

# Laguna Division Conservation Area

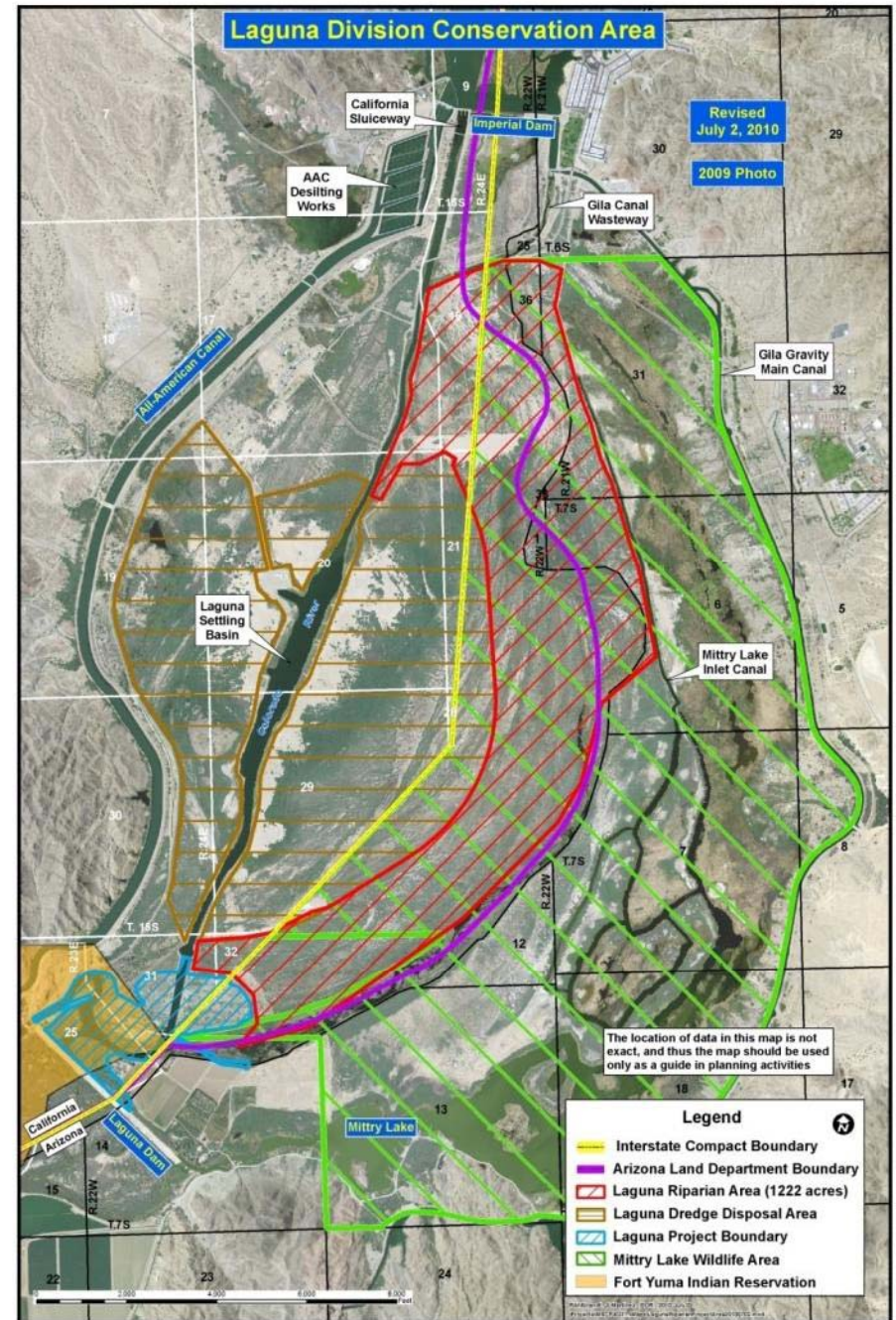
## Project Update





# Project Site Map

- Project Area – 1154 acres
- Reach Length – 4.3 miles
- Existing Conditions
  - Extensive/dense tamarisk monoculture



# Project Design Considerations

- Up to 100 cfs available for project use
- Habitat Targets
  - Open Water/Marsh: 50 – 100 ac
  - Cottonwood/Willow: >200 ac
  - Upland(mesquite): <500 ac
  - Include specific habitat for T&E species
- Provide hydrology to support habitats for 50 years or more
- No detrimental effect on existing Mittry Lake or Old River Channel Habitats
- Minimize impacts to existing operations (sluicing, dredge disposal, water delivery, etc.)
- Minimize both initial construction and long-term operating costs



# Target Habitats

Open Water/Marsh: 50 – 100 ac



Cottonwood/Willow: >200 ac



Upland (Mesquite): <500 ac

# Target Species



California Black Rail

Yuma Clapper Rail



Southwestern Willow Flycatcher



Yellow Billed Cuckoo



Yuma Hispid Cotton Rat



Colorado River Cotton Rat



Western Least Bittern



# Permitting Update

- NEPA
  - Public Outreach held in March 2010
  - Draft NEPA September 2010
  - Final NEPA October 2010
- 404 Permit
  - Scheduled submittal November 2010
- Additional Permitting
  - Yuma County encroachment permit for road crossing



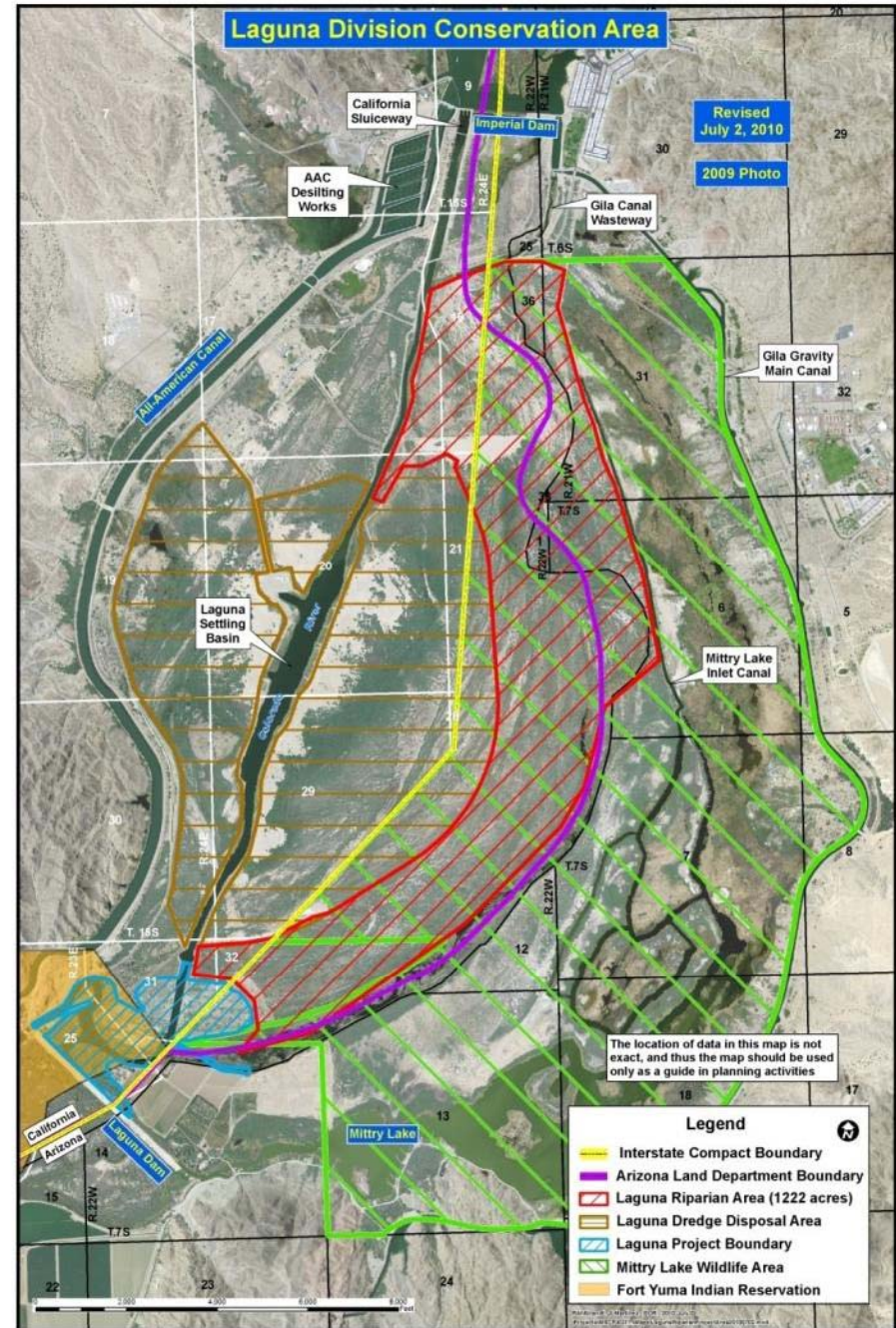
# Public Concerns with Burn

- Nearby Agriculture Fields
  - Wind direction for ash fallout
  - Displaced Animals
- Wildlife and Wildlife Areas
  - Breeding Season
  - Displaced Animals
  - Recreation at Mittry Lake Wildlife Area
- Nearby Homes and Parks
  - Road Closures
  - Smoke / Ash fallout
  - Fire Containment
- Invasive Weeds
  - Spread of Invasive Weeds by Fire Management Operations

Bureau of Land Management  
will address these in final burn plan

# General Project Update

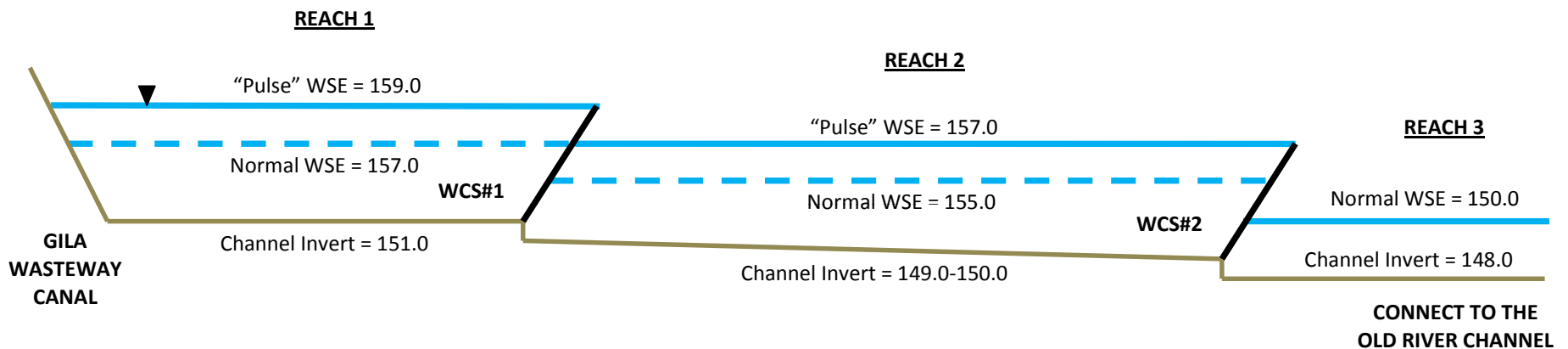
- Boundary change
  - Additional acres from dredge disposal site
  - Tribal boundary revised
- Designing preferred alternative
- Moving towards construction





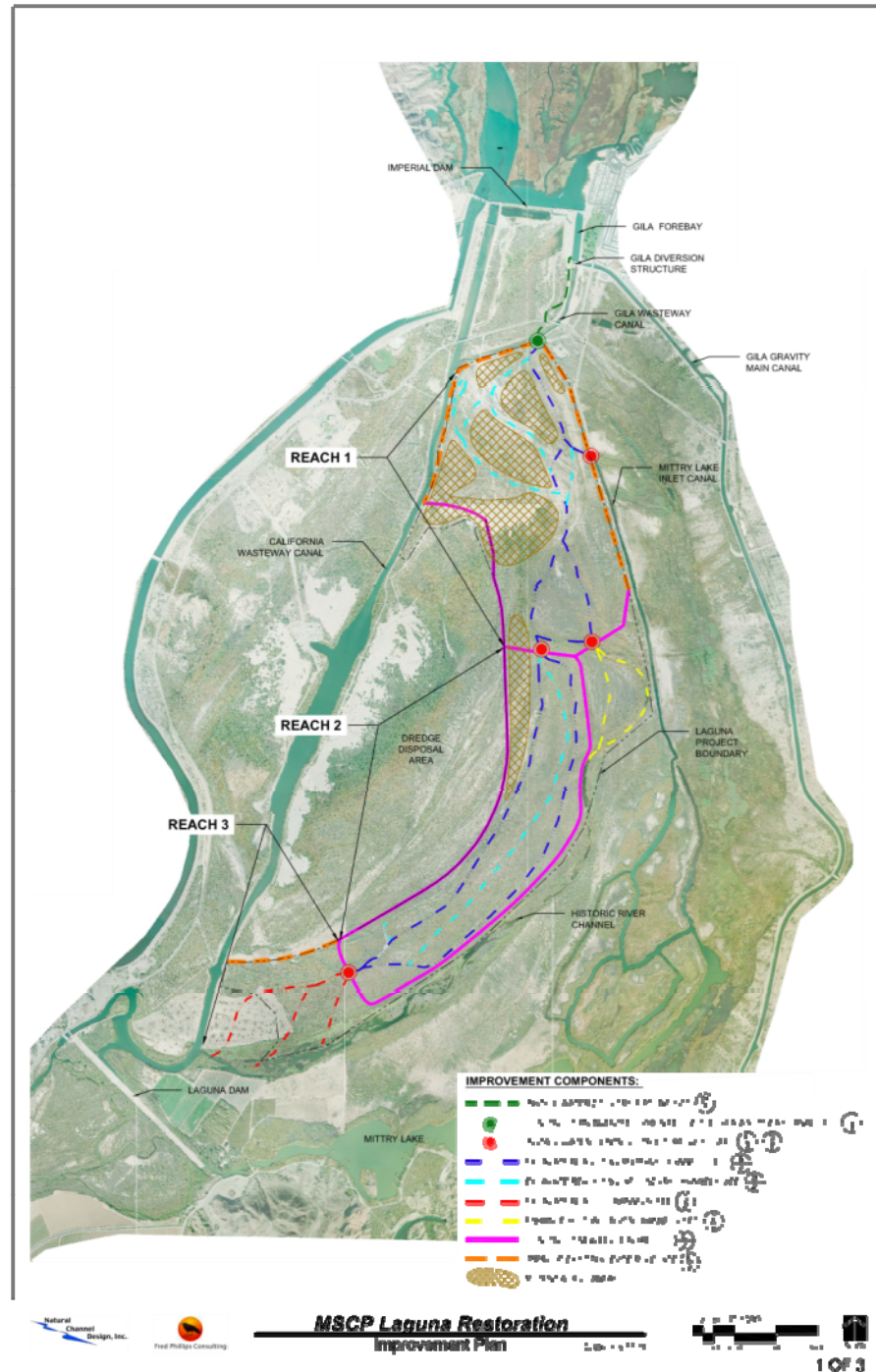
# Current Design Concept: Overview

- Operate as a managed, leveed wetland rather than a river system to maximize limited water resource
- Use existing overflow channels through project area to minimize excavation
- Use “pulse flows” to provide irrigation to woody species
- Requires water control structures to manage water levels



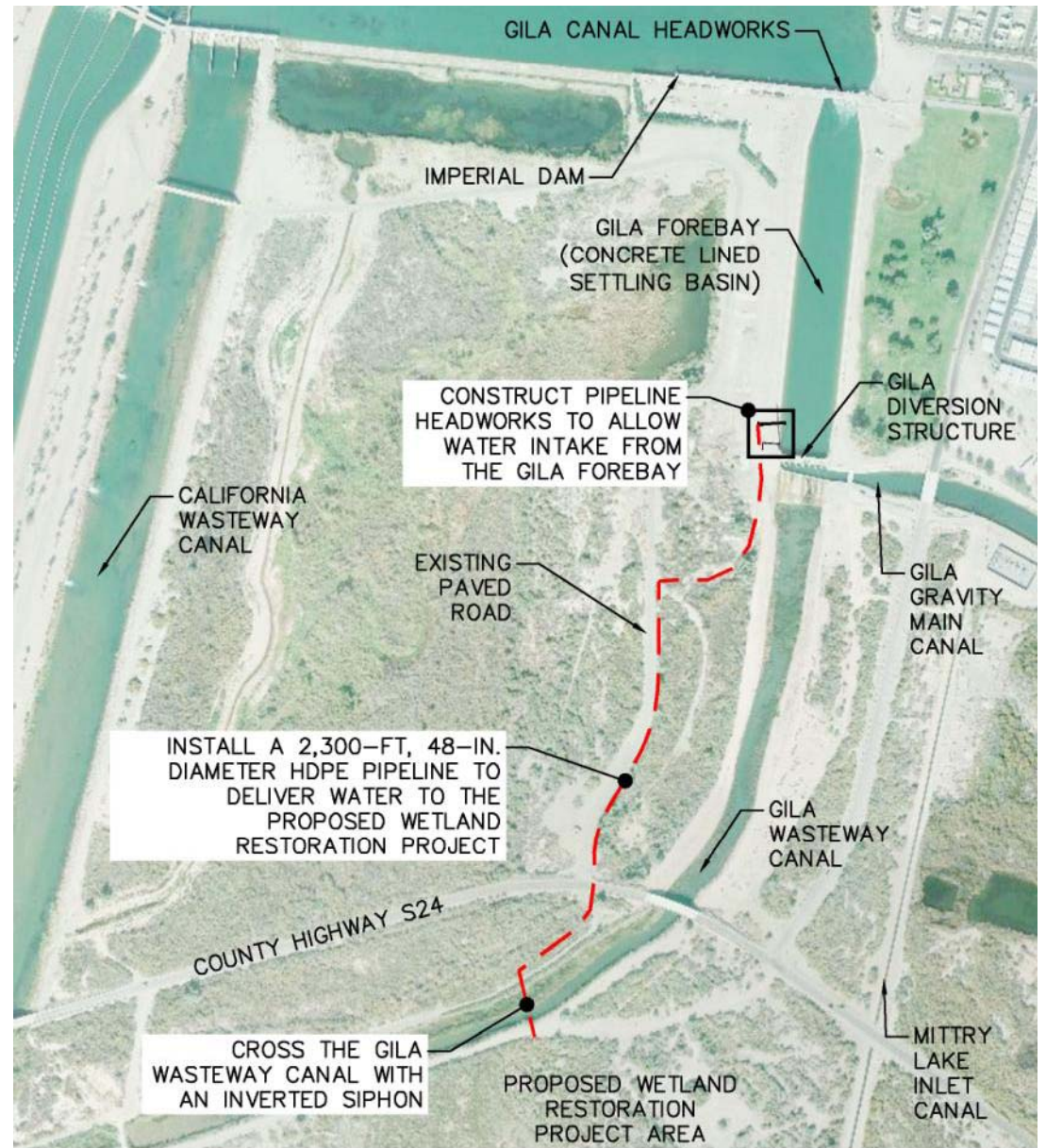
# Construction Components

- Water Delivery System from Gila Forebay
  - Headworks
  - Pipeline
- Site Preparation for Earthwork
  - Burning and Grubbing of Salt Cedar
- Earthwork
  - Channels provide the topography to support water conveyance and vegetation/ habitat
  - Utilize existing topography to minimize cut/fill and maximize pulse flow irrigated area
  - Reach 1 & 2 primary and secondary channels; Reach 3 outlet channels; Enhancement of historic channel
  - Levees and roads for access and firebreaks
- Water Control Structures
  - Manage water levels in Reaches 1 & 2, and historic river channel
  - Additional Mittry Lake turnout structure



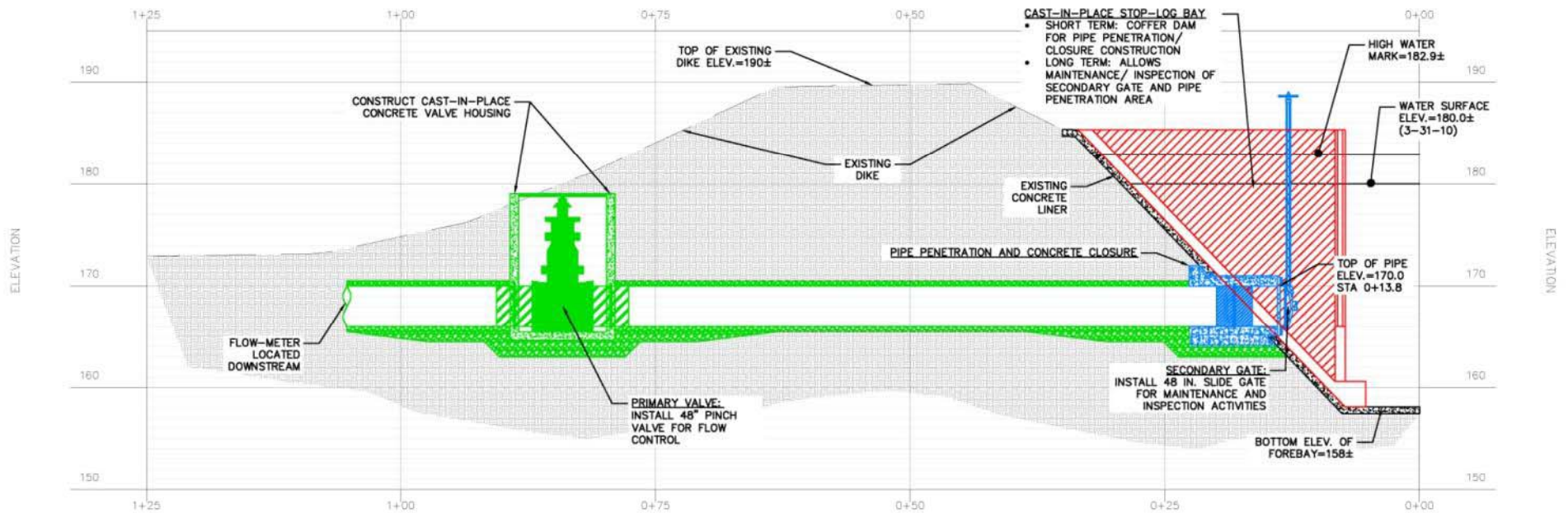
# Water Delivery System Overview

- Gravity system delivering high quality water from the Gila Forebay to the wetland restoration area
- Pipeline headworks at the Gila Forebay
- 2,300-FT, 48-IN. diameter pipeline
- Cross underneath the Gila Wasteway Canal with an inverted siphon

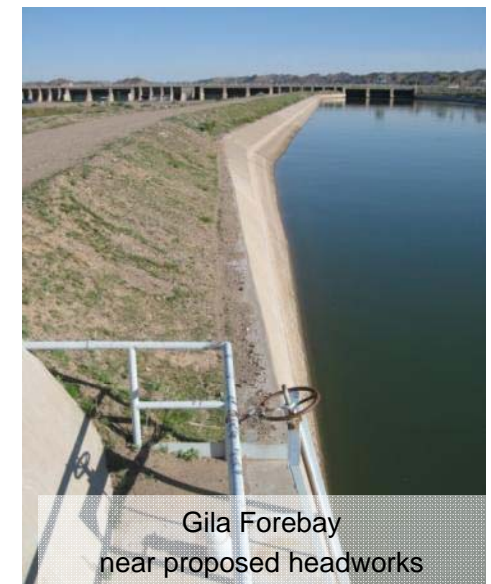




# Water Delivery System: Headworks



- 5-day construction window during maintenance draw-down for the Gila Forebay
- Construct **cast-in-place concrete stop-log bay** during the maintenance draw-down (Tentative start date: January 2011)
- Construct **pipe penetration/closure** of the Gila Forebay liner and install **secondary slide gate** (Tentative start date: Spring 2011)
- Install **primary valve and meter** (Tentative start date: Spring 2011)



# Water Delivery System: Pipeline

- 48-inch diameter, 2,300 Foot pipeline
  - Inverted siphon to cross underneath the Gila Wasteway Canal
  - Scheduled to be constructed Spring 2011
- Constructed through portions of the original Yuma Proving Grounds historic area – SHPO consultation underway





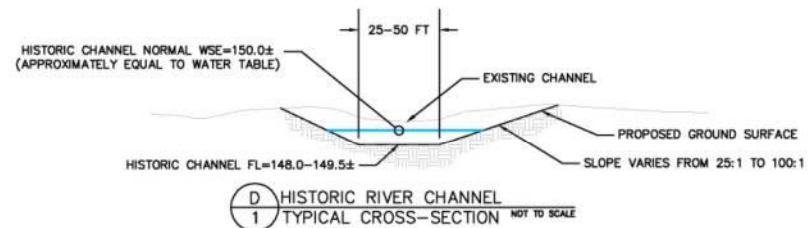
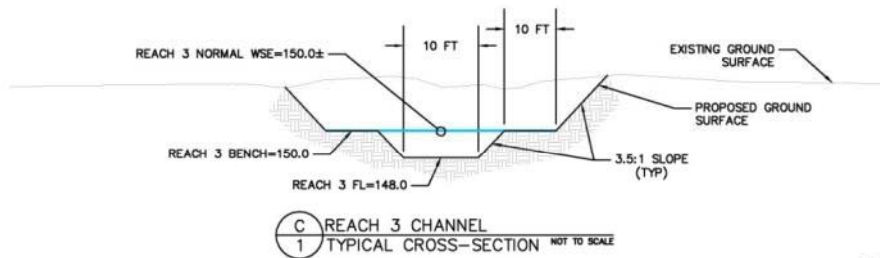
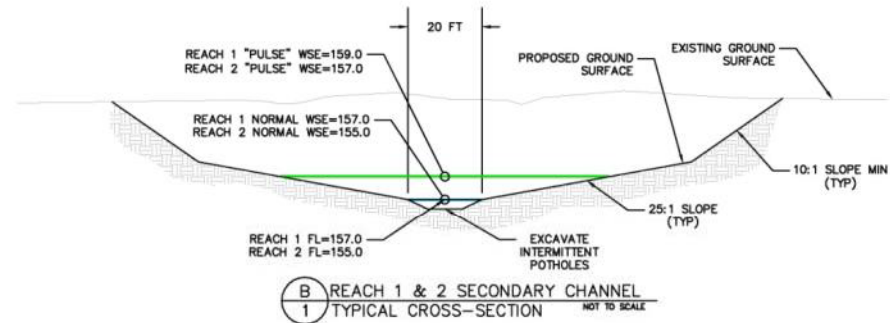
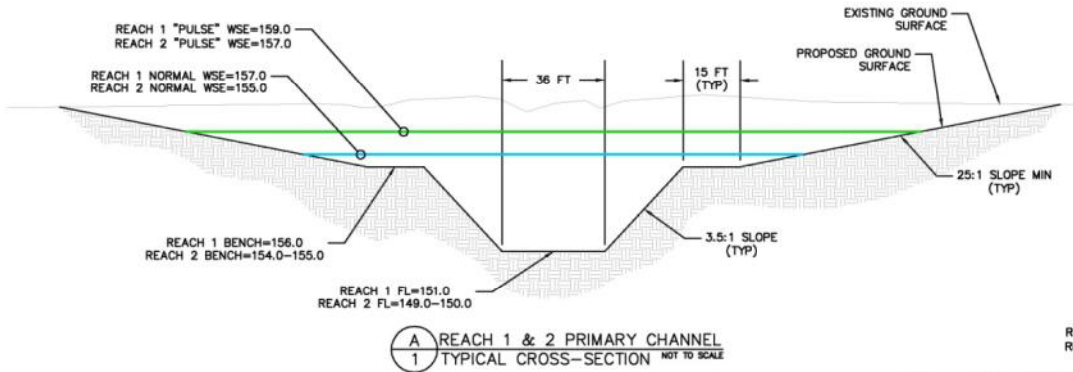
# Site Preparation for Earthwork

- Prescribed Burn
  - Single burn of entire project area
  - BLM developing burn plan
  - Scheduled for fall/winter 2011
- Post-Burn Operations
  - Clearing, Grubbing & Piling
  - Soil & Water Monitoring
  - On-going herbicide treatment of invasive species





# Earthwork Operations: Typical Cross Sections



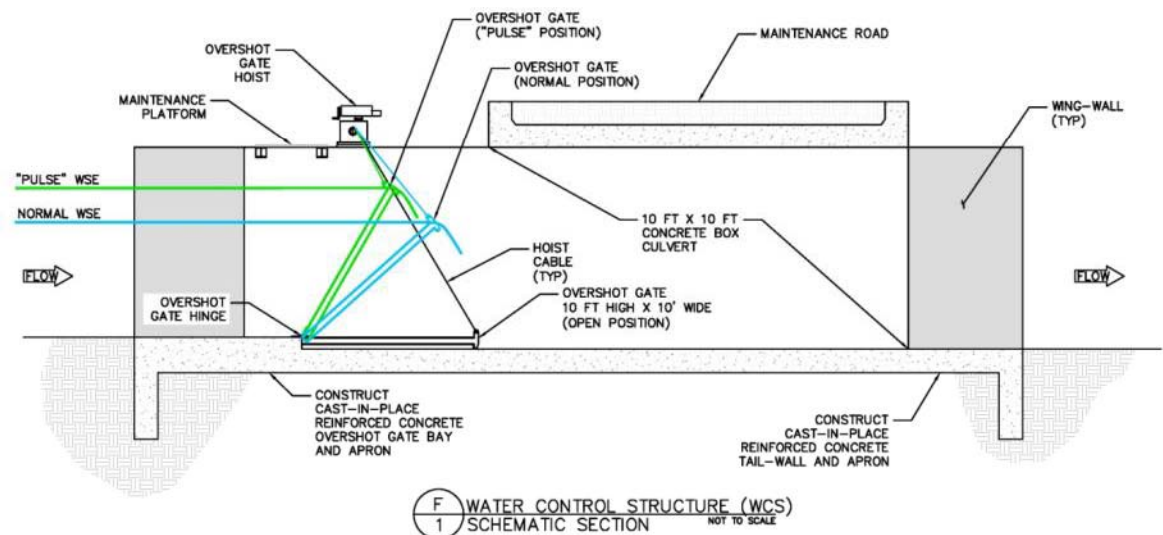
# Earthwork Operations

- Earthwork
  - Approximately 1.3 Million Cubic Yards of excavation
  - Utilize excavated spoils to form levees and maintenance roads
  - Excavate from south to north to allow management of groundwater
  - Commence Fall 2012
- Invasive weed management on-going

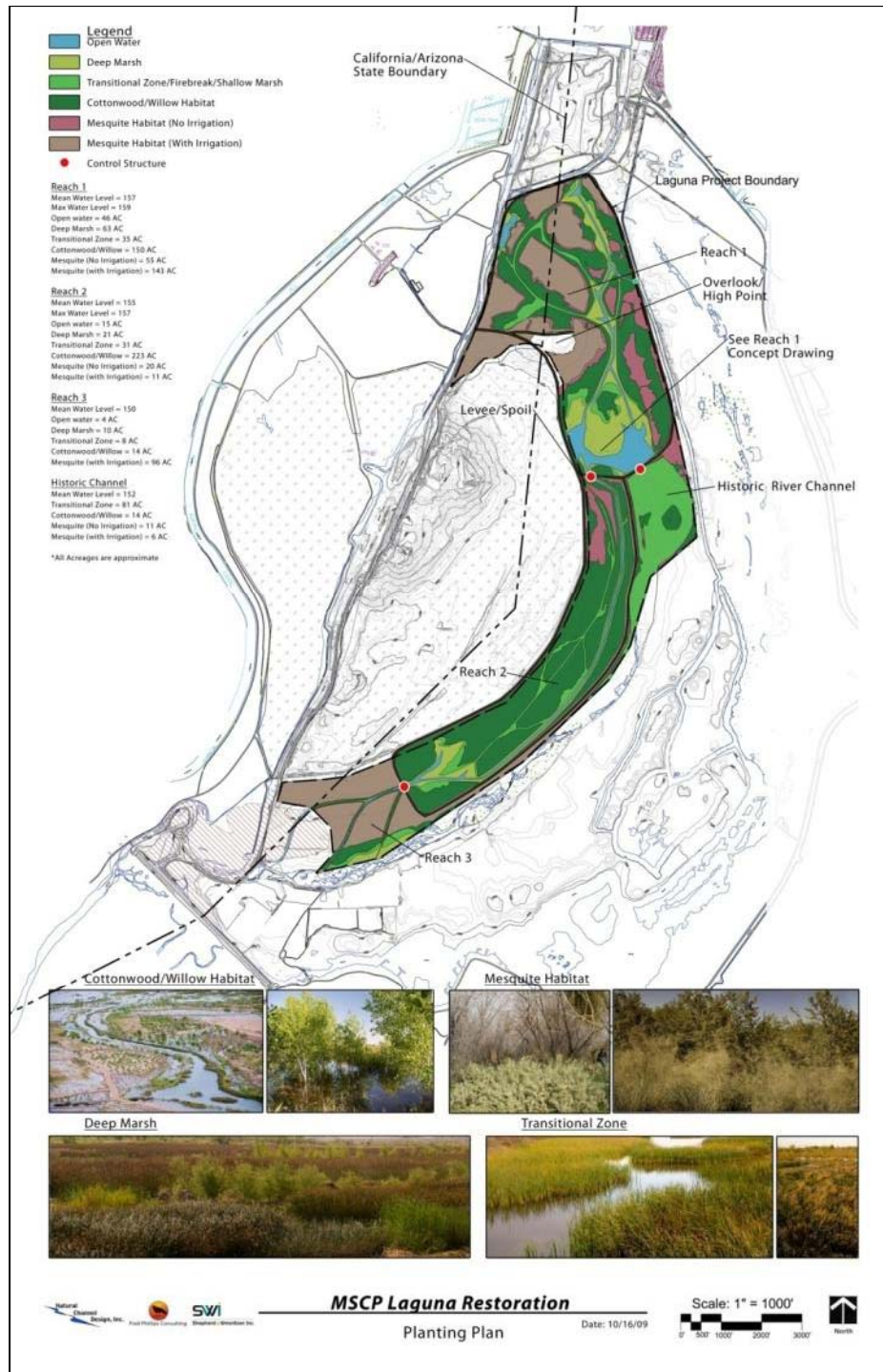


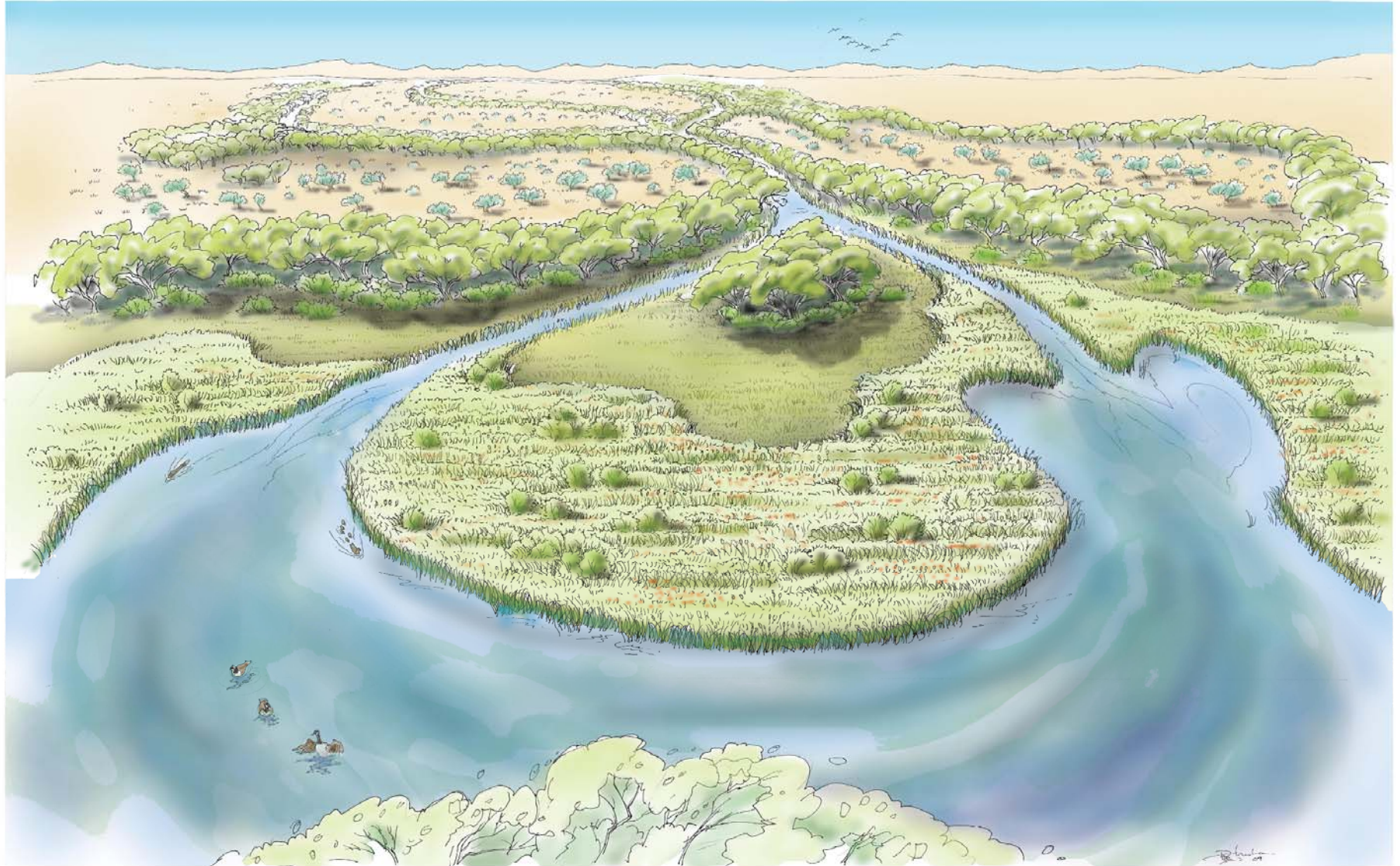
# Water Control Structures

- Overshot Gates set in cast-in-place concrete bays
- Constructed in concert with earthwork operations
- Potential to automate
- Additional Mittry Lake turn-out structure





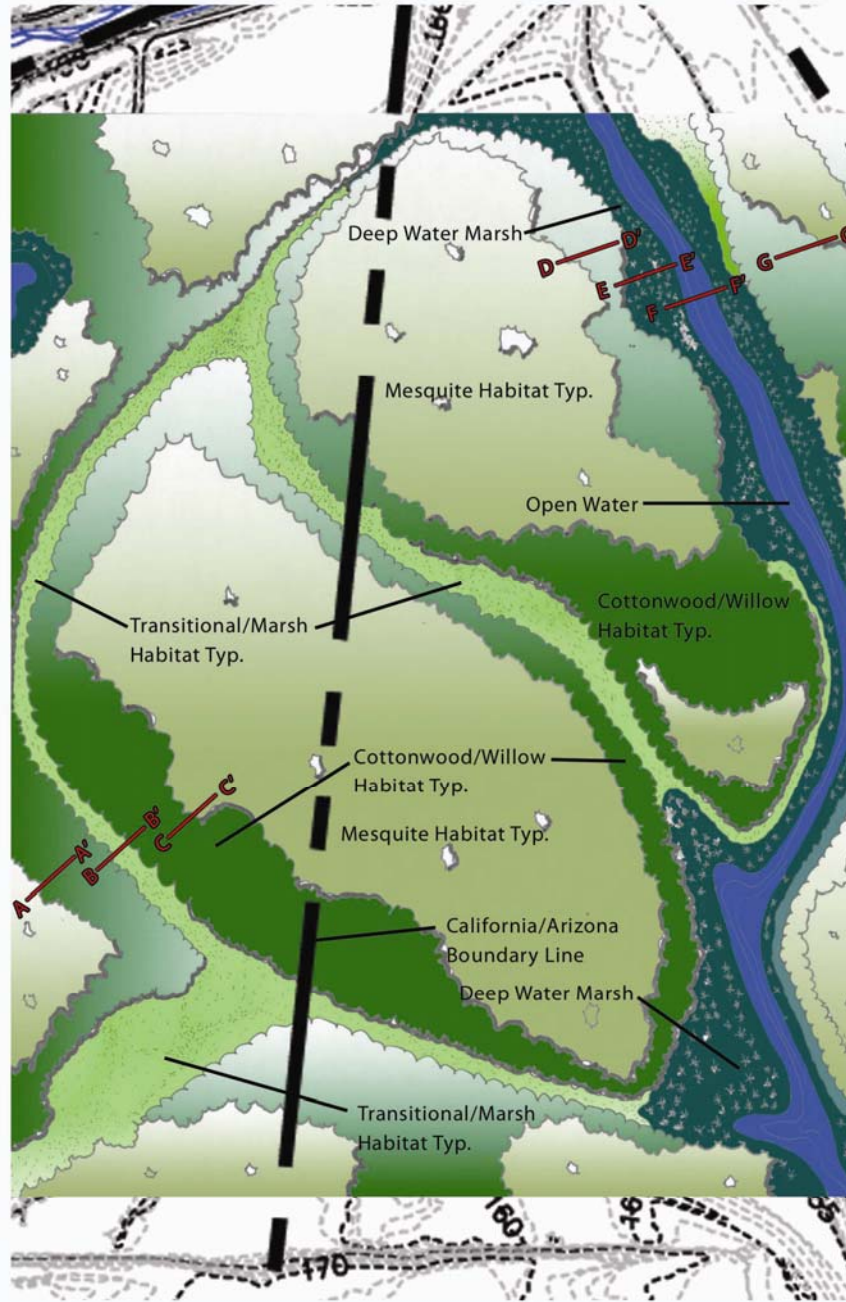




## **MSCP Laguna Restoration**

Reach 1 Concept Drawing





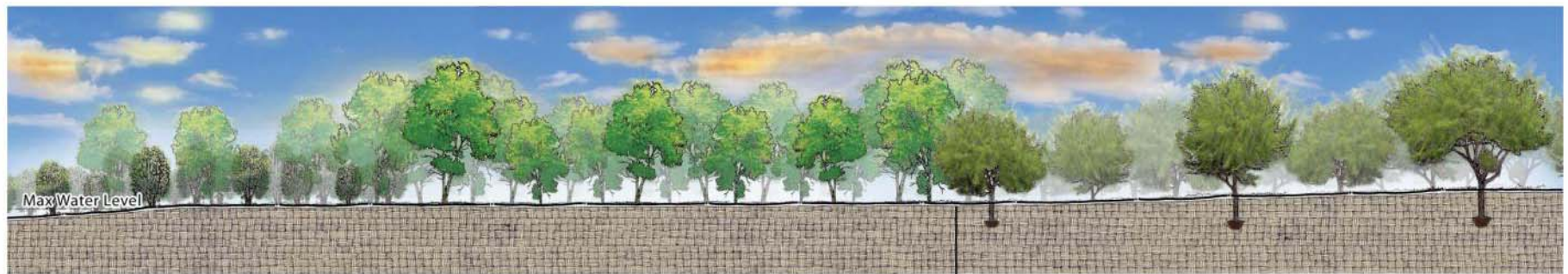




A Honey Mesquite With Irrigation Honey Mesquite No Irrigation Cottonwood/Willow Habitat A'



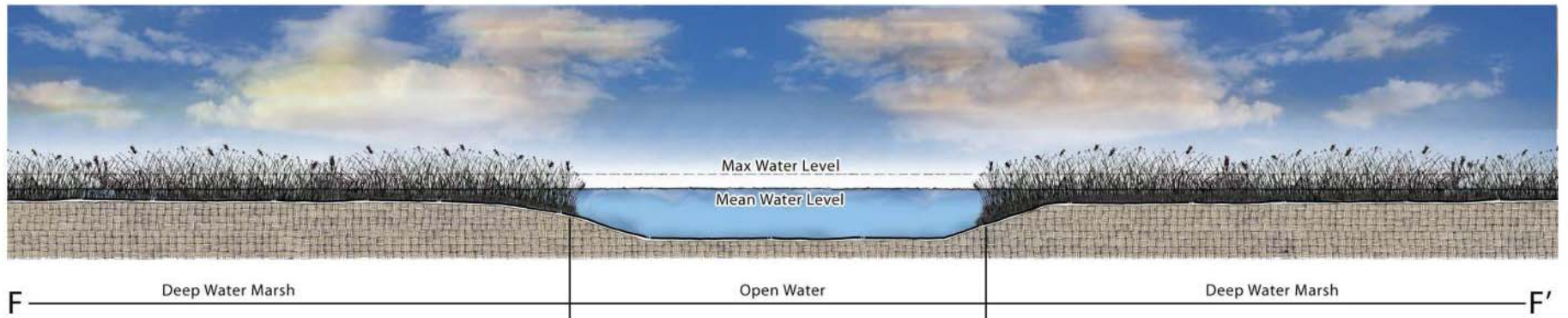
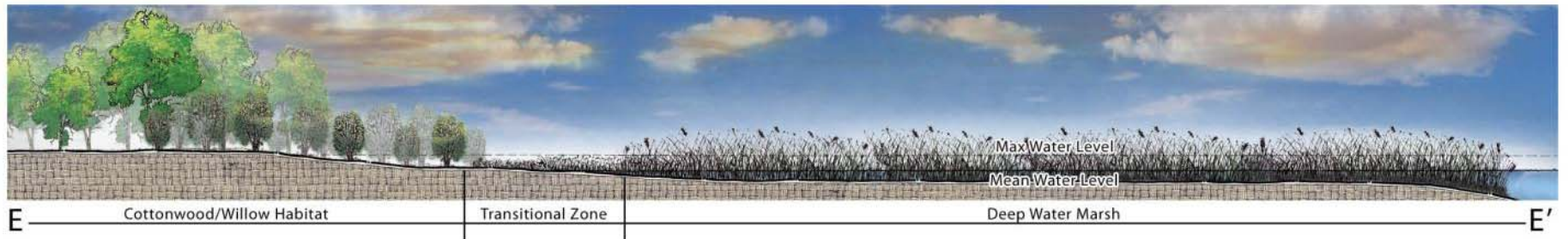
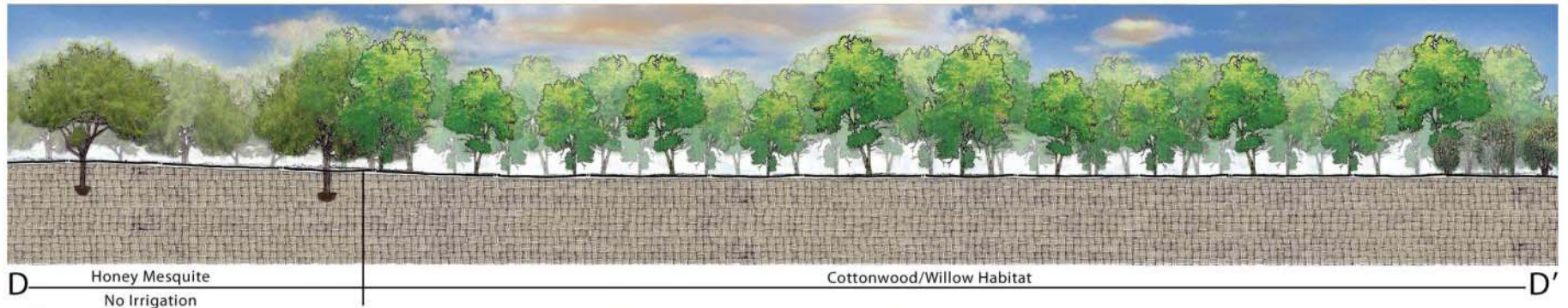
B Cottonwood/Willow Habitat Transitional Zone With Depression/Firebreak Cottonwood/Willow Habitat B'



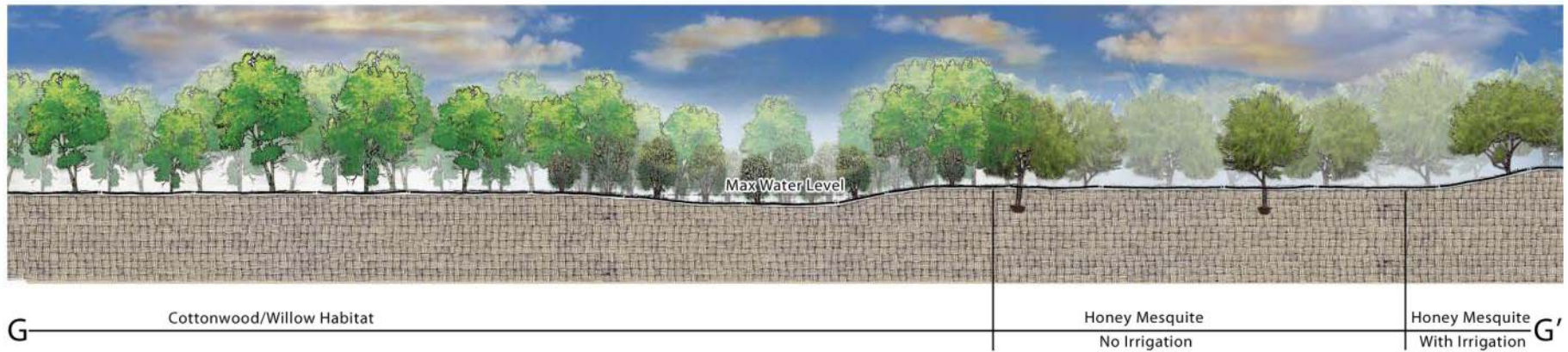
C Cottonwood/Willow Habitat Honey Mesquite No Irrigation C'

**MSCP Laguna Restoration**  
Reach 1 Cross Sections





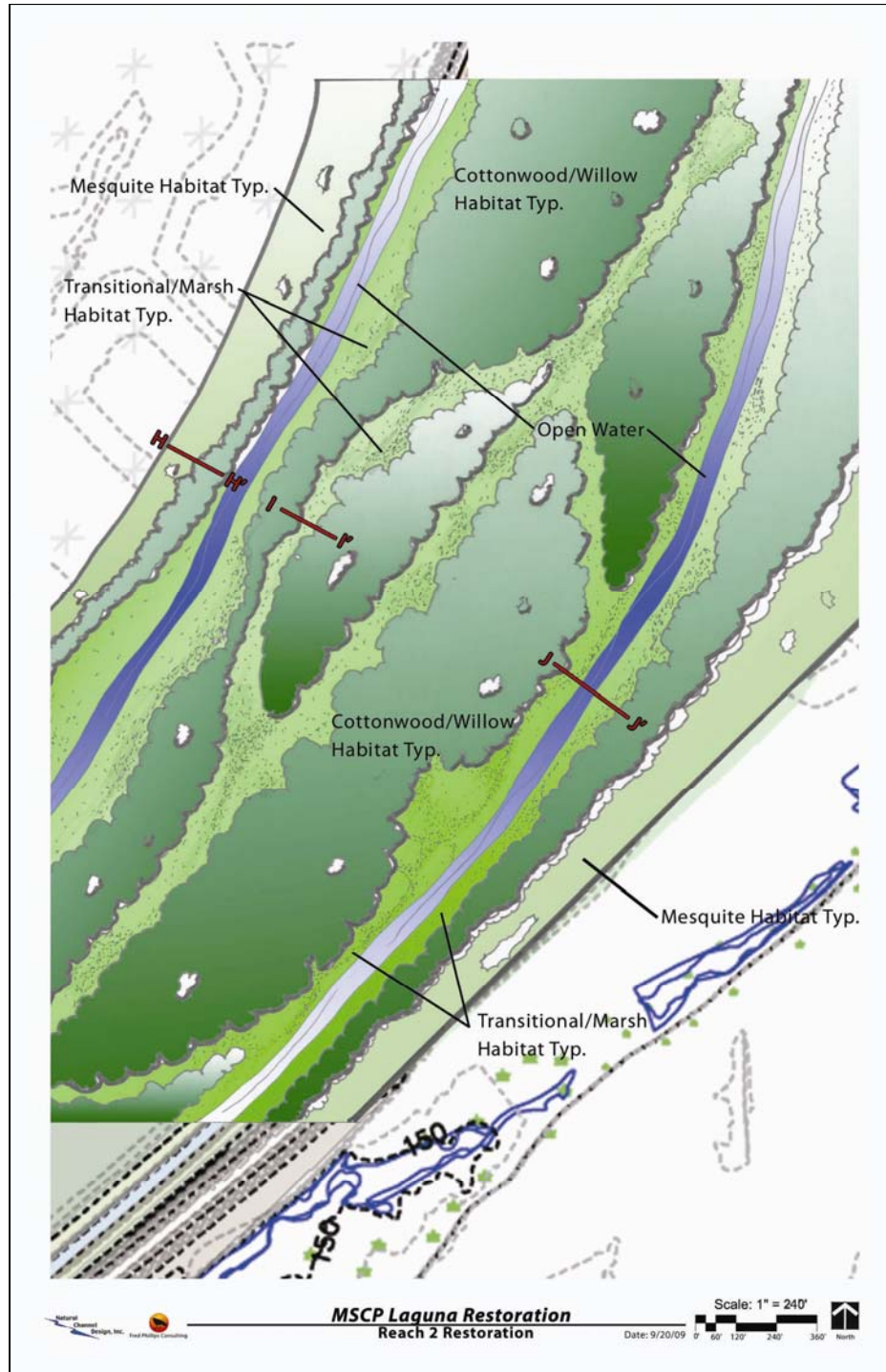
**MSCP Laguna Restoration**  
Reach 1 Cross Sections



**MSCP Laguna Restoration**  
Reach 1 Cross Section

Date: 8/25/10 Scale: 1" = 120'





Mesquite Habitat Typ.

Cottonwood/Willow  
Habitat Typ.

Transitional/Marsh  
Habitat Typ.

Open Water

Cottonwood/Willow  
Habitat Typ.

Mesquite Habitat Typ.

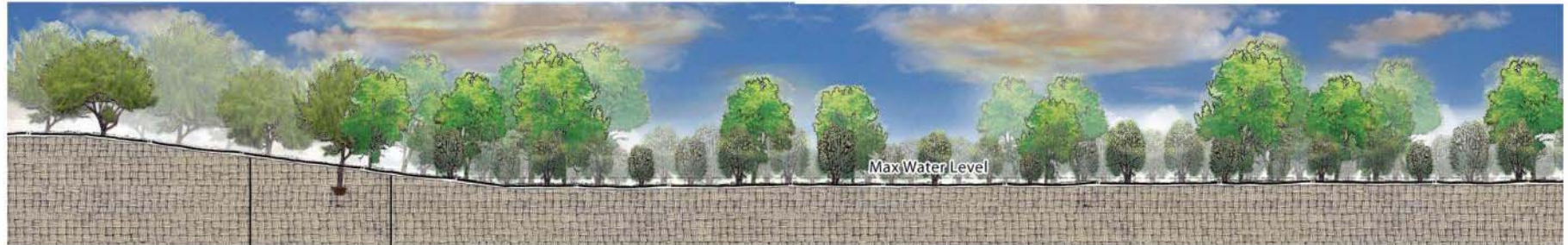
Transitional/Marsh  
Habitat Typ.

**MSCP Laguna Restoration**  
Reach 2 Restoration

Scale: 1" = 240'

Date: 9/20/09

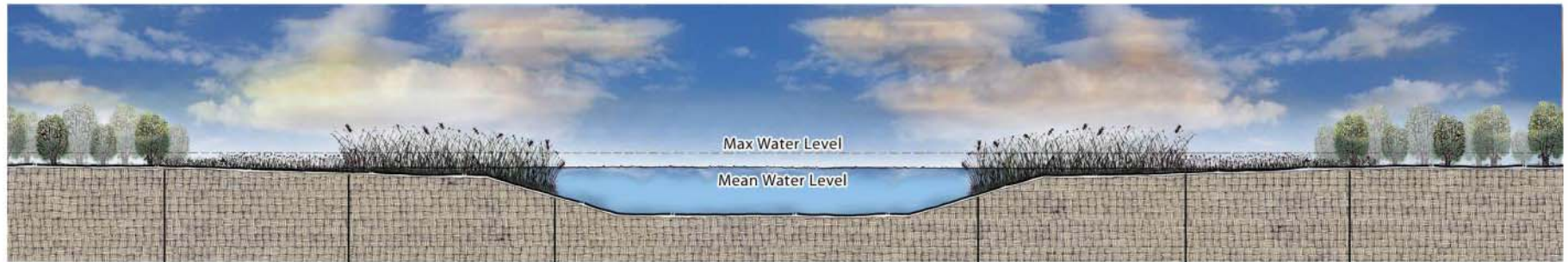




H Honey Mesquite With Irrigation | Honey Mesquite No Irrigation | Cottonwood/Willow Habitat H'



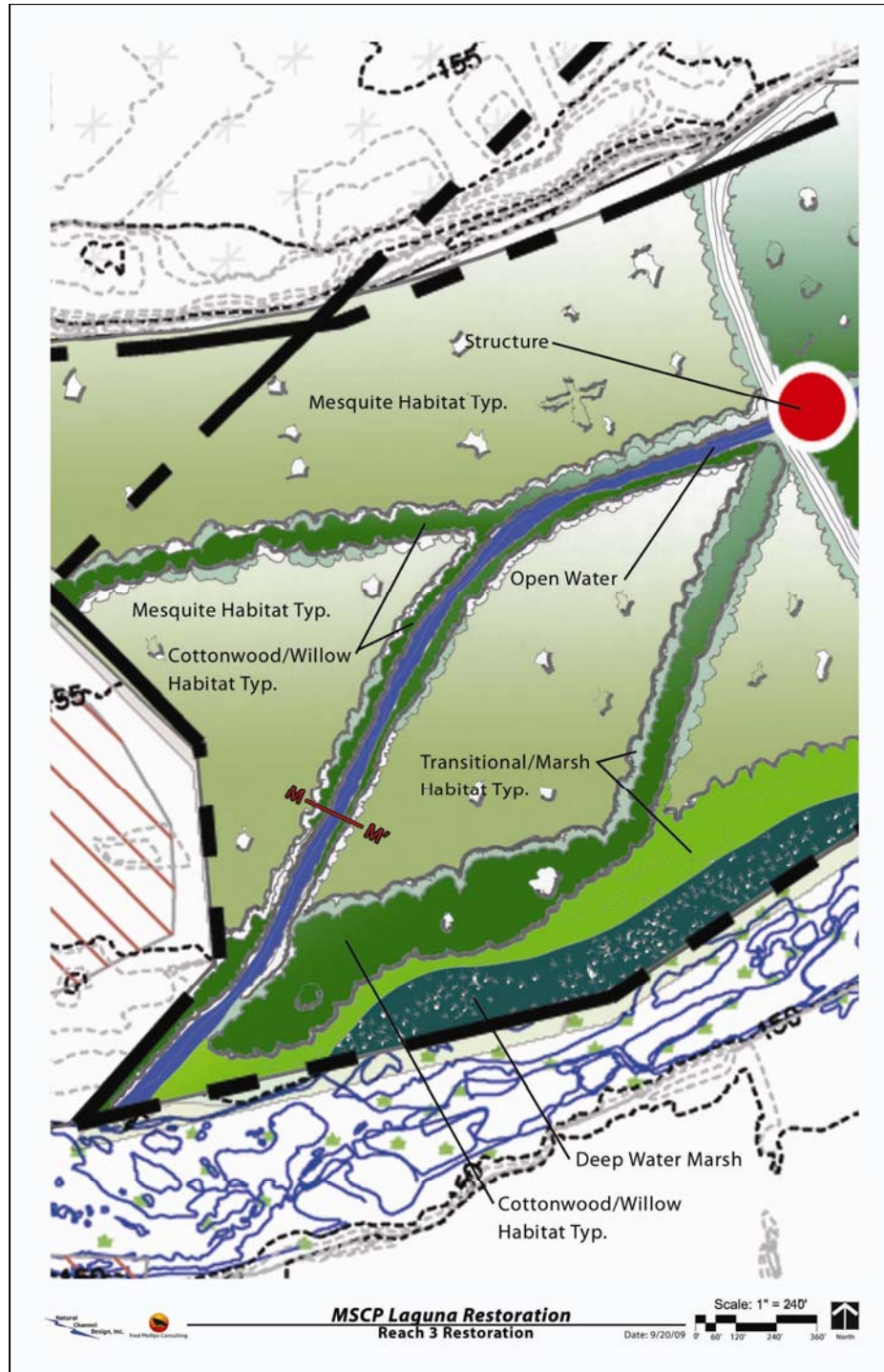
I Cottonwood/Willow Habitat | Transitional Zone With Depression/Firebreak | Cottonwood/Willow Habitat I'



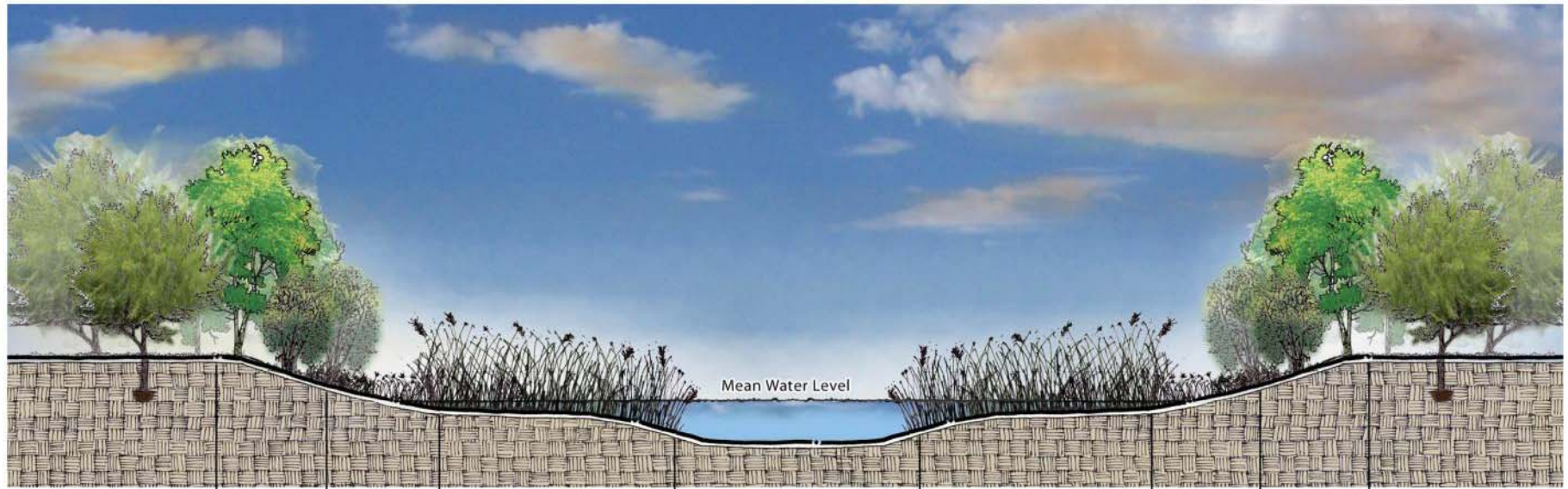
J Cottonwood/Willow | Transitional Zone | Deep Water Marsh | Open Water | Deep Water Marsh | Transitional Zone | Cottonwood/Willow J'

**MSCP Laguna Restoration**  
Reach 2 Cross Sections





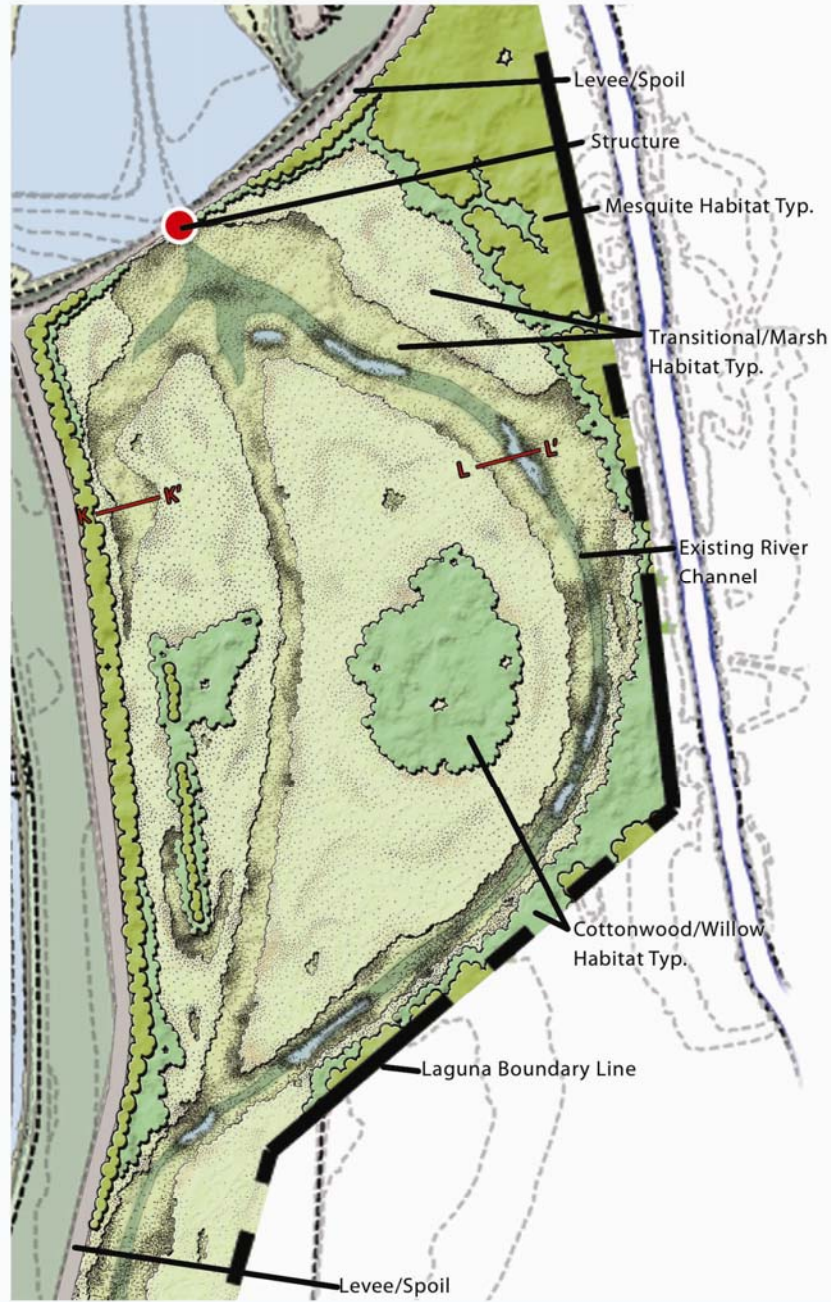




M	Honey Mesquite No Irrigation	Cottonwood/ Willow Habitat	Transitional Zone	Deep Water Marsh	Open Water	Deep Water Marsh	Transitional Zone	Cottonwood/ Willow Habitat	Honey Mesquite No Irrigation	M'
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## MSCP Laguna Restoration

### Reach 3 Typical Channel Cross Section







K ————— Transitional Zone ————— K'



L ————— Transitional Zone ————— L'



# Habitat Acreages

	OPEN WATER	DEEP MARSH	TRANSITION ZONE/ FIRE BREAK	COTTONWOOD/ WILLOW	MESQUITE
Reach 1	46	63	35	164	57 (no irrigation) 159 (irrigation)
Reach 2	21	24	50	234	30 (no irrigation) 44 (irrigation)
Reach 3	4	10	8	14	0 (no irrigation) 102 (irrigation)
Historic River Channel	0	0	81	14	11 (no irrigation) 6 (irrigation)
<b>Project Totals</b>	<b>71</b>	<b>97</b>	<b>174</b>	<b>426</b>	<b>98</b> (no irrigation) <b>311</b> (irrigation)
MSCP Targets	50-100			>200	<500

# **Channel Revegetation (Tidal irrigation with water control structures)**



**April 2006**



**June 2010**



# **Marsh and Transitional Zone (Tidal irrigation with water control structures)**



**October 2005**



**June 2010**



# **Transitional Zone (Tidal irrigation with water control structures)**



**October 2006**



**June 2010**



# Plant Establishment

- 1. Establishment of marsh plantings and upper terrace mesquite plantings**
  - Hand planting of marsh plugs and deep pot mesquites
  - Marsh plants must establish before the transitional/cottonwood areas can be flooded
  - Mesquite plantings irrigated with sheet irrigation in leveled areas
  
- 2. Establishment of transitional zones and cottonwood/**
  - Machine planted with plugs and/or hand planting with larger 1 gallon trees

# Plant Establishment

## **3. Water level management**

- Frequent fluctuations the first two years during establishment
- Once vegetation is established maintain stable water levels especially during migration and nesting seasons



# Project Maintenance and Monitoring

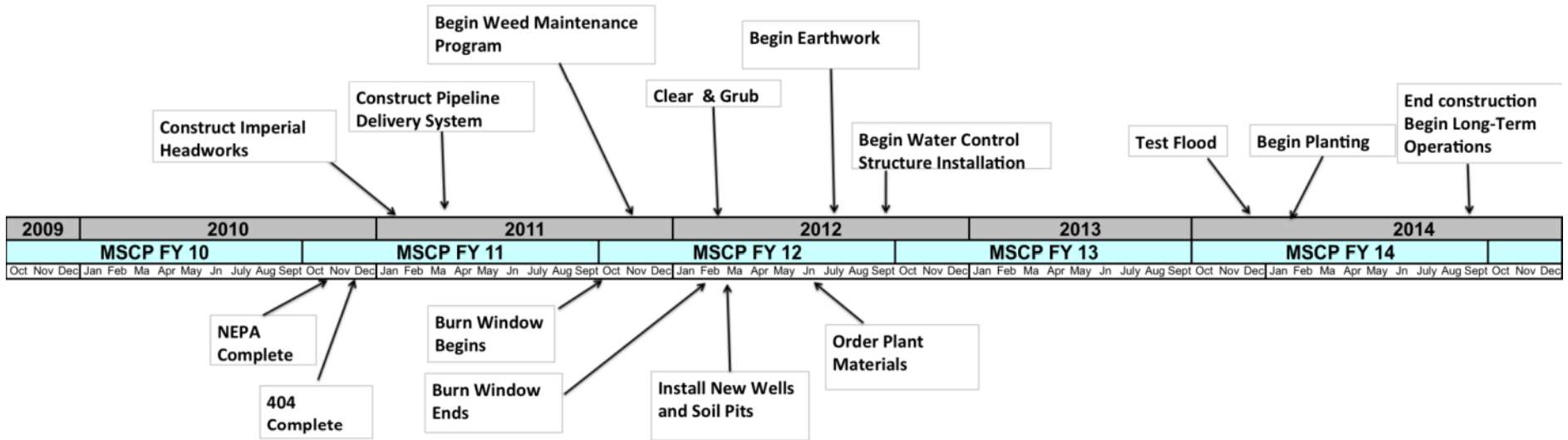
- Follow up aerial/land-based herbicide treatments after burn and up to planting areas
- Continued weed maintenance of planted/unplanted areas during plant establishment period (intense maintenance the first 2-3 years)
- Maintenance and operation of water control structures, roads and project infrastructure (50 years)
- Irrigation of upper terrace mesquite revegetation
- Plant and wildlife monitoring of restored area
- Long-term weed, replanting and irrigation maintenance

# Additional Information Needs

- Additional Monitoring Wells along proposed Channels
  - Groundwater information (water quality and salinity)
- Additional soil surveys to determine the depth to water table, soil texture and soil salinity across the site
- Vegetation design will need refinement to incorporate the additional water and soil analyses



# Current Schedule





Questions?