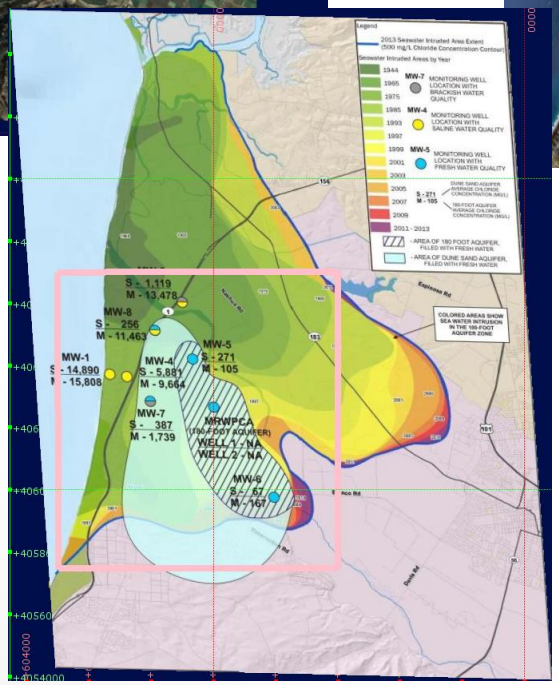
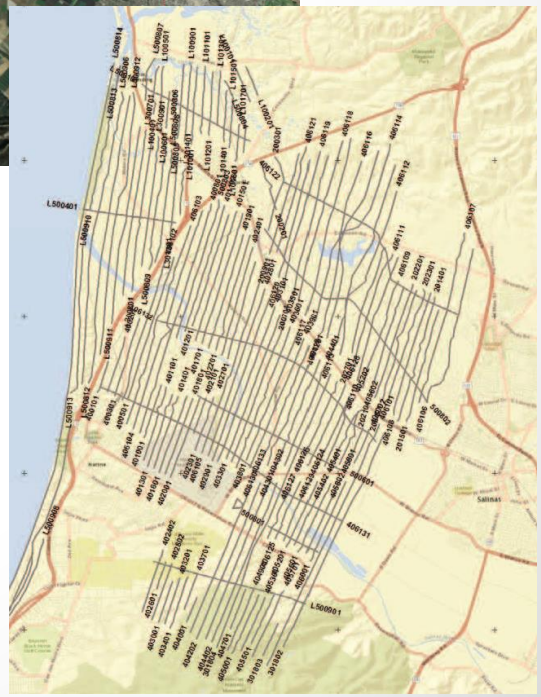
MARINA COAST WATER DISTRICT

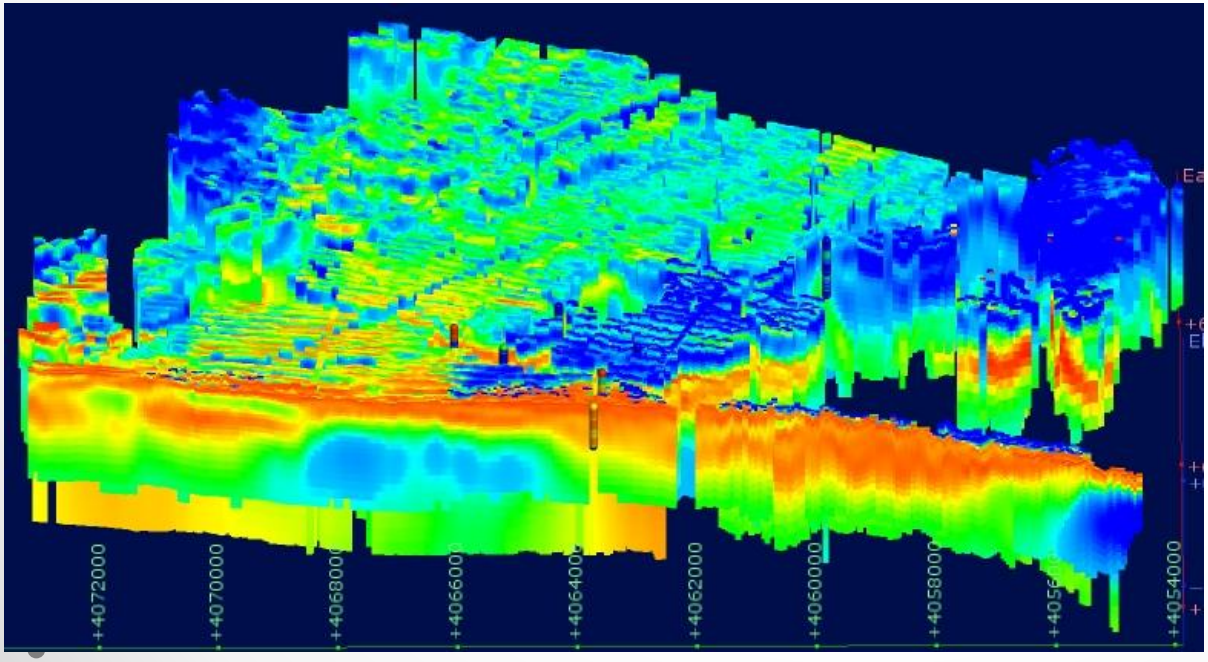
BOARD OF DIRECTORS MEETING
AUGUST 7, 2017

AEM STUDY AREA

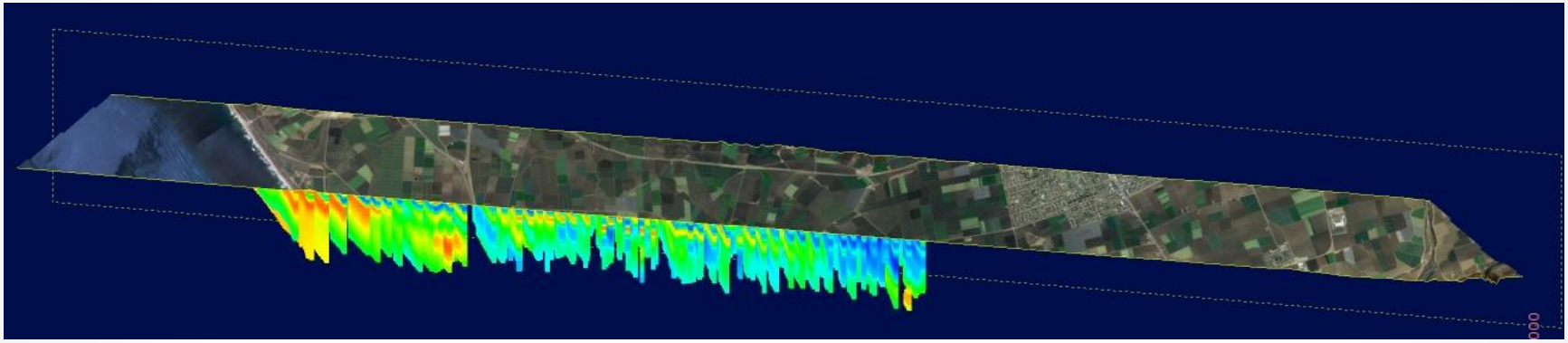


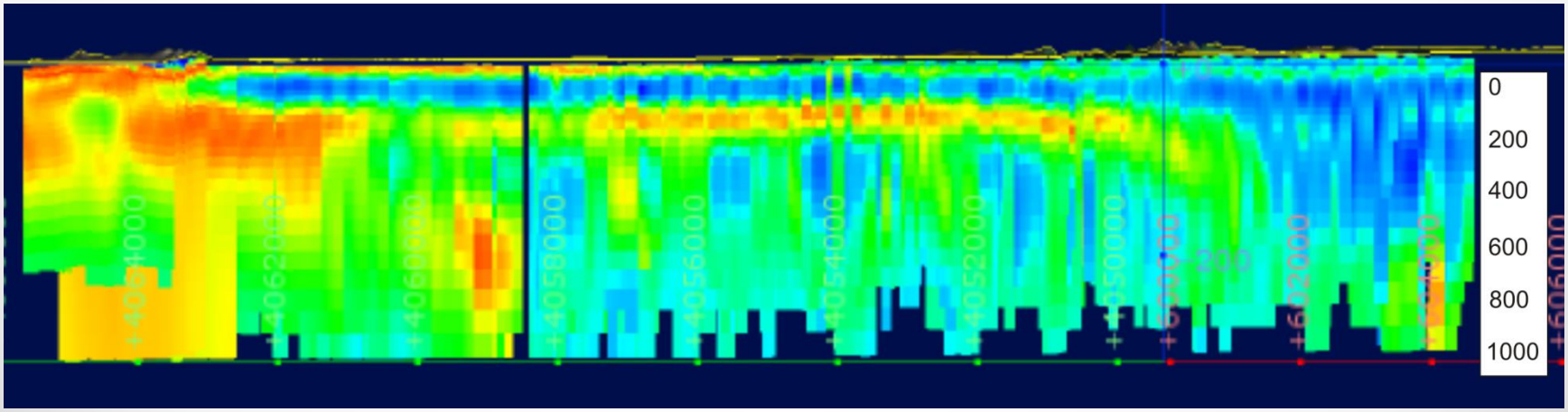


WAS THE AEM SURVEY A SUCCESS?



PROFILE SELECTION

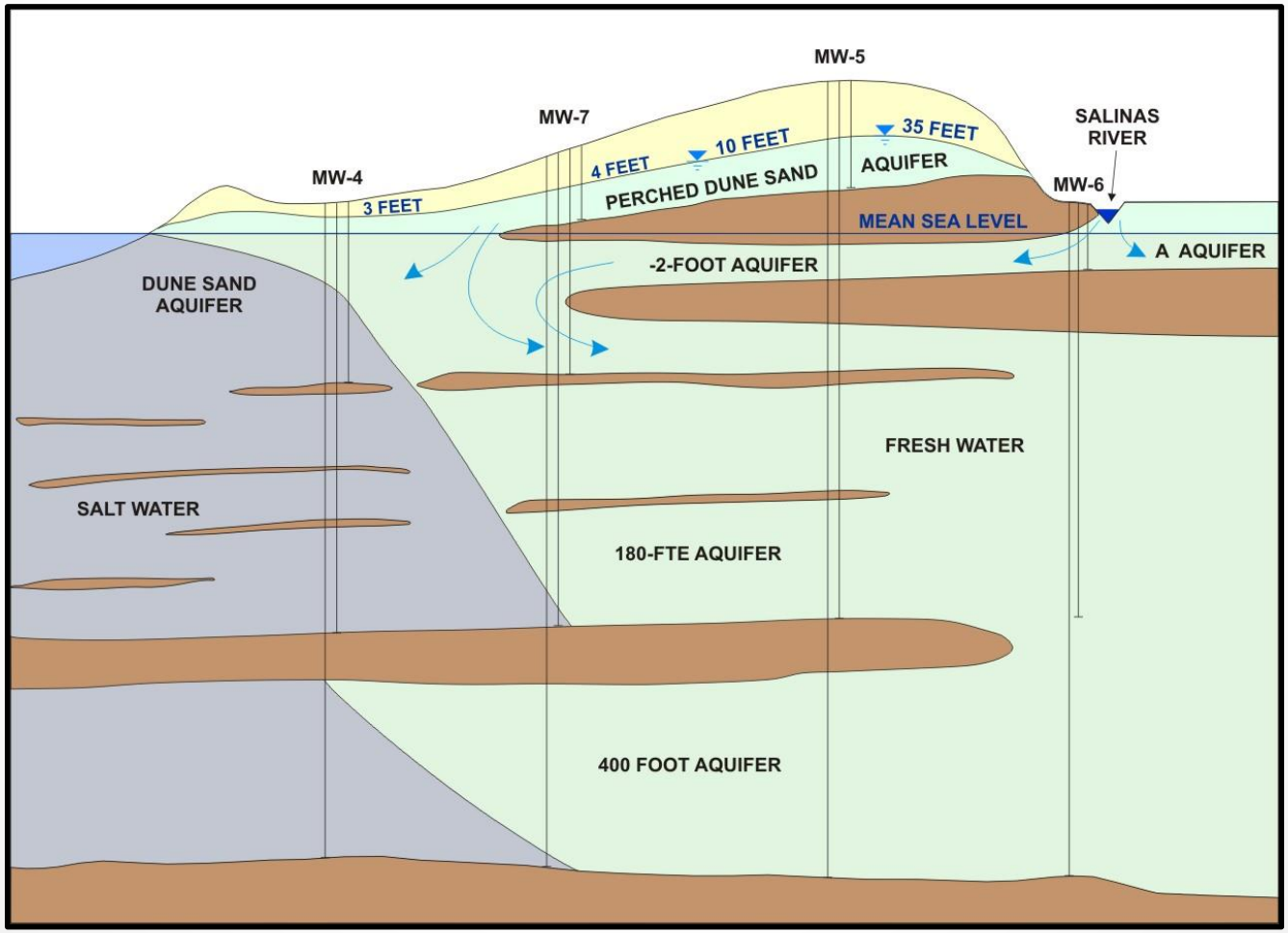




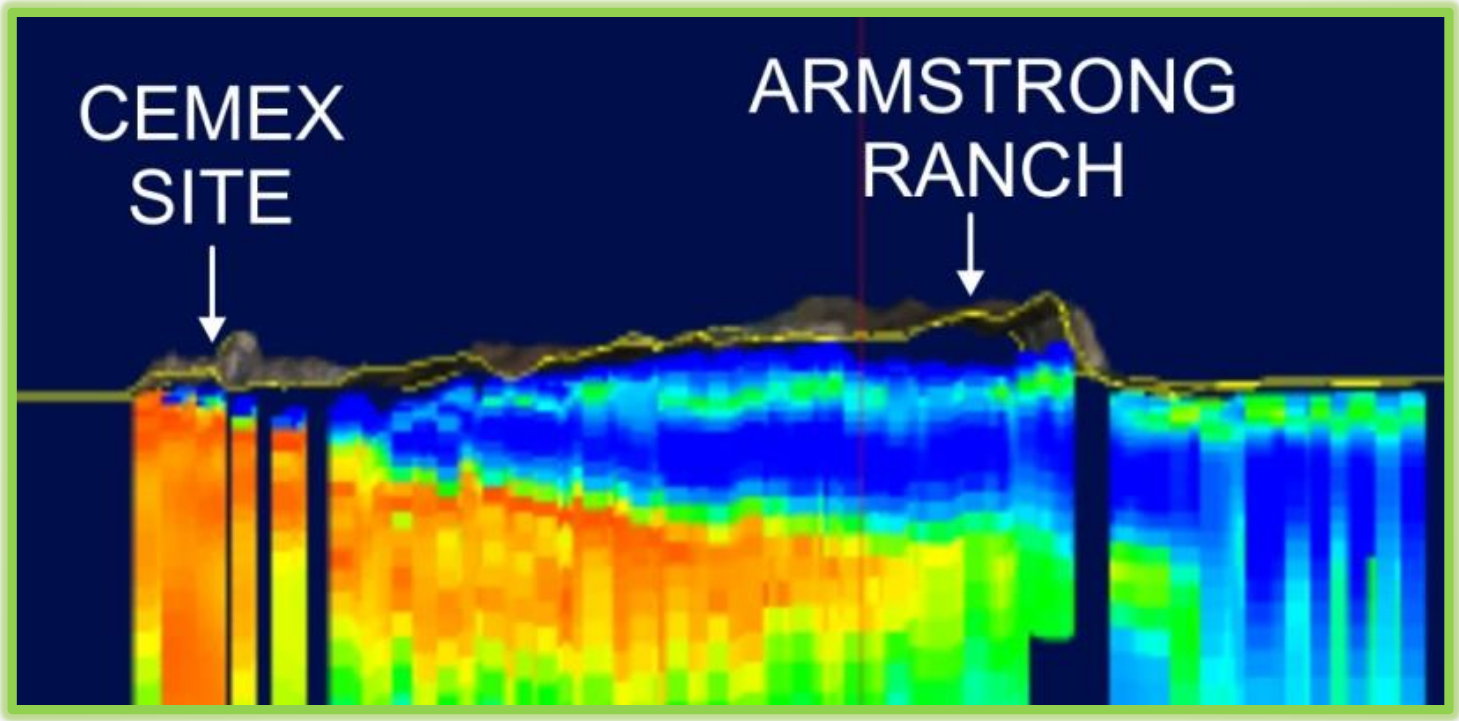
FUTURE USES OF AEM DATA

- GROUNDWATER BASIN MANAGEMENT AND FUTURE AREAS OF STUDY INCLUDING APPARENT AREAS OF SEAWATER INTRUSION PREVIOUSLY UNIDENTIFIED AND LOCATING MONITORING WELL NETWORKS
- INTAKE LOCATIONS FOR SALINE GROUNDWATER OR BRACKISH GROUNDWATER PRODUCTION PROJECTS
- HYDROGEOLOGIC FRAMEWORK FOR GROUNDWATER MODEL CONSTRUCTION
- LOCATION OF GROUNDWATER RECHARGE PROJECTS INCLUDING SURFACE SPREADING OR ASR
- MUNICIPAL SUPPLY WELL LOCATIONS AND TARGET DEPTHS

CONCEPTUAL INTERPRETATION OF MPWSP TEST SLANT WELL DATA

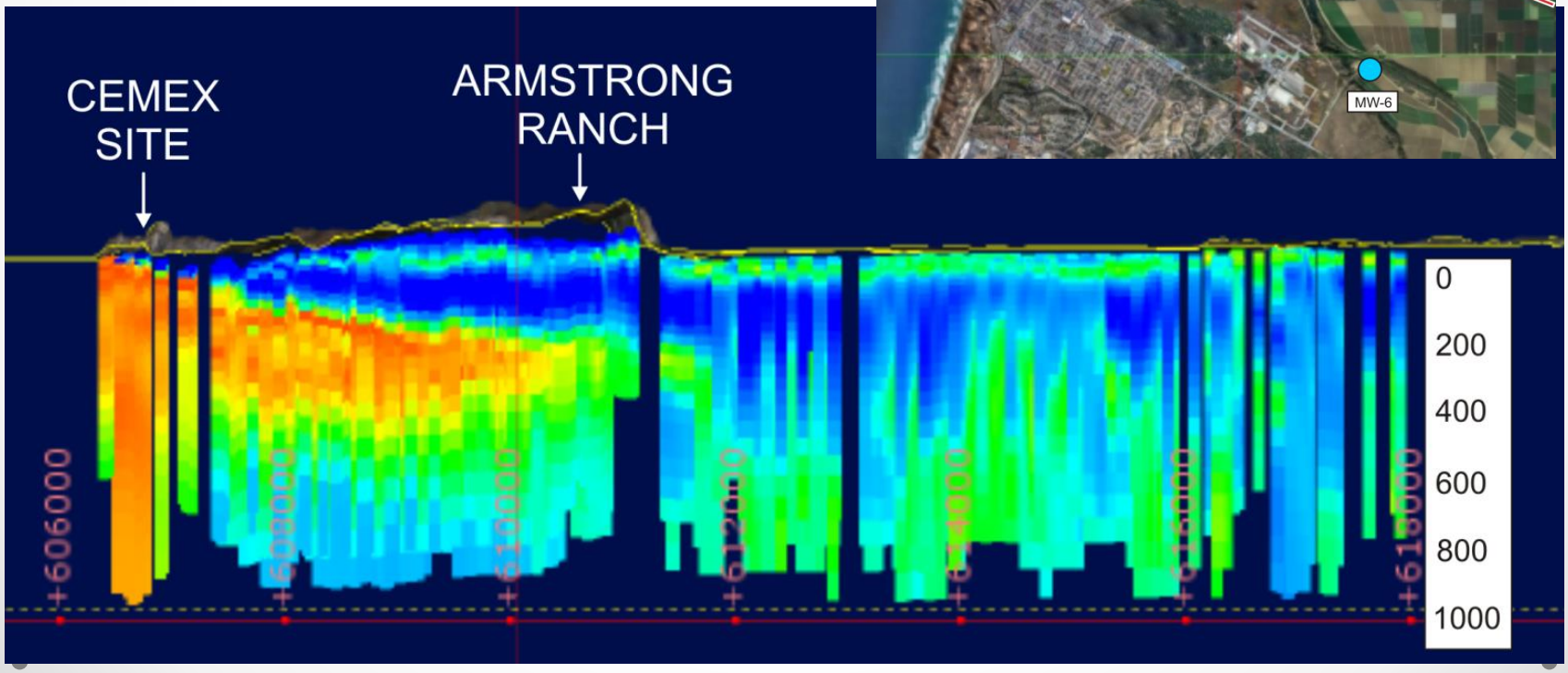


AEM DATA

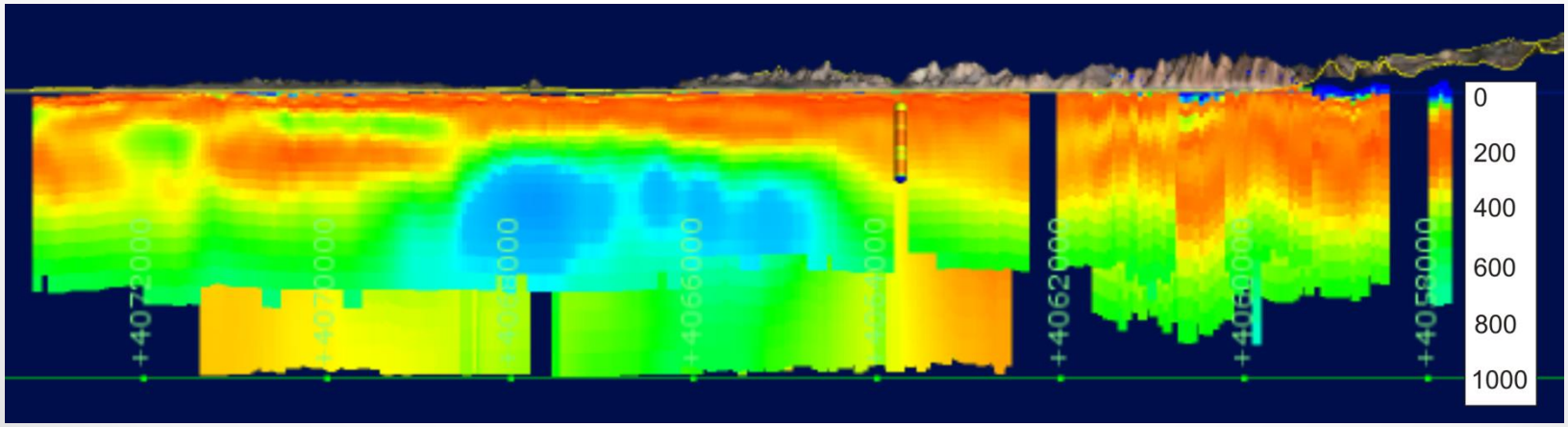


PROFILE PERPENDICULAR TO COASTLINE

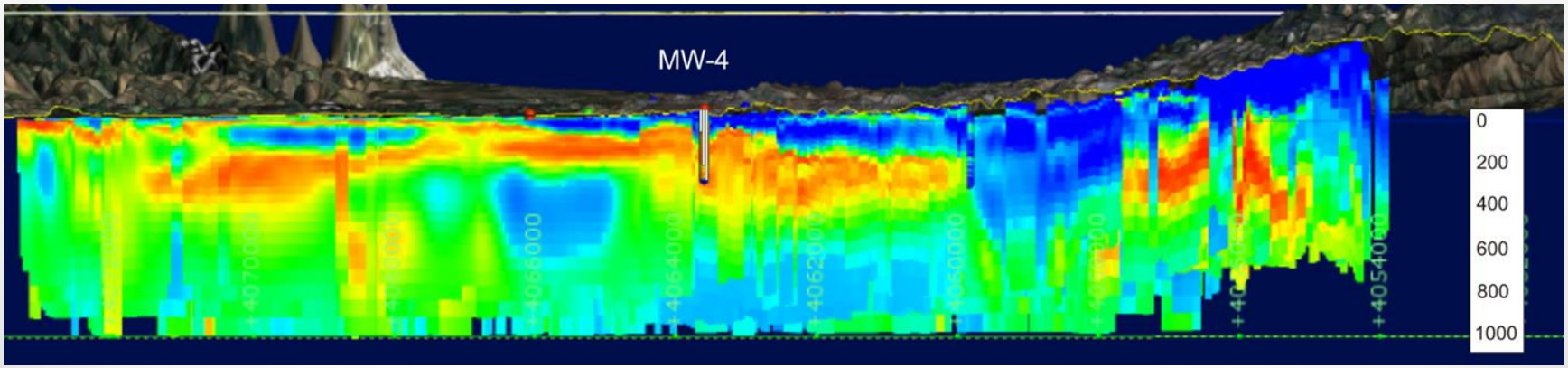
DS – 180-FTE CONNECTIVITY



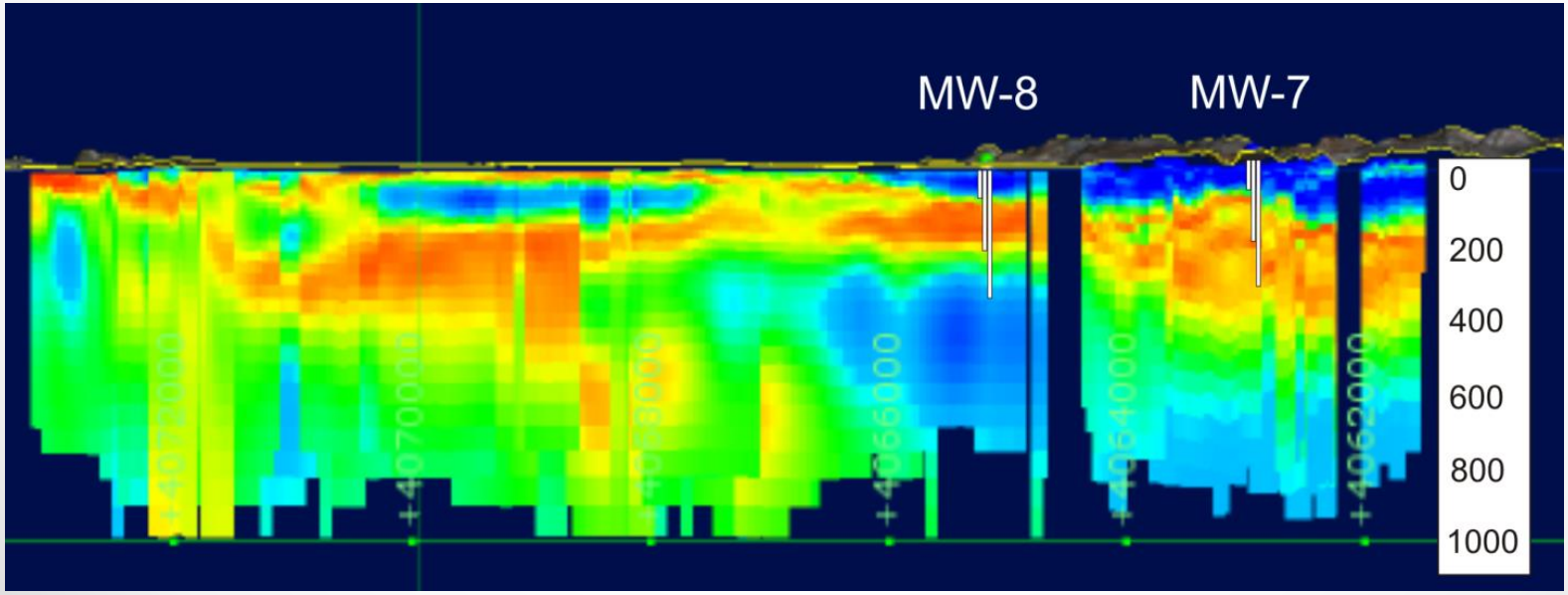
PROFILE PARALLEL TO COASTLINE ON THE BEACH



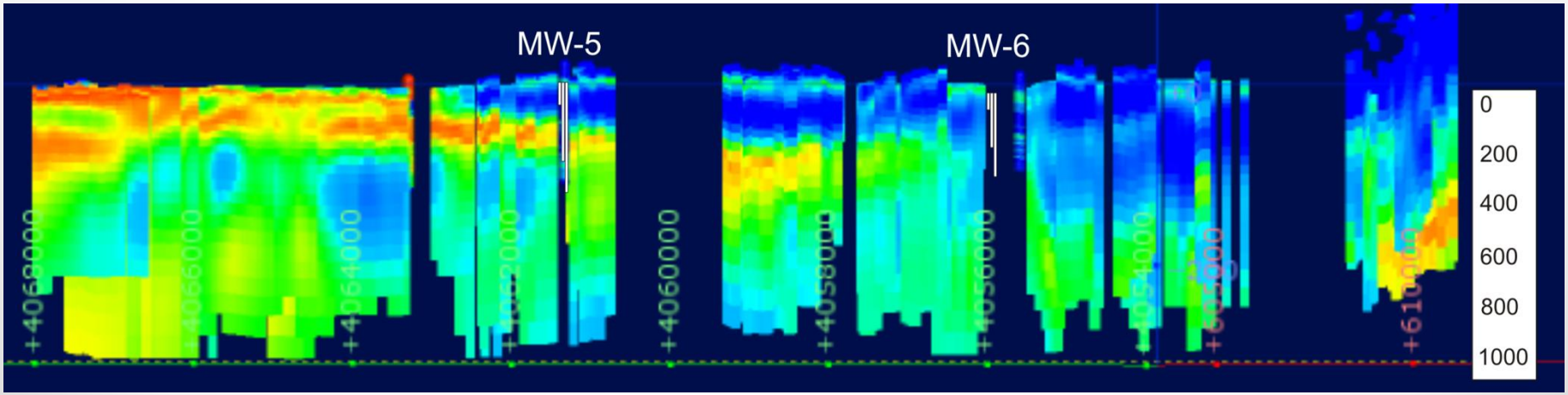
PROFILE PARALLEL TO COASTLINE BEHIND THE ACTIVE DUNES

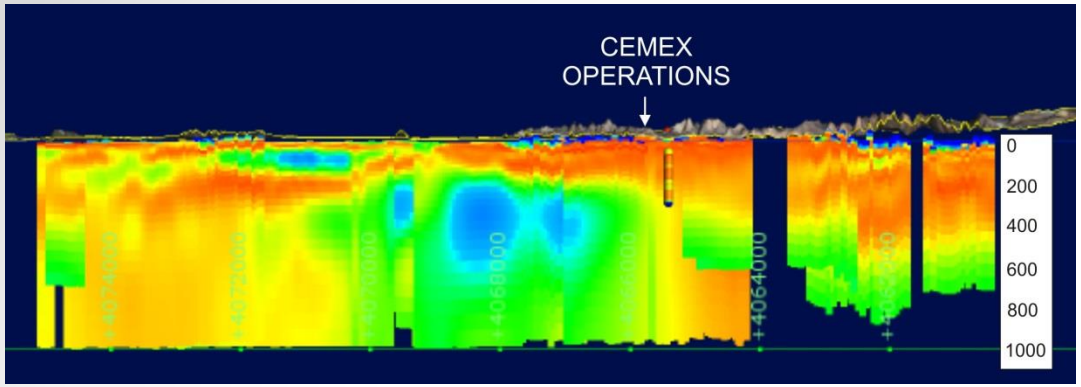


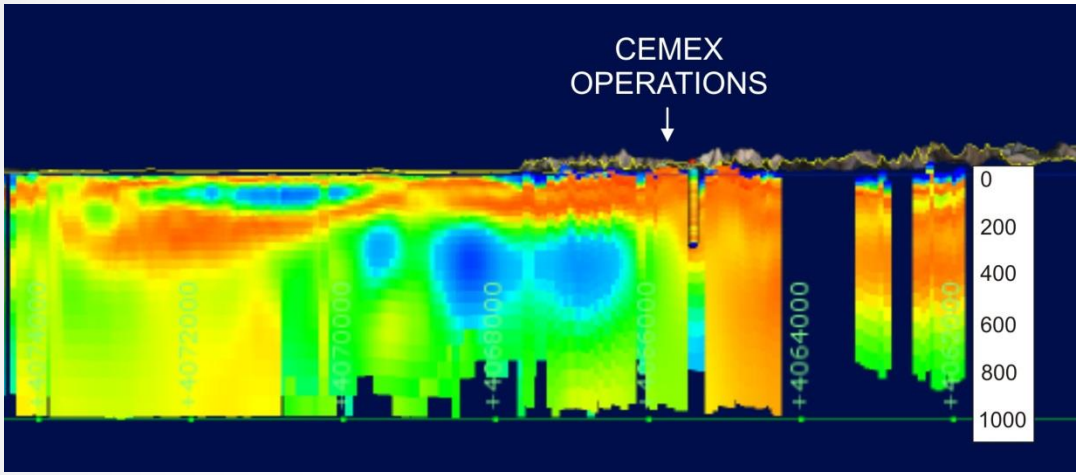
PROFILE THROUGH MONITORING WELLS MW-7 & MW-8

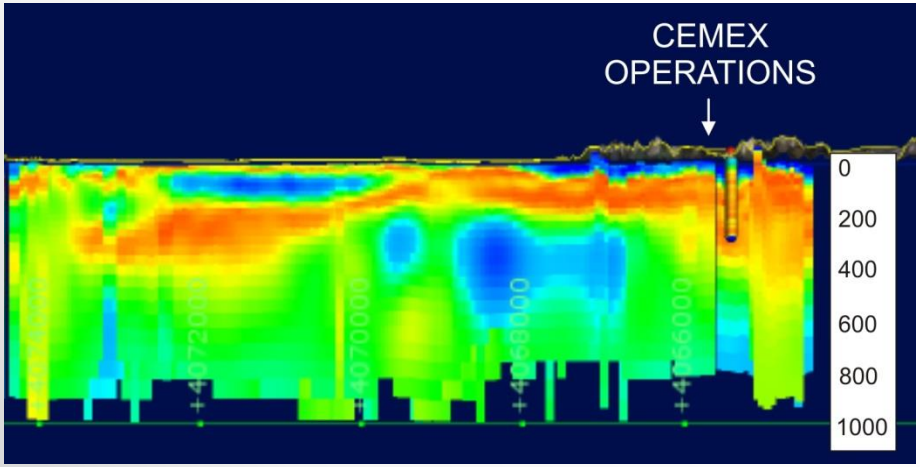


PROFILE THROUGH MONITORING WELLS MW-5 & MW-6

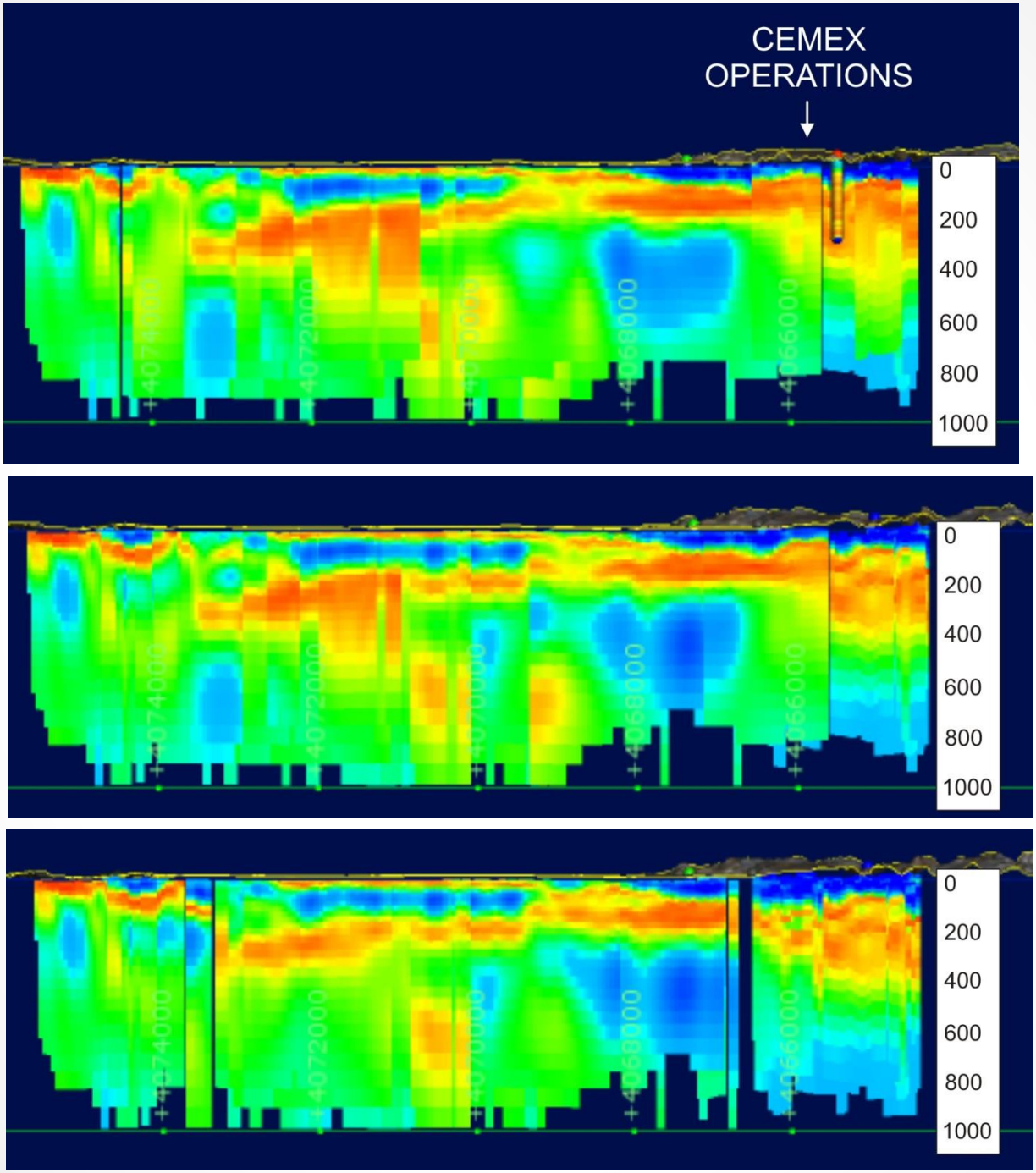








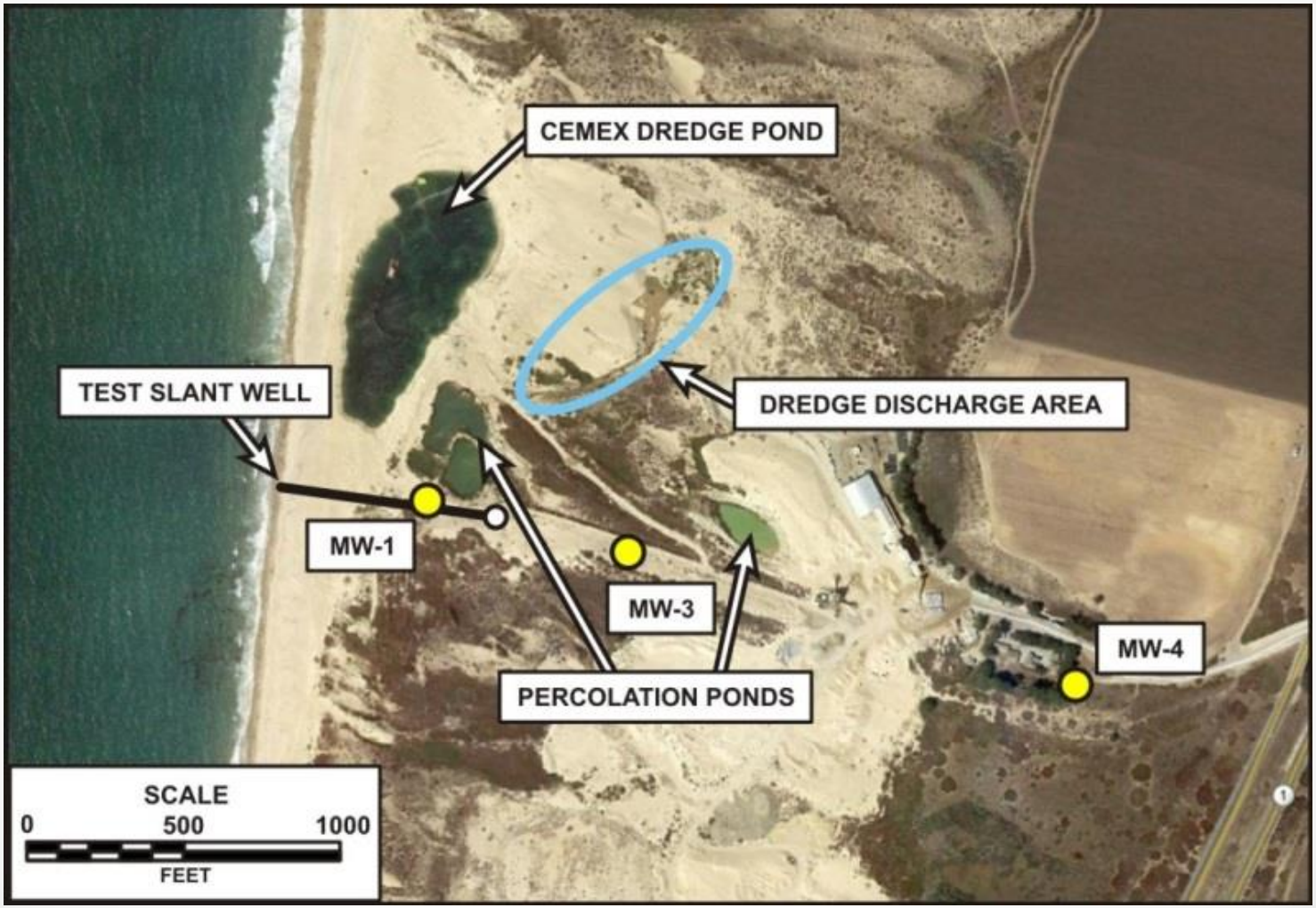
PROFILES AWAY FROM COASTLINE IN 200-FOOT INCREMENTS

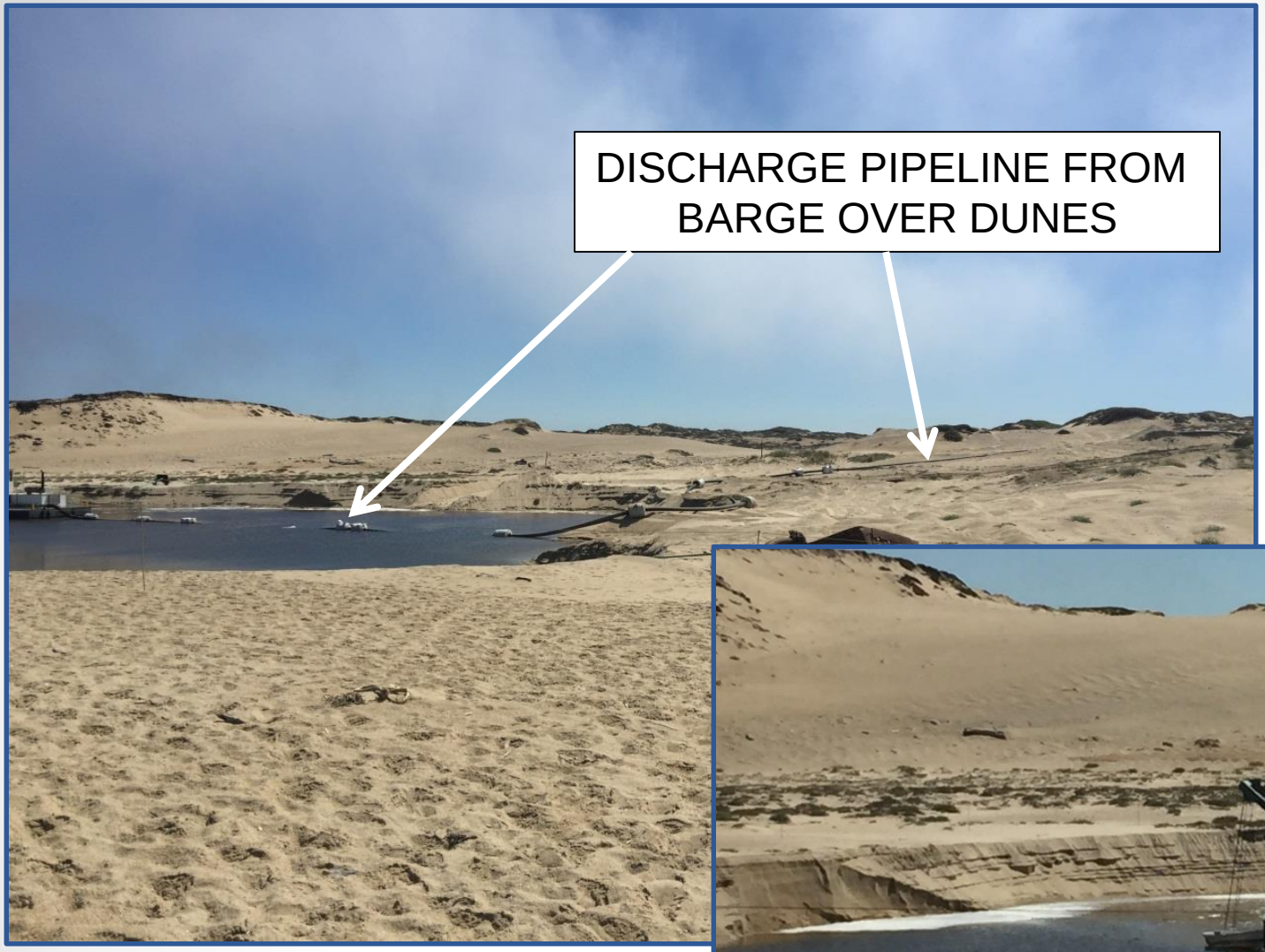

CEMEX
OPERATIONS
0
200
400
600
800
1000
4074000
4072000
4070000
4068000
4066000

AEM DATA IMPLICATION FOR MPWSP ISSUES

- CEMEX HAS A LOCAL INFLUENCE ON GROUNDWATER BY RECHARGING SEAWATER AT THE SURFACE FROM DREDGE MINING OPERATIONS AND WASH WATER PONDS
- FRESH GROUNDWATER EXISTS IN THE DUNE SAND AQUIFER AND UPPER 180-FOOT AQUIFER AS WE MOVE AWAY FROM CEMEX SITE BOTH INLAND AND ALONG THE COAST AND SEAWATER INTRUSION IS NOT UBIQUITOUS IN ALL ZONES ONLY IN VERY NARROW COASTAL MARGIN
- THESE FINDINGS INDICATE A GREATER AMOUNT OF FRESHWATER WILL BE PRODUCED THAN IS ESTIMATED BASED ON BIASED TEST SLANT WELL WATER QUALITY DATA
- 400-FOOT AQUIFER IS THE MOST INTRUDED ZONE IN THE VICINITY OF THE CEMEX SITE
- MODEL CONSTRUCTION INADEQUATE SOUTH OF RIVER

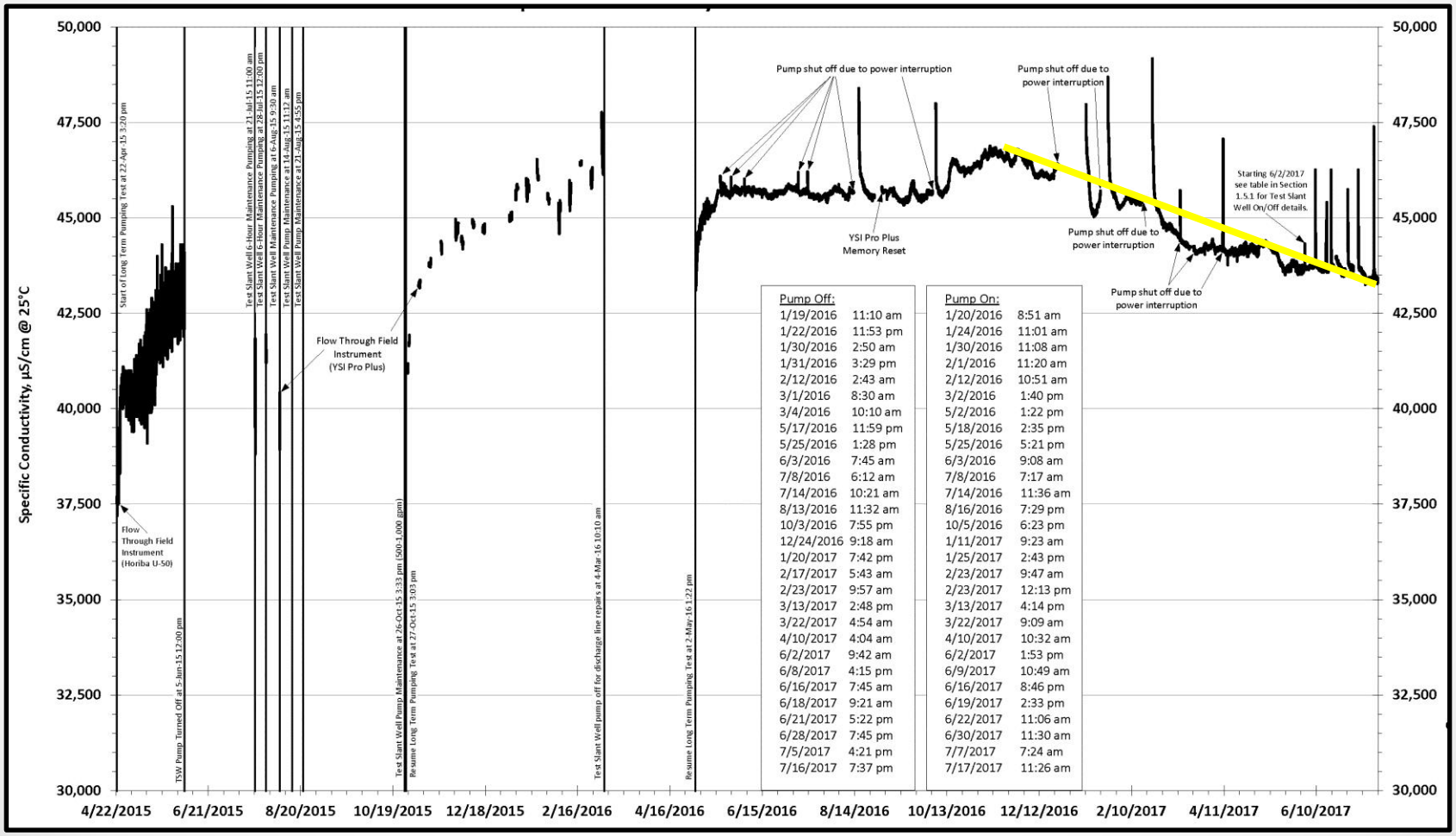
SALINE GROUNDWATER RECHARGE FROM CEMEX PLANT OPERATIONS





DREDGE BARGE

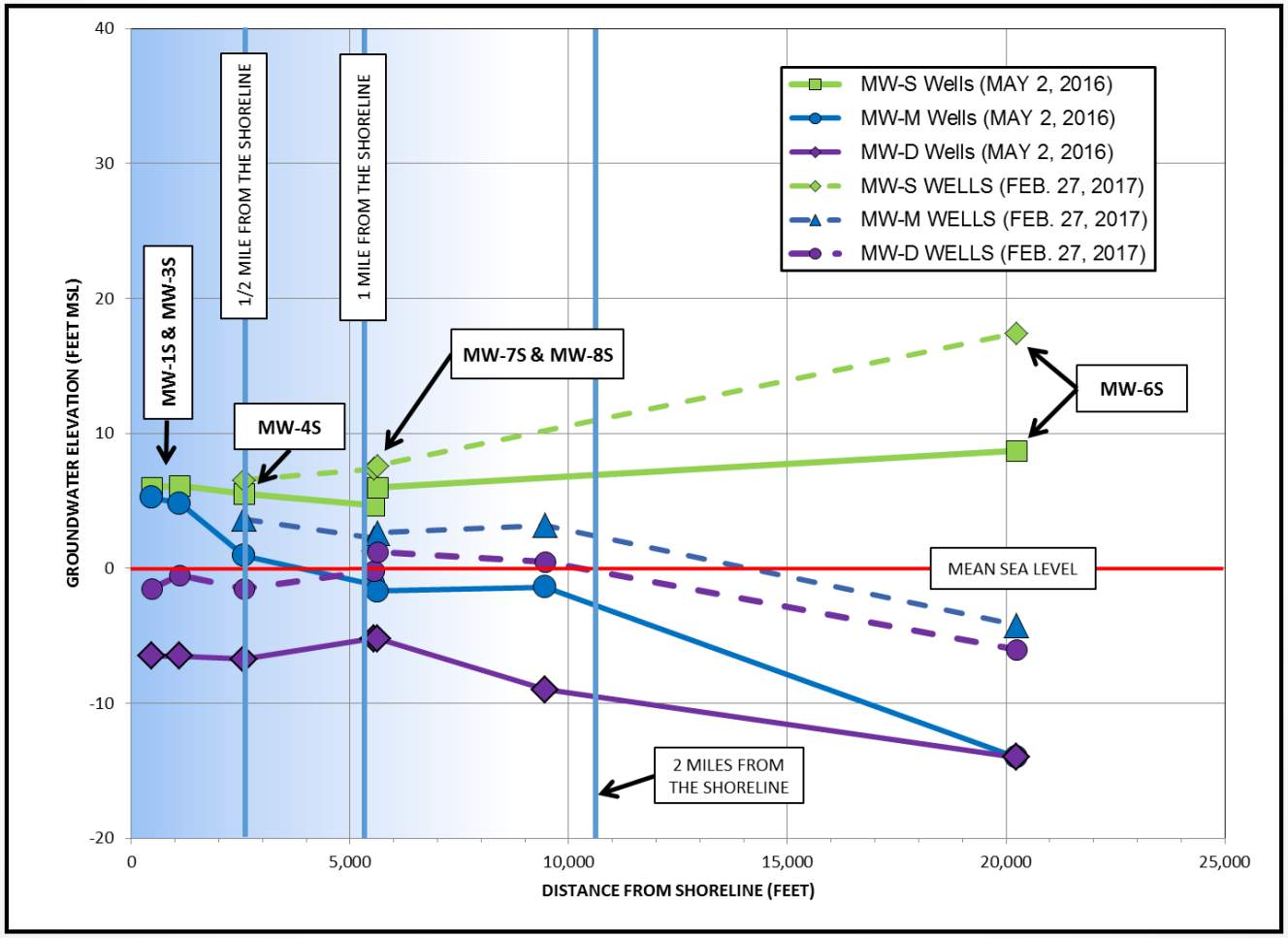
TSW CONDUCTIVITY DATA



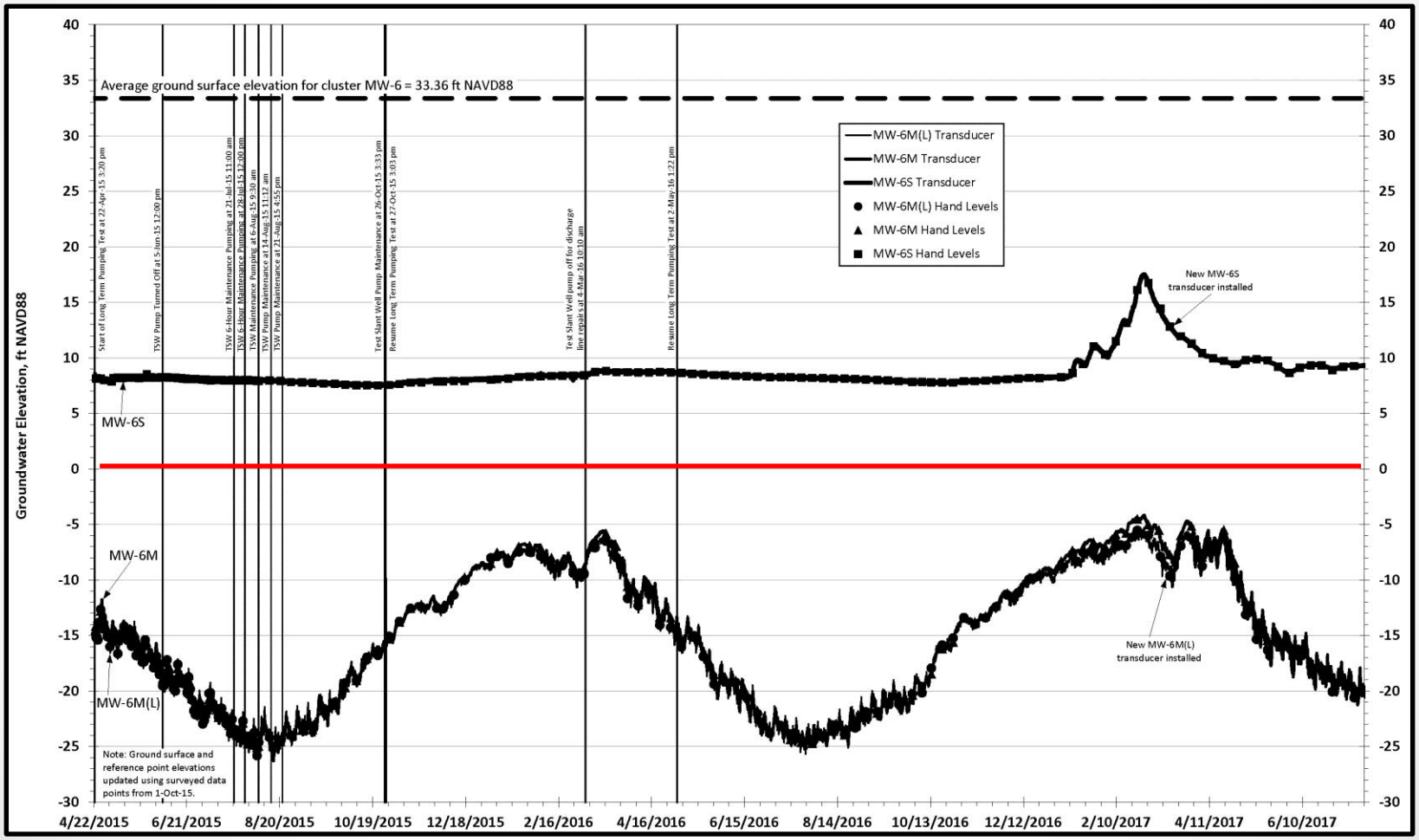
REGIONAL ISSUES OBSERVED

- FRESHWATER RECHARGE HAS BEEN SIGNIFICANT IN THIS AREA OF THE 180-400-FOOT SUBBASIN AND PROVIDES PROTECTIVE GROUNDWATER LEVELS FOR THE SHALLOWER AQUIFER ZONES (DUNE SAND AND 180-FOOT AQUIFER)
- THE FRESHWATER INFLUENCE HAS REDUCED THE LANDWARD GROUNDWATER GRADIENT WITHIN THE NORTH MARINA PORTION OF THE BASIN
- EFFORTS TO REDUCE THE ONSHORE GRADIENT BY THE PROHIBITION OF PUMPING ARE ENHANCED BY THE RECHARGE FROM THIS PORTION OF THE COASTLINE

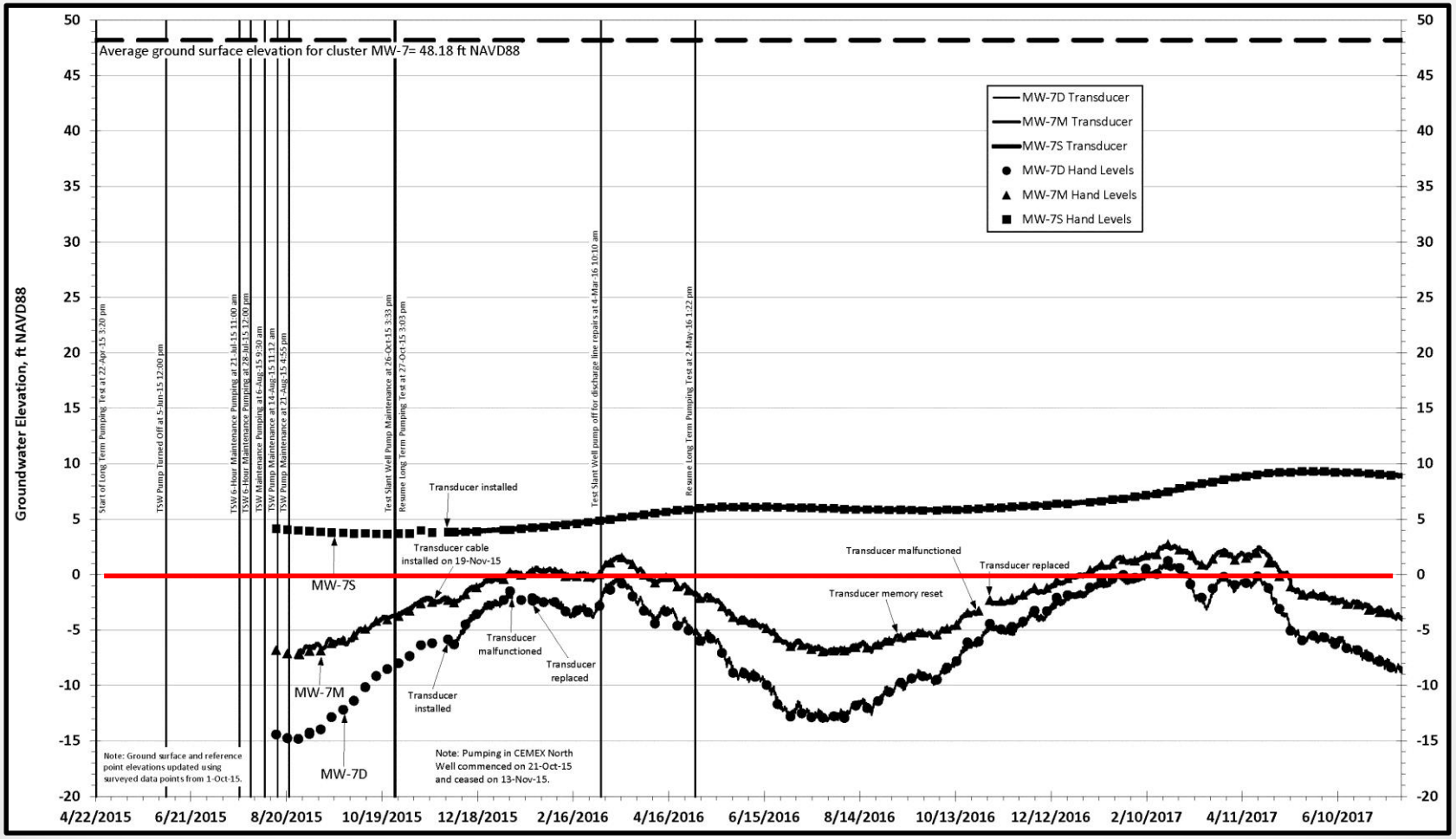
COASTAL GROUNDWATER GRADIENTS



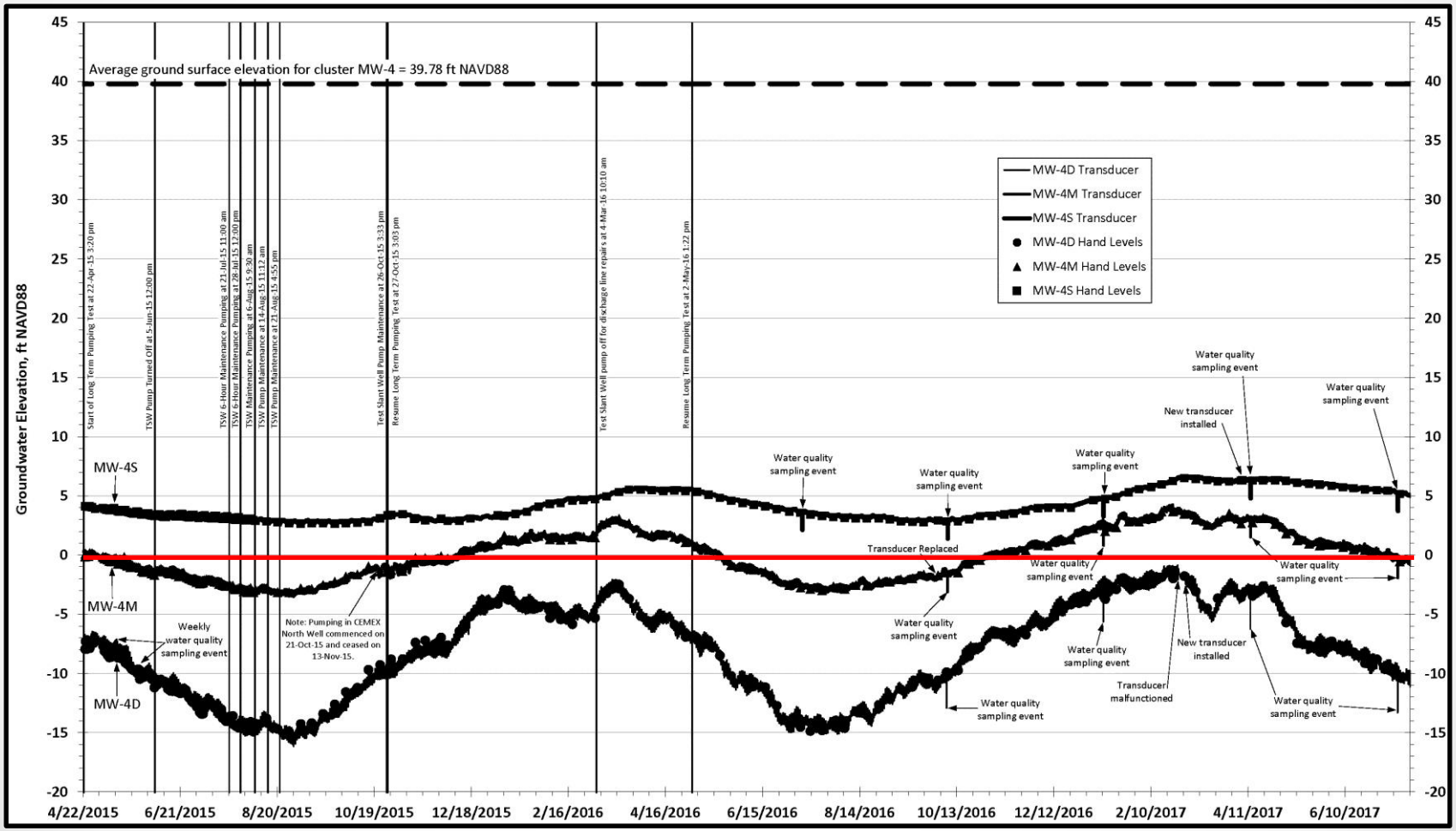
MW-6 WATER LEVEL DATA



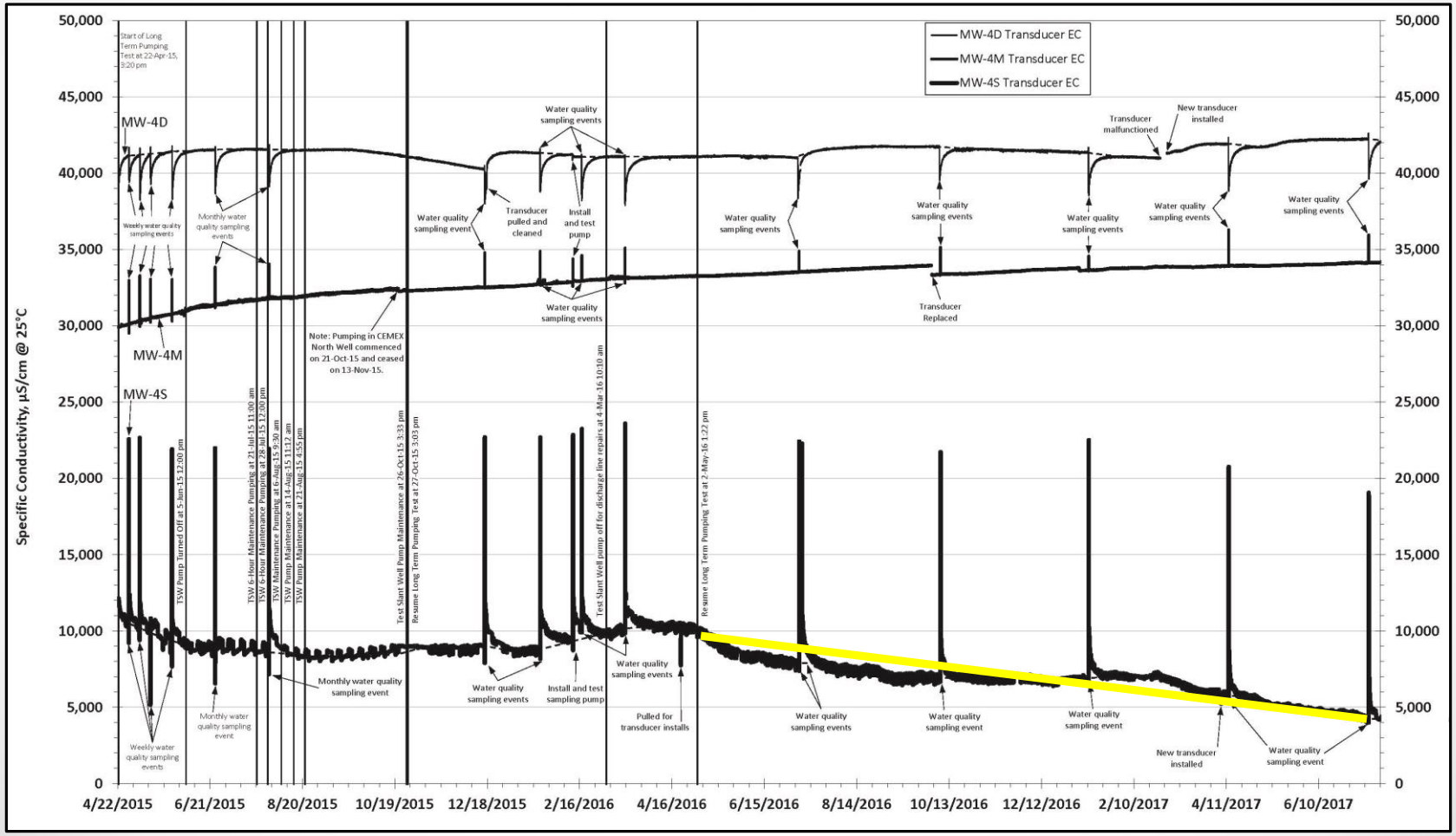
MW-7 WATER LEVEL DATA



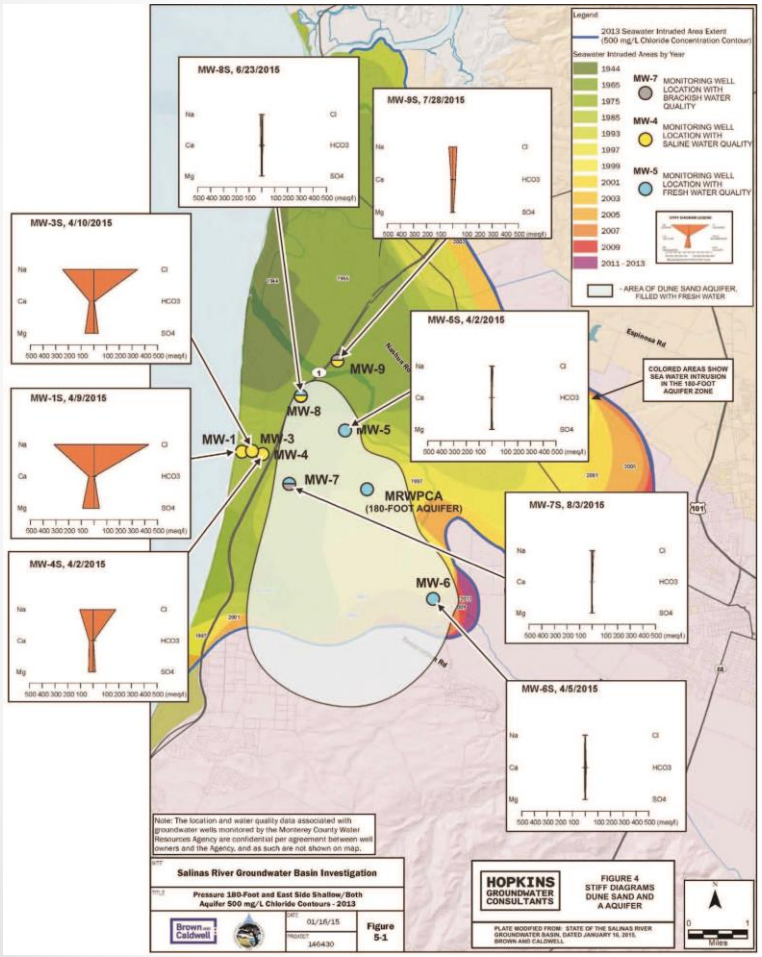
MW-4 WATER LEVEL DATA

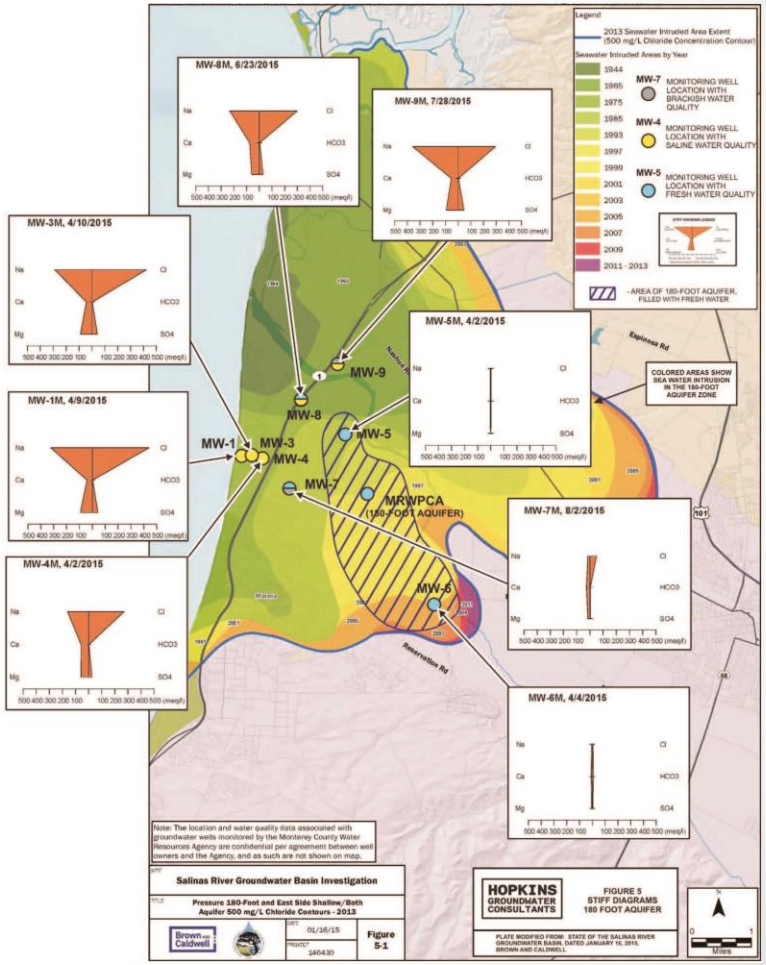


FRESH WATER SALTWATER INTERFACE MOVING SEAWARD



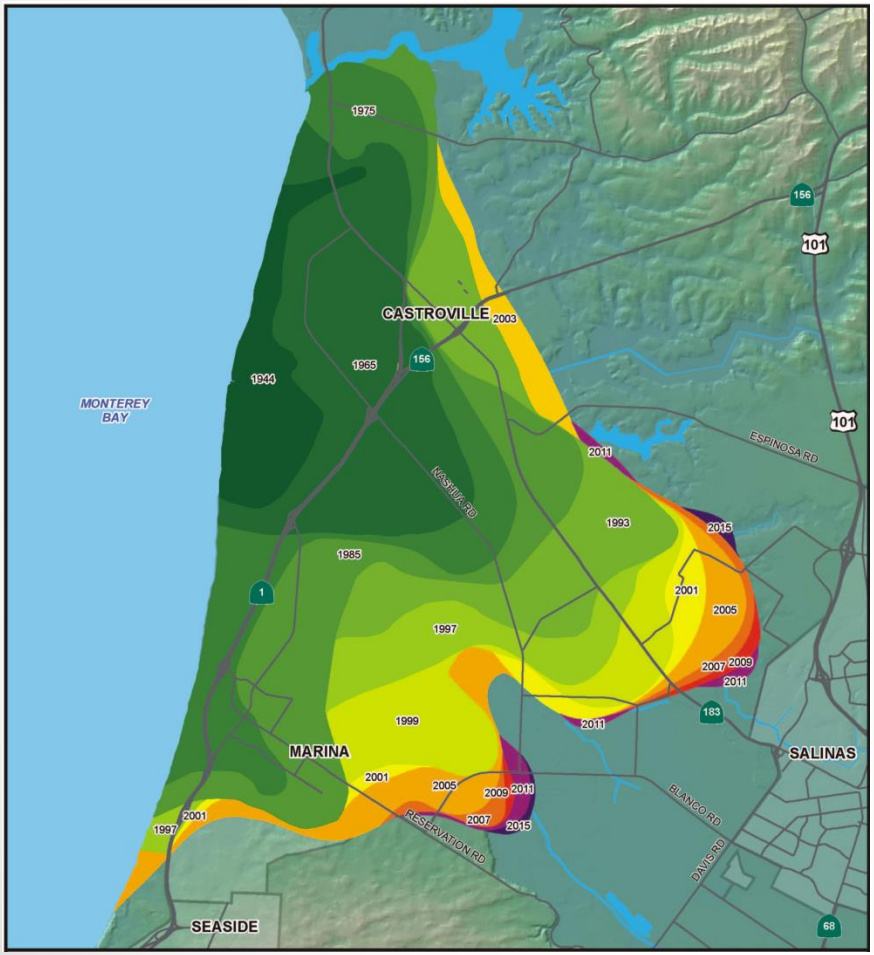
LABORATORY WATER QUALITY TEST RESULTS

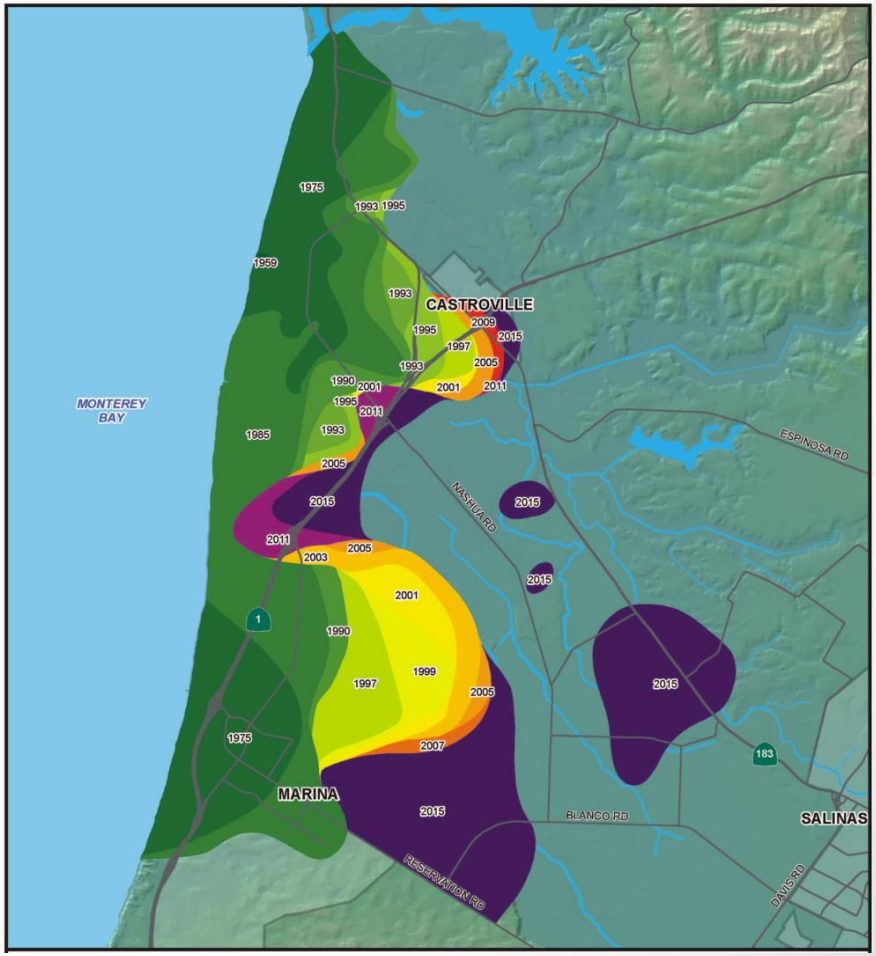


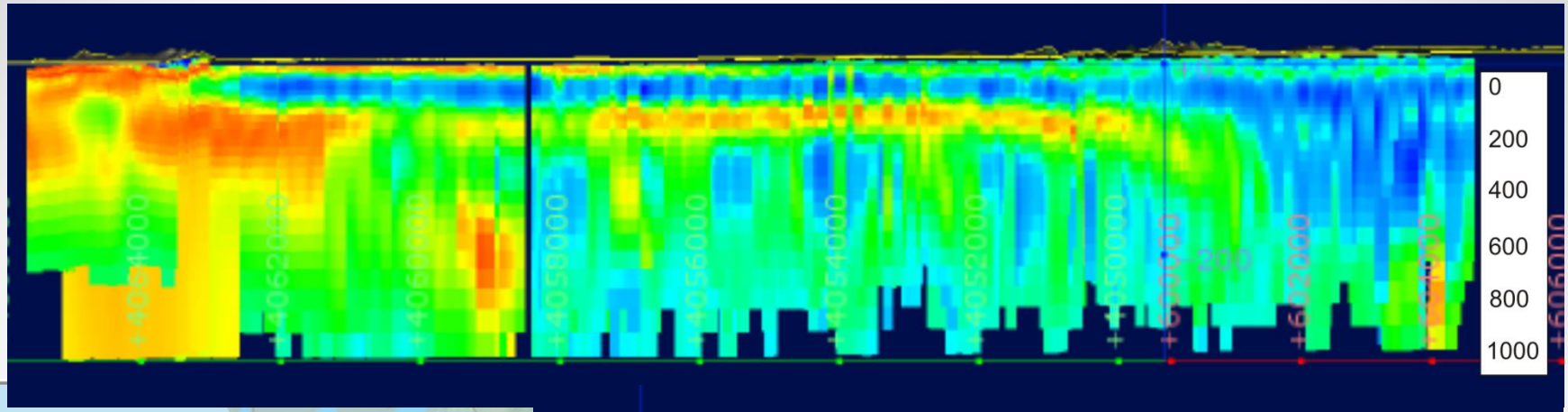


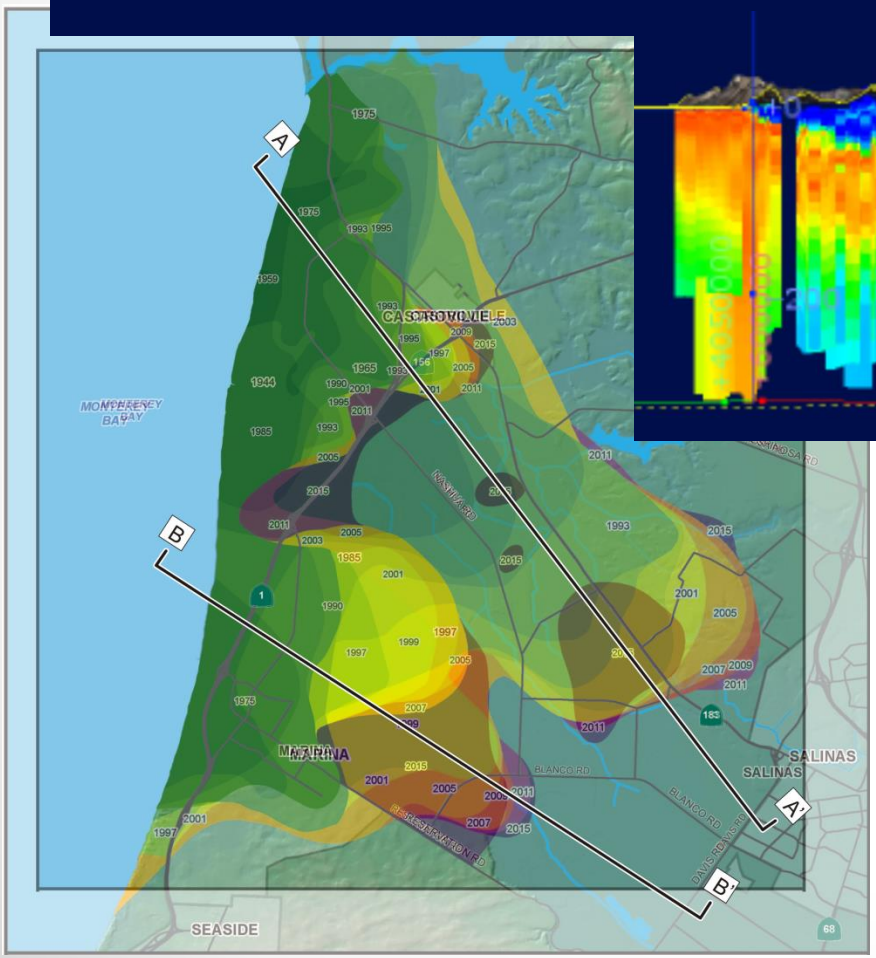
NOT ALL SALTS IN GROUNDWATER ARE FROM THE OCEAN

MCWRA 2015 SALTWATER INTRUSION MAPS



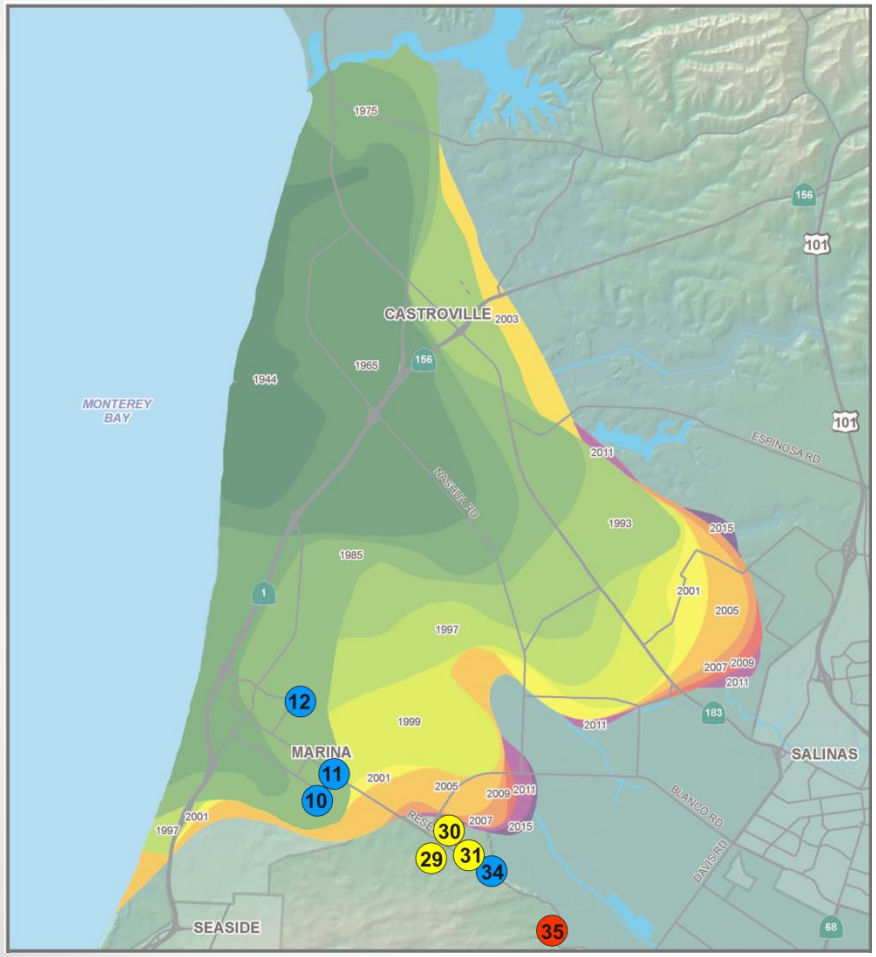


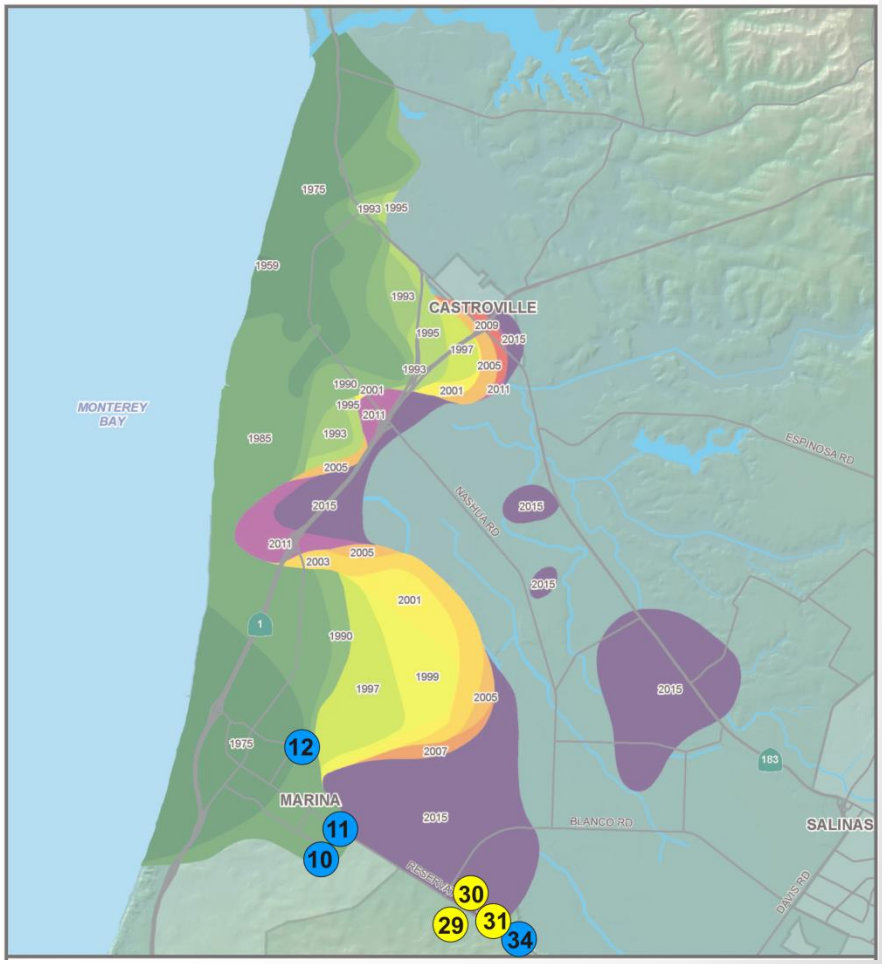




MAP VIEW VERSES PROFILE VIEW

MCWD WELLFIELD





QUESTIONS?