

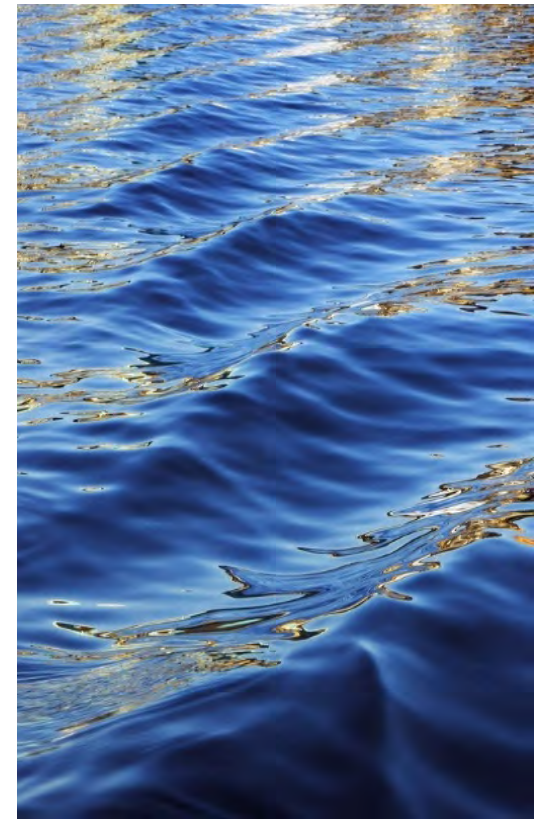
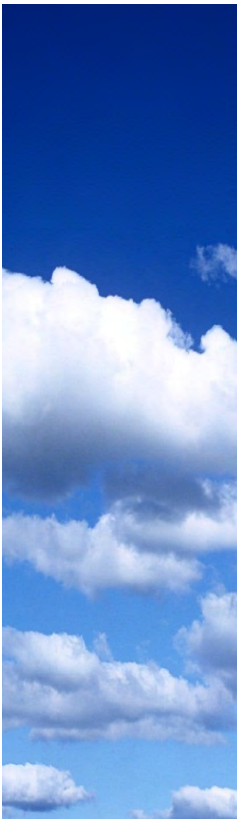
# Stormwater Programs

BIA Meeting  
June 5, 2014

Jason Uhley

Chief of Watershed Protection

Riverside County Flood Control  
and Water Conservation District





# Presentation Outline

- Clean Water Act Stormwater Program 101
- Regional stormwater issues
- Development Community Impacts
- Efforts to streamline regulations
- Discussion

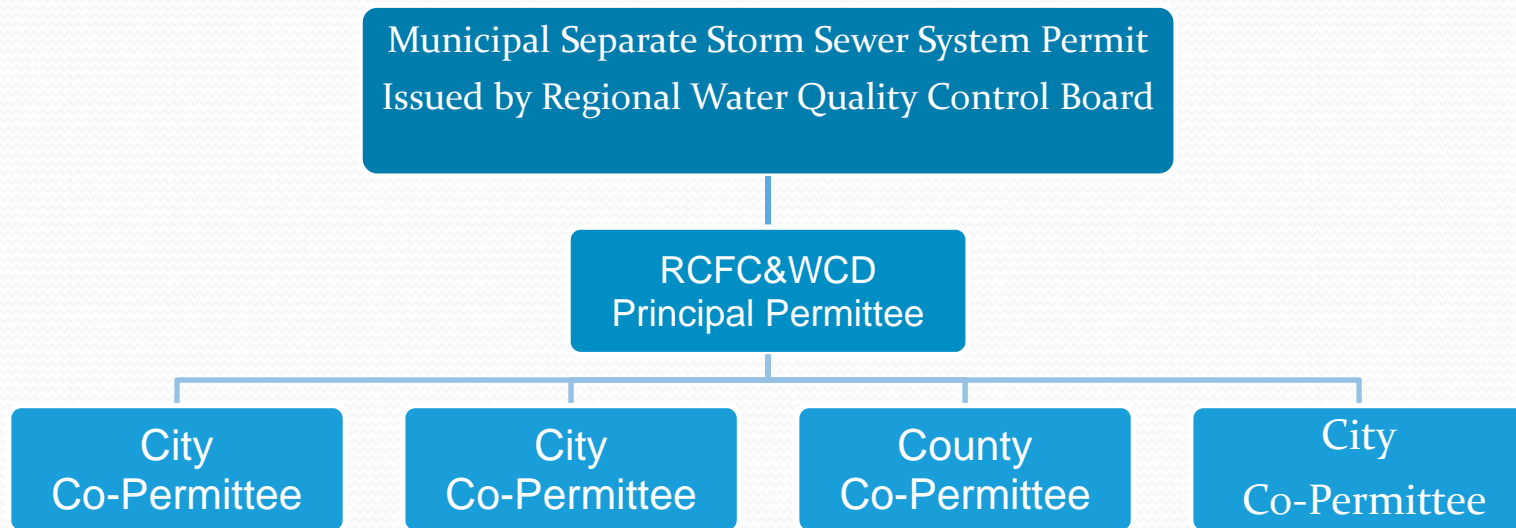
# Federal Clean Water Act

## National Pollutant Discharge Elimination System (NPDES)



- 1969 Time Magazine Article
- 1972 federal Clean Water Act
  - Industrial waste streams
  - Wastewater treatment
- 1987 NPDES Stormwater Amendments
- 1990 Early Municipal Storm Sewer System (MS4) Permits

# Municipal Separate Storm Sewer System Permit Permit Compliance Structure



Issued to municipal operators of storm drains (cities and County)

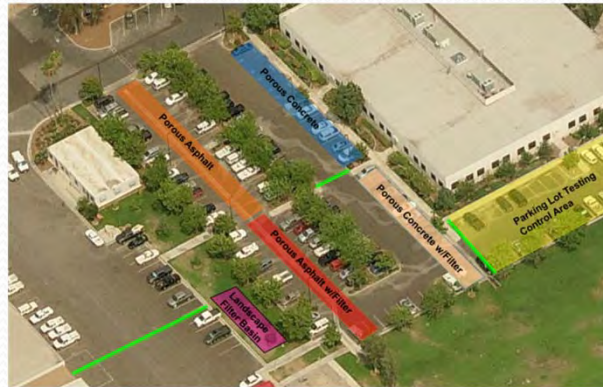
Effectively requires:

- Elimination of non-stormwater discharges to storm drains
- Management of pollution from storm drains

# Basic Compliance Programs



Code Enforcement



Public Works Project Controls / Urban Retrofit



New Development Controls



Education/Outreach



Municipal Activities



Business Inspection Programs



# Presentation Outline

- Clean Water Act Stormwater Program 101
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Santa Ana River near Van Buren



## Santa Ana River

- Bacteria levels recorded above water quality standards

## Cause

- *Bacterial contamination*

## Common Bacteria Sources

- Sewer cross connections/exfiltration
- Failed septic systems
- Improper pet waste disposal
- Homeless encampments
- Inadequate home/activity/swimming sanitation
- Natural sources (wildlife, vegetation, regrowth)



## Lake Elsinore / Canyon Lake

- Algal blooms
- Fish kills

### Cause

- **Nutrients**

### Common Nutrient Sources

- Excessive fertilizer use
- Improper yard waste disposal
- Pet waste
- Detergents
- Leaking septic
- Agriculture/Dairies
- Natural sources (wildlife, vegetation, atmosphere)





## Santa Margarita Lagoon, River and tributaries

- Algal blooms and low dissolved oxygen

### Cause

- **Nutrients**

### Common Nutrient Sources

- Excessive fertilizer use
- Improper yard waste disposal
- Pet waste
- Detergents
- Leaking septic
- Agriculture
- Natural sources (wildlife, vegetation, atmosphere)



# Riverside County watch list



Example of stream modification caused by increased runoff in Orange County

- Trash
- Ant Control Pesticides
- Automotive wear bi-products
  - Iron – tires
  - Copper – brake pads
  - Lead – wheel weights
- Stream modification from increased urban runoff

# \$290,000,000 Parcel Tax proposed in LA

## L.A. County asking property owners to support stormwater runoff tax

By Christina Villacorte, Staff Writer

Posted: 12/06/2012 09:31:56 PM PST

Updated: 12/06/2012 10:10:46 PM PST



This is the Tujunga Wash at Vanowen Street and Fulton Avenue in Valley Glen, Calif. (Dean Musgrove/Staff Photographer)

2.2 million properties  
\$290,000,000 annually  
\$100/home  
\$10,000+ for business  
School Districts

# San Diego's stormwater bill: \$4 billion

Nobody really knows the price tag of California's new standards

By **Dan McSwain** 5 P.M. FEB. 17, 2014

PRINT

COMMENTS

8



William Svec, a biologist with the city of San Diego Transportation and Stormwater Department, left, records information while intern Sean Mulderig, right, takes water samples from a storm drain system channeled creek along Murphy Canyon Road. / photo by Howard Lipin ^ U-T

## San Diego City Stormwater:

\$4 billion over 17 years.

Businesses and consumers will spend billions more.

## Comparison Statistics:

unfunded pension liability:  
\$2.3 billion

Total revenue: \$2.75 billion

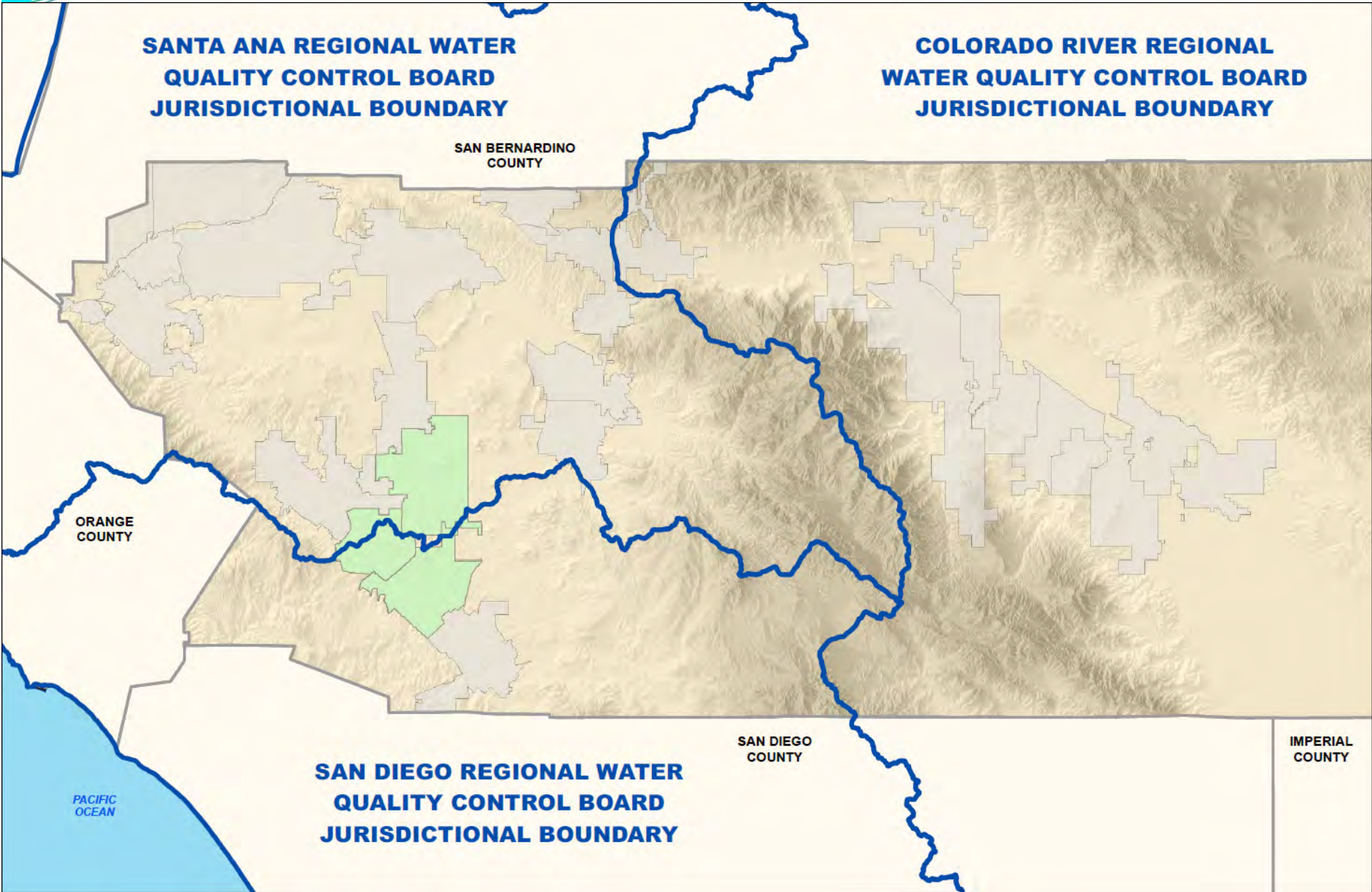


California's quest for clean water is about to get very, very expensive.



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# New Development Permit Program Effective Dates

Permit (Adoption Date)	Onsite Development Requirements	Regional Solutions
Santa Ana (2011)	April 2013	Ongoing
Santa Margarita (2010)	July 2014	Ongoing
Santa Margarita Regional (2013)	August 2018	Ongoing
Whitewater (2013)	August 2014	Ongoing

# Priority Development Projects

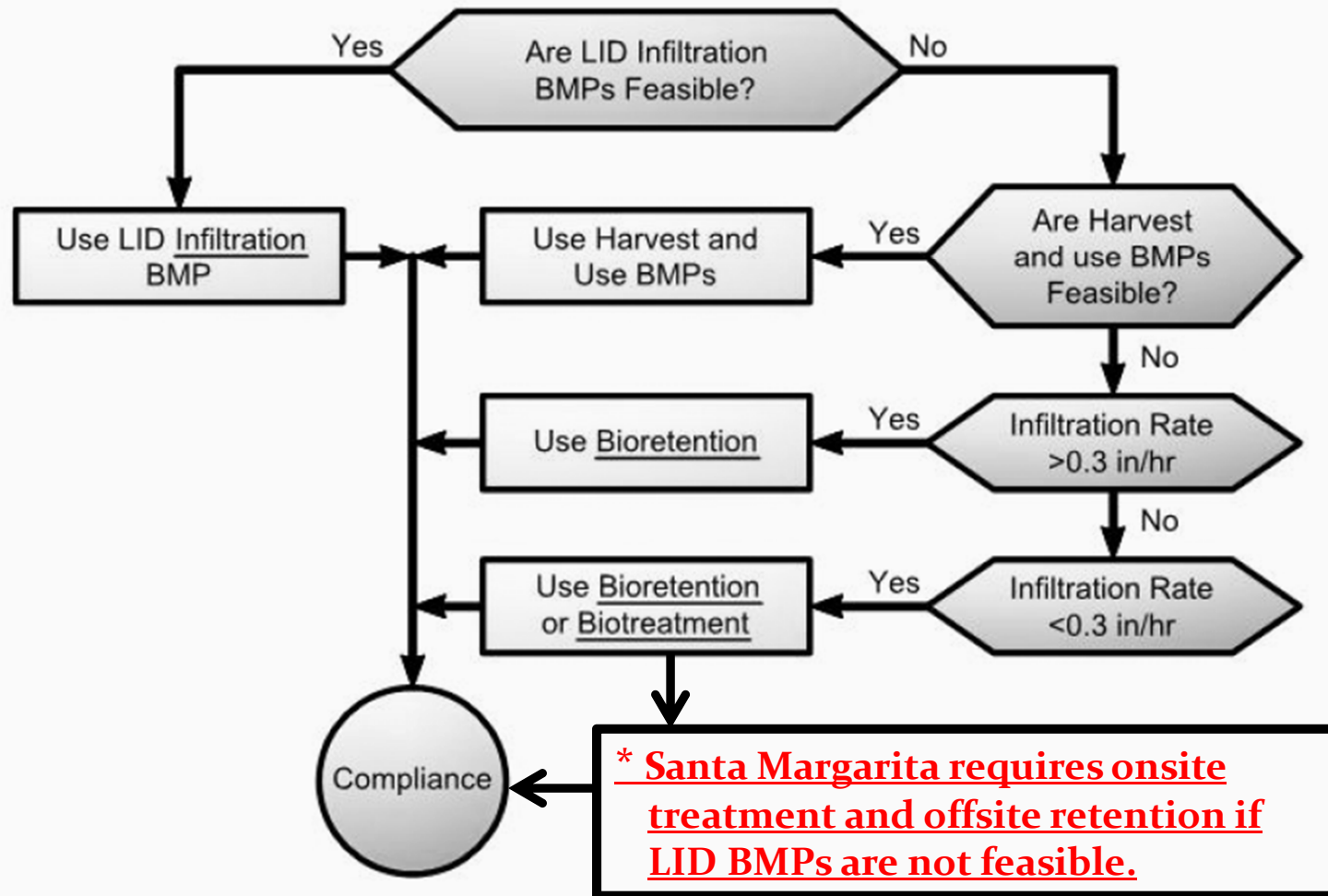
***PDP's include (Santa Margarita Permit):***

<b>New Development Projects</b>	<b>Threshold</b>
<i>New Development Projects</i>	<i>10,000 SF new Impervious surface</i>
<i>Automotive Repair Shops</i>	<i>Dependent on SIC Code</i>
<i>Restaurants</i>	<i>5,000 SF</i>
<i>Hillside Developments</i>	<i>5,000 SF</i>
<i>Environmentally Sensitive Areas</i>	<i>2,500 SF Impervious surface</i>
<i>Parking Lots</i>	<i>5,000 SF Impervious surface</i>
<i>Streets, Roads, Highways and Freeways</i>	<i>5,000 SF Impervious surface</i>
<i>Retail Gasoline Outlets</i>	<i>5,000 SF or ADT &gt;100</i>
<i>Pollutant Generating projects disturbing over 1 acre</i>	<i>1 acre disturbed area</i>

<b>Redevelopment Projects</b>	
<i>Project creates, adds, or replaces at least 5,000 square feet of impervious surfaces on an already developed site AND The existing development AND/OR the proposed redevelopment project meets the criteria in Table 1-1 of the SMR TGD</i>	
<b>50% Rule</b>	
<i>Project results in an increase of <b>less than 50%</b> of the impervious surfaces compared to the previously existing development, and the existing development was not subject to WQMP requirements, the WQMP applies only to the addition or replacement, and not to the entire development.</i>	<i>Project results in an increase of <b>less than 50%</b> of the impervious surfaces compared to the previously existing development, and the existing development was not subject to WQMP requirements, the WQMP applies only to the addition or replacement, and not to the entire development.</i>



# Water Quality Retention Hierarchy



# Hydromodification Mitigation

- Guilty until proven innocent
- Santa Margarita
  - Continuous Simulation Modeling
  - Address changes to sediment load





# Big Picture

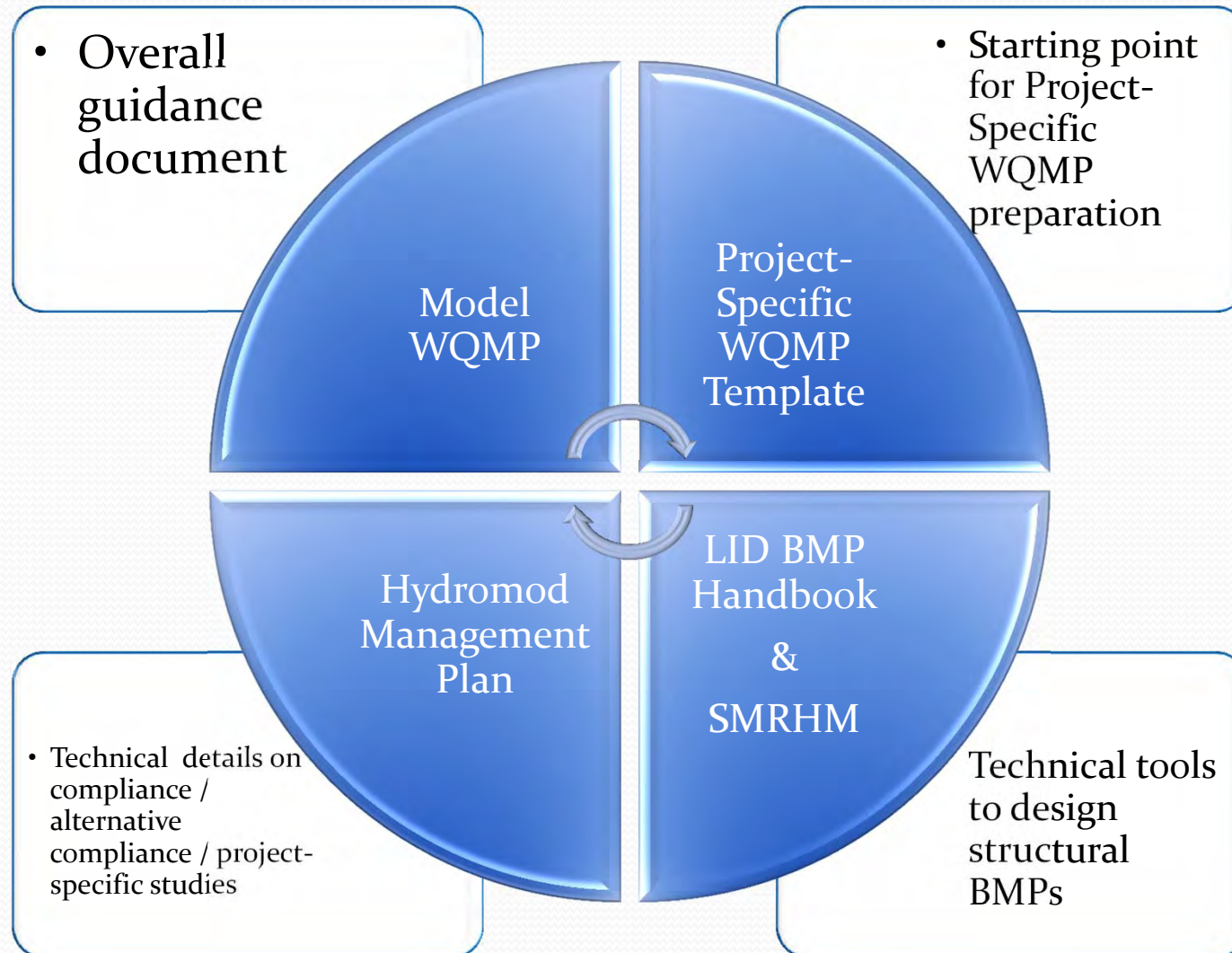
- More projects – down to 5,000 sq. ft.
- Up to 4-8% of land area for mitigation
- Limited grandfathering (Santa Ana only)
- Limited flexibility for regional/offsite solutions



# Presentation Outline

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# Standardized Guidance



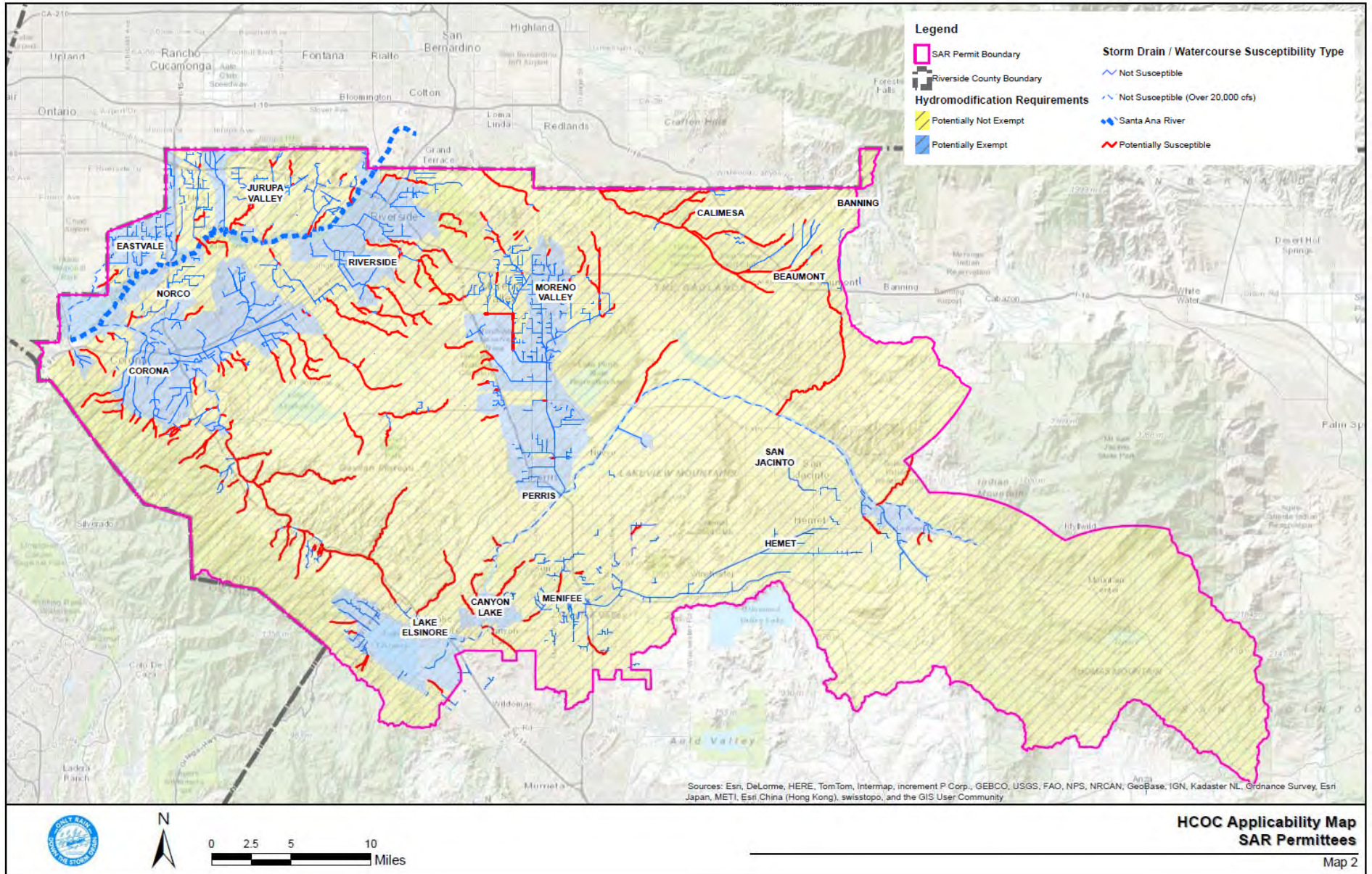
# Credits Program

TABLE 3-8. Water Quality Credits for Applicable Project Categories

<b>Project Category</b>	<b>Water Quality Credit (% of DCV) <sup>1</sup></b>
Redevelopment Projects that reduce the overall impervious footprint of the project site	Percentage of site imperviousness reduced
Historic district, historic preservation area, or similar areas	10%
Brownfield redevelopment	25%
Higher density development, 7 units/acre or more	5%
Higher density development, vertical density	20%
Mixed use development, transit oriented development or live-work development	20%
In-fill development	10%

<sup>1</sup> Maximum total of water quality credits for a project is 50%

# Hydromodification Mitigation Plan



# Riverside County Flood Control and Water Conservation District



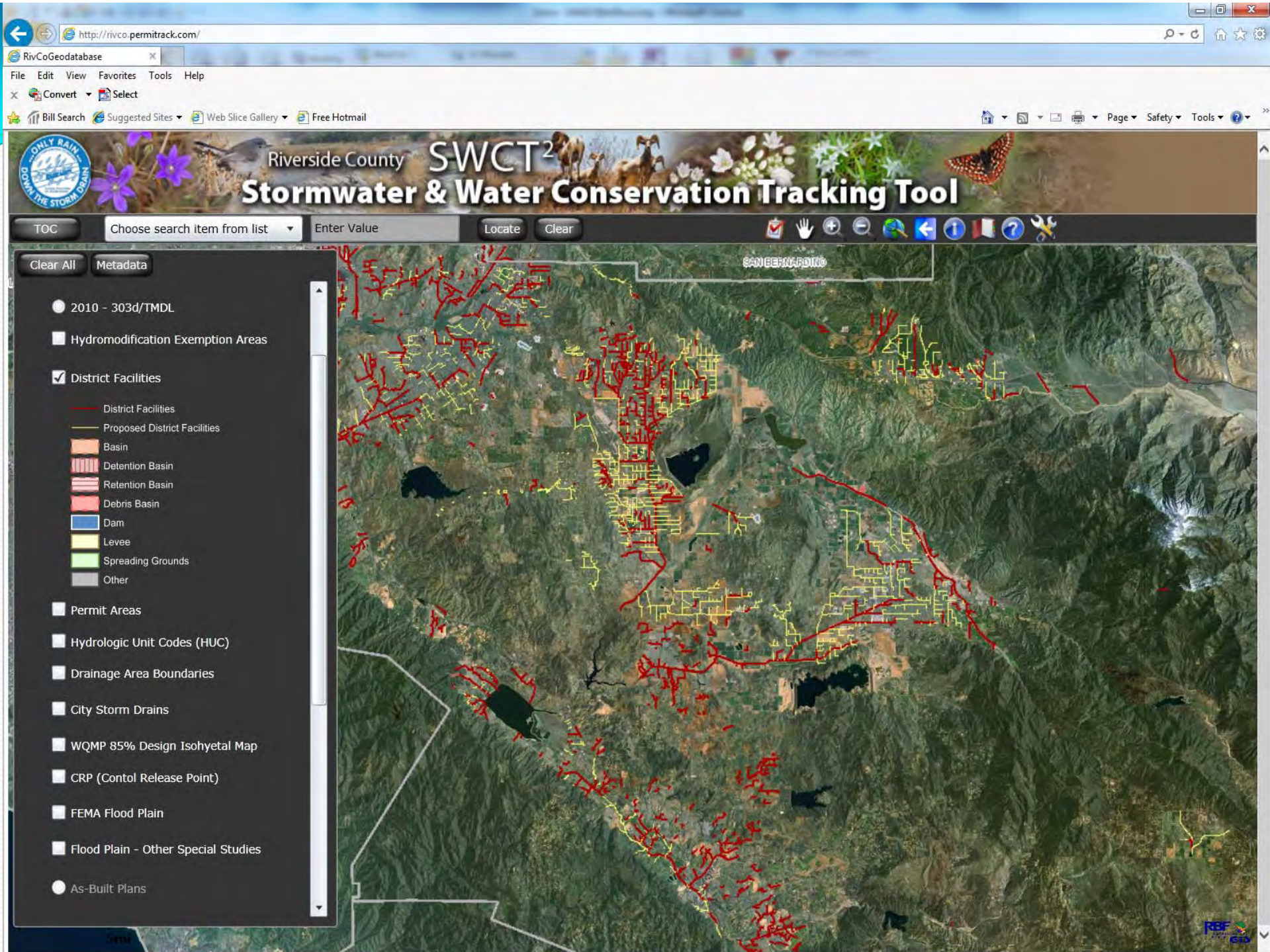
- Flood Hazard Reduction
- Water Conservation
- Water Quality

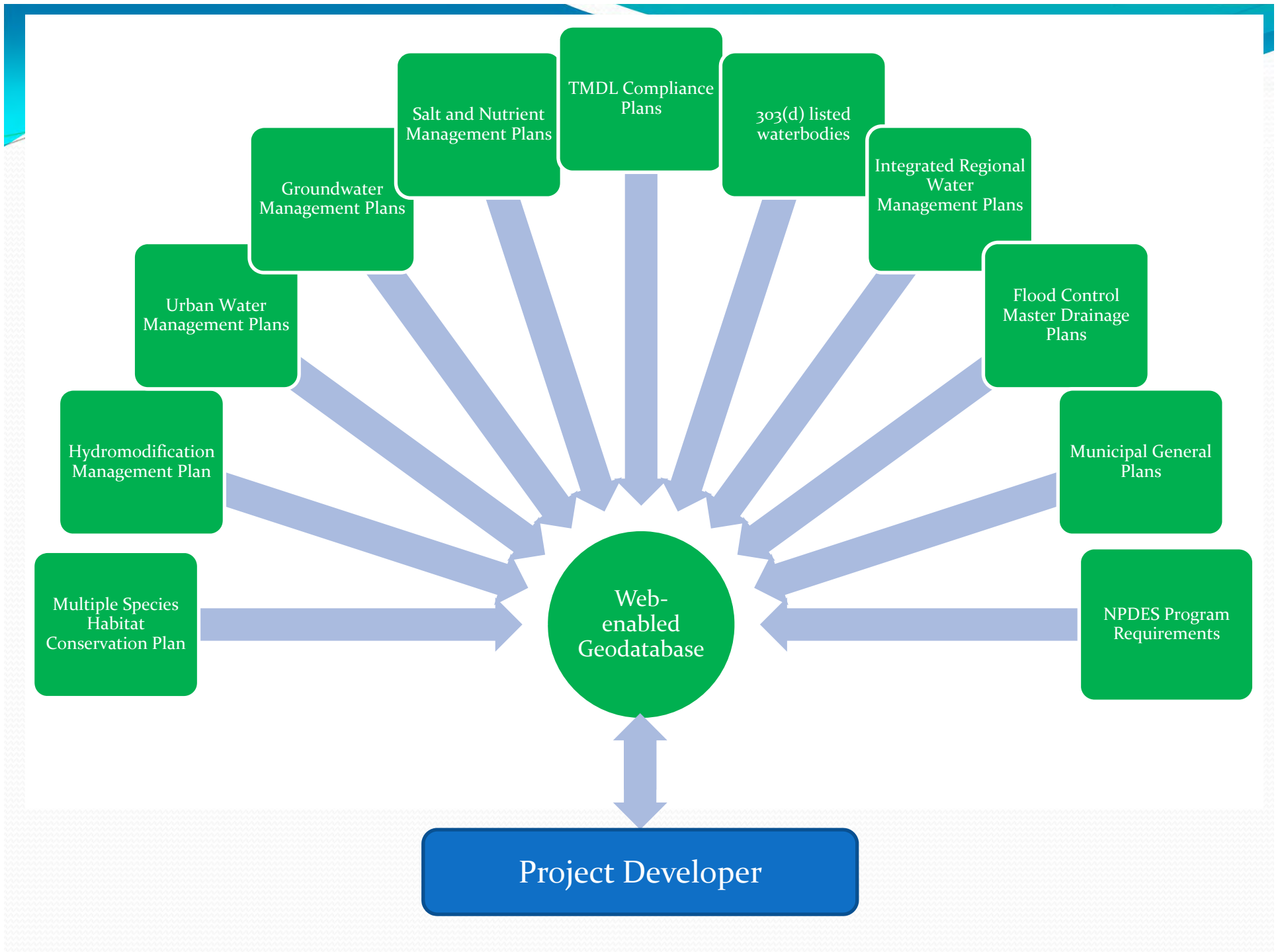


# Regional Planning and Partnerships



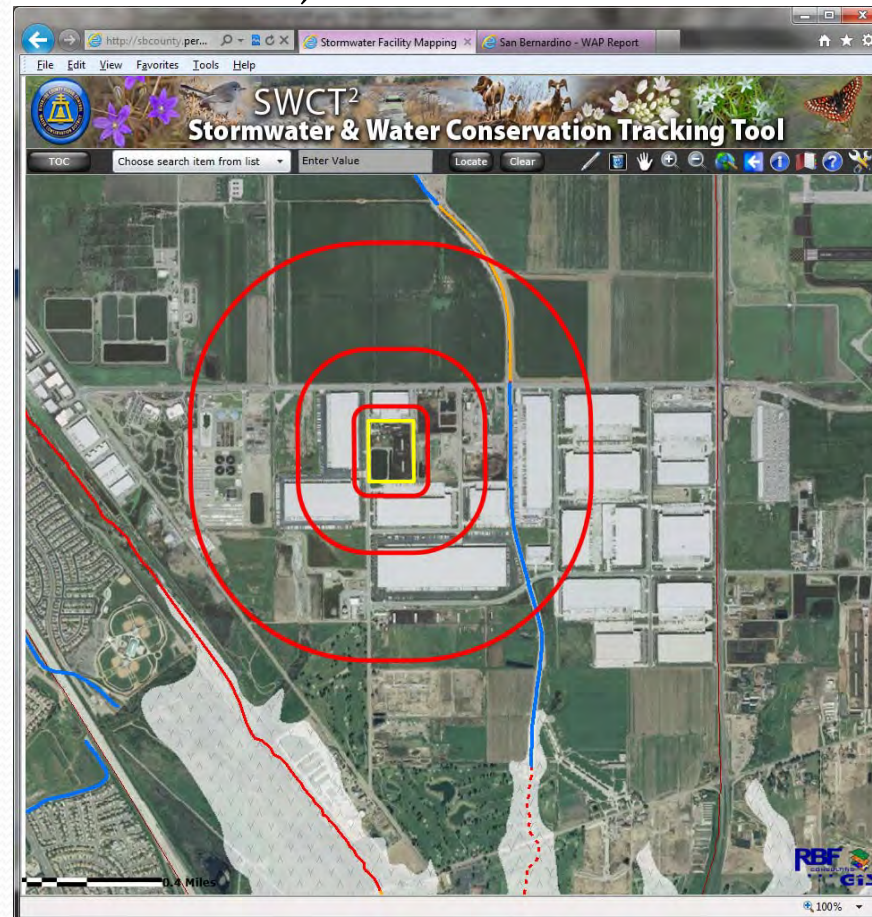
- Desert Hot Springs MSP
- Lakeland Village MDP (Lake Elsinore)
- Lake Matthews Water Quality MDP
- Arlington Groundwater Basin (Riverside)
- Temescal Basin Groundwater Study (Corona)
- WRCOG I-215 Corridor Study (Temecula/Murrieta)
- Temescal Floodplain Restoration
- Mockingbird Canyon Geomorphic Study
- Riverside County Geodatabase





# Site Specific Assessments

Outline Project Site or Select Parcels



# Automated Data Mining

- Site Specific
- Interactive
- Ease of Use
- Concise Results

### Example Application

1. Identify Subarea of Interest
2. Click on Subarea
3. Review table of attributes

Attribute	Description
Soils	Coarse Alluvium, Pervious (> 2 in/hr)
Groundwater Quality	No Known Contaminants,
Groundwater Levels	30+ feet below ground surface
Groundwater Resources	Municipal Recharge Benefit
Pollutant Loads from Catchment	Cu, Pb, Zn
Opportunities for regional EMPs	High availability of open parcels
Vulnerability of downstream stream system	Medium-Low

WQMP Options/Technical Preferences

Option 1	Option 2	Option 3

Geosyntec

### Example Illustration of Comparison of Benefits Full LID vs. Full Regional Approach

**Assumptions:**

- Upper watershed (30%) is good for infiltration
- Watershed is about 70% developed (Total)
- New Development (subject to WQMP req.): 20% of Total Watershed

**Hypothetical Benefits:**

- Groundwater Recharge (% of total runoff)
  - LID = 4.2%
  - Regional = 15%
  - (Does not account for higher ET losses in LID)
- Total Treatment water recharge (% of total runoff)
  - Full LID = 14%
  - Full Regional = 20%

**Scenario 1: Standard LID Example**

- 30% of New Development overlays good soils
- 70% of New Development overlays poor soils
- New Development is 20% of total watershed
- Design Criteria 85<sup>th</sup> percentile (70% capture)
- 1000 acre watershed (50% impervious, 12 in/yr)
- Total annual runoff volume = 500 acre-ft

LID implemented in ALL New Development Areas

**Benefits of LID Approach:**

- GW Potential Recharge = 20% of watershed x 30% over good soils x 70% capture = 4.2% of annual runoff to GW (21 AF)
- Quality only = 20% of watershed x 70% over good soils x 70% capture = 10% of annual stormwater runoff (50 AF)
- New Development (20% of watershed)
  - 70% overlays poor soils
  - 1000 acre watershed (50% impervious, 12 in/yr)
  - Total annual runoff volume = 7.5 acre-ft
- LID implemented in ALL New Development Areas
  - 30% overlays good soils
  - 70% overlays poor soils
  - 20% of watershed
  - 1000 acre watershed (50% impervious, 12 in/yr)
  - Total annual runoff volume = 14% of watershed (70 AF)

**Scenario 2: Regional Approach**

- 30% of New Development overlays good soils
- 70% of New Development overlays poor soils
- New Development is 20% of total watershed
- Equiv Design Criteria 85<sup>th</sup> percentile (70% capture)
- 1000 acre watershed
- Total annual runoff volume = 500 acre-ft
- Design WQV 7.5 AF

**Regional design concepts:**

In upper watershed (infiltration)


- Total runoff volume (50% of total) = 150 acre-ft
- Design capacity 4 acre-ft
- Total annual capture percentage = 50%?
- Total annual volume recharged = 75 acre-ft
- % of GW recharged (relative to total watershed) = (36% of Scenario 1)

In lower watershed (poor soils)

- Total runoff volume = 350 acre feet
- Design capacity 100 acre-ft
- Total annual capture percentage = 20%?
- Total annual volume recharged = 70 acre-ft (12% of Scenario 1)

3.04 Total annual recharged = 145 acre-ft (29% of annual runoff, based on capture = 50% in upper watershed, 20% in lower watershed)

# Development Project Reports


**DRAFT**

## SWCT<sup>2</sup> Stormwater & Water Conservation Tracking Tool

**DRAFT**

### WQMP Project Report

**County of Riverside Stormwater Program**

Santa Ana River Watershed Geodatabase

Tuesday, March 26, 2013

Note: The information provided in this report and on the Stormwater Geodatabase for the County of Riverside Stormwater Program is intended to provide basic guidance in the preparation of the applicant's Water Quality Management Plan (WQMP) and should not be relied upon without independent verification.

<b>Project Site Parcel Number(s):</b>	333050015, 333050034, 333050016, 333050014, 333230001, 333050035
<b>Project Site Acreage:</b>	36.586
<b>Watershed(s):</b>	SANTA ANA
<b>Closest Receiving Waters:</b> <small>(Applicant to verify based on local drainage facilities and topography.)</small>	<b>Project Name - SUN CITY - MAYWOOD BEND STORM DRAIN</b> <b>Facility Number - RCFC804</b>
<b>Closest channel segment's susceptibility to Hydromodification:</b>	Susceptible
<b>Downstream hydromodification susceptibility:</b>	Susceptible
<b>Is this drainage segment subject to TMDLs?</b>	No
<b>Are there downstream drainage segments subject to a TMDL?</b>	Yes
<b>Is this drainage segment a 303d listed stream?</b>	No
<b>Are there 303d listed streams downstream?</b>	Yes
<b>Project Site Onsite Soil Group(s):</b>	B, C, D
<b>Environmentally Sensitive Areas within 200':</b>	Area 3: Allium munzii, Ambrosia pumila, Dudleya multicaulis, Navarretia fossalis, Orcuttia californica, Trichocoronis wrightii var wrightii, Athene Cunicularia Hypugaea
<b>Groundwater Depth (FT):</b>	1391
<b>Groundwater Basin:</b>	No Data
<b>Known Groundwater Contamination Plumes within 1000':</b>	No
<b>MSHCP Criteria Cell(s):</b>	No Data
<b>Studies and Reports Related to Project Site:</b>	<a href="#">water_fact_3_7.11</a> <a href="#">CBRP.pdf</a> <a href="#">Romoland MDP</a> <a href="#">San Jacinto River Hydrology MDP</a> <a href="#">Comprehensive Nutrient Reduction Plan</a> <a href="#">IBI Scores - Southern Cal</a> <a href="#">bulletin118_4-sc</a> <a href="#">8039-SAR-Hydromodification</a> <a href="#">West San Jacinto GW Basin Management Plan</a>

[Click here for detailed MSHCP report](#)

# MSHCP Report for Parcels:

Western Riverside County Multiple Species Habitat Conservation Plan (MSHCP)

APN	Cell	Cell Group	Acres	Area Plan	Sub Unit
333050014	Not A Part	Independent	2.25	Sun City / Menifee Valley	Not a Part
333050015	Not A Part	Independent	2.21	Sun City / Menifee Valley	Not a Part
333050016	Not A Part	Independent	2.3	Sun City / Menifee Valley	Not a Part
333050034	Not A Part	Independent	9.27	Sun City / Menifee Valley	Not a Part
333050035	Not A Part	Independent	1.73	Sun City / Menifee Valley	Not a Part
333230001	Not A Part	Independent	19.23	Sun City / Menifee Valley	Not a Part

**HABITAT ASSESSMENTS**

Habitat assessment shall be required and should address at a minimum potential habitat for the following species:

APN	Amphibia Species	Burrowing Owl	Criteria Area Species	Mammalian Species	Narrow Endemic Plant Species	Special Linkage Area
333050014	NO	YES	NO	NO	YES	NO
333050015	NO	YES	NO	NO	YES	NO
333050016	NO	YES	NO	NO	YES	NO
333050034	NO	YES	NO	NO	YES	NO
333050035	NO	YES	NO	NO	YES	NO
333230001	NO	YES	NO	NO	YES	NO

**Burrowing Owl**

Burrowing owl.

**Narrow Endemic Plant Species**

3) Munz's onion, San Diego ambrosia, Many-stemmed dudleya, Spreading navarretia, California Orcutt grass, Wright's trichocoronis

If potential habitat for these species is determined to be located on the property, focused surveys may be required during the appropriate season.

# Storm Drain As-Builts

The image displays a GIS application interface with two main windows. The left window shows a PDF document titled "SOUTH NORCO CHANNEL CONSTRUCTION DRAWINGS" by Riverside County Flood Control and Water Conservation District. The PDF includes a title block, a map of the project area, and a table of contents. The right window shows an interactive map titled "Observation Tracking Tool" over an aerial view of the South Norco Channel area. The map features a legend with categories: Flood Zones, Plumes, Soils, As-Built Plans (As-Built Available in red, No As-Built in blue), and Habitat/Species. A scale bar indicates 3000 feet, and the zoom level is set to 100%.

**PDF Document Content:**

**SOUTH NORCO CHANNEL**

**CONSTRUCTION DRAWINGS**

**BY**

**RIVERSIDE COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT**

**GENERAL NOTES**

1. All construction shall be done in accordance with the latest edition of the California Building Code and the California Fire Code.

2. All construction shall be done in accordance with the latest edition of the California Building Code and the California Fire Code.

3. All construction shall be done in accordance with the latest edition of the California Building Code and the California Fire Code.

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17. All construction shall be done in accordance with the latest edition of the California Building Code and the California Fire Code.

18. All construction shall be done in accordance with the latest edition of the California Building Code and the California Fire Code.

19. All construction shall be done in accordance with the latest edition of the California Building Code and the California Fire Code.

20. All construction shall be done in accordance with the latest edition of the California Building Code and the California Fire Code.

PROJECT NO. 93-0-000

AS-BUILT

**Map Legend:**

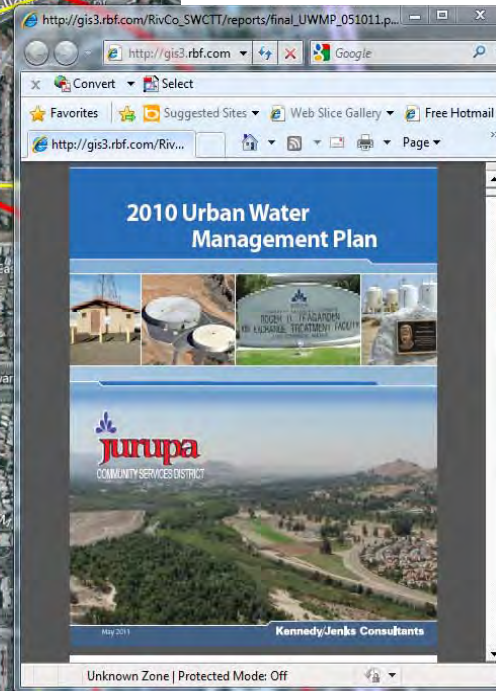
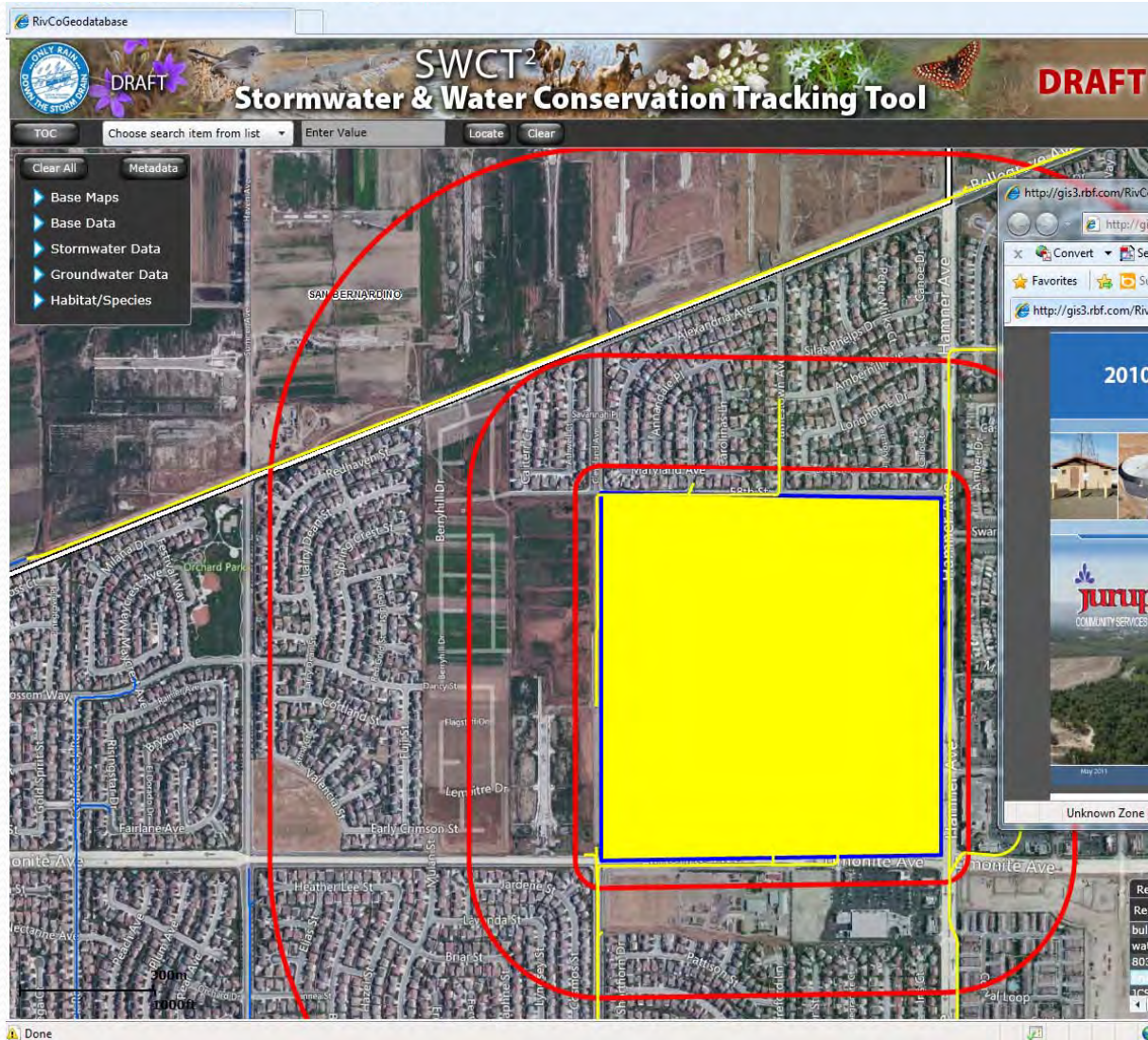
- Flood Zones
- Plumes
- Soils
- As-Built Plans
  - As-Built Available
  - No As-Built
- Habitat/Species

3000ft

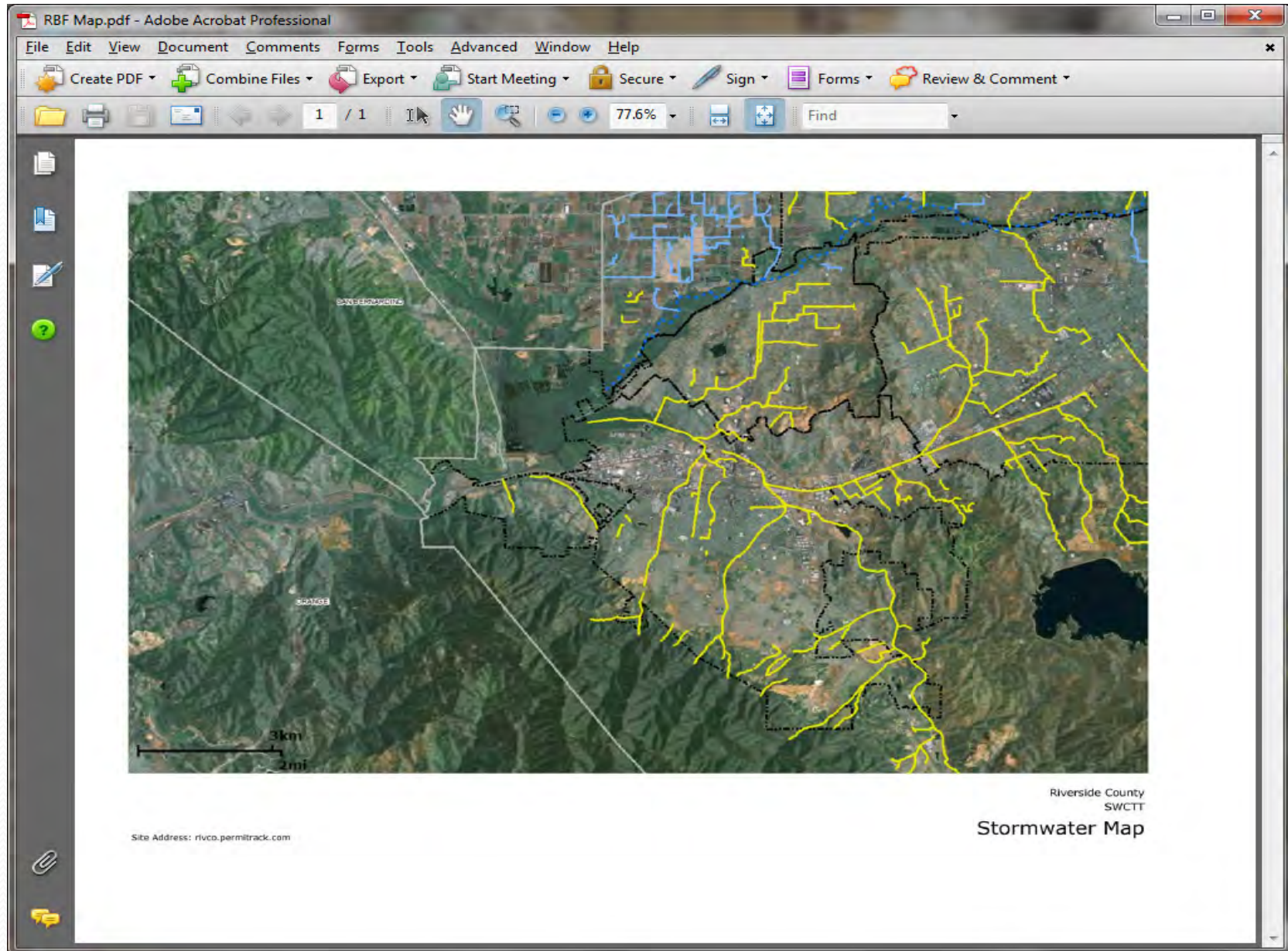
100%



# Surface/Groundwater Management Plans



# Create Maps and Exhibits





# Geodatabase Log-in Information

<http://rivco.permitrack.com/>

Comments: [Dhgarcia@rcflood.org](mailto:Dhgarcia@rcflood.org)

# Closing

- Permit compliance programs approved
- Now developing regional solutions & other alternative compliance options
- Need to ensure next round of permits facilitate regional and alternative compliance paths



BIA Helps Here



# Presentation Outline

- Clean Water Act Stormwater Program 101
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- **Discussion**