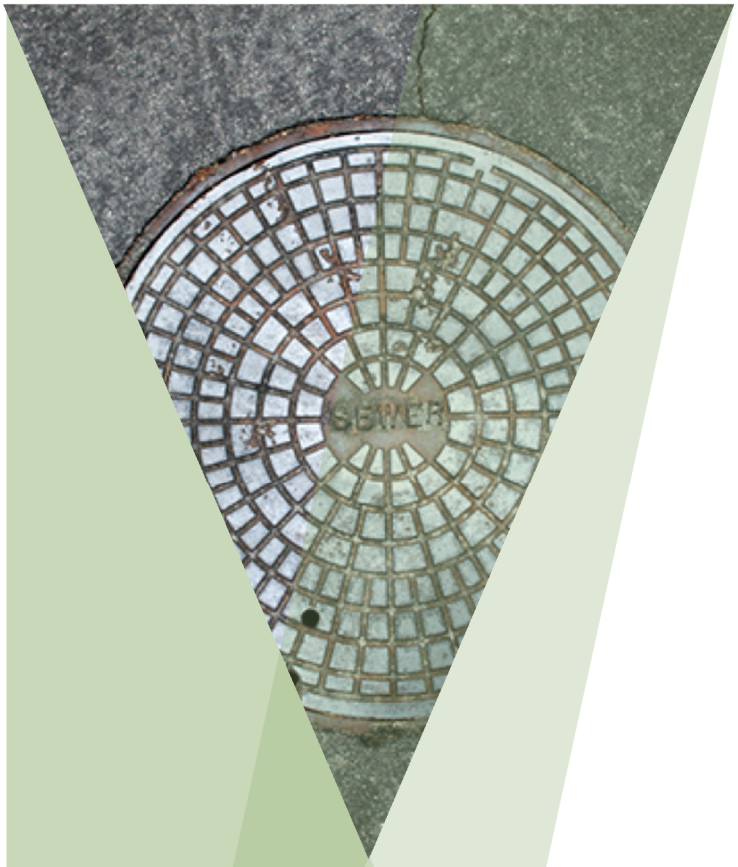
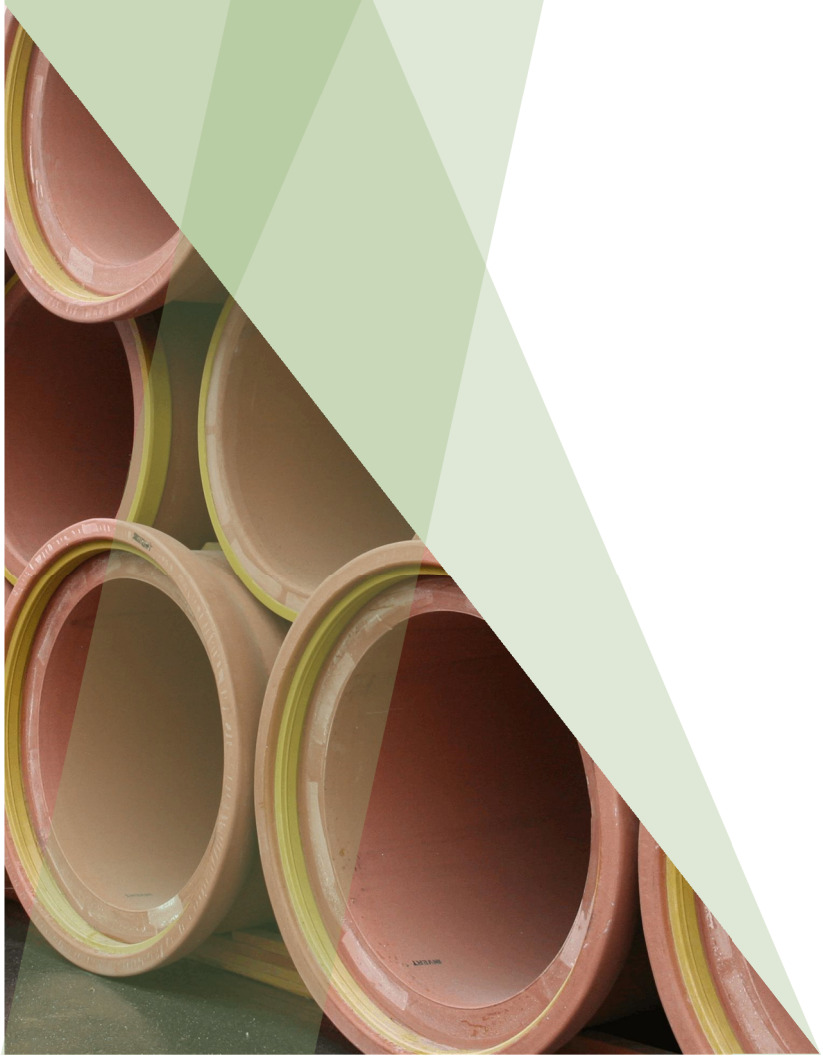
Appendix K1 Sewer Analysis Report

Appendices

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FUSCOE ENGINEERING

SEWER ANALYSIS REPORT

NEWPORT CROSSINGS

NEWPORT BEACH, CA

PREPARED FOR:
STARBOARD REALTY PARTNERS, LLC
1301 DOVE STREET, SUITE 1080
NEWPORT BEACH, CA
(949) 851-2020

PREPARED BY:
FUSCOE ENGINEERING, INC.
16795 VON KARMAN, SUITE 100
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PROJECT MANAGER:
BRYAN SMITH, P.E.

DATE PREPARED: DECEMBER 2017

JOB NUMBER 1618-001-01

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SEWER ANALYSIS REPORT

NEWPORT CROSSINGS

NEWPORT BEACH, CA

December 2017

1618-001

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SEWER ANALYSIS REPORT

NEWPORT CROSSINGS

NEWPORT BEACH, CA

December 2017

1618-001

FUSCOE ENGINEERING

SEWER ANALYSIS REPORT

NEWPORT CROSSINGS

NEWPORT BEACH, CA

December 2017

1618-001

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1.0 INTRODUCTION

1.1 PURPOSE OF STUDY

The purpose of this study is to analyze the public sanitary sewer system for the existing and proposed conditions for the proposed Newport Crossings project, located in City of Newport Beach, California. In addition, the report includes recommendations for sewer upgrades, if any, that would be required to accommodate wastewater flows associated with the proposed project development. Lastly, recommendations regarding allocations of the proposed onsite flows to the sewer laterals will be presented, to prevent overloading of the public system.

1.2 SITE DESCRIPTION

The existing project site encompasses approximately 5.69 acres in the City of Newport Beach. The project site is bounded by Dove Street to the south, Scott Drive to the west, Corinthian Way to the north, and Martingale Way to the east. A Vicinity Map is included on Page 2 of this report.

Under existing conditions, the project site is primarily built out, with several low-rise commercial buildings and small businesses, as well as surface parking. Landscaping areas with trees surround the site. Adjacent land uses include other commercial businesses, such as Staples, a Radisson Hotel, Jamba Juice, and a car wash.

1.3 EXISTING SEWER FACILITIES

Wastewater from the site currently discharges to the City's public system in three locations, as follows:

- Martingale Way (existing 8" sewer main)
- Scott Drive (existing 10" sewer main)
- Dove Street (existing 10" sewer main)

The sewer system continues southerly along Dove Street, as a 10" sewer line, then turns easterly in Newport Place Drive, where it continues as a 15" line, to MacArthur Boulevard. From there, the 15" sewer line travels northerly to a sewer pump station in MacArthur Boulevard. A Sewer Exhibit is included in this report as Appendix 1. As-Built Sewer Plans are included in Appendix 2.

1.4 PROPOSED DEVELOPMENT

The proposed project will include the construction of a 350-unit residential development, consisting of four (4) 5-story Type III-A residential buildings surrounding a 5-story (6-level) Type I-A parking structure with amenity deck and 7,500 square feet of retail space. A Conceptual Site Plan is included as Appendix 3.



VICINITY MAP

2.0 METHODOLOGY AND EXISTING SEWER FLOWS

The City of Newport Beach has published design criteria for public sewer systems. A copy of this criteria is included in this report as Appendix 4. The design criteria include the following parameters:

- Design flow shall not exceed half-full;
- Manning's roughness coefficient (Manning's "n") shall not be less than 0.013;
- Wastewater calculations shall be 255 gallons per day (gpd) for development size of 250 units and up;
- Peaking factor for development size of 250 units and up shall be 3.15 times average flow.

The investigation included obtaining the current wastewater flows in the existing sewer system that will be accepting the project flows. This was achieved by flow tests conducted between November 11, 2017 and November 25, 2017, by USCubed. See Sewer Monitoring Report in Appendix 5.

The manholes were monitored using Hach Flo-Dar Flow Meters, and included the following analyses:

- Review and provide input to the identified site,
- Validate site for suitability and traffic control,
- Calibrate and Install flow monitoring equipment,
- Validate preliminary data,
- Modify system to further support the monitoring requirements.
- Provide On-Site Training for Web-Based Viewing & Reporting of Sewer Monitoring Data.

The Flo-Dar methodology used by USCubed consists of transmission of a digital Doppler radar beam that interacts with the fluid and reflects back signals at a different frequency than that which was transmitted. The flow-depths are detected by ultrasonic pulse echo. Flow is then calculated based on the continuity equation, as follows:

$$Q = V \times A, \text{ Where } Q = \text{Flow, } V = \text{Average Velocity and } A = \text{Area.}$$

Table 1 presents the results of the peak wastewater flows that were obtained from the flow monitoring operations:

Table 1 – Existing Condition Peak Wastewater Flows

MH #	Street	Peak Flow (gpm)	Peak Flow (cfs)	Pipe Size
#1 Main (MHM_28_013)	Martingale Way	27.416 (inflow)	0.06 (inflow)	8″
#1 Lateral (MHM_28_013)	Martingale Way	4.913 (inflow)	0.01 (inflow)	8″
#1A Main (MHM_28_012)	Martingale Way	29.400 (inflow)	0.066 (inflow)	8″
#2 Main (MHM_28_010)	Scott Drive	31.607 (inflow)	0.070 (inflow)	10″
#2 Lateral (MHM_28_010)	Scott Drive	5.741 (inflow)	0.01 (inflow)	8″
#3 Main (MHM_28_009)	Dove Street	43.752 (inflow)	0.098 (inflow)	10″
#3 Main (MHM_28_009)	Dove Street	68.400 (outflow)	0.152 (outflow)	10″
#4 Main (MHM_28_008)	Dove Street	82.822 (outflow)	0.185 (outflow)	10″
#4 Lateral (MHM_28_008)	Dove Street	4.035 (inflow)	0.01 (inflow)	8″
#5 Main (MHM_28_004)	Dove Street	110.188 (inflow)	0.245 (inflow)	10″
#5 Main (MHM_28_004)	Dove Street	140.355 (outflow)	0.313 (outflow)	10″
#6 Main (MHM_28_002)	Newport Place Drive	204.545 (outflow)	0.456 (outflow)	15″

3.0 PROPOSED SEWER FLOWS

The proposed project wastewater peak flows were calculated for this project using the following information, from Site Plan and Project Information (See Appendix 3):

- 450 residential units
- 7,500 square feet of retail

The total proposed peak wastewater flows from the project site was calculated to be 0.419 cfs. A credit of 0.01 cfs for each of the three existing laterals was used. The sewer generation calculations and tables are included in Appendix 6 of this report.

The flow depths in the existing sewer systems were calculated using Kutter Flow Depth analysis. The calculations are included in Appendix 7 of this report. The Sewer Study Table shows that the proposed project will not adversely affect the existing public sewer system, and is included in Appendix 8 of this report. The depths and %-full of the existing sewer reaches with proposed condition flows is shown on Table 2.

Due to limitations in the existing 8-inch sewer in Martingale Way, the proposed lateral at that location is limited to 244 units, along with all the retail development. The other two laterals, at Scott Drive and Dove Street have no limitations on discharge. The discharge allocations are shown on the Conceptual Utility Plan, included in this report as Appendix 9.

Table 2 – Existing Sewer Depth with Proposed Condition Flows

Reach	Street	Pipe Size	Existing Peak Flow (cfs)	Project Peak Flow (cfs)	Credit from Existing Site Lateral (cfs)	Total Flow in Pipe (cfs)	Proposed Flow Depth (in)	Proposed % Full
1	Martingale Way	8″	0.066	0.292	-0.01	0.348	4.0	50%
2	Corinthian Way	10″	0.070	0.292	-0.01	0.352	3.60	36%
3	Scott Drive	10″	0.070	0.292	-0.01	0.352	3.60	36%
4	Scott Drive	10″	0.152	0.419	-0.02	0.551	3.32	33%
5	Dove Street	10″	0.152	0.419	-0.02	0.551	4.57	46%
6	Dove Street	10″	0.185	0.419	-0.03	0.574	4.67	47%
7	Dove Street	10″	0.245	0.419	-0.03	0.634	4.41	44%
8	Dove Street	10″	0.245	0.419	-0.03	0.634	4.41	44%
9	Dove Street	10″	0.313	0.419	-0.03	0.702	3.84	38%
10	Dove Street	10″	0.456	0.419	-0.03	0.845	5.31	35%
11	Dove Street	15″	0.456	0.419	-0.03	0.845	5.31	35%
12	MacArthur Blvd	15″	0.456	0.419	-0.03	0.845	5.31	35%

4.0 RESULTS AND CONCLUSIONS

Existing Public Sewer Line

The calculations and results presented in this report demonstrate that the existing sewer system will not be adversely impacted by the wastewater flows associated with the proposed project. The proposed condition flow depths of the existing public sewer system will not exceed 50%-full, in accordance with City of Newport Beach Design Criteria. Therefore, no sewer upgrades will be required to accommodate the proposed project development.

Proposed Project Sewer Discharge Allocation

The project site will discharge into the City of Newport Beach public sewer system at three locations; Martingale Way, Scott Drive, and Dove Street. The existing sewer on Martingale Way is an 8-inch-diameter line, while the sewer lines on Scott Drive and Dove Street are 10-inch lines. The Public Sewer Exhibit is included in this report as Appendix 1.

The upper reach (Martingale Way/ Reach 1) of the existing sewer system that will be accepting the project flows is an 8-inch-diameter line, with a slope of 0.4%. Therefore, project wastewater flows to this lateral are restricted, due to the size and slope constraints. Consequently, the allocation of the project's wastewater flows to the Martingale lateral have been analyzed, and are limited to a maximum of 244 units, along with the entirety of the proposed retail. The sewer allocation calculations are included in Appendix 6.

There are no restrictions to the wastewater allocations for the proposed sewer laterals on Scott Drive or Dove Street. The sewer flow allocations are illustrated on the Conceptual Utility Plan, included in this report as Appendix 9.

5.0 APPENDICES

Appendix 1 Public Sewer Exhibit

Appendix 2 Sewer As-Built Plans

Appendix 3 Conceptual Site Plan

Appendix 4 Design Criteria

Appendix 5 Sewer Monitoring Report

Appendix 6 Sewer Generation Calculations

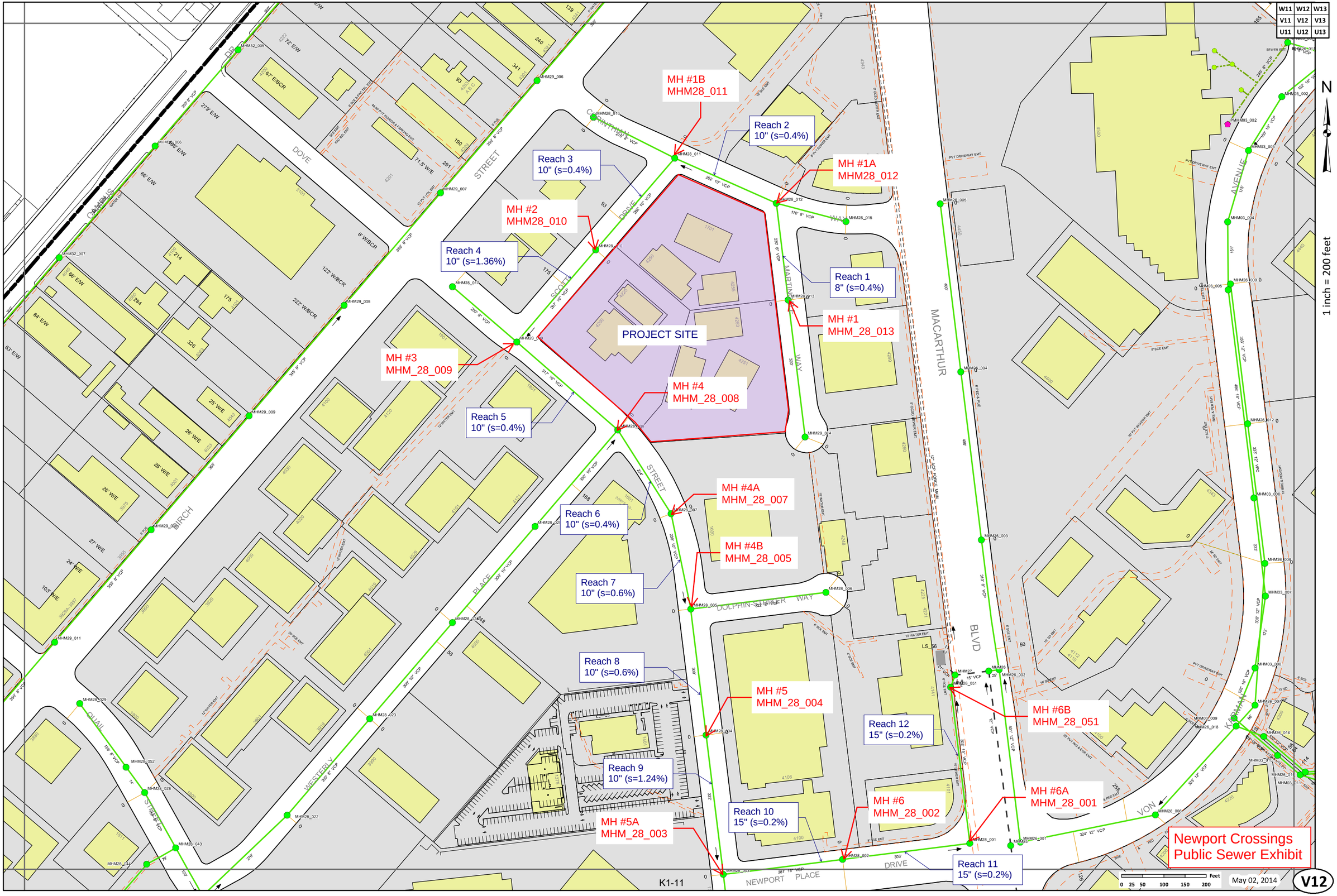
Appendix 7 Kutter Flow Depth Calculations

Appendix 8 Sewer Study Table

Appendix 9 Conceptual Utility Plan

Appendix 1

Public Sewer Exhibit


MH #1B
MHM28_011
Reach 2
10" (s=0.4%)
MH #1A
MHM28_012
Reach 3
10" (s=0.4%)
MH #2
MHM28_010
Reach 4
10" (s=1.36%)
Reach 1
8" (s=0.4%)
MH #1
MHM_28_013
PROJECT SITE
MH #3
MHM_28_009
MH #4
MHM_28_008
Reach 5
10" (s=0.4%)
MH #4A
MHM_28_007
MH #4B
MHM_28_005
Reach 6
10" (s=0.4%)
Reach 7
10" (s=0.6%)
Reach 8
10" (s=0.6%)
MH #5
MHM_28_004
Reach 12
15" (s=0.2%)
MH #6B
MHM_28_051
Reach 9
10" (s=1.24%)
MH #6
MHM_28_002
MH #6A
MHM_28_001
MH #5A
MHM_28_003
Reach 10
15" (s=0.2%)
Reach 11
15" (s=0.2%)
Newport Crossings
Public Sewer Exhibit
May 02, 2014
V12
K1-11
N
1 inch = 200 feet
W11 W12 W13
V11 V12 V13
U11 U12 U13

Appendix 2

Sewer As-Built Plans

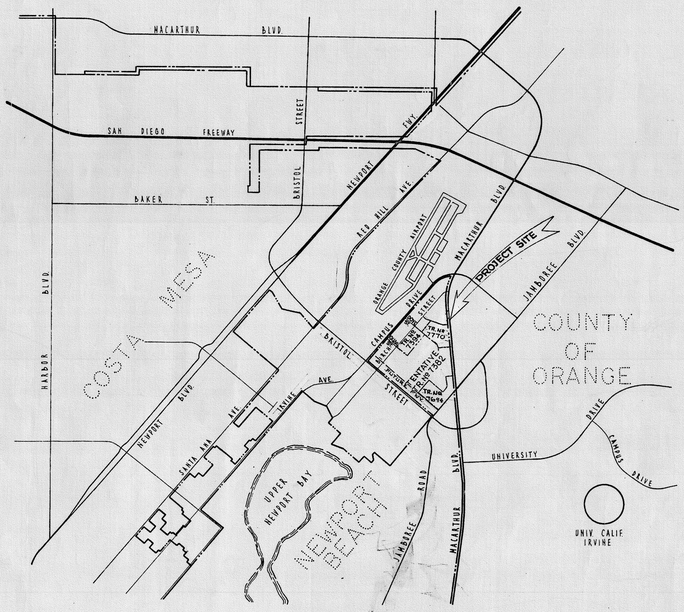
PLAN AND PROFILE
FOR THE IMPROVEMENT OF STREETS WITHIN
AND ADJACENT TO

PHASE II OF TENTATIVE TRACT Nº 7382
AND TRACT Nºs 7694 AND 7770
"NEWPORT PLACE"

NEWPORT BEACH, CALIFORNIA

A DEVELOPMENT OF

EMKAY DEVELOPMENT CO.



VICINITY MAP
NOT TO SCALE

SHEET INDEX

1. TITLE SHEET
2. CONSTRUCTION NOTES AND ESTIMATED QUANTITIES
3. TYPICAL SECTIONS AND INDEX MAP
4. DOVE STREET
5. DOVE STREET
6. QUAIL STREET
7. 84" R.C.P. STORM DRAIN (FROM DOVE STREET TO JAMBOREE ROAD)
8. TEMPORARY 48" C.M.P. STORM DRAIN ALONG JAMBOREE ROAD
9. DOLPHIN-STRIKER WAY, BOWSPRIT DRIVE
10. MARTINGALE WAY
11. SPRUCE AVENUE
12. ⚠ JAMBOREE ROAD
13. STREET LIGHTING PLAN

PLAN LEGEND

- 8"V.C.P. M.H. — SAN. SEWER LINE
- 48"RCB S.D.M.H. — STORM DRAIN
- 8"W — WATER MAIN
- 8"GV — GATE VALVE
- FH — FIRE HYDRANT ASSEMBLY
- T.C. — TOP OF CURB
- F.L. — FLOW LINE
- E.P. — EDGE OF PAVEMENT
- F.S. — FINISH SURFACE
- 2+80 — SAN. SEWER STATION
- UNDERGROUND ELECTRICAL DUCTS
- STREET LIGHT
- STREET SURVEY MONUMENT

BENCH MARK:

ALUMINUM DISK STAMPED 3S-26-70 0.61 MILES W'LY ALONG MACARTHUR BLVD. FROM THE JUNCTION OF PALISADES ROAD AND MACARTHUR BLVD. ABOUT 47' EAST OF THE ℄ OF MACARTHUR, ABOUT 402' W'LY OF ENTRANCE TO COLLINS RADIO CO. AT A DROP INLET. SET IN TOP OF THE WEST END OF THE NORTH-WEST CORNER OF DROP INLET, 35' S'LY OF END OF CURB.

ELEV. 43.259 M.S.L.

GENERAL NOTES

1. THE CONSTRUCTION OF ALL PUBLIC IMPROVEMENTS SHALL CONFORM TO THE REQUIREMENTS OF THE STANDARD SPECIFICATIONS AND APPROPRIATE STANDARD DRAWINGS OF THE CITY OF NEWPORT BEACH (ADOPTED APRIL 13, 1970).
2. STATIONING REFERS TO CENTERLINE OF STREETS.
3. CURB DATA REFERS TO FACE OF CURB.
4. PAVING SECTIONS SHOWN ARE MINIMUM AND SUBJECT TO REVISION AND APPROVAL OF THE CITY AS REQUIRED BY THE SOIL TESTS TAKEN AFTER COMPLETION OF ROUGH GRADING.
5. ALL UNDERGROUND WORK SHALL BE COMPLETED PRIOR TO PAVING OF STREETS.
6. ALL SEWER LINES SHALL HAVE PLASTIC COMPRESSION JOINTS.
7. ALL PORTLAND CEMENT CONCRETE SHALL BE CLASS 6.0-C-3000.
8. ALL DRAINAGE STRUCTURES AND RETAINING WALL FOOTINGS SHALL BE CONSTRUCTED OF CLASS 6.0-B-2500 CONCRETE. F.c. = 2500 P.S.I., F.s. = 15,000 P.S.I., UNLESS OTHERWISE INDICATED ON PLANS.
9. EXISTING UNDERGROUND UTILITIES ARE SHOWN AS PER AVAILABLE RECORDS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFYING THE ACTUAL LOCATION AND ELEVATION IN THE FIELD PRIOR TO BEGINNING CONSTRUCTION OF THE NEW UTILITIES.
10. PAVING CONTRACTOR SHALL ACCEPT EXISTING STREET SUBGRADE CONDITIONS UNLESS WRITTEN NOTIFICATION IS GIVEN TO OWNER PRIOR TO BEGINNING WORK.
11. ALL EXPOSED CONCRETE SURFACES SHALL CONFORM IN GRADE, COLOR, AND FINISH TO ALL ADJOINING CURBS AND WALKS.
12. ALL EXPOSED FERROUS METAL PARTS TO BE GALVANIZED PER STD SPECS. AFTER FABRICATION (SEC 206-1).
13. SEWER LINE LENGTH SHOWN ON PLAN AND IN PROFILE IS THE HORIZONTAL DISTANCE MEASURED FROM ℄ OF MANHOLE
14. STORM DRAIN LENGTH SHOWN IS THE HORIZONTAL DISTANCE MEASURED FROM END OF PIPE.
15. STATIONS SHOWN THUS 0+00 ARE SEWER LINE STATIONS AND ARE INDEPENDENT OF STREET CENTERLINE STATIONING.
16. BEDDING MATERIAL SHALL BE USED IN ALL UTILITY TRENCHES, INCLUDING WATER MAINS.
17. ALL WATER MAINS SHALL BE ASBESTOS CEMENT PIPE, CLASS 150 MIN.; WATER SERVICE LINES SHALL BE 4" A.C.P. MINIMUM. GATE VALVES ADJACENT TO BENDS AND TEES SHALL BE FLANGED BY RING-TITE AND SHALL BE CONNECTED FLANGE TO FLANGE WITH SUCH APPURTENANCES.
18. FIRE HYDRANTS & WATER METERS SHALL BE LOCATED IN THEIR NORMAL LOCATION BEHIND THE CURB.
19. STREET LIGHT STANDARDS SHALL BE LOCATED IN THEIR NORMAL LOCATION BEHIND THE CURB.
20. SEWER MANHOLES SHALL BE LEFT BELOW PAVEMENT GRADE AND BROUGHT TO FINISH GRADE AFTER PAVEMENT IS IN PLACE.
21. THE CONTRACTOR SHALL MAKE THE NECESSARY ARRANGEMENTS WITH THE CITY FOR THE SHUTTING DOWN & DRAINING OF THE EXISTING WATER LINES IN ORDER TO FACILITATE THE PROPOSED CONNECTIONS.
22. V.C.P. STUBS AND THE FIRST JOINT OUT OF ALL MANHOLES SHALL BE A MAXIMUM OF ONE (1) FOOT MEASURED FROM THE INSIDE WALL OF THE MANHOLE.
23. WROUGHT IRON STEPS IN SEWER MANHOLES WILL BE ALLOWED PROVIDED THAT THE MANHOLE MANUFACTURER CERTIFIES IN WRITING THAT THE STEPS INSTALLED ARE WROUGHT IRON FABRICATED FROM 3/4" DIAMETER ROUND BAR AND CONFORMS TO THE REQUIREMENTS OF A.S.T.M. A 207, LATEST REVISION.
24. THE SEAL COAT SHALL CONSIST OF SS-1h ASPHALTIC EMULSION (PAVING ASPHALT GRADE 60-TC) AND SHALL BE APPLIED A MINIMUM OF 30 DAYS AFTER THE A.C. PAVEMENT CONSTRUCTION / AS PART OF THE CLEANUP OPERATION; AT THE RATE OF 0.10 GAL/SQ.YD.
25. FIRE HYDRANTS SHALL BE "RICH VANGUARD "6055A"
26. FLOW LINE WILL REMAIN THE SAME FOR 78" R.C.P. STORM DRAIN OR 84" C.I.P.P. ALTERNATE.

RAUB · BEIN · FROST AND ASSOCIATES
CIVIL AND STRUCTURAL ENGINEERS
LAND SURVEYORS AND PLANNERS
136 ROCHESTER STREET, COSTA MESA, CALIFORNIA · TEL: (714) 646-7723 (714) 545-1922
DATE 1-13-72
JACK G. RAUB RCE NO. 14749

DATE	BY	DESCRIPTION	APP'D	DATE
10-11-52	H.S.H.	⚠ ADD. JAMBOREE RD (SHEET 12)		

REVISIONS

APPROVED Jeremiah D. Nolan
ASST. PUBLIC WORKS DIRECTOR
R.C.E. № 12806
DATE 9-14-72

FIELD BOOKS — SCALE AS SHOWN
DESIGNED R.M.G. — DRAWN B.T.
CHECKED V.U. — DATE DEC. '71

PHASE II OF TENTATIVE TRACT Nº 7382
TITLE SHEET

CITY OF NEWPORT BEACH
PUBLIC WORKS DEPARTMENT

SHEET 1 OF 13

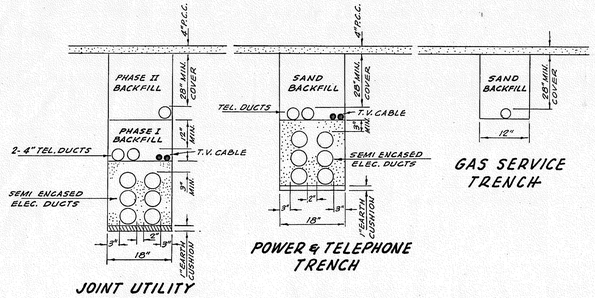
K1-13

TENT. TR. 7382 - STREET IMPROVEMENT PLANS

TRACT 7382, 7694, 7770 Sht 2 of 13

SEE TR-7594 ALSO

TR 7382 (Phase II), 7694/7770

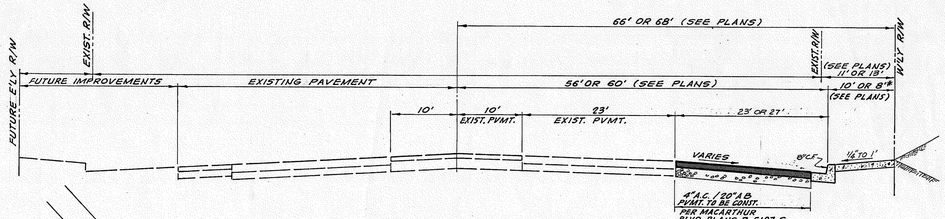


JOINT UTILITY TRENCH

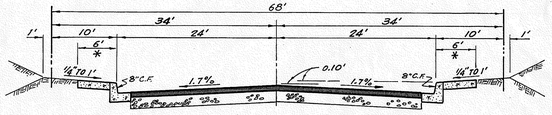
POWER & TELEPHONE TRENCH

GAS SERVICE TRENCH

TYPICAL UTILITY TRENCH CROSS SECTIONS



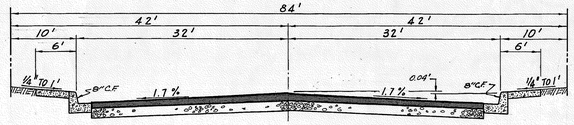
MACARTHUR BOULEVARD



INTERIOR STREETS

*NOTE

THE SIDEWALKS SHOWN HEREON ARE SUBJECT TO REVISION AS EACH INDIVIDUAL DEVELOPMENT IS PLANNED IN THE FUTURE. THE SIDEWALKS WILL CONFORM TO THE P.C. ZONE TEXT DATED NOV. 21, 1970.



SPRUCE AVENUE

TR. Nº 3201

SEE TRACT 7394

PAVING SCHEDULE		
STREET	REACH	ST. SECT.
MARTINGALE	CORINTHIAN THRU SOUTHERLY	4"AC/20'A.B.
DOLPHIN-STRIKER	DOVE THRU EASTERLY	3"AC/20'A.B.
BOWSPRIT	DOVE TO MACARTHUR	4"AC/20'A.B.
QUAIL	STA. 17+70 THRU SOUTHEASTERLY	4"AC/20'A.B.
DOVE	STA. 20+15 THRU SOUTHERLY	4"AC/20'A.B.
SPRUCE	FRONTAGE ROAD TO QUAIL	4"AC/20'A.B.
⚠ JAMBOREE RD	STA 190+18 TO MACARTHUR BLVD	8"AC./20'A.B.

KEY MAP LEGEND

- 8"V.C.P. MH — SANITARY SEWER LINE
- 48"R.C.P. SDMH — STORM DRAIN
- 8"W — WATER MAIN
- 8"GV — GATE VALVE
- FH — FIRE HYDRANT ASSEMBLY
- 4 — SHEET Nº REFERENCE
- PHASE I CONSTRUCTION TR 7382
- PHASE II CONSTRUCTION
- STREET LIGHT

INDEX MAP

SCALE 1"=200'

PREPARED BY THE OFFICE OF:
RAUB · BEIN · FROST AND ASSOCIATES
CIVIL AND STRUCTURAL ENGINEERS
LAND SURVEYORS AND PLANNERS
136 ROCHESTER STREET, COSTA MESA, CALIFORNIA
TEL: (714) 548-7723 (714) 542-1022
Jack G. Raub
DATE 1-13-72
JACK G. RAUB RCE NO. 14749

DATE	BY	DESCRIPTION	APP'D.	DATE
10-11-72	H.S.H.	⚠ REVISE INDEX MAP & PAVING SCHEDULE		

REVISIONS

APPROVED
ASST. PUBLIC WORKS DIRECTOR
R.C.E. NO. 12806
DATE 3-14-72

FIELD BOOK | SCALE AS SHOWN
DESIGNED R.M.G. | DRAWN B.T.
CHECKED J.V. | DATE DEC. '71

TYPICAL SECTIONS AND INDEX MAP

PHASE II

TENTATIVE TRACT Nº 7382

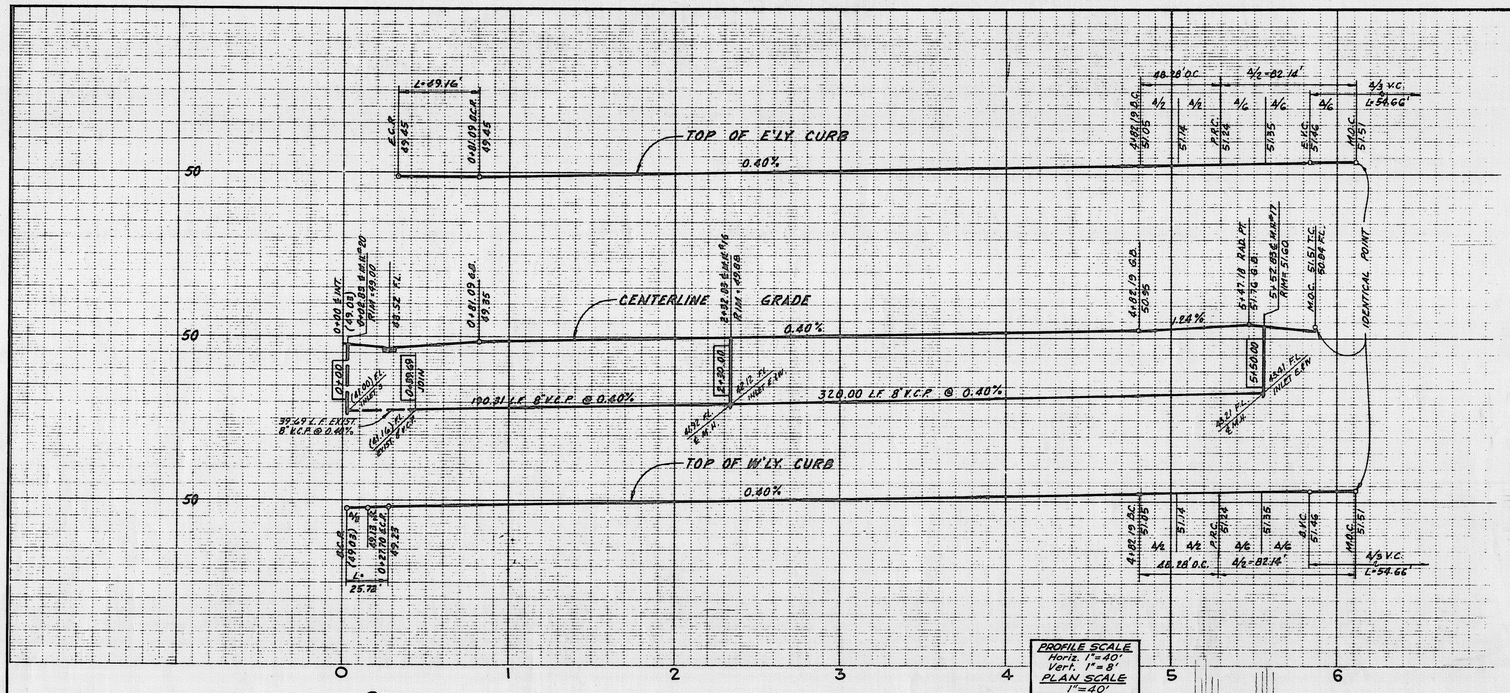
CITY OF NEWPORT BEACH
PUBLIC WORKS DEPARTMENT

SHEET 3 OF 13

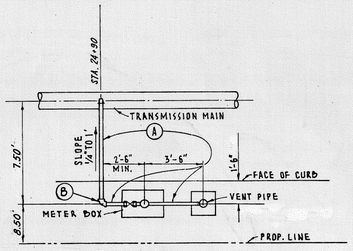
TRACT 7382, 7684, 7770
SH 2 of 13

TR 7382, 7684, 7770
1 mp.

K1-14

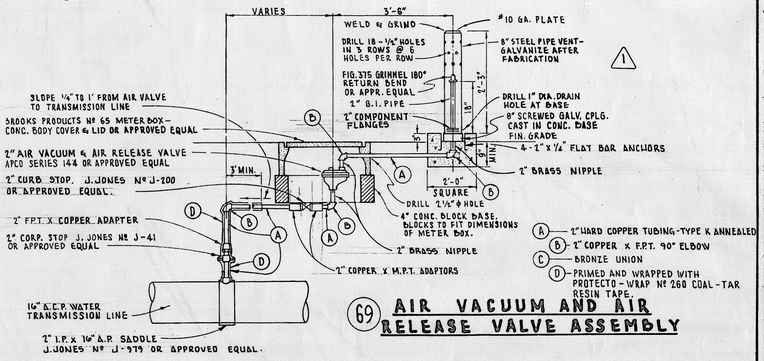


PROFILE SCALE
Horiz. 1"=40'
Vert. 1"=8'
PLAN SCALE
1"=40'

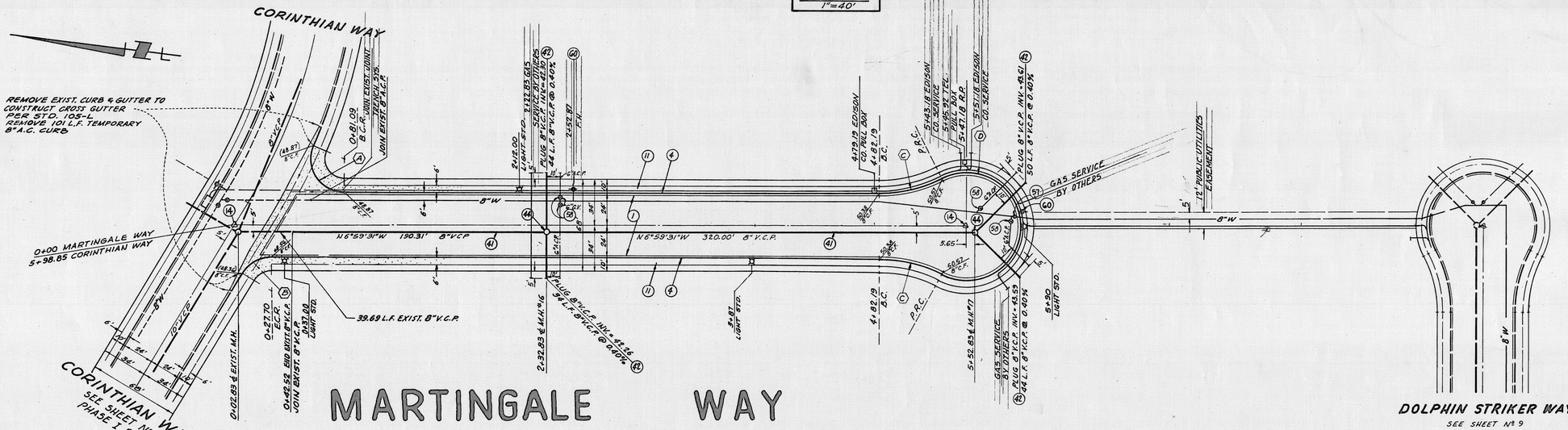


PLAN

NOTES:
1 - SILVER SOLDER ALL TUBING
2 - A COPPER X COPPER UNION MAY BE INSERTED ANY PLACE ABOVE THE 2" J. JONES Nº J-979



69 AIR VACUUM AND AIR RELEASE VALVE ASSEMBLY



CURVE DATA

- (A) — Δ=112°39'44" R= 25.00' L= 49.16' T= 37.53'
- (B) — Δ=58°57'19" R= 25.00' L= 25.72' T= 14.13'
- (C) — Δ=27°39'38" R=100.00' L= 48.28' T= 24.62'
- (D) — Δ=235°18'16" R= 40.00' L= 164.28'

PREPARED BY THE OFFICE OF:
RAUB · BEIN · FROST AND ASSOCIATES
CIVIL AND STRUCTURAL ENGINEERS
LAND SURVEYORS AND PLANNERS
136 ROCHESTER STREET, COSTA MESA, CALIFORNIA | TEL: (714) 548-7723 (714) 542-1022
DATE 3-14-72
JACK G. RAUB RCE NO. 14749

DATE	BY	DESCRIPTION	APP'D.	DATE
		REVISIONS		

APPROVED
ASST. PUBLIC WORKS DIRECTOR
R.C.E. NO. 12806
DATE 3-14-72

FIELD BOOK	SCALE
	AS SHOWN
DESIGNED R.M.G.	DRAWN B.T.
CHECKED J.V.	DATE DEC. '71

PLAN AND PROFILE FOR THE IMPROVEMENT OF
MARTINGALE WAY
FROM CORINTHIAN WAY TO STA. 4+62.83
TENTATIVE TRACT Nº 7382 PHASE II
CITY OF NEWPORT BEACH
PUBLIC WORKS DEPARTMENT

SHEET 10 OF 13

TRACT 7382, 7694, 7770 Sht 12 of 13

K1-15

TR. 7382, 7694, 7770 imp.

PLAN AND PROFILE
FOR THE IMPROVEMENT OF STREETS WITHIN
AND ADJACENT TO

TRACT Nº 7394

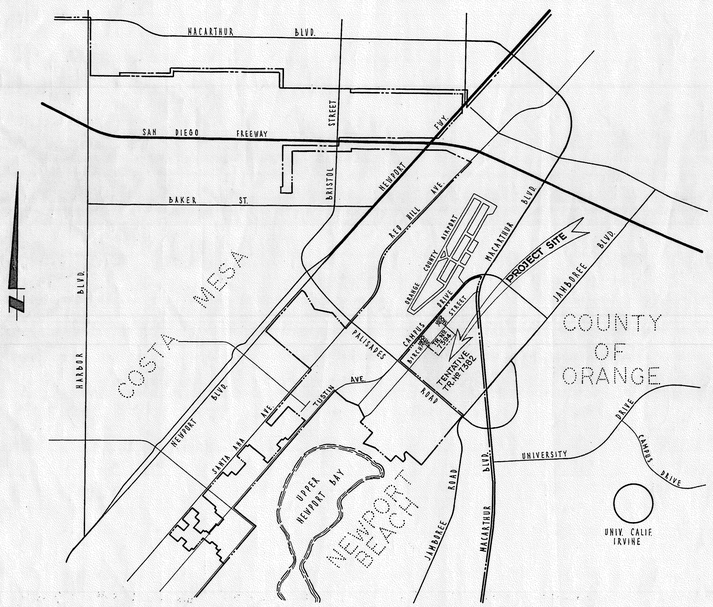
AND PHASE I OF TENTATIVE TRACT NO. 7382

"NEWPORT PLACE"

NEWPORT BEACH, CALIFORNIA

A DEVELOPMENT OF

EMKAY DEVELOPMENT CO.



VICINITY MAP

NOT TO SCALE

PLAN LEGEND

8"VCP M.H.	SAN. SEWER LINE
48"RCP S.D.M.H.	STORM DRAIN
8"W	WATER MAIN
GGV	GATE VALVE
FH	FIRE HYDRANT ASSEMBLY
T.C.	TOP OF CURB
F.L.	FLOW LINE
E.P.	EDGE OF PAVEMENT
F.S.	FINISH SURFACE
2+80	SAN. SEWER STATION
	UNDERGROUND ELECTRICAL DUCTS
	STREET LIGHT
	STREET SURVEY MONUMENT

SHT. Nº	SHEET INDEX
1	TITLE SHEET
2	TYPICAL SECTIONS & INDEX MAP
3	CONSTRUCTION NOTES & QUANTITIES
4-13	STREET IMPROVEMENT PLANS
14	STREET LIGHTING PLAN
⚠ 15	QUAIL STREET (STA. 6+65.74 TO STA. 17+70.00) PHASE I EXTENSION
⚠ 16	DOVE STREET (STA. 18+42.86 TO STA. 20+15.00) PHASE I EXTENSION

16A WATER MAIN

BENCH MARK:

ALUMINUM DISK STAMPED SS-26-70 0.61 MILES N'LY ALONG MACARTHUR BLVD. FROM THE JUNCTION OF PALISADES ROAD AND MACARTHUR BLVD. ABOUT 47' EAST OF THE ℄ OF MACARTHUR, ABOUT 402' N'LY OF ENTRANCE TO COLLINS RADIO CO. AT A DROP INLET. SET IN TOP OF THE WEST END OF THE NORTH-WEST CORNER OF DROP INLET, 35' S'LY OF END OF CURB.

ELEV 43.259 M.S.L.

GENERAL NOTES

1. THE CONSTRUCTION OF ALL PUBLIC IMPROVEMENTS SHALL CONFORM TO THE REQUIREMENTS OF THE STANDARD SPECIFICATIONS AND APPROPRIATE STANDARD DRAWINGS OF THE CITY OF NEWPORT BEACH (ADOPTED APRIL 13, 1970).
2. STATIONING REFERS TO CENTERLINE OF STREETS.
3. CURB DATA REFERS TO FACE OF CURB.
4. PAVING SECTIONS SHOWN ARE MINIMUM AND SUBJECT TO REVISION AND APPROVAL OF THE CITY AS REQUIRED BY THE SOIL TESTS TAKEN AFTER COMPLETION OF ROUGH GRADING.
5. ALL UNDERGROUND WORK SHALL BE COMPLETED PRIOR TO PAVING OF STREETS.
6. ALL SEWER LINES SHALL HAVE PLASTIC COMPRESSION JOINTS.
7. ALL PORTLAND CEMENT CONCRETE SHALL BE CLASS 6.0-C-3000.
8. ALL DRAINAGE STRUCTURES AND RETAINING WALL FOOTINGS SHALL BE CONSTRUCTED OF CLASS 6.0-B-2500 CONCRETE. F.c. = 2500 P.S.I., F.s. = 18,000 P.S.I., UNLESS OTHERWISE INDICATED ON PLANS.
9. EXISTING UNDERGROUND UTILITIES ARE SHOWN AS PER AVAILABLE RECORDS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFYING THE ACTUAL LOCATION AND ELEVATION IN THE FIELD PRIOR TO BEGINNING CONSTRUCTION OF THE NEW UTILITIES.
10. PAVING CONTRACTOR SHALL ACCEPT EXISTING STREET SUBGRADE CONDITIONS UNLESS WRITTEN NOTIFICATION IS GIVEN TO OWNER PRIOR TO BEGINNING WORK.
11. ALL EXPOSED CONCRETE SURFACES SHALL CONFORM IN GRADE, COLOR, AND FINISH TO ALL ADJOINING CURBS AND WALKS.
12. ALL EXPOSED FERROUS METAL PARTS TO BE GALVANIZED PER STD. SPECS. AFTER FABRICATION (SEC. 206-1.).
13. SEWER LINE LENGTH SHOWN ON PLAN AND IN PROFILE IS THE HORIZONTAL DISTANCE MEASURED FROM ℄ OF MANHOLE.
14. STORM DRAIN LENGTH SHOWN IS THE HORIZONTAL DISTANCE MEASURED FROM END OF PIPE.
15. STATIONS SHOWN THUS 0+00 ARE SEWER LINE STATIONS AND ARE INDEPENDENT OF STREET CENTERLINE STATIONING.
16. BEDDING MATERIAL SHALL BE USED IN ALL UTILITY TRENCHES, INCLUDING WATER MAINS.
17. ALL WATER MAINS SHALL BE ASBESTOS CEMENT PIPE, CLASS 150 MIN.; WATER SERVICE LINES SHALL BE 4" A.C.P. MINIMUM. GATE VALVES ADJACENT TO BENDS AND TEES SHALL BE FLANGED BY RING-TITE AND SHALL BE CONNECTED FLANGE TO FLANGE WITH SUCH APPURTENANCES.
18. ⚠ FIRE HYDRANTS & WATER METERS SHALL BE LOCATED IN THEIR NORMAL LOCATION BEHIND THE CURB.
19. STREET LIGHT STANDARDS SHALL BE LOCATED IN THEIR NORMAL LOCATION BEHIND THE CURB.
20. SEWER MANHOLES SHALL BE LEFT BELOW PAVEMENT GRADE AND BROUGHT TO FINISH GRADE AFTER PAVEMENT IS IN PLACE.
21. THE CONTRACTOR SHALL MAKE THE NECESSARY ARRANGEMENTS WITH THE CITY FOR THE SHUTTING DOWN & DRAINING OF THE EXISTING WATER LINES IN ORDER TO FACILITATE THE PROPOSED CONNECTIONS.
22. V.C.P. STUBS AND THE FIRST JOINT OUT OF ALL MANHOLES SHALL BE A MAXIMUM OF ONE (1) FOOT MEASURED FROM THE INSIDE WALL OF THE MANHOLE.
23. WROUGHT IRON STEPS IN SEWER MANHOLES WILL BE ALLOWED PROVIDED THAT THE MANHOLE MANUFACTURER CERTIFIES IN WRITING THAT THE STEPS INSTALLED ARE WROUGHT IRON FABRICATED FROM 3/4" DIAMETER ROUND BAR AND CONFORMS TO THE REQUIREMENTS OF A.S.T.M. A 207, LATEST REVISION.
24. THE SEAL COAT SHALL CONSIST OF SS-1h ASPHALTIC EMULSION (PAVING ASPHALT GRADE 60-70) AND SHALL BE APPLIED A MINIMUM OF 30 DAYS AFTER THE AC. PAVEMENT CONSTRUCTION (AS PART OF THE CLEANUP OPERATION) AT THE RATE OF 0.10 GAL./SQ.YD.
25. ⚠ FIRE HYDRANTS SHALL BE "RICH VANGUARD "66SA"

RAUB · BEIN · FROST AND ASSOCIATES
CIVIL AND STRUCTURAL ENGINEERS
LAND SURVEYORS AND PLANNERS
16 ROCHESTER STREET, COSTA MESA, CALIFORNIA
TEL: (714) 545-7325 (714) 543-1022

Jack G. Raub 6-10-71
JACK G. RAUB RCE NO. 14749

K1-16

DATE	BY	DESCRIPTION	APP'D	DATE
9-20-71	R.M.G.	⚠ ADDED SHEETS 15 & 16 TO INDEX	J.D.	11/9/71
7-16-71	J.P.N.	⚠ ADDED NOTE #25	BBN	7-12-71
7-1-71	J.P.N.	⚠ REVISED NOTES 18 & 19	BBN	7-12-71

REVISIONS

APPROVED
PUBLIC WORKS DIRECTOR
R.C.E. NO. 9537
DATE 6-17-71

FIELD BOOKS 302-9, 321-R, 325-9 | SCALE AS SHOWN
DESIGNED R.M.G. | DRAWN N.A.
CHECKED J.P.N. | DATE APRIL , 1971

TRACT 7382 & TRACT 7394 & ADJACENT STREETS
PH I
TITLE SHEET

CITY OF NEWPORT BEACH
PUBLIC WORKS DEPARTMENT

SHEET 1 OF 16

TR. 7394, TENT. TR. 7382 - STREET IMPROVEMENT PLANS

TR. 7394 SH 1 of 16

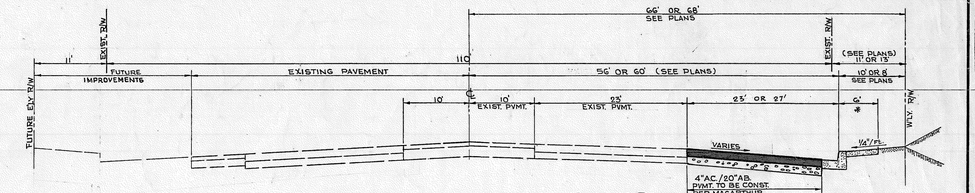
JOINT UTILITY TRENCH

POWER & TELEPHONE TRENCH

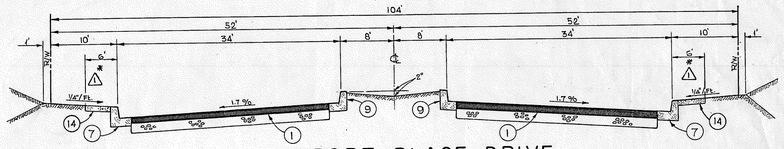
GAS SERVICE TRENCH

1 TYPICAL UTILITY TRENCH CROSS SECTIONS

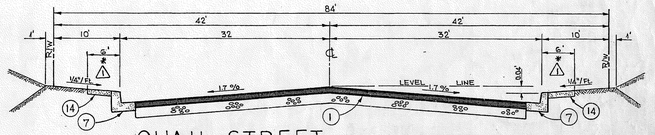
NO SCALE



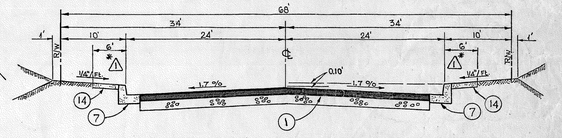
MACARTHUR BOULEVARD
(NOT A PART OF THESE PLANS)



NEWPORT PLACE DRIVE

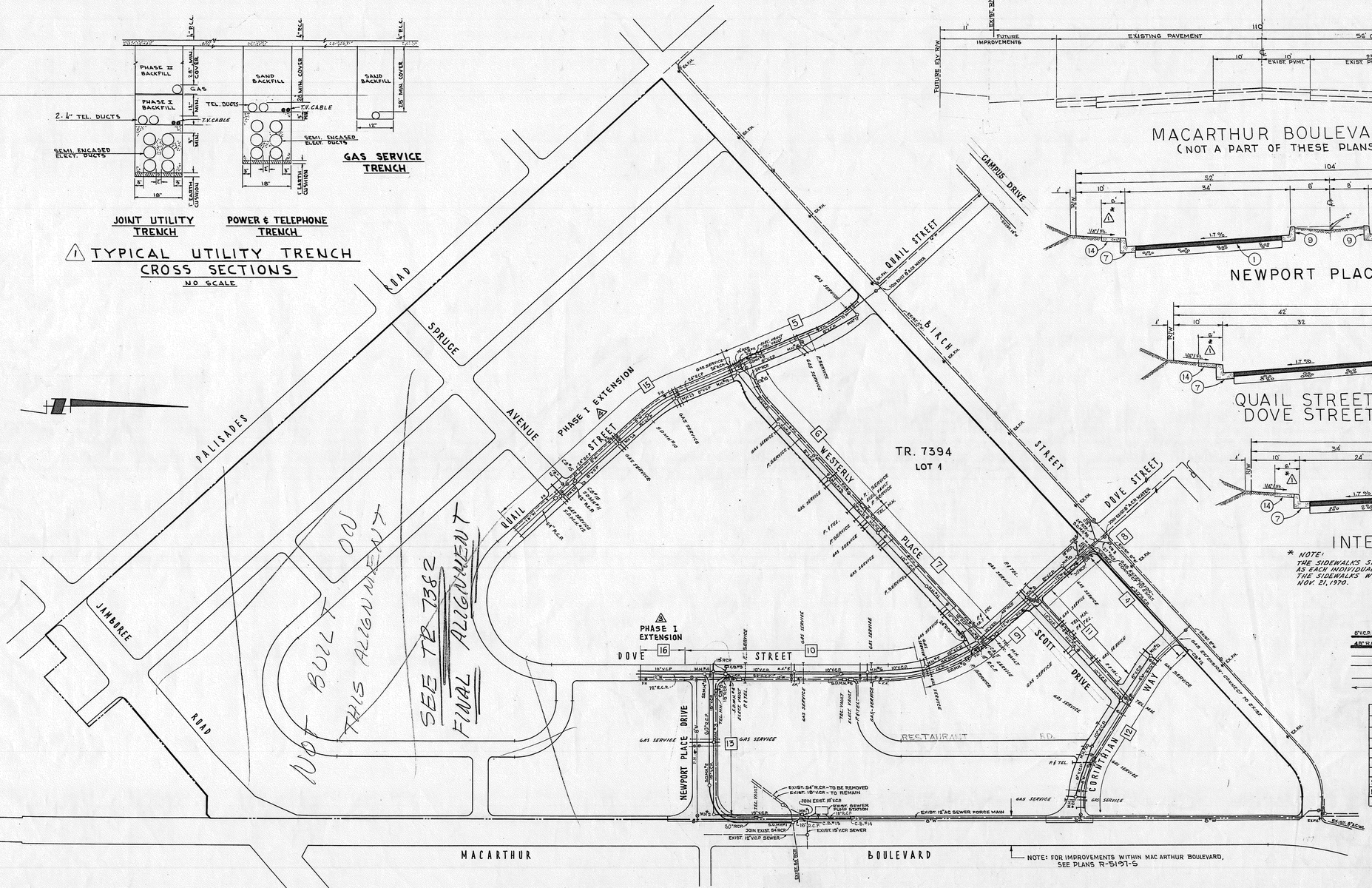


QUAIL STREET STA. 0+67.00 TO STA. 5+67.74
DOVE STREET STA. 0+67.00 TO STA. 2+74.00



INTERIOR STREETS

* NOTE:
THE SIDEWALKS SHOWN HEREON ARE SUBJECT TO REVISION AS EACH INDIVIDUAL DEVELOPMENT IS PLANNED IN THE FUTURE. THE SIDEWALKS WILL CONFORM TO THE PC ZONE TEXT DATED NOV. 21, 1970.



INDEX MAP
SCALE: 1" = 200'

KEY MAP LEGEND

8"V.C.P. M.H. / 48"R.C.P. SDMH	SAN. SEWER LINE
	STORM DRAIN
8"W	WATER MAIN
8"GV	GATE VALVE
F.H.	FIRE HYDRANT ASSEMBLY
12	SHEET NO.

PAVING SCHEDULE 2

STREET	REACH	ST. SECT.
QUAIL	BIRCH THRU WESTERLY	4" A.C./15" A.B.
WESTERLY		4" A.C./15" A.B.
DOVE	BIRCH THRU WESTERLY	4" A.C./15" A.B.
DOVE	WESTERLY TO STA. 15+00	4" A.C./12" A.B.
DOVE	STA. 15+00 TO ENTRANCE	4" A.C./14" A.B.
SCOTT DRIVE	DOVE ST. TO CORINTHIAN WAY	4" A.C./11" A.B.
NEWPORT PLACE	MACARTHUR THRU DOVE	4" A.C./15" A.B.
CORINTHIAN		4" A.C./14" A.B.

PREPARED BY THE OFFICE OF:
RAUB · BEIN AND A
CIVIL AND STRUCTURAL LAND SURVEYORS AN
136 ROCHESTER STREET
COSTA MESA, CALIFORNIA
JACK G. RAUB
6-10-71
14749

K1-17

DATE	BY	DESCRIPTION	APP'D.	DATE
9-20-71	R.M.G.	2 ADDED EXTENSION OF QUAIL ST. FROM STA. 6+66.74 TO STA. 17+70.00 (PHASE I EXT.)	J.D.	11/9/71
9-20-71	R.M.G.	2 ADDED EXTENSION OF DOVE ST. FROM STA. 18+92.89 TO STA. 20+15.00 (PHASE I EXT.)	J.D.	"
5-16-71	J.P.N.	2 ADDED PAVING SCHEDULE	DBW	8-17-71
6-30-71	J.P.N.	1 ADDED UTILITY TRENCH DETAIL & INCREASED SIDEWALK WIDTH	DBW	7-2-71

REVISIONS

APPROVED
PUBLIC WORKS DIRECTOR
R.C.E. NO. 9837
DATE 6-17-71

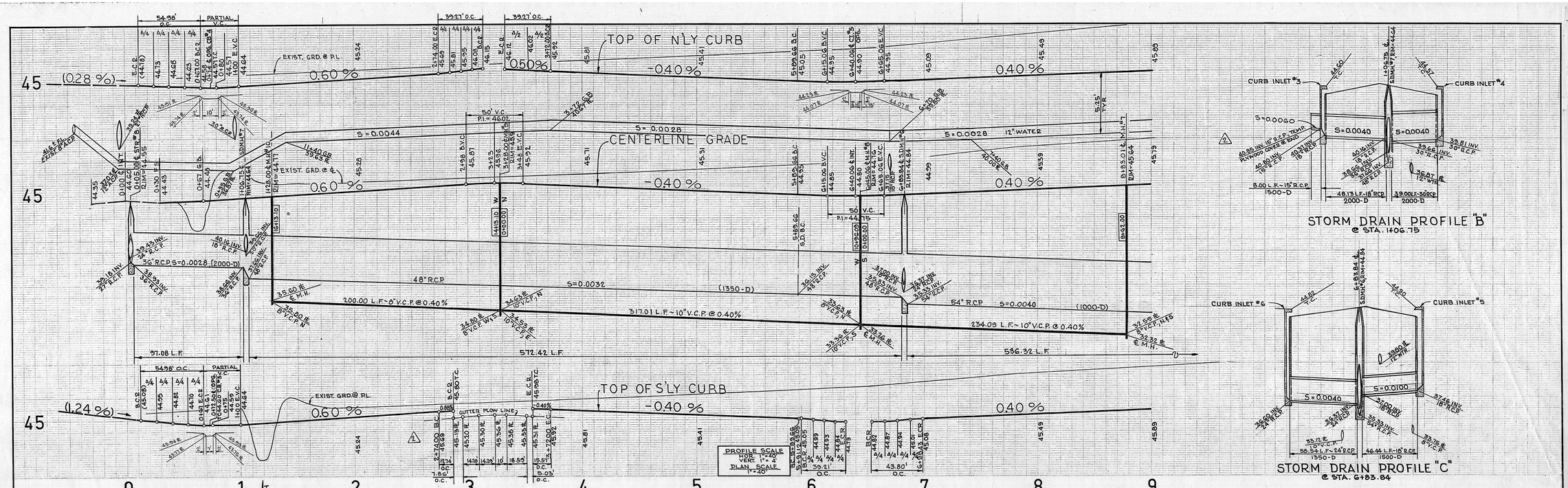
FIELD BOOKS	SCALE
302-R, 321-R, 325-R	AS SHOWN
DESIGNED R.M.G.	DRAWN N.A.
CHECKED J.P.N.	DATE APRIL, 1971

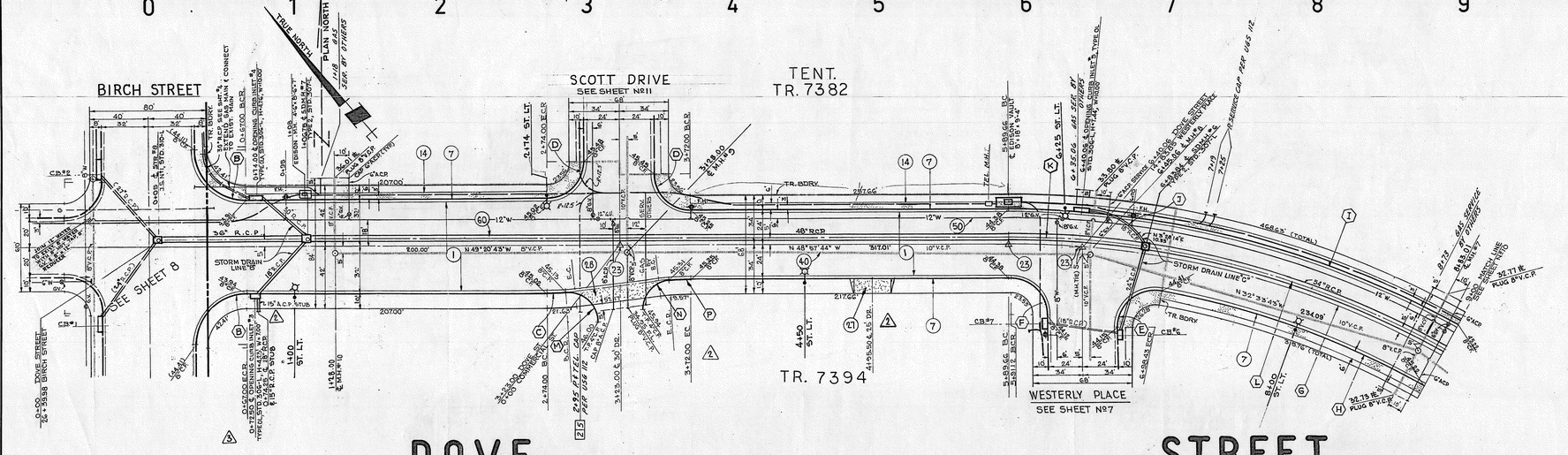
TYPICAL SECTIONS AND INDEX MAP
TRACT 7394 & TENT. TRACT 7382
CITY OF NEWPORT BEACH
PUBLIC WORKS DEPARTMENT

SHEET 2 OF 16

TRACT 7394 SH 2 of 16

TR 7394 7382 sh 2





CURVE DATA

STORM DRAIN (K)	Δ = 6° 59' 31"	R = 605.00'	L = 94.97'	T = 47.43'
STORM DRAIN (L)	Δ = 35° 21' 25"	R = 605.00'	L = 352.22'	T = 181.26'
(M)	Δ = 85° 38' 55"	R = 20.00'	L = 32.69'	T = 21.32'
(N)	Δ = 85° 52' 24"	R = 20.00'	L = 29.86'	T = 18.50'
(P)	Δ = 4° 21' 36"	R = 200.00'	L = 15.57'	T = 7.79'
(B)	Δ = 90° 00' 00"	R = 35.00'	L = 54.98'	T = 35.00'
(C)	Δ = 3° 38' 55"	R = 200.00'	L = 12.74'	T = 6.37'
(D)	Δ = 90° 00' 00"	R = 25.00'	L = 39.27'	T = 25.00'
(E)	Δ = 100° 23' 11"	R = 25.00'	L = 43.80'	T = 30.00'
(F)	Δ = 89° 51' 40"	R = 25.00'	L = 39.21'	T = 24.94'
(TOTAL CURVE) (G)	Δ = 42° 21' 02"	R = 600.00'	L = 443.48'	T = 232.43'
(TOTAL CURVE) (H)	Δ = 31° 57' 51"	R = 576.00'	L = 321.34'	T = 321.34'
(TOTAL CURVE) (I)	Δ = 42° 21' 02"	R = 624.00'	L = 461.23'	T = 241.72'
STORM DRAIN (J)	Δ = 48° 12' 34"	R = 45.00'	L = 37.86'	T = 20.13'

RBF
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CIVIL AND STRUCTURAL ENGINEERS
LAND SURVEYORS AND PLANNERS
136 ROCHESTER STREET, COSTA MESA, CALIFORNIA
TEL: (714) 548-7723 (714) 542-1022
Jack G. Raub
DATE 6-10-71
JACK G. RAUB RCE NO. 14749

DATE	BY	DESCRIPTION	APP'D.	DATE
7-16-71	J.P.N.	① ADDED ST. LIGHTS	D. T.	7-30-71
7-12-71	J.P.N.	② CORRECTED TERMINOLOGY @ S.D. CURB INLETS # 3 & #4	BBN	7-12-71
7-1-71	J.P.N.	③ ADDED STORM DRAIN STUB AND P.C.C. DRIVEWAY APPROACHES	BBN	7-2-71
6-30-71	J.P.N.	④ RELOCATE ALL F.H.'S TO BACK OF CURB	BBN	7-2-71

REVISIONS

APPROVED
PUBLIC WORKS DIRECTOR
R.C.E. NO. 9597
DATE 6-17-71

FIELD BOOKS	SCALE
502-R, 321-R 313-R	AS SHOWN
DESIGNED R. M. G.	DRAWN H.A.
CHECKED J. P. N.	DATE APRIL, 1971

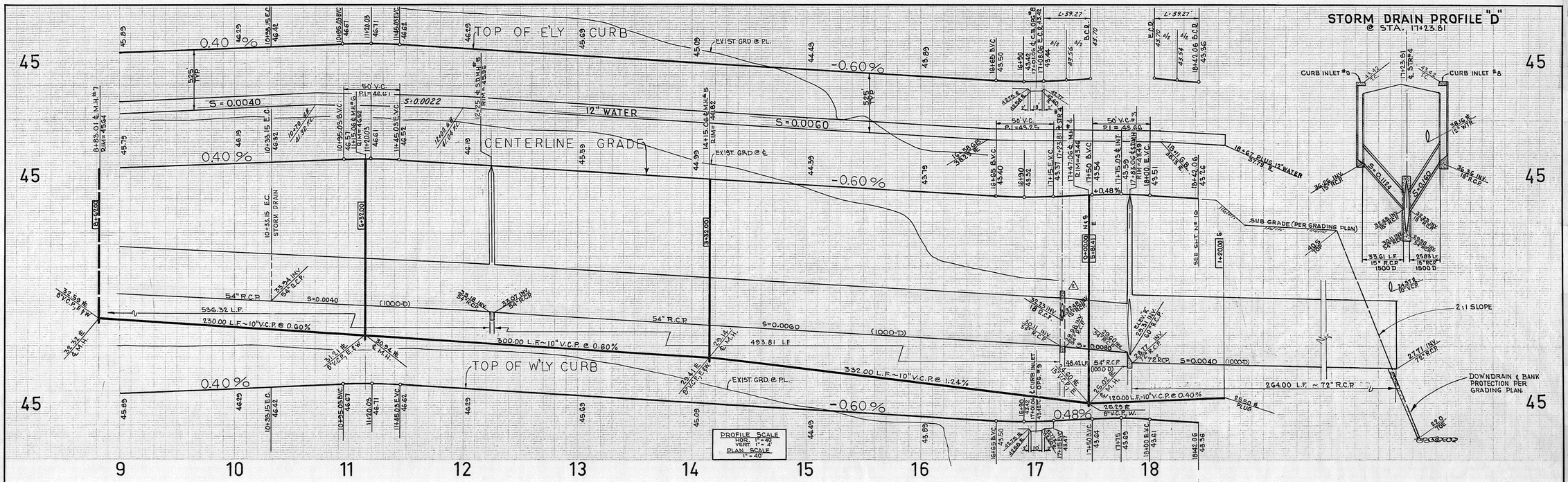
PLAN AND PROFILE FOR THE IMPROVEMENT OF
DOVE STREET
TRACT Nº 7394
CITY OF NEWPORT BEACH
PUBLIC WORKS DEPARTMENT

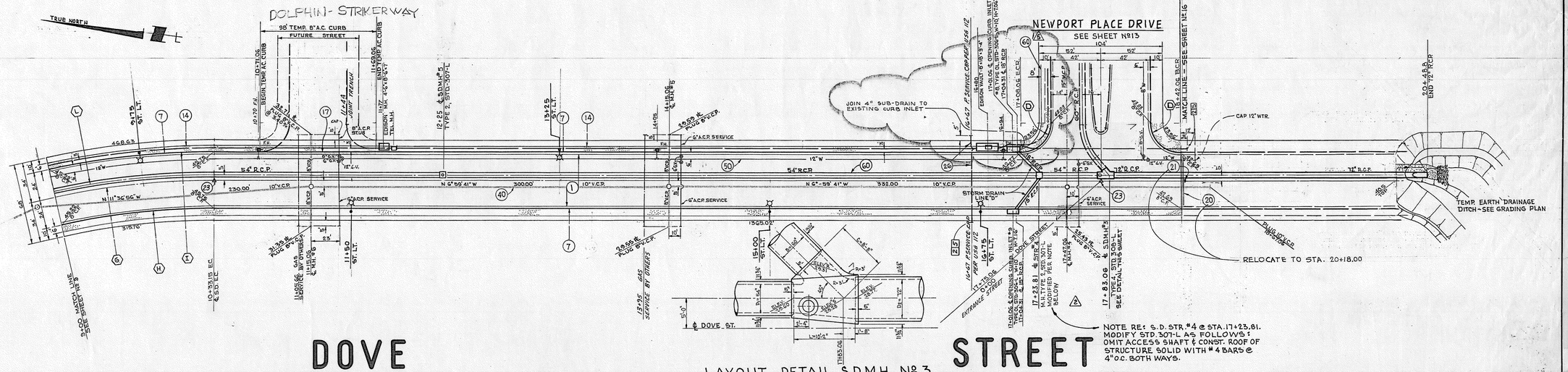
SHEET 9 OF 16

TRACT 7394 SH 9 of 16

K1-18

TR. 7394, 7382 sh. 9





LAYOUT DETAIL S.D.M.H. Nº 3
TYPE 4 STD.- 308-L
NO SCALE

NOTE RE: S.D. STR. #4 @ STA. 17+23.81.
MODIFY STD. 307-L AS FOLLOWS:
OMIT ACCESS SHAFT & CONST. ROOF OF STRUCTURE SOLID WITH #4 BARS @ 4" O.C. BOTH WAYS.

CURVE DATA

(TOTAL CURVE)	G	Δ = 42°21'02"	R = 600.00'	L = 443.49' T = 232.45'
(TOTAL CURVE)	H	Δ = 31°57'51"	R = 576.00'	L = 321.34' T = 164.57'
(TOTAL CURVE)	I	Δ = 42°21'02"	R = 624.00'	L = 461.23' T = 241.72'
	D	Δ = 90°00'00"	R = 25.00'	L = 39.27' T = 25.00'
(STORM DRAIN)	L	Δ = 33°21'25"	R = 605.00'	L = 352.22' T = 181.26'

RBF
PREPARED BY THE OFFICE OF:
RAUB · BEIN · FROST AND ASSOCIATES
CIVIL AND STRUCTURAL ENGINEERS
LAND SURVEYORS AND PLANNERS
136 ROCHESTER STREET | TEL: (714) 548-7723
COSTA MESA, CALIFORNIA | (714) 542-1022
Jack G. Raub
DATE 6-10-71
JACK G. RAUB
RCE NO. 14749

DATE	BY	DESCRIPTION	APPD.	DATE
10-18-72	J.W.W.	⚠5 ADDED SUB-DRAIN IN NEWPORT PLACE DRIVE		
10-15-71	J.W.D.	⚠4 REVISED FOR CONTINUATION OF DOVE STREET	J.D. 7-30-71	11-9-71
7-16-71	J.P.N.	⚠3 ADDED ST. LIGHTS		
7-12-71	J.P.N.	⚠2 REVISED S.D. U.S. #4	BBH 7-22-71	
6-30-71	J.P.N.	⚠1 RELOCATE ALL F.H.'s TO BACK OF CURB	BBH 7-2-71	

REVISIONS

APPROVED
PUBLIC WORKS DIRECTOR
R.C.E. NO. 9597
DATE 6-17-71

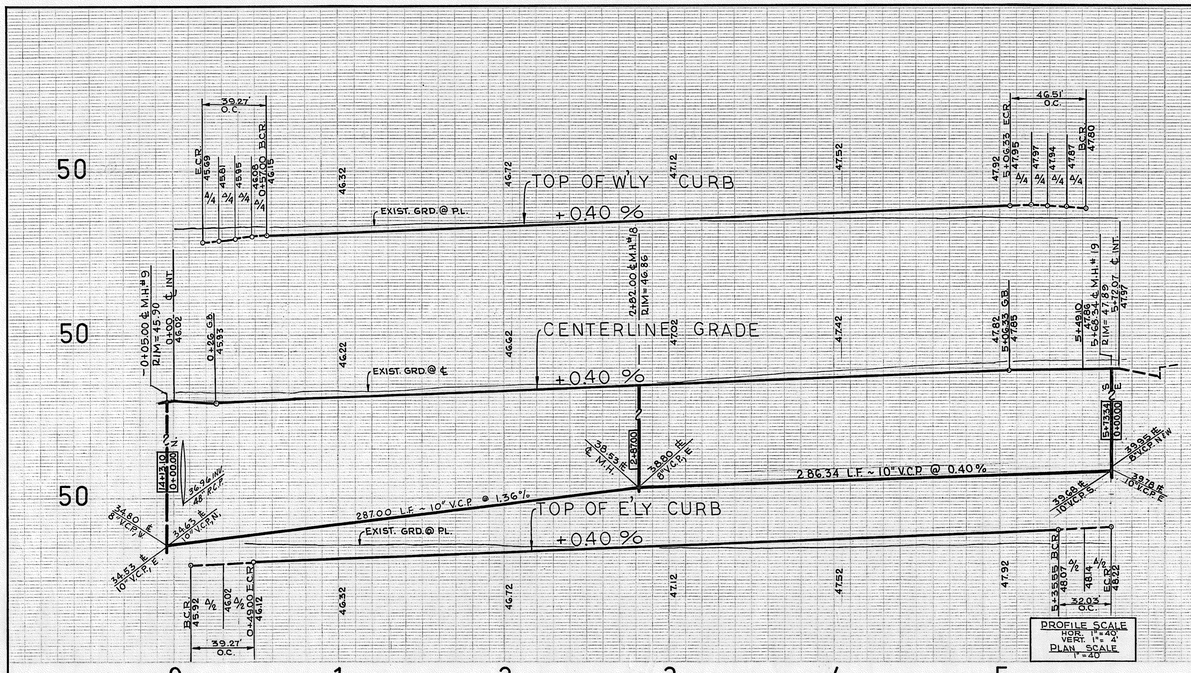
FIELD BOOKS 302-R, 321-R, 323-R | SCALE AS SHOWN
DESIGNED R.M.G. | DRAWN H.A.
CHECKED J.P.N. | DATE APRIL , 1971

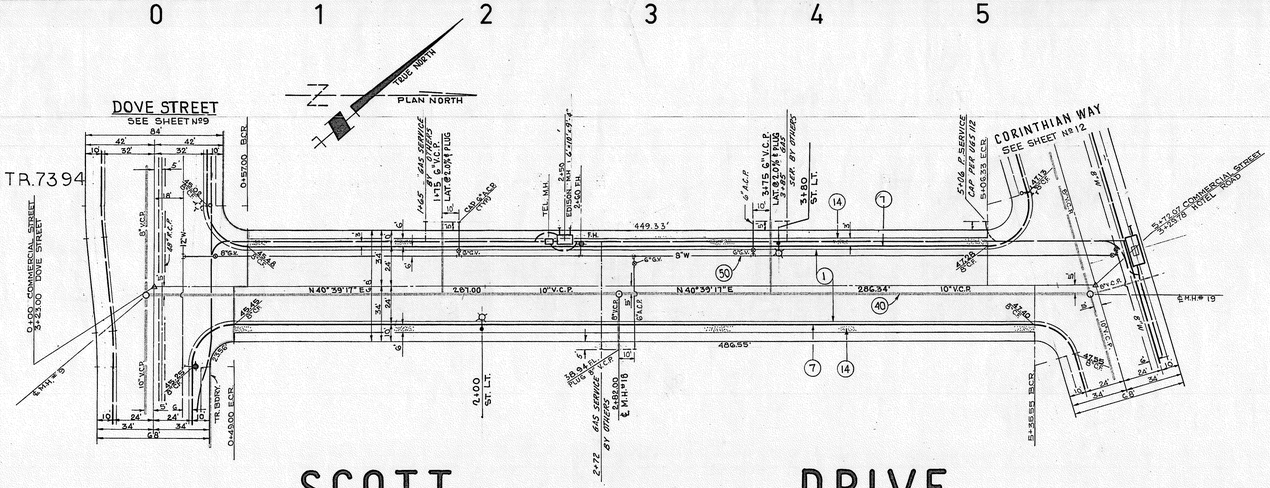
PLAN AND PROFILE FOR THE IMPROVEMENT OF
DOVE STREET
TENT. TRACT 7382
CITY OF NEWPORT BEACH
PUBLIC WORKS DEPARTMENT

SHEET 10 OF 16

TRACT 7382
Sht 10 of 16

Tr. 7394, 7382 sh. 10





7-16-71	J.P.N.	⚠ ADDED ST. LIGHTS		7-30-71
6-30-71	J.P.N.	⚠ RELOCATE ALL F.H.'S TO BACK OF CURB	BAN	7-2-71
DATE	BY	DESCRIPTION	APP'D.	DATE

REVISIONS

PREPARED BY THE OFFICE OF
RAUB · BEIN · FROST AND ASSOCIATES
CIVIL AND STRUCTURAL ENGINEERS
LAND SURVEYORS AND PLANNERS
136 ROCHESTER STREET, COSTA MESA, CALIFORNIA
TEL: (714) 548-7723 (714) 542-1022

Jack G. Raub
JACK G. RAUB
DATE 6-10-71
RCE NO. 14749

APPROVED
PUBLIC WORKS DIRECTOR
R.C.E. NO. 9537
DATE 6-17-71

FIELD BOOKS	SCALE
S02-R,S21-R,S25-R	AS SHOWN
DESIGNED R.M.G.	DRAWN H.A.
CHECKED J.P.N.	DATE APRIL 1971

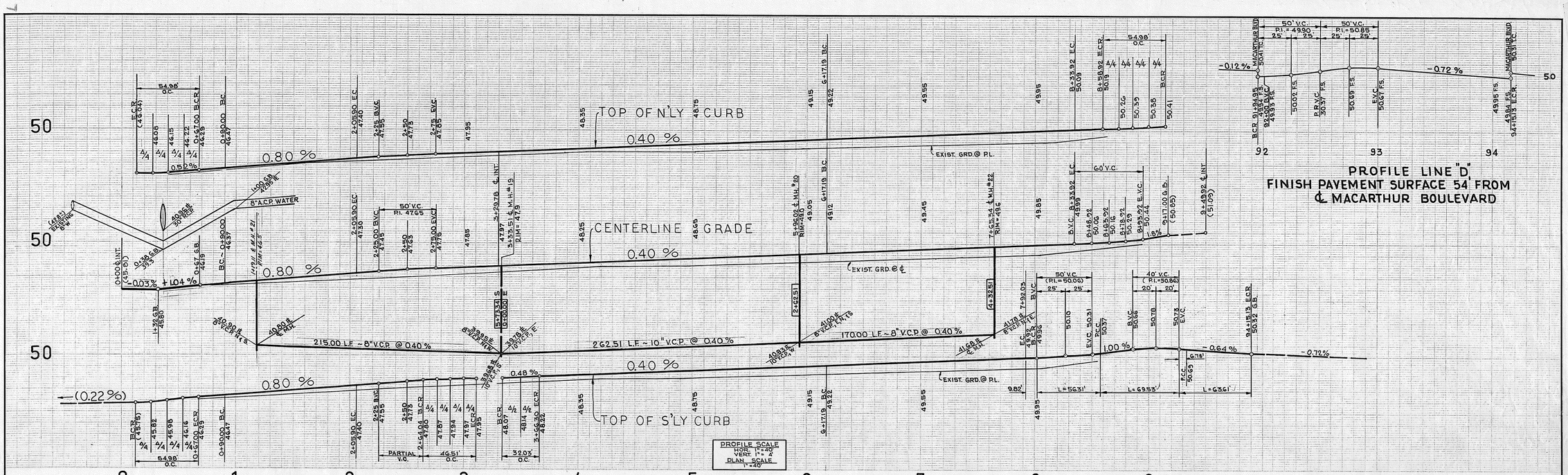
PLAN AND PROFILE FOR THE IMPROVEMENT OF
SCOTT DRIVE
FROM DOVE ST. TO CORINTHIAN WAY
TENT. TRACT 7382
CITY OF NEWPORT BEACH
PUBLIC WORKS DEPARTMENT

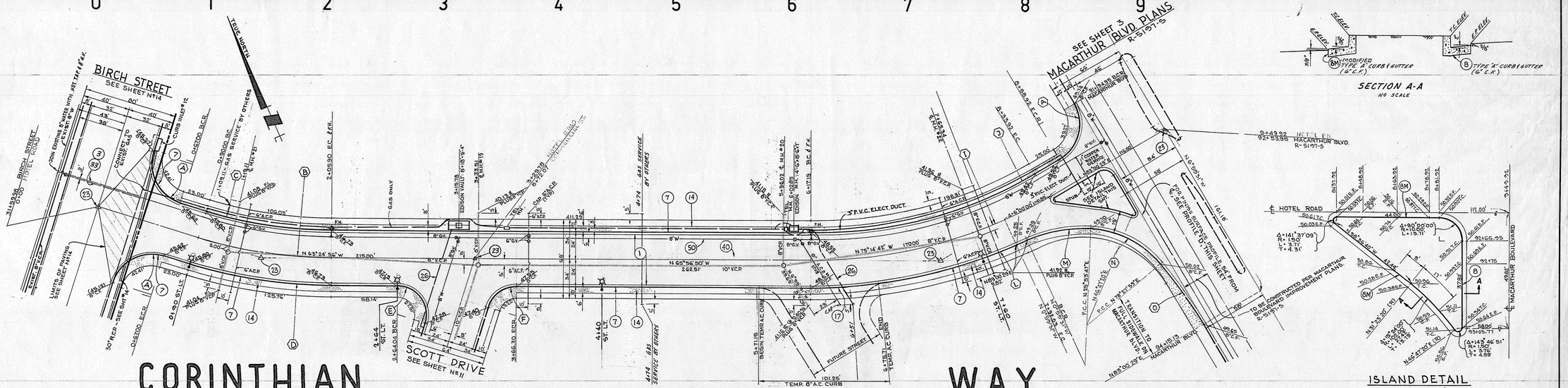
SHEET 11 OF 16

TRACT 7394 Sh. 11 of 16

K1-20

TR. 7394, 7382 sh. 11





SECTION A-A
NO SCALE

ISLAND DETAIL
SCALE: 1" = 20'

CURVE DATA

(K) (L)	Δ = 25° 02' 41"	R = 424.00'	L = 185.34'	T = 94.17'
(M)	Δ = 26° 55' 18"	R = 120.00'	L = 56.31'	T = 28.69'
(N)	Δ = 52° 34' 12"	R = 83.00'	L = 76.15'	T = 40.99'
(O)	Δ = 4° 32' 30"	R = 717.00'	L = 56.83'	T = 28.42'
(A)	Δ = 90° 00' 00"	R = 35.00'	L = 54.98'	T = 35.00'
(B)	Δ = 16° 36' 07"	R = 400.00'	L = 115.90'	T = 58.36'
(C)	Δ = 16° 36' 07"	R = 376.00'	L = 108.95'	T = 54.86'
(D)	Δ = 16° 36' 07"	R = 424.00'	L = 122.86'	T = 61.86'
(E)	Δ = 106° 36' 07"	R = 25.00'	L = 46.51'	T = 33.54'
(F)	Δ = 75° 23' 53"	R = 25.00'	L = 32.03'	T = 18.63'
(G) (H)				
(I)	Δ = 31° 02' 41"	R = 400.00'	L = 216.75'	T = 111.10'
(J)	Δ = 31° 02' 41"	R = 376.00'	L = 203.73'	T = 104.43'

PREPARED BY THE OFFICE OF:
RAUB · BEIN · FROST AND ASSOCIATES
CIVIL AND STRUCTURAL ENGINEERS
LAND SURVEYORS AND PLANNERS
186 ROCHESTER STREET | TEL: (714) 548-7723
COSTA MESA, CALIFORNIA | (714) 542-1022
Jack G. Raub DATE 6-10-71
JACK G. RAUB RCE NO. 14749

DATE	BY	DESCRIPTION	APPD.	DATE
9-20-71	R.M.G.	⚠ ADDED STREET NAME	J.D.	11/9/71
7-16-71	J.P.N.	⚠ ADDED ST. LIGHTS		7-30-71
6-30-71	J.P.N.	⚠ RELOCATE ALL F. HTS. TO BACK OF CURB	BBW	7-2-71

REVISIONS

APPROVED
PUBLIC WORKS DIRECTOR
R.C.E. NO. 9887
DATE 6-17-71

FIELD BOOKS 502-6,531-8,333-9	SCALE AS SHOWN
DESIGNED R.M.G.	DRAWN H.A.
CHECKED J.P.N.	DATE APRIL , 1971

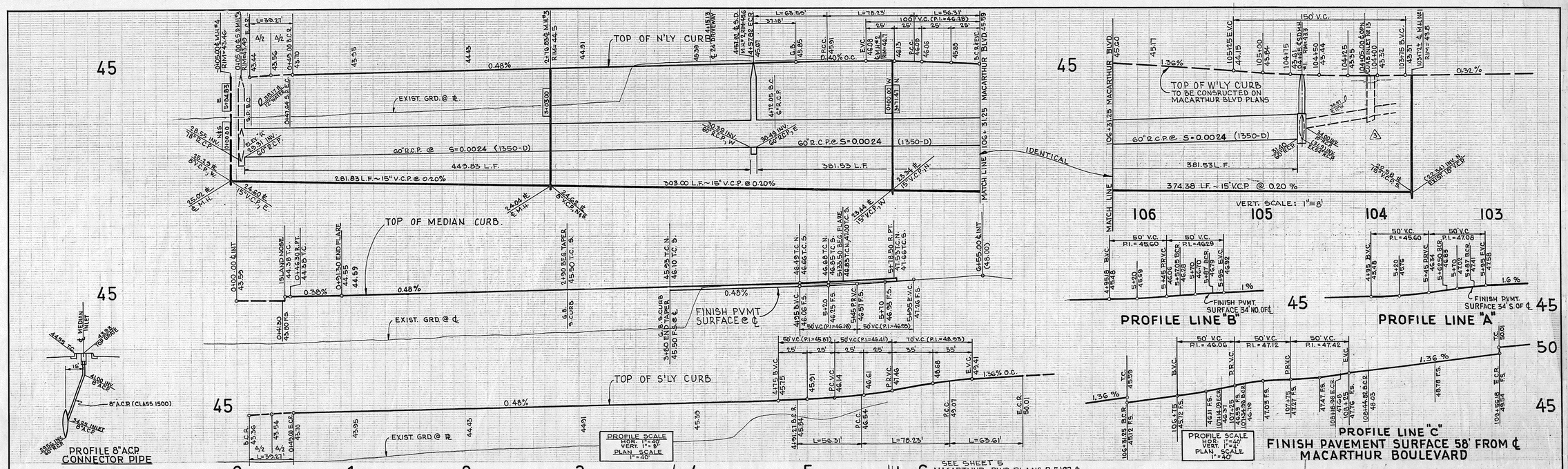
PLAN AND PROFILE FOR THE IMPROVEMENT OF
CORINTHIAN WAY
TENT. TRACT 7382 1770
CITY OF NEWPORT BEACH
PUBLIC WORKS DEPARTMENT

SHEET 12 OF 16

TRACT 7394 SHT 12 of 16

K1-21

TR. 7394, 7382 sh. 12



PREPARED BY THE OFFICE OF:
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LAND SURVEYORS AND PLANNERS
106 ROCHESTER STREET, COSTA MESA, CALIFORNIA | TEL: (714) 548-7723 (714) 542-1022
Jack G. Raub — DATE 6-10-71
JACK G. RAUB RCE NO. 14749

DATE	BY	DESCRIPTION	APP'D.	DATE
7-30-71	J.P.N.	⚠1 REVISED ST. LTS.	D.	7-30-71
7-12-71	J.P.N.	⚠2 TRANSFERRED PORTION OF STORM DRAIN TO MACARTHUR BLVD PLANS	D.	"
7-16-71	J.P.N.	⚠3 ADDED ST. LIGHTS	D.	"
6-30-71	J.P.N.	⚠4 RELOCATE ALL F.H.'S TO BACK OF CURB	BBF	7-2-71

REVISIONS

APPROVED
PUBLIC WORKS DIRECTOR
R.C.E. NO. 9337
DATE 6-17-71

FIELD BOOKS	SCALE
302-R, 321-R, 323-R	AS SHOWN
DESIGNED R.M.S.	DRAWN H.A.
CHECKED J.P.N.	DATE APRIL , 1971

PLAN AND PROFILE FOR THE IMPROVEMENT OF
NEWPORT PLACE DRIVE
FROM DOVE ST. TO MACARTHUR BLVD.
TENT. TRACT 7382
CITY OF NEWPORT BEACH
PUBLIC WORKS DEPARTMENT

SHEET 13 OF 16

TRACT 7382 SH 13 of 16

K1-22

TR. 7394, 7382 sh. 13

Appendix 3

Conceptual Site Plan

CODE SUMMARY

CODE	ADOPTED EDITION
BUILDING CODE	2016 CALIFORNIA BUILDING CODE
FIRE CODE	2016 CALIFORNIA FIRE CODE
ENERGY CODE	2016 BUILDING EFFICIENCY STANDARDS FOR RESIDENTIAL AND NON RESIDENTIAL BUILDINGS
MECHANICAL CODE	2016 CALIFORNIA MECHANICAL CODE
PLUMBING CODE	2016 CALIFORNIA PLUMBING CODE
ELECTRICAL CODE	2016 CALIFORNIA CODE
POOL CODE	2012 UNIFORM SWIMMING POOL CODE
	2016 CALIFORNIA GREEN BUILDING STANDARDS

RESIDENTIAL BUILDING:
CONSRUCTION TYPE: TYPE III-A
OCCUPANCY: R-2
GROSS S.F. : 437,127 S.F.

PARKING STRUCTURE:
CONSTRUCTION TYPE: TYPE 1-A
OCCUPANCY: S-2
GROSS S.F. : 278,337 S.F.

RETAIL:
CONSTRUCTION TYPE: TYPE 1-A
OCCUPANCY: M
GROSS S.F. : 11,000 S.F.

CBC 2016 - BUILDING CODE ANALYSIS

	RESIDENTIAL BUILDING: TYPE III-A OCCUPANCY:R-2	PARKING STRUCTURE: TYPE I-A OCCUPANCY: S-2
TABLE 504.3 - ALLOWABLE BUILDING HEIGHTS	85 FEET	UL
TABLE 504.4 - ALLOWABLE BNUMBER OF STORIES	5 - WITH HEIGHT INCREASE	UL
TABLE 506.2 - ALLOWABLE AREA	24,000 S.F.	UL
OCCUPANCY, MULTISTORY BUILDINGS (EQUATION 5-2) Aa=[At+(NSxIf)]xSa	48,000 S.F.	N/A

RESIDENTIAL WASTE COLLECTION SUMMARY

SOLID WASTE CALCUALTIONS							
UNITS	C.Y./WK/ UNIT	TOTAL (C.Y.)	COMPACTION (3:1)	TOTAL C.Y./WK	2 C.Y. BIN SIZE	# PICK-UPS/WK	2 C.Y. BINS REQ'D
350	0.33	115.5	0.33	38.1	19.1	2	10
RECYCLING CALCULATIONS							
UNITS	C.F./WK/UNIT	TOTAL(C.Y.)	2 C.Y. BIN SIZE			# PICK-UPS/WK	2 C.Y. BINS REQ'D
350	139.26 x 0.25	28.88	14			2	7
ORGANICS CALCULATIONS							
UNITS	GALLONS/WEEK	TOTAL(GAL/WK)	GAL/200=C.Y./WK	2 C.Y. BIN SIZE		# PICK-UPS/WK	2 C.Y. BINS REQ'D
350	4	1400	7	3.5		2	2

NOTE: A MIN. OF (5) 2 CU. YD. BINS FOR COMPACTED SOLID WASTE, (3) 2 CU. YD. BINS FOR RECYCLABLE WATSE, AND (1) 2 CU.YD. BIN WILL BE PROVODED IN EACH TRASH TERMINATION ROOM (THREE TOTAL) FOR TWICE A WEEK PICK-UP

RETAIL WASTE COLLECTION SUMMARY

SOLID WASTE CALCUALTIONS							
RETAIL S.F.	LBS/WK PER 100 S.F.	TOTAL LBS/WK	LBS. TO C.Y.	TOTAL C.Y./WK	2 C.Y. BIN SIZE	# PICK-UPS/WK	2 C.Y. BINS REQ'D
5,500	2.5	137.5	0.09	12.4	6.2	2	4
DINING OCC. (1000 S.F. DINING)	LBS/WK PER OCCUPANT	TOTAL LBS/WK	LBS. TO C.Y.	TOTAL C.Y./WK	2 C.Y. BIN SIZE	# PICK-UPS/WK	2 C.Y. BINS REQ'D
67	1.5	703.5	0.008	5.6	2.8	2	2

NOTE: A MIN. OF (6) 2 CU. YD. BINS WILL BE PROVODED IN RETAIL TRASH ROOM LOCATED FOR TWICE A WEEK PICK-UP ALONG WITH AREA FOR RECYCLABLE MATERIALS AND ORGANIC WASTE STORAGE.

RESIDENTIAL BUILDING SUMMARY

UNITS	LEVEL 1	LEVEL 2	LEVEL 3	LEVEL 4	LEVEL 5	%	TOTAL
S1	2	3	3	3	3	4.0%	14
S2	0	0	5	5	5	4.3%	15
STUDIOS	2	3	8	8	8	8%	29
A1	9	9	9	9	7	12.3%	43
A2	16	8	9	9	6	13.7%	48
A3	18	19	19	19	19	26.9%	94
A4	3	3	3	3	0	3.4%	12
1 BR'S	46	39	40	40	32	56%	197
B1	9	19	23	23	14	25.1%	88
B2	0	1	1	1	1	1.1%	4
B4	2	2	2	2	2	2.9%	10
B5	0	0	5	5	5	4.3%	15
B6	1	1	1	1	0	1.1%	4
B7	0	0	1	1	1	0.9%	3
2 BR'S	12	23	33	33	23	35%	124
TOTAL	**60**	**65**	**81**	**81**	**63**	**100%**	**350**

UNIT SUMMARY

UNIT TYPE	UNIT NET SQ. FT.	NUMBER OF UNITS	TOTAL NET SQ. FT.	%	UNIT %
S1	587	14	8218	4.0%	8%
S2	626	15	9390	4.3%	
A1	690	43	29670	12.3%	56%
A2	730	48	35040	13.7%	
A3	764	94	71816	26.9%	
A4	828	12	9936	3.4%	
B1	1,095	88	96360	25.1%	35%
B2	1,100	4	4400	1.1%	
B4	1,070	10	10700	3%	
B5	916	15	13740	4.3%	
B6	1,074	4	4296	1.1%	
B7	1,055	3	3165	0.9%	
TOTAL	**848**	**350**	**296731**	**100%**	

PARKING SUMMARY

RESIDENTIAL PARKING REQUIRED

UNIT TYPE	UNITS	REQUIRED PARKING	STALLS REQUIRED
STUDIO	29	1.00	29
1 BR	197	1.00	197
2 BR'S	124	2.00	248
GUEST	350	0.50	175
TOTAL STALLS - RESIDENTIAL		RATIO: 1.85	649
RETAIL PARKING REQUIRED			
RESTAURANT	2000 S.F.	0.025	50
GENERAL RETAIL	5500 S.F.	0.004	22
TOTAL STALLS - RETAIL		RATIO: 13.8/1000 S.F.	72
TOTAL PARKING STALLS REQUIRED			721

ACCESSIBLE STALLS REQUIRED

	QUAN.	RATIO	REQ'D
RESIDENTS	488	0.02	10
GUEST	175	0.05	9
RETAIL	72	0.05	4

NOTE: PROVIDE (1) VAN ACCESSIBLE STALL FOR EVERY 6 ACCESSIBLE STALLS PROVIDED FOR EACH PARKING TYPE

PARKING PROVIDED

	UNITS PER LEVEL	RESIDENTIAL STALLS	ACCESSIBLE STALLS	TOTAL STALLS	
ON GRADE		4	1	5	
LEVEL SUB 1	0	40	0	40	
LEVEL 1	60	96	6	102	
LEVEL 2	65	119	4	123	
LEVEL 3	81	119	4	123	
LEVEL 4	81	119	4	123	
LEVEL 5	63	121	4	125	
LEVEL 6	0	113	0	113	
TOTAL STALLS PROVIDED	350	731	23	754	2.09

STARBOARD REALTY PARTNERS, LLC
NEWPORT CROSSINGS

PROJECT DESCRIPTION

A 350 UNIT PROJECT CONSISTING OF 4 & 5-STORY TYPE III-A RESIDENTIAL BUILDING SURROUNDING A 5-STORY (6 LEVEL) TYPE I-A PARKING STRUCTURE WITH AMENITY DECK AND 7,500 S.F. TYPE I-A RETAIL

GROSS LAND AREA:	5.19 ACRES
DEDICATED PUBLIC PARK:	0.5 ACRES
TOTAL UNITS:	350 UNITS
DENSITY:	67.44 DU/AC

EXISTING ZONING: GENERAL COMMERCIAL SITE 6 OF THE PC 11 (NEWPORT PLACE) PLANNED COMMUNITY ZONING DISTRICT AND GENERAL PLAN LAND USE CATEGORY MU-H2

EXISTING/PROPOSED USES

EXISTING USES:	58,277 SQ. FT. COMMERCIAL
PROPOSED USES:	MIXED USE RESIDENTIAL (350 UNITS) / RETAIL (7,500 SQ. FT.) DEVEOLPMENT

LEGAL DESCRIPTION

THE LAND REFERRED TO HEREIN BELOW IS SITUATED IN THE COUNTY OF ORANGE, STATE OF CALIFORNIA, AND IS DESCRIBED AS FOLLOWS:

PARCEL A:

LOT 1 OF TRACT NO. 7770, IN THE CITY OF NEWPORT BEACH, COUNTY OF ORANGE, STATE OF CALIFORNIA, AS PER MAP RECORDED IN BOOK 299, PAGES 15 AND 16 OF MISCELLANEOUS MAPS, RECORDS OF SAID ORANGE COUNTY, CALIFORNIA.

EXCEPT ALL MINERALS, PETROLEUM, GAS AND OTHER HYDROCARBON SUBSTANCES EXISTING BELOW 500 FEET FROM THE SURFACE OF SAID REAL PROPERTY DESCRIBED ABOVE; PROVIDED, HOWEVER, THAT GRANTOR HEREBY EXPRESSLY WAIVES THE RIGHT TO ENTER UPON THE SURFACE OF SAID REAL PROPERTY FOR THE PURPOSE OF EXPLORING FOR OR PRODUCING THE MINERALS, PETROLEUM, GAS AND OTHER HYDROCARBON SUBSTANCES SO RESERVED, AS RESERVED IN AN INSTRUMENT RECORDED SEPTEMBER 8, 1972 IN BOOK 10316, PAGE 114 OF OFFICIAL RECORDS.

PARCEL B:

THAT PORTION OF LOT 2 OF TRACT NO. 7770, IN THE CITY OF NEWPORT BEACH, COUNTY OF ORANGE, STATE OF CALIFORNIA, AS SHOWN ON A MAP RECORDED IN BOOK 299, PAGES 15 AND 16 OF MISCELLANEOUS MAPS, RECORDS OF ORANGE COUNTY, CALIFORNIA, DESCRIBED AS FOLLOWS:

PARCEL 1 AS SHOWN ON A MAP FILED IN BOOK 53, PAGE 13 OF PARCEL MAPS, IN THE OFFICE OF THE COUNTY RECORDER OF SAID ORANGE COUNTY.

EXCEPT ALL MINERALS, PETROLEUM, GAS AND OTHER HYDROCARBON SUBSTANCES EXISTING BELOW 500 FEET FROM THE SURFACE OF SAID REAL PROPERTY DESCRIBED ABOVE; PROVIDED, HOWEVER, THAT GRANTOR HEREBY EXPRESSLY WAIVES THE RIGHT TO ENTER UPON THE SURFACE OF SAID REAL PROPERTY FOR THE PURPOSE OF EXPLORING FOR OR PRODUCING THE MINERALS, PETROLEUM, GAS AND OTHER HYDROCARBON SUBSTANCES SO RESERVED, AS RESERVED IN AN INSTRUMENT RECORDED SEPTEMBER 4, 1973 IN BOOK 10883, PAGE 83 OF OFFICIAL RECORDS.

PARCEL C:

THAT PORTION OF LOT 2 OF TRACT NO. 7770, IN THE CITY OF NEWPORT BEACH, COUNTY OF ORANGE, STATE OF CALIFORNIA, AS SHOWN ON A MAP RECORDED IN BOOK 299, PAGES 15 AND 16 OF MISCELLANEOUS MAPS, RECORDS OF ORANGE COUNTY, CALIFORNIA, DESCRIBED AS FOLLOWS:

PARCEL 2 AS SHOWN ON A MAP FILED IN BOOK 53, PAGE 13 OF PARCEL MAPS, IN THE OFFICE OF THE COUNTY RECORDER OF ORANGE COUNTY, CALIFORNIA.

EXCEPTING THEREFROM, ALL MINERALS, PETROLEUM, GAS AND OTHER HYDROCARBON SUBSTANCES EXISTING BELOW 500 FEET FROM THE SURFACE OF SAID REAL PROPERTY DESCRIBED ABOVE; PROVIDED, HOWEVER, THAT GRANTOR HEREBY EXPRESSLY WAIVES THE RIGHT TO ENTER UPON THE SURFACE OF SAID REAL PROPERTY FOR THE PURPOSE OF EXPLORING FOR OR PRODUCING THE MINERALS, PETROLEUM, GAS AND OTHER HYDROCARBON SUBSTANCES, AS RESERVED BY DEED RECORDED MARCH 1, 1974 IN BOOK 11086, PAGE 2 OF OFFICIAL RECORDS.

APN: 427-172-02, 427-172-03, 427-172-05, 427-172-06

NEWPORT CROSSINGS - NEWPORT BEACH, CA

JOB NO: 2017-165 DATE: 05-25-17

A-1.1

STARBOARD REALTY PARTNERS, LLC
1301 Dove Street Suite1080 Newport Beach, CA (949) 851-2020

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144 NORTH ORANGE ST. ORANGE, CA 92866 (714) 639-9860

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VICINITY MAP



LEGEND:

NON-SHADED PORTIONS OF RESIDENTIAL BUILDING INDICATES 4 STORIES

INDICATES AREA OF 5 STORIES

INDICATES AREA OF AMENITY DECK

SITE PLAN NOTES:

- PRIVATE RESIDENTIAL AMENITY SPACES - THESE SPACES MUST BE ONLY USED FOR RESIDENTIAL-RELATED ACTIVITIES. NON-RELATED RESIDENTIAL USES (RETAIL COMMERCIAL, OFFICE, RESTAURANT, ETC.) WILL NOT BE ALLOWED AT ANY GIVEN TIME.
- A TOTAL OF 50 PARKING SPACES MUST BE SOLELY PROVIDED FOR THE FUTURE RESTAURANT USE. PLEASE REFER TO SECTION 20.40.040 OF THE ZONING CODE FOR ADDITIONAL PARKING PROVISIONS FOR THE FUTURE RESTAURANT'S OUTDOOR DINING AREA.
- GUEST AND TENANT PARKING ALLOCATIONS MUST ALSO BE CLEARLY IDENTIFIED AND MAY NOT BE SHARED WITH THE FUTURE RESTAURANT USE. ACCESS GATES AND FENCES ON ALL PARKING LEVELS TO BE CLEARLY IDENTIFIED.
- DRIVE AISLE(S) MAY NOT BE USED FOR LOADING PURPOSES.
- PUBLIC PARK - THE PROPOSED PUBLIC PARK MUST BE 0.5 ACRE (EXCLUSIVE OF FIRE LANE) IN SIZE, OPEN AND AVAILABLE TO THE GENERAL PUBLIC, AND DEDICATED TO THE CITY.
- ONE-HOUR RATED CORRIDOR IS REQUIRED FOR SPRINKLERED R-2 BUILDINGS.
- TRAVEL DISTANCE ON ALL BUILDINGS TO EXIT STAIRWAY NOT TO EXCEED 250 FEET FROM THE MOST REMOTE POINT.
- 2-HOUR SHAFT TO BE PROVIDED FOR STAIRWAYS.
- 2-HOUR ELEVATOR SHAFT CONNECTING GARAGE AND RESIDENCE FLOORS ABOVE TO BE PROVIDED.
- ONE-HOUR ELEVATOR LOBBY (CBC 3007.7.2) AND GURNEY SIZE ELEVATOR. CBC 3002.4 TO BE PROVIDED.
- GARAGE CEILING CLEARANCE SHALL BE AT LEAST 8'-2" FOR VAN ACCESSIBLE CARS.

- IN MIXED OCCUPANCY BUILDINGS, EACH PORTION OF A BUILDING SHALL COMPLY WITH SPECIFIC GREEN CODE REQUIREMENTS:

HTTP://WWW.NEWPORTBEACH.GOV/MODULES/SHOWDOCUMENT.ASPX?DOCUMENTID=11142
HTTP://WWW.NEWPORTBEACH.GOV/MODULES/SHOWDOCUMENT.ASPX?DOCUMENTID=13742
HTTP://WWW.NEWPORTBEACH.GOV/MODULES/SHOWDOCUMENT.ASPX?DOCUMENTID=13741

- ALL NEW STREET TREES MUST BE 36-INCH BOX IN SIZE.
- APPARATUS ACCESS ROADS SHALL BE CONSTRUCTED OF A MATERIAL THAT PROVIDES AN ALL-WEATHER DRIVING SURFACE AND CAPABLE OF SUPPORTING 72,000 POUNDS IMPOSED LOAD FOR FIRE APPARATUS AND TRUCK OUTRIGGER LOADS OF 75 POUNDS PER SQUARE INCH OVER A TWO FOOT AREA. CALCULATIONS STAMPED AND SIGNED BY A REGISTERED PROFESSIONAL ENGINEER SHALL CERTIFY THAT THE PROPOSED SURFACE MEETS THE CRITERIA OF AN ALL-WEATHER DRIVING SURFACE AND IS CAPABLE OF WITHSTANDING THE WEIGHT OF 72,000 POUNDS, NEWPORT BEACH FIRE DEPARTMENT GUIDELINE C.01.
- ALL SECURITY GATES (INCLUDING AT ENTRANCE TO GARAGE AND INTERIOR OF GARAGE AREA) SHALL HAVE AN APPROVED REMOTE OPENING DEVICE FOR EMERGENCY SERVICES.
- AN AUTOMATIC FIRE SPRINKLER SYSTEM SHALL BE REQUIRED AND SHALL BE INSTALLED AS PER C.F.C. SEC. 903.
- STANDPIPES SYSTEM SHALL BE PROVIDED AS SET FORTH IN C.F.C. SEC. 905. ADDITIONAL STANDPIPES (DUE TO ACCESS RESTRICTIONS WITH DESIGN OF PROJECT) SHALL BE REQUIRED IN LOCATIONS DETERMINED BY THE FIRE DEPARTMENT.
- A FIRE ALARM SYSTEM SHALL BE REQUIRED AND INSTALLED AS PER C.F.C. SEC. 907.
- 2A 10BC FIRE EXTINGUISHERS SHALL BE REQUIRED FOR THE R-2 OCCUPANCY. THIS FIRE EXTINGUISHER WILL COVER 3,000 SQUARE FEET OF FLOOR AREA. THE EXTINGUISHER SHALL BE LOCATED SO THAT IT IS NOT MORE THAN 75 FEET TRAVEL DISTANCE TO REACH AN EXTINGUISHER FROM THE FRONT DOOR OF EACH APARTMENT.
- THE PARKING GARAGE TO BE PROVIDED WITH A 2A 20BC FIRE EXTINGUISHER.
- EFFECTIVE EMERGENCY RESPONDER RADIO COVERAGE (800 MHZ) SHALL BE REQUIRED AND SHALL COMPLY WITH NEWPORT BEACH FIRE DEPARTMENT GUIDELINE & STANDARDS D.05 PUBLIC SAFETY RADIO SYSTEM COVERAGE.
- PREMISES IDENTIFICATION SHALL BE PROVIDED AS CITY OF NEWPORT BEACH AMENDED C.F.C. SEC. 505.1.1. ADDRESSES SHALL BE PLACED AN OVER OR IMMEDIATELY ADJACENT TO ALL DOORS THAT ALLOW FIRE DEPARTMENT ACCESS. IN NO CASE SHALL THE NUMBERS SHALL BE LESS THAN FOUR INCHES IN HEIGHT WITH A ONE-HALF INCH STROKE.
- FIRE PLACES AND FIRE PIT CLEARANCE SHALL BE PROVIDED AS PER MANUFACTURES RECOMMENDATIONS AND/OR CALIFORNIA MECHANICAL CODE REQUIREMENTS.
- ALL BUILDINGS AND STRUCTURES WITH ONE OF MORE PASSENGER SERVICE ELEVATORS SHALL BE PROVIDED WITH NOT LESS THAN ONE MEDICAL EMERGENCY SERVICE ELEVATOR TO ALL LANDINGS. THE ELEVATOR CAR SHALL BE OF SUCH A SIZE TO ACCOMMODATE A 24-INCH BY 84-INCH AMBULANCE GURNEY OR STRETCHER WITH NOT LESS THAN 5-INCH RADIUS CORNERS, IN THE HORIZONTAL, OPEN POSITION, SHALL BE PROVIDED WITH A MINIMUM CLEAR DISTANCE BETWEEN WALLS OR BETWEEN WALLS AND DOOR EXCLUDING RETURN PANELS NOT LESS THAN 80 INCHES BY 54 INCHES AND A MINIMUM DISTANCE FROM WALL TO RETURN PANEL NOT LESS THAN 51 INCHES WITH A 42-INCH SIDE SLIDE DOOR AS PER CALIFORNIA BUILDING CODE SEC. 3002. PHASE I AND PHASE II RECALL WILL BE REQUIRED.
- STAIRWELL SIGNAGE SHALL MEET NEWPORT BEACH FIRE DEPARTMENT GUIDELINE & STANDARDS D.01.
- SMOKE DETECTORS SHALL BE REQUIRED FOR THE INDIVIDUAL DWELLING UNITS AS PER C.F.C. SEC. 907.2.11.1.
- DUMPSTER LOCATIONS SHALL MEET NEWPORT BEACH FIRE DEPARTMENT GUIDELINE & STANDARD A.16.
- EXTERIOR WALKWAYS SHALL BE DESIGNED TO ACCOMMODATE HAND CARRYING OF FIREFIGHTER LADDERS FOR USE OF "GROUND" LADDERING OF BUILDINGS. (THE LARGEST LADDER UTILIZED WILL BE 35-FOOT LADDER WITH A STORING LENGTH OF 20.5 FEET LONG.)
- LADDERING GROUND PADS SHALL BE PROVIDED FOR GROUND LADDERING AND MADE LARGE ENOUGH TO ACCOMMODATE A 35-FOOT LADDER WITH A 70° CLIMBING ANGLE. THE LADDERING PADS MAY NEED TO BE PROVIDED IN THE LANDSCAPED AREAS.
- EXTERIOR WALKWAYS SHALL BE WIDE ENOUGH TO ACCOMMODATE GURNEYS.
- LANDSCAPE SHALL NOT OBSTRUCT LADDERING TO BUILDINGS.
- ROOF GARDENS AND LANDSCAPED ROOFS SHALL COMPLY WITH THE REQUIREMENTS OF THE CALIFORNIA BUILDING CODE AND THE CALIFORNIA FIRE CODE.
- CAR CHARGING SHALL MEET REQUIREMENTS FROM NATIONAL ELECTRICAL CODE 625.5.
- THE EMERGENCY GENERATOR SHALL BE FILLED FROM THE OUTSIDE OF THE BUILDING VIA A REMOTE FILL PIPE IN A LOCATION APPROVED BY THE FIRE DEPARTMENT.
- GARAGE RAMPS COMPLY WITH CITY STANDARD STD-805-L-A AND STD-805-L-B.
- ALL IMPROVEMENTS SHALL BE CONSTRUCTED AS REQUIRED BY ORDINANCE AND THE PUBLIC WORKS DEPARTMENT.
- AN ENCROACHMENT PERMIT SHALL BE OBTAINED FOR ALL WORK ACTIVITIES WITHIN THE PUBLIC RIGHT-OF-WAY.
- AN ENCROACHMENT AGREEMENT SHALL BE OBTAINED FOR ANY PRIVATE IMPROVEMENTS WITHIN THE PUBLIC RIGHT-OF-WAY PER CITY COUNCIL L-6, PRIVATE ENCROACHMENTS IN PUBLIC RIGHTS-OF-WAY.
- RECONSTRUCT CURB AND GUTTER ALONG THE DOVE STREET, SCOTT DRIVE, CORINTHIAN WAY AND MARTINGALE WAY FRONTAGES PER CITY STANDARDS.
- RECONSTRUCT A MINIMUM 6 FOOT WIDE SIDEWALK ALONG THE DOVE STREET, SCOTT DRIVE, CORINTHIAN WAY, AND MARTINGALE WAY FRONTAGES PER CITY STANDARDS. SIDEWALK MAYBE LOCATED AT THE BACK OF CURB.
- NEW ADA COMPLIANT CURB ACCESS RAMPS SHALL BE CONSTRUCTED AT THE INTERSECTION OF DOVE STREET AND SCOTT DRIVE, SCOTT DRIVE AND CORINTHIAN WAY, AND CORINTHIAN WAY AND MARTINGALE WAY PER CITY STANDARDS.
- ALL IMPROVEMENTS SHALL COMPLY WITH THE CITY'S SIGHT DISTANCE REQUIREMENT. SEE CITY STANDARD 110-L.

ARCHITECTURAL SITE PLAN

N

0 15' 30' 60' 90'

SCALE: 1" = 30'

JOB NO: 2017-165 DATE: 05-25-17

A-1.2

NEWPORT CROSSINGS
NEWPORT BEACH, CA

STARBOARD REALTY PARTNERS, LLC
1301 Dove Street Suite1080 Newport Beach, CA (949) 851-2020

K1-25

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Appendix 4

Design Criteria

DESIGN CRITERIA

GENERAL

For more information on Design Criteria look in The City of Newport Beach Engineering Standards Manual. It provides consultants with authorized Newport Beach project requirements pertaining to production of construction drawings, project deliverables, related quality assurance, submitting final hard copies and digital plans. This information is intended for all engineering disciplines.
Consultants shall adhere to the CAD requirements for delivering plans. The guidelines shall be enforced during both the project design period and construction services period.

This Manual is not intended to replace codes or accepted industry standards and practices.

1. Submitting hard copy drawings

a. All submitters should contact the project engineer to get a project number. The project engineer shall contact the Public Works Department to get the last project number assigned for their type of project. The project number shall be reflected on the right bottom corner of all drawing pages. E.g. W-3567-S, TRM_15634, T_5678_S, etc.

b. Drawings shall exactly 24"x36" cut sheet. Drawing border should be only 1" on the left side of the sheet and ½" on other three sides. Refer to 2-e for more detail.

c. All sheets shall be issued a **SEQUENTIAL NUMERIC SHEET NUMBER.** Alphanumeric numbers shall not be assigned in lieu of numeric numbers. Duplicate numbering such as sheet 6 and 6A shall not be used. In the case of revisions and additions of additional sheets all sheets may have to be re-numbered so they remain sequential or added to the end of the set.

d. Title sheets shall have an index and/or key map **clearly indicating** the sheet numbers issued. Provide a Vicinity map, a legend of abbreviations, symbols and, line types used.

e. Scales for profile shall not be smaller than 1" = 40' horizontal and 1" = 10' vertical. The vertical scale should be changed to appropriate scale when grades are steep or very flat. Scales for plan views shall not be smaller than 1" = 40'. For complex intersections or similar plans, the scale shall be 1" = 10' or as approved by City's Project Engineer.

f. Large tracts shall have separate small-scale maps showing the overall layout of water, sewer,
storm drain, and street lighting systems.

b. There are more than one fire service connection to the same parcel or site.

c. The building being serviced by the connection is 3-stories in height or greater.

d. There are hazardous chemicals or materials either stored or used on the site being served by the connection.

e. There is a private storage or fire protection reservoir on the site being served by the connection.

f. The connection serves a marina or boat dock slip.

K. Pressure Booster Pump Stations (Private Domestic & Private Fire)

1. Pressure boosting stations shall be permitted only as a temporary installation by special permission from the Public Works Department.

a. Where such installations are allowed, they shall be served by metered service connections having both RPP type backflow prevention assembly and pressure sustaining valve equipment.

(1.) These installations require special design and review by the Utilities Department and the Public Works Department.

b. Backflow device shall be reduced pressure principle (RPP) type in accord with the applicable City standards.

IV. SEWER SYSTEM

A. Mains

1. General

a. Substantiating engineering calculations for sizing pipe and structural designs shall accompany all plan submittals.

b. Minimum size shall be 8 inches inside diameter.

c. Design flow shall not exceed H of full depth.

d. Pipe joints shall be elastomeric compression type unless otherwise specified.

e. Pipe material shall be SDR-35 PVC or standard strength VCP.

f. HDPE, ductile iron, RPM or filament bonded PVC flexible pipe materials can only be used upon special approval by the Utilities Department.

g. Structural design shall be per water system requirements listed in Section III D. "Structural Pipe Design", except that:

(1). Minimum test pressure shall be per the *Standard Specifications*.

(2). Minimum factor of safety for VCP shall be 1.5.

h. PVC fittings shall be prefabricated (molded) full-body fittings.

i. Backfill shall be in conformance with the *Standard Specifications* Section 306-1.3, except that relative compaction shall be 90% minimum.

j. Pipe Bedding

(1.) VCP shall be bedded in conformance with section 306-1.2.1 of the *Standard Specifications*. PVC shall be bedded in I inch crushed rock.

(2.) Pipe bedding and backfill shall be done in accord with the applicable portions of City STD-105-L and STD-106-L.

2. Locations

a. Alleys - Mains shall be offset 3.0 feet minimum from centerline to clear gutter. The offset shall be to the opposite side of the alley from any existing or proposed water main.

(1.) Clearance between sewer and water mains shall be in strict accord with the California DOHS requirements for "water and sewer separation.

(a). Horizontal clearance shall be at least 10 ft. wall to wall.

(b). Horizontal clearances less than 10 ft., but greater than 4 ft. may be allowed with special material construction. Utilities Department and State DOHS written permission is mandatory.

(2.) Clearance between sewer and utility conduits other than water shall be at least 2 ft. horizontal and 1 ft. vertical.

b. Streets - Main locations shall be in accord with STD-101-L.

c. Sewers in streets with more than 84 feet of right-of-way width require special design.

d. Extend and cap all dead ends beyond pavement limits. Refer to STD-401-L.

3. Minimum Gravity Sewer Slopes expressed in units of feet per foot:

Pipe Size (in.)	**Minimum Slope** (ft./ft.)	**Preferred Slope** (ft./ft.)
8"	0.0032	0.0040
10"	0.0026	0.0032
12"	0.0020	0.0032

4. Gravity Sewer Hydraulic Criteria

a. Hydraulic analysis shall be performed using Manning's Equation in the US Customary Unit System. Long-hand, manual calculations may be requested for City review on all sewer designs.

(1.) Manning's Roughness coefficient shall not be less than 0.013 for any sewer main. ($n \geq 0.013$)

(2.) Flows shall be first analyzed as "steady, uniform, non-turbulent" flow.

b. Velocity Criteria

(1.) Minimum design velocity shall be 2.0 ft./sec.

(2.) Maximum velocity shall be 6.0 ft./sec. Analysis shall be performed to determine whether flow regime is "sub-critical" or "super-critical".

(a.) Initial critical flow analysis shall be via Froude Number (f).

(b.) Depth of flow limit requirement shall be for "sub-critical" flow depth.

(3.) Froude Number (f) shall be determined from the following equation:

$$f = \frac{v}{\sqrt{gd}}$$ where the variables in the equation are:

f .....is the Froude Number
v.....is the velocity of the waste stream
g.....is the gravitational constant (32.2 ft/sec^2)
d.....is the depth of flow (subcritical depth)

5. Sewer Hydraulic Loading Design

a. Wastewater hydraulic calculations shall be performed utilizing the quantities of wastewater from the table below; (these should be considered design minimums, they are based on actual field flow monitoring tests):

Development Size (dwelling units)	**Average flow** (gallons per day)	**Peaking Factor** (dimensionless)	**Peak flow** (gallons per day)

0 to 75 315	3.80	1,200
76 to 150 285	3.65	1,040
151to 250 265	3.40	900
250& up 245	3.15	770

b. Certain developments with special circumstances may require design to consider flows higher than those in the table above. In no case shall the design flows be less than the amounts determined by the table above.

B. Manholes

Manholes shall be designed in accord with City of Newport Beach Standards, Standard Drawings, Standard Special Provisions and these Design Criteria. Manholes are required:

1. At all changes in slope.

2. At all changes in direction.

a. Horizontal curves for radii in excess of 150 feet may be used in areas without services only by the special approval of both the Utilities Department and the Public Works Department and only where straight sewer main runs are infeasible because of interference with other underground utilities.

3. At all intersections of mains. Match crown lines. Use 0.20 foot drop through manhole per City STD-401-L.

4. At all intersections between mains and laterals sized 8 inches and larger.

5. Minimum spacing is 300 feet; maximum spacing is 400 feet.

6. At the ends of dead end mains greater than 200 feet in length.

7. To have a special lining (either fiberglass or T-Lock) installed wherever:

a. Any sewer main connecting to the manhole has a slope greater than 7%.

b. Any change in slope of 5% or greater occurs between the upstream and the downstream manhole.

C. Terminal Cleanouts

1. Are required at ends of all mains where it is impractical or impossible to construct a sewer manhole.

2. May be used at other locations only by special permission of the Public Works Department.

D. Laterals

Each residential dwelling unit, residence, condominium, or rental unit (for buildings with four or less units) shall have an individual lateral, unless otherwise approved by the Public Works Department.

1. Size

a. Single family, apartment or condominium units shall be 4 inches minimum diameter per City STD-406-L unless slope is less than
G inch per foot. (In which case the lateral shall be upsized to
6 inches diameter.)

b. All other laterals shall be a minimum of 6 inches in diameter.

2. Location

a. At right angles or radial to street right-of-way.

b. Center of lot frontage or 5 feet toward the center of the lot from the downstream lot line. All lateral locations shall be shown and dimensioned or stationed on the construction plans.

c. In commercial developments, laterals shall connect the main line at manholes wherever possible.

d. All lateral connections 8 inches and larger shall connect to the sewer main at manholes.

e. All connections to existing manholes shall be mechanically saw cored and the joints made shall be sealed closed around the installed pipe using a non-shrink concrete grout or epoxy material.

3. Minimum depth of lateral pipe cover shall be 4 feet below finished grade at property line for level lots or lots sloping toward street. Special design is required for lots sloping away from street.

4. Cleanout shall be provided at property line in accord with STD-406-L
on all lateral connections 6 inches in diameter and smaller. 8-inch diameter laterals and larger require manholes as cleanouts at or near the property line.

E. Wastewater Pump Stations

1. Special Design Required

a. In all cases where a wastewater lift station is required, special design and review by City is required.

2. General Design Requirements

SEWARAGE FACILITIES CHARGE GUIDE
RESIDENTIAL AND COMMERCIAL CATEGORIES

(GR.SQ.FT.) = Gross Square Feet: area included within the exterior of the surrounding walls of a building excluding court.

EFFECTIVE DATE: April 6, 2012

Line No.	**FACILITY DESCRIPTION**	**FEE RATE**
1	Acupuncture Office/Clinic	$495/1000 GR.SQ.FT.
2	Arcade - Video Games	$206/1000 GR.SQ.FT.
3	Auditorium (a)	$12/SEAT
4	Auto Parking (a)	$83/1000 GR.SQ.FT.
5	Auto Mfg., Service Maintenance (b)	Actual
6	Bakery	$2956/1000 GR.SQ.FT.
7	Bank: Headquarters	$495/1000 GR.SQ.FT.
8	Bank: Branch	$206/1000 GR.SQ.FT.
9	Ballroom	$1445/1000 GR.SQ.FT.
10	Banquet Room	$1445/1000 GR.SQ.FT.
11	Bar: Cocktail, Fixed Set (a) (c)	$60/SEAT
12	Bar: Juice, No Baking Facilities (d)	$2973/1000 GR.SQ.FT.
13	Bar: Juice, with Baking Facilities (d)	$2973/1000 GR.SQ.FT.
14	Bar: Cocktail, Public Table Area (c)	$2973/1000 GR.SQ.FT.
15	Barber Shop	$495/1000 GR.SQ.FT.
16	Barber Shop (s)	$62/STALL.
17	Beauty Parlor	$1755/1000 GR.SQ.FT.
18	Beauty Parlor (s)	$206/STALL.
19	Bldg. Const/Field Office (e)	$483/OFFICE
20	Bowling Alley: Alley, Lanes & Lobby Area	$206/1000 GR.SQ.FT.
21	Bowling Facility: Arcade/Bar/Restaurant/Dancing	Total
22	Cafeteria: Fixed Seat	$162/SEAT
23	Car Wash: Automatic (b)	Actual
24	Car Wash: Coin Operated Bays (b)	Actual
25	Car Wash: Hand Wash (b)	Actual
26	Car Wash: Counter & Sales Area	$206/1000 GR.SQ.FT.
27	Chapel: Fixed Seat	$12/SEAT
28	Chiropractic Office	$495/1000 GR.SQ.FT.
29	Church: Fixed Seat	$12/SEAT
30	Church School: Day Care/Elem	$36/OCCUPANT
31	Church School: One Day Use (s)	$36/OCCUPANT
32	Cocktail Lounge: Fixed Seat (f)	$60/SEAT
33	Coffee House: No Food Preparation (d)	$2973/1000 GR.SQ.FT.
34	Coffee House: Pastry Baking Only (d)	$2973/1000 GR.SQ.FT.
35	Coffee House: Serves Prepared Food (d)	$135/SEAT
36	Cold Storage: No Sales (g)	$124/1000 GR.SQ.FT.
37	Cold Storage: Retail Sales (g)	$206/1000 GR.SQ.FT.
38	Comfort Station: Public	$322/FIXTURE
39	Commercial Use (a)	$206/1000 GR.SQ.FT.
40	Community Center	$12/OCCUPANT
41	Conference Room of Office Bldg.	$495/1000 GR.SQ.FT.

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42	Counseling Center (h)	$495/1000 GR.SQ.FT.
43	Credit Union	$495/1000 GR.SQ.FT.
44	Dairy	Average Flow
45	Dairy: Barn	Average Flow
46	Dairy: Retail Area	$206/1000 GR.SQ.FT.
47	Dancing Area (of Bars or Nightclub) (c)	$1445/1000 GR.SQ.FT.
48	Dance Studio (i)	$206/1000 GR.SQ.FT.
49	Dental Office/Clinic	$1032/1000 GR.SQ.FT.
50	Doughnut Shop	$1540/1000 GR.SQ.FT.
51	Drug Rehabilitation Center (h)	$495/1000 GR.SQ.FT.
52	Equipment Booth	$124/1000 GR.SQ.FT.
53	Film Processing (Retail)	$206/1000 GR.SQ.FT.
54	Film Processing (Industrial)	Actual
55	Food Processing Plant (b)	Actual
56	Gas Station: Self Service	$403/W.C.
57	Gas Station: Four Bays Max	$3168/STATION
58	Golf Course Facility: Lobby/Office/Restaurant/Bar	Total
59	Gymnasium: Basketball, Volleyball (k)	$826/1000 GR.SQ.FT.
60	Hanger (Aircraft)	$206/1000 GR.SQ.FT.
61	Health Club/Spa (k)	$2684/1000 GR.SQ.FT.
62	Homeless Shelter	$282/BED
63	Hospital	$415/BED
64	Hospital: Convalescent (a)	$282/BED
65	Hospital: Animal	$1811/1000 GR.SQ.FT.
66	Hospital: Psychiatric	$282/BED
67	Hospital: Surgical (a)	$1450/BED
68	Hotel: Use Guest Rooms Only (a)	$483/ROOM
69	Jail	$342/INMATE
70	Kennel: Dog Kennel/Open	$413/1000 GR.SQ.FT.
71	Laboratory: Commercial	$1032/1000 GR.SQ.FT.
72	Laboratory: Industrial	Actual
73	Laundromat	$837/MACHINE
74	Library: Public Area	$206/1000 GR.SQ.FT.
75	Library: Stacks, Storage	$124/1000 GR.SQ.FT.
76	Lobby of Retail Area (l)	$206/1000 GR.SQ.FT.
77	Lodge Hall	$12/SEAT
78	Lounge (l)	$206/1000 GR.SQ.FT.
79	Machine Shop (No Industrial Waste Permit Required) (b)	$206/1000 GR.SQ.FT.
80	Machine Shop (Industrial)	Actual
81	Mfg or Industrial Facility (No IW Permit Required) (b)	$206/1000 GR.SQ.FT.
82	Mfg or Industrial Facility (Industrial)	Actual
83	Massage Parlor	$1032/1000 GR.SQ.FT.
84	Medical Building (a)	$929/1000 GR.SQ.FT.

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85	Medical: Lab in Hospital	$1057/1000 GR.SQ.FT.
86	Medical Office/Clinic	$1032/1000 GR.SQ.FT.
87	Mini-Mall (No Food)	$206/1000 GR.SQ.FT.
88	Mortuary: Chapel	$12/SEAT
89	Mortuary: Embalming	$1644/1000 GR.SQ.FT.
90	Mortuary: Living Area	$206/1000 GR.SQ.FT.
91	Motel: Use Guest Room Only (a)	$483/ROOM
92	Museum: All Area	$124/1000 GR.SQ.FT.
93	Museum: Office Over 15%	$495/1000 GR.SQ.FT.
94	Museum: Sales Area	$206/1000 GR.SQ.FT.
95	Office Building (a)	$495/1000 GR.SQ.FT.
96	Office Bldg w/Cooling Tower	$702/1000 GR.SQ.FT.
97	Plating Plant (No IW Permit Required) (b)	$206/1000 GR.SQ.FT.
98	Plating Plant (Industrial) (b)	Actual
99	Pool Hall (No Alcohol)	$206/1000 GR.SQ.FT.
100	Post Office: Full Service (m)	$495/1000 GR.SQ.FT.
101	Post Office: Private Mail Box Rental	$206/1000 GR.SQ.FT.
102	Prisons	$705/INMATE
103	Residential Dorm: College or Residential (n)	$282/STUDENT
104	Residential: Boarding House	$282/BED
105	Residential: Apt - Bachelor (a)	$302/DU
106	Residential: Apt - 1 BDR (a) (o)	$443/DU
107	Residential: Apt - 2 BDR (a) (o)	$604/DU
108	Residential: Apt - 3 BDR (a) (o)	$765/DU
109	Residential: Apt - >3 BDR (o)	$161 PER ADDITIONAL BEDROOM
110	Residential: Condo - 1 BDR (o)	$443/DU
111	Residential: Condo - 2 BDR (o)	$604/DU
112	Residential: Condo - 3 BDR (o)	$765/DU
113	Residential: Condo - >3 BDR (o)	$161 PER ADDITIONAL BEDROOM
114	Residential: Duplex/Towhhouse - 1 BR (o)	$443/DU
115	Residential: Duplex/Towhhouse - 2 BR (o)	$604/DU
116	Residential: Duplex/Towhhouse - 3 BR (o)	$765/DU
117	Residential: Duplex/Towhhouse - >3 BR (o)	$161 PER ADDITIONAL BEDROOM
118	Residential: SFD - 1 BR (o)	$578/DU
119	Residential: SFD - 2 BR (o)	$764/DU
120	Residential: SFD - 3 BR (o)	$950/DU
121	Residential: SFD - >3 BR (o)	$186/BDR
122	Residential Room Addition: Bedroom (o)	$181/BDR
123	Residential Room Conversion: Into a Bedroom (o)	$181/BDR
124	Residential: Mobile Home	Same as Apt
125	Residential: Artist (2/3 Area)	$302/DU
126	Residential: Artist Residence	$302/DU
127	Residential: Guest Home w/ Kitchen	Same as Apt

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RESIDENTIAL AND COMMERCIAL CATEGORIES

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EFFECTIVE DATE: April 6, 2012

128	Residential: Guest Home w/o Kitchen	$181/BDR
129	Rest Home	$327/BED
130	Restaurant: Drive-In	$270/STALL
131	Restaurant: Drive-In Seating Area	$135/SEAT
132	Restaurant: Fast Food Indoor Seat	$135/SEAT
133	Restaurant: Fast Food Outdoor Seat	$135/SEAT
134	Restaurant: Full Service Indoor Seat (a)	$162/SEAT
135	Restaurant: Full Service Outdoor Seat	$162/SEAT
136	Restaurant: Take Out	$1650/1000 GR.SQ.FT.
137	Retail Area (greater than 100,000 SF)	$206/1000 GR.SQ.FT.
138	Retail Area (less than 100,000 SF)	$103/1000 GR.SQ.FT.
139	Rifle Range: Shooting Stalls/Lanes, Lobby	$206/1000 GR.SQ.FT.
140	Rifle Range Facility: Bar/Restaurant	Total
141	School: Arts/Dancing/Music (i)	$45/1000 GR.SQ.FT.
142	School: Elementary/Jr. High (a) (p)	$36/STUDENT
143	School: High School (a) (p)	$44/STUDENT
144	School: Kindergarten (s)	$36/STUDENT
145	School: Martial Arts (i)	$36/STUDENT
146	School: Nursery-Day Care (p)	$36/CHILD
147	School: Special Class (p)	$36/STUDENT
148	School: Trade or Vocational (p)	$44/STUDENT
149	School: Training (p)	$44/STUDENT
150	School: University/College (a) (p)	$64/STUDENT
151	School: Dormitory (a) (n)	$282/STUDENT
152	School: Stadium, Pavilion	$12/SEAT
153	Spa/Jacuzzi (Commercial with backwash filters)	Total
154	Storage: Building/Warehouse	$124/1000 GR.SQ.FT.
155	Storage: Self-Storage Bldg	$124/1000 GR.SQ.FT.
156	Store: Ice Cream/Yogurt	$138/1000 GR.SQ.FT.
157	Store: Retail (l)	$206/1000 GR.SQ.FT.
158	Studio: Film/TV - Audience Viewing Room (q)	$12/SEAT
159	Studio: Film/TV - Regular Use Indoor Filming Area (q)	$206/1000 GR.SQ.FT.
160	Studio: Film/TV - Ind. Use Film Process/Machine Shop (q)	$206/1000 GR.SQ.FT.
161	Studio: Film/TV - Ind. Use Film Process/Machine Shop	Total
162	Studio: Recording	$206/1000 GR.SQ.FT.
163	Swimming Pool (Commercial with backwash filters)	Total
164	Tanning Salon: Independent, No Shower (r)	$206/1000 GR.SQ.FT.
165	Tanning Salon: Within a Health Spa/Club	$2642/1000 GR.SQ.FT.
166	Theater: Drive-In	$24/VEHICLE
167	Theater: Live/Music/Opera	$12/SEAT
168	Theater: Cinema	$12/SEAT
169	Tract: Commercial/Residential	$4/ACRE
170	Trailer: Const/Field Office (e)	$483/OFFICE

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RESIDENTIAL AND COMMERCIAL CATEGORIES

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171	Veterinary Clinic/Office	$1032/1000 GR.SQ.FT.
172	Warehouse	$124/1000 GR.SQ.FT.
173	Warehouse w/ Office	Total
174	Waste Dump: Recreational	$4090/STATION
175	Wine Tasting Room: Kitchen	$826/1000 GR.SQ.FT.
176	Wine Tasting Room: All Area	$206/1000 GR.SQ.FT.

FOOTNOTES TO SFC Table

(a) SFC rates for these facilities have historically been published in SFC ordinances.

(b) Bureau of Sanitation will determine the flow based on the information given by applicants for facilities with industrial discharge. The flow will be redetermined by Sanitation inspectors annually based on water bills. If the actual flow exceeds the previous year's determined flow, the applicants will be charged for the difference.
If this type of facility is exempt from an industrial discharge permit, only the domestic SFC will be assessed.

(c) The SFC for a bar shall be the sum of SFC's for all areas based on the SGF for each area (ex. fixed seat area, public table area, dancing area).

(d) The determination of SGF for juice bars and coffee houses previously depended on the extent of the actual food preparation in house, not by the types of food provided. Food is assumed to be prepared offsite and as such, the three prior subcategories have been consolidated.

1) SGF for no pastry baking and no food preparation is 720 gpd/1000 gr.sq.ft.
2) SGF for pastry baking only and no food preparation is 720 gpd/1000 gr.sq.ft.
3) SGF for complete food preparation is 25 gpd/seat, the same as a fast food restaurant.

Juice bars and coffee houses do not serve any alcoholic drinks.

(e) Building construction includes trailers, field offices, etc.

(f) Cocktail lounge usually does not serve prepared food.

(g) Cold storage facilities are categorized as follow:

1) No Sales - the cold storage facility is used only for temporary storage, no selling is involved. For example, cold storage facilities at the harbor temporarily store seafood until it is distributed.
2) Cold storage w/ retail sales - the primary function of this facility is to support the wholesale/retail operation of a store, such as supermarket freezers, refrigerators, etc.

(h) Counseling centers include marriage counseling centers, alcohol/drug rehabilitation /dependency centers, nutrition centers, diet centers, etc.

(i) Part-time basis schools or dance studios should be charged as retail area - 50 gpd /1000 gr.sq.ft. Full-time basis schools should be charged by the number of students.

(j) Domestic waste is estimated at 50 gpd/1,000 square feet in addition to total process flow.

(k) Bureau of Sanitation will determine if an industrial permit is needed for health spas. The first year flow is based on 650 gpd/1000 gr.sq.ft., and the Sanitation inspectors will redetermine the flow annually based on water bill from the previous year. The applicants are responsible for paying the difference of SFC.

Health club/spa includes lobby area, workout floors, aerobic rooms, swimming pools, Jacuzzi, sauna, locker rooms, showers, and restrooms. If a health club/spa has a gymnasium type of facility, this portion should be charged separately at the gymnasium SFC rate.

Gymnasiums include basketball court, volleyball court, and any other large open space with low occupancy density.

(l) Lobby of retail includes lounges, holding rooms, or waiting area, etc.

(m) Full service post offices include U.S. Postal Service, UPS, Federal Express, DHL, and etc.

(n) The SGF for a college dormitory based on student capacity also includes the SGF for the dormitory cafeterias.

(o) A bedroom is defined as an enclosed subdivision with 50 sq.ft. or more floor area in a residential building commonly used for sleeping purpose, and is partitioned off to form a habitable room.

(p) The SGF for schools based on the student capacity, covers the following facilities:

1) classrooms and lecture halls
2) professors' offices
3) administration offices
4) laboratories for classes or research
5) libraries
6) bookstores
7) student/professor lounges
8) school cafeterias
9) warehouses and storage areas
10) auditoriums
11) gymnasiums
12) restrooms

It does not include water used by schools for swimming pools. When a school files an application for addition of any of the foregoing facilities, the student population will be reassessed and the total gpd for the new facility will be based on the number of students increased since the last SFC was paid or when the City implemented the SFC for the first time. The SFC for any school facility (ex. stadium, dormitory, etc.) not listed above, will be based on the designated SGF for that category.

(q) The SFC for a TV or motion picture studio shall be the sum of SFC's for different facilities in the studio, based on the SGF for each facility. A studio may include one or more of the following facilities: audience viewing room, filming room, film processing, storage area, etc.

(r) No independent tanning salons with shower were encountered during 1996 survey.

(s) Alternative basis of charge for City's consideration. The prior square footage basis is also presented should the City decide to continue charging on that basis.

(t) The formula for calculating total SFCs for sewage flow and its strength components is as follows:

SFC = (flow in gpd*$344/100 gpd) + (flow in mg*BOD in mg/l*8.34 lb/day*$159/ppd) + (flow in mg*SS in mg/l*8.34 lb/day*$147/ppd)

Exanple: Let us assume flow = 100 gpd, BOD = 265 mg/l (ppm), and SS = 275 mg/l (ppm).

Pounds of wastewater strength in 100 gpd:

$$\text{BOD} = \frac{100\text{ mg}}{1{,}000{,}000} \times 265\text{ mg/l} \times 8.34\text{ lb/day} = 0.22101\text{ lb/day}$$

$$\text{SS} = \frac{100\text{ mg}}{1{,}000{,}000} \times 275\text{ mg/l} \times 8.34\text{ lb/day} = 0.22935\text{ lb/day}$$

Base Fee:

Flow			= $344
BOD = 0.22101 lb/day (ppd)	X	$159 per ppd	= $35
SS = 0.22101 lb/day (ppd)	X	$147 per ppd	= $34
Total			**= $413**

SEWARAGE FACILITIES CHARGE
SEWAGE GENERATION FACTOR FOR
RESIDENTIAL AND COMMERCIAL CATEGORIES

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Line No.	FACILITY DESCRIPTION	PROPOSED SGF IN GPD	BOD (mg/l)	SS (mg/l)
1	Acupuncture Office/Clinic	120/1,000 Gr SF	265	275
2	Arcade - Video Games	50/1,000 Gr SF	265	275
3	Auditorium (a)	3/Seat	265	275
4	Auto Parking (a)	20/1,000 Gr SF	265	275
5	Auto Mfg., Service Maintenance (b)	Actual	1,260	1,165
6	Bakery	280/1,000 Gr SF	3,020	2,540
7	Bank: Headquarters	120/1,000 Gr SF	265	275
8	Bank: Branch	50/1,000 Gr SF	265	275
9	Ballroom	350/1,000 Gr SF	265	275
10	Banquet Room	350/1,000 Gr SF	265	275
11	Bar: Cocktail, Fixed Set (a) (c)	15/Seat	265	275
12	Bar: Juice, No Baking Facilities (d)	720/1,000 Gr SF	265	275
13	Bar: Juice, with Baking Facilities (d)	720/1,000 Gr SF	265	275
14	Bar: Cocktail, Public Table Area (c)	720/1,000 Gr SF	265	275
15	Barber Shop	120/1,000 Gr SF	265	275
16	Barber Shop (s)	15/Stall	265	275
17	Beauty Parlor	425/1,000 Gr SF	265	275
18	Beauty Parlor (s)	50/Stall	265	275
19	Bldg. Const/Field Office (e)	120/Office	265	275
20	Bowling Alley: Alley, Lanes & Lobby Area	50/1,000 Gr SF	265	275
21	Bowling Facility: Arcade/Bar/Restaurant/Dancing	Total	Average	Average
22	Cafeteria: Fixed Seat	30/Seat	1,000	600
23	Car Wash: Automatic (b)	Actual	265	285
24	Car Wash: Coin Operated Bays (b)	Actual	265	285
25	Car Wash: Hand Wash (b)	Actual	265	285
26	Car Wash: Counter & Sales Area	50/1,000 Gr SF	265	275
27	Chapel: Fixed Seat	3/Seat	265	275
28	Chiropractic Office	120/1,000 Gr SF	265	275
29	Church: Fixed Seat	3/Seat	265	275
30	Church School: Day Care/Elem	9/Occupant	265	275
31	Church School: One Day Use (s)	9/Occupant	265	275
32	Cocktail Lounge: Fixed Seat (f)	15/Seat	265	275
33	Coffee House: No Food Preparation (d)	720/1,000 Gr SF	265	275
34	Coffee House: Pastry Baking Only (d)	720/1,000 Gr SF	265	275
35	Coffee House: Serves Prepared Food (d)	25/Seat	1,000	600
36	Cold Storage: No Sales (g)	30/1,000 Gr SF	265	275
37	Cold Storage: Retail Sales (g)	50/1,000 Gr SF	265	275
38	Comfort Station: Public	80/Fixture	265	275
39	Commercial Use (a)	50/1,000 Gr SF	265	275
40	Community Center	3/Occupant	265	275
41	Conference Room of Office Bldg.	120/1,000 Gr SF	265	275
42	Counseling Center (h)	120/1,000 Gr SF	265	275
43	Credit Union	120/1,000 Gr SF	265	275
44	Dairy	Average Flow	1,510	325
45	Dairy: Barn	Average Flow	1,510	325
46	Dairy: Retail Area	50/1,000 Gr SF	265	275
47	Dancing Area (of Bars or Nightclub) (c)	350/1,000 Gr SF	265	275
48	Dance Studio (i)	50/1,000 Gr SF	265	275
49	Dental Office/Clinic	250/1,000 Gr SF	265	275

SEWARAGE FACILITIES CHARGE
SEWAGE GENERATION FACTOR FOR
RESIDENTIAL AND COMMERCIAL CATEGORIES

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Line No.	FACILITY DESCRIPTION	PROPOSED SGF IN GPD	BOD (mg/l)	SS (mg/l)
50	Doughnut Shop	280/1,000 Gr SF	1,000	600
51	Drug Rehabilitation Center (h)	120/1,000 Gr SF	265	275
52	Equipment Booth	30/1,000 Gr SF	265	275
53	Film Processing (Retail)	50/1,000 Gr SF	265	275
54	Film Processing (Industrial)	Actual	265	275
55	Food Processing Plant (b)	Actual	2,210	1,450
56	Gas Station: Self Service	100/W.C.	265	275
57	Gas Station: Four Bays Max	430/Station	1,950	1,175
58	Golf Course Facility: Lobby/Office/Restaurant/Bar	Total	700	450
59	Gymnasium: Basketball, Volleyball (k)	200/1,000 Gr SF	265	275
60	Hanger (Aircraft)	50/1,000 Gr SF	265	275
61	Health Club/Spa (k)	650/1,000 Gr SF	265	275
62	Homeless Shelter	70/Bed	265	275
63	Hospital	70/Bed	820	1,230
64	Hospital: Convalescent (a)	70/Bed	265	275
65	Hospital: Animal	300/1,000 Gr SF	820	1,230
66	Hospital: Psychiatric	70/Bed	265	275
67	Hospital: Surgical (a)	360/Bed	265	275
68	Hotel: Use Guest Rooms Only (a)	120/Room	265	275
69	Jail	85/Inmate	265	275
70	Kennel: Dog Kennel/Open	100/1,000 Gr SF	265	275
71	Laboratory: Commercial	250/1,000 Gr SF	265	275
72	Laboratory: Industrial	Actual	265	275
73	Laundromat	185/Machine	550	370
74	Library: Public Area	50/1,000 Gr SF	265	275
75	Library: Stacks, Storage	30/1,000 Gr SF	265	275
76	Lobby of Retail Area (l)	50/1,000 Gr SF	265	275
77	Lodge Hall	3/Seat	265	275
78	Lounge (l)	50/1,000 Gr SF	265	275
79	Machine Shop (No Industrial Waste Permit Required) (b)	50/1,000 Gr SF	265	275
80	Machine Shop (Industrial)	Actual	265	275
81	Mfg or Industrial Facility (No IW Permit Required) (b)	50/1,000 Gr SF	265	275
82	Mfg or Industrial Facility (Industrial)	Actual	265	275
83	Massage Parlor	250/1,000 Gr SF	265	275
84	Medical Building (a)	225/1,000 Gr SF	265	275
85	Medical: Lab in Hospital	250/1,000 Gr SF	340	275
86	Medical Office/Clinic	250/1,000 Gr SF	265	275
87	Mini-Mall (No Food)	50/1,000 Gr SF	265	275
88	Mortuary: Chapel	3/Seat	265	275
89	Mortuary: Embalming	300/1,000 Gr SF	800	800
90	Mortuary: Living Area	50/1,000 Gr SF	265	275
91	Motel: Use Guest Room Only (a)	120/Room	265	275
92	Museum: All Area	30/1,000 Gr SF	265	275
93	Museum: Office Over 15%	120/1,000 Gr SF	265	275
94	Museum: Sales Area	50/1,000 Gr SF	265	275
95	Office Building (a)	120/1,000 Gr SF	265	275
96	Office Bldg w/Cooling Tower	170/1,000 Gr SF	265	275
97	Plating Plant (No IW Permit Required) (b)	50/1,000 Gr SF	265	275
98	Plating Plant (Industrial) (b)	Actual	265	275

SEWARAGE FACILITIES CHARGE
SEWAGE GENERATION FACTOR FOR
RESIDENTIAL AND COMMERCIAL CATEGORIES

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Line No.	FACILITY DESCRIPTION	PROPOSED SGF IN GPD	BOD (mg/l)	SS (mg/l)
99	Pool Hall (No Alcohol)	50/1,000 Gr SF	265	275
100	Post Office: Full Service (m)	120/1,000 Gr SF	265	275
101	Post Office: Private Mail Box Rental	50/1,000 Gr SF	265	275
102	Prisons	175/Inmate	265	275
103	Residential Dorm: College or Residential (n)	70/Student	265	275
104	Residential: Boarding House	70/Bed	265	275
105	Residential: Apt - Bachelor (a)	75/DU	265	275
106	Residential: Apt - 1 BDR (a) (o)	110/DU	265	275
107	Residential: Apt - 2 BDR (a) (o)	150/DU	265	275
108	Residential: Apt - 3 BDR (a) (o)	190/DU	265	275
109	Residential: Apt - >3 BDR (o)	40/BDR	265	275
110	Residential: Condo - 1 BDR (o)	110/DU	265	275
111	Residential: Condo - 2 BDR (o)	150/DU	265	275
112	Residential: Condo - 3 BDR (o)	190/DU	265	275
113	Residential: Condo - >3 BDR (o)	40/BDR	265	275
114	Residential: Duplex/Towhhouse - 1 BR (o)	110/DU	265	275
115	Residential: Duplex/Towhhouse - 2 BR (o)	150/DU	265	275
116	Residential: Duplex/Towhhouse - 3 BR (o)	190/DU	265	275
117	Residential: Duplex/Towhhouse - >3 BR (o)	40/BDR	265	275
118	Residential: SFD - 1 BR (o)	140/DU	265	275
119	Residential: SFD - 2 BR (o)	185/DU	265	275
120	Residential: SFD - 3 BR (o)	230/DU	265	275
121	Residential: SFD - >3 BR (o)	45/BDR	265	275
122	Residential Room Addition: Bedroom (o)	45/BDR	265	275
123	Residential Room Conversion: Into a Bedroom (o)	45/BDR	265	275
124	Residential: Mobile Home	Same as Apt	265	275
125	Residential: Artist (2/3 Area)	75/DU	265	275
126	Residential: Artist Residence	75/DU	265	275
127	Residential: Guest Home w/ Kitchen	Same as Apt	265	275
128	Residential: Guest Home w/o Kitchen	45/BDR	265	275
129	Rest Home	70/Bed	555	490
130	Restaurant: Drive-In	50/Stall	1000	600
131	Restaurant: Drive-In Seating Area	25/Seat	1000	600
132	Restaurant: Fast Food Indoor Seat	25/Seat	1000	600
133	Restaurant: Fast Food Outdoor Seat	25/Seat	1000	600
134	Restaurant: Full Service Indoor Seat (a)	30/Seat	1000	600
135	Restaurant: Full Service Outdoor Seat	30/Seat	1000	600
136	Restaurant: Take Out	300/1,000 Gr SF	1000	600
137	Retail Area (greater than 100,000 SF)	50/1,000 Gr SF	265	275
138	Retail Area (less than 100,000 SF)	25/1,000 Gr SF	265	275
139	Rifle Range: Shooting Stalls/Lanes, Lobby	50/1,000 Gr SF	265	275
140	Rifle Range Facility: Bar/Restaurant	Total	Average	Average
141	School: Arts/Dancing/Music (i)	11/Student	265	275
142	School: Elementary/Jr. High (a) (p)	9/Student	265	275
143	School: High School (a) (p)	11/Student	265	275
144	School: Kindergarten (s)	9/Student	265	275
145	School: Martial Arts (i)	9/Student	265	275
146	School: Nursery-Day Care (p)	9/Child	265	275
147	School: Special Class (p)	9/Student	265	275

SEWARAGE FACILITIES CHARGE
SEWAGE GENERATION FACTOR FOR
RESIDENTIAL AND COMMERCIAL CATEGORIES

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Line No.	FACILITY DESCRIPTION	PROPOSED SGF IN GPD	BOD (mg/l)	SS (mg/l)
148	School: Trade or Vocational (p)	11/Student	265	275
149	School: Training (p)	11/Student	265	275
150	School: University/College (a) (p)	16/Student	265	275
151	School: Dormitory (a) (n)	70/Student	265	275
152	School: Stadium, Pavilion	3/Seat	265	275
153	Spa/Jacuzzi (Commercial with backwash filters)	Total	265	275
154	Storage: Building/Warehouse	30/1,000 Gr SF	265	275
155	Storage: Self-Storage Bldg	30/1,000 Gr SF	265	275
156	Store: Ice Cream/Yogurt	25/1,000 Gr SF	1000	600
157	Store: Retail (l)	50/1,000 Gr SF	265	275
158	Studio: Film/TV - Audience Viewing Room (q)	3/Seat	265	275
159	Studio: Film/TV - Regular Use Indoor Filming Area (q)	50/1,000 Gr SF	265	275
160	Studio: Film/TV - Ind. Use Film Process/Machine Shop (q)	50/1,000 Gr SF	265	275
161	Studio: Film/TV - Ind. Use Film Process/Machine Shop	Total	265	275
162	Studio: Recording	50/1,000 Gr SF	265	275
163	Swimming Pool (Commercial with backwash filters)	Total	265	275
164	Tanning Salon: Independent, No Shower (r)	50/1,000 Gr SF	265	275
165	Tanning Salon: Within a Health Spa/Club	640/1,000 Gr SF	265	275
166	Theater: Drive-In	6/Vehicle	265	275
167	Theater: Live/Music/Opera	3/Seat	265	275
168	Theater: Cinema	3/Seat	265	275
169	Tract: Commercial/Residential	1/Acre	265	275
170	Trailer: Const/Field Office (e)	120/Office	265	275
171	Veterinary Clinic/Office	250/1,000 Gr SF	265	275
172	Warehouse	30/1,000 Gr SF	265	275
173	Warehouse w/ Office	Total	265	275
174	Waste Dump: Recreational	400/Station	2650	2750
175	Wine Tasting Room: Kitchen	200/1,000 Gr SF	265	275
176	Wine Tasting Room: All Area	50/1,000 Gr SF	265	275

FOOTNOTES TO SGFs TABLE

(a) SFC rates for these facilities have historically been published in SFC ordinances.

(b) Bureau of Sanitation will determine the flow based on the information given by applicants for facilities with industrial discharge. The flow will be redetermined by Sanitation inspectors annually based on water bills. If the actual flow exceeds the previous year's determined flow, the applicants will be charged for the difference.
If this type of facility is exempt from an industrial discharge permit, only the domestic SFC will be assessed.

(c) The SFC for a bar shall be the sum of SFC's for all areas based on the SGF for each area (ex. fixed seat area, public table area, dancing area).

(d) The determination of SGF for juice bars and coffee houses previously depended on the extent of the actual food preparation in house, not by the types of food provided. Food is assumed to be prepared offsite and as such, the three prior subcategories have been consolidated.

1) SGF for no pastry baking and no food preparation is 720 gpd/1000 gr.sq.ft.
2) SGF for pastry baking only and no food preparation is 720 gpd/1000 gr.sq.ft.
3) SGF for complete food preparation is 25 gpd/seat, the same as a fast food restaurant.

Juice bars and coffee houses do not serve any alcoholic drinks.

(e) Building construction includes trailers, field offices, etc.

(f) Cocktail lounge usually does not serve prepared food.

(g) Cold storage facilities are categorized as follow:

1) No Sales - the cold storage facility is used only for temporary storage, no selling is involved. For example, cold storage facilities at the harbor temporarily store seafood until it is distributed.
2) Cold storage w/ retail sales - the primary function of this facility is to support the wholesale/retail operation of a store, such as supermarket freezers, refrigerators, etc.

(h) Counseling centers include marriage counseling centers, alcohol/drug rehabilitation /dependency centers, nutrition centers, diet centers, etc.

(i) Part-time basis schools or dance studios should be charged as retail area - 50 gpd /1000 gr.sq.ft. Full-time basis schools should be charged by the number of students.

(j) Domestic waste is estimated at 50 gpd/1,000 square feet in addition to total process flow.

(k) Bureau of Sanitation will determine if an industrial permit is needed for health spas. The first year flow is based on 650 gpd/1000 gr.sq.ft., and the Sanitation inspectors will redetermine the flow annually based on water bill from the previous year. The applicants are responsible for paying the difference of SFC.

Health club/spa includes lobby area, workout floors, aerobic rooms, swimming pools, Jacuzzi, sauna, locker rooms, showers, and restrooms. If a health club/spa has a gymnasium type of facility, this portion should be charged separately at the gymnasium SFC rate.

Gymnasiums include basketball court, volleyball court, and any other large open space with low occupancy density.

(l) Lobby of retail includes lounges, holding rooms, or waiting area, etc.

(m) Full service post offices include U.S. Postal Service, UPS, Federal Express, DHL, and etc.

(n) The SGF for a college dormitory based on student capacity also includes the SGF for the dormitory cafeterias.

(o) A bedroom is defined as an enclosed subdivision with 50 sq.ft. or more floor area in a residential building commonly used for sleeping purpose, and is partitioned off to form a habitable room.

(p) The SGF for schools based on the student capacity, covers the following facilities:

1) classrooms and lecture halls
2) professors' offices
3) administration offices
4) laboratories for classes or research
5) libraries
6) bookstores
7) student/professor lounges
8) school cafeterias
9) warehouses and storage areas
10) auditoriums
11) gymnasiums
12) restrooms

It does not include water used by schools for swimming pools. When a school files an application for addition of any of the foregoing facilities, the student population will be reassessed and the total gpd for the new facility will be based on the number of students increased since the last SFC was paid or when the City implemented the SFC for the first time. The SFC for any school facility (ex. stadium, dormitory, etc.) not listed above, will be based on the designated SGF for that category.

(q) The SFC for a TV or motion picture studio shall be the sum of SFC's for different facilities in the studio, based on the SGF for each facility. A studio may include one or more of the following facilities: audience viewing room, filming room, film processing, storage area, etc.

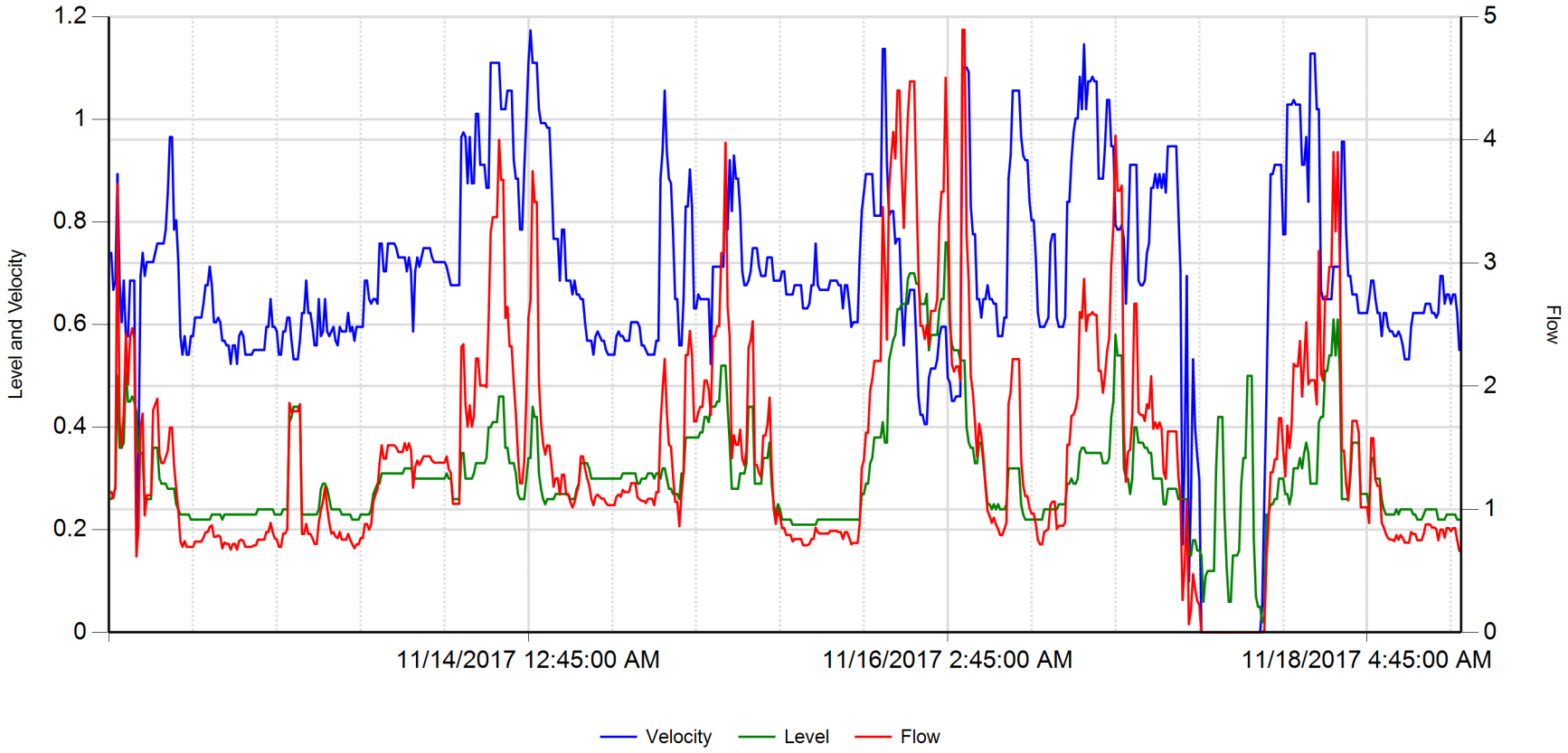
(r) No independent tanning salons with shower were encountered during 1996 survey.

(s) Alternative basis of charge for City’s consideration. The prior square footage basis is also presented should the City decide to continue charging on that basis.

Appendix 5

Sewer Monitoring Report

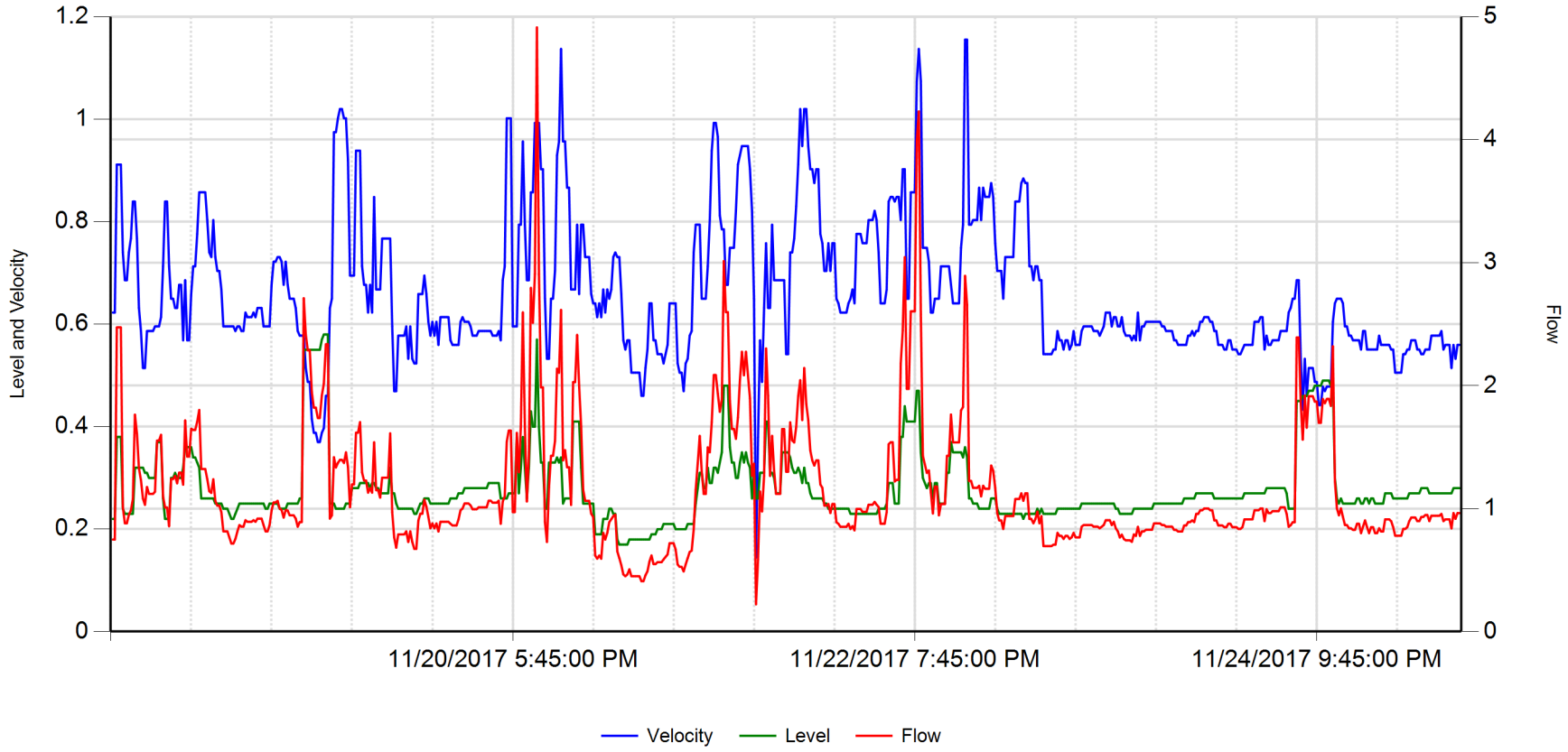
2017.11 Site 1 Lateral Inflow



	Velocity (fps)	Level (in)	Flow (gpm)		
Average	0.684	0.310	1.466	**RainFall**	Inches
Maximum	1.173	0.760	4.893		
Minimum	0.000	0.020	0.000		

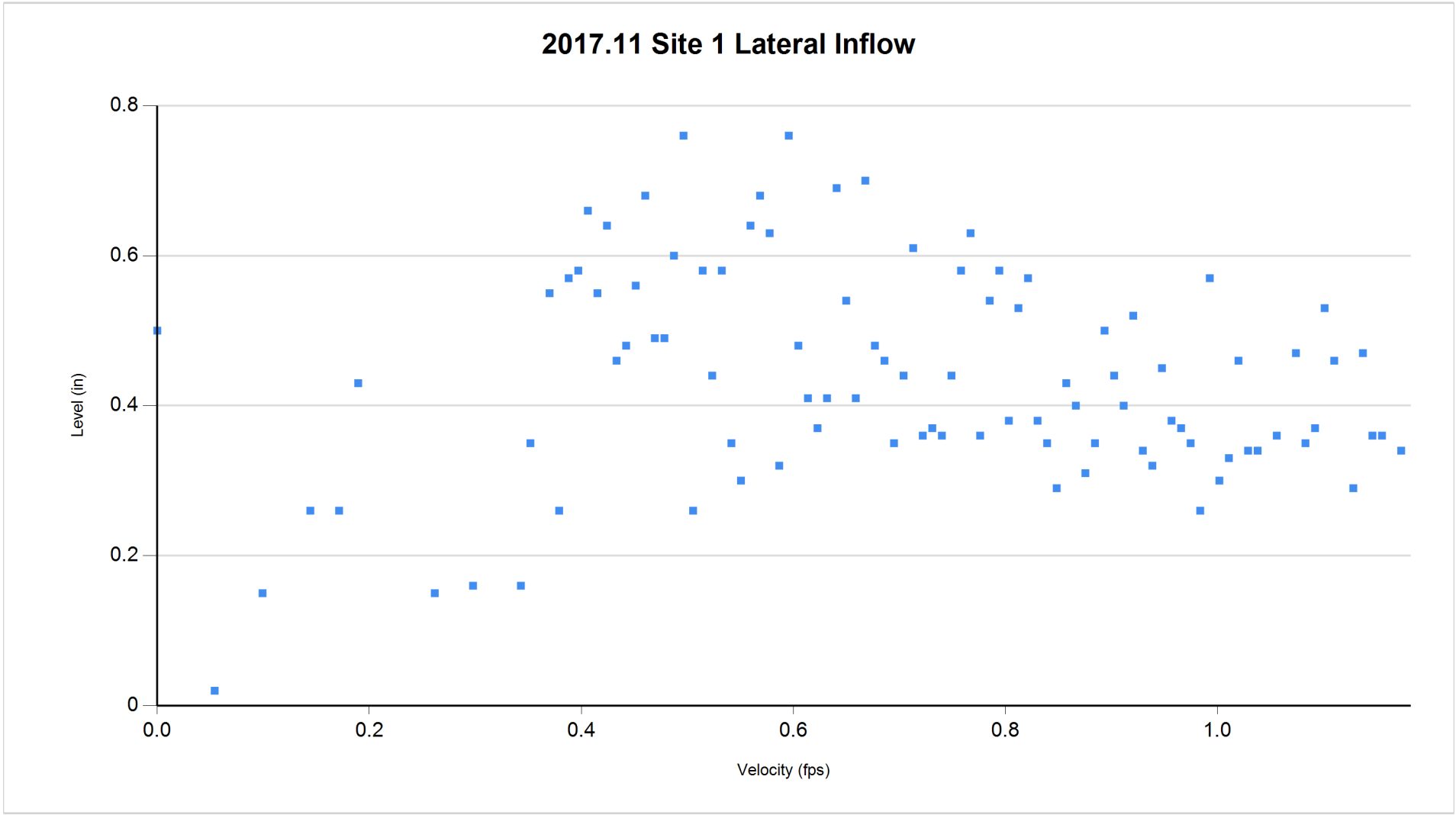
11/30/2017 10:46:50 AM

2017.11 Site 1 Lateral Inflow



	Velocity (fps)	Level (in)	Flow (gpm)		
Average	0.661	0.280	1.161	**RainFall**	Inches
Maximum	1.155	0.580	4.913		
Minimum	0.144	0.170	0.223		

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11/11/2017 thru 11/25/2017

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Site Report 11-30-2017

Confidential Proprietary Information

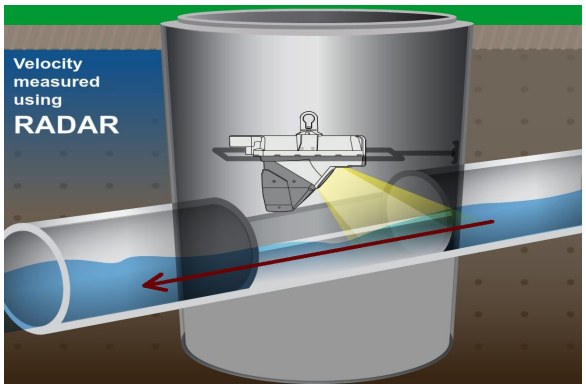
2017.11 Site 1 Lateral Inflow	Fuscoe	~4278 Martingale Way Manhole No. M28-013

Access:	System Type:	Install Date: 11/11/2017
Manhole in southbound lane	Sanitary [X] Storm [ ]	

Map



Technology



Sewer Plan



Flow Meter			
Meter Depth: 90.52"			
Map Coordinates: 33.666067, -117.865277			
Laminar open channel hydraulics			
Avg Velocity	Avg Measured Level		Multiplier
0.75 fps	0.25"		1
Gas			
O2	H2S	CO	LEL
20.9	0	0	0
Notes			
Monitored lateral from Project Site.			
Traffic Safety			
Used arrow board, cones & signs for traffic control; worked during off-peak hrs to avoid impacting traffic.			
Land Use			
Residential	Commercial	Industrial	Trunk
	X		

Manhole Depth	102"
Monitored Pipe Size	8"
Pipe Size (Up/Down)	8"/8"
Pipe Shape	Round
Pipe Condition	Good
Manhole Material	Concrete
Silt	0
Velocity Profile Data	*
Velocity Profile Taken	0.4 2-D
Sensor Offset	11.48"
Sensor Dist. to Crown	3.48"
Sensor Direction	Upstream
Flow Heading	North

Meter Site Document

Fuscoe

2017.11 Site 1 Lateral Inflow ~4278 Martingale Way

Site



Manhole Before Install



Installation Process



Installed



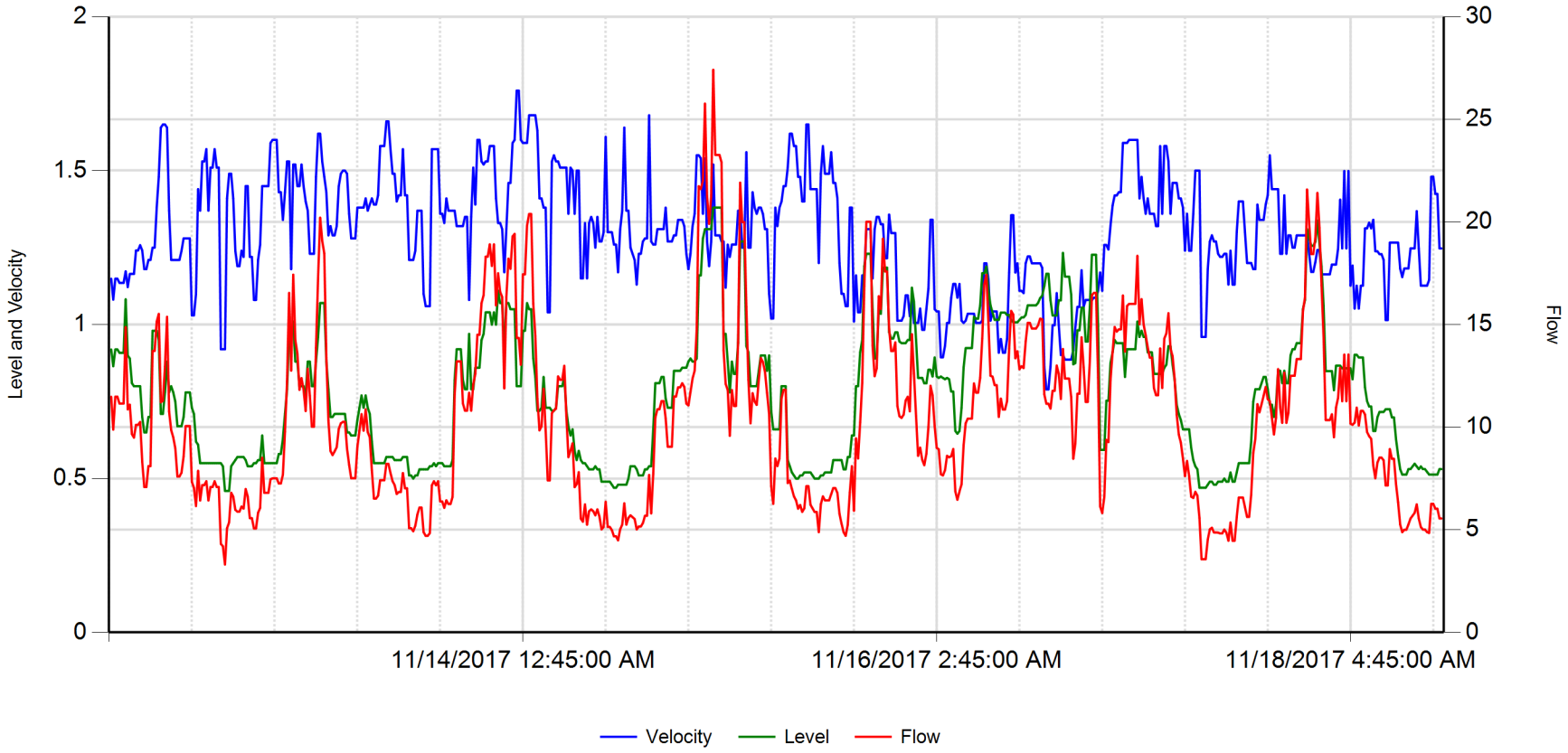
Traffic Control



Traffic Control



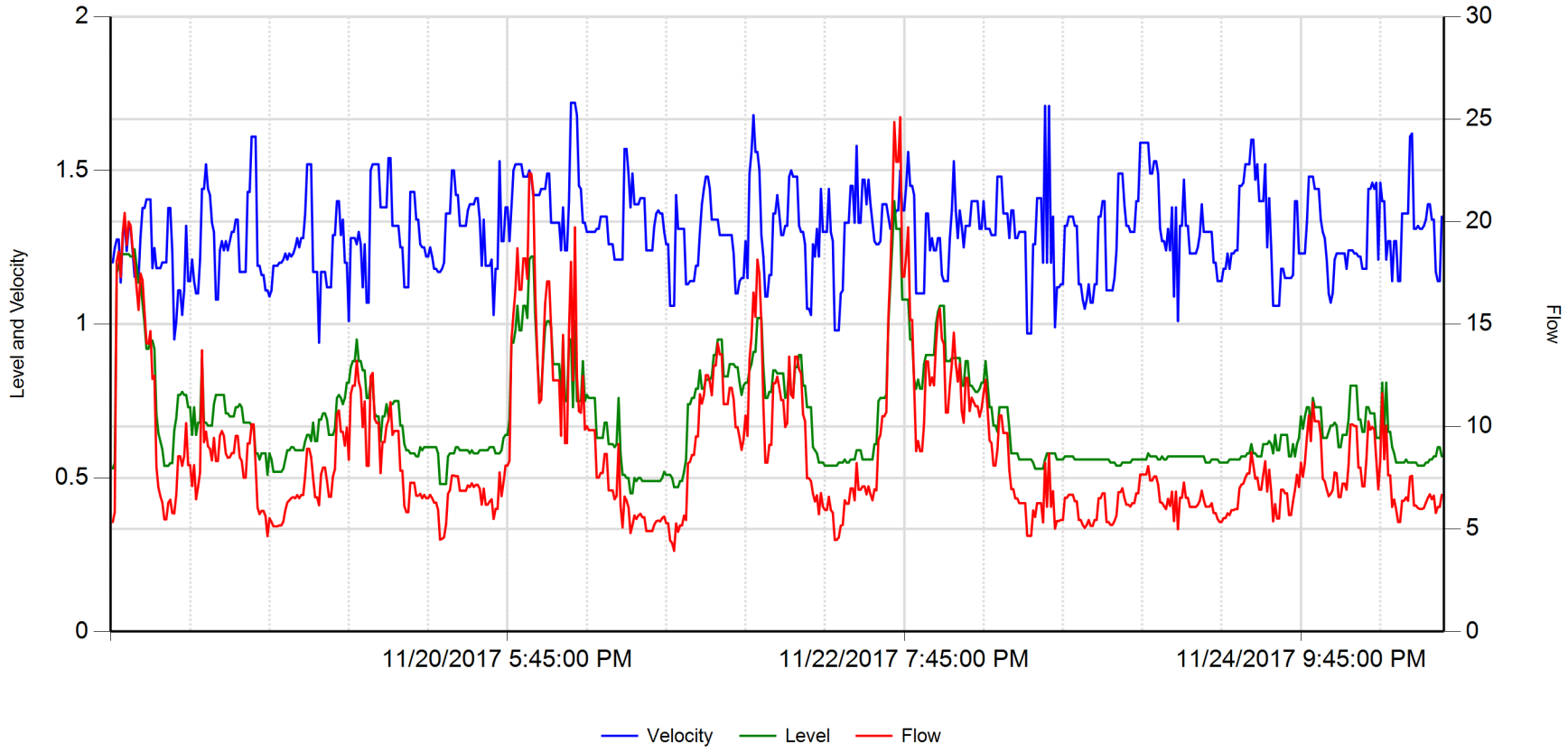
2017.11 Site 1 Mainline Inflow



	Velocity (fps)	Level (in)	Flow (gpm)		
Average	1.298	0.783	10.388	**RainFall**	Inches
Maximum	1.760	1.380	27.416		
Minimum	0.789	0.460	3.315		

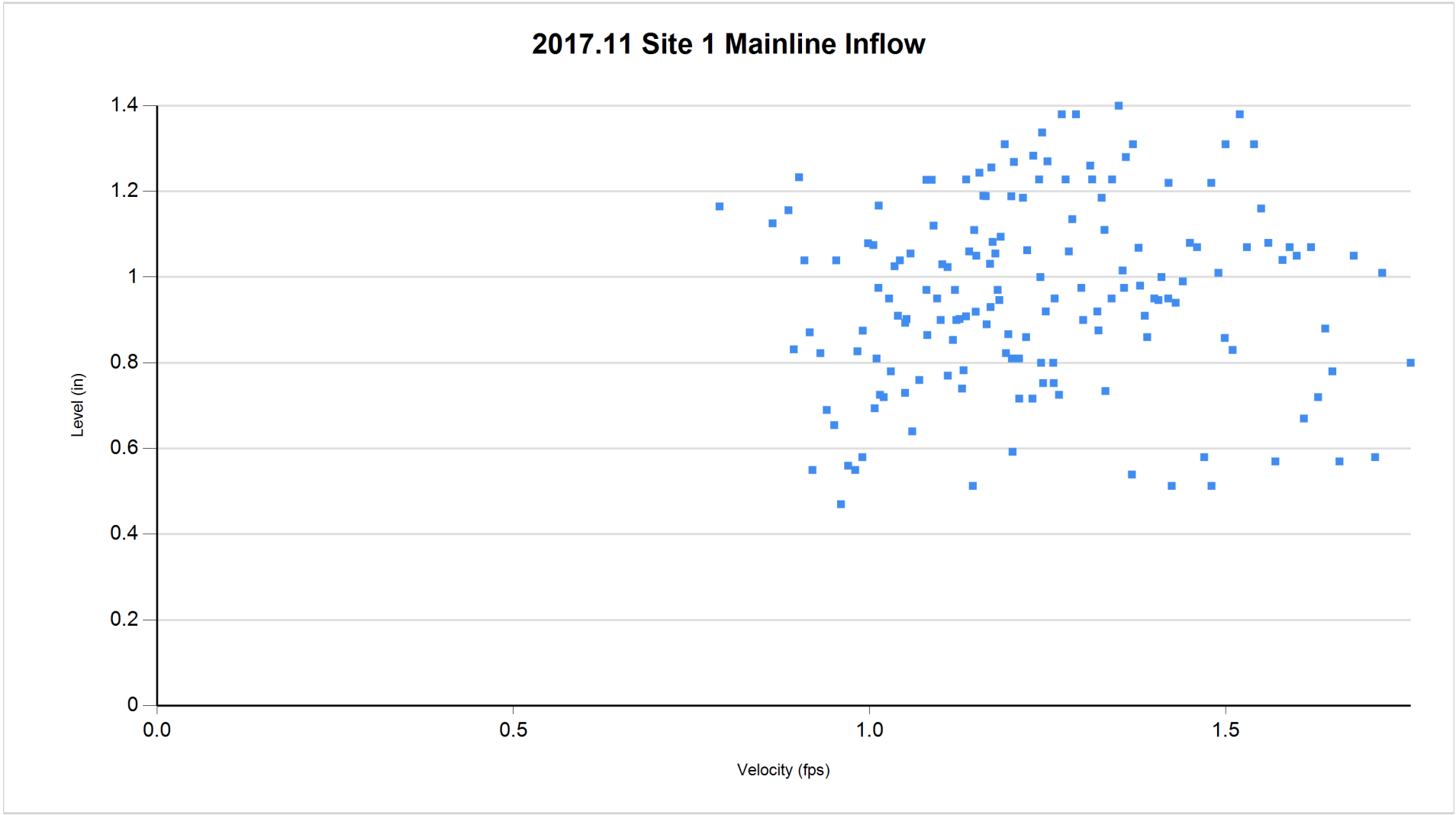
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2017.11 Site 1 Mainline Inflow



	Velocity (fps)	Level (in)	Flow (gpm)		
Average	1.301	0.692	8.781	**RainFall**	Inches
Maximum	1.720	1.400	25.097		
Minimum	0.940	0.450	3.943		

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11/11/2017 thru 11/25/2017

11/30/2017 10:50:11 AM

Site Report 11-30-2017

Confidential Proprietary Information

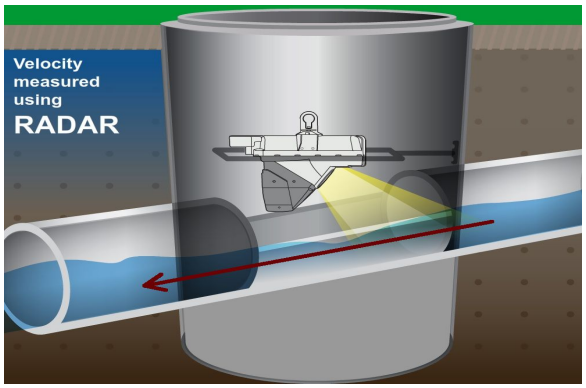
	Fuscoe	~4278 Martingale Way
2017.11 Site 1 Mainline Inflow		Manhole No. M28-013

Access:	System Type:	
Manhole in southbound lane	Sanitary [X] Storm [ ]	Install Date: 11/11/2017

Map



Technology



Sewer Plan



Flow Meter			
Meter Depth: 89.21"			
Map Coordinates: 33.666067, -117.865277			
Laminar open channel hydraulics			
Avg Velocity	Avg Measured Level		Multiplier
1.25 fps	1.0"		1
Gas			
O2	H2S	CO	LEL
20.9	0	0	0
Notes			
Monitored upstream mainline, entering MH from the south.			
Traffic Safety			
Used arrow board, cones & signs for traffic control; worked during off-peak hrs to avoid impacting traffic.			
Land Use			
Residential	Commercial	Industrial	Trunk
	X		

Manhole Depth	102"
Monitored Pipe Size	8"
Pipe Size (Up/Down)	8"/8"
Pipe Shape	Round
Pipe Condition	Good
Manhole Material	Concrete
Silt	0
Velocity Profile Data	*
Velocity Profile Taken	0.4 2-D
Sensor Offset	12.79"
Sensor Dist. to Crown	4.79"
Sensor Direction	Upstream
Flow Heading	North

Meter Site Document

Fuscoe

2017.11 Site 1 Mainline Inflow ~4278 Martingale Way

Site



Manhole Before Install



Installation Process



Installed



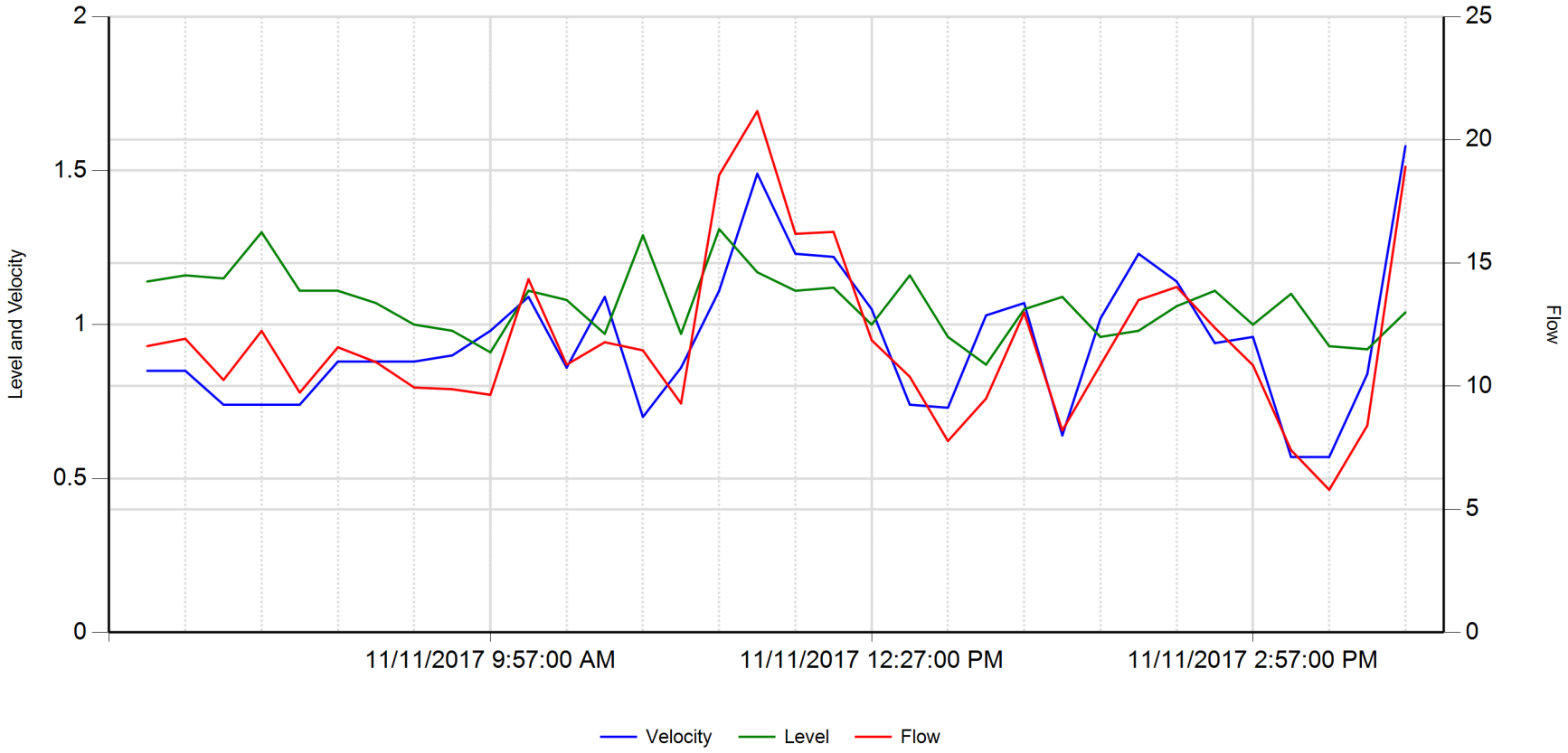
Traffic Control



Traffic Control



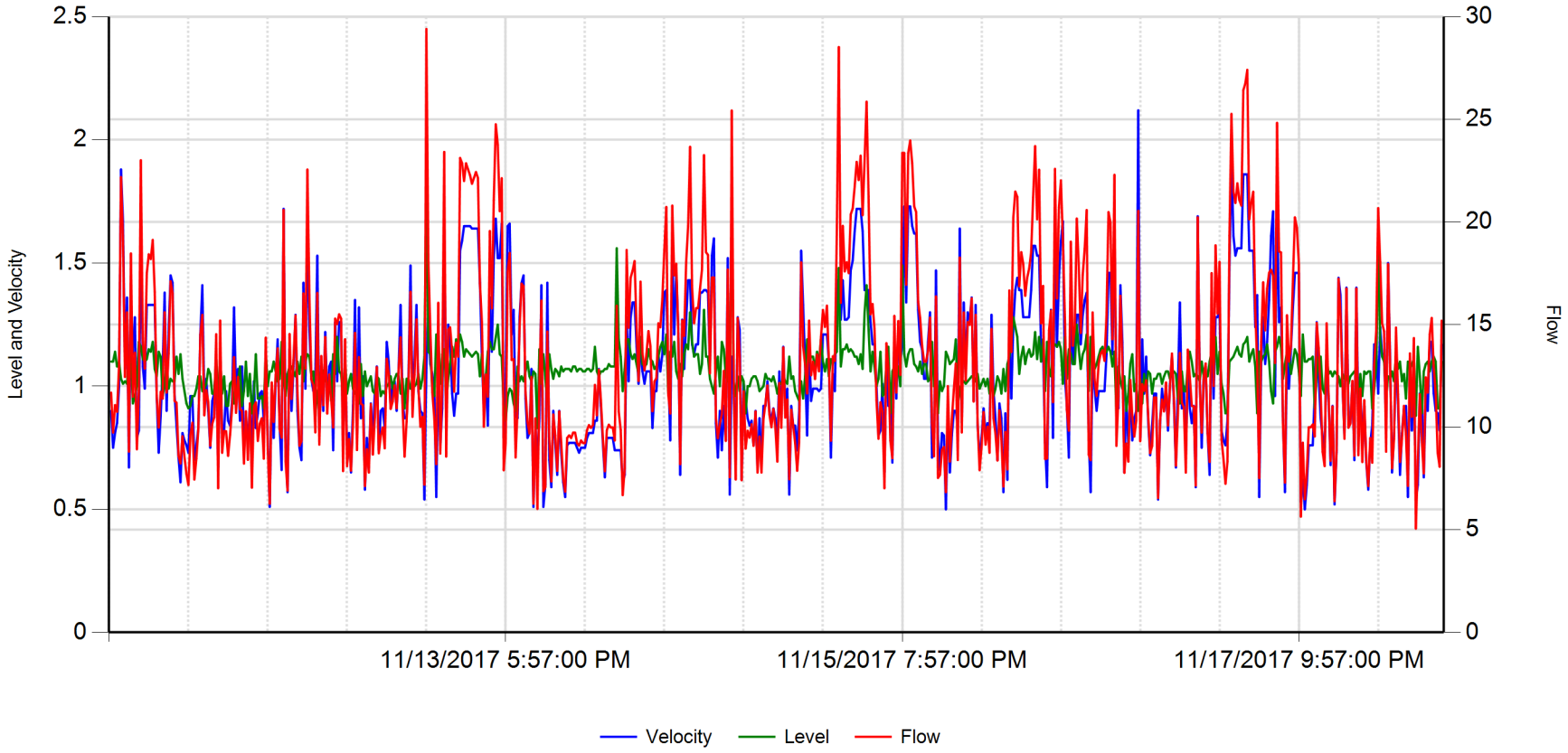
2017.11 Site 1A Martingale Inflow



	Velocity (fps)	Level (in)	Flow (gpm)		
Average	0.947	1.067	11.782	**RainFall**	Inches
Maximum	1.580	1.310	21.166		
Minimum	0.570	0.870	5.795		

11/30/2017 10:50:56 AM

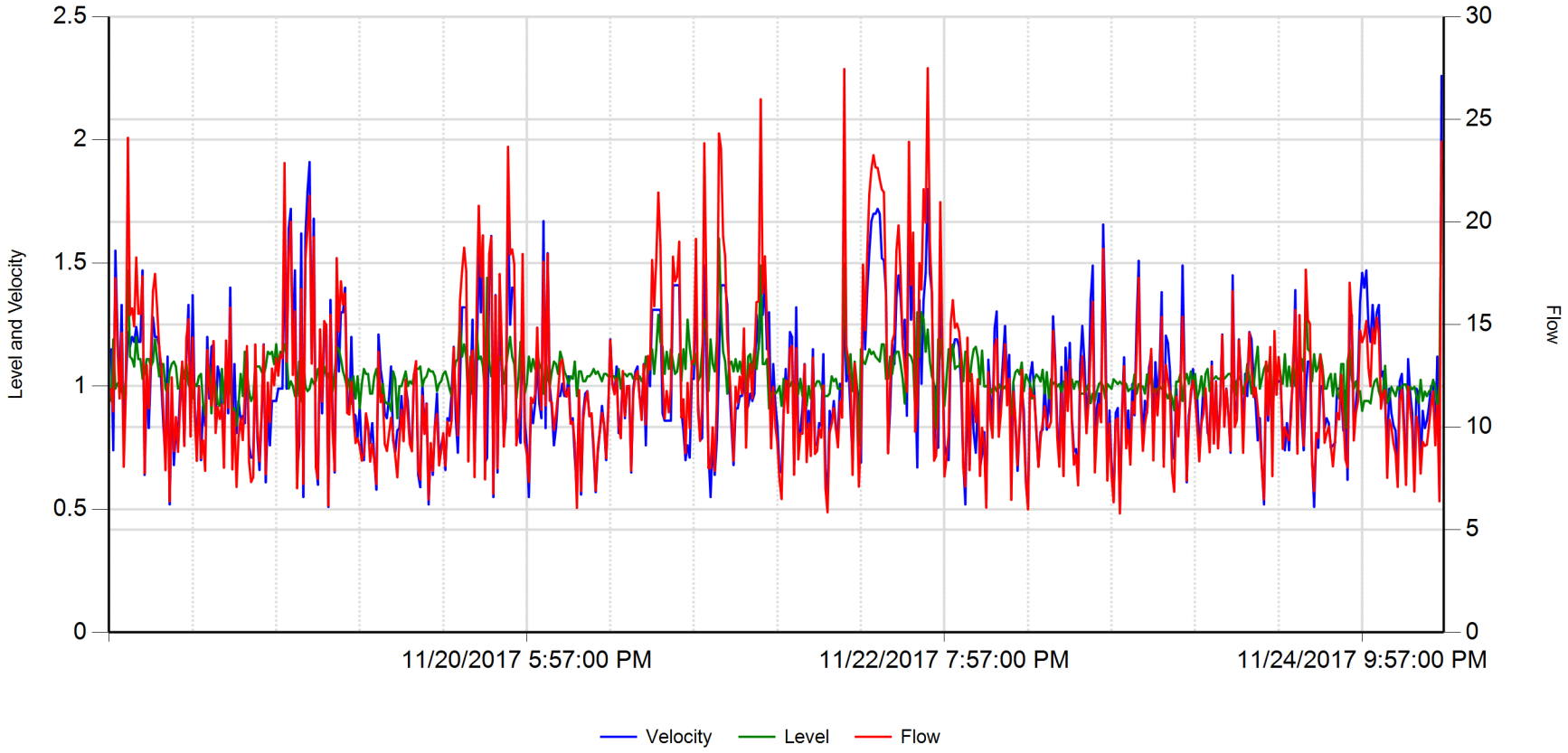
2017.11 Site 1A Martingale Inflow



	Velocity (fps)	Level (in)	Flow (gpm)		
Average	1.052	1.068	13.231	**RainFall**	Inches
Maximum	2.120	1.840	29.400		
Minimum	0.500	0.830	5.063		

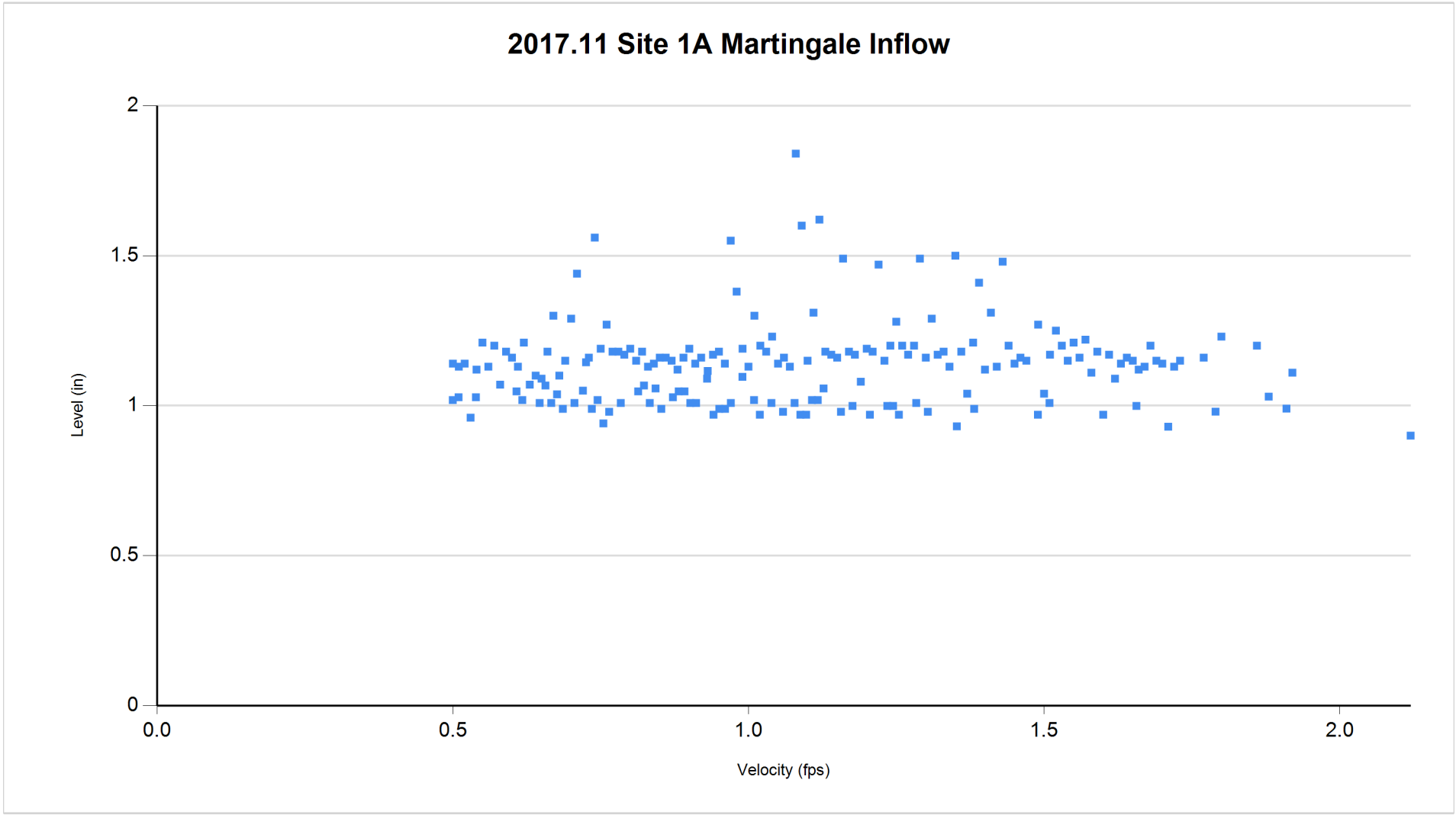
11/30/2017 10:50:56 AM

2017.11 Site 1A Martingale Inflow



	Velocity (fps)	Level (in)	Flow (gpm)		
Average	0.991	1.044	11.999	**RainFall**	Inches
Maximum	1.910	1.600	27.492		
Minimum	0.500	0.760	5.802		

11/30/2017 10:50:56 AM



11/11/2017 thru 11/25/2017

11/30/2017 10:50:56 AM

Site Report 11-30-2017

Confidential Proprietary Information

	Fuscoe	~1750 Corinthian Way
2017.11 Site 1A Martingale Inflow		Manhole No. M28-012

Access:
Manhole in left-hand eastbound lane at intersection with Martingale Way

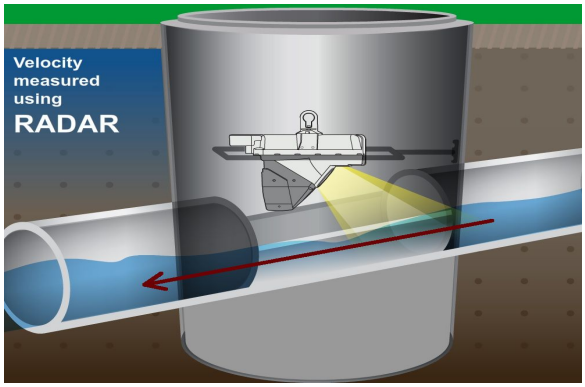
System Type: Sanitary [X] Storm [ ]

Install Date: 11/11/2017

Map



Technology



Sewer Plan



Flow Meter			
Meter Depth: 85"			
Map Coordinates: 33.666704, -117.865387			
Moderate open channel hydraulics			
Avg Velocity	Avg Measured Level		Multiplier
0.75 fps	1.2"		1
Gas			
O2	H2S	CO	LEL
20.9	0	0	0
Notes			
Monitored upstream line from Martingale Way, entering MH from south.			
Traffic Safety			
Used arrow board, cones & signs for traffic control; worked during off-peak hrs to avoid impacting traffic.			
Land Use			
Residential	Commercial	Industrial	Trunk
	X		

Manhole Depth	100"
Monitored Pipe Size	8"
Pipe Size (Up/Down)	8"/10"
Pipe Shape	Round
Pipe Condition	Good
Manhole Material	Concrete
Silt	0
Velocity Profile Data	*
Velocity Profile Taken	0.4 2-D
Sensor Offset	15.20"
Sensor Dist. to Crown	7.20"
Sensor Direction	Upstream
Flow Heading	West

Meter Site Document

Fuscoe

2017.11 Site 1A Martingale Inflow ~1750 Corinthian Way

Site



Manhole Before Install



Installation Process



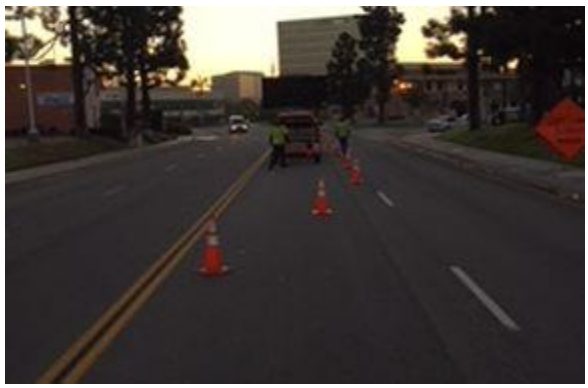
Installed



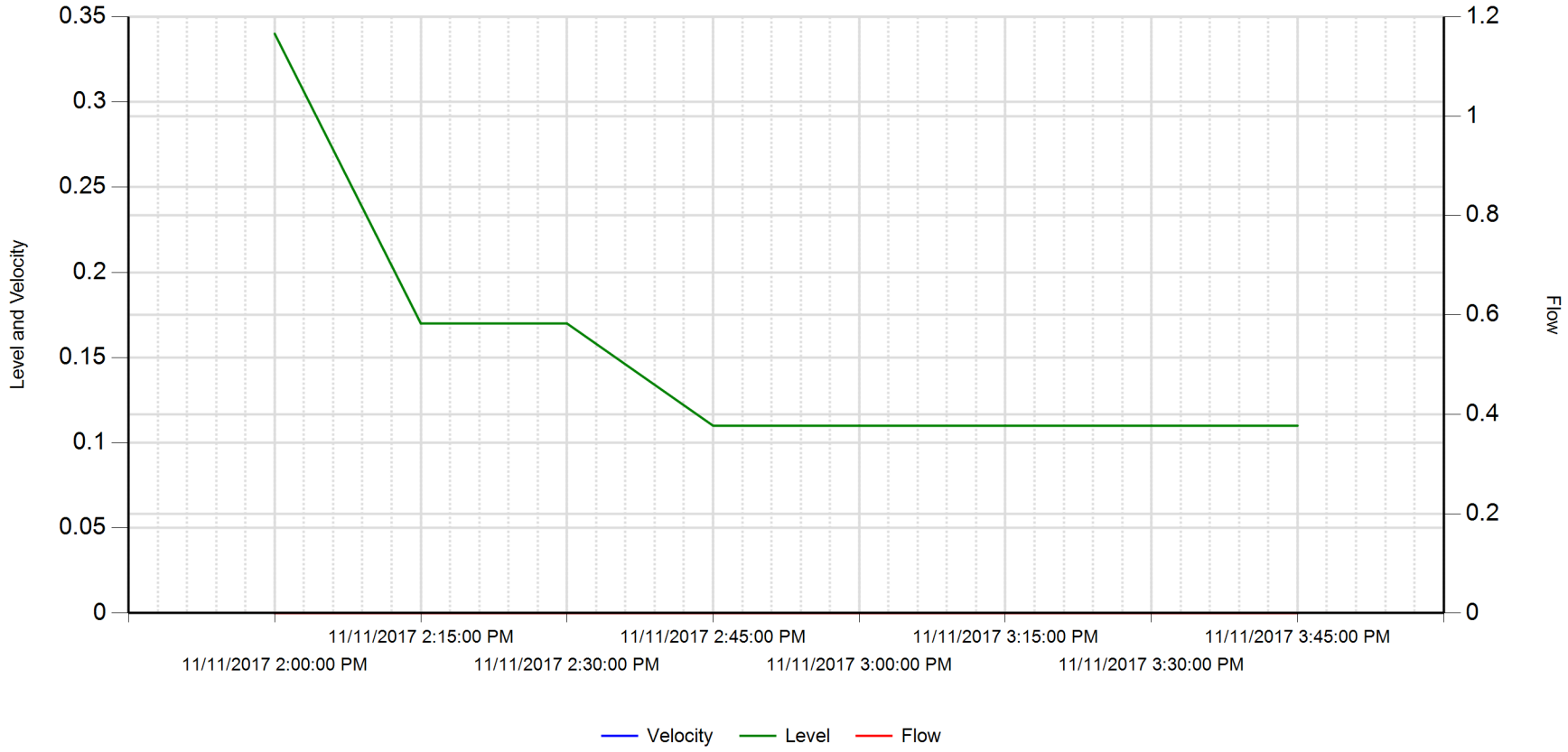
Traffic Control



Traffic Control



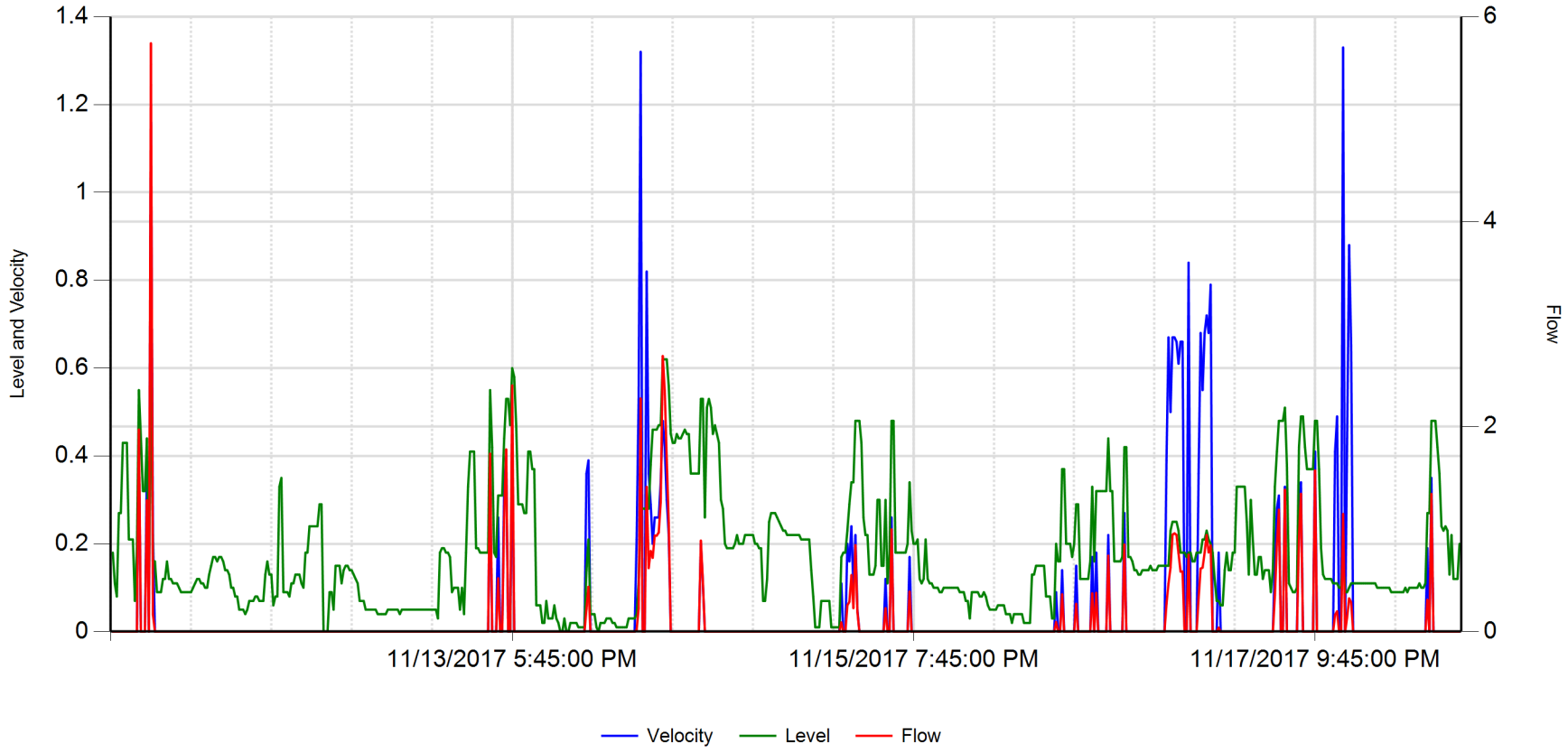
2017.11 Site 2 Lateral Inflow



	Velocity (fps)	Level (in)	Flow (gpm)		
Average	0.000	0.154	0.000	**RainFall**	Inches
Maximum	0.000	0.340	0.000		
Minimum	0.000	0.110	0.000		

11/30/2017 10:47:49 AM

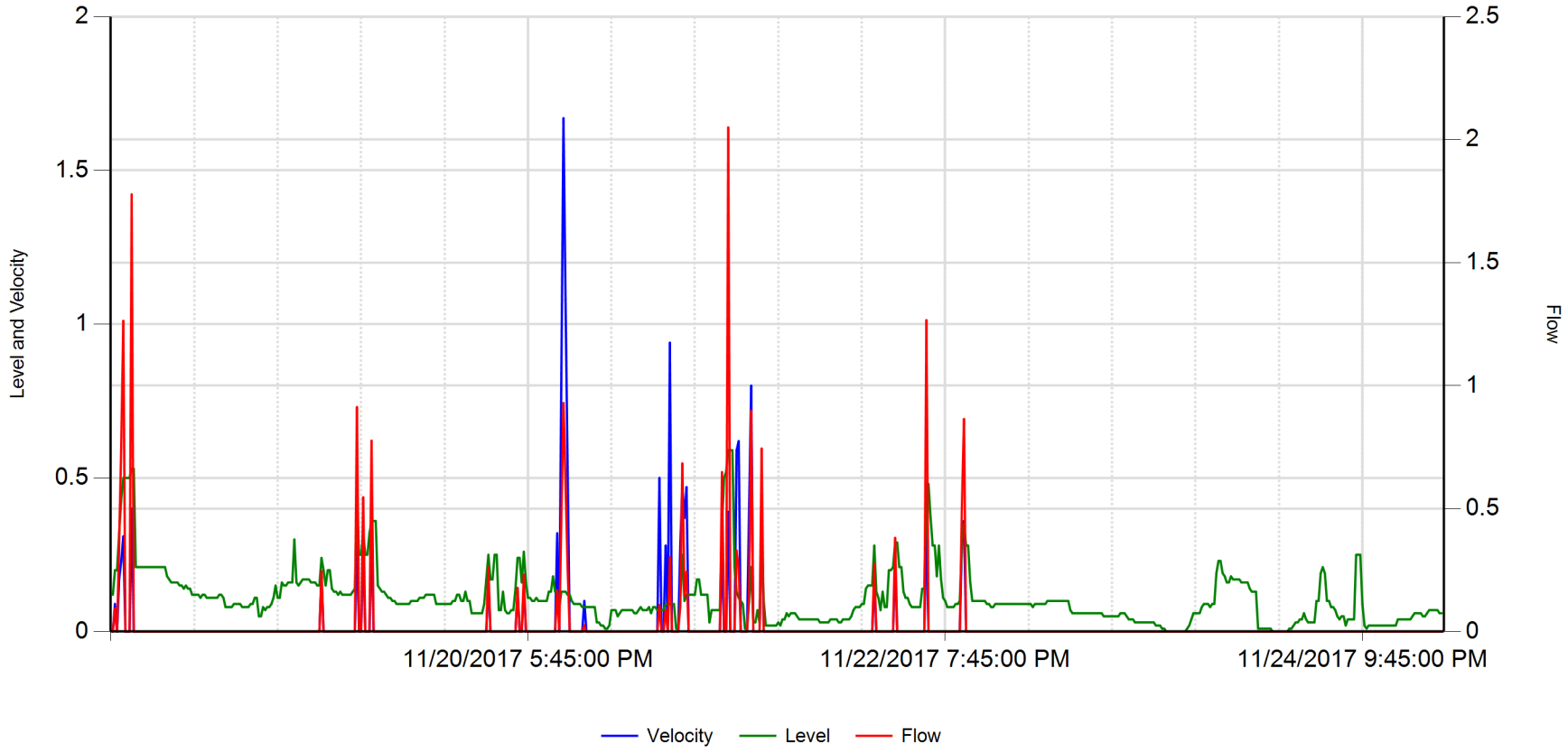
2017.11 Site 2 Lateral Inflow



	Velocity (fps)	Level (in)	Flow (gpm)		
Average	0.048	0.176	0.100	**RainFall**	Inches
Maximum	1.330	0.620	5.741		
Minimum	0.000	0.000	0.000		

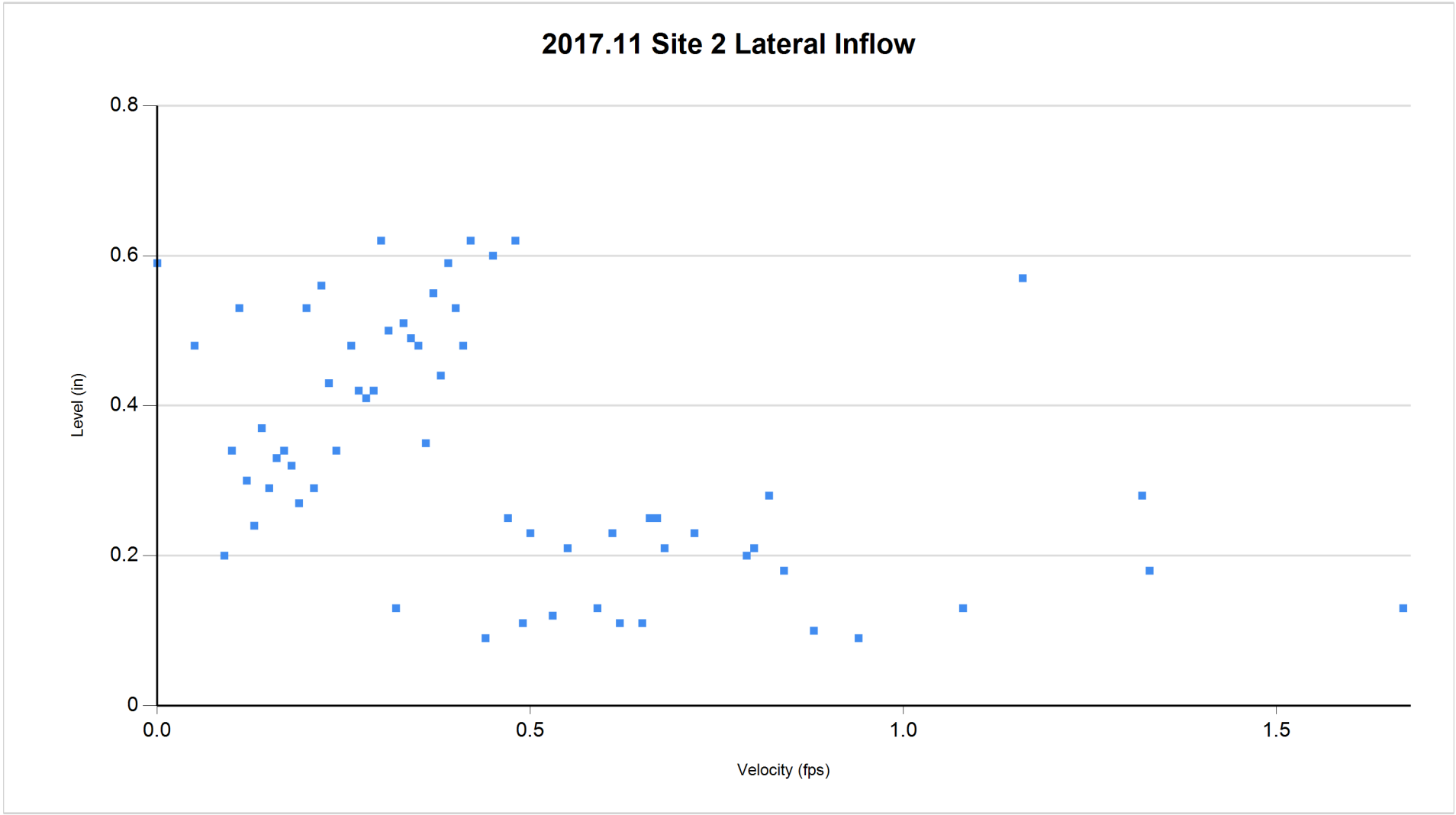
11/30/2017 10:47:49 AM

2017.11 Site 2 Lateral Inflow



	Velocity (fps)	Level (in)	Flow (gpm)		
Average	0.024	0.109	0.031	**RainFall**	Inches
Maximum	1.670	0.590	2.050		
Minimum	0.000	0.000	0.000		

11/30/2017 10:47:49 AM



11/11/2017 thru 11/25/2017

11/30/2017 10:47:49 AM

Site Report 11-30-2017

Confidential Proprietary Information

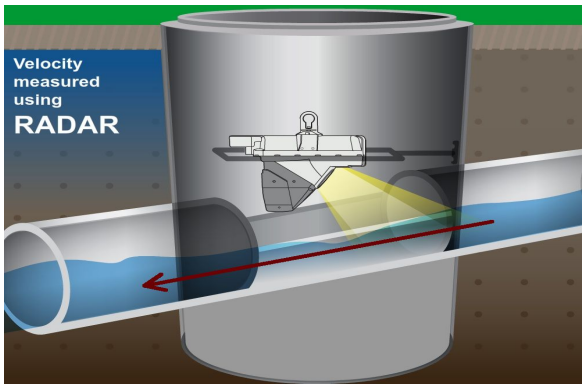
2017.11 Site 2 Lateral Inflow	Fuscoe	~4220 Scott Dr Manhole No. M28-010

Access:	System Type:	Install Date: 11/11/2017
Manhole in left-hand northbound lane	Sanitary [X] Storm [ ]	

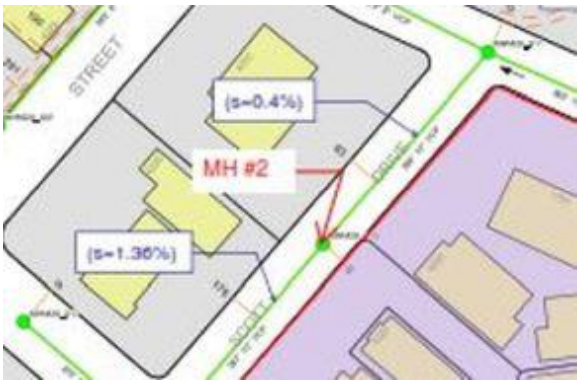
Map



Technology



Sewer Plan



Flow Meter			
Meter Depth: 82.98"			
Map Coordinates: 33.666379, -117.866777			
Laminar open channel hydraulics			
Avg Velocity	Avg Measured Level		Multiplier
0	0.1"		1
Gas			
O2	H2S	CO	LEL
20.9	0	0	0
Notes			
Monitored lateral from Project Site; low flow made verification of calibration difficult.			
Traffic Safety			
Used arrow board, cones & signs for traffic control; worked during off-peak hrs to avoid impacting traffic.			
Land Use			
Residential	Commercial	Industrial	Trunk
	X		

Manhole Depth	99"
Monitored Pipe Size	8"
Pipe Size (Up/Down)	10"/10"
Pipe Shape	Round
Pipe Condition	Good
Manhole Material	Concrete
Silt	0
Velocity Profile Data	*
Velocity Profile Taken	0.4 2-D
Sensor Offset	16.02"
Sensor Dist. to Crown	8.02"
Sensor Direction	Upstream
Flow Heading	South

Meter Site Document

Fuscoe

2017.11 Site 2 Lateral Inflow ~4220 Scott Dr

Site



Manhole D□rin□ Install



Installation Process



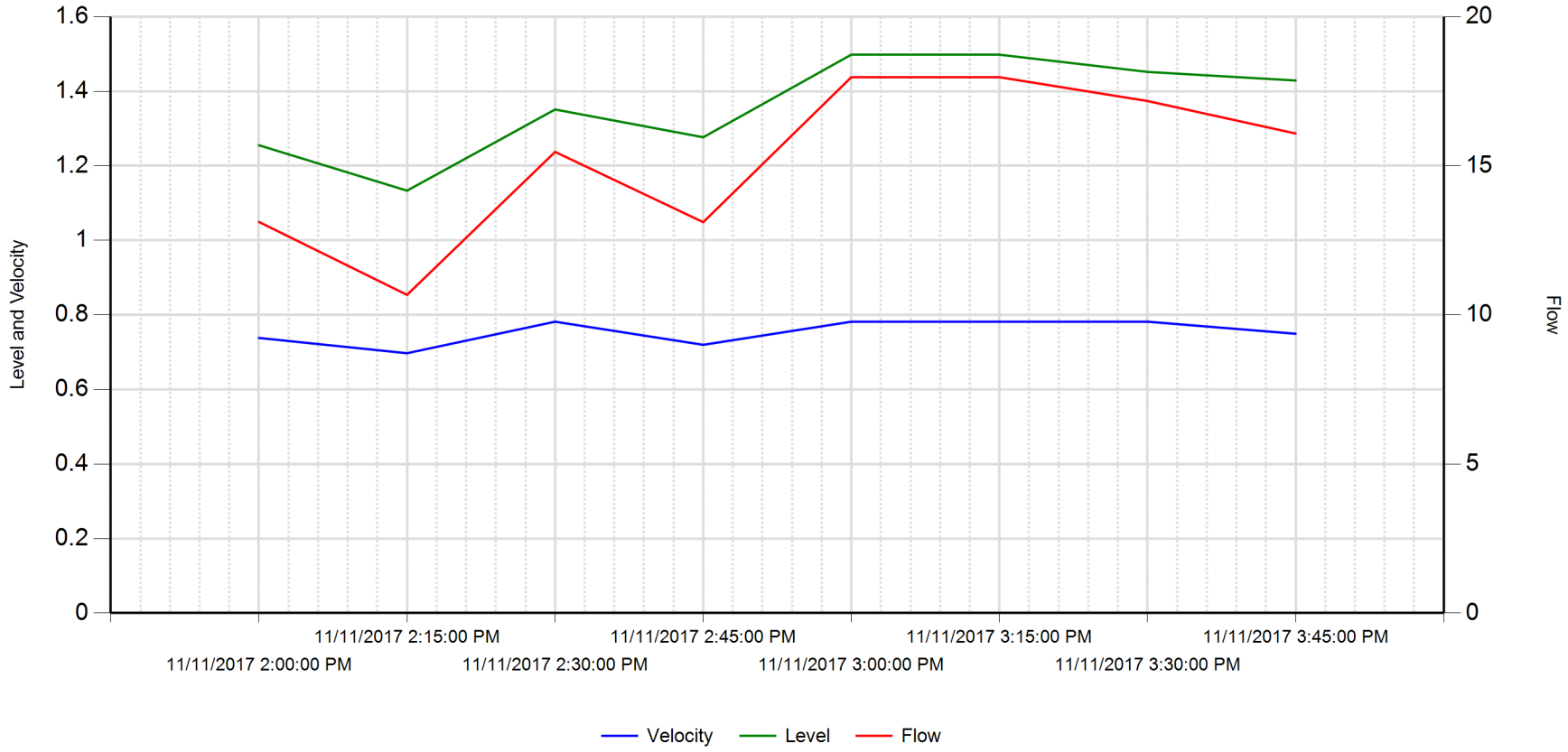
Installed



Traffic Control



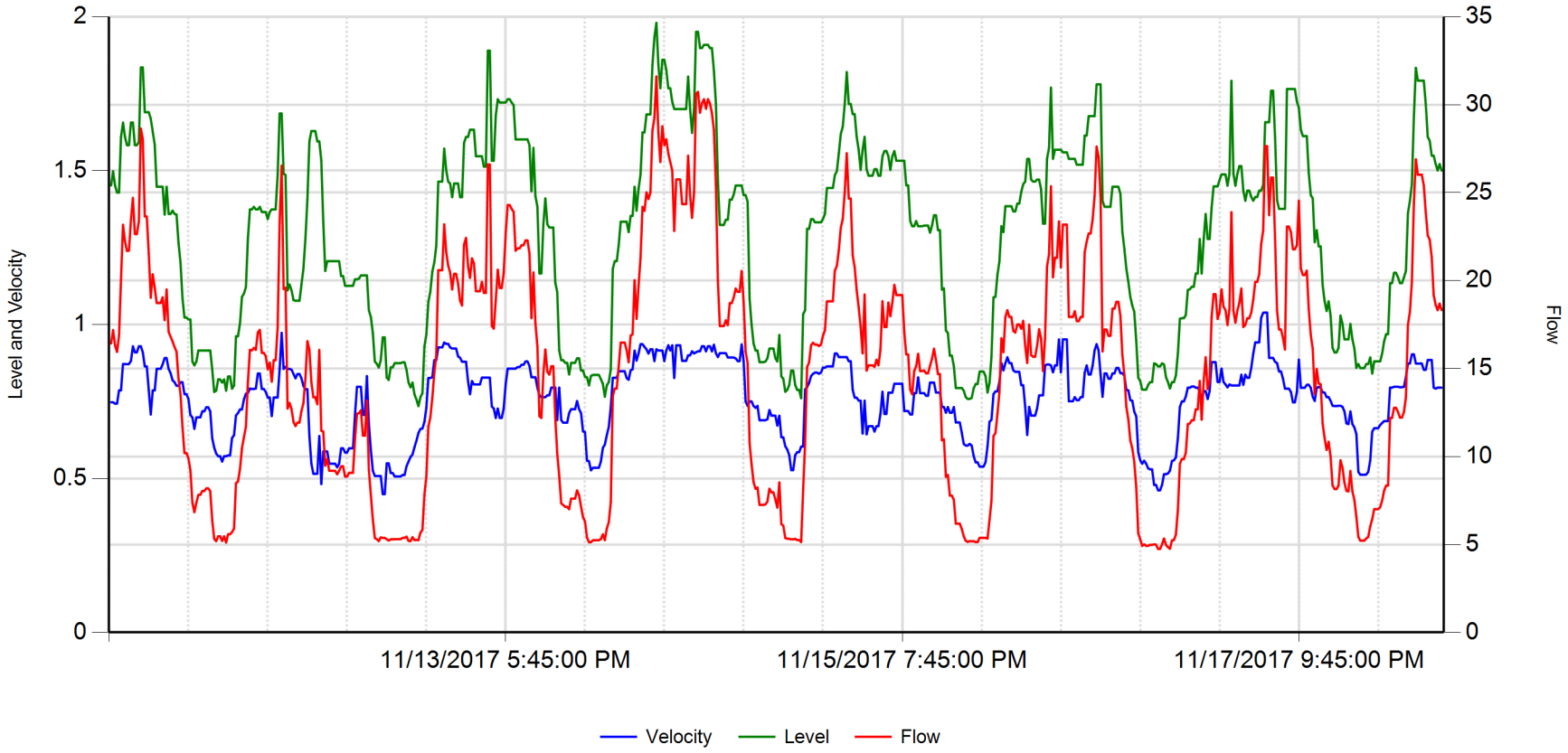
2017.11 Site 2 Mainline Inflow



	Velocity (fps)	Level (in)	Flow (gpm)		
Average	0.754	1.362	15.196	**RainFall**	Inches
Maximum	0.782	1.498	17.972		
Minimum	0.697	1.133	10.673		

11/30/2017 10:51:33 AM

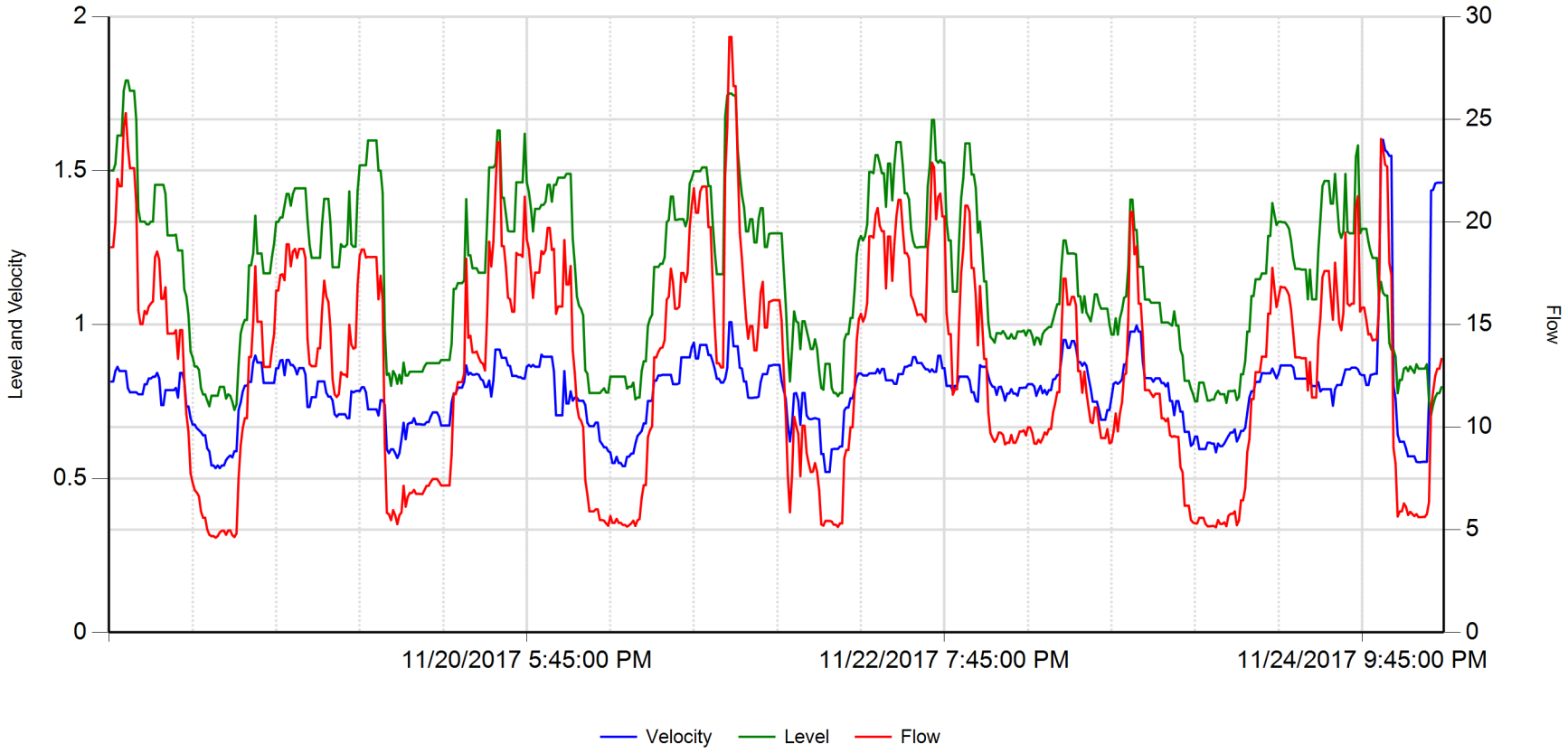
2017.11 Site 2 Mainline Inflow



	Velocity (fps)	Level (in)	Flow (gpm)		
Average	0.762	1.290	14.949	**RainFall**	Inches
Maximum	1.039	1.980	31.607		
Minimum	0.449	0.735	4.749		

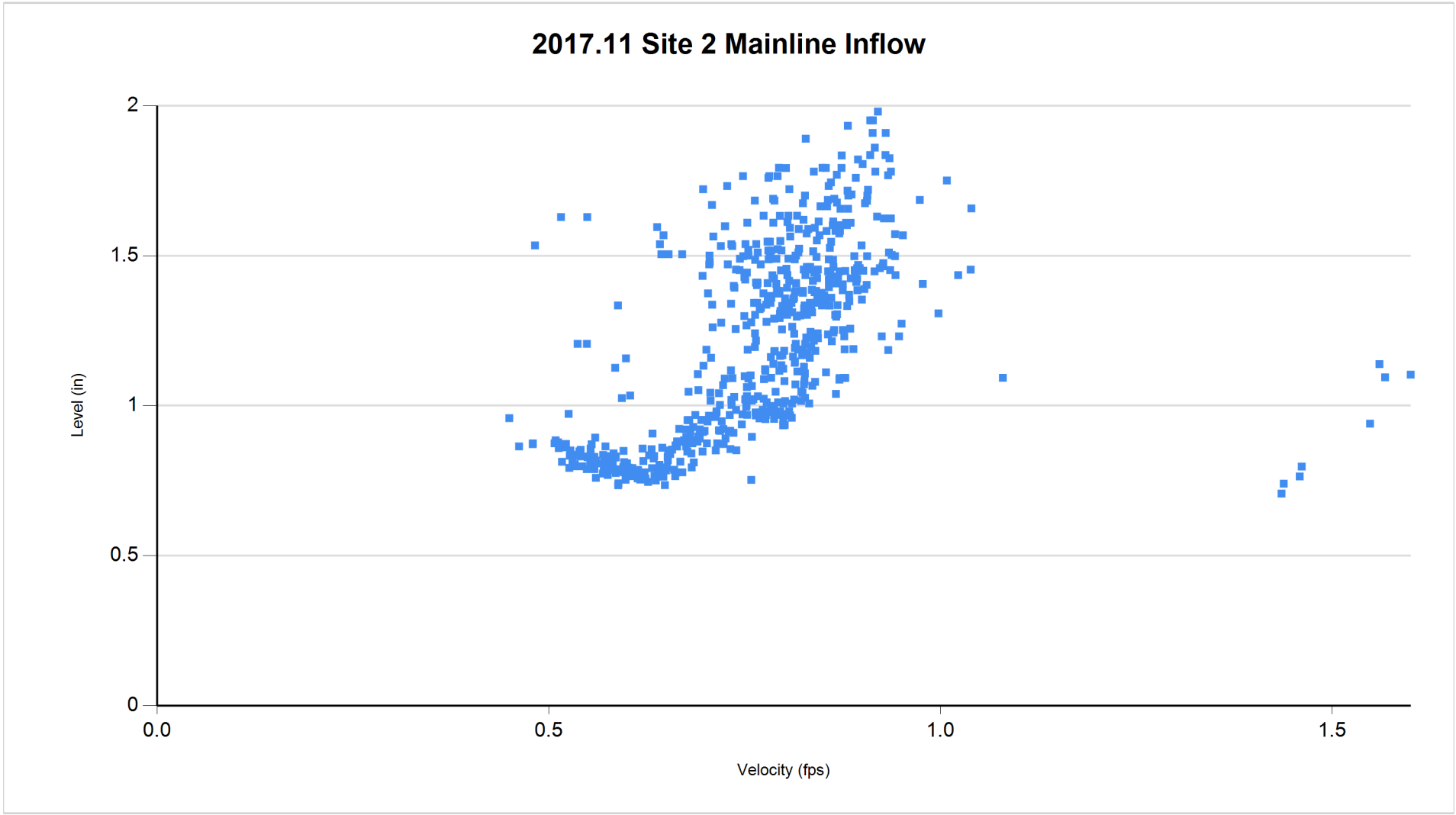
11/30/2017 10:51:33 AM

2017.11 Site 2 Mainline Inflow



	Velocity (fps)	Level (in)	Flow (gpm)		
Average	0.787	1.161	12.995	**RainFall**	Inches
Maximum	1.600	1.793	29.012		
Minimum	0.522	0.707	4.621		

11/30/2017 10:51:33 AM



11/11/2017 thru 11/25/2017

11/30/2017 10:51:33 AM

Site Report 11-30-2017

Confidential Proprietary Information

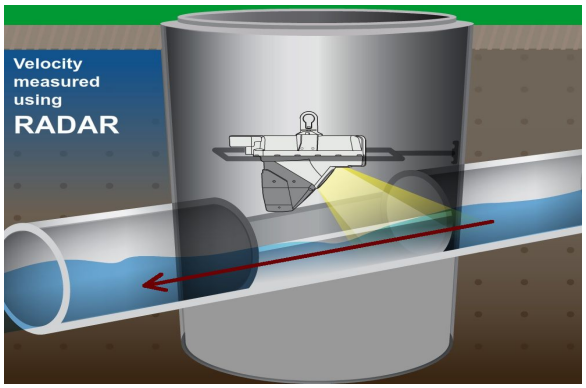
2017.11 Site 2 Mainline Inflow	Fuscoe	~4220 Scott Dr Manhole No. M28-010

Access:	System Type:	
Manhole in left-hand northbound lane	Sanitary [X] Storm [ ]	Install Date: 11/11/2017

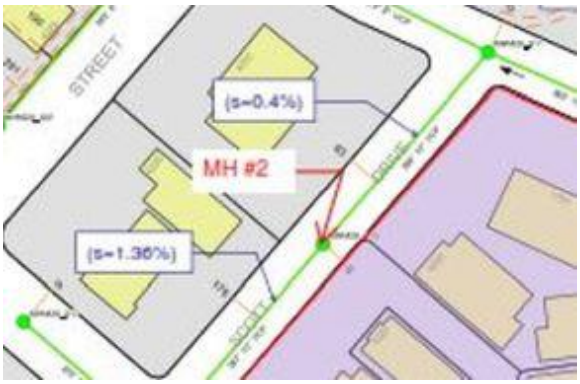
Map



Technology



Sewer Plan



Flow Meter			
Meter Depth: 83.13"			
Map Coordinates: 33.666379, -117.866777			
Moderate open channel hydraulics			
Avg Velocity	Avg Measured Level		Multiplier
0.75 fps	1.5"		1
Gas			
O2	H2S	CO	LEL
20.9	0	0	0
Notes			
Monitored upstream mainline, entering MH from the north.			
Traffic Safety			
Used arrow board, cones & signs for traffic control; worked during off-peak hrs to avoid impacting traffic.			
Land Use			
Residential	Commercial	Industrial	Trunk
	X		

Manhole Depth	99"
Monitored Pipe Size	10"
Pipe Size (Up/Down)	10"/10"
Pipe Shape	Round
Pipe Condition	Good
Manhole Material	Concrete
Silt	0
Velocity Profile Data	*
Velocity Profile Taken	0.4 2-D
Sensor Offset	15.87"
Sensor Dist. to Crown	5.87"
Sensor Direction	Upstream
Flow Heading	South

Meter Site Document

Fuscoe

2017.11 Site 2 Mainline Inflow ~4220 Scott Dr

Site



Manhole D□rin□ Install



Installation Process



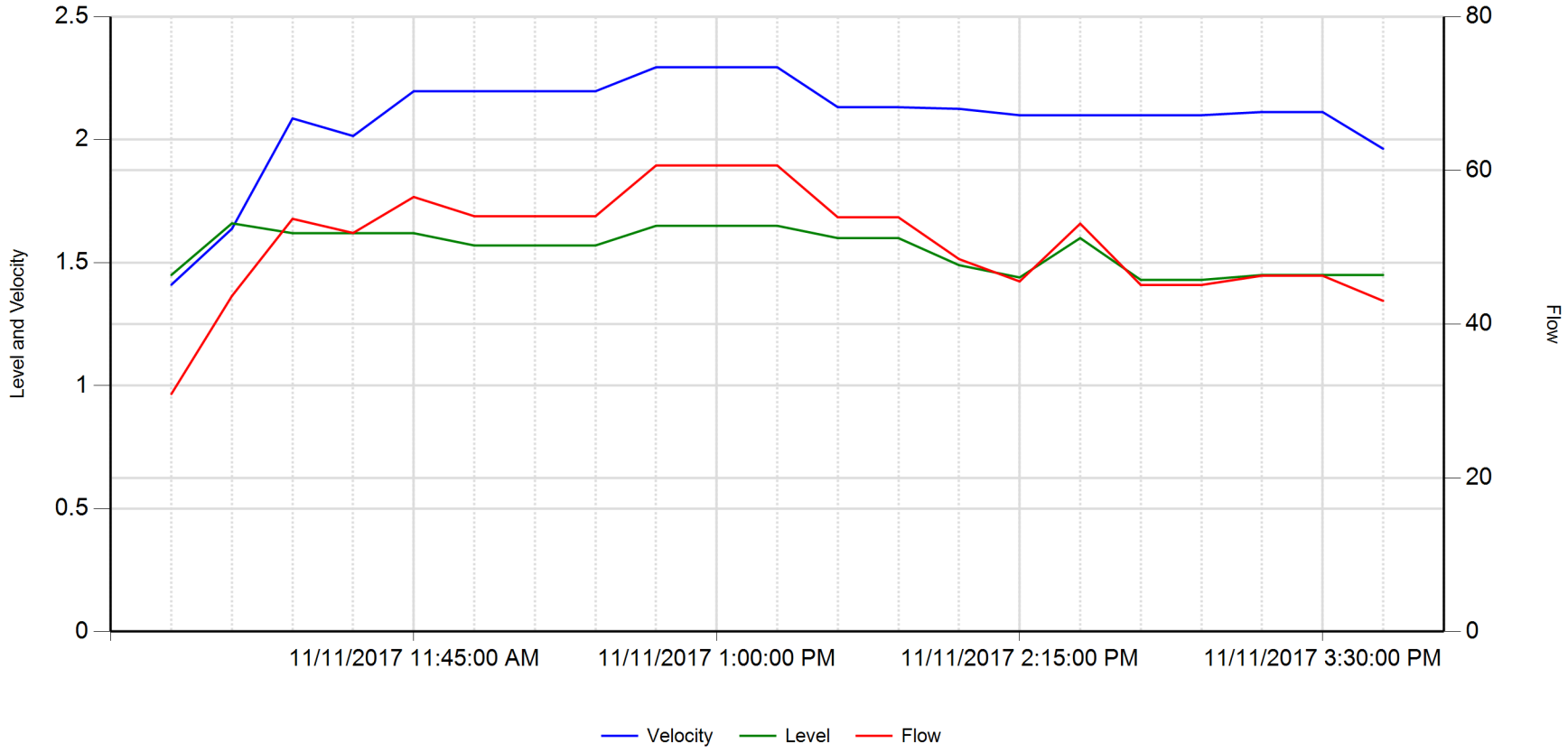
Installed



Traffic Control



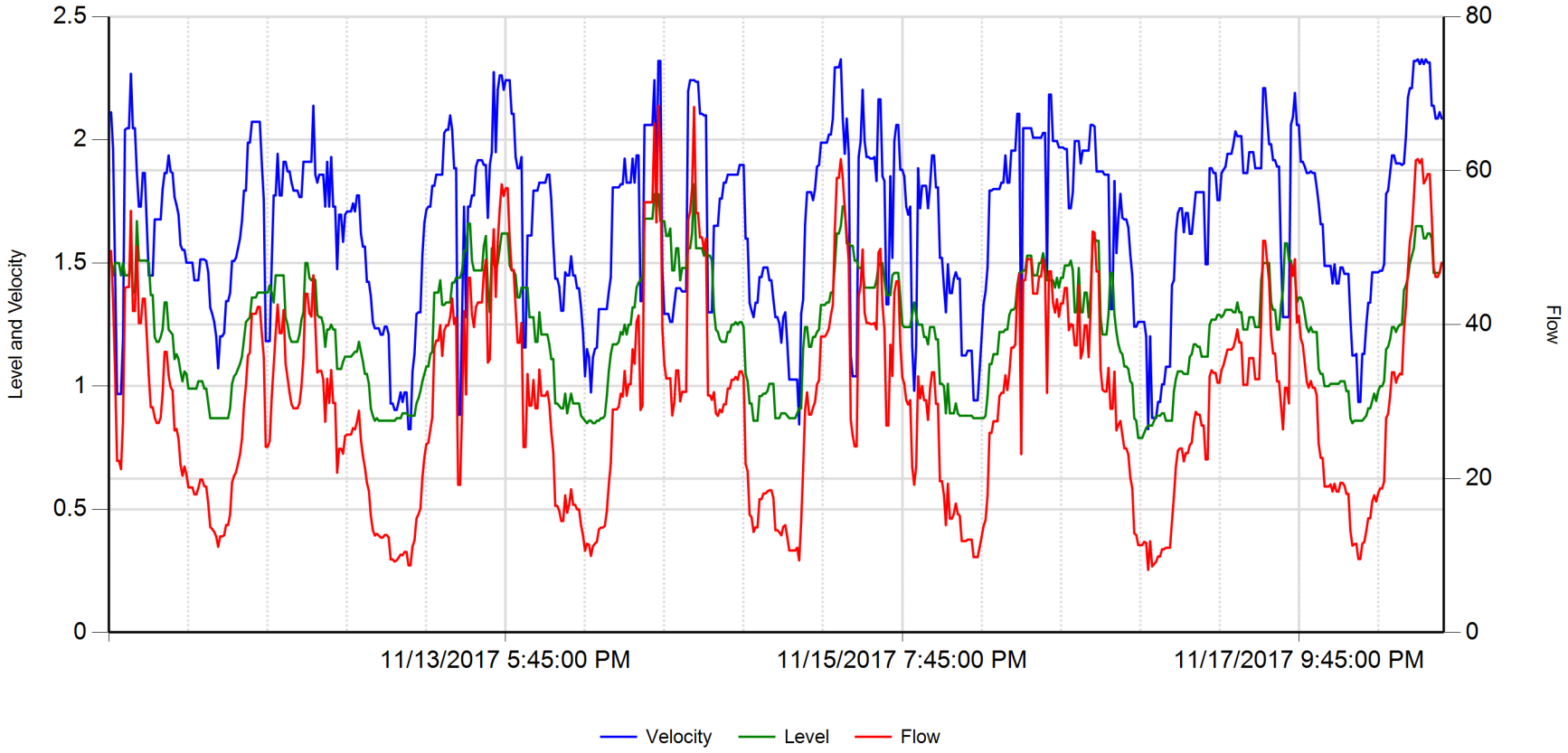
2017.11 Site 3 Outflow



	Velocity (fps)	Level (in)	Flow (gpm)		
Average	2.086	1.551	50.550	**RainFall**	Inches
Maximum	2.295	1.660	60.647		
Minimum	1.411	1.430	30.919		

11/30/2017 10:46:13 AM

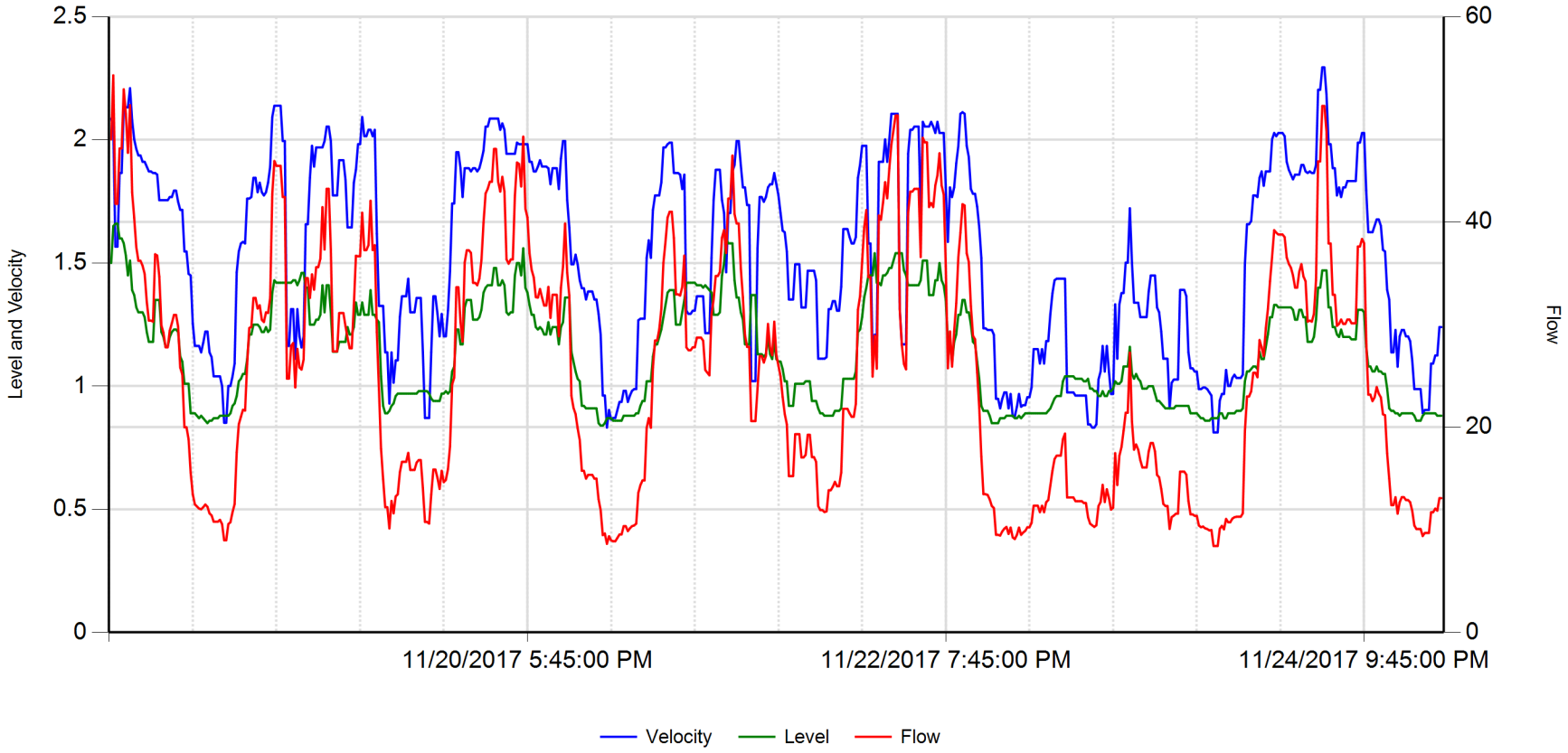
2017.11 Site 3 Outflow



	Velocity (fps)	Level (in)	Flow (gpm)		
Average	1.671	1.227	30.253	**RainFall**	Inches
Maximum	2.327	1.820	68.422		
Minimum	0.826	0.790	8.138		

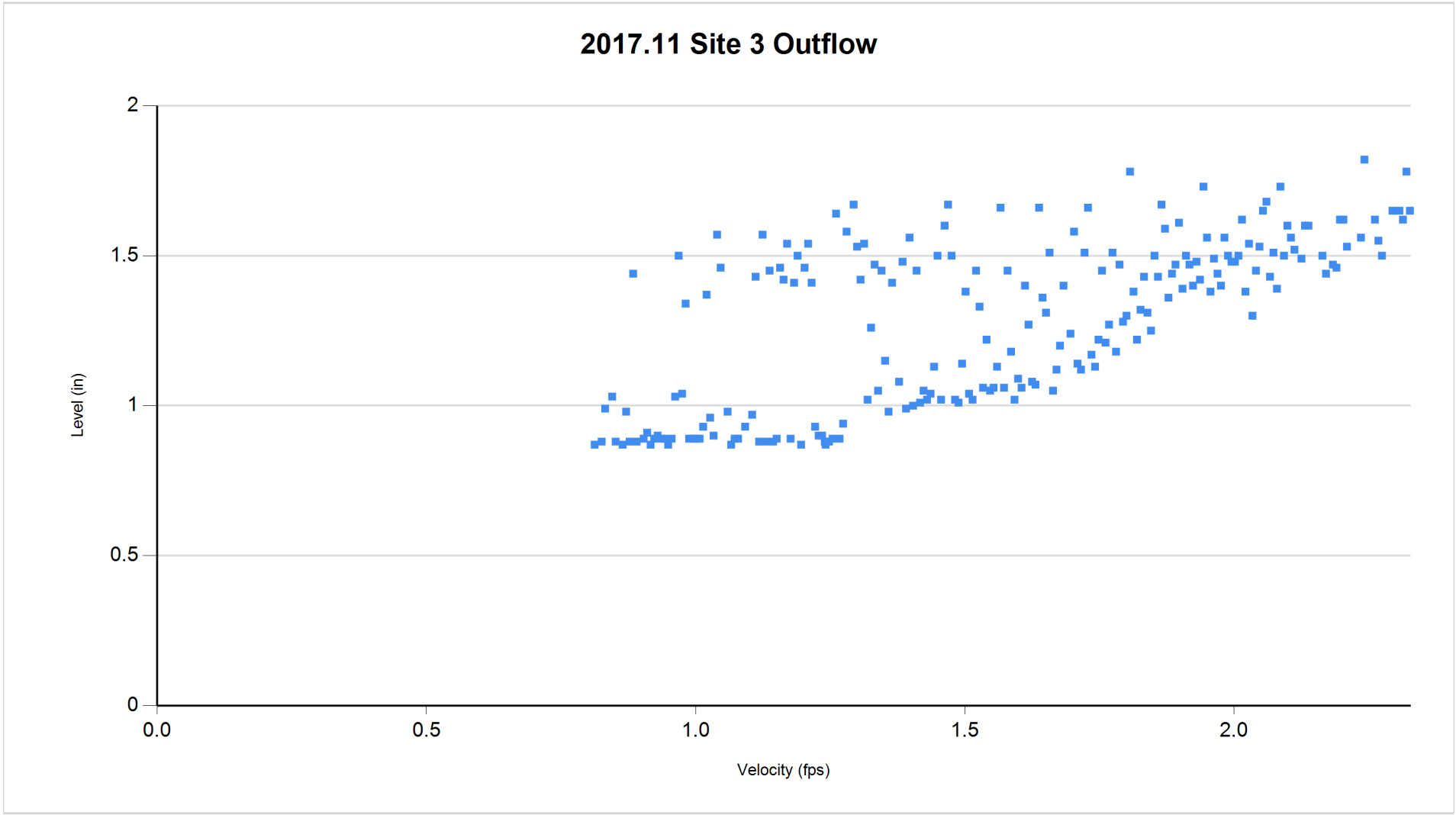
11/30/2017 10:46:13 AM

2017.11 Site 3 Outflow



	Velocity (fps)	Level (in)	Flow (gpm)		
Average	1.533	1.135	25.038	**RainFall**	Inches
Maximum	2.295	1.660	54.291		
Minimum	0.813	0.840	8.435		

11/30/2017 10:46:13 AM



11/11/2017 thru 11/25/2017

11/30/2017 10:46:13 AM

Site Report 11-30-2017

Confidential Proprietary Information

Fuscoe ~1801 Dove St

2017.11 Site 3 Outflow Manhole No. M28-009

Access:

Manhole in left-hand eastbound lane at intersection with Scott Dr

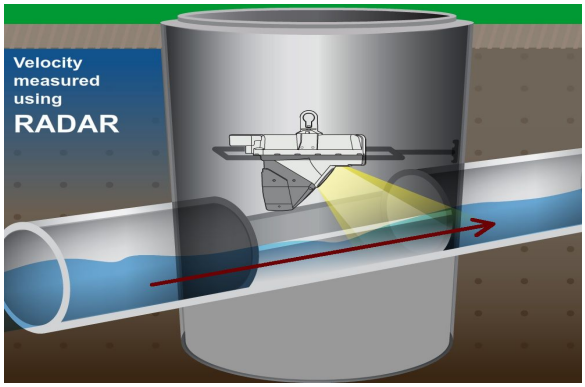
System Type: Sanitary [X] Storm [ ]

Install Date: 11/11/2017

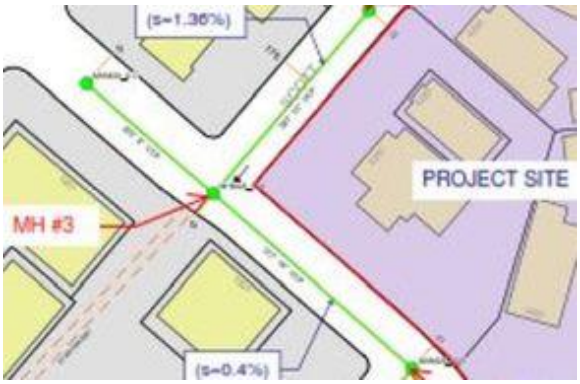
Map



Technology



Sewer Plan



Flow Meter			
Meter Depth: 129.3"			
Map Coordinates: 33.665761, -117.867376			
Moderate open channel hydraulics			
Avg Velocity	Avg Measured Level		Multiplier
1.0	2.0"		1
Gas			
O2	H2S	CO	LEL
20.9	0	0	0
Notes			
Monitored downstream line, exiting MH to the east.			
Traffic Safety			
Used arrow board, cones & signs for traffic control; worked during off-peak hrs to avoid impacting traffic.			
Land Use			
Residential	Commercial	Industrial	Trunk
	X		

Manhole Depth	146"
Monitored Pipe Size	10"
Pipe Size (Up/Down)	10"/10"
Pipe Shape	Round
Pipe Condition	Good
Manhole Material	Concrete
Silt	0
Velocity Profile Data	*
Velocity Profile Taken	0.4 2-D
Sensor Offset	16.70"
Sensor Dist. to Crown	6.70"
Sensor Direction	Downstream
Flow Heading	East

Meter Site Document

Fuscoe

2017.11 Site 3 Outflow ~1801 Dove St

Site



Manhole Before Install



Installation Process



Installed



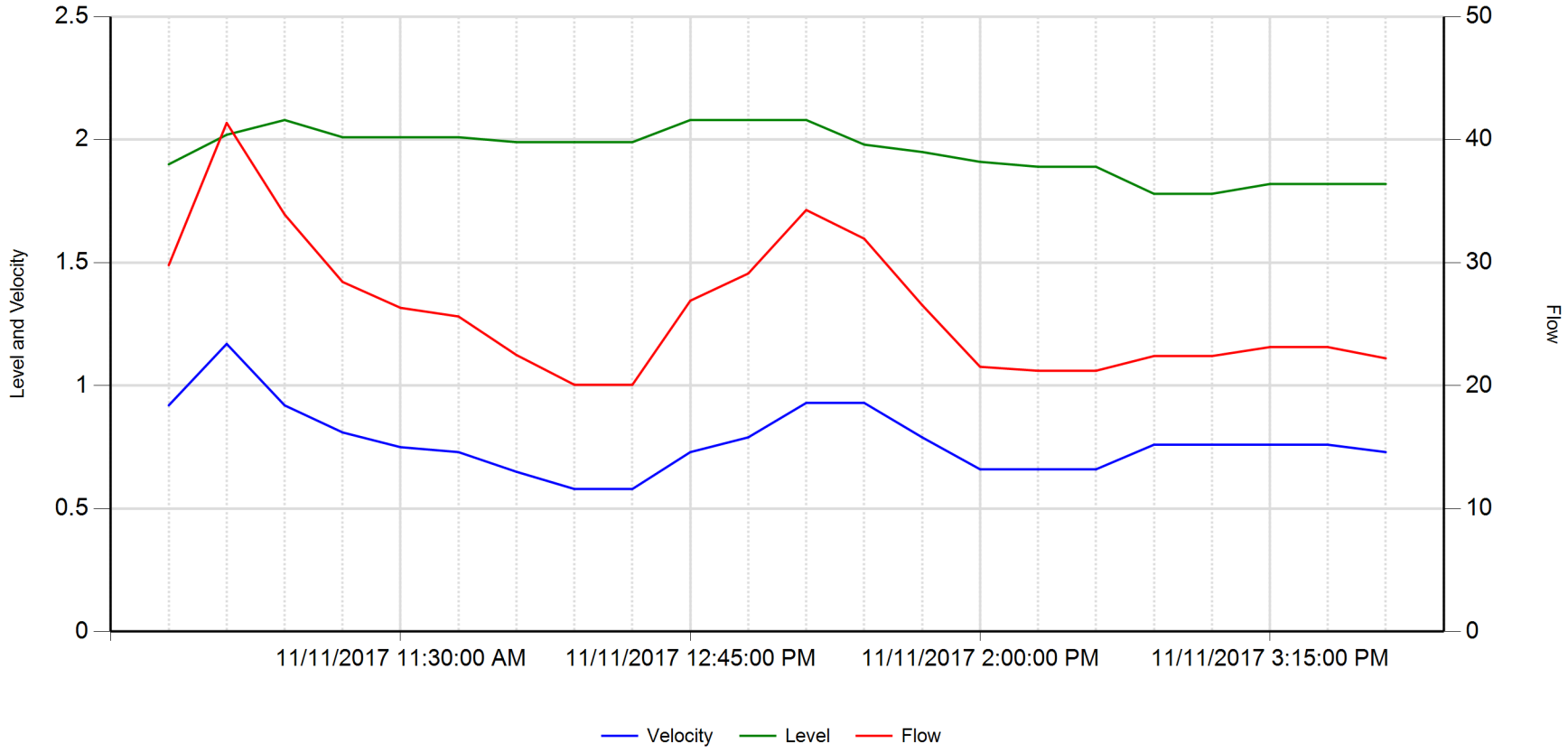
Traffic Control



Traffic Control



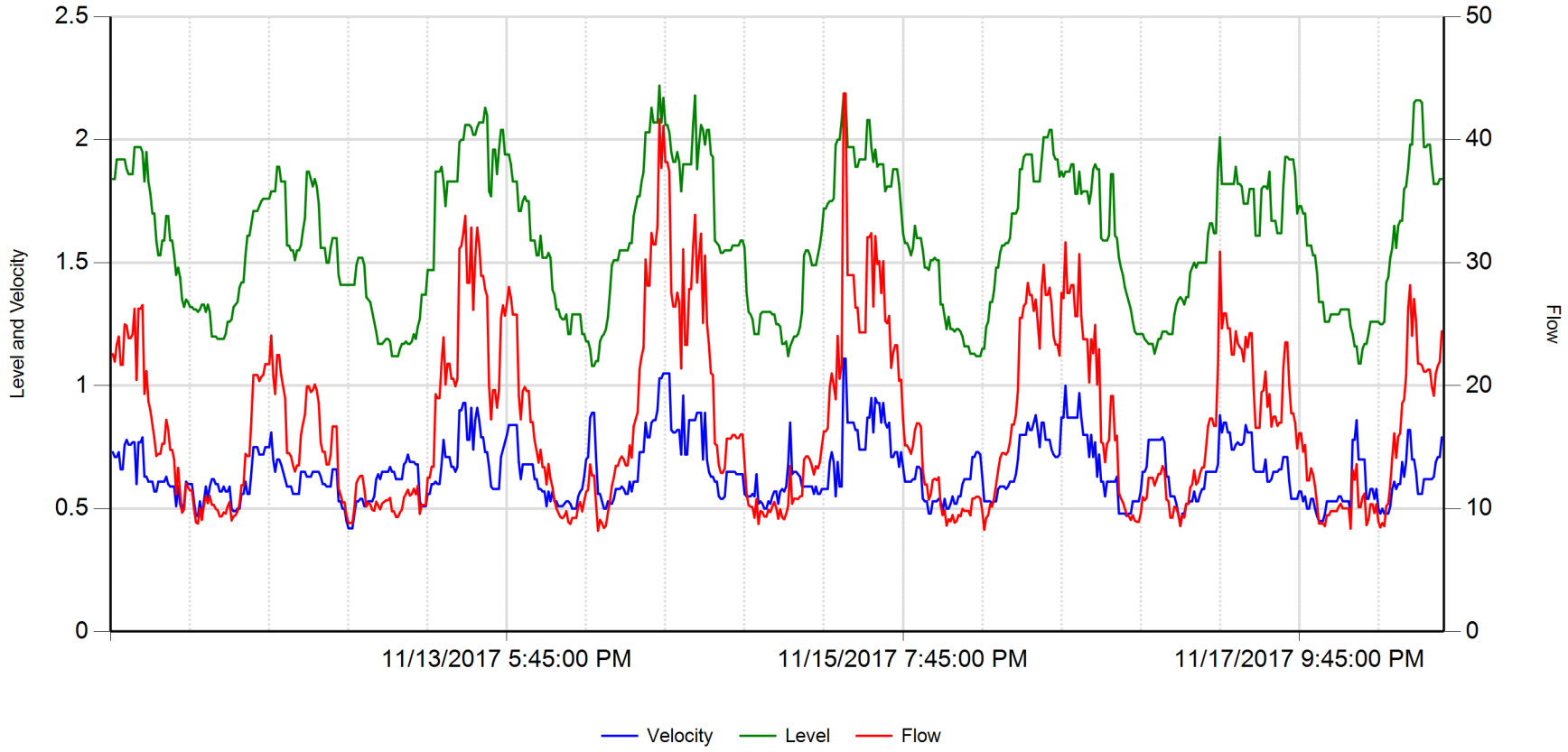
2017.11 Site 3 Scott St Inflow



	Velocity (fps)	Level (in)	Flow (gpm)		
Average	0.774	1.949	26.100	**RainFall**	Inches
Maximum	1.170	2.080	41.364		
Minimum	0.580	1.780	20.071		

11/30/2017 10:51:59 AM

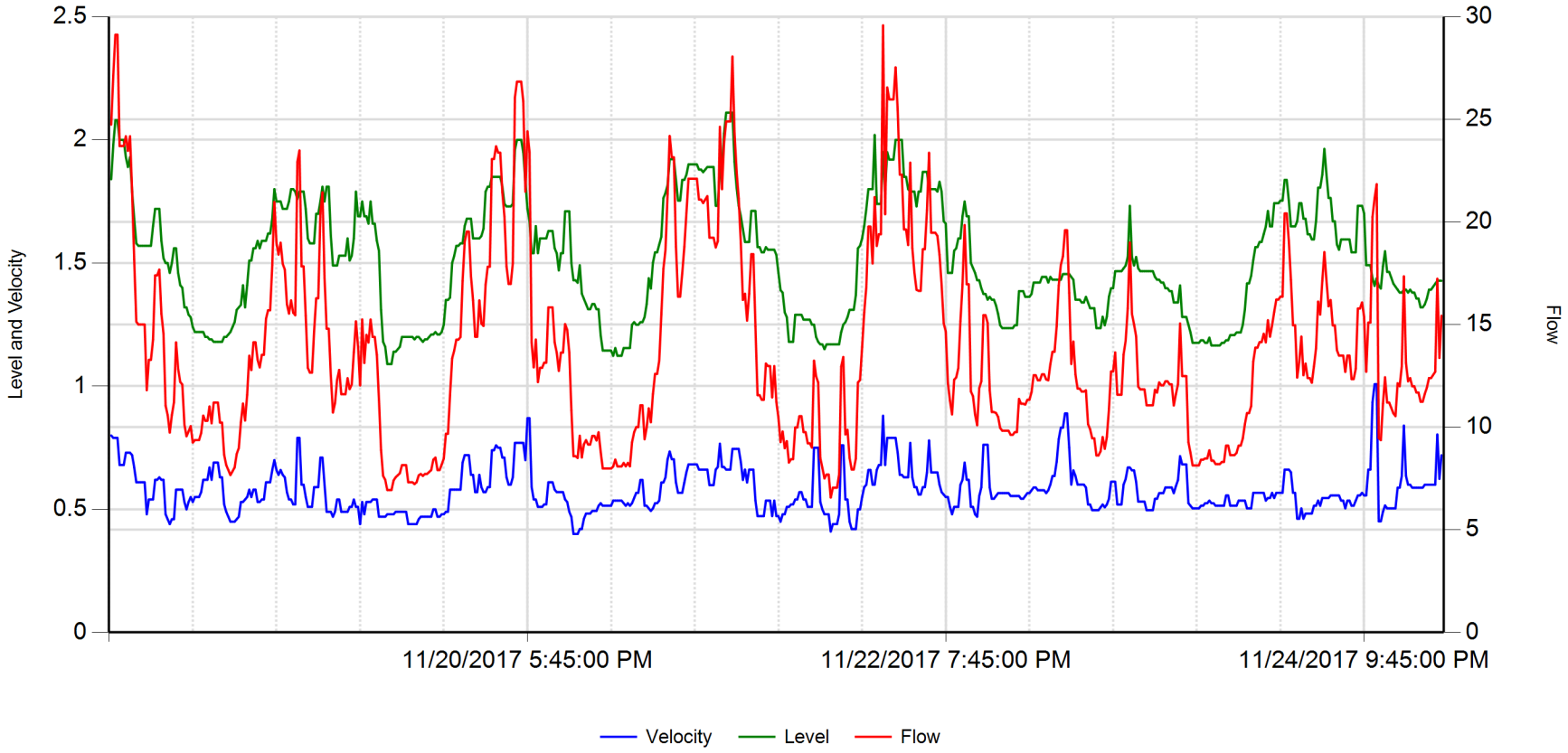
2017.11 Site 3 Scott St Inflow



	Velocity (fps)	Level (in)	Flow (gpm)		
Average	0.651	1.592	17.012	**RainFall**	Inches
Maximum	1.110	2.220	43.752		
Minimum	0.420	1.080	8.205		

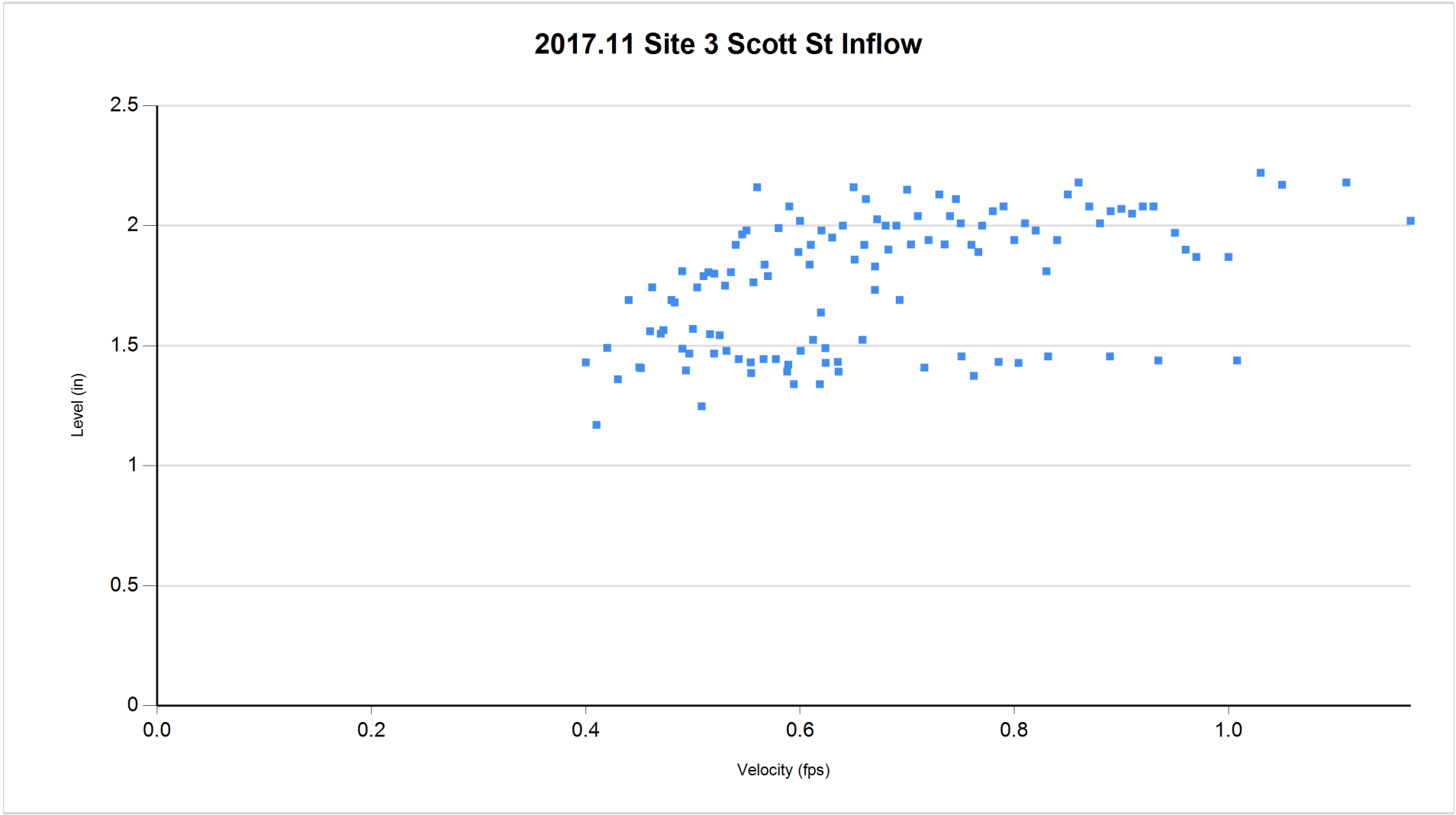
11/30/2017 10:51:59 AM

2017.11 Site 3 Scott St Inflow



	Velocity (fps)	Level (in)	Flow (gpm)		
Average	0.578	1.512	13.790	**RainFall**	Inches
Maximum	1.008	2.111	29.580		
Minimum	0.400	1.090	6.574		

11/30/2017 10:51:59 AM



11/11/2017 thru 11/25/2017

11/30/2017 10:51:59 AM

Site Report 11-30-2017

Confidential Proprietary Information

2017.11 Site 3 Scott St Inflow	Fuscoe	~1801 Dove St Manhole No. M28-009

Access:
Manhole in left-hand eastbound lane at intersection with Scott St

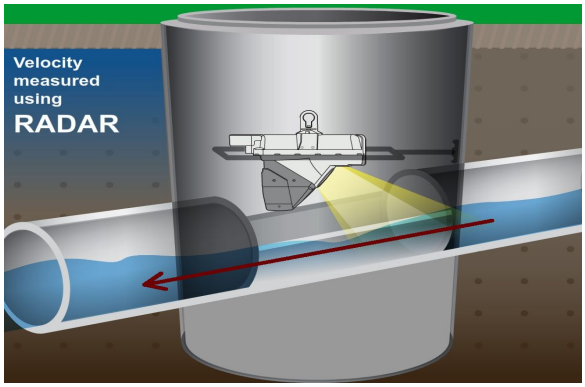
System Type: Sanitary [X] Storm [ ]

Install Date: 11/11/2017

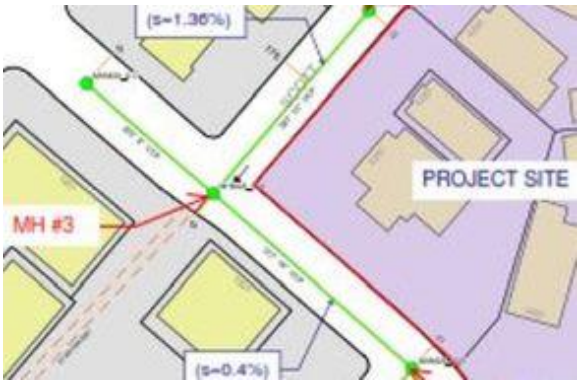
Map



Technology



Sewer Plan



Flow Meter			
Meter Depth: 134.58"			
Map Coordinates: 33.665761, -117.867376			
Moderate open channel hydraulics			
Avg Velocity	Avg Measured Level		Multiplier
1.0 fps	2.0"		1
Gas			
O2	H2S	CO	LEL
20.9	0	0	0
Notes			
Monitored upstream line, entering MH from north.			
Traffic Safety			
Used arrow board, cones & signs for traffic control; worked during off-peak hrs to avoid impacting traffic.			
Land Use			
Residential	Commercial	Industrial	Trunk
	X		

Manhole Depth	146"
Monitored Pipe Size	10"
Pipe Size (Up/Down)	10"/10"
Pipe Shape	Round
Pipe Condition	Good
Manhole Material	Concrete
Silt	0
Velocity Profile Data	*
Velocity Profile Taken	0.4 2-D
Sensor Offset	11.42"
Sensor Dist. to Crown	1.42"
Sensor Direction	Upstream
Flow Heading	East

Meter Site Document

Fuscoe

2017.11 Site 3 Scott St Inflow ~1801 Dove St

Site



Manhole Before Install



Installation Process



Installed



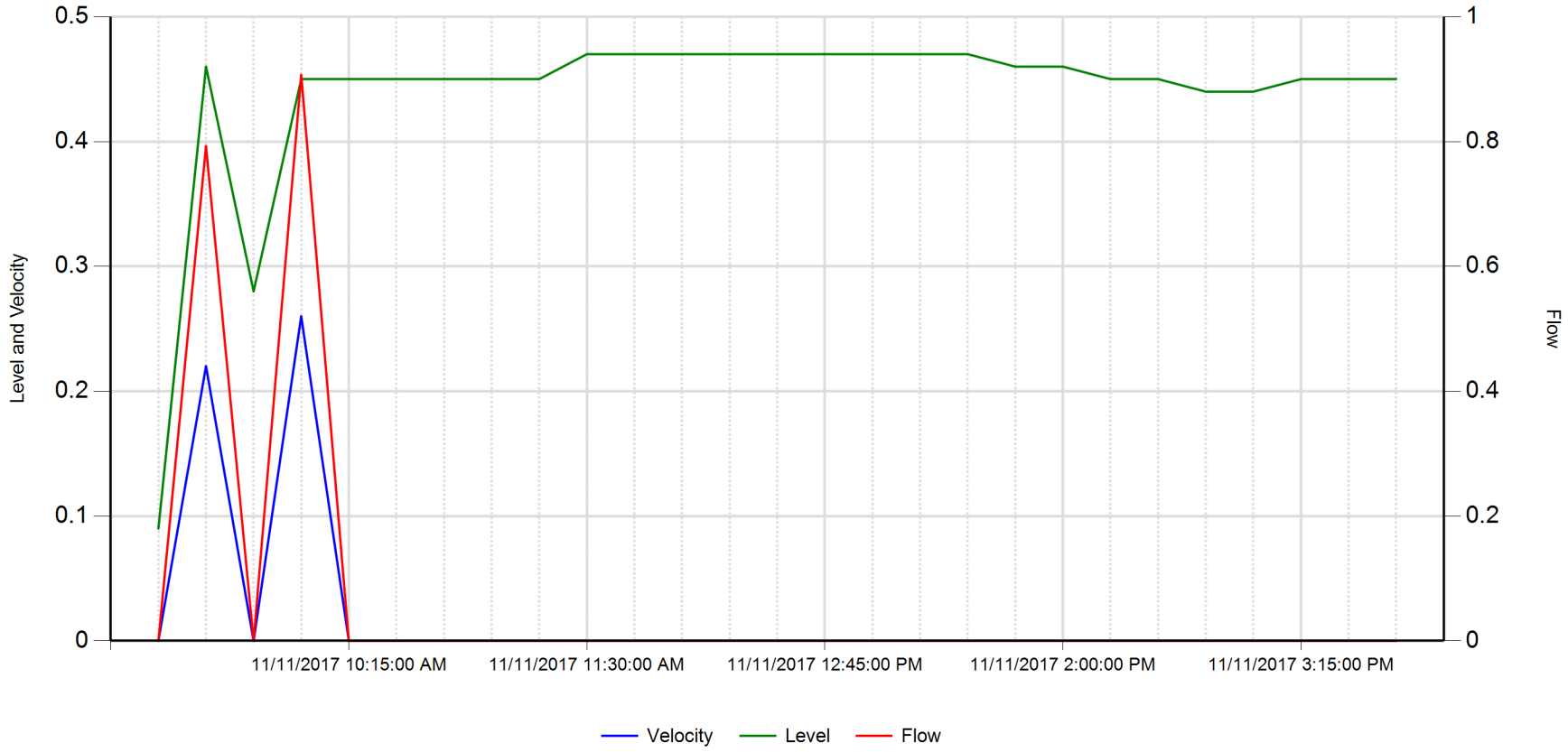
Traffic Control



Traffic Control



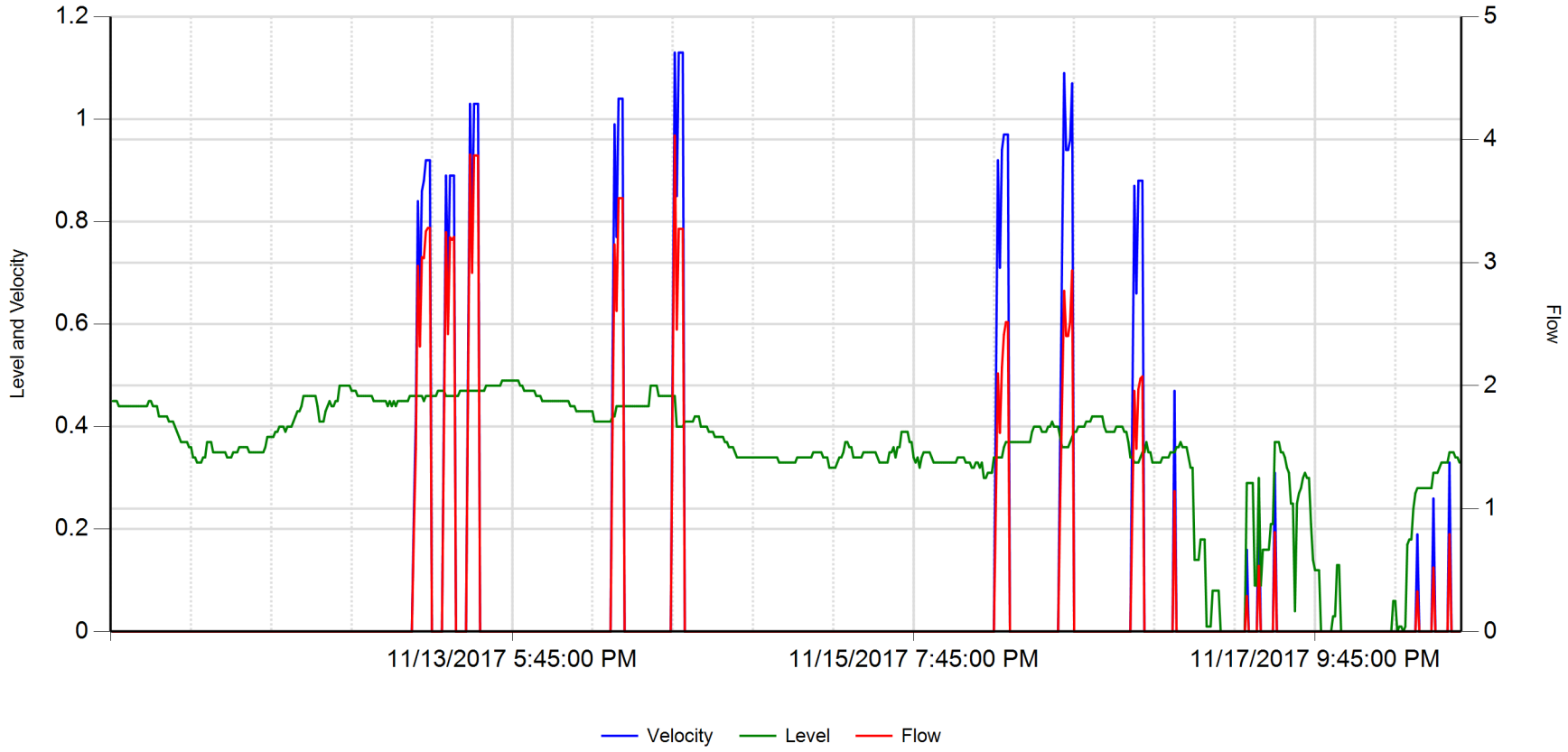
2017.11 Site 4 Lateral Inflow



	Velocity (fps)	Level (in)	Flow (gpm)		
Average	0.018	0.437	0.063	**RainFall**	Inches
Maximum	0.260	0.470	0.907		
Minimum	0.000	0.090	0.000		

11/30/2017 10:49:39 AM

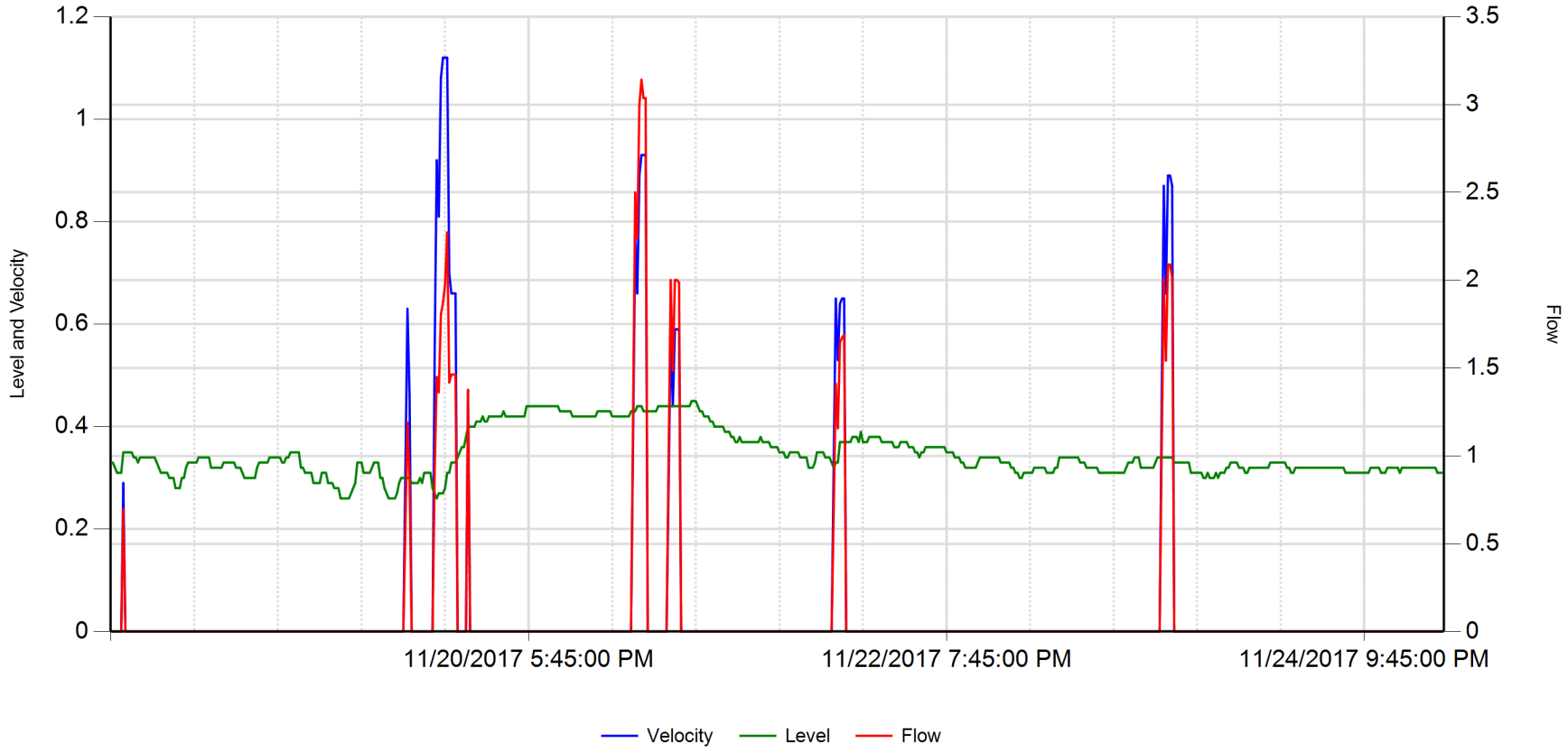
2017.11 Site 4 Lateral Inflow



	Velocity (fps)	Level (in)	Flow (gpm)		
Average	0.070	0.346	0.212	**RainFall**	Inches
Maximum	1.130	0.490	4.035		
Minimum	0.000	0.000	0.000		

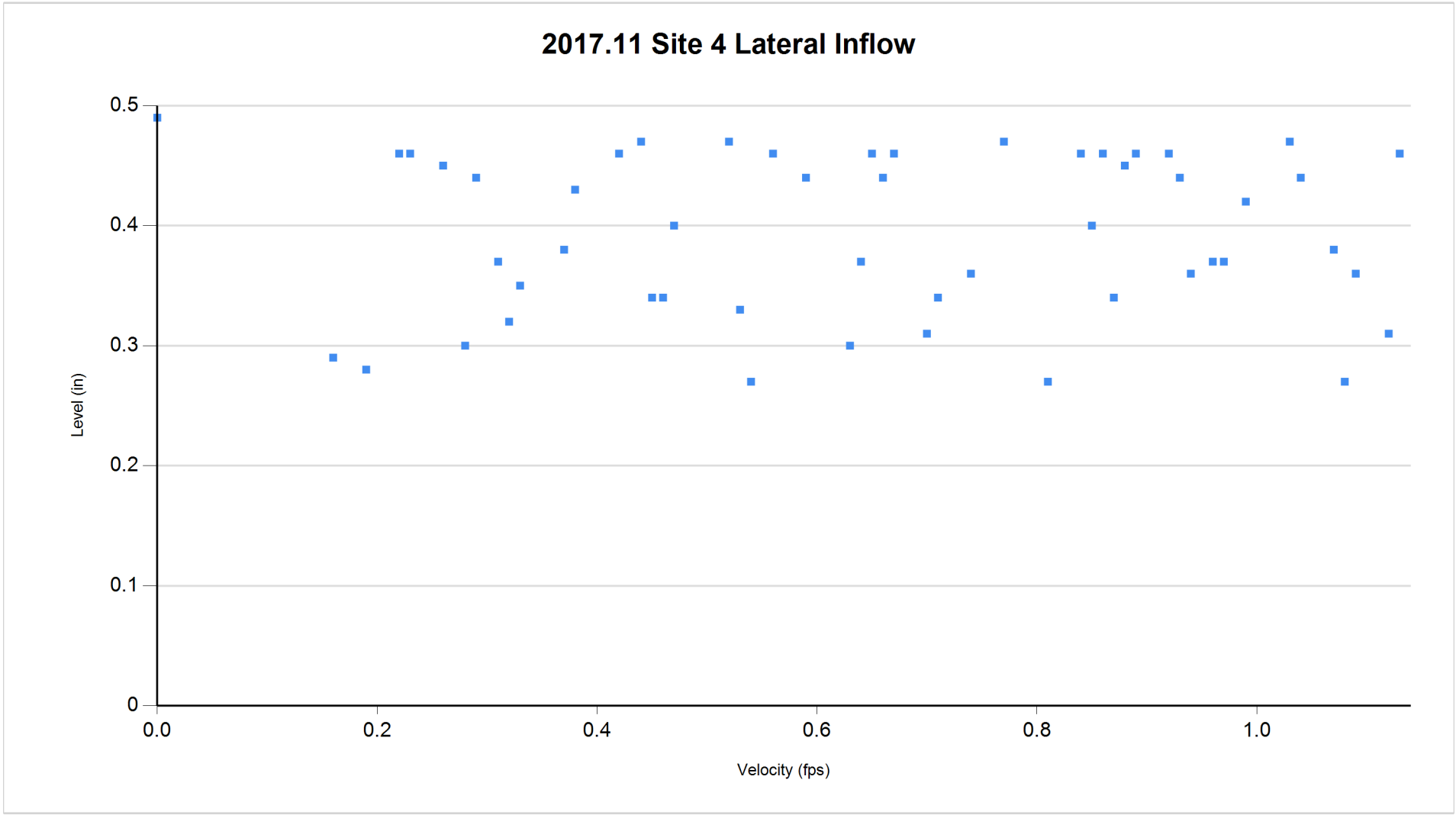
11/30/2017 10:49:39 AM

2017.11 Site 4 Lateral Inflow



	Velocity (fps)	Level (in)	Flow (gpm)		
Average	0.044	0.346	0.110	**RainFall**	Inches
Maximum	1.120	0.450	3.141		
Minimum	0.000	0.260	0.000		

11/30/2017 10:49:39 AM



11/11/2017 thru 11/25/2017

11/30/2017 10:49:39 AM

Site Report 11-30-2017

Confidential Proprietary Information

2017.11 Site 4 Lateral Inflow	Fuscoe	~1660 Dove St Manhole No. M28-008

Access:
Manhole in left-hand eastbound lane at intersection with Westerly Pl

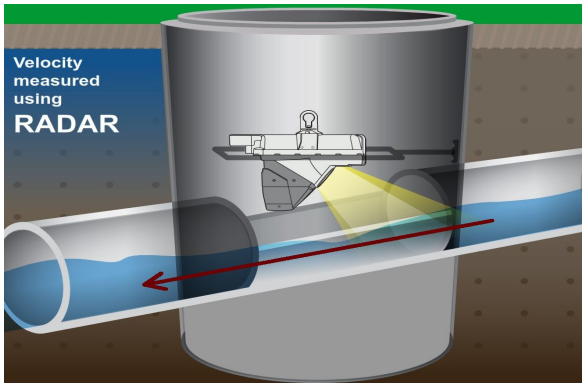
System Type: Sanitary [X] Storm [ ]

Install Date: 11/11/2017

Map



Technology



Sewer Plan



Flow Meter			
Meter Depth: 133.92"			
Map Coordinates: 33.665198, -117.866585			
Laminar open channel hydraulics			
Avg Velocity	Avg Measured Level		Multiplier
0	0.1"		1
Gas			
O2	H2S	CO	LEL
20.9	0	0	0
Notes			
Monitored lateral from Project Site; low flow made verification of calibration difficult.			
Traffic Safety			
Used arrow board, cones & signs for traffic control; worked during off-peak hrs to avoid impacting traffic.			
Land Use			
Residential	Commercial	Industrial	Trunk
	X		

Manhole Depth	149"
Monitored Pipe Size	8"
Pipe Size (Up/Down)	10"/10"
Pipe Shape	Round
Pipe Condition	Good
Manhole Material	Concrete
Silt	0
Velocity Profile Data	*
Velocity Profile Taken	0.4 2-D
Sensor Offset	15.08"
Sensor Dist. to Crown	7.08"
Sensor Direction	Upstream
Flow Heading	South

Meter Site Document

Fuscoe

2017.11 Site 4 Lateral Inflow ~1660 Dove St

Site



Manhole D□rin□ Install



Installation Process



Installed



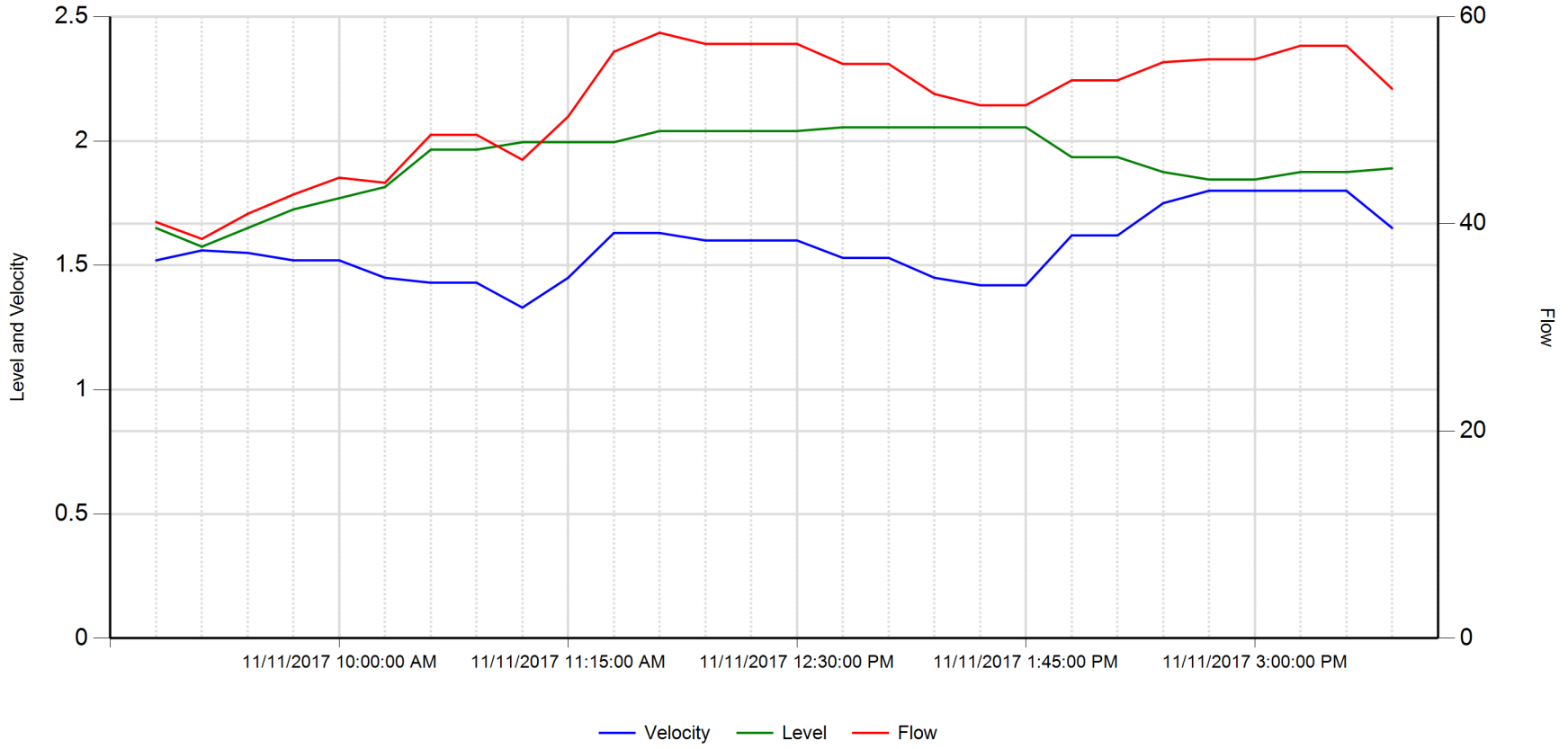
Traffic Control



Traffic Control



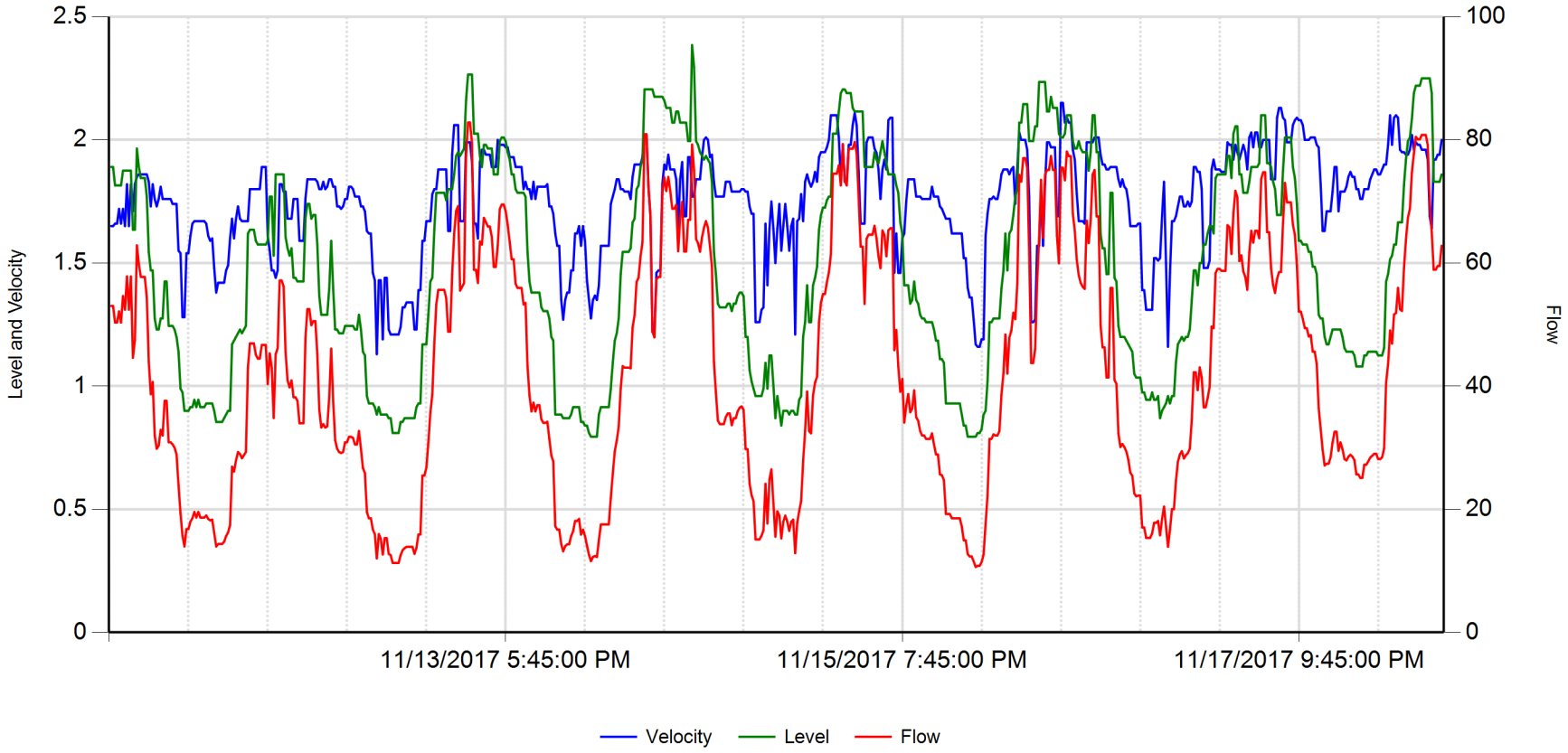
2017.11 Site 4 Outflow



	Velocity (fps)	Level (in)	Flow (gpm)		
Average	1.572	1.915	51.453	**RainFall**	Inches
Maximum	1.800	2.055	58.444		
Minimum	1.330	1.575	38.551		

11/30/2017 10:45:42 AM

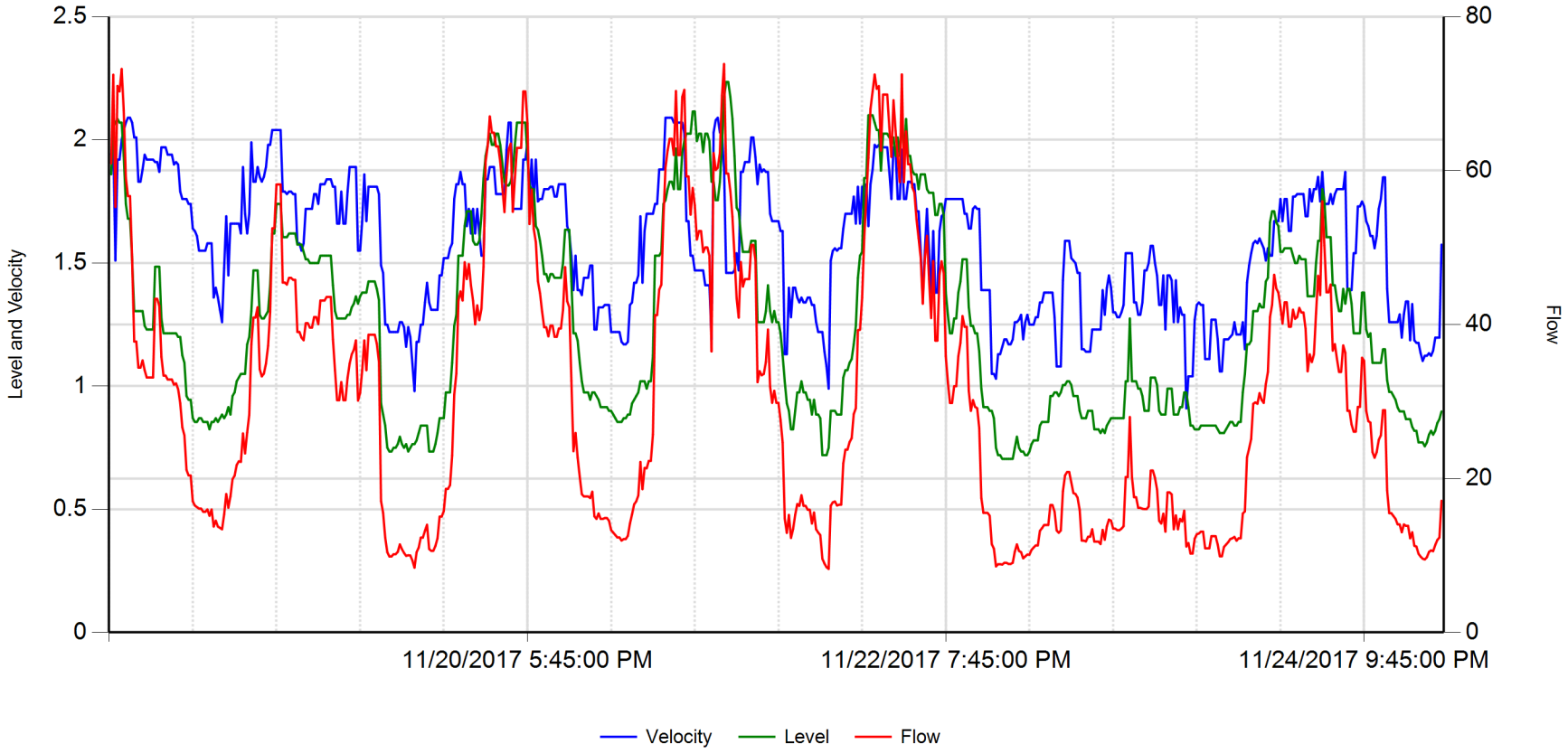
2017.11 Site 4 Outflow



	Velocity (fps)	Level (in)	Flow (gpm)		
Average	1.755	1.489	42.271	**RainFall**	Inches
Maximum	2.150	2.385	82.822		
Minimum	1.130	0.795	10.635		

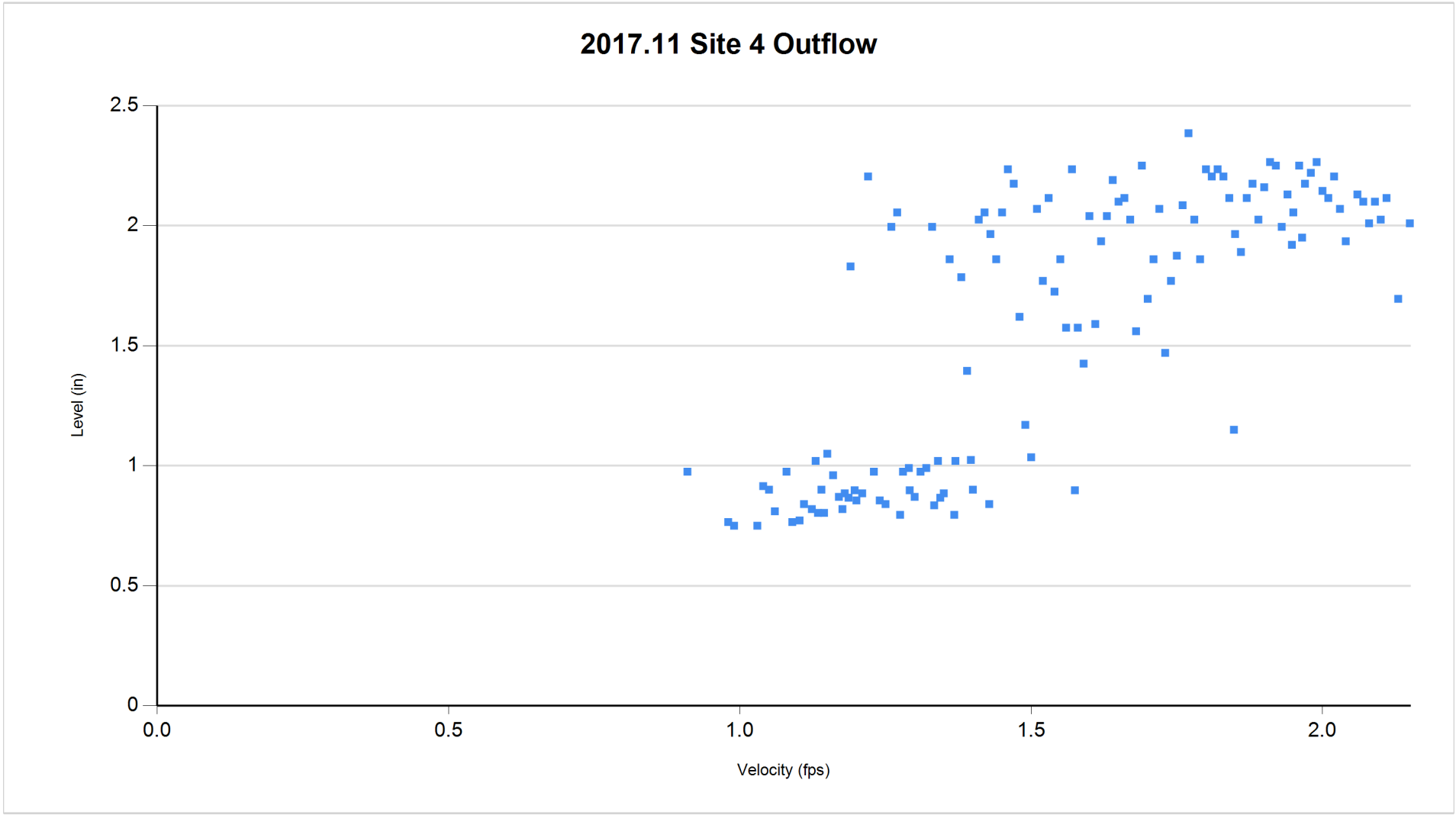
11/30/2017 10:45:42 AM

2017.11 Site 4 Outflow



	Velocity (fps)	Level (in)	Flow (gpm)		
Average	1.575	1.265	30.821	**RainFall**	Inches
Maximum	2.090	2.235	73.860		
Minimum	0.910	0.705	8.258		

11/30/2017 10:45:42 AM



11/11/2017 thru 11/25/2017

11/30/2017 10:45:42 AM

Site Report 11-30-2017

Confidential Proprietary Information

Fuscoe ~1660 Dove St

2017.11 Site 4 Outflow Manhole No. M28-008

Access:
Manhole in left-hand eastbound lane at intersection with Westerly Pl

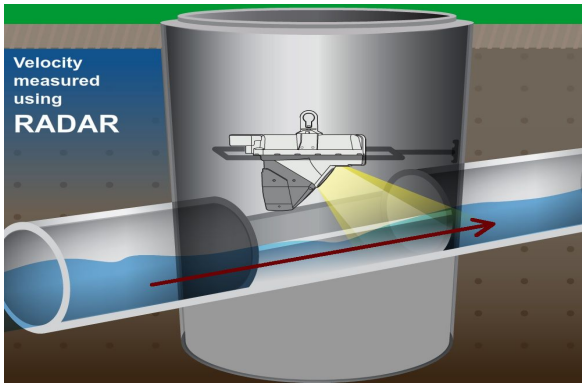
System Type: Sanitary [X] Storm [ ]

Install Date: 11/11/2017

Map



Technology



Sewer Plan



Flow Meter			
Meter Depth: 132.11"			
Map Coordinates: 33.665198, -117.866585			
Moderate open channel hydraulics			
Avg Velocity	Avg Measured Level		Multiplier
1.5 fps	1.75"		1
Gas			
O2	H2S	CO	LEL
20.9	0	0	0
Notes			
Monitored downstream line, exiting MH to the southeast.			
Traffic Safety			
Used arrow board, cones & signs for traffic control; worked during off-peak hrs to avoid impacting traffic.			
Land Use			
Residential	Commercial	Industrial	Trunk
	X		

Manhole Depth	149"
Monitored Pipe Size	10"
Pipe Size (Up/Down)	10"/10"
Pipe Shape	Round
Pipe Condition	Good
Manhole Material	Concrete
Silt	0
Velocity Profile Data	*
Velocity Profile Taken	0.4 2-D
Sensor Offset	16.89"
Sensor Dist. to Crown	6.89"
Sensor Direction	Downstream
Flow Heading	South

Meter Site Document

Fuscoe

2017.11 Site 4 Outflow

~1660 Dove St

Site



Manhole D□rin□ Install



Installation Process



Installed



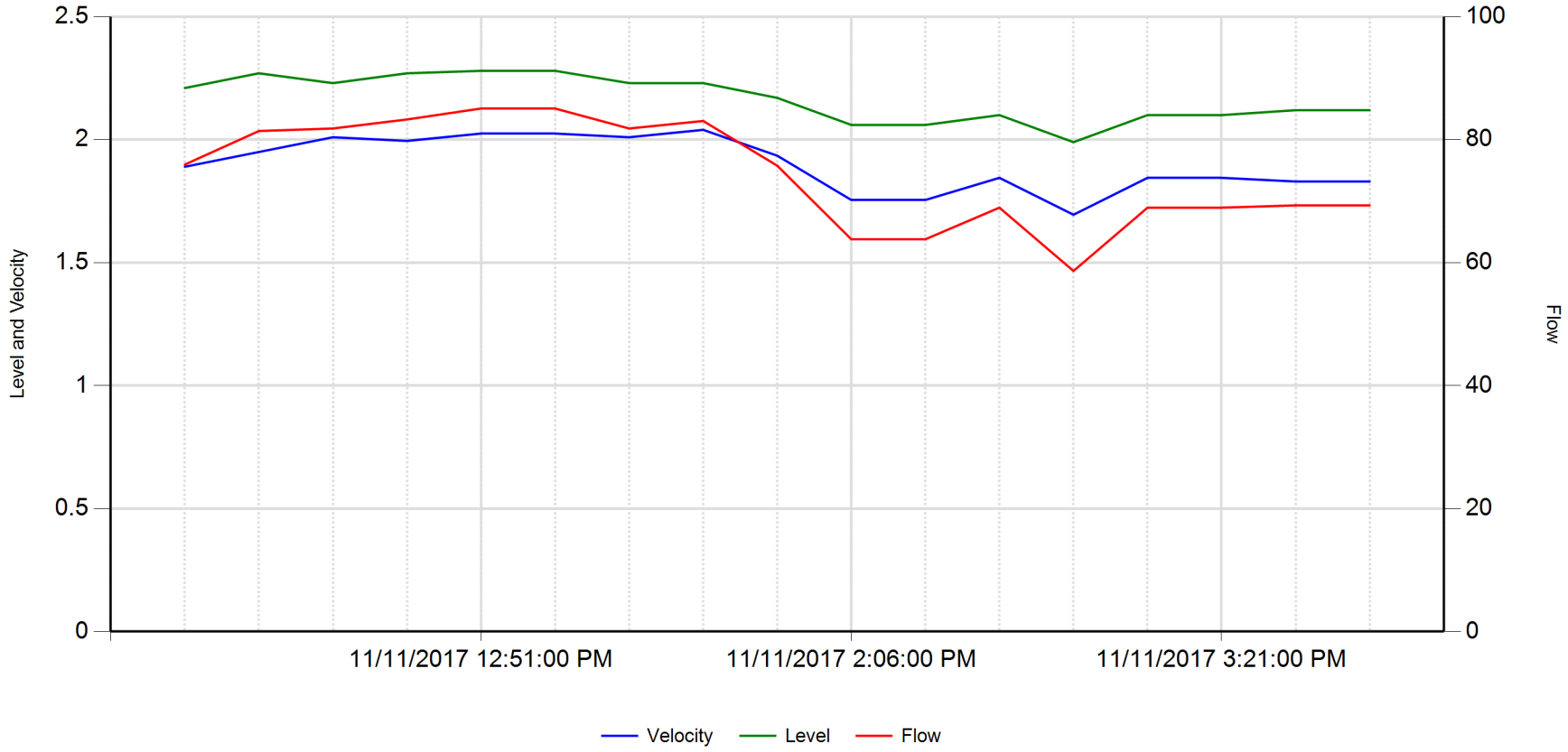
Traffic Control



Traffic Control



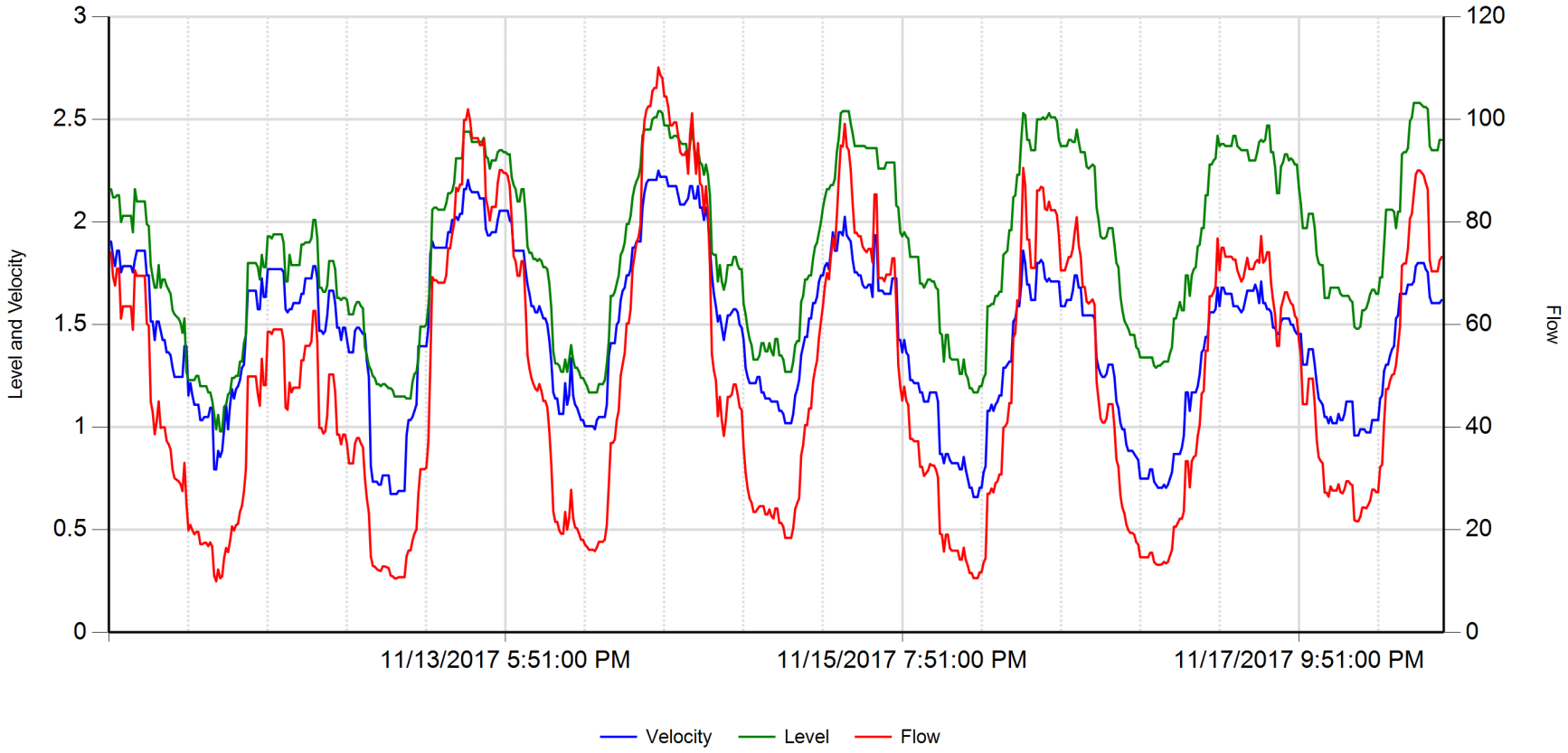
2017.11 Site 5 Mainline Inflow



	Velocity (fps)	Level (in)	Flow (gpm)		
Average	1.899	2.166	74.413	**RainFall**	Inches
Maximum	2.040	2.280	85.072		
Minimum	1.695	1.990	58.656		

11/30/2017 10:52:38 AM

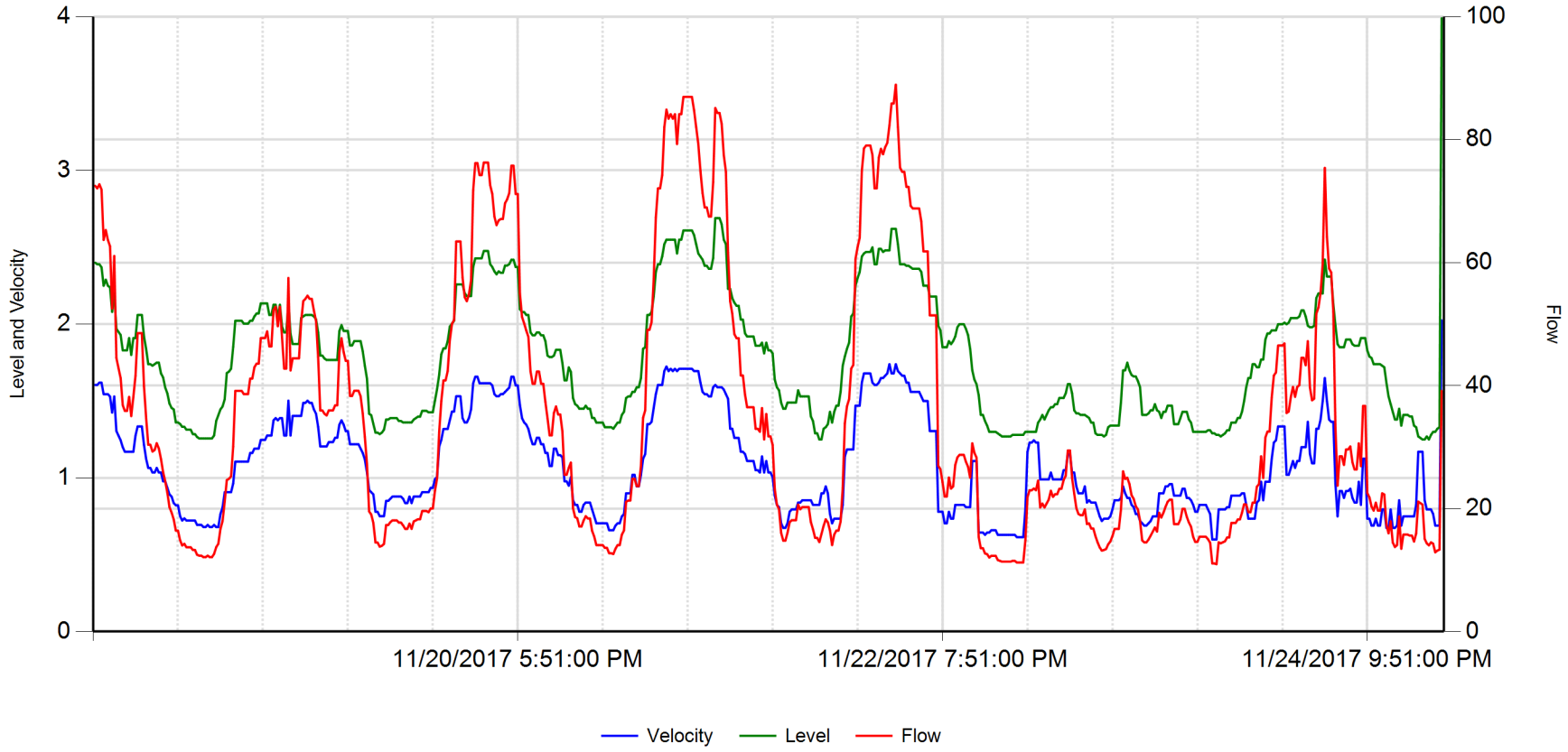
2017.11 Site 5 Mainline Inflow



	Velocity (fps)	Level (in)	Flow (gpm)		
Average	1.444	1.858	49.399	**RainFall**	Inches
Maximum	2.250	2.580	110.118		
Minimum	0.660	0.980	9.980		

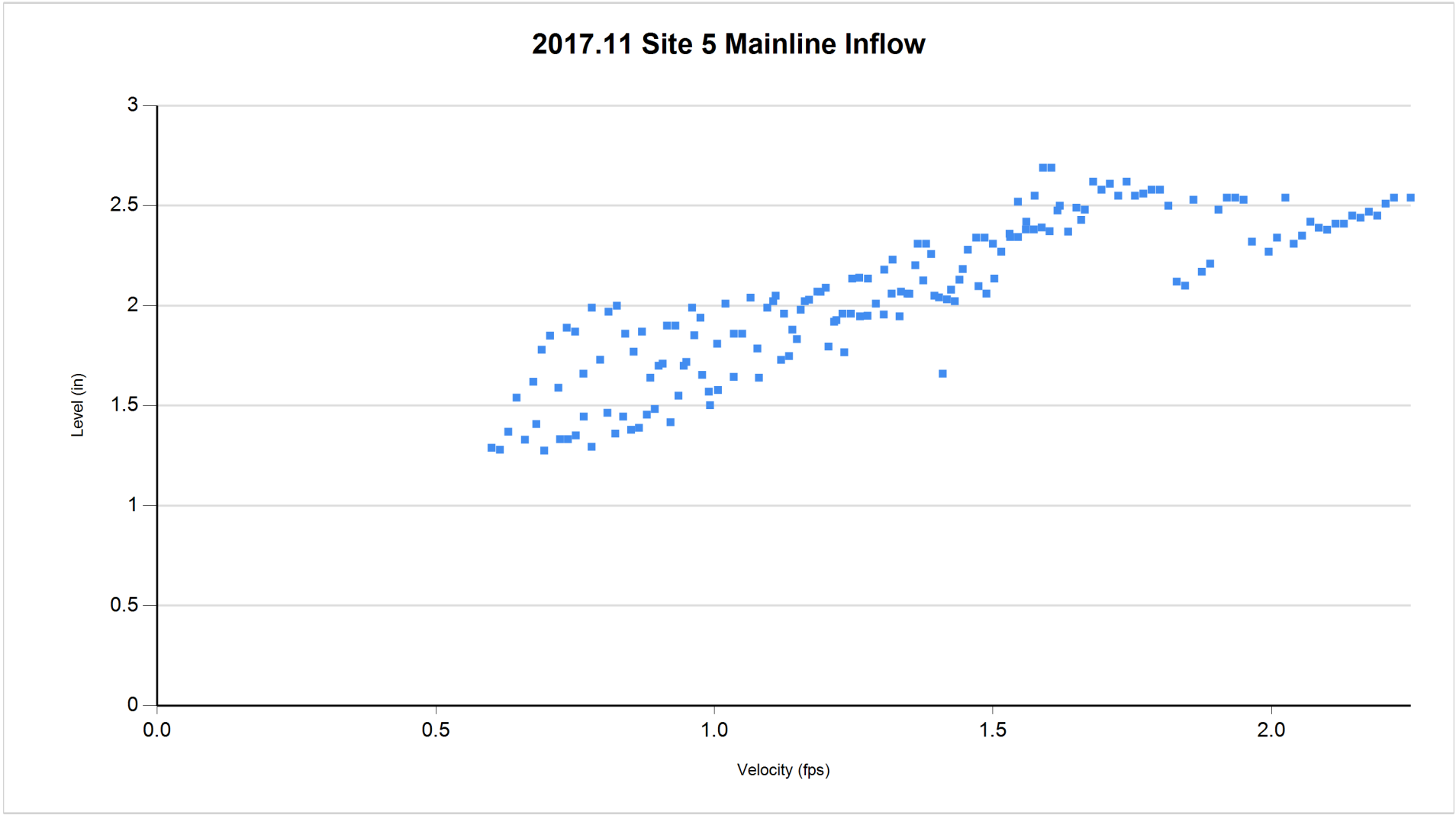
11/30/2017 10:52:38 AM

2017.11 Site 5 Mainline Inflow



	Velocity (fps)	Level (in)	Flow (gpm)		
Average	1.077	1.776	34.868	**RainFall**	Inches
Maximum	1.740	2.690	88.954		
Minimum	0.600	1.250	10.970		

11/30/2017 10:52:38 AM



11/11/2017 thru 11/25/2017

11/30/2017 10:52:38 AM

Site Report 11-30-2017

Confidential Proprietary Information

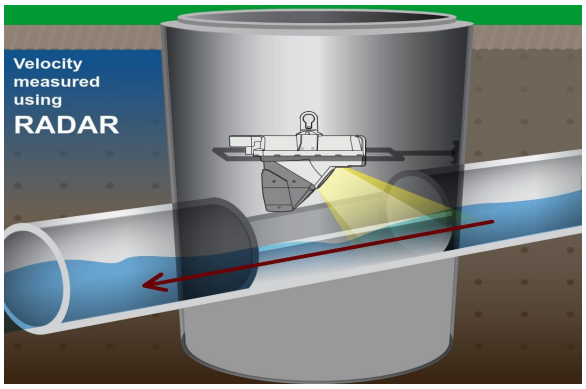
2017.11 Site 5 Mainline Inflow	Fuscoe	~1499 Dove St Manhole No. M28-004

Access:	System Type:	Install Date: 11/11/2017
Manhole in left-hand southbound lane	Sanitary [X] Storm [ ]	

Map



Technology



Sewer Plan



Flow Meter			
Meter Depth: 174.82"			
Map Coordinates: 33.664045, -117.865999			
Moderate open channel hydraulics			
Avg Velocity	Avg Measured Level		Multiplier
1.75 fps	2.0"		1
Gas			
O2	H2S	CO	LEL
20.9	0	0	0
Notes			
Monitored upstream mainline, entering MH from north.			
Traffic Safety			
Used arrow board, cones & signs for traffic control; worked during off-peak hrs to avoid impacting traffic.			
Land Use			
Residential	Commercial	Industrial	Trunk
	X		

Manhole Depth	192"
Monitored Pipe Size	10"
Pipe Size (Up/Down)	10"/10"
Pipe Shape	Round
Pipe Condition	Good
Manhole Material	Concrete
Silt	0
Velocity Profile Data	*
Velocity Profile Taken	0.4 2-D
Sensor Offset	17.18"
Sensor Dist. to Crown	7.18"
Sensor Direction	Upstream
Flow Heading	South

Meter Site Document

Fuscoe

2017.11 Site 5 Mainline Inflow ~1499 Dove St

Site



Manhole Before Install



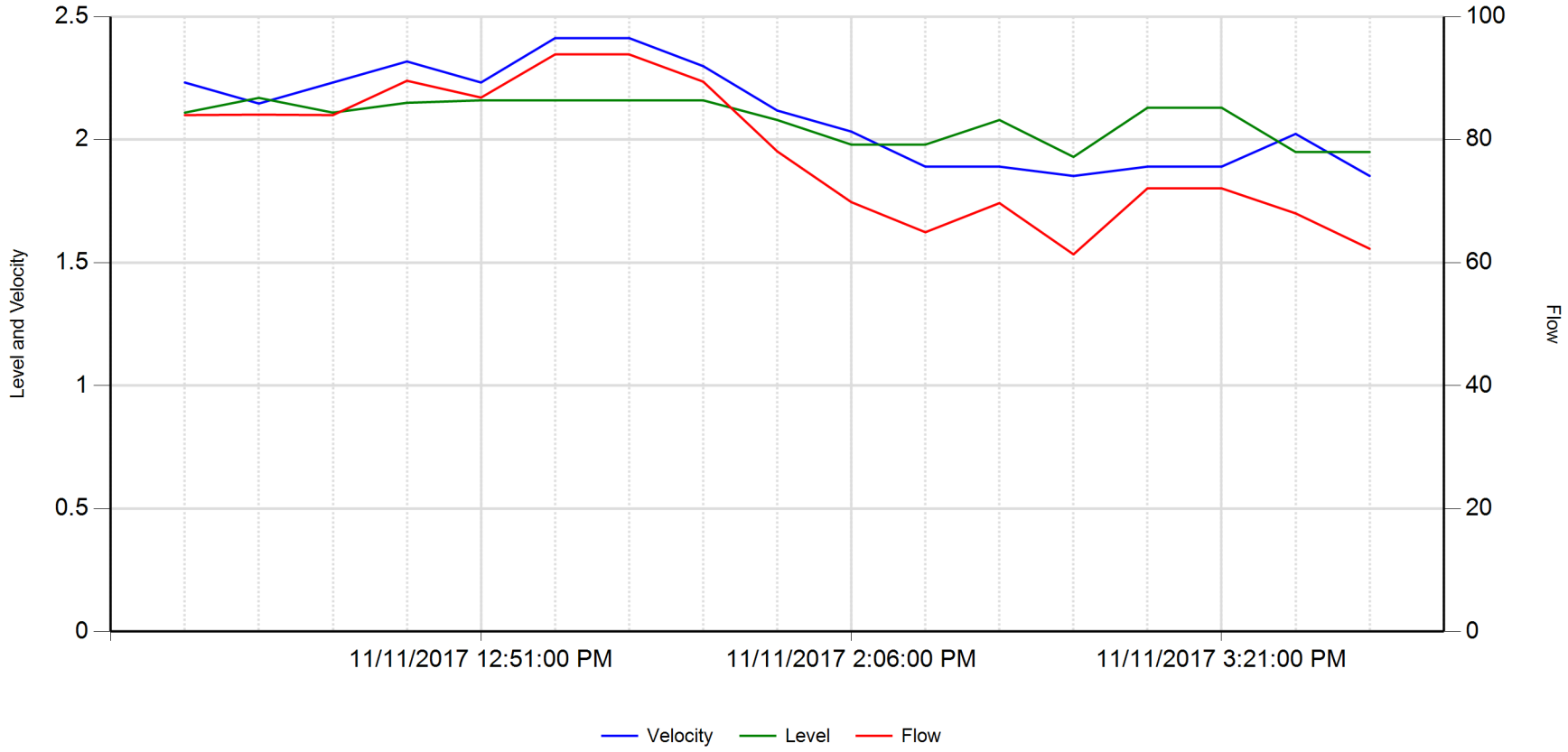
Installation Process



Installed



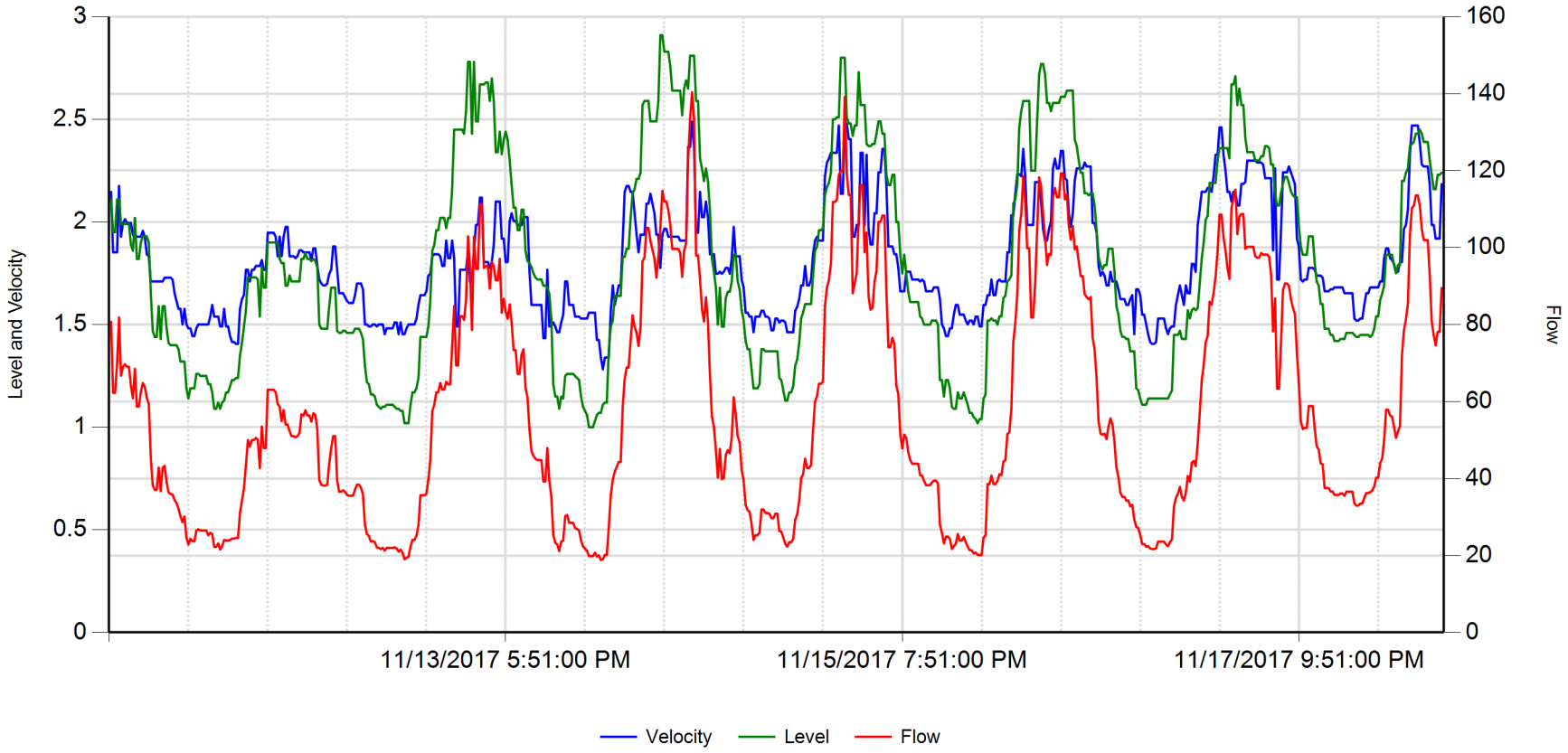
2017.11 Site 5 Outflow



	Velocity (fps)	Level (in)	Flow (gpm)		
Average	2.102	2.082	77.887	**RainFall**	Inches
Maximum	2.413	2.170	93.870		
Minimum	1.852	1.930	61.355		

11/30/2017 10:45:07 AM

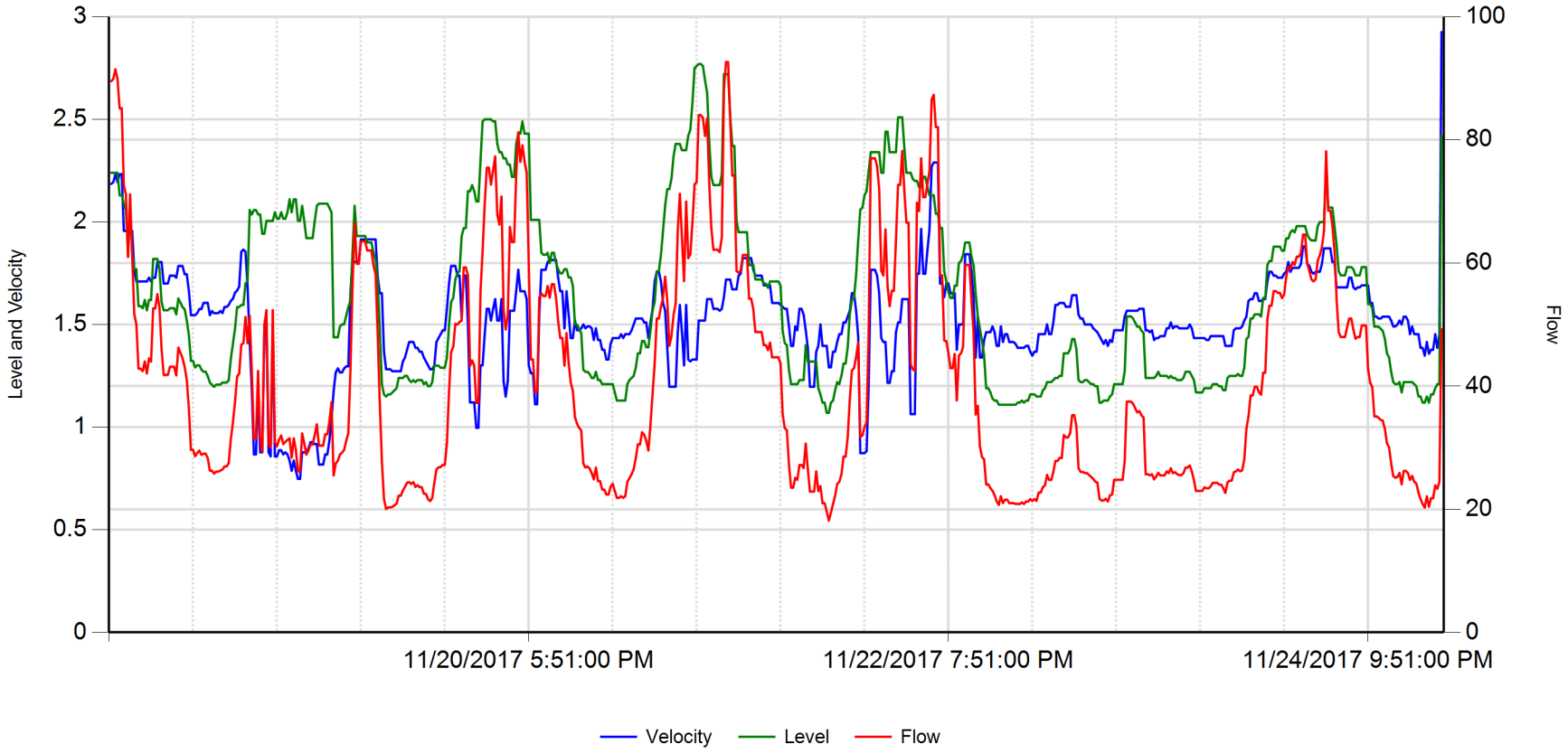
2017.11 Site 5 Outflow



	Velocity (fps)	Level (in)	Flow (gpm)		
Average	1.812	1.798	58.116	**RainFall**	Inches
Maximum	2.489	2.910	140.355		
Minimum	1.283	1.000	18.846		

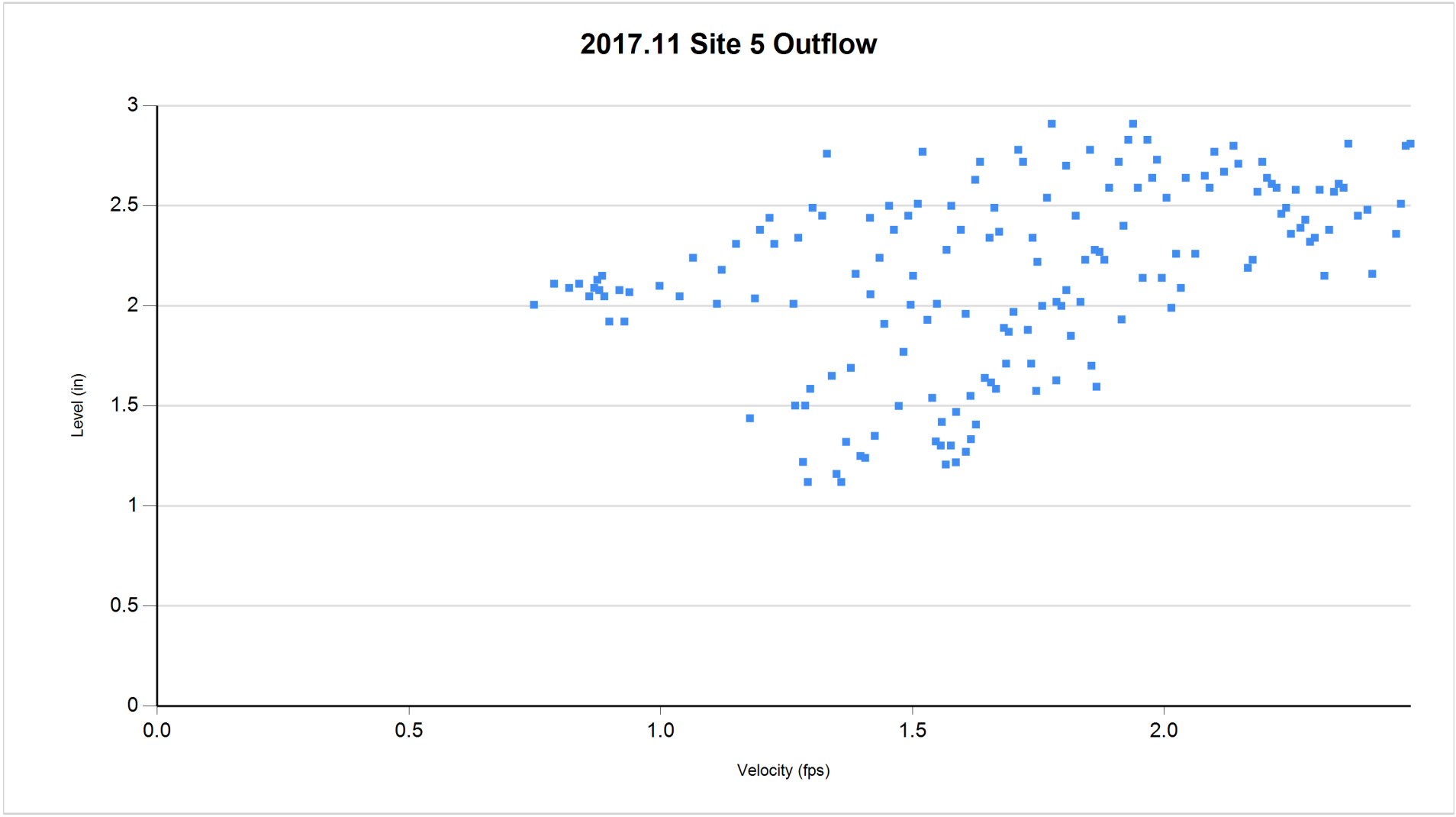
11/30/2017 10:45:07 AM

2017.11 Site 5 Outflow



	Velocity (fps)	Level (in)	Flow (gpm)		
Average	1.517	1.648	40.980	**RainFall**	Inches
Maximum	2.289	2.770	92.648		
Minimum	0.748	1.070	18.178		

11/30/2017 10:45:07 AM



11/11/2017 thru 11/25/2017

11/30/2017 10:45:07 AM

Site Report 11-30-2017

Confidential Proprietary Information

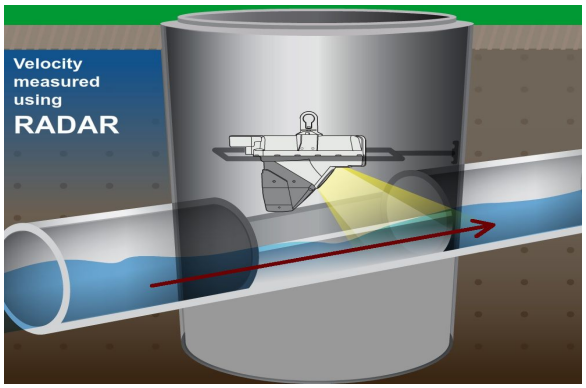
2017.11 Site 5 Outflow	Fuscoe	~1499 Dove St Manhole No. M28-004

Access:	System Type:	Install Date: 11/11/2017
Manhole in left-hand southbound lane	Sanitary [X] Storm [ ]	

Map



Technology



Sewer Plan



Flow Meter			
Meter Depth: 175.73"			
Map Coordinates: 33.664045, -117.865999			
Moderate open channel hydraulics			
Avg Velocity	Avg Measured Level		Multiplier
2.0 fps	2.0"		1
Gas			
O2	H2S	CO	LEL
20.9	0	0	0
Notes			
Monitored downstream line, exiting MH to the south.			
Traffic Safety			
Used arrow board, cones & signs for traffic control; worked during off-peak hrs to avoid impacting traffic.			
Land Use			
Residential	Commercial	Industrial	Trunk
	X		

Manhole Depth	192"
Monitored Pipe Size	10"
Pipe Size (Up/Down)	10"/10"
Pipe Shape	Round
Pipe Condition	Good
Manhole Material	Concrete
Silt	0
Velocity Profile Data	*
Velocity Profile Taken	0.4 2-D
Sensor Offset	16.27"
Sensor Dist. to Crown	6.27"
Sensor Direction	Downstream
Flow Heading	South

Meter Site Document

Fuscoe

2017.11 Site 5 Outflow ~1499 Dove St

Site



Manhole Before Install



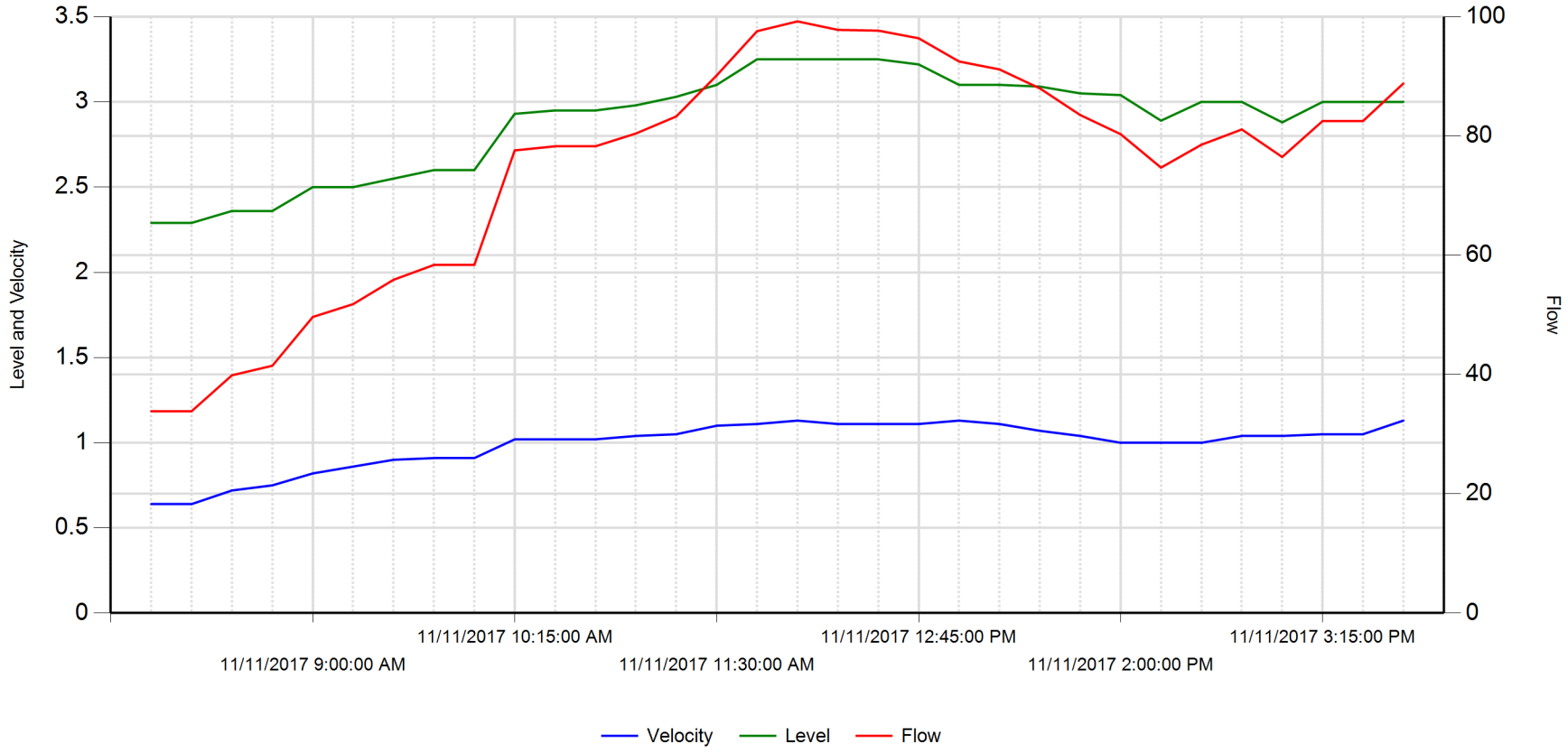
Installation Process



Installed



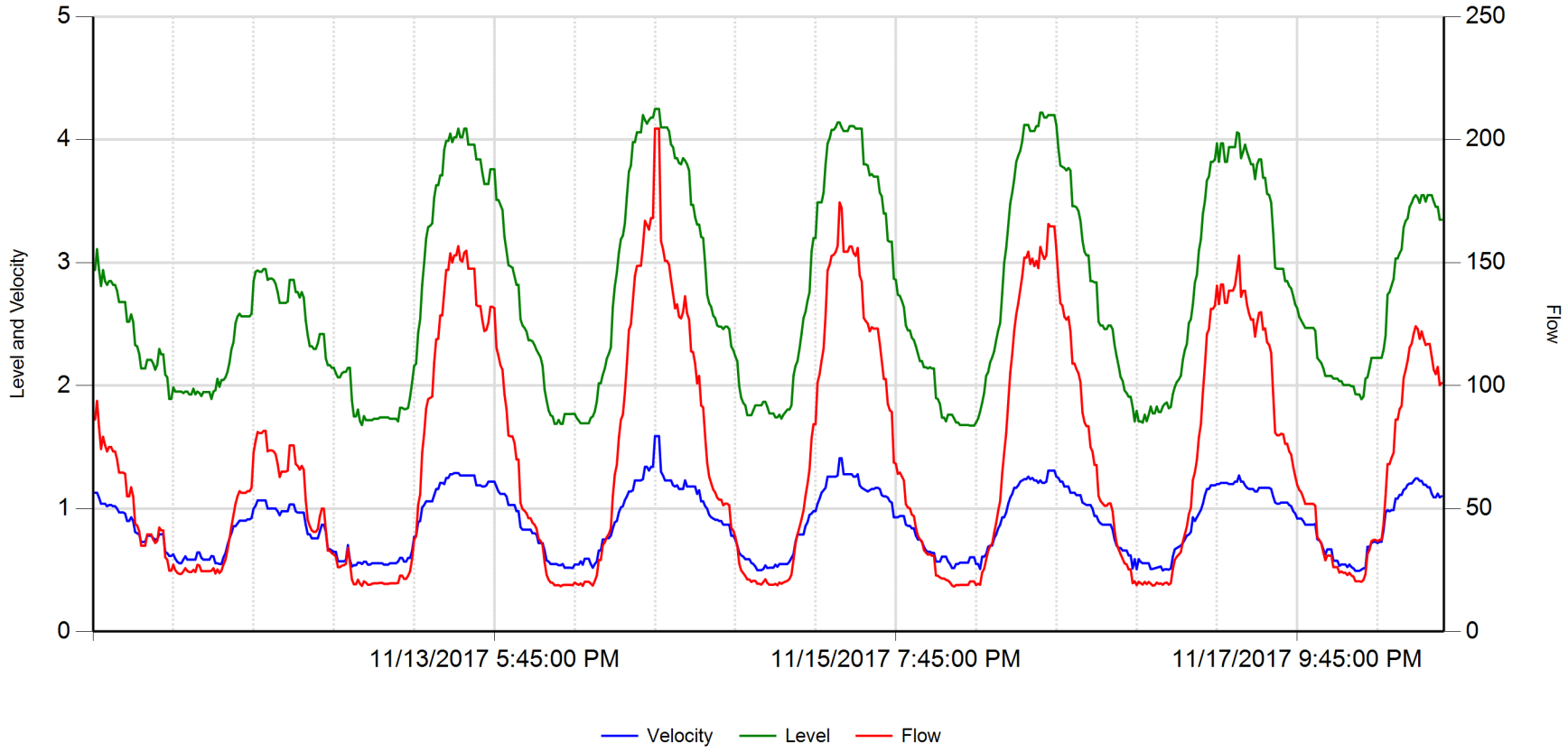
2017.11 Site 6 Outflow



	Velocity (fps)	Level (in)	Flow (gpm)		
Average	0.988	2.886	74.998	**RainFall**	Inches
Maximum	1.130	3.250	99.217		
Minimum	0.640	2.290	33.856		

11/30/2017 10:44:34 AM

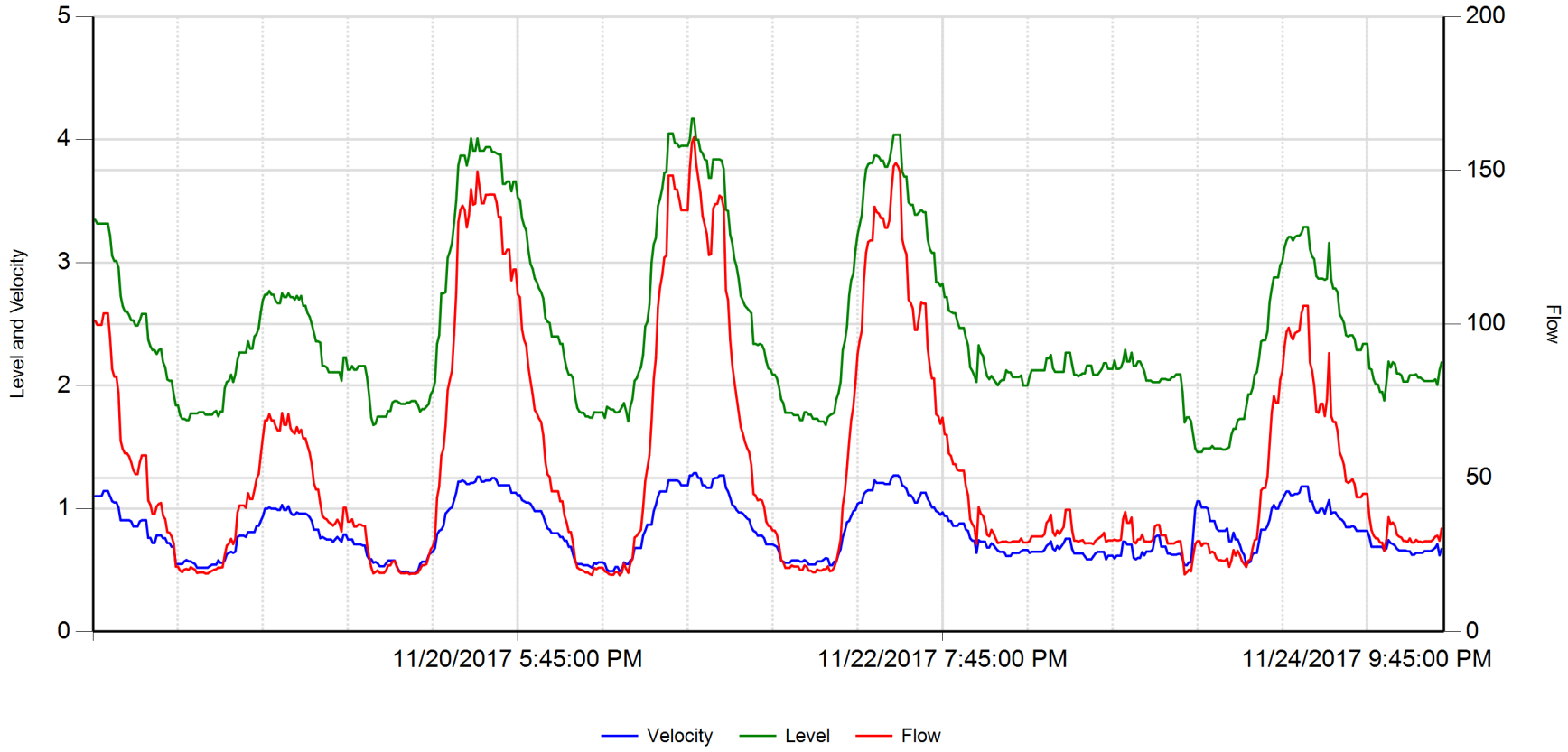
2017.11 Site 6 Outflow



	Velocity (fps)	Level (in)	Flow (gpm)		
Average	0.887	2.732	69.860	**RainFall**	Inches
Maximum	1.590	4.250	204.545		
Minimum	0.494	1.676	18.343		

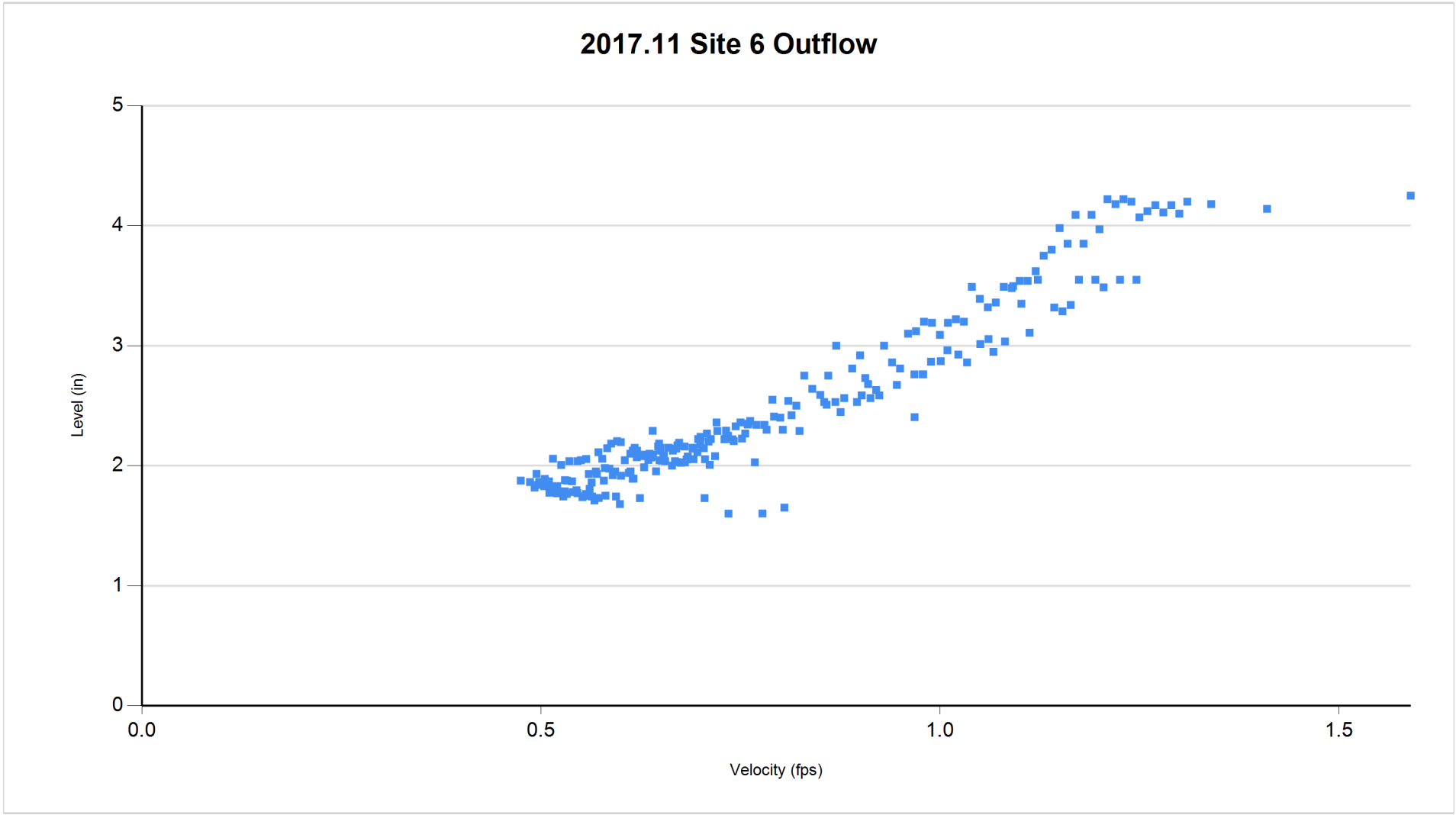
11/30/2017 10:44:34 AM

2017.11 Site 6 Outflow



	Velocity (fps)	Level (in)	Flow (gpm)		
Average	0.822	2.478	55.223	**RainFall**	Inches
Maximum	1.290	4.170	160.806		
Minimum	0.475	1.460	18.330		

11/30/2017 10:44:34 AM



11/11/2017 thru 11/25/2017

11/30/2017 10:44:34 AM

Site Report 11-30-2017

Confidential Proprietary Information

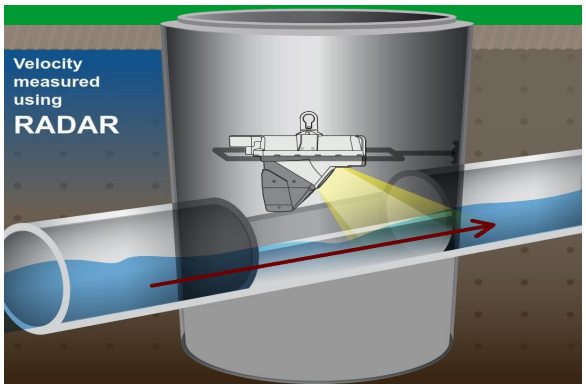
2017.11 Site 6 Outflow	Fuscoe	~4100 Newport Pl Dr Manhole No. M28-002

Access:	System Type:	Install Date: 11/11/2017
Manhole in right-hand westbound lane	Sanitary [X] Storm [ ]	

Map



Technology



Sewer Plan



Flow Meter			
Meter Depth: 230.4"			
Map Coordinates: 33.662437, -117.864792			
Moderate open channel hydraulics			
Avg Velocity	Avg Measured Level		Multiplier
0.75 fps	2.2"		1
Gas			
O2	H2S	CO	LEL
20.9	0	0	0
Notes			
Monitored downstream line, exiting MH to east.			
Traffic Safety			
Used arrow board, cones & signs for traffic control; worked during off-peak hrs to avoid impacting traffic.			
Land Use			
Residential	Commercial	Industrial	Trunk
	X		

Manhole Depth	251"
Monitored Pipe Size	15"
Pipe Size (Up/Down)	15"/15"
Pipe Shape	Round
Pipe Condition	Good
Manhole Material	Concrete
Silt	0
Velocity Profile Data	*
Velocity Profile Taken	0.4 2-D
Sensor Offset	20.6"
Sensor Dist. to Crown	5.6"
Sensor Direction	Downstream
Flow Heading	East

Meter Site Document

Fuscoe

2017.11 Site 6 Outflow ~4100 Newport Pl Dr

Site



Manhole Before Install



Installation Process



Installed



Traffic Control



Traffic Control



10/18/2017

Fuscoe Engineering Inc.
16795 Von Karman, Suite 100
Irvine, CA 92606
United States

Attention: Sue Williams

Subject: Temporary Sewer Flow Monitoring

Hello Sue,

Attached you will find Utility Systems Science & Software (US3) response to your request. US3 is providing 12 sensor(s) for a period of 14 days.

This project will be monitored with the State of the Art Hach Flo-Dar Flow Meters.

- Review and provide input to the identified site,
- Validate site for suitability and traffic control,
- Calibrate and Install flow monitoring equipment,
- Validate preliminary data,
- Modify system to further support the monitoring requirements.
- Provide On-Site Training for Web-Based Viewing & Reporting of Sewer Monitoring Data.

Note: All data will be provided in a ***Secure Web-Based Environment***.

Site Assessment

US3 will perform detailed site investigations/assessments of the potential monitoring site, assuring it is hydraulically suitable for accurate flow monitoring measurements. The site documentation shall include, at a minimum, a location map with address, digital photographs of the site, pipe size, channel condition, flow characteristics, site drawings, and pictures of surrounding area.

The Site assessments will also identify traffic control and safety issues, and will be performed only by trained US3 staff.

Equipment Installation, Site Maintenance, Equipment Removal

US3 staff will install all equipment in accordance manufacture recommendations and the associated Project Plan. Each sensor shall be calibrated by US3 before installation.

Installation

In general, US3 will follow the Methods & Procedures (Attached) to install the Hach Sewer Flow Monitoring equipment. US3 will coordinate with the City prior to performing field work within the collection system, including confined space entry, traffic control as required.

Site Maintenance

US3 staff will maintain all equipment, meeting reliability requirements. Where US3 guarantees 95% uptime or greater. General maintenance includes the recommended manufacturer maintenance procedures, field verifications, cleaning of sensors and diagnostics.

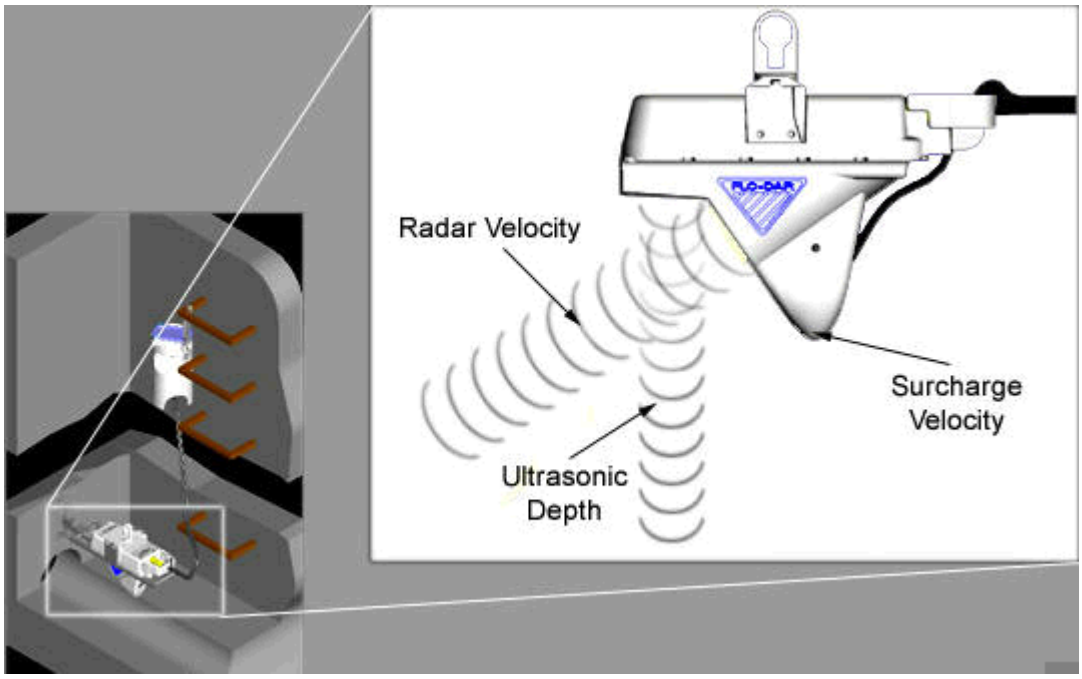


Figure 1: Flo-Dar - Flow Meter for Sewers & Open Channels

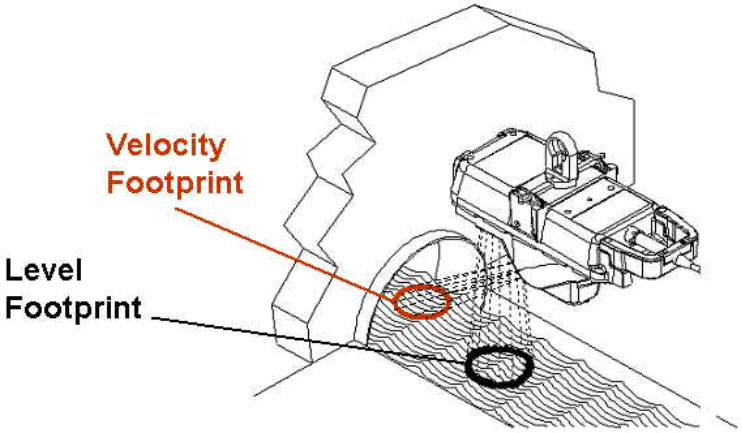
Perfect solution for Difficult Flow Conditions:

- Flows with High Solids Content
- High Temperature Flows
- Caustic Flows
- Large Man-Made Channel
- High Velocities
- Shallow Flows



Here's How It Works

Flo-Dar transmits a digital Doppler radar beam that interacts with the fluid and reflects back signals at a different frequency than that which was transmitted. These reflected signals are compared with the transmitted frequency. The resulting frequency shift provides an accurate measure of the velocity and the direction of the flow. Level is detected by ultrasonic pulse echo. Flow is then calculated based on the Continuity Equation:



Q = V x A, Where Q = Flow, V = Average Velocity and A = Area.

Accurate Flow Measurements

Flo-Dar provides the user with highly accurate flow measurements under a wide range of flows and site conditions.

By measuring the velocity of the fluid from above, Flo-Dar eliminates accuracy problems inherent with submerged sensors including sensor disturbances, high solids content and distribution of reflectors.

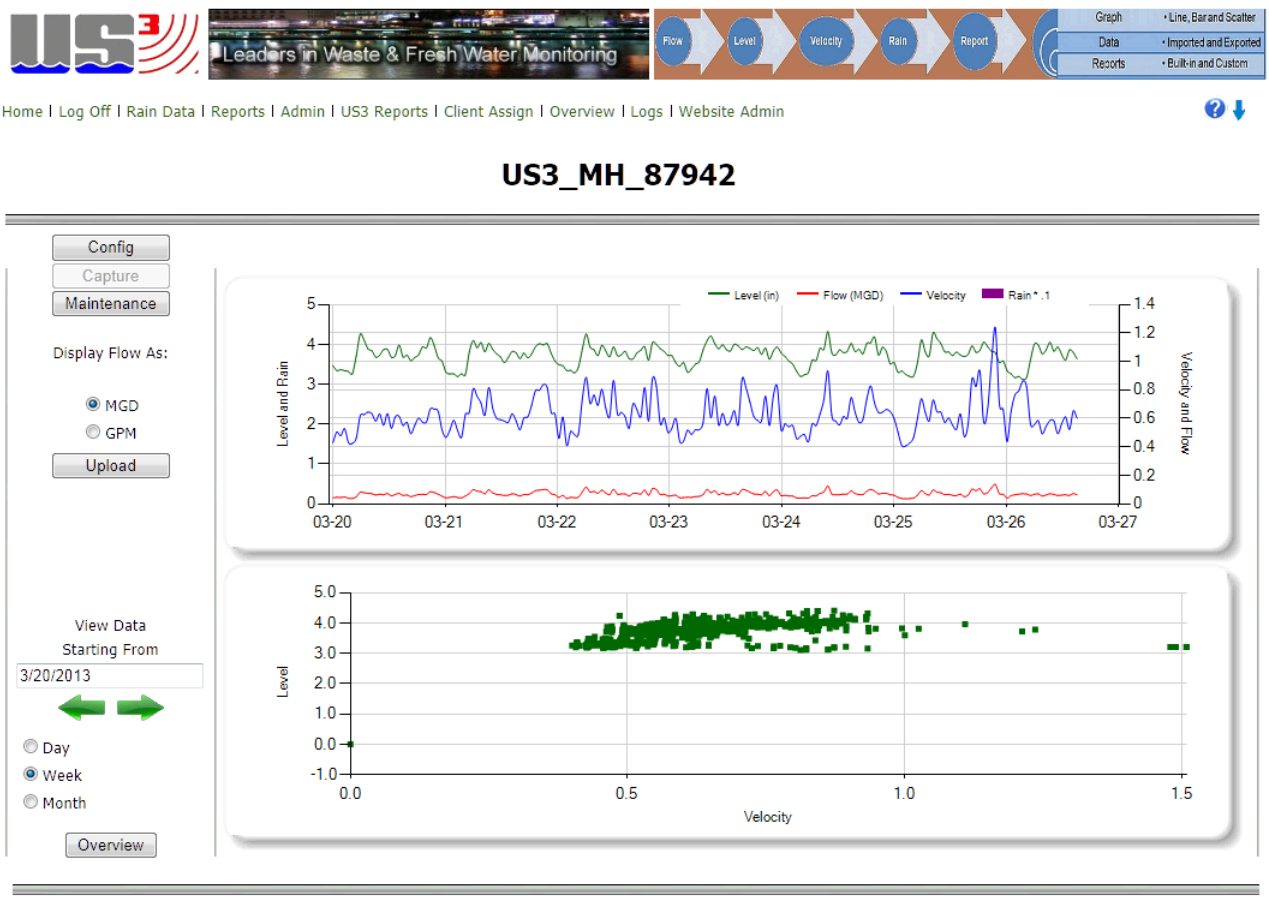


Figure 2: Standard Sewer Flow Monitoring Graph with the Scatter Plot.

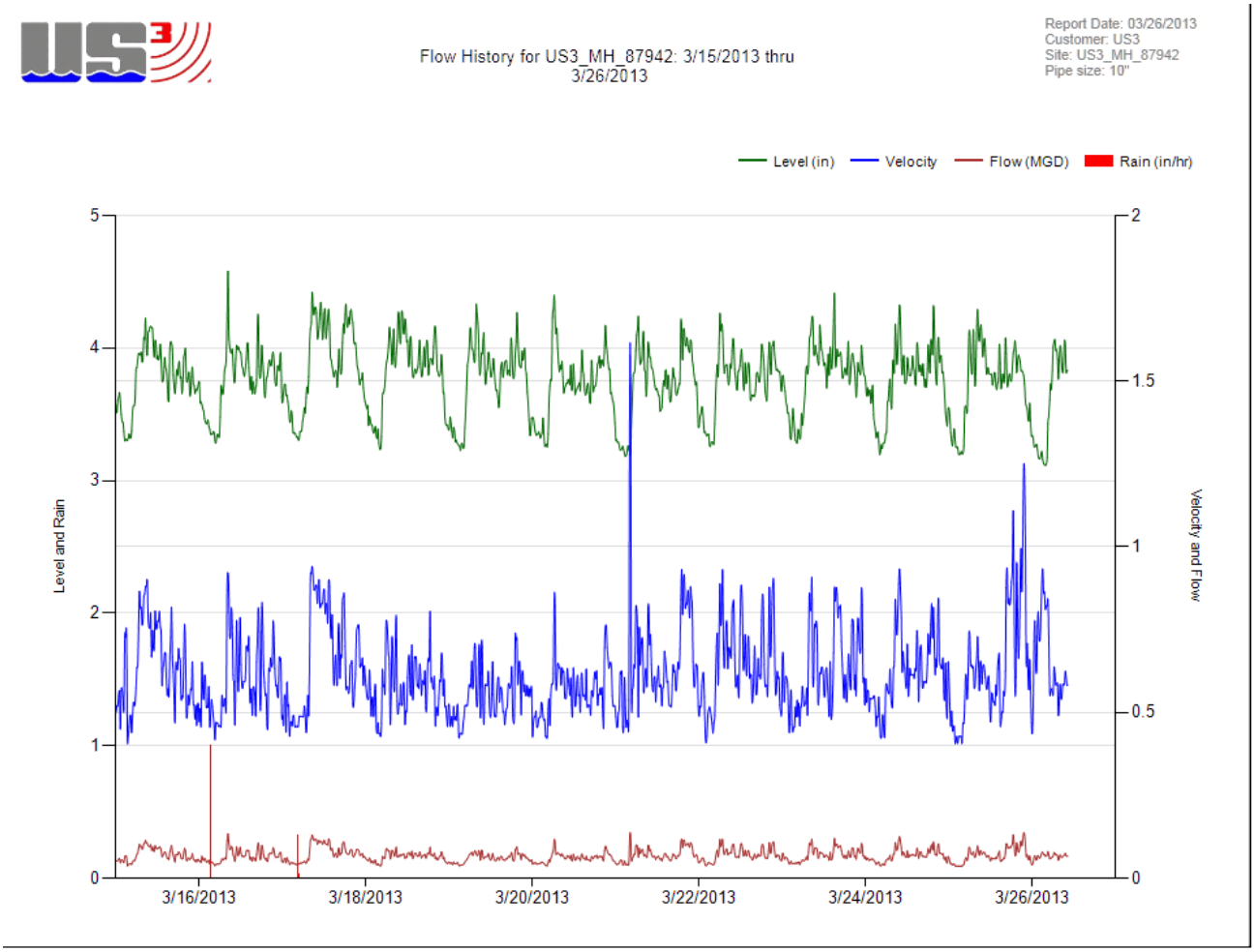


Figure 3: Expanded Graphs Report.

Project Management & Staffing

The fundamental objective is to provide city with the high quality services by utilizing advance-metering technologies factory certified from Hach Co. All services will be completed per an agreed schedule. The Installations, Calibrations, Maintenance Services will be performed by US3 and Utility Systems Science and Software personnel and is designed to provide United with complete coverage with hardware, software and engineering. Thus, the Implementation Plan includes:

- Verify equipment installation/operation.
- Gather information as a prelude to software/hardware maintenance.
- Examine system following with the designed format forms.
- Provide engineering/technical on-site support as needed to support the system.
- Provide with 24 hrs on-call response support.

Key Personnel
US3 possess all material, office and technical resources required to successfully maintain the system and provide skilled enhancements for United. Primary in support of this effort will be the following personnel:

- **Mark Serres** Vice President-Operations
- **Tom Williams Engineering & Installation Manager**
- **Darlene Szczublewski, P.E:** Senior Civil Engineer

Key Personnel Assigned to United

US3 possess all material, office and technical resources required to successfully monitor the system and provide skilled enhancements for United. With over 90 engineers and technicians, US3 can easily provide the necessary resources to fully implement this project. Primary in support of this effort will be the following personnel:

Mr. Mark Serres: Mr. Serres is a degreed electrical engineer with over 25 years systems Fresh/Waste water systems, project management and systems

Integration experience in relation to complex industrial systems, this includes experience in industrial automation and water/waste water industries. Mr. Serres will be the primary point of contact for all technical issues for City. Mr. Serres will also be responsible for assuring client satisfaction and will marshal the required resources to meet the project requirements.

Mr. Thomas Williams: Mr. Williams will be the City Project Manager with over 15 years of complex systems development for wastewater monitoring system experience. This experience includes hydraulic compatibility, instrumentation, communications and analysis.

Darlene Szczublewski, P.E.: Mrs. **Szczublewski** has over ten years of engineering experience in flow monitoring related projects. She assisted in the review of flow meter data and the completion of several SSES and Capacity Analysis projects to meet Consent Decrees. Mrs. **Szczublewski** has completed numerous I/I-related studies for other clients as well. Mrs. **Szczublewski** has developed numerous flow data analysis techniques to present a clear informative picture of flow responses to storm events. Her work also includes the development of training programs for clients describing I/I and capacity analysis methodologies.



The Flo-Dar Family of flowmeters provide a revolutionary approach to open channel and sewer flow monitoring. Flo-Dar combines digital doppler radar velocity sensing technology with ultrasonic pulse echo level sensing to remotely measure open channel flows.

Flo-Dar's unique non-contact measuring technology means trouble-free sewer flow monitoring. It even won the Water Environment Federation's Innovative Technology Award!

Like all Marsh-McBirney products, Flo-Dar sets the standard for ease-of-use, accuracy, and reliability. Flo-Dar accuracy has been independently confirmed by Alden Labs as well as the satisfaction of thousands of Flo-Dar users. Read our white paper, "Understanding the Flo-Dar Flow Measuring System" for more details and verified test data.



Figure 4: *Manhole 1*



Figure 5: *Manhole 2*



Figure 6: *Manhole 3*

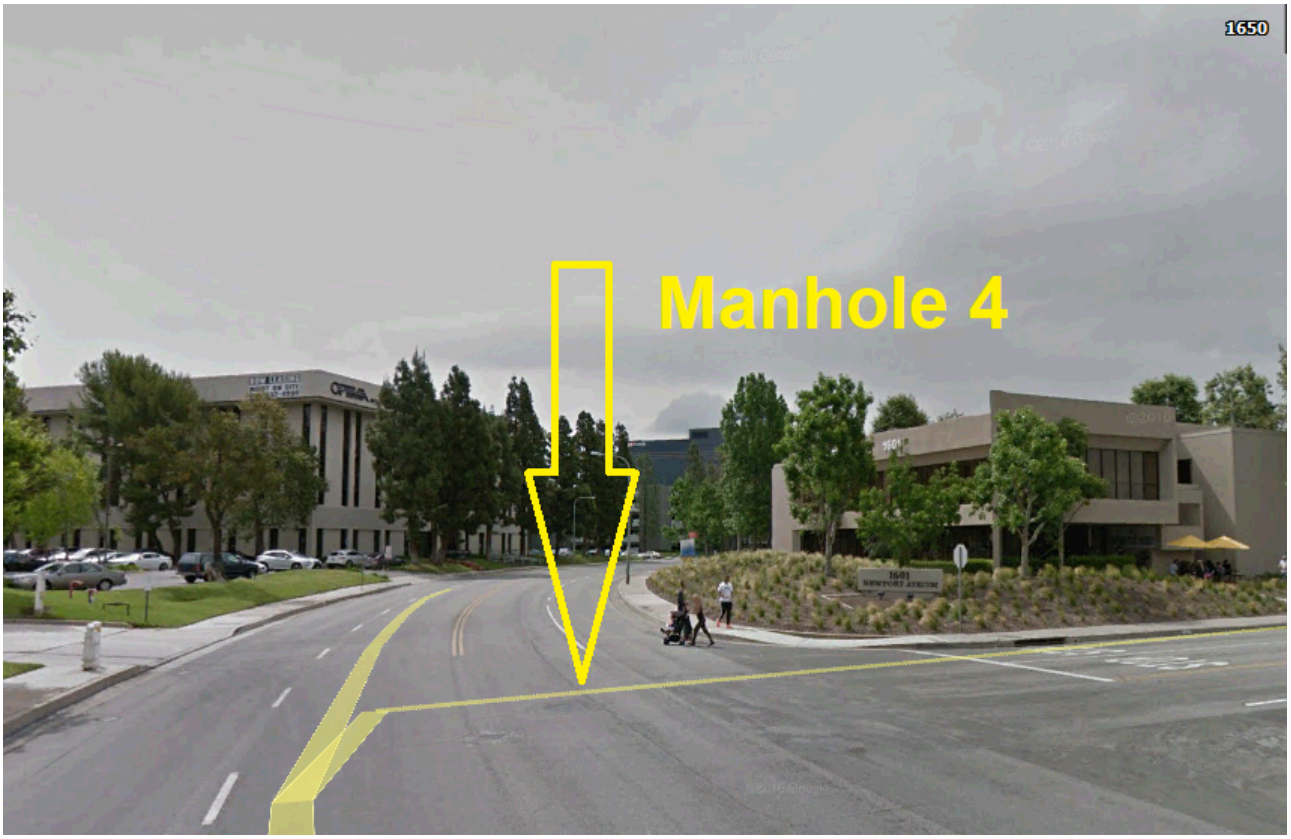


Figure 7: *Manhole 4*



Figure 8: *Manhole 5*



Figure 9: *Manhole 6*

Sincerely,

Mark

Mark Serres
Project Manager

Utility Systems, Science and Software
601 Parkcenter Dr., Ste 209
Santa Ana, CA 92705
Toll Free: 1-855-872-8233
www.uscubed.com

Utility Systems Science and Software, Inc.
601 Parkcenter Drive, Suite 209, Santa Ana, California 92705
t. (714) 564-3494 f. (714) 542-1332

Proposal

Number FUSCOE_101717

Date Oct 18, 2017

Prepared for

Fuscoe Engineering Inc.
Sue Williams
16795 Von Karman, Suite 100
Irvine, CA 92606
United States
Phone (949) 474-1960
Fax

Duration of Monitoring	Location	Terms
14 days	City of Newport Beach	Net 30 days

Qty	Description	Unit Price	Ext. Price
	Temporary Sewer Flow Monitoring at City of Newport Beach, CA		
12	Sewer Flow Meter	$650.00	$7,800.00
0	Permit (TBD)	$0.00	$0.00
6	Installation Materials	$85.00	$510.00
6	Flow Meter Installation	$1,540.00	$9,240.00
6	Removal Meter	$840.00	$5,040.00
	SubTotal		$22,590.00
	Fuscoe Engineering 10% Discount on Installation		-$924.00
	Total		$21,666.00

certified Installation & Calibration
95% Data Uptime Guarantee
Secure Server
Pre-packaged data in XLS, PDF and MS Word
Maintenance & Repair Included
General Traffic Control has been included. Should extensive additional traffic control be required, it will be quoted separately.

Total	**$21,666.00**
Deposit	$0.00

To accept this proposal, sign here and return: _____

Appendix 6

Sewer Generation Calculations

Newport Crossings - Newport Beach

Proposed Sewer Flow Generation

Residential

Number Of Units	Avg Flow (gpd/du)	Peaking Factor	Peak Flow (gpd/du)	Total Peak Flow (gpd)	Total Peak Flow (cfs)
350	245	3.15	772	270,113	0.418

Note: Generation Factors Per City of Newport Beach Design Criteria (See Appendix)

Amenity	Size (sf)	Avg Flow (gpd/sf)	Peaking Factor	Peak Flow (gpd)	Peak Flow (cfs)
Retail	7,500	0.025	2.5	469	0.00073
Avg Daily Flow Per City Of LA					
				Total Proposed Peak Flow	**0.419 cfs**

Newport Crossings - Newport Beach

Allowable Wastewater Flows to Martingale Way Lateral = 0.292 cfs

Residential

Alowable Number Of Units to Martingale Lateral *	Avg Flow (gpd/du)	Peaking Factor	Peak Flow (gpd/du)	Total Peak Flow (gpd)	Total Peak Flow (cfs)
244	245	3.15	772	188,307	0.291

Note: Generation Factors Per City of Newport Beach Design Criteria (See Appendix)

Amenity	Size (sf)	Avg Flow (gpd/sf)	Peaking Factor	Peak Flow (gpd)	Peak Flow (cfs)
Retail	7,500	0.025	2.5	469	0.00073
Avg Daily Flow Per City Of LA					
				Total Proposed Peak Flow	**0.292 cfs**

* Allowable number of units that can drain to Martingale Way Lateral, based on sewer capacity of existing 8" sewer (Reach 1)

Appendix 7

Kutter Flow Depth Calculations

Cells that are highlighted can be changed

Reach 1

GIVEN:

Qgiven=	**0.348**	cfs	*<== Discharge*
n=	**0.013**		*<== Roughness coefficient*
S=	**0.0040**		*<== Slope V:H*
r=	**0.333**	ft	*<== Radius*

TRIAL DEPTH:

h=	**4.000**	in	*<== Vary this depth to get $Q_{assume} = Q_{given}$*
	0.333	ft	

CACULATIONS:

beta=	90.06	degree
R=	0.167	ft
C=	77.339	
V=	1.997	ft/sec
A=	0.174	sq. ft.
Q_{assume}=	0.348	cfs

$Q_{halffull}$ = 0.35 cfs **$Q_{3/4full}$ = 0.65 cfs**

RESULT:

(Qgiven-Qassume) / Qgiven %= 0% **<======== OK**

Flow Depth (in) = 4.000

Capacity d/r = 100.10%

$Q_{capacity}$ = 0.348 cfs

Capacity $Q_{given}/Q_{capacity}$ = 100.00%

($Q_{halffull}$ =	0.35	**cfs**	**($Q_{3/4full}$ =**	0.65	**cfs**
$beta_{halffull}$=	90.000	degree	$beta_{3/4full}$=	120.00	degree
$R_{halffull}$ =	0.167	ft	$R_{3/4full}$=	0.201	ft
$C_{halffull}$ =	77.391	ft	$C_{3/4full}$=	81.524	ft
$A_{halffull}$ =	0.174	sq. ft.	$A_{3/4full}$=	0.280	sq. ft.
$V_{halffull}$ =	2.000	ft/sec)	$V_{3/4full}$=	2.311	ft/sec)

Cells that are highlighted can be changed

Reach 2 &
Reach 3

GIVEN:

Qgiven=	**0.350**	cfs	*<== Discharge*
n=	**0.013**		*<== Roughness coefficient*
S=	**0.0040**		*<== Slope V:H*
r=	**0.417**	ft	*<== Radius*

TRIAL DEPTH:

h=	**3.600**	in	*<== Vary this depth to get $Q_{assume} = Q_{given}$*
	0.300	ft	

CACULATIONS:

beta=	73.74	degree
R=	0.165	ft
C=	77.100	
V=	1.980	ft/sec
A=	0.177	sq. ft.
Q_{assume}=	0.350	cfs
$Q_{halffull}$ =	**0.65**	**cfs**

$Q_{3/4full}$ = 1.21 cfs

RESULT:

(Qgiven-Qassume) / Qgiven %= 0% **<======== OK**

Flow Depth (in) =	**3.600**
Capacity d/r =	**71.99%**
$Q_{capacity}$ =	**0.648 cfs**
Capacity $Q_{given}/Q_{capacity}$ =	**54.05%**

($Q_{halffull}$ =	0.65	**cfs**	**($Q_{3/4full}$ =**	1.21	**cfs**
$beta_{halffull}$=	90.000	degree	$beta_{3/4full}$=	120.00	degree
$R_{halffull}$ =	0.208	ft	$R_{3/4full}$=	0.251	ft
$C_{halffull}$ =	82.302	ft	$C_{3/4full}$=	86.586	ft
$A_{halffull}$ =	0.273	sq. ft.	$A_{3/4full}$=	0.439	sq. ft.
$V_{halffull}$ =	2.374	ft/sec)	$V_{3/4full}$=	2.746	ft/sec)

Cells that are highlighted can be changed

Reach 4

GIVEN:

Qgiven=	**0.551**	cfs	*<== Discharge*
n=	**0.013**		*<== Roughness coefficient*
S=	**0.0136**		*<== Slope V:H*
r=	**0.417**	ft	*<== Radius*

TRIAL DEPTH:

h=	**3.318**	in	*<== Vary this depth to get $Q_{assume} = Q_{given}$*
	0.277	ft	

CACULATIONS:

beta=	70.34	degree
R=	0.155	ft
C=	75.992	
V=	3.484	ft/sec
A=	0.158	sq. ft.
Q_{assume}=	0.551	cfs
$Q_{halffull}$ =	**1.20**	**cfs**
$Q_{3/4full}$ =	**2.23**	**cfs**

RESULT:

(Qgiven-Qassume) / Qgiven %= 0% **<======== OK**

Flow Depth (in) =	**3.318**
Capacity d/r =	**66.35%**
$Q_{capacity}$ =	**1.198 cfs**
Capacity $Q_{given}/Q_{capacity}$ =	**45.98%**

($Q_{halffull}$ =	1.20	**cfs**	**($Q_{3/4full}$ =**	2.23	**cfs**
$beta_{halffull}$=	90.000	degree	$beta_{3/4full}$=	120.00	degree
$R_{halffull}$ =	0.208	ft	$R_{3/4full}$=	0.251	ft
$C_{halffull}$ =	82.607	ft	$C_{3/4full}$=	86.882	ft
$A_{halffull}$ =	0.273	sq. ft.	$A_{3/4full}$=	0.439	sq. ft.
$V_{halffull}$ =	4.394	ft/sec)	$V_{3/4full}$=	5.080	ft/sec)

Reach 5

Cells that are highlighted can be changed

GIVEN:

Qgiven=	**0.551**	cfs	*<== Discharge*
n=	**0.013**		*<== Roughness coefficient*
S=	**0.0040**		*<== Slope V:H*
r=	**0.417**	ft	*<== Radius*

TRIAL DEPTH:

h=	**4.567**	in	*<== Vary this depth to get Q_{assume} = Q_{given}*
	0.381	ft	

CACULATIONS:

beta=	85.03	degree
R=	0.196	ft
C=	80.993	
V=	2.269	ft/sec
A=	0.243	sq. ft.
Q_{assume}=	0.551	cfs

$Q_{halffull}$ = 0.65 cfs **$Q_{3/4full}$ = 1.21 cfs**

RESULT:

(Qgiven-Qassume) / Qgiven %= 0% **<======== OK**

Flow Depth (in) = 4.567

Capacity d/r = 91.33%

$Q_{capacity}$ = 0.648 cfs

Capacity $Q_{given}/Q_{capacity}$ = 85.10%

($Q_{halffull}$ =	0.65	**cfs**	**($Q_{3/4full}$ =**	1.21	**cfs**
$beta_{halffull}$=	90.000	degree	$beta_{3/4full}$=	120.00	degree
$R_{halffull}$ =	0.208	ft	$R_{3/4full}$=	0.251	ft
$C_{halffull}$ =	82.302	ft	$C_{3/4full}$=	86.586	ft
$A_{halffull}$ =	0.273	sq. ft.	$A_{3/4full}$=	0.439	sq. ft.
$V_{halffull}$ =	2.374	ft/sec)	$V_{3/4full}$=	2.746	ft/sec)

Cells that are highlighted can be changed

Reach 6

GIVEN:

Qgiven=	**0.574**	cfs	*<== Discharge*
n=	**0.013**		*<== Roughness coefficient*
S=	**0.0040**		*<== Slope V:H*
r=	**0.417**	ft	*<== Radius*

TRIAL DEPTH:

h=	**4.670**	in	*<== Vary this depth to get $Q_{assume} = Q_{given}$*
	0.389	ft	

CACULATIONS:

beta=	86.21	degree
R=	0.199	ft
C=	81.333	
V=	2.296	ft/sec
A=	0.250	sq. ft.
Q_{assume}=	0.574	cfs

$Q_{halffull}$ = 0.65 cfs **$Q_{3/4full}$ = 1.21 cfs**

RESULT:

(Qgiven-Qassume) / Qgiven %= 0% **<======== OK**

Flow Depth (in) = 4.670

Capacity d/r = 93.39%

$Q_{capacity}$ = 0.648 cfs

Capacity $Q_{given}/Q_{capacity}$ = 88.65%

($Q_{halffull}$ =	0.65	**cfs**	**($Q_{3/4full}$ =**	1.21	**cfs**
$beta_{halffull}$=	90.000	degree	$beta_{3/4full}$=	120.00	degree
$R_{halffull}$ =	0.208	ft	$R_{3/4full}$=	0.251	ft
$C_{halffull}$ =	82.302	ft	$C_{3/4full}$=	86.586	ft
$A_{halffull}$ =	0.273	sq. ft.	$A_{3/4full}$=	0.439	sq. ft.
$V_{halffull}$ =	2.374	ft/sec)	$V_{3/4full}$=	2.746	ft/sec)

Cells that are highlighted can be changed

Reach 7 &
Reach 8

GIVEN:

Qgiven=	**0.634**	cfs	*<== Discharge*
n=	**0.013**		*<== Roughness coefficient*
S=	**0.0060**		*<== Slope V:H*
r=	**0.417**	ft	*<== Radius*

TRIAL DEPTH:

h=	**4.413**	in	*<== Vary this depth to get Q_{assume} = Q_{given}*
	0.368	ft	

CACULATIONS:

beta=	83.25	degree
R=	0.192	ft
C=	80.605	
V=	2.733	ft/sec
A=	0.232	sq. ft.
Q_{assume}=	0.634	cfs
$Q_{halffull}$ =	**0.79**	**cfs**

$Q_{3/4full}$ = 1.48 cfs

RESULT:

(Qgiven-Qassume) / Qgiven %= 0% **<======== OK**

Flow Depth (in) =	**4.413**	
Capacity d/r =	**88.25%**	
$Q_{capacity}$ =	**0.794**	**cfs**
Capacity $Q_{given}/Q_{capacity}$ =	**79.81%**	

($Q_{halffull}$ =	0.79	**cfs**	**($Q_{3/4full}$ =**	1.48	**cfs**
$beta_{halffull}$=	90.000	degree	$beta_{3/4full}$=	120.00	degree
$R_{halffull}$ =	0.208	ft	$R_{3/4full}$=	0.251	ft
$C_{halffull}$ =	82.445	ft	$C_{3/4full}$=	86.725	ft
$A_{halffull}$ =	0.273	sq. ft.	$A_{3/4full}$=	0.439	sq. ft.
$V_{halffull}$ =	2.913	ft/sec)	$V_{3/4full}$=	3.368	ft/sec)

Cells that are highlighted can be changed

Reach 9

GIVEN:

Qgiven=	**0.702**	cfs	*<== Discharge*
n=	**0.013**		*<== Roughness coefficient*
S=	**0.0124**		*<== Slope V:H*
r=	**0.417**	ft	*<== Radius*

TRIAL DEPTH:

h=	**3.842**	in	*<== Vary this depth to get $Q_{assume} = Q_{given}$*
	0.320	ft	

CACULATIONS:

beta=	76.61	degree
R=	0.173	ft
C=	78.503	
V=	3.638	ft/sec
A=	0.193	sq. ft.
Q_{assume}=	0.702	cfs
$Q_{halffull}$ =	**1.14**	**cfs**
$Q_{3/4full}$ =	**2.13**	**cfs**

RESULT:

(Qgiven-Qassume) / Qgiven %= 0% **<======== OK**

Flow Depth (in) = 3.842

Capacity d/r = 76.83%

$Q_{capacity}$ = 1.144 cfs

Capacity $Q_{given}/Q_{capacity}$ = 61.36%

($Q_{halffull}$ =	1.14	**cfs**	**($Q_{3/4full}$ =**	2.13	**cfs**
$beta_{halffull}$=	90.000	degree	$beta_{3/4full}$=	120.00	degree
$R_{halffull}$ =	0.208	ft	$R_{3/4full}$=	0.251	ft
$C_{halffull}$ =	82.594	ft	$C_{3/4full}$=	86.870	ft
$A_{halffull}$ =	0.273	sq. ft.	$A_{3/4full}$=	0.439	sq. ft.
$V_{halffull}$ =	4.195	ft/sec)	$V_{3/4full}$=	4.850	ft/sec)

Cells that are highlighted can be changed

Reach 10 &
Reach 11 &
Reach 12

GIVEN:

Qgiven=	**0.845**	cfs	***<== Discharge***
n=	**0.013**		***<== Roughness coefficient***
S=	**0.0020**		***<== Slope V:H***
r=	**0.750**	ft	***<== Radius***

TRIAL DEPTH:

h=	**5.310**	in	***<== Vary this depth to get $Q_{assume} = Q_{given}$***
	0.443	ft	

CACULATIONS:

beta=	65.80	degree
R=	0.253	ft
C=	86.304	
V=	1.941	ft/sec
A=	0.436	sq. ft.
Q_{assume}=	0.845	cfs
$Q_{halffull}$ =	**2.31**	**cfs**
$Q_{3/4full}$ =	**4.26**	**cfs**

RESULT:

(Qgiven-Qassume) / Qgiven %= 0% **<======== OK**

Flow Depth (in) =	**5.310**	
Capacity d/r =	**59.00%**	
$Q_{capacity}$ =	**4.257**	**cfs**
Capacity $Q_{given}/Q_{capacity}$ =	**19.85%**	

($Q_{halffull}$ =	2.31	**cfs**	**($Q_{3/4full}$ =**	4.26	**cfs**
$beta_{halffull}$=	90.000	degree	$beta_{3/4full}$=	120.00	degree
$R_{halffull}$ =	0.375	ft	$R_{3/4full}$=	0.453	ft
$C_{halffull}$ =	95.278	ft	$C_{3/4full}$=	99.541	ft
$A_{halffull}$ =	0.884	sq. ft.	$A_{3/4full}$=	1.422	sq. ft.
$V_{halffull}$ =	2.609	ft/sec)	$V_{3/4full}$=	2.995	ft/sec)

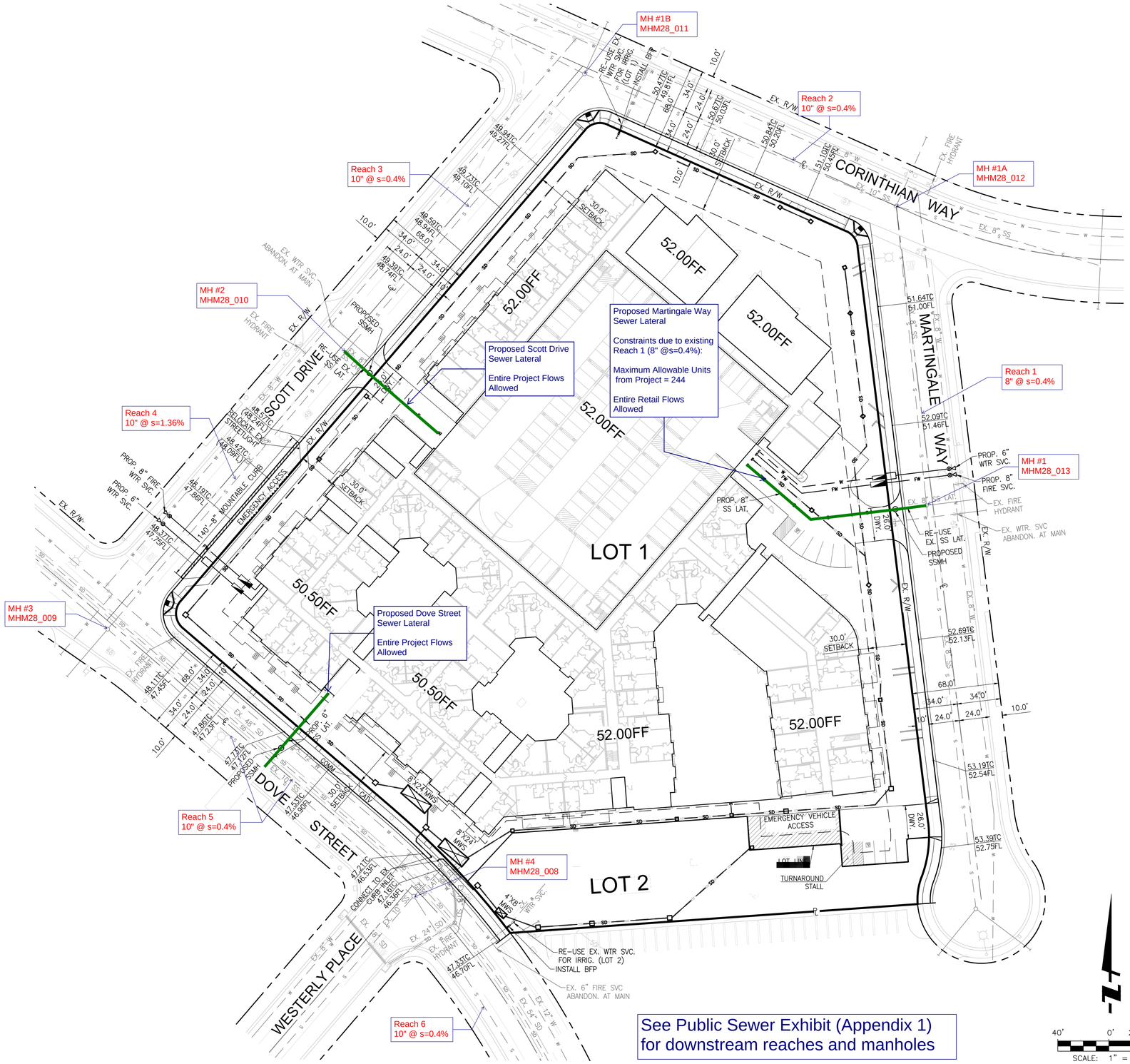
Appendix 8

Sewer Study Table

Newport Crossings Sewer Area Study Calculations											
Sewer Location/ Reach	From MH	To MH	Pipe Size (in)	Pipe Slope (ft/ft)	Capacity (1/2 full) (cfs)	Existing Measured Flow (cfs)	Credit Existing Flow from Property Lateral(s) (cfs)	Project Flows (cfs)	Total Flows in Pipe (cfs)	Proposed Flow Depth (in)	Proposed % Full
Martingale Way/Reach 1	#1 (MHM28_013)	#1A (MHM28_012)	8	0.004	0.348	0.066	-0.010	0.292	0.348	4.0	50%
Corinthian Way/Reach 2	#1A (MHM28_012)	#1B (MHM28_011)	10	0.004	0.648	0.070	-0.010	0.292	0.352	3.60	36%
Scott Drive / Reach 3	#1B (MHM28_011)	#2 (MHM28_010)	10	0.004	0.648	0.070	-0.010	0.292	0.352	3.60	36%
Scott Drive / Reach 4	#2 (MHM28_010)	#3 (MHM28_009)	10	0.0136	1.198	0.152	-0.020	0.419	0.551	3.32	33%
Dove Street / Reach 5	#3 (MHM28_009)	#4 (MHM28_008)	10	0.004	0.648	0.152	-0.020	0.419	0.551	4.57	46%
Dove Street / Reach 6	#4 (MHM28_008)	#4A (MHM28_007)	10	0.004	0.648	0.185	-0.030	0.419	0.574	4.67	47%
Dove Street / Reach 7	#4A (MHM28_007)	#4B (MHM28_005)	10	0.006	0.794	0.245	-0.030	0.419	0.634	4.41	44%
Dove Street / Reach 8	#4B (MHM28_005)	#5 (MHM28_004)	10	0.006	0.794	0.245	-0.030	0.419	0.634	4.41	44%
Dove Street / Reach 9	#5 (MHM28_004)	#5A (MHM28_003)	10	0.0124	1.14	0.313	-0.030	0.419	0.702	3.84	38%
Newport Place Drive/ Reach 10	#5A (MHM28_003)	#6 (MHM28_002)	15	0.002	1.14	0.456	-0.030	0.419	0.845	5.31	35%
Newport Place Drive/ Reach 11	#6 (MHM28_002)	#6A (MHM28_001)	15	0.002	1.14	0.456	-0.030	0.419	0.845	5.31	35%
Newport Place Drive/ Reach 12	#6A (MHM28_001)	#6B (MHM28_051)	15	0.002	1.14	0.456	-0.030	0.419	0.845	5.31	35%

Appendix 9

Conceptual Utility Plan


MH #1B
MHM28_011
MH #1A
MHM28_012
MH #1
MHM28_013
MH #2
MHM28_010
MH #3
MHM28_009
MH #4
MHM28_008
Reach 1
8" @ s=0.4%
Reach 2
10" @ s=0.4%
Reach 3
10" @ s=0.4%
Reach 4
10" @ s=1.36%
Reach 5
10" @ s=0.4%
Reach 6
10" @ s=0.4%
Proposed Martingale Way Sewer Lateral
Constraints due to existing Reach 1 (8" @s=0.4%):
Maximum Allowable Units from Project = 244
Entire Retail Flows Allowed
Proposed Scott Drive Sewer Lateral
Entire Project Flows Allowed
Proposed Dove Street Sewer Lateral
Entire Project Flows Allowed
CORINTHIAN WAY
MARTINGALE WAY
SCOTT DRIVE
DOVE STREET
WESTERLY PLACE
LOT 1
LOT 2
52.00FF
50.50FF
30.0' SETBACK
EMERGENCY ACCESS
TURNAROUND STALL
RE-USE EX. WTR SVC FOR IRRIG. (LOT 1) INSTALL BFP
RE-USE EX. WTR SVC FOR IRRIG. (LOT 2) INSTALL BFP
EX. WTR SVC ABANDON. AT MAIN
EX. 6" FIRE SVC ABANDON. AT MAIN
PROP. 6" WTR SVC.
PROP. 8" FIRE SVC.
PROP. 8" SS LAT.
EX. 8" SS LAT.
RE-USE EX. SS LAT.
PROPOSED SSMH
EX. FIRE HYDRANT
EX. R/W
EX. 8" W
EX. 10" SD
EX. 8" SS
EX. 12" W
EX. 54" SD
EX. 24" SD
EX. 18" SD
EX. 15" SD
EX. 8" SD
EX. 6" SD
EX. 4" SD
EX. 3" SD
EX. 2" SD
EX. 8" FW
EX. 6" W
EX. 4" W
EX. 2" W
EX. 8" SS
EX. 6" SS
EX. 4" SS
EX. 2" SS
EX. 6" FW
EX. 4" FW
EX. 2" FW
EX. 6" SCO
EX. 4" SCO
EX. 2" SCO
EX. 6" SW
EX. 4" SW
EX. 2" SW