



Item I

Submission of the Concept Design Report for the Water Conveyance Facilities Project and Review of the Groundwater Modeling Technical Memorandum

Morro Bay, CA
June 04, 2019

Recommendations



- Accept the Final Draft Concept Design Report
- Provide comments and input on the presentation for the Groundwater Modeling Technical Memorandum



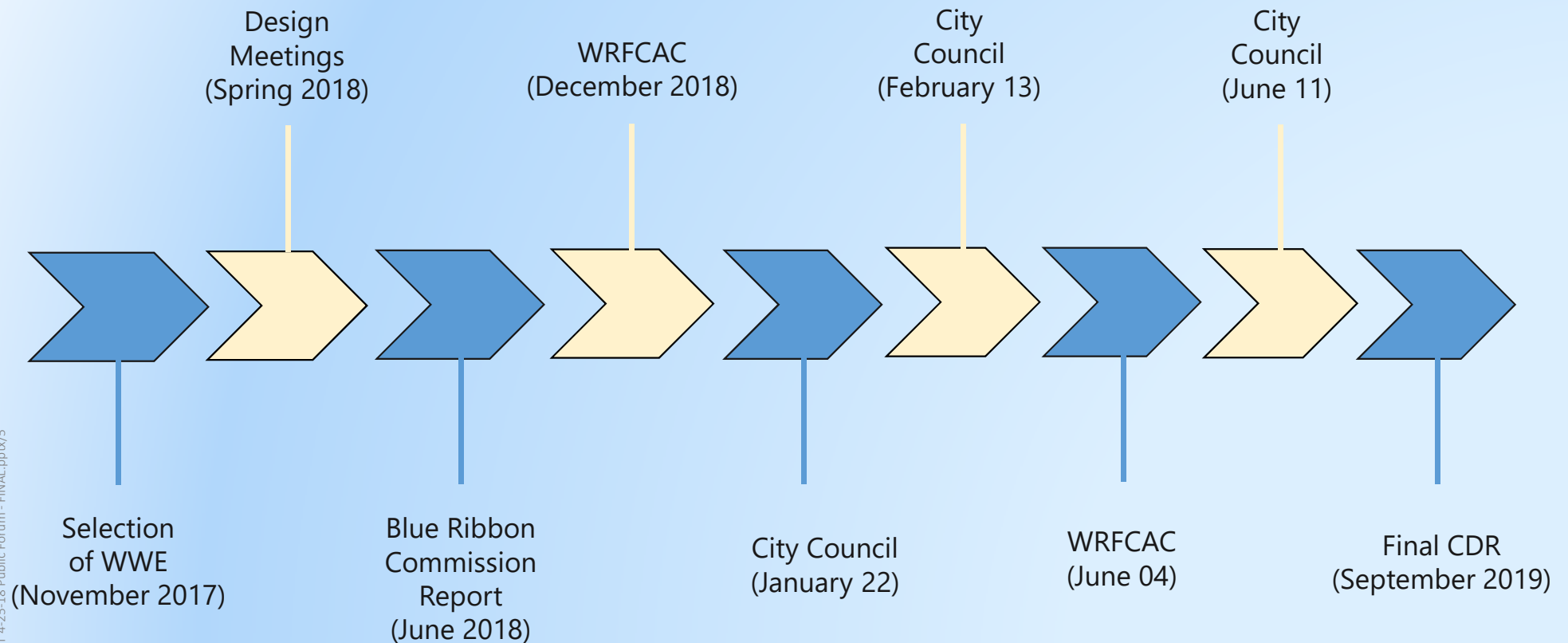
Final Draft Concept Design Report

Purpose of the Concept Design Report

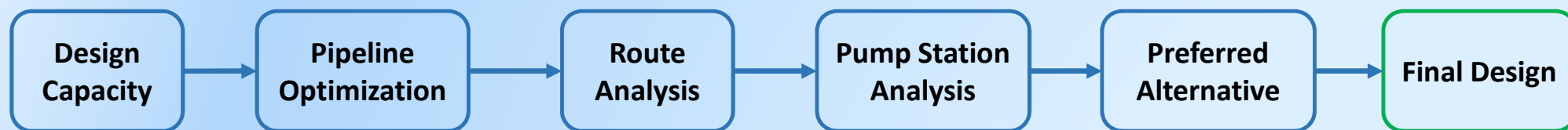


- Siting, design criteria, and project constraints for the WRF lift station(s)
- Alignment, design criteria, and project constraints for the offsite pipelines (sewer forcemains, brine/effluent line, communication conduit, and IPR line)

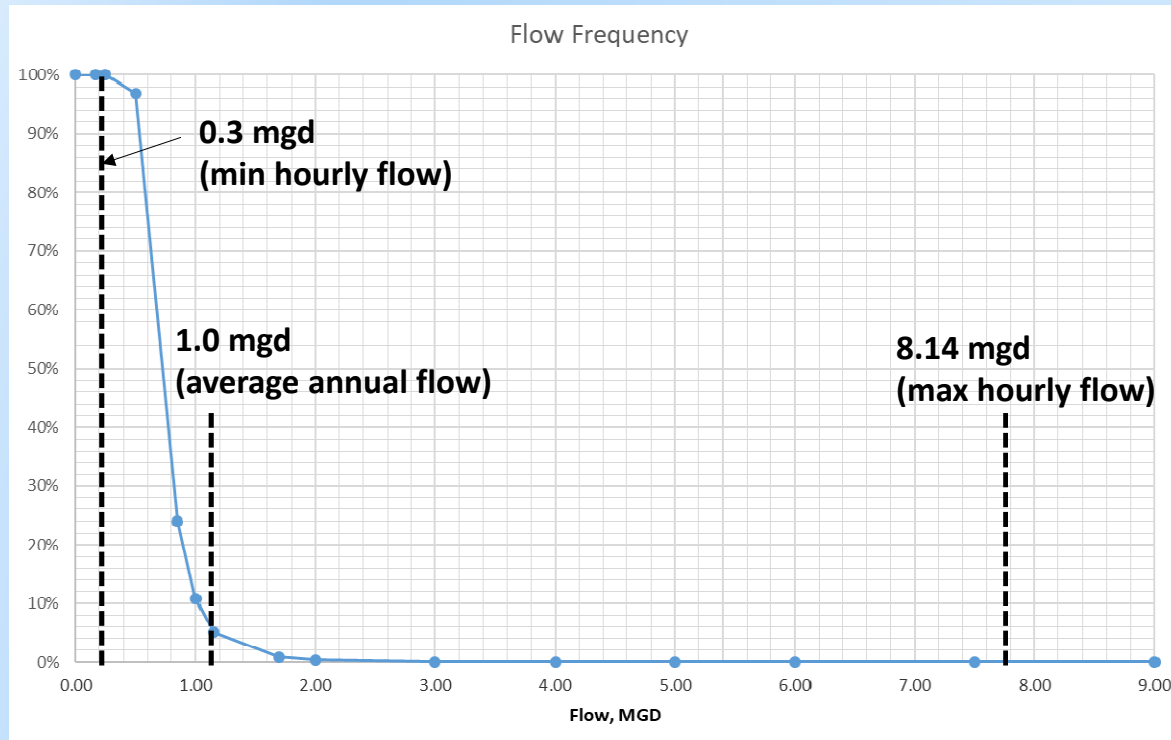
Conceptual design activities



Concept Design Report sequence



Design Capacity



Source Documents

- Facility Master Plan
- City Historical Flow Meter Data
- OneWater Plan

Brine (outfall) Pipeline =
8.14 mgd (max hourly flow)

IPR Pipeline =
0.80 mgd (average annual flow)

Pipeline Optimization



Sewer Force mains

- Dual force mains
- Size: 12" and 16" diameter pipelines
- Material: Competitively bid HDPE and FPVC

Brine (Outfall) Pipeline

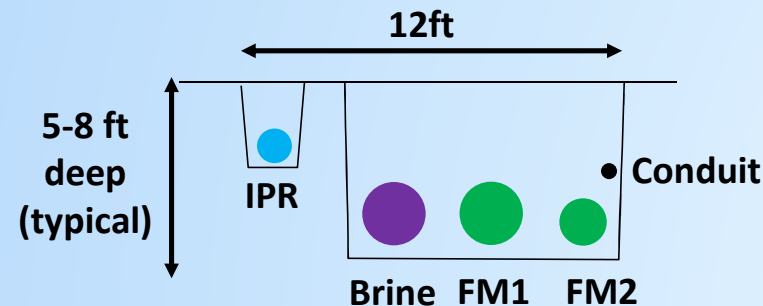
- Size: 16" diameter pipelines
- Material: Competitively bid HDPE and FPVC

Indirect Potable Reuse (IPR) Pipeline

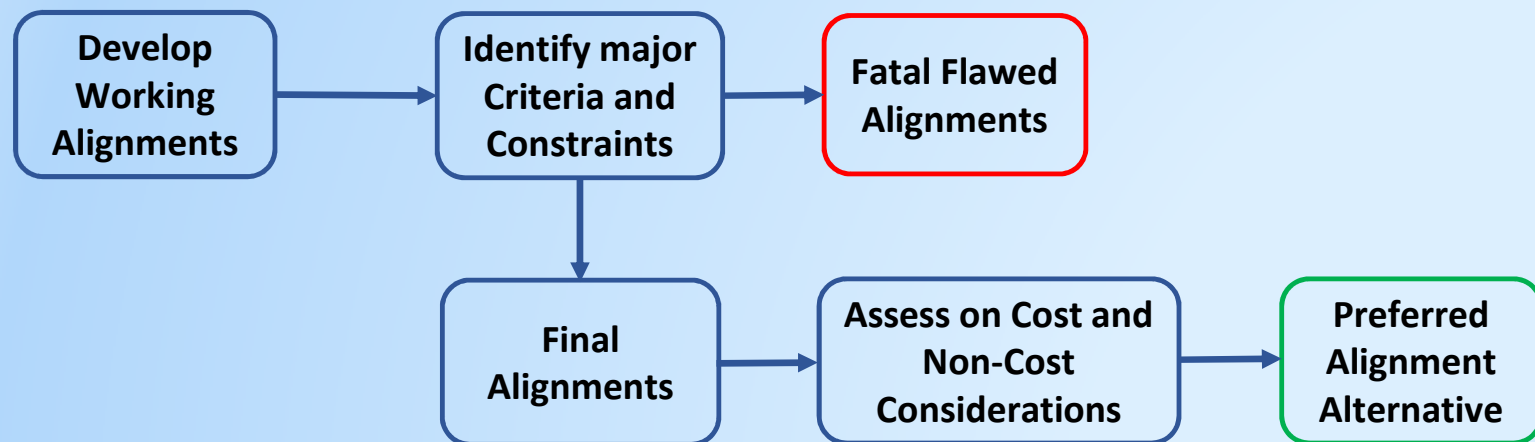
- Size: 8" diameter pipelines
- Material: Competitively bid HDPE and FPVC

Communication Conduit (Fiber Optic)

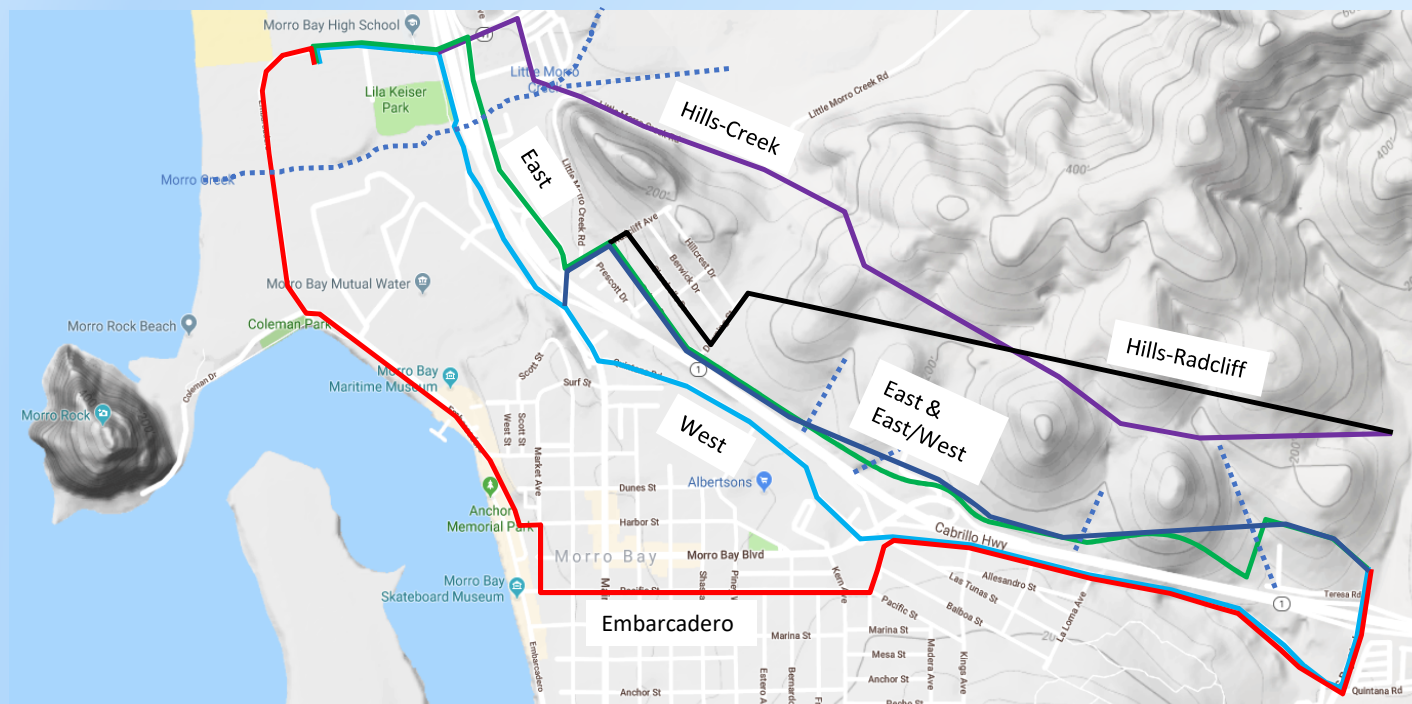
- 4" diameter PVC Conduit



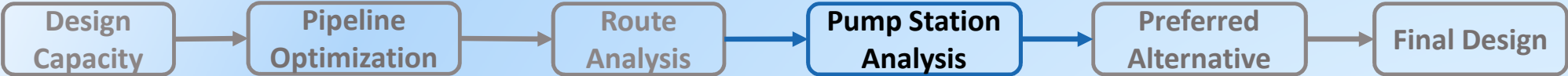
Route Analysis Summary



Working Alignments



Pump Station Analysis

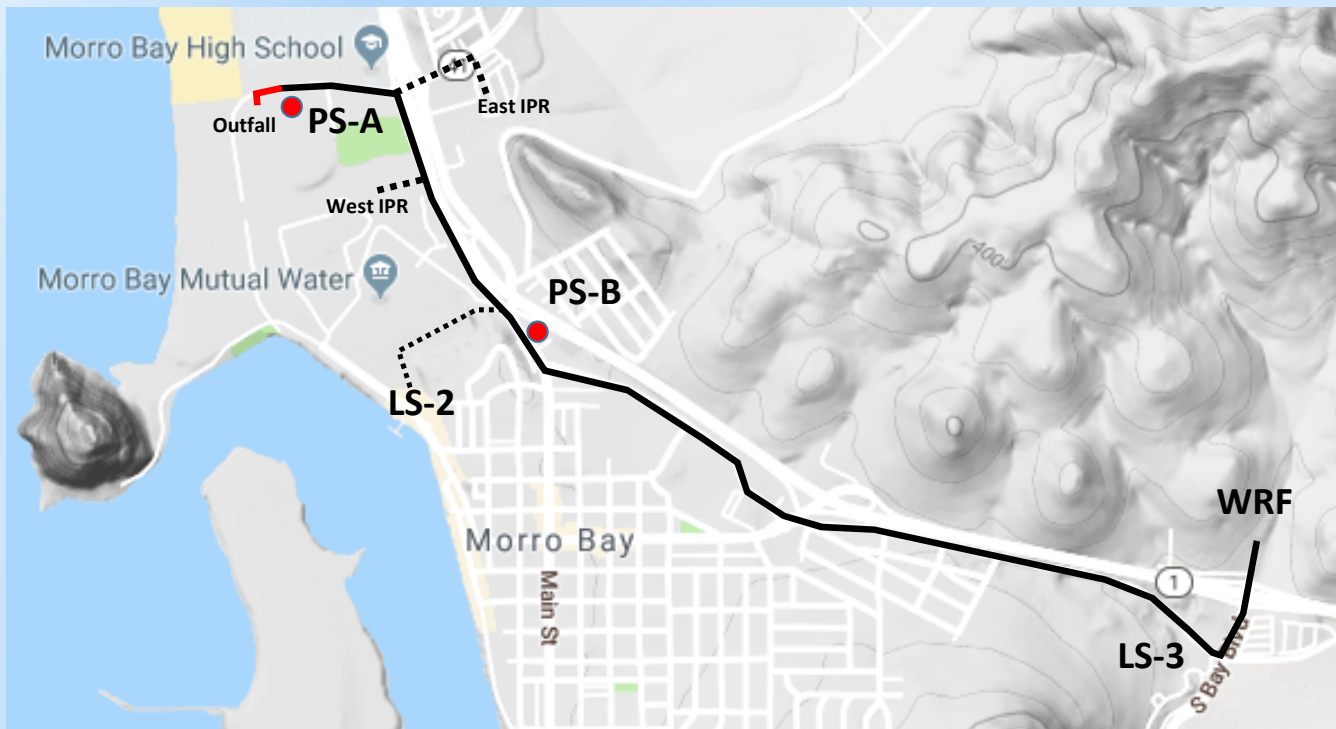


Key Criteria and Constraints	Single	Dual
# of New Stations	0	-1
Single vs. PS-A Footprint	-1	+1
Standard Wet Well Configuration	-1	+1
Facility Maintenance Impacts	0	-1
Pipe Length for Pigging	-1	+1
LS-2 FM Redundancy	0	+1
Total Score	-3	+2

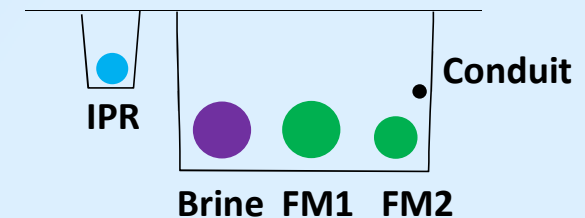
Project Costs: Pump Station	\$11.0M	\$8.4M
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Preferred Alternative



West Alignment



Schedule changes since initial draft

Milestone Activities	Initial Draft (November 2018)	Final Draft (May 2019)
60-Percent Design Submittal	July 09, 2019	August 30, 2019
90 Percent Design Submittal	October 15, 2019	December 20, 2019

52	Production (PRIOR to receipt of Survey, Geotech, Utility Locating)	60 days	Tue 12/18/18	Mon 3/11/19
53	Production (AFTER receipt of Survey, Geotech, Utility Locating)	30 days	Mon 7/8/19	Fri 8/16/19
54	Internal QA/QC and Revisions	10 days	Mon 8/19/19	Fri 8/30/19
55	Submit to City	0 days	Fri 8/30/19	Fri 8/30/19

Bid Opening	April 03, 2020	June 17, 2020
Contractor Notice to Proceed	May 11, 2020	July 22, 2020
Construction Substantial Completion	September 17, 2021	November 26, 2019



Questions



Groundwater Modeling Technical Memorandum

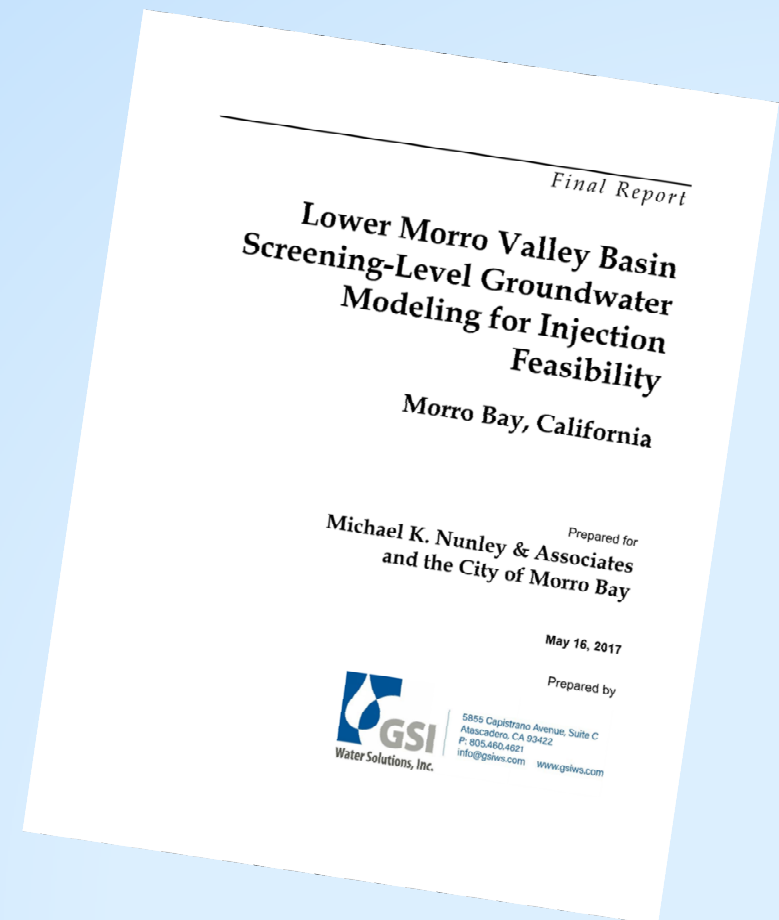
Summary of hydrogeological activities



- Feasibility Study
- Phase 1
- Phase 2
- Phase 3
- Recycled Water Facilities Final Design

Feasibility Study findings

- Feasible for aquifer to accept injection
- A minimum of four injection wells needed
- Approximately 1,200 acre-feet-per year (AFY) of groundwater could potentially be produced using IPR
- Minimum 2-month subsurface retention time likely

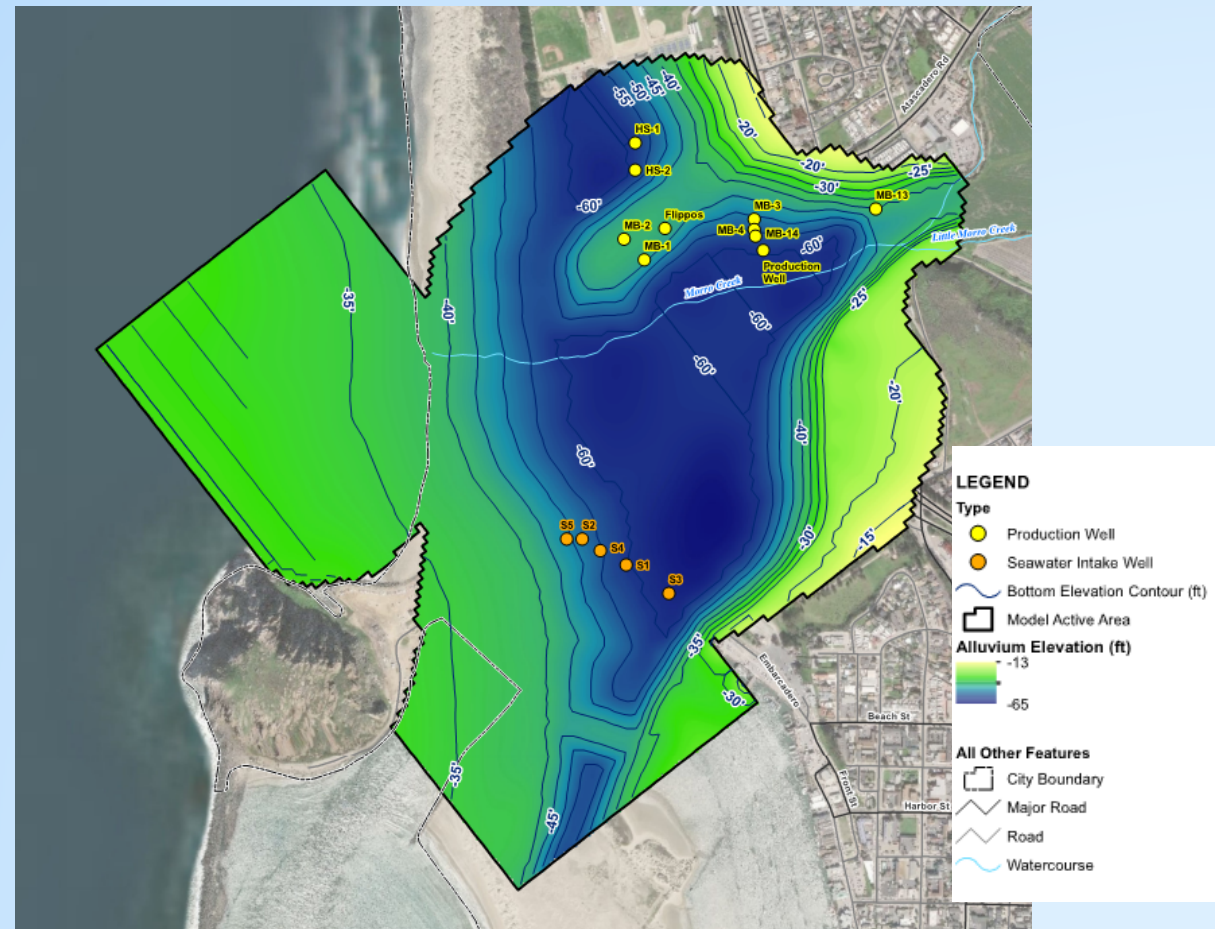


Phase 1 scope of work

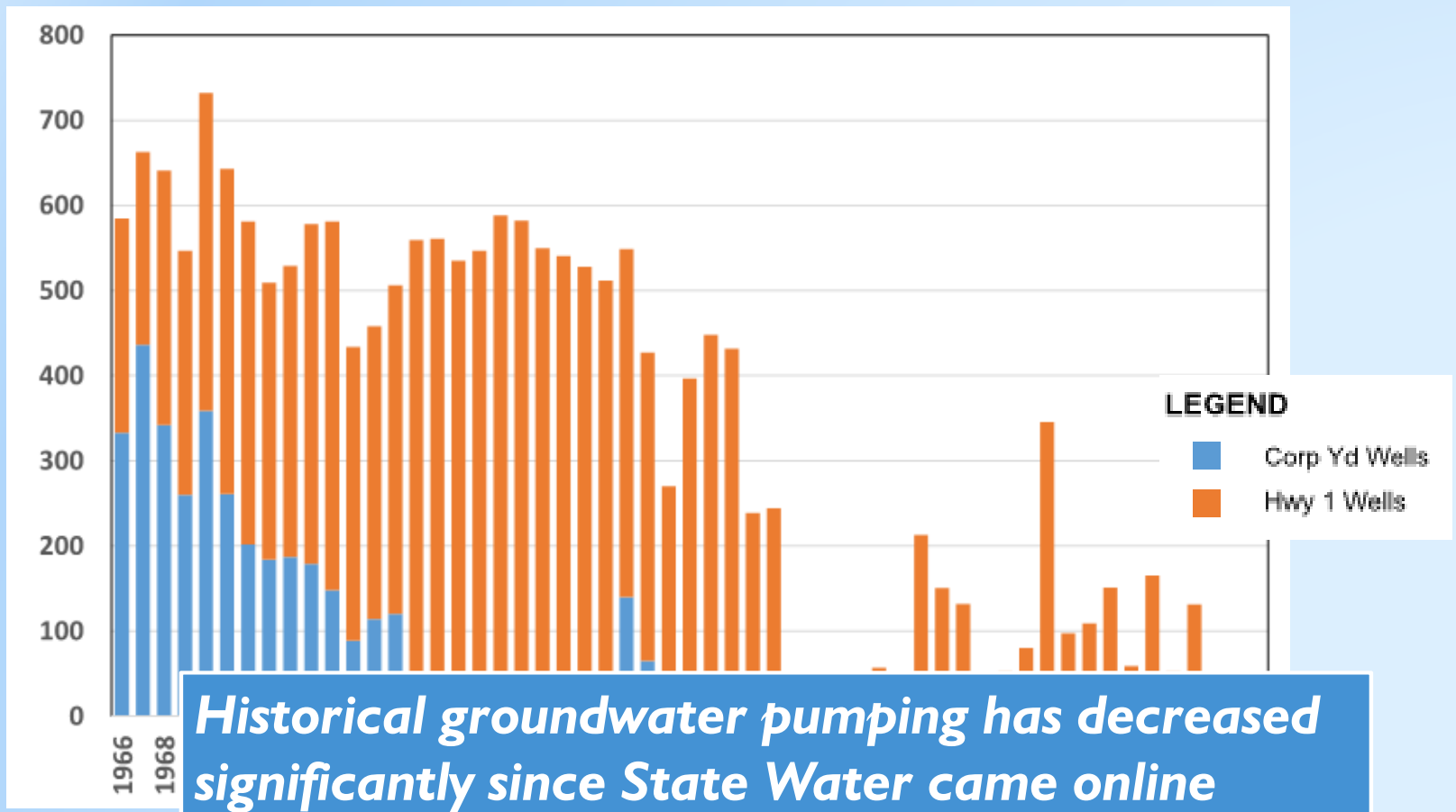
- Investigate pumping of the City's full permitted allotment of 581 AFY without injection
- Analysis of possible groundwater nitrate levels under different injection scenarios
- Analysis of potential changes in groundwater chemistry due to potential salt water intrusion

Phase 1 approach

- Pumping data between 1965 and 2018 from 7 wells
- TDS and nitrate data to early 1980s
- Combination of MODFLOW and MODPATH

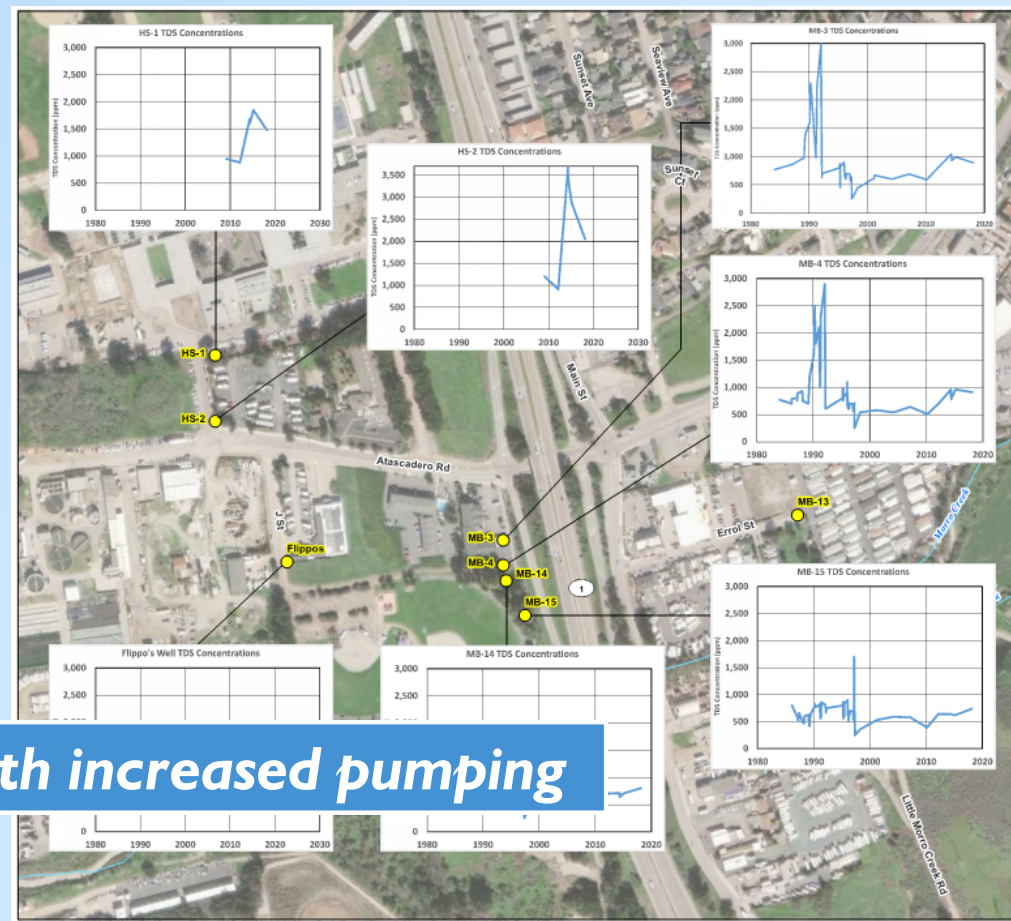


Historical Lower Morro basin pumping



Impacts of pumping on seawater intrusion

- 581 AFY extraction without injection
- 38-year simulation period
- 5,000 to 17,000 mg/L¹



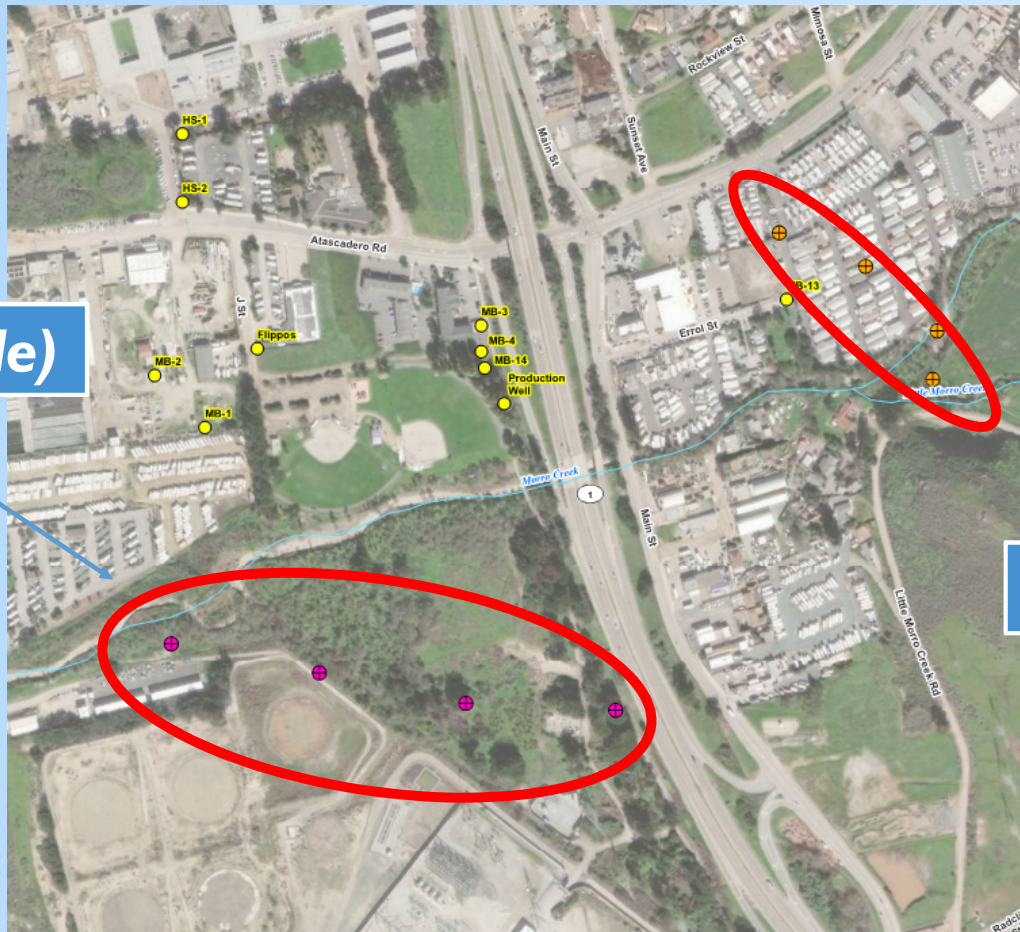
At risk of seawater intrusion with increased pumping

1. Secondary MCL for TDS is 1,000 mg/L

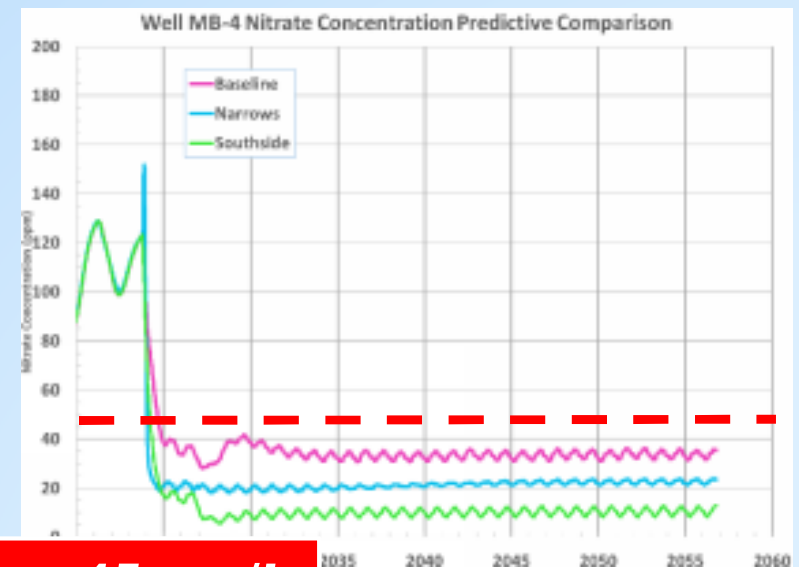
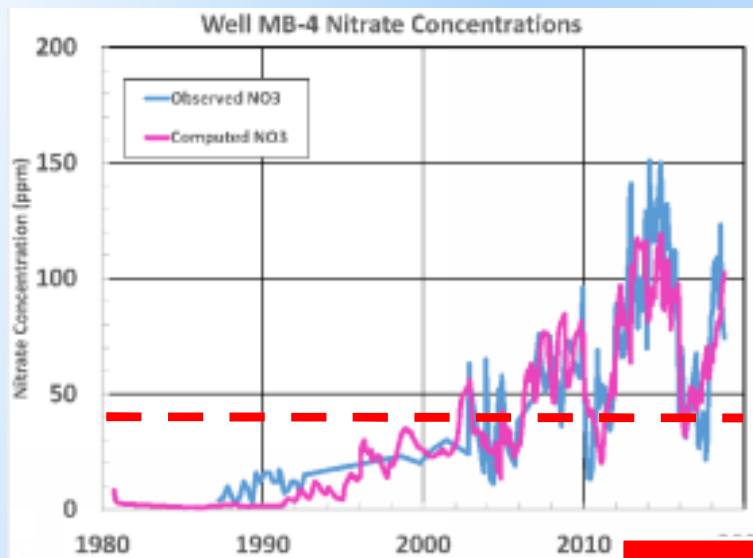
Modeled injection well locations

West (Southside)

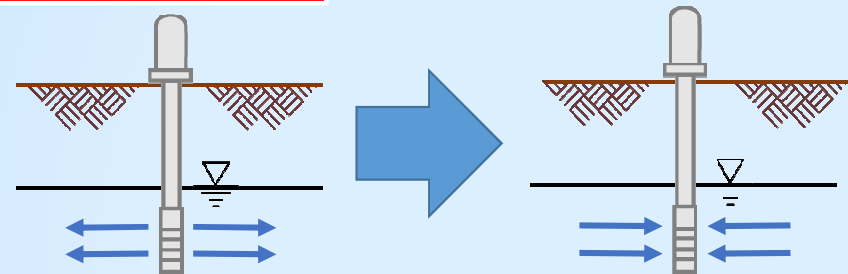
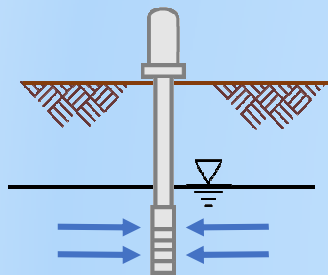
East (Narrows)



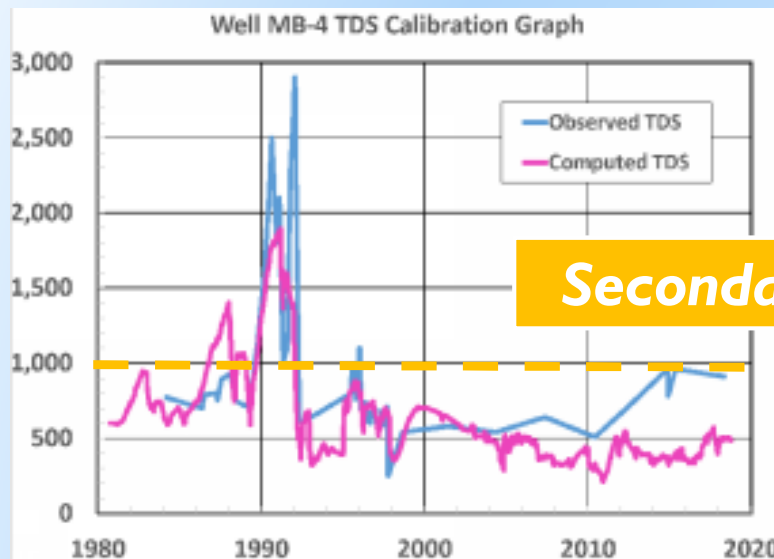
Impacts of injection on nitrates



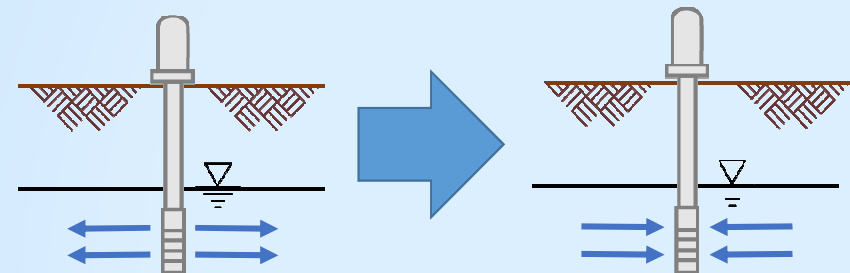
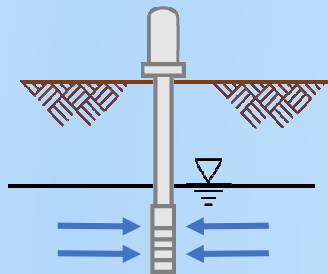
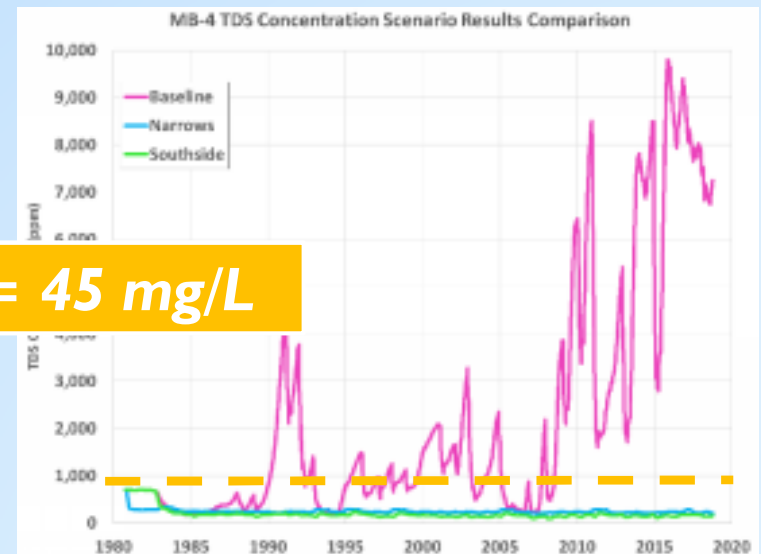
Primary MCL (NO_3) = 45 mg/L



Impacts of injection on nitrates



Secondary MCL (TDS) = 45 mg/L



Phase 2 objectives

- Prepare test well design and permitting
- Evaluate two potential injection well locations and recommend preferred area for testing
- Secure permitting for injection testing
- Conduct pilot injection testing
- Update groundwater model
- Perform travel time analysis and clogging analysis
- Perform seawater intrusion monitoring
- Perform groundwater level monitoring

Phase 2 status update

- Evaluation of injection locations
 - CPT for the East Area – Completed
- Prepare test well design and permitting
 - East Area
 - Install piezometer on Errol Street – June 13, 2019
 - Pump testing for MB-13 well – June 2019
 - West Area
 - Work Plan sent to Vistra – June 04, 2019
 - Perform seawater intrusion monitoring – Ongoing (December 2018)
 - Perform groundwater level monitoring – Ongoing (December 2018)

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Questions and Discussion