

Emergency Groundwater Program Update

Board of Public Utilities
November 15, 2018



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Presentation Outline

- Background
- Emergency Groundwater Program
- Implementation Challenges
- Considerations
- Next Steps



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City's Historical Use of Groundwater

- Prior to 1959, City relied primarily on groundwater for water supply
- After 1959, City relied almost exclusively on purchased water from SCWA for water supply
- In July 2005, City converted Farmers Lane Wells from emergency to active status
- City began using Farmers Lane Wells in 2007 to provide supplemental supply during summer months



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Groundwater Master Plan

- 1998 – City identified need to develop additional 8.7 million gallons per day (mgd) of emergency groundwater supply
- Numerous Meetings with BPU to develop Master Plan, with adoption in 2013
- Provide a strategic road map for the City regarding how groundwater resources could be most effectively used to meet the needs of the City's existing and future customers
 - Expand City's understanding of GW resources
 - Focuses on need for emergency supply wells
 - Future production not evaluated due to lack of data from the USGS Study
 - Update Groundwater Master Plan every 5 years



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Emergency GW Analysis Assumptions

EMERGENCY SCENARIOS

- Full Loss of Agency Supply
- Partial Loss of Agency Supply

OUTAGE DURATIONS

- Short-term (2 days)
- Long-term (14 days)

FACILITY STATUS

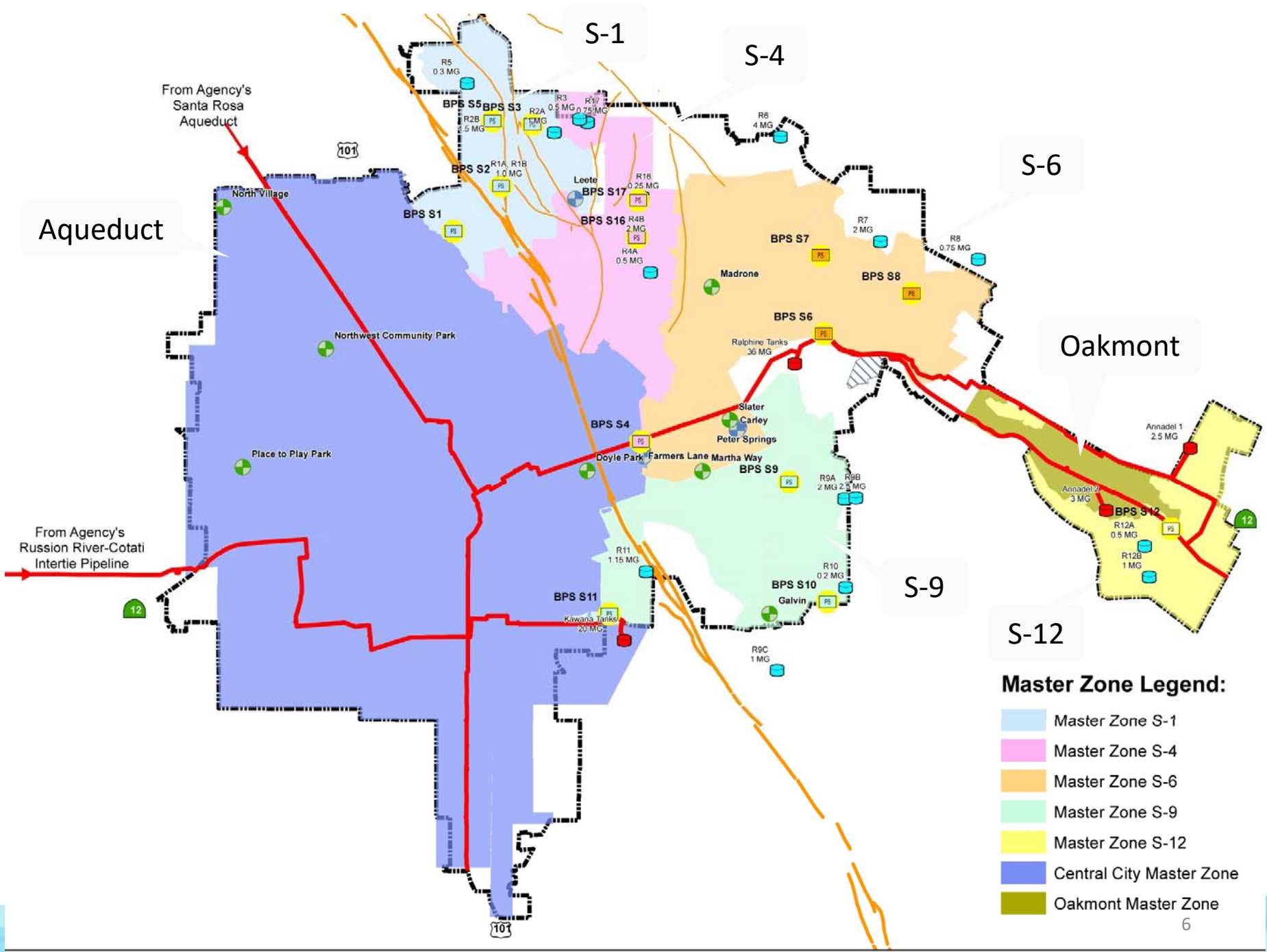
- All Tanks Half Full
- Pump Stations Operational
- Pipelines Operational
- Existing City Wells Operational
- New Emergency Wells Produce 700 gpm (equivalent to 1 mgd)

DEMAND CONDITIONS

- Existing & Buildout Conditions
- Buildout Demand based on uniform growth in City
- Health & Safety

LEVEL OF SERVICE

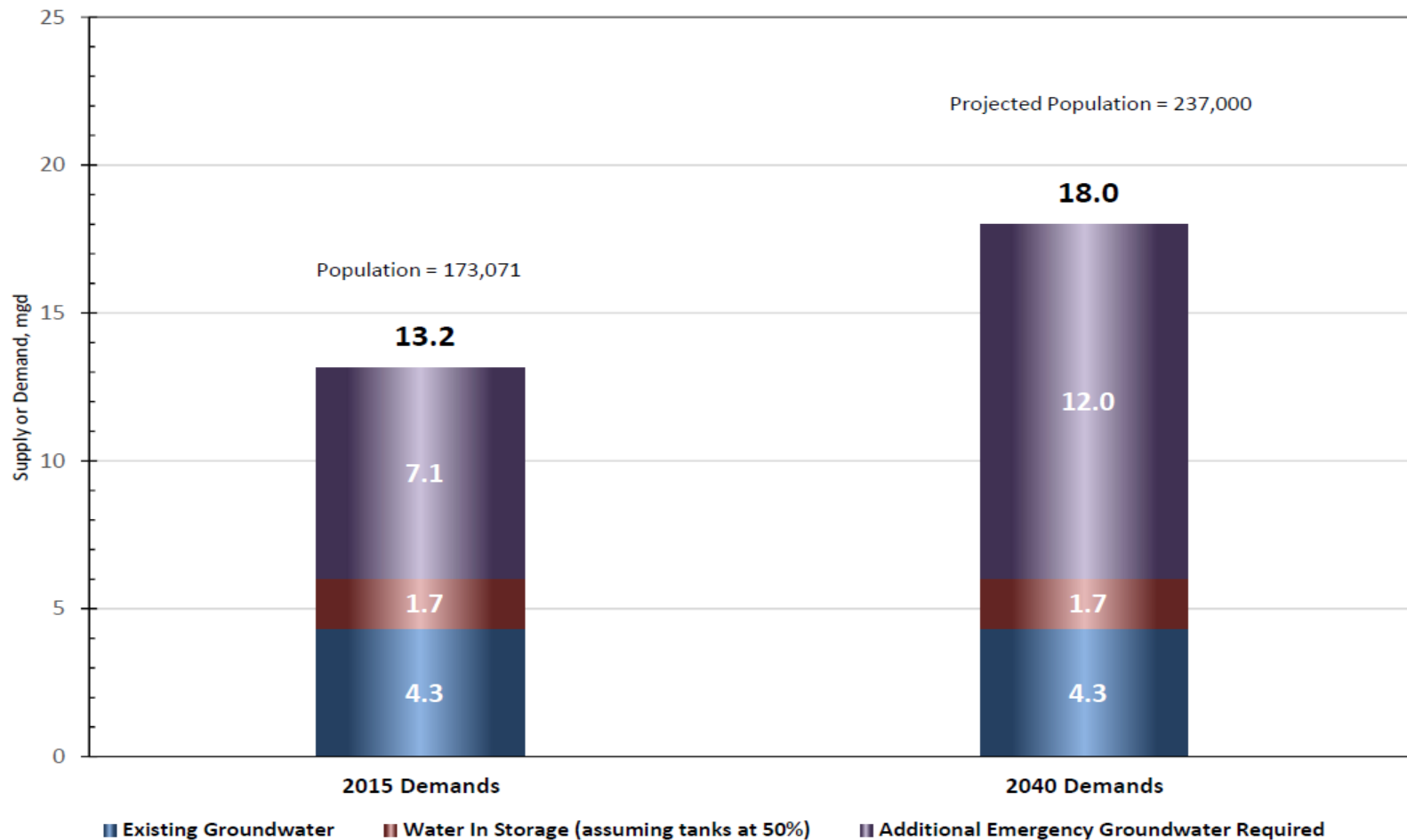
- Service to all pressure zones to extent possible
- Provide supply to key pump stations or other key locations within City for distribution to customers
- Provide supply equivalent to ½ of Winter water use



Master Zone Legend:

- Master Zone S-1
- Master Zone S-4
- Master Zone S-6
- Master Zone S-9
- Master Zone S-12
- Central City Master Zone
- Oakmont Master Zone

Additional Groundwater Need (per GW Master Plan)



Required New Emergency Wells (per GW Master Plan)

- Based on analysis:
 - Existing Demands – 6 to 7 emergency wells
 - Buildout Demands – 11 to 12 emergency wells
 - Each new emergency well assumed to produce 700 gpm (1 mgd)



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Emergency Groundwater Program Implementation

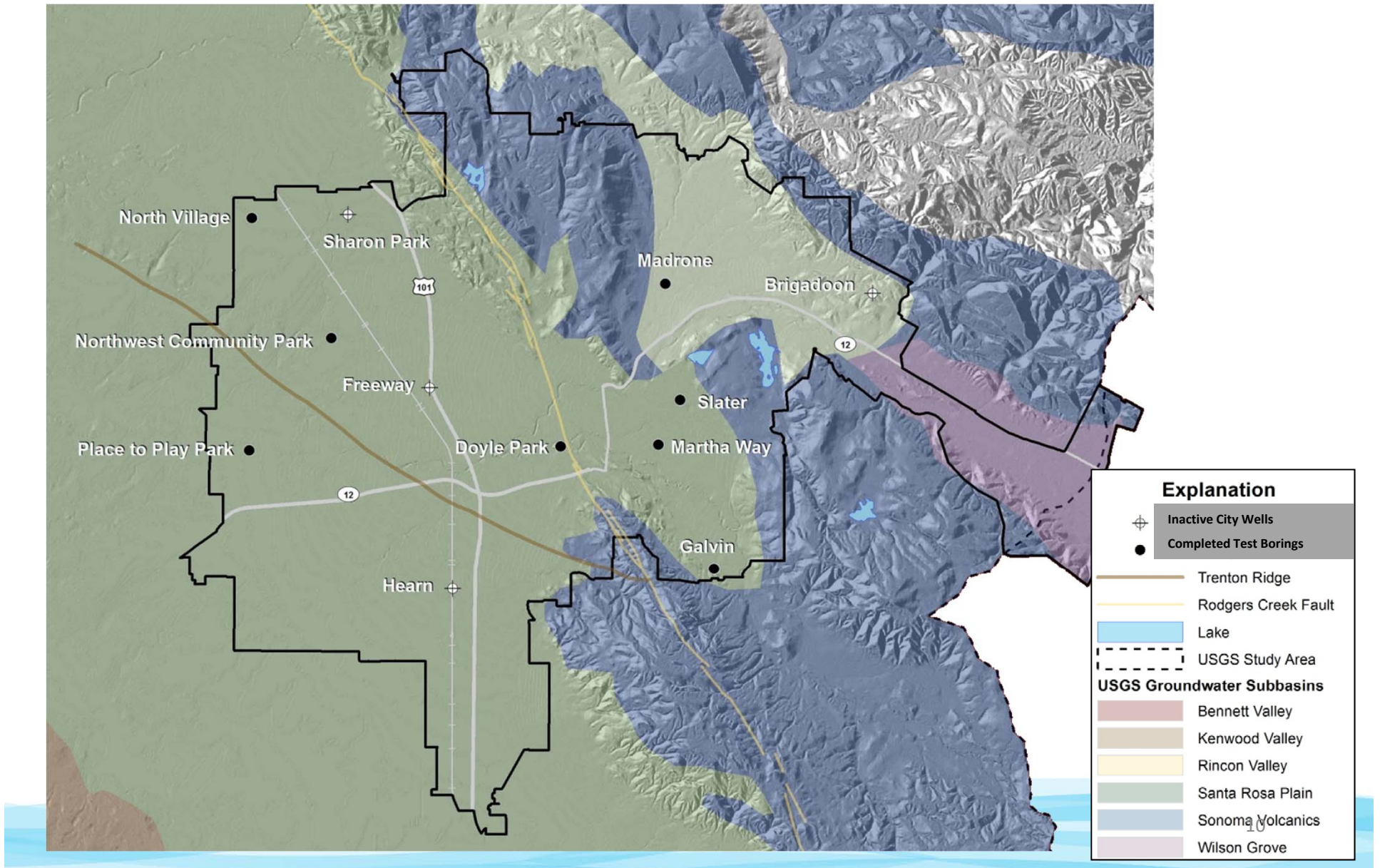
- Conducted Test Well siting studies
- Rigorous Selection Criteria
 - Appropriate relative to Fault Traces, Monitoring, Geology, Recent GW Program Results
 - 50 Feet From Sewers
 - 1,000 Feet From Known Toxic Release Sites
 - Half Acre Parcel Size With Good Access
 - Preferably City-Owned Parcels
 - Water and Sanitary Sewer Access and Capacity
 - Generally Feasible For Drilling Operations



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Test Boring Sites



Implementation Challenges

- Difficulty with property acquisition/negotiating site access
- Project Team explored parallel approaches:
 - Continue to pursue new well sites
 - Convert existing test wells
 - Protect City's existing emergency supply wells
 - Look for opportunities for agreements with others for emergency GW supplies



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Program Findings To-date

- Well yields in the 1,000 – 1,200 gpm range, like Farmers Lane wells, are the exception
 - More typical well yields 350 – 450 gpm
 - Instead of 10-12 emergency wells, may need 20 wells at buildout located throughout the City



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Emergency Groundwater Program

- In 2015/16 worked with BPU Ad Hoc and BPU to refocus program and provide new direction:
 - Convert test borings to emergency wells
 - Continue to pursue property acquisition
 - Continue to pursue additional test borings
 - Partnership opportunities



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What Has Changed?

Costs

- Total expenditures from inception - \$10.7 M
 - Test borings and related expenses
 - Conversion of Farmers Lane to Production
 - Other expenses
- 20 wells = \$60M
 - \$2.5 – \$3M per emergency well
- Competing priorities for limited financial resources



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What Has Changed?

Risk Profile

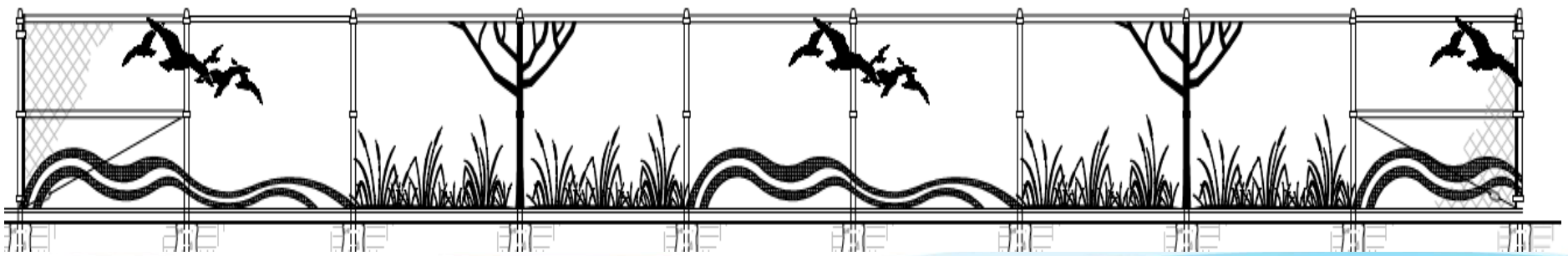
- SC Water Agency has increased seismic reliability of Aqueducts
- SC Water Agency, along with the Retailers, have initiated a Regional Water Supply Resiliency Study



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Status of Potential New Wells

- A Place to Play
 - Design Complete
 - Arts in Public Places Committee
 - Master Plan Amendment
- Madrone School
 - No longer interested in working with City
- Other Park sites
 - In discussion



Additional Opportunities for New Wells

- Bennett Valley Golf Course
 - Exploring opportunities
- Highway Site
- Oakmont Treatment Plant
 - Site constraints
- 618 Speers Road
 - Concerns/questions from residents
 - 3 community meetings held



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Current Emergency Supply

All existing City infrastructure

- Farmers Lane Well - Upgrades completed
- Carley and Peter Springs – Planned upgrades
- Leete Well – Evaluation for rehabilitation

- Collectively – will provide approximately 15 gal/day/person for emergency supply



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Next Steps

- BPU Study Session in 2019, including:
 - Re-consider Level-of-Service for Emergency Water Supply
 1. FEMA/EPA/Red Cross recommendation¹ = 1(0.5-5) gpd/p
 2. Utilization of City's existing wells = 12-15 gpd/p
 3. Current GW Master Plan ½ Winter water use = 65 gpd/p
 - Regional partnering for additional emergency GW supplies
 - Cities (Rohnert Park)
 - Active Ag Wells

Questions?



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