DRAINAGE REPORT

MIDCOAST STORM DRAIN INVENTORY AND ASSESSMENT PROJECT

Prepared for

THE COUNTY OF SAN MATEO

February 8, 2013

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Funding for this project has been provided in full or in part through an agreement with the State Water Resources Control Board. The contents of this document do not necessarily reflect the views and policies of the State Water Resources Control Board, nor does mention of trade names or commercial products constitute endorsement or recommendation for use.

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1. INTRODUCTION

1.1 Purpose and Scope

The purpose of the MidCoast Storm Drain Inventory and Assessment Project (Project) is to identify prioritized areas for future Best Management Practice (BMP) installations to reduce trash and sediment and to provide stormwater treatment within the existing storm drain systems flowing to the James V. Fitzgerald Area of Special Biological Significance (Fitzgerald ASBS). This prioritization will assist the County of San Mateo (County) in complying with Special Protections set forth by the California State Water Resources Control Board for stormwater discharges to the Fitzgerald ASBS. This documentation of the hydrologic and hydraulic conditions in the MidCoast region of the County was conducted to meet a requirement that the County inventory and analyze their existing drainage systems. The analyses will be used as a basis for designing stormwater improvements. The Project vicinity is shown in Figure 1, and the project locations are shown in Figure 2.

1.2 Description and Setting

The project area is located in the MidCoast region of unincorporated San Mateo County. The area encompasses the communities of Montara, Seal Cove, Moss Beach, and El Granada. The northern portion of the project area drains to the Fitzgerald ASBS. The southern portion of the project area discharges to Princeton Harbor and Half Moon Bay.

The project area is semi-rural, with some areas served by a system of curbs and gutters typical of urbanized areas and other areas served by roadside ditches with pipes under driveways typical of rural areas.

2. BACKGROUND

The project utilized geographic information compiled by the County and provided in the form of ESRI shapefiles and LIDAR point cloud topographic information. BKF supplemented the geographic information with field surveys. No previous analyses were utilized in evaluating the flow capacity of the storm drain system.

BKF received two County GIS database shapefiles from the County, Storm_Mains.shp and Storm_Misc.shp. Storm_Main.shp contains all of the County line work for pipes, ditches, swales, gutters, etc. Storm_Misc.shp contains all of the County point information for structures, beginning and ending of pipes, etc.

3. EXECUTIVE SUMMARY

The MidCoast storm drain system was analyzed to identify locations for potential BMP implementation to reduce trash and sediment and provide stormwater treatment and to identify locations of flow constraints throughout the system. The analysis consisted of field surveys to collect supplemental geographic information and hydraulic modeling for the 2-, 10-, and 100-year

design storm events. Field data and output from the hydraulic model were added or used to update the existing County shapefiles. Drainage areas were calculated and also incorporated into the existing County shapefiles.

Most local drainage systems in the project area have adequate flow capacity based on a 10-year storm event. This study does not include an evaluation of major creeks. Areas shown as adequate in this study may flood as a result of high creek water levels. The analyses of the MidCoast storm drain systems show that 282 drainage segments of the 1,323 drainage segments evaluated do not have adequate capacity to convey the peak flow rate during a 10-year storm event. The analyses include only ditches and pipes flowing to identified major outfalls. Localized ponding areas were observed and appear to be as a result of where settlement has created depressed areas with no release point or where sediment deposition has created a barrier to flow. This study did not address localized ponding areas.

BKF reviewed the hydraulic and hydrologic data to produce prioritized lists of ditch and outfall locations for potential future stormwater treatment and trash removal options. The prioritization of the ditches was based on the 10-year peak flow rate, the ditch's proximity to its system outlet, the ditch's current condition/slope, and the space available to establish a better defined ditch with greater volume and replant with suitable vegetation. Ten ditches and nine BMP locations were selected on these criteria.

One possible method for treating stormwater runoff is to convey stormwater through vegetated ditches. The ditches could be converted to treatment facilities by removing existing soils to a depth of about 30 inches, placing a 12-inch layer of permeable aggregate base and an 18-inch thick layer of bioinfiltration soil mix that consists primarily of a combination of sand and compost. The ditch could then be planted to achieve stormwater treatment. Grade control structures would be needed on steeper slopes to avoid high flow velocities.

The County currently manages ditches to optimize flow capacity. In many cases, the flow in the ditch is small relative to the flow capacity, and less frequent vegetation removal is warranted. Allowing for increased vegetation growth and/or installation of check dams within ditches would trap trash and sediments. Capturing of sediments may lead to increased future maintenance costs associated with clearing the sediment. However, the settled sediment would be prevented from flowing downstream to the Fitzgerald ASBS or Princeton Harbor.

The prioritization of the outfalls was based on system flow rate, where those systems with the higher flow rates gained the highest priority. Outfalls discharging to the ASBS were also considered a high priority.

4. FIELD SURVEY

An antenna-mounted Global Positioning System (GPS) survey was conducted for the MidCoast area using a Trimble Geo 6000 XH device, which provides an accuracy of 4 inches. Survey points were taken for gutters, ditches and storm drain structures. Five points were surveyed at each culvert crossing, including driveways. Measurements included four points on the pipe at the inlet ditch (2 at street grade and 2 near the flow line) and one measurement of the flow line of pipe at the exit. Information applied to the survey points include: elevations, coordinates, alignment and

notes. GPS points using a Real Time Kinematic (RTK) survey grade equipment were collected to check the LIDAR survey at intersections with unobstructed satellite views. Photos were also taken to give a snapshot of the condition of the above-ground storm drain system.

The collected information was incorporated into the existing County shapefiles by relocating points within the shapefile to correspond with the survey data. The elevations from the survey data were added to the County shapefiles. BKF verified pipe diameters, culvert material and culvert conveyance type listed in County shapefiles and checked them against the field survey. The photos taken during the survey were referenced in the County shapefile attributes. The updated shapefiles were used as a background for the storm drainage analyses. The shapefiles are included as a CD in Appendix A.

5. FLOW ANALYSES

StormCAD models were created to obtain stormwater flows and identify locations of flow deficiency within the existing storm drain systems. GPS survey information collected during the field inspections was used to develop the StormCAD models. Street View in Google Earth was used in conjunction with the site contours to create drainage areas. Street View was used to evaluate whether the residential parcel is sloped toward or away from the street.

The time of concentration for each drainage subarea was computed using the Kirpich method with 10 minutes added to the calculated time of concentration.

The runoff coefficient was computed using the methodology presented in Figure 819.2A of the Caltrans Highway Design Manual dated July 1, 2008. The pervious runoff coefficient is calculated by summing a factor for slope, soil infiltration, vegetative cover and surface storage. The runoff coefficient is a weighted sum of the percent impervious coverage of the drainage area times an impervious runoff coefficient of 0.9 plus the percent pervious area times the calculated pervious runoff coefficient.

The analyses included calculation of peak flow rates for the treatment, 2-, 10- and 100-year design storm events. The treatment storm for the Project was defined as 0.3 inches of rainfall per hour. The StormCAD results for the treatment storm event can be found in Tables 1-6. The StormCAD results for the 2-year storm event can be found in Tables 7-12. The StormCAD results for the 10-year storm event can be found in Tables 13-18. The StormCAD results for the 100-year storm event can be found in Tables 19-24. It is anticipated that future trash capture, sediment removal and stormwater treatment devices will utilize these design flow rates for sizing.

6. BMP SITE PRIORITIZATION

Data were collected for the existing storm drain system and potential locations for future BMPs were identified. The County provided locations of existing BMPs within the MidCoast area. Existing BMPs include flume filter boxes lined with BioMediaGreen, vegetated swales (two types: 1-native grass sod and 2-native plant vegetated swale with under-drain system), and catch basins equipped with stormwater filtration cartridge devices. Locations of installed features are

provided on Figures 4A, 4B and 4C. In addition to existing treatment areas, BKF reviewed hydrologic and hydraulic data to produce a list of outfall and ditch locations for potential future stormwater treatment and trash and sediment removal options.

7. BMP OUTFALLS

A prioritized list of potential treatment and sediment removal options near outfall areas is provided in Table A below. The prioritized locations are shown in Photos 1-9. The recommended location for BMP device installation is at the downstream end of systems that flow directly to the ocean. Systems with the largest flow rates are of the highest priority are shown in Figures 5A, 5B, 5C and 5D.

Table A: Prioritized list of proposed outfall BMP locations

PRIORITIZED BMP NUMBER	LOCATION	TREATMENT AND 10-YEAR PEAK FLOW RATE	STORMCAD ID	BMP TYPE	BMP REASON
BMP-1	10th St & Cabrillo Highway	5.3 cfs / 37 cfs	P-MN-G-010	CDS unit	No space available for other BMPs. High flow off road area and discharges to the ocean.
BMP-2	2nd St & Cabrillo Highway	3.4 cfs / 20 cfs	P-MN-A-010	CDS unit	No space available for other BMPs. High flow off road area and discharges to the ocean.
BMP-3	North Lake St & The Strand	0.4 cfs / 4 cfs	P-MB-S-L010-010	Vegetated swale	Space available for vegetated swale. Upstream catchment includes car park areas which discharge directly to San Vicente Creek.
BMP-4	7th St & Cabrillo Highway	2.9 cfs / 18 cfs	P-MN-B-010	Vegetated swale	Existing ditch on south side of road between driveways. Catchment discharges to the ocean.
BMP-5	Wienke Way	8.2 cfs / 46 cfs	MB-E-040	Catch basin filter cartridges	Catch basin filters cartridges to be installed in Manhole on Wienke Way.
BMP-6	Beach St & The Strand	0.3 cfs / 3 cfs	P-MB-Q-010	Flume filter	Flume filter possible at end of street.
BMP-7	8th St & Cabrillo Highway	0.7 cfs / 6 cfs	MN-S-010	Catch basin filter cartridges	Catch basin filter cartridges to be installed in catch basin on North corner of 8th St.
BMP-8	Farallone Ave & 14th St	4.7 cfs / 34 cfs	P-MN-P-010	Vegetated swale	Existing ditch is vegetated however maintenance is required to ensure adequate capacity is provided.
BMP-9	Vallemar St	0.3 cfs / 2 cfs	P-MB-A-030	Flume filter	Flume filter to be installed in Vallemar St prior to flow entering private property.

Photo 1: BMP-1 ~ CDS unit at 10th St & Cabrillo Highway

Photo 2: BMP-2 ~ CDS unit at 2nd St & Cabrillo Highway

Photo 3: BMP-3 ~ Vegetated swale on North Lake St at Nevada

Photo 4: BMP-4 ~ Vegetated swale on Seventh St (west of Cabrillo Highway)

Photo 5: BMP-5 ~ Catch basin filter cartridges to be installed in Manhole on Wienke Way/Juliana Avenue

Photo 6: BMP-6 ~ Flume filter at end of Beach Street

Photo 7: BMP-7 ~ Catch basin filter cartridges at 8th St and Cabrillo Highway

Photo 8: BMP-8 ~ Vegetated swale to be maintained and checked for capacity at 14th St and Farallone Avenue

Photo 9: BMP-9 ~ Flume filter to be installed in Vallemar St prior to flow entering private property

8. BMP DITCHES

A prioritized list of ditches where vegetation can be allowed to grow or where vegetated swales can be installed to facilitate capture of trash, sediment, and filtering of pollutants is presented in Table B below. If the slope of the ditch is in excess of 2%, check dams could be constructed within the ditch to reduce velocity and therefore increase sedimentation. Allowing for increased vegetation growth and/or installation of check dams within ditches would trap trash and sediments. Capturing of sediments may lead to increased future maintenance costs associated with clearing the sediment. However, the settled sediment is prevented from flowing downstream to the Fitzgerald ASBS or Princeton Harbor.

The prioritization of the ditches was based on the 10-year peak flow rate, the ditch's proximity to its system outlet, the ditch's current condition/slope and the space available to establish a better defined ditch with greater volume and more suitable vegetation. Prioritized ditches are shown in Photos 10-19 and shown in Figure 6. A recommended ditch best management practice would consist of replacement of existing ditch soils with a biotreatment soil mix consisting of a soil and compost mix consistent with requirements in the San Francisco Bay Region Municipal Regional Stormwater Permit with plantings suited for trash capture. Some ditch widening or deepening may be required depending on density and type of vegetation selected. Erosion control fabric is recommended where slopes are greater than one percent.

Table B: Prioritized list of proposed ditch vegetation locations

PRIORITIZED DITCH NUMBER	LOCATION	TREATMENT FLOW RATE (cfs)	10-YEAR PEAK FLOW RATE (cfs)	LENGTH OF DITCH (feet)	STORMCAD ID
DITCH-1	Main St & 9th St	2.1	14.6	100	P-MN-G-100
DITCH-2	Farallone Ave & 4th St	1.9	13.3	42	P-MN-C-120
DITCH-3	Cedar St at Kanoff St	5.5	37.6	131	P-MN-M-170
DITCH-4	Main St at 4th St	0.8	5.3	56	P-MN-A-L010-100
DITCH-5	6th St & Farallone Ave	0.4	3.9	94	P-MN-B-L040-L010-060
DITCH-6	3rd St near Le Conte Ave	0.7	4.4	53	P-MN-E-L040W-010
DITCH-7	3rd St near Farallone Ave	0.2	1.6	75	P-MN-E-L040W-130
DITCH-8	Kanoff St at Tamarind St	1.8	11.5	140	P-MN-F-L040-100
DITCH-9	Acacia St at Kanoff St	1.4	9.9	130	P-MN-F-L030-120
DITCH-10	4th St and Farallone Ave	0.2	1.4	106	P-MN-C-L150-010

Photo 10: DITCH-1 ~ Main St and 9th St (P-MN-G-100)

Photo 11: DITCH-2 ~ Farallone Ave and 4th St (P-MN-C-120)

Photo 12: DITCH-3 ~ Cedar St at Kanoff St (P-MN-M-170)

Photo 13: DITCH-4 ~ Main St at 4th St (P-MN-A-L010-100)

Photo 14: DITCH-5 ~ 6th St and Farallone Ave (P-MN-B-L040-L010-050)

Photo 15: DITCH-6 ~ 3rd St near Le Conte Ave (P-MN-E-L040W-010)

Photo 16: DITCH-7 ~ 3rd St near Farallone Ave (P-MN-E-L040W-130)

Photo 17: DITCH-8 ~ Kanoff St at Tamarind St (P-MN-F-L040-100)

Photo 18: DITCH-9 ~ Acacia St at Kanoff St (P-MN-F-L030-120)

Photo 19: DITCH-10 ~ 4th St and Farallone Ave (P-MN-C-L150-010)

9. FLOW DEFICIENCIES

The hydrologic data processing identified locations within the MidCoast storm drain system that are undersized. The hydraulic analyses yielded areas of inundation during the treatment, 2-, 10-, and 100-year storm events. Inundated pipes and ditches during a 10-year storm event are shown in Figures 7A-7G, and summarized in Appendix C.

Based on discussions with residents during the field survey, there are three locations where flow in excess of the storm drain system capacity overtops streets and flows across private property. Site specific evaluation was not conducted as a part of these studies to follow the flow path of runoff in excess of the storm drain system flow capacity. There is a higher potential for erosion where flows are conveyed in non-maintained overland flow paths. Further analysis is needed to establish whether system overflows are successfully conveyed in streets or are spilling across lands, resulting in localized erosion.

Specific recommendations for addressing deficiencies are not included as a part of this Report. In general, drainage corrections would consist of adding a storm drain line parallel to existing ditches, retrofitting ditches to increase capacity, or upsizing existing storm drain pipes. Deficiencies associated with inadequate inlet capacity were not addressed as part of this study.

10. CONCLUSIONS AND RECOMMENDATIONS

This project documents hydrologic and hydraulic conditions in the MidCoast region of the County of San Mateo. The products of the inventory and analyses should be used as a basis for designing stormwater improvements and measures for capturing trash, sediment, and filtering pollutants in order to protect the Fitzgerald ASBS and Princeton Harbor.

Locations were identified where the existing storm drain system is undersized. Site specific evaluation should be conducted to establish whether system overflows are successfully conveyed in streets or are spilling across lands, resulting in localized erosion.

Stormwater treatment potential within the MidCoast system was assessed and prioritized lists consisting of ten (10) ditch locations and nine (9) system outfall locations were developed (see Section 6). The following four types of storm drain BMPs to reduce trash and sediment and provide stormwater treatment were proposed for the various locations: CDS units, flume filter boxes lined with BioMediaGreen, vegetated swales, and catch basins equipped with stormwater filtration cartridge devices. The most suitable BMP was recommended for each prioritized outfall and ditch location depending on existing site conditions, storm flow rate and available space for construction.

The prioritization of the ditches was based on the 10-year flow, the ditch's proximity to its system outlet, the ditch's current condition/slope and the space available to establish a better defined ditch with greater volume and ability to replant with suitable vegetation. Check dams could be incorporated within ditches with slopes greater than 2% to reduce velocity and therefore improve sedimentation.

FIGURES

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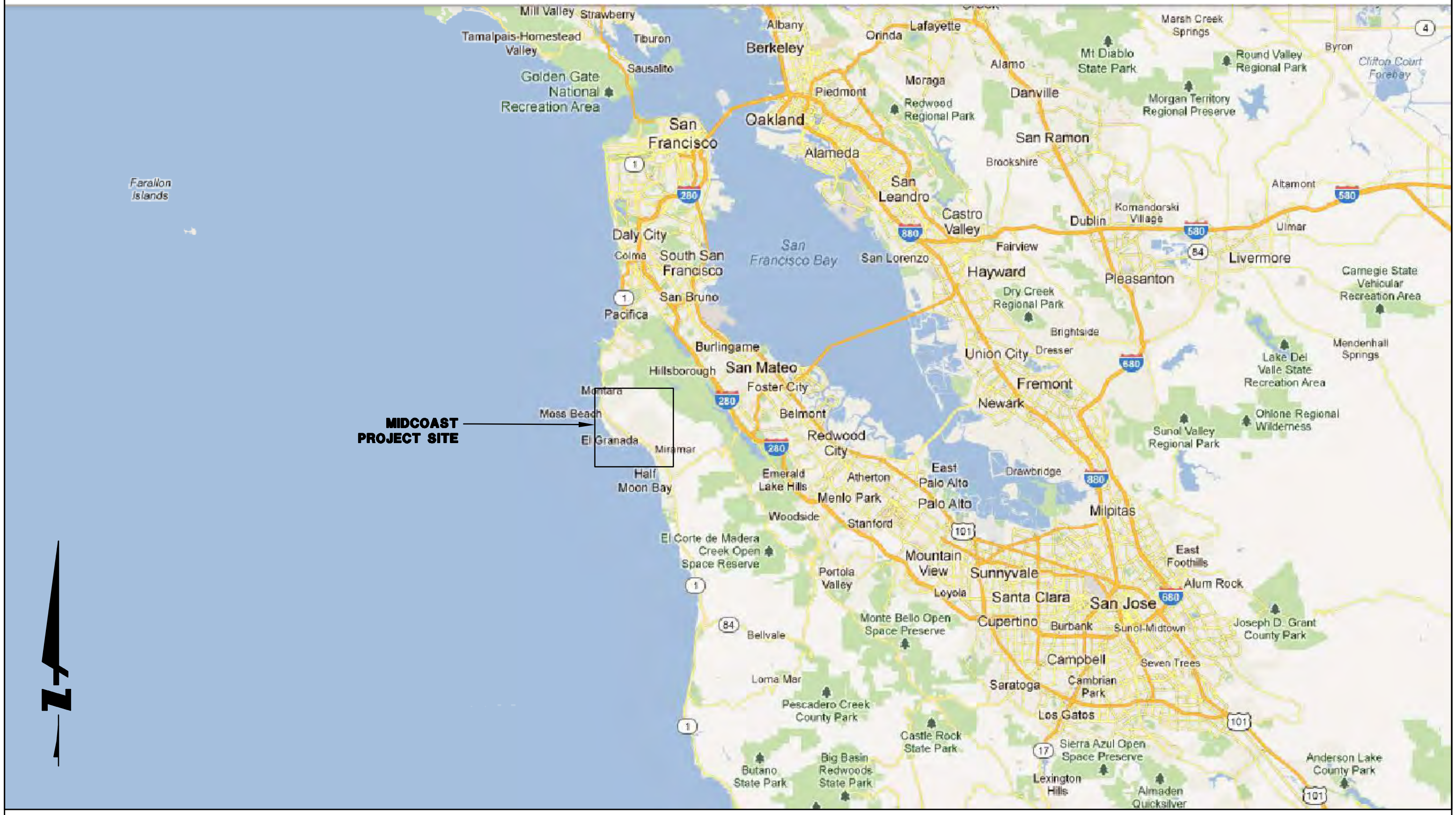

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DATE: JAN, 2013
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REV: ED BOSCACCI

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FIGURE 1

MIDCOAST STORM DRAIN INVENTORY AND ASSESSMENT
VICINITY MAP
DRAINAGE REPORT

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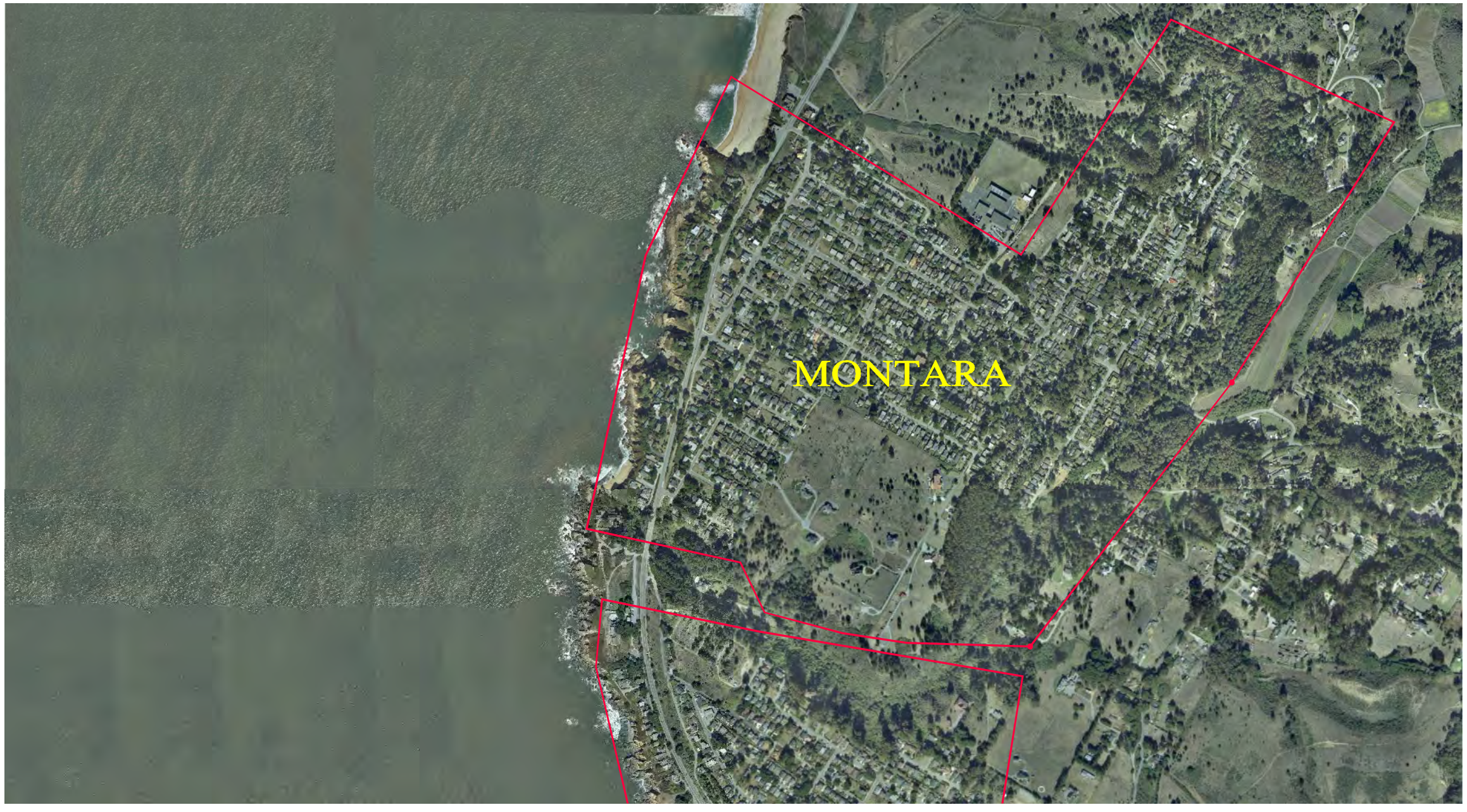

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FIGURE 2A

MIDCOAST STORM DRAIN INVENTORY AND ASSESSMENT
LOCATION MAP
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FIGURE 2B

MIDCOAST STORM DRAIN INVENTORY AND ASSESSMENT
LOCATION MAP
DRAINAGE REPORT

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FIGURE 2C

MIDCOAST STORM DRAIN INVENTORY AND ASSESSMENT
LOCATION MAP
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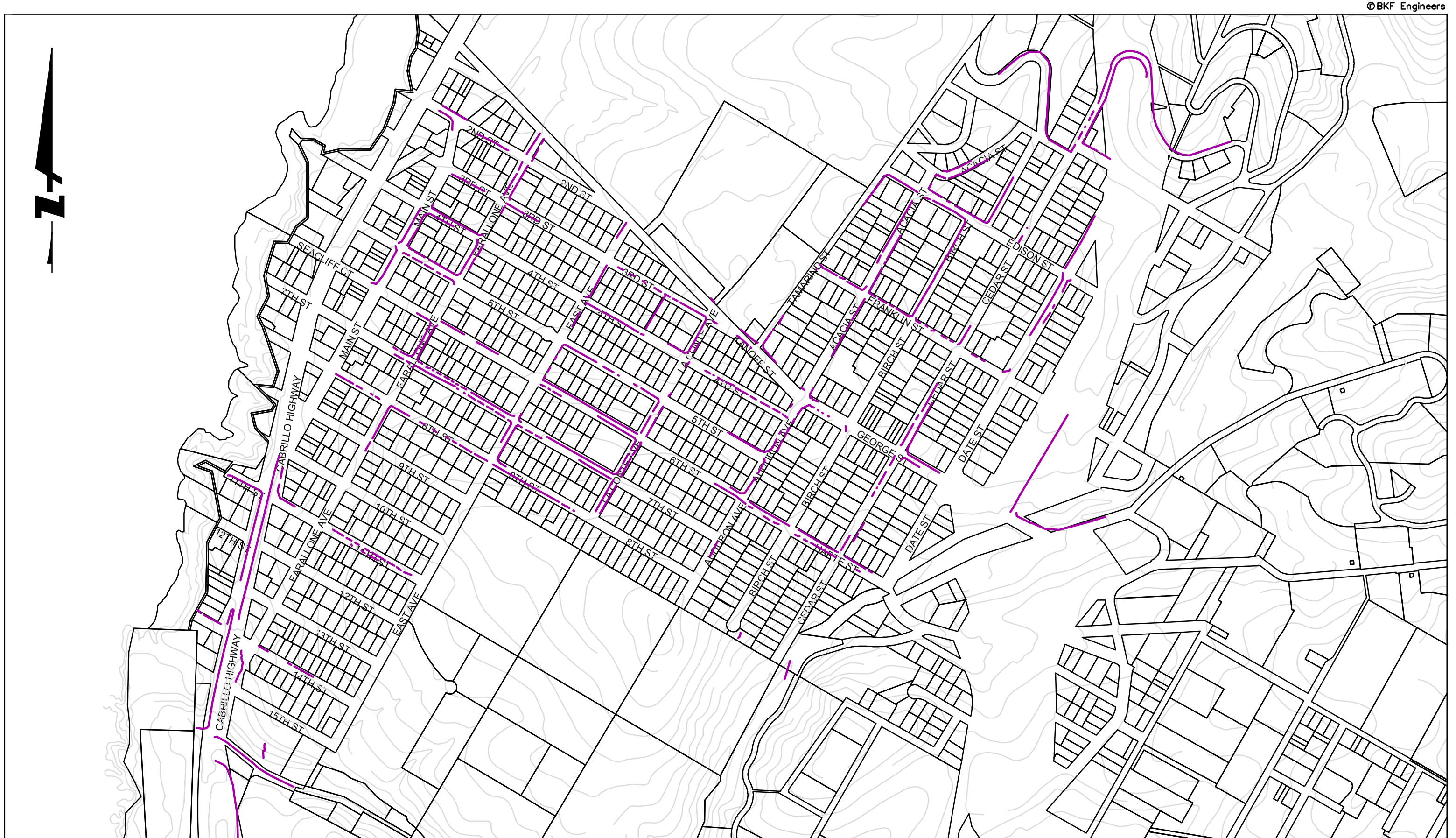

DRAWING NAME: K:\Eng11\110155-SMC\Dwg\dwg\FIGURE 3-13_0201_recover.dwg
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GRAPHIC SCALE
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FIGURE 3A

MIDCOAST STORM DRAIN INVENTORY AND ASSESSMENT
EXISTING DITCHES WITH ADEQUATE CAPACITY (10-YEAR STORM EVENT)
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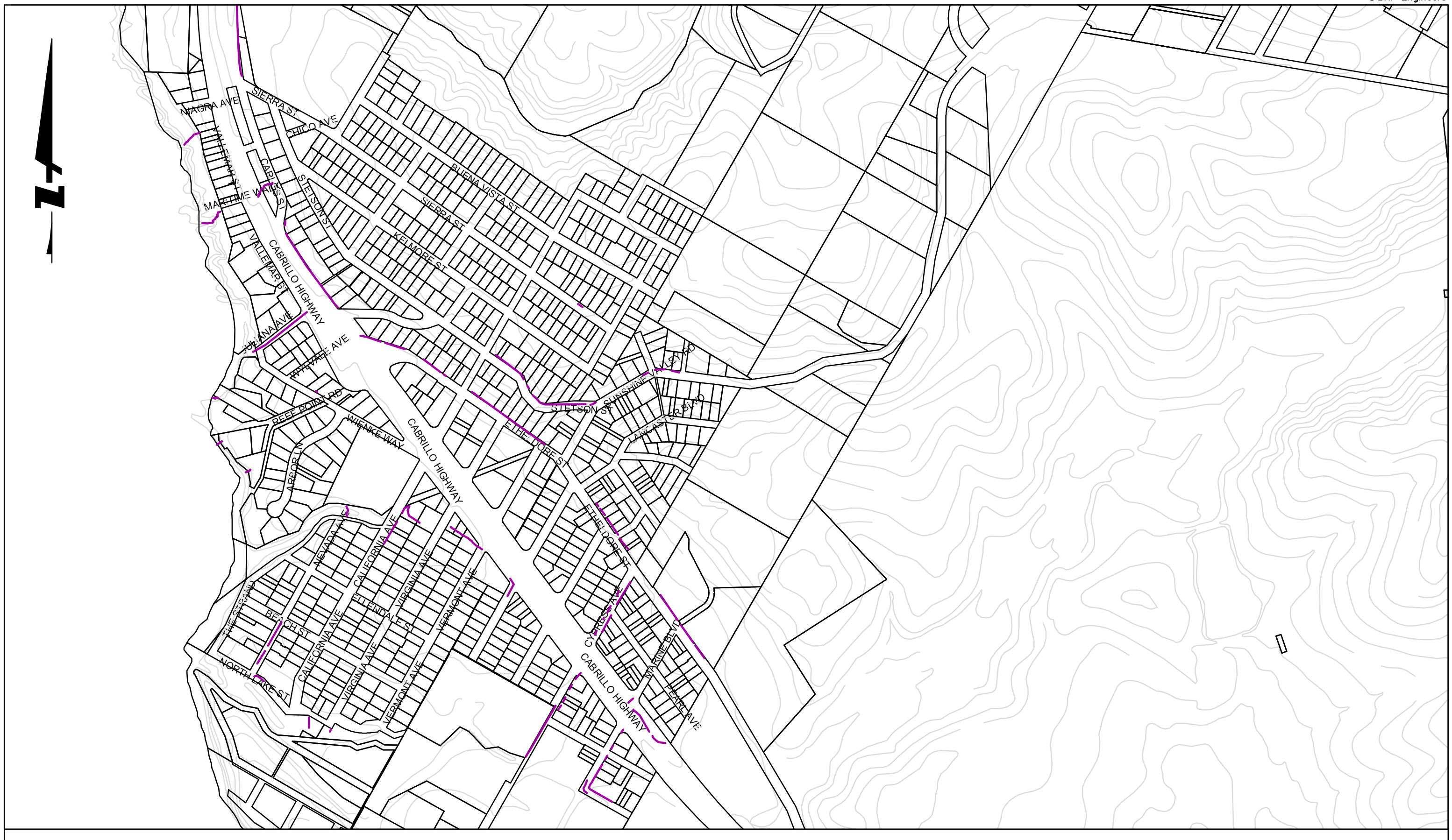

DRAWING NAME: K:\Engl1\110155-SMC\Dwg\dwg\FIGURE 3-13_0201_recover.dwg
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DATE: JAN, 2013
BY: E.V.M
REV: ED BOSCACCI

GRAPHIC SCALE

500 0 500 1000

FIGURE 3B

MIDCOAST STORM DRAIN INVENTORY AND ASSESSMENT
EXISTING DITCHES WITH ADEQUATE CAPACITY (10-YEAR STORM EVENT)
DRAINAGE REPORT

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DRAWING NAME: K:\Engl\110155-SMC\Dwg\dwg\FIGURE 3-13_0201_recover.dwg
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BY: E.V.M
REV: ED BOSCACCI

GRAPHIC SCALE
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FIGURE 3C

MIDCOAST STORM DRAIN INVENTORY AND ASSESSMENT
EXISTING DITCHES WITH ADEQUATE CAPACITY (10-YEAR STORM EVENT)
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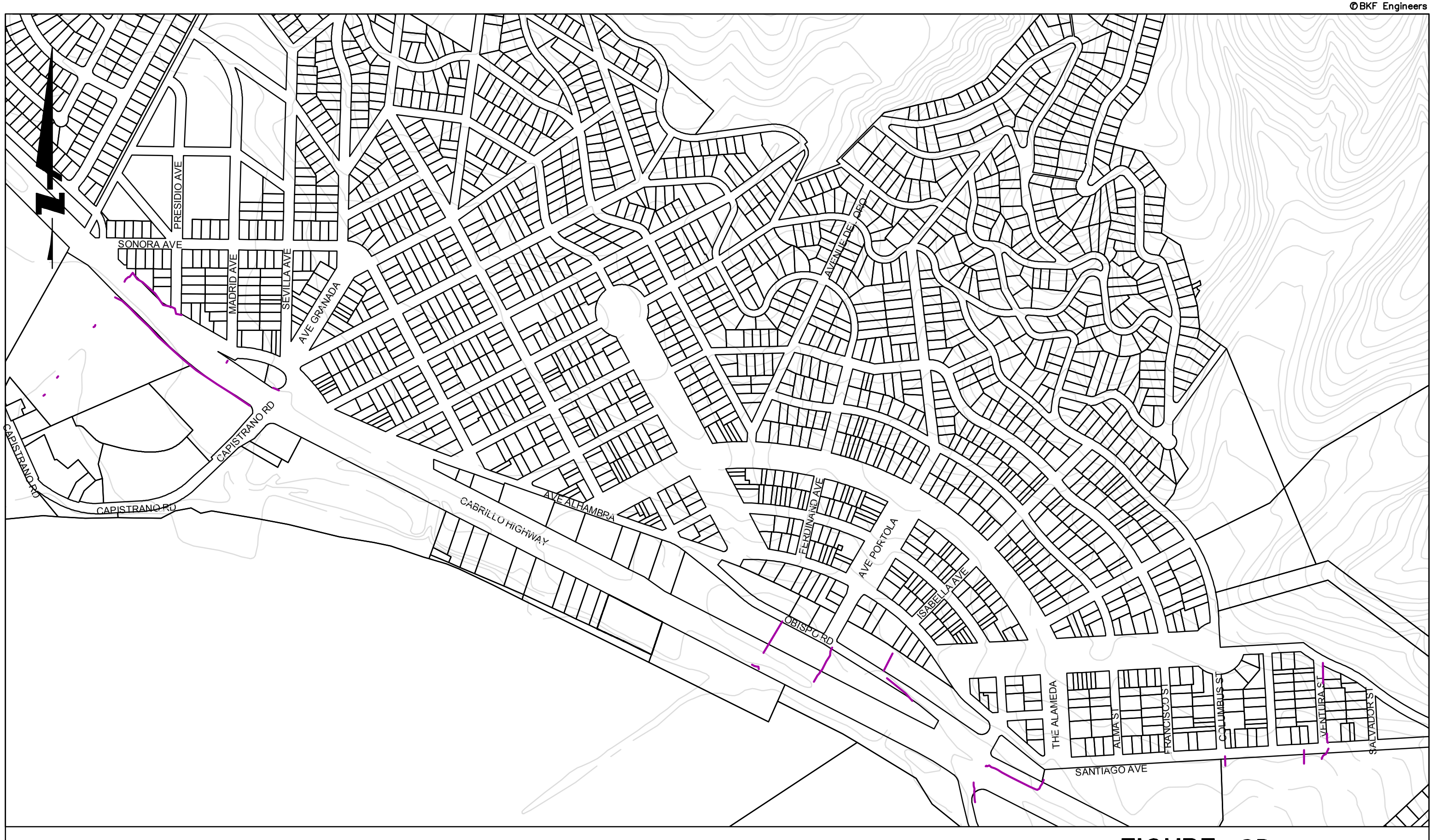

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GRAPHIC SCALE
500 0 500 1000

FIGURE 3D

MIDCOAST STORM DRAIN INVENTORY AND ASSESSMENT
EXISTING DITCHES WITH ADEQUATE CAPACITY (10-YEAR STORM EVENT)
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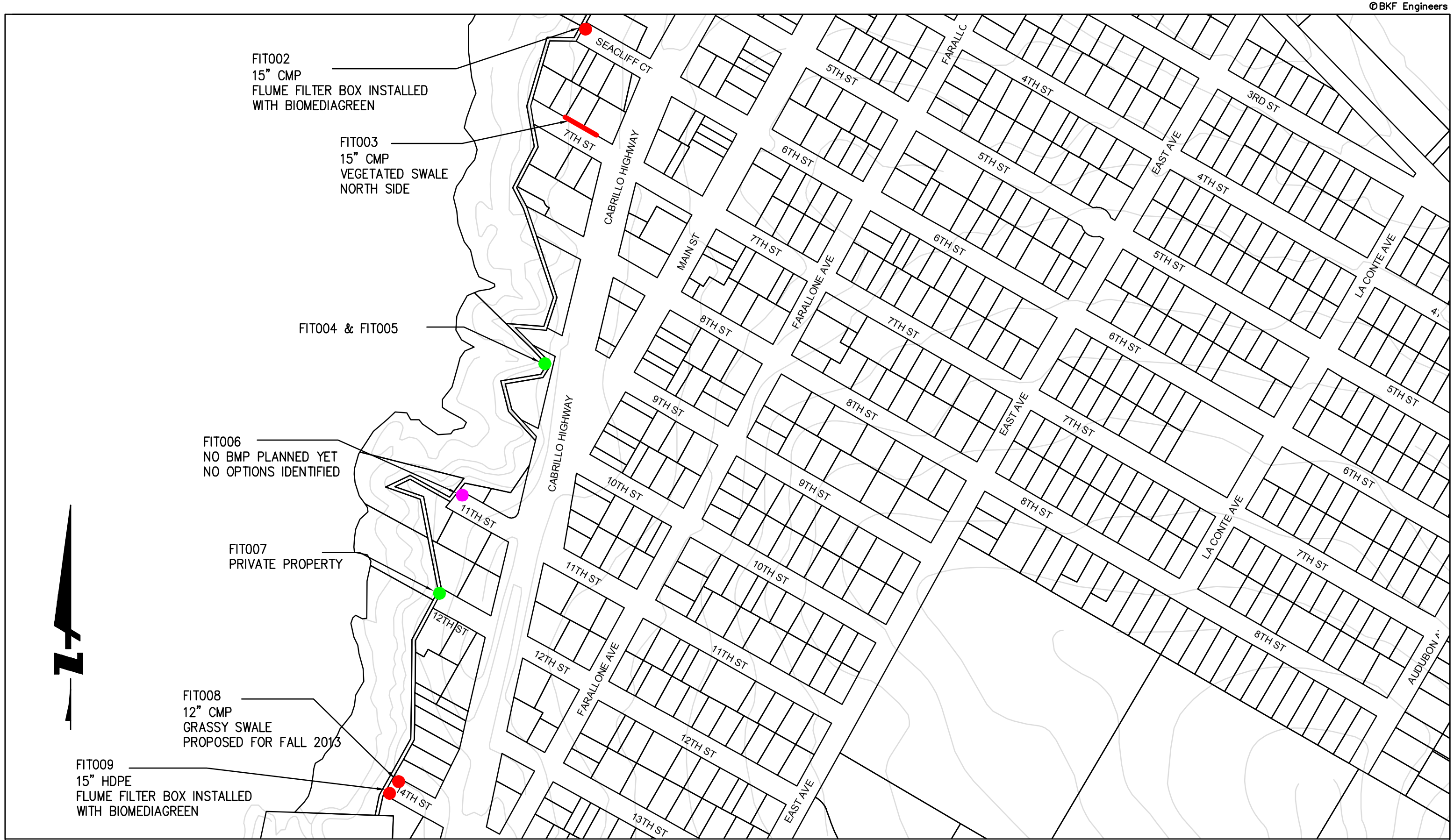

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GRAPHIC SCALE
250 0 250 500

LEGEND
CMP
HDPE

COUNTY MAINTAINED – BMP INSTALLED OR PLANNED
COUNTY MAINTAINED – NO BMP
ASBS DISCHARGE FROM PRIVATE PROPERTY
CORRUGATED METAL PIPE
HIGH DENSITY POLYETHYLENE

FIGURE 4A

MIDCOAST STORM DRAIN INVENTORY AND ASSESSMENT
EXISTING OUTFALL BMP LOCATIONS
DRAINAGE REPORT

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FIT012
24" CONCRETE GUTTER
NO BMP PLANNED YET

FIT015
12" CMP
INSTALLED VEGETATED
SWALE WITH SUB DRAIN

WIENKE WAY
NO BMP PLANNED YET

FIT016
PRIVATE PROPERTY

FIT017
PRIVATE PROPERTY

FIT018
PRIVATE PROPERTY

FIT019
PRIVATE PROPERTY

FIT020
PRIVATE PROPERTY

FIT021
PRIVATE PROPERTY

FIT024
15" HDPE
NO BMP PLANNED YET
NO OPTIONS IDENTIFIED

MARITIME WAY
VALLEMAR ST
CABRILLO HIGHWAY
JULIANA AVE
WYLVALE AVE
REEF POINT RD
WIENKE WAY
ARBOR LN
ARBOR LN
CABRILLO HIGHWAY
NEVADA AVE
CALIFORNIA AVE
VIRGINIA AVE

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GRAPHIC SCALE
250 0 250 500

LEGEND
CMP
HDPE

COUNTY MAINTAINED – BMP INSTALLED OR PLANNED
COUNTY MAINTAINED – NO BMP
ASBS DISCHARGE FROM PRIVATE PROPERTY
CORRUGATED METAL PIPE
HIGH DENSITY POLYETHYLENE

FIGURE 4B

MIDCOAST STORM DRAIN INVENTORY AND ASSESSMENT
EXISTING OUTFALL BMP LOCATIONS
DRAINAGE REPORT

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GRAPHIC SCALE
250 0 250 500

LEGEND
CMP
HDPE

COUNTY MAINTAINED – BMP INSTALLED OR PLANNED
COUNTY MAINTAINED – NO BMP
ASBS DISCHARGE FROM PRIVATE PROPERTY
CORRUGATED METAL PIPE
HIGH DENSITY POLYETHYLENE

FIGURE 4C

MIDCOAST STORM DRAIN INVENTORY AND ASSESSMENT
EXISTING OUTFALL BMP LOCATIONS
DRAINAGE REPORT

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DRAWING NAME: K:\Eng11\110155-SMC\Dwg\dwg\FIGURE 4.dwg
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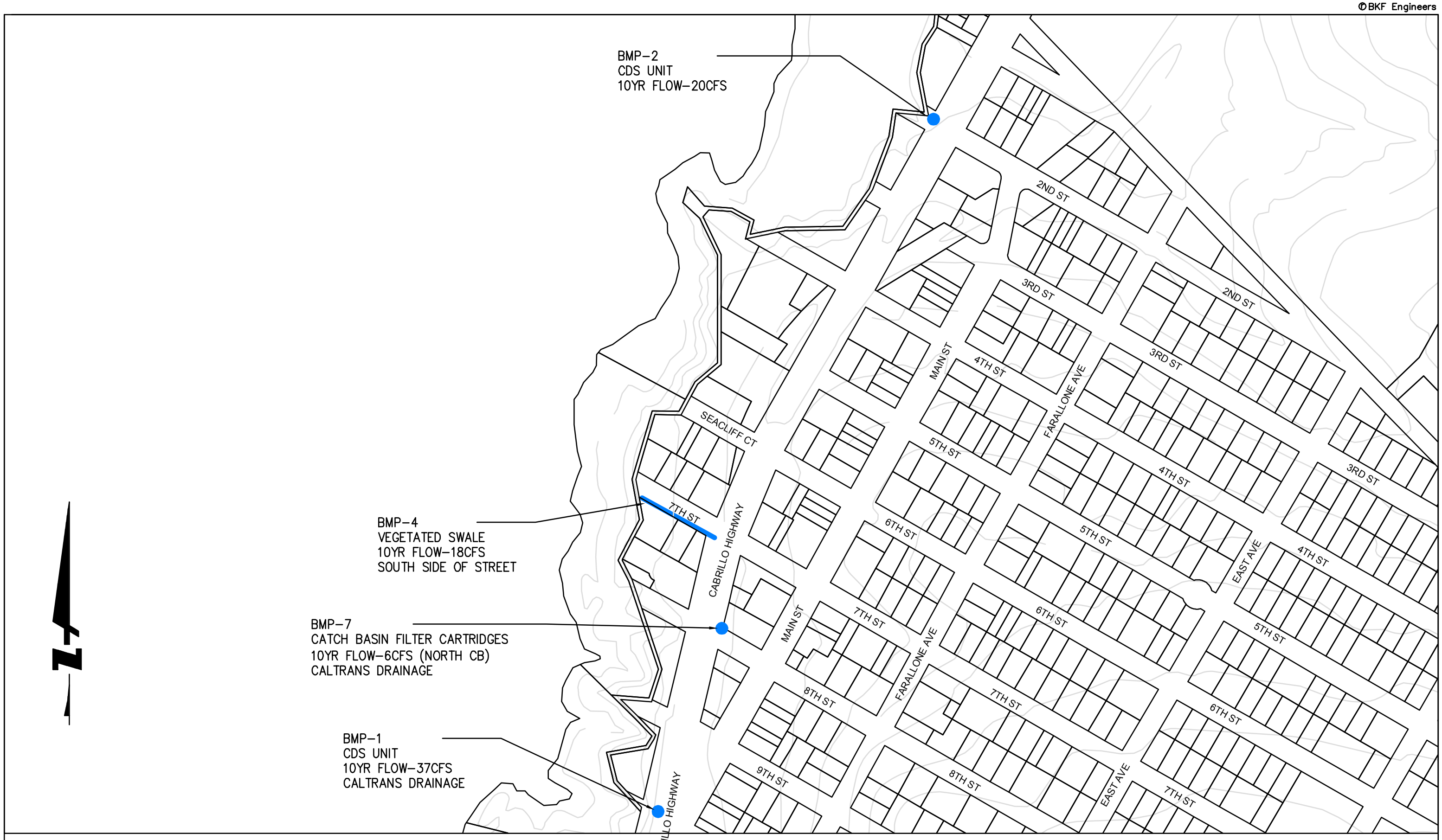

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REV: ED BOSCACCI

GRAPHIC SCALE
250 0 250 500

LEGEND

CMP	CORRUGATED METAL PIPE
HDPE	HIGH DENSITY POLYETHYLENE

FIGURE 5A

MIDCOAST STORM DRAIN INVENTORY AND ASSESSMENT
PRIORITIZED OUTFALL BMP LOCATIONS
DRAINAGE REPORT

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DRAWING NAME: K:\Eng11\110155-SMC\Dwg\dwg\FIGURE 3.5,6,7-13_0130.dwg
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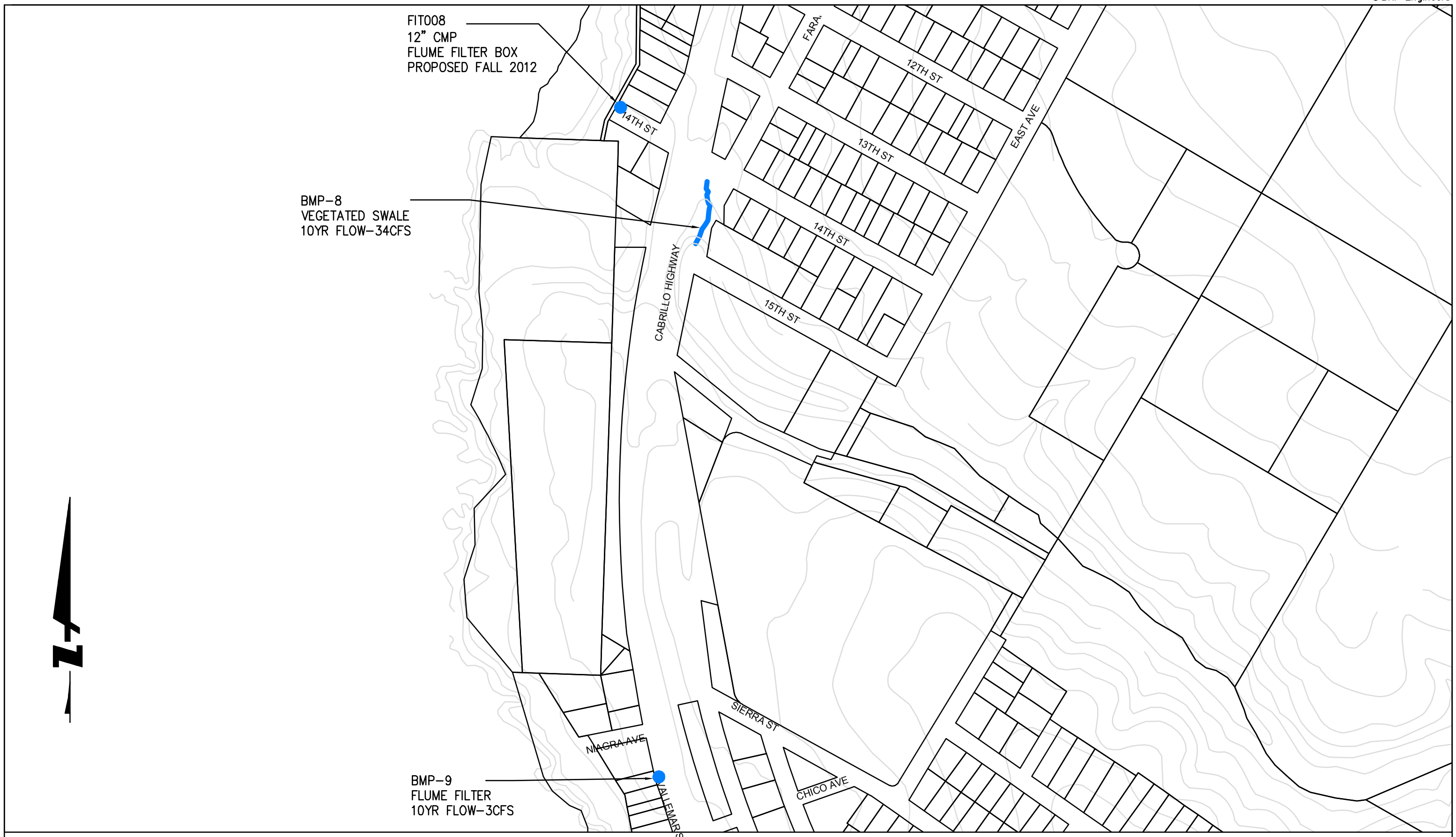

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GRAPHIC SCALE
250 0 250 500

LEGEND

CMP	CORRUGATED METAL PIPE
HDPE	HIGH DENSITY POLYETHYLENE

FIGURE 5B

MIDCOAST STORM DRAIN INVENTORY AND ASSESSMENT
PRIORITIZED OUTFALL BMP LOCATIONS
DRAINAGE REPORT

BKF

DRAWING NAME: K:\Eng11\110155-SWC\Dwg\dwg\FIGURE 3.5,6,7-13_0130.dwg
PLOT DATE: 01-30-13
PLOTTED BY: marie

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FIT012
10YR FLOW–31CFS
24" CONCRETE GUTTER
NO BMP PLANNED YET
STORMWATER FILTRATION CARTRIDGE
DEVICE BEING TESTED IN CATCH BASIN
ON VALLEMAR AVE (FALL 2012)

BMP–5
CATCH BASIN FILTER CARTRIDGE
10YR FLOW–46CFS

BMP–6
FLUME FILTER
FIT024
10YR FLOW–3CFS
15" HDPE

JOB NO: 20110155
DATE: JAN, 2013
BY: E.V.M
REV: ED BOSCACCI

GRAPHIC SCALE
250 0 250 500

LEGEND

CMP	CORRUGATED METAL PIPE
HDPE	HIGH DENSITY POLYETHYLENE

FIGURE 5C

MIDCOAST STORM DRAIN INVENTORY AND ASSESSMENT
PRIORITIZED OUTFALL BMP LOCATIONS
DRAINAGE REPORT

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DRAWING NAME: K:\Eng1\110155-SMC\Dwg\dwg\FIGURE 3,5,6,7-13_0130.dwg
PLOT DATE: 01-30-13 PLOTTED BY: mora

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DRAWING NAME: K:\Engi1\110155-SMC\Dwg\dwg\FIGURE 3.5.6.7-13_0130.dwg
PLOT DATE: 02-08-13
PLOTTED BY: mar.e

JOB NO: 20110155
DATE: JAN, 2013
BY: E.V.M
REV: ED BOSCACCI

GRAPHIC SCALE
250 0 250 500

LEGEND

CMP	CORRUGATED METAL PIPE
HDPE	HIGH DENSITY POLYETHYLENE

FIGURE 5D

MIDCOAST STORM DRAIN INVENTORY AND ASSESSMENT
PRIORITIZED OUTFALL BMP LOCATIONS
DRAINAGE REPORT

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JOB NO: 20110155
DATE: JAN, 2013
BY: E.V.M
REV: ED BOSCACCI

GRAPHIC SCALE
250 0 250 500

LEGEND
DITCHES WITH SLOPE LESS THAN 2%
DITCHES INUNDATED DURING THE 10-YEAR EVENT

FIGURE 6

MIDCOAST STORM DRAIN INVENTORY AND ASSESSMENT
PRIORITIZED DITCHES FOR VEGETATION AND RETROFITTING
DRAINAGE REPORT

BkF

DRAWING NAME: K:\Engi1\110155-SWC\Dwg\dwg\FIGURE 3.5.6.7-13_0130.dwg
PLOT DATE: 01-31-13
PLOTTED BY: mar●

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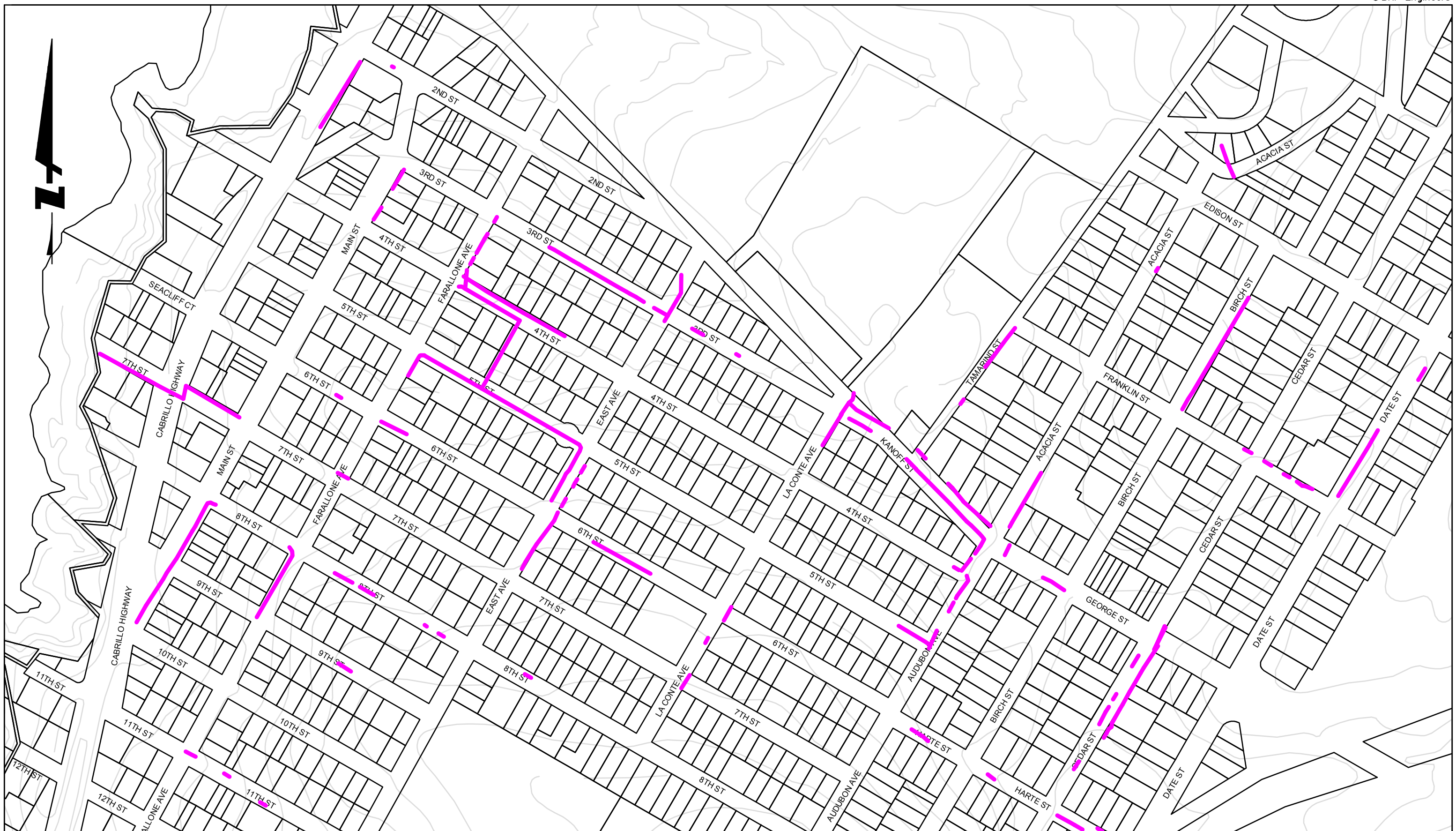

JOB NO: 20110155
DATE: JAN, 2013
BY: E.V.M
REV: ED BOSCACCI

GRAPHIC SCALE

250 0 250 500

FIGURE 7A

MIDCOAST STORM DRAIN INVENTORY AND ASSESSMENT
PIPES INUNDATED DURING 10-YEAR EVENT
DRAINAGE REPORT

BkF

DRAWING NAME: K:\Eng11\110155-SMC\Dwg\dwg\FIGURE7-13_0206.dwg
PLOT DATE: 02-07-13
PLOTTED BY: marie

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JOB NO: 20110155
DATE: JAN, 2013
BY: E.V.M
REV: ED BOSCACCI

GRAPHIC SCALE

300 0 300 600

FIGURE 7B

MIDCOAST STORM DRAIN INVENTORY AND ASSESSMENT
PIPES INUNDATED DURING 10-YEAR EVENT
DRAINAGE REPORT

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DRAWING NAME: C:\Temp\AcePublish_2196\FIGURE7-13_0206.dwg
PLOT DATE: 02-07-13 PLOTTED BY: mora

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JOB NO: 20110155
DATE: JAN, 2013
BY: E.V.M
REV: ED BOSCACCI

GRAPHIC SCALE
300 0 300 600

FIGURE 7C

MIDCOAST STORM DRAIN INVENTORY AND ASSESSMENT
PIPES INUNDATED DURING 10-YEAR EVENT
DRAINAGE REPORT

BkF

DRAWING NAME: C:\Temp\AcPublish_2196\FIGURE7-13_0206.dwg
PLOT DATE: 02-07-13 PLOTTED BY: mora

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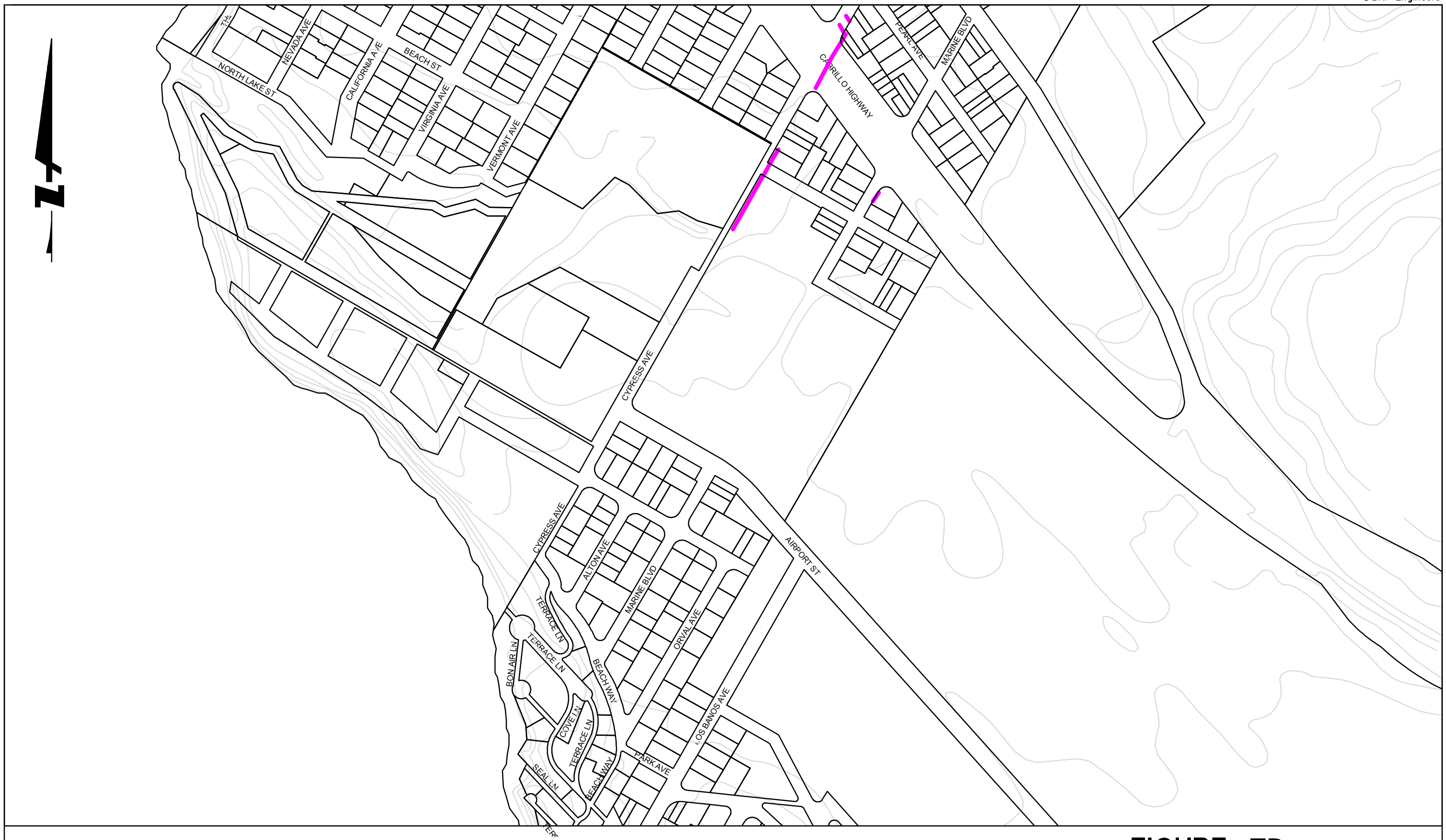

JOB NO: 20110155
DATE: JAN, 2013
BY: E.V.M
REV: ED BOSCACCI

GRAPHIC SCALE
300 0 300 600

FIGURE 7D

MIDCOAST STORM DRAIN INVENTORY AND ASSESSMENT
PIPES INUNDATED DURING 10-YEAR EVENT
DRAINAGE REPORT

BkF

DRAWING NAME: C:\Temp\AcPublish_2196\FIGURE7-13_0206.dwg
PLOT DATE: 02-07-13 PLOTTED BY: mora

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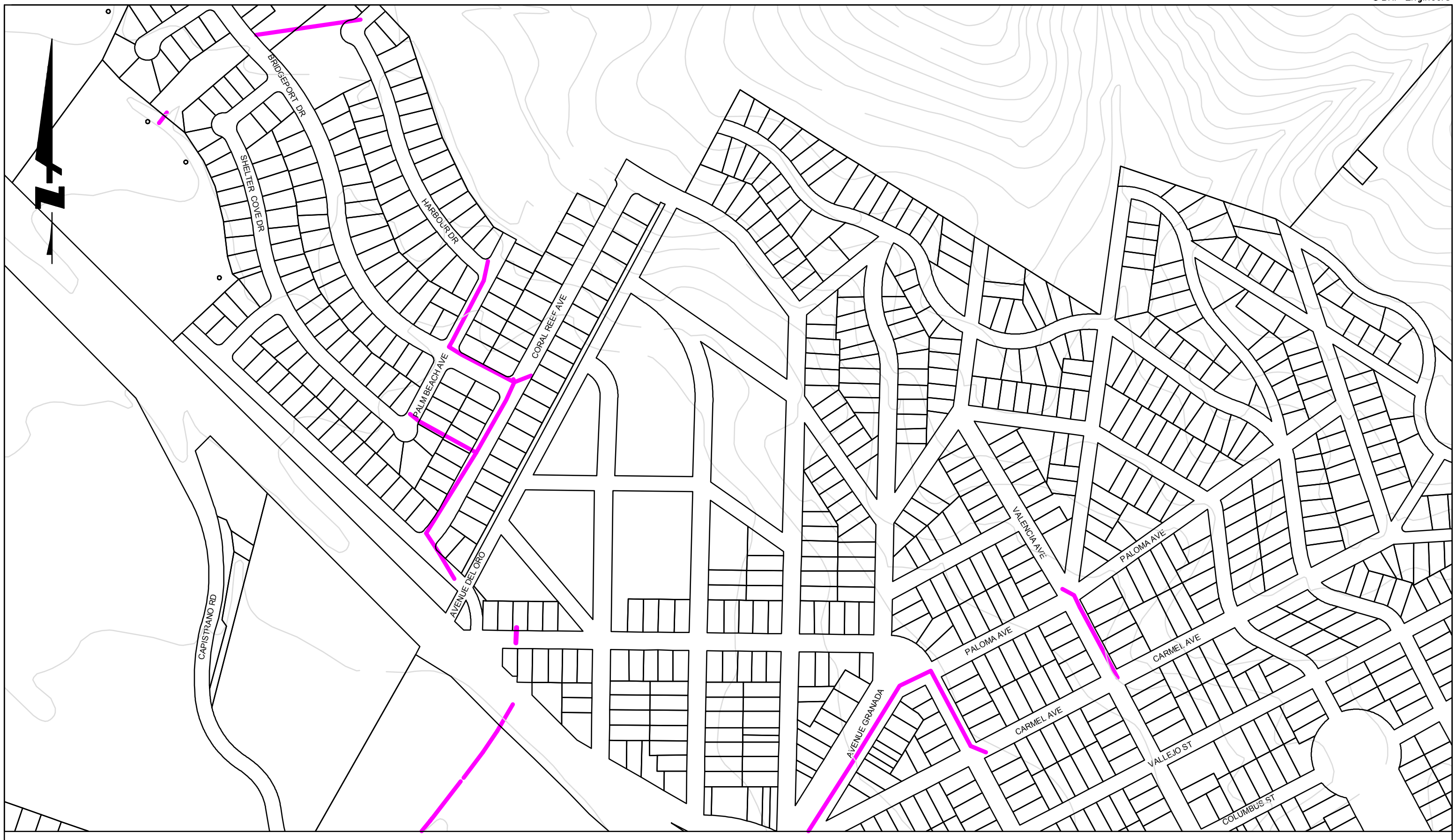

DRAWING NAME: C:\Temp\AcPublish_2196\FIGURE7-13_0206.dwg
PLOT DATE: 02-07-13
PLOTTED BY: mario

JOB NO: 20110155
DATE: JAN, 2013
BY: E.V.M
REV: ED BOSCACCI

GRAPHIC SCALE

300 0 300 600

FIGURE 7E

MIDCOAST STORM DRAIN INVENTORY AND ASSESSMENT
PIPES INUNDATED DURING 10-YEAR EVENT
DRAINAGE REPORT

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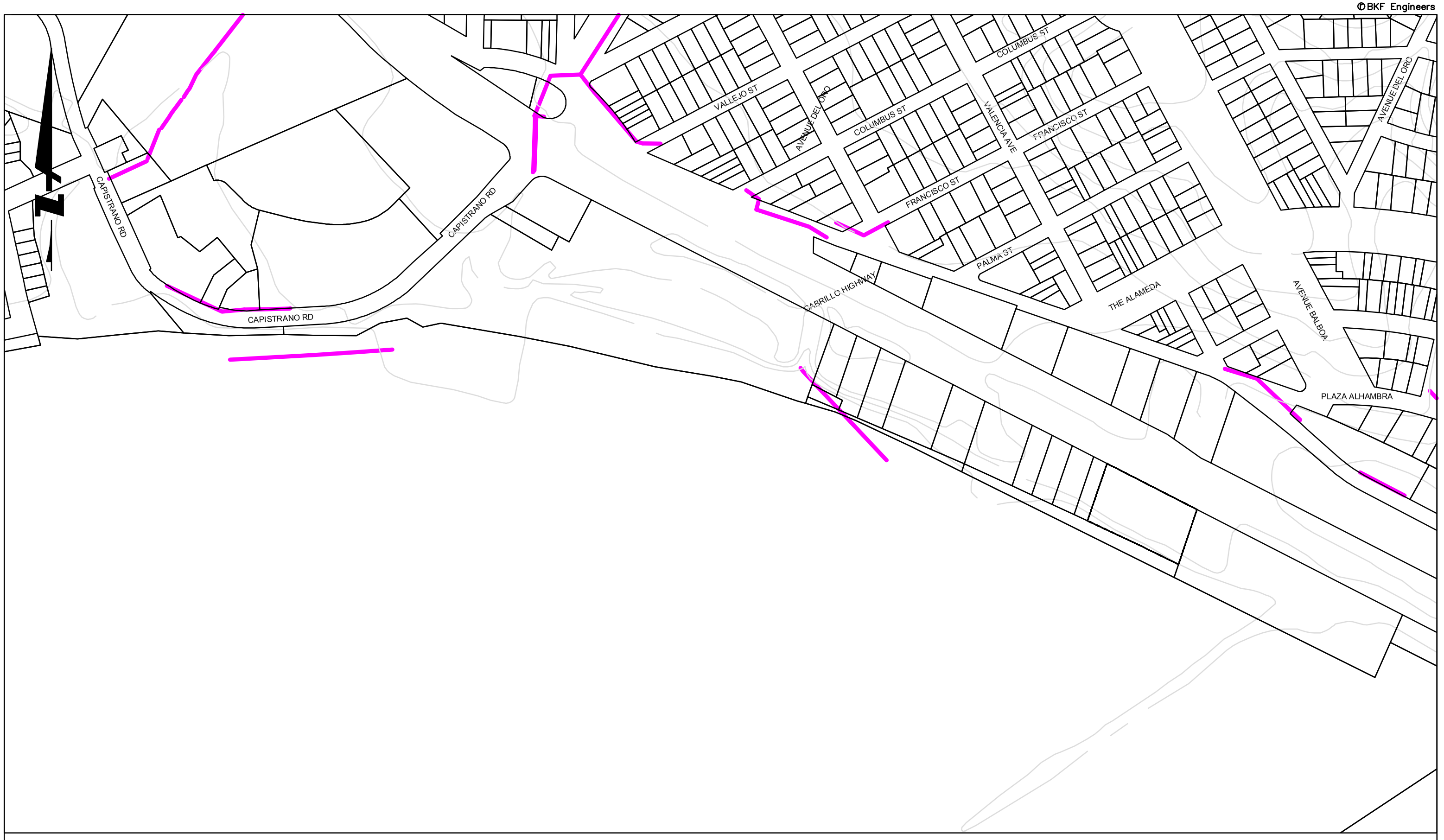

DRAWING NAME: C:\Temp\AcPublish_2196\FIGURE7-13_0206.dwg
PLOT DATE: 02-07-13 PLOTTED BY: mars

JOB NO: 20110155
DATE: JAN, 2013
BY: E.V.M
REV: ED BOSCACCI

GRAPHIC SCALE
300 0 300 600

FIGURE 7F

MIDCOAST STORM DRAIN INVENTORY AND ASSESSMENT
PIPES INUNDATED DURING 10-YEAR EVENT
DRAINAGE REPORT

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JOB NO: 20110155
DATE: JAN, 2013
BY: E.V.M
REV: ED BOSCACCI

GRAPHIC SCALE

300 0 300 600

FIGURE 7G

MIDCOAST STORM DRAIN INVENTORY AND ASSESSMENT
PIPES INUNDATED DURING 10-YEAR EVENT
DRAINAGE REPORT

BkF

DRAWING NAME: C:\Temp\AcPublish_2196\FIGURE7-13_0206.dwg
PLOT DATE: 02-07-13 PLOTTED BY: more

APPENDIX B

Existing Storm_Main.shp Attributes

Shape File Attribute	Description
COMPKEY	Not specified
ID	Not specified
DWNDPTH	Surface depth of the downstream end of the storm main to invert of pipe
DWNELEV	Elevation above sea level of the downstream end of the storm main
OWN	Ownership of the storm main
PIPEDIAM	Diameter of storm main
PIPETYPE	Material type of the storm main
SPECINST	Not specified
UNITTYPE	Type of storm main
UPSDPTH	Surface depth of the upstream end of the storm main to invert of pipe
UPSELEV	Elevation above sea level of the upstream end of the storm main
ID1	County ID system
COMMENTS	Survey / miscellaneous comments

Existing Storm_Misc.shp Attributes

Shape File Attribute	Description
DIAM	Numeric field for the diameter of the miscellaneous storm asset
DEPTH	Miscellaneous storm asset's below-ground depth
ELEV	Miscellaneous storm asset's elevation above sea level
MISCDESC	Not specified
OWN	Ownership of the miscellaneous storm asset
SPECINST	Not specified
UNITTYPE	Type of miscellaneous storm asset
ID1	County ID system
COMMENTS	Survey / miscellaneous comments
FLOWS_TO	Not specified
PAINT	Not specified
THERMO	Not specified
GMRotation	Not specified

Added Shape File Attributes

Shape File Attribute	Description
BMP	Is there a BMP present? (yes/no)
BMPTYPE	Type of BMP present or proposed
COHO	Coho critical habitat? (yes/no)
CONDITION	Condition of material (rusted, cracked, damaged)
CRLF	California red-legged frog critical habitat? (yes/no)
CULVTYPE	Culvert type (ditch relief, intermittent creek, perennial creek, etc.)
DISSIPATOR	If culvert outlet, is there an energy dissipater present? (rock, flume, etc.)
ELEV_METHD	Method used to obtain elevation (GPS, survey, lidar)
EROSION	Visible erosion (yes/no)
FLOW_10	10-year storm event flow (cfs)
FLOW_TRASH	Treatment storm event flow (cfs)
HEADWALL	If culvert inlet, is there a headwall present?
INLET_A	Inlet area (acres)
INTENSITY_	System intensity (in/hr)
MDLD_GRD	Modeled ground level in StormCAD
MDLD_INV	Modeled invert level in StormCAD
MURRELET	Murrelet critical habitat? (yes/no)
NEEDBMP	Is a BMP necessary? (yes/no)
OUTFALL_TO	If culvert outlet, where does it outfall to? (creek, wetland, etc.)
PERENNIAL	Perennial plants nearby?
PHOTO	Photo taken of storm drain element
RUNOFF_C	Runoff coefficient (0.5)
SEDIMENT	Visible sediment accumulation (yes/no)
SENSITIVE	Sensitive habitats present (riparian, wetland, sensitive plants, etc.)
STEELHEAD	Steelhead critical habitat? (yes/no)
STORMCADID	StormCAD element ID
SURROUNDNG	Surrounding characteristics (pavement, vegetation, near creek, etc.)
TIME_CONC	Time of concentration (mins)
TOTAL_A	Total cumulative area (acres)
TOTAL_CA	Total cumulative area x runoff coefficient (0.5)
TRASH	Visible trash accumulation (yes/no)

APPENDIX C

Appendix C – Conduits Inundated During the 10-Year Storm Event

STORMCADID	DESCRIPTION	OUTFALL_TO	LOCATION
P-MN-P-L090-030	Driveway Pipe	Montara Creek	11th St
P-MN-P-L020-040	Driveway Pipe	Montara Creek	North Side of 14th St
P-MN-P-270	Ditch	Montara Creek	11th St
P-MN-P-120	Driveway Pipe	Montara Creek	11th St
P-MN-P-090	Pipe	Montara Creek	Intersection of Farallone Ave and 11th St
P-MN-M-L220-200	Ditch	Montara Creek	West Side of Birch St and Franklin St
P-MN-M-L220-190	Ditch	Montara Creek	North Side of Franklin St
P-MN-M-L220-090	Driveway Pipe	Montara Creek	North Side of Franklin St
P-MN-M-L220-060	Ditch	Montara Creek	North Side of Franklin St
P-MN-M-L220-030	Driveway Pipe	Montara Creek	North Side of Franklin St
P-MN-M-L220-010	Driveway Pipe	Montara Creek	North Side of Franklin St
P-MN-M-L220-010	Driveway Pipe	Montara Creek	North Side of Franklin St
P-MN-M-L220-010	Ditch	Montara Creek	North Side of Franklin St
P-MN-M-L040-100	Driveway Pipe	Montara Creek	West Side of Cedar St
P-MN-M-L040-060	Driveway Pipe	Montara Creek	West Side of Cedar St
P-MN-M-L040-040	Driveway Pipe	Montara Creek	West Side of Cedar St
P-MN-M-L040-020	Ditch	Montara Creek	West Side of Cedar St
P-MN-M-L040-020	Ditch	Montara Creek	West Side of Cedar St
P-MN-M-340	Driveway Pipe	Montara Creek	West Side of Date St
P-MN-M-330	Ditch	Montara Creek	West Side of Date St
P-MN-M-250	Pipe	Montara Creek	West Side of Date St
P-MN-M-250	Pipe	Montara Creek	West Side of Date St
P-MN-M-250	Ditch	Montara Creek	West Side of Date St
P-MN-M-160	Pipe	Montara Creek	East Side of Cedar St
P-MN-M-150	Ditch	Montara Creek	East Side of Cedar St
P-MN-M-140	Driveway Pipe	Montara Creek	East Side of Cedar St
P-MN-M-130	Ditch	Montara Creek	East Side of Cedar St
P-MN-M-120	Driveway Pipe	Montara Creek	East Side of Cedar St
P-MN-M-110	Ditch	Montara Creek	East Side of Cedar St
P-MN-M-105	Driveway Pipe	Montara Creek	East Side of Cedar St
P-MN-M-100	Ditch	Montara Creek	East Side of Cedar St
P-MN-M-090	Driveway Pipe	Montara Creek	East Side of Cedar St
P-MN-M-080	Ditch	Montara Creek	East Side of Cedar St
P-MN-M-070	Driveway Pipe	Montara Creek	East Side of Cedar St
P-MN-K-L010-050	Driveway Pipe	Montara Creek	North Side of Harte St
P-MN-K-L010-020	Ditch	Montara Creek	North Side of Harte St
P-MN-K-220	Ditch	Montara Creek	South Side of Harte St
P-MN-K-210	Driveway Pipe	Montara Creek	South Side of Harte St

STORMCADID	DESCRIPTION	OUTFALL_TO	LOCATION
P-MN-K-140	Driveway Pipe	Montara Creek	South Side of Harte St
P-MN-K-100	Ditch	Montara Creek	South Side of Harte St
P-MN-K-090	Driveway Pipe	Montara Creek	South Side of Harte St
P-MN-K-070	Driveway Pipe	Montara Creek	South Side of Harte St
P-MN-K-060	Ditch	Montara Creek	South Side of Harte St
P-MN-K-050	Driveway Pipe	Montara Creek	South Side of Harte St
P-MN-K-040	Ditch	Montara Creek	South Side of Harte St
P-MN-K-030	Driveway Pipe	Montara Creek	South Side of Harte St
P-MN-K-020	Ditch	Montara Creek	South Side of Harte St
P-MN-K-010	Ditch	Montara Creek	South Side of Harte St
P-MN-I-020	Pipe	Kanoff Creek	Acacia and Edison St
P-MN-I-010	Ditch	Kanoff Creek	Acacia and Edison St
P-MN-G-L030-L020-L010-020	Driveway Pipe	FIT 004/FIT005	West Side of Farallone St
P-MN-G-360	Driveway Pipe	FIT 004/FIT005	South Side of 8th St
P-MN-G-340	Driveway Pipe	FIT 004/FIT005	South Side of 8th St
P-MN-G-260	Driveway Pipe	FIT 004/FIT005	South Side of 8th St
P-MN-G-240	Driveway Pipe	FIT 004/FIT005	South Side of 8th St
P-MN-G-210	Ditch	FIT 004/FIT005	South Side of 8th St
P-MN-G-120	Ditch	FIT 004/FIT005	East Side of Main St
P-MN-G-110	Driveway Pipe	FIT 004/FIT005	East Side of Main St
P-MN-G-090	Ditch	FIT 004/FIT005	East Side of Main St
P-MN-G-080	Ditch	FIT 004/FIT005	East Side of Main St
P-MN-G-070	Driveway Pipe	FIT 004/FIT005	East Side of Main St
P-MN-G-060	Ditch	FIT 004/FIT005	East Side of Main St
P-MN-G-050	Ditch	FIT 004/FIT005	East Side of Main St
P-MN-F-L040-L240-010	Ditch	Kanoff Creek	North Side of 5th St and Audubon Ave
P-MN-F-L040-L170-020	Driveway Pipe	Kanoff Creek	North Side of 4th St and Audubon Ave
P-MN-F-L040-240	Ditch	Kanoff Creek	West Side of Audubon Ave
P-MN-F-L040-210	Driveway Pipe	Kanoff Creek	West Side of Audubon Ave
P-MN-F-L040-190	Driveway Pipe	Kanoff Creek	West Side of Audubon Ave
P-MN-F-L040-180	Ditch	Kanoff Creek	West Side of Audubon Ave
P-MN-F-L040-170	Pipe	Kanoff Creek	West Side of Audubon Ave
P-MN-F-L040-150	Driveway Pipe	Kanoff Creek	South Side of Kanoff St
P-MN-F-L040-130	Ditch	Kanoff Creek	South Side of Kanoff St
P-MN-F-L040-120	Driveway Pipe	Kanoff Creek	South Side of Kanoff St
P-MN-F-L040-110	Ditch	Kanoff Creek	South Side of Kanoff St
P-MN-F-L040-100	Ditch	Kanoff Creek	South Side of Kanoff St
P-MN-F-L040-090	Driveway Pipe	Kanoff Creek	South Side of Kanoff St
P-MN-F-L040-080	Ditch	Kanoff Creek	South Side of Kanoff St
P-MN-F-L040-070	Driveway Pipe	Kanoff Creek	South Side of Kanoff St

STORMCADID	DESCRIPTION	OUTFALL_TO	LOCATION
P-MN-F-L040-020	Pipe	Kanoff Creek	South Side of Kanoff St
P-MN-F-L040-020	Pipe	Kanoff Creek	South Side of Kanoff St
P-MN-F-L040-020	Driveway Pipe	Kanoff Creek	South Side of Kanoff St
P-MN-F-L030-L090-L010-100	Ditch	Kanoff Creek	South Side of George St and Birch St
P-MN-F-L030-L090-L010-010	Pipe	Kanoff Creek	Intersection of Kanoff St and Acacia St
P-MN-F-L030-L030-080	Ditch	Kanoff Creek	East Side of Tamarind St
P-MN-F-L030-L030-070	Driveway Pipe	Kanoff Creek	East Side of Tamarind St
P-MN-F-L030-240	Driveway Pipe	Kanoff Creek	East Side of Acacia St
P-MN-F-L030-120	Ditch	Kanoff Creek	East Side of Acacia St
P-MN-F-L030-110	Driveway Pipe	Kanoff Creek	East Side of Acacia St
P-MN-F-L030-070	Driveway Pipe	Kanoff Creek	North Side of Kanoff St
P-MN-F-L030-060	Ditch	Kanoff Creek	North Side of Kanoff St
P-MN-F-L030-050	Driveway Pipe	Kanoff Creek	North Side of Kanoff St
P-MN-F-L030-030	Pipe	Kanoff Creek	North Side of Kanoff St
P-MN-F-L030-010	Ditch	Kanoff Creek	North Side of Kanoff St
P-MN-F-170	Ditch	Kanoff Creek	East La Conte Ave
P-MN-F-150	Driveway Pipe	Kanoff Creek	East La Conte Ave
P-MN-F-130	Pipe	Kanoff Creek	East La Conte Ave
P-MN-F-050	Ditch	Kanoff Creek	East La Conte Ave
P-MN-F-040	Pipe	Kanoff Creek	East La Conte Ave
P-MN-F-030	Swale	Kanoff Creek	Kanoff St and La Conte Ave
P-MN-E-L200-070	Ditch	Kanoff Creek	South Side of 6th Street
P-MN-E-L040W-140	Driveway Pipe	Kanoff Creek	South Side of 3rd Street
P-MN-E-L040W-130	Ditch	Kanoff Creek	South Side of 3rd Street
P-MN-E-L040W-120	Driveway Pipe	Kanoff Creek	South Side of 3rd Street
P-MN-E-L040W-110	Ditch	Kanoff Creek	South Side of 3rd Street
P-MN-E-L040W-100	Driveway Pipe	Kanoff Creek	South Side of 3rd Street
P-MN-E-L040W-090	Ditch	Kanoff Creek	South Side of 3rd Street
P-MN-E-L040W-080	Driveway Pipe	Kanoff Creek	South Side of 3rd Street
P-MN-E-L040W-070	Ditch	Kanoff Creek	South Side of 3rd Street
P-MN-E-L040W-060	Driveway Pipe	Kanoff Creek	South Side of 3rd Street
P-MN-E-L040W-050	Ditch	Kanoff Creek	South Side of 3rd Street
P-MN-E-L040W-040	Driveway Pipe	Kanoff Creek	South Side of 3rd Street
P-MN-E-L040W-030	Ditch	Kanoff Creek	South Side of 3rd Street
P-MN-E-L040W-010	Ditch	Kanoff Creek	South Side of 3rd Street
P-MN-E-L040-080	Ditch	Kanoff Creek	South Side of 3rd Street
P-MN-E-L040-030	Driveway Pipe	Kanoff Creek	South Side of 3rd Street
P-MN-E-300	Pipe	Kanoff Creek	East Side of East Ave
P-MN-E-240	Driveway Pipe	Kanoff Creek	East Side of East Ave
P-MN-E-230	Ditch	Kanoff Creek	East Side of East Ave

STORMCADID	DESCRIPTION	OUTFALL_TO	LOCATION
P-MN-E-220	Driveway Pipe	Kanoff Creek	East Side of East Ave
P-MN-E-210	Ditch	Kanoff Creek	East Side of East Ave
P-MN-E-200	Pipe	Kanoff Creek	East Side of East Ave
P-MN-E-180	Driveway Pipe	Kanoff Creek	East Side of East Ave
P-MN-E-140	Ditch	Kanoff Creek	East Side of East Ave
P-MN-E-140	Driveway Pipe	Kanoff Creek	East Side of East Ave
P-MN-E-120	Driveway Pipe	Kanoff Creek	East Side of East Ave
P-MN-E-040	Pipe	Kanoff Creek	East Ave and 3rd Street
P-MN-E-030	Pipe	Kanoff Creek	East Ave and 3rd Street
P-MN-C-L170-030	Ditch	Kanoff Creek	South Side of 5th Street
P-MN-C-L170-020	Pipe	Kanoff Creek	Pipe under 5th St
P-MN-C-L170-010	Pipe	Kanoff Creek	Between 4th and 5th St
P-MN-C-L160-010	Ditch	Kanoff Creek	South Side of 4th St
P-MN-C-L150-020	Ditch	Kanoff Creek	North Side of 4th St
P-MN-C-L150-010	Ditch	Kanoff Creek	North Side of 4th St
P-MN-C-170	Pipe	Kanoff Creek	South Side of 4th St
P-MN-C-160	Pipe	Kanoff Creek	East Side of Farallone Ave
P-MN-C-140	Ditch	Kanoff Creek	East Side of Farallone Ave
P-MN-C-120	Ditch	Kanoff Creek	East Side of Farallone Ave
P-MN-C-110	Pipe	Kanoff Creek	East Side of Farallone Ave
P-MN-C-080	Pipe	Kanoff Creek	East Ave and 3rd Street
P-MN-B-L040-L010-060	Ditch	FIT 003	South Side of 6th Street
P-MN-B-L040-L010-020	Driveway Pipe	FIT 003	South Side of 6th Street
P-MN-B-110	Pipe	FIT 003	Intersection of Farallone Ave and 7th St
P-MN-B-030	Ditch	FIT 003	North Side of 7th Street and Highway 1
P-MN-B-025	Pipe	Montara State Beach	East Side of Highway 1 and 7th Street
P-MN-B-020	Pipe	FIT 003	South Side of 7th Street and Highway 1
P-MN-B-010	Ditch	FIT 003	South Side of 7th Street
P-MN-A-L010-100	Ditch	Montara State Beach	East Side of Main St
P-MN-A-L010-090	Ditch	Montara State Beach	East Side of Main St
P-MN-A-L010-040	Pipe	Montara State Beach	South Side of 2nd Street
P-MN-A-030	Swale	Montara State Beach	East Side of Highway 1
P-MB-ZG-070	Ditch	San Vicente Creek	East Side of Marine Blvd
P-MB-ZF-L220-020	Driveway Pipe	San Vicente Creek	Cypress Ave and Etheldore st
P-MB-ZF-L220-010	Ditch	San Vicente Creek	Cypress Ave and Etheldore st
P-MB-ZF-L220-010	Ditch	San Vicente Creek	Cypress Ave and Etheldore st
P-MB-ZF-L140-060	Pipe	Dean Creek	Cypress Ave and Etheldore st
P-MB-ZF-L140-010	Pipe	Dean Creek	Cypress Ave and Etheldore st
P-MB-ZF-L130-080	Ditch	Dean Creek	Cypress Ave
P-MB-ZF-L130-010	Pipe	Dean Creek	Cypress Ave

STORMCADID	DESCRIPTION	OUTFALL_TO	LOCATION
P-MB-ZF-240	Driveway Pipe	Dean Creek	Cypress Ave
P-MB-ZF-230	Ditch	Dean Creek	Cypress Ave
P-MB-ZF-220	Pipe	Dean Creek	Cypress Ave
P-MB-ZF-210	Ditch	Dean Creek	Cypress Ave
P-MB-ZF-200	Driveway Pipe	Dean Creek	Cypress Ave
P-MB-ZF-190	Ditch	Dean Creek	Cypress Ave
P-MB-ZF-170	Driveway Pipe	Dean Creek	Cypress Ave
P-MB-ZF-160	Pipe	Dean Creek	Cypress Ave
P-MB-ZF-120	Ditch	Dean Creek	Cypress Ave
P-MB-ZF-110	Pipe	Dean Creek	Cypress Ave
P-MB-ZF-020	Driveway Pipe	Dean Creek	Cypress Ave
P-MB-ZF-010	Ditch	Dean Creek	Cypress Ave
P-MB-ZE-030	Driveway Pipe	Dean Creek	North Side of Sierra St
P-MB-ZD-060	Driveway Pipe	Dean Creek	Sunshine Valley Road and Stetson
P-MB-ZD-000-OUTFALL	Ditch	Dean Creek	Sunshine Valley Road and Stetson
P-MB-ZC-L020-010	Ditch	Dean Creek	Sunshine Valley Road and Stetson
P-MB-ZC-020	Pipe	Dean Creek	Sunshine Valley Road and Stetson
P-MB-X-070	Pipe	Dean Creek	East Side of Vermont Ave
P-MB-X-040	Pipe	Dean Creek	East Side of Virginia Ave
P-MB-W-030	Driveway Pipe	Dean Creek	East Side of California Ave
P-MB-N-L060-010	Pipe	Ocean	North Side of Stetson
P-MB-N-050	Pipe	Ocean	East Side of California Ave
P-MB-N-040	Pipe	Ocean	East Side of California Ave
P-MB-N-030	Pipe	Ocean	East Side of California Ave
P-MB-N-010	Pipe	Ocean	East Side of California Ave
P-MB-E-200	Pipe	Ocean	Intersction of Etheldore and Highway 3
P-MB-E-190	Swale	Ocean	Intersction of Etheldore and Highway 2
P-MB-E-180	Pipe	Ocean	Intersction of Etheldore and Highway 1
P-MB-E-150	Driveway Pipe	Ocean	North Side of Weinke Way
P-MB-E-130	Ditch	Ocean	North Side of Weinke Way
P-MB-E-120	Driveway Pipe	Ocean	North Side of Weinke Way
P-MB-E-100	Driveway Pipe	Ocean	North Side of Weinke Way
P-MB-E-090	Ditch	Ocean	North Side of Weinke Way
P-MB-E-070	Pipe	Ocean	North Side of Weinke Way
P-MB-E-060	Pipe	Ocean	North Side of Weinke Way
P-MB-E-050	Pipe	Ocean	North Side of Weinke Way
P-MB-B-L050N-010	Pipe	FIT012	East Side of Stetson St
P-MB-B-050	Pipe	FIT012	East Side of Stetson St
P-MB-B-020	Pipe	FIT012	Carlos St
P-MB-A-020	Pipe	Ocean	Driveway towards the end of Vallemar St

STORMCADID	DESCRIPTION	OUTFALL_TO	LOCATION
P-EG-ZR-L010-030	Pipe	Ocean	Francisco St and Avenue Alhambra
P-EG-ZR-L010-020	Pipe	Ocean	Francisco St and Avenue Alhambra
P-EG-ZR-L010-010	Pipe	Ocean	Francisco St and Avenue Alhambra
P-EG-ZR-030	Pipe	Ocean	Francisco St and Avenue Alhambra
P-EG-ZR-020	Pipe	Ocean	Francisco St and Avenue Alhambra
P-EG-O-L050-020	Pipe	Ocean	Avenue Cabrillo and Avenue Alhambra
P-EG-O-050	Pipe	Ocean	Between Plaza Alhambra and Obispo Rd
P-EG-O-020	Pipe	Ocean	Obispo Rd
P-EG-N-L040-030	Pipe	Ocean	Plaza Alhambra
P-EG-N-L040-010	Pipe	Ocean	Plaza Alhambra
P-EG-N-190	Pipe	Ocean	Avenue Portola
P-EG-N-060	Pipe	Ocean	Intersection of Plaza Alhambra and Avenue Portola
P-EG-N-050	Pipe	Ocean	Intersection of Plaza Alhambra and Avenue Portola
P-EG-N-010	Pipe	Ocean	Outfall on the coast line
P-EG-M-070	Pipe	Ocean	Obispo Rd
P-EG-M-050	Pipe	Ocean	Obispo Rd
P-EG-J-010	Pipe	Ocean	Outfall on the coast line
P-EG-F-L060-020	Pipe	Ocean	Vallejo St
P-EG-F-L060-010	Pipe	Ocean	Vallejo St
P-EG-F-L050N-L040W-010	Pipe	Ocean	Valencia Ave
P-EG-F-L050N-L040S-020	Pipe	Ocean	Valencia Ave
P-EG-F-L050N-L040S-010	Pipe	Ocean	Valencia Ave
P-EG-F-L050N-L020-020	Pipe	Ocean	Sonora Ave
P-EG-F-L050N-L020-010	Pipe	Ocean	Sonora Ave
P-EG-F-L050N-020	Pipe	Ocean	Avenue Granada
P-EG-F-L050N-010	Pipe	Ocean	Avenue Granada
P-EG-F-L050N-010	Pipe	Ocean	Avenue Granada
P-EG-F-L030-010	Pipe	Ocean	Avenue Granada
P-EG-F-060	Pipe	Ocean	Avenue Granada
P-EG-F-040	Pipe	Ocean	Capistrano Road and Highway 4
P-EG-F-030	Pipe	Ocean	Capistrano Road and Highway 2
P-EG-F-030	Pipe	Ocean	Capistrano Road and Highway 3
P-EG-F-010	Pipe	Ocean	Capistrano Road and Highway 1
P-EG-E-L010S-020	Pipe	Ocean	Capistrano Road
P-EG-E-L010S-020	Pipe	Ocean	Capistrano Road
P-EG-E-L010S-010	Pipe	Ocean	Capistrano Road
P-EG-D-L220E-010	Pipe	Denniston Creek	Coral Reef Ave
P-EG-D-L220-010	Pipe	Denniston Creek	Palm Beach Ave and Coral Reef Ave
P-EG-D-L200-020	Pipe	Denniston Creek	Palm Beach Ave and Coral Reef Ave

STORMCADID	DESCRIPTION	OUTFALL_TO	LOCATION
P-EG-D-L200-010	Pipe	Denniston Creek	Palm Beach Ave and Coral Reef Ave
P-EG-D-L140-030	Pipe	Denniston Creek	Pipes under Sonora Ave
P-EG-D-260	Pipe	Denniston Creek	Palm Beach Ave
P-EG-D-250	Pipe	Denniston Creek	Palm Beach Ave
P-EG-D-230	Pipe	Denniston Creek	Palm Beach Ave
P-EG-D-220	Pipe	Denniston Creek	Coral Reef Ave
P-EG-D-200	Pipe	Denniston Creek	Coral Reef Ave
P-EG-D-180	Pipe	Denniston Creek	Coral Reef Ave
P-EG-D-130	Pipe	Denniston Creek	Under Highway 1
P-EG-D-120	Ditch	Denniston Creek	Creek running towards Capistrano Road
P-EG-D-110	Pipe	Denniston Creek	Creek running towards Capistrano Road
P-EG-D-090	Pipe	Denniston Creek	Creek running towards Capistrano Road
P-EG-D-090	Pipe	Denniston Creek	Creek running towards Capistrano Road
P-EG-D-090	Ditch	Denniston Creek	Creek running towards Capistrano Road
P-EG-D-070	Pipe	Denniston Creek	Creek running towards Capistrano Road
P-EG-D-050	Pipe	Denniston Creek	Creek running towards Capistrano Road
P-EG-D-040	Pipe	Denniston Creek	Creek running towards Capistrano Road
P-EG-B-040	Pipe	Denniston Creek	Between Harbour and Bridgeport Dr
P-EG-B-010	Swale	Denniston Creek	Ditch near Shelter Cove Dr

APPENDIX D

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PLOT TIME: 02-08-13
PLOTTED BY: mora

Drawing Number: APP-D 1 OF 4	Date: 2/8/13	No.	Revisions
	Scale: 1"= 200'		
	Design: JS		
	Drawn: EM		
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	Job No: 20110155-10		

MIDCOAST STORM DRAIN INVENTORY AND ASSESSMENT

DRAINAGE REPORT - APPENDIX D

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Drawing Number: APP D 2 of 4

MIDCOAST STORM DRAIN INVENTORY AND ASSESSMENT

DRAINAGE REPORT - APPENDIX D

MOSS BEACH/SEAL COVE COUNTY OF SAN MATEO CALIFORNIA

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PLOTTED BY: mora

Drawing Number: APP D 3 OF 4	Date: 2/8/13	No.	Revisions
	Scale: 1"= 250'		
	Design: JS		
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MIDCOAST STORM DRAIN INVENTORY AND ASSESSMENT

DRAINAGE REPORT - APPENDIX D

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APP D	Scale: 1"=300'		
4 OF 4	Design:		
	Drawn:		
	Approved:		
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PLOT TIME: 02-08-13
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Drawing Number: APP E 1 OF 4	Date: 2/8/13	No.	Revisions
	Scale: 1"= 200'		
	Design: JS		
	Drawn: EM		
	Approved: EB		
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Date: 2/8/13	No.	Revisions	
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MIDCOAST STORM DRAIN INVENTORY AND ASSESSMENT

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Drawing Number:	Date: 2/8/13	No.	Revisions
APP E 3 OF 4	Scale: 1" = 250'		
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