

# This presentation premiered at WaterSmart Innovations

[watersmartinnovations.com](http://watersmartinnovations.com)



# Identifying Water Use Efficiency Opportunities for Large Landscapes with GIS

## *Part Deux*

**WaterSmart Innovations Conference**  
**October 9, 2014**  
**Las Vegas, Nevada**



# Metropolitan Water District of Southern California

- Regional water wholesaler to 6 counties, 19 million people, over 5,200 sq mi
  - Growth: ~170,000 people/yr
  - \$1 trillion regional economy
  - ~50% of region's retail water supply





A map of the Metropolitan Water District of Southern California service area. The map shows various water districts and agencies, each color-coded: CALIFORNIA MWD (brown), LAS VEGAS MWD (pink), LOS ANGELES (green), SAN ANGELO VALLEY MWD (brown), INLAND (blue), UTICORPS AGENCY (blue), WESTERN MWD (green), EASTERN MWD (yellow), RIVERSIDE COUNTY (green), SAN DIEGO COUNTY WATER AUTHORITY (blue), and ORANGE COUNTY (orange). Major cities like Los Angeles, San Diego, and Orange are labeled. The map also shows the Pacific Ocean to the west and the United States border to the south. A large, dark green, leafy plant is visible in the bottom left corner, partially obscuring the map.

# Metropolitan Water District Service Area

- 26 member agencies

# Sources of Water for Southern California

Sierra Nevada Mtns / Lake Oroville

LA Aqueduct (Local)

Colorado River Aqueduct  
~20% of supplies

State Water Project  
~30% of supplies

Local  
~45% of supplies

Average Rainfall = 15 inches per year

# Sources of Water for Southern California

Delta

Sierra Nevada Mtns / Lake Oroville

LA Aqueduct (Local)

State Water Project  
~30% of supplies

Local  
~45% of supplies

Colorado River Aqueduct  
~20% of supplies

Average Rainfall = 15 inches per year

# Sources of Water for Southern California

Sierra Nevada Mtns / Lake Oroville

LA Aqueduct (Local)

Colorado River Aqueduct  
~20% of supplies

State Water Project  
~30% of supplies

Local  
~45% of supplies

Average Rainfall = 15 inches per year

# Sources of Water for Southern California

Sierra Nevada Mtns / Lake Oroville

LA Aqueduct (Local)

Colorado River Aqueduct  
~20% of supplies

State Water Project  
~30% of supplies

Local  
~45% of supplies

Average Rainfall = 15 inches per year

# Sources of Water for Southern California

Sierra Nevada Mtns / Lake Oroville

LA Aqueduct (Local)

Colorado River Aqueduct  
~20% of supplies

State Water Project  
~30% of supplies

Local  
~45% of supplies

Average Rainfall = 15 inches per year

# Sources of Water for Southern California

Sierra Nevada Mtns / Lake Oroville

LA Aqueduct (Local)

Colorado River Aqueduct  
~20% of supplies

State Water Project  
~30% of supplies

Local  
~45% of supplies

Average Rainfall = 15 inches per year

# Sources of Water for Southern California

Sierra Nevada Mtns / Lake Oroville

LA Aqueduct (Local)

Colorado River Aqueduct  
~20% of supplies

State Water Project  
~30% of supplies

Local  
~45% of supplies

Average Rainfall = 15 inches per year

# Sources of Water for Southern California

Delta

Sierra Nevada Mtns / Lake Oroville

LA Aqueduct (Local)

State Water Project  
~30% of supplies

Local  
~45% of supplies

Colorado River Aqueduct  
~20% of supplies

Average Rainfall = 15 inches per year



# Recap (Part *Un*)

## ■ 2009 Water Conservation Act (SBX7-7) “20 x 2020”

- State mandate to reduce urban per capita water use 20% by 2020
- Achieve through conservation & recycled water use



## ■ Helping Large Landscapes Improve Water Use Efficiency

- Landscape surveys & rebates for irrigation equipment
- Performance-based incentives for customized projects
- Recycled water hookups



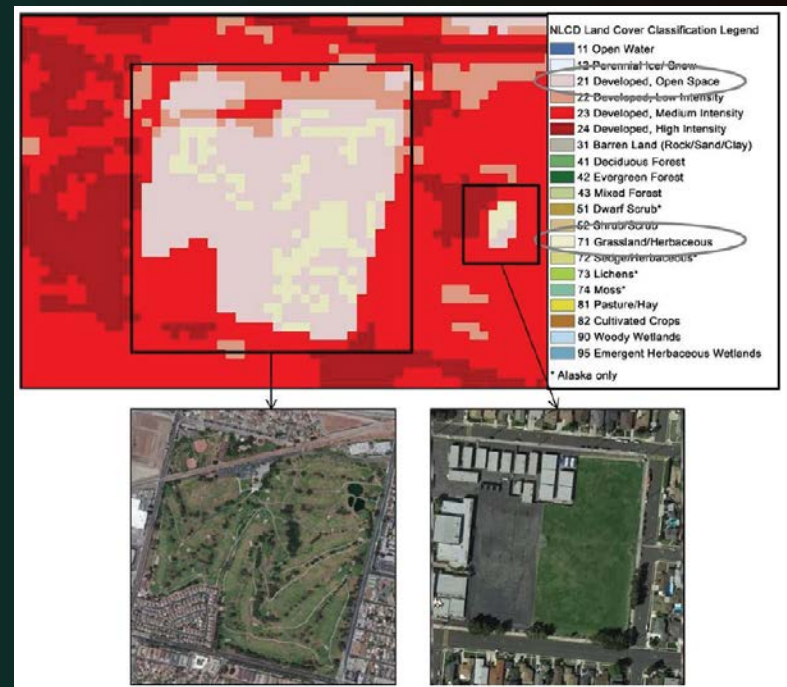
# Landscape Equipment Incentives

- Turf removal
- “Smart” controllers & central systems
- High efficiency rotary sprinkler nozzles
- Large high efficiency nozzles
- Sprinkler flow regulators
- Soil moisture sensors
- Active landscape management



# Project Goals

- Identify and catalog Large Landscape sites
- Overlay Metropolitan's past participation data (sites that have received incentives to retrofit water-conserving landscape equipment)
- Update Metropolitan's recycled water infrastructure data
- Obtain water treatment plant production data





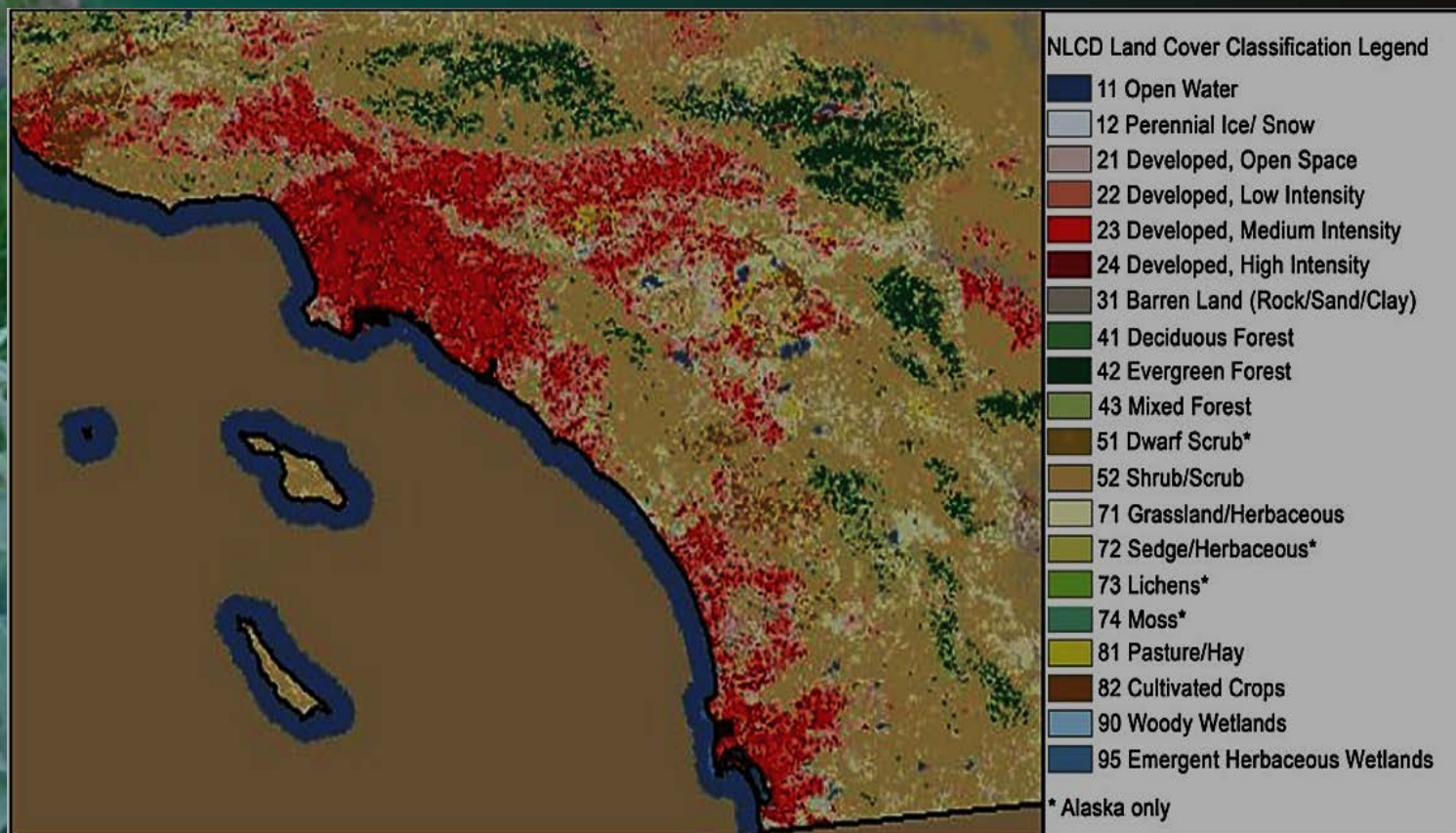
# Large Landscapes

■  $\geq 5$  acres

■ Actively irrigated

■ Public & private

■ Within Metropolitan's service area



# Readily Available Data

- U.S. Geological Survey 2006 30m raster National Land Cover Dataset
- Southern California Association of Governments (SCAG) 2008 Land Use Data
- San Diego Association of Governments (SANDAG) 2012 Land Use data
- ESRI Aerial imagery
- County parcel data (where available)



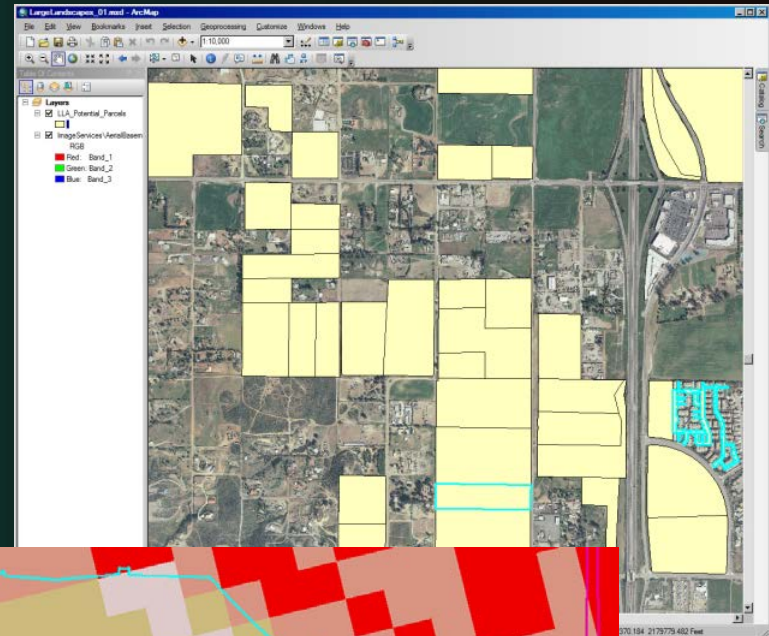
# Working with Data: Choosing Parcels

## ■ Selection criteria

- Larger than 5 acres
- Classified (> 50%) as “Developed, Open Space or Grassland/Herbaceous”

## ■ Not chosen:

- Outside the designated land cover classification
- Less than 5 acres
- LU classification not generally associated with irrigated landscapes

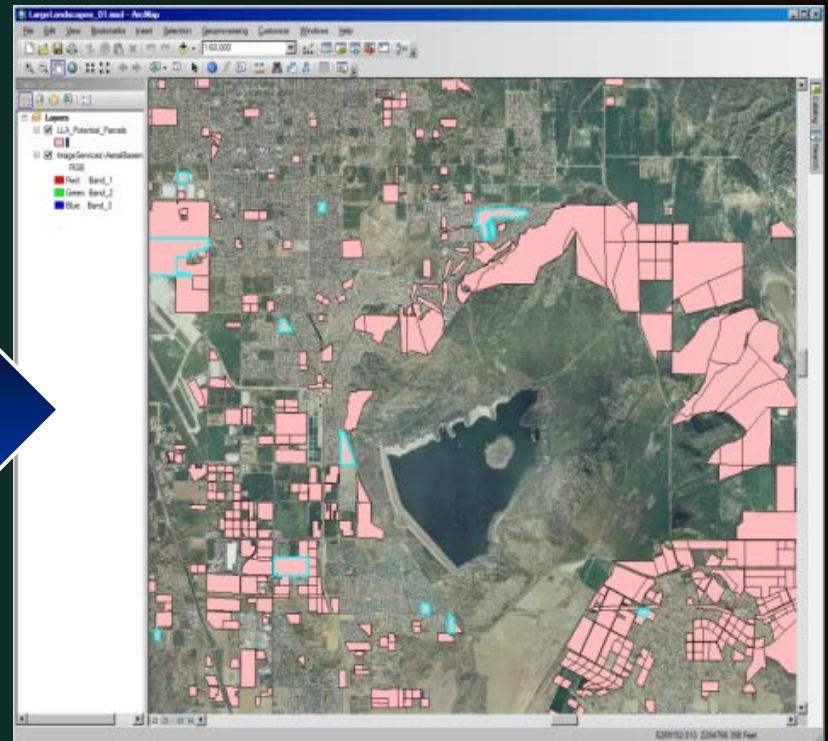
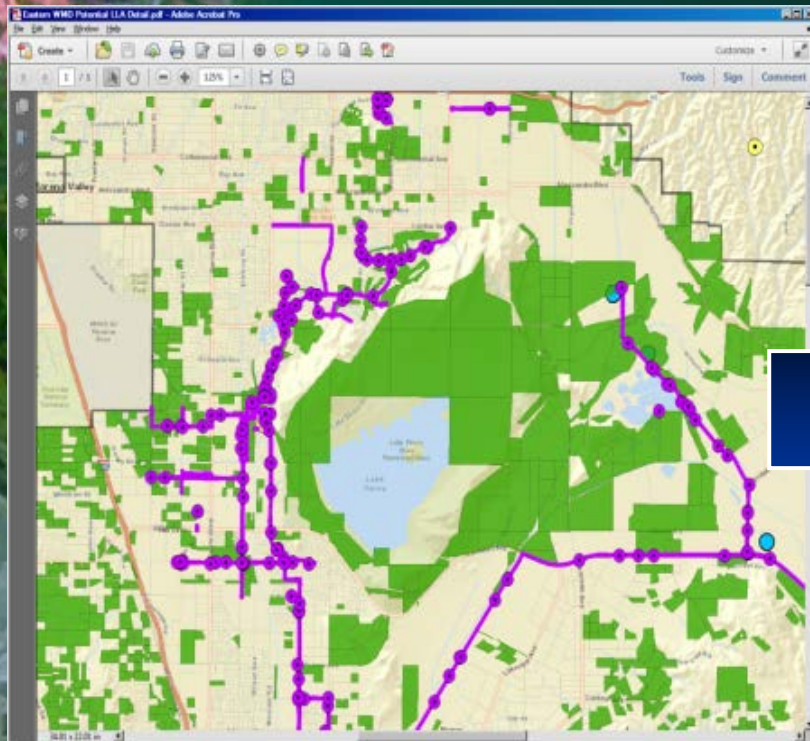




# Working with Data: Choosing Parcels

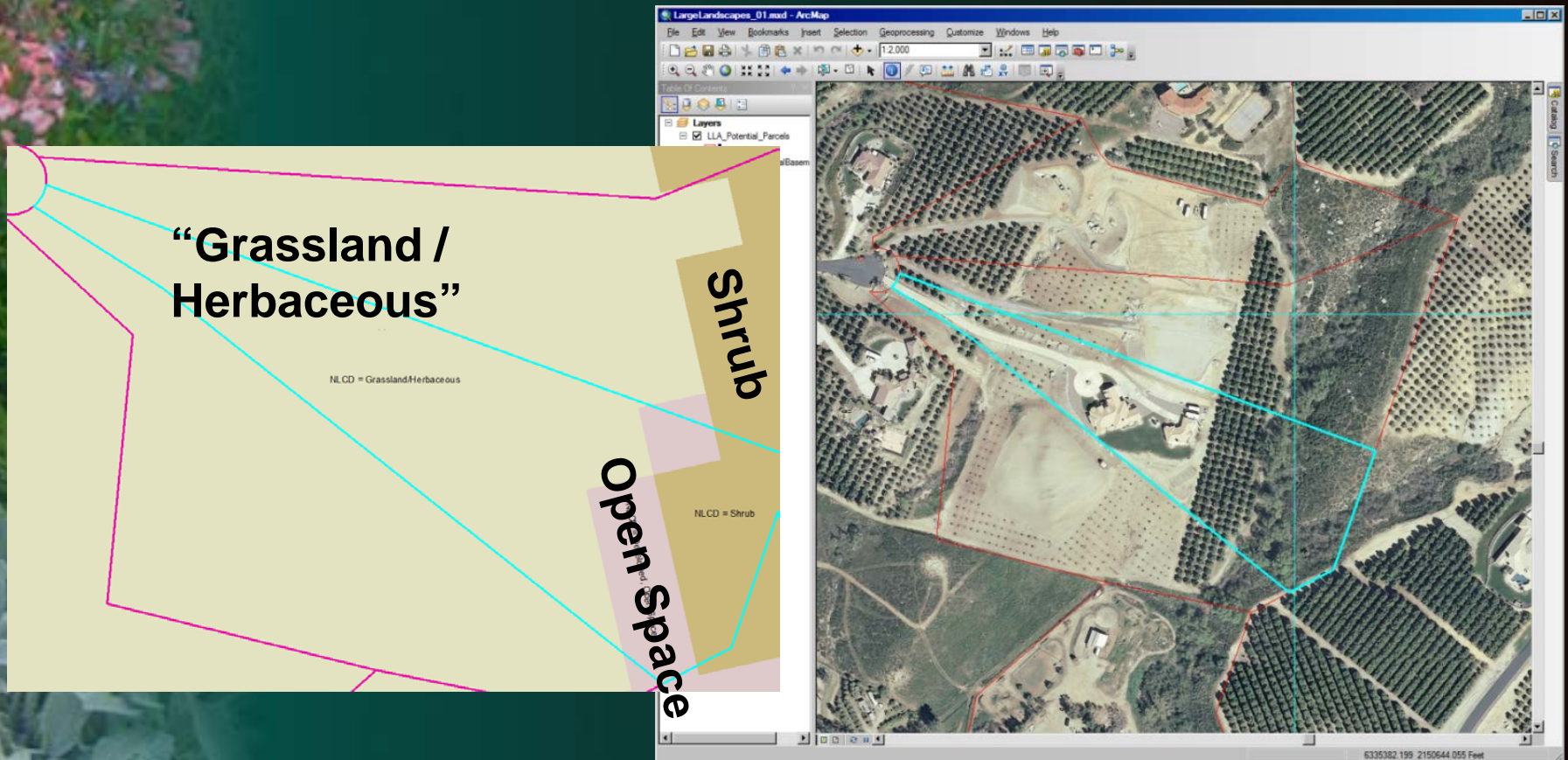
## ■ Filtering

- Land use classification
- Aerial image assessment
- Percentage of NCLD coverage



# Working with Data: Choosing Parcels

- Some “cleaning up” still needed:
  - Recent development can alter landscapes: this irrigated parcel is classified as having ~4.4 acres of NLCD Developed, Open Space and Grassland/Herbaceous within its ~5.2 total acres.





# Recycled Water Infrastructure

- Plants
- Pipelines & connections
- Service points, storage areas
- Production data  
(if/where available)



# Recycled Water Data

## ■ Challenges

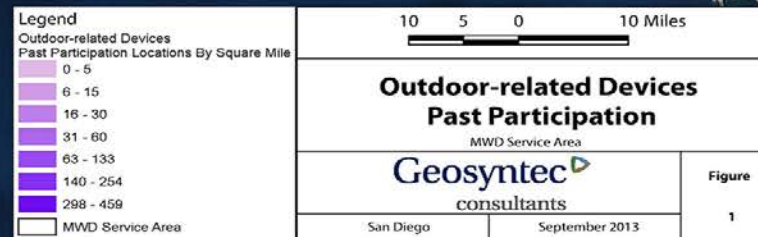
- Not all agencies can/will share data
- Multiple formats (digital/ hard copy/PDF/GIS/etc)
- Production data often not available
- Multiple agencies and agency types: Water Agencies, Water Authorities, Watershed Authorities, Sanitation Districts, NGOs, Cities, Counties...

## ■ Sources

- Online data
- Published reports
- Direct communication with agencies

# Incentives Past Participation - Landscape

- Metropolitan / regional programs
- Member agency & retail agency programs





# Using The Results: Big Picture

## Legend

— Recycled Water Pipeline

— Outdoor-related Devices

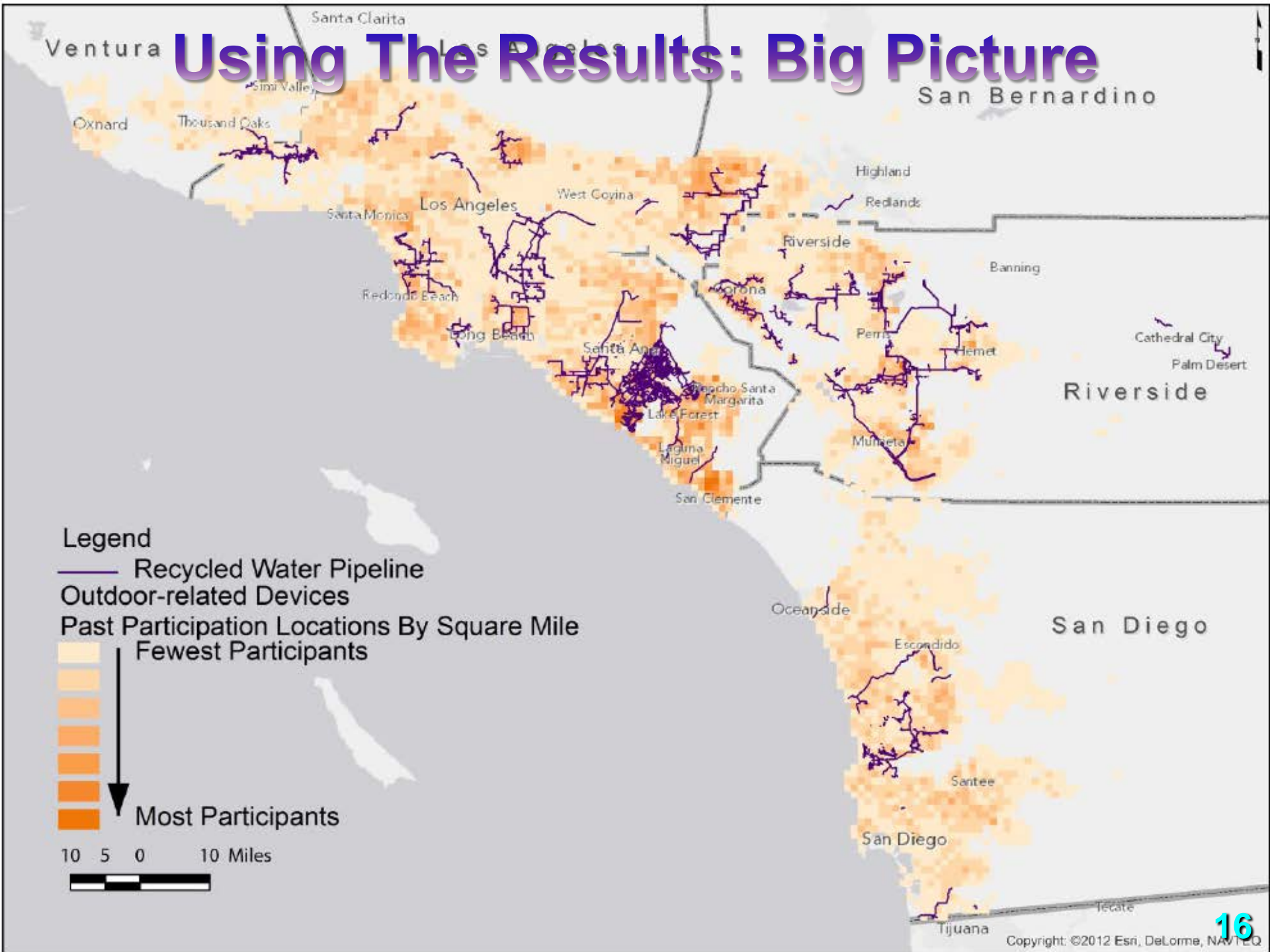
Past Participation Locations By Square Mile

Fewest Participants



Most Participants

10 5 0 10 Miles





# Using The Results

Carlsbad WRF

Encina Water Pollution Control Facility (WPCF)

- Identify saturated areas & potential target areas
- Review marketing and outreach strategies
- Collaborative options
- Modify incentives



# Next Steps

Eastern Municipal Water District (EMWD) Moreno Valley Regional Water Reclamation Facility (RWRF)

- Review & refine data
- Analyses
- Collaborate w/  
member & retail  
agencies
- Maintain database





# RECLAMATION

*Managing Water in the West*

**Gary Tilkian**  
**(213) 217-6088**  
**[gtilkian@mwdh2o.com](mailto:gtilkian@mwdh2o.com)**







