Orange County Water Reuse

Peters Canyon Wash Channel Water Capture and Reuse Pipeline Project

April 20, 2017

Agenda

History and Approach

Design and Construction

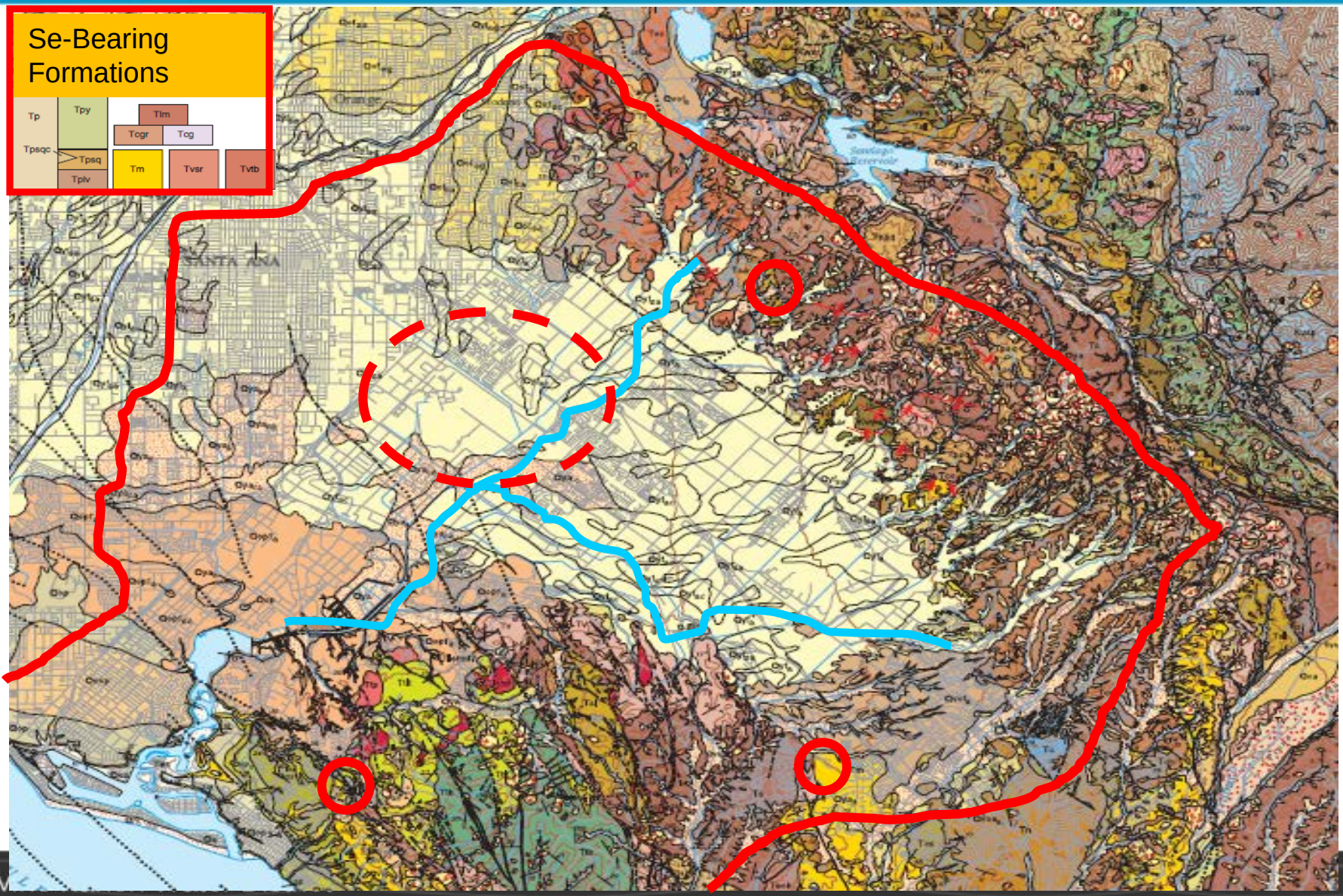
Lessons and Challenges

Questions

History and Approach

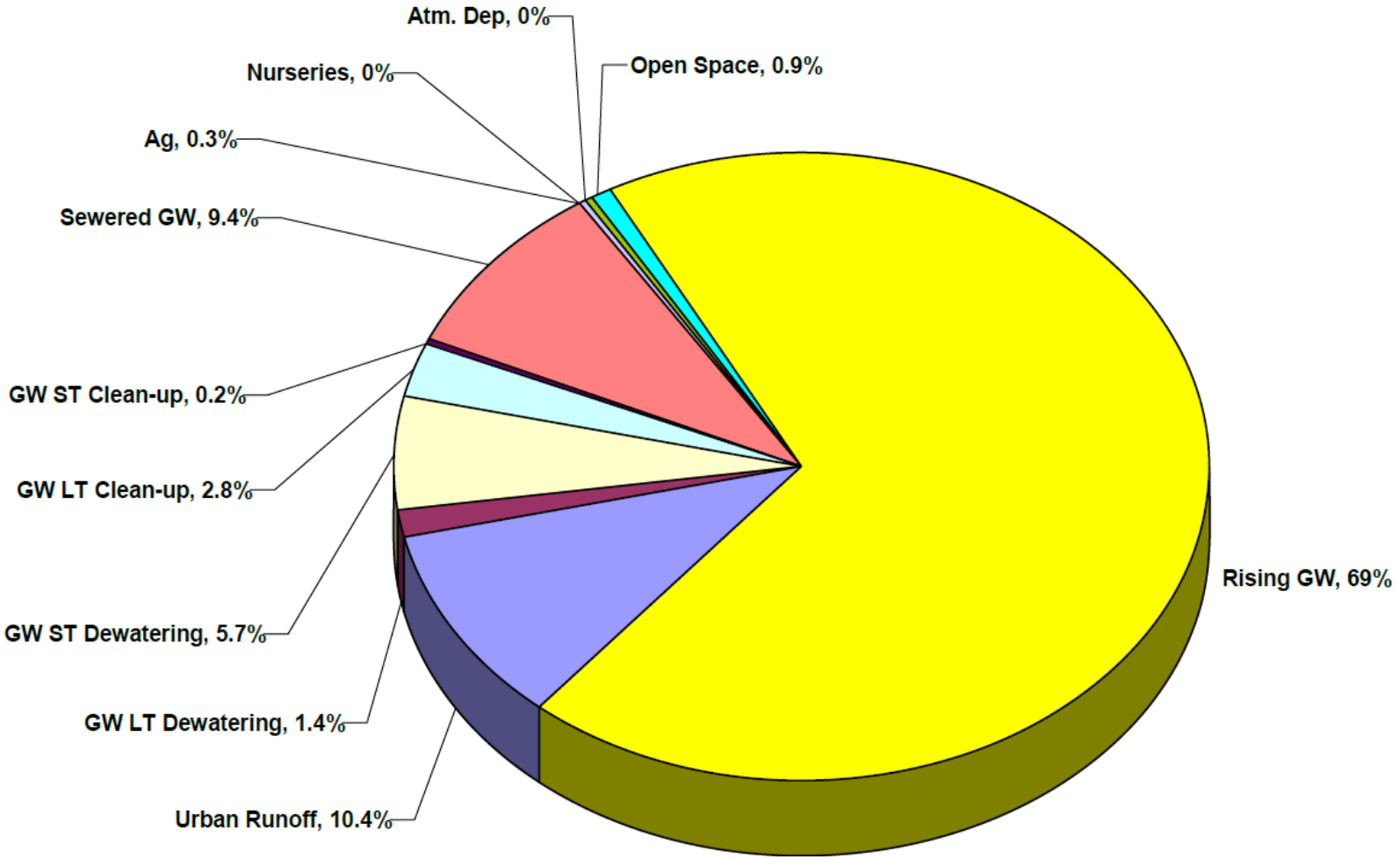
Jian Peng, PhD
Water Quality Planning, OC Environmental Resources
OC Public Works, County of Orange

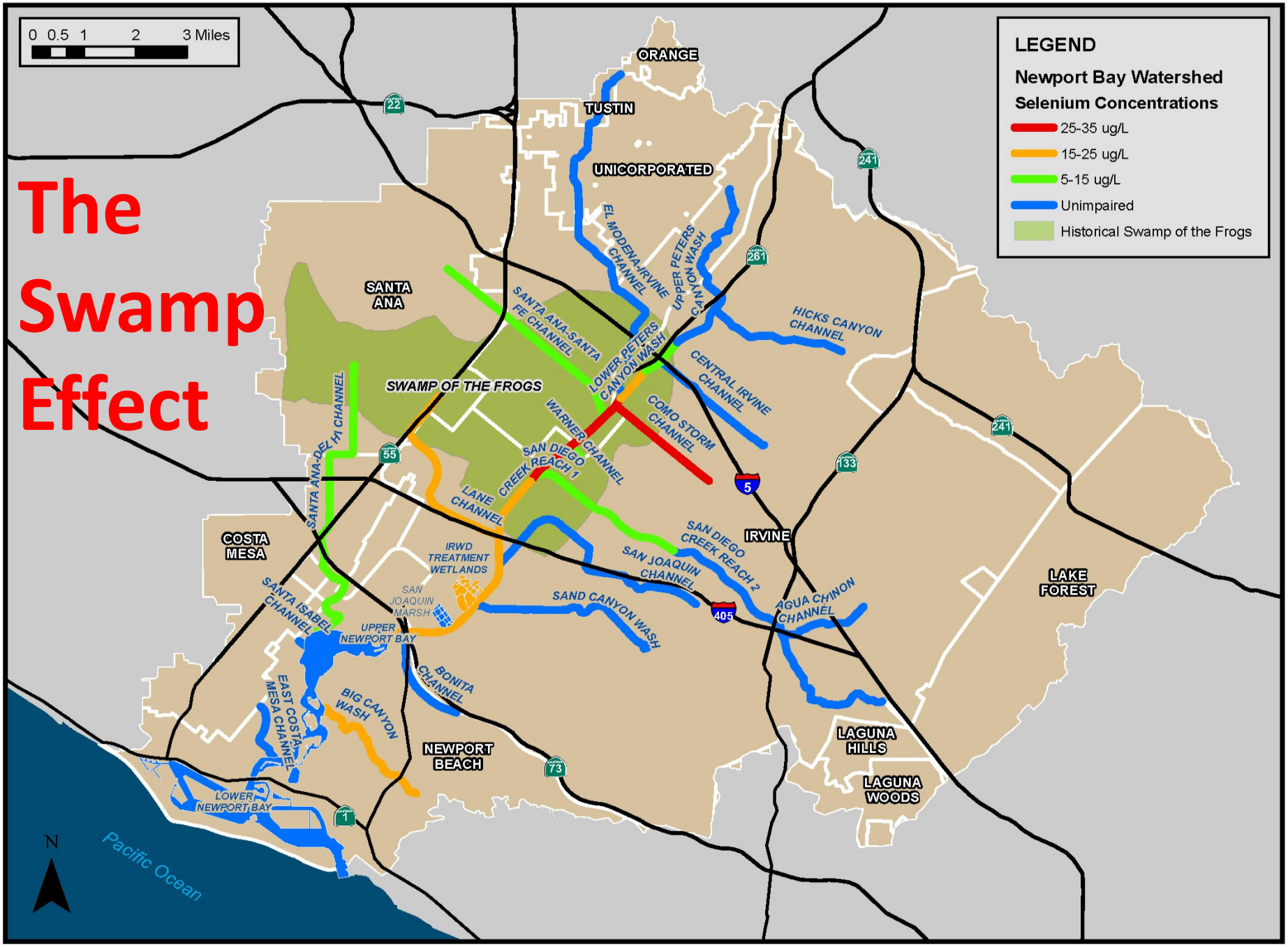
Geological Sources and Hot Spots (USGS 2006)



Rising Groundwater

Selenium Sources in Newport Bay Watershed





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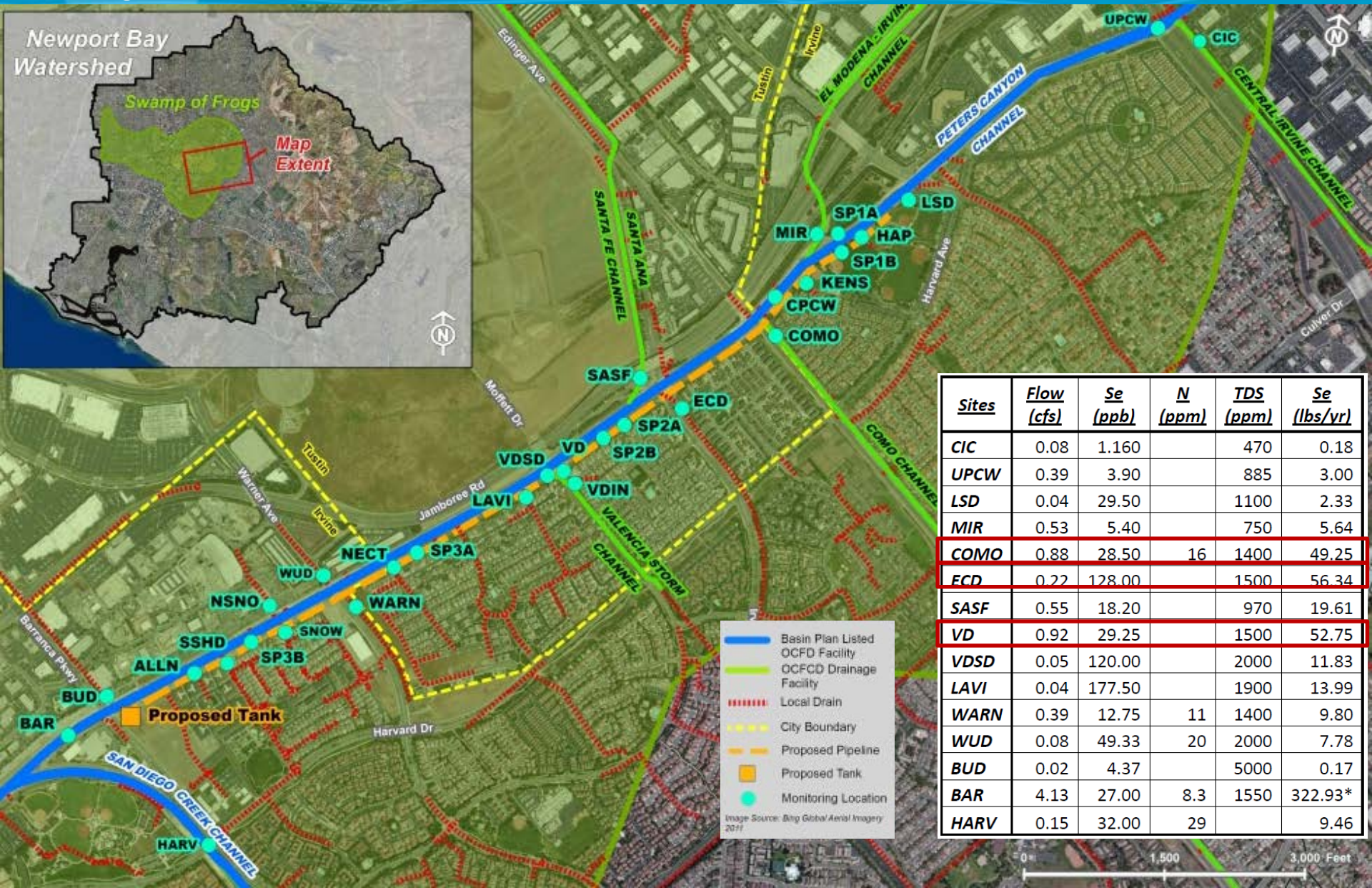
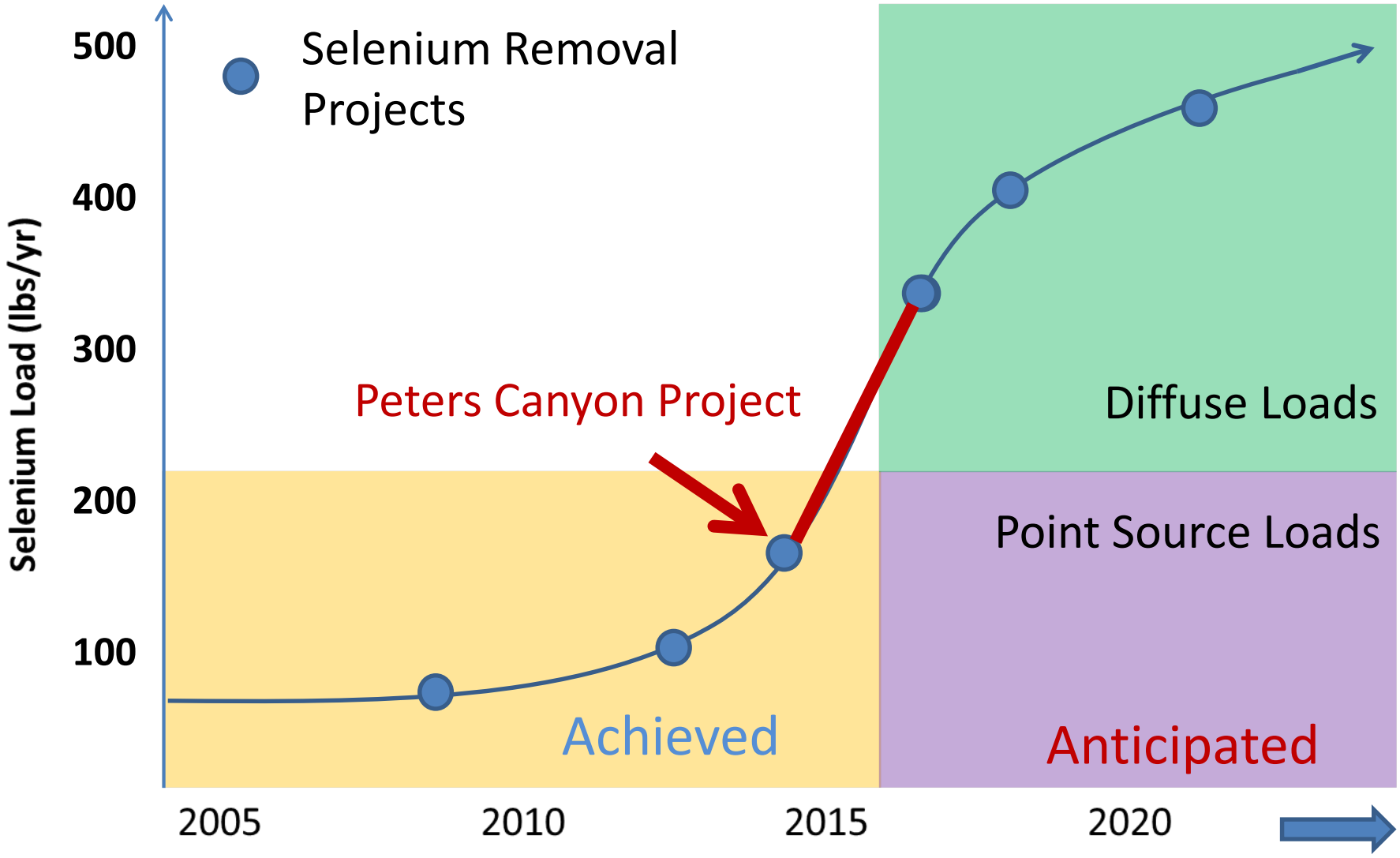
Lower Peters Canyon Mass Balance Studies - 2012



Sites	Flow (cfs)	Se (ppb)	N (ppm)	TDS (ppm)	Se (lbs/yr)
CIC	0.08	1.160		470	0.18
UPCW	0.39	3.90		885	3.00
LSD	0.04	29.50		1100	2.33
MIR	0.53	5.40		750	5.64
COMO	0.88	28.50	16	1400	49.25
ECD	0.22	128.00		1500	56.34
SASF	0.55	18.20		970	19.61
VD	0.92	29.25		1500	52.75
VDSD	0.05	120.00		2000	11.83
LAVI	0.04	177.50		1900	13.99
WARN	0.39	12.75	11	1400	9.80
WUD	0.08	49.33	20	2000	7.78
BUD	0.02	4.37		5000	0.17
BAR	4.13	27.00	8.3	1550	322.93*
HARV	0.15	32.00	29		9.46

Achieved and Anticipated Selenium Reduction



Design and Construction

Ray Bennett, P.E.

Engineer

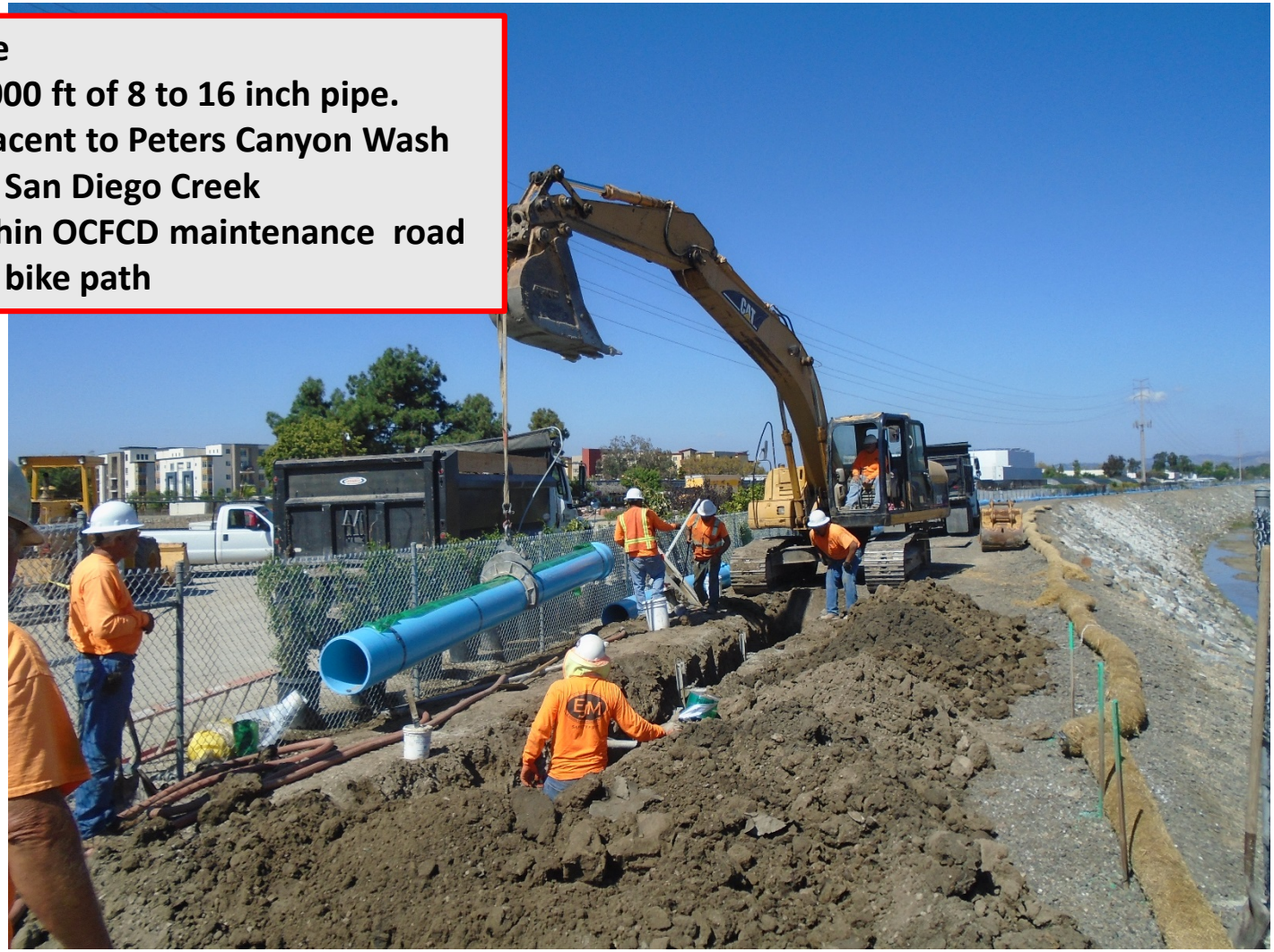
Irvine Ranch Water District

Overall Project

Pipeline Construction

Pipeline

- **17,000 ft of 8 to 16 inch pipe.**
- **Adjacent to Peters Canyon Wash and San Diego Creek**
- **Within OCFCD maintenance road and bike path**



Street Crossings

Four (4) major street crossings:

- **Alton Parkway,**
- **Barranca Parkway,**
- **Warner Avenue and**
- **Edinger Avenue**

Bridge Crossings

Two (2) Bridge Crossings:

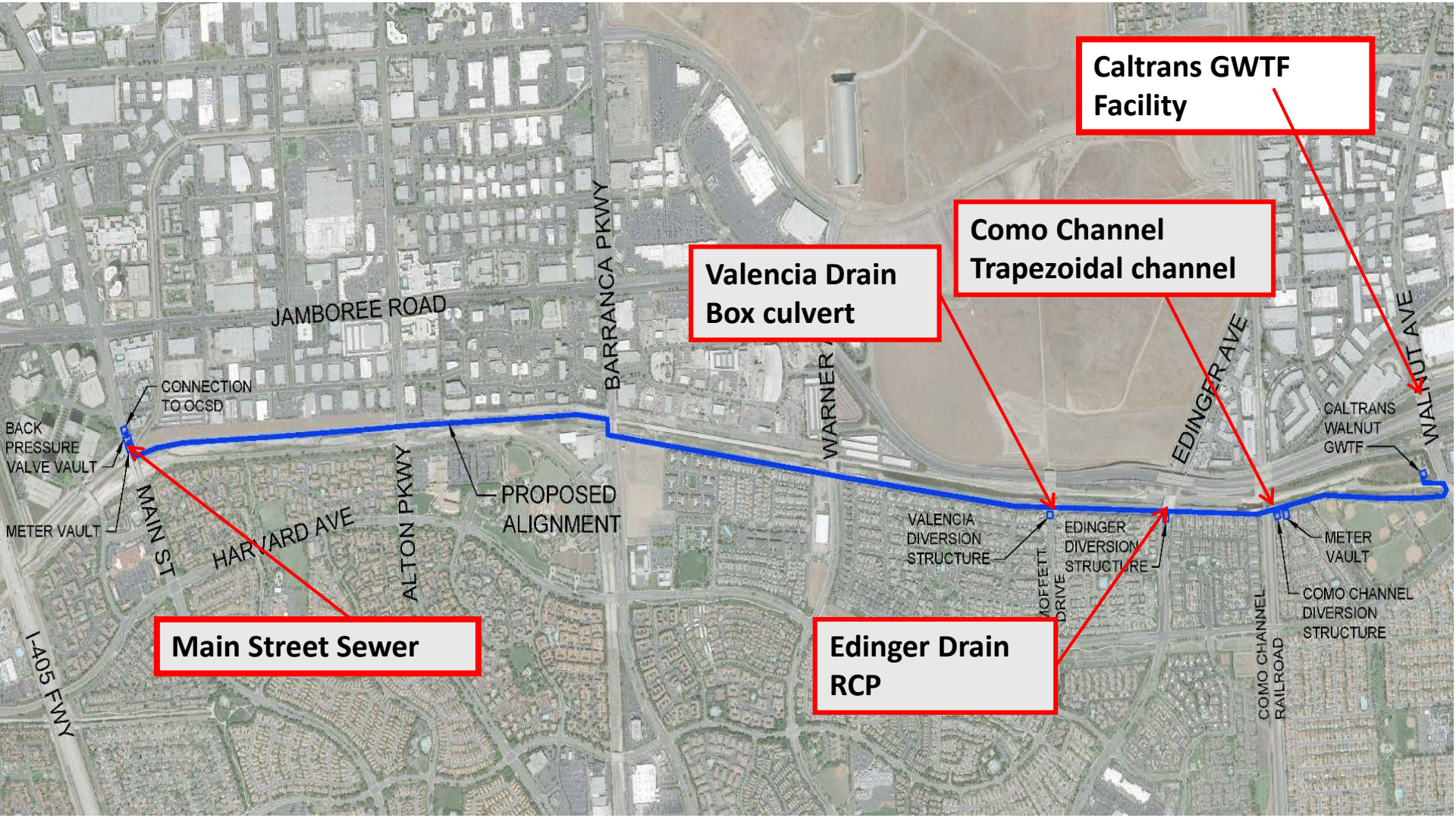
- **Walnut Avenue and**
- **Barranca Parkway**

Jack and Bore

One (1) 283 ft. jack and bore beneath

- **Railroad,**
- **Metrolink and**
- **Como Channel**

Diversion and Inlet Structures



Como Channel Diversion Structure

Edinger Avenue Diversion Structure

Cost and Construction Summary

- Construction was completed in 20 months
- Construction cost was $8,497,722
- Design and Construction Support was about 20% of construction cost
- Total project cost was $10,544,720 (as of Jan ‘17)

Lessons and Challenges

Ray Bennett, P.E.
Engineer, Water Resources
Irvine Ranch Water District

Multi Agency Involvement

- Background & Issue:
  - Multiple agencies want a regulatory solution
  - Each has unique review process, contracting limits, etc.

- Solution:
  - Development Agreement
    - Ownership & responsibilities
    - Pipeline capacity and cost allocation
    - Operation and maintenance costs
    - Allocation of nitrogen and selenium reductions
    - Legal (indemnification, successors, attorney fees, ..
  - Coordination
    - Monthly reports and quarterly progress meetings

Right of Way

- Background & Issue:
  - Diversions will occur near Peters Canyon Channel
  - Existing maintenance road and bike path are obvious
  - OCFCD needs to reserve right-of-way for future flood control

- Solution
  - Agreement requires participants to share in risk.
  - Acknowledges the main purpose of right-of-way
  - Provides actions if future circumstances require relocation
    - Participants will confer in good faith
    - Costs of relocation will be paid by Funding Parties

OCSD Permit

- Background & Issue:
  - Diversions will be discharged to OCSD
  - Cost of treatment can exceed over $1.5 million per year
  - OCSD has an Urban Runoff Diversion Program for dry weather flows

- Solution
  - Structure part of project to meet Urban Runoff Diversion Program's low flow limit
  - Coordinate to expand the existing cap and ensure project diversions fit beneath that cap

Project Costs

- Background & Issue:
  - Need a partner agreement to begin design
  - Estimated costs are at a feasibility level

- Solution
  - Recognize limitations of feasibility study
  - Include sufficient contingency for unknowns
  - Aggressively pursue cost savings measures:
    - Grants
    - Right of way
    - OCSD urban runoff program
    - Approach to cross bridges and roads

Summary

- Peters Canyon Diversion project is a success
  - Win for participants by meeting RWQCB requirements
  - Win for the environment by improving water quality
  - Win for the County by increasing water reuse
- Excellent example of a multi agency development
- BIG THANKS
  - All cooperating agencies, boards, consultants and contractors
  - OC Reuse

Questions?


Connection to OCSD
Bridge Crossing
Moffett Diversion
Caltrans
Bridge Crossing
Pipeline
Edinger Diversion
Como Diversion
JAMBOREE ROAD
BARRANCA PKWY
WARNER AVE
EDINGER AVE
WALNUT AVE
BACK PRESSURE VALVE VAULT
METER VAULT
MAIN ST
HARVARD AVE
ALTON PKWY
PROPOSED ALIGNMENT
I-405 FWY
VALENCIA DIVERSION STRUCTURE
EDINGER DIVERSION STRUCTURE
MOFFETT DRIVE
HARVARD AVE
CALTRANS WALNUT GWTF
METER VAULT
COMO CHANNEL RAILROAD