

Laguna Division Conservation Area

Project Update for the
Colorado River Terrestrial
and Riparian Meeting

Laughlin, NV
January 26, 2011



Fred Phillips Consulting

Natural
Channel
Design, Inc.

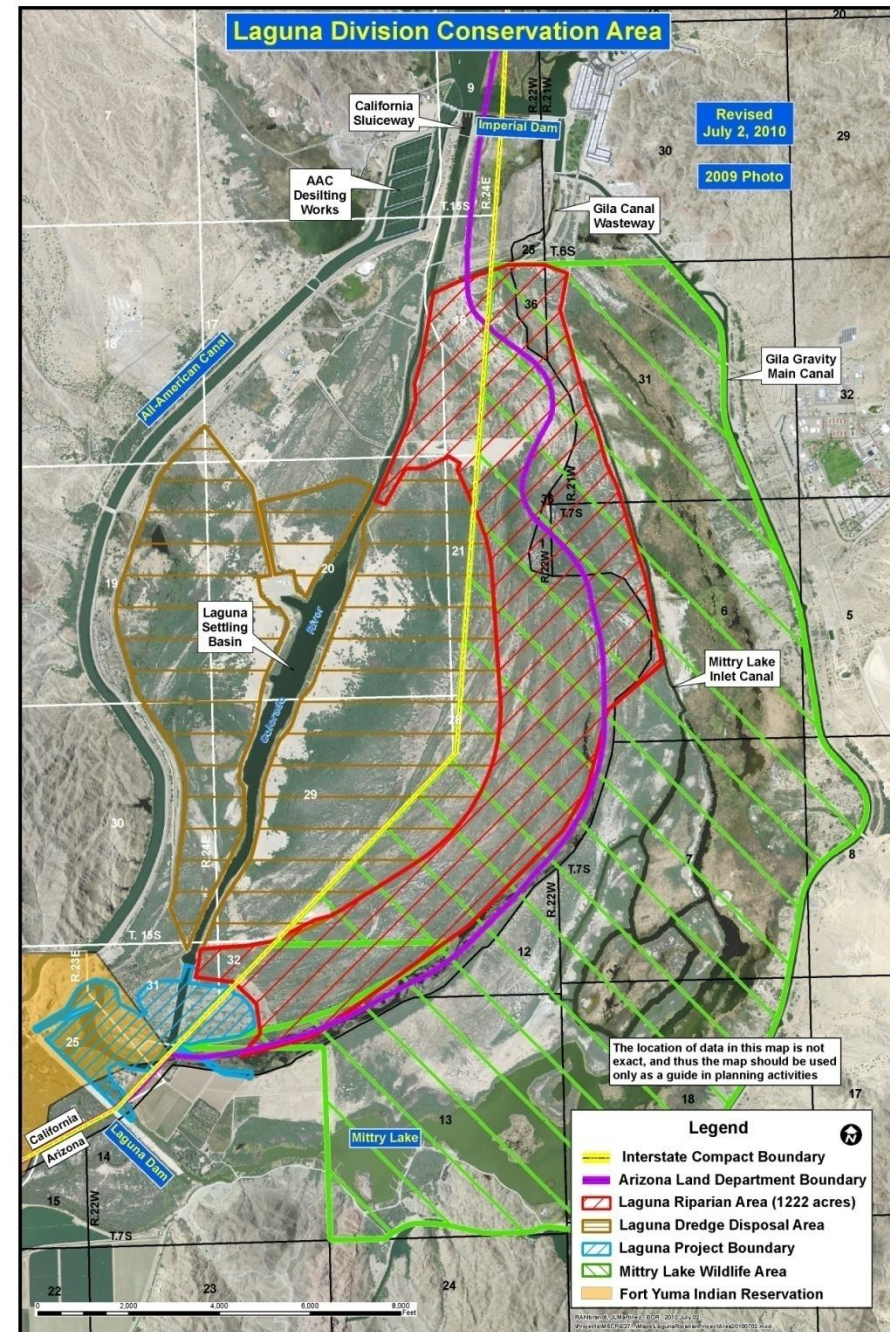


Presentation Outline

- Project Site Map
- Objectives and Design Considerations
- Status Update
- Water availability
- Current Design Concept and Construction Components
- Re-vegetation and Habitat
- Maintenance and Monitoring
- Information needs

Project Site Map

- Project Area – 1222 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



Western Least Bittern

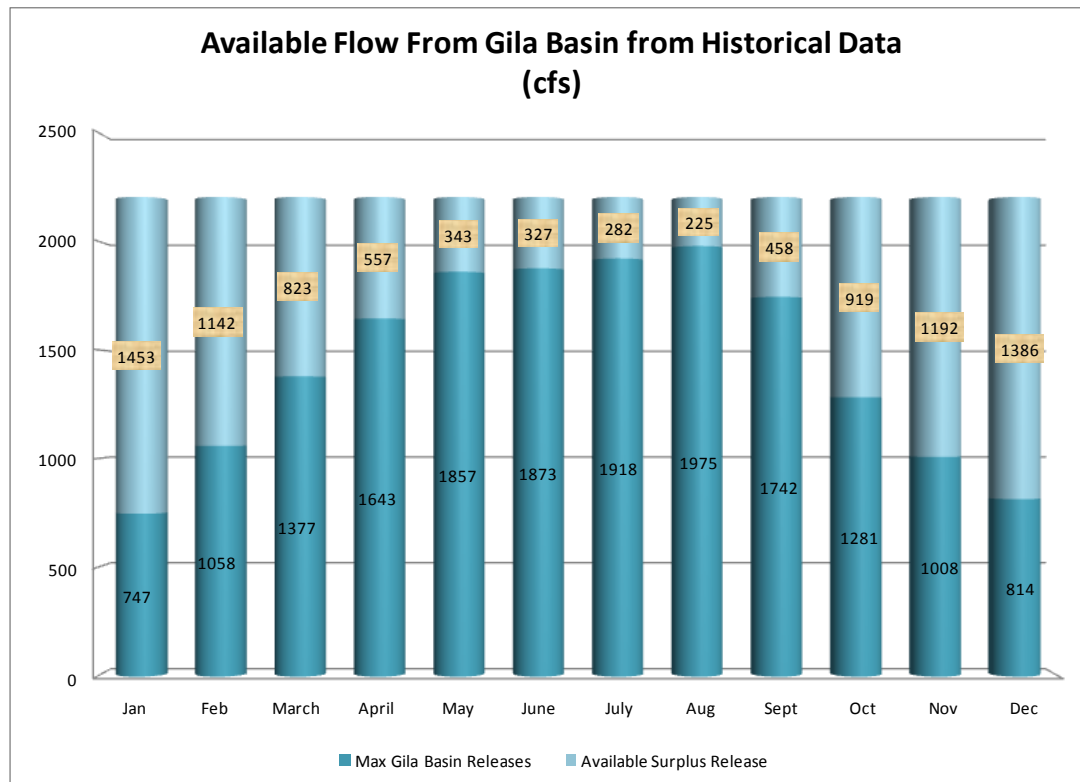


Permitting Update

- NEPA
 - Public Outreach held in March 2010
 - Draft NEPA September 2010
 - Final NEPA January 2011
- 404 Permit
 - Scheduled submittal February 2011
- Additional Permitting
 - Yuma County encroachment permit for road crossing

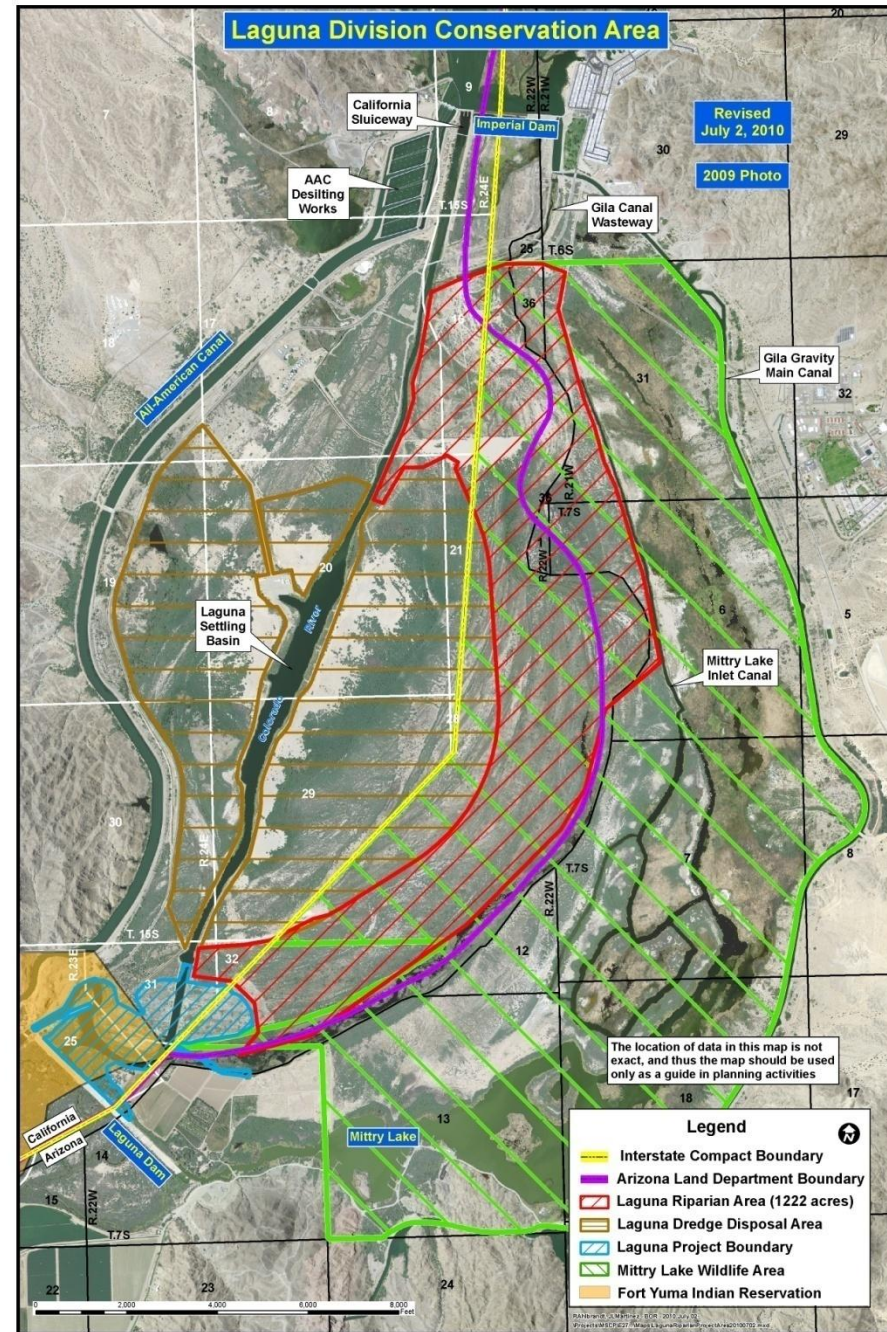
Water Accounting

- 100 cfs continuous flow is available from the Gila Settling Basin
 - Looking at historical (1943 – 2009) monthly flow data of gauging station, USGS 0952250 Gila Gravity Main Canal at Imperial Dam, collected in the Main Canal.
 - In the event of a water shortage to the Gila Main Canal, the Laguna Division Conservation Area has lower priority than downstream users and water supply to the Area may be limited.



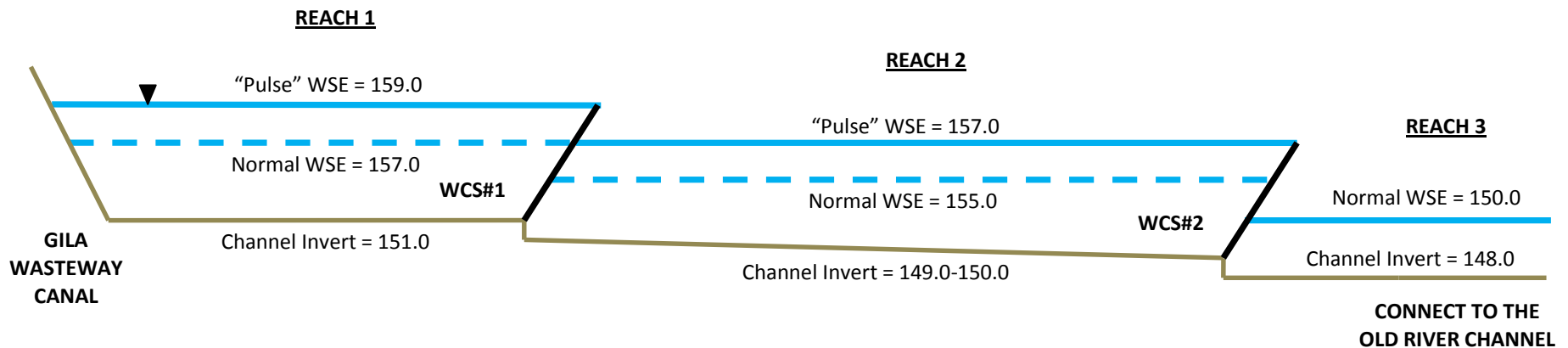
General Project Update

- Boundary change
 - Additional acres from dredge disposal site
- Designing preferred alternative
- Moving towards construction
- Finding a balance between wildlife and public presence



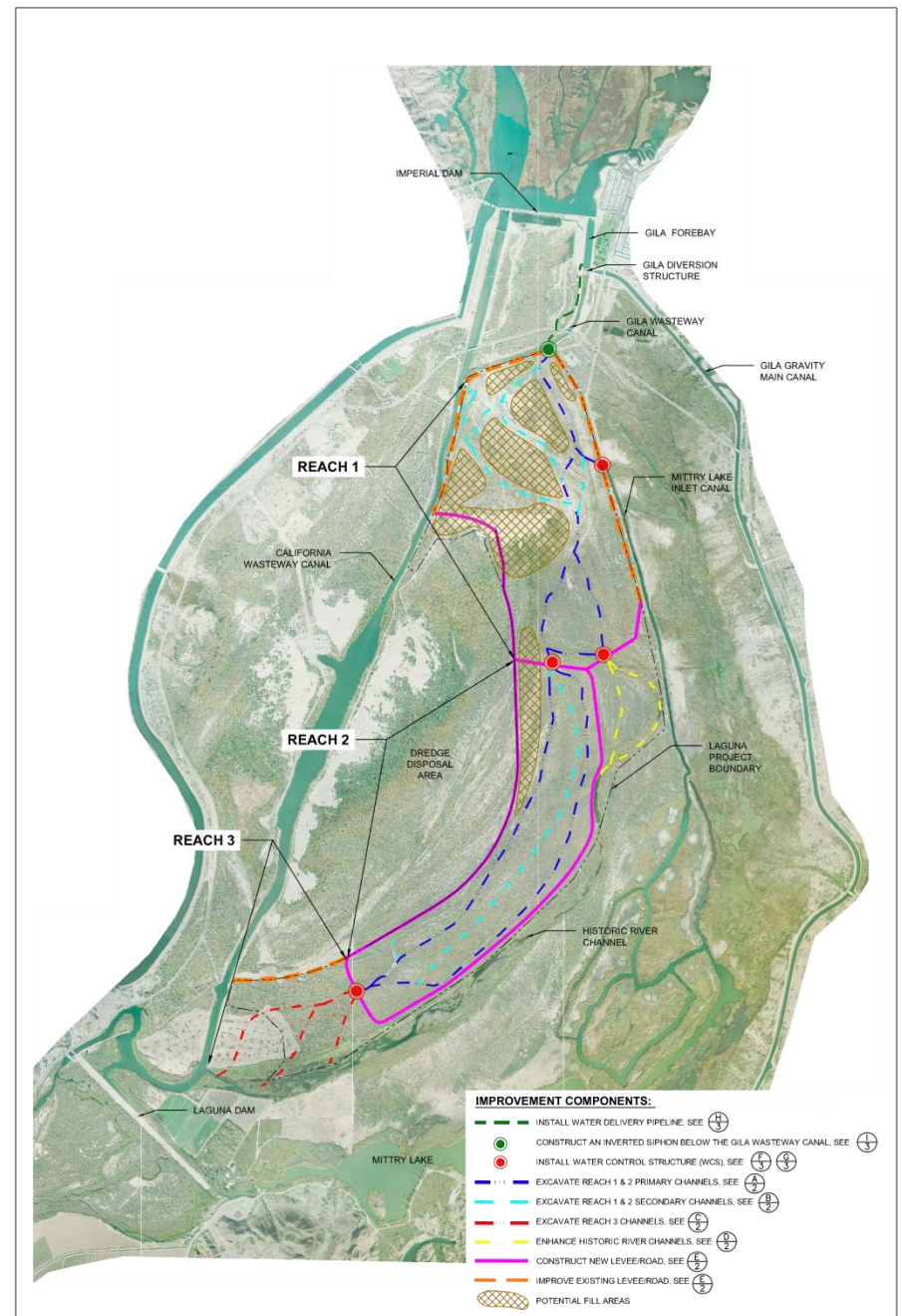
Current Design Concept: Overview

- Operate as a managed, riverine 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



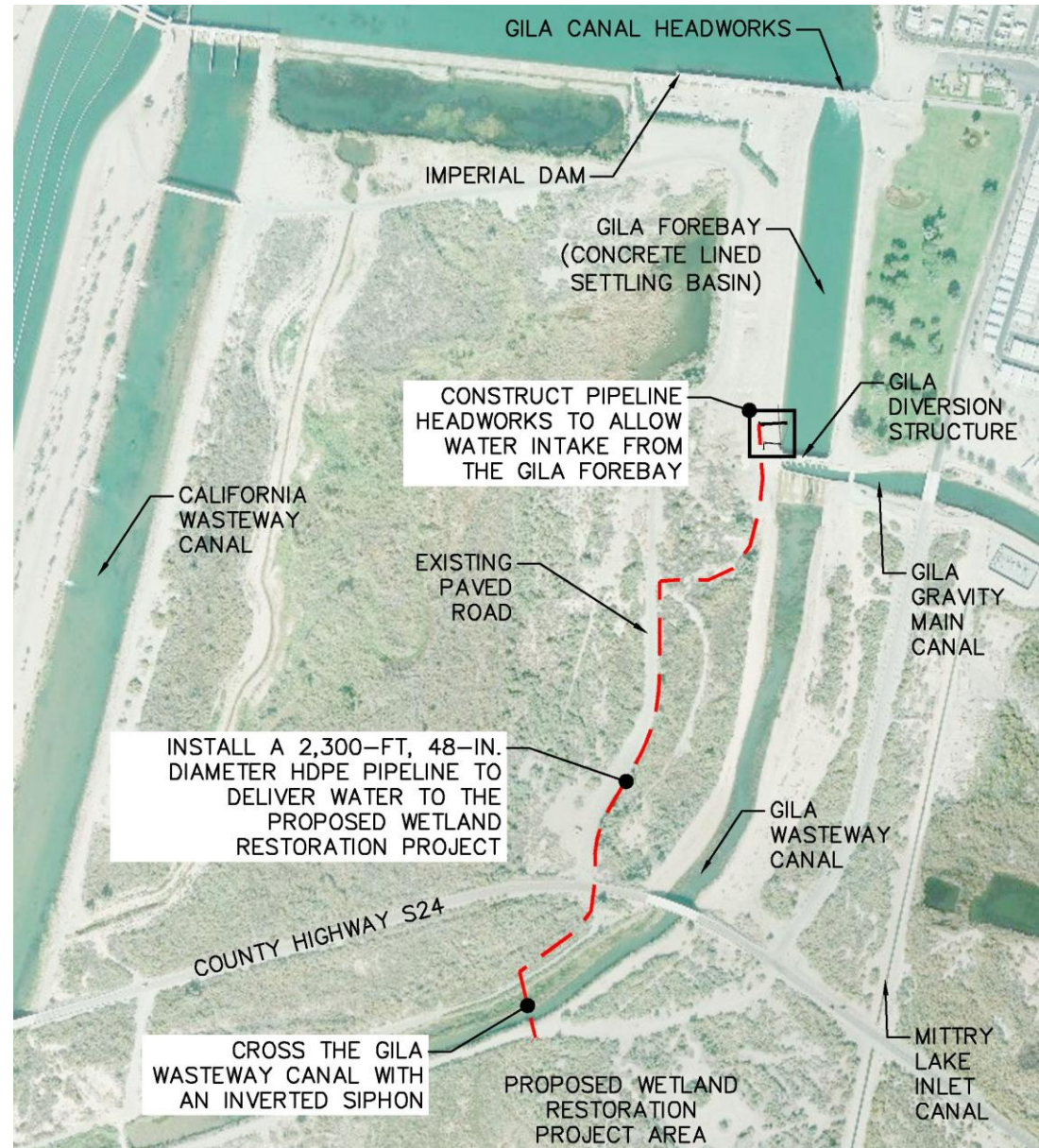
Construction Components

- Water Delivery System from Gila Forebay
 - Headworks
 - Pipeline
- Site Preparation for Earthwork
 - Burning and Grubbing of Saltcedar
- 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

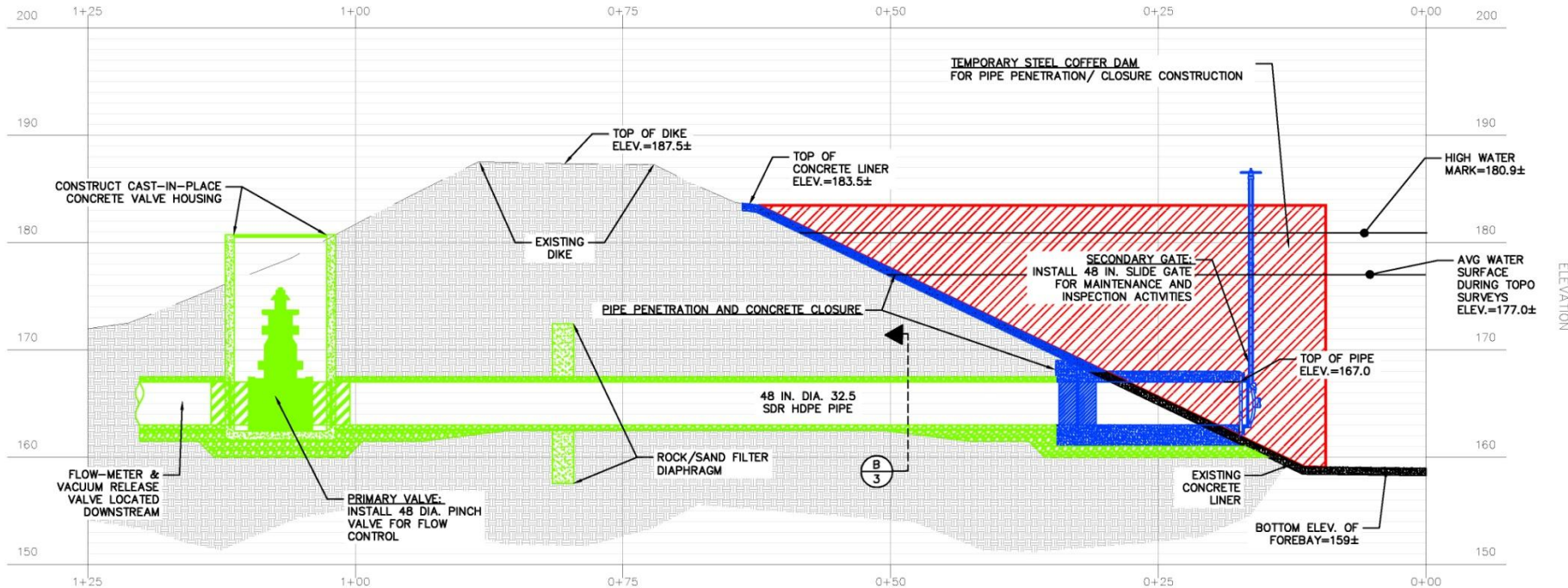


Water Delivery System Overview

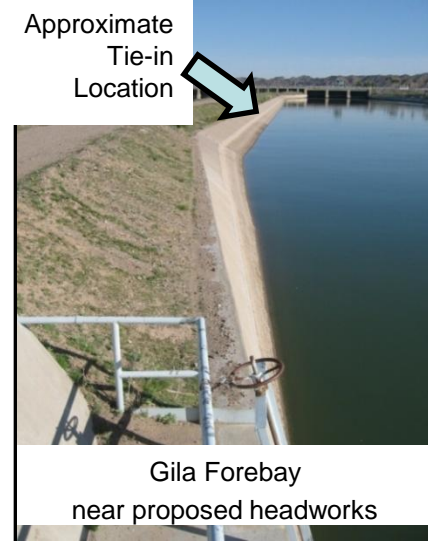
- Gravity system delivering high quality water from the Gila Forebay to the wetland restoration area
- Pipeline headworks at the Gila Forebay
- 2,300-FT, 48-IN. diameter pipeline
- Cross underneath the Gila Wasteway Canal with an inverted siphon



Water Delivery System: Headworks



- Construction window during maintenance draw-down of the Gila Forebay (November 2012)
- Install **temporary steel coffer dam** during the maintenance draw-down
- Construct **pipe penetration/closure** of the Gila Forebay liner and install **secondary slide gate**
- Install **primary valve and meter**. The primary valve/meter will be utilized to control flow based on habitat and downstream user needs.



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 Fire
 - 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 removal of invasive species as necessary

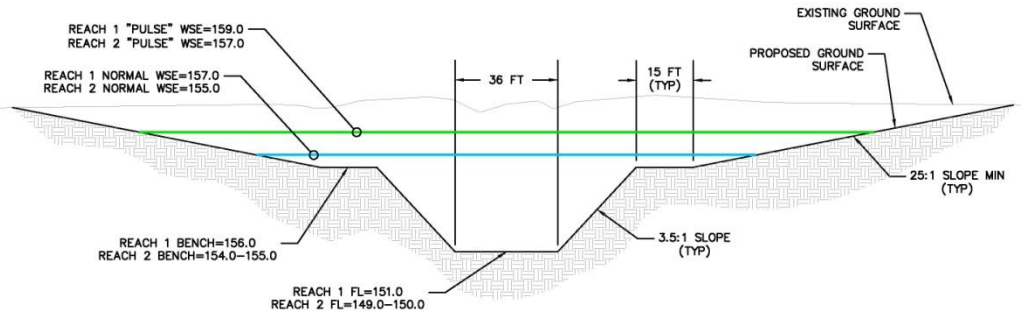


Public Concerns with Burn

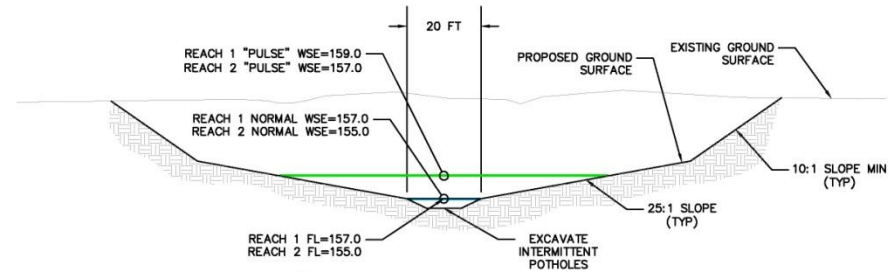
- Nearby Agriculture Fields
 - Wind direction for ash fallout
 - Displaced Animals
- Wildlife and Wildlife Areas
 - Breeding Season
 - Displaced Animals
 - Recreation at Mittry Lake Wildlife Area
- Nearby Homes and Parks
 - Road Closures
 - Smoke / Ash fallout
 - Fire Containment
- Invasive Weeds
 -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

Bureau of Land Management
will address these in final burn plan

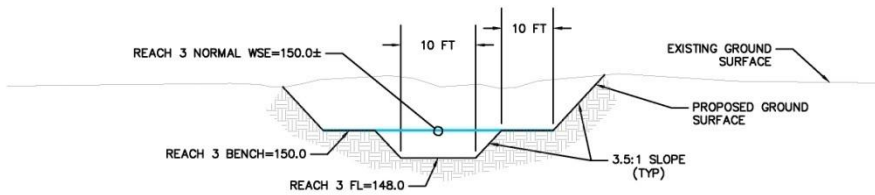
Earthwork Operations: Typical Cross Sections



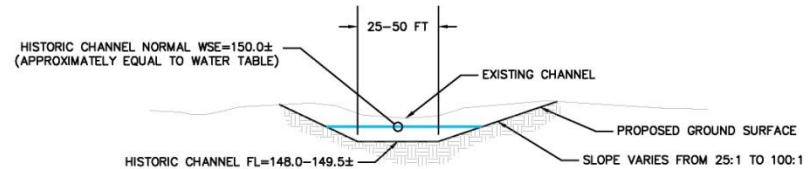
(A) REACH 1 & 2 PRIMARY CHANNEL
1 TYPICAL CROSS-SECTION NOT TO SCALE



(B) REACH 1 & 2 SECONDARY CHANNEL
1 TYPICAL CROSS-SECTION NOT TO SCALE



(C) REACH 3 CHANNEL
1 TYPICAL CROSS-SECTION NOT TO SCALE



(D) HISTORIC RIVER CHANNEL
1 TYPICAL CROSS-SECTION NOT TO SCALE

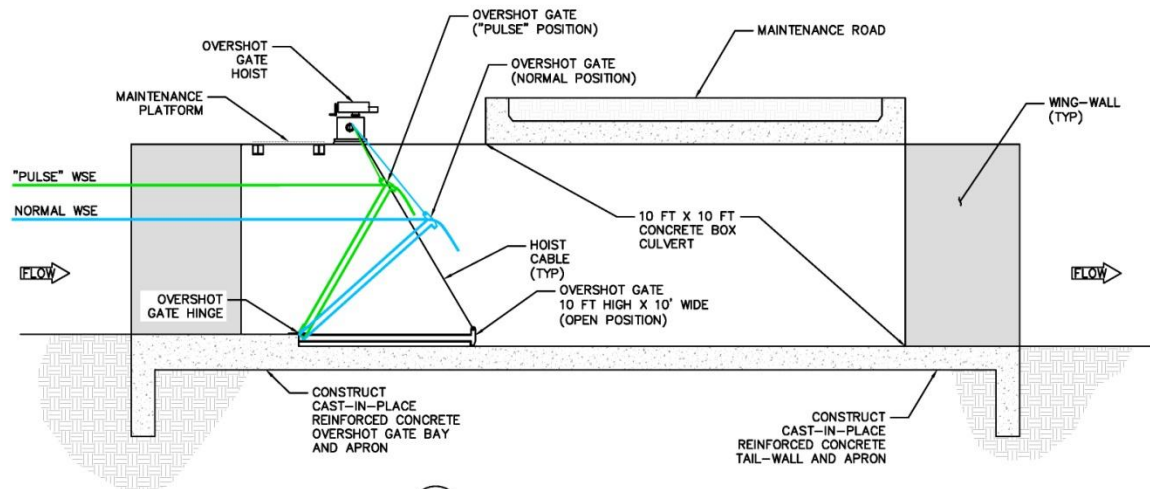
Earthwork Operations

- 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 post-burn (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



- Open Water
- Deep Marsh
- Transitional Zone/Firebreak/Shallow Marsh
- Cottonwood/Willow Habitat
- Mesquite Habitat (No Irrigation)
- Mesquite Habitat (With Irrigation)
- Control Structure

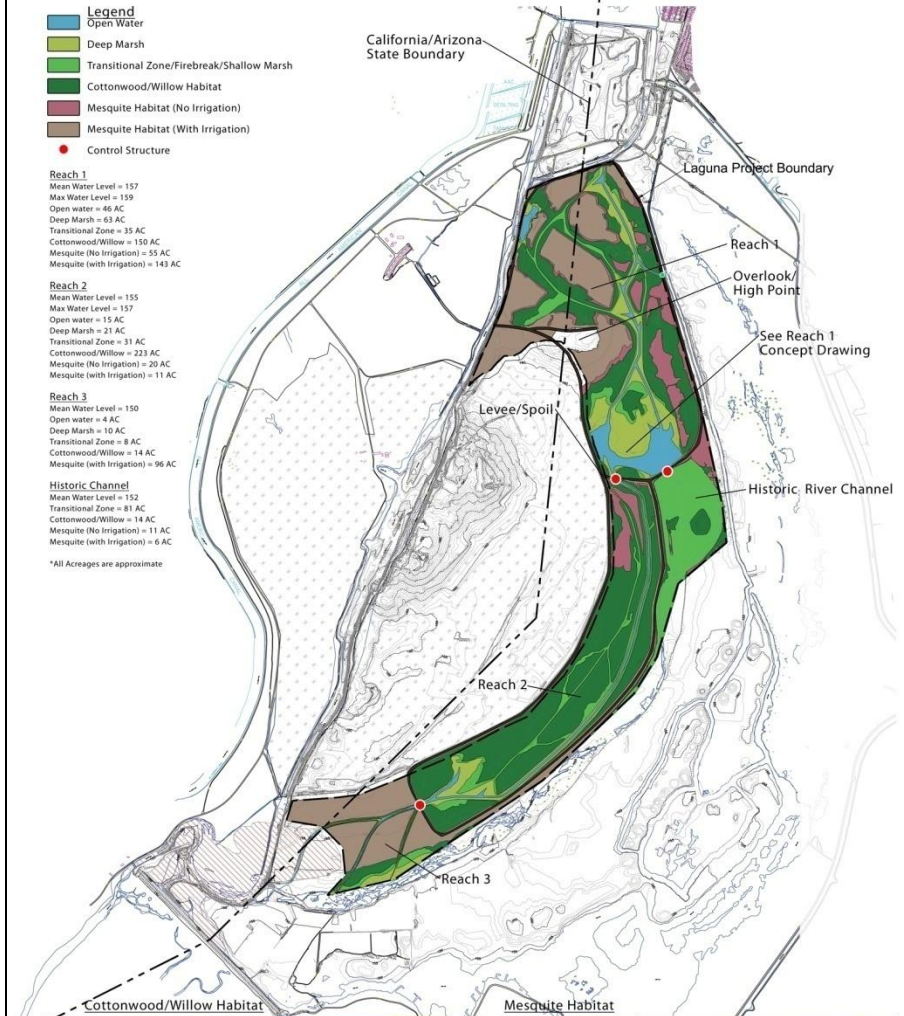
Reach 1
 Mean Water Level = 157
 Max Water Level = 159
 Open water = 66 AC
 Deep Marsh = 63 AC
 Transitional Zone = 35 AC
 Cottonwood/Willow = 150 AC
 Mesquite (No Irrigation) = 55 AC
 Mesquite (with Irrigation) = 143 AC

Reach 2
 Mean Water Level = 155
 Max Water Level = 157
 Open water = 15 AC
 Deep Marsh = 21 AC
 Transitional Zone = 31 AC
 Cottonwood/Willow = 223 AC
 Mesquite (No Irrigation) = 20 AC
 Mesquite (with Irrigation) = 11 AC

Reach 3
 Mean Water Level = 150
 Open water = 4 AC
 Deep Marsh = 10 AC
 Transitional Zone = 8 AC
 Cottonwood/Willow = 14 AC
 Mesquite (with Irrigation) = 96 AC

Historic Channel
 Mean Water Level = 152
 Transitional Zone = 81 AC
 Cottonwood/Willow = 14 AC
 Mesquite (No Irrigation) = 11 AC
 Mesquite (with Irrigation) = 6 AC

*All Acreages are approximate

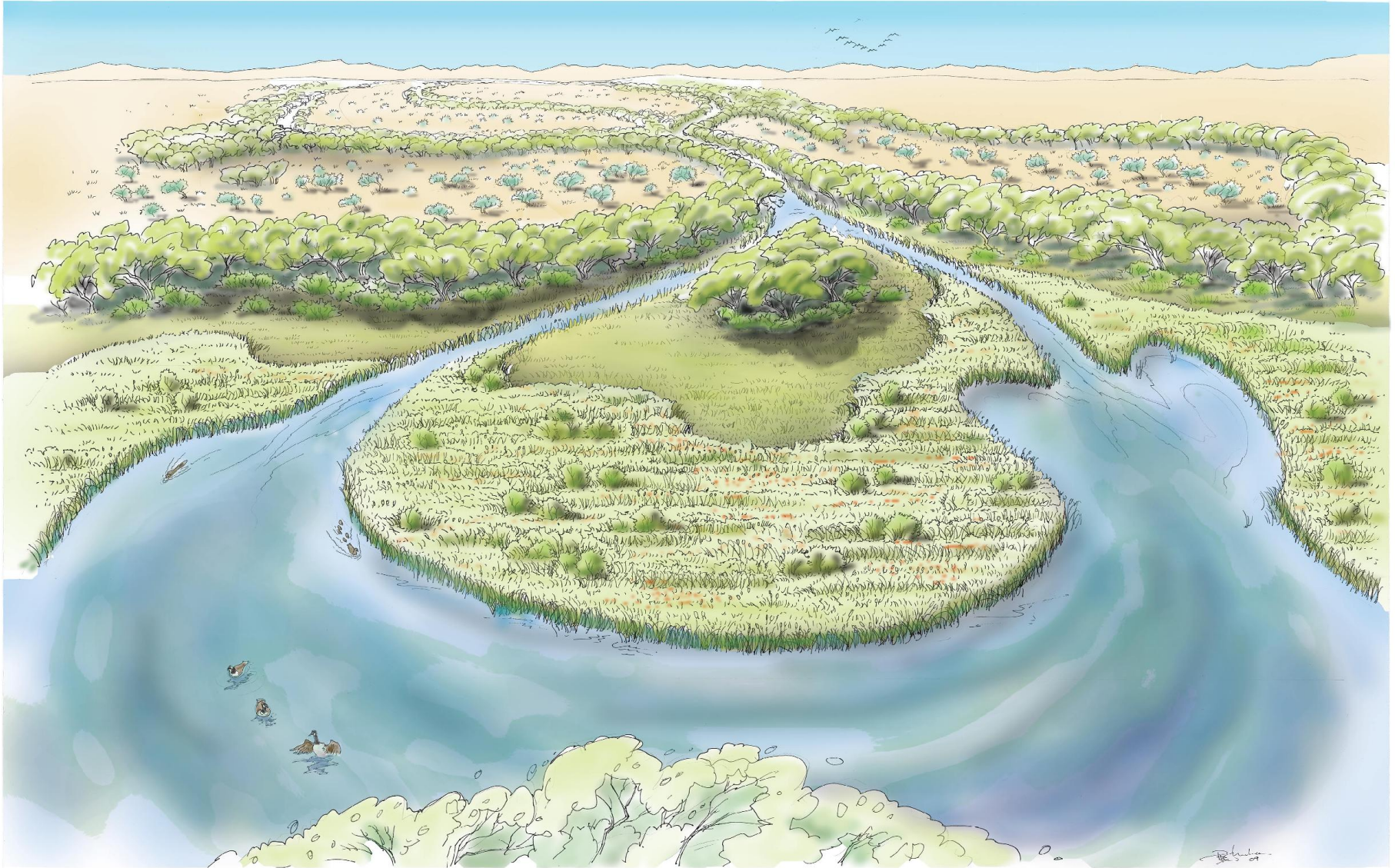


Deep Marsh



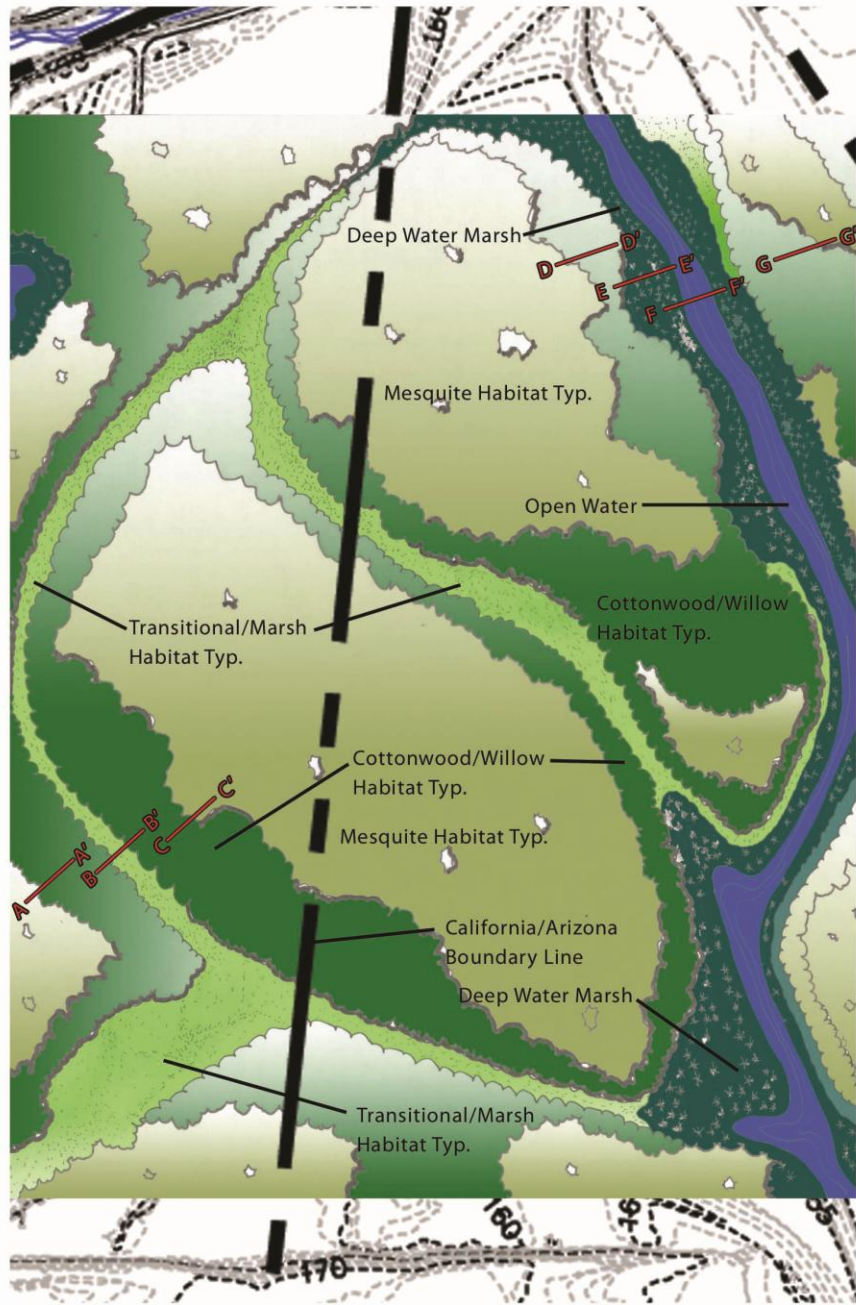
Mesquite Habitat

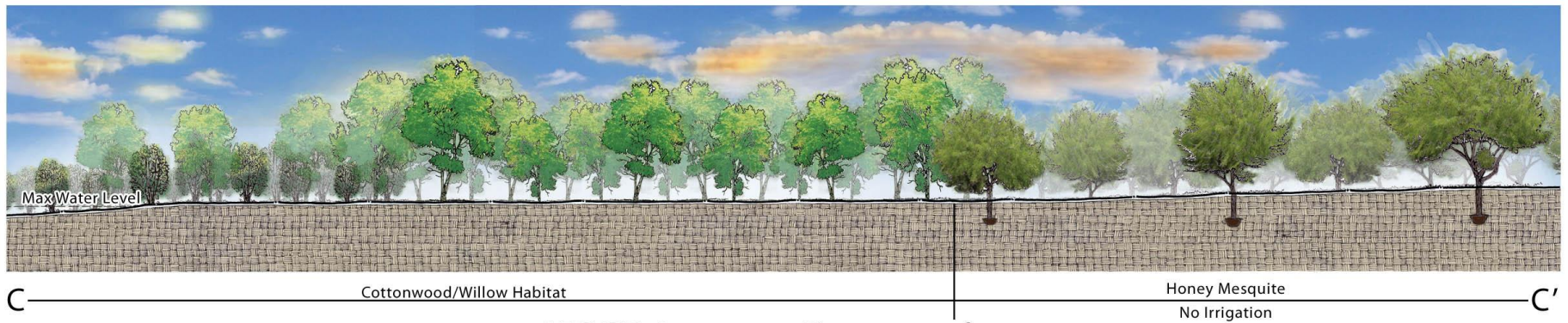
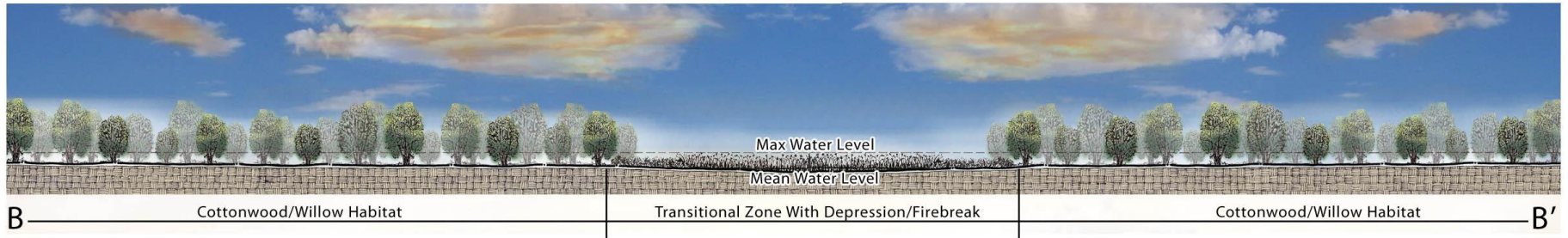




MSCP Laguna Restoration

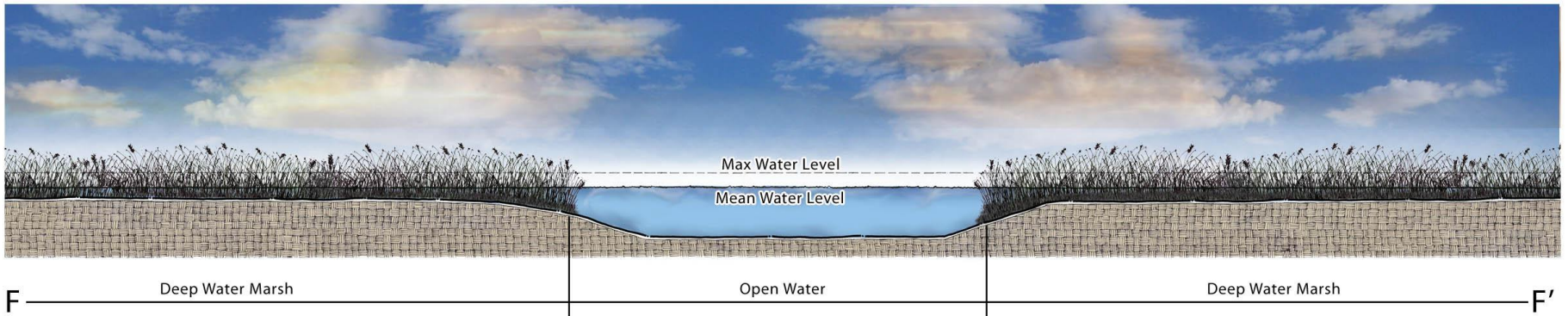
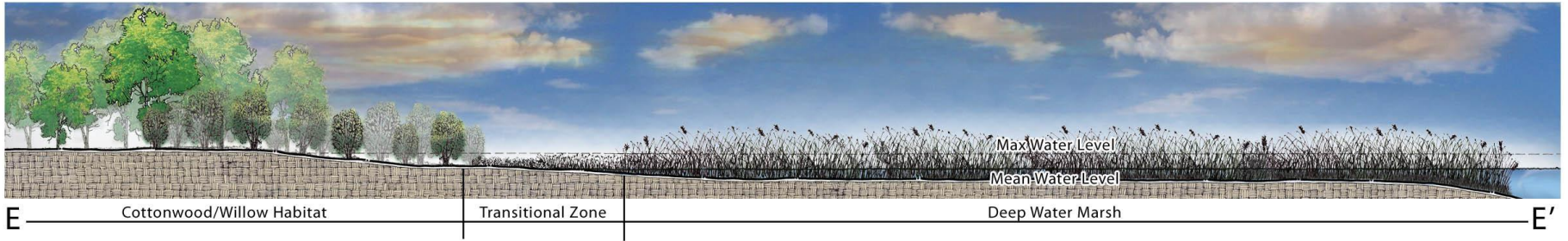
Reach 1 Concept Drawing



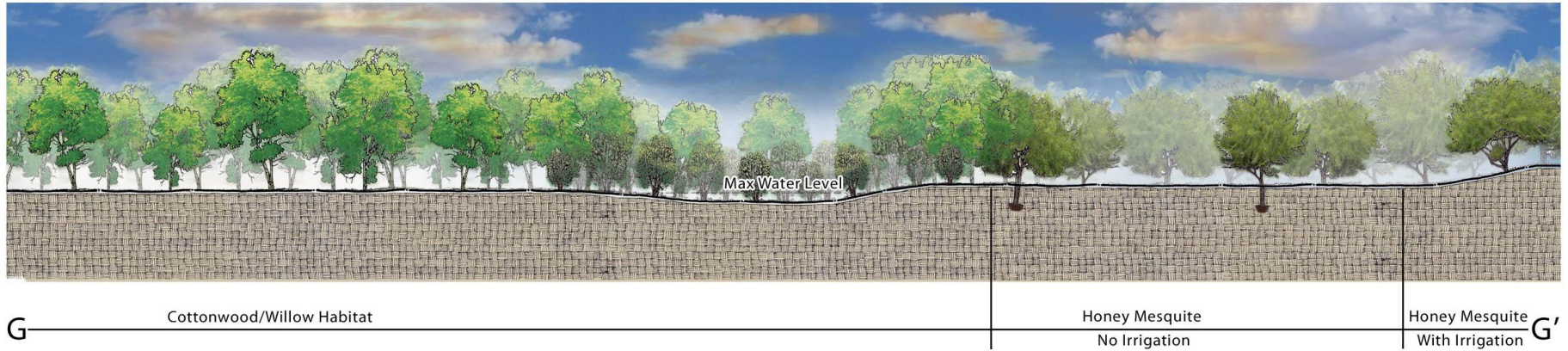


MSCP Laguna Restoration

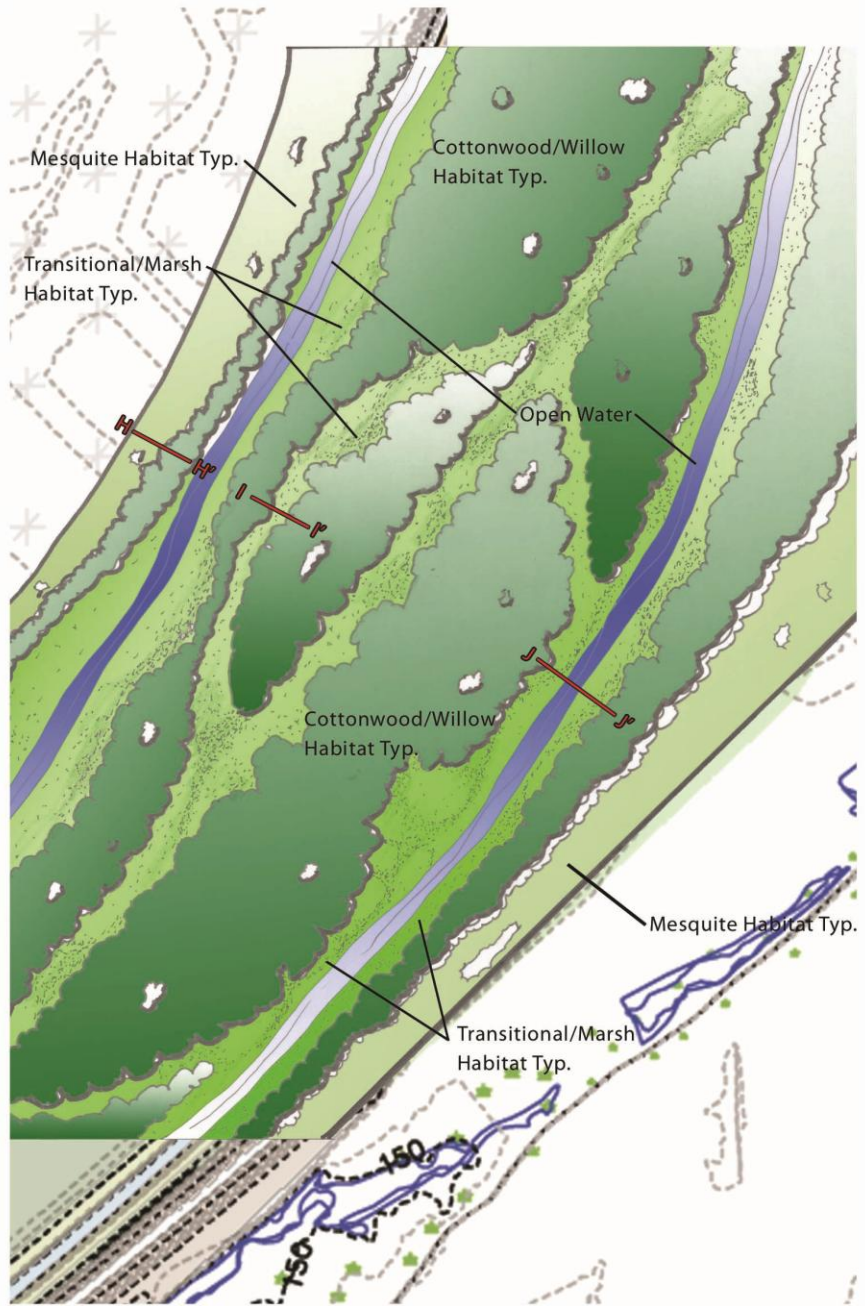
Reach 1 Cross Sections



MSCP Laguna Restoration
Reach 1 Cross Sections

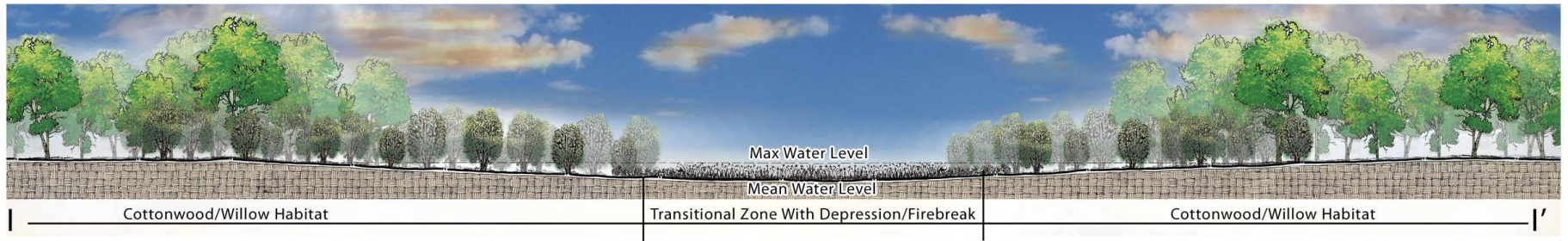


MSCP Laguna Restoration
Reach 1 Cross Section

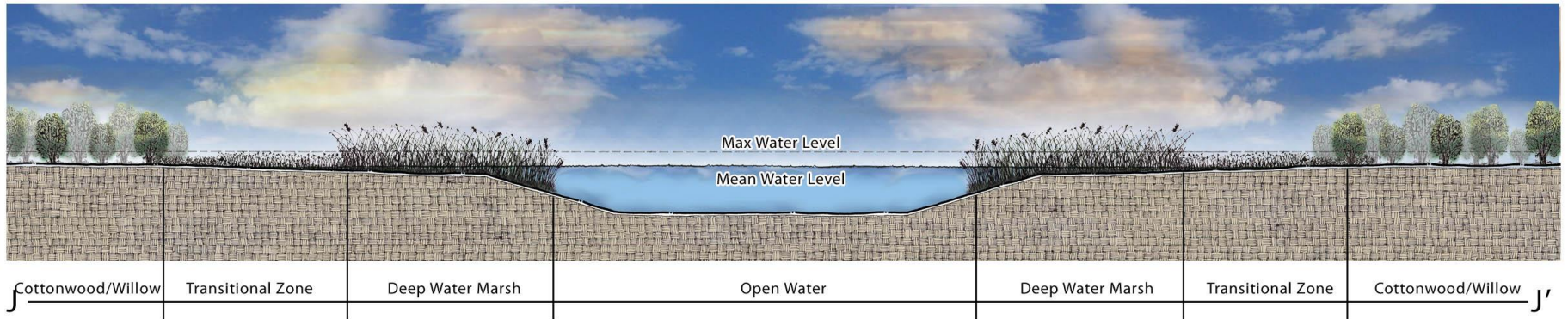




H Honey Mesquite With Irrigation | Honey Mesquite No Irrigation | Cottonwood/Willow Habitat H'



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'

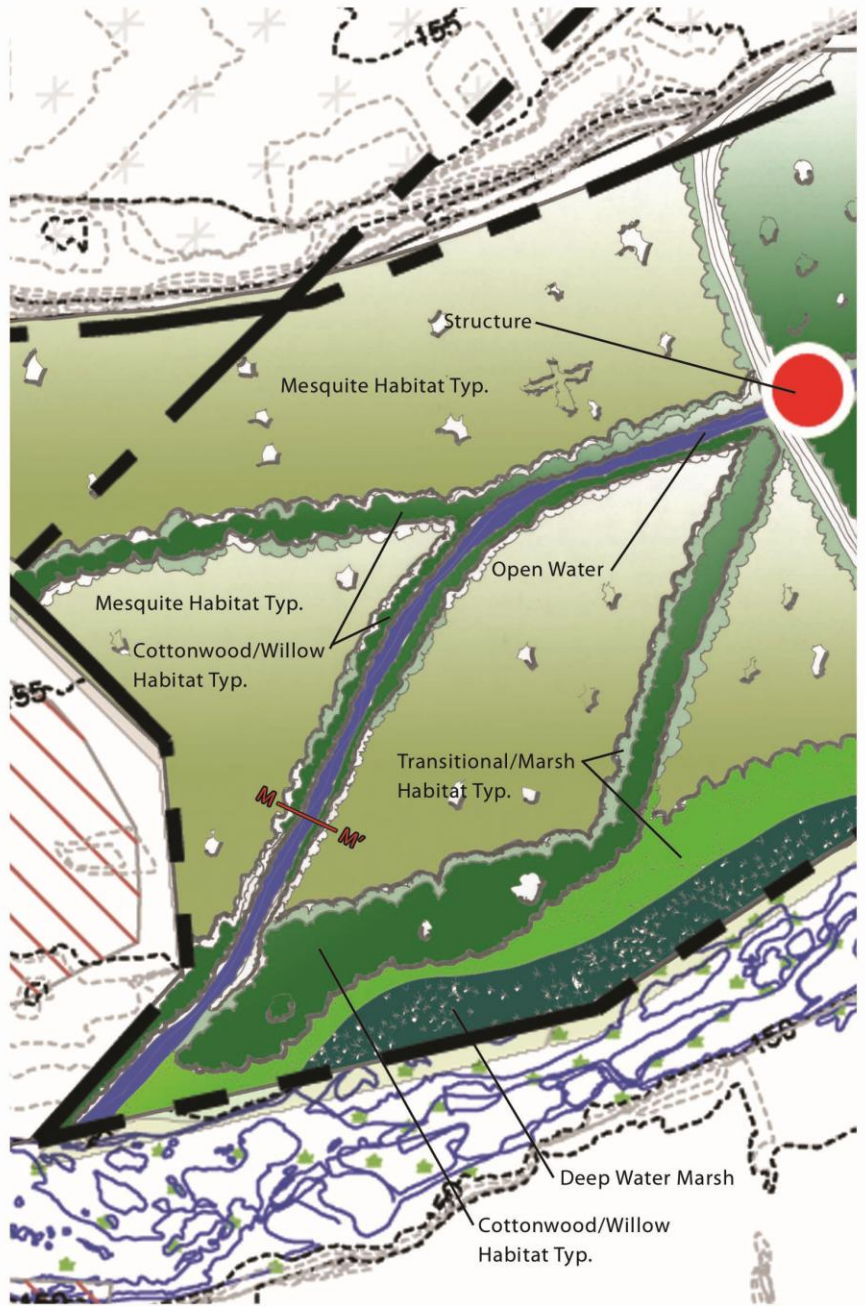
MSCP Laguna Restoration

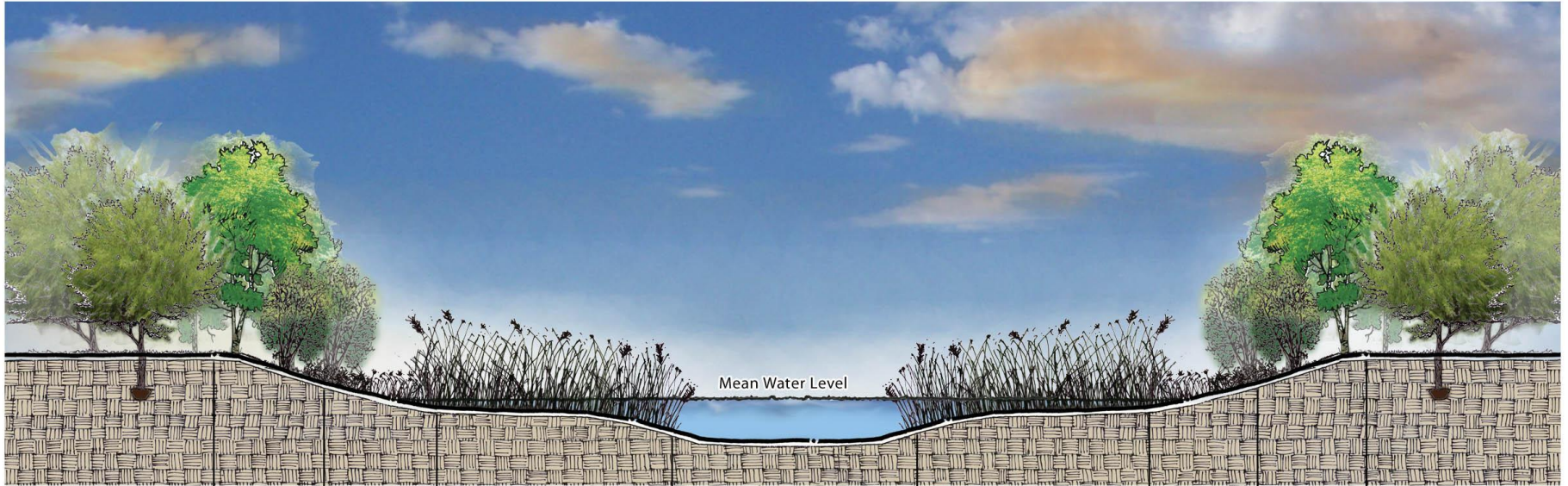
Reach 2 Cross Sections



Scale: 1" = 120'

Date: 8/25/10





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)
Project Totals	71	97	174	426	98 (no irrigation) 311 (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/ willow once marsh plants are tall enough to flood for longer periods (4-6 months after marsh plantings)

- 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

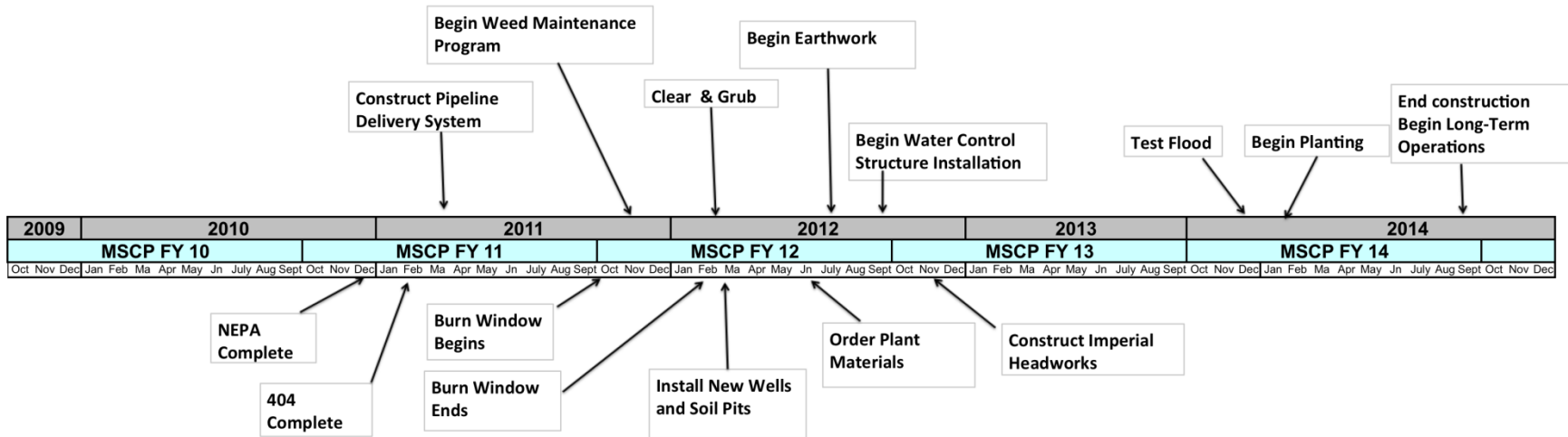
Project Maintenance and Monitoring

- 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?