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Managing Water in the West

Madera Irrigation District Water Supply Enhancement Project Environmental Impact Statement

Draft

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

July 2009

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.

DRAFT ENVIRONMENTAL IMPACT STATEMENT
for the Madera Irrigation District Water Supply Enhancement Project

This Draft Environmental Impact Statement (Draft EIS) has been prepared by the Bureau of Reclamation, Mid-Pacific Region (Reclamation) in accordance with the requirements of the National Environmental Policy Act (NEPA) for Madera Irrigation District's (MID's) Water Supply Enhancement Project (WSEP). The WSEP involves constructing and operating a water bank on the Madera Ranch property, located in Madera County. Reclamation's limited action relevant to the WSEP is to approve the banking of MID Central Valley Project (CVP) water outside MID's service area in the proposed Madera Ranch water bank, and the alteration of the 24.2 Canal, a federal facility, as proposed by MID. The purpose of the proposed federal action is to:

- meet a portion of MID's current and future water storage needs,
- enhance water supply reliability and flexibility by using the space underground for surface water storage (water banking),
- reduce aquifer overdraft, and
- encourage conjunctive use in the region as a means toward regional self-sufficiency.

The Draft EIS considers three action alternatives and the No Action Alternative:

- Alternative A—No Action;
- Alternative B (Proposed Action)— Banking CVP water outside the MID Service Area Using Swales and Alteration of Reclamation-Owned Facilities;
- Alternative C—Banking CVP water outside the MID Service Area without Swales and Alteration of Reclamation-Owned Facilities; and
- Alternative D—Banking CVP water outside the MID Service Area with Banking and Recovery via Gravelly Ford Canal (no alteration of Reclamation-Owned Facilities).

This Draft EIS describes and evaluates the potential environmental, social, and economic effects of the WSEP. It analyzes the direct, indirect, and cumulative environmental effects of the following resources: Water Supply, Aesthetics, Agriculture, Air Quality, Biological Resources, Climate Change, Cultural Resources, Geology, Land Use, Noise, Public Health and Safety, Public Services and Utilities, Traffic, Water Quality, Socioeconomics, Environmental Justice, and Indian Trust Assets. The project alternatives would not result in significant adverse environmental impacts after mitigation. The project would result in beneficial effects on groundwater recharge rates, subsidence, water supply, and socioeconomics because of the increased reliability of water in dry years and the gradual groundwater recharge proposed as part of the WSEP.

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Acronyms and Abbreviations

°F	degrees Fahrenheit
µg/l	micrograms per liter
µS/cm	microSiemens per centimeter
AE	agricultural exclusive
af	acre-feet
af/year	acre-feet per year
APE	area of potential effect
ARB	California Air Resources Board
AST	aboveground storage tank
BA	Biological Assessment
BACT	best available control technology
BACT	best available control technology
Basin Plan	Water Quality Control Plan for the Sacramento and San Joaquin River Basins
BAT	Best Available Technology
BEPA	Bald Eagle Protection Act
BGEPA	Bald and Golden Eagle Protection Act
BLM	Bureau of Land Management
BMPs	best management practices
BNLL	blunt-nosed leopard lizard
BP	before present
btus	British thermal units
btu/hp-hr	British thermal units per horsepower-hour
CAA	federal Clean Air Act
CAAA	Clean Air Act Amendments of 1990
CAAQS	state ambient air quality standards
CalEPA	California Environmental Protection Agency
CCAR	California Climate Action Registry
CDMG	California Division of Mines and Geology
CEQA	California Environmental Quality Act
CESA	California Endangered Species Act
cfs	cubic feet per second
CH_4	methane
CIMIS	California Irrigation Management Information System
cm	centimeters
CNDDB	California Natural Diversity Database
CNPS	California Native Plant Society

CO	carbon monoxide
CO2e	CO2 equivalent
CO_3^{2-}	carbonate
Corps	U.S. Army Corps of Engineers
County	Madera County
CRHR	California Register of Historical Resources
CUP	Conditional Use Permit
CVP	Central Valley Project
CWA	Clean Water Act
dB	Decibel
dBA	A-weighted decibel
DBCP	1,2-dibromo-3-chlorop propane
Dc	critical water-table depth
DFG	California Department of Fish and Game
diesel PM	particulate emissions from diesel-fueled engines
DOI	U.S. Department of the Interior
DPR	California Department of Pesticide Regulation
dS/m	deciSiemens per meter
DSOD	Department of Safety of Dams
DWR	California Department of Water Resources
EC	electrical conductivity
EIR	Environmental Impact Report
EIS	draft Environmental Impact Statement
EPA	U.S. Environmental Protection Agency
ESA	federal Endangered Species Act
ESRP	Endangered Species Recovery Program
ET	Evapotranspiration
FEMA	Federal Emergency Management Agency
FIRMs	flood insurance rate maps
FMMP	Farmland Mapping and Monitoring Program
FPPA	Farmland Protection Policy Act
FWUA	Friant Water Users Authority
GAMAQI	Guide for Assessing and Mitigating Air Quality Impacts
GF Canal	Gravelly Ford Canal
GFWD	Gravelly Ford Water District
GHGs	greenhouse gas emissions
GMP	Groundwater Management Plan
GPS	Global Positioning System
GWP	global warming potential

Hc	capillary zone
HCO_3^-	bicarbonate
HFCs	hydrofluorocarbons
HGWPG	high GWP gases
hp	horsepower
IC	internal combustion
IPCC	Intergovernmental Panel on Climate Change
ITAs	Indian Trust Assets
L_{eq}	Equivalent sound level
LESA	land evaluation and site assessment
LOS	Level of service
M&I	municipal and industrial
MBTA	Migratory Bird Treaty Act
MCL	maximum contaminant levels
MCMAVCD	Madera County Mosquito Abatement & Vector Control District
mg/l	milligrams per liter
mgd	million gallons per day
MID	Madera Irrigation District
MMT	million metric tons
MOA	memorandum of agreement
MOCP	Monitoring and Operational Constraints Program
MOU	Memorandum of Understanding
mph	miles per hour
MROC	Madera Ranch Oversight Committee
MSA	Metropolitan Statistical Area
msl	above mean sea level
MWMA	Mendota Wildlife Management Area
N_2O	nitrous oxide
Na^+	sodium
NAAQS	National Ambient Air Quality Standards
NaCl	sodium chloride
NAHC	Native American Heritage Commission
$NaHCO_3$	sodium bicarbonate
NEPA	National Environmental Policy Act
NFIP	National Flood Insurance Program
NMFS	National Marine Fisheries Service
NO_2	nitrogen dioxide
NO_X	nitrogen oxides
NPDES	National Pollutant Discharge Elimination System

NRCS	Natural Resources Conservation Service
NRDC	Natural Resources Defense Council
NRHP	National Registry of Historic Places
O&M	operations and maintenance
O_3	Ozone
ODS	O3-depleting substances
OHWM	ordinary high water mark
OSHA	Occupational Safety and Health Administration
PFCs	perfluorocarbons
PG&E	The Pacific Gas and Electric Company
PLSS	Public Land Survey System
PM10	particulate matter smaller than or equal to 10 microns in diameter
PM2.5	particulate matter smaller than or equal to 2.5 microns in diameter
ppb	parts per billion
ppm	parts per million
ppm N	parts per million of nitrogen
ppt	parts per trillion
PRC	Public Resources Code
PVC	polyvinyl chloride
RCP	reinforced concrete pipe
Reclamation	U.S. Department of the Interior, Bureau of Reclamation
RIP	road improvement plan
ROGs	reactive organic gases
RWQCB	Regional Water Quality Control Board
SCADA	Supervisory Control and Data Acquisition
Settlement	NRDC et al. v. Kirk Rodgers et al. settlement
SF_6	sulfur hexafluoride
SHPO	California Historic Preservation Officer
SIP	State Implementation Plan
SJRRP	San Joaquin River Restoration Program
SJVAB	San Joaquin Valley Air Basin
SJVAPCD	San Joaquin Valley Air Pollution Control District
SO_2	sulfur dioxide
SO_X	sulfur oxides
SPCCP	spill prevention control and countermeasures program
SR	State Route
SSJVIC	Southern San Joaquin Valley Information Center
State Water Board	State Water Resources Control Board
SWP	State Water Project

SWPPP	stormwater pollution prevention plan
TACs	toxic air contaminants
TDS	total dissolved solids
TMDL	total maximum daily load
UBC	Uniform Building Code
USC	U.S. Code
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey
USSL	U.S. Salinity Laboratory
UST	underground storage tank
WDRs	Waste Discharge Requirements
WEGs	wind erodibility groups
WSEP	Water Supply Enhancement Project

Executive Summary

ES.1 Introduction

This Draft Environmental Impact Statement (Draft EIS) evaluates the potential environmental effects of the proposed Madera Irrigation District (MID) Water Supply Enhancement Project (WSEP) on the natural, physical, and social environments in relationship to Madera Ranch, Mendota Wildlife Management Area, MID's service area, and the areas for the "off-site" conveyance improvements. The WSEP would be located on the property known as Madera Ranch, west of the city of Madera, in Madera County, California.

This Draft EIS has been prepared by the U.S. Department of the Interior, Bureau of Reclamation (Reclamation) as the federal lead agency to comply with requirements of the National Environmental Policy Act (NEPA). Reclamation's limited action relevant to the WSEP is to approve the banking of MID Central Valley Project (CVP) water outside MID's service area in the proposed Madera Ranch water bank, and the alteration of the 24.2 Canal, a federal facility.

ES.2 Related Environmental Documentation

MID approved a WSEP in September 2005 based on their Final Environmental Impact Report (EIR)—State Clearing House #2005031068. At the time, there was no federal action. Reclamation commented on the draft EIR, stating that once MID proposed a federal action, Reclamation would need to complete and satisfy all NEPA and federal Endangered Species Act (ESA) requirements before approving any federal action. This EIS has been initiated in response to MID's request that Reclamation approve the banking of CVP water outside of their service area in the proposed Madera Ranch water bank, as well as alterations to federal facilities.

ES.3 Overview of Proposed Action, Alternatives, and Alternatives Development

This Draft EIS evaluates a No Action Alternative; the Proposed Action (the WSEP using swales, including alteration of Reclamation-owned facilities); a WSEP that uses constructed basins instead of swales and includes alteration of Reclamation-owned facilities; and an alternative that would include a WSEP that uses non-Reclamation facilities.

Consistent with MID's 2005 EIR, Alternative B is Reclamation's preferred alternative, referred to in this Draft EIS as the Proposed Action. This alternative involves construction and operation of facilities to convey and bank surface water beneath Madera Ranch using natural swales and later to recover up to 90% of the banked water for beneficial use.

ES.3.1 Alternative A—No Action

Under the No Action Alternative, MID would not bank MID CVP water (MID Long-Term Water Service Contract supplies from both the Friant Division and Hidden Unit) on Madera Ranch (Figure 2-1) and Reclamation's delivery canals would not be enlarged. MID may bank non-CVP water on the property, and other limited on-site water banking and recovery facilities may be constructed if MID is able to find participants and funding to support these efforts. MID estimates that under the No Action Alternative, MID only could apply less than 5,000 acre-feet per year (af/year) of their own non-CVP water, and recovery operations likewise would be limited if Reclamation-owned facilities were not altered. The number of other participants and amount of water they could bring to the project are uncertain. If the project does not proceed, MID likely would sell the property to other agricultural interests. MID has had numerous offers from prospective buyers, including dairy, orchard, and row crop farmers. The No Action conditions would continue to support agricultural activities.

ES.3.2 Alternative B

Alternative B is the Proposed Action and Reclamation's preferred alternative. The Proposed Action would be completed in two phases. Phase 1 would involve only recharge-related facilities. Phase 2 would involve supplemental recharge facilities and facilities for recovery of banked water. Reclamation would approve a total banking capacity of 250,000 af of MID CVP water outside the MID service area and issuance of an MP-620 permit for the alteration of Reclamation-owned facilities (Lateral 24.2). After alteration of the Reclamation-owned facilities and certain MID facilities, MID would be able to recharge and recover a maximum of 55,000 af annually.

Phase 1 activities would involve:

- reconditioning and extending canals to provide at least 200 cubic feet per second (cfs) of conveyance capacity into Madera Ranch;
- constructing approximately 55 acres of recharge basins on current agricultural land to regulate flow, remove sediment, and provide some recharge;
- applying recharge flows to approximately 700 acres of swales; and

- integrating approximately 2,600 acres of Madera Ranch row crops and vineyards into an in-lieu recharge program in which surface water periodically would be served in lieu of groundwater pumping subject to approval by the Madera Ranch Oversight Committee (MROC).

Phase 2 activities for recharge and recovery facilities would involve:

- additional upgrades to existing canals,
- construction of up to 1,000 acres of new on-site recharge basins and canals as required to supplement Phase 1 facilities and achieve 200 cfs of recharge capacity (if required),
- use of up to 15 existing wells for recovery,
- installation of up to 49 new wells and recovery pipelines (in phases over several years) to provide 200 cfs of recovery capacity, and
- installation of up to 12 lift stations on MID canals and one lift station on Gravelly Ford Canal (GF Canal) (in phases over several years) to provide 200 cfs of pump-back capacity into the MID service area.

ES.3.3 Alternative C

Alternative C is a variation of the Proposed Action that would complete the water bank in two phases and replace natural swale recharge solely with recharge basins. Phase 1 would involve recharge-related facilities only. Phase 2 would involve facilities for recovery of banked water. Reclamation would approve banking of CVP water outside the MID service area and alteration of Reclamation-owned facilities.

Phase 1 activities would involve:

- reconditioning and extending existing canals to provide at least 200 cfs of conveyance capacity into Madera Ranch,
- constructing up to 1,000 acres of new on-site recharge basins and canals as required to achieve 200 cfs of recharge capacity, and
- integrating approximately 2,600 acres of Madera Ranch row crops and vineyards into an in-lieu recharge program in which surface water periodically would be served in lieu of groundwater pumping subject to approval by the MROC.

Phase 2 recharge and recovery facilities would involve:

- up to 15 existing wells for recovery;
- up to 49 new wells and recovery pipelines (in phases over several years) to provide 200 cfs of recovery capacity; and

- up to 12 lift stations on MID canals and one lift station on GF Canal (in phases over several years, total of 13 lift stations) to provide 200 cfs of pump-back capacity into the MID service area.

ES.3.4 Alternative D

Under Alternative D, MID would enter into an agreement with Gravelly Ford Water District (GFWD) to improve the GF Canal to allow water to be conveyed from the San Joaquin River through the GF Canal to Madera Ranch for banking of water and recovery of water from the ranch back through the canal to the river. The existing GFWD river pumping plant would be enlarged; the existing, associated pipeline replaced with a larger-diameter line; the GF Canal regraded to a flat-bottom (zero slope) configuration to allow two-way flow; a new connection to the river constructed to allow recovery water to reach the river without flowing through the pumps; and appropriate gate structures constructed. On-site improvements allowing water banking and extraction, including a pumping plant and pipeline to allow distribution of water uphill from the GF Canal, would be constructed.

MID would complete Alternative D in two phases. Phase 1 would involve recharge-related facilities only. Phase 2 would involve supplemental recharge facilities and facilities for recovery of banked water. Reclamation would approve the banking of CVP water outside the MID service area as described under Alternative B. No alteration of Reclamation-owned facilities would occur under Alternative D.

Phase 1 activities would involve:

- reconditioning of existing canals to provide at least 200 cfs of conveyance capacity into Madera Ranch;
- construction of approximately 26 acres of recharge basins on current agricultural land to regulate flow, remove sediment, and provide some recharge;
- application by MID of recharge flows to approximately 700 acres of swales; and
- integration of approximately 2,600 acres of Madera Ranch row crops and vineyards into an in-lieu recharge program in which surface water would be periodically served in lieu of groundwater pumping subject to approval by the MROC.

Phase 2 recharge and recovery facilities would use or include:

- up to 15 existing wells for recovery,

- up to 49 new wells and recovery pipelines (in phases over several years) to provide 200 cfs of recovery capacity, and
- one lift station on GF Canal to provide 200 cfs of pump-back capacity to the San Joaquin River.

ES.3.5 Alternative Comparison

The alternatives affect many of the same facilities. Table ES-1 below provides a comparison of the alternatives.

Table ES-1. Facility Components Associated with Project Alternatives

Component	Alternative B—Proposed Action	Alternative C—without Swales	Alternative D—Use of Gravelly Ford Canal
24.2 Canal improvements	X	X	
Section 8 Canal, Cottonwood Creek, and Main No. 1 Canal connection upgrade	X	X	
Section 8 Canal upgrades/extensions	X	X (excluding Northern Lateral)	X (excluding new 1.55 mile segment in Sections 13 and 14)
Gravelly Ford Canal upgrade			X
Gravelly Ford Canal sedimentation basin and flow regulation area	X	X	X
Cottonwood Creek Overflow improvements	X	X	X
Reconditioning of ditches	X	X	X
Swales	X		X
55 acres of recharge basins	X	X	
Section 8 Canal Southwestern Lateral upgrade	X	X	X
Gravelly Ford Canal Section 21 Northern Lateral	X	X	X
1,000 acres of recharge basins	X*	X	X*
Recovery wells	X	X	X
Recovery pipelines and electrical facilities	X	X	X
Recovery lift stations	X	X	X

* These would be constructed only if the swales do not perform as expected.

ES.3.6 Purpose and Need

The purpose of the proposed federal action is to:

- meet a portion of MID's current and future water storage needs,
- enhance water supply reliability and flexibility by using the space underground for surface water storage (water banking),
- reduce aquifer overdraft, and
- encourage conjunctive use in the region as a means toward regional self-sufficiency.

To meet these project purposes, MID proposes to implement the WSEP, by which MID would bank a portion of their CVP water from the San Joaquin and Fresno Rivers and other non-CVP water in the aquifer underlying Madera Ranch. Water would be banked in the aquifer, and 10% of the water would be left behind to reduce overdraft. In order for MID to fully implement the WSEP, federal approval to bank a portion of MID's CVP water supply outside their service area and to alter a federal facility (24.2 Canal) is needed.

Currently, farmers in MID's service area use a combination of groundwater and surface water, and during dry and critically dry years there is not adequate surface water to meet the water demand. In these years, groundwater pumping increases substantially, and the amount of groundwater that has been pumped from the aquifer in the vicinity of Madera Ranch has exceeded the amount of water that has recharged the aquifer, resulting in groundwater overdraft. Even in wet years, the groundwater basin is in severe overdraft because groundwater pumping is steadily increasing for agricultural and M&I uses. This overdraft has caused the water table to decline and groundwater quality to degrade and has resulted in excess space underground that can be used to bank surface water. In the vicinity of Madera Ranch, the water table has declined more than 90 feet over the last 60 years (Figure 1-1). These conditions have made it increasingly expensive for farmers to pump groundwater. Additionally, in many years, MID has been unable to deliver sufficient surface water to farmers because water is available primarily during the early months of the year when irrigation demand is low, and often water is available only for short periods of time during the growing season. Anticipated smaller snowpacks (the source of most Friant Division water), a result of climate change, will require additional water storage capacity. Additionally, changes in regulatory frameworks may shift the amount of water available or the times it is available for use.

ES.4 Federal Funding

MID has been working toward securing federal funds to assist in the cost of purchasing Madera Ranch and construction of the WSEP. In January 2009, the

U.S. Congress passed the Omnibus Public Land Management Act of 2009 (Public Law 11-111; H.R. 146-308). Section 9102 of the Omnibus bill includes the "Madera Water Supply Enhancement Project, California." Thus, the WSEP has been authorized by the U.S. Congress and is eligible for federal funding in the next budget cycle, in 2010. MID is pursuing federal funding through the appropriations process. In addition, MID is pursuing a grant award through Reclamation's Policy and Program Services, Challenge Grant Program: Recovery Act of 2009 Water Marketing and Efficiency Grants. The application for this grant is due May 22, 2009. A determination relevant to grant approvals is expected to be made in July 2009.

ES.5 Overview of Environmental Effects

The EIS evaluates the direct, indirect, and cumulative environmental changes and/or effects on the following resources:

- Water Supply
- Aesthetics
- Agriculture
- Air Quality
- Biological Resources
- Cultural Resources
- Climate Change
- Geology, Seismicity, and Soils
- Land Use
- Noise
- Public Health and Safety
- Public Services and Utilities
- Traffic
- Water Quality
- Socioeconomics
- Environmental Justice
- Indian Trust Assets
- Growth-Inducing Effects

These effects are summarized briefly in Table ES-2.

ES.6 Coordination with Other Agencies

Reclamation has been coordinating with the U.S. Army Corps of Engineers (Corps) and U.S. Fish and Wildlife Service (USFWS) to analyze potential environmental effects of the Proposed Action. The Corps is in the process of verifying the wetland delineation provided by MID, and MID will seek permits for reshaping existing drainage ditches and adding structures in artificial canals. Reclamation submitted a biological assessment to the USFWS for the WESP in April 2008. The USFWS has provided two insufficiency memos requesting additional information on the project and Reclamation has responded to these memos. The USFWS's comments relate primarily to avoiding and minimizing effects on federally listed species that may use the swales and associated habitat on Madera Ranch.

ES.7 Public Involvement and Next Steps

Pursuant to the requirements of NEPA, Reclamation published a Notice of Intent (NOI) to prepare an EIS and Notice of Public Scoping Meetings in the *Federal Register* on September 28, 2007. Reclamation and MID held EIS scoping meetings at MID's offices in Madera on October 22 and 29, 2007. Before the meetings, public notices were posted at MID's offices and published in the *Madera Tribune* and the *Fresno Bee* announcing the time, date, location, and purpose of the meetings. Each scoping meeting included an overview of the meeting's purpose, the proposed project and alternatives, potentially significant environmental issues, and opportunities for future public involvement.

This Draft EIS represents the next step in public involvement as it has been made available to the public and agencies for review and comment. Reclamation filed a Notice of Availability (NOA) in the *Federal Register* on July 28, 2009. This Draft EIS will undergo public review for 60 days, during which time Reclamation will hold a public meeting. Once comments are received, Reclamation will prepare responses to comments and include them in the Final EIS. Reclamation will circulate the Final EIS for at least 30 days before issuing a record of decision (ROD).

Table ES-2. Summary of Effects and Mitigation Measures for the Madera Irrigation District Water Supply Enhancement Project

Effect	Alternative	Adverse?	Environmental Commitment
4.1 WATER SUPPLY			
WS-1: Changes in Groundwater Supplies or Overdraft Rates in Madera County	B, C, D	Beneficial	
WS-2: Substantial Effects on Surrounding Groundwater Wells as a Result of Recovery Operations	B, C, D, Cumulative	No	MOCP, MROC
WS-3: Substantially Alter the Existing Drainage Pattern or Contribute to Existing Local or Regional Uncontrolled Flows	B, C, D, Cumulative	No	MOCP, MROC
WS-4: Adverse Effects on the Area of Origin of Water from Amendments to Existing Water Rights	B, C, D	No	
WS-5: Reduced Surface Water Availability in Madera County or the Area of Origin	B, C	No	
WS-6: Water Supply Reliability Improvement in Dry Years	B, C, D	Beneficial	
WS-7: Adverse Effects on the Area of Origin of Water from Amendments to Existing Water Rights	D	No	
WS-8: Reduced Surface Water Availability in Madera County or the Area of Origin	D, Cumulative	No	
4.2 AESTHETICS			
AES-1: Temporary Degradation of Visual Character or Quality from Construction-Related Activities	B, C, D	No	
AES-2: Degradation of Visual Character or Quality from New Permanent Features	B, C, D	No	
4.3 AGRICULTURE			
AG-1: Alteration of Madera Ranch Agricultural Operations	B, C, D	No	
AG-2: Conflict with Williamson Act Contracts	B, C, D	No	

Effect	Alternative	Adverse?	Environmental Commitment
AG-3: Loss of Agricultural Land Designated as Prime Farmland or Farmland of Statewide Importance	B, C, D	Yes	AG-1
AG-4: Conflict with Local Zoning Designations	B, C, D	No	
4.4 AIR QUALITY			
AQ-1: Generation of Construction Emissions in Excess of Federal *de Minimis* Threshold Levels	B, C, D	Yes	AQ-1, AQ-2
AQ-2: Generation of Operational Emissions in Excess of Federal *de Minimis* Threshold Levels	B, C, D	No	
AQ-3: Result in a Cumulatively Considerable Net Increase of Any Criteria Pollutant for which the Region Is in Nonattainment under an Applicable Federal or State Ambient Air Quality Standard (Including Releasing Emissions that Exceed Quantitative Thresholds for Ozone Precursors)	Cumulative	Yes	AQ-1, AQ-2
4.5 BIOLOGICAL RESOURCES			
BIO-1: Temporary Disturbance of California Annual Grassland and Alkali Grassland during Construction	B, C, D	No	
BIO-2: Permanent Removal of California Annual Grassland and Alkali Grassland Habitats during Construction	B, C, D	Yes	BIO-1
BIO-3: Loss or Disturbance of Iodine Bush Scrub or Sensitive Plant Species Habitat as a Result of Construction	B, C, D	Yes	BIO-2a, BIO-2b
BIO-4: Potential for Construction-Related Mortality of Sensitive Vernal Pool Crustaceans	B, C, D	Yes	BIO-2a, BIO-2b
BIO-5: Potential for Operation- and Maintenance-Related Mortality of Sensitive Vernal Pool Crustaceans	B, C, D	Yes	BIO-2a, BIO-2b
BIO-6: Potential for Construction-Related Mortality of San Joaquin Tiger Beetle	B, C, D	No	
BIO-7: Potential for Operation- and Maintenance-Related Mortality of San Joaquin Tiger Beetle	B, C, D	No	

Effect	Alternative	Adverse?	Environmental Commitment
BIO-8: Potential for Construction-Related Mortality of California Tiger Salamander	B, C, D	Yes	BIO-1, BIO-2a, BIO-2b, BIO-4a, BIO-4b, BIO-4c
BIO-9: Potential for Operation- and Maintenance-Related Mortality of California Tiger Salamander	B, C, D	Yes	BIO-1, BIO-2a, BIO-2b
BIO-10: Potential for Construction- and/or Operation- and Maintenance-Related Mortality of Western Spadefoot Toad	B, C, D	Yes	BIO-2a, BIO-2b
BIO-11: Potential for Construction- and/or Operation- and Maintenance-Related Effects on Blunt-Nosed Leopard Lizard	B, C, D	Yes	BIO-1, BIO-5
BIO-12: Potential for Construction- and/or Operation- and Maintenance-Related Mortality of California Horned Lizard	B, C, D	No	
BIO-13: Potential for Construction- and/or Operation- and Maintenance-Related Mortality of Silvery Legless Lizard	B, C, D	No	
BIO-14: Potential for Operation- and Maintenance-Related Harm and Harassment of Giant Garter Snake	B, C, D	No	
BIO-15: Potential for Construction-Related Disturbance of Nesting Swainson's Hawk and White-Tailed Kite	B, C, D	Yes	BIO-6
BIO-16: Potential Loss of Foraging Area for Greater Sandhill Crane, Golden Eagle, Ferruginous Hawk, Prairie Falcon, Merlin, Mountain Plover, Long-Billed Curlew, and Short-Eared Owl	B, C, D	No	
BIO-17: Potential for Construction-Related Mortality of Western Burrowing Owl	B, C, D	Yes	BIO-1, BIO-7
BIO-18: Potential for Operation-Related Mortality of Western Burrowing Owl	B, C, D	No	
BIO-19: Potential for Construction-Related Harm to Loggerhead Shrike	B, C, D	Yes	BIO-1
BIO-20: Potential for Construction-Related Foraging Habitat Loss for Tricolored Blackbird	B, C, D	No	
BIO-21: Potential for Effects on San Joaquin Kit Fox	B, C, D	Yes	BIO-1, BIO-8

Effect	Alternative	Adverse?	Environmental Commitment
BIO-22: Potential for Effects on Fresno Kangaroo Rat	B, C, D	Yes	BIO-9
BIO-23: Potential for Mortality of San Joaquin Pocket Mouse	B, C, D	No	
BIO 24: Potential Mortality of Sensitive Species during Construction	C, D	Yes	BIO-10
BIO-25: Potential for Entrainment of Anadromous Fish If Restored to the San Joaquin River	D	Yes	BIO-11
BIO-26: Result in a Cumulatively Considerable Loss of Grassland	Cumulative	Yes	BIO-11
BIO-27: Result in a Cumulatively Considerable Loss of Habitat for Endangered Species	Cumulative	Yes	BIO-1
4.6 CLIMATE CHANGE			
CC-1: Increased GHG Emissions during Construction	B	No	AQ-1, AQ-2
CC-1: Increased GHG Emissions during Construction	C, D, Cumulative	Yes	AQ-1, AQ-2
CC-2: Increase in GHG Emissions as a Result of Operation and Maintenance	B, C, D	Yes	AQ-3
CC-3: Secondary Emissions at Power Plants	B, C, D, Cumulative	No	
4.7 CULTURAL			
CR-1: Damage to or Destruction of Nine Historic Features on Madera Ranch through Construction of Recharge Basins	B, C, D	No	
CR-2: Physical Modifications of Gravelly Ford Canal (P-20-2402)	B, C, D	No	
CR-3: Physical Modifications of Historic Main No. 1, Main No. 2 and Section 8 Canal	B, C, D	No	
CR-4: Physical Modification of 24.2 Canal	B, C, D	No	
CR-5: Physical Disturbance of Currently Undiscovered Cultural Resources	B, C, D	Yes	CR-1

Effect	Alternative	Adverse?	Environmental Commitment
4.8 GEOLOGY			
GEO-1: Potential Exposure of People or Structures to Substantial Adverse Effects Resulting from Liquefaction	B, C, D	No	
GEO-2: Potential Subsidence Caused by Groundwater Overdraft	B, C, D	No	MROC
GEO-3: Potential Risks to Property Caused by Construction on an Expansive Soil	B, C, D	No	
GEO-4: Potential Loss of a Substantial Amount of Topsoil from Land Grading Operations	B, C, D	No	
GEO-5: Increase in Wind and Water Erosion Rates during and Shortly after Construction	B, C, D	No	
GEO-6: Increase in Long-Term Wind and Water Erosion Rates	B, C, D	Yes	GEO-1
GEO-7: Potential Destruction of a Unique Pedologic Feature	B, C, D	Yes	BIO-1
GEO-8: Potential Soil Salinization from Elevated Groundwater Levels	B, C, D	No	
GEO-9: Potential Destruction of a Sensitive Paleontological Resource	B, C, D	Yes	GEO-2
4.9 LAND USE			
LU-1: Conflict with Applicable Land Use Plans, Policies, or Regulations, Including Land Use Designations and Zoning Ordinances	B, C, D	No	
LU-2: Land Use/Operational Conflicts between Existing and Proposed Land Uses	B, C, D	No	
LU-3: Conflict with Recreational Land Uses	B, C, D	No	
4.10 NOISE			
NOI-1: Exposure of Residences to Noise from Grading and Construction Activities	B, C, D	Yes	NOI-1
NOI-2: Exposure of Residences to Noise from Well Drilling Operations	B, C, D	Yes	NOI-2

Effect	Alternative	Adverse?	Environmental Commitment
NOI-3: Exposure of Residences to Noise from Operation of Engines at Wells	B, C, D	No	
NOI-4: Exposure of Residences to Noise from Operation of Engines at Lift Stations	B, C, D	Yes	NOI-4
Effect NOI-5: Exposure of Residences to Noise from Operation of Engines at Lift Stations	B, C, D	Yes	NOI-4
4.11 PUBLIC HEALTH AND SAFETY			
PHS-1: Potential Creation of a Public Hazard from Risk of Drowning	B, C, D, Cumulative	Yes	PHS-1a
PHS-2: Potential Creation of a Public Hazard from Risk of Berm Failure	B, C, D, Cumulative	No	
PHS-3: Potential Creation of a Public Hazard from Risk of Wildland Fire	B, C, D	Yes	PHS-1b, PHS-1b
PHS-4: Potential for Increase in Adult Mosquito Populations	B, C, D	Yes	PHS-2
PHS-5: Potential Exposure or Disturbance of Hazardous Materials or Wastes	B, C, D	No	WQ-1b
4.12 PUBLIC SERVICES			
PSU-1: Increased Demand for Utilities	B, C, D	No	
PSU-2: Potential Disruption of Emergency-Response Routes (Moderate)	B, C, D	Yes	PSU-1a, PSU-1b
PSU-3: Temporary Disruption of Irrigation Service as a Result of Construction	B, C, D	No	
Effects related to the disruption of emergency response routes within Madera County	Cumulative	Yes	PSU-2a, PSU-2b
4.13 TRAFFIC			
TRAF-1: Temporary Construction-Related Increase in Traffic Volumes on Local and Regional Roadways	B, C, D	No	

Effect	Alternative	Adverse?	Environmental Commitment
TRAF-2: Potential Increase in Construction-Related Traffic Volume Delay and Hazard on Local and Regional Roadways	B, C, D	Yes	PSU-1b
TRAF-3: Potential Damage to the Roadway Surface during Construction	B, C, D	Yes	TRAF-1
TRAF-4: Potential Increase in the Demand for Parking Space at the Construction Site(s)	B, C, D	No	
4.14 WATER QUALITY			
WQ-1: Degradation of Water Quality Resulting from Construction Runoff	B, C, D	Yes	WQ-1a, WQ-1b
WQ-2: Water Quality Effects from Construction-Related Dewatering	B, C, D	Yes	WQ-2
WQ-3: Potential Effects on Groundwater or Surface Water Quality from Recharge or Recovery Operations	B, C, D, Cumulative	No	MOCP, MROC
WQ-4: Potential Soil Salinization from Elevated Groundwater Levels (also in Section 3.6, *Geology*)	B, C, D	No	
WQ-5: Potential Erosion Attributable to Reversal of Flows in 24.2 Canal and Cottonwood Creek/Main No. 2 Canal	B, C, Cumulative	Yes	MOCP, MROC, WQ-1a, WQ-1b, WQ-2
WQ-6: Potential Erosion Attributable to Reversal of Flows in Gravelly Ford Canal	D, Cumulative	No	MOCP, MROC
4.15 SOCIOECONOMICS			
SE-1: Increase in Temporary Construction-Related Employment and Income in the Fresno Metropolitan Statistical Area	B, C, D	Beneficial	
SE-2: Increase in Permanent Employment and Income in the Local Area	B, C, D	Beneficial	
SE-3: Increase in Water Costs Influencing Agricultural Production	B, C, D	No	
SE-4: Reliability of Water Supply on Changes in Employment and Income in the Local Area because of Increased Water Supply Reliability	B, C, D	Beneficial	

Effect	Alternative	Adverse?	Environmental Commitment
4.16 ENVIRONMENTAL JUSTICE			
No disproportionate effect			
4.17 INDIAN TRUST ASSETS			
No effects			
4.18 WETLANDS			
WET-1: Permanent Removal of Vernal Pools and Alkali Rain Pools during Construction, Operation, and Maintenance	B, C, D	Yes	BIO-2a, BIO-2b
WET-2: Other Wetland Effects during Construction, Operation, and Maintenance	B, C, D	No	
WET-3: Cumulative Loss of Wetlands	Cumulative		
5 GROWTH-INDUCING EFFECTS			
GI-1: Inducement of Growth Attributable to Municipal and Industrial Participation in Water Bank	B, C, D	No	

MOCP = Monitoring and Operational Constraint Plan

MROC = Madera Ranch Oversight Committee

Chapter 1 Introduction

1.1 Introduction

This draft Environmental Impact Statement (EIS) evaluates the potential environmental effects of the proposed Madera Irrigation District (MID) Water Supply Enhancement Project (WSEP). The WSEP would be located on the property known as Madera Ranch, west of the city of Madera, Madera County, California. This document has been prepared by the U.S. Department of the Interior, Bureau of Reclamation (Reclamation) as the federal lead agency to comply with requirements of the National Environmental Policy Act (NEPA). Reclamation's limited action relevant to the WSEP is to approve the banking of MID Central Valley Project (CVP) water outside MID's service area in the proposed Madera Ranch water bank, and the alteration of the 24.2 Canal, a Reclamation-owned facility, as proposed by MID and described in Chapter 2. Reclamation owns and operates the CVP, a system of 20 reservoirs and more than 500 miles of major canals and aqueducts. The CVP includes Millerton Lake, contained by the Friant Dam on the San Joaquin River, which provides a portion of the MID water supply.

The vicinity of Madera Ranch has long been considered a viable area to operate a water bank because of the aquifer space availability, fast percolation rate, and other characteristics. Other entities previously have explored opportunities to develop a water bank in the area, but for reasons not relevant to this analysis, these former proposals were not implemented. These previous efforts, however, presented opportunities from which to learn and were a basis for development of more viable options that ultimately have resulted in MID's current proposal.

1.2 Proposed Action

For any proposed major federal action, federal agencies such as Reclamation must prepare a NEPA compliance document to provide full disclosure to the public. The issuance of an MP-620 permit and approval to allow MID to bank CVP water outside the CVP service area constitutes a Reclamation action, and therefore an evaluation of the effects of that action is required that meets the provisions of NEPA. NEPA requires full disclosure about major actions taken by federal agencies, including alternatives to the actions, impacts, and possible mitigation. NEPA also requires that environmental concerns and impacts be evaluated during planning and decision making.

This EIS satisfies the requirements of NEPA. NEPA requires the federal government to use all practical means and measures, consistent with other

essential considerations of national policy, to promote a healthy human environment. It establishes policy, sets goals, and provides means for carrying out the policy. NEPA encourages the wise use of natural resources by requiring that environmental factors be considered in federal agency decision-making. NEPA also enables the public, private organizations, state and local agencies, and Native American tribal governments to be involved in and informed about the decision-making process.

1.3 Madera Irrigation District and California Environmental Quality Act Compliance

MID encompasses an area of 128,292 acres and delivers water to its service area as part of the Hidden Unit (Fresno River) and Friant Division (San Joaquin River) Long-Term Water Supply contracts with Reclamation. MID operates and maintains a gravity irrigation distribution system of approximately 300 miles of open flow canal systems and 150 miles of pipelines. In addition to the services rendered to the lands within MID, the District conveys agricultural water to the Gravelly Ford Water District (GFWD). MID is also a member of the Madera-Chowchilla Water and Power Authority, which operates and maintains the Madera Canal under an agreement with Reclamation.

In accordance with the California Environmental Quality Act (CEQA), MID, as the state lead agency, approved their WSEP in September 2005 based on their Final Environmental Impact Report (EIR) (State Clearinghouse #2005031068). At the time, there was no proposed federal action. Reclamation commented on the draft EIR, stating that once MID proposed a federal action, Reclamation would need to complete and satisfy all NEPA and federal Endangered Species Act (ESA) requirements before approving any federal action. This EIS has been initiated in response to MID's request that Reclamation approve the banking of MID CVP water outside their service area in the proposed Madera Ranch water bank, as well as alterations to a federal facility.

MID is also in the process of preparing a Supplemental EIR to address new information and changed circumstances since the WSEP was approved in 2005. The Supplemental EIR will provide updated information on MID's water supply relevant to the San Joaquin River Restoration settlement; updated information and analysis of impacts regarding bank participants, including 10,000 acre-feet (af) of municipal and industrial (M&I) water users and 10,000 af of water allocated to environmental users; and updated information and analysis of impacts on biological resources and new mitigation measures to protect biological resources, including special-status species and sensitive natural communities. This EIS also addresses these issues.

1.4 Purpose and Need

Reclamation's purpose is to fulfill its mission which is to manage, develop and protect water and related resources in an environmentally and economically sound manner in the interest of the American people. In order to fulfill its mission, Reclamation facilitates water delivery that would benefit efficient and effective water use. Reclamation's purpose under the Proposed Action would be to fulfill its role as Contracting Officer and approve MID's banking CVP water outside its service area and modification of Reclamation facilities (lateral 24.2).

The purpose of the Proposed Action is to:

- meet a portion of MID's current and future water storage needs,
- enhance water supply reliability and flexibility by using the space underground for surface water storage (water banking),
- reduce aquifer overdraft, and
- encourage conjunctive use in the region as a means toward regional self-sufficiency.

To meet these project purposes, MID proposes to implement the WSEP, by which MID would bank a portion of their CVP water from the San Joaquin and Fresno Rivers and other non-CVP water in the aquifer underlying Madera Ranch. Water would be banked in the aquifer, and 10% of the water would be left behind to reduce overdraft. In order for MID to fully implement the WSEP, Reclamation approval to bank a portion of MID's CVP water supply outside their service area and to alter a federal facility (24.2 Canal) is needed.

Currently, farmers within MID's service area use a combination of groundwater and surface water, and during dry and critically dry years there is not adequate surface water to meet the water demand. In these years, groundwater pumping increases substantially, and the amount of groundwater that has been pumped from the aquifer in the vicinity of Madera Ranch has exceeded the amount of water that has recharged the aquifer, resulting in groundwater overdraft. Even in wet years, the groundwater basin is in severe overdraft because groundwater pumping is steadily increasing for agricultural and M&I uses. This overdraft has caused the water table to decline and groundwater quality to degrade and has resulted in excess space underground that can be used to bank surface water. In the vicinity of Madera Ranch, the water table has declined more than 90 feet over the last 60 years (Figure 1-1). These conditions have made it increasingly expensive for farmers to pump groundwater. Additionally, in many years, MID has been unable to deliver sufficient surface water to farmers, because water is available primarily during the early months of the year when irrigation demand is low, and often water is available only for short periods of time during the growing season. Anticipated smaller snowpacks (the source of most Friant Division and Hidden Unit water), a result of climate change, will require additional water storage capacity. Additionally, changes in regulatory frameworks may change the

amount of water available or shift the times it is available for use.

1.5 Public Participation

Reclamation and MID held EIS scoping meetings at MID's offices in Madera on October 22 and 29, 2007. Before the meetings, public notices were posted at MID's offices and published in the *Madera Tribune* and the *Fresno Bee* announcing the time, date, location, and purpose of the meetings. Each scoping meeting included an overview of the meeting's purpose, the Proposed Action and alternatives, potentially significant environmental issues, and opportunities for future public involvement. Attendees were given the opportunity to provide both oral and written comments. Ten written comments were received and comments pertained to the following topics:

- potential impacts on water quality,
- potential impacts on water supply,
- potential water rights issues,
- potential impacts on biological resources, and
- socioeconomic concerns related to economic impacts on farmers.

These issues are addressed in this EIS.

1.6 Organization of This EIS

This EIS is organized into chapters as follows:

Chapter 1: Introduction—This chapter provides background information related to the Proposed Action and describes the purpose of and need for the Proposed Action.

Chapter 2: Alternatives—This chapter describes each of the four alternatives that could accomplish the Proposed Action's purpose and need that are analyzed in detail in the EIS, the alternatives screening process, and the alternatives eliminated from detailed discussion.

Chapter 3: Regulatory Environment—This chapter describes the various federal, state, and local regulations applicable to the Proposed Action and alternatives, and any coordination between Reclamation and other agencies as of distribution of this EIS.

Chapter 4: Environmental Analysis—This chapter includes analysis of direct, indirect, and cumulative effects on water supply; aesthetics; agriculture; air quality; biological resources; cultural resources; geology, seismicity, and soils; land use; noise; public health and safety; public services and utilities; traffic and

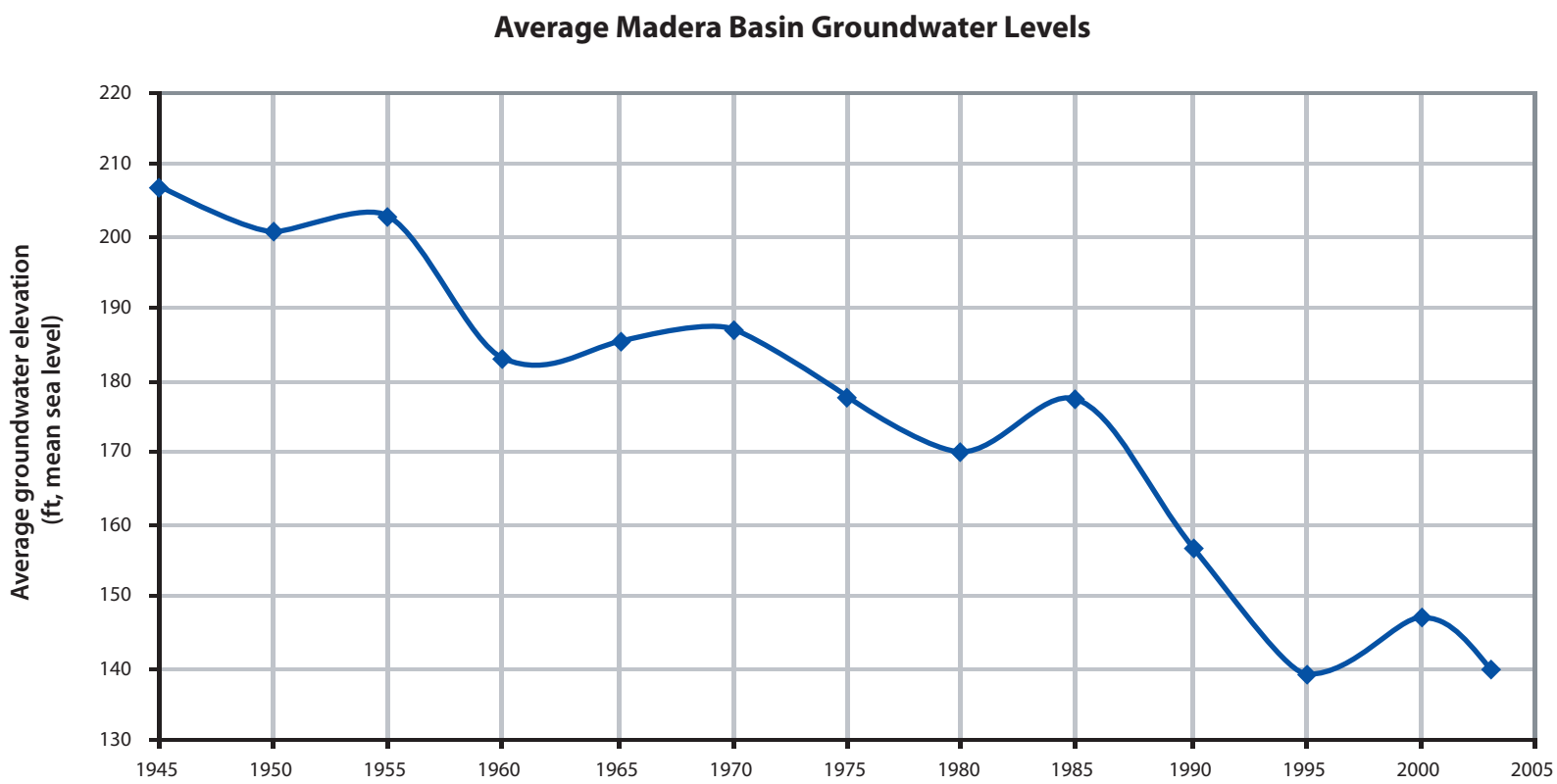

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Figure 1-1
Historical Trends in Average Groundwater Levels in the Madera Subbasin

circulation; water quality; climate change; socioeconomics; environmental justice; and Indian Trust Assets. Each of these resource topics is included in a separate section of Chapter 4.

Chapter 5: Growth-Inducing Effects—This chapter describes the potential for the Proposed Action or alternatives to remove an obstacle to growth, and related environmental effects.

Chapter 6: List of Preparers—This chapter lists all persons involved in the preparation of this EIS.

Chapter 7: References—This chapter lists references cited in this EIS.