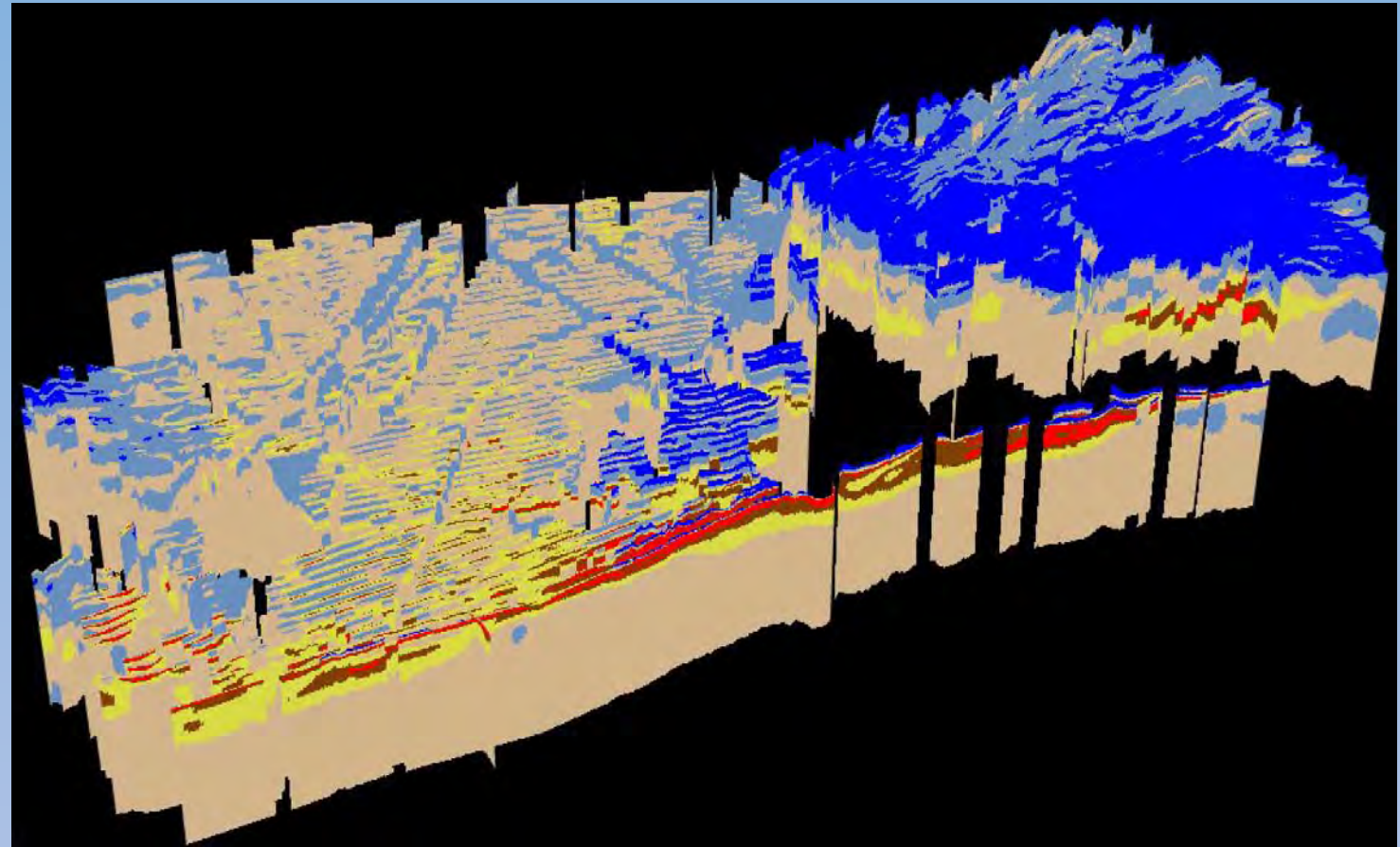


# Marina Coast Water District Board of Directors

## 2017 & 2019 Airborne Geophysical Investigations for Marina Coast Water District



Theodore Asch, Ph.D., P.Gp.  
Jared Abraham, and James Cannia  
Aqua Geo Frameworks, LLC

February 25, 2020

25 February 2020





## 2017 MCWD AEM Investigation

AEM acquisition of  
635 line-km took 6  
flights over 3 days  
in mid-May 2017.

AEM acquisition design  
optimized for  
infrastructure

25 February 2020



SkyTEM 304M  
used for  
acquisition

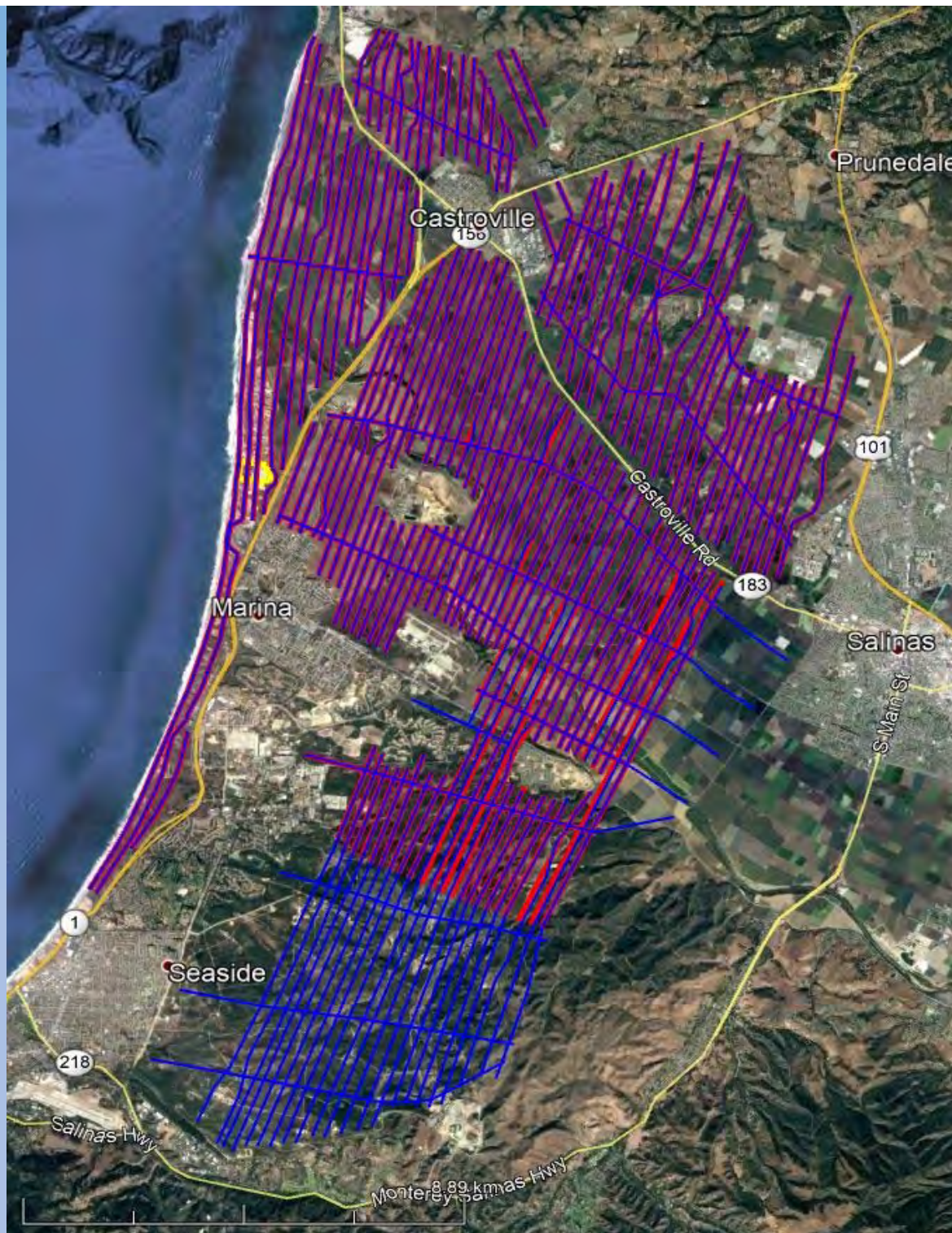


## 2019 MCWD AEM Investigation

AEM acquisition of  
881 line-km took 6  
flights over 3 days  
in late-April 2019.

AEM acquisition design  
optimized for  
infrastructure

25 February 2020



SkyTEM 312  
used for  
acquisition

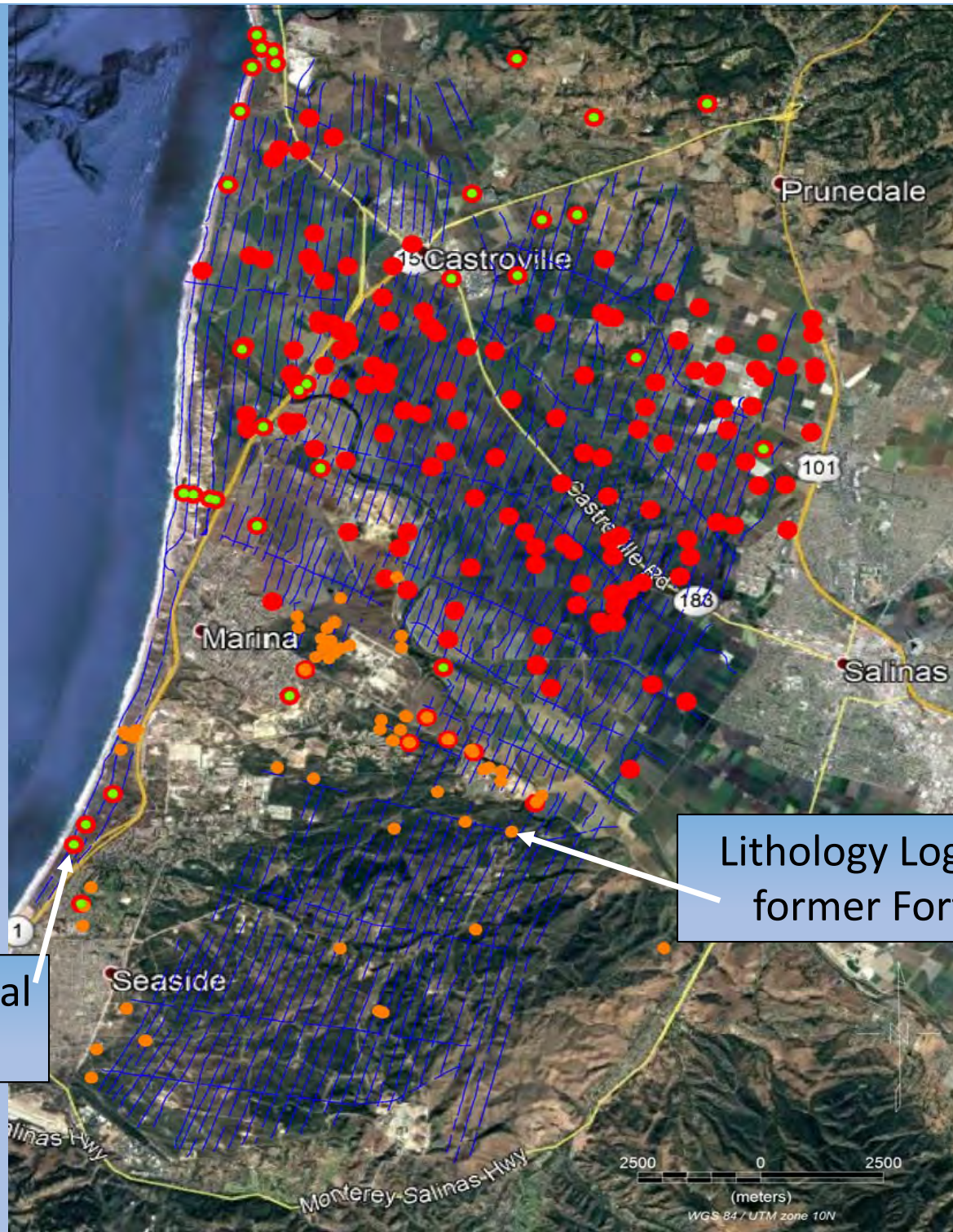


# 2019 MCWD AEM Investigation

Lithology Logs,  
Geophysical Logs  
Used in Analysis

Geophysical  
Logs

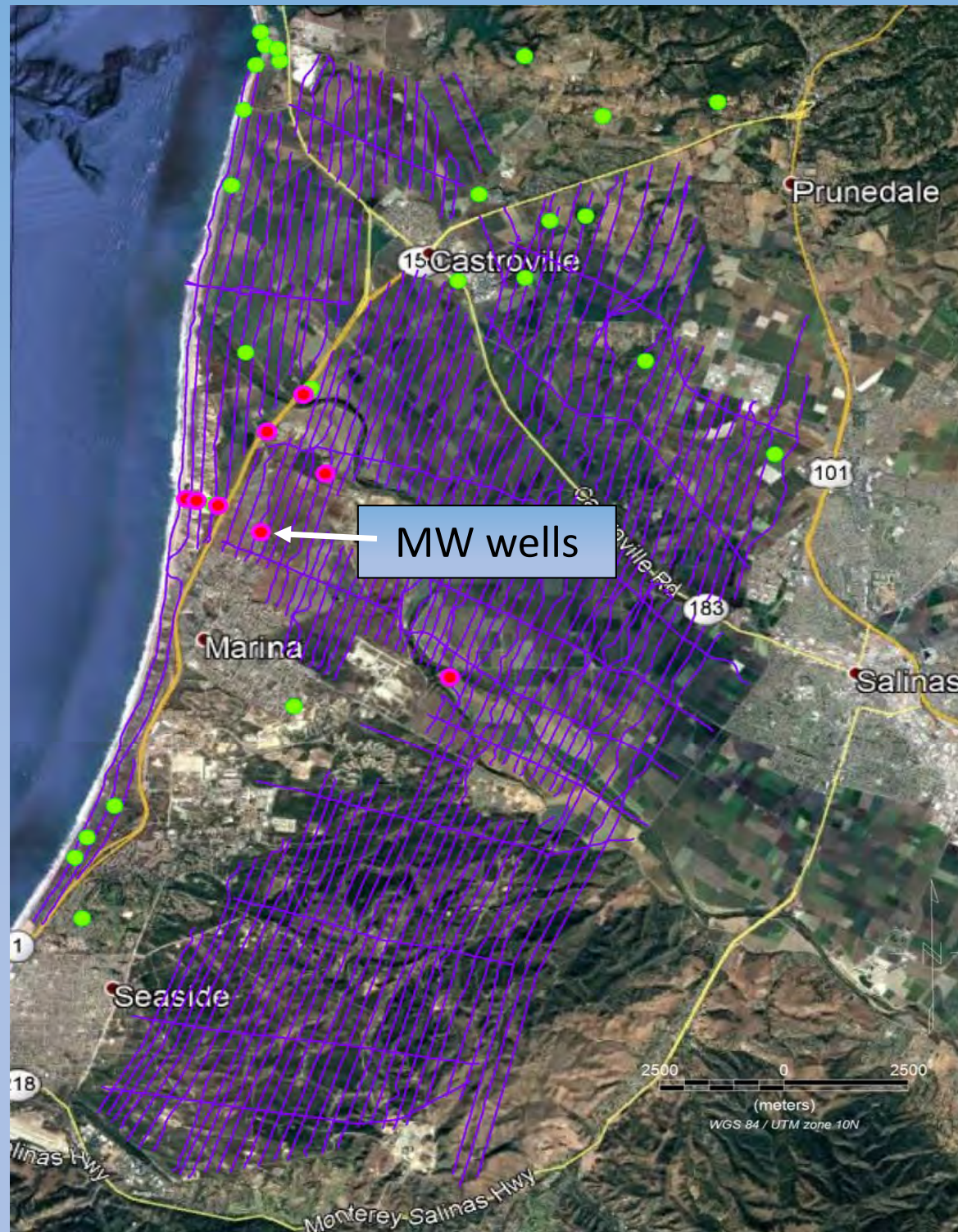
Lithology Logs from  
former Fort Ord





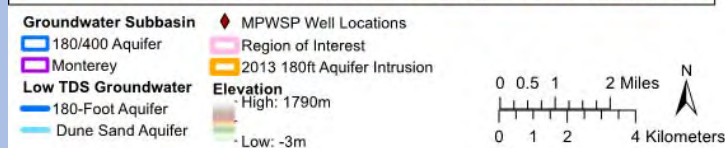
# 2019 MCWD AEM Investigation

## Geophysical Logs

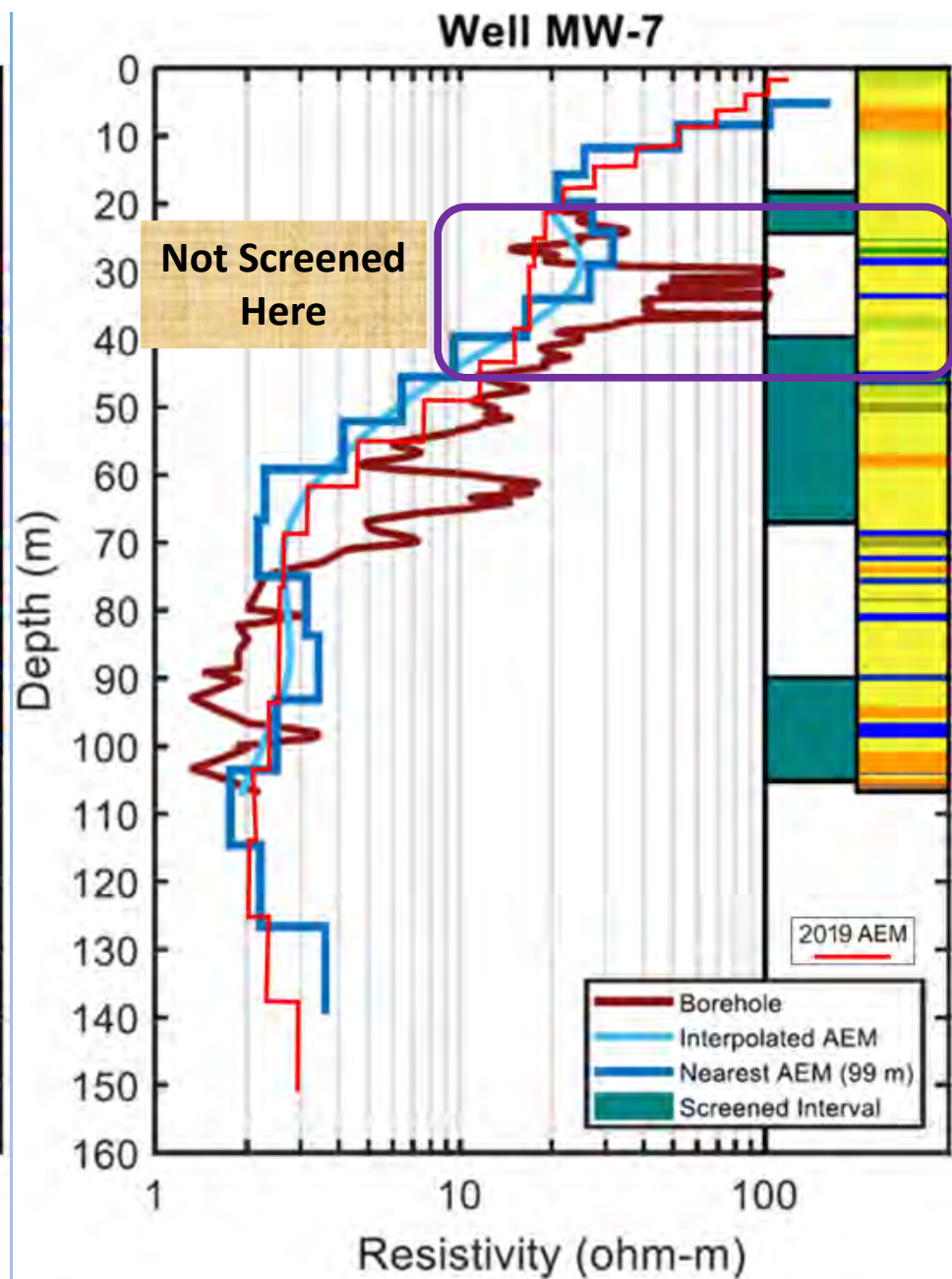
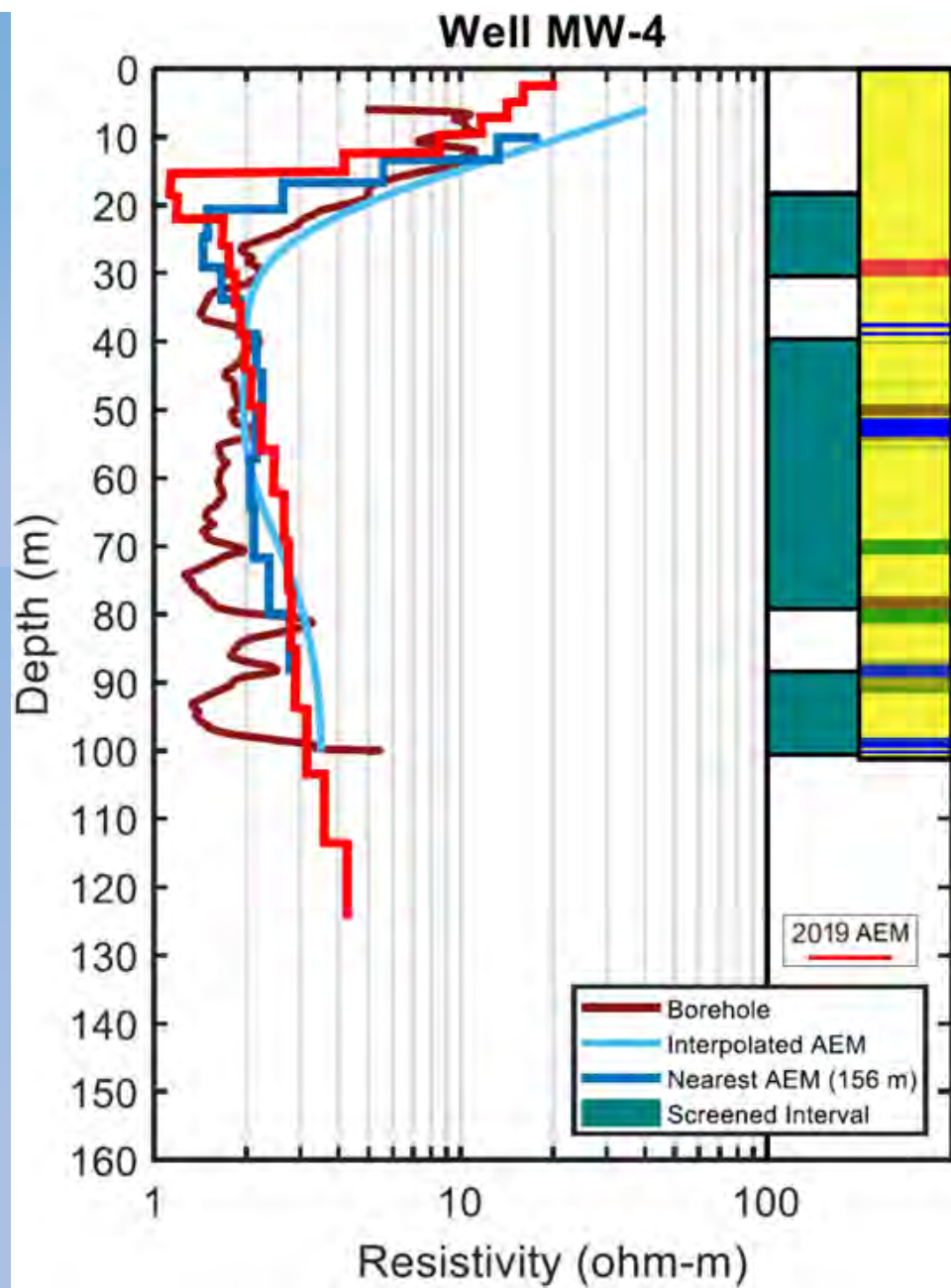




# Comparison of 2019 AEM Inversion Results to 2017 AEM & Borehole Geophysics



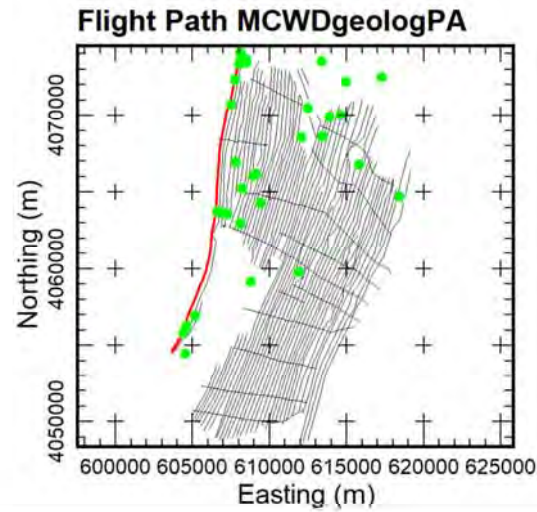
25 February 2020



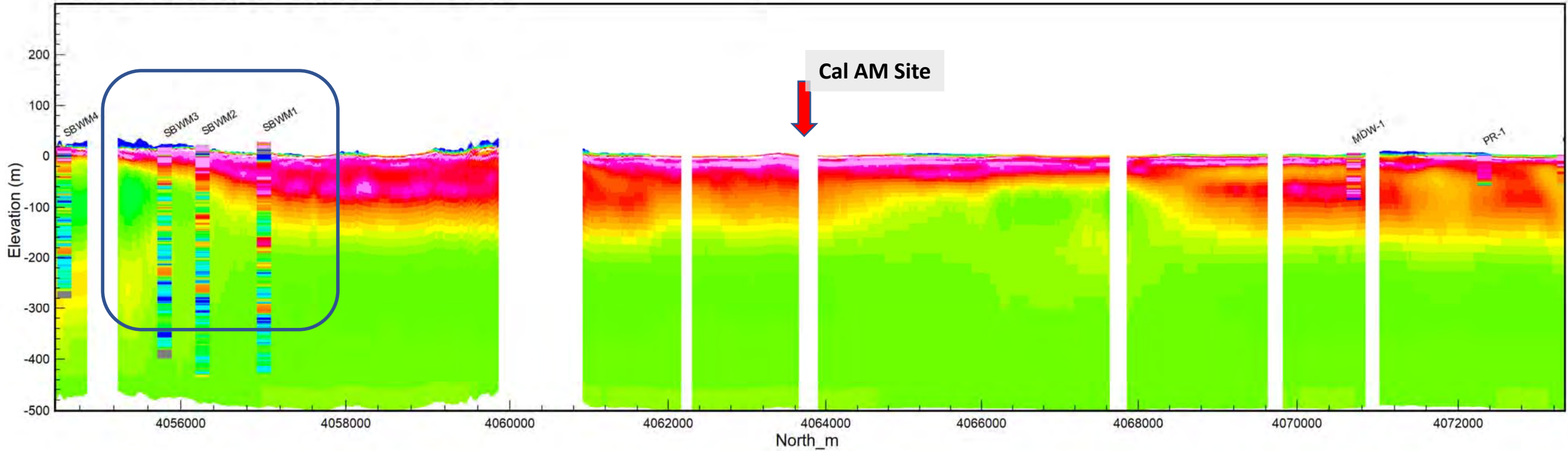
## Lithology



# Comparison of 2019 AEM Inversion Results to Borehole Geophysics

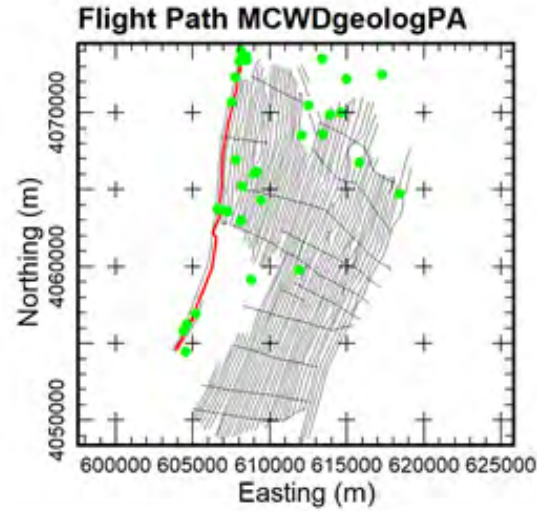


MCWD 2019 Resistivity & E-Log Profile - Line L200101

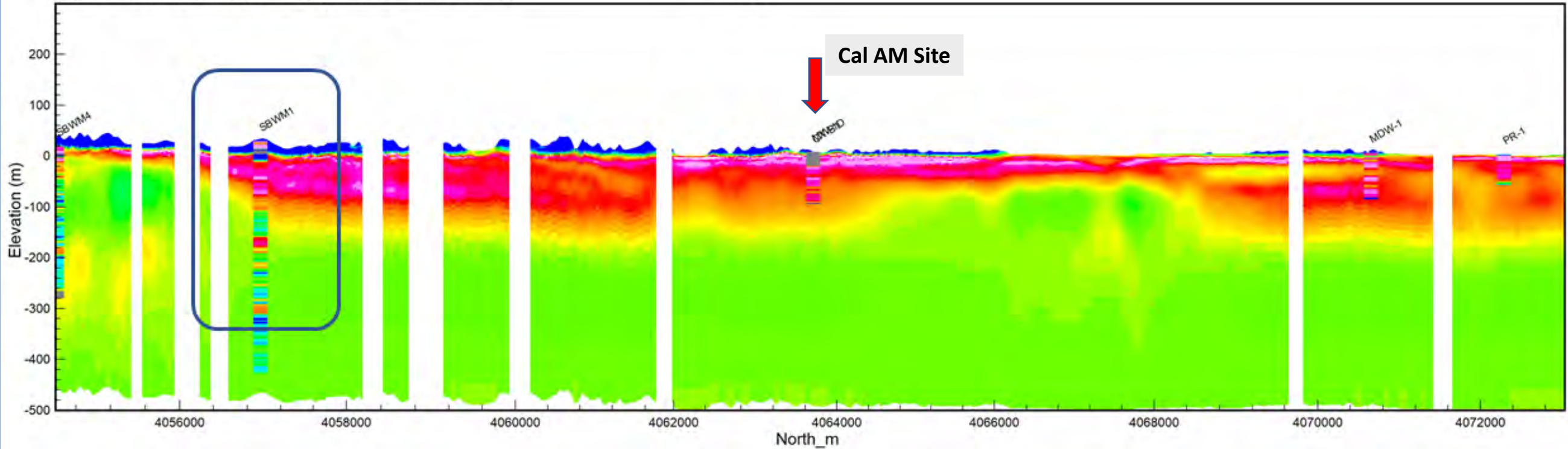




# Comparison of 2019 AEM Inversion Results to Borehole Geophysics



MCWD 2019 Resistivity & E-Log Profile - Line L200200

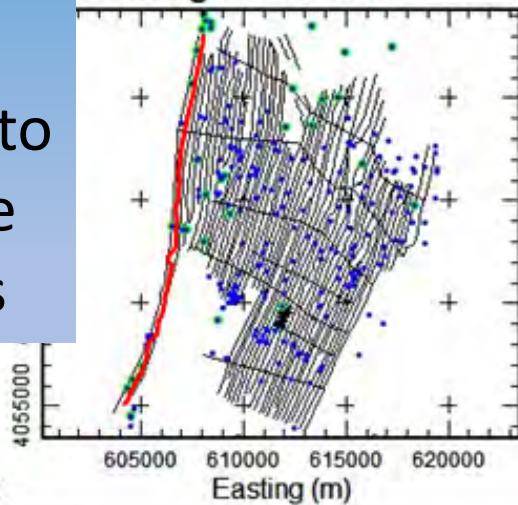




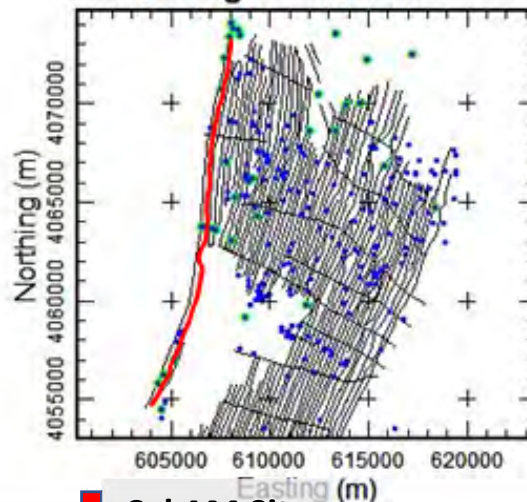


South

MCWD Flight Path 2017



MCWD Flight Path 2019

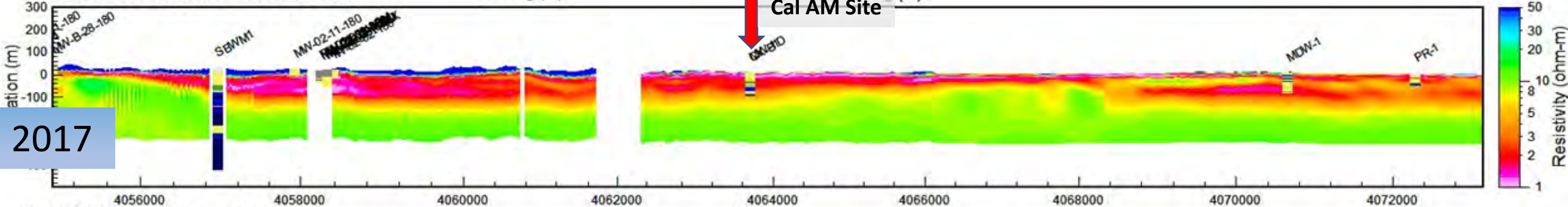


North

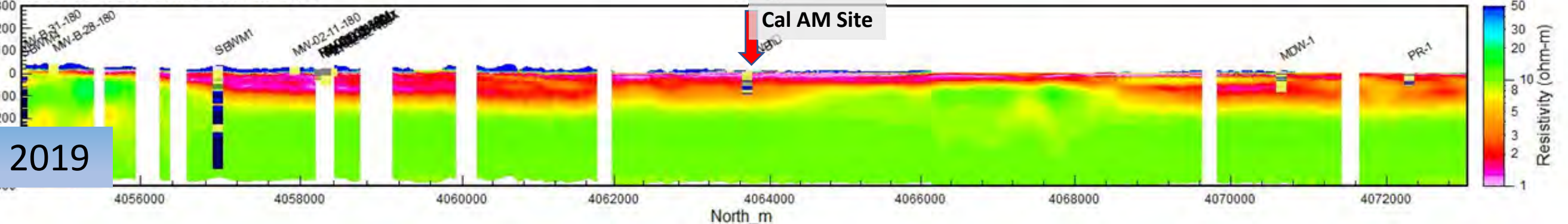
- MCWD Lithology
- No Sample
  - Igneous/Metamorphics
  - Decomposed Granite
  - Clayey Shale Claystone
  - Chert
  - Gravel/Boulders
  - Sand and Gravel
  - Sand
  - Mixed
  - Clayey sand
  - Clayey Gravel
  - Silty Sand
  - Silt/Loess
  - Silty Clay
  - Sandy Clay
  - Gravelly Clay
  - Clay
  - Roadfill and/or Topsoil

# Comparison of 2019 AEM Inversion Results to 2017 AEM & Borehole Lithology, Geophysics

2017 MCWD Profile Line L200202



2019 MCWD Profile Line L200200







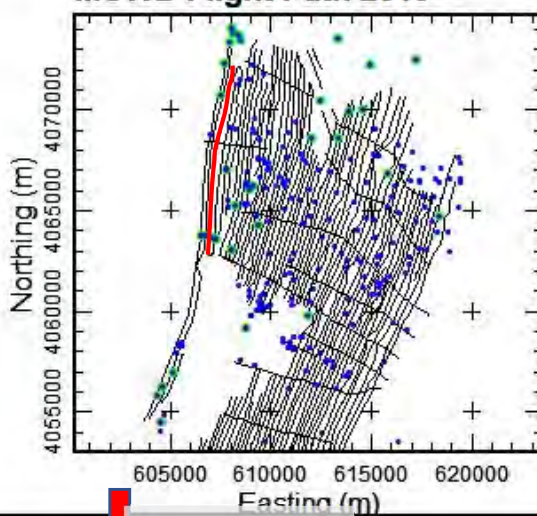
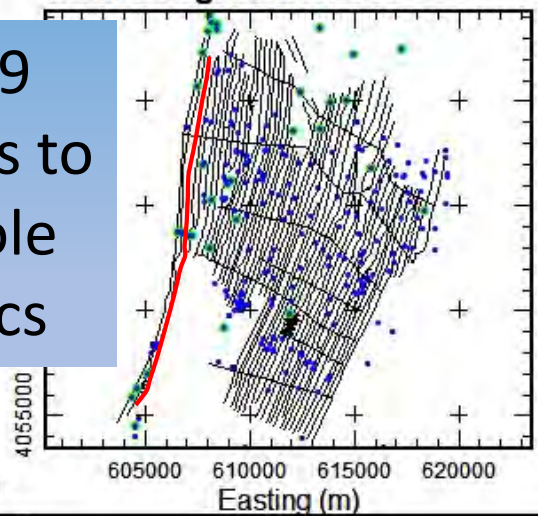
South

North

# Comparison of 2019 AEM Inversion Results to 2017 AEM & Borehole Lithology, Geophysics

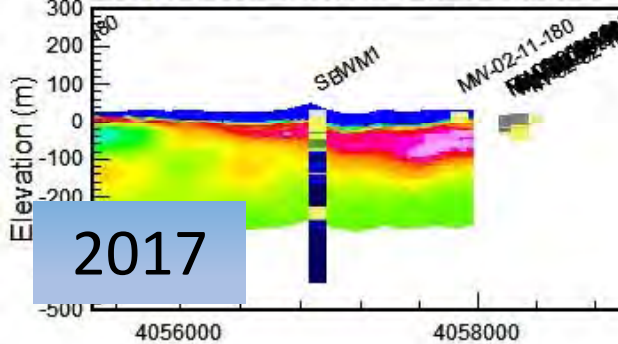
MCWD Flight Path 2017

MCWD Flight Path 2019

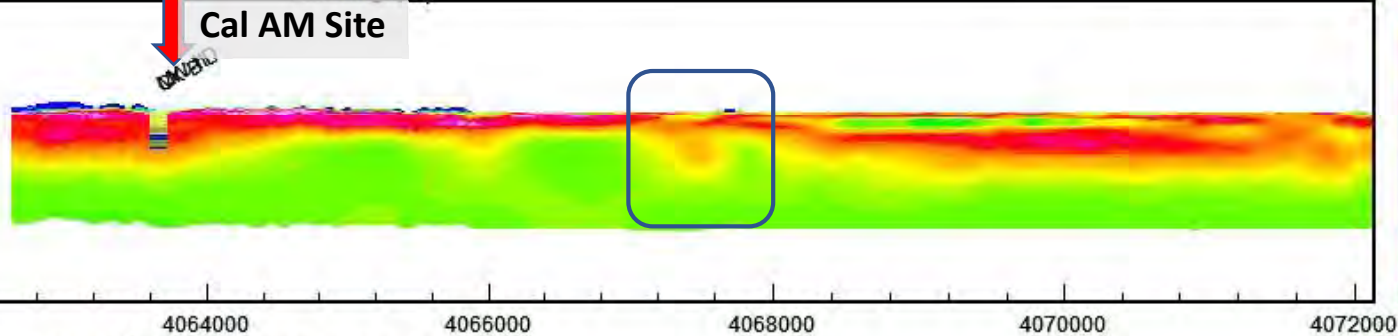


- MCWD Lithology
- No Sample
  - Igneous/Metamorphics
  - Decomposed Granite
  - Clayey Shale Claystone
  - Chert
  - Gravel/Boulders
  - Sand and Gravel
  - Sand
  - Mixed
  - Clayey sand
  - Clayey Gravel
  - Silty Sand
  - Silt/Loess
  - Silty Clay
  - Sandy Clay
  - Gravelly Clay
  - Clay
  - Roadfill and/or Topsoil

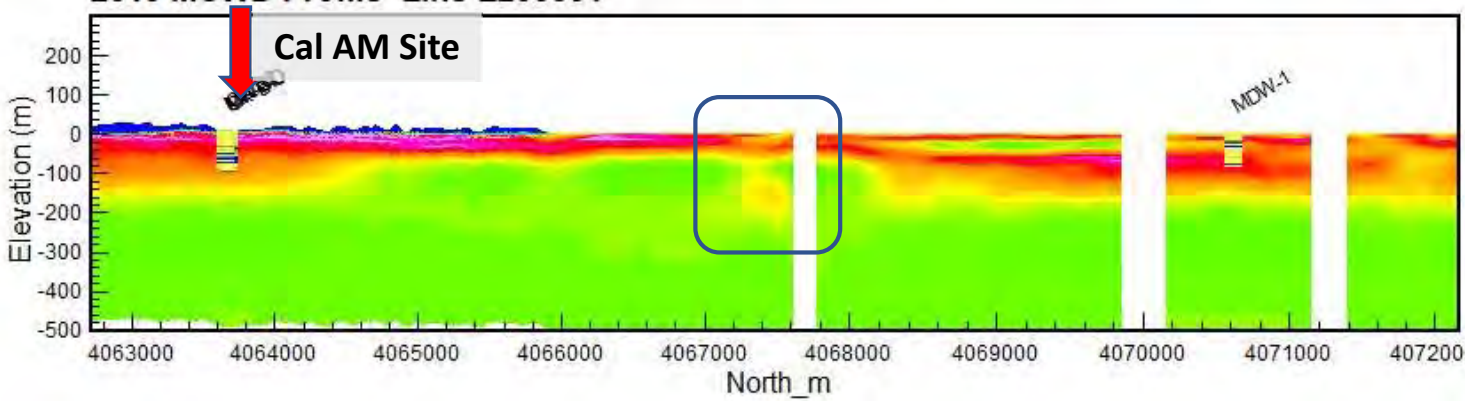
2017 MCWD Profile Line L200301



2017



2019 MCWD Profile Line L200301



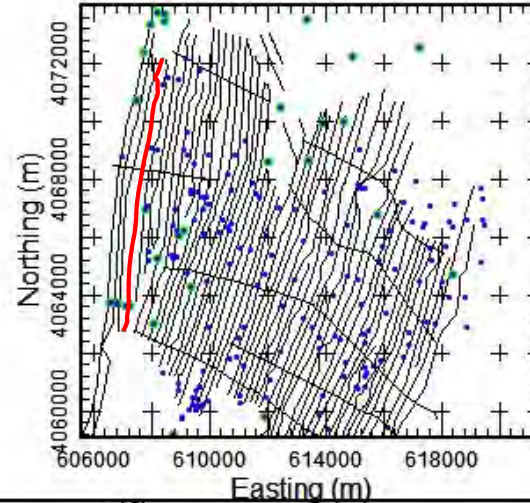
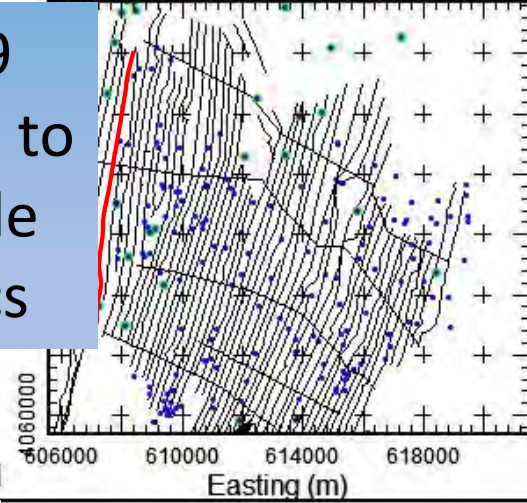
2019



Comparison of 2019  
AEM Inversion Results to  
2017 AEM & Borehole  
Lithology, Geophysics

MCWD Flight Path 2017

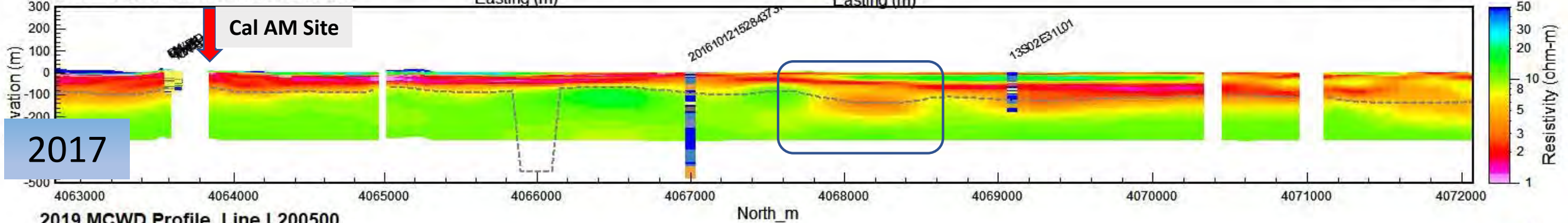
MCWD Flight Path 2019



- MCWD Lithology
- No Sample
  - Igneous/Metamorphics
  - Decomposed Granite
  - Clayey Shale Claystone
  - Chert
  - Gravel/Boulders
  - Sand and Gravel
  - Sand
  - Mixed
  - Clayey sand
  - Clayey Gravel
  - Silty Sand
  - Silt/Loess
  - Silty Clay
  - Sandy Clay
  - Gravelly Clay
  - Clay
  - Roadfill and/or Topsoil

2017 MCWD Profile Line L200501

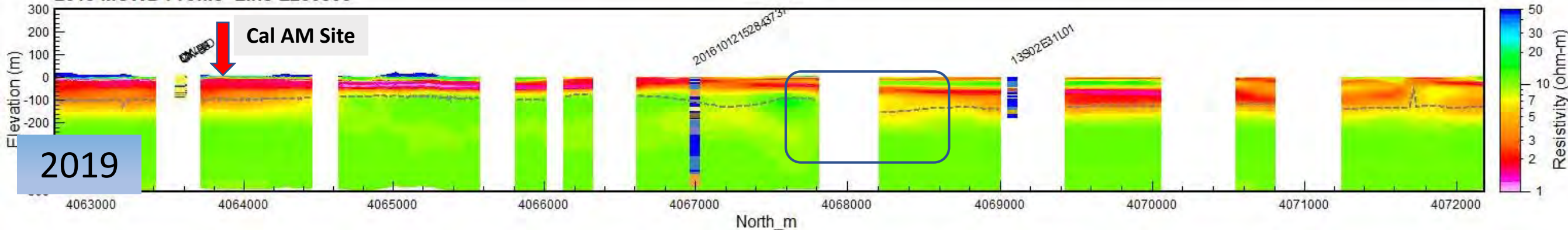
Cal AM Site



2017

2019 MCWD Profile Line L200500

Cal AM Site



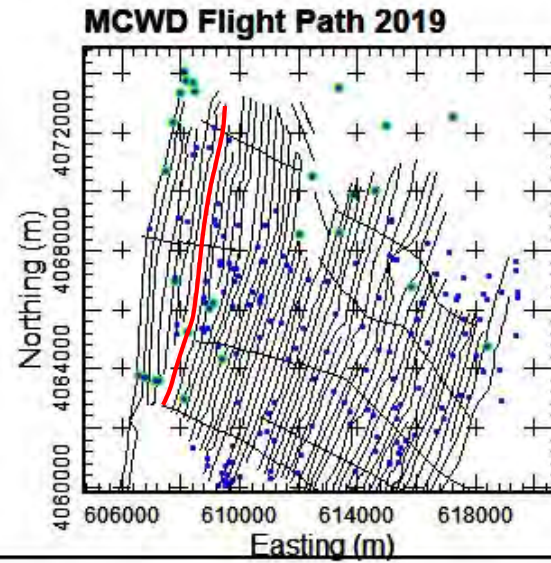
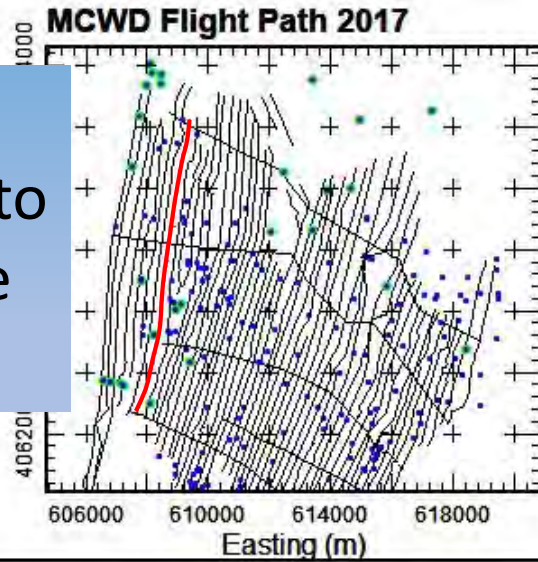
2019



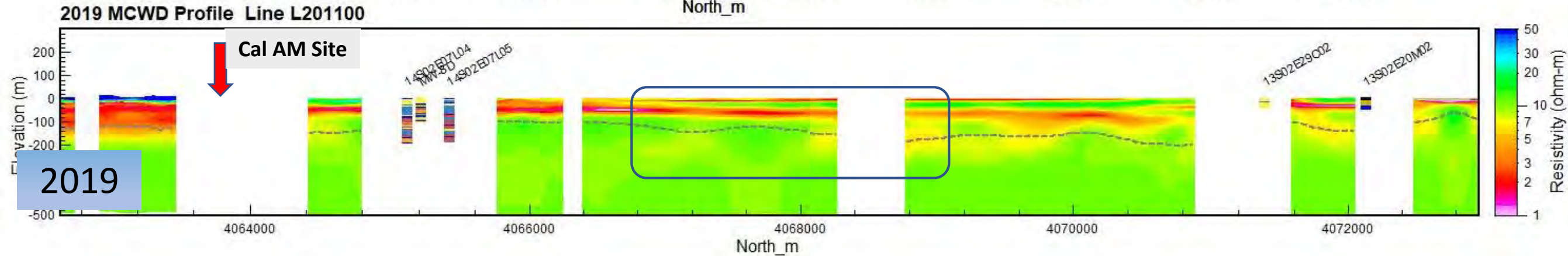
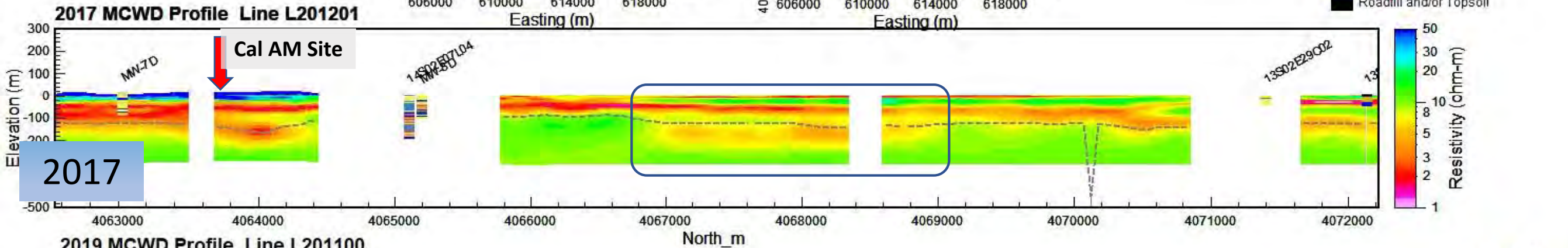


South

# Comparison of 2019 AEM Inversion Results to 2017 AEM & Borehole Lithology, Geophysics



- North**
- MCWD Lithology
- No Sample
  - Igneous/Metamorphics
  - Decomposed Granite
  - Clayey Shale Claystone
  - Chert
  - Gravel/Boulders
  - Sand and Gravel
  - Sand
  - Mixed
  - Clayey sand
  - Clayey Gravel
  - Silty Sand
  - Silt/Loess
  - Silty Clay
  - Sandy Clay
  - Gravelly Clay
  - Clay
  - Roadfill and/or Topsoil

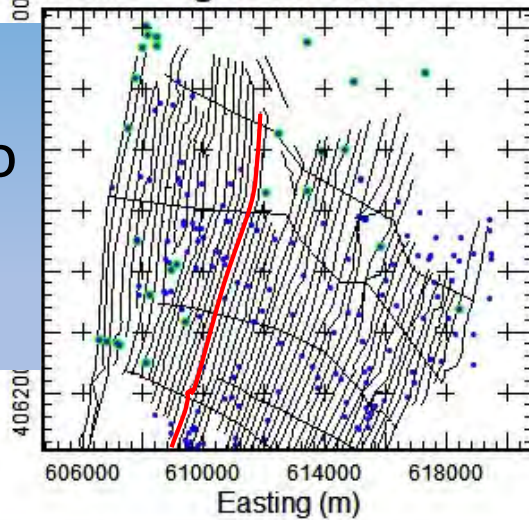




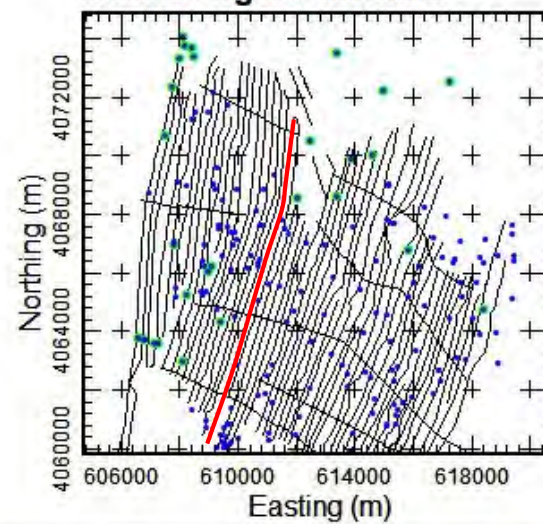


South

MCWD Flight Path 2017



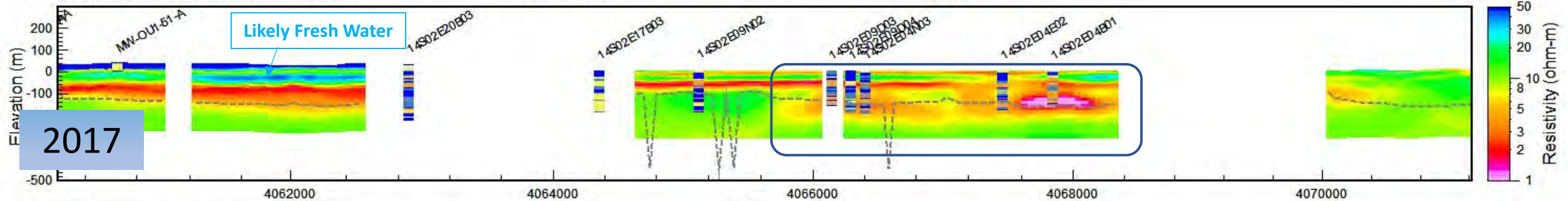
MCWD Flight Path 2019



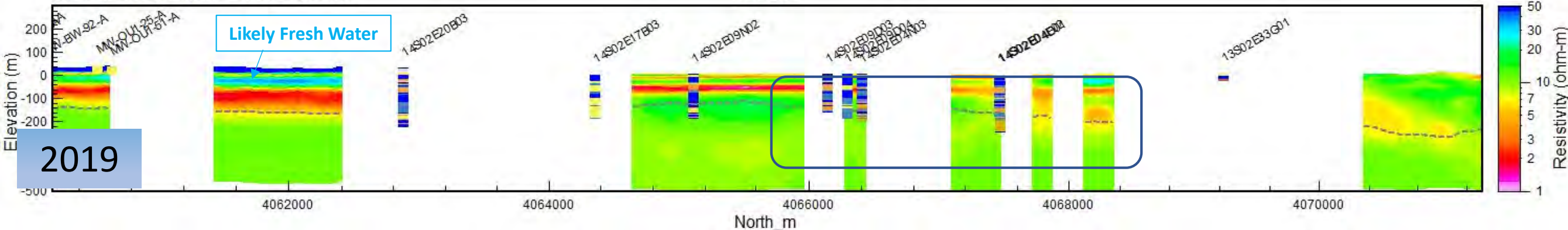
- North
- MCWD Lithology
- No Sample
  - Igneous/Metamorphics
  - Decomposed Granite
  - Clayey Shale Claystone
  - Chert
  - Gravel/Boulders
  - Sand and Gravel
  - Sand
  - Mixed
  - Clayey sand
  - Clayey Gravel
  - Silty Sand
  - Silt/Loess
  - Silty Clay
  - Sandy Clay
  - Gravelly Clay
  - Clay
  - Roadfill and/or Topsoil

# Comparison of 2019 AEM Inversion Results to 2017 AEM & Borehole Lithology, Geophysics

2017 MCWD Profile Line L204001

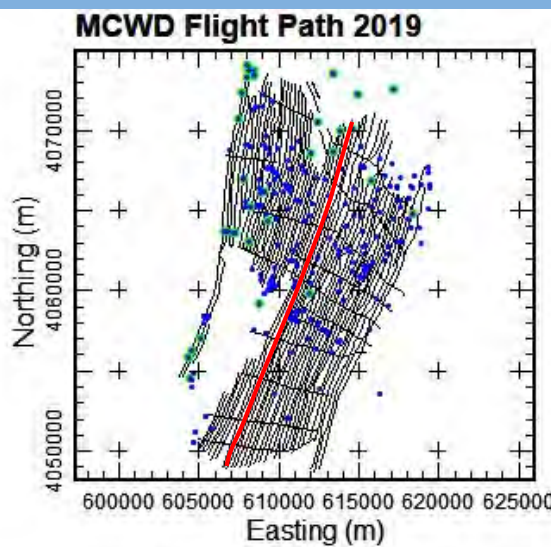
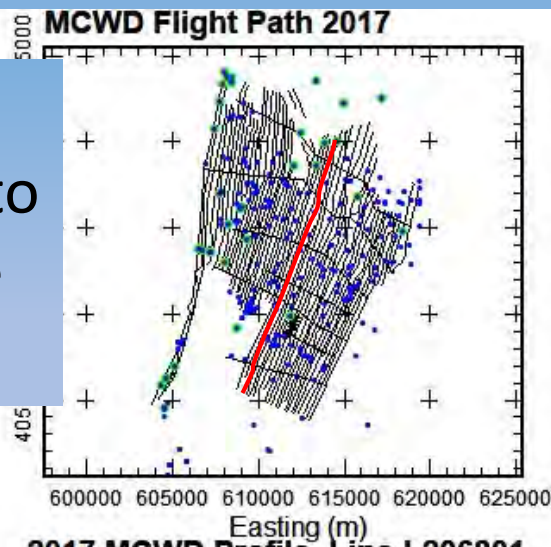


2019 MCWD Profile Line L204000



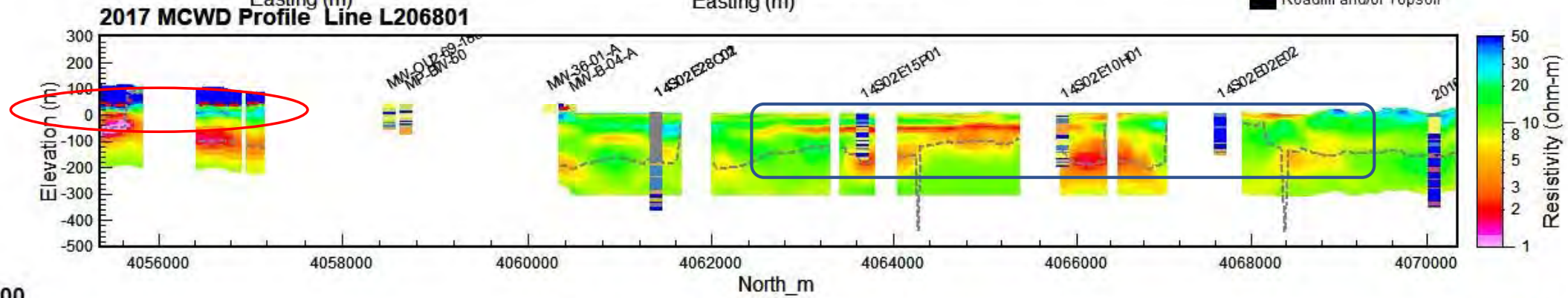


Comparison of 2019 AEM Inversion Results to 2017 AEM & Borehole Lithology, Geophysics

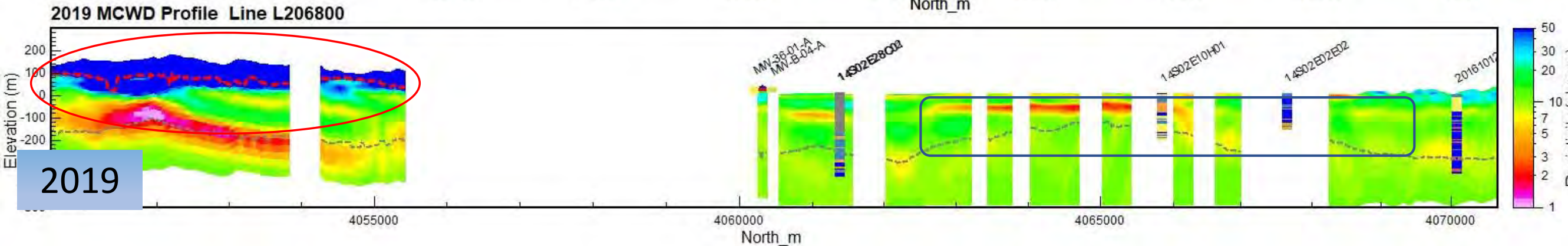


- MCWD Lithology
- No Sample
  - Igneous/Metamorphics
  - Decomposed Granite
  - Clayey Shale Claystone
  - Chert
  - Gravel/Boulders
  - Sand and Gravel
  - Sand
  - Mixed
  - Clayey sand
  - Clayey Gravel
  - Silty Sand
  - Silt/Loess
  - Silty Clay
  - Sandy Clay
  - Gravelly Clay
  - Clay
  - Roadfill and/or Topsoil

2017



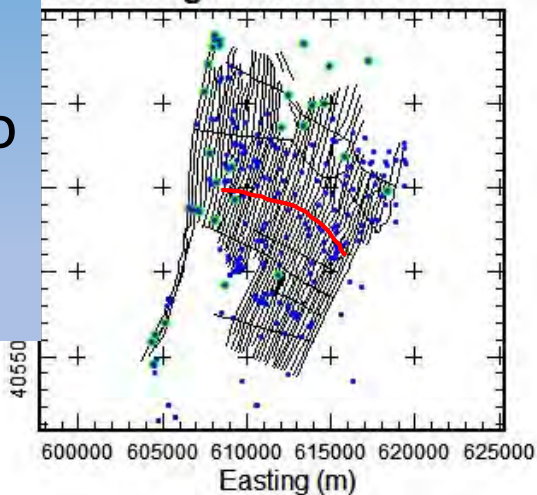
2019



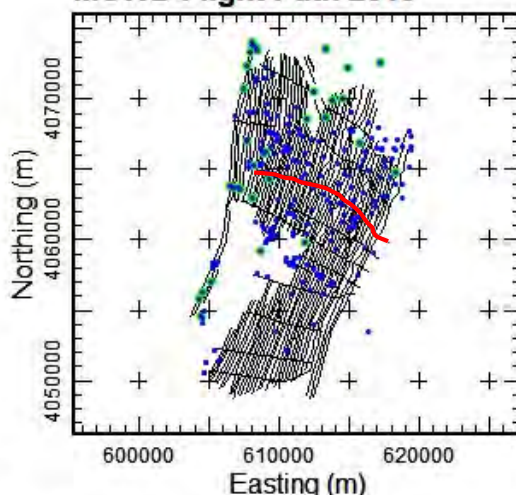


# Comparison of 2019 AEM Inversion Results to 2017 AEM & Borehole Lithology, Geophysics

MCWD Flight Path 2017

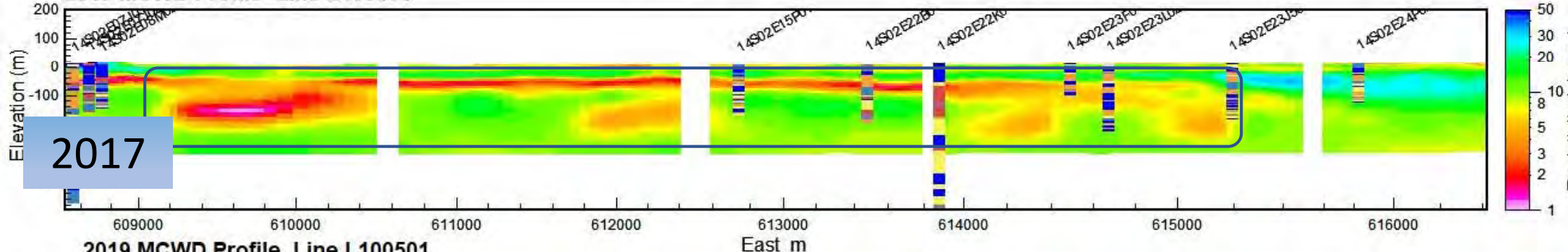


MCWD Flight Path 2019



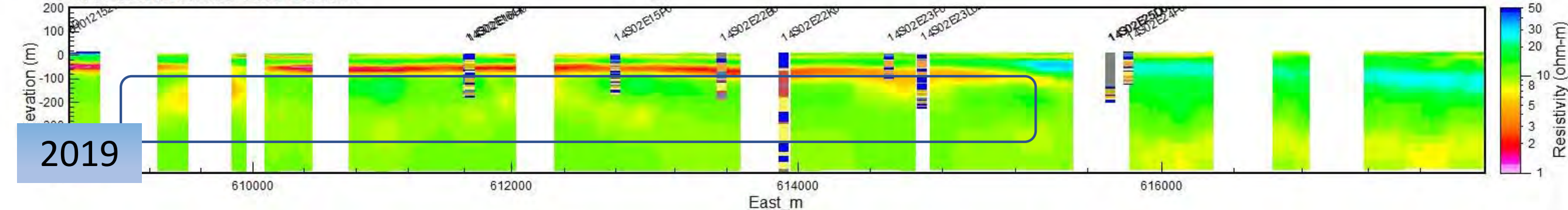
- MCWD Lithology
- No Sample
  - Igneous/Metamorphics
  - Decomposed Granite
  - Clayey Shale Claystone
  - Chert
  - Gravel/Boulders
  - Sand and Gravel
  - Sand
  - Mixed
  - Clayey sand
  - Clayey Gravel
  - Silty Sand
  - Silt/Loess
  - Silty Clay
  - Sandy Clay
  - Gravelly Clay
  - Clay
  - Roadfill and/or Topsoil

2017 MCWD Profile Line L100501



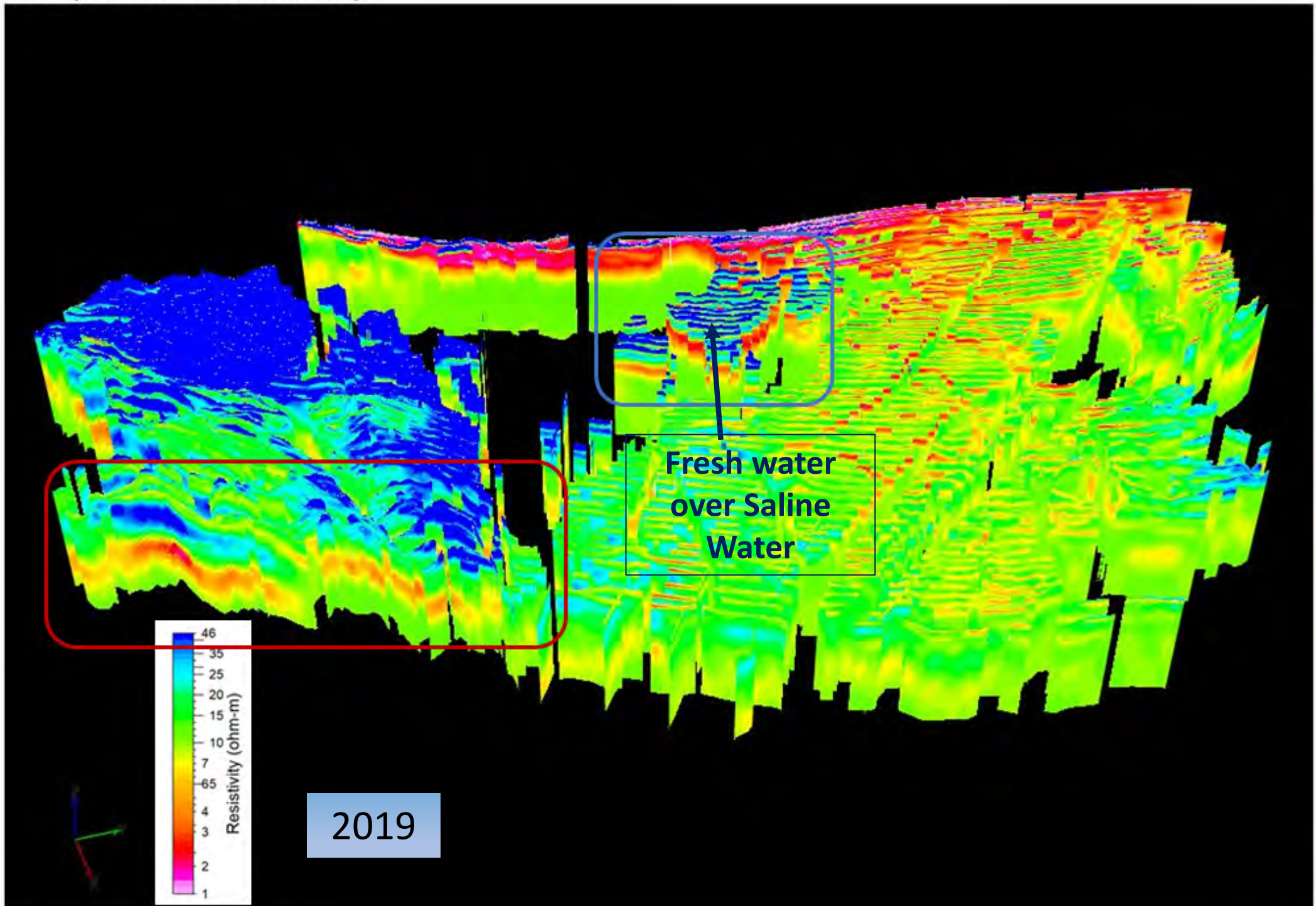
2017

2019 MCWD Profile Line L100501



2019







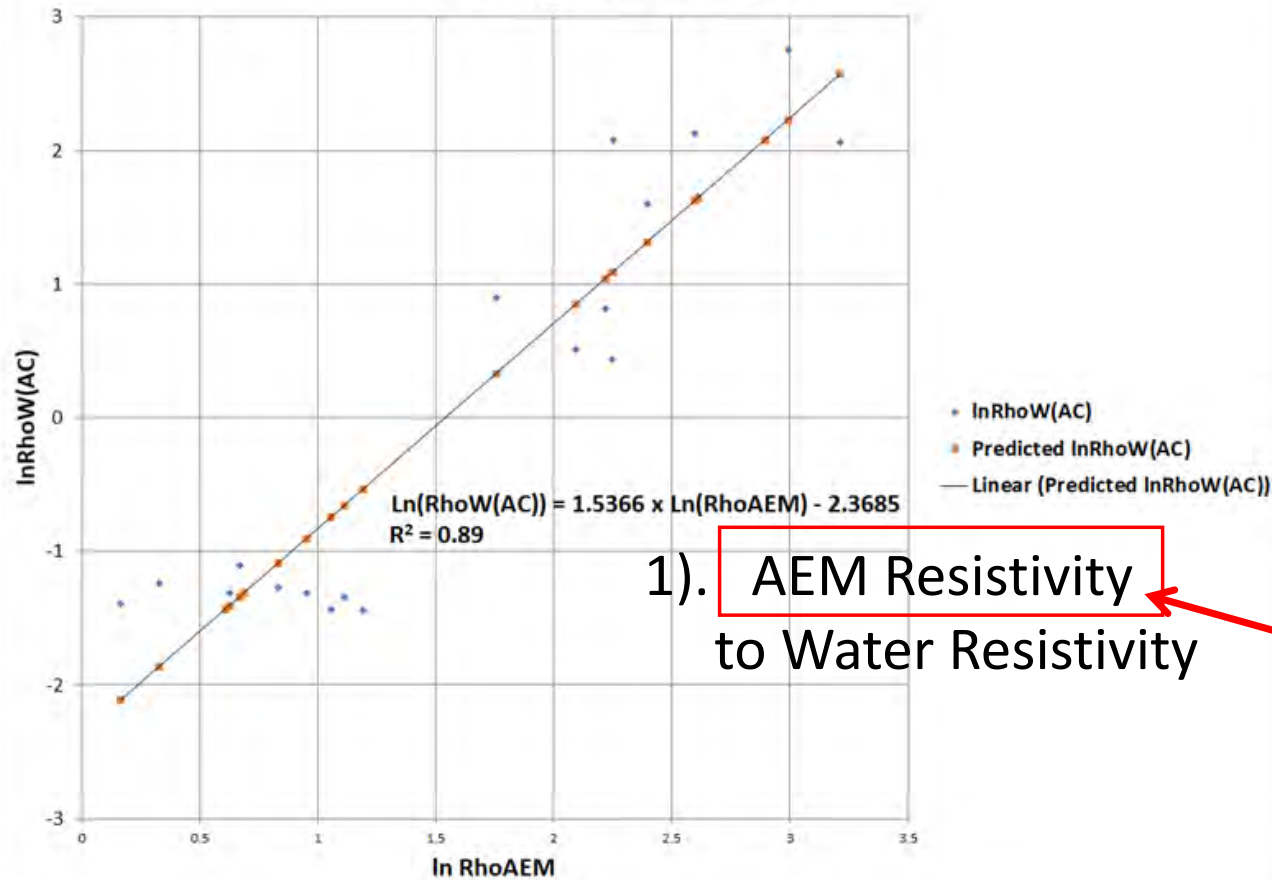
# AEM Bulk Resistivity to TDS Concentration Regression Relationship

HoleID	Screen Interval Lithology	Actual Conductivity $\mu\text{S}/\text{cm}$	Actual Conductivity (AC) $\text{S}/\text{cm}$	Actual Conductivity (AC) $\text{S}/\text{m}$	RhoW(AC) ohm-m	In RhoW(AC)	Meas. Spec. Cond. $\mu\text{S}$ 4/24/2019 12PM	Ln(EC) $\mu\text{S}$	Ln(EC) S	TDS Conc mg/L	Salinity mg/L	AEM Mean Rho Ohm_m	CUT	Pred. Ln(Meas. EC)	Pred. EC	Pred TDS by EC (mg/L)	Pred TDS by RhoW (mg/L)
MW-1S	Sand	40172	0.040172	4.0172	0.2489	-1.3906	50221	10.82	1.6139	34150	32900	1.2		10.893	53809	58411	63981
MW-1M	Clayey Sand	41691	0.041691	4.1691	0.2389	-1.4277	51263	10.84	1.6344	34900	33700	1.8		10.732	45821	32747	33075
MW-1D	Clayey Sand	38218	0.038218	3.8218	0.2617	-1.3407	42936	10.67	1.4571	29200	27900	3.0		10.432	33922	16608	15252
MW-3S	Sand	34557	0.034557	3.4557	0.2894	-1.2400	40352	10.61	1.3950	27400	25900	1.4		10.845	51298	47859	50979
MW-3M	Clayey Sand	37029	0.037029	3.7029	0.2701	-1.3091	43257	10.67	1.4646	29400	28000	1.9		10.725	45465	32013	32231
MW-3D	Sand	41973	0.041973	4.1973	0.2382	-1.4344	46802	10.75	1.5433	31800	30700	2.9		10.471	35266	17827	16535
MW-4S	Sand	1751	0.001751	0.1751	5.7123	1.7426	2037	7.62	-1.5909	1400	1100	4.6	X, X	10.028	22653	9339	7912
MW-4M	Clayey Sand	30126	0.030126	3.0126	0.3319	-1.1028	34845	10.46	1.2483	23700	33200	2.0		10.705	44559	30246	30210
MW-4D	Clayey Sand	37219	0.037219	3.7219	0.2687	-1.3142	40848	10.62	1.4073	27800	26400	2.6		10.544	37934	20586	19482
MW-5S	X	2016	0.002016	0.2016	4.9596	1.6013	NA	NA	NA	NA	NA	11.0		8.434	4599	2905	2090
MW-5M	X	1254	0.001254	0.1254	7.9726	2.0760	NA	NA	NA	NA	NA	18.1		6.653	775	1480	968
MW-5D	Sand	6016	0.006016	0.6016	1.6622	0.5081	6450	8.77	-0.4386	4400	3600	8.1		9.158	9489	4388	3344
MW-6S	Sand	1901	0.001901	0.1901	5.2615	1.6604	2240	7.71	-1.4963	1500	1200	13.6		7.770	2367	2169	1498
MW-6M	Sand	1194	0.001194	0.1194	8.3780	2.1256	1412	7.25	-1.9579	1000	710	13.4		7.815	2477	2209	1529
MW-6D	Sand	4409	0.004409	0.4409	2.2681	0.8189	1833	7.51	-1.6965	3300	2600	9.2	X	8.886	7232	3704	2756
MW-7S	Sand	1268	0.001268	0.1268	7.8858	2.0651	1478	7.30	-1.9120	1000	800	24.9	X	4.933	139	958	589
MW-7M	X	6440	0.006440	0.6440	1.5528	0.4401	NA	NA	NA	NA	NA	9.5		8.813	6723	3551	2627
MW-7D	Sand	35728	0.035728	3.5728	0.2799	-1.2733	40180	10.60	1.3908	27300	25900	2.3		10.617	40805	24181	23407
MW-8S	Sand	635	0.000635	0.0635	15.7381	2.7561	762	6.64	-2.5751	500	400	19.9		6.185	485	1296	832
MW-8M	Sand	42505	0.042505	4.2505	0.2353	-1.4470	49993	10.82	1.6093	34000	32900	3.3		10.365	31731	14823	13397
MW-8D	Sand	1255	0.001255	0.1255	7.9707	2.0758	1375	7.23	-1.9841	900	700	9.5	X	8.806	6673	3535	2614
MW-9S	Silty Sand	4066	0.004066	0.4066	2.4594	0.8999	4805	8.48	-0.7329	3300	2600	5.8	X	9.741	17006	6934	5634
MW-9M	Sand	36792	0.036792	3.6792	0.2718	-1.3027	43607	10.68	1.4726	29700	28300	2.0		10.695	44113	29425	29277
MW-9D	Clayey Sand	550	0.000550	0.0550	18.1752	2.9001	295	5.69	-3.5237	405	300	12.1	X, X	8.144	3444	2538	1792



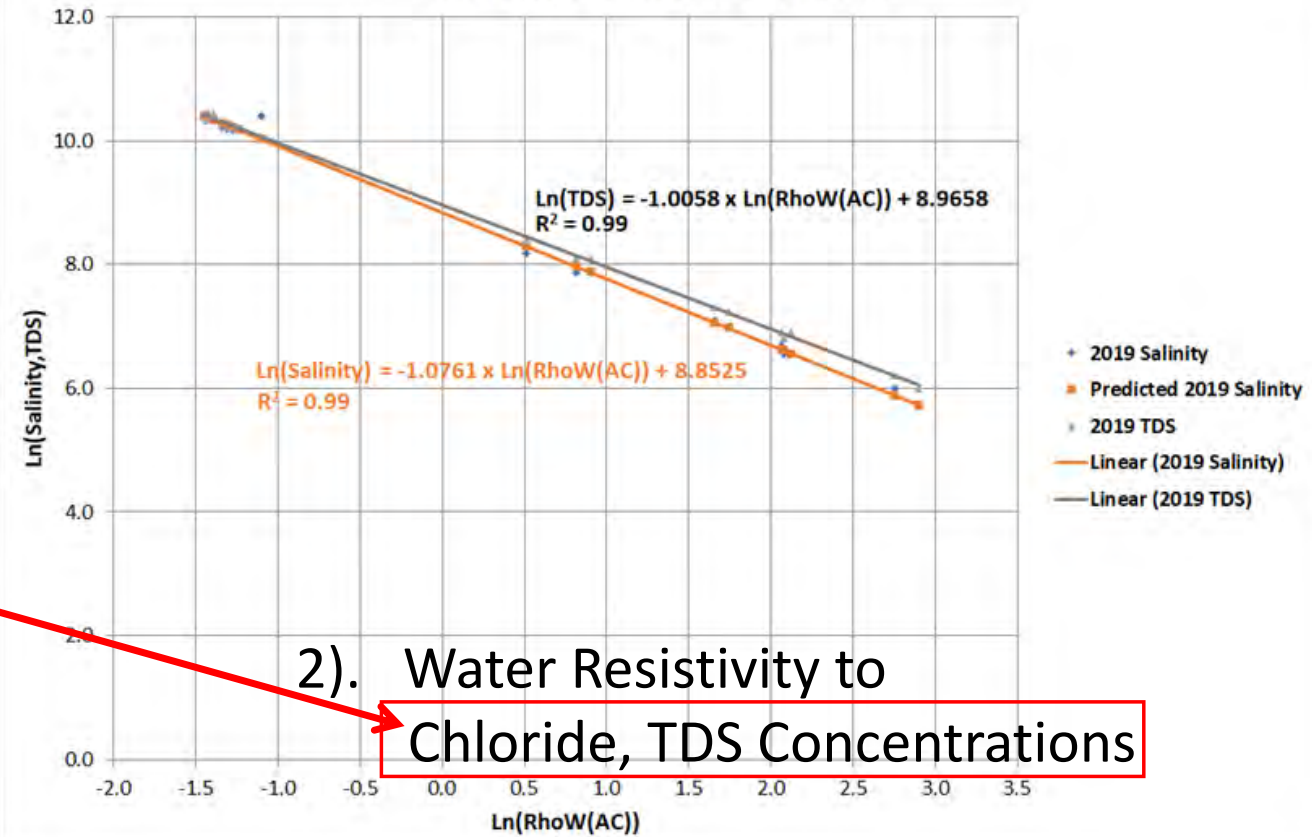
# 2019 AEM Bulk Resistivity to TDS Concentration Regression Relationships

RhoW(AC) vs RhoAEM Line Fit Plot



1). AEM Resistivity to Water Resistivity

RhoW(AC) vs Salinity, TDS Line Fit Plot

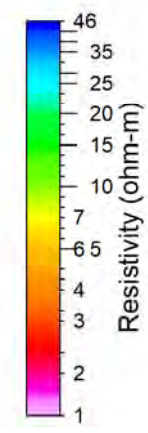
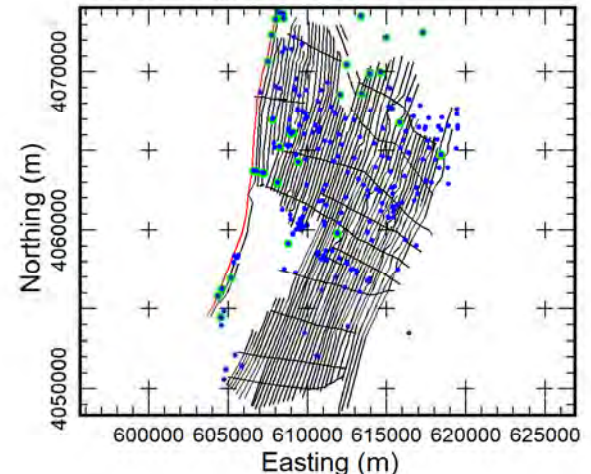


2). Water Resistivity to Chloride, TDS Concentrations



## Conversion of Rho AEM to Chloride Concentration

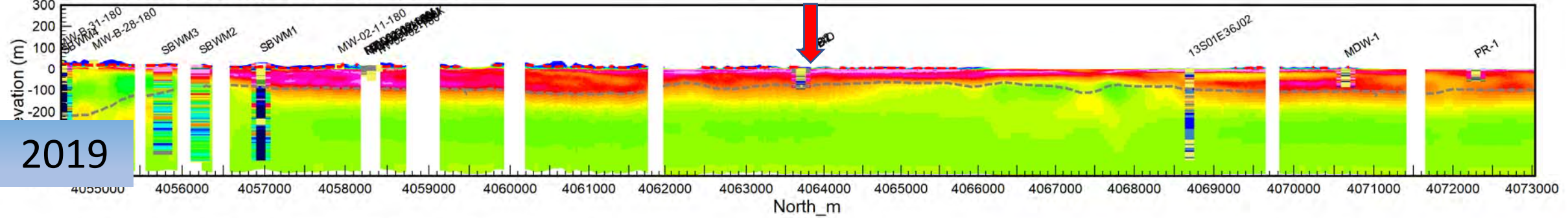
MCWD Flight Path 2019



- MCWD Lithology
- No Sample
  - Igneous/Metamorphics
  - Decomposed Granite
  - Clayey Shale Claystone
  - Chert
  - Gravel/Boulders
  - Sand and Gravel
  - Sand
  - Mixed
  - Clayey sand
  - Clayey Gravel
  - Silty Sand
  - Silt/Loess
  - Silty Clay
  - Sandy Clay
  - Gravelly Clay
  - Clay
  - Roadfill and/or Topsoil

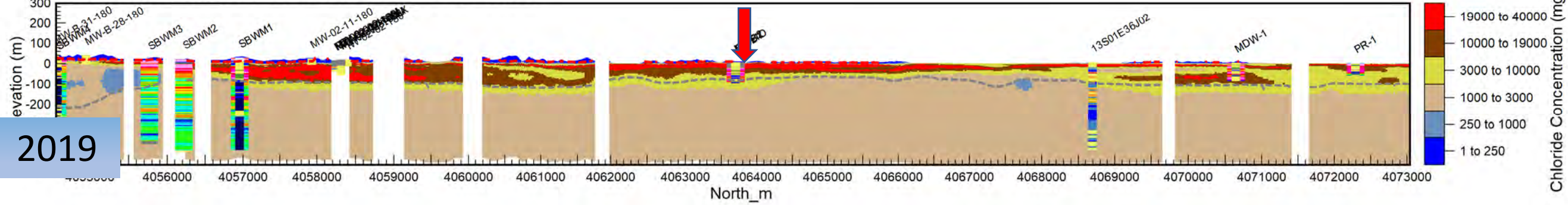
North

2019 MCWD Resistivity Profile - Line L200200



2019

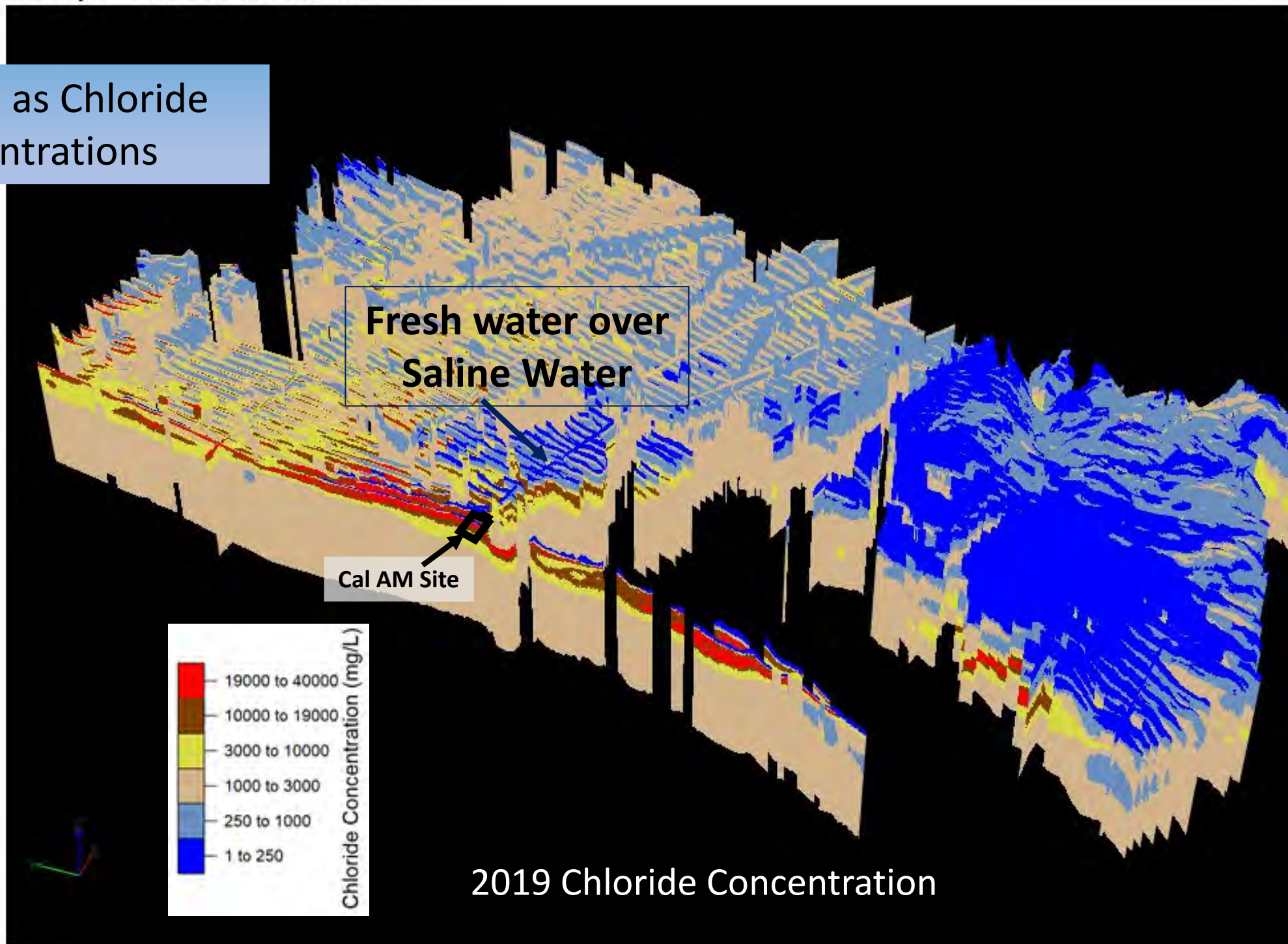
2019 MCWD Chloride Concentration Profile - Line L200200



2019



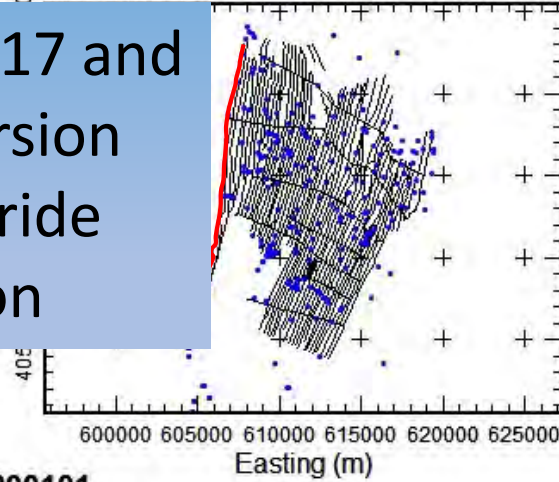
# Rho AEM as Chloride Concentrations



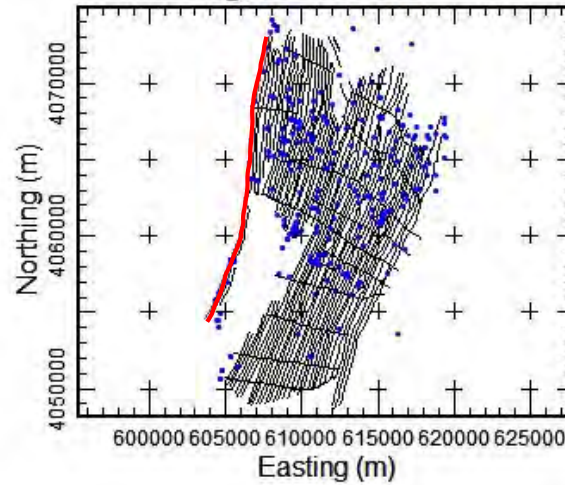


# Comparison of 2017 and 2019 AEM Inversion Results in Chloride Concentration

MCWD Flight Path 2017

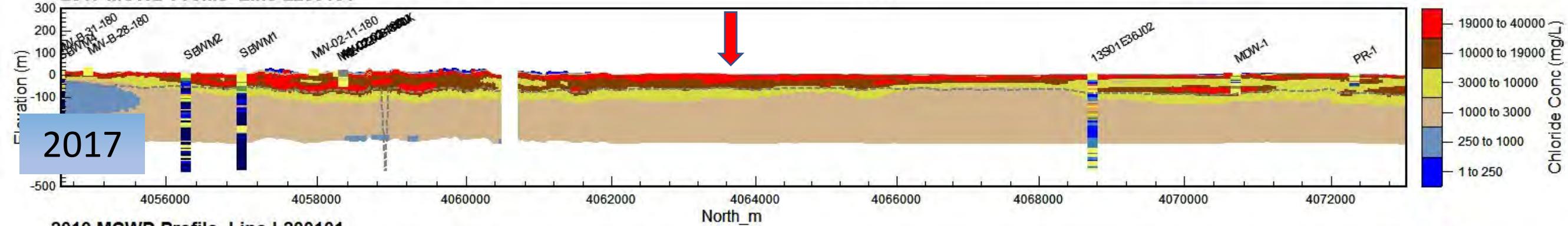


MCWD Flight Path 2019



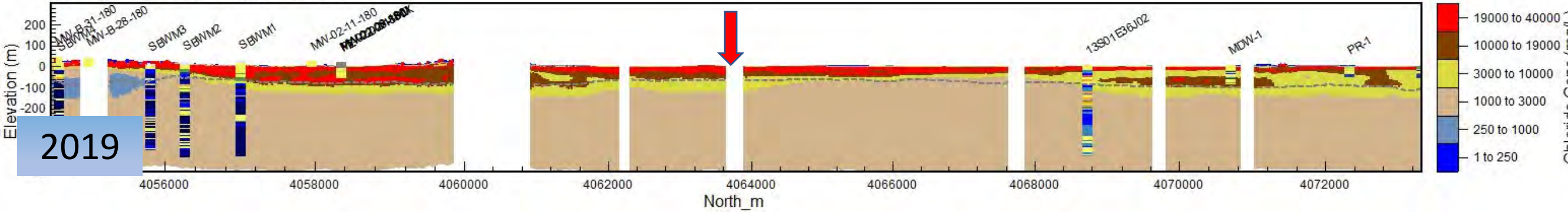
North

2017 MCWD Profile Line L200101



2017

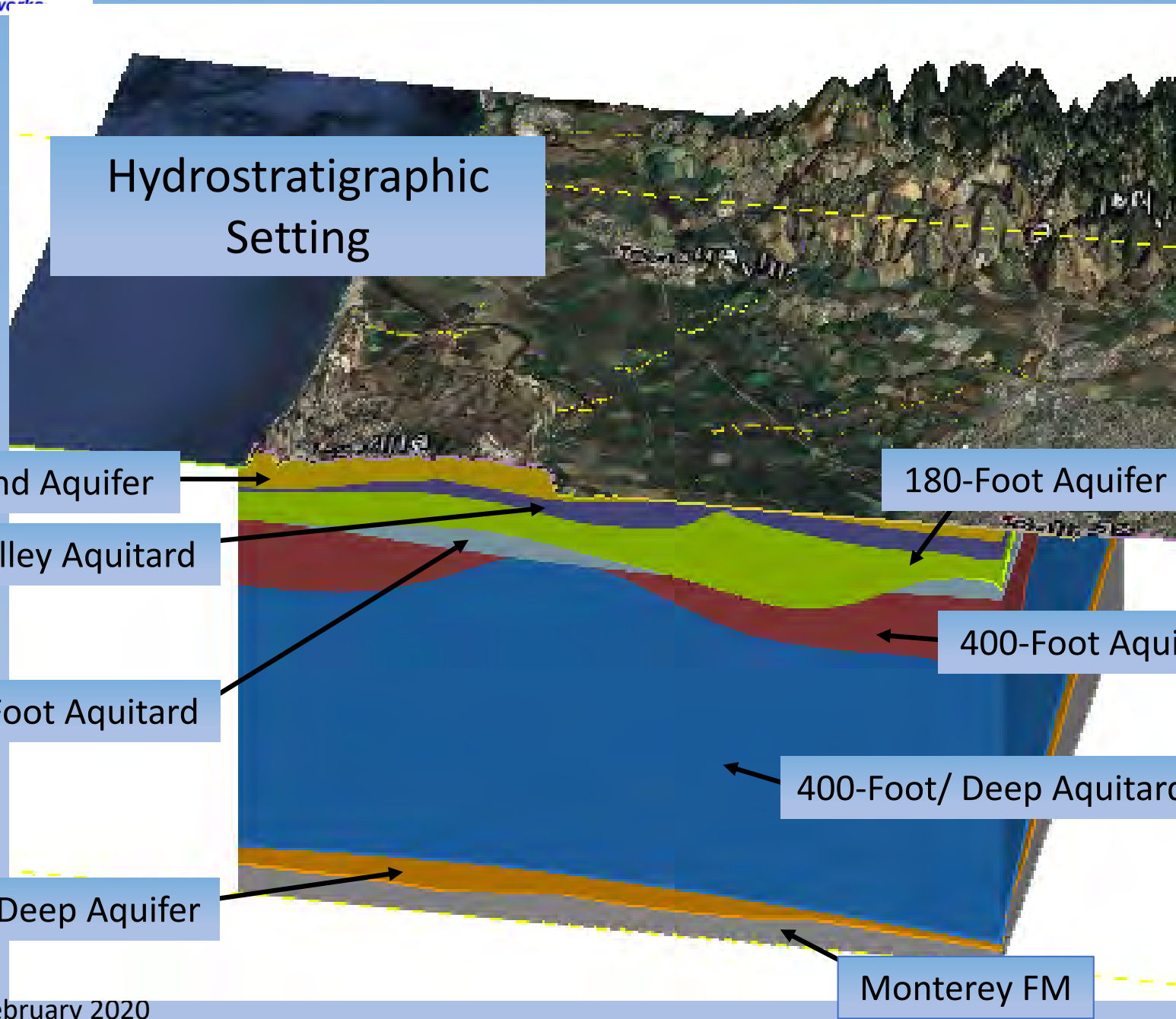
2019 MCWD Profile Line L200101



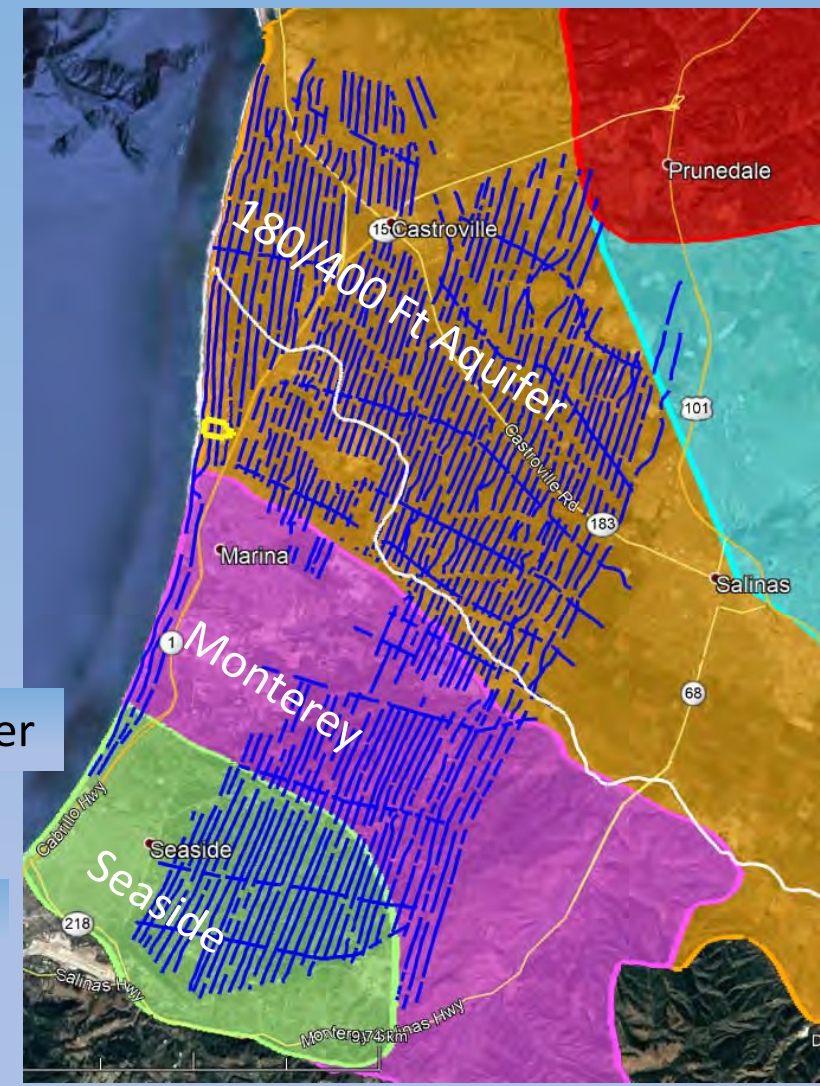
2019



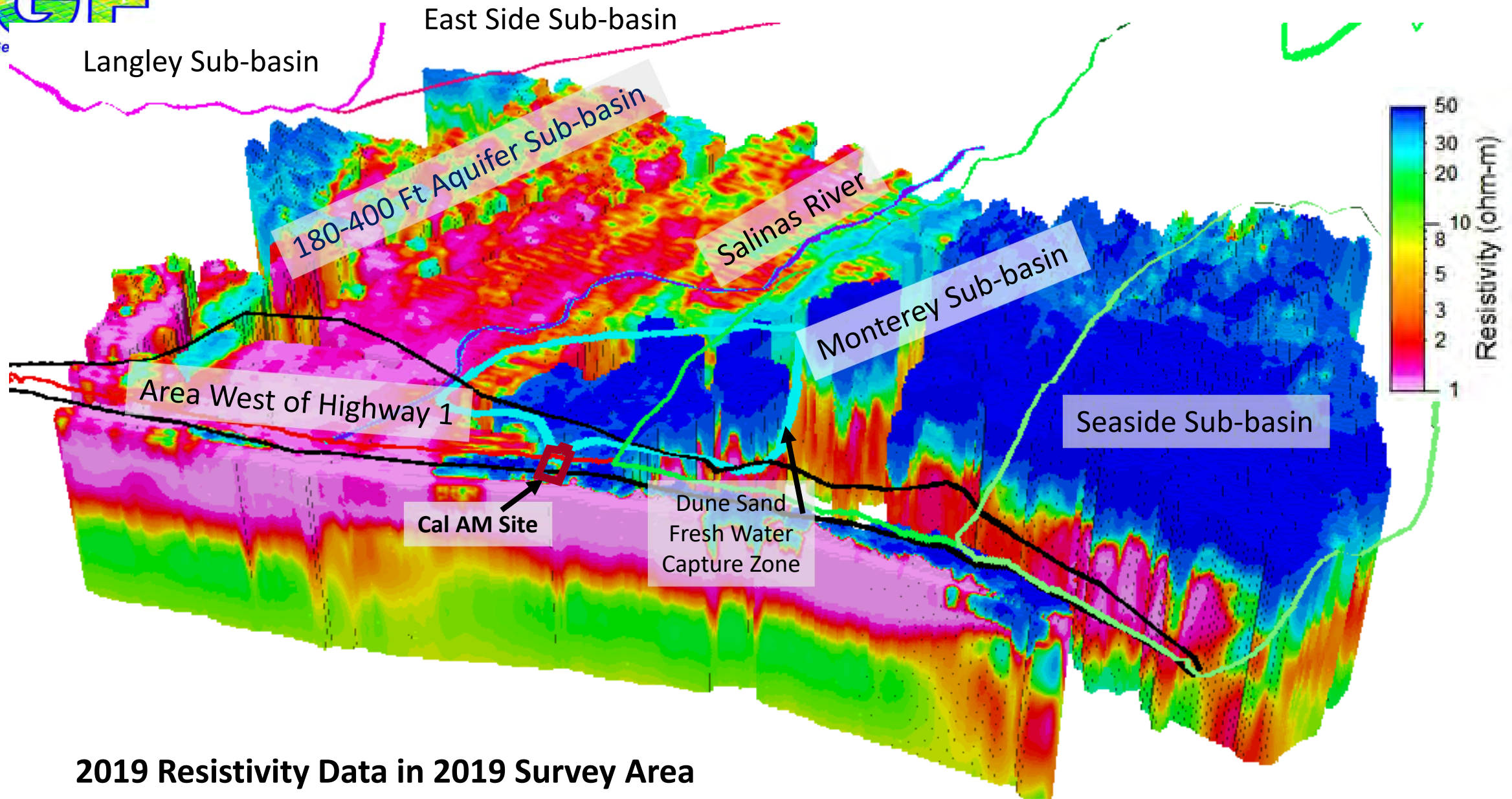
Hydrostratigraphic Setting



Local Sub-Basins

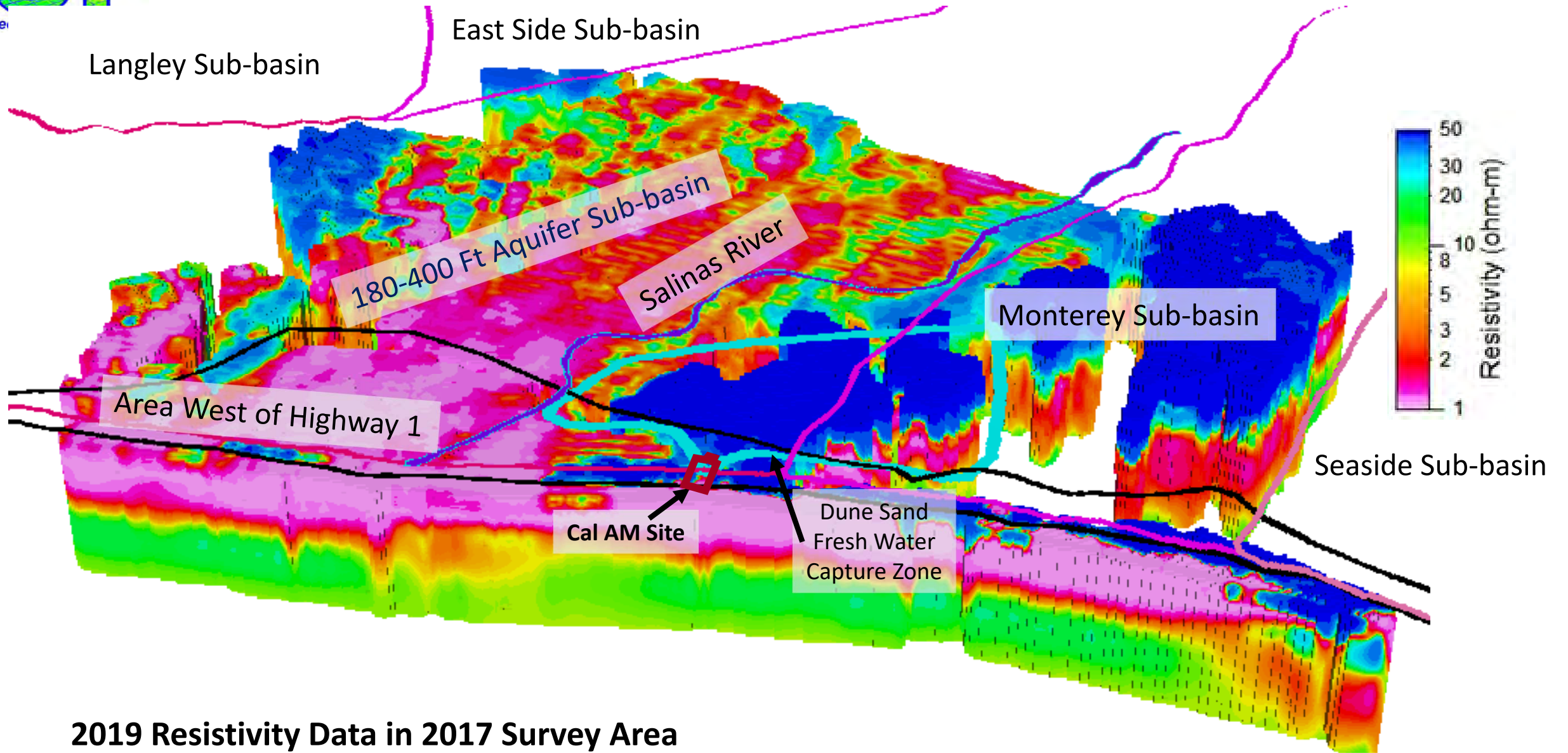






**2019 Resistivity Data in 2019 Survey Area**  
**Full Voxel**  
**Depth: Surface to -375 m (1,230 ft)**

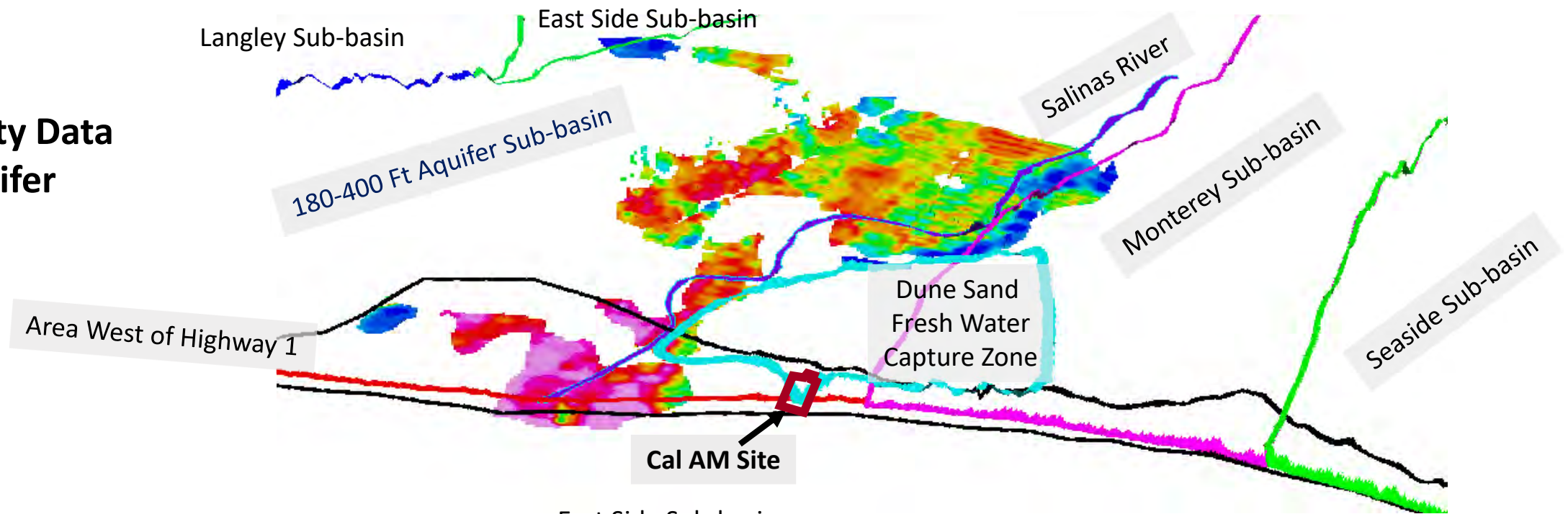
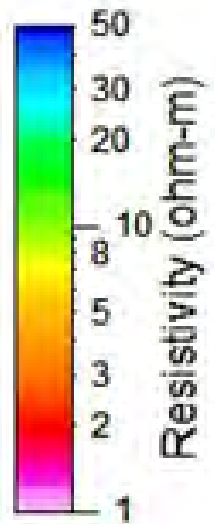




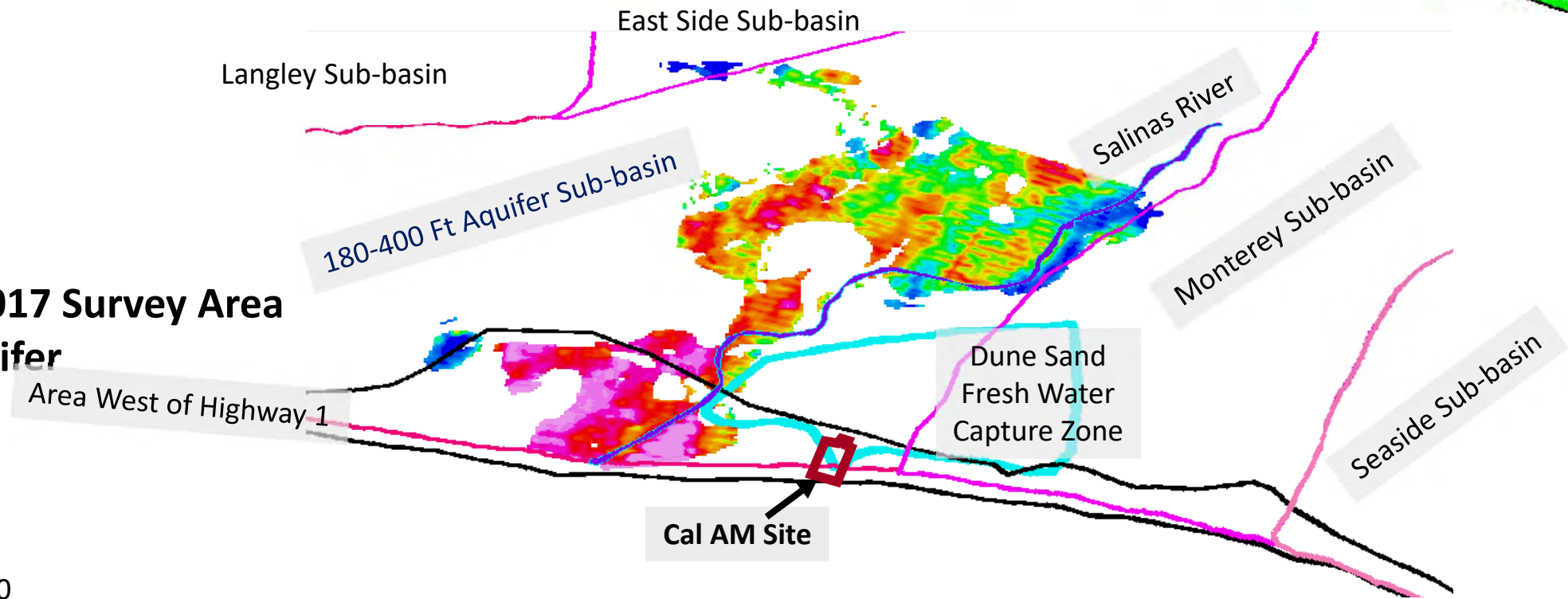
**2019 Resistivity Data in 2017 Survey Area**  
**Full Voxel**  
**Depth: Surface to -375 m (1,230 ft)**



## 2017 Resistivity Data Perch "A" Aquifer

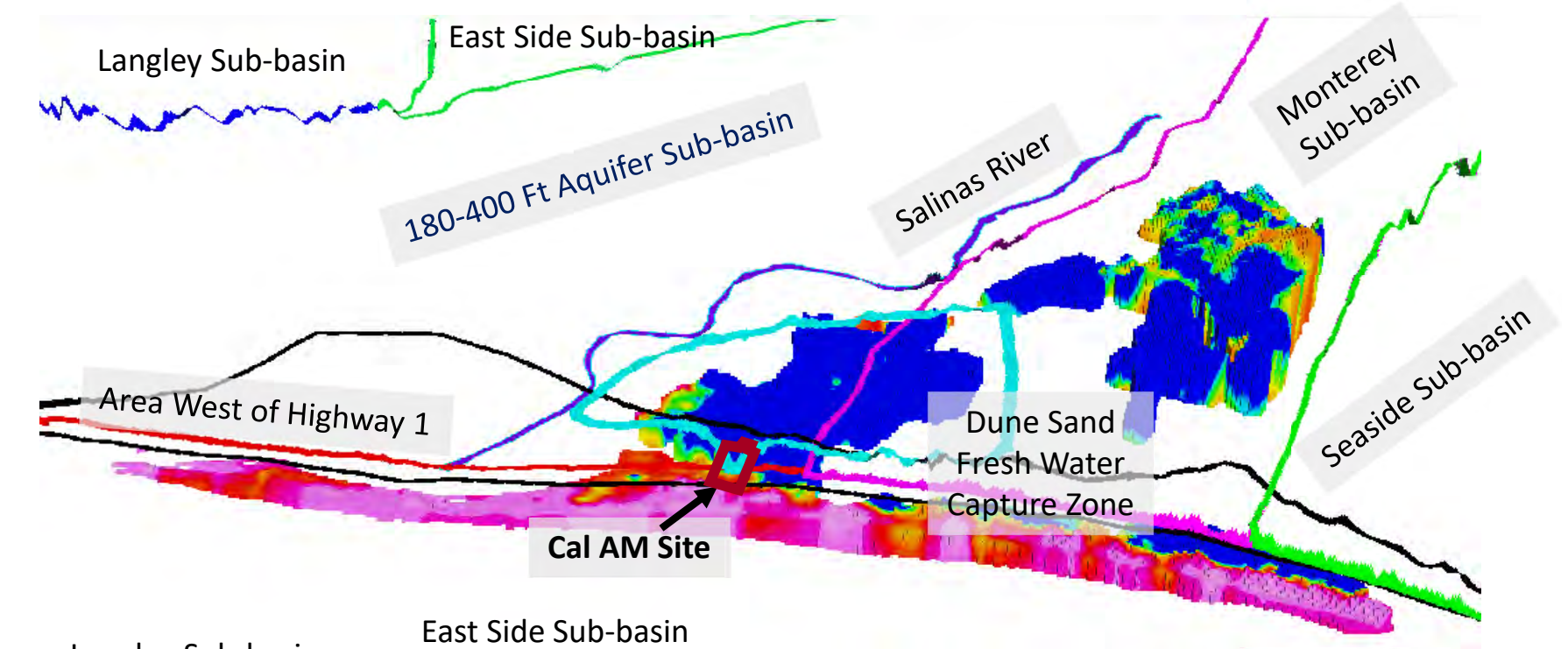
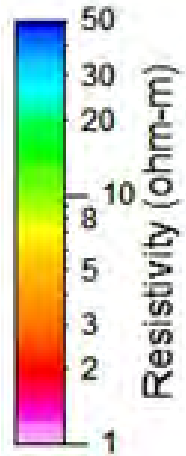


## 2019 Data - 2017 Survey Area Perch "A" Aquifer

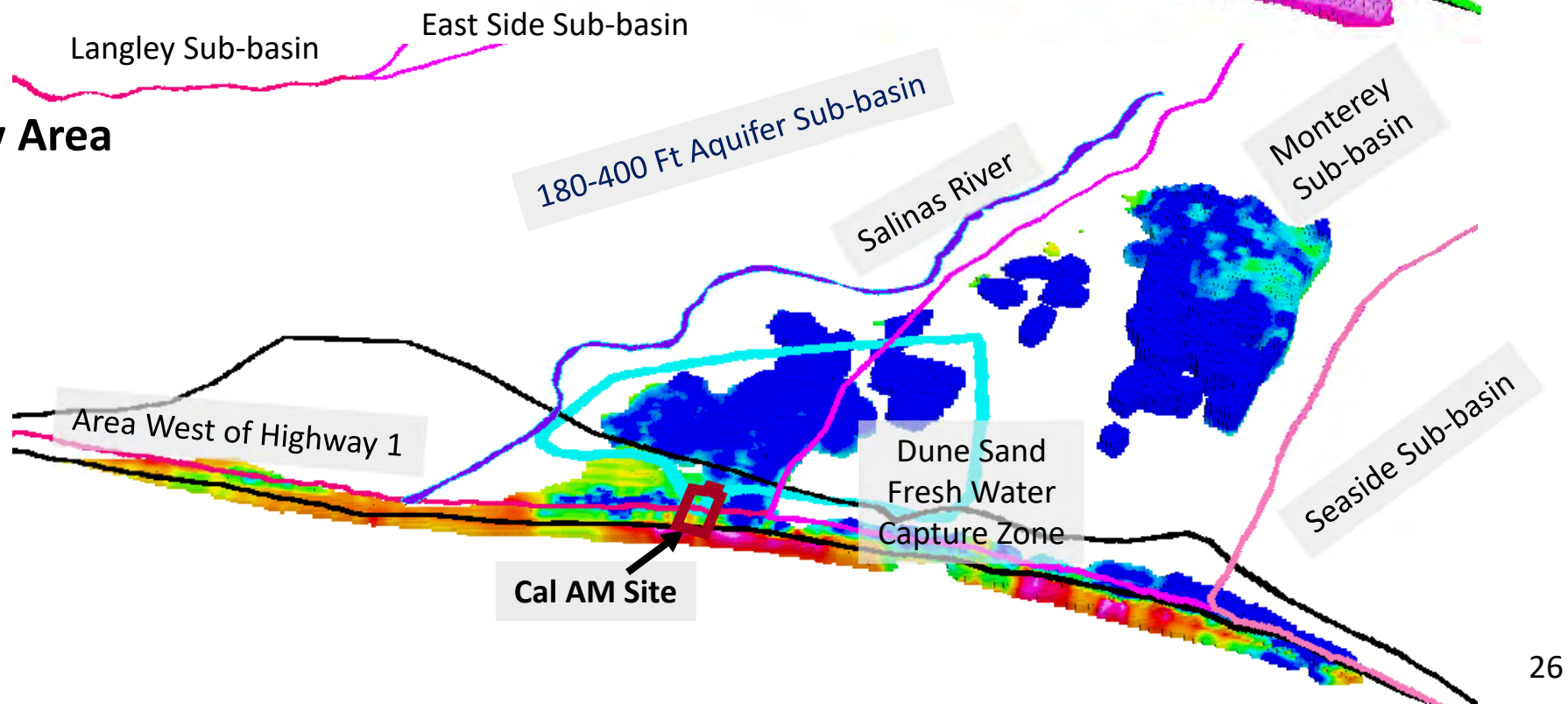




## 2017 Resistivity Data Dune Sand Aquifer

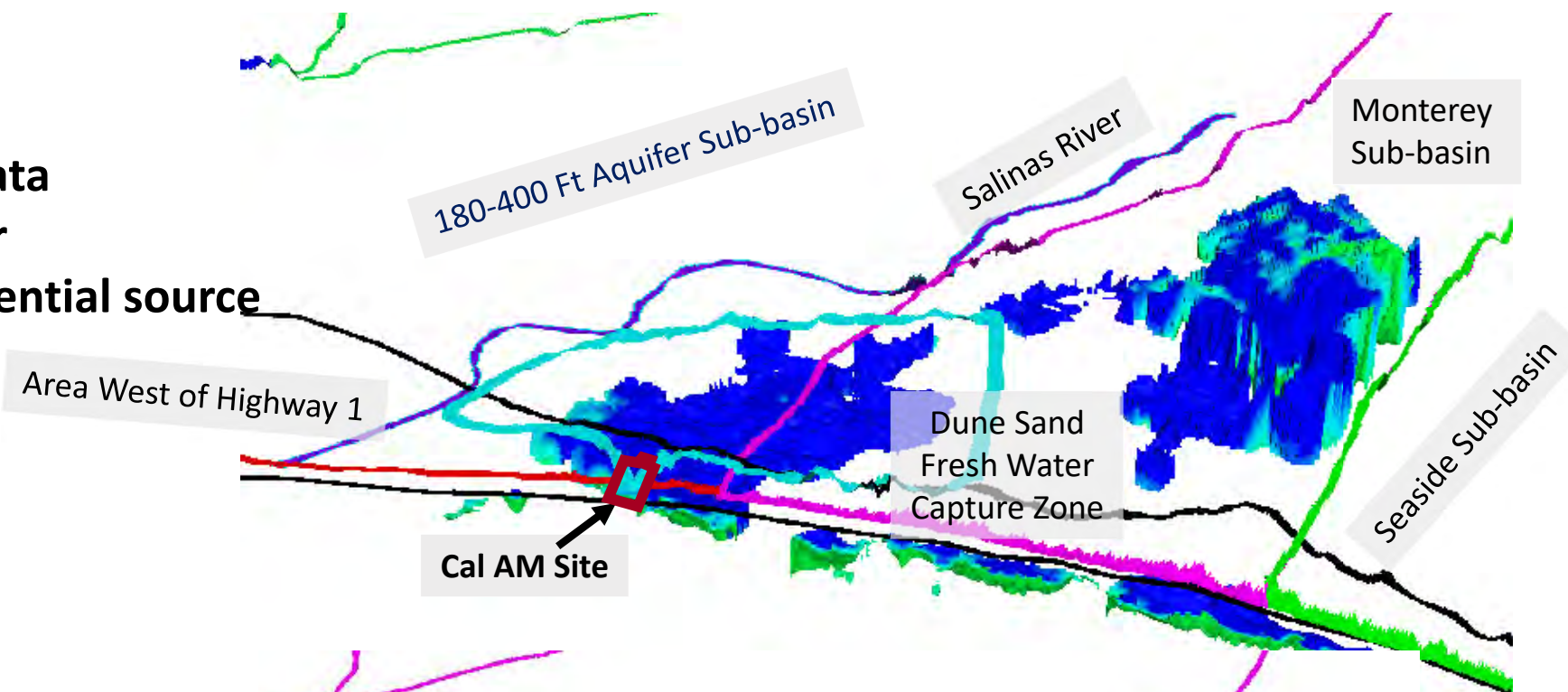


## 2019 Data - 2017 Survey Area Dune Sand Aquifer

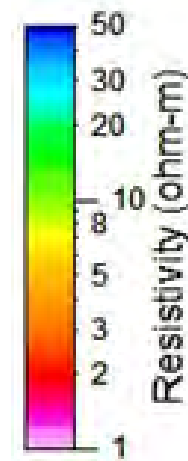
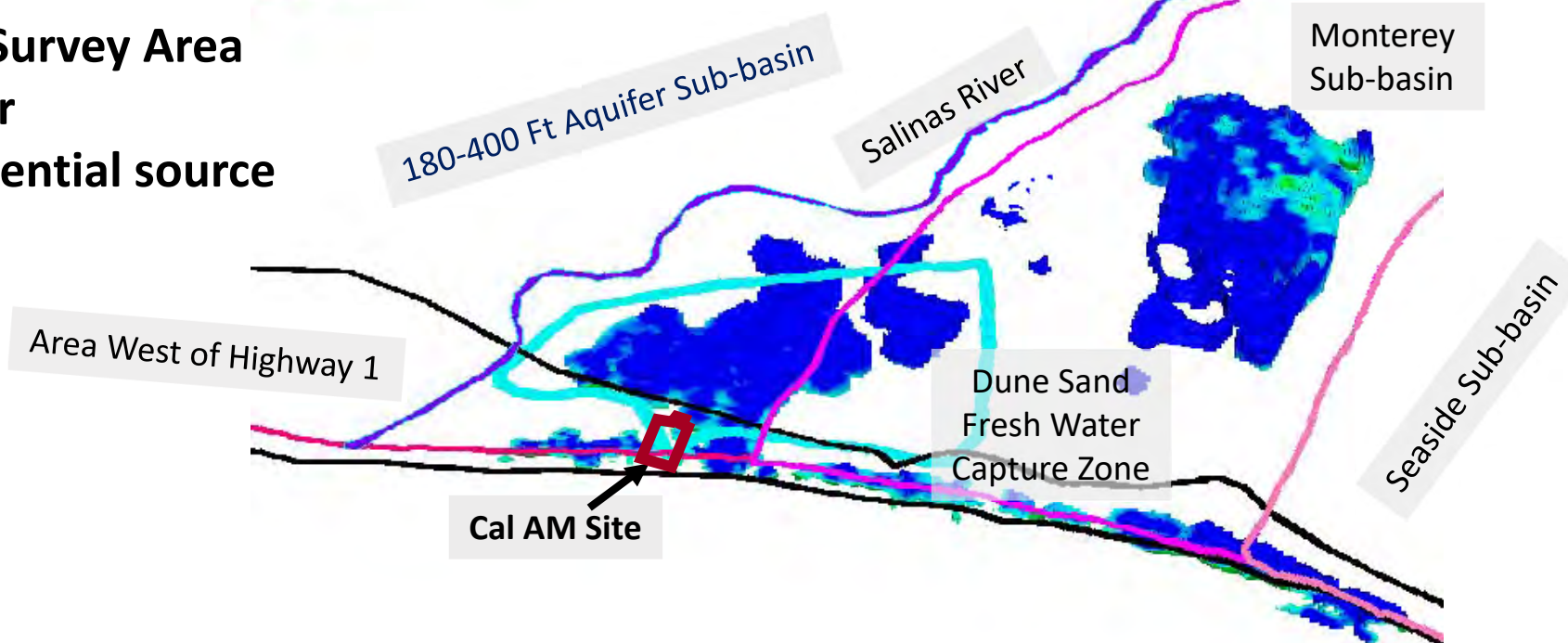




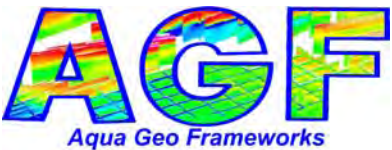
**2017 Resistivity Data**  
**Dune Sand Aquifer**  
**20-75 ohm-m (Potential source**  
**of drinking water)**



**2019 Data - 2017 Survey Area**  
**Dune Sand Aquifer**  
**20-75 ohm-m (Potential source**  
**of drinking water)**



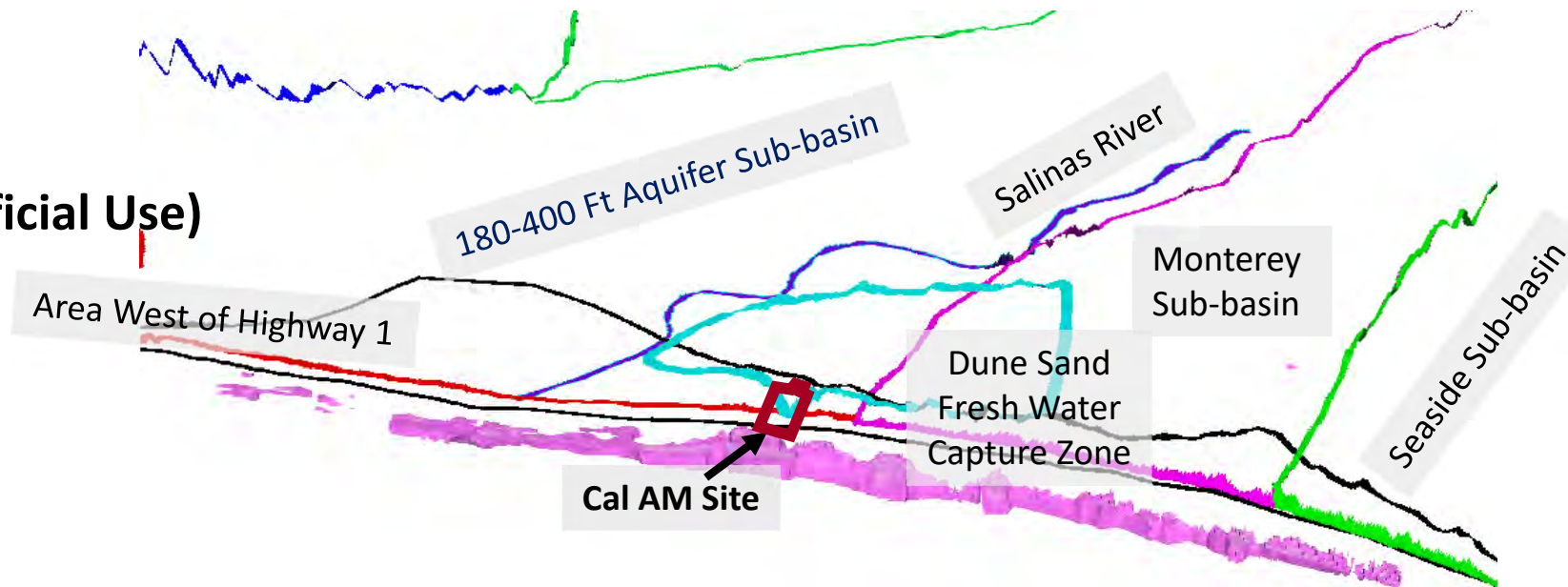




# 2017 Resistivity Data

## Dune Sand Aquifer

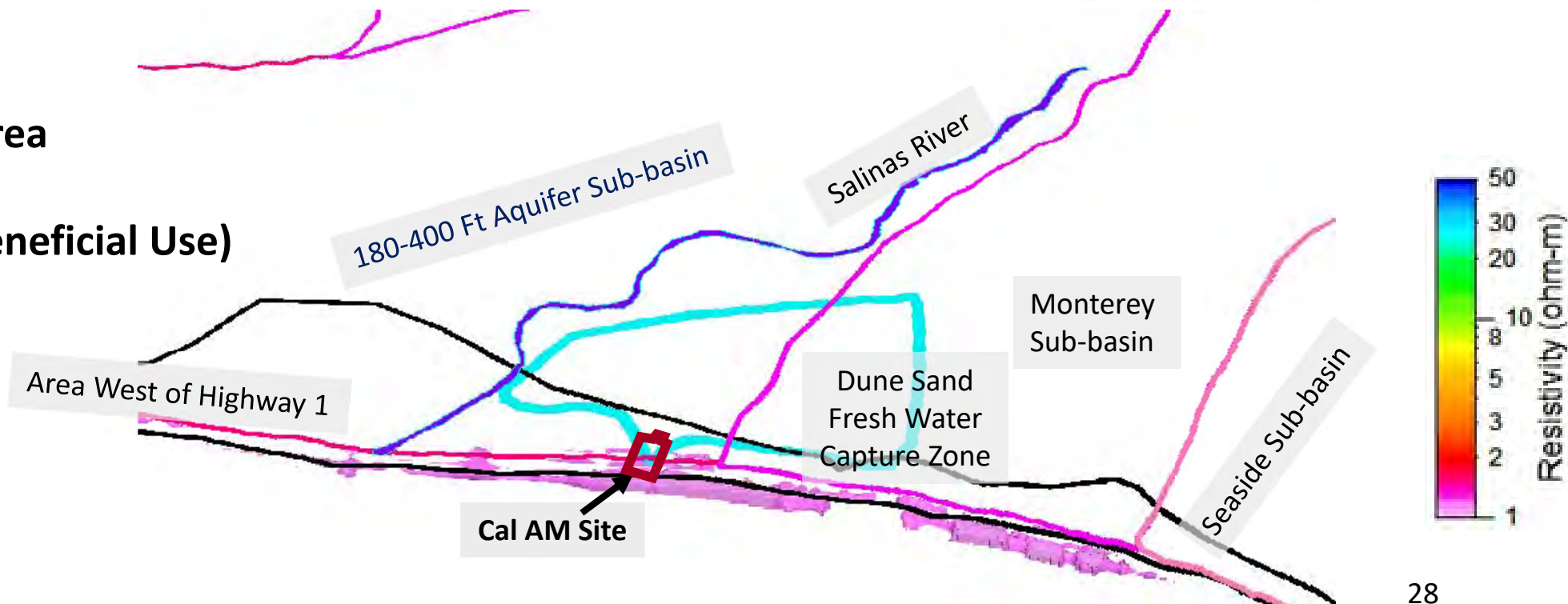
0.01 - 3 ohm-m (Limited Beneficial Use)



# 2019 Data - 2017 Survey Area

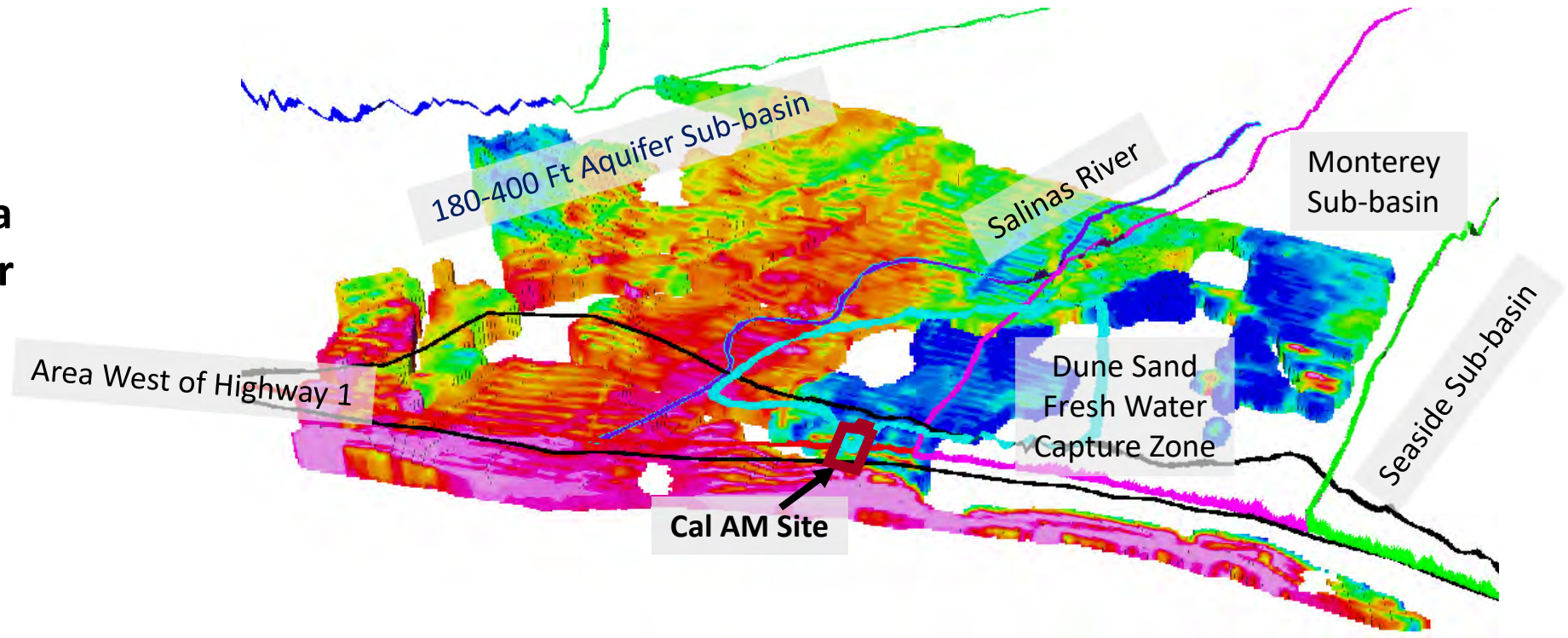
## Dune Sand Aquifer

0.01 - 3 ohm-m (Limited Beneficial Use)

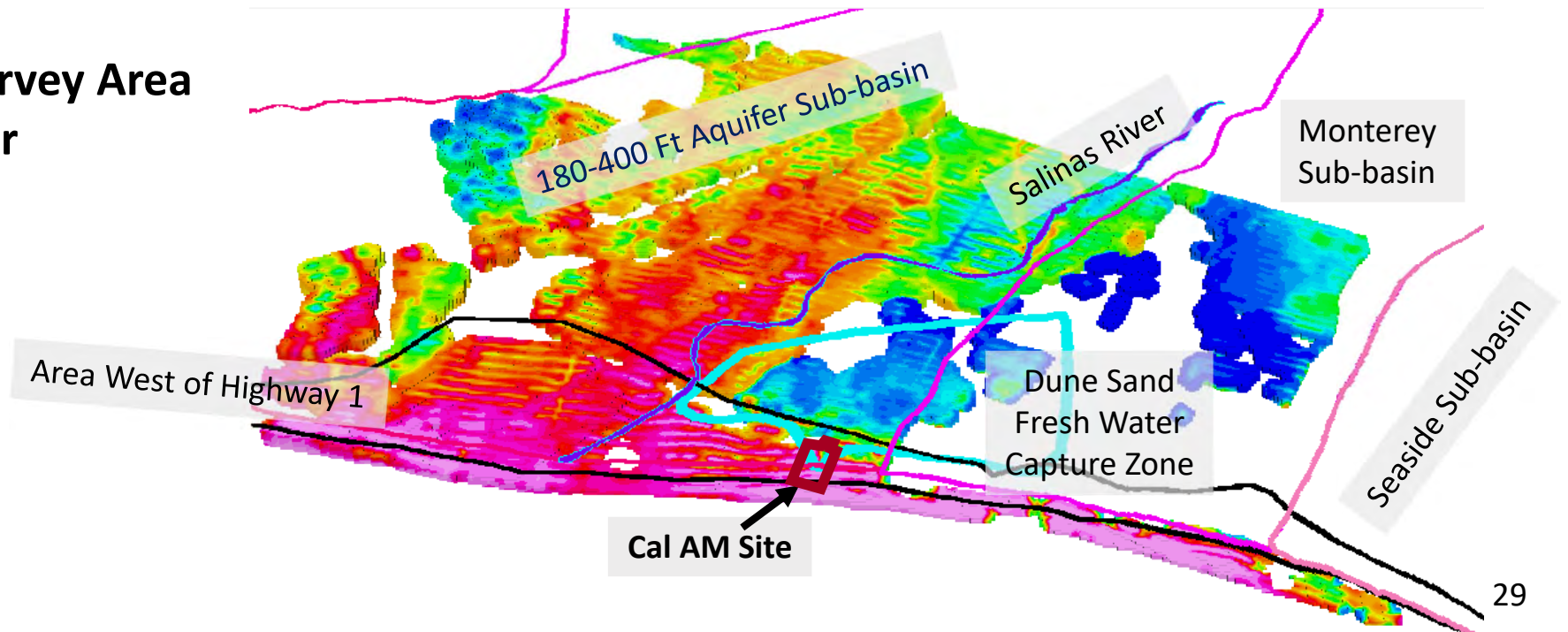
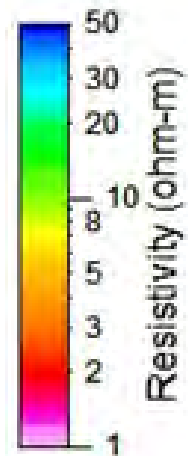




**2017 Resistivity Data  
Upper 180 Ft Aquifer**

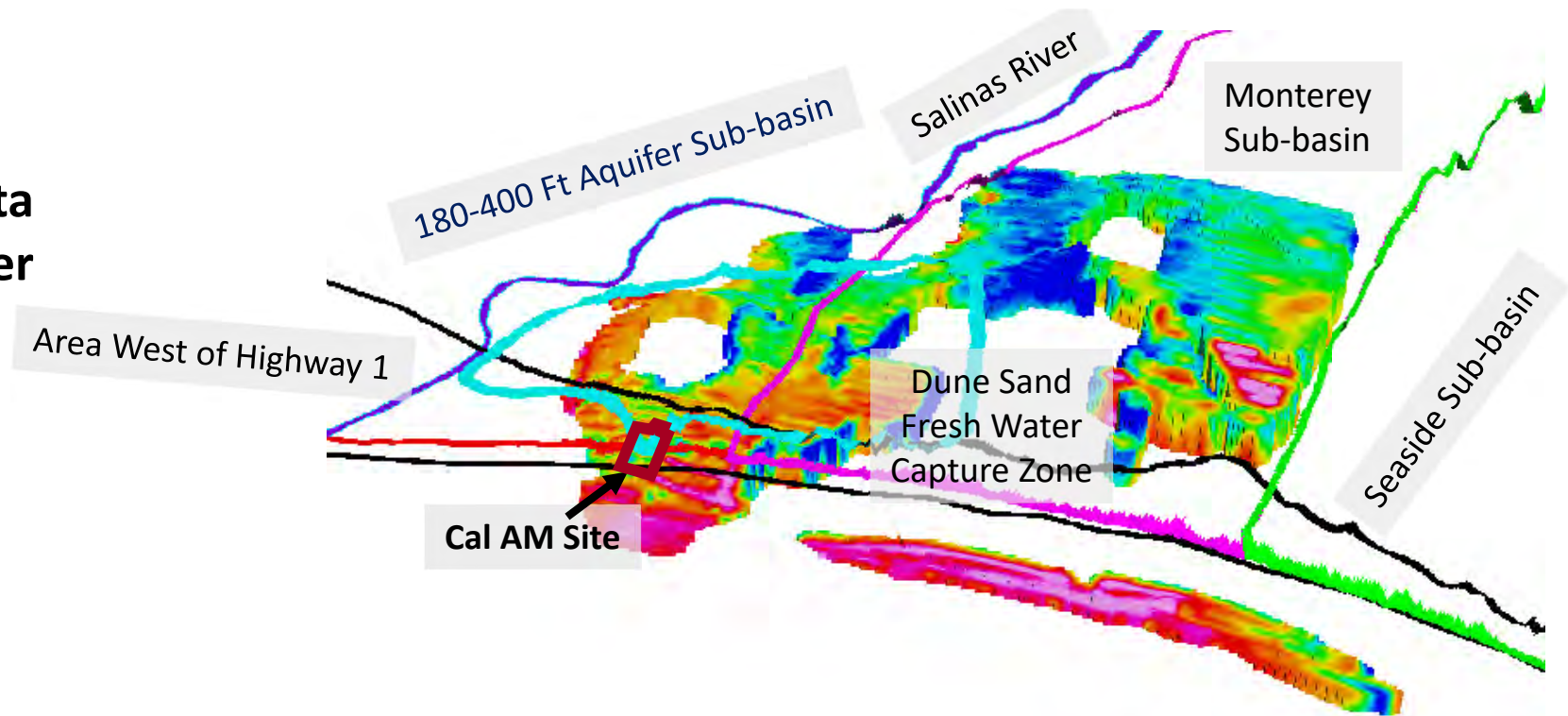


**2019 Data - 2017 Survey Area  
Upper 180 Ft Aquifer**

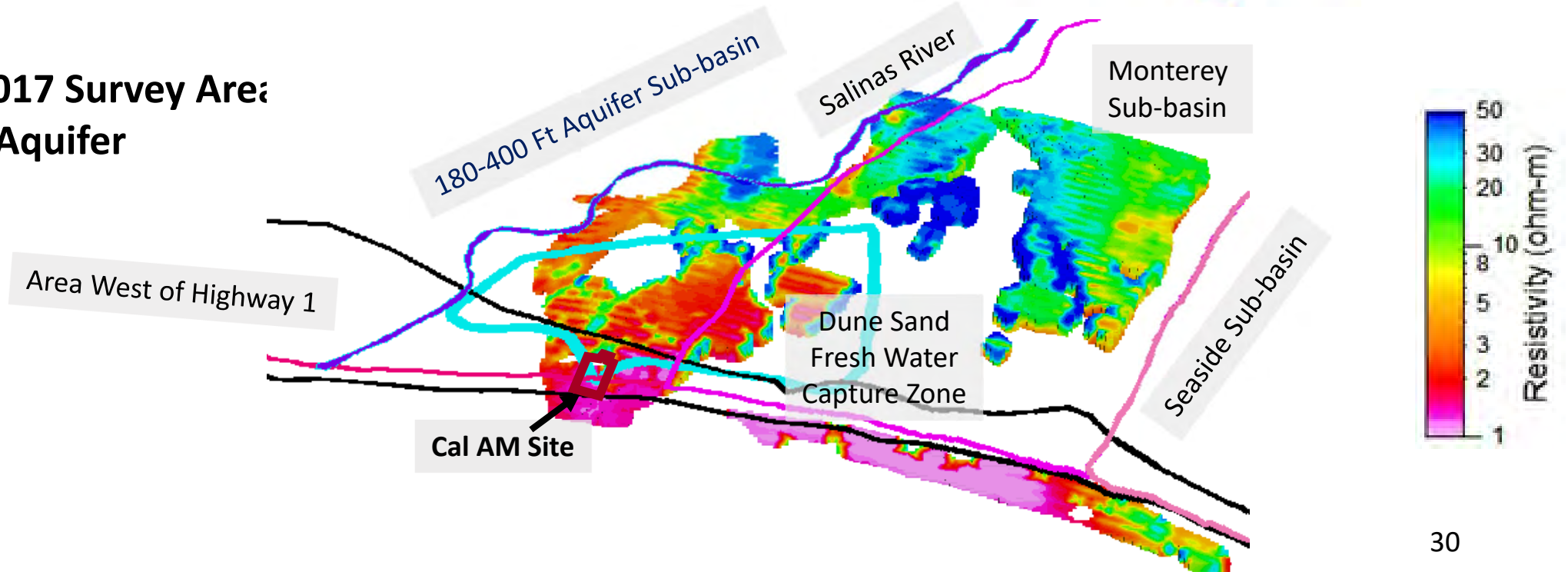




**2017 Resistivity Data  
Lower 180 Ft Aquifer**

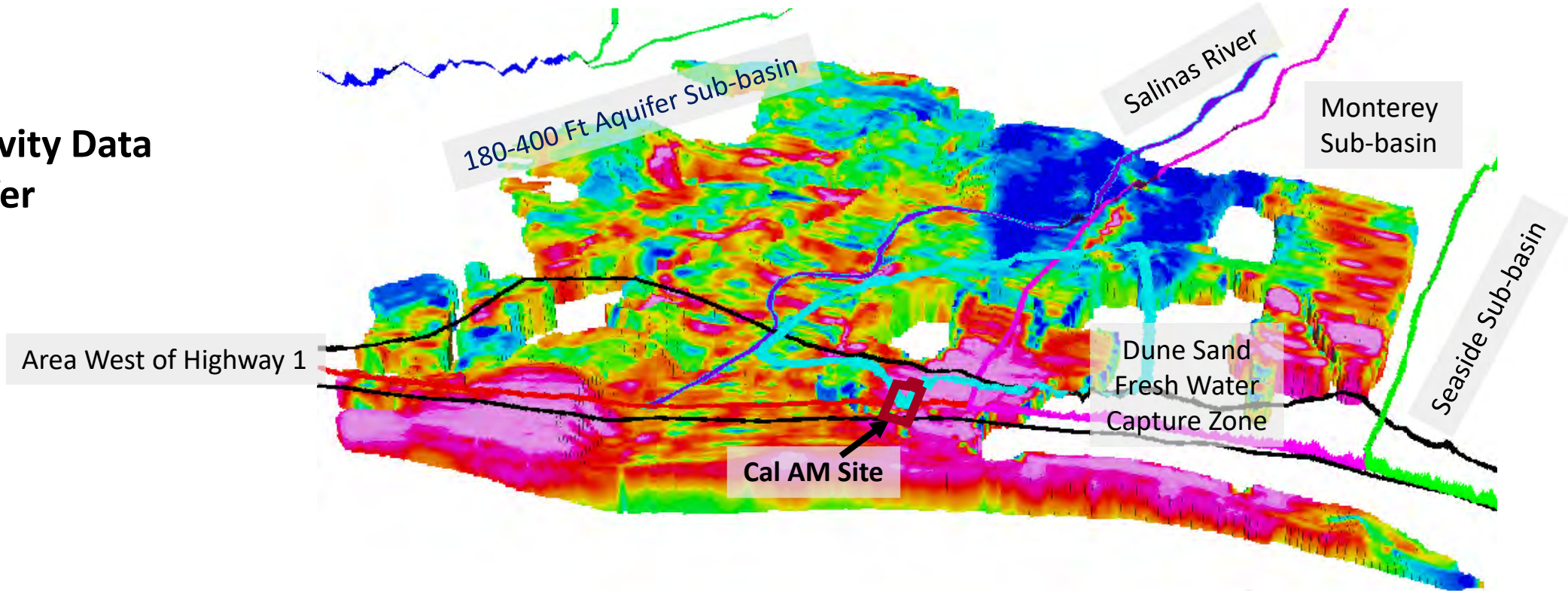


**2019 Data - 2017 Survey Area  
Lower 180 Ft Aquifer**

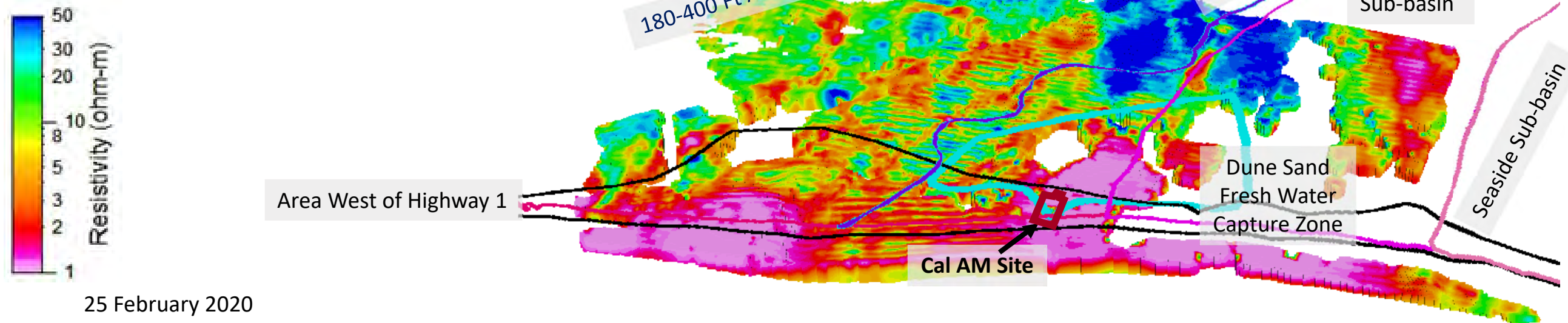




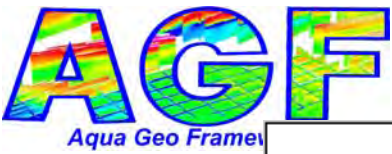
## 2017 Resistivity Data 400 Ft Aquifer



## 2019 Data - 2017 Survey Area 400 Ft Aquifer







# Estimated Volumes Based on 2017 Resistivity Data

Stanford Rept Table 5, p.62, Revised 12/23/2019		2017 Total Volume "Limited Beneficial Use" (m <sup>3</sup> x10 <sup>8</sup> )	2017 Total Volume "Limited Beneficial Use" (acre-ft x10 <sup>3</sup> )	2017 Total Volume Potential source of drinking water (m <sup>3</sup> x10 <sup>8</sup> )	2017 Total Volume Potential source of drinking water (acre-ft x10 <sup>3</sup> )	2017 Net Volume potential source of drinking water, 20% porosity (m <sup>3</sup> x10 <sup>8</sup> )	2017 Net Volume potential source of drinking water, 20% porosity (acre-ft x10 <sup>3</sup> )
<b>By Aquifer</b>							
	Perched A/Shallow Aquifer	0.04	3	0.05	4	0.01	1
	Dune Sand Aquifer	1.48	120	13.11	1062	2.62	212
	Salinas Valley Aquitard	0.70	56	1.64	133	0.33	27
	Upper 180-Foot Aquifer	1.40	113	9.24	749	1.85	150
	Intermediate 180 Aquitard	0.14	11	0.59	48	0.12	10
	Lower 180-Foot Aquifer	1.51	123	2.08	169	0.42	34
	180-400 Ft Aquitard	0.31	25	0.30	24	0.06	5
	400-Foot Aquifer	1.19	96	0.45	36	0.09	7
	400-Foot Aquitard	0.19	15	0.00	0	0.00	0
	<b>Total</b>	<b>6.94</b>	<b>562</b>	<b>27.47</b>	<b>2226</b>	<b>5.49</b>	<b>445</b>
<b>2017 Vol.</b>							
<b>By Region</b>	Monterey Subbasin	4.55	369	12.83	1039	2.57	208
	180/400 Aquifer Subbasin	12.94	1048	18.12	1468	3.62	294
	West of HW 1	10.41	844	0.84	68	0.17	14
	<b>Total</b>	<b>27.91</b>	<b>2261</b>	<b>31.79</b>	<b>2575</b>	<b>6.36</b>	<b>515</b>

**445,000  
acre-feet  
Net Vol.**





# Estimated Volumes Based on 2019 Resistivity Data in 2017 Survey Bounds

Stanford Rept Table 5, p.62, Revised 12/23/2019		2019: 2017 Area - Total Volume "Limited Beneficial Use" (m <sup>3</sup> x10 <sup>8</sup> )	2019: 2017 Total Volume "Limited Beneficial Use" (acre-ft x10 <sup>3</sup> )	2019: 2017 Total Volume Potential source of drinking water (m <sup>3</sup> x10 <sup>8</sup> )	2019: 2017 Total Volume Potential source of drinking water (acre-ft x10 <sup>3</sup> )	2019: 2017 Net Volume potential source of drinking water, 20% porosity (m <sup>3</sup> x10 <sup>8</sup> )	2019: 2017 Net Volume potential source of drinking water, 20% porosity (acre-ft x10 <sup>3</sup> )
<b>By Aquifer</b>							
	Perched A/Shallow Aquifer	0.02	1	0.04	3	0.01	1
	Dune Sand Aquifer	1.16	94	13.57	1100	2.71	220
	Salinas Valley Aquitard	0.45	37	1.44	117	0.29	23
	Upper 180-Foot Aquifer	1.68	136	8.07	654	1.61	131
	Intermediate 180 Aquitard	0.14	12	0.82	66	0.16	13
	Lower 180-Foot Aquifer	1.28	104	2.38	193	0.48	39
	180-400 Ft Aquitard	0.36	30	0.24	19	0.05	4
	400-Foot Aquifer	0.42	34	0.44	36	0.09	7
	400-Foot Aquitard	0.00	0	0.04	3	0.01	1
	<b>Total</b>	<b>5.52</b>	<b>447</b>	<b>27.05</b>	<b>2191</b>	<b>5.41</b>	<b>438</b>
<b>2017 Vol.</b>		<b>2019 Data, 2017 Bounds</b>					
<b>By Region</b>	Monterey Subbasin	2.90	235	11.41	924	2.28	185
	180/400 Aquifer Subbasin	12.06	977	13.39	1084	2.68	217
	West of HW 1	9.92	803	0.64	52	0.13	10
	<b>Total</b>	<b>24.88</b>	<b>2015</b>	<b>25.43</b>	<b>2060</b>	<b>5.09</b>	<b>412</b>

**438,000  
acre-feet  
Net Vol.**

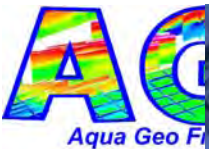


# Estimated Volumes Based on 2019 Resistivity Data

		2019 Area - Total Volume "Limited Beneficial Use" (m <sup>3</sup> x10 <sup>8</sup> )	2019 Total Volume "Limited Beneficial Use" (acre-ft x10 <sup>3</sup> )	2019 Total Volume Potential source of drinking water (m <sup>3</sup> x10 <sup>8</sup> )	2019 Total Volume Potential source of drinking water (acre-ft x10 <sup>3</sup> )	2019 Net Volume potential source of drinking water, 20% porosity (m <sup>3</sup> x10 <sup>8</sup> )	2019 Net Volume potential source of drinking water, 20% porosity (acre-ft x10 <sup>3</sup> )
<b>By Aquifer</b>							
	Perched A/Shallow Aquifer	0.02	1	0.04	3	0.01	1
	Dune Sand Aquifer	1.19	97	20.19	1636	4.04	327
	Salinas Valley Aquitard	0.45	37	2.09	170	0.42	34
	Upper 180-Foot Aquifer	1.69	137	9.39	761	1.88	152
	Intermediate 180 Aquitard	0.15	12	0.96	78	0.19	16
	Lower 180-Foot Aquifer	1.29	104	2.52	204	0.50	41
	180-400 Ft Aquitard	0.37	30	0.59	47	0.12	9
	400-Foot Aquifer	0.44	36	1.06	86	0.21	17
	400-Foot Aquitard	0.11	9	0.06	5	0.01	1
	<b>Total</b>	<b>5.71</b>	<b>463</b>	<b>36.89</b>	<b>2989</b>	<b>7.38</b>	<b>598</b>
<b>2019 Vol. By Region</b>							
	Monterey Subb	3.18	258	24.08	1951	4.82	390
	180-400 Ft Aq Subb	12.10	980	16.28	1319	3.26	264
	Hwy 1	9.93	804	0.64	52	0.13	10
	Seaside	6.88	557	20.67	1675	4.13	335
	Langley	0	0	0.26	21	0.05	4
	East Side	0	0	0.10	8	0.02	2
	<b>Total</b>	<b>32.09</b>	<b>2599</b>	<b>62.02</b>	<b>5024</b>	<b>12.40</b>	<b>1005</b>

**598,000  
acre-feet  
Net Vol.**





### 2017 TDS Thickness Dune Sand Aquifer < 500 mg/L

### 2019 TDS Thickness Dune Sand Aquifer < 500 mg/L

Cal AM Site

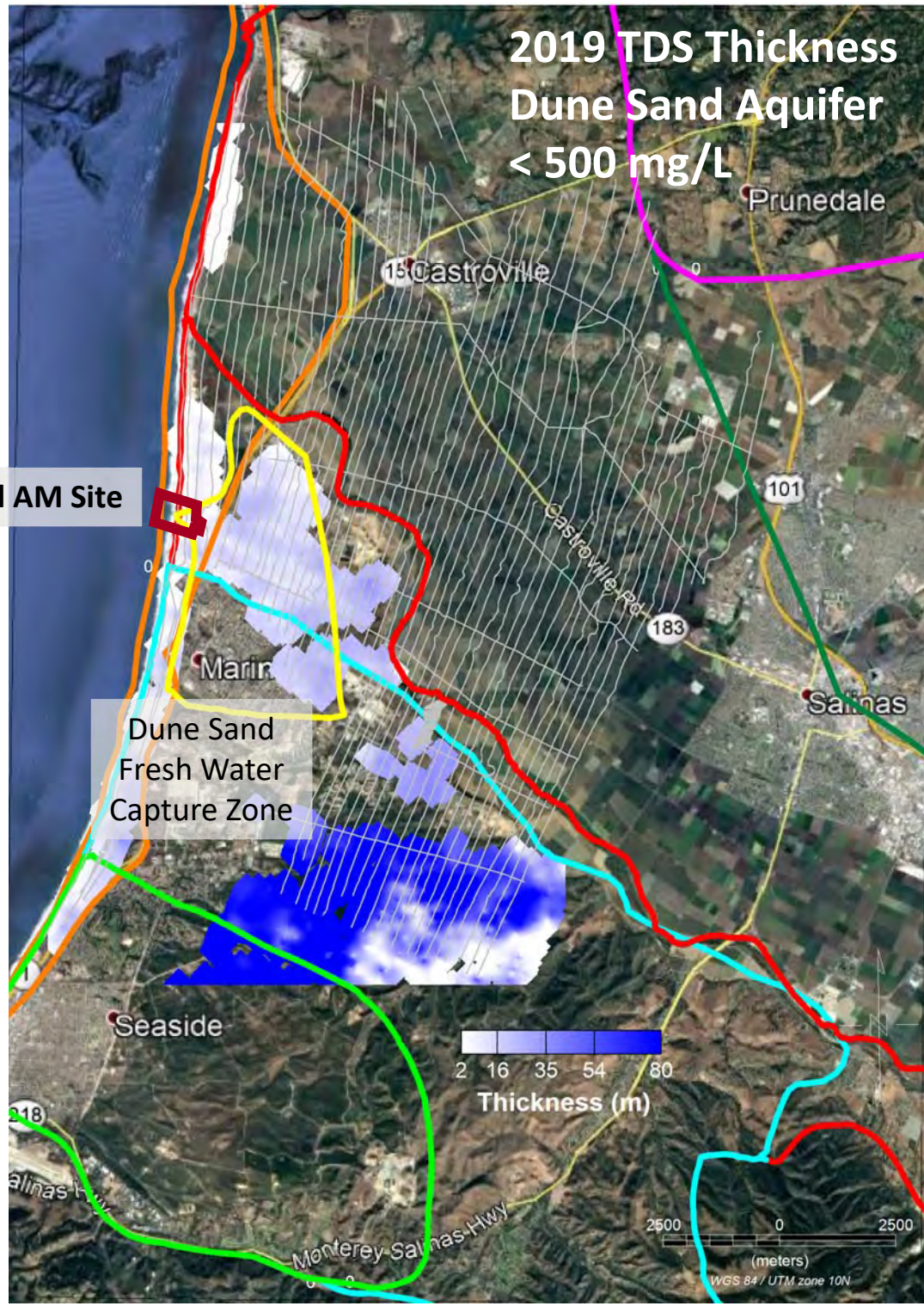
Cal AM Site

Dune Sand  
Fresh Water  
Capture Zone

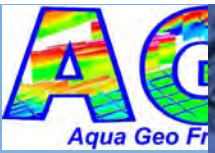
Dune Sand  
Fresh Water  
Capture Zone



Comparison of 2017  
and 2019 AEM by TDS  
Concentrations







### 2017 TDS Thickness Dune Sand Aquifer 500-1,000 mg/L

Cal AM Site

Dune Sand  
Fresh Water  
Capture Zone

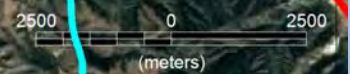


WGS 84 / UTM zone 10N

### 2019 TDS Thickness Dune Sand Aquifer 500-1,000 mg/L

Cal AM Site

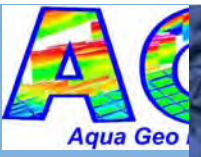
Dune Sand  
Fresh Water  
Capture Zone



WGS 84 / UTM zone 10N

Comparison of 2017  
and 2019 AEM by TDS  
Concentrations

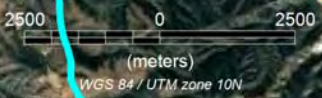




### 2017 TDS Thickness Dune Sand Aquifer 1,000-3,000 mg/L

Cal AM Site

Dune Sand  
Fresh Water  
Capture Zone



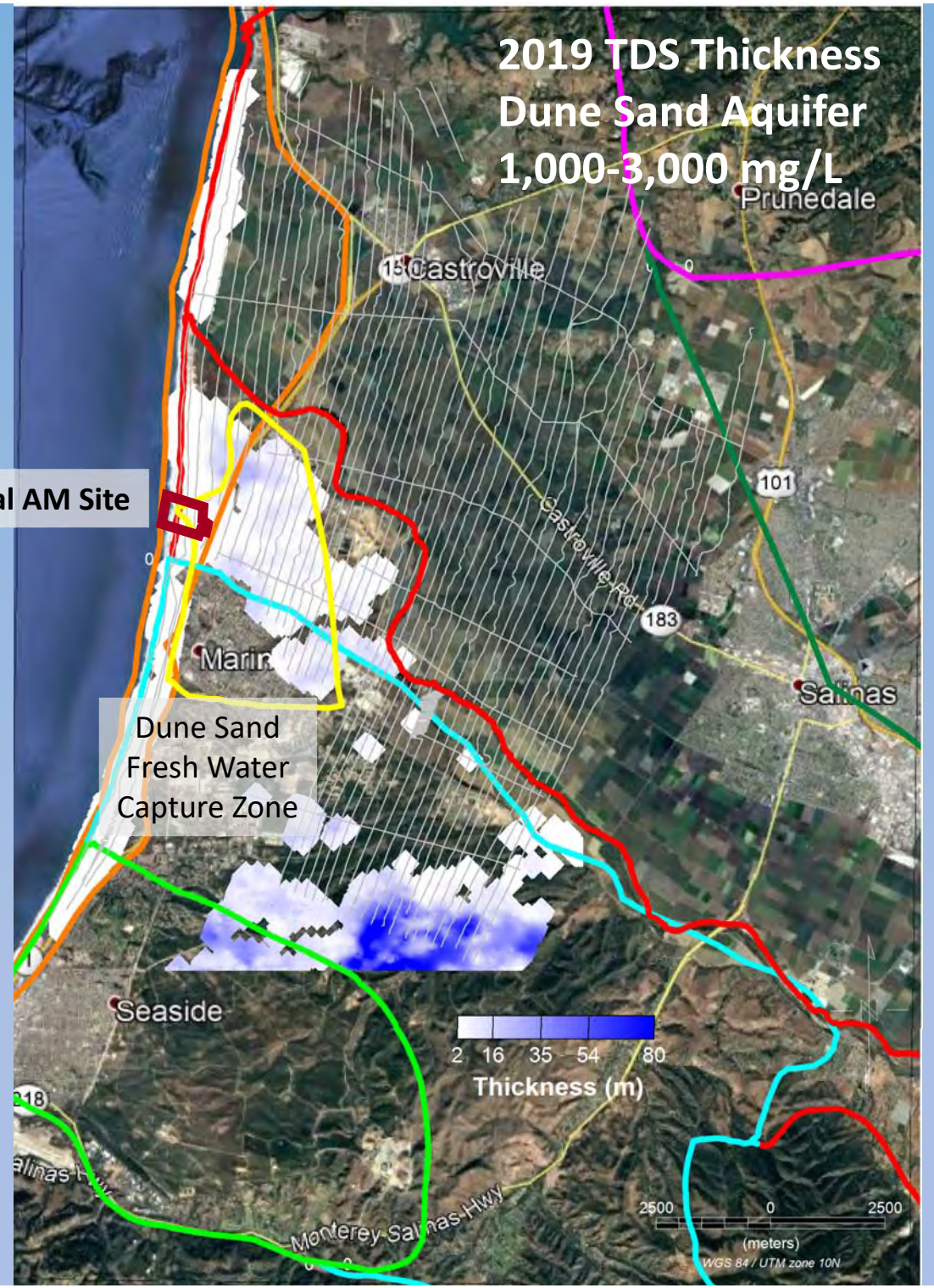
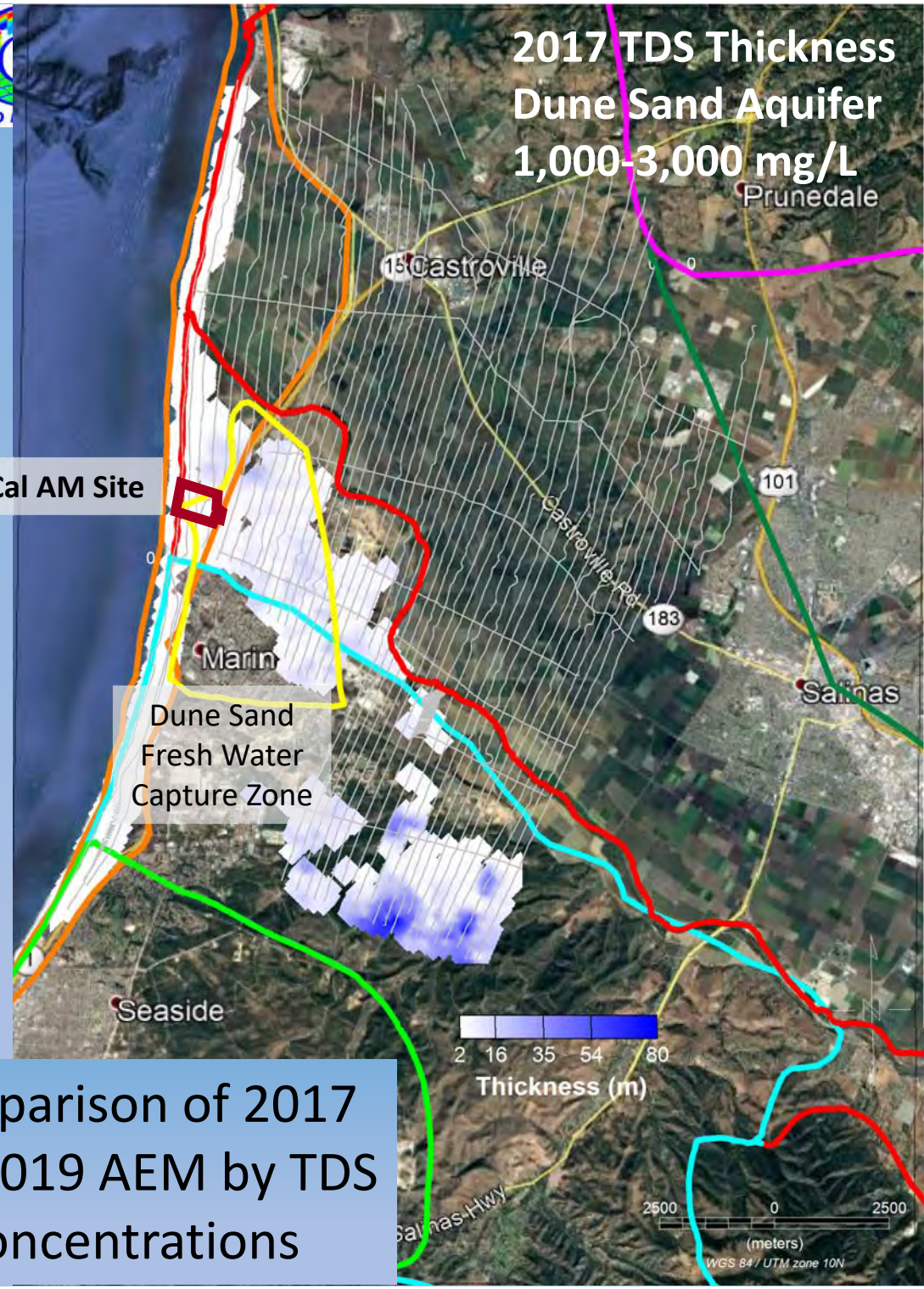
### 2019 TDS Thickness Dune Sand Aquifer 1,000-3,000 mg/L

Cal AM Site

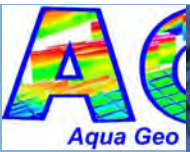
Dune Sand  
Fresh Water  
Capture Zone



Comparison of 2017  
and 2019 AEM by TDS  
Concentrations







### 2017 TDS Thickness Dune Sand Aquifer 3,000-10,000 mg/L

Cal AM Site

Dune Sand  
Fresh Water  
Capture Zone



### 2019 TDS Thickness Dune Sand Aquifer 3,000-10,000 mg/L

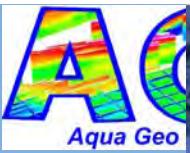
Cal AM Site

Dune Sand  
Fresh Water  
Capture Zone

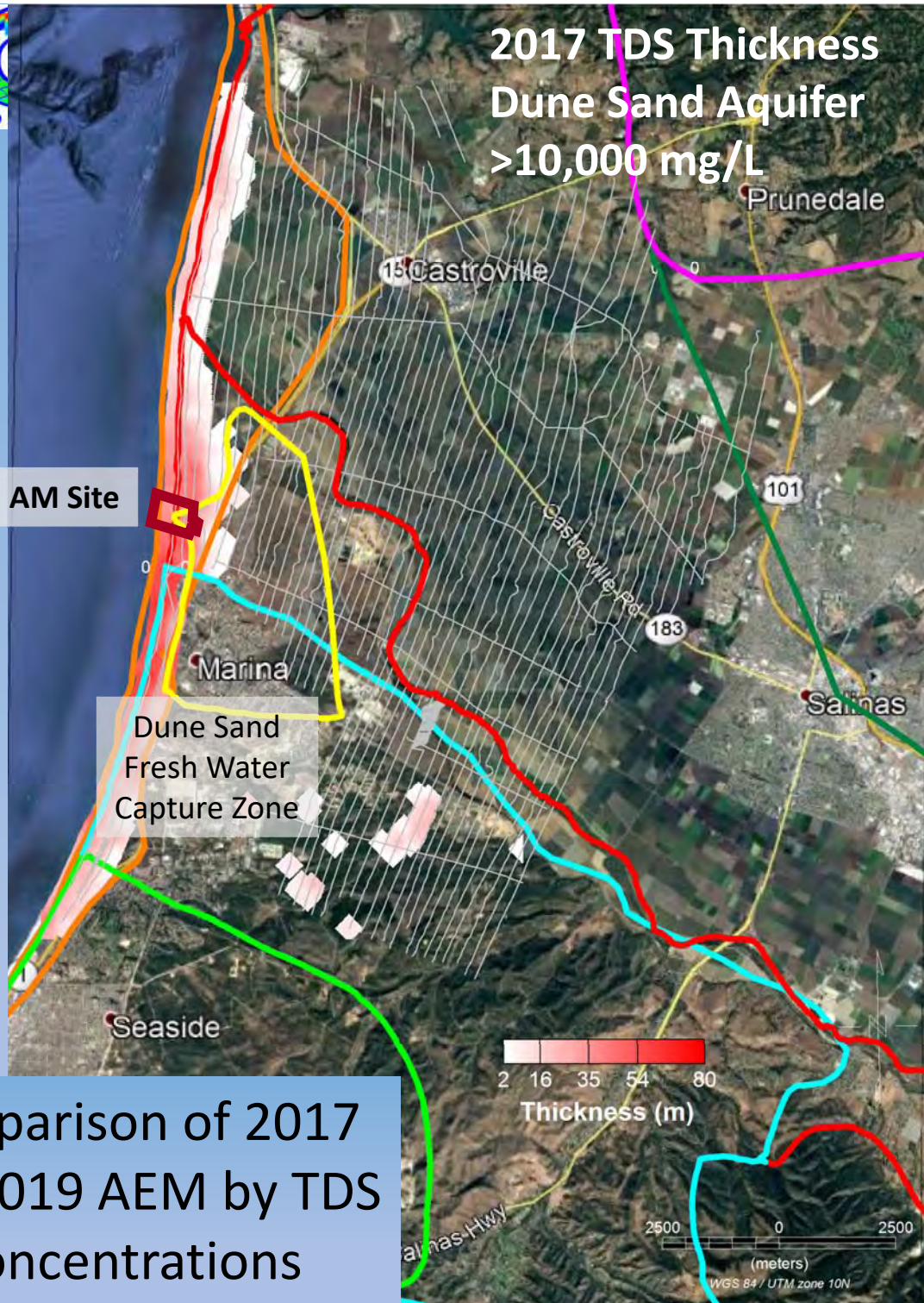


Comparison of 2017  
and 2019 AEM by TDS  
Concentrations

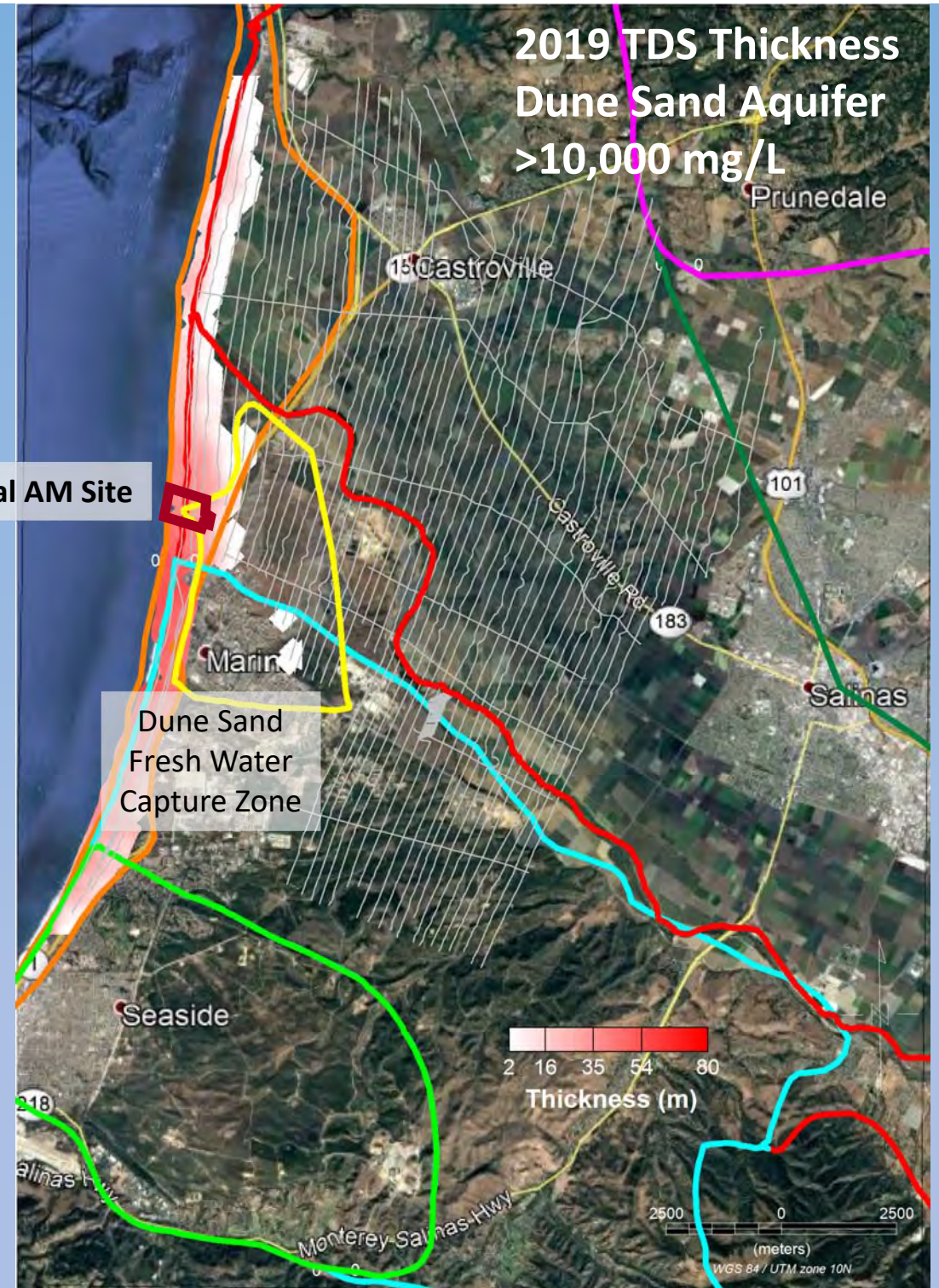




### 2017 TDS Thickness Dune Sand Aquifer >10,000 mg/L



### 2019 TDS Thickness Dune Sand Aquifer >10,000 mg/L



Cal AM Site

Dune Sand  
Fresh Water  
Capture Zone

2 16 35 54 80  
Thickness (m)

2500 0 2500  
(meters)  
WGS 84 / UTM zone 10N

Cal AM Site

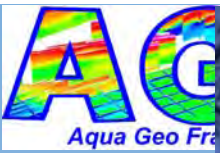
Dune Sand  
Fresh Water  
Capture Zone

2 16 35 54 80  
Thickness (m)

2500 0 2500  
(meters)  
WGS 84 / UTM zone 10N

Comparison of 2017  
and 2019 AEM by TDS  
Concentrations





### 2017 TDS Thickness Upper 180 Ft Aquifer 500-1,000 mg/L

Cal AM Site

Dune Sand  
Fresh Water  
Capture Zone



### 2019 TDS Thickness Upper 180 Ft Aquifer 500-1,000 mg/L

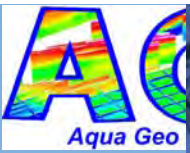
Cal AM Site

Dune Sand  
Fresh Water  
Capture Zone



Comparison of 2017  
and 2019 AEM by TDS  
Concentrations





### 2017 TDS Thickness Upper 180 Ft Aquifer >10,000 mg/L

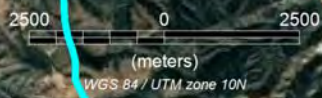
### 2019 TDS Thickness Upper 180 Ft Aquifer >10,000 mg/L

Cal AM Site

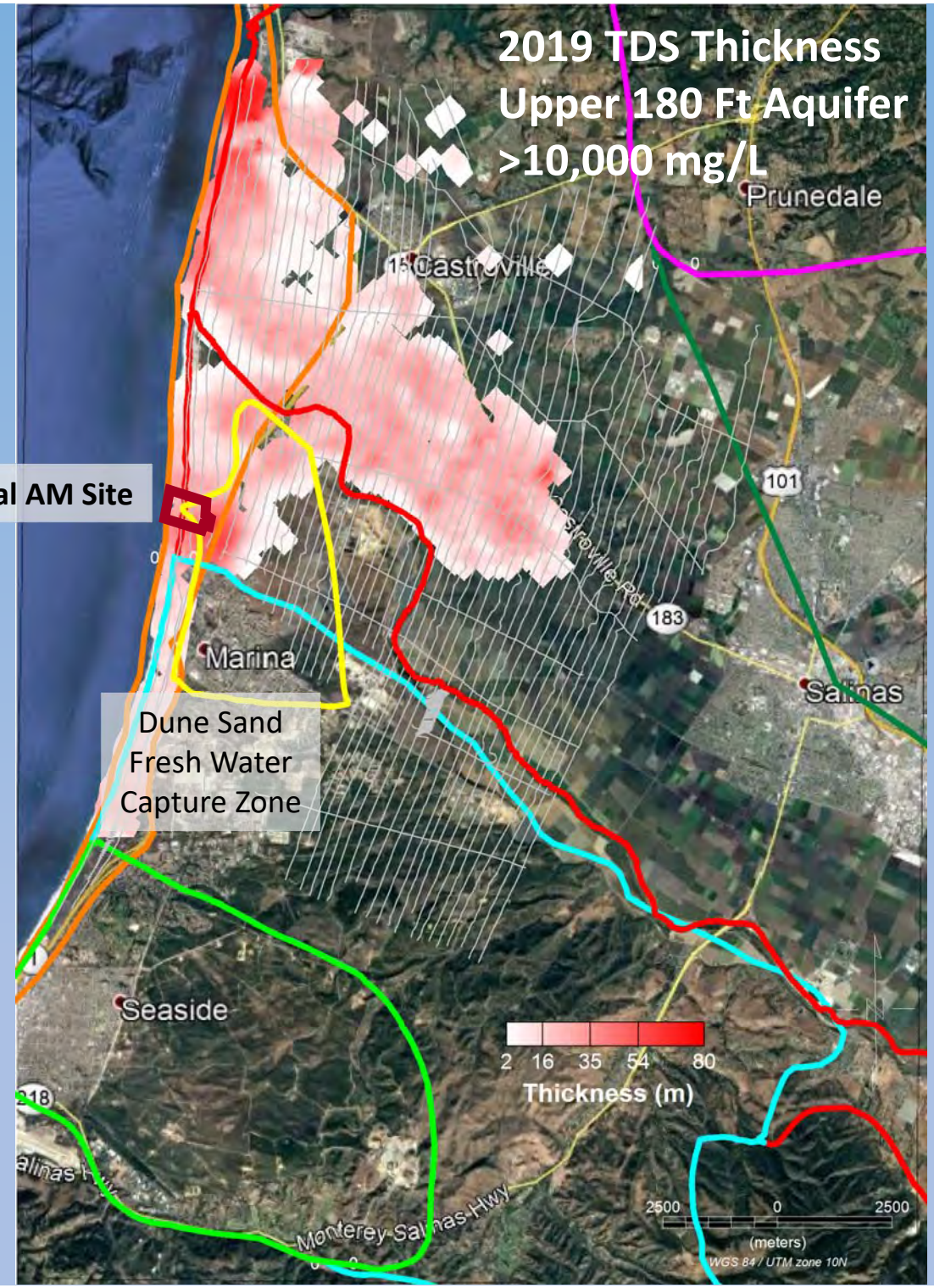
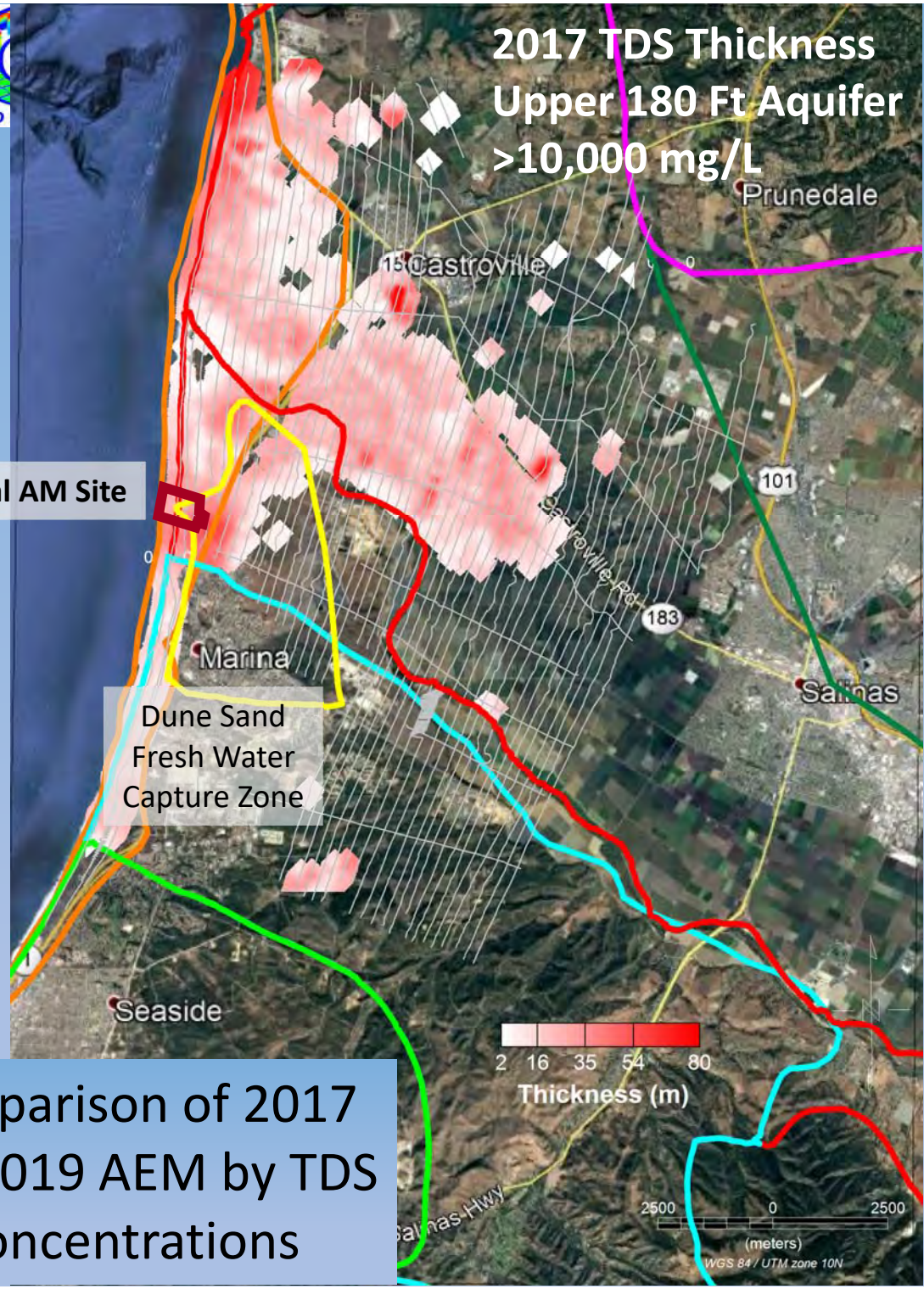
Cal AM Site

Dune Sand  
Fresh Water  
Capture Zone

Dune Sand  
Fresh Water  
Capture Zone



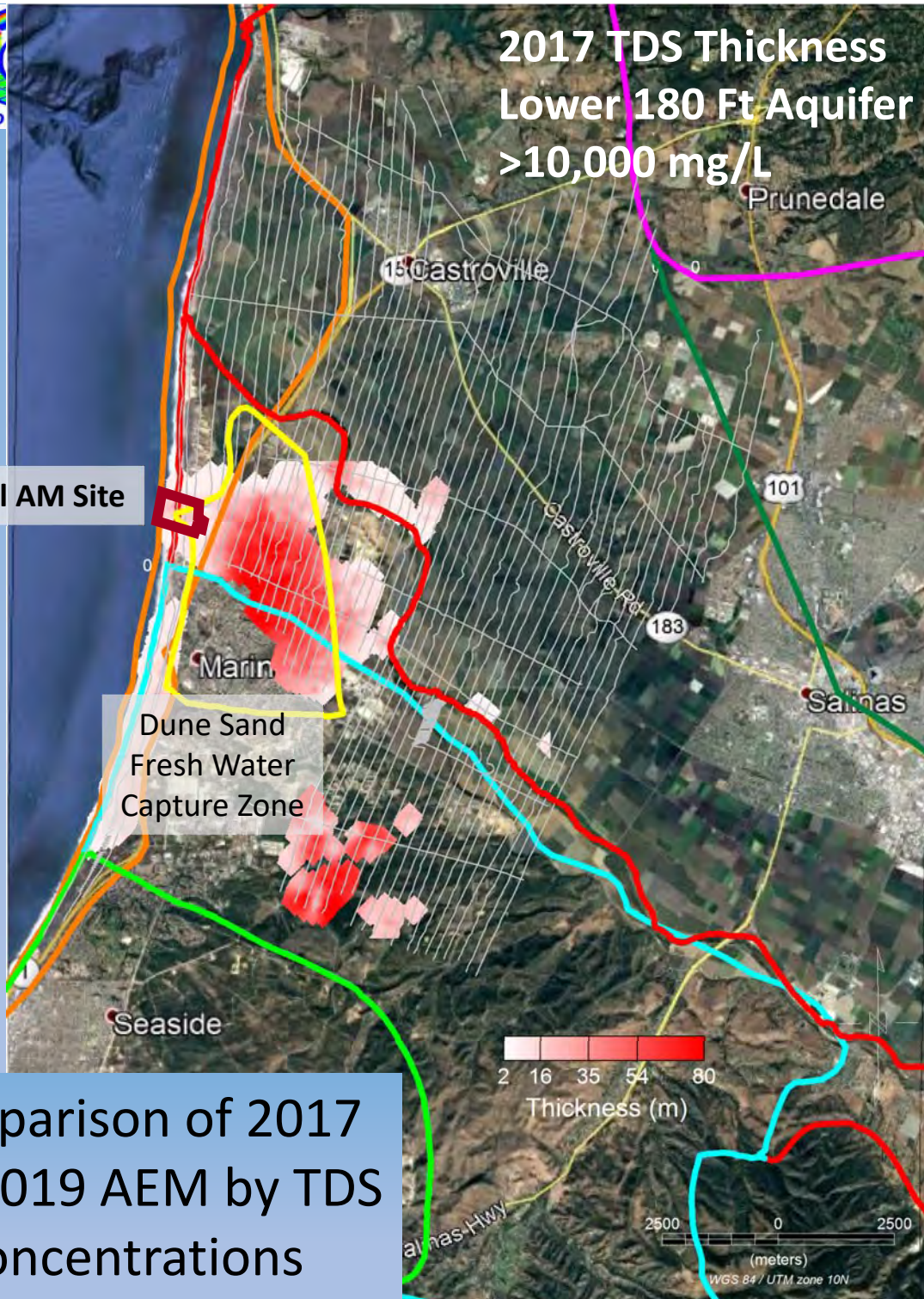
Comparison of 2017 and 2019 AEM by TDS Concentrations



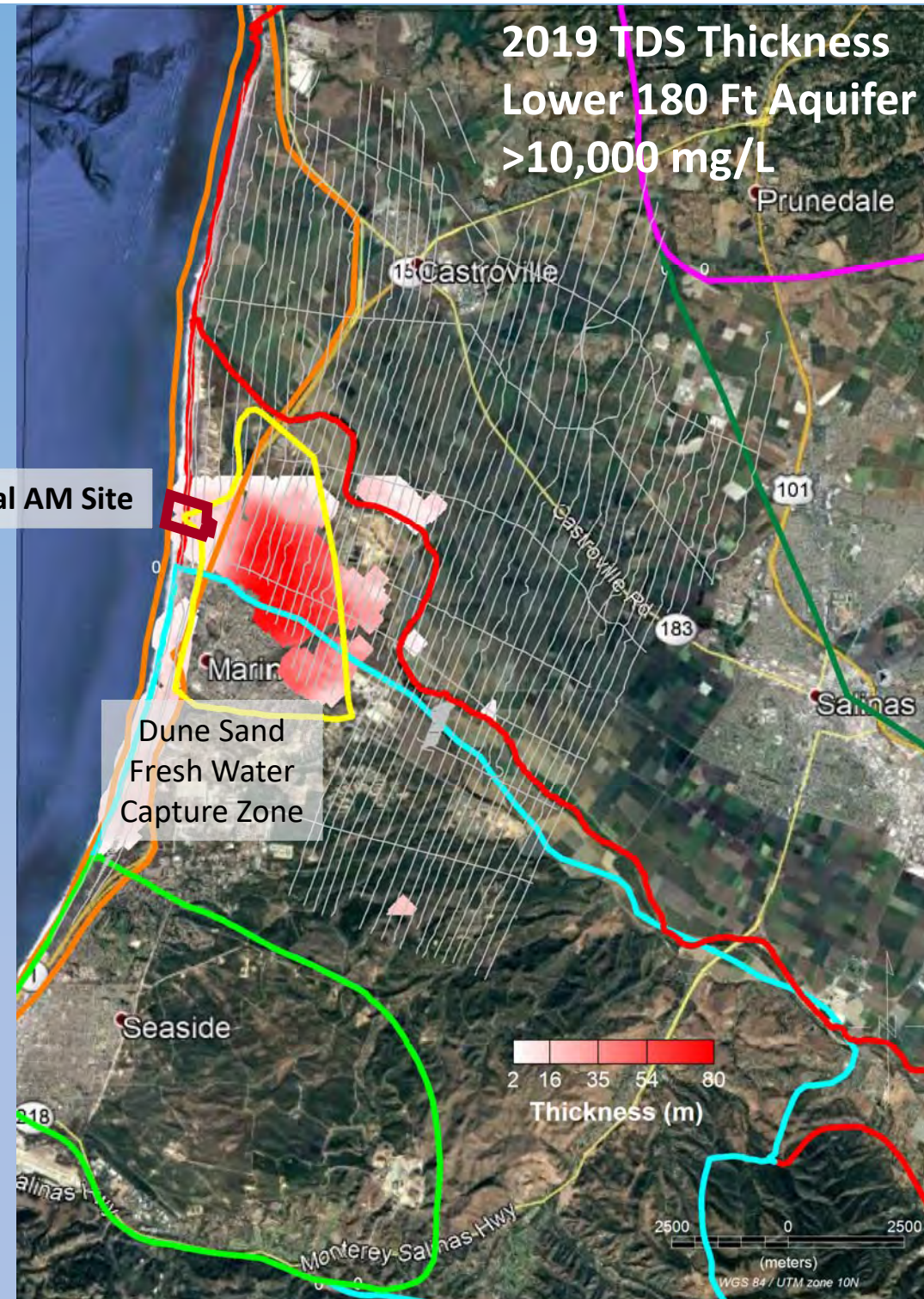




2017 TDS Thickness  
Lower 180 Ft Aquifer  
>10,000 mg/L



2019 TDS Thickness  
Lower 180 Ft Aquifer  
>10,000 mg/L



Cal AM Site

Cal AM Site

Dune Sand  
Fresh Water  
Capture Zone

Dune Sand  
Fresh Water  
Capture Zone

2 16 35 54 80  
Thickness (m)

2 16 35 54 80  
Thickness (m)

2500 0 2500  
(meters)  
WGS 84 / UTM zone 10N

2500 0 2500  
(meters)  
WGS 84 / UTM zone 10N

Comparison of 2017  
and 2019 AEM by TDS  
Concentrations



Questions?  
Comments?



Ted Asch  
Aqua Geo Frameworks, LLC  
[tasch@aquageoframeworks.com](mailto:tasch@aquageoframeworks.com)