



# Integrated Partnerships Integrated Solutions



*Integrated Vision*

***Regional Water  
Quality  
Habitat  
Restoration  
Recreation***



# Integrated Partnerships Integrated Solutions



## Project Statistics

- *Integrated Regional Facility*
- *77 Square Mile Watershed In Cities of Upland, Rancho Cucamonga, Ontario, Chino, and Eastvale*
- *Private / Public Partnership – Federal /State / County/ Cities / Resource Agencies*
- *52 Acres Wetlands*
- *160 Acre Feet Water Quality Treatment*
- *Over 23 Acres Riparian & Wetland Habitat*
- *3 Miles Recreational Trails*
- *\$7.5 Million State Grants (Multiple Agencies)*



# PUBLIC AMENITIES

COMET ROAD

**1 REGIONAL RECREATION**  
A multi-modal regional trail connecting numerous communities to the open space along the Creek could accommodate hikers, bicyclists, and equestrians.

**2 LOCAL RECREATION**  
A trail system around the water treatment ponds will provide a local recreational component as well as allow for maintenance of the site.

**3 PUBLIC ACCESS**  
A small permeable-surface parking area off of Chino-Corona Road will serve as a trailhead for both the local and regional trail systems. Interpretive signage and area trail maps will assist visitors.

**4 INTERPRETIVE OPPORTUNITIES**  
Informative signage located at overlooks will illustrate the environmental issues of the area including stormwater management, habitat restoration, and the wetland treatment system.

**5 PUBLIC ENTRYWAY**  
The welcoming entry area from Chino-Corona Road could feature such amenities as interpretive exhibits, trail maps, and bicycle racks.

**6 INTERPRETIVE GATE**  
Utilitarian gates could be modified to become artistic interpretive elements that greet visitors at the site entry.

**7 MEASURED LOOPS & COURSES**  
Trail markers could be placed at trailside for runners and other recreational users benefit and to accommodate organized cross-country events.

Funding for this project has been provided in full or in part through an agreement with the State Water Resources Control Board. The contents of this document do not necessarily reflect the views and policies of the State Water Resources Control Board, nor does mention of trade names or commercial products constitute endorsement or recommendation by any agency. Code: 7500, 01/17/12

REGIONAL TRAIL CONNECTIONS TO ONTARIO NEIGHBORHOODS

1 12

MILL CREEK  
CUCAMONGA CREEK

DROP-OFF AREA

PARKING LOT

CHINO-CORONA ROAD



**12 INTERPRETIVE SIGNAGE**  
Signage located throughout the Project could be increased and feature a wide variety of topics including local history, habitat, ethno-botany, water quality and the regional value of the Prado Basin.

**13 INTERACTIVE OPPORTUNITIES**  
Interactive educational opportunities will provide visitors with hands-on experiences to engage their senses as they expand their knowledge on local resources, history and culture.

**14 LOOK BUT DO NOT TOUCH**  
With images of area wildlife that a visitor might encounter, interpretive signage could highlight the roles that each plays in the environment and how to enact safely with these local residents.

**15 RAPTORS OVERHEAD**  
Irrigated areas within the site support trees along the trail for raptor habitat. Visitors may observe hawks and falcons circling high above the fields and creek flood plains.

**16 WATER QUALITY**  
Cleaned stormwater will re-enter Mill Creek through a naturalized drainage outlet. Visitors will be able to experience the reestablished riparian habitats adjacent to the stream course.

**8 WETLAND POND OVERLOOK**  
Walking through the willow riparian habitat provides an opportunity to experience birds and plants up close. Interpretive signs could further describe the ecology and importance of the riparian habitat.

**9 UPLAND & WILLOW RIPARIAN HABITATS**  
A trail along the pond embankment provides opportunities to experience the treatment ponds and natural creek. Interpretive signs could elaborate the value of willows, mullet, alders, and poplars for wildlife.

**10 WIND FAMILY HISTORY**  
From the trail around the forebay—the top settling basin—interpretive signage could detail local farming history, the Wind Family, and other early settlers.

**11 CALIFORNIA HABITATS TRAIL**  
A diverse series of native habitats will establish themselves along a hydraulic gradient from the wet to the higher elevations. The changes in habitat provide shelter and food for native animals, birds, and insects.

# TRAIL FEATURES

# EDUCATIONAL FOCUS

REGIONAL TRAIL CONNECTION TO EDGEWATER

Cucamonga Creek Trails and Riparian Restoration Project



**LANDSCAPE LEGEND**

**ZONE: Pond Bottom**

PLANT CODE	COMMON NAME	WET	SHADE	HT	SPREAD	NOTES	
BC	<i>Sagittaria californica</i>	California Bulrush	1 gal	2' x 1'	4'	4'	Plant Screens and Typics in one to one ratio, in diagonal pattern
TA	<i>Typha angustifolia</i>	Narrowleaf cattail	1 gal	2' x 1'	4'	4'	

**ZONE: Island**

PLANT CODE	COMMON NAME	WET	SHADE	HT	SPREAD	NOTES	
BC	<i>Sagittaria californica</i>	California Bulrush	1 gal	2' x 1'	4'	4'	
SL	<i>Sagittaria speciosa</i>	Willow species	bundles	4' x 4'	16'	16'	see Tree Legend for species Plant bundles with 4 cuttings, two of each species

**ZONE: Selected Buffer Areas in Ponds**

PLANT CODE	COMMON NAME	WET	SHADE	HT	SPREAD	NOTES	
SL	<i>Sagittaria speciosa</i>	Red Willow	1 gal	4'	4'	4'	Plant in clusters with 5-10 plants
SL	<i>Sagittaria speciosa</i>	Arroyo Willow	1 gal	4'	4'	4'	
SL	<i>Sagittaria speciosa</i>	Red Willow	1 gal	4'	4'	4'	
SL	<i>Sagittaria speciosa</i>	Willow	1 gal	4'	4'	4'	

**ZONE: Perimeter Barrier Landscape (and Boulders)**

PLANT CODE	COMMON NAME	WET	SHADE	HT	SPREAD	NOTES	
BP	<i>Baccharis pilularis</i>	Coyote Bush	1 gal	4' x 4'	4'	4'	
OB	<i>Opuntia basilaris</i>	Prickly Pear	1 gal	2' x 2'	2'	2'	
RC	<i>Rhus californica</i>	Wild Rose	1 gal	4' x 4'	4'	4'	

**ZONE: Upland Hydroseed**

PLANT CODE	COMMON NAME	WET	SHADE	HT	SPREAD	NOTES	
LL	<i>Lonicera californica</i>	California Oudardia	seed	16'	1'	1'	
LP	<i>Lupinus albus</i>	Blackbelly Lupine	seed	16'	1'	1'	
ML	<i>Medicago lupulina</i>	Jumpgrass	seed	16'	1'	1'	
NC	<i>Nassella tenuis</i>	Needlegrass	seed	16'	1'	1'	
NL	<i>Nassella tenuis</i>	Foot's Needlegrass	seed	16'	1'	1'	
NP	<i>Nassella tenuis</i>	Purple Needlegrass	seed	16'	1'	1'	
YM	<i>Yucca microcarpa</i>	Small Yucca	seed	16'	2'	2'	

**ZONE: Trees**

PLANT CODE	COMMON NAME	WET	SHADE	HT	SPREAD	NOTES	
DA	<i>Quercus agrifolia</i>	Coast Live Oak	2 gal	16'	16'	16'	
PH	<i>Pinus ponderosa</i>	California Pinyon	2 gal	16'	16'	16'	
DM	<i>Diospyros maritima</i>	Mission Blue Elderberry	2 gal	16'	16'	16'	
PA	<i>Populus alba</i>	Poplar	2 gal	16'	16'	16'	

CUCAMONGA / MILL CREEK WATERSHED WATER QUALITY PROJECT

# Native habitats support endangered or threatened birds

Prado Basin is home to more than 300 species of plants, 13 species of reptiles, 47 species of breeding birds, 11 raptor species and 23 mammal species, some of which are endangered or threatened. Three bird species you might observe at Mill Creek Wetlands include:

Can you spot these birds and the plants they rely on?

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**Black Willow**  
*Salix goodingii*

**Arroyo Willow**  
*Salix lasiolepis*

**Least Bell's Vireo**  
*Vireo bellii pusillus*  
ENDANGERED

Willow Riparian Woodland habitats bordering streams and rivers are valuable wildlife habitat due to the many opportunities created by the layering of trees, shrubs, grasses and aquatic vegetation. Prado Basin provides some of Southern California's best habitat for the Least Bell's Vireo, which relies on the Black Willow and Arroyo Willow found at the edges of the open water in the treatment basins for cover and shelter, food and nesting from March through September.



**Purple Needlegrass**  
*Nassella pulchra*

**California Wild Rye**  
*Leymus species*

**Burrowing Owl**  
*Athene cunicularia*  
SPECIES OF SPECIAL CONCERN

Burrows made by ground squirrels in open grassland areas are the ideal home of the tiny burrowing owl, one of the smallest raptor species in North America. Their food source includes mice and insects that live on the seeds, roots, sap and leaves of the native grasses surrounding the desilting basin.



**California Sycamore**  
*Platanus racemosa*

**Fremont Cottonwood**  
*Populus fremontii*

**Cooper's Hawk**  
*Accipiter cooperii*  
THREATENED

The Cooper's Hawk is one of eleven raptor species (hawks, eagles, falcons, owls, etc.) observed in the Prado Basin. Raptor habitat requirements include grasslands that support their food source which includes mice, voles and insects. In order to spot their prey, raptors need tall trees from which to view open areas from a safe place. Cooper's Hawk prefers streamside riparian forests above other forest habitats for perching and nesting.

# Meet the work horses: water-purifying plants

DRAFT

*In this outdoor factory, plants and microorganisms are the workers. They may look simple, but they're doing a complex job -- quietly working at filtering out pollutants.*

Polluted stormwater flows in, and comes out clean. Expert cleaners? These plants are naturals!



SHALLOW WETLAND SPECIES

DEEP WETLAND SPECIES



**1 Sedge**  
*Carex species*

Sedges grow in shallow water. The plant's dense root mass is ideal for erosion control where wind whipped waves threaten to erode the basin edge. The rhizomes of the sedge act in the same way as bulrush to remove bacteria and pathogens out of the water.



**2 Rush**  
*Juncus species*

Rushes have the capability of reducing pathogens and bacteria such as E. coli and salmonella by up to 90% in just 2 hours of contact in the water. Given more time in polluted water, rushes will also remove heavy metals including cobalt, copper, manganese, nickel and zinc.



**3 Cattail**  
*Typha species*

Cattail species are best known for their ability to uptake and store excess nitrogen, and phosphorus from fertilizers and manure, as well as metals. Cattails will eventually come into the wetlands on their own and naturalize by wind, water, and birds transporting the seeds.



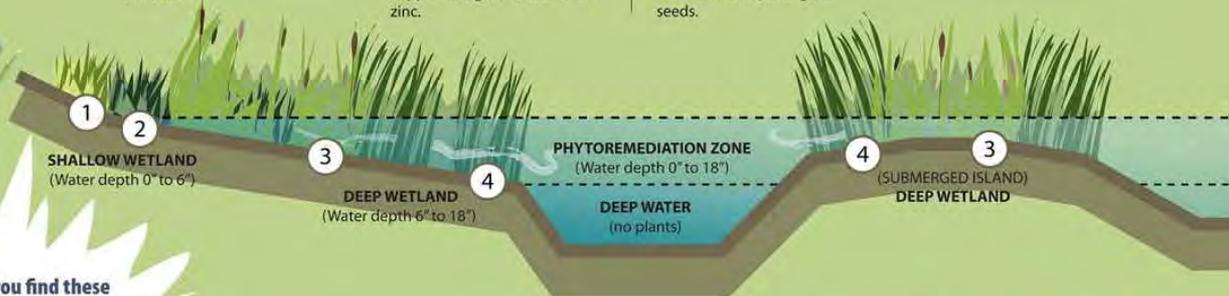
**4 Bulrush**  
*Scirpus species*

The Bulrush rhizomes (roots) form a dense matrix for beneficial bacteria to remove harmful bacteria, and break down oil, organics, and nutrients. Bulrush also accumulates heavy metals; this is called phytoremediation.

Mill Creek Wetlands



Can you find these plants? Which ones like the most water?



CUCAMONGA / MILL CREEK WATERSHED WATER QUALITY PROJECT

# How does this natural water cleaning system work?

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Mill Creek Wetlands

### A Combination of Nature + Engineering

Constructed treatment wetlands are designed to replicate the water-cleansing processes of natural wetlands.

### A Win-Win-Win

Compared to traditional treatment facilities, these constructed wetlands will improve water quality naturally – and also provide wildlife habitat and public recreation. They're also designed so water moves purely by gravity, eliminating the need for man-made energy sources.



**1** **Divert the water**  
Like a straw, the **diversion structure** diverts water from Cucamonga Creek and sends it to the wetlands.

**2** **Drop the sediment**  
As water flows into the wide **forebay/ desilting basin**, it slows down, leaving sediment and trash behind. This basin is cleaned out regularly.

**3** **Filter through wetland plants and microorganisms**  
Next, the water moves slowly through the **wetland basins**, where plant roots (rhizomes) create a dense home for microorganisms. This invisible army breaks down water pollutants and removes them. Plants also take up excess nutrients.

**4** **... and out you go!**  
Now filtered, the diverted water flows down the **outlet structure** and out to Mill Creek, which eventually joins the Santa Ana River.

*Plants and active microorganisms are cleaning Cucamonga Creek's stormwater in these constructed treatment wetlands.*

Why is this needed?  
Before development, open land absorbed rainfall naturally. But now, houses, cities, and pavement cover the land, causing rainwater and irrigation to spill onto the streets.

All that urban runoff washes bacteria, motor oil, pesticides, fertilizers, manure and trash right into Cucamonga Creek.

The constructed treatment wetland basins around you filter the polluted stormwater, so that clean water enters Mill Creek, the Santa Ana River, and finally, the Pacific Ocean.



# Integrated Partnerships Integrated Solutions



Key Partnerships ~ Partnership Keys



# Integrated Partnerships Integrated Solutions



*Partnership Challenges*

Perspectives  
Approaches  
Goals  
Vision



Solutions  
Innovation  
Commitment  
Reality

*Common Vision ~ Common Solution*

# Integrated Partnerships Integrated Solutions

*From Vision to Reality*



# Integrated Partnerships Integrated Solutions

Mill Creek Wetlands



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Mill Creek Wetlands

