforms to the applicable State Implementation Plan (SIP) required under Section 110 (a) of the CAA (42 USC 7401 (a)) before the action is otherwise approved. In this context, conformity means that such federal actions must be consistent with a SIP's purpose of eliminating or reducing the severity and number of violations of the National Ambient Air Quality Standards and achieving expeditious attainment of those standards. Each federal agency must determine that any action that is proposed by the agency and that is subject to the regulations implementing the conformity requirements will, in fact conform to the applicable SIP before the action is taken. As described in Section 3.9.2, the Proposed Action would not result in air quality impacts that would exceed Federal thresholds.

Section 5 List of Preparers and Reviewers

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