



Costa Mesa Sanitary District

....an Independent Special District

Memorandum

To: Board of Directors

From: Scott Carroll, General Manager 

Date: February 9, 2016

Subject: Inflow Reduction Program

Summary

Inflow is surface water entering wastewater systems. Excessive inflow in wastewater systems can inundate treatment plants, which causes wastewater to flow backwards uplifting manhole covers and causing sanitary sewer overflows (SSOs). The best way to prevent wet weather SSOs is to reduce the amount of rain water from entering the system. Staff believes the best method to reducing inflow is sealing and plugging manhole covers.

Staff Recommendation

That the Board of Directors receive and file the report.

Analysis

The District has approximately 4,650 manholes within the system. The District's Inflow Reduction Program has been in place for several years by plugging and sealing 1,137 manholes. On October 8, 2015 staff had a meeting to discuss El Niño preparation in which staff identified an additional 806 manhole covers to be plugged and sealed. The locations staff focused on were city streets that historically flood (Attachment A are maps showing the location of flooded streets. This information was provided by City staff), as well as manholes located within 5' to 10' of curb and gutter, in alleyways and near Mendoza and Irvine pump stations. Mendoza and Irvine pump stations have historically received considerable amount of inflow in past storms.

The plugging and sealing of 806 manholes is complete. Nearly half of all manholes within the system are now plugged and sealed, but it should be noted that not every manhole has to be plugged and sealed to have a successful inflow reduction program. Plugging every manhole will reduce the oxygen level circulating in the system causing a buildup of hydrogen sulfide, which leads to more pronounced odors and corrosion in the system.



In addition, the goal of the District's inflow reduction program is to meet Orange County Sanitation District's (OCSD) standards by achieving rain ingress of less than or equal to two percent.

In January 2016 there have been several El Niño type storms that occurred on January 4th through January 8th and another storm occurred on January 31st. Attachment B is the daily precipitation report in Costa Mesa from the Orange County Public Works Department. The report does not include the precipitation that occurred on Sunday, January 31st, but according to the report in Attachment C Costa Mesa had 0.092 inches of precipitation, which makes the monthly total precipitation in January at 2.48 inches.

To determine the effectiveness of the District's Inflow Reduction Program, a storm event must produce more than an inch of rain within a 24 hour period. As you can see in Attachment B, January 6th and 7th had more than one inch of rain. Attachment D is a chart showing the rain ingress from the two storms, which is below two percent.

Strategic Plan Element & Goal

This item complies with Strategic Element No.1, *Sewer Infrastructure* and Strategic Goal No. 1.2, *Inflow Reduction Program*.

Legal Review

Not applicable.

Environmental Review

Plugging and sealing sewer manholes is not a disturbance of the environment similar to grading or construction and does not constitute a project under CEQA or the District's CEQA Guidelines.

Financial Review

The cost to plug and seal 806 manhole covers was \$663.60 for materials only. The materials used for plugging and sealing are corks and silicone sealant.

Public Notice Process

Copies of this report are on file and will be included with the complete agenda packet for the February 9, 2016 Board of Directors study session meeting at District Headquarters and posted on the District's website.

- Attachment A: Street Maps showing flooded areas
B: Daily Precipitation Report from OC Public Works
C: Daily Precipitation Report for January 31, 2016
D: CMSD Rain Ingress Chart
E: News Story – "Winnipeg faces at least \$1.2B tab to stop sewage from flowing into rivers."

Costa Mesa Sanitary District Potential Flood Areas Atlas

-  Potential Flood Areas (1)
-  Scheduled for P&S (3)
- Manhole**
 -  CMSD Standard (23)
 -  Other Agency (1)
 -  Abandoned (1)
 -  CMSD (24)
 -  OCSD (5)
 -  Abandoned (6)
 -  CMSD Boundary (1)
 -  Atlas Grid
 -  Centerline
 -  Centerline Offset

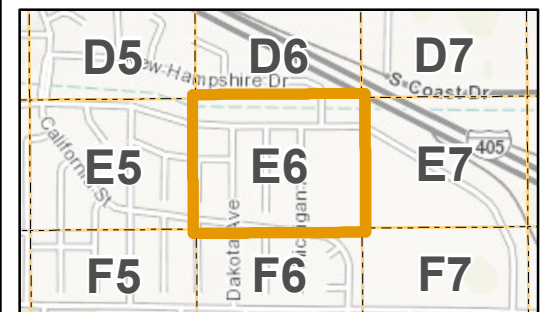
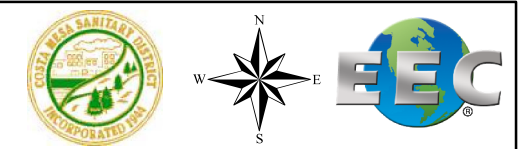
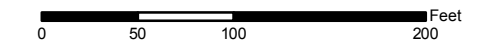
Notes:

P&S: Plug and seal
Data is not purported to be accurate or reliable.
Manholes are labeled with Manhole ID.
Cleanouts are labeled with Cleanout ID.
Repairs are labeled with project number.
Gravity Mains are labeled:

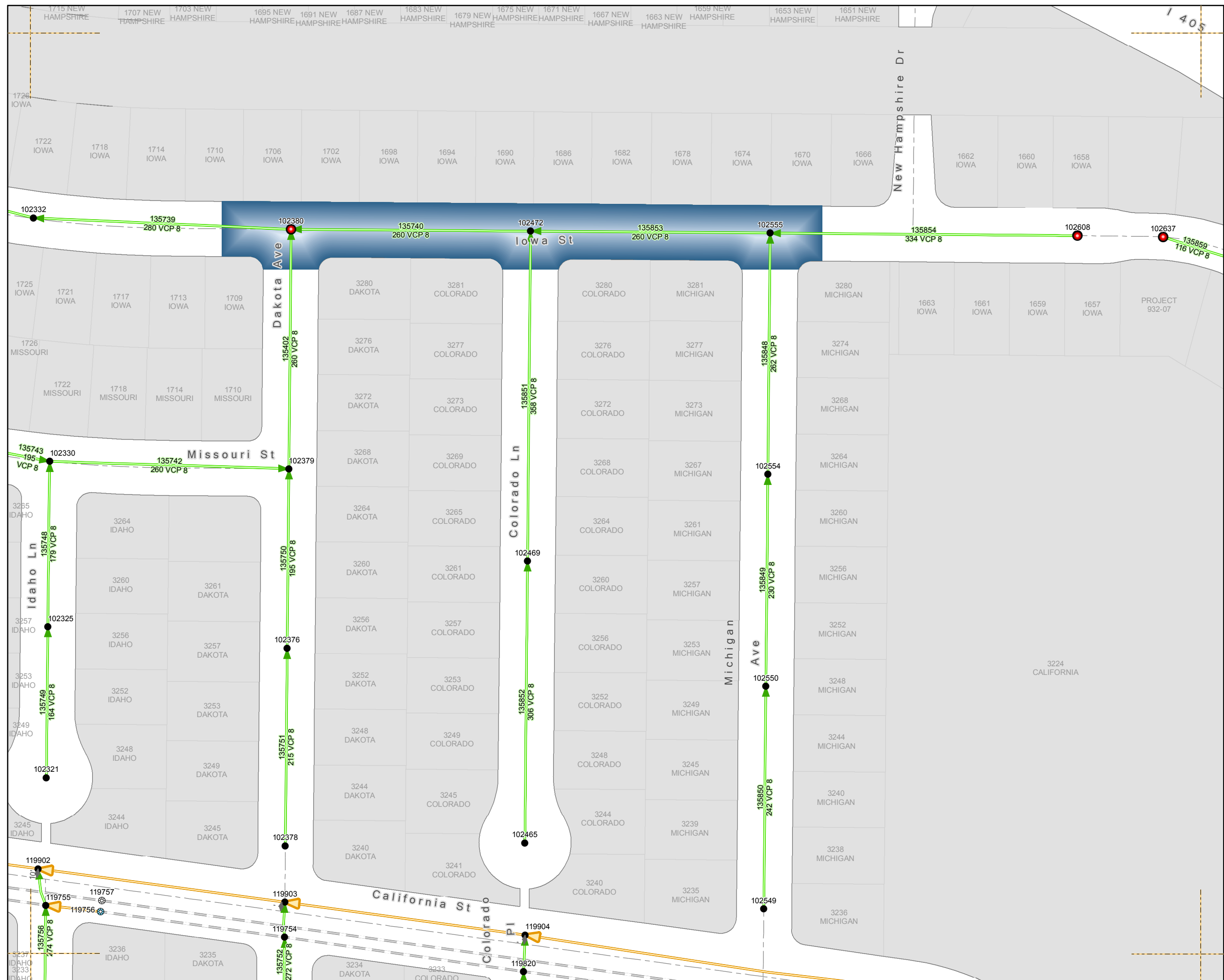
Pipe Segment ID
Length Material Diameter

Arrow on gravity mains indicate flow direction.
 Laterals are labeled with station equation.
 (#): Refers to number of features on this page.

1 inch = 100 feet (At 11"X17", 100% printing)



5/13/2014 Atlas Grid Number: E6



Costa Mesa Sanitary District Potential Flood Areas Atlas

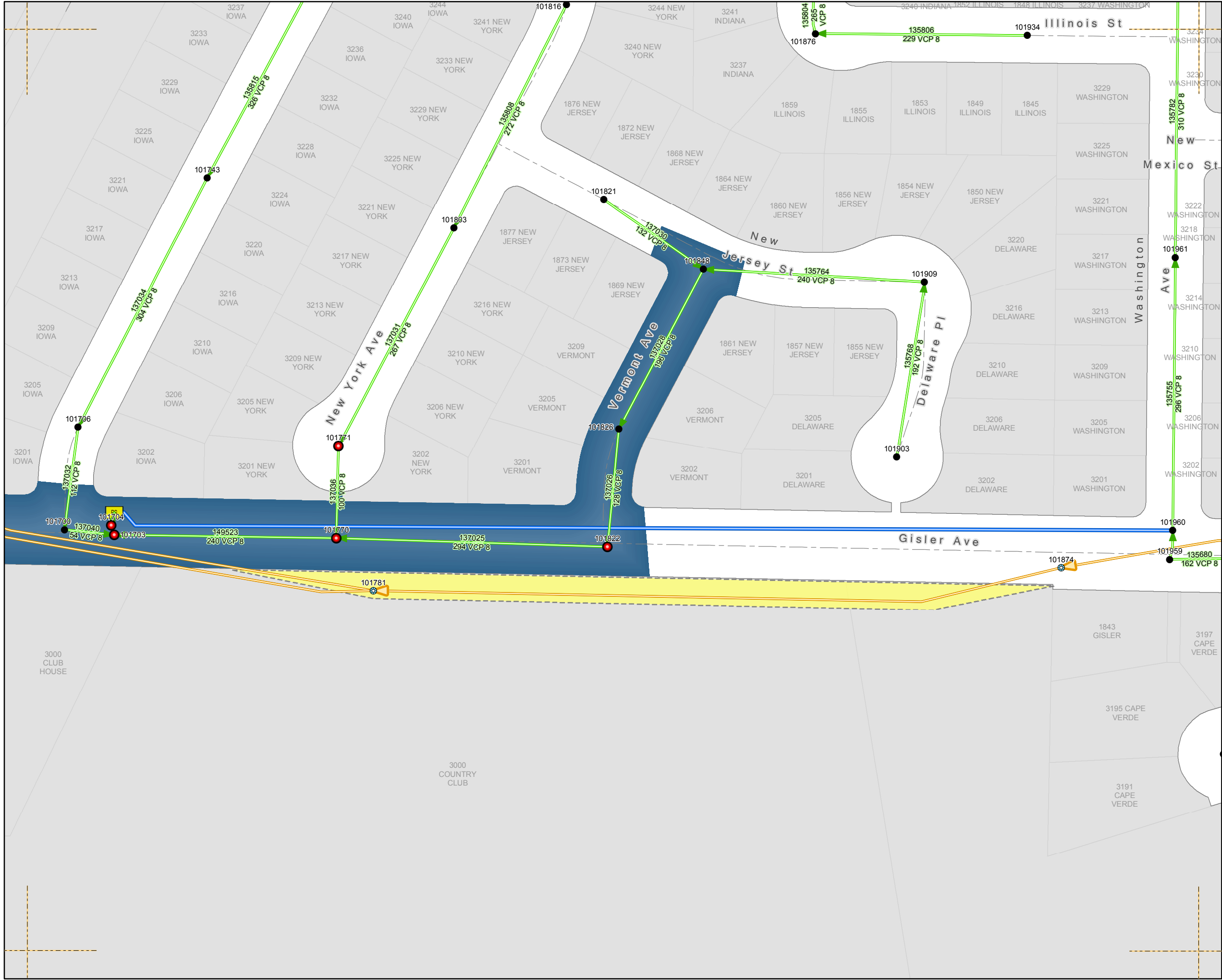
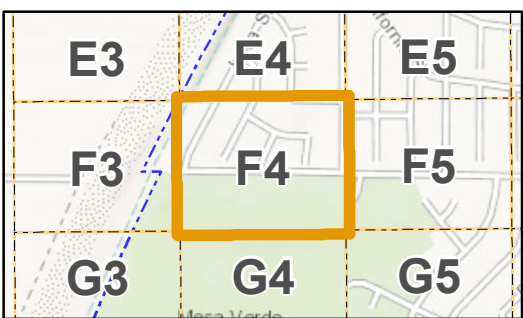
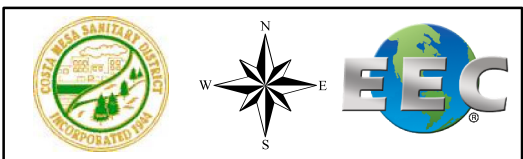
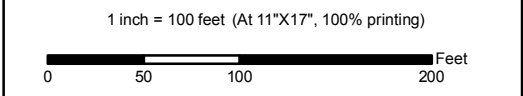
- Potential Flood Areas (1)
- Scheduled for P&S (5)
- Manhole**
 - CMSD Standard (21)
 - Other Agency (2)
- CMSD (23)**
- OCSD (4)**
- Pump Station**
 - Active (1)
- Pressurized Main**
 - Active (1)
- Easement (1)
- CMSD Boundary (1)
- Atlas Grid
- Centerline

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- Manhole**
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 - Other Agency (4)
 - CMSD (9)
 - OCSD (6)
 - CMSD Boundary (1)
 - Atlas Grid
 - Centerline

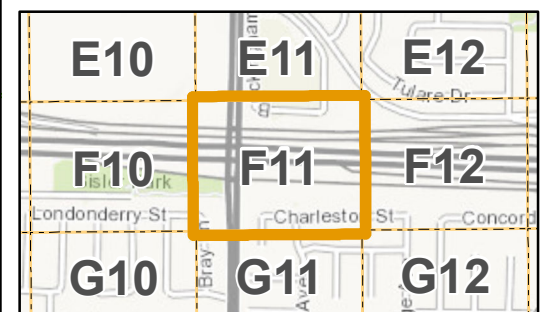
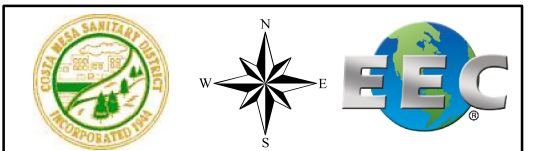
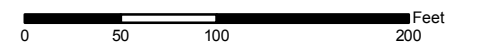
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Costa Mesa Sanitary District Potential Flood Areas Atlas

 Potential Flood Areas (1)

 Scheduled for P&S (1)

Manhole

 CMSD Standard (16)

 CMSD (21)

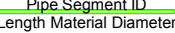
 CMSD Boundary (1)

 Atlas Grid

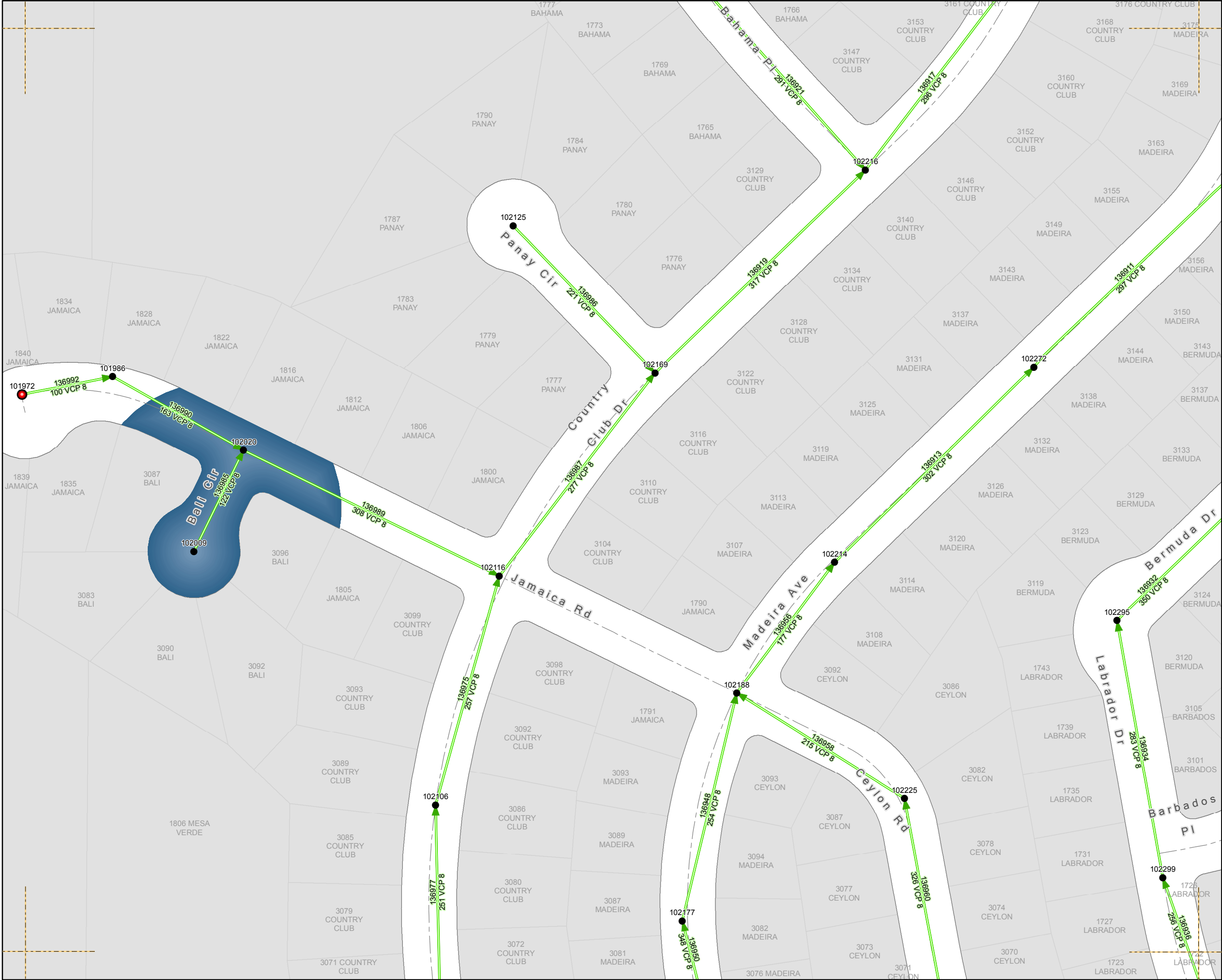
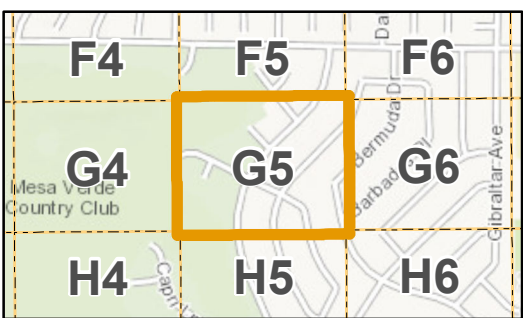
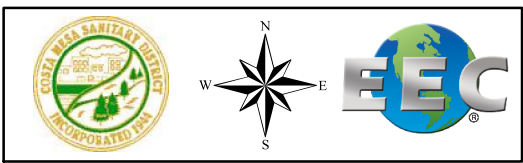
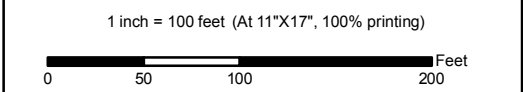
 Centerline

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Costa Mesa Sanitary District Potential Flood Areas Atlas

- Potential Flood Areas (1)
- Scheduled for P&S (4)
- Manhole**
 - CMSD Standard (8)
 - Private (1)
 - CMSD (8)
 - Private (1)
 - CMSD Boundary (1)
 - Atlas Grid
 - Centerline

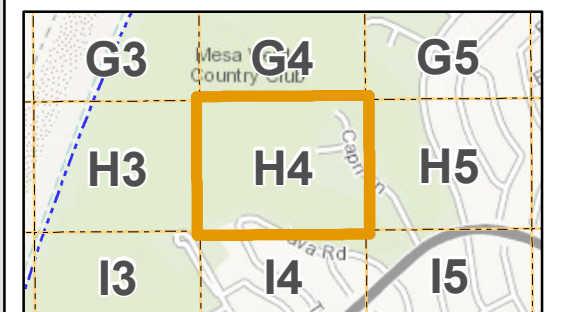
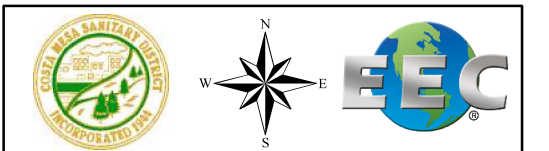
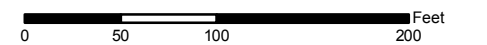
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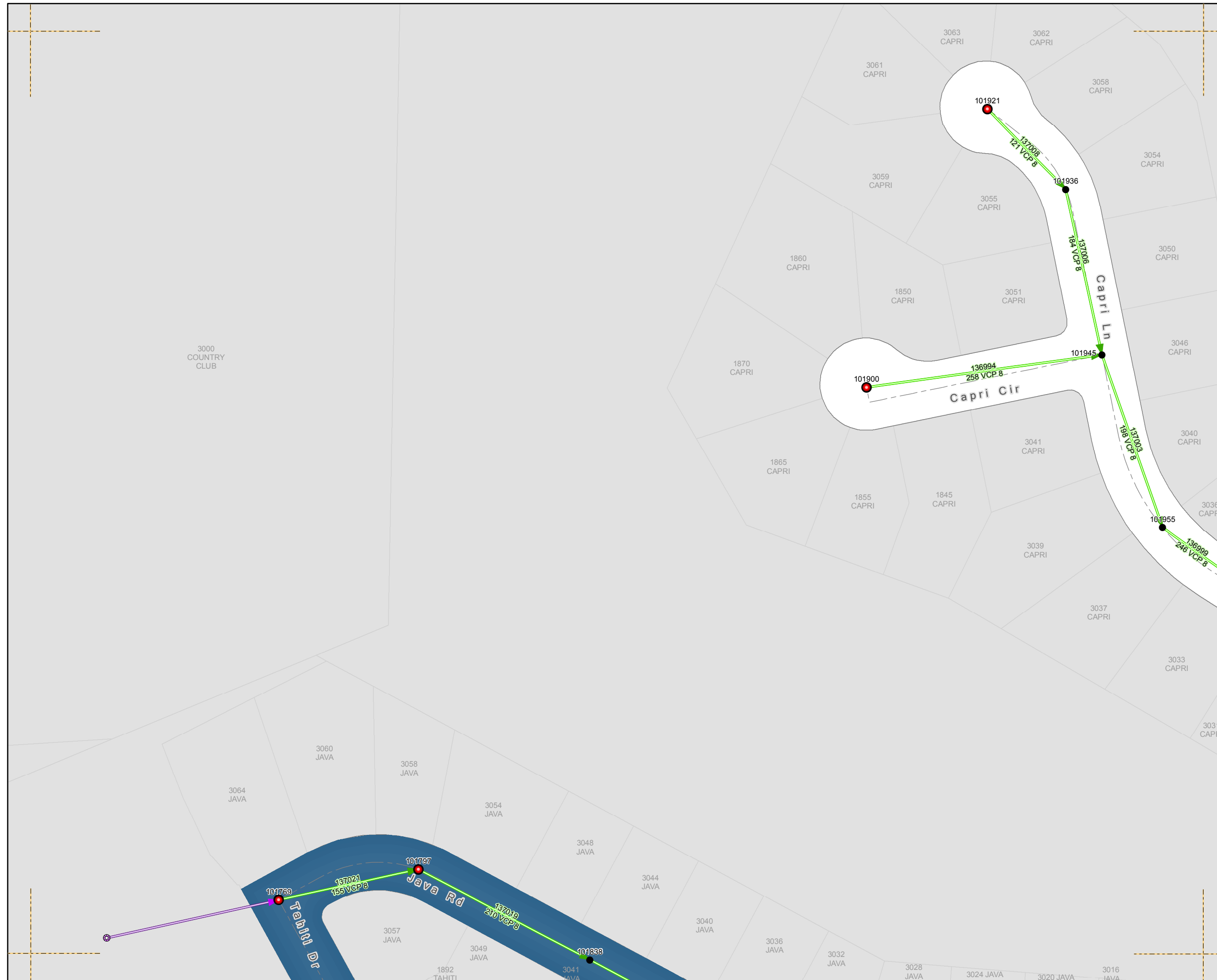
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5/13/2014 Atlas Grid Number: H4



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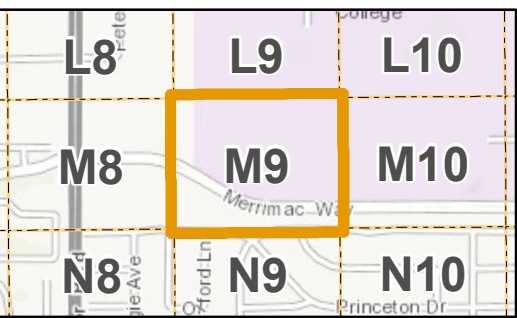
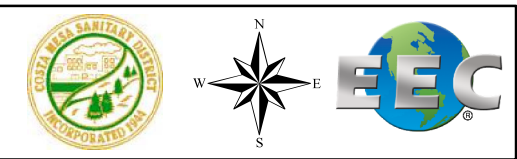
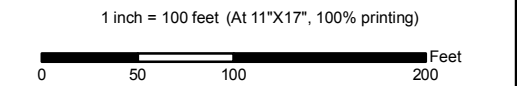
- Potential Flood Areas (1)
- Scheduled for P&S (2)
- Manhole**
 - CMSD Standard (6)
 - CMSD (10)
 - Easement (1)
 - CMSD Boundary (1)
 - Atlas Grid
 - Centerline

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Gravity Mains are labeled:

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Length Material Diameter

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Costa Mesa Sanitary District Potential Flood Areas Atlas

Potential Flood Areas (1)

Scheduled for P&S (5)

●

CMSD Standard (29)

CMSD (38)

CMSD Boundary (1)

Atlas Grid

Centerline

Manhole

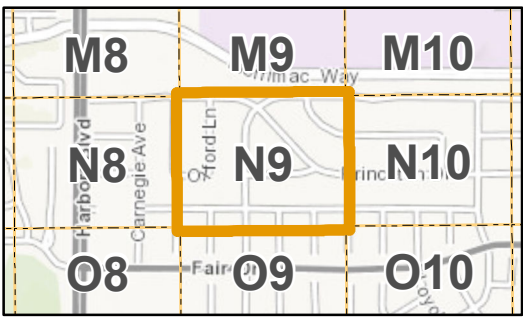
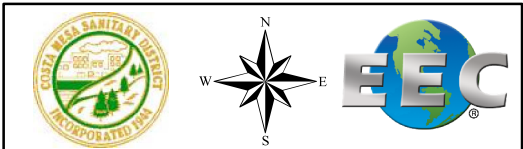
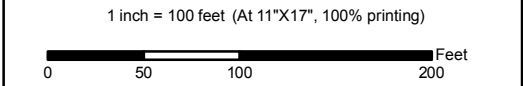
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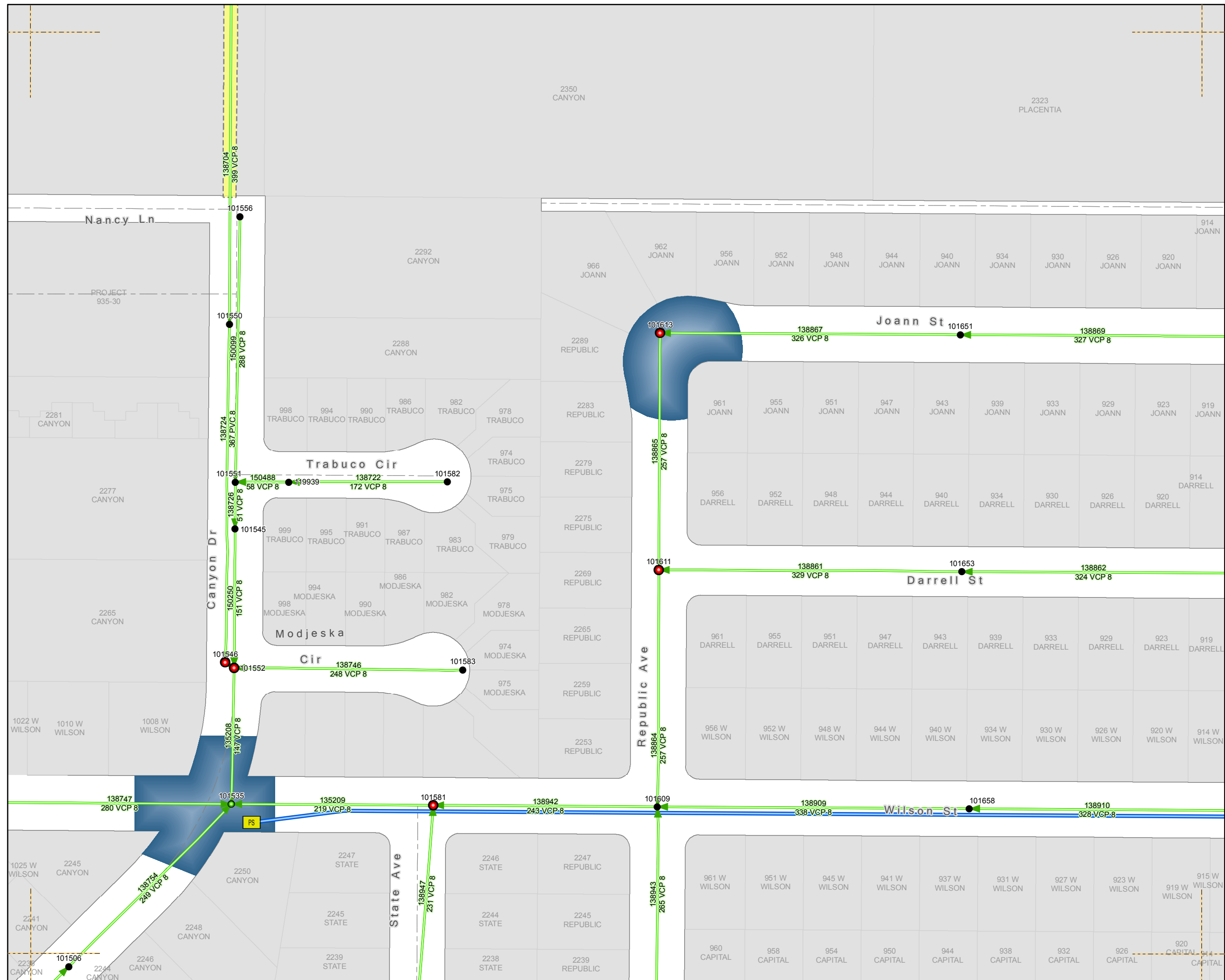
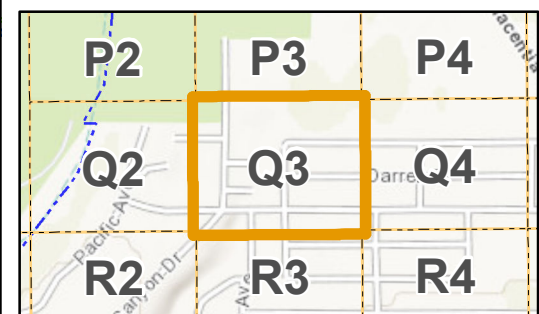
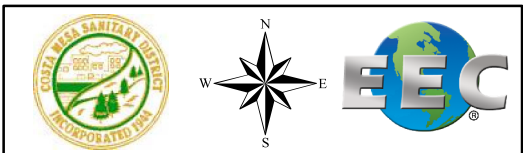
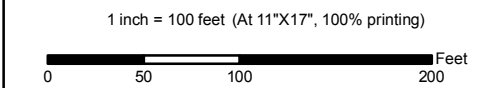
- Potential Flood Areas (2)
- Plugged and Sealed (1)
- Scheduled for P&S (5)
- Manhole**
 - CMSD Standard (18)
 - CMSD (25)
- Pump Station**
 - Active (1)
- Pressurized Main**
 - Active (1)
- Easement (1)
- CMSD Boundary (1)
- Atlas Grid
- Centerline

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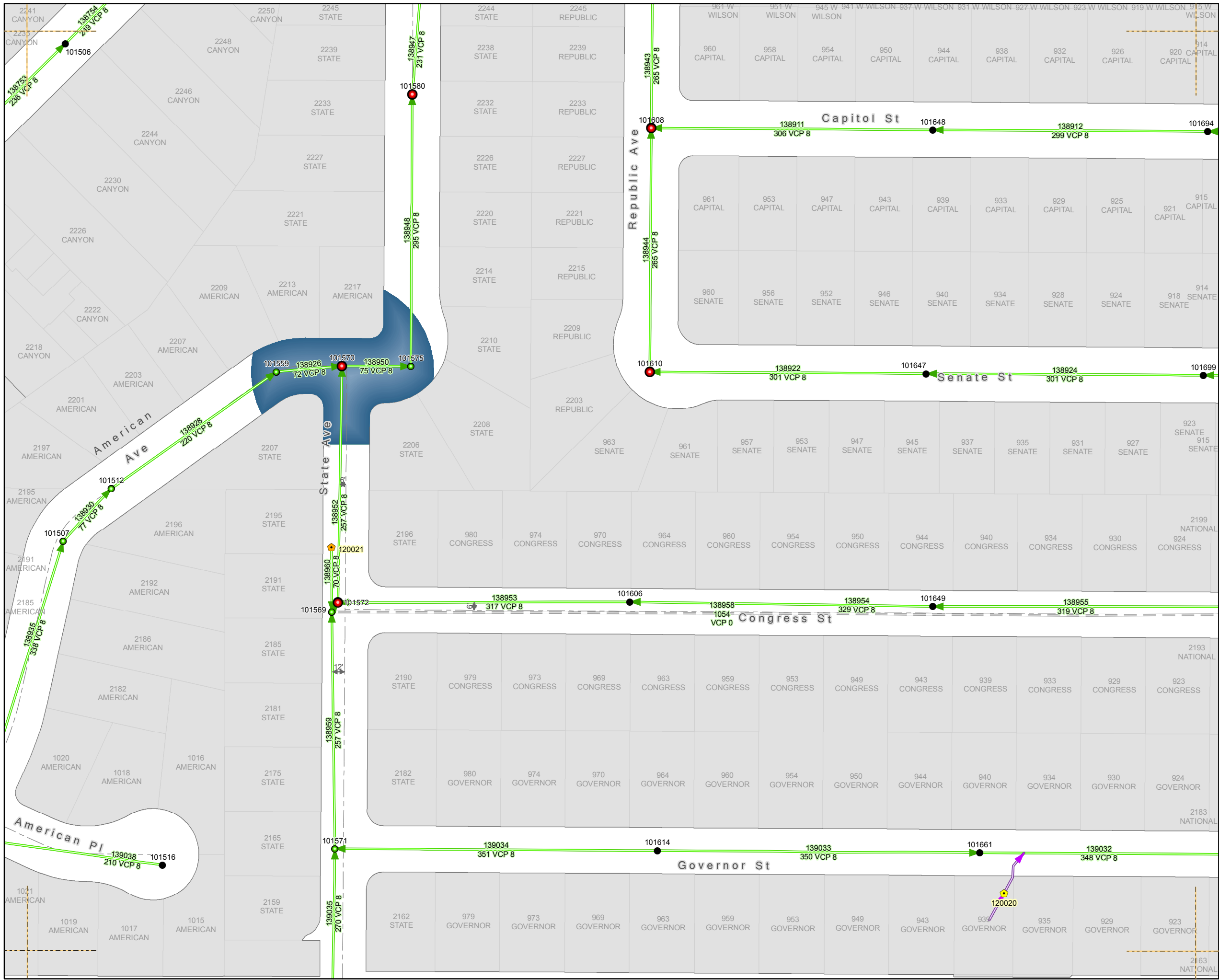
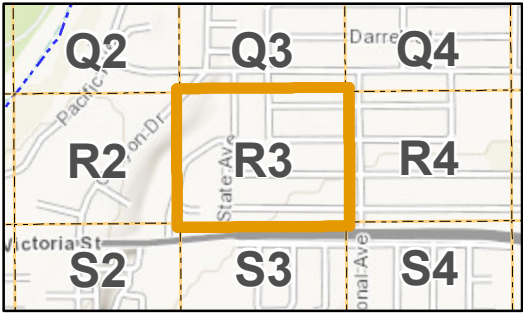
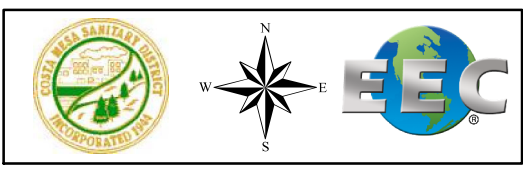
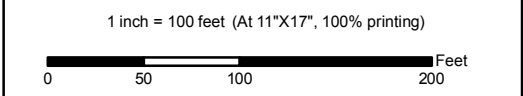
- Potential Flood Areas (1)
- Plugged and Sealed (6)
- Scheduled for P&S (5)
- Manhole**
 - CMSD Standard (21)
 - Cleanout (1)
 - Lamphole (1)
 - CMSD (29)
 - Private (2)
 - Abandoned (1)
 - CMSD Boundary (1)
 - Atlas Grid
 - Centerline
 - Centerline Offset

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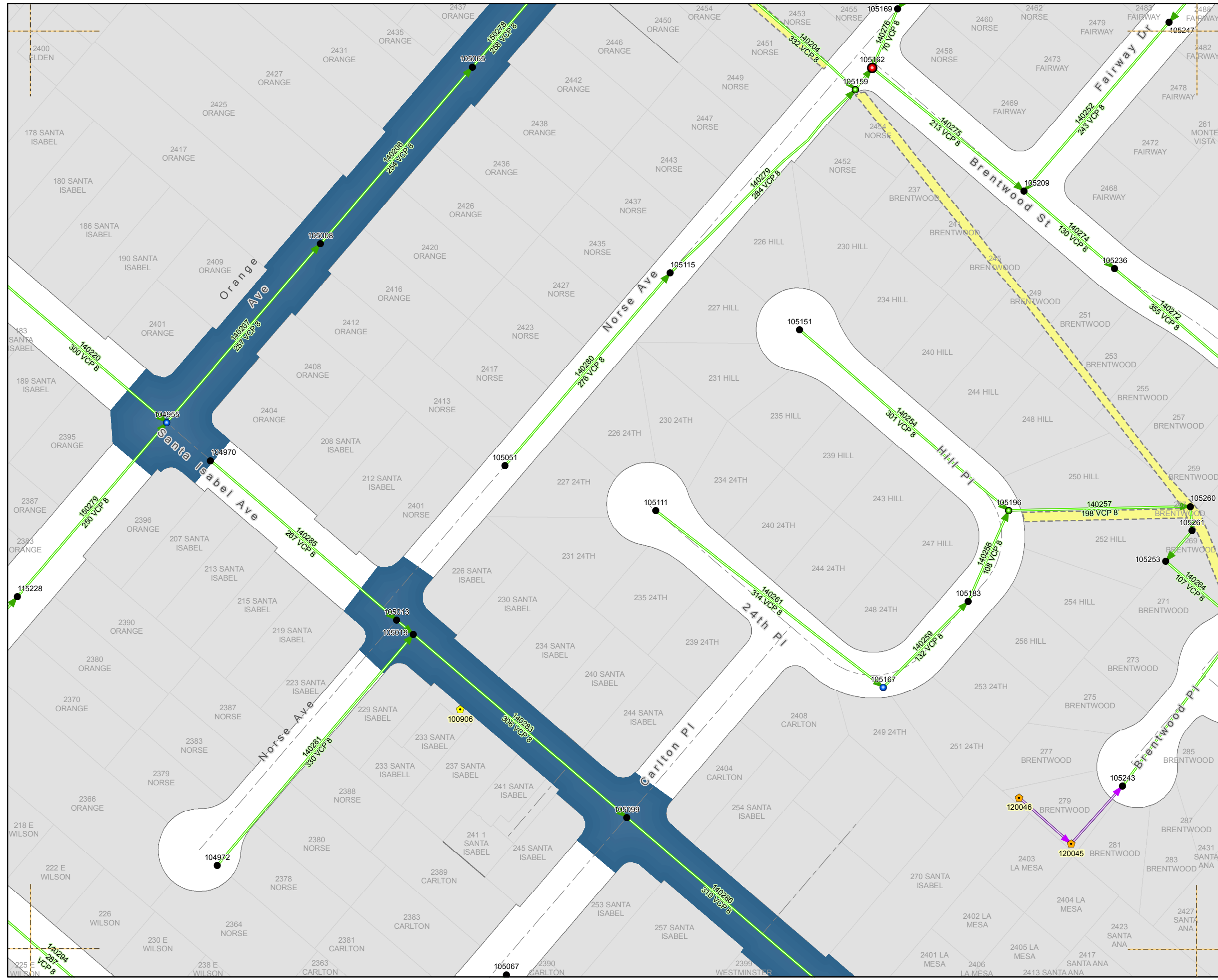
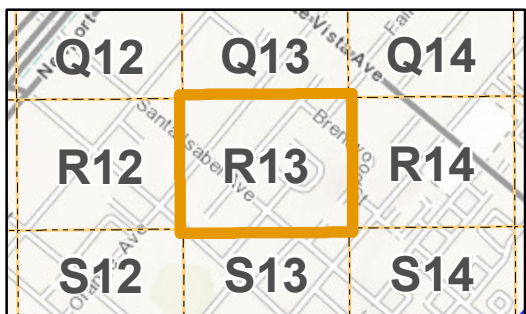
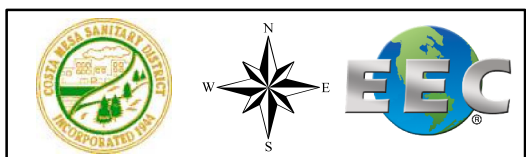
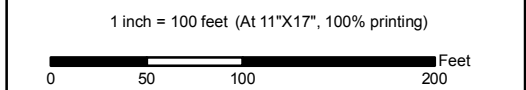
- Potential Flood Areas (2)
 - Plugged (2)
 - Plugged and Sealed (2)
 - Scheduled for P&S (1)
- Manhole**
- CMSD Standard (27)
 - Cleanout (1)
 - Lamphole (2)
 - CMSD (33)
 - Private (2)
 - Easement (3)
 - CMSD Boundary (1)
 - Atlas Grid
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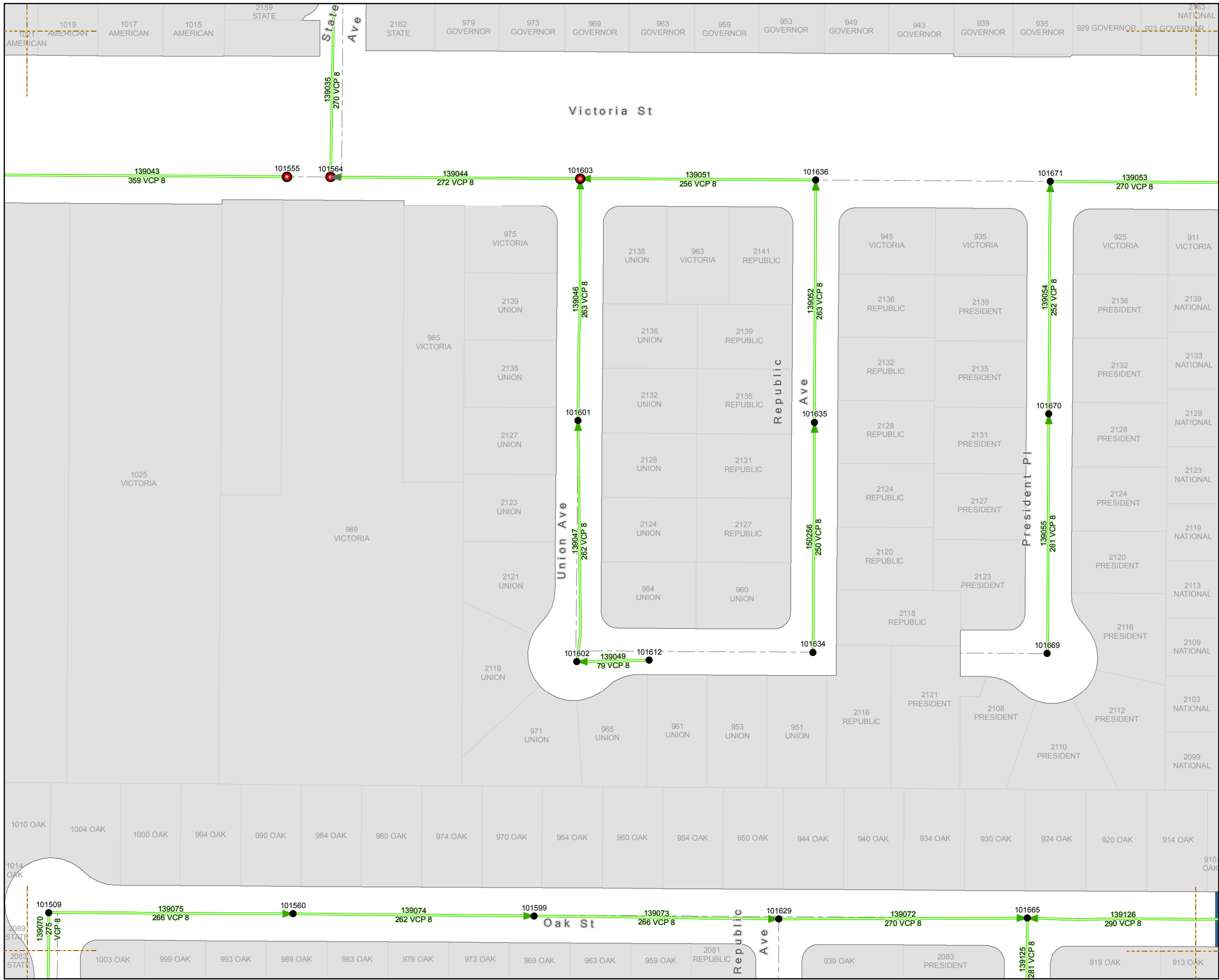
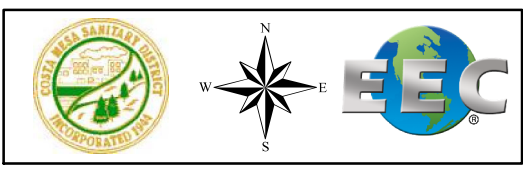
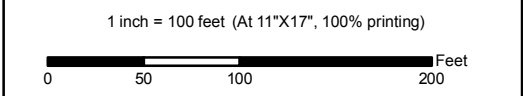
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 - CMSD (20)
 - CMSD Boundary (1)
 - Atlas Grid
 - Centerline
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- Scheduled for P&S (4)
- Manhole**
 - CMSD Standard (18)
 - CMSD (22)
- Pressurized Main**
 - Active (1)
 - Abandoned (1)
- Easement (1)
- CMSD Boundary (1)
- Atlas Grid
- Centerline

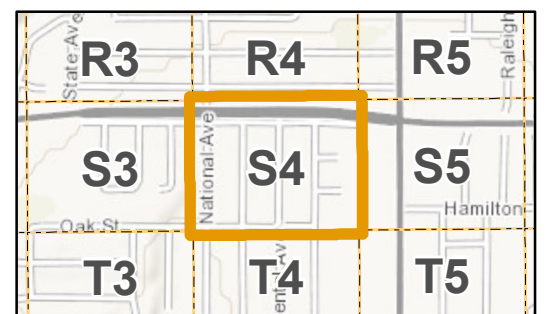
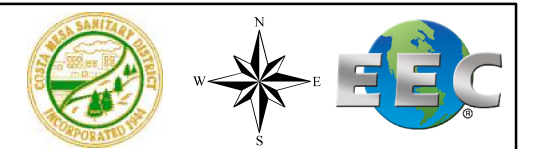
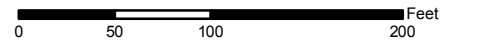
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5/13/2014 Atlas Grid Number: S4



Costa Mesa Sanitary District Potential Flood Areas Atlas

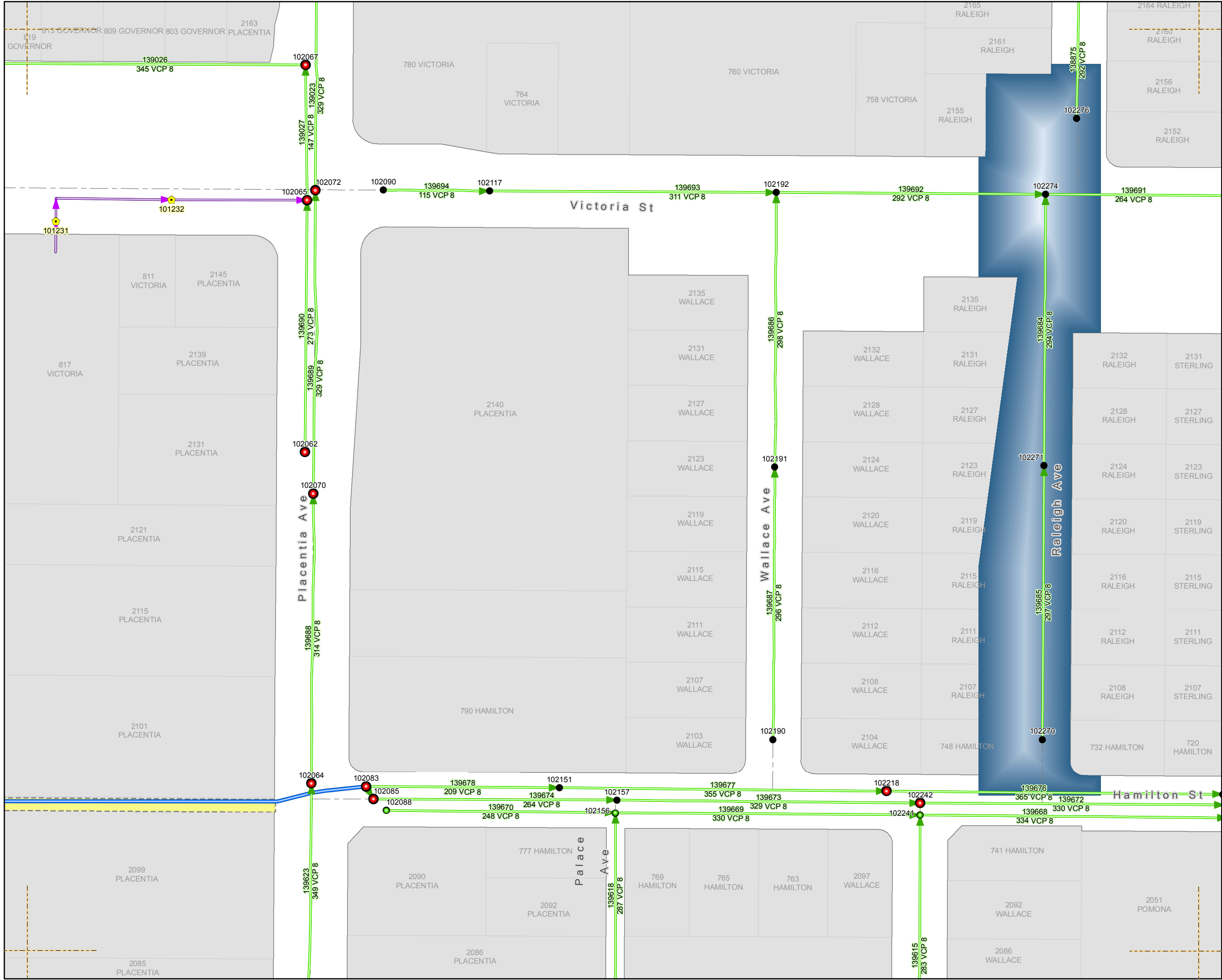
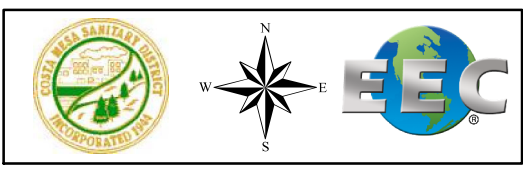
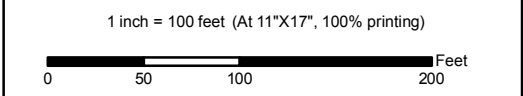
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- Plugged and Sealed (3)
- Scheduled for P&S (10)
- Manhole**
 - CMSD Standard (26)
 - Cleanout (2)
 - CMSD (28)
 - Private (4)
- Pressurized Main**
 - Active (1)
 - Easement (1)
 - CMSD Boundary (1)
 - Atlas Grid
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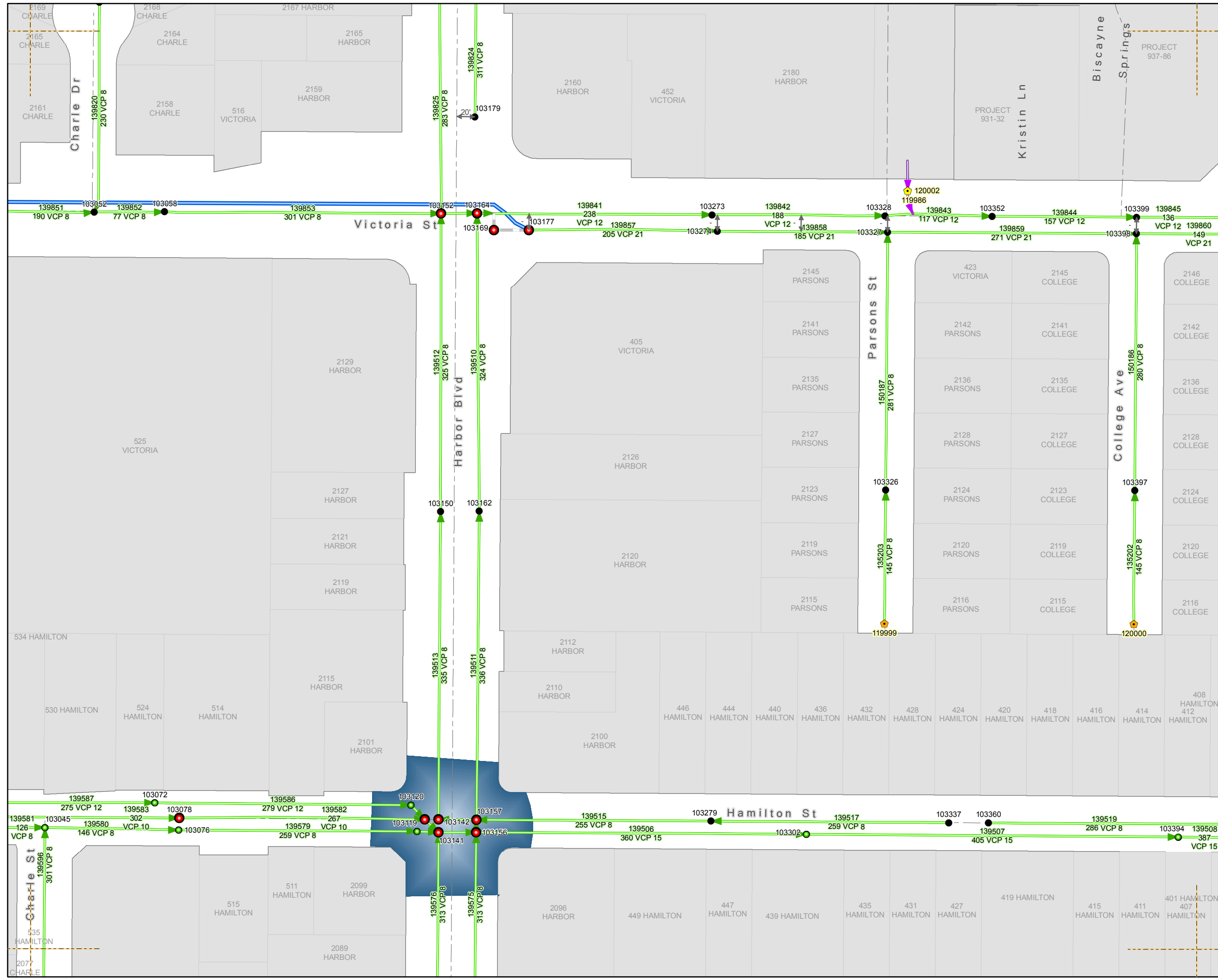
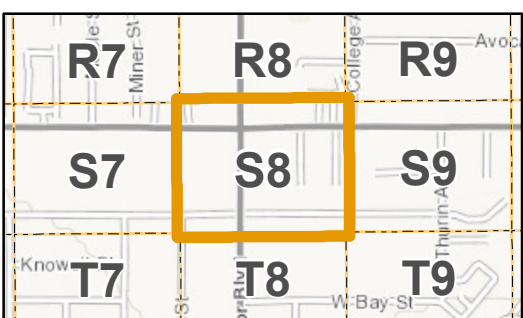
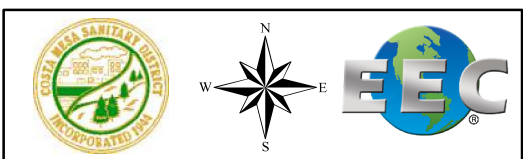
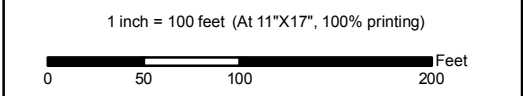
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 - Cleanout (2)
 - Lamphole (2)
 - CMSD (47)
 - Private (2)
 - Abandoned (2)
- Pressurized Main**
 - Active (1)
 - CMSD Boundary (1)
 - Atlas Grid
 - Centerline
 - Centerline Offset

Notes:

P&S: Plug and seal
Data is not purported to be accurate or reliable.
Manholes are labeled with Manhole ID.
Cleanouts are labeled with Cleanout ID.
Repairs are labeled with project number.
Gravity Mains are labeled:

Pipe Segment ID
Length Material Diameter

Arrow on gravity mains indicate flow direction.
Laterals are labeled with station equation.
(#): Refers to number of features on this page.



Costa Mesa Sanitary District Potential Flood Areas Atlas

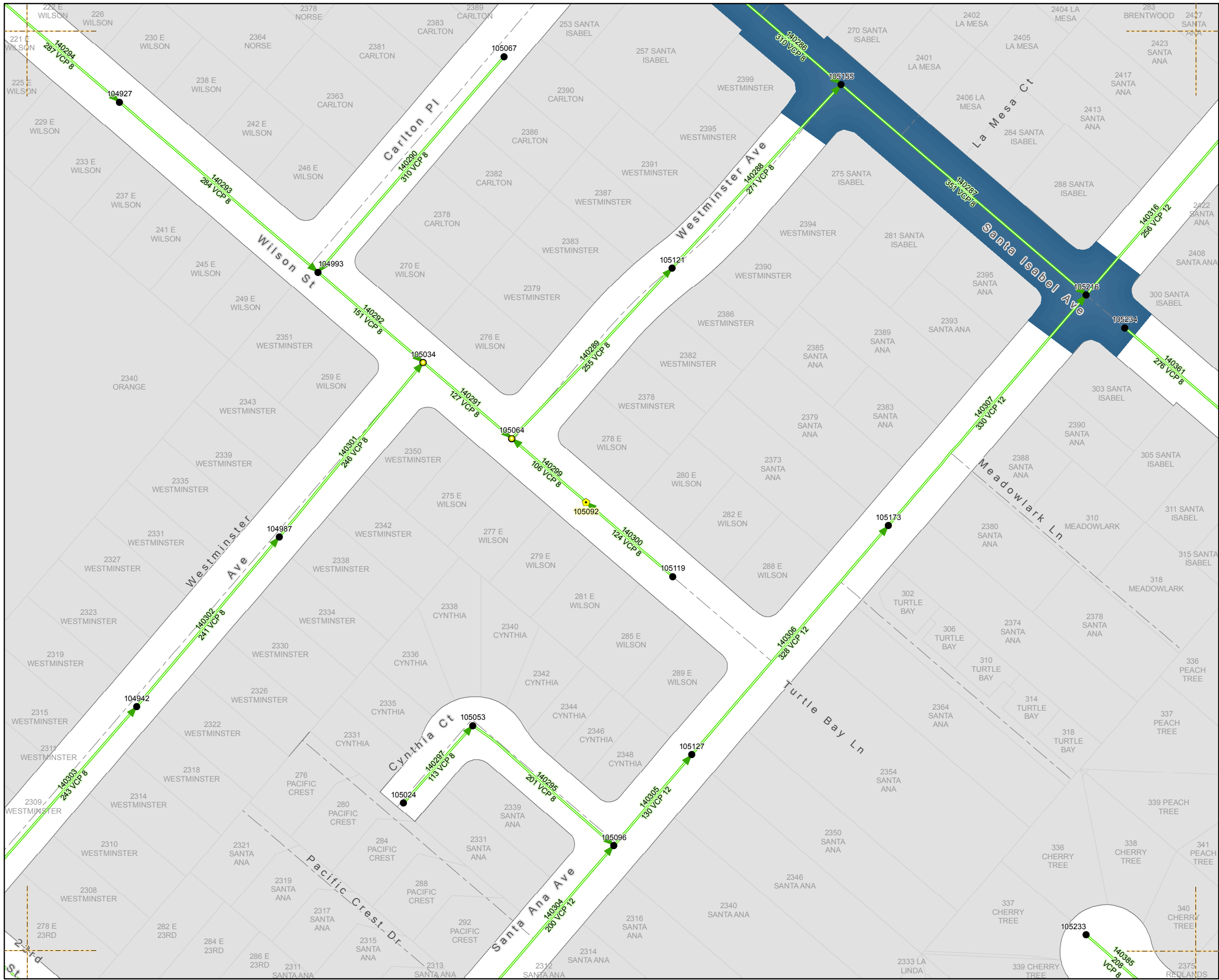
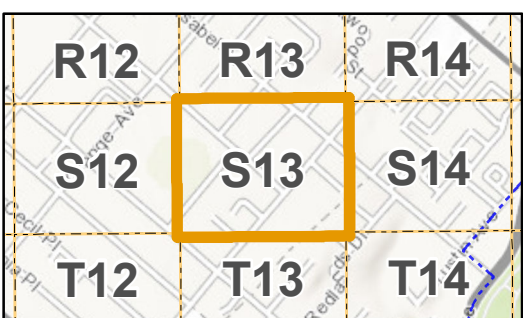
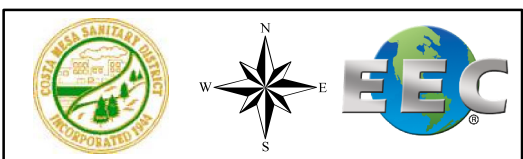
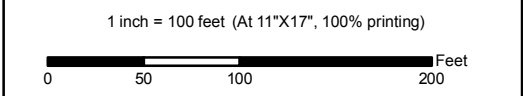
- Potential Flood Areas (1)
- Sealed (2)
- Manhole**
 - CMSD Standard (18)
 - Cleanout (1)
 - CMSD (24)
 - CMSD Boundary (1)
 - Atlas Grid
 - Centerline

Notes:

P&S: Plug and seal
Data is not purported to be accurate or reliable.
Manholes are labeled with Manhole ID.
Cleanouts are labeled with Cleanout ID.
Repairs are labeled with project number.
Gravity Mains are labeled:

Pipe Segment ID
Length Material Diameter

Arrow on gravity mains indicate flow direction.
Laterals are labeled with station equation.
(#): Refers to number of features on this page.



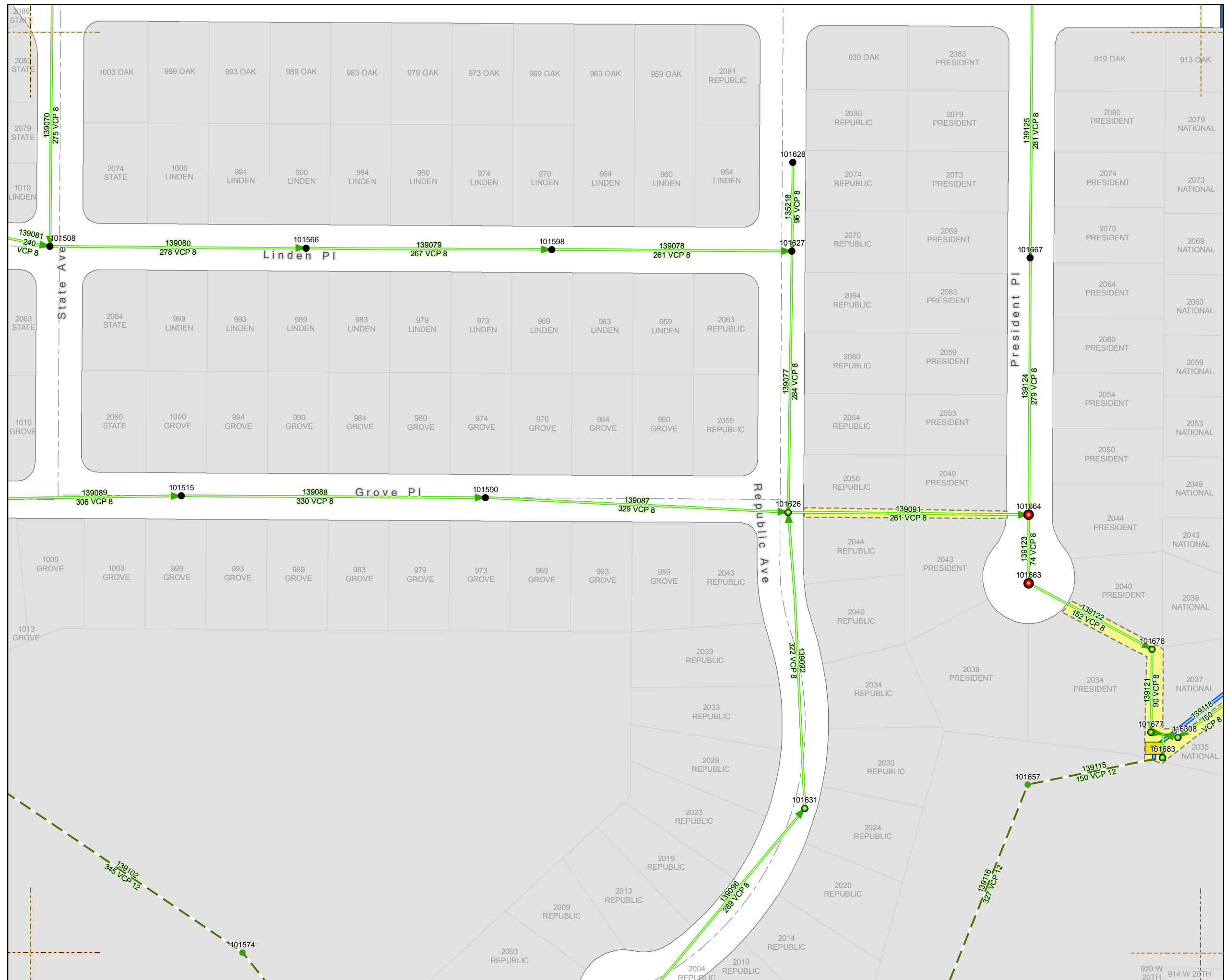
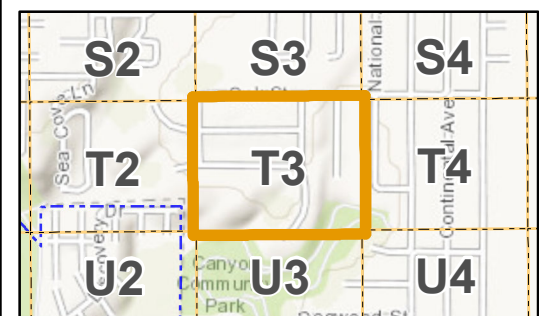
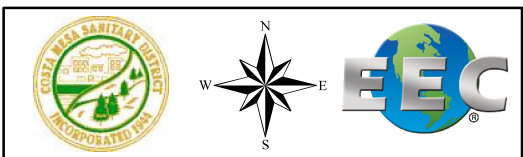
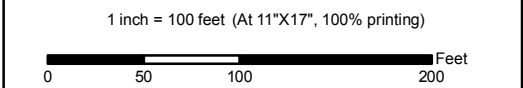
Costa Mesa Sanitary District Potential Flood Areas Atlas

- Potential Flood Areas (1)
- Plugged and Sealed (6)
- Scheduled for P&S (2)
- Manhole**
 - CMSD Standard (16)
 - Proposed (2)
 - CMSD (22)
 - Proposed (4)
- Pump Station**
 - Active (1)
- Pressurized Main**
 - Active (2)
 - Easement (2)
 - CMSD Boundary (1)
 - Atlas Grid
 - Centerline

Notes:
P&S: Plug and seal
Data is not purported to be accurate or reliable.
Manholes are labeled with Manhole ID.
Cleanouts are labeled with Cleanout ID.
Repairs are labeled with project number.
Gravity Mains are labeled:

Pipe Segment ID
Length Material Diameter

Arrow on gravity mains indicate flow direction.
Laterals are labeled with station equation.
(#): Refers to number of features on this page.



- Potential Flood Areas (1)
- Plugged and Sealed (1)
- Scheduled for P&S (5)

Manhole

- CMSD Standard (17)
- CMSD (19)

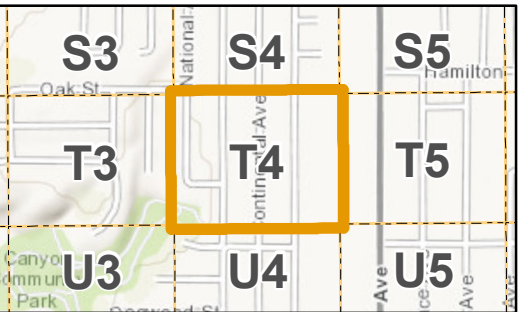
Pressurized Main

- Active (1)
- Easement (1)
- CMSD Boundary (1)
- Atlas Grid
- Centerline
- Centerline Offset

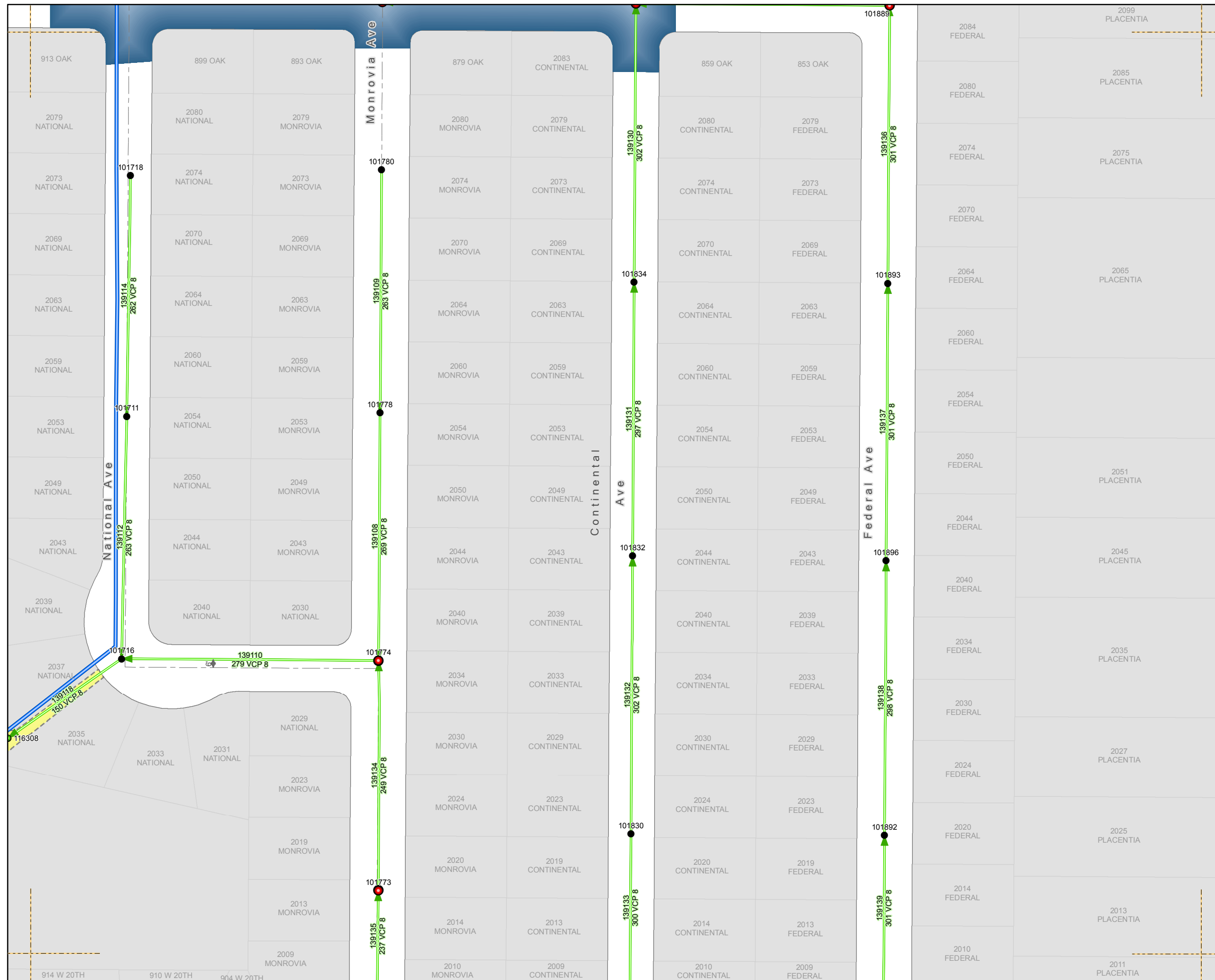
P&S: Plug and seal
Data is not purported to be accurate or reliable.
Manholes are labeled with Manhole ID.
Cleanouts are labeled with Cleanout ID.
Repairs are labeled with project number.
Gravity Mains are labeled:
$$\frac{\text{Pipe Segment ID}}{\text{Length Material Diameter}}$$

Arrow on gravity mains indicate flow direction.
Laterals are labeled with station equation.
(#): Refers to number of features on this page.

A horizontal number line representing distance in feet. The line is marked with 0, 50, 100, and 200. A white rectangular segment is highlighted between the 50 and 100 marks. The word "Feet" is written at the right end of the line.



5/13/2014 Atlas Grid Number: T4



Costa Mesa Sanitary District Potential Flood Areas Atlas

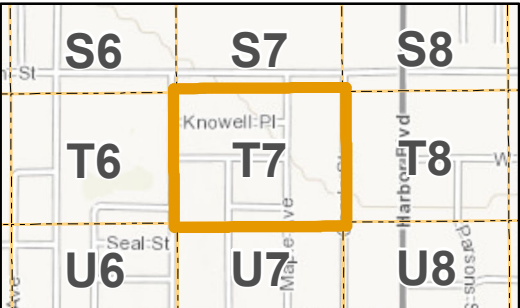
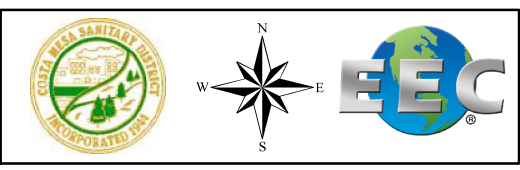
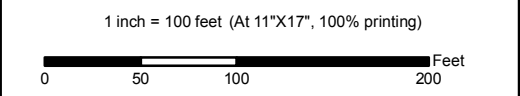
- Potential Flood Areas (1)
- Scheduled for P&S (5)
- Manhole
 - CMSD Standard (21)
 - Cleanout (1)
 - Lamphole (1)
- CMSD (23)
- Easement (1)
- CMSD Boundary (1)
- Atlas Grid
- Centerline

Notes:

P&S: Plug and seal
Data is not purported to be accurate or reliable.
Manholes are labeled with Manhole ID.
Cleanouts are labeled with Cleanout ID.
Repairs are labeled with project number.
Gravity Mains are labeled:

Pipe Segment ID
Length Material Diameter

Arrow on gravity mains indicate flow direction.
Laterals are labeled with station equation.
(#): Refers to number of features on this page.



Costa Mesa Sanitary District Potential Flood Areas Atlas

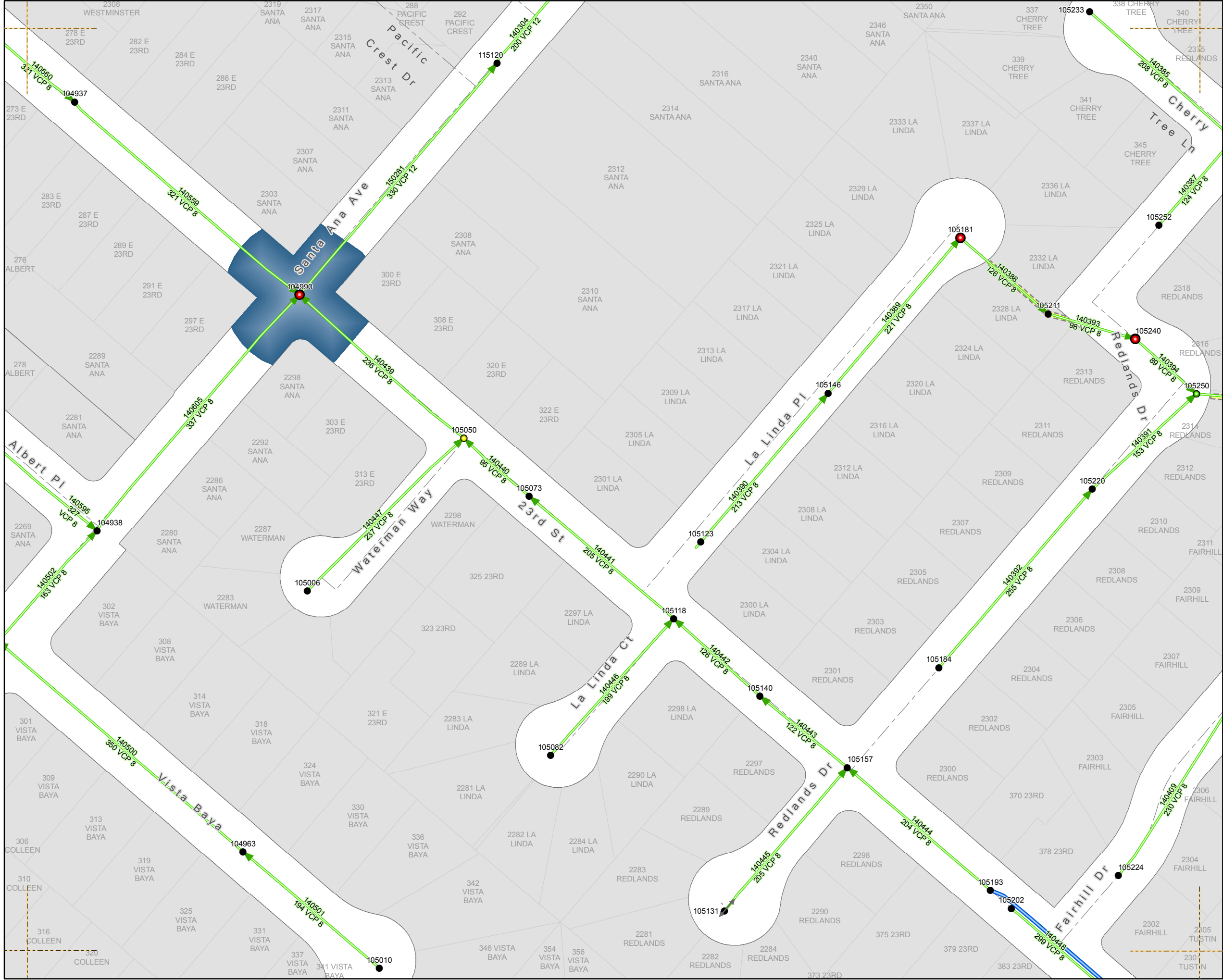
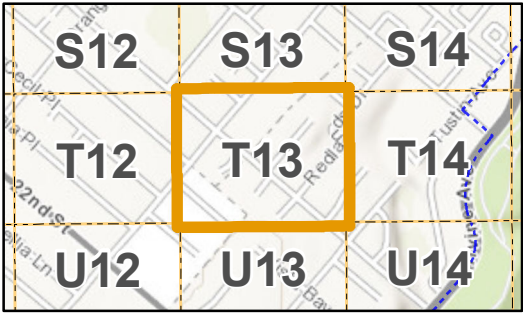
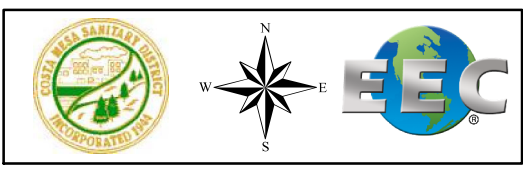
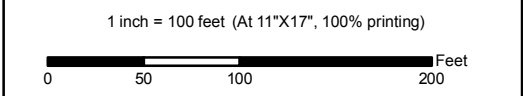
- Potential Flood Areas (1)
- Sealed (1)
- Plugged and Sealed (1)
- Scheduled for P&S (3)
- Manhole**
 - CMSD Standard (27)
 - CMSD (31)
- Pressurized Main**
 - Active (1)
 - Easement (2)
 - CMSD Boundary (1)
 - Atlas Grid
 - Centerline
 - Centerline Offset

Notes:

P&S: Plug and seal
Data is not purported to be accurate or reliable.
Manholes are labeled with Manhole ID.
Cleanouts are labeled with Cleanout ID.
Repairs are labeled with project number.
Gravity Mains are labeled:

Pipe Segment ID
Length Material Diameter

Arrow on gravity mains indicate flow direction.
Laterals are labeled with station equation.
(#): Refers to number of features on this page.

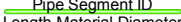


Costa Mesa Sanitary District Potential Flood Areas Atlas

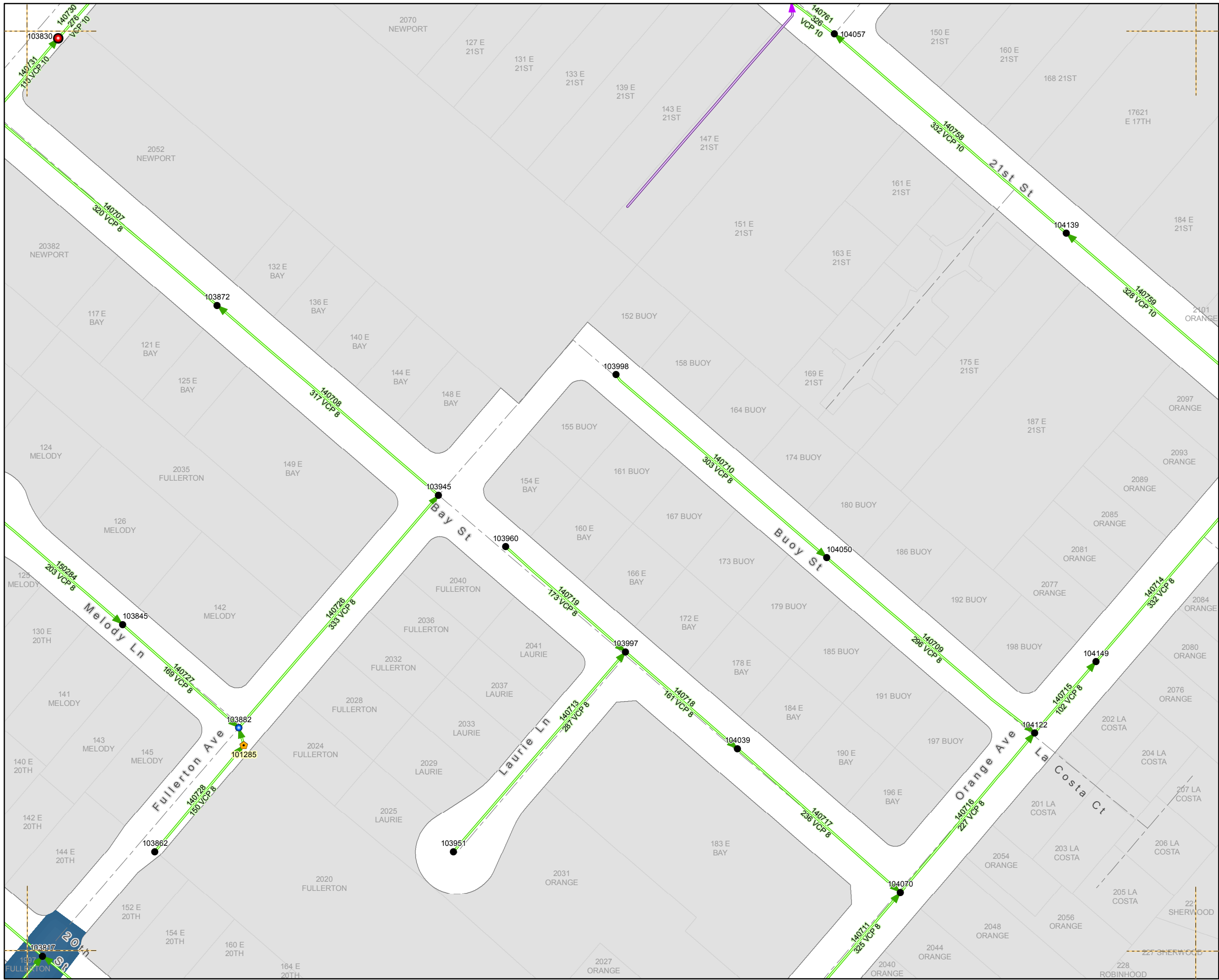
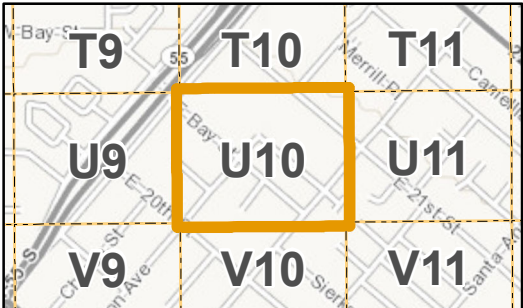
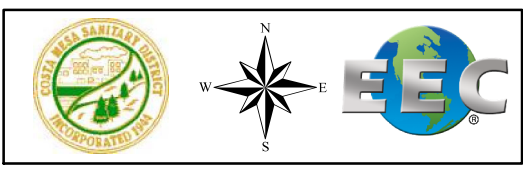
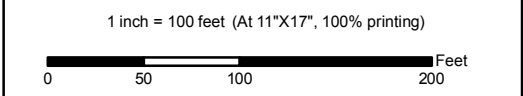
-  Potential Flood Areas (1)
-  Plugged (1)
-  Scheduled for P&S (1)
- Manhole**
-  CMSD Standard (18)
-  Lamphole (1)
-  CMSD (25)
-  Private (1)
-  CMSD Boundary (1)
-  Atlas Grid
-  Centerline

Notes:

P&S: Plug and seal
Data is not purported to be accurate or reliable.
Manholes are labeled with Manhole ID.
Cleanouts are labeled with Cleanout ID.
Repairs are labeled with project number.
Gravity Mains are labeled:

 Pipe Segment ID
Length Material Diameter

Arrow on gravity mains indicate flow direction.
Laterals are labeled with station equation.
(#): Refers to number of features on this page.



Costa Mesa Sanitary District Potential Flood Areas Atlas

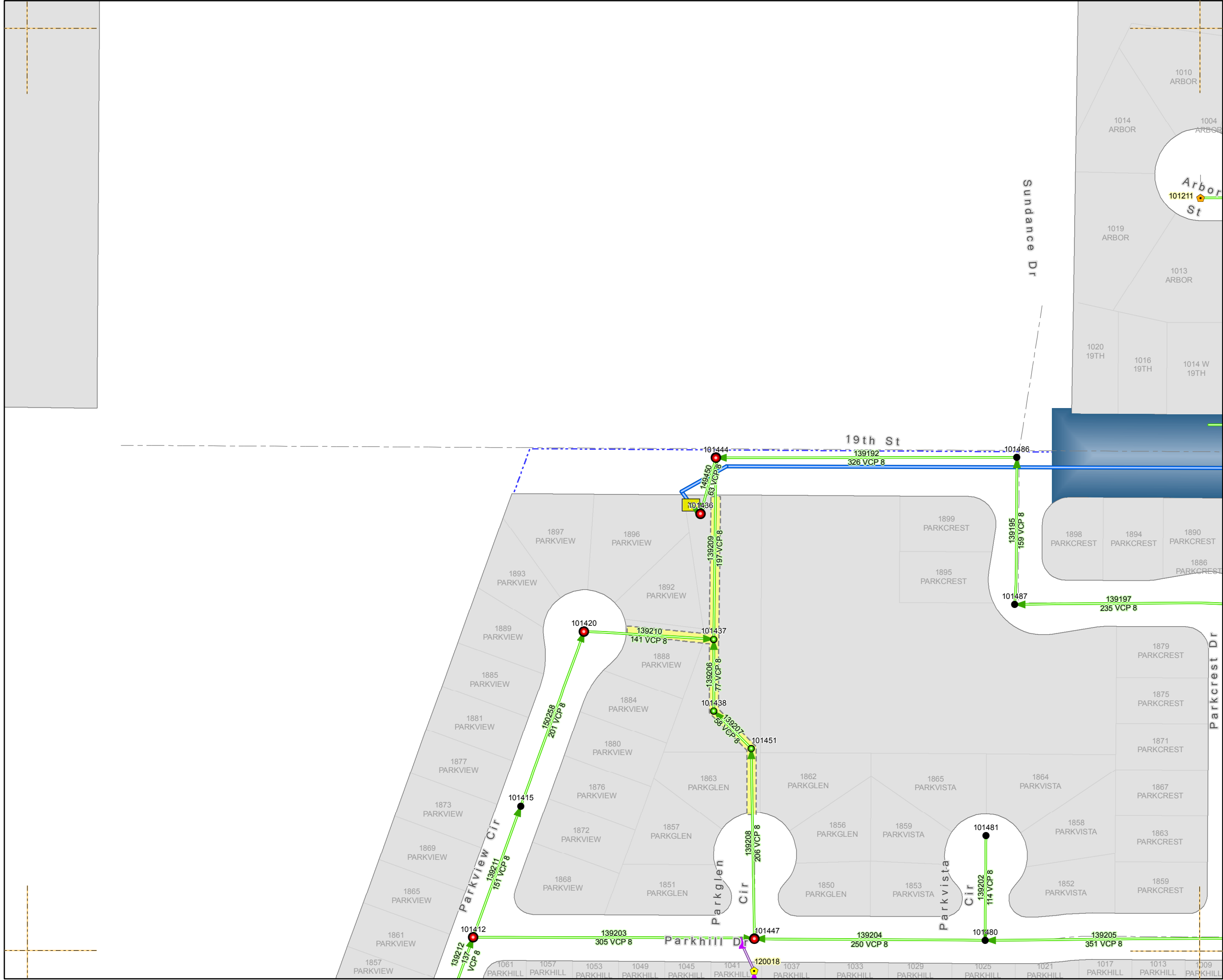
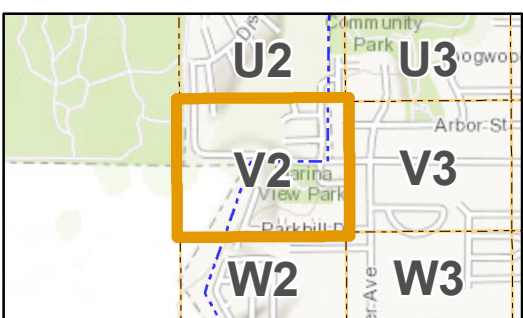
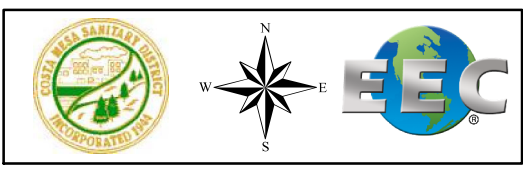
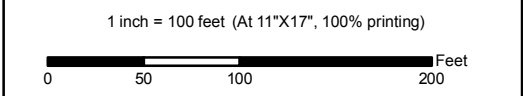
- Potential Flood Areas (1)
- Plugged and Sealed (3)
- Scheduled for P&S (5)
- Manhole**
 - CMSD Standard (13)
 - Cleanout (1)
 - Lamphole (1)
 - CMSD (19)
 - Private (2)
- Pump Station**
 - Active (1)
- Pressurized Main**
 - Active (3)
 - Easement (1)
 - CMSD Boundary (1)
 - Atlas Grid
 - Centerline

Notes:

P&S: Plug and seal
Data is not purported to be accurate or reliable.
Manholes are labeled with Manhole ID.
Cleanouts are labeled with Cleanout ID.
Repairs are labeled with project number.
Gravity Mains are labeled:

Pipe Segment ID
Length Material Diameter

Arrow on gravity mains indicate flow direction.
Laterals are labeled with station equation.
(#): Refers to number of features on this page.



Costa Mesa Sanitary District Potential Flood Areas Atlas

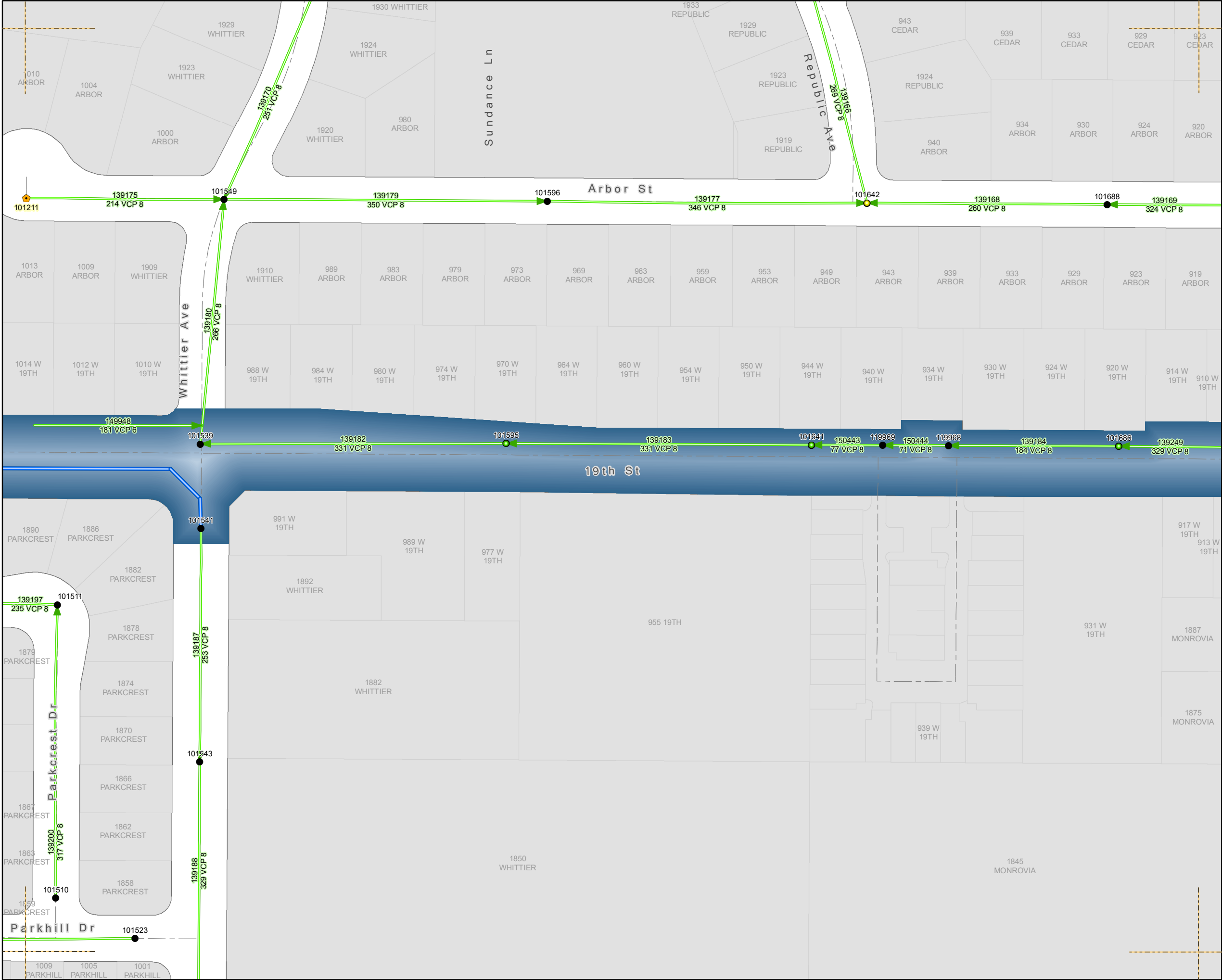
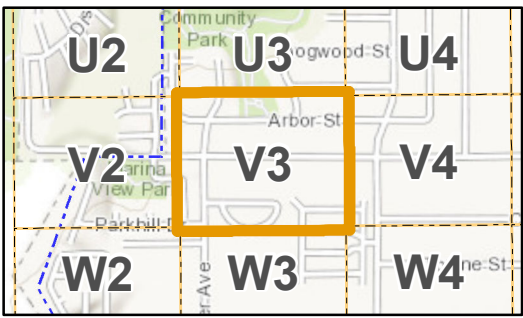
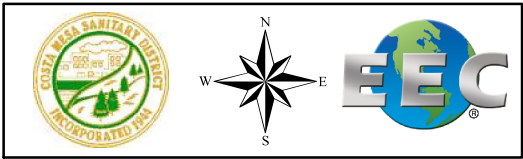
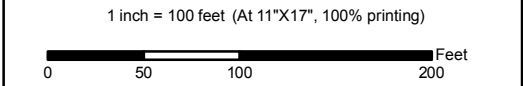
- Potential Flood Areas (1)
- Sealed (1)
- Plugged and Sealed (3)
- Manhole**
 - CMSD Standard (15)
 - Lamphole (1)
 - CMSD (20)
- Pressurized Main**
 - Active (3)
 - CMSD Boundary (1)
 - Atlas Grid
 - Centerline

Notes:

P&S: Plug and seal
Data is not purported to be accurate or reliable.
Manholes are labeled with Manhole ID.
Cleanouts are labeled with Cleanout ID.
Repairs are labeled with project number.
Gravity Mains are labeled:

Pipe Segment ID
Length Material Diameter

Arrow on gravity mains indicate flow direction.
Laterals are labeled with station equation.
(#): Refers to number of features on this page.



Costa Mesa Sanitary District Potential Flood Areas Atlas

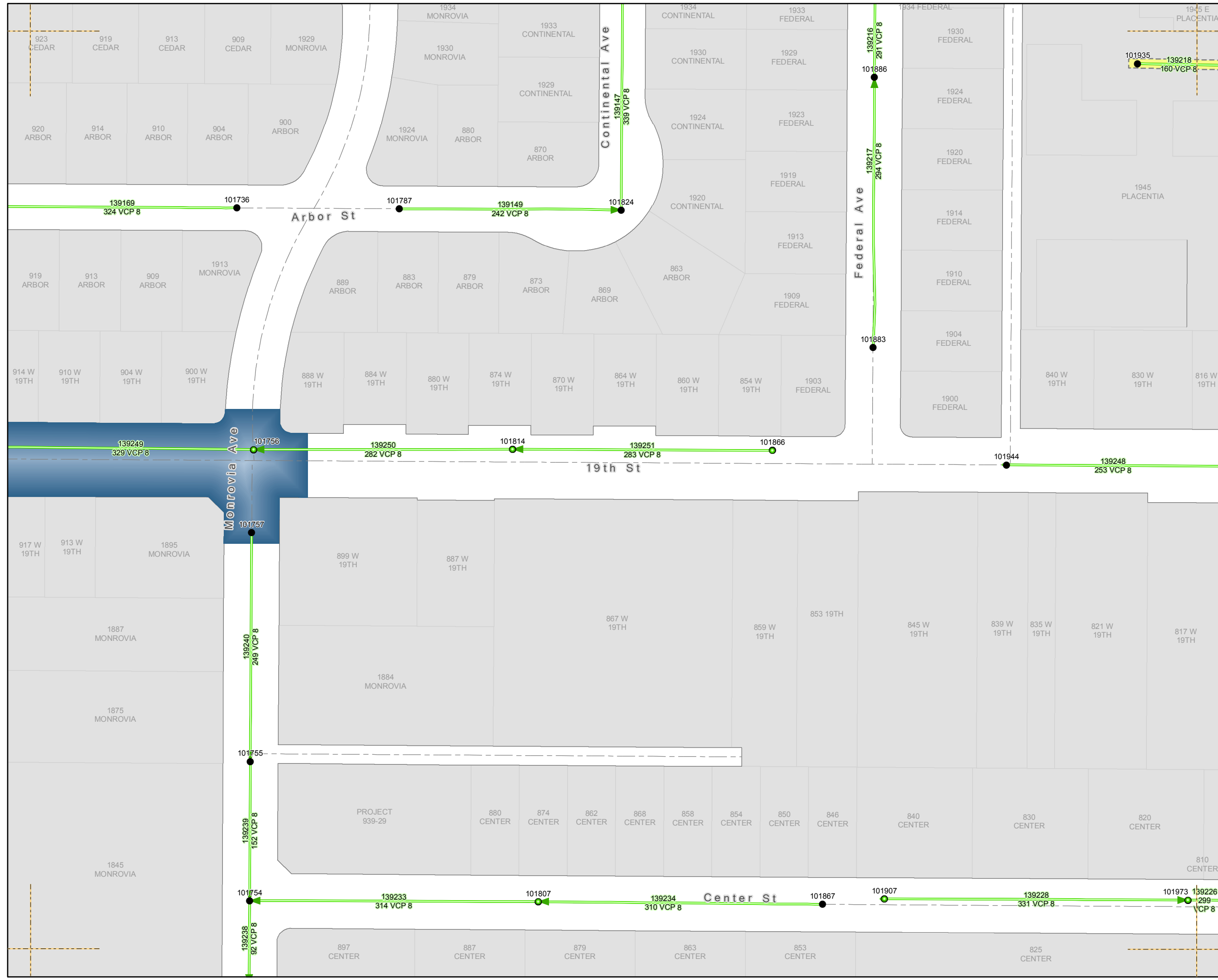
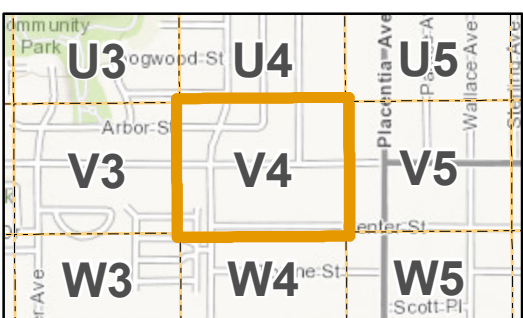
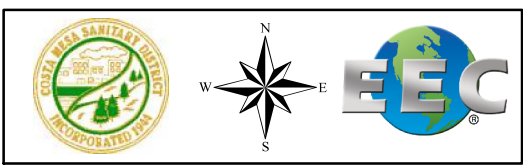
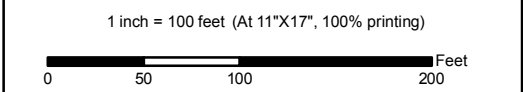
- Potential Flood Areas (1)
- Plugged and Sealed (6)
- Manhole**
 - CMSD Standard (17)
 - CMSD (19)
 - Easement (1)
 - CMSD Boundary (1)
 - Atlas Grid
 - Centerline

Notes:

P&S: Plug and seal
Data is not purported to be accurate or reliable.
Manholes are labeled with Manhole ID.
Cleanouts are labeled with Cleanout ID.
Repairs are labeled with project number.
Gravity Mains are labeled:

Pipe Segment ID
Length Material Diameter

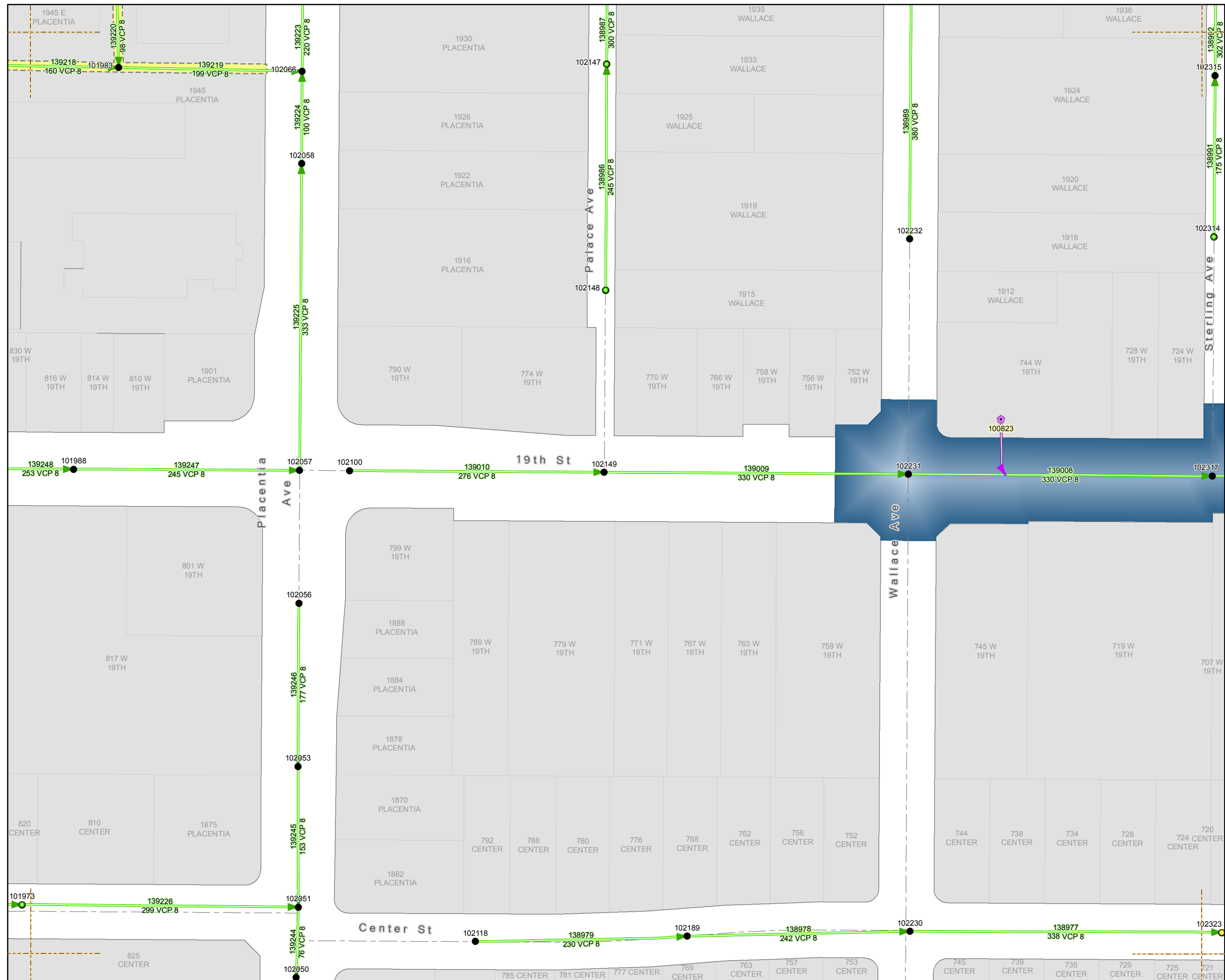
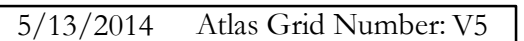
Arrow on gravity mains indicate flow direction.
Laterals are labeled with station equation.
(#): Refers to number of features on this page.



Manhole

- CMSD Standard (23)
- 🏠 Private Cleanout (1)
- ➡ CMSD (27)
- ➡ Private (1)
- 🟡 Easement (1)
- 🌀 CMSD Boundary (1)
- 🟡 Atlas Grid
- Centerline

- Notes:**
- P&S: Plug and seal
Data is not purported to be accurate or reliable.
Manholes are labeled with Manhole ID.
Cleanouts are labeled with Cleanout ID.
Repairs are labeled with project number.
Gravity Mains are labeled:
Pipe Segment ID
Length Material Diameter
Arrow on gravity mains indicate flow direction.
Laterals are labeled with station equation.
(#): Refers to number of features on this page.



Costa Mesa Sanitary District Potential Flood Areas Atlas

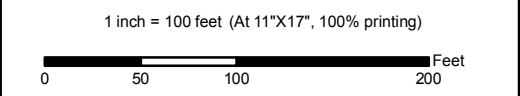
- Potential Flood Areas (1)
- Sealed (1)
- Plugged and Sealed (2)
- Manhole**
 - CMSD Standard (20)
 - CMSD (25)
 - CMSD Boundary (1)
 - Atlas Grid
 - Centerline

Notes:

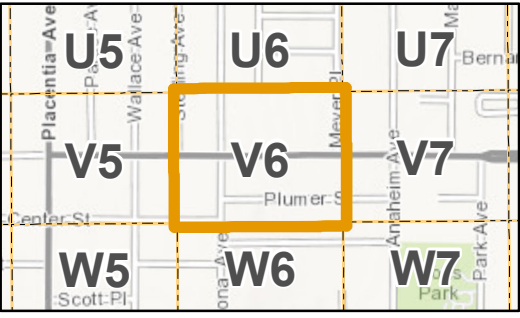
P&S: Plug and seal
Data is not purported to be accurate or reliable.
Manholes are labeled with Manhole ID.
Cleanouts are labeled with Cleanout ID.
Repairs are labeled with project number.
Gravity Mains are labeled:

Pipe Segment ID
Length Material Diameter

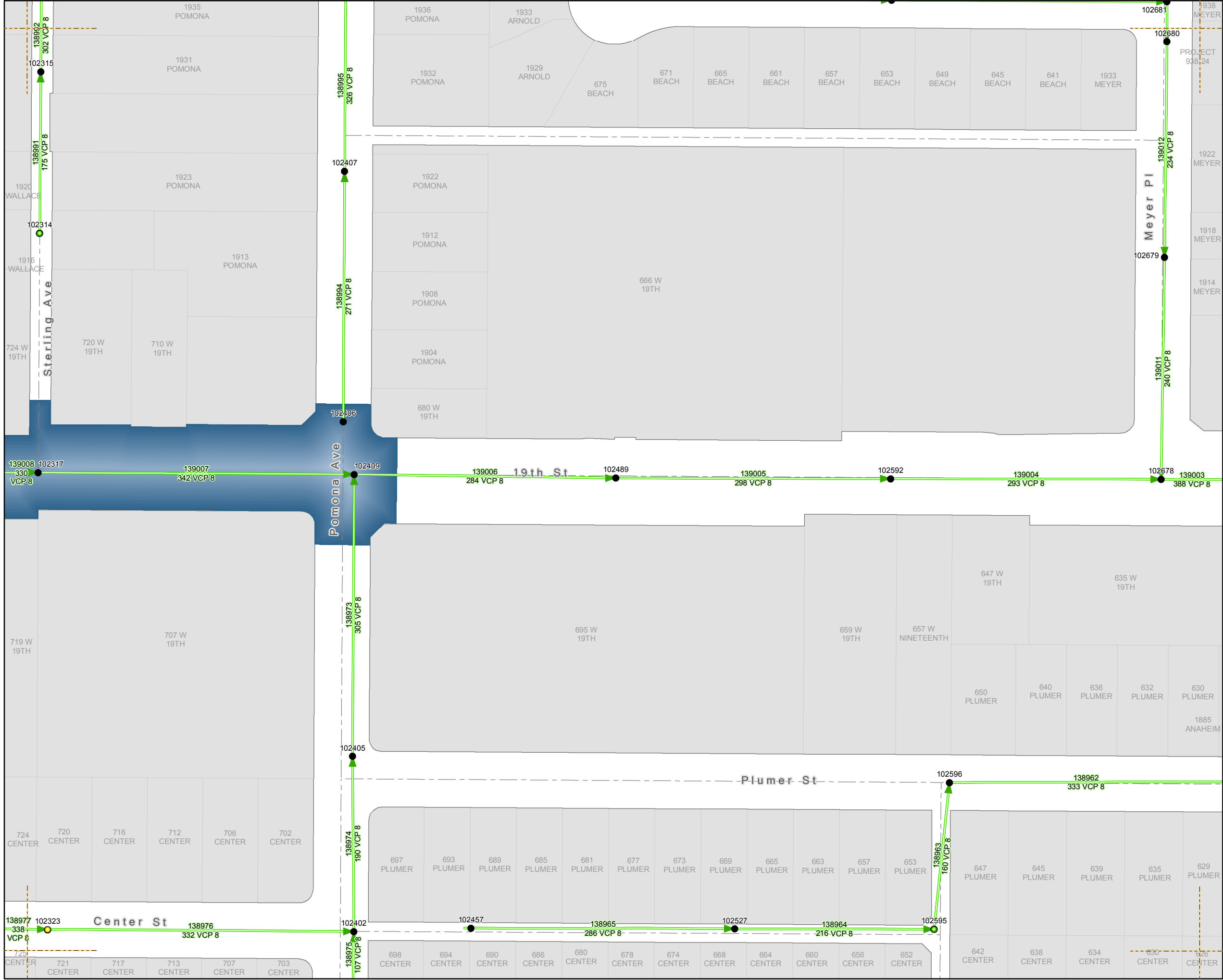
Arrow on gravity mains indicate flow direction.
Laterals are labeled with station equation.
(#): Refers to number of features on this page.







5/13/2014 Atlas Grid Number: V6



Costa Mesa Sanitary District Potential Flood Areas Atlas

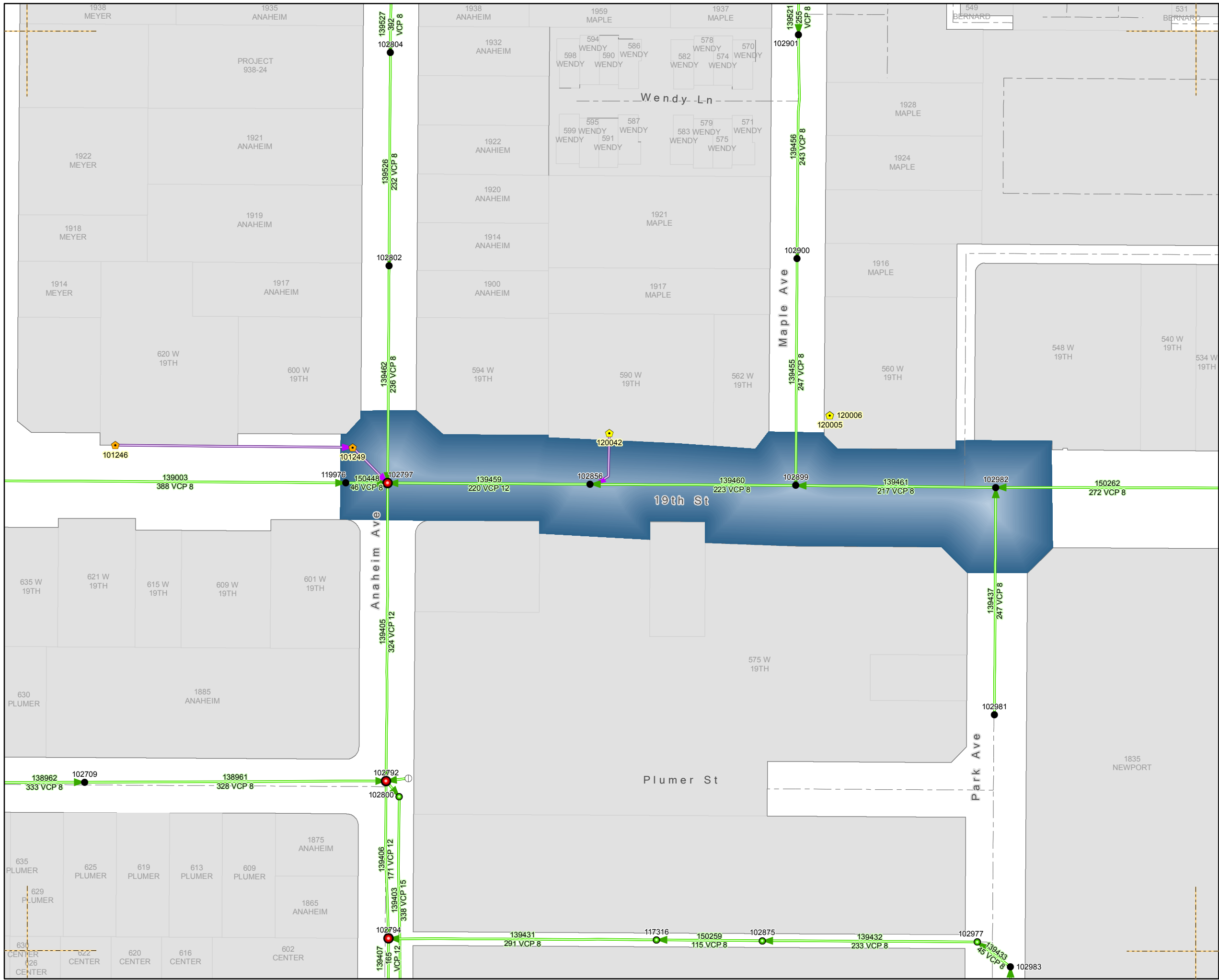
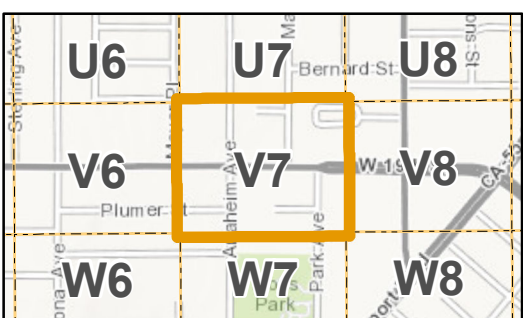
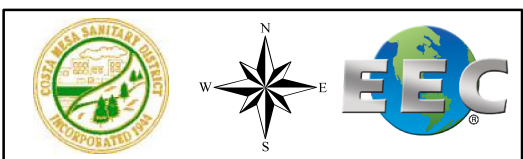
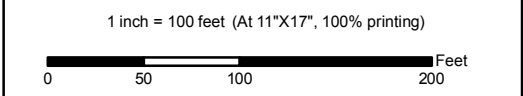
- Potential Flood Areas (1)
 - Plugged and Sealed (4)
 - Scheduled for P&S (3)
- Manhole**
- CMSD Standard (18)
 - Cleanout (3)
 - Lamphole (2)
 - Plug (1)
 - CMSD (26)
 - Private (3)
 - CMSD Boundary (1)
 - Atlas Grid
 - Centerline

Notes:

P&S: Plug and seal
Data is not purported to be accurate or reliable.
Manholes are labeled with Manhole ID.
Cleanouts are labeled with Cleanout ID.
Repairs are labeled with project number.
Gravity Mains are labeled:

Pipe Segment ID
Length Material Diameter

Arrow on gravity mains indicate flow direction.
Laterals are labeled with station equation.
(#): Refers to number of features on this page.



Costa Mesa Sanitary District Potential Flood Areas Atlas

- Potential Flood Areas (1)
- Sealed (2)
- Plugged and Sealed (5)
- Scheduled for P&S (3)
- Manhole**
 - CMSD Standard (25)
 - Private Cleanout (2)
 - CMSD (31)
 - Private (4)
 - Abandoned (2)
 - Easement (2)
 - CMSD Boundary (1)
 - Atlas Grid
 - Centerline
 - Centerline Offset

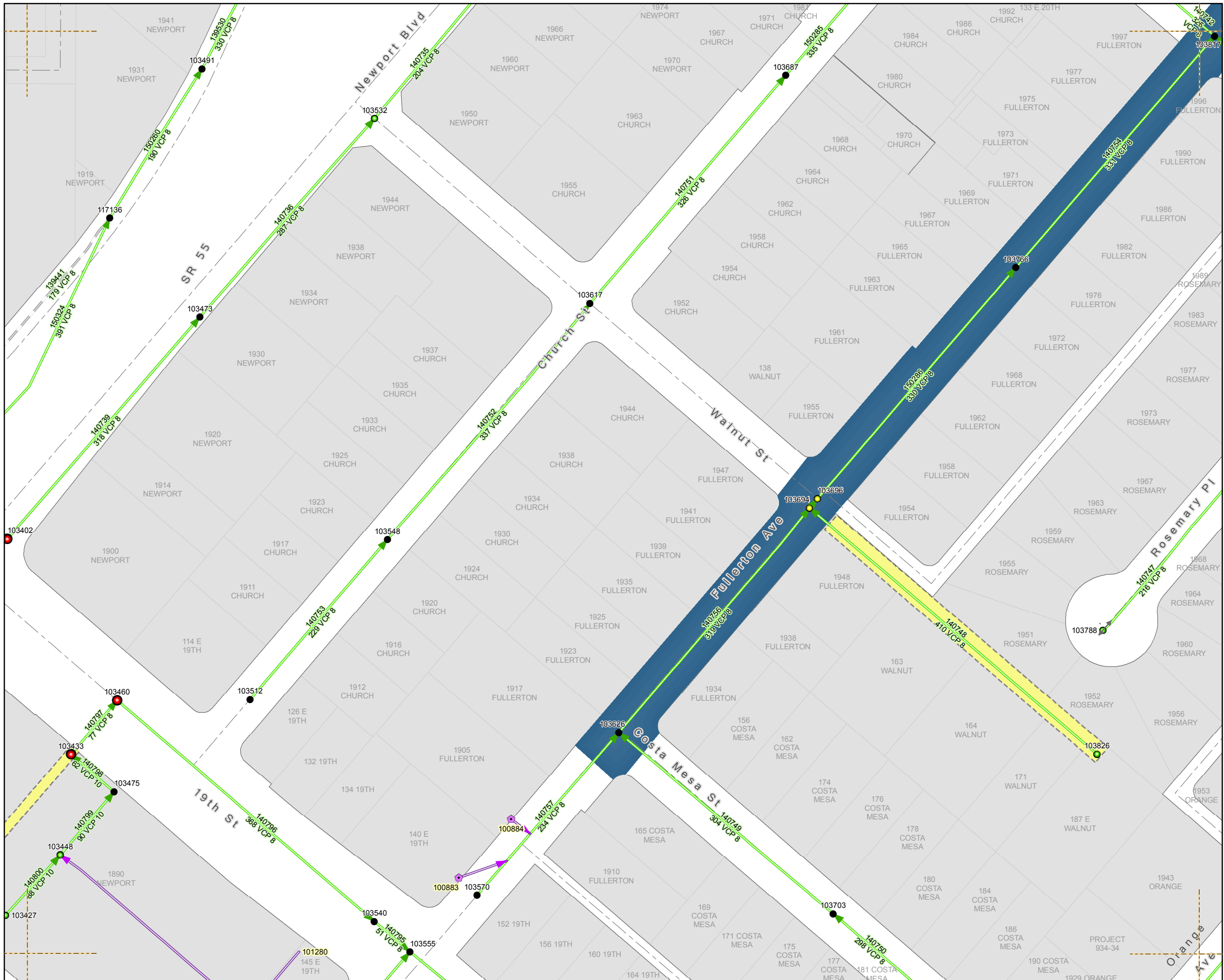
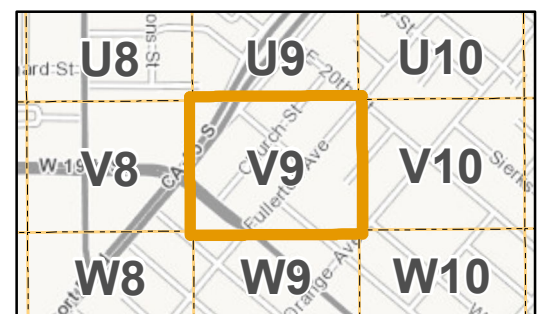
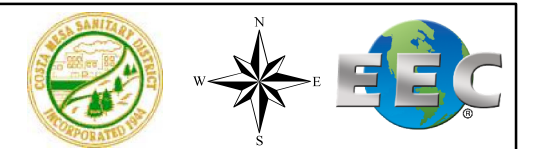
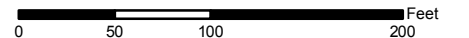
Notes:

P&S: Plug and seal
Data is not purported to be accurate or reliable.
Manholes are labeled with Manhole ID.
Cleanouts are labeled with Cleanout ID.
Repairs are labeled with project number.
Gravity Mains are labeled:

Pipe Segment ID
Length Material Diameter

Arrow on gravity mains indicate flow direction.
Laterals are labeled with station equation.
(#): Refers to number of features on this page.

1 inch = 100 feet (At 11"x17", 100% printing)



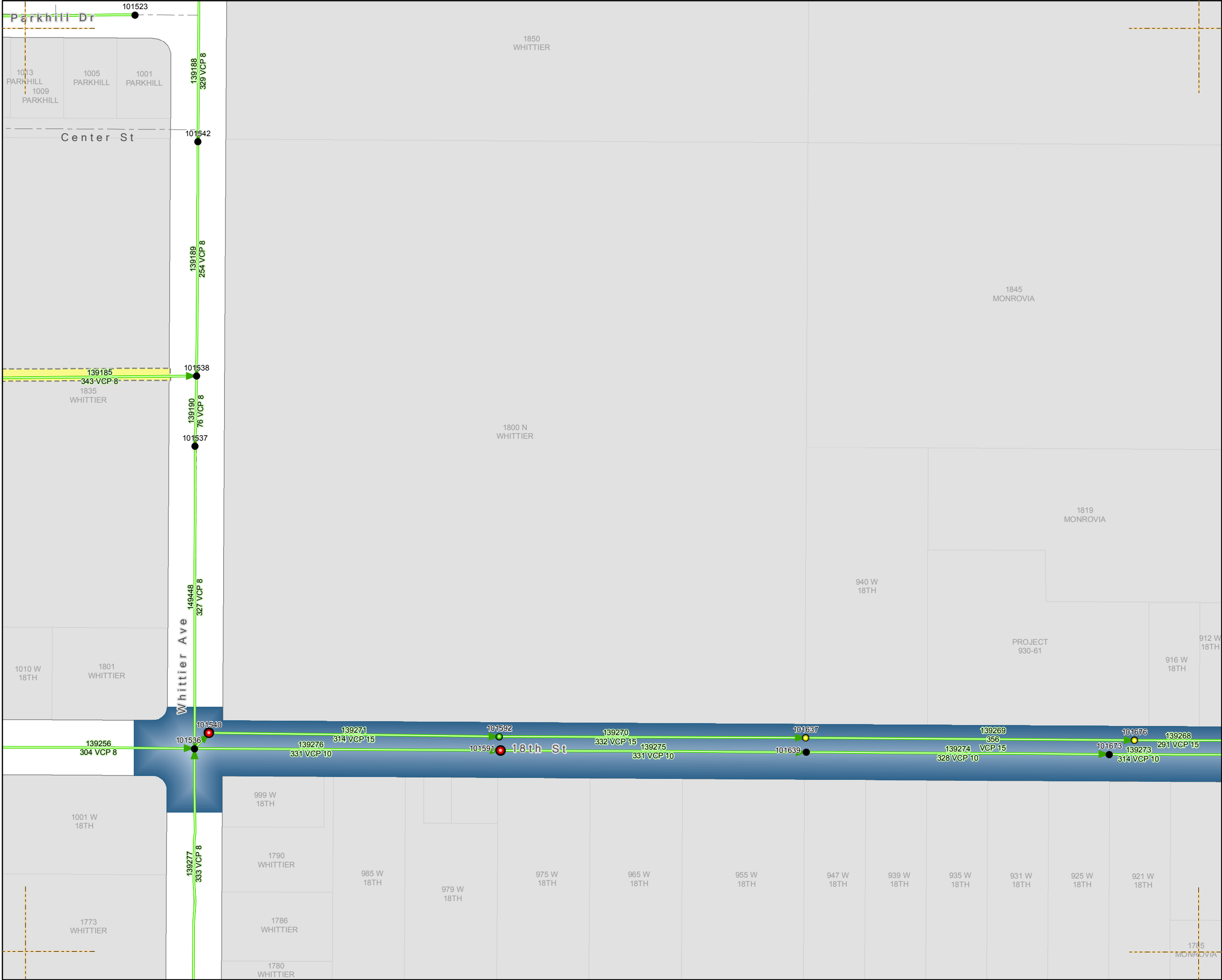
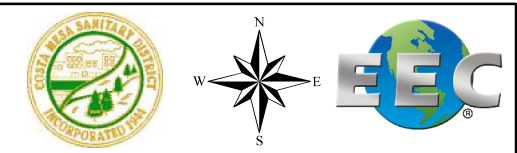
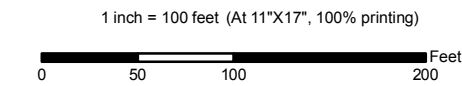
Costa Mesa Sanitary District Potential Flood Areas Atlas

- Potential Flood Areas (1)
- Sealed (2)
- Plugged and Sealed (1)
- Scheduled for P&S (2)
- Manhole**
 - CMSD Standard (12)
 - CMSD (17)
 - Easement (1)
 - CMSD Boundary (1)
 - Atlas Grid
 - Centerline

Notes:
P&S: Plug and seal
Data is not purported to be accurate or reliable.
Manholes are labeled with Manhole ID.
Cleanouts are labeled with Cleanout ID.
Repairs are labeled with project number.
Gravity Mains are labeled:

Pipe Segment ID
Length Material Diameter

Arrow on gravity mains indicate flow direction.
Laterals are labeled with station equation.
(#): Refers to number of features on this page.



Costa Mesa Sanitary District Potential Flood Areas Atlas

Potential Flood Areas (1)

Sealed (3)

Manhole

CMSD Standard (17)

Private Cleanout (1)

CMSD (22)

Private (2)

Abandoned (1)

CMSD Boundary (1)

Atlas Grid

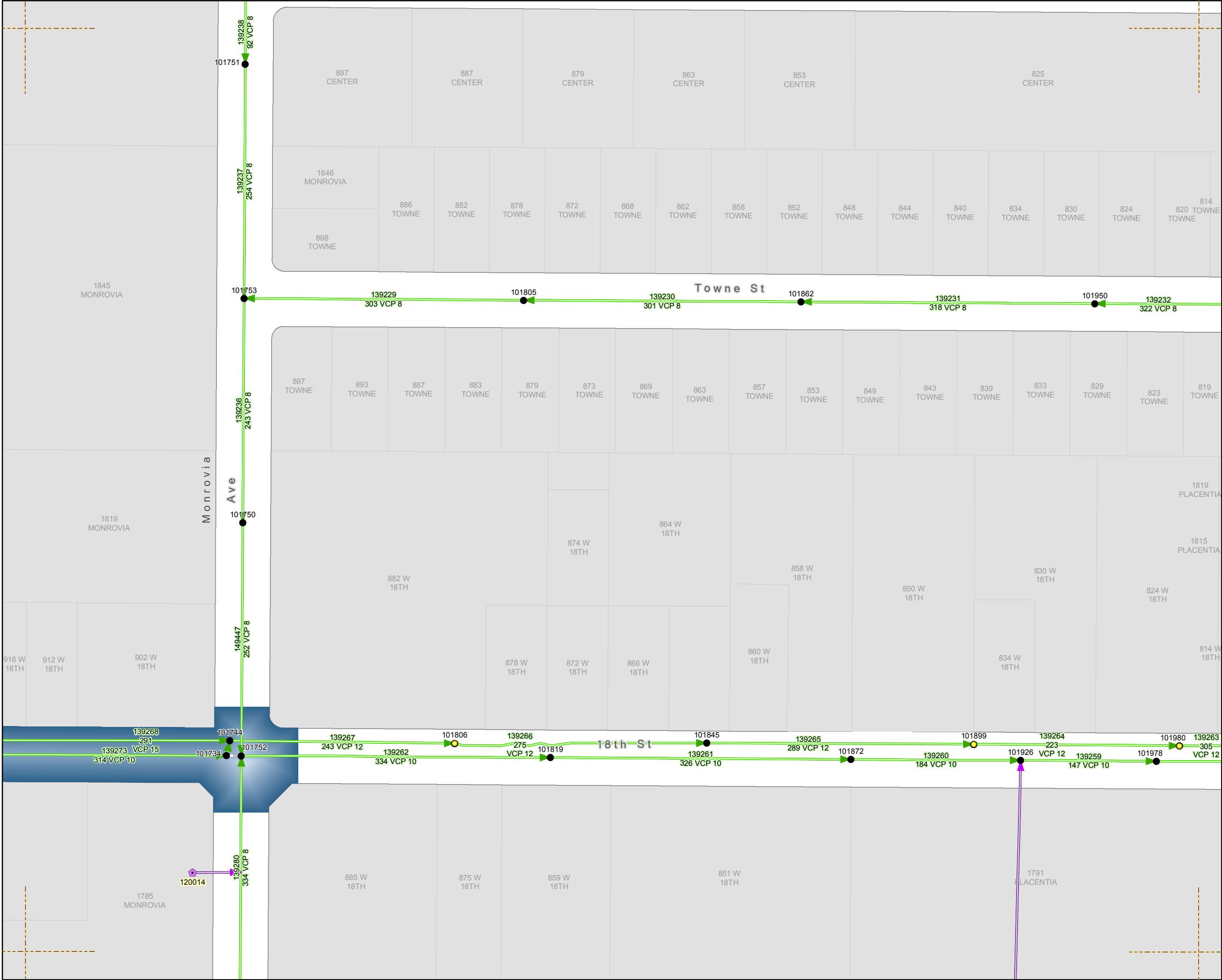
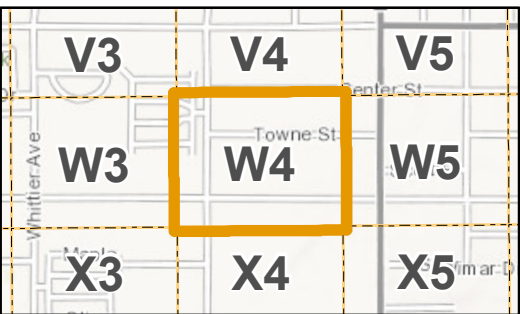
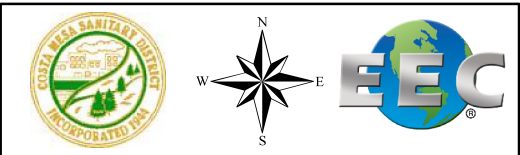
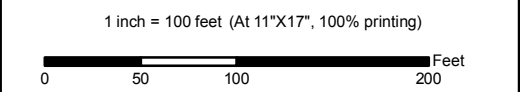
Centerline

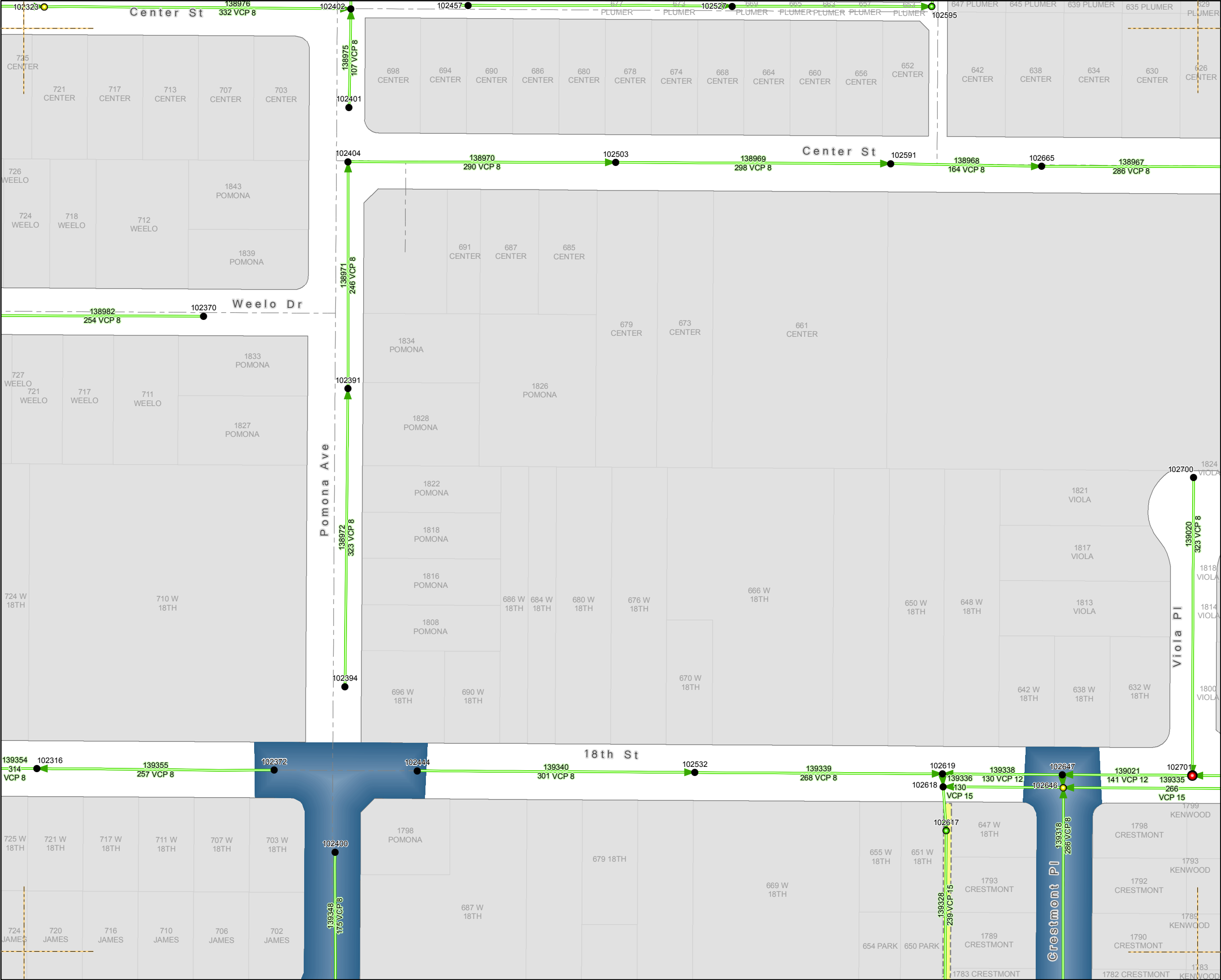
Notes:

P&S: Plug and seal
Data is not purported to be accurate or reliable.
Manholes are labeled with Manhole ID.
Cleanouts are labeled with Cleanout ID.
Repairs are labeled with project number.
Gravity Mains are labeled:

Pipe Segment ID
Length Material Diameter

Arrow on gravity mains indicate flow direction.
Laterals are labeled with station equation.
(#): Refers to number of features on this page.





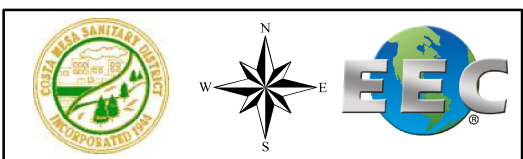
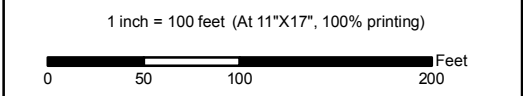
Costa Mesa Sanitary District Potential Flood Areas Atlas

- Potential Flood Areas (2)
- Sealed (2)
- Plugged and Sealed (2)
- Scheduled for P&S (1)
- Manhole**
- CMSD Standard (25)
- CMSD (31)
- Easement (1)
- CMSD Boundary (1)
- Atlas Grid
- Centerline

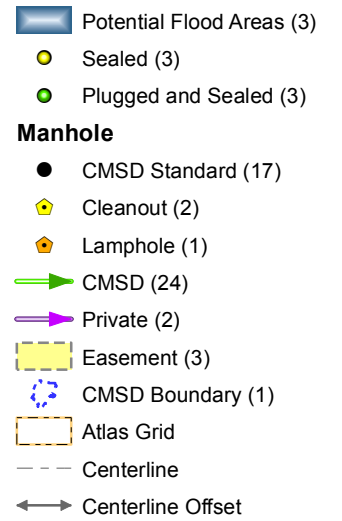
Notes:

P&S: Plug and seal
Data is not purported to be accurate or reliable.
Manholes are labeled with Manhole ID.
Cleanouts are labeled with Cleanout ID.
Repairs are labeled with project number.
Gravity Mains are labeled:

Arrow on gravity mains indicate flow direction.
Laterals are labeled with station equation.
(#): Refers to number of features on this page.



Costa Mesa Sanitary District Potential Flood Areas Atlas



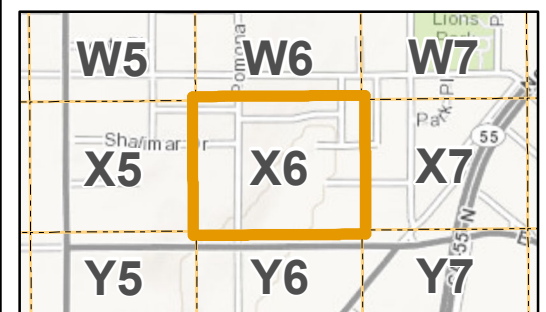
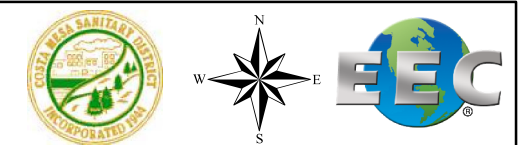
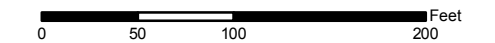
Notes:

P&S: Plug and seal
Data is not purported to be accurate or reliable.
Manholes are labeled with Manhole ID.
Cleanouts are labeled with Cleanout ID.
Repairs are labeled with project number.
Gravity Mains are labeled:

[illegible]

Arrow on gravity mains indicate flow direction.
 Laterals are labeled with station equation.
 (#): Refers to number of features on this page.

1 inch = 100 feet (At 11"X17", 100% printing)



Costa Mesa Sanitary District Potential Flood Areas Atlas

-  Potential Flood Areas (1)
-  Sealed (1)
-  Plugged and Sealed (1)
-  Scheduled for P&S (2)

Manhole

- CMSD Standard (15)
- ⬡ Cleanout (2)
- ⬡ Lamphole (1)
- ➡ CMSD (21)
- ➡ Private (4)
- ⬡ Easement (1)
- ⬡ CMSD Boundary (1)
- ⬡ Atlas Grid
- Centerline

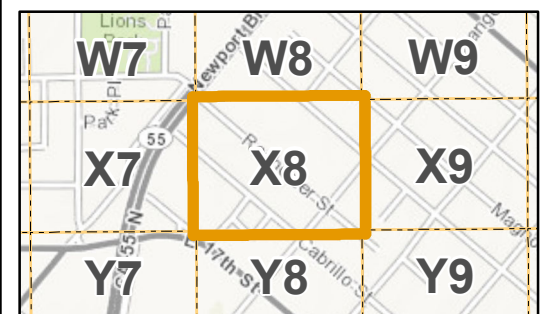
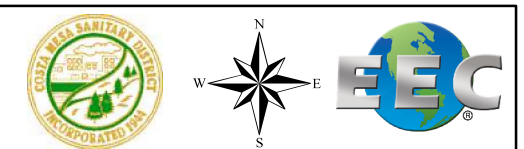
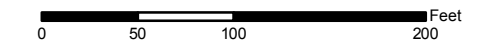
Notes:

P&S: Plug and seal
Data is not purported to be accurate or reliable.
Manholes are labeled with Manhole ID.
Cleanouts are labeled with Cleanout ID.
Repairs are labeled with project number.
Gravity Mains are labeled:

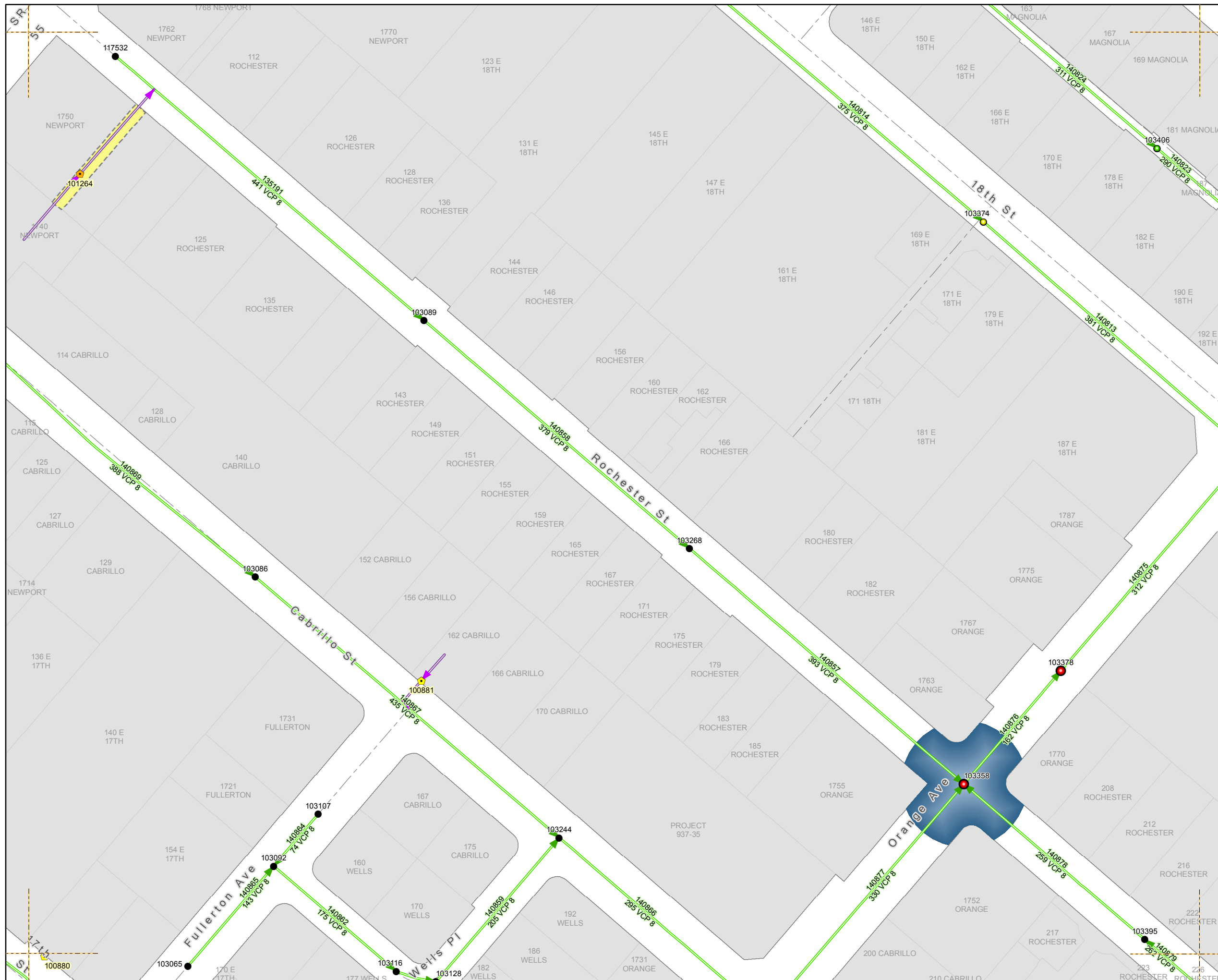
Pipe Segment ID	Length	Material	Diameter
1	100	Steel	12
2	150	Steel	12
3	200	Steel	12
4	250	Steel	12
5	300	Steel	12
6	350	Steel	12
7	400	Steel	12
8	450	Steel	12
9	500	Steel	12
10	550	Steel	12
11	600	Steel	12
12	650	Steel	12
13	700	Steel	12
14	750	Steel	12
15	800	Steel	12
16	850	Steel	12
17	900	Steel	12
18	950	Steel	12
19	1000	Steel	12
20	1050	Steel	12
21	1100	Steel	12
22	1150	Steel	12
23	1200	Steel	12
24	1250	Steel	12
25	1300	Steel	12
26	1350	Steel	12
27	1400	Steel	12
28	1450	Steel	12
29	1500	Steel	12
30	1550	Steel	12
31	1600	Steel	12
32	1650	Steel	12
33	1700	Steel	12
34	1750	Steel	12
35	1800	Steel	12
36	1850	Steel	12
37	1900	Steel	12
38	1950	Steel	12
39	2000	Steel	12
40	2050	Steel	12
41	2100	Steel	12
42	2150	Steel	12
43	2200	Steel	12
44	2250	Steel	12
45	2300	Steel	12
46	2350	Steel	12
47	2400	Steel	12
48	2450	Steel	12
49	2500	Steel	12
50	2550	Steel	12
51	2600	Steel	12
52	2650	Steel	12
53	2700	Steel	12
54	2750	Steel	12
55	2800	Steel	12
56	2850	Steel	12
57	2900	Steel	12
58	2950	Steel	12
59	3000	Steel	12
60	3050	Steel	12
61	3100	Steel	12
62	3150	Steel	12
63	3200	Steel	12
64	3250	Steel	12
65	3300	Steel	12
66	3350	Steel	12
67	3400	Steel	12
68	3450	Steel	12
69	3500	Steel	12
70	3550	Steel	12
71	3600	Steel	12
72	3650	Steel	12
73	3700	Steel	12
74	3750	Steel	12
75	3800	Steel	12
76	3850	Steel	12
77	3900	Steel	12
78	3950	Steel	12
79	4000	Steel	12
80	4050	Steel	12
81	4100	Steel	12
82	4150	Steel	12
83	4200	Steel	12
84	4250	Steel	12
85	4300	Steel	12
86	4350	Steel	12
87	4400	Steel	12
88	4450	Steel	12
89	4500	Steel	12
90	4550	Steel	12
91	4600	Steel	12
92	4650	Steel	12
93	4700	Steel	12
94	4750	Steel	12
95	4800	Steel	12
96	4850	Steel	12
97	4900	Steel	12
98	4950	Steel	12
99	5000	Steel	12

Arrow on gravity mains indicate flow direction.
 Laterals are labeled with station equation.
 (#): Refers to number of features on this page.

1 inch = 100 feet (At 11"X17", 100% printing)



5/13/2014 Atlas Grid Number: X8



Costa Mesa Sanitary District Potential Flood Areas Atlas

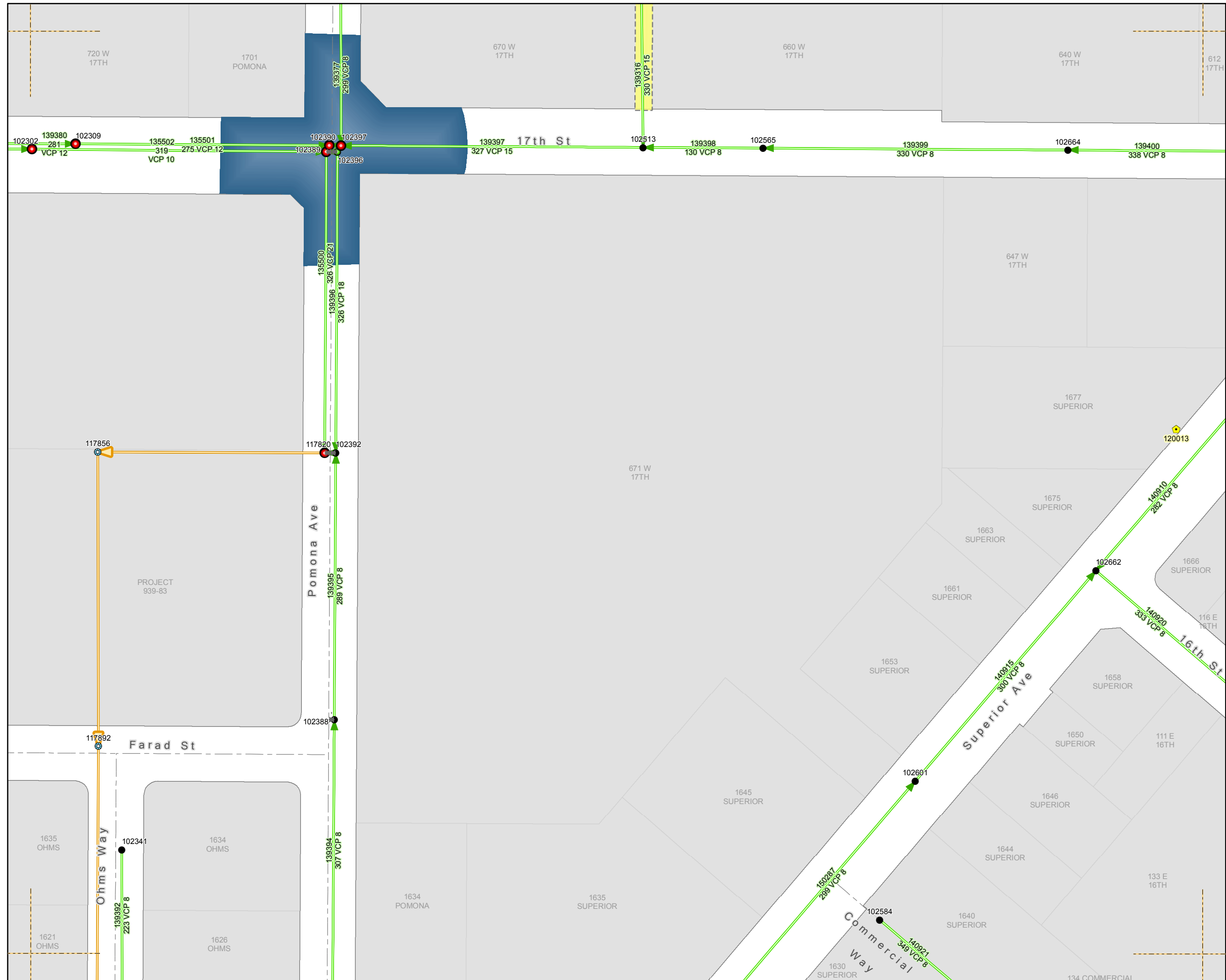
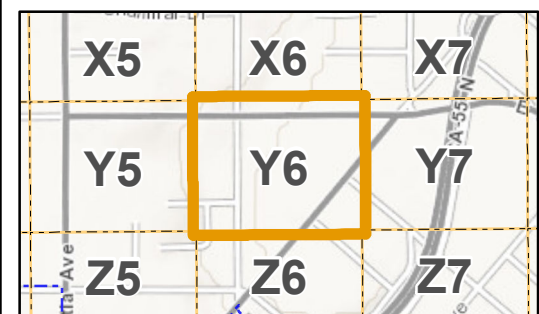
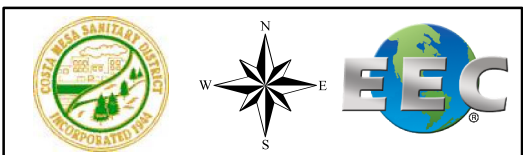
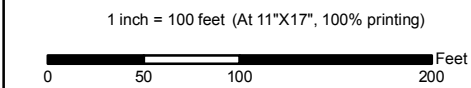
- Potential Flood Areas (1)
 - Plugged and Sealed (1)
 - Scheduled for P&S (6)
- Manhole**
- CMSD Standard (16)
 - Other Agency (2)
 - Cleanout (1)
 - CMSD (24)
 - OCSD (3)
 - Easement (1)
 - CMSD Boundary (1)
 - Atlas Grid
 - Centerline
 - Centerline Offset

Notes:

P&S: Plug and seal
Data is not purported to be accurate or reliable.
Manholes are labeled with Manhole ID.
Cleanouts are labeled with Cleanout ID.
Repairs are labeled with project number.
Gravity Mains are labeled:

Pipe Segment ID
Length Material Diameter

Arrow on gravity mains indicate flow direction.
Laterals are labeled with station equation.
(#): Refers to number of features on this page.



Costa Mesa Sanitary District Potential Flood Areas Atlas

- Potential Flood Areas (1)
- Plugged (3)
- Scheduled for P&S (4)
- Manhole**
 - CMSD Standard (25)
 - Private (1)
 - Cleanout (2)
 - CMSD (32)
 - Private (1)
 - CMSD Boundary (1)
- Atlas Grid
- Centerline

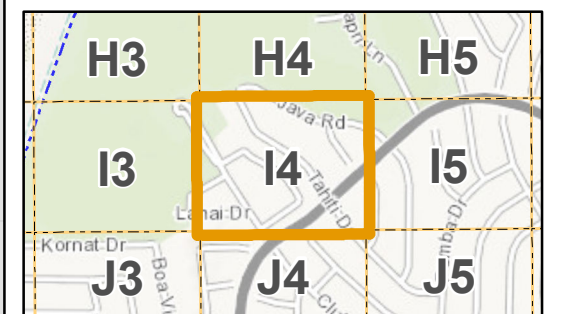
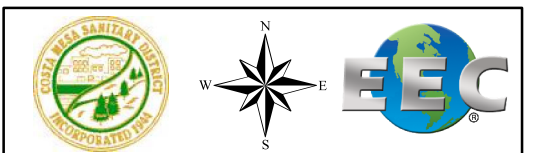
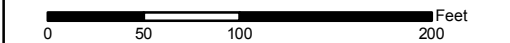
Notes:

P&S: Plug and seal
Data is not purported to be accurate or reliable.
Manholes are labeled with Manhole ID.
Cleanouts are labeled with Cleanout ID.
Repairs are labeled with project number.
Gravity Mains are labeled:

Pipe Segment ID
Length Material Diameter

Arrow on gravity mains indicate flow direction.
Laterals are labeled with station equation.
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1 inch = 100 feet (At 11"X17", 100% printing)



OC PUBLIC WORKS

DAILY PRECIPITATION 2015-2016 SEASON

STATION COSTA MESA OCPW NO. 219

OBSERVATION TIME 8:00 AM OBSERVER CMCWD STAFF

DAY	JULY	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	DAY
1								0.11					1
2													2
3					0.01								3
4					0.04								4
5				0.60									5
6							1.06						6
7							1.29						7
8													8
9													9
10			0.22		0.08								10
11						0.05							11
12													12
13													13
14						0.14							14
15			1.31										15
16			0.05										16
17													17
18													18
19	0.24												19
20	0.43					0.13	0.04						20
21													21
22	0.04					0.19							22
23						0.08							23
24													24
25					0.03								25
26													26
27													27
28													28
29													29
30													30
31													31
TOTAL	0.71	0.00	1.58	0.60	0.16	0.59	2.39	0.11	0.00	0.00	0.00	0.00	TOTAL

---LEGEND---

A - ESTIMATED

C - INCOMPLETE

NR - NO RECORD

B - PARTIALLY ESTIMATED

D - DATE UNCERTAIN

T - TRACE

P - INCLUDED IN FOLLOWING TOTAL

REMARKS _____

Prepared: _____ Reviewed: _____ Approved: _____

SEASON TOTAL 6.14 "



☰ Costa Mesa, CA Menu

Home (<http://www.localconditions.com>) / Local Weather & Traffic (<http://www.localconditions.com/local-weather.php>) / California (<http://www.localconditions.com/us/weather/california/>) / Costa Mesa Past Weather

Costa Mesa Past Weather

Last 10 Days

Wed, Feb 3rd 2016

Tue, Feb 2nd 2016

Mon, Feb 1st 2016

Sun, Jan 31st 2016

High: 59°F @12:53 PM **Low:** 53.06°F @6:53 PM **Approx. Precipitation / Rain Total:** 0.092 in.

Time (PST)	Temp. (°f)	Humidity (%)	Dew Point (°f)	Barometer (inHG)	Wind Speed (mph)	Wind Direction	Wind Gust (mph)	1hr. Precip / Rain Total (in.)	Snow Depth
9:53 PM	53.06	50.28	35.06	29.78	15	wnw	24	-	-
8:53 PM	53.06	50.28	35.06	29.77	13	w	26	-	-
7:53 PM	53.96	48.65	35.06	29.74	19	w	31	-	-
6:53 PM	53.06	58.78	39.02	29.73	13	w	21	-	-
5:53 PM	53.96	58.91	39.92	29.71	13	w	23	-	-
4:53 PM	53.96	64.04	42.08	29.67	17	w	25	-	-
2:53 PM	55.94	71.72	46.94	29.66	15	wsW	22	0.01	-
1:53 PM	59	86.7	55.04	29.64	23	sw	31	0.02	-
1:21 PM	57.2	93.7	55.4	29.66	19	s	28	0.01	-
1:01 PM	57.2	93.7	55.4	29.68	26	s	35	0.001	-
12:53 PM	59	86.7	55.04	29.68	24	s	32	0.01	-
12:18 PM	59	87.85	55.4	29.73	19	s	30	0.001	-
11:53 AM	59	86.7	55.04	29.76	16	s	22	0.001	-
11:48 AM	57.2	87.75	53.6	29.76	14	ssw	22	0.001	-
11:14 AM	59	82.27	53.6	29.8	18	s	24	-	-
10:53 AM	59	80.66	53.06	29.82	15	ssw	22	-	-
10:13 AM	59	82.27	53.6	29.84	14	ssw	21	-	-
9:53 AM	59	86.7	55.04	29.84	14	ssw	21	0.02	-
9:36 AM	57.2	93.7	55.4	29.85	13	ssw	18	0.02	-
9:14 AM	57.2	93.7	55.4	29.86	12	ssw	-	0.01	-
9:07 AM	57.2	93.7	55.4	29.86	12	s	-	0.01	-

2/3/2016

Costa Mesa Past Weather For Last 10 days - LocalConditions.com

9:00 AM	55.4	100	55.4	29.87	11	s	17	0.001	-
8:53 AM	55.94	96.79	55.04	29.87	11	s	-	0.02	-
8:44 AM	55.4	93.65	53.6	29.87	9	s	-	0.01	-
8:06 AM	57.2	87.75	53.6	29.87	7	se	-	0.001	-
7:53 AM	57.02	86.6	53.06	29.88	6	sse	-	0.001	-
6:53 AM	55.94	86.54	51.98	29.9	6	sse	-	-	-
6:34 AM	57.2	82.14	51.8	29.92	5	sse	-	-	-
5:53 AM	57.02	83.23	51.98	29.94	3	s	-	-	-
4:53 AM	55.94	86.54	51.98	29.92	6	ssw	-	-	-
3:53 AM	57.02	86.6	53.06	29.95	6	ssw	-	-	-
2:53 AM	57.02	89.49	53.96	29.96	5	sse	-	-	-
1:53 AM	55.94	93.05	53.96	29.98	3	s	-	-	-
12:53 AM	57.02	93.09	55.04	29.98	4	s	-	0.01	-
12:48 AM	57.2	93.7	55.4	29.98	5	s	-	0.01	-
12:40 AM	57.2	93.7	55.4	29.99	4	s	-	0.01	-
12:04 AM	57.2	93.7	55.4	30.01	3	s	-	-	-

Sat, Jan 30th 2016**Fri, Jan 29th 2016****Thu, Jan 28th 2016****Wed, Jan 27th 2016****Tue, Jan 26th 2016****Mon, Jan 25th 2016****Sun, Jan 24th 2016**[Past Weather Disclaimer](#)**Costa Mesa CA Past Weather Nearby**[Newport Beach, CA \(http://www.localconditions.com/weather-newport-beach-california/92659/past.php\)](http://www.localconditions.com/weather-newport-beach-california/92659/past.php)

INFLOW SUMMARY AND % RAIN INGRESS CHART

	A	B	C	D
1	Date	Rain Total	District-Wide Total Rain	
2			% Rain Ingress District-Wide (MGD)	
3				
4	Wed. 1/6/16	1.06 "/24 HR.	0.92%	
5				
6	Thur. 1/7/16	1.29"/24 HR.	1.30%	
7				
8				
9				
10				
11				
12				
13				
14				
15				

Winnipeg faces at least \$1.2B tab to stop sewage from flowing into rivers

[CBC News](#) Posted: Feb 01, 2016 12:56 PM CT Last Updated: Feb 01, 2016 5:30 PM CT

Preventing sewage overflows into Winnipeg's rivers will cost more than \$1 billion, regardless of what choice is made, a report from the city's water and waste department says.

The city currently averages 22 combined sewage overflows through each of its 79 outflows (locations where pipes overflow directly into the rivers), the report says.

That means sewage is released into the rivers more than 1,700 times every year. City staff estimate an average of approximately 900 million litres of sewage go into the rivers annually.

The major reason the city's antiquated combined sewer system — storm water and sewage use the same pipes in many older areas — can't handle heavy rainfalls without overflows into the river.

Prior to the 1940s, sewage and storm runoff flowed untreated into the rivers down the same sewer pipe. Gates called "weir dams" were later installed in each of the 79 outlet pipes in order to divert the mixed water toward municipal treatment plants.

During periods of heavy precipitation, the system can get overwhelmed, leading to what the city calls "combined sewer overflows."

- [5 million litres of raw sewage leak into Red River in Winnipeg](#)
- [185M litres of raw sewage dumped into Winnipeg rivers since 2004](#)

The overflows add to the nutrient load in Manitoba's lakes, although the number is relatively modest — overflows add 0.3 per cent of all the phosphorus and 0.1 per cent of all the nitrogen going into Lake Winnipeg, the report states.

The city has been reviewing options to reduce combined sewage overflows along with the provincial government and advice from other municipalities. Options include total infrastructure upgrades such as sewer separation, or enhancements such as in-line storage, offline storage or end-of-pipe treatment.

The city's water and waste department staff have a preferred option, based on in-line storage, that would capture 85 per cent of overflows in a year. The plan is loosely estimated to cost \$1.2 billion.

A complete sewer separation would cost approximately \$4.1 billion.

The proposal from water and waste would be the least disruptive in terms of planning and construction, the report says.

The Manitoba government has set a deadline of 2017 for the city to submit a final master plan.

But it could be decades before the number of combined sewer overflows is actually cut down. Water and waste's solution has a timeline to be completed by 2030.

Explore CBC