APPENDIX C

Habitat Conservation Plan

Habitat Conservation Plan IID Water Conservation and Transfer Project

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Acronyms and Abbreviations

µg/g dw	micrograms per gram for drinking water
µg/L	micrograms per Liter
AAC	All American Canal
AF	acre-feet
AFY	acre-feet per year
BEPA	Bald Eagle and Golden Eagle Protection Act
BLM	Bureau of Land Management Sensitive Species
CDFG	California Department of Fish and Game
CESA	California Endangered Species Act
CEQA	California Environmental Quality Act
CFR	Code of Federal Regulations
cfs	cubic feet per second
Code	California Fish and Game Code
CSC	California Species of Special Concern
CVWD	Coachella Valley Water District
CWHR	California Wildlife Habitat Relationship
DDD	dichloro diphenyl dichloroethane
DDE	dichlorophenyldichloro-ethene
DDT	dichloro-diphenyl-trichloroethane
DOI	Department of Interior
DOQQ	Digital Orthophoto Quarter Quadrangle
DW	dry weight
E	endangered
EIR/EIS	environmental impact report and environmental impact statement
F	Fahrenheit
FESA	Federal Endangered Species Act of 1973
FP	fully protected
FR	*Federal Register*
ft/s	foot per second
g/L	grams per liter
GIS	geographic information systems
GM	geometric mean
HCP	habitat conservation plan

IA	Implementation Agreement
IID	Imperial Irrigation District
IT	Implementation Team
ITP	Incidental Take Permit
KAFY	thousand acre-feet per year
Kg/ha/yr	kilograms per hectare per year
lb/acre	pounds per acre
LCR	Lower Colorado River
m	meter
MAFY	million acre-feet per year
mi^2	square mile
mg/kg	milligrams per kilogram
mg/L	milligrams per liter
MOU	Memorandum of Understanding
msl	mean sea level
MWD	Metropolitan Water District of Southern California
NEPA	National Environmental Policy Act
NMFS	National Marin Fisheries Service
NNE	north-northeast
NPPA	Native Plant Protection Act
NWR	National Wildlife Refuge
O&M	operation and maintenance
PL	Public Law
ppb	parts per billion
ppm	parts per million
PPR	present perfected water rights
ppt	parts per trillion
PCB	polychlorinated biphenyl
PT	proposed threatened
QA/QC	quality assurance/quality controls
QSA	Quantification Settlement Agreement
R	rare
Reclamation	U.S. Bureau of Reclamation
ROD	Record of Decision
RV	recreational vehicle
S	federal species of concern
SDCWA	San Diego County Water Authority

T	threatened
TDS	total dissolved solids
TSS	total suspended solids
USACOE	U.S. Army Corps of Engineers
USC	United States Code
USFWS	U.S. Fish and Wildlife Service
WA	wildlife area

APPENDIX C

Executive Summary

Imperial Irrigation District Water Conservation and Transfer Project Habitat Conservation Plan

Preface

The Imperial Irrigation District (IID) prepared this Habitat Conservation Plan (HCP) to support its application for issuance of incidental take permits (ITP) under the Federal Endangered Species Act of 1973 (FESA) and the California Endangered Species Act (CESA) in order to implement the conservation and transfer of Colorado River water to other California water agencies. Through this HCP, IID commits to certain management and other actions that will minimize and mitigate the potential impact of any "take" of covered species that may occur as a result of IID's implementation of the IID/San Diego County Water Authority (SDCWA) Transfer Agreement (Transfer Agreement) and the proposed Quantification Settlement Agreement (QSA), and related activities. The Transfer Agreement and QSA are, in turn, critical elements of California's Colorado River Water Use Plan (formerly the "4.4 Plan"). California has developed the 4.4 Plan to reduce California's use of water from the Colorado River in accordance with California's 4.4 million acre-feet per year (MAFY) apportionment of Colorado River water.

Introduction

IID delivers water from the Colorado River to agricultural and domestic water users within the boundaries of its water service area. This service area covers about 500,000 acres in the Imperial Valley in southeastern California. Irrigated agriculture is the primary economic enterprise within IID's service area and the primary use of water delivered by IID.

California's Colorado River Water Use Plan

The use of Colorado River water is allocated among the seven states that comprise the Colorado River Basin. In accordance with the laws governing use of Colorado River water, including court decree, California's apportionment of Colorado River water is 4.4 MAFY (plus 50 percent of any surplus water). Recent California diversions have been up to 800 thousand acre-feet per year (KAFY) above its normal year (i.e., non-surplus) apportionment. California recently published the Draft California Colorado River Water Use Plan (Water Use Plan) in which the steps necessary to reduce its use to 4.4 MAFY are outlined, including the need for cooperative water conservation and transfers from agricultural to urban use. The IID/SDCWA Water Conservation and Transfer Project is a key component of the Water Use Plan.

IID/SDCWA Transfer Agreement

In 1998, IID and SDCWA executed an Agreement for Transfer of Conserved Water. The IID/SDCWA Transfer Agreement is a long-term (75 years) transaction between IID and SDCWA involving the voluntary conservation by IID of up to 300 KAFY and the subsequent

transfer of all or a portion of the conserved water to SDCWA. The transferred, conserved water is intended for use within SDCWA's service area in San Diego County, California.

The conserved water will consist of Colorado River water that otherwise would be diverted by IID at Imperial Dam for use within IID's service area in Imperial County, California. IID's annual diversions of Colorado River water at Imperial Dam will be reduced by the amount of the conserved water. Water for transfer to SDCWA will be diverted at Parker Dam into the Colorado River Aqueduct operated by the Metropolitan Water District of Southern California (MWD), and SDCWA will receive an equivalent amount of water through MWD's distribution facilities pursuant to an Exchange Agreement between SDCWA and MWD.

Quantification Settlement Agreement

Subsequent to execution of the IID/SDCWA Transfer Agreement, a settlement was negotiated by and among IID, Coachella Valley Water District (CVWD), and MWD, with the participation of the State of California and the Department of the Interior. The proposed terms of the settlement agreement are incorporated in a draft QSA, which is intended to settle, for a period of up to 75 years, long-standing disputes among IID, MWD, and CVWD regarding the priority, use, and transfer of Colorado River water. The QSA facilitates a number of component agreements and actions which, when implemented, will enhance the certainty and reliability of Colorado River water supplies available to the signatory agencies and will assist these agencies in meeting their water demands within California's normal-year apportionment of Colorado River water. The QSA thus implements the goals and key programs of the Water Use Plan.

Under the terms of the QSA, up to 100 KAFY of the water conserved by IID may be transferred to CVWD or MWD or both. The QSA also includes a voluntary contractual limitation of IID's total diversions of Colorado River water under its third-priority water right to 3.1 MAFY.

Purpose and Need for the HCP

The purpose and need for the HCP stems from the need to comply with FESA and CESA and also IID's need for long-term regulatory certainty (up to 75 years) in committing to the IID/SDCWA Transfer Agreement and the QSA. Both the IID/SDCWA Transfer Agreement and the QSA establish long-term water supply arrangements designed to implement the Water Use Plan. Implementation of these agreements will require changes in current farming practices and substantial capital investments in water conservation equipment and technologies. Long-term, no-surprises assurances regarding FESA and CESA compliance measures and costs are needed by IID to commit to the long-term obligations set forth in the IID/SDCWA Transfer Agreement and the QSA.

Area Covered by the HCP

IID conveys and delivers water diverted from the lower Colorado River at Imperial Dam to customers in the Imperial Valley in IID's service area via the All-American Canal (AAC). The HCP area includes all lands comprising the approximately 500,000 acres of IID's service area, lands owned by IID outside of its service area that are currently submerged by the Salton Sea, and IID's rights-of-way along the AAC downstream from the point of diversion

at Imperial Dam. In addition, the HCP covers any take of covered species using the Salton Sea that could occur as a result of IID's activities.

Species Covered by the HCP

The HCP covers 96 fish, wildlife, and plant species with the potential to occur in the HCP area. Several of these are federally and/or state listed species, while the remainder represent currently unlisted species that are present or potentially present in IID's service area, the Salton Sea, or along the AAC.

Term of the HCP

IID is proposing a 75-year term (2002 through 2077) for the HCP. This term is consistent with the term of the IID/SDCWA Transfer Agreement and the QSA.

Activities Covered by the HCP

The activities covered by the HCP include:

- Water conservation and water use activities, including irrigation and drainage of lands to which IID delivers water
- Water conservation activities undertaken by IID, and the farmers, leaseholders or landowners of the Imperial Valley receiving IID water and participating in the conservation program
- Activities of IID in connection with the diversion, conveyance, and delivery of Colorado River water to users within IID's service area, including the AAC
- Activities of IID in connection with the collection of unused irrigation or drainage waters within its service area and conveyance to the Salton Sea

The covered activities specifically include all conservation and mitigation measures in connection with the conservation and transfer of up to 300 KAFY of Colorado River water pursuant to the IID/SDCWA Transfer Agreement and/or the QSA and compliance with the cap on IID's annual diversions of Colorado River water established by the QSA.

Biological Environment

The HCP area lies within the California desert. Before European settlement, the area consisted of native desert vegetation and associated wildlife. Periodically, the Colorado River changed course and flowed northward into the Salton Trough forming a temporary, inland sea. These former seas persisted as long as water entered from the Colorado River, but evaporated when the river returned to its previous course. Thus, despite the periodic occurrence of a lake within the Salton Trough, the HCP area consisted predominantly of a desert ecosystem.

The Salton Sea represents the remnants of the most recent occurrence of flooding by the Colorado River, which, in 1905, breached an irrigation control structure and flowed into the Salton Trough, a dry desert basin. By 1920, agricultural production had increased in both the Imperial and Coachella valleys and the Salton Sea was receiving agricultural drainage water. In 1924 and 1928, presidential orders withdrew all federal lands below –220 feet mean sea level (msl) "for the purpose of creating a reservoir in the Salton Sea for storage of waste and seepage

water from irrigated land in Imperial Valley." Since its formation in 1905, the Salton Sea has been sustained by irrigation return flows from the Imperial, Coachella, and Mexicali valleys.

The availability of a reliable water supply affected by construction of Hoover and Imperial dams and the AAC facilitated sustained intensive cultivation within the Imperial Valley. To support agricultural production in the valley, an extensive network of canals and drains was constructed to convey water from the Colorado River to farms in the valley and subsequently to transport drainage water from the farms to the Salton Sea. The importation of water from the Colorado River and subsequent cultivation of the Imperial and Coachella valleys radically altered the Salton Trough from its native desert condition. The availability of water in the drains and canals supported the development of mesic (marsh-associated) vegetation and, in some locations, patches of marsh-like habitats (e.g., along the Salton Sea and seepage from canals). These mesic habitats, in addition to the productive agricultural fields and the Salton Sea, have attracted and currently support numerous species of wildlife that would be absent or only present in low numbers in the native desert habitat. Today, only isolated remnants of desert habitat remain in the HCP area, which is bounded by the main irrigation water delivery canals on the east and west sides of the IID water service area. The vast majority of the habitat supporting covered species is created and maintained by water imported to the Imperial Valley for agricultural production. Native desert habitat surrounding the IID water service area has not changed as a result of IID's activities and will not change as a result of the water conservation.

Habitat Conservation Plan Components

The HCP employs both habitat-based and species-specific approaches. The habitat-based component of the conservation strategy of the HCP focuses on mitigating the potential loss of habitat values (quality and quantity) of each habitat type within the HCP area. The overall conservation strategy for the IID HCP is to maintain or increase the value (amount and/or quality) of each habitat in the HCP area in addition to implementing measures to minimize direct effects to covered species from operation and maintenance (O&M) and construction activities. In addition to the habitat-based conservation approach of the HCP, a species-specific approach is used to address individual species or groups of species (i.e., burrowing owls, desert pupfish, razorback suckers, and other covered species) that are not easily accommodated by habitat approach. Consistent with the guidance provided by the USFWS, all HCP effects are evaluated on a species-by-species basis.

IID's HCP contains specific conservation strategies for:

- Salton Sea habitat
- Tamarisk scrub habitat
- Drain habitat
- Desert habitat
- Agricultural field habitat
- Burrowing owls
- Desert pupfish
- Razorback sucker
- Other covered species

General HCP Commitments

To ensure proper implementation of the HCP measures and the Monitoring and Adaptive Management Program, the HCP includes commitments by IID to:

- Hire a full-time biologist to oversee implementation of the HCP measures
- Establish and convene an HCP Implementation Team composed of representatives from the U.S. Fish and Wildlife Service (USFWS), California Department of Fish and Game (CDFG), and IID to guide implementation of the mitigation and adaptive management elements of the HCP

Salton Sea Conservation Strategy

Water conservation by IID is anticipated to reduce drain water discharge and accelerate the rate at which salinity increases in the Salton Sea. The increase in salinity is expected to eventually lead to conditions in the Salton Sea that would no longer support fish. Although the Salton Sea is projected to become too saline to support fish even in the absence of water conservation, the anticipated acceleration of salinization caused by water conservation would hasten the loss of fish in the Sea and lead to the discontinued use by piscivorous (fish-eating) birds, such as pelicans. Current modeling projections suggest that average salinity in the Salton Sea under the IID/SDCWA Water Conservation and Transfer Project could reach a level that would no longer support viable populations of tilapia (the fish species in the Salton Sea that serves as the birds' primary forage base) approximately 11 years earlier than if the water conservation program were not implemented. The discontinued use of the Salton Sea by piscivorous birds could result in take as defined by the FESA by the U.S. Fish and Wildlife Service.

A salinity of 60 parts per thousand (ppt) is the threshold above which tilapia (the primary forage fish for piscivorous birds at the Salton Sea) are predicted to become impaired. For the Baseline, hydrological modeling predicted that that the salinity of Salton Sea would exceed 60 ppt by 2030 with 95 percent probability. Under the Salton Sea Conservation Strategy, IID would acquire and discharge water to the Sea such that the salinity of the Salton Sea would remain at or below 60 ppt until 2030. Thus, provision of this water to the Sea would maintain the salinity of the Salton Sea equal to or lower than the salinity that would occur under the Salton Sea Baseline until 2030. Through this commitment, IID would ensure continued persistence of fish in the Salton Sea (and therefore piscivorous birds) for a period the same as that projected under the Salton Sea Baseline. Under this strategy, the duration and level of use of the Salton Sea by piscivorous birds would be expected to be the same as or longer than would have occurred under the Salton Sea Baseline. This approach also would avoid impacts to nesting/roosting sites from the water conservation and transfer programs because the provision of water to the Sea would maintain the elevation of the Sea at or above the surface elevation that would occur under the Salton Sea Baseline.

In addition, IID has committed to avoiding or mitigating take of other covered species resulting from increased salinity or reduced Sea level that could occur after IID ceases discharging water to the Salton Sea as mitigation. The key elements are to:

- Ensure an appropriate level of connectivity among pupfish populations in the drains if an increase in the salinity prevents movement of fish among drains

- Replace tamarisk scrub habitat lost as a result of reduced Sea levels caused by water conservation with native tree habitat consisting of mesquite bosque or cottonwood-willow habitat

Tamarisk Scrub Conservation Strategy

In the HCP area, tamarisk scrub is found along the New and Alamo rivers, sporadically along some drains, in seepage areas adjacent to the East Highline Canal and All American Canal, adjacent to the Salton Sea, and in other scattered and isolated patches throughout the HCP area wherever water is available. Although tamarisk is an exotic plant species and provides lower habitat value than native vegetation (e.g., mesquite and cottonwood), it dominates the plant community in portions of the HCP area and provides habitat for some covered species. Implementation of water conservation and ongoing O&M activities has the potential to affect tamarisk scrub habitat and the covered species that use it. The biological goal of the Tamarisk Scrub Habitat Conservation Strategy is to maintain the species composition and life history functions of covered species using tamarisk scrub habitats. The approach to the Tamarisk Scrub Habitat Conservation Strategy entails a combination of minimization and mitigation measures. The key elements are to:

- Minimize take, including disturbance, of covered species as a result of construction activities
- Protect or create native tree habitat to mitigate the take of covered species resulting from loss of tamarisk scrub or native tree/shrub habitat permanently removed as a result of construction activities

Drain Habitat Conservation Strategy

IID operates and maintains agricultural drains in the HCP area, portions of which support vegetation used by covered species. Implementation of water conservation and ongoing O&M has the potential to result in the take of covered species. The biological goal of the Drain Habitat Conservation Strategy is to maintain the species composition and life history functions of covered species using drain habitat. The approach of the Drain Habitat Conservation Strategy is to create high-quality managed marsh habitat to augment existing drain habitats and to implement measures to minimize the direct effects of O&M and construction activities on covered species. The key elements are to:

- Create at least 190 acres of managed marsh habitat
- Create up to an additional 462 acres of managed marsh habitat depending on the actual amount of covered species habitat in the drains determined by surveys
- Minimize disturbance and mortality/injury of covered species during dredging at the mouths of the New and Alamo Rivers
- Minimize take, including disturbance, of covered species as a result of construction activities

Desert Habitat Conservation Strategy

Desert habitat in the HCP area occurs in the rights-of-way of the AAC, East Highline and portions of the Westside Main, Thistle, and Trifolium Extension canals. IID's maintenance

operations rarely affect desert habitat directly, but activities conducted adjacent to desert habitat could result in the take of a covered species. The biological goal of the Desert Habitat Conservation Strategy is to avoid and minimize death or physical injury of individuals of the covered species, and to improve habitat contiguity and persistence to mitigate changes in habitat quality or quantity caused by construction activities. The approach to the Desert Habitat Conservation Strategy is to implement a program to minimize the potential for take of covered species during O&M activities, and to compensate for habitat loss if construction activities impact desert habitat. The key elements are to:

- Implement a worker education program
- Implement interim measures to avoid and minimize the potential for take of covered species during O&M activities
- Implement specific measures to avoid and minimize the potential for take of covered species during construction activities along the AAC, East Highline Canal, and portions of the Westside Main, Thistle, and Trifolium Extension canals
- Conduct surveys to determine the occurrence of covered species
- Acquire and protect offsite desert habitat if construction activities permanently reduce the quality or availability of habitat

Burrowing Owl Conservation Strategy

The agricultural areas of the Imperial Valley support high densities of burrowing owls, particularly along the canal and drain system operated and maintained by IID. Although IID's maintenance activities contribute to the quality of burrowing owl habitat, these activities have the potential to take burrowing owls. The biological goal of the Burrowing Owl Conservation Strategy is to maintain a self-sustaining population of burrowing owls across the current range of the species in the HCP area. The approach consists of a combination of measures to minimize effects of O&M and construction activities on owls and their habitat, and measures to enhance habitat availability. The key elements are to:

- Implement a worker education program
- Avoid and minimize the potential for covered activities to take individual owls by modifying maintenance activities in areas occupied by owls or scheduling activities during periods that would avoid the breeding season
- Continue maintenance practices that maintain and create suitable habitat conditions
- Initiate and implement a comprehensive population and demographic study to develop the information necessary to guide adjustments in the burrowing owl mitigation and management program
- Compensate for loss of burrows if construction activities would eliminate suitable burrows by installing replacement burrows
- Implement a farmer and public education program

Desert Pupfish Conservation Strategy

Desert pupfish have become established in many of the drains constructed and maintained by IID that discharge directly via gravity into the Salton Sea. Although IID routinely maintains adequate drainage in these channels by removing vegetation and sediment, these drains provide the habitat conditions necessary to support pupfish. IID's maintenance activities, while likely necessary to maintain the habitat characteristics that support pupfish, have the potential to result in the incidental take of pupfish. In addition, implementation of water conservation projects has the potential to change water quality in the drains occupied by pupfish and to adversely affect pupfish. The biological objective of the desert pupfish conservation strategy is to maintain or increase pupfish habitat in the drains relative to the current levels and to minimize the potential for IID's drain maintenance activities to result in take of pupfish. The key elements are to:

- Operate and maintain the drainage system in a manner that will maintain the amount of drain habitat currently available (i.e., no net loss) in the portion of IID drains that flow directly to the Salton Sea
- Operate and maintain drain channels in a manner that minimizes the effects of water conservation on water quality, particularly concentrations of selenium
- Increase the amount of pupfish drain habitat by extending, modifying, or creating drain channels on land exposed if the elevation of the Salton Sea recedes
- Implement a study to evaluate the potential effect of routine drain maintenance on pupfish occupying the drains and to determine the efficacy of modifying current maintenance practices to avoid and minimize the potential for incidental take
- Avoid or minimize the potential for incidental take of pupfish by IID construction activities by implementing procedures for dewatering construction sites and salvaging and relocating pupfish potentially stranded by construction activities

Razorback Sucker Conservation Strategy

Razorback suckers are known to occur in the All-American and East Highline Canal systems as a result of movement by fish from the Colorado River into the system. Because they are isolated from the main population and are not known to be reproducing, razorback suckers in the HCP area are not contributing to the overall razorback sucker population. As a result, loss of these individuals would have no effect on the razorback sucker population. Although incidental take of individual razorback suckers in the IID canals system would not impact the species' population, IID will implement measures to minimize mortality of suckers as a result of canal dewatering. The key element of this approach is to:

- Monitor segments of the canal system during dewatering operations and salvage and transport any stranded razorback suckers to the Colorado River

Agricultural Field Habitat Conservation Strategy

Agricultural fields in the Imperial Valley attract a large variety and number of wildlife species, including some covered species. Foraging is the predominant use of agricultural fields by covered species, although fields also are used as resting habitats. Species that exploit agricultural habitats would benefit under the HCP from IID obtaining incidental

take authorization and unlisted species assurances because such assurances would encourage continued agricultural production. The biological objective of the Agricultural Field Habitat Conservation Strategy is to maintain agriculture as the primary enterprise in IID's service area to continue to provide foraging habitat for covered species associated with agricultural field habitat. This objective is facilitated by the IID/SDCWA Water Transfer Agreement, the QSA, and the implementation of this HCP. In addition to the incentives to continue agriculture in the Imperial Valley provided by these actions, the approach includes a measure that will help avoid the potential for incidental take associated with implementation of on-farm water conservation techniques. This measure entails the installation of markers on any new power lines installed in association with the water conservation program (e.g., to serve pumps used for tail-water recovery ponds) to avoid or minimize the potential for collisions with wires by covered species.

Other Covered Species

Of the 96 species covered by this HCP, USFWS and CDFG identified 25 species for which existing information on the ecology and distribution in the HCP area is limited or that might not occur in the HCP area. Under the HCP, IID will implement species-specific measures to avoid, minimize and mitigate take of these 25 species. IID also will implement a research program to better understand the presence, distribution, and ecological requirements of these species in the HCP area. Based on the results of the research program, IID will implement revised measures to avoid, minimize, and mitigate the impacts of any take of these species resulting from the covered activities as recommended by the HCP Implementation Team and approved by the USFWS and CDFG.

Monitoring and Adaptive Management

Monitoring the effectiveness of the conservation measures and ensuring compliance with the terms of the conservation program are mandatory elements of an HCP. The HCP includes a comprehensive monitoring and adaptive management program to help ensure that compliance with the measures of the HCP is achieved, that the anticipated effectiveness of the measures is assessed, and that adjustments in the species conservation measures, where necessary, are made in response to new information. The monitoring requirements for each of the HCP elements are summarized below:

Salton Sea Conservation Strategy

- IID will demonstrate compliance with the measures for this strategy through the reporting requirements and involvement of the HCP implementation team (IT).
- IID will evaluate the effectiveness of the measures for this strategy by conducting baseline and periodic surveys to quantify net changes in the total amount of tamarisk in shoreline strand and adjacent wetland dominated by tamarisk.
- Based on the results of the effectiveness monitoring, IID and the HCP IT may recommend changes to one or more of the conservation measures. IID will submit a description of the actions to be implemented to the USFWS and CDFG for approval.

Tamarisk Scrub Habitat Conservation Strategy

- IID will demonstrate compliance with the measures for this strategy through the reporting requirements and involvement of the HCP IT.
- The involvement of the HCP IT and approval requirements from USFWS and CDFG will ensure that any property acquired or habitat created by IID will support use by the covered species associated with tamarisk scrub. IID will monitor use of the created habitat by covered bird species and other bird species. The HCP IT will develop the species requirements for monitoring, including the survey technique, timing of the surveys, and duration of the surveys following creation of the habitat.
- Monitoring data will be used in conjunction with other relevant data to adapt management of native tree habitats as necessary to meet the biological goals.

Drain Habitat Conservation Strategy

A baseline survey of the covered species will be conducted during a consecutive 3-year period to determine the seasonal occurrence and distribution of covered species using drains in the HCP area.

- IID will demonstrate compliance with the measures for this strategy through the reporting requirements and involvement of the HCP IT.
- IID will conduct species-specific surveys for Yuma clapper rails and California black rails and conduct general surveys for other covered species in the created managed marsh habitat.
- Monitoring data will be used in conjunction with other relevant data to adapt management of managed marsh habitats as necessary to meet the biological goals.

Desert Habitat Conservation Strategy

A baseline survey of the covered species will be initiated within 1 year of issuance of the incidental take permit and conducted during a consecutive 3-year period to determine the seasonal occurrence and distribution of covered species along the AAC, East Highline, Westside Main, Thistle, and Trifolium Extension canals in the HCP area. Prior to conducting surveys for the covered species along these canals, IID will conduct a habitat survey to identify and map habitat and habitat features.

- IID will demonstrate compliance with the measures for this strategy through the reporting requirements and involvement of the HCP IT. The HCP Implementation Biologist will also periodically conduct random checks (during their routine duties) of workers conducting O&M activities to assess whether workers are following the standard operating procedures.
- Information on the effectiveness of the measures will come from the workers and HCP Implementation Biologist. Workers will be instructed to report any incidences of mortality or injury of a covered species. The biologist will be regularly coordinating with workers, monitoring construction activities, and checking on the effectiveness of the measures.

- The HCP IT will review the measures of the desert habitat conservation strategy annually for the first 3 years and every 3 years thereafter. The HCP IT may adjust the measures based on results of the species and habitat surveys, prevailing practices for avoiding take, observations/recommendations of the HCP Implementation Biologist, among others.

Burrowing Owl Conservation Strategy

- Submission of preconstruction checklists and copies of the worker education manual and updates of the manual to the USFWS and CDFG will serve as compliance monitoring for this strategy. In addition, the HCP Implementation Biologist will periodically conduct random checks (during their routine duties) of workers conducting O&M activities to assess whether workers are following the standard operating procedures for burrowing owls.
- Monitoring to evaluate the effectiveness of the measures for this strategy will include surveys of the drainage and conveyance system in such a manner as to provide a valley-wide perspective of the burrowing owl population each year for the term of the permit and conduct of a study of the burrowing owl population to understand the status of the population and estimate key population parameters.
- The results of the demographic study will be used to determine the population trend of the burrowing owl population. If the burrowing owl population is shown to be in decline, the HCP Implementation Team will have the option to access the Owl Contingency Fund. The contingency fund may be used to conduct focused studies to understand the factors influencing the burrowing owl population, implement management actions to benefit the population (e.g., creating burrows), continue the demographic study, or other actions recommended by the HCP IT.

Desert Pupfish Conservation Strategy

- IID will demonstrate compliance with the measures for this strategy through the reporting requirements and involvement of the HCP IT.
- The HCP IT will develop an appropriate protocol for monitoring pupfish presence in drains maintained by IID and in drain channels constructed as mitigation. IID will also monitor selenium concentrations in any drains modified as mitigation to determine the effectiveness of the action.
- Through the adaptive management, drain maintenance activities could be adjusted based on information developed through the evaluation of the maintenance practices and drains could be reconfigured to improve water quality (selenium) conditions if justified by the results of studies of selenium effects on pupfish.

Razorback Sucker Conservation Strategy

- Whenever suckers are salvaged, IID will submit information on location, numbers, ages, and survival of salvaged suckers to the USFWS and CDFG within one week of salvaging the fish. Submission of this information will serve as compliance monitoring for this strategy.

- The reports submitted to USFWS and CDFG of the number of fish salvaged and the number surviving until release will allow an assessment of the effectiveness of the measure in avoiding mortality of razorback suckers.
- Over the term of the permit, the HCP IT may adjust the procedures to improve survival of fish during capture, transport and release. The HCP IT may adjust the procedure if the compliance monitoring shows a high level of mortality or for consistency with standard practices developed by the USFWS or CDFG.

Costs and Funding

The estimated cost of implementing the HCP ranges widely depending on the ultimate amount of habitat creation necessary under the Drain Habitat and Tamarisk Scrub Habitat Conservation Strategies, and for tamarisk adjacent to the Salton Sea under the Salton Sea Habitat Conservation strategy. Per commitments identified in the IID/SDCWA Water Conservation and Transfer Agreement and the QSA, approximately $22.5 million has been allocated for the environmental mitigation required to mitigate project impacts and to minimize the impact of the potential take of covered species. Any mitigation costs in excess of the $22.5 million estimated to minimize and mitigate project impacts could be funded through one or a combination of the following: revenue generated through conservation and transfer of water, additional funds contributed by the water agencies, and grants or funding provided by the federal and state governments.

Response to Emergencies

When an emergency occurs such that IID cannot comply with all of requirements of the HCP, IID will implement the following procedures:

- IID will notify the USFWS and CDFG within 24 hours of initiating emergency activities. In notifying the USFWS and CDFG, IID will describe the nature of the emergency and the actions necessary to correct the problem.
- Where multiple actions need to be taken, the HCP Implementation Biologist will work with repair crews to prioritize repairs based on the risk to covered species and habitats for covered species provided under the HCP and threats to human health and safety and property.
- The HCP Implementation Biologist will visit sites where emergency activities are being implemented as soon as possible. The biologist will take pictures of the damaged areas and note the general extent and species composition of any vegetation impacted by the emergency response activities.
- Within one month of completing emergency actions, IID will meet with USFWS and CDFG to review the measures IID will implement to mitigate any impacts resulting from the emergency actions.
- Following agreement with the USFWS and CDFG regarding appropriate mitigation, IID will prepare a Post Incident Report for submittal to these agencies.

To facilitate effective and appropriate responses to emergencies, the HCP IT may refine and further specify these general procedures to address specific types of emergencies that could arise.

Changed and Unforeseen Circumstances

IID identified several circumstances under which changes could occur during the term of the ITP that would result in a substantial and adverse change in the status of a species covered by the HCP. These relate primarily to circumstances that influence IID's ability to carry out its obligations: (1) on managed marsh and native tree habitats created and managed for mitigation, (2) in habitats supported by IID water (e.g., pupfish drains), and (3) in habitats acquired and managed for mitigation. These circumstances include:

- Seismic activity that affects IID's conveyance and drainage infrastructure and/or its ability to deliver or drain water
- Storm events that result in damage to IID infrastructure and substantial flooding
- Toxic spills that influence operations or directly affect species and habitat
- Introduction and invasion by exotic plant or animal species that affect covered species or their habitat
- Disease outbreaks that affect covered species
- Drought conditions in the Colorado River basin that influence the availability of water in the Imperial Valley
- Land condemnation actions by others

IID anticipates that these events could occur during the term of the HCP. Through the combination of implementing the emergency procedures and specific requirements outlined for each of these categories above, IID will ensure that the objectives of the HCP will continue to be met.

Alternatives

Section 10 of the FESA requires an applicant for an ITP to consider and describe "alternative actions to such takings" within the HCP. IID considered three alternatives in the process of developing the HCP that were determined to be inconsistent with its objectives and/or less likely to be successfully implemented. The alternatives to the HCP that were considered are listed below.

No Action Alternative

Under the No Action Alternative, IID would continue to meet the demands of farmers and other water users within its service area in the Imperial Valley using Colorado River water diverted in accordance with IID's existing water rights. IID would not engage in a program to conserve additional water for the purpose of transferring it outside the service area. IID has determined that this alternative could lead to the impairment of its ability to deliver water in the future and result in negative impacts to its customers, the biological resources,

and the agricultural economy that depend on water delivery. Therefore, IID considered the No Action Alternative to not be practicable or feasible.

Modification of Water Conservation and Transfer Amounts

Two different levels of water conservation (conservation and transfer of 130 KAF and 230 KAF) were examined as alternative actions to the level of take anticipated under the proposed water conservation programs and the HCP. The underlying premise for considering these alternatives was that the potential for impact and the level of take are related to the amount of water conserved and transferred out of the system. Each of these alternatives was anticipated to have incrementally less impact relative to the Proposed Project. However, IID determined that reduced conservation and transfer amounts would not substantially reduce the level of take or mitigation requirements. For these reasons, a reduced HCP alternative was not adopted. However, reduced levels of conservation are Project Alternatives and HCP alternatives as described in the IID Water Conservation and Transfer Project EIR/EIS and HCP.

CHAPTER 1

Introduction

This Habitat Conservation Plan (HCP) was prepared in support of the Imperial Irrigation District's (IID's) application for Incidental Take Permits (ITPs) in conformance with Section 10 of the Federal Endangered Species Act of 1973 (FESA) and 2081(b) of the California Endangered Species Act (CESA). Through this HCP, IID is committing to certain management actions that will minimize and mitigate the impacts of any take of covered species that may occur as a result of IID's implementation of the IID/San Diego County Water Authority (SDCWA) Transfer Agreement and Quantification Settlement Agreement (QSA), and continuation of its operation and maintenance (O&M) activities.

1.1 Background

The IID was formed under California law to deliver water for irrigation and domestic purposes. IID delivers water from the Colorado River to agricultural and domestic water users within the boundaries of its service area. This service area covers about 500,000 acres in Imperial Valley. Irrigated agriculture is the primary economic enterprise within IID's service area and the primary use of water delivered by IID.

The Imperial Valley is part of the Colorado Desert and is located in the Salton Trough in Imperial County in Southeastern California. The Salton Sea is located in the northern portion of Imperial Valley, with portions of the Sea in both Imperial and Riverside counties. The Salton Sea serves as a drainage repository for agricultural and urban runoff from the Imperial, Coachella, and Mexicali Valleys.

IID's diversion of Colorado River water is based upon water rights obtained pursuant to state law, which were perfected in the early 1900s. IID's diversions from the Colorado River also are accomplished pursuant to a 1932 water delivery contract with the U.S. Bureau of Reclamation (Reclamation) under the Boulder Canyon Project Act of December 21, 1928 (45 Stat. 1057, as amended, 43 U.S.C. § 617 et seq.). IID's senior water rights are part of California's apportionment of Colorado River water under the 1922 Colorado River Compact, the Boulder Canyon Project Act, and the U.S. Supreme Court decree in Arizona v. California, 373 U.S. 546 (1963).

IID diverts water from the Colorado River at Imperial Dam, located about 18 miles northeast of Yuma, Arizona. Water diverted at Imperial Dam first enters desilting basins, where sediment settles out of the water. IID operates both Imperial Dam and the desilting basins pursuant to a contract with Reclamation. From the desilting basins, the water enters the All American Canal (AAC). The 84-mile-long AAC runs in a westerly direction and conveys water to three main canals within IID's service area. These three canals (East Highline, Central Main, and Westside Main) generally run northerly and deliver water to lateral canal systems and subsequently to farm turnouts. IID owns and operates the canal and turnout system.

After the water is applied to farm fields for irrigation purposes, all unused water is collected in drains. Water may enter the drains as field runoff (tailwater) or through tile drains (tilewater). Tile drains collect salinized subsurface leach flow and convey it to the drains. The drains transport water directly to the Salton Sea or to the New or Alamo Rivers that discharge to the Salton Sea. IID maintains the network of drains. With no outlet, the Salton Sea is a terminal sink for drain water from Imperial Valley.

1.1.1 IID/SDCWA Water Conservation and Transfer Agreement

In mid-1995, IID and SDCWA began discussions regarding a water conservation and transfer agreement. As a result of these discussions, on April 29, 1998, IID and SDCWA executed an Agreement for Transfer of Conserved Water (IID/SDCWA Transfer Agreement; IID and SDCWA 1998. The IID/SDCWA Transfer Agreement is a long-term transaction between IID and SDCWA involving the voluntary conservation by IID of up to 300 KAFY (300 thousand acre-feet per year) and the subsequent transfer of all or a portion of the conserved water to SDCWA. The transferred, conserved water is intended for use within SDCWA's service area in San Diego County, California. Under certain circumstances, up to 100 KAFY of the water conserved by IID may be transferred to the Coachella Valley Water District (CVWD), the Metropolitan Water District of Southern California (MWD), or both.

The conserved water will consist of Colorado River water that otherwise would be diverted by IID at Imperial Dam for use within IID's service area in Imperial County, California. For conserved water transferred to SDCWA or MWD, IID's annual diversions of Colorado River water at Imperial Dam will be reduced by the amount of the conserved water, and this amount will be diverted at MWD's Whitsett Intake at Lake Havasu on the Colorado River for delivery through MWD's Colorado River Aqueduct. The Colorado River Aqueduct operated by MWD provides the only existing facilities for conveyance of conserved water from the Colorado River to SDCWA's service area. For conserved water transferred to CVWD, IID's annual diversions of Colorado River water at Imperial Dam will also be reduced by the amount of the conserved water; however, the amount CVWD will divert at Imperial Dam will increase by this same amount. This amount will be diverted into the Coachella Canal from the AAC.

Conservation methods employed to effect the IID/SDCWA Water Conservation and Transfer Agreement may consist of: (1) on-farm measures implemented by landowners and tenants within IID's service area; and/or (2) system-based measures implemented by IID and affecting its distribution and drainage facilities. The IID/SDCWA Transfer Agreement anticipates that on-farm conservation measures will be the principal means of conserving water for transfer to SDCWA and requires on-farm conservation of at least 130 KAFY, unless SDCWA and IID agree on a lower amount. On-farm conservation requires the voluntary cooperation of landowners and tenants within IID's service area. On-farm conservation measures will be developed and managed under contracts between IID and landowners that elect to participate. If a sufficient number of landowners participate to meet the minimum conserved water (130 KAFY unless otherwise agreed) amount from on-farm conservation described above, then IID may elect to transfer additional conserved water using system-based conservation measures, on-farm measures, or a combination of these measures.

The IID/SDCWA Transfer Agreement is described in greater detail in the IID Water Conservation and Transfer Project Environmental Impact Report/Environmental Impact Statement (EIR/EIS) (IID 2001).

1.1.2 California's Colorado River Water Use Plan

The Colorado River Compact of 1922 quantified the allocation of Colorado River water among the seven states that comprise the Colorado River Basin. The compact allocates approximately 7.5 MAFY (7.5 million acre-feet per year) to the four Upper Basin states—Colorado, Utah, Wyoming, and New Mexico—and 7.5 MAFY to the three Lower Basin states—California, Nevada, and Arizona. Rapidly growing metropolitan areas and vast irrigated acreage have contributed to a history of contentious relations among the Lower Basin states and individual users in the states, as well as between the Upper and Lower Basins. Because of acrimonious and litigious relations among the Lower Basin states, they have not self-apportioned Colorado River supplies in the same manner as the Upper Basin states. As a result, the Secretary of the Interior (Secretary) acts as water master (typically through actions of Reclamation) for the Lower Colorado River (LCR; Arizona v. California, 1964). The decree of the court set California's apportionment at 4.4 MAF (plus 50 percent of any surplus water); Arizona at 2.8 MAF (plus 46 percent of any surplus); and Nevada at 300 KAF (and 4 percent of any surplus). Recent California diversions have been up to 800 KAF above its normal year (i.e., non-surplus) allocation. California's efforts to reduce its use to 4.4 MAFY were the subject of negotiations among the states and the Secretary.

California recently published the Draft California Water Use Plan (Water Use Plan), formerly known as the "4.4 Plan," in which the steps necessary to comply with the court decree were outlined. The Water Use Plan is a programmatic effort intended to reduce California's use of the Colorado River to comply with its Lower Basin entitlement. The Water Use Plan provides California's Colorado River water users with a framework by which programs, projects, and other activities will be cooperatively implemented to allow California to satisfy its annual water supply needs within its annual normal-year apportionment of Colorado River water. The Water Use Plan will require operational changes in the Colorado River to allow water wheeling and other actions necessary to transfer water among users.

The Water Use Plan identifies a suite of actions that will reduce total Colorado River water use in the state. Finalization of the Water Use Plan will require the four major linchpins:

- Cooperative water conservation and transfers from agricultural to urban use
- Further quantification of the third priority of the Seven-Party Agreement, which established the priority of use for California's 4.4 MAF among the seven major water users: Palo Verde Irrigation District, IID, CVWD, MWD, City of San Diego, City of Los Angeles, and the County of San Diego
- Improved reservoir management and operations
- Water storage and conjunctive use programs

The IID/SDCWA Water Conservation and Transfer project is an example of the first linchpin.

1.1.3 Quantification Settlement Agreement

Subsequent to execution of the IID/SDCWA Transfer Agreement, a settlement agreement was negotiated by and among IID, CVWD, and MWD, with the participation of the State of California and the Department of the Interior (DOI). The proposed terms of the settlement agreement are incorporated in a draft QSA, which was released for public review in December 2000. (A copy of the draft QSA and a Summary of the QSA are available for review at the IID Headquarters in Imperial.) The QSA is intended to settle, for a period of up to 75 years, long-standing disputes among IID, MWD, and CVWD regarding the priority, use and transfer of Colorado River water by establishing a consensual sharing of Colorado River water among these agencies. The QSA facilitates a number of component agreements and actions which, when implemented, will enhance the certainty and reliability of Colorado River water supplies available to the signatory agencies and will assist these agencies in meeting their water demands within California's normal-year apportionment of Colorado River water. The QSA thus implements the goals and programs of the Water Use Plan.

In addition to establishing water budgets for IID, MWD, and CVWD, the QSA sets forth the approved parameters of various water transfers and exchanges, including the conservation by IID of up to 300 KAFY for transfer to SDCWA, CVWD, and/or MWD. The QSA allocates the water to be conserved by the AAC and Coachella Canal lining projects. The QSA also incorporates a consensual limit by IID on its total Priority 3 diversions of Colorado River water at 3.1 MAFY. IID's limit is further reduced by the amounts IID conserves and transfers to others under the QSA, by the amount to be conserved by the AAC lining project, and by any Priority 3 water made available by IID to holders of miscellaneous present perfected Colorado River water rights (PPRs) and Indian reserved rights, resulting in a net Priority 3 diversion of approximately 2.61 to 2.70 MAFY for use within the IID service area. The QSA also includes a consensual cap on CVWD's Priority 3 diversions at 330 KAFY, reduced by the amount to be conserved by the Coachella Canal lining project and by any Priority 3 water made available by CVWD for holders of miscellaneous PPRs and Indian reserved rights. A Program EIR is being prepared by IID, MWD, CVWD, and SDCWA, as joint lead agencies, to identify and assess the environmental impacts of the QSA program.

The Secretary of DOI, in its role as water master for the LCR, must implement the terms of the QSA by delivering Colorado River water in accordance with its terms. The actions required of the Secretary are set forth in a proposed Implementation Agreement (IA), which is intended to be effective concurrently with the QSA. As a condition precedent to implementation of the QSA, certain other federal actions are required, including the adoption of Interim Surplus Criteria and the adoption of an Inadvertent Overrun Program to facilitate the payback of inadvertent exceedances by IID or CVWD of their respective Priority 3 diversion caps. Reclamation has prepared a final EIS for the proposed Interim Surplus Criteria, and a Record of Decision (ROD) was signed in January 2001. Reclamation is preparing an EIS pursuant to National Environmental Policy Act (NEPA) to assess the environmental impacts of the IA and related federal actions.

If the QSA is finally approved and implemented, it would change the project described in the IID/SDCWA Transfer Agreement in certain respects. The QSA would limit the amount of conserved water transferable to SDCWA to a maximum of 200 KAFY, and would provide for CVWD's option to acquire up to 100 KAFY of water conserved by IID, in lieu of transfer of this increment of conserved water to SDCWA. The QSA also provides for MWD's option to acquire any portion of the 100 KAFY of conserved water available to, but not acquired by, CVWD. Under both the QSA and the IID/SDCWA Transfer Agreement, the conserved water transferred by IID to SDCWA, CVWD, and/or MWD retains the priority of IID's senior water rights. However, IID retains ownership of its water rights.

The EIR/EIS for the IID Water Conservation and Transfer Project addresses the environmental impacts of IID's consensual limit on its Priority 3 diversions and the conservation by IID of up to 300 KAFY for transfer pursuant to the IID/SDCWA Water Transfer Agreement and/or the QSA. This HCP is intended to support the issuance of ITPs for that project within the covered area (i.e., Imperial Valley, the Salton Sea, and the area of the AAC).

1.2 Purpose and Need for the HCP

The purpose and need for the HCP stem from IID's requirement for long-term regulatory certainty in committing to the IID/SDCWA Transfer Agreement and the QSA. Both the IID/SDCWA Transfer Agreement and the QSA establish long-term water supply arrangements designed to assist California in meeting its Colorado River entitlement of 4.4 MAFY. The IID/SDCWA Transfer Agreement continues in effect for an initial term of 45 years after transfers have commenced and provides for an optional renewal term of 30 additional years. A substantial term is required by SDCWA, so that it can rely upon the IID conserved water as a key element of its future water supply plans. To implement the transfer, SDCWA must enter into a long-term agreement with the MWD to provide for acceptance of the conserved water at the new point of diversion and conveyance through MWD's Colorado River aqueduct. Similarly, the QSA establishes water budgets for a period of up to 75 years, including long-term obligations on the part of IID to limit its overall Colorado River water diversions and to generate conserved water for transfer to SDCWA, CVWD, and/or MWD. Long-term, no-surprises assurances regarding the FESA and CESA compliance measures and costs are needed by IID to commit to the long-term obligations set forth in the IID/SDCWA Transfer Agreement and the QSA.

Whether the IID/SDCWA Transfer Agreement becomes a reality depends largely on whether the IID and its participating farmers can conclude that the benefits of implementing the IID/SDCWA Transfer Agreement project are balanced by the risks and costs to be borne by the IID and farmers. The conservation of up to 300 KAF of water within the IID service area will require changes in current farming practices and substantial capital investments in water conservation equipment and technologies.

Of the initial 200 KAF anticipated to be conserved for transfer to SDCWA, 130 KAF is projected to come from on-farm conservation programs adopted by farmers in the Imperial Valley. The on-farm conservation programs are voluntary. Farmers will enter into agreements with IID ranging from 1 to 75 years, committing to the implementation of conservation measures. These measures, in turn, will require the farmers to make capital investments in various types of water

conservation equipment and facilities. In many cases, farmers will be required to obtain financing and pay for construction costs and implement and maintain conservation measures. The farmers will be unable to obtain financing if they can not estimate the direct and indirect costs of implementing the water conservation programs.

As such, farmers may be unwilling to enter into binding agreements to undertake significant costs and risks associated with implementing on-farm conservation measures unless they can determine the total costs of the measures and the additional associated cost of complying with the FESA and CESA. The greater the cost of the mitigation program the fewer funds available for IID to compensate farmers for water conservation measures. In the absence of this certainty, IID and farmers within IID's service area will be at risk and the costs of implementing the water conservation measures could increase substantially in the future to address additional costs associated with: (1) the listing of new species as endangered or threatened; (2) the designation of critical habitat for listed species; and (3) the imposition of additional mitigation obligations on IID in the event of changed or unforeseen circumstances. The IID seeks incidental take authorization and no surprises assurances to provide certainty and predictability regarding the habitat conservation measures that IID will be required to implement during the term of the IID/SDCWA Water Conservation and Transfer Agreement and QSA to comply with the state and federal endangered species acts.

The effect of the QSA is to establish obligations and incentives for the long-term conservation by IID of a substantial amount of Colorado River water. The agencies proposing to acquire conserved water from IID need to rely upon the long-term availability of the conserved water for water supply planning purposes. As a result, the QSA allows only very limited flexibility to modify or terminate IID's obligations. Therefore, IID must have certainty regarding the scope, feasibility, and cost of implementing the water conservation and transfer program, including the required environmental mitigation measures, on a long-term basis, prior to committing to implement the QSA. This HCP is intended to establish a definitive program, which will set forth the obligations of IID, and limitations on those obligations, to provide certainty regarding IID's ability to implement the program.

With respect to biological resources, the purpose of the HCP is to minimize and mitigate the effects of implementing the water conservation and transfer programs on covered species. The HCP consists of a combination of measures to minimize the effects of implementing the water conservation and transfer programs as well as measures that will ensure habitat availability for covered species over the term of the HCP. The commitments to create habitat under the HCP will provide a net benefit to covered species by improving habitat availability and quality.

1.3 Relationship to Other Endangered Species Act Approvals

Implementation of the IID Water Conservation and Transfer Project requires changes in water management that could potentially influence habitats and species over a broad geographic area. In addition to the potential effects in areas (i.e., AAC, Imperial Valley, and the Salton Sea) covered by this HCP, potential effects on listed species could occur along the LCR between Parker and Imperial dams, in the Coachella Valley, in San Diego County and potentially in MWD's Service Area. To achieve compliance with the FESA and CESA, several regulatory approval processes in addition to this HCP will be required. Reclamation's changed operation in the Colorado River between Parker and Imperial dams, including

implementation of the Interim Surplus Criteria and the change in the point of diversion required for the water transfer projects and the AAC and Coachella Canal lining projects pursuant to the QSA, is a federal action that is addressed through a Section 7 consultation. The Biological Opinion was issued by the USFWS on January 12, 2001, and provides incidental take authorization for federally listed species potentially affected by this change in operation. Coverage under CESA for state-listed species potentially affected by the change in the point of diversion on the Colorado River is expected to be obtained through a Section 2081 permit issued by CDFG for the benefit of IID, SDCWA, and MWD. It is anticipated that long-term coverage for state and federally listed species as well as selected unlisted species in the affected reach of the LCR will be provided by the LCR Multi-Species Conservation Plan.

Potential effects on state and federally listed species in the Coachella Valley resulting from use of conserved water transferred from IID will be addressed through separate FESA and CESA processes. Incidental take coverage as necessary for this element of the project will be obtained by CVWD through a regional HCP process or a process specific to the use of the transferred water.

Delivery of conserved water to San Diego County and MWD's Service Area is not anticipated to result in the take of any state or federally listed species. SDCWA has indicated that the conserved water transferred by IID will replace water that it otherwise would acquire from MWD, its primary supplier. Similarly, if water is transferred to MWD, the water would replace other historic supplies. The transferred water will retain IID's high-level Priority 3 status and thus will provide better protection from impacts of drought and increased reliability compared to SDCWA's existing supply. As such, the transfer of water from IID will not result in an increased water supply for SDCWA, although it will increase the reliability of water in the SDCWA service area. No additional FESA/CESA compliance actions are anticipated.

1.4 Area Covered by the HCP

IID conveys and delivers water diverted from the LCR at Imperial Dam to customers in the Imperial Valley in IID's service area via the AAC. The HCP area includes all lands comprising the approximately 500,000 acres of IID's service area (including canal rights-of-way), the Salton Sea, lands owned by IID outside of its service area that are currently submerged by the Salton Sea, and IID's rights-of-way along the AAC downstream from the point of diversion at Imperial Dam. In addition, the HCP covers any take of covered species using the Salton Sea that could occur as a result of IID's activities. Figure 1.4-1 shows the HCP area.

1.5 Species Covered by the HCP

The IID prepared this HCP in support of an application for ITPs from the USFWS and CDFG to cover federally and state listed species and certain unlisted species that are present or potentially present in IID's service area, the Salton Sea, or along the AAC. The HCP covers 96 fish, wildlife, and plant species with the potential to occur in the HCP area. These species and their current federal and state status are shown in Table 1.5-1.

1.6 Term of the HCP

IID is applying for ITPs for 75 years (2002 through 2077). This HCP was prepared in support of IID's applications, and will be in effect for the full 75-year term of the ITPs.

The IID/SDCWA Transfer Agreement continues in effect for an initial term of 45 years with an optional renewal term of 30 additional years. The QSA remains in effect for a period of up to 75 years. Long-term assurances regarding FESA and CESA compliance measures and costs are needed by the parties to commit to the obligations required under the IID/SDCWA Transfer Agreement and the QSA. For this reason, IID is seeking coverage under this HCP for a 75-year term.

1.7 Activities Covered by the HCP

The activities covered by this HCP include the following:

- Water conservation and irrigation and drainage of lands to which IID delivers water
- Water conservation activities undertaken by IID
- Activities of IID in connection with the diversion, conveyance, and delivery of Colorado River water to users within IID's service area
- Activities of IID in connection with the collection of unused irrigation or drainage waters within its service area and conveyance to the Salton Sea

The covered activities specifically include all conservation and mitigation measures, whether undertaken by IID or by farmers, tenants, or landowners, in connection with either the conservation and transfer of up to 300 KAFY of Colorado River water pursuant to the IID/SDCWA Transfer Agreement and/or the QSA; or compliance with the cap on IID's annual diversions of Colorado River water established by the QSA.

1.7.1 Overview of Covered Activities

IID is an irrigation district, a limited purpose public agency, formed under the laws of the State of California. IID holds rights to take water from the Colorado River and deliver it to water users in Imperial County. To do so, IID diverts water from the Colorado River at Imperial Dam. After being desilted, this water is conveyed through the AAC to three main canals (Figure 1.7-1). The water is then diverted from the main canals into lateral canals. While a small number of farms take water directly from the AAC or main canals, most take water from lateral canals. Water is diverted out of the lateral canals and into farm fields by turnouts. Most farmers then use flood irrigation techniques after the water flows through the turnout.

The majority of water delivered to a field is absorbed and stored in the soil for use by the crops. The remaining water evaporates or leaves the field in the form of either tailwater or tilewater. Tailwater is surface runoff; tilewater is water that has leached through the soil and has been collected by drain pipes (called tile) installed underneath the field. The brackish tail and tile water are discharged into drains maintained by IID.

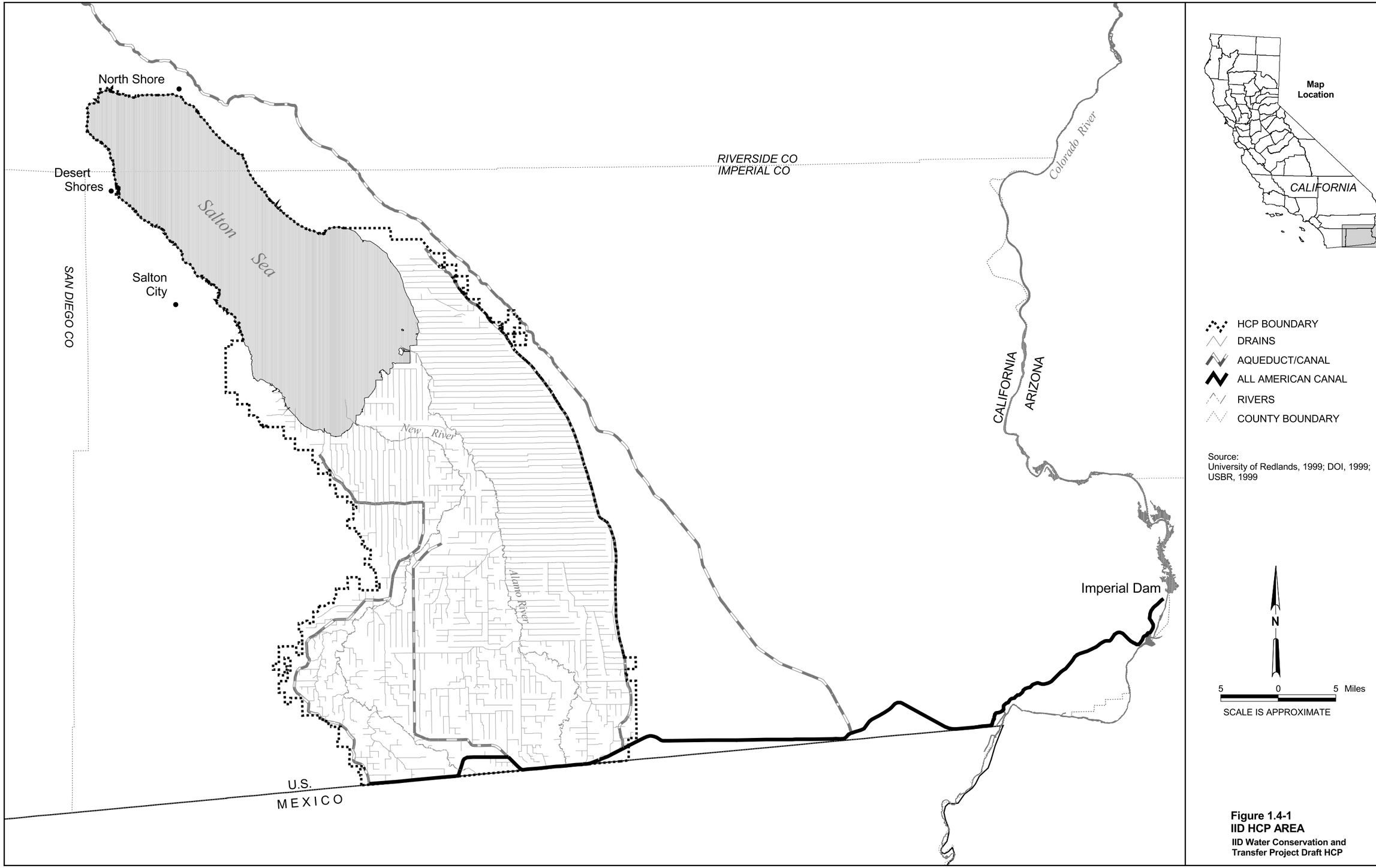

Figure 1.4-1
IID HCP AREA
IID Water Conservation and Transfer Project Draft HCP

TABLE 1.5-1
Species Covered by the IID HCP

Common Name	Scientific Name	Federal Status	State Status
Invertebrates			
Cheeseweed moth lacewing	*Oliarces clara*	S	-
Andrew's dune scarab beetle	*Pseudocatalpa andrewsi*	S	-
Fish			
Desert pupfish	*Cyprinodon macularius*	E	E
Razorback sucker	*Xyrauchen texanus*	E	E/FP
Amphibians and Reptiles			
Colorado River toad	*Bufo alvarius*	-	CSC
Desert tortoise	*Gopherus agassizi*	T	T
Banded gila monster	*Helodema suspectum cinctum*	-	CSC
Flat-tailed horned lizard	*Phrynosoma mcalli*	PT	CSC
Lowland leopard frog	*Rana yavapaiensis*	S	-
Western chuckwalla	*Sauromalus obesus obesus*	S	-
Couch's spadefoot toad	*Scaphiopus couchii*	-	CSC
Colorado desert fringed-toed lizard	*Uma notata notata*	S	CSC
Birds			
Cooper's hawk	*Accipiter cooperii*	-	CSC
Sharp-shinned hawk	*Accipiter striatus*	-	CSC
Tricolored blackbird	*Agelaius tricolor*	S	CSC
Golden eagle	*Aquila chrysaetos*	-	CSC/FP
Short-eared owl	*Asio flammeus*	-	CSC
Long-eared owl	*Asio otus*	-	CSC
Burrowing owl	*Athene cunicularia*	S	CSC
Aleutian Canada goose	*Branta canadensis leucopareia*	DM	-
Ferruginous hawk	*Buteo regalis*	S	CSC
Swainson's hawk	*Buteo swainsoni*	-	T
Western snowy plover	*Charadrius alexandrinus nivosus*	-	CSC
Mountain plover	*Charadrius montanus*	PT	CSC
Vaux's swift	*Chaetura vauxi*	-	CSC
Black tern	*Chlidonias niger*	S	-
Northern harrier	*Circus cyaneus*	-	CSC
Western yellow-billed cuckoo	*Coccyzus americanus*	-	E
Gilded flicker	*Colaptes chrysoides*	-	E
Black swift	*Cypseloides niger*	-	CSC
Fulvous whistling-duck	*Dendrocygna bicolor*	S	CSC
Yellow warbler	*Dendroica petechia*	-	CSC
Reddish egret	*Egretta rufescens*	S	-
White-tailed kite	*Elanus leucurus*	-	FP
Southwestern willow flycatcher	*Empidonax trailii extimus*	E	E
Merlin	*Falco columbarius*	-	CSC
Prairie falcon	*Falco mexicanus*	-	CSC

TABLE 1.5-1
Species Covered by the IID HCP

Common Name	Scientific Name	Federal Status	State Status
Peregrine falcon	*Falco peregrinus*	DM	E/FP
Greater sandhill crane	*Grus canadensis tadiba*	-	T/FP
Bald eagle	*Haliaeetus leucocephalus*	T	E/FP
Yellow-breasted chat	*Icteria virens*	-	CSC
Least bittern	*Ixobrychus exilis*	S	CSC
Loggerhead shrike	*Lanius ludovicianus*	S	-
Laughing gull	*Larus atricilla*	-	CSC
California black rail	*Laterallus jamaicensis coturniculus*	S	T/FP
Long-billed curlew	*Numenius americanus*	-	CSC
Osprey	*Pandion haliaetus*	-	CSC
Black skimmer	*Rhynchops niger*	-	CSC
Bank swallow	*Riparia riparia*	-	T
Gila woodpecker	*Melanerpes uropygialis*	-	E
Elf owl	*Micrathene whitneyi*	-	E
Wood stork	*Mycteria americana*	-	CSC
Brown-crested flycatcher	*Myiarchus tyrannulus*	-	CSC
Harris' hawk	*Parabuteo unicinctus*	-	CSC
Large-billed savannah sparrow	*Passerculus sandwichensis rostratus*	S	-
American white pelican	*Pelecanus erythrorhynchos*	-	CSC
Brown pelican	*Pelecanus occidentalis*	E	E/FP
Double-crested cormorant	*Phalacrocorax auritus*	-	CSC
Summer tanager	*Piranga rubra*	-	CSC
White-faced ibis	*Plegadis chihi*	S	CSC
Purple martin	*Progne subis*	-	CSC
Vermilion flycatcher	*Pyrocephalus rubinus*	-	CSC
Yuma clapper rail	*Rallus longirostris yumanesis*	E	T/FP
California least tern	*Sterna antillarum browni*	E	E/FP
Elegant tern	*Sterna elegans*	S	-
Van Rossem's gull-billed tern	*Sterna nilotica vanrossemi*	S	CSC
Crissal thrasher	*Toxostoma crissale*	-	CSC
LeConte's thrasher	*Toxostoma lecontei*	-	CSC
Arizona Bell's vireo	*Vireo bellii arizonae*	-	E
Least Bell's vireo	*Vireo bellii pusillus*	E	E
Mammals			
Pallid bat	*Antrozous pallidus*	-	CSC
Mexican long-tongued bat	*Choeronycteris mexicana*	S	CSC
Pale western big-eared bat	*Corynorhinus townsendii pallescens*	-	CSC
Spotted bat	*Euderma maculatum*	S	CSC
Western mastiff bat	*Eumops perotis californicus*	S	CSC
California leaf-nosed bat	*Macrotus californicus*	S	CSC
Western small-footed myotis	*Myotis ciliolabrum*	S	-

TABLE 1.5-1
Species Covered by the IID HCP

Common Name	Scientific Name	Federal Status	State Status
Occult little brown bat	*Myotis lucifugus occultus*	S	CSC
Southwestern cave myotis	*Myotis velifer brevis*	S	CSC
Yuma myotis	*Myotis yumanensis yumanensis*	S	CSC
Pocketed free-tailed bat	*Nyctinomops femorosaccus*	-	CSC
Big free-tailed bat	*Nyctinomops macrotis*	-	CSC
Nelson's bighorn sheep	*Ovis canadensis nelsoni*	BLMSS	
Jacumba little pocket mouse	*Perognathus longimembris internationalis*	S	CSC
Yuma Hispid cotton rat	*Sigmodon hispidus eremicus*	S	CSC
Colorado River hispid cotton rat	*Sigmodon arizonae plenus*	-	CSC
Plants			
Peirson's milk-vetch	*Astragalus magdalenae* var. *peirsonii*	T	E
Flat-seeded spurge	*Chamaesyce platysperma*	S	-
Wiggin's croton	*Croton wigginsii*	-	R
Foxtail cactus	*Escobaria vivipara* var. *alversonii*	S	-
Algodones Dunes sunflower	*Helianthus niveus* ssp. *tephrodes*	S	E
Munz's cactus	*Opuntia munzii*	S	
Giant Spanish needle	*Palafoxia arida* var. *gigantea*	S	-
Sand food	*Pholisma sonorae*	S	-
Orocopia sage	*Salvia greatae*	S	-
Orcutt's aster	*Xylorhiza orcuttii*	S	-

Status Codes:
BLMSS: Bureau of Land Management Sensitive Species
CSC: California Species of Special Concern
DM: Delisted – monitored
E: Endangered
FP: Fully protected
PT: Proposed threatened
R: Rare
S: Federal Species of Concern
T: Threatened

The drains carry three kinds of water: tailwater and tilewater discharged from farm fields, and operational discharge. Three kinds of water make up operational discharge: carriage water, lateral fluctuations, and change order. Carriage water is the extra volume of water needed in the laterals to deliver a specific volume of water to a turnout. Because open channel gravity flow water delivery is not exact, additional water is required to ensure deliveries are made in the amounts ordered. Lateral fluctuations are caused by delivery operations and maintenance activities. Laterals may need to be emptied for maintenance activities; the water that was in the lateral at the time must be removed and is discharged into a drain. Finally, a reduction or change by a farmer in his delivery order may not be timed exactly to efficiently implement the change by IID, resulting in extra water being delivered to a lateral or onto a field and then discharged into a drain.

Drains discharge water into one of three locations: the New River, Alamo River, or Salton Sea. Both the New and Alamo Rivers discharge to the Salton Sea. The Alamo River flows in

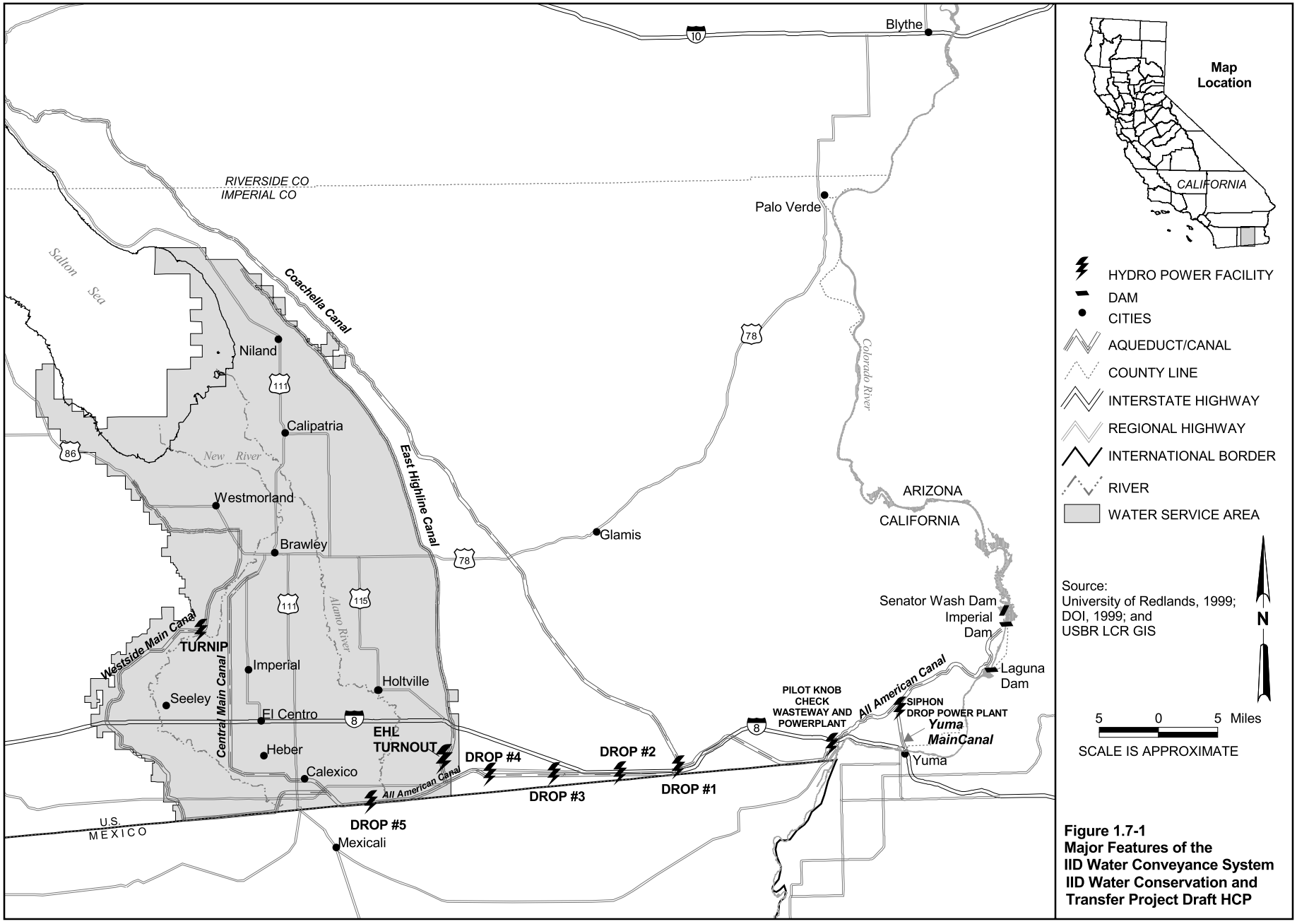

Figure 1.7-1
Major Features of the
IID Water Conveyance System
IID Water Conservation and
Transfer Project Draft HCP

a natural desert dry wash drainage channel, while the New River flows in a channel carved by the Colorado River to the Salton Sea. When the Colorado River flooded its banks in 1906, it flowed north and created the Salton Sea. The New River originates south of the International Boundary in the Mexicali Valley and conveys treated and untreated municipal and industrial wastewater, in addition to agricultural drainage from irrigated areas south of the border.

1.7.2 Water Use and Conservation Activities

As described in Section 1.1.1 of this chapter, IID will implement a water conservation program to generate up to 300 KAFY of conserved water for transfer to SDCWA, CVWD, and MWD. In addition, conservation measures or other water use activities also may be implemented by IID, farmers or landowners to comply with the annual cap on IID's Priority 3 diversions of Colorado River water established by the QSA. All water conservation and use activities by IID, farmers, tenants, and landowners and the effects of those activities are covered by this HCP.

Implementation of water conservation measures and transfer of the water to SDCWA, CVWD, and MWD would occur gradually. The IID/SDCWA Transfer Agreement and the QSA specify the quantities of water to be transferred and the ramp-up schedule for the transfer. The IID/SDCWA Water Conservation and Transfer Agreement requires a ramp-up of the conservation and transfer of water to SDCWA in increments of 20 KAFY. The QSA also specifies the amount and timing of transfers to CVWD and MWD. Based on the schedules in these agreements, a total conservation and transfer of 130 KAFY would be reached about six to seven years after initiation of the conservation and transfer program. About 10 years after initiation of the conservation and transfer program, 200 KAFY of water would be transferred with 300 KAFY of conservation and transfer achieved 24 years after the start of the water conservation and transfer programs.

Water conservation will be accomplished through a combination of on-farm and system-based conservation measures. On-farm measures consist of actions taken by individual farmers or landowners to conserve water under voluntary water conservation agreements with IID. System-based conservation measures consist of actions that would be undertaken by IID to conserve water. The exact mix of conservation methods that would be employed is anticipated to vary over the term of the HCP. The following describes the suite of conservation methods that could be implemented to conserve water.

1.7.2.1 On-farm Water Use and Conservation Activities

To commit to implementing the IID Water Conservation and Transfer Project, IID and participating farmers within the IID service area must be able to conclude that the benefits of the project justify the risks and costs to be assumed by IID and farmers. The conservation of 200 to 300 KAF of water within the IID service area will require changes in current farming practices and substantial capital investments in water conservation equipment and technologies. Thus, covered activities include irrigation practices by farmers and landowners otherwise required by the QSA and water conservation measures undertaken by farmers participating in the water conservation program.

Of the 130 to 200 KAF to be conserved for transfer to SDCWA pursuant to the IID/SDCWA Water Transfer Agreement, at least 130 KAFY is anticipated to come from on-farm

conservation programs adopted by farmers in the Imperial Valley. The on-farm conservation programs are voluntary. Farmers will enter into agreements with IID, committing to the implementation of conservation measures. These measures, in turn, will require the farmers to make capital investments in various types of water conservation equipment and facilities. In many cases, farmers will be required to obtain financing for construction costs to implement and maintain conservation measures. The farmers' ability to obtain financing will depend on the estimate of the direct and indirect costs of implementing the water conservation measures.

As such, farmers and lending institutions may be unwilling to enter into binding agreements to undertake significant costs and risks associated with implementing on-farm conservation measures unless they can determine the total costs of the measures and the associated additional cost of complying with the FESA and CESA. In the absence of this certainty, IID and farmers within IID's service area will be at risk that the costs of implementing the water conservation measures will increase substantially in the future. Therefore, incidental take authorization for water use and conservation activities is critical.

Farmers also need incidental take authorization to remove water conservation practices. Farmers may install water conservation measures and participate in the program for a period of time and subsequently stop participating in the program and remove water conservation measures. For example, a farmer could install a tailwater pond and participate in the water conservation program for a period of years but convert the tailwater pond back to agricultural production at a later date. To participate in the water conservation program, farmers need the assurance that they can stop implementing and remove water conservation measures on their property and that future use of their property for agricultural purposes would not be impaired because of participation in the water conservation program. Thus, if covered species use tailwater ponds or other water conservation features, farmers need incidental take authorization to remove the features or otherwise cease using a water conservation method.

Many farmers own their own land within the IID service area. Some lease their land from third parties and others lease their land from IID. This HCP covers water use activities on land in the IID service area irrespective of who owns the land and who conducts the activities. Water use activities include all activities associated with moving water from IID's conveyance system to farm fields, irrigating crops, and draining water from fields into the IID drainage system.

As part of the conservation program described in Section 1.1.1, a portion of the conserved water will be generated by on-farm conservation measures implemented by individual farmers, tenants, and landowners. Participation in the program by farmers will be voluntary and will vary during the term of the permit, probably from year to year. The amount of water conserved and the on-farm conservation techniques used will be at the discretion of the individual farmer. The options for conserving water that are available to farmers generally fall into the following categories:

- Installation of structural or facility improvements, or conversion to irrigation systems that increase efficiency and reduce water losses
- Irrigation management
- Land use practices

Compliance with the cap on IID's Priority 3 diversions of Colorado River water (see Chapter 1.1.3: Quantification Settlement Agreement) could result in conservation by farmers and landowners over the term of the permit. Compliance with the cap also may necessitate water conservation measures to pay back inadvertent overruns. IID does not anticipate rationing water to ensure as a means to comply with the cap or generate water to pay back inadvertent overruns. It is more likely that IID would fallow land it owns for short periods to achieve compliance with these requirements. Implementation and cessation of water conservation practices by individual farmers, tenants, landowners, and IID within the IID service area are covered under this HCP.

Installation of Structures/Facilities and Conversion of Irrigation Systems

On-farm water conservation can be achieved through various techniques using existing technology. On-farm conservation measures may include the following:

- Tailwater return systems
- Cascading tailwater systems
- Level basins
- Shorten furrows and border strip improvements
- Narrow border strips
- Cutbacks
- Laser leveling
- Multi-slope
- Drip irrigation

The techniques for achieving water conservation would be at the discretion of the individual farmer. It is expected that some combination of the techniques listed would be employed. These water conservation techniques are briefly described in Table 1.7-1 and depicted in Figure 1.7-2. Additional information is provided in Chapter 2 of the IID Water Conservation and Transfer EIR/EIS.

In addition, farmers have and continue to experiment with new and/or developing irrigation technology. Additionally, evolving crop technology often requires farmers to grow crops with varying methods to improve production. The activities associated with the installation and conversion of irrigation systems from one technology to another is covered under this HCP.

Irrigation Management

Certain farmers may be able to conserve water and cultivate the same acreage through better irrigation management without constructing facilities or changing irrigation methods. Irrigation management refers to controlling the timing and amount of each irrigation application to provide adequate crop water for maximum yield and to achieve adequate soil leaching. Irrigation management on-farm will continue to evolve as the science of crop/soil water develops and understanding of the farmers to put that knowledge to practical use increases. As greater demands are put on agricultural areas to conserve more water in California, IID expects that irrigation water management will become a more important tool for farmers to conserve water.

TABLE 1.7-1
On-Farm Water Conservation Techniques

Conservation Technique	Brief Description
Tailwater return or pump back systems	Pumps surface irrigation tailwater back to the head ditch reducing both the delivery requirement and the volume of water discharged to the drains.
Cascading tailwater	Allows the tailwater to cascade by gravity to the head ditch of a lower field adjacent to the tailwater ditch. This can be accomplished by placing drainpipes with drop box inlets through the embankment between the fields just upstream of each head ditch check.
Level basins	Dividing a field into basins and flooding each basin at a relatively high flow rate.
Shorten furrows and border strip improvements	The distribution uniformity of furrow and border strip irrigation can be improved by shortening the length of irrigation runs, particularly in soils with higher infiltration rates.
Narrow border strips	Narrowing the width of border strips can improve distribution uniformity both along the length of fields by improving the advance time, and across the width of fields by increasing the depth of flow.
Cutback	Irrigation is initiated with a high flow rate to advance the water down the field as quickly as possible without causing erosion. When the water reaches a predetermined distance down the field, the flow is reduced to minimize tailwater.
Multi-slope	Distribution uniformity can be improved for furrow and border strip irrigation by varying the slope of the field with the head of the field having a greater slope than the end of the field.
Drip irrigation	Water is run through pipes (with holes in them) either buried or lying slightly above the ground next to the crop. Water slowly drips onto the crop roots and stems. Water can be directed only to the plants that need it, cutting back on tailwater runoff.

Land Use Practices

Fallowing could be used to meet water conservation objectives by reducing IID's requirement to deliver irrigation water in the service area. Fallowing can be described as the reduction or cessation of certain farmland operations for a specified or indefinite period of time. For the purposes of this HCP, fallowing is defined as:

- Long-term land retirement (greater than 1 year), whereby crop production ceases indefinitely or during the term of the water conservation and transfer agreements. A cover crop may be maintained during the period of inactivity or the land is returned to natural vegetation.
- Rotational fallowing, whereby crop production ceases for one calendar year. No water is applied, and no cover crop is grown.
- Single crop fallowing, whereby multiple crops are reduced to a single crop rotation on an annual or longer term basis.

The IID/SDWCWA Transfer Agreement provides that at least 130 KAFY of conserved water must be generated by on-farm conservation measures and fallowing is not an acceptable

Laser Leveling

USDA NRCS Practice Code 466

Multi-Slope

USDA NRCS Practice Code 464

Drip Irrigation

USDA NRCS Practice Code 441

FIGURE 1.7-2a
ON-FARM CONSERVATION MEASURES

Tailwater Return or Pump Back System

USDA NRCS Practice Code 447

Shorten Furrow or
Border Strips,
Narrow Border Strips

USDA NRCS Practice Code 388

Figure 1.7-2b
On-Farm Conservation Measures

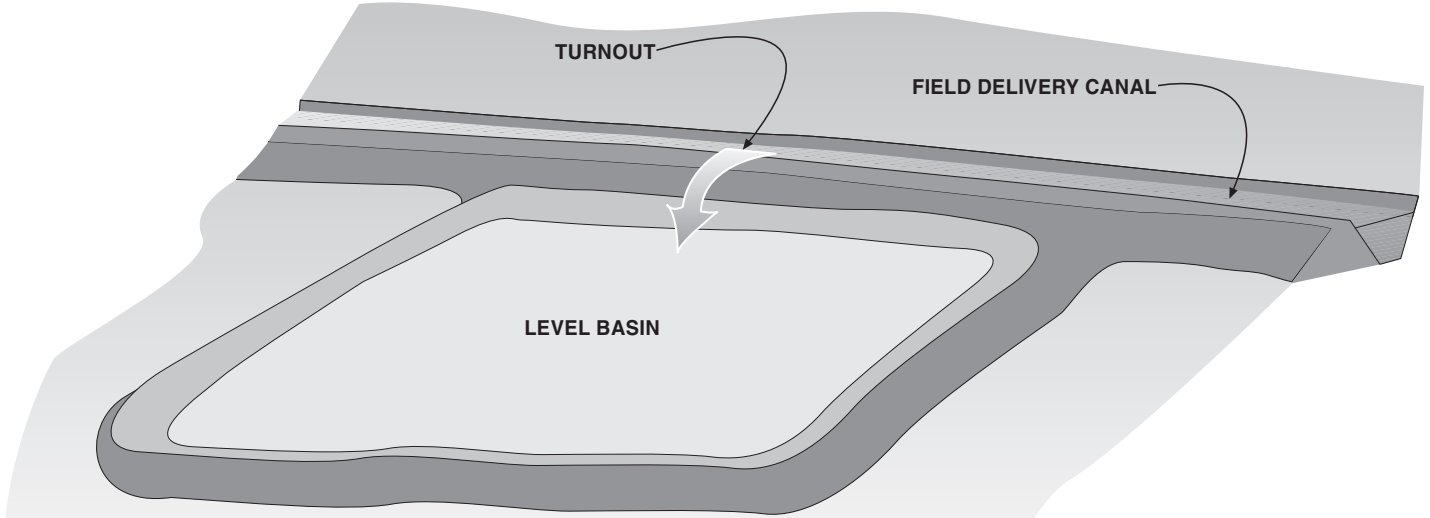

FIGURE 1.7-2c
LEVEL BASIN
IID WATER CONSERVATION AND TRANSFER PROJECT DRAFT HCP

method of on-farm water conservation under landowner contracts. IID's Board of Directors has also adopted Resolution No. 5-96 stating that IID will not support fallowing programs for purposes of transferring water. However, there is no prohibition of fallowing under the terms of the QSA. Fallowing may be considered a potentially viable method to achieve water conservation to meet IID's obligations under the QSA to produce conserved water for transfer, to comply with the limit on total water diversions by IID and/or to comply with the Inadvertent Overrun Policy (which generally requires IID to make up in subsequent years for inadvertent overruns of the 3.1 MAF cap on annual diversions from the Colorado River). Therefore, this HCP covers take of covered species that could result from the fallowing described above for water conservation purposes by IID or farmers and landowners. In addition, the HCP covers take of covered species associated with returning fallowed land into agricultural production.

1.7.2.2 System-based Water Conservation Activities

As part of the water conservation and transfer programs, IID will implement operational and structural improvements to conserve water and enhance water delivery and drainage system capabilities and service. The specific improvements to be undertaken are uncertain at this time; however, the types of improvements that IID could pursue include the following:

- Additional lining of canals and laterals
- Replacement of existing canal linings as normal maintenance
- Automation of flow control structures
- Installation of check gates in the laterals that are automated or manually operated
- Installation of nonleak gates
- Installation of additional lateral interceptors
- Installation of additional pipelines
- Installation of additional reservoirs, including small, mid-lateral reservoirs to provide temporary water storage
- Development of water reclamation systems
- Installation of pump or gravity-operated seepage recovery systems

Additional information on system-based conservation measures is provided in the IID Water Conservation and Transfer EIR/EIS. All water conservation practices implemented by IID and within IID's canal and drainage systems are covered under this HCP.

Canal Lining and Piping

Canal lining consists of lining canals with concrete or using pipelines to reduce seepage. About 537 miles of canals are currently unlined. Canal lining is currently contemplated for three canal sections in the IID service area totaling about 1.74 miles (Figure 1.7-3; Table 1.7-2). To line a canal, the existing canal is filled in and then trenched to form a trapezoidal channel. Concrete is then installed on the banks and bottom of the channel using a lining float. Construction activities can be conducted within the canal's right-of-way and

TABLE 1.7-2
Canals Currently Anticipated to Be Lined to Conserve Water and Area Temporarily Disturbed to Line Canals

Canal	Length (miles)	Acreage Affected
Rose Lateral 9	0.25	2.12
Ash Lateral 43	0.49	4.16
N Lateral	1.00	8.48
Total	**1.74**	**14.76**

affects an area about 70 feet wide centered on the canal. The canal rights-of-way consist of either roads, embankments or other disturbed ground. Table 1.7-2 shows the current anticipated acreage that would be affected under proposed canal lining. About one week is required to line a mile of canal. For the canal lining anticipated thus far, this work would be completed within two weeks. In addition, although no additional canals are planned or anticipated, IID may need to construct new canals over the term of the permit and line those as well. The exact location, size, and length of future canals are uncertain at this time; however, any new canals would be within IID's current water service area. To cover the potential for canal lining beyond that amount presently anticipated, IID is seeking coverage for lining the remaining laterals (up to 320 miles) over the term of the HCP. If IID lined these additional laterals, up to 2,700 acres could be temporarily disturbed. The temporarily disturbed area would be within IID's rights-of-way and would consist of previously disturbed areas such as roads and embankments.

Lateral Interceptors

A lateral interceptor system consists of new canals and reservoirs that collect operational spills from lateral canals. Lateral interceptors are lined canals or pipelines that generally run perpendicular to lateral canals at their terminus. The lateral interceptors capture operational spill water, unused water resulting from canal fluctuations, and return water from farmer delivery reductions or changes. The interceptors convey this captured water to regulating reservoirs where the water can be stored and reused in another canal serving another delivery system as needed. IID currently has four systems in operation and potentially could enlarge that to 16 additional systems under the water conservation and transfer programs (Figure 1.7-4; Table 1.7-3).

Installation of a lateral interceptor requires constructing and lining a canal, installing pipelines and constructing a minimum 40-surface-acre reservoir (Figure 1.7-5). An approximately 70-foot-wide area centered on the new interceptor would be affected by the construction. The affected area of the reservoir site would be only slightly larger than the reservoir itself. Table 1.7-3 shows the acreage potentially affected by each of the interceptors. The total acreage potentially affected by construction of lateral interceptors could be about 1,480 acres (i.e., about 840 acres of canals and 640 acres of reservoir).

Reservoirs

Two types of reservoirs can facilitate water conservation: (1) operational reservoirs (includes mid-lateral reservoirs) and (2) interceptor reservoirs. Operational reservoirs are generally placed in locations to take advantage of delivery system supply and demand needs and in some cases include locations of historical canal spills. These reservoirs are used to regulate canal flows in order to match or optimize demand flows to supply flows. Conservation is

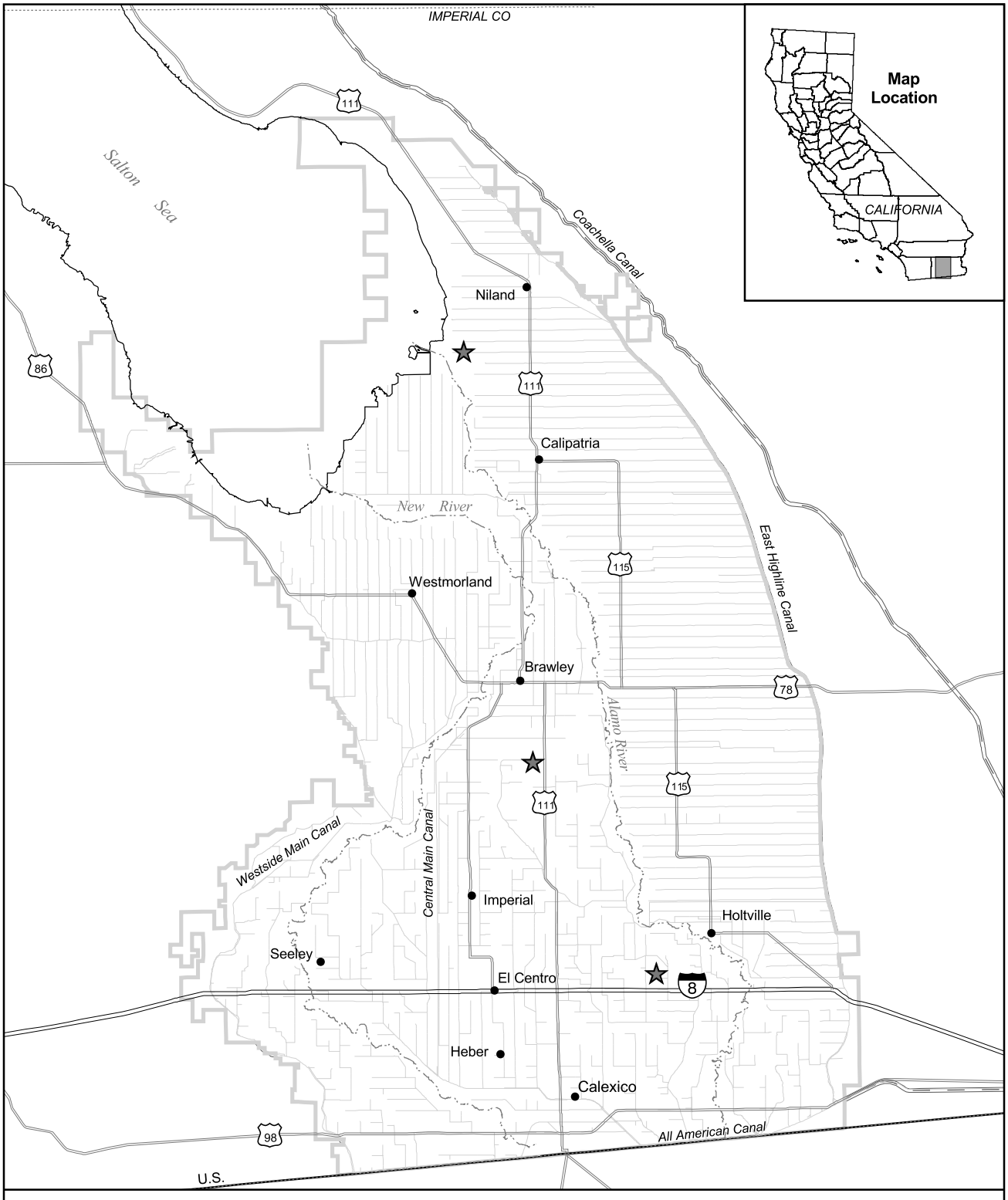

Figure 1.7-3
Proposed Conveyance Lining Locations in the IID Water Service Area

IID Water Conservation and Transfer Project Draft HCP