

SAN MATEO PLAIN GROUNDWATER BASIN ASSESSMENT

STAKEHOLDER WORKSHOP#1

MAY 17, 2016

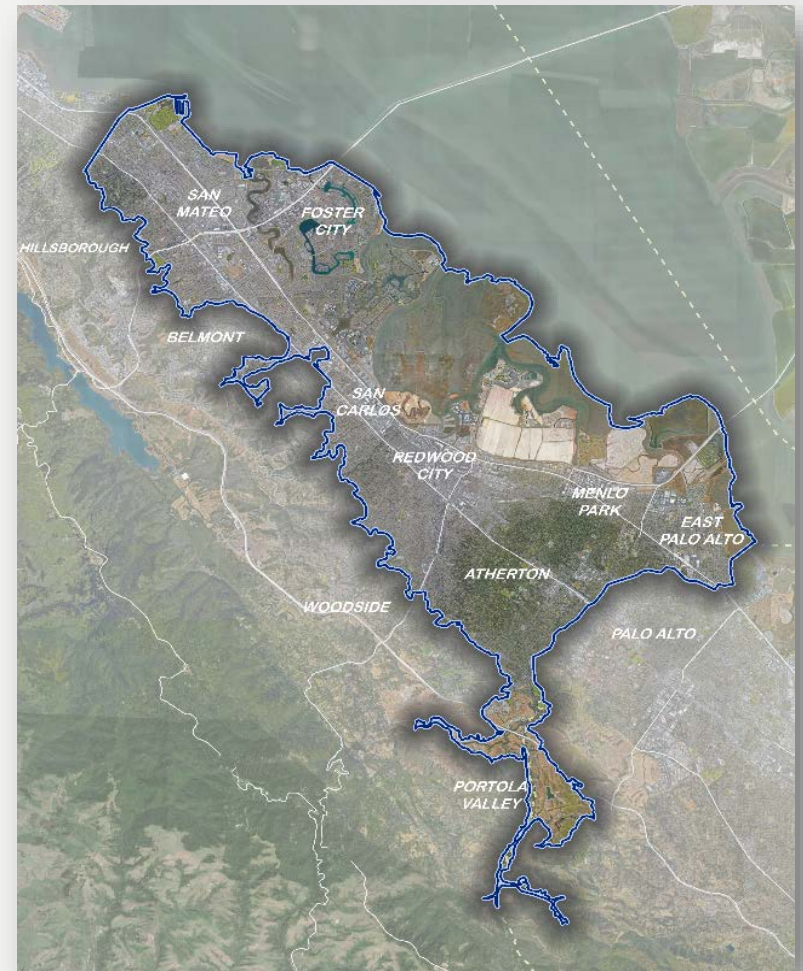


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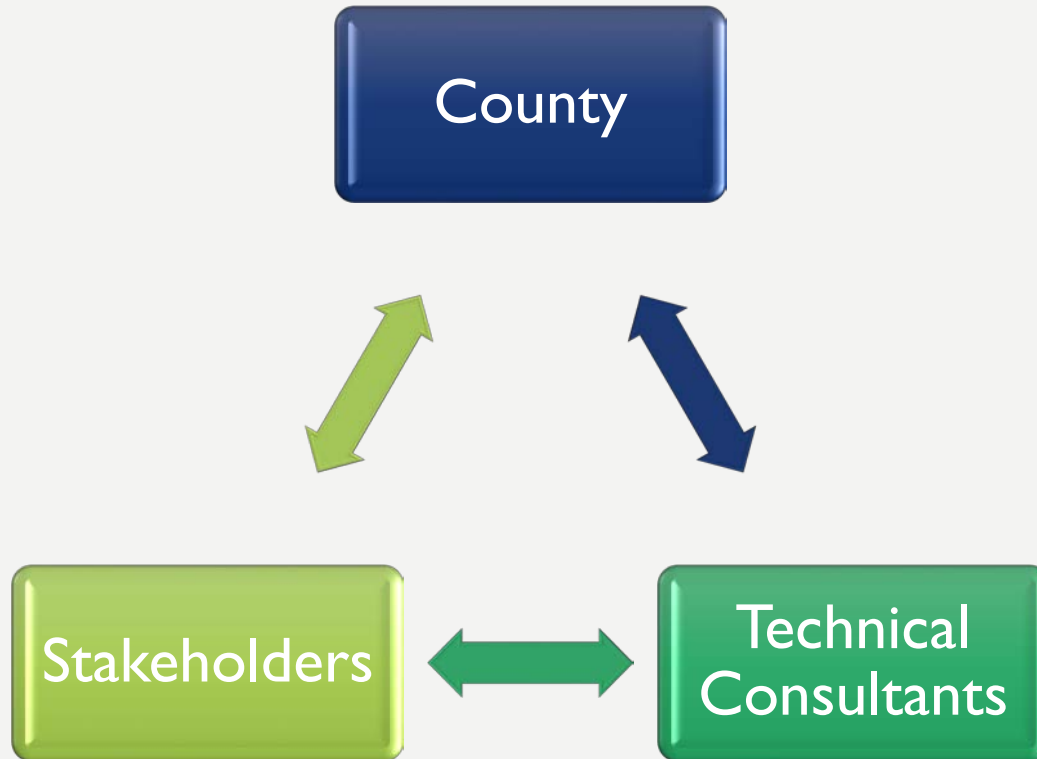


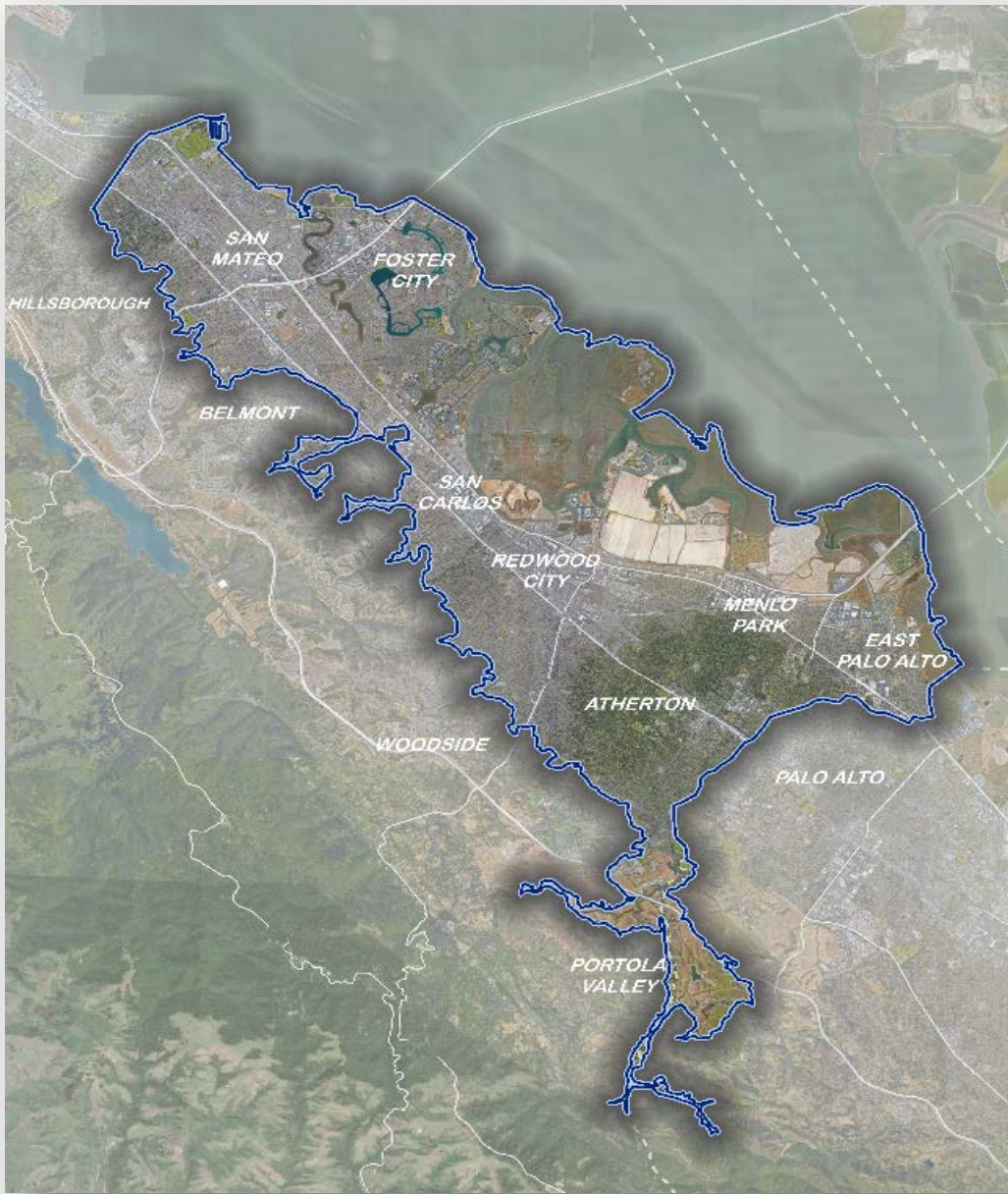
PRESENTATION OVERVIEW

- Introductions
- Project Overview
- Breakout Session
- Round Table Discussion



PROJECT TEAM INTRODUCTIONS





PROJECT OVERVIEW



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Issues with Groundwater From County's Perspective

- 8 out of the last 9 years have had below average rainfall causing severe drought
- Increased attention and use of groundwater within the County
- Passage of Sustainable Groundwater Management Act
- Neighboring basins all actively managed

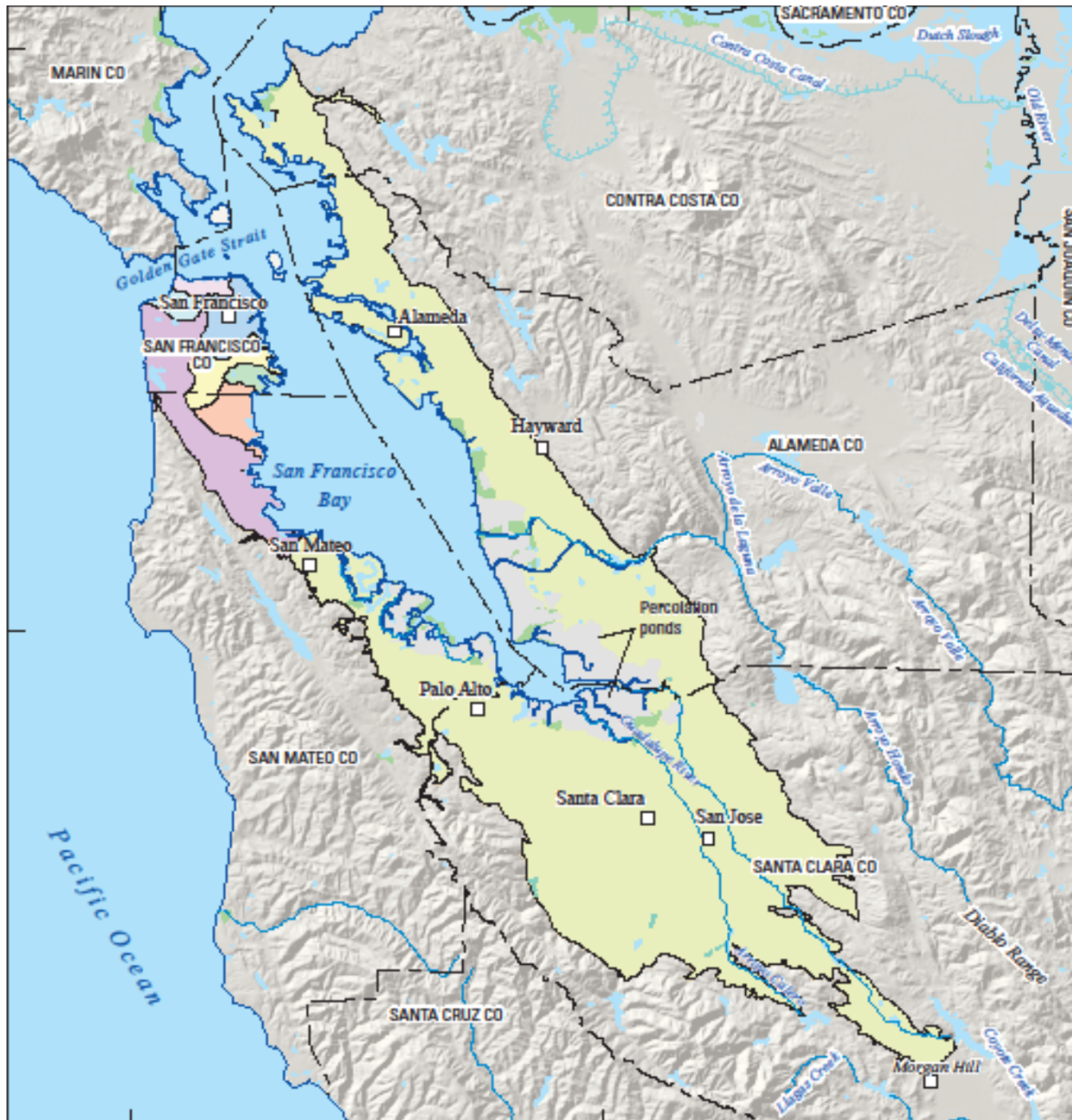
Environmental Health Services

Heather Forshey, Director

Charles Ice, Groundwater Protection Program Lead



COUNTY OF SAN MATEO
HEALTH SYSTEM



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COUNTY OF SAN MATEO
HEALTH SYSTEM

San Mateo County Environmental Health's Involvement in Groundwater

- Oversee cleanup of soil and groundwater contamination sites
- Issue well drilling permits throughout the County except in the City of Daly City
- Facilitated South Westside Basin Partners groundwater monitoring program in the late 1990s
- Represent Health Officer regarding water quality and quantity issues
- Facilitate discussions regarding groundwater in San Mateo Plain sub-basin

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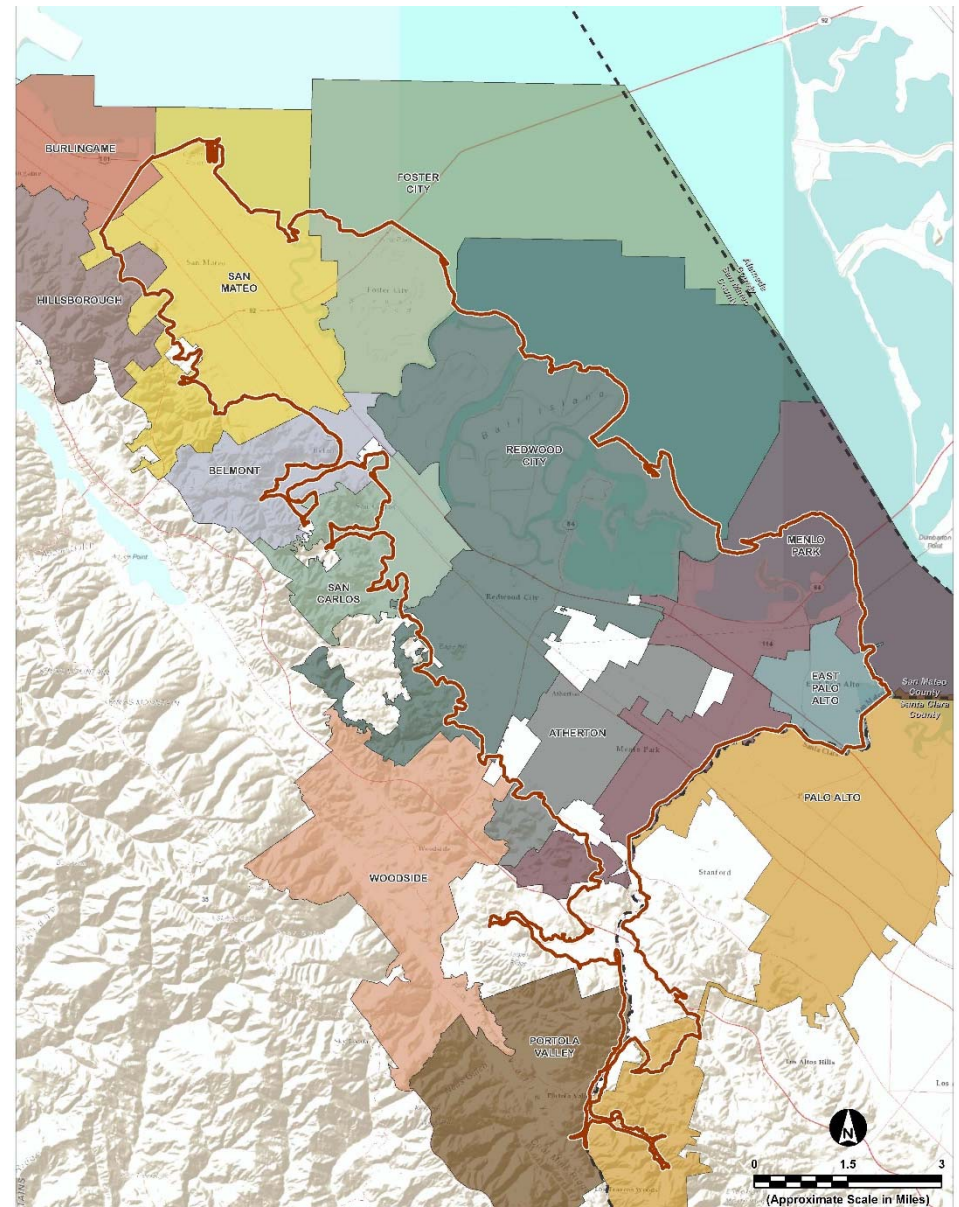
Charles Ice, Groundwater Protection Program Lead



COUNTY OF SAN MATEO
HEALTH SYSTEM

Land Use Agencies:

East Palo Alto, Menlo Park, Redwood City, Atherton, Foster City, San Mateo, Belmont, San Carlos, Burlingame, Hillsborough, Woodside, Portola Valley, Palo Alto, San Mateo County, and Santa Clara County



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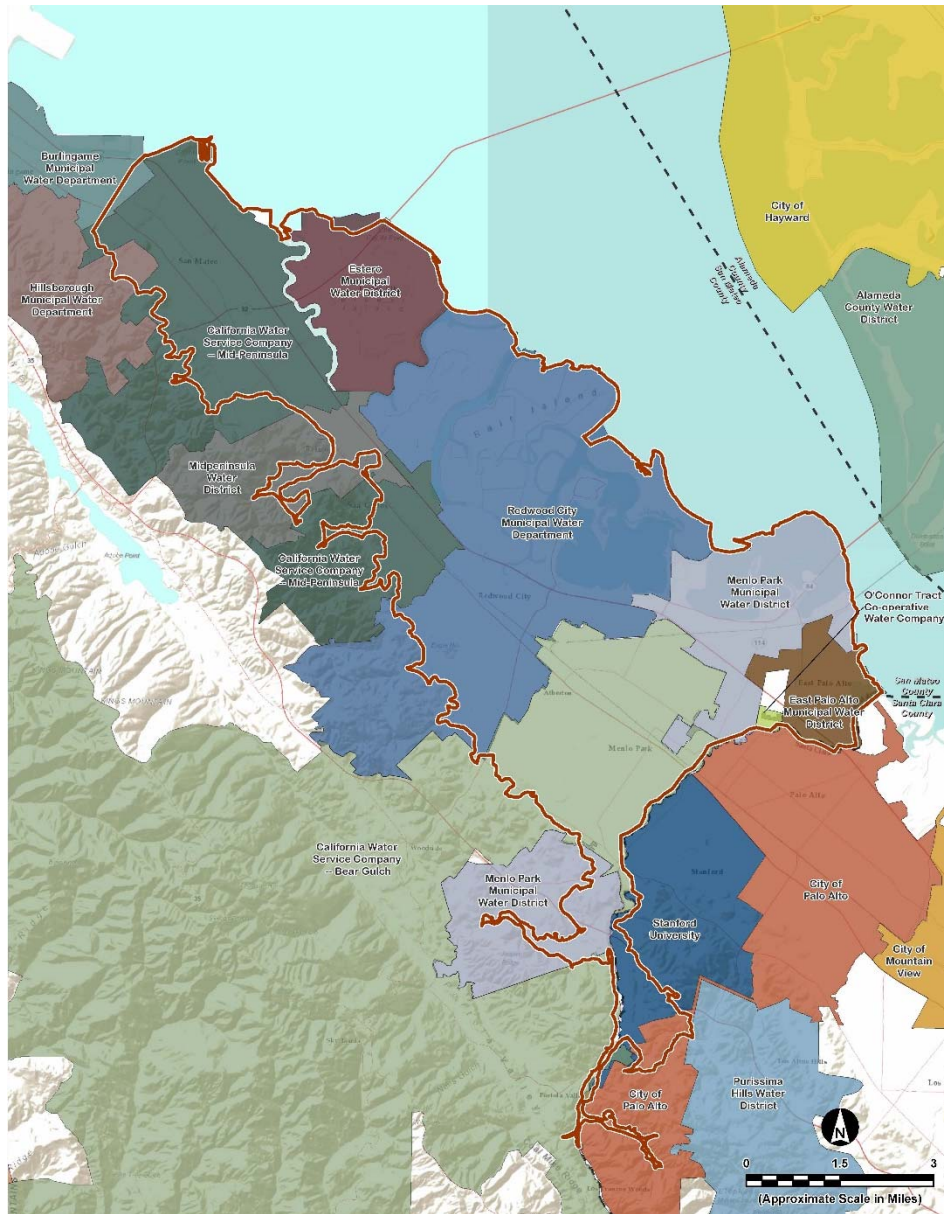
Charles Ice, Groundwater Protection Program Lead



COUNTY OF SAN MATEO
HEALTH SYSTEM

Water Districts:

East Palo Alto Muni, O'Connor Tract, Palo Alto Park Mutual, Menlo Park Muni, CalWater – Bear Gulch, Redwood City Muni, Midpeninsula, CalWater – Mid-Peninsula, Estero Muni, Hillsborough Muni, Burlingame Muni, Stanford, and Palo Alto



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COUNTY OF SAN MATEO
HEALTH SYSTEM

County's Actions in San Mateo Plain Sub-Basin

- Approved as a Measure A project to be implemented by Environmental Health and Office of Sustainability
- Meetings and information sharing with interested stakeholders
- Resolution to Board approving contract with Erler and Kalinowski, Inc., Todd Groundwater, and Hydrofocus (April 2016)

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COUNTY OF SAN MATEO
HEALTH SYSTEM

County's Objectives for Assessment of San Mateo Plain Sub-Basin

- Assess the groundwater resources, current usage, and current condition
- Describe various groundwater management strategies available and identify various interested stakeholders
- Identify potential long-term strategies to sustainably manage groundwater resources through local policies and cooperative relationships

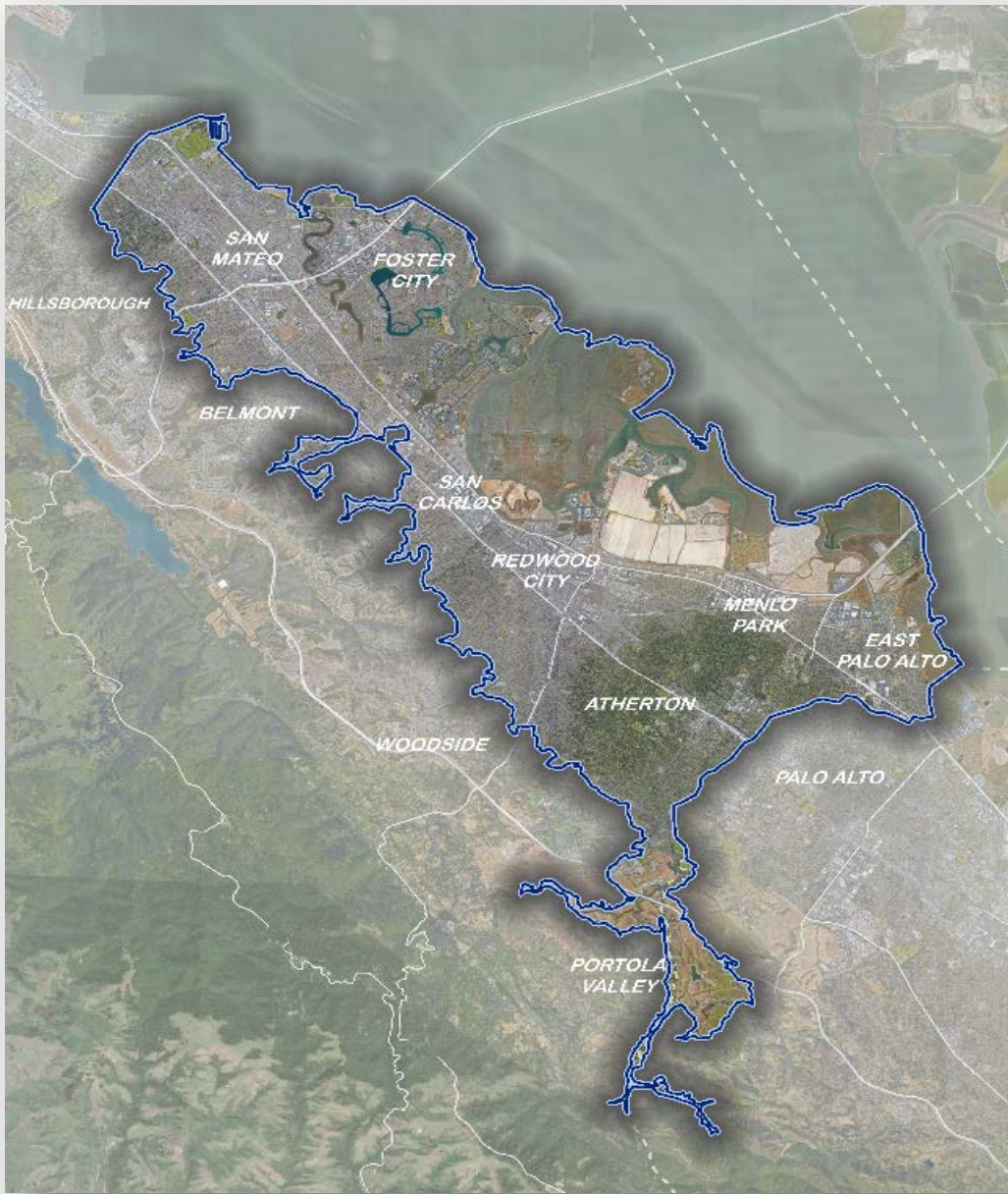
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PROJECT SCOPE



PROJECT OBJECTIVES & STRATEGIC APPROACH

- Engage Basin stakeholders
- Build on existing relationships to facilitate partnerships
- Position the Basin for funding opportunities
- Leverage work completed to date

Increase Public Knowledge

Evaluate Hydrogeologic and Groundwater Conditions

Identify Potential Impacts of Sea Level Rise, Climate Change, and Increased Groundwater Use

Evaluate Threats to Groundwater Quality and Quantity

Develop Potential Groundwater Management Strategies

TASKS DIRECTLY INTERSECT WITH PROJECT OBJECTIVES

Increase Public Knowledge

- Host public workshops
- Provide access to data & GIS shapefiles (e.g., website)
- Provide interim deliverables for stakeholder/public review
- Provide well-illustrated and written memos and reports

Evaluate Hydrogeologic and Groundwater Conditions

- Leverage our existing data and knowledge of groundwater conditions for the Basin and adjacent basins
- Gather additional high-value data
- Coordinate multiple data sets and methodologies for a comprehensive and consistent Basin conceptual model

Identify Potential Impacts of Sea Level Rise, Climate Change, and Increased Groundwater Use

- Develop comprehensive Basin conceptual model
- Evaluate water balances under various climatic conditions
- Update groundwater model as a powerful management tool
- Identify and assess multiple meaningful scenarios

Evaluate Threats to Groundwater Quality and Quantity

- Develop Basin conceptual model and water balance
- Identify baselines and characterize threats to sustainability
- Refine Basin objectives into specific measurable management objectives
- Update groundwater model and conduct scenario evaluation

Develop Potential Groundwater Management Strategies

- Build on relationships with key Basin stakeholders
- Identify potential Basin management actions
- Utilize detailed knowledge of planned projects
- Position the Basin for funding opportunities

THE PROJECT WILL BE EXECUTED IN THREE PHASES

Phase 1

- Task 1: General Services / Project Management
- Task 2: Stakeholder Coordination and Public Outreach
- Task 3: Data Compilation, Unification, and Sharing
- Task 4: Develop Initial Basin Conceptual Model
- Task 5: Develop Basin Groundwater Numerical Model
- Task 6: Evaluate Potential Basin Management Strategies
- Task 7: Prepare Phase I Report

Phase 2

- Task 1: Project Management and Public Outreach
- Task 8: Fill Selected Data Gaps
- Task 9: Update Database
- Task 10: Update and Refine Conceptual and Numerical Models

Phase 3

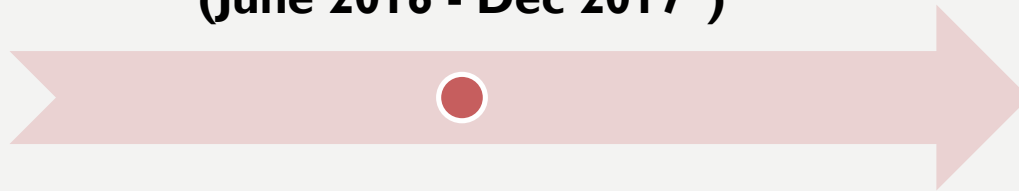
- Task 1: Project Management and Public Outreach
- Task 11: Conduct Scenario Evaluations
- Task 12: Prepare San Mateo Plain Groundwater Basin Assessment Report

PROJECT SCHEDULE

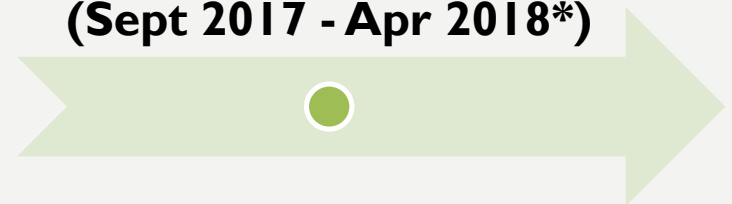
Phase I
(Apr 2016 – Jan 2017)



Phase 2
(June 2016 - Dec 2017*)

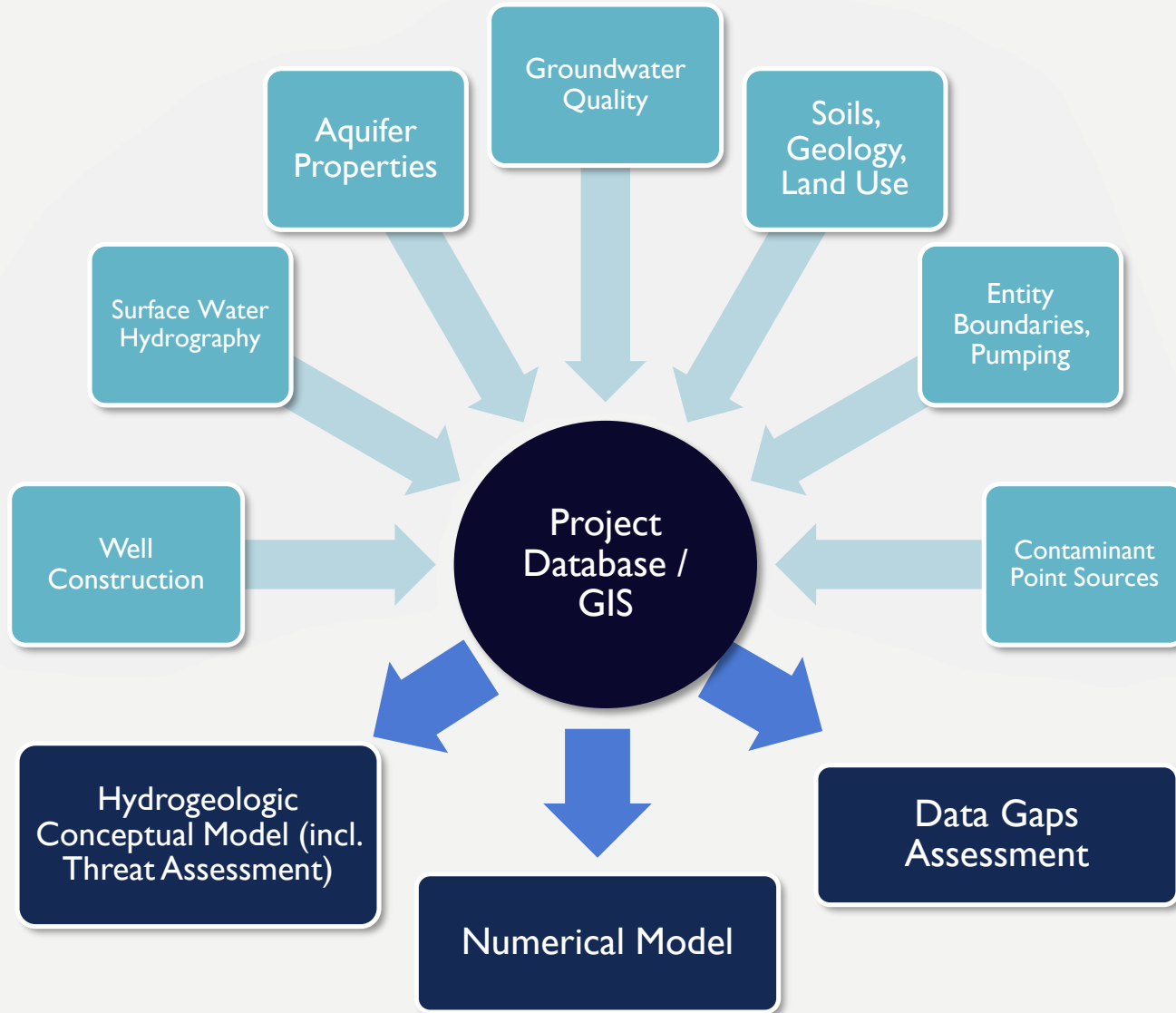


Phase 3
(Sept 2017 - Apr 2018*)



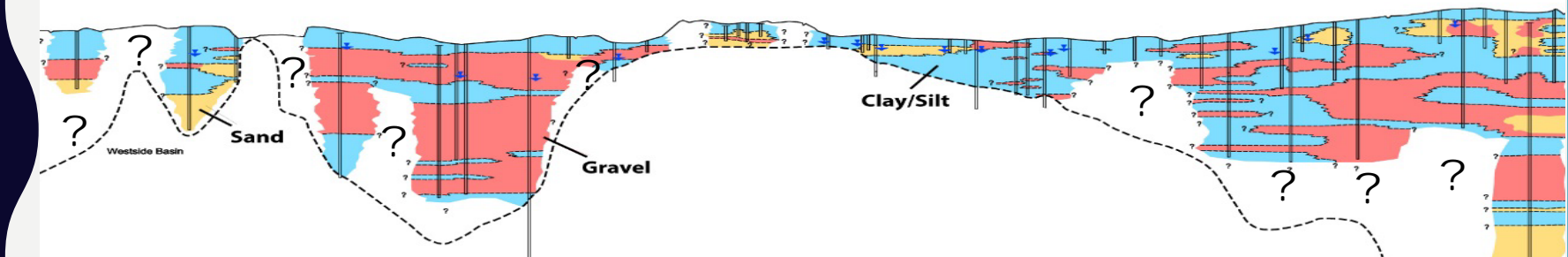
*** Timeline may be accelerated by up to 6 months**

DEVELOPING A COMPREHENSIVE GIS DATABASE



DEVELOPING A BASIN-WIDE HYDROGEOLOGIC CONCEPTUAL MODEL

- Comprehensive: across the basin + beyond
- Integrative: climate, geology, hydrology, hydrogeology, water supply and demand
 - Multiple hydrostratigraphic settings
 - Dynamic stream/groundwater/bay systems
 - Different sources/types/quality of information/data gaps
- Informative: pumping, recharge areas, surface water-groundwater interactions, subsidence



DEVELOPING THE FIRST BASIN-WIDE WATER BALANCE



Conducting a systematic, transparent and independent evaluation:

- Applying multiple methods to examine current and historical conditions
- Incorporating multiple lines of evidence
- Utilizing information from adjoining basins
- Validating with water balances embedded in existing numerical models

SYSTEMATICALLY ASSESSING GROUNDWATER THREATS

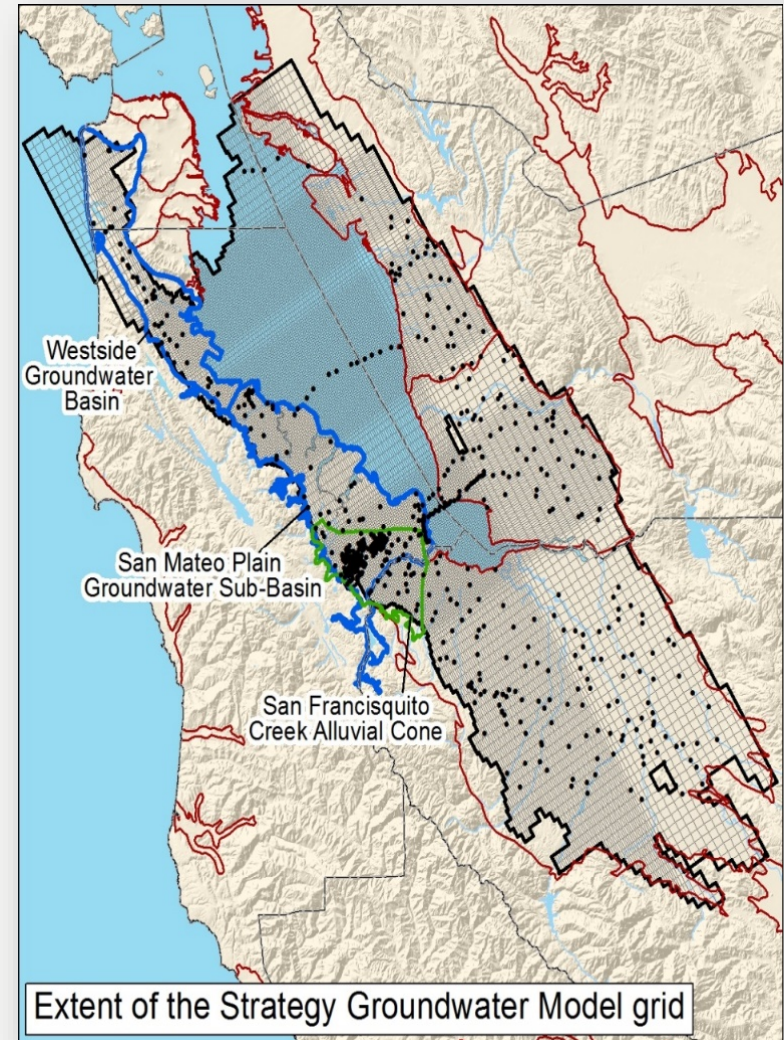
- Identifying types and locations of threats
 - Contamination
 - Salt water intrusion
- Identifying exacerbating / alleviating factors
 - Proximity to wells or recharge areas
 - Hydrogeologic barriers
- Developing screening algorithms to identify and rank severity of each threat



STARTING WITH THE BEST AVAILABLE TOOL

San Mateo Plain Subbasin Model (SMPSM)

- Regional MODFLOW model
- Represents East Bay Plain, Niles Cone, Santa Clara Valley, and San Mateo County basins - including the hydraulic connections in-between and beneath San Francisco Bay



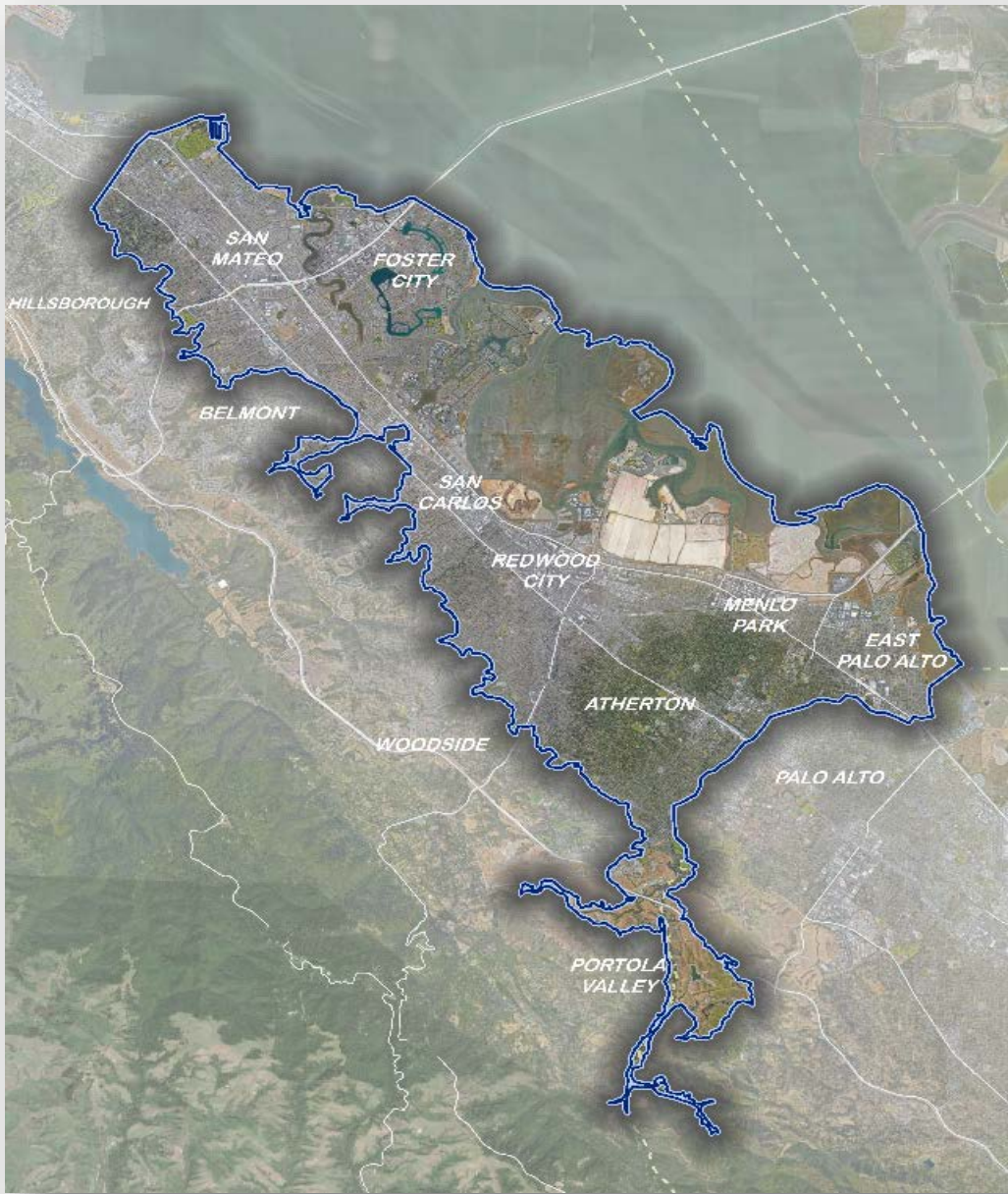
BASIN MANAGEMENT STRATEGIES ARE TWO-FOLD

Governance

- Groundwater management plans and policies
- Groundwater development and use projections
- SGMA – GSA models

Physical

- Opportunities for enhanced recharge
 - IPR, DPR
 - Stormwater
- Opportunities for conjunctive use
- Baseline and thresholds for undesirable results



INITIAL DATA ASSESSMENT



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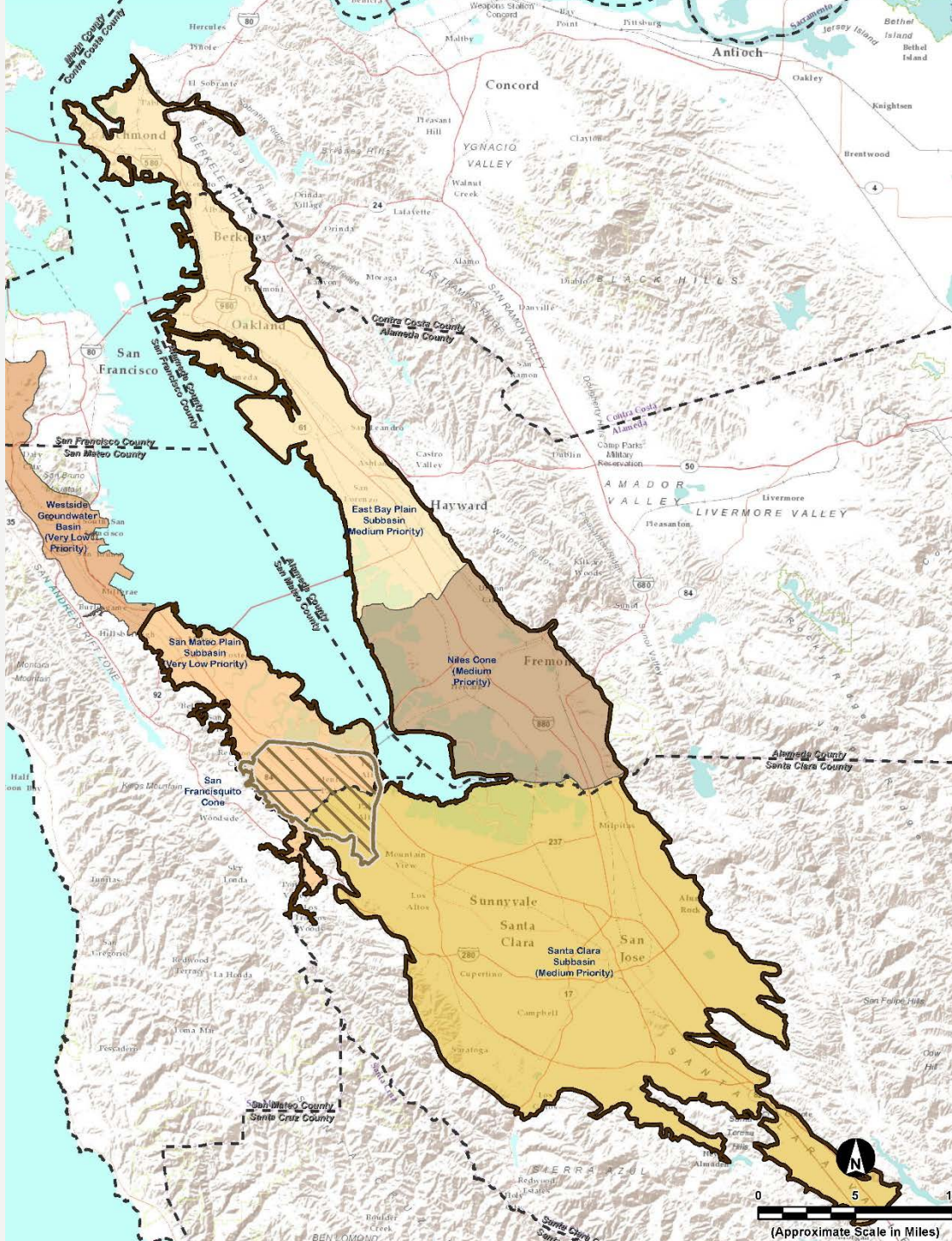
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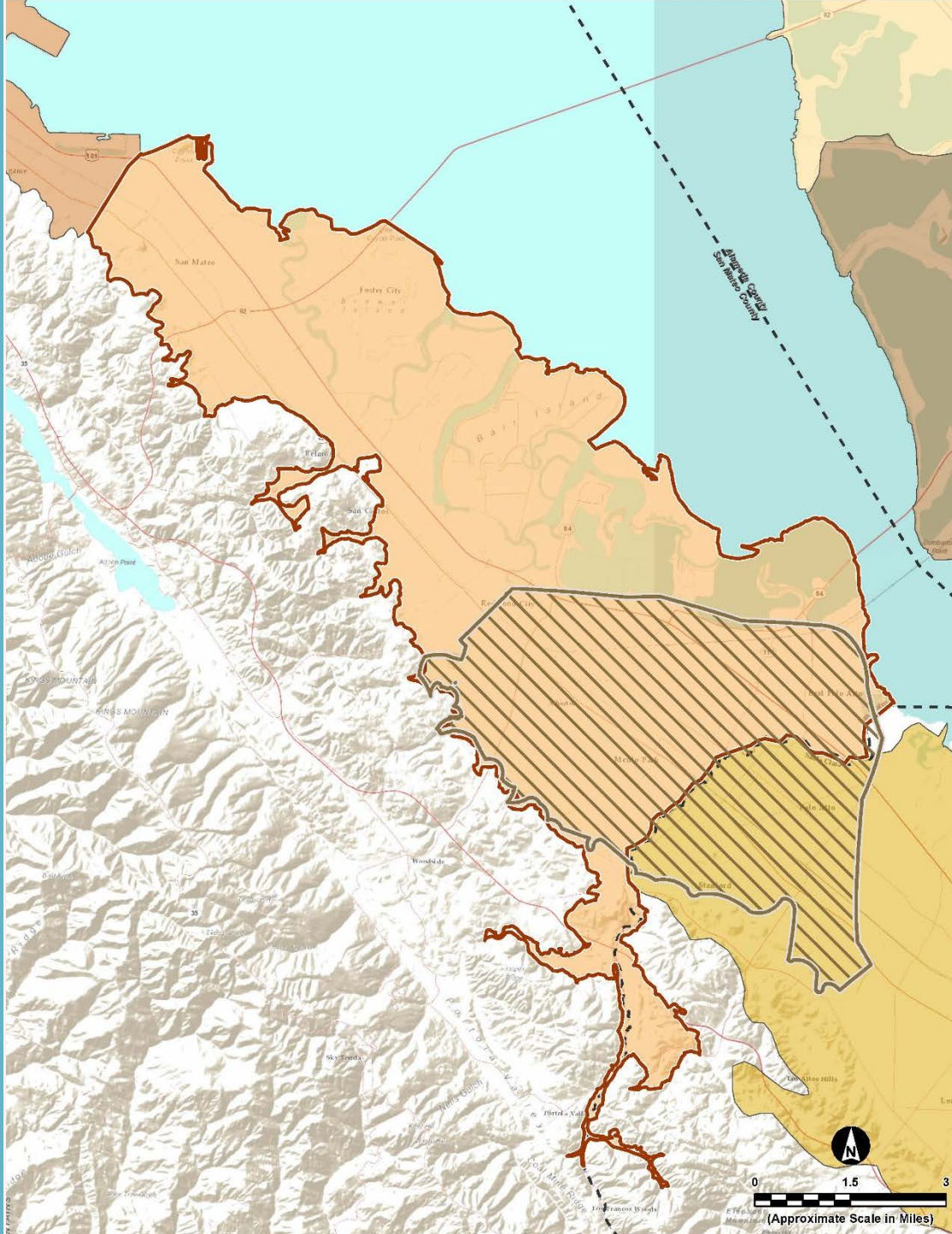
REGIONAL GROUNDWATER SYSTEM

- Part of the Santa Clara Basin (DWR Basin 2-9)
- Hydraulically connected to Santa Clara, Westside, Niles Cones, and East Bay Plain Subbasins
- Overlain by northern portion of the San Francisquito Cone

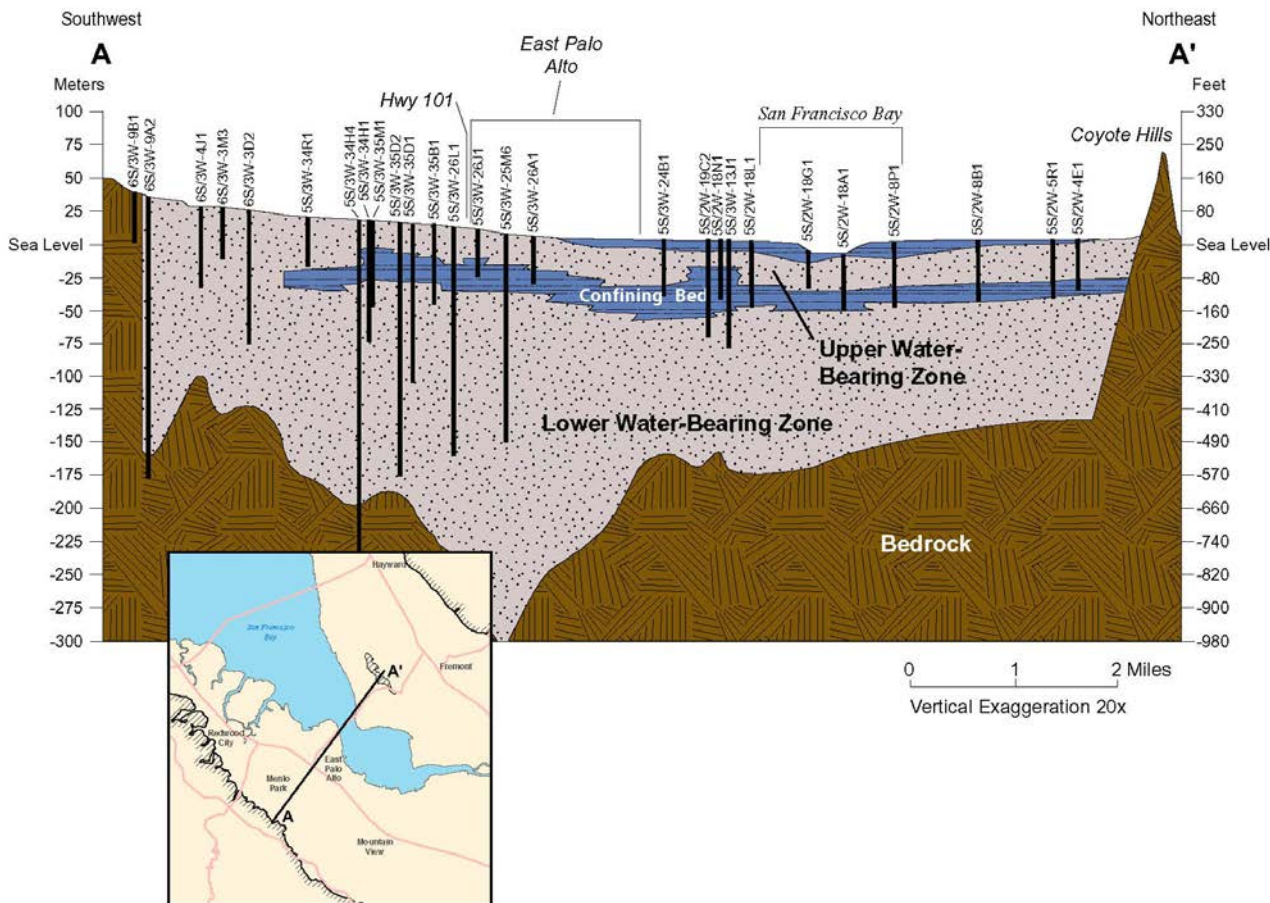


SAN MATEO PLAIN GROUNDWATER SUBBASIN

- DWR Basin 2-9.03
- 48,000 acres
- SGMA Ranking – Very Low Priority
- Not CASGEM compliant



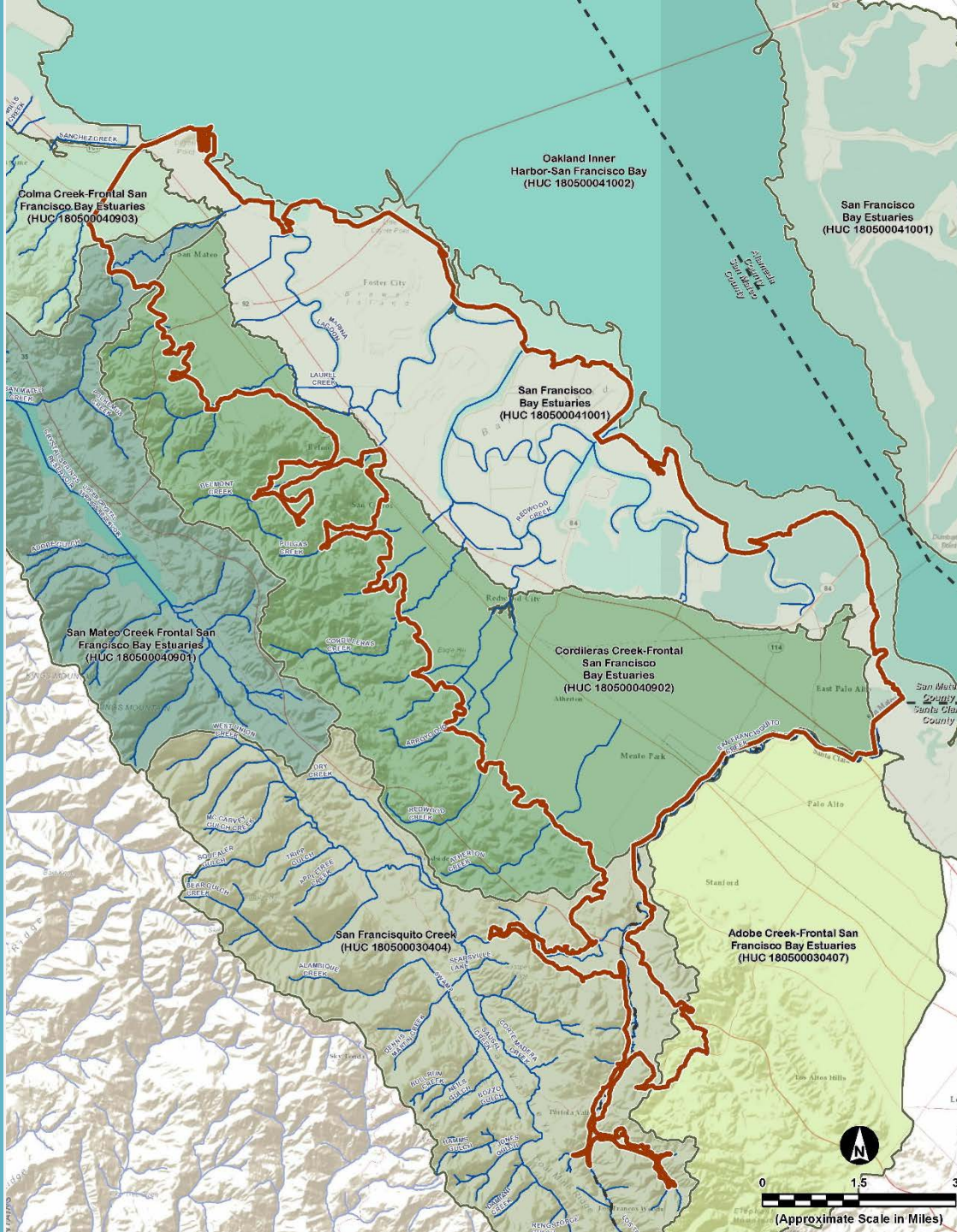
GENERALIZED CROSS-SECTION

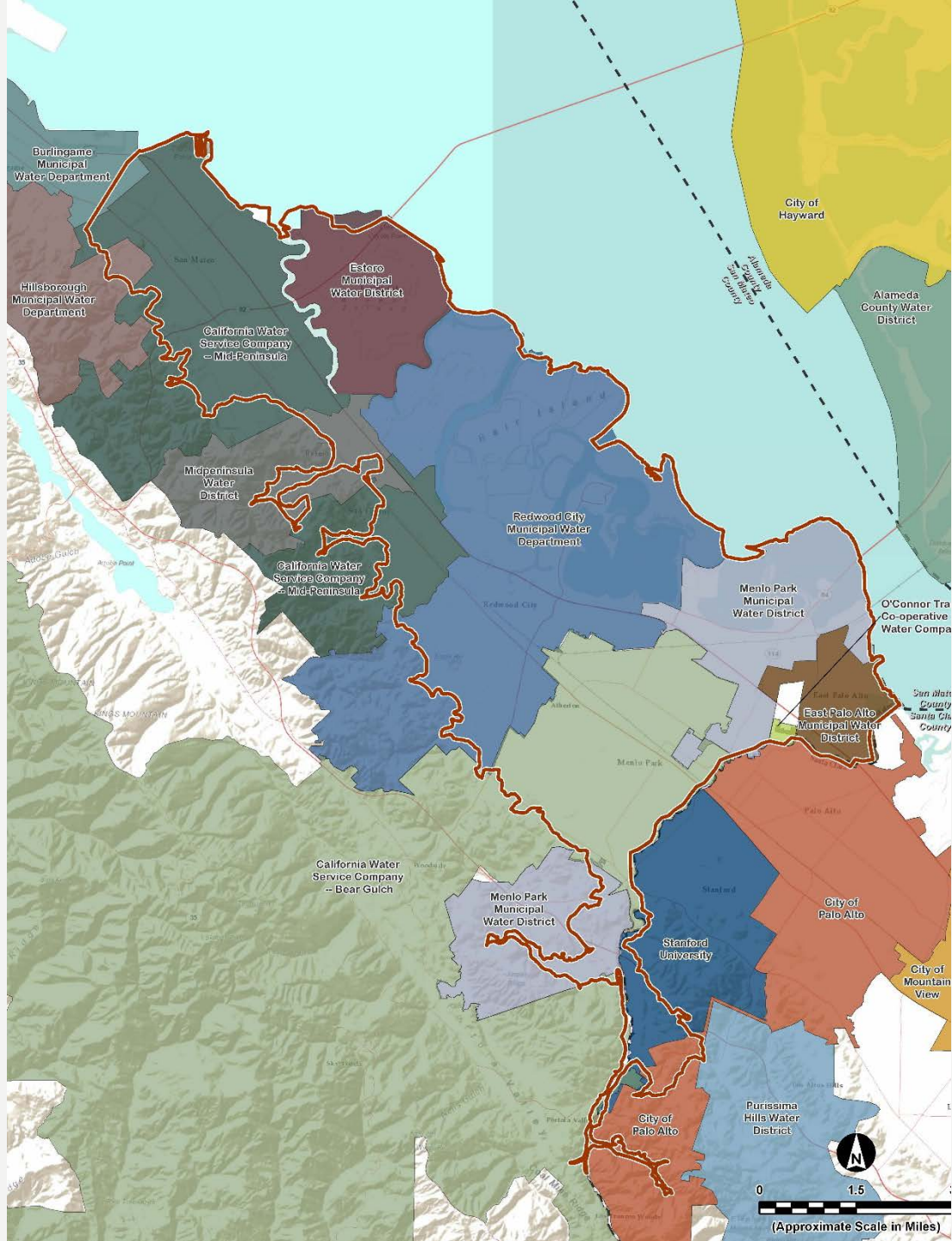


- Multi-layered aquifer system
- Shallow – unconfined
- Deeper - confined

MAJOR SURFACE WATER SYSTEMS

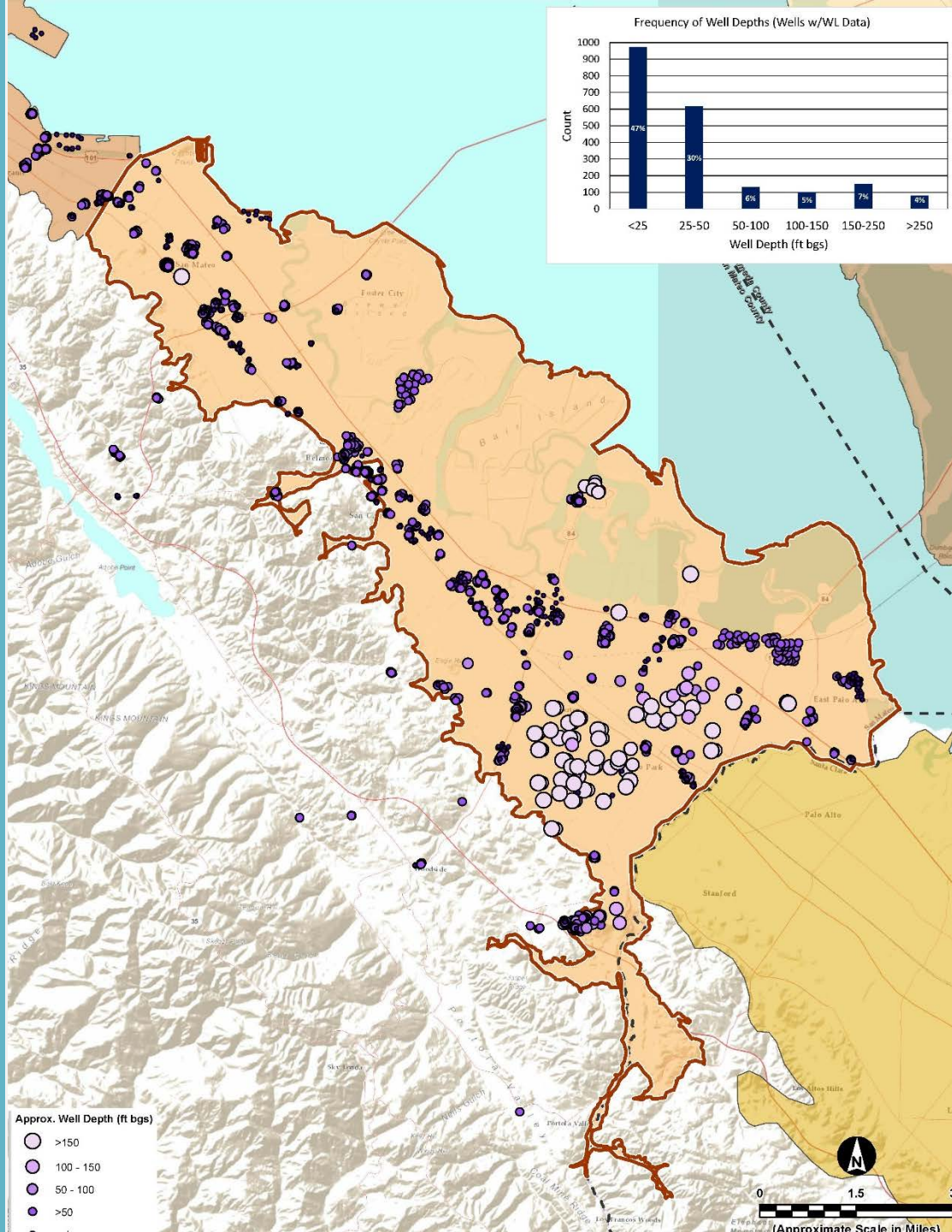
- Primarily drained by a single watershed (Cordilleras Creek)
- Bounded on the south by San Francisquito Creek
- Other major drainages: San Mateo Creek, Redwood Creek, etc.





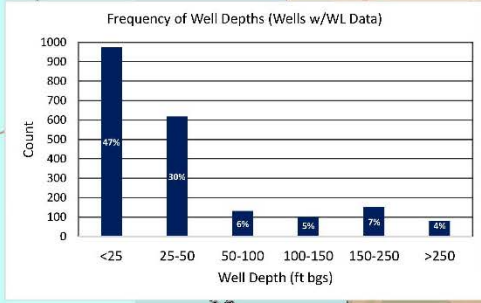
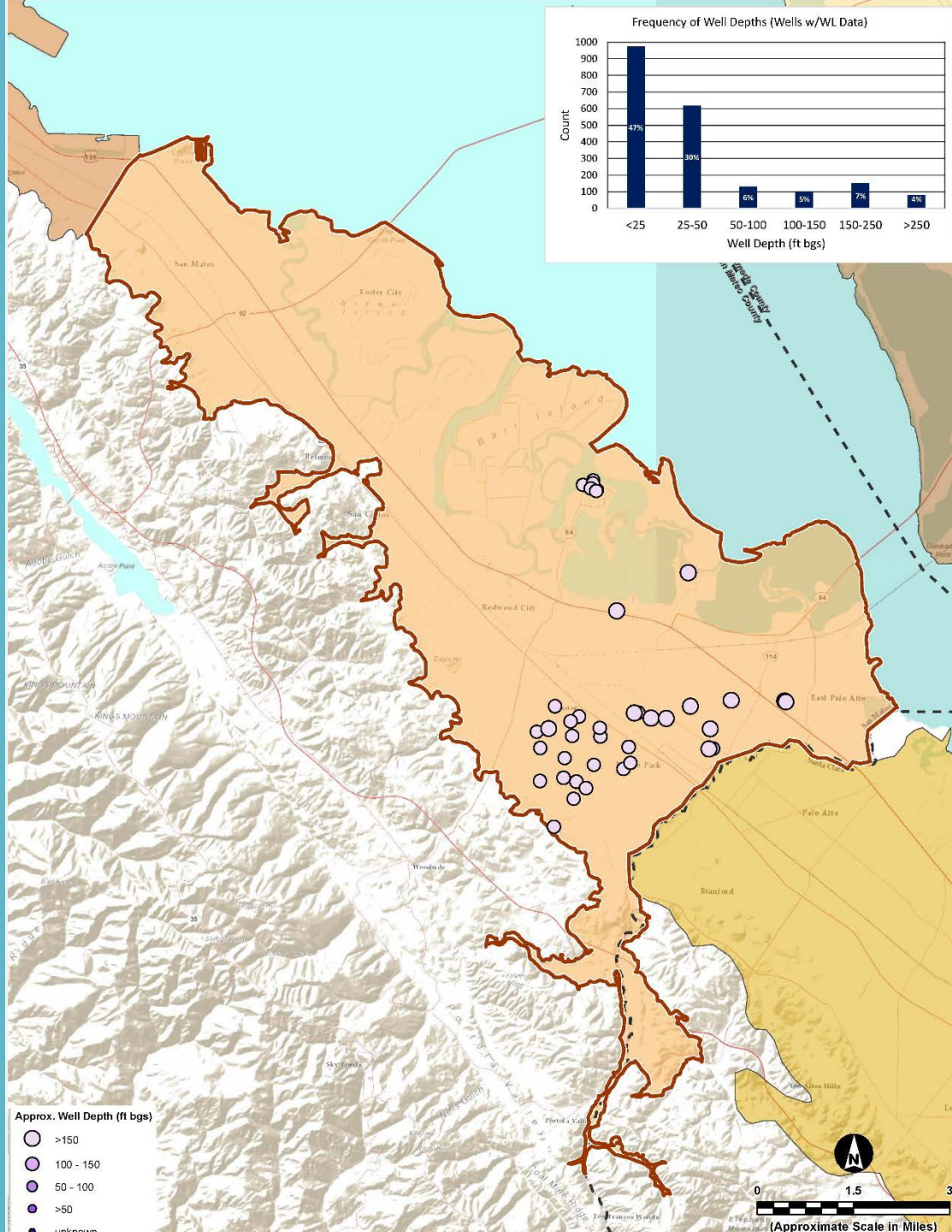
WATER SERVICE AREAS

- 13 municipal water suppliers within the Basin
- Groundwater only used as a source for municipal supply for two small Mutual Water Companies



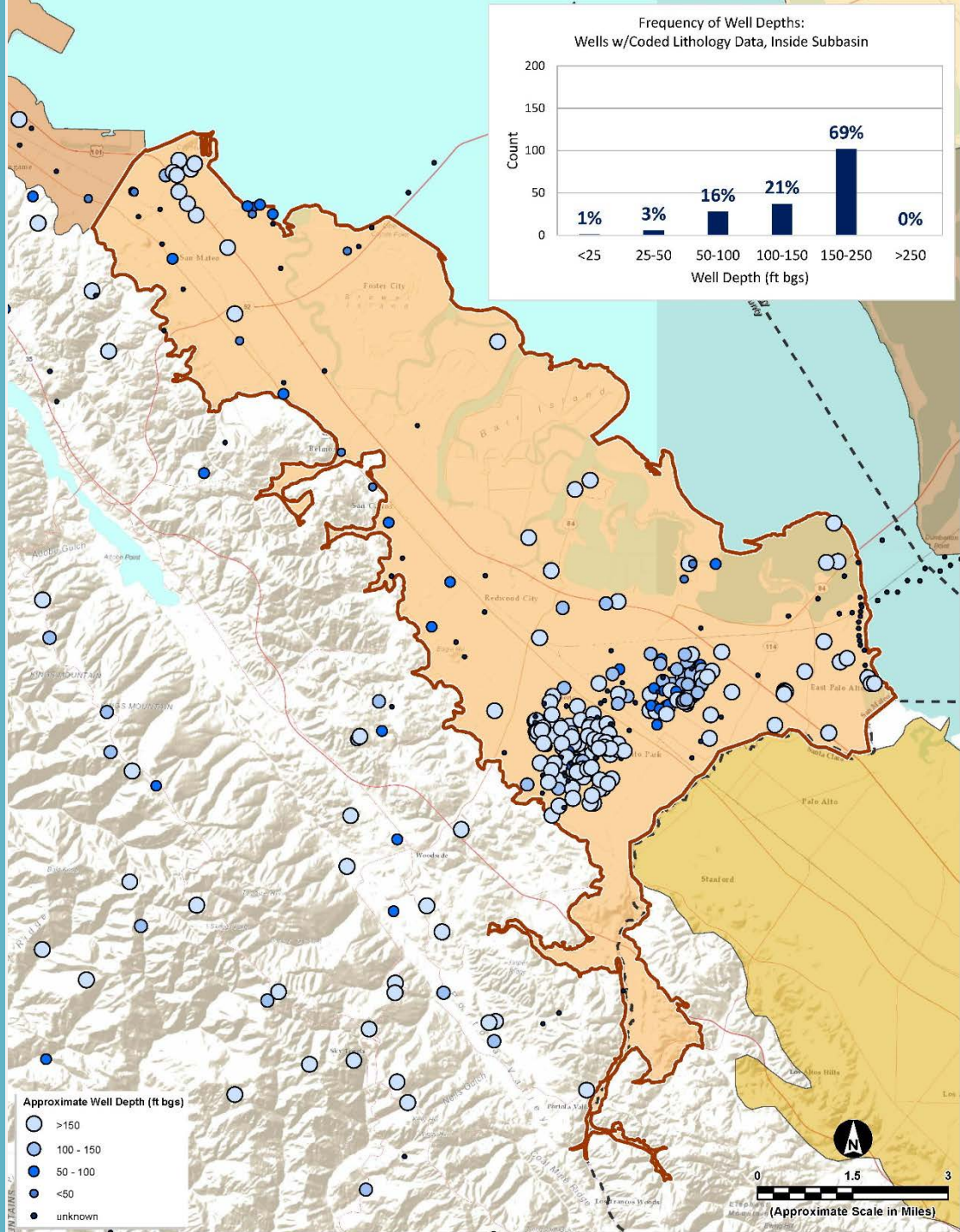
WATER LEVEL DATA

- The majority of wells (80%) are less than 50 feet deep
- Only 4% of wells are greater than 250 feet deep
- Obvious “well clustering”



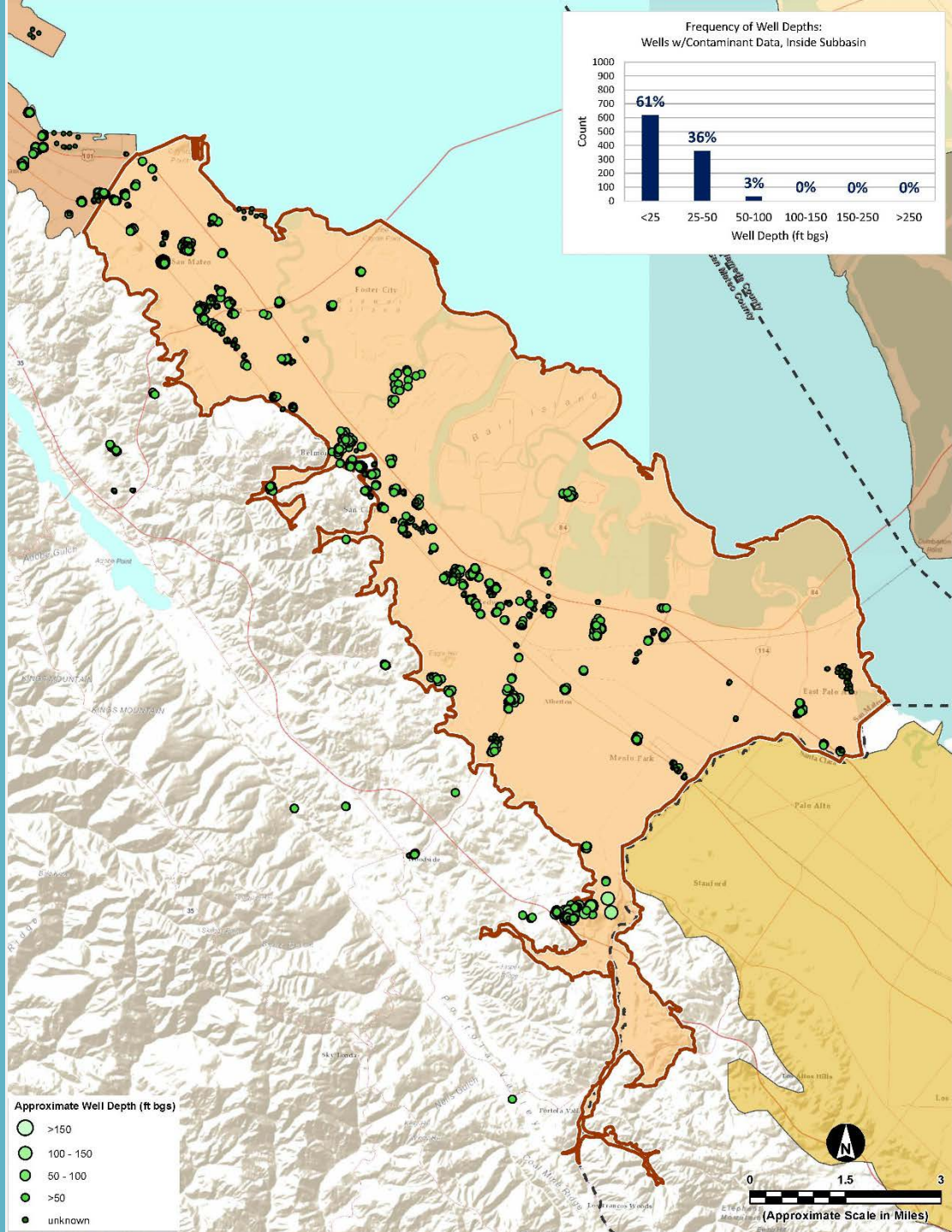
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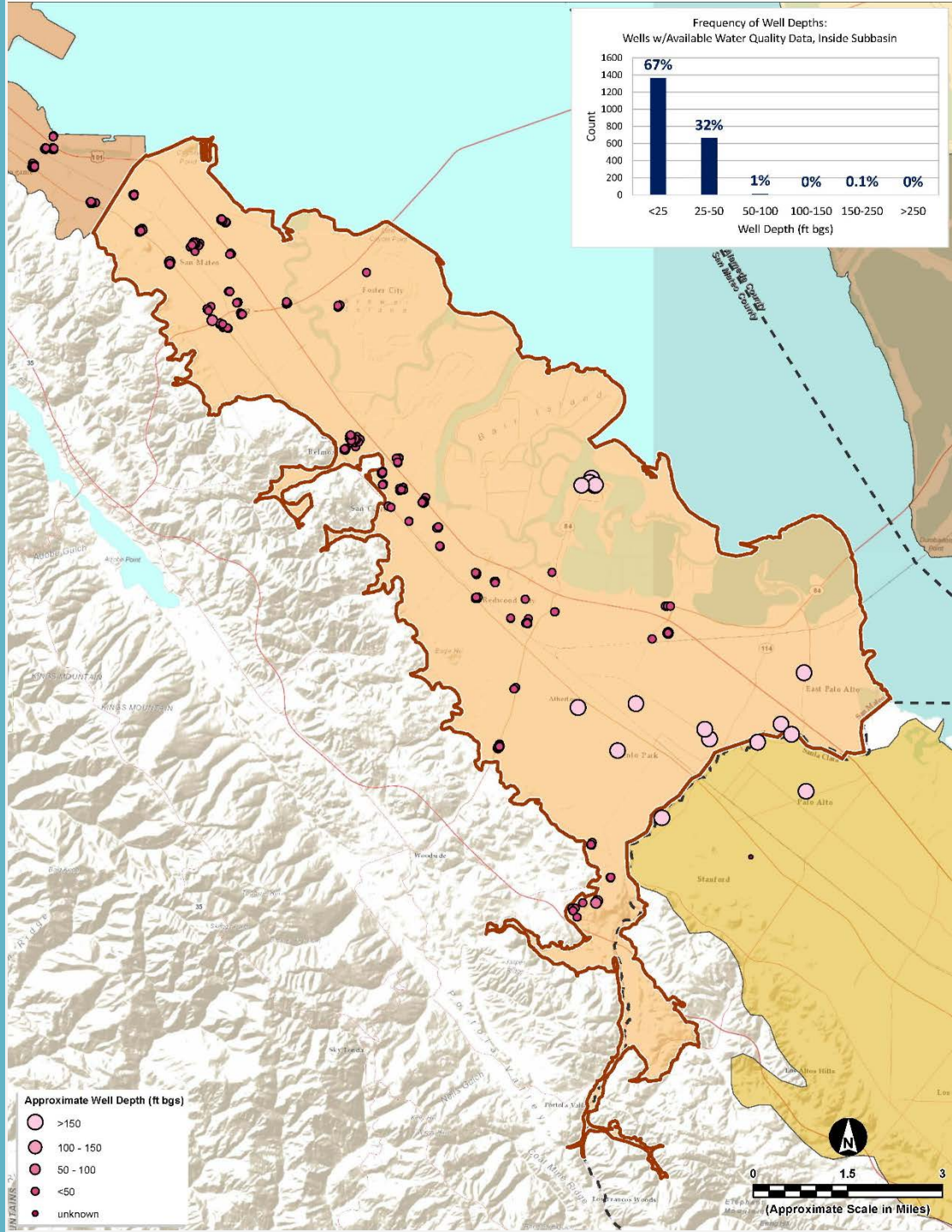
LITHOLOGIC DATA

- Wells with lithologic data are between 50 and 250 feet deep
- Limited lithologic data for wells greater than 250 feet deep
- Lack of data for middle of Basin



GROUNDWATER CONTAMINATION DATA

- Contamination data is available for wells less than 50 feet deep
- The majority of wells (61%) with contamination data are less than 25 feet deep



GENERAL WATER QUALITY DATA

- The majority of wells (67%) with water quality data are less than 25 feet deep
- Only 1.1% of wells with water quality data are greater than 50 feet deep
- Deeper data for southern portion of Basin

STAKEHOLDER INPUT IS KEY TO PROJECT SUCCESS

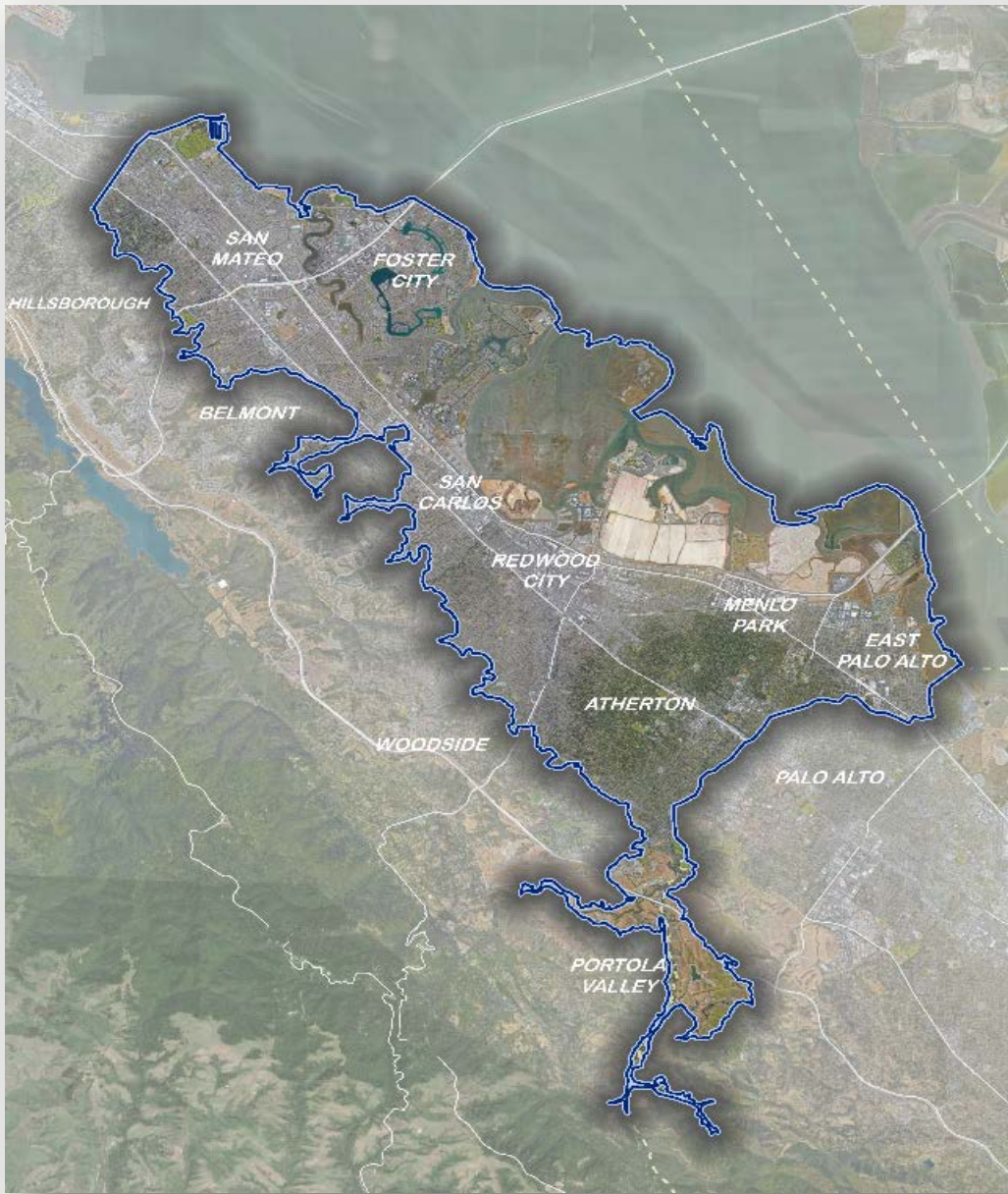
- Input will help frame project direction and results
- Identify potential partnerships
 - Funding
 - Data collection & sharing
 - Joint projects

ANTICIPATED STAKEHOLDER ENGAGEMENT

- Input on major deliverables and scoping items
- Anticipate 10 meetings / workshops over the course of the 2-year project
- Active curation of project website:
<http://green.smcgov.org/san-mateo-plain>
- Next meeting anticipated in early Fall 2016
 - Basin Conceptual Model
 - Basin Water Balance

FUTURE WORKSHOP TOPICS

- Basin Governance and Management Options
- Numerical Model Update and Application
- Review Phase 1 Report
- Phase 2 Scoping Effort – Data Gaps Analysis, Scenario Evaluation
- Report on Phase 2 Efforts and Model Refinements
- Results of Scenario Evaluation
- Review Final Project Report



BREAKOUT SESSION



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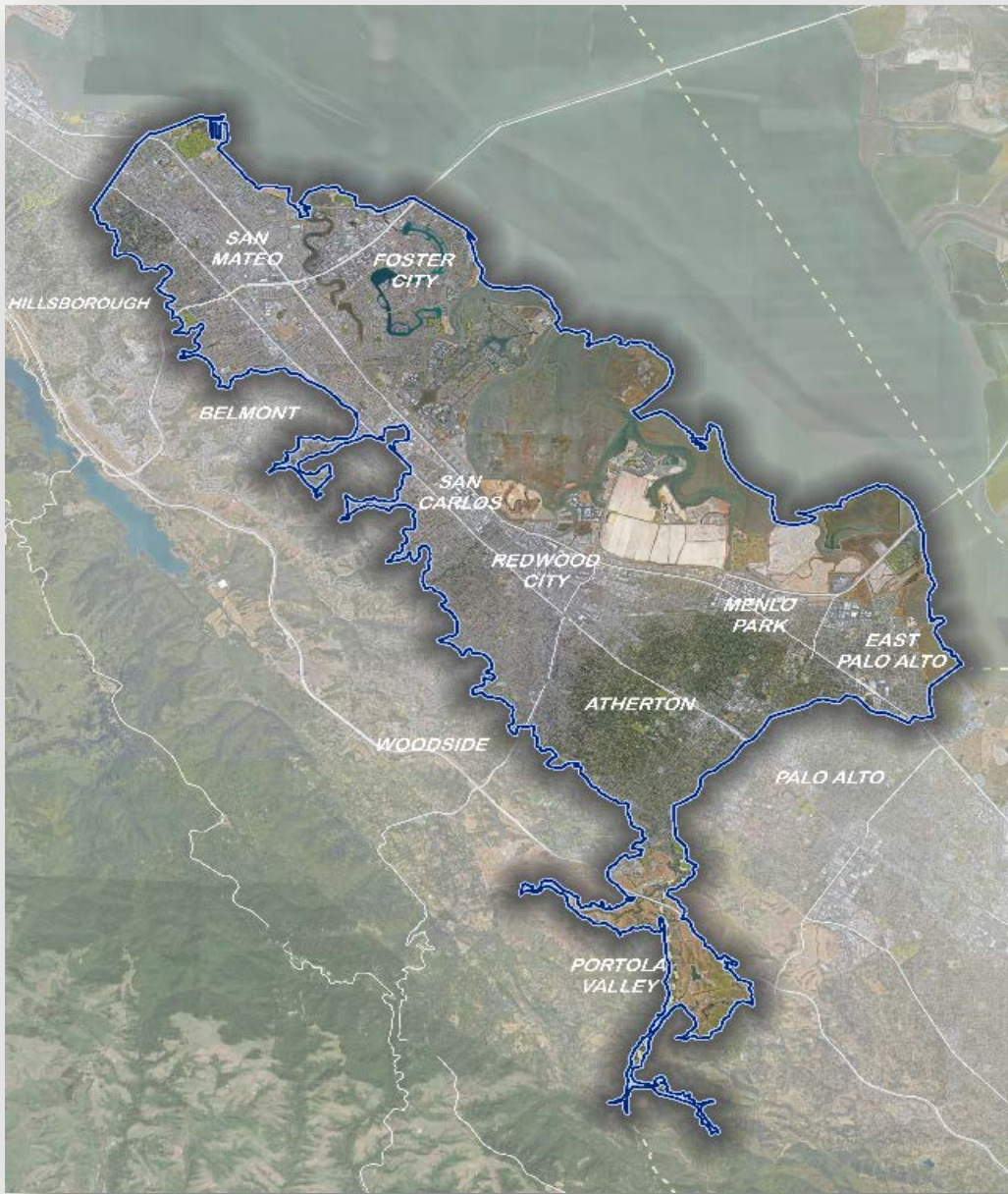
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BREAKOUT SESSION TOPICS

- Basin Issue and Opportunities
- Project Objectives
- Data Needs and Opportunities



ROUND TABLE DISCUSSION



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ROUND TABLE DISCUSSION TOPICS

- Data Needs and Opportunities
- Potential Funding Opportunities

QUESTIONS?

