Appendix I
Sanitary Sewer Analysis

ALAN R. SHORT, P.E.

SEWER CAPACITY STUDY
TENTATIVE TRACT NO. 82945

1335, 1337, 1341, & 1343 141ST Street
GARDENA, CA 90247

Latest Revision: March 12, 2020

Prepared For:
The Olson Company
3010 Old Ranch Parkway, Suite 100
Seal Beach CA, 90740

Prepared By:

Alan R. Short, P.E.
RCE 30873, Exp. 3/31/22

3/12/20
Date

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TABLE OF CONTENTS

I. INTRODUCTION

The following Capacity Study has been prepared by Alan R. Short, PE to determine and demonstrate:

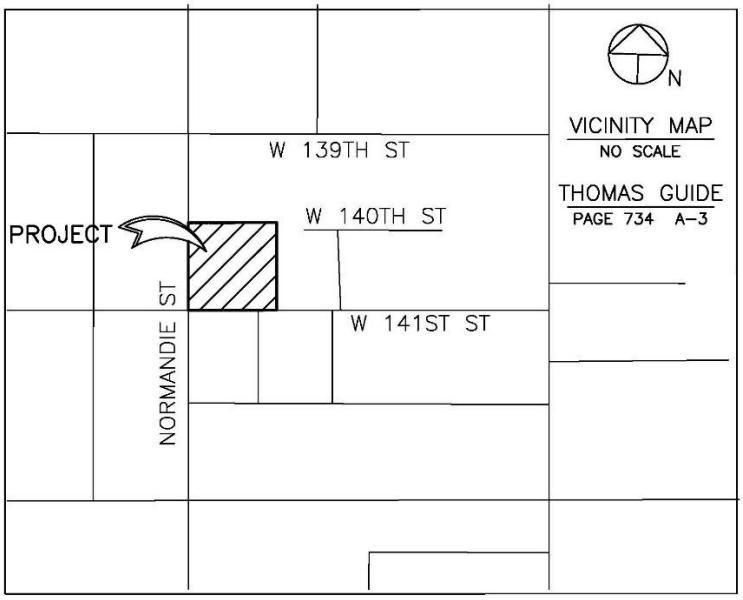
A) The anticipated flow from the proposed development: Tentative Tract 82945.

B) The existing measured flow in the Normandie City Sewer main as it flows into the Sanitation District trunk sewer.

C) The proposed flow in Normandie City sewer facility after the addition of the proposed flow from Tract No. 82945.

II. SITE DESCRIPTION

This site is located at the Northeast corner of Normandie Ave. and 141st street. The site is a former commercial nursery.



III. PROJECT DESCRIPTION

This proposed project includes 50 single family attached condominiums (3 story) which will be served by private streets and public utilities.

IV. FLOW MONITORING

US3 installed and monitored the subject manhole from February 19th through February 27th, 2020. Results are included in Appendices X through XII. The summary included in Appendix X indicates that the maximum flow measured was 88.3 GPM (0.197 cfs) and that flow was 2" deep.

V. PROPOSED FLOW CALCULATION

The tributary sewer flow rate (Q) for the proposed development is analyzed based on LA County standards, as follows:

Q=ZA
A= Tributary Area (Acres)
Z= Zoning Coefficients (see County attachment in Appendix IX).

This proposed project includes 2.02 ac (Gross) of proposed attached residential dwellings.
The highest residential flow rate factor per LA County DPW e is 0.016 cfs/ac (Appendix IX).

2.02 ac x 0.016 cfs/ac yields 0.032cfs of flow from the proposed development.

The total proposed flow with the new development = 0.197 + 0.032 = 0.229 cfs

This ignores the credit for any flow currently coming from the property.

VI. SEWER PIPE CAPACITY ANALYSIS

The existing flow was measured in the 8" sewer line flowing Southerly in South Normandie Avenue at the monitored manhole connecting it to the 15" Sanitation District manhole. Per County Standard S-C4 (Appendix XIII), this existing sewer line capacity is evaluated flowing ½ full (0.50 d/D).

At 2" deep, the existing flow is at 0.25 d/D.

The additional flow in the existing 8" sewer due to the proposed project increases the flow depth by 0.02' (¼") (see Appendix XIV) resulting in a flow depth of approximately 2-1/4" > 0.28 d/D.

VII. CONCLUSION

Based on the flow monitoring results and calculations included herein, the existing 8" sewer line in Normandie Avenue can accommodate the cumulative calculated flow from the proposed development.

VIII. APPENDIX – AS-BUILT SEWER PLAN

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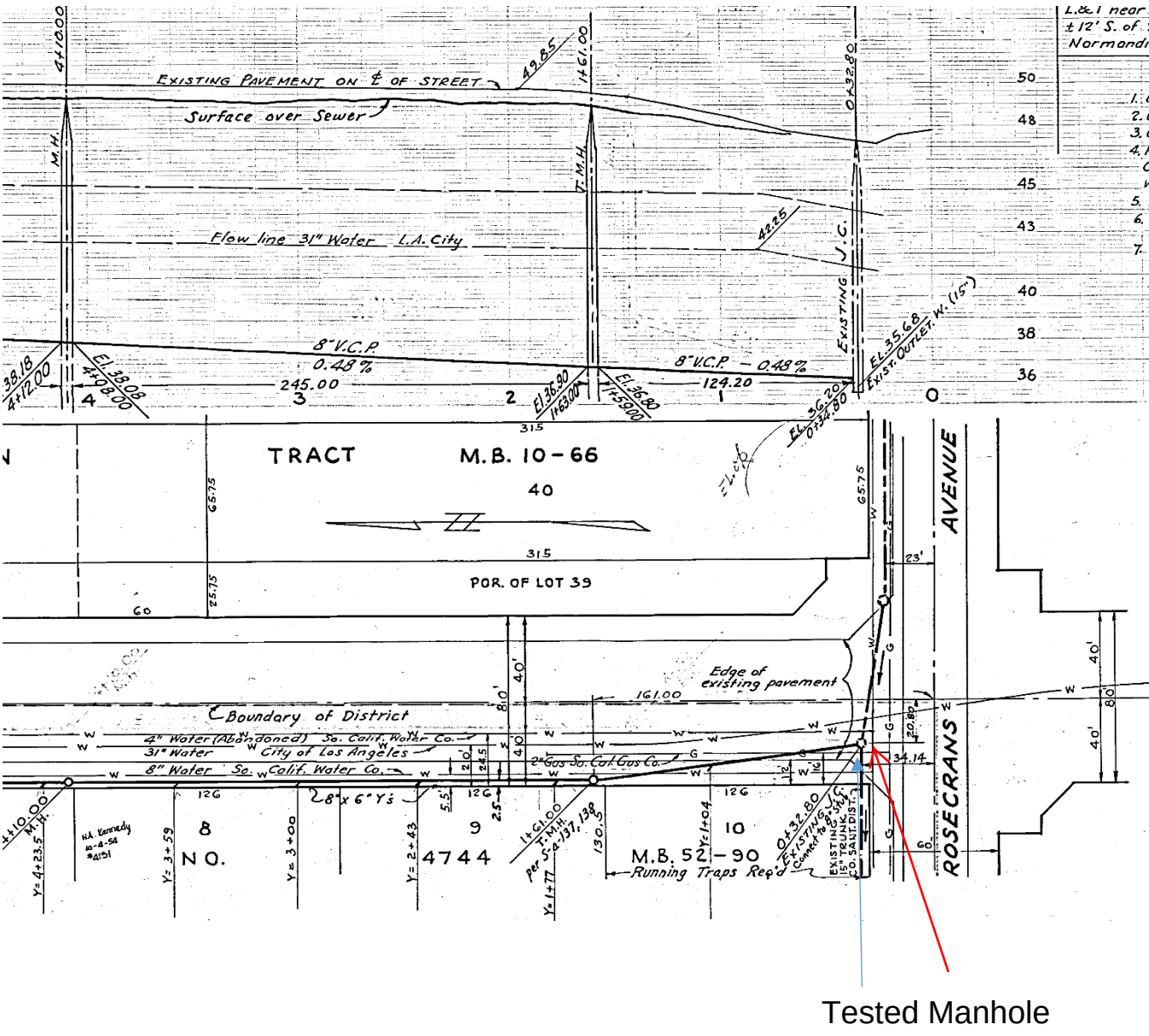


IX. APPENDIX – FLOW GENERATION FACTORS

LOS ANGELES COUNTY
DEPARTMENT OF PUBLIC WORKS
LAND DEVELOPMENT DIVISION

AREA STUDY

An area study must be made for all private contract sewer projects. See attached sample. The area study must include the following items:

1. Area being served - In Acres
2. Determined Tributary area to main line being designed (incl. areas of future devel.)- In Acres
3. Existing and Land Use Zoning
4. Anticipated Sewer Discharge in cfs of total area based on zoning, and/or heavy water users
5. Existing or proposed utilities if in conflict
6. Existing and proposed sewers showing pipe size and grade leading up to the trunk line in order for you to evaluate the impact of your proposed development on the existing system
7. Direction of sewer flow
8. Contour lines
9. Scale not to be less than 1"=600'
10. North arrow pointing up or to the left

ZONING COEFFICIENTS

ZONE	COEFFICIENT (cfs/Acre)
Agriculture	0.001
Residential	
R-1	0.004
R-2	0.008
R-3	0.012
R-4	0.016 *
Commerical	
C-1 through C-4	0.015 *
Heavy Industrial	
M-1 through M-4	0.021 *

* Individual building, commercial or industrial plant capacities shall be the determining factor when they exceed the coefficients shown.

The coefficient to be used for any zoned areas not listed will be determined by the County based upon the intended development and use.

The County shall determine which of the coefficients or combination of coefficients shall be used for design as determined by the established or proposed zoning in the study area. Any modifications to these coefficients due to topography, development, or hazard areas, shall be approved by the Department of Public Works.

X. APPENDIX – TESTING STATISTICS

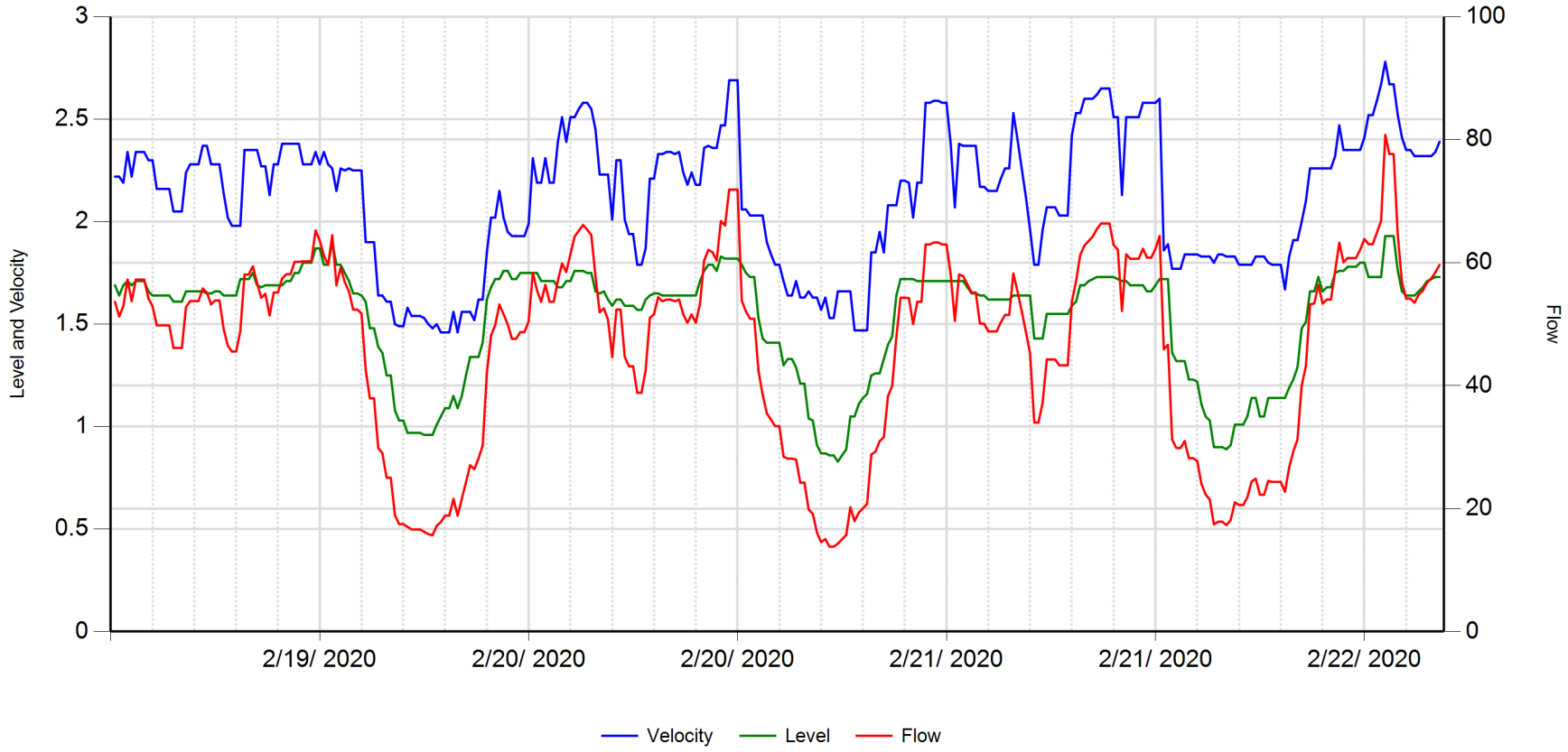
Utility Systems Science and Software

Report Date: 03/02/2020
Customer: The Olson Company
Group: Gardena
Site: 2020.02 Rosecrans MH

Statistics for 2020.02 Rosecrans MH: 02/19/2020 thru 02/27/2020

	Flow (GPM)			Flow (MGD)			Velocity (FPS)			Level (inches)				
Date	**Avg**	**Max**	**Min**	**Avg**	**Max**	**Min**	**Avg**	**Max**	**Min**	**Avg**	**Max**	**Min**	**Total Gal**	**Rain**
2/19/20	54.25	65.23	37.94	0.08	0.09	0.05	2.24	2.38	1.90	1.69	1.90	1.48	78,127	
2/20/20	44.44	71.89	15.68	0.06	0.10	0.02	2.03	2.69	1.46	1.53	1.83	0.96	64,000	
2/21/20	45.10	66.37	13.82	0.06	0.10	0.02	2.12	2.65	1.47	1.50	1.73	0.83	64,951	
2/22/20	45.84	80.77	17.34	0.07	0.12	0.02	2.17	2.78	1.67	1.50	1.93	0.89	66,013	
2/23/20	44.49	69.11	13.74	0.06	0.10	0.02	2.11	2.64	1.55	1.49	1.98	0.84	64,062	
Week:	**6.83**	**80.77**	**3.7**	**0.07**	**0. 2**	**0.02**	**2. 3**	**2.78**	**. 6**	**.5**	**.98**	**0.83**	**337, 53**	
2/24/20	43.32	88.13	12.33	0.06	0.13	0.02	2.04	2.88	1.43	1.49	2.00	0.83	62,383	
2/25/20	44.07	67.80	12.40	0.06	0.10	0.02	2.13	2.68	1.42	1.47	1.80	0.79	63,461	
2/26/20	45.72	67.16	15.62	0.07	0.10	0.02	2.16	2.62	1.56	1.50	1.86	0.91	65,837	
2/27/20	39.89	71.89	17.39	0.06	0.10	0.03	2.11	2.66	1.75	1.37	1.83	0.90	57,437	
Week:	**3.25**	**88. 3**	**2.33**	**0.06**	**0. 3**	**0.02**	**2.**	**2.88**	**. 2**	**. 6**	**2.00**	**0.79**	**2 9, 8**	
Totals:	**5.2**	**88. 3**	**2.33**	**0.07**	**0. 3**	**0.02**	**2. 2**	**2.88**	**. 2**	**.5**	**2.00**	**0.79**	**586,27**	

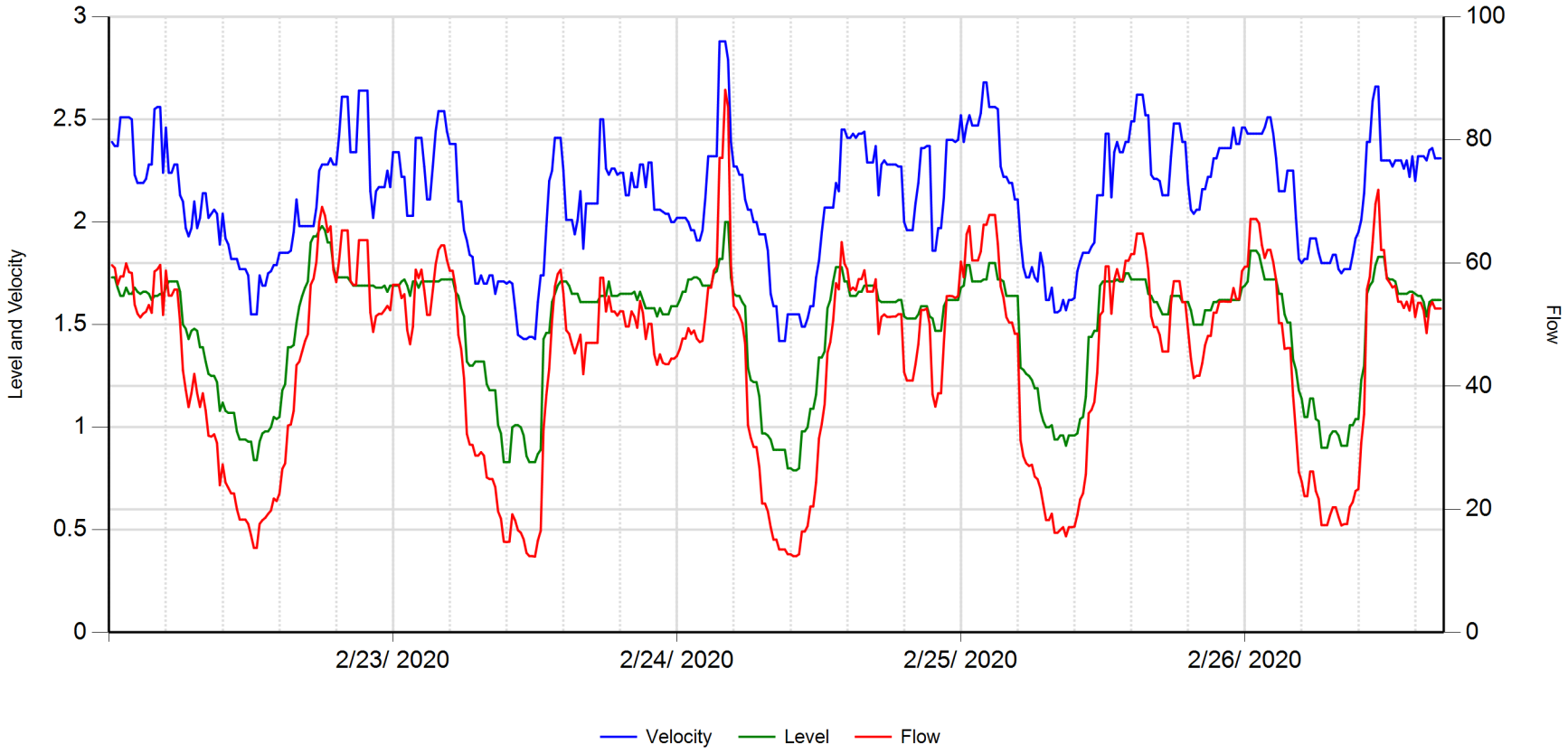
2020.02 Rosecrans MH



	Velocity (fps)	Level (in)	Flow (gpm)		
Average	2.115	1.534	46.209	**RainFall**	Inches
Maximum	2.780	1.930	80.772		
Minimum	1.460	0.830	13.819		

3/02/2020

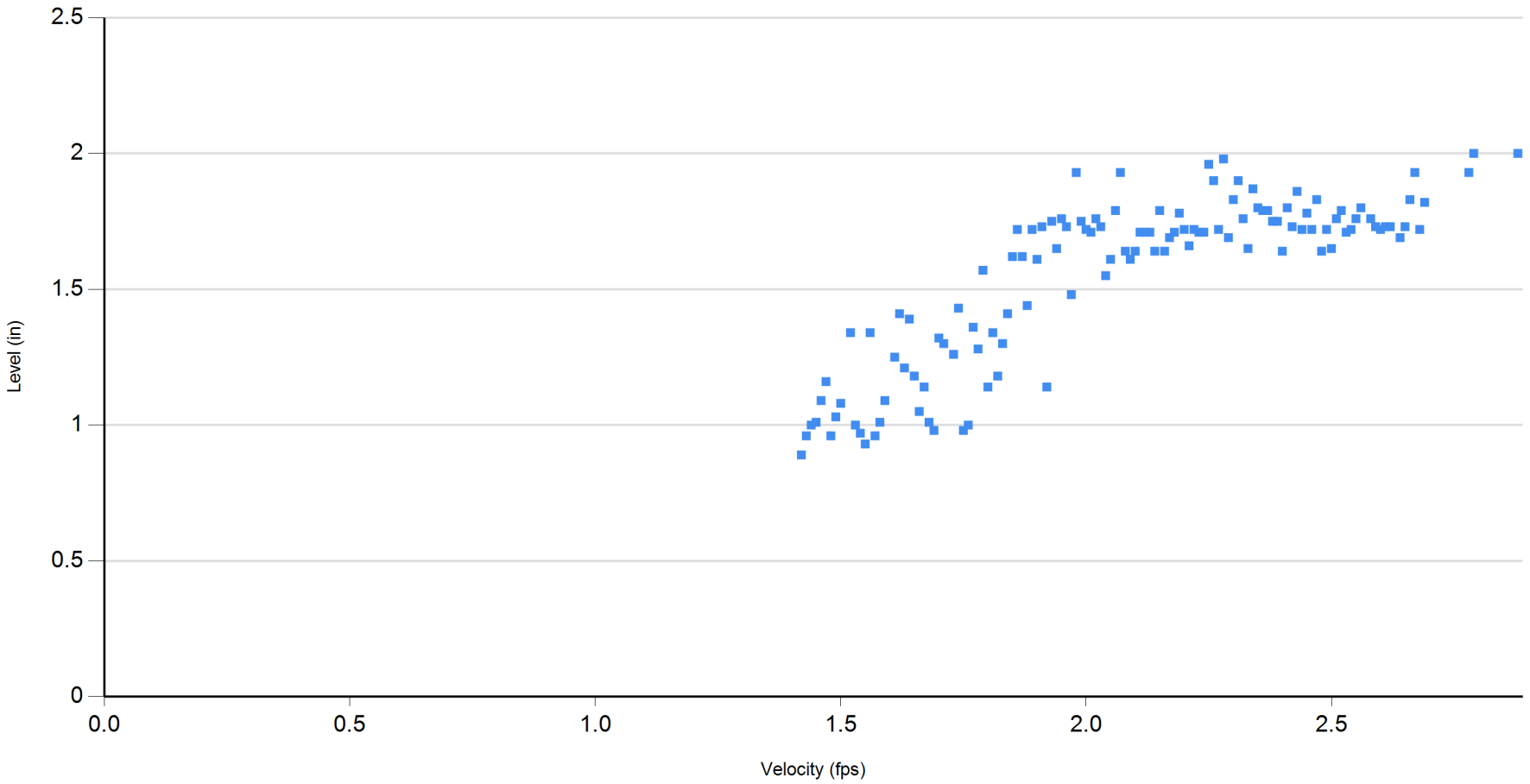
2020.02 Rosecrans MH



	Velocity (fps)	Level (in)	Flow (gpm)		
Average	2.122	1.484	44.414	**RainFall**	Inches
Maximum	2.880	2.000	88.129		
Minimum	1.420	0.790	12.327		

3/02/2020

2020.02 Rosecrans MH



2/19/2020 thru 2/27/2020

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XI. APPENDIX – TESTING EQUIPMENT

Methods & Procedures & Equipment

Methods and Procedures

Utility Systems Science & Software provided The Olson Company with an off the shelf, non-proprietary flow monitoring solution that included one state of the art Hach Flo-Dar® AV Sensor system. The project course of action is listed below. The US^3 team:

- Assessed permitting and traffic control at the selected monitoring site within the intersection of Normandie Av & Rosecrans Av in Gardena, CA.
- Validated the site for suitability for sewer flow monitoring for the proposed project at 1335 W. 141st St.
- Prepared the traffic control plan and obtained a City Encroachment Permit.
- Coordinated with the City Engineering and Public Works Departments for installation of flow monitoring equipment.
- Installed and removed traffic control in accord with CA Temporary Traffic Control Handbook (CATTCH) Drawing 32 for the installation and removal of equipment.
- Installed and calibrated the flow monitoring equipment per manufacturer recommendations.
- Removed the equipment, validated the data and prepared the data reports.
    - The data supports the conclusion that there is capacity available in the monitored sewer line since the depth for the peak flows observed during this study did not exceed the d/D limit of 0.50 at any time.
    - The maximum d/D observed during this study was ~0.25.

Equipment

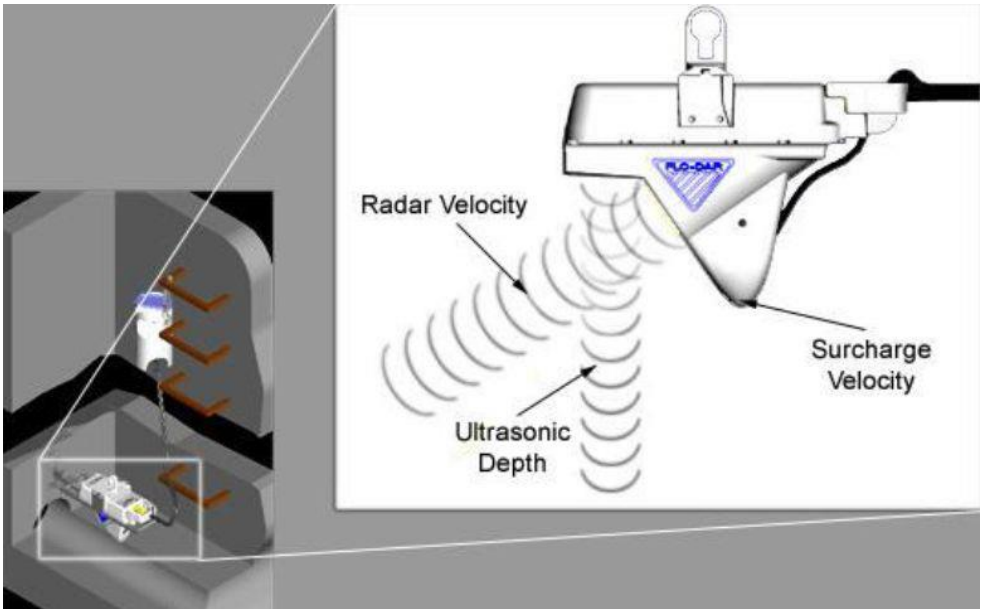


Figure: Equipment installed for the Sewer Flow Monitoring Study

Figure: Web-Enabled Flo-Dar® AV Sensor, Radar-Based Velocity/Area Flow Meter

SPECIFICATIONS

- **Enclosure**
  - IP68 Waterproof rating, Polystyrene
- **Dimensions**
  - 160.5 W x 432.2 L x 297 D mm (6.32 x 16.66 x 11.7 in.),
  - With SVS, D = 387 mm (15.2 in.)
- **Weight**
  - 4.8 kg (10.5 lbs.)
- **Operating Temperature**
  - -10 to 50°C (14 to 122°F)
- **Storage Temperature**
  - -40 to 60°C (-40 to 140°F)
- **Power Requirements**
  - Supplied by FL900 Flow Logger, Flo-Logger, or Flo-Station

- **Interconnecting Cable**
  - Disconnect available at both sensor and logger or Flo-Station
  - Polyurethane, 0.400 (±0.015) in. diameter; IP68
  - Standard length 9 m (30 ft), maximum 305 m (1000 ft)
- **Cables – available in two styles:**
  - connectors at both ends
  - connector from sensor with open leads to desiccant hub, desiccant hub with connector to logger. A potting/sealant kit will be included. This can be used to run the cable through conduit.
- **Certification**
  - Certified to: FCC Part 15.245: FCC ID: VIC-FLODAR24
  - Industry Canada Spec. RSS210. v7: IC No.: 6149A-FLODAR24

SURCHARGE DEPTH MEASUREMENT

- Auto zero function maintains zero error below 0.5 cm (0.2 in.)

- **Method**
  - Piezo-resistive pressure transducer with stainless steel diaphragm
- **Range**
  - 3.5 m (138 in.), overpressure rating 2.5 x full scale

VELOCITY MEASUREMENT

- **Method**
  - Radar
- **Range**
  - 0.23 to 6.10 m/s (0.75 to 20 ft/s)
- **Frequency Range**
  - 24.075 to 24.175 GHz, 15.2 mW (max.)
- **Accuracy**
  - ±0.5%; ±0.03 m/s (±0.1 ft/s)

DEPTH MEASUREMENT

- **Method**
  - Ultrasonic
- **Standard Operating Range from Flo-Dar® Housing to Liquid**
  - 0 to 152.4 cm (0 to 60 in.)
- **Optional Extended Level Operating Range from Transducer Face to Liquid**
  - 0 to 6.1 m (0 to 20 ft.) with 43.18 cm (17 in.) dead band, temperature compensated.
- **Accuracy**
  - ±1%; ±0.25 cm (±0.1 in.)

FLOW MEASUREMENT

- **Method**
  - Based on Continuity Equation
- **Accuracy**
  - ±5% of reading typical where flow is in a channel with uniform flow conditions and is not surcharged, ±1% full scale max.

SURCHARGE CONDITIONS DEPTH/VELOCITY DEPTH (Std with Flo-Dar® Sensor)

- **Surcharge depth supplied by Flo-Dar® sensor.**

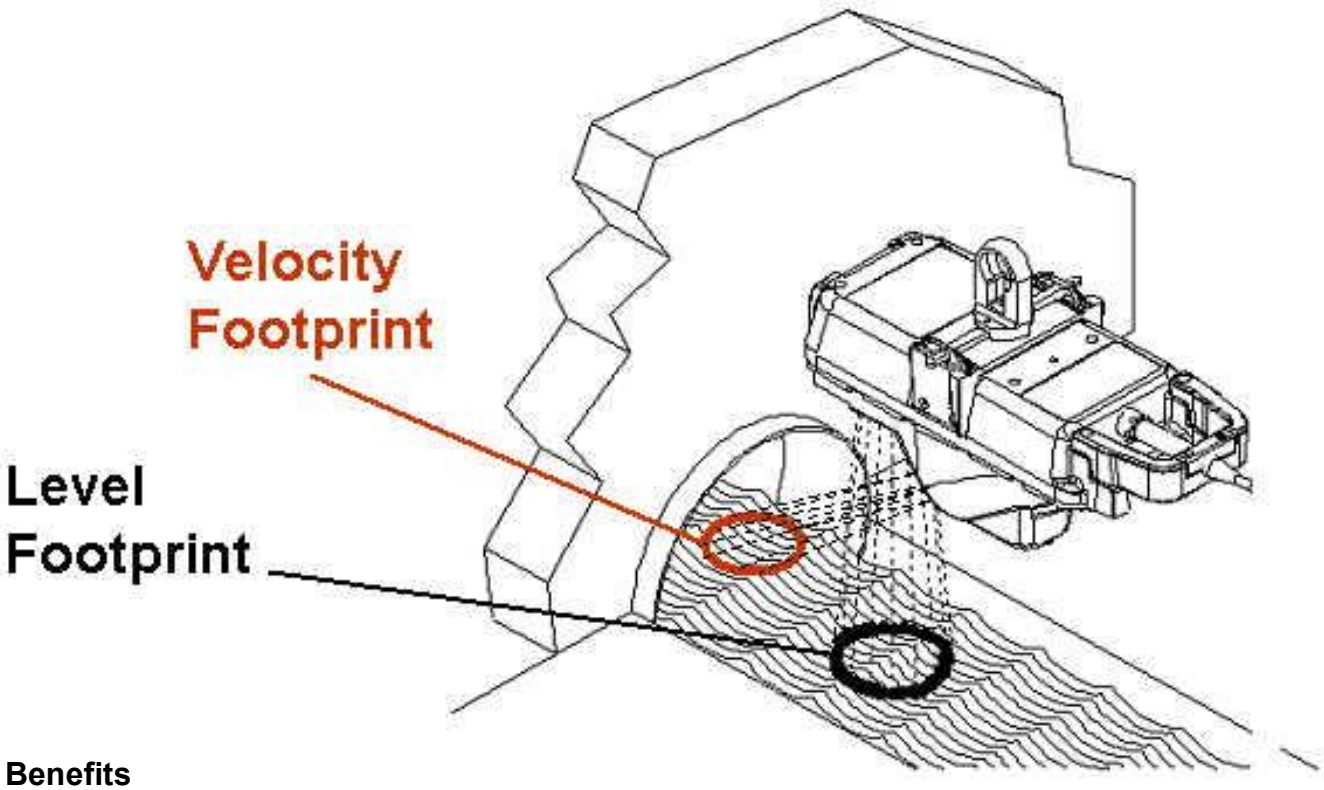
VELOCITY (Optional Surcharge Velocity Sensor)

- **Method**
  - Electromagnetic
- **Range**
  - ±4.8 m/s (±16 ft/s)
- **Accuracy**
  - ±0.15 ft/s or 4% of reading, whichever is greater.
- **Zero Stability**
  - ±0.05 ft/s

The Flo-Dar® Open Channel Flow Meters provide an innovative approach to open channel flow monitoring. Combining digital Doppler radar velocity sensing with ultrasonic pulse echo level sensing Flo-Dar® provides accurate open channel flow monitoring without the fouling problems associated with submerged sensors.

Perfect Solution for Difficult Flow Conditions:

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



Benefits

1. Personnel have no contact with the flow during installation.
2. Maintenance caused by sensor fouling is eliminated
3. Field Replaceable/Interchangeable Sensors and Monitors

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.

US³ Company Information

US³ is a California Corporation **Federal ID No. 33-0729605** and qualifies as a Minority Business Enterprise. US³ has certified as an MBE with the California Public Utility Commissionûs authorized clearinghouse, **Verification Number: 97ES0008.**

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US³ engineers and technical personnel have applied advanced instrumentation system technology to water/wastewater open channel flow monitoring, pipeline evaluation, engineering, and data analysis, all coupled to the power of the Internet. This unique integrated systems approach allows the company to bring greater insight and intelligence to gathering information about water/wastewater system performance of our clients, and in turn, to support the fulfillment of their commitments to manage and cost effectively design, operate, and maintain these systems.

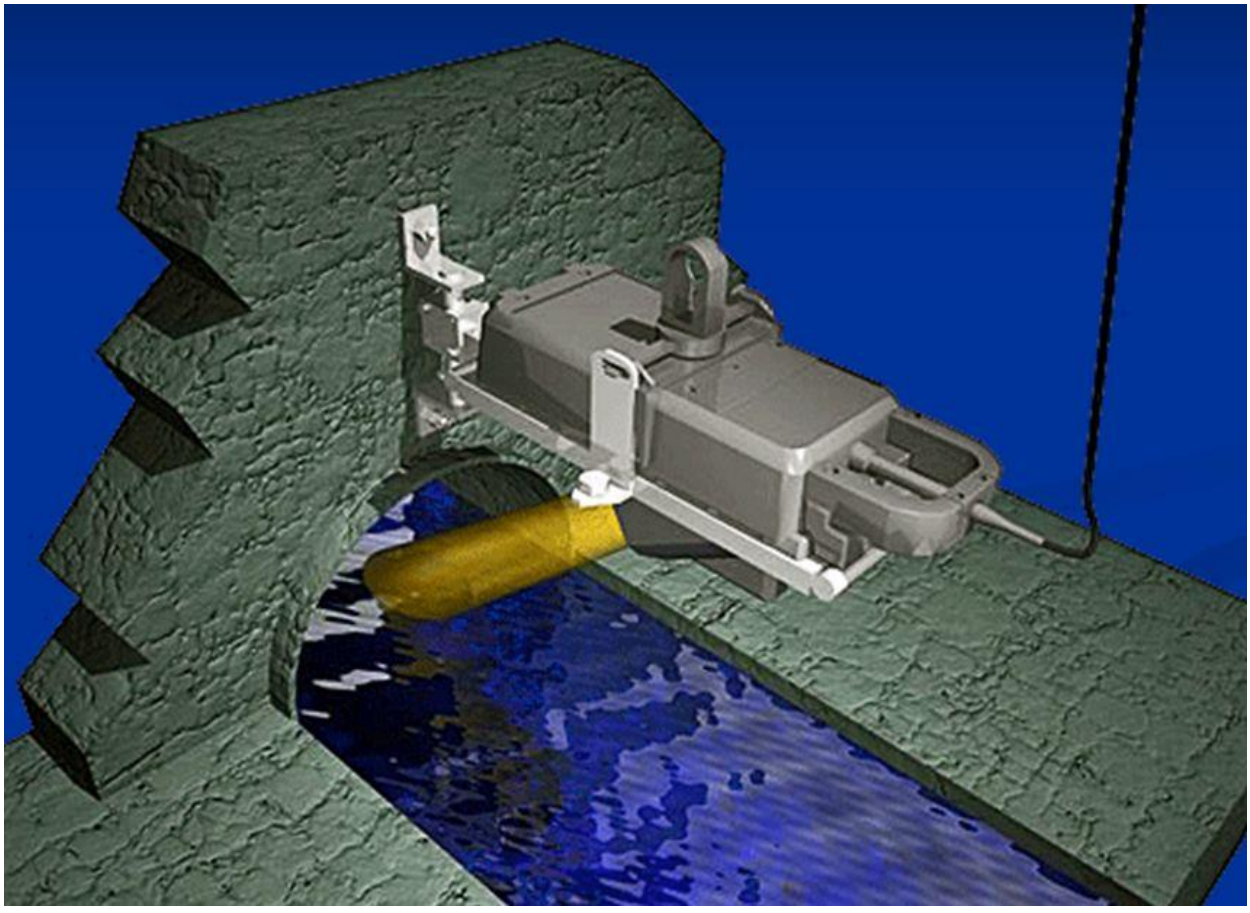

Figure: US³ utilizes exclusively Hach March-McBirney Flo-Dar® Meters

Moreover, ***US³*** supports Municipalities, Consulting Engineering firms and other water/waste water systems integrators by providing temporary technical services for engineering, software programming and technical site maintenance and calibration site support work, primarily in the Water and Waste Water industries.

Figure: All technicians are certified for Confined Space Entry.

Name, Title, Address and Telephone numbers of persons to contact concerning this report.

Darlene Szczublewski, PE
Senior Civil Engineer
darlene.szczublewski@uscubed.com

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El Cajon, CA 92021
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619-246-5304 (cell)

Tom Williams
Engineering Manager
tom.williams@uscubed.com

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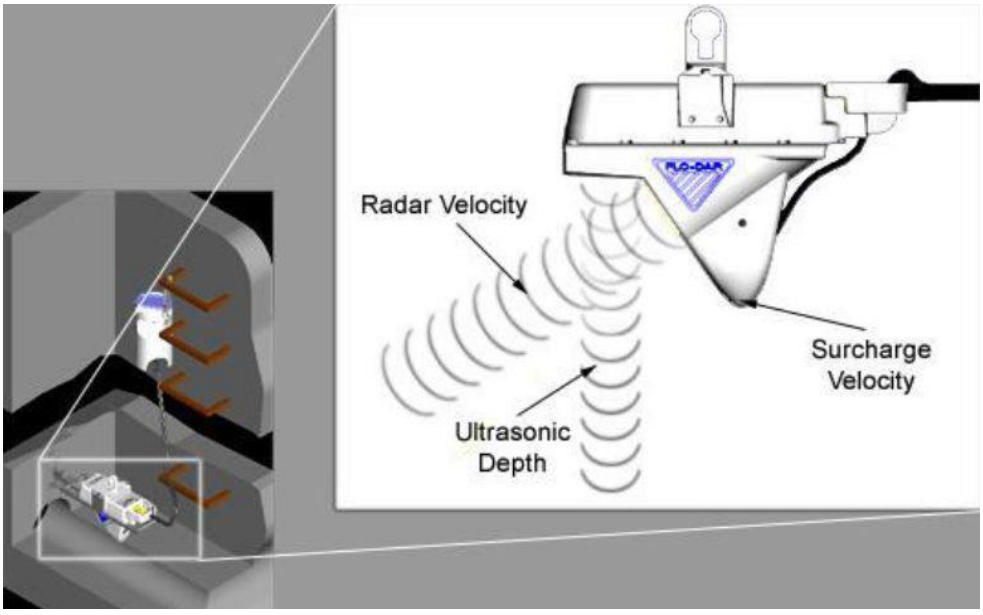

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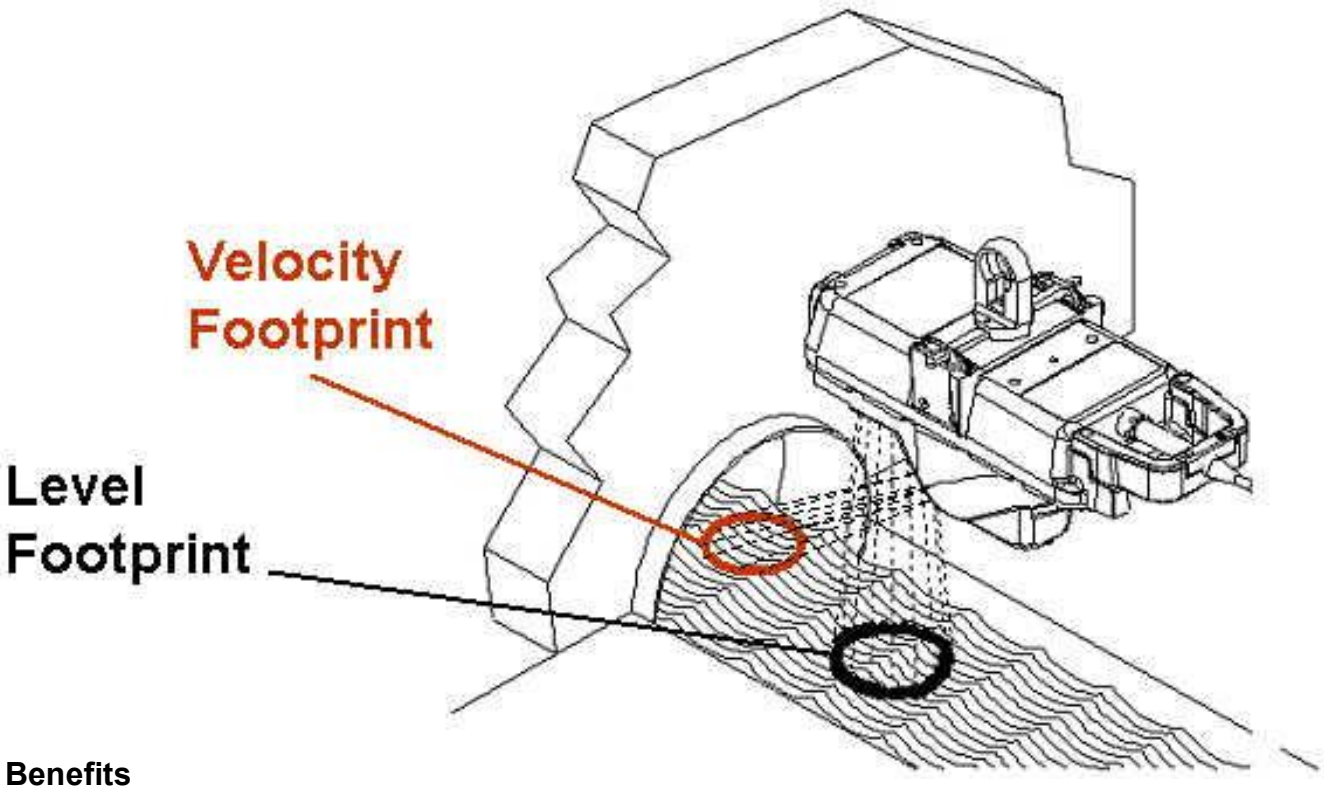

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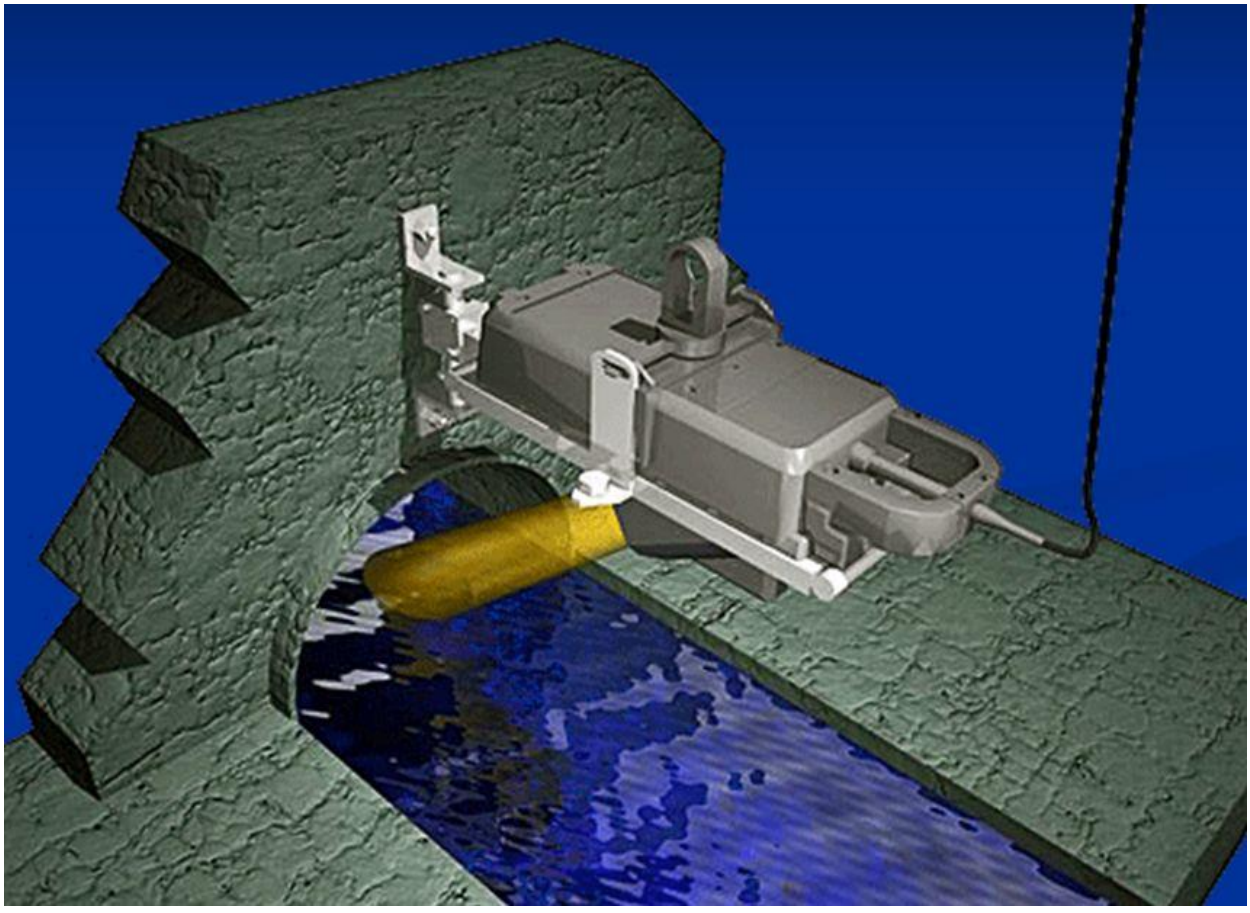

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XII. APPENDIX – TESTING EQUIPMENT INSTALLATION

Site Report 3/02/2020

Confidential Proprietary Information

The Olson Company

2020.02 Rosecrans MH

MH at ~1401 Rosecrans Av
Gardena, CA 90249
MH # unknown

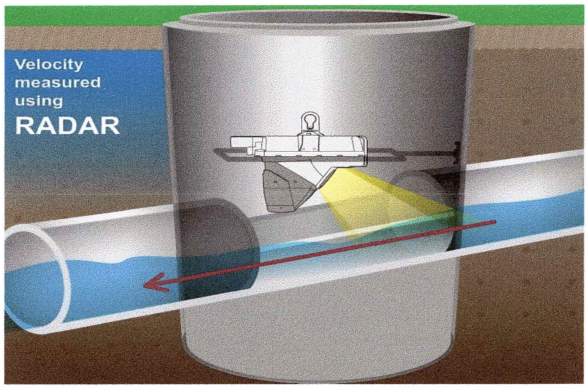
Access:
MH in NW corner of Normandie Av & Rosecrans Av, SE of address

System Type:
Sanitary [X] Storm [ ]

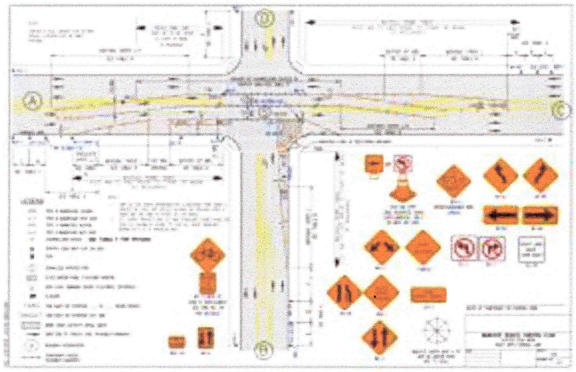
Install Date: 2/19/2020

Map

Technology



Traffic Plan



Flow Meter			
Meter Depth: 133"			
MH Coordinates: 33.902008, -118.300495			
Slope from pipe down to trough increases velocities & protects capacity of monitored line.			
Avg Velocity	Avg Measured Level		Multiplier
2.0 fps	1.5"		1.0
Gas			
O2	H2S	CO	LEL
20.9	0	0	0
Notes			
Four inlets into MH; monitored upstream N line as directed.			
Traffic Safety			
Used arrow boards, cones & signs in accord w/site-specific CATTCH Dwg 32.			
Land Use			
Residential	Commercial	Industrial	Trunk
	X		

Manhole Depth	147"
Monitored Pipe Size	8"
Inner Pipe Size (In/Out)	8"/8"
Pipe Shape	Round
Pipe Condition	Good
Manhole Material	Brick
Silt	0
Velocity Profile Data	*
Velocity Profile Taken	0.4 2-D
Sensor Offset	14.21"
Sensor Dist. to Crown	6.21"
Sensor Direction	Upstream
Flow Heading	West

Meter Site Document

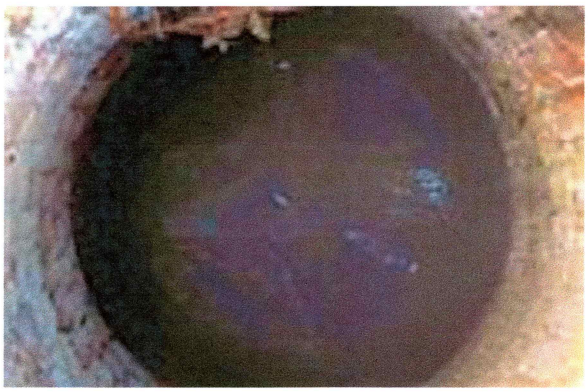
2020.02 Rosecrans MH

MH at ~1401 Rosecrans Av

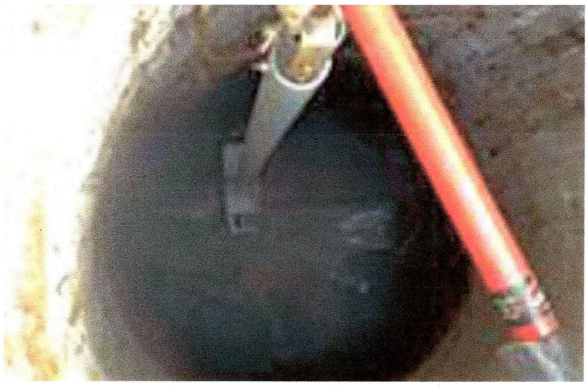
Gardena, CA 90249

Site

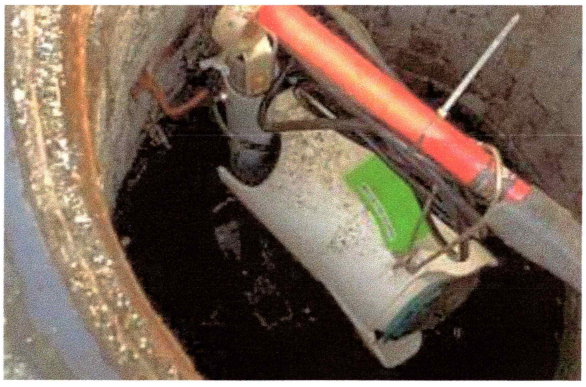
Manhole Before Install



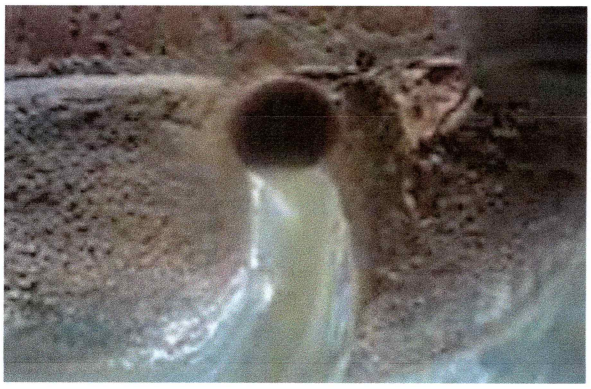
Installation Process



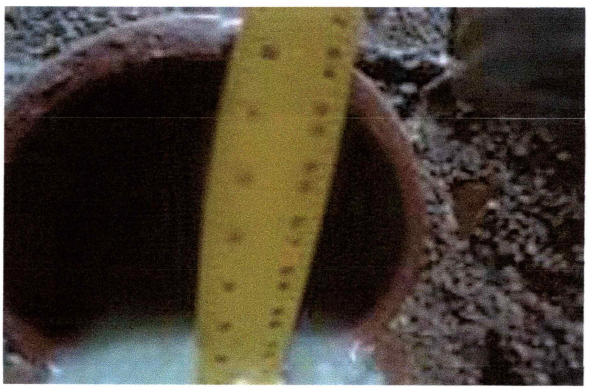
Installed



Upstream North Line



Monitored Pipe Size



Temporary Flow Study

The Olson Company

2020.02 Rosecrans MH

Meter Start Date		From	2/19/2020
Meter Stop Date		To	2/27/2020
Velocity (fps)		Level (in)	Flow (mgd)
Average	2.120	1.514	0.066
Maximum	2.880	2.000	0.127
Minimum	1.420	0.790	0.018
Pipe Size		8.000	
Estimated Capacity (mgd)		Not Calculated	
Capacity Used		Not Calculated	
Sensor Type		Hach - Flodar	

Utility Systems, Science and Software

9314 Bond Ave, Suite A
El Cajon, CA 92021

601 N. Parkcenter Drive Suite 209
Santa Ana, CA 92705

XIII. APPENDIX – TESTING DATA

Utility Systems Science and Software

Report Date: 03/02/2020
Customer: US3
Group: Gardena
Site: 2020.02 Rosecrans MH

Data for 2020.02 Rosecrans MH: 02/19/2020 thru 02/27/2020

TimeStamp	Level (in)	Flow (gpm)	Velocity (fps)
2020/02/19 08:33	1.69	53.64	2.22
2020/02/19 08:48	1.64	51.25	2.22
2020/02/19 09:03	1.69	52.94	2.19
2020/02/19 09:18	1.71	57.25	2.34
2020/02/19 09:33	1.69	53.75	2.22
2020/02/19 09:48	1.71	57.25	2.34
2020/02/19 10:03	1.71	57.25	2.34
2020/02/19 10:18	1.71	57.25	2.34
2020/02/19 10:33	1.66	54.19	2.30
2020/02/19 10:48	1.64	52.90	2.30
2020/02/19 11:03	1.64	49.81	2.16
2020/02/19 11:18	1.64	49.81	2.16
2020/02/19 11:33	1.64	49.81	2.16
2020/02/19 11:48	1.64	49.81	2.16
2020/02/19 12:03	1.61	46.13	2.05
2020/02/19 12:18	1.61	46.13	2.05
2020/02/19 12:33	1.61	46.13	2.05
2020/02/19 12:48	1.66	52.82	2.24
2020/02/19 13:03	1.66	53.76	2.28
2020/02/19 13:18	1.66	53.76	2.28
2020/02/19 13:33	1.66	53.76	2.28
2020/02/19 13:48	1.66	55.81	2.37
2020/02/19 14:03	1.65	55.15	2.37
2020/02/19 14:18	1.65	53.22	2.28
2020/02/19 14:33	1.66	53.86	2.28
2020/02/19 14:48	1.66	53.86	2.28
2020/02/19 15:03	1.64	49.25	2.14
2020/02/19 15:18	1.64	46.50	2.02
2020/02/19 15:33	1.64	45.56	1.98
2020/02/19 15:48	1.64	45.56	1.98
2020/02/19 16:03	1.72	48.90	1.98
2020/02/19 16:18	1.72	58.07	2.35
2020/02/19 16:33	1.72	58.07	2.35
2020/02/19 16:48	1.75	59.41	2.35
2020/02/19 17:03	1.69	56.74	2.35
2020/02/19 17:18	1.68	54.29	2.27
2020/02/19 17:33	1.69	54.93	2.27
2020/02/19 17:48	1.69	51.43	2.13

TimeStamp	Level (in)	Flow (gpm)	Velocity (fps)
2020/02/19 18:03	1.69	55.15	2.28
2020/02/19 18:18	1.69	55.15	2.28
2020/02/19 18:33	1.69	57.44	2.38
2020/02/19 18:48	1.71	58.11	2.38
2020/02/19 19:03	1.71	58.11	2.38
2020/02/19 19:18	1.75	60.14	2.38
2020/02/19 19:33	1.75	60.14	2.38
2020/02/19 19:48	1.80	60.22	2.28
2020/02/19 20:03	1.80	60.22	2.28
2020/02/19 20:18	1.80	60.30	2.28
2020/02/19 20:33	1.87	65.23	2.34
2020/02/19 20:48	1.87	63.62	2.28
2020/02/19 21:03	1.79	61.15	2.34
2020/02/19 21:18	1.79	59.64	2.28
2020/02/19 21:33	1.90	64.48	2.26
2020/02/19 21:48	1.79	56.32	2.15
2020/02/19 22:03	1.79	59.20	2.26
2020/02/19 22:18	1.75	56.82	2.25
2020/02/19 22:33	1.71	55.31	2.26
2020/02/19 22:48	1.65	52.37	2.25
2020/02/19 23:03	1.65	52.37	2.25
2020/02/19 23:18	1.64	51.74	2.25
2020/02/19 23:33	1.61	42.60	1.90
2020/02/19 23:48	1.48	37.94	1.90
2020/02/20 00:03	1.48	37.94	1.90
2020/02/20 00:18	1.39	29.87	1.64
2020/02/20 00:33	1.36	29.01	1.64
2020/02/20 00:48	1.25	25.03	1.61
2020/02/20 01:03	1.25	25.03	1.61
2020/02/20 01:18	1.08	18.93	1.50
2020/02/20 01:33	1.03	17.50	1.49
2020/02/20 01:48	1.03	17.50	1.49
2020/02/20 02:03	0.97	17.06	1.58
2020/02/20 02:18	0.97	16.63	1.54
2020/02/20 02:33	0.97	16.63	1.54
2020/02/20 02:48	0.97	16.63	1.54
2020/02/20 03:03	0.96	16.23	1.53
2020/02/20 03:18	0.96	15.86	1.50
2020/02/20 03:33	0.96	15.68	1.48
2020/02/20 03:48	1.01	17.22	1.50
2020/02/20 04:03	1.05	17.84	1.46
2020/02/20 04:18	1.09	18.88	1.46
2020/02/20 04:33	1.09	18.88	1.46
2020/02/20 04:48	1.15	21.59	1.56
2020/02/20 05:03	1.09	18.88	1.46

TimeStamp	Level (in)	Flow (gpm)	Velocity (fps)
2020/02/20 05:18	1.15	21.59	1.56
2020/02/20 05:33	1.25	24.29	1.56
2020/02/20 05:48	1.34	27.07	1.56
2020/02/20 06:03	1.34	26.44	1.52
2020/02/20 06:18	1.34	28.16	1.62
2020/02/20 06:33	1.41	30.28	1.62
2020/02/20 06:48	1.62	42.05	1.85
2020/02/20 07:03	1.68	48.17	2.02
2020/02/20 07:18	1.72	49.88	2.02
2020/02/20 07:33	1.72	53.20	2.15
2020/02/20 07:48	1.76	51.61	2.02
2020/02/20 08:03	1.76	49.93	1.95
2020/02/20 08:18	1.72	47.62	1.93
2020/02/20 08:33	1.72	47.62	1.93
2020/02/20 08:48	1.75	48.72	1.93
2020/02/20 09:03	1.75	48.72	1.93
2020/02/20 09:18	1.75	50.45	1.99
2020/02/20 09:33	1.75	58.37	2.31
2020/02/20 09:48	1.75	55.51	2.19
2020/02/20 10:03	1.71	53.64	2.19
2020/02/20 10:18	1.71	56.40	2.31
2020/02/20 10:33	1.71	53.64	2.19
2020/02/20 10:48	1.71	53.64	2.19
2020/02/20 11:03	1.68	57.13	2.39
2020/02/20 11:18	1.68	59.86	2.51
2020/02/20 11:33	1.71	58.48	2.39
2020/02/20 11:48	1.71	61.39	2.51
2020/02/20 12:03	1.76	64.26	2.51
2020/02/20 12:18	1.76	65.20	2.55
2020/02/20 12:33	1.76	66.13	2.58
2020/02/20 12:48	1.75	65.39	2.58
2020/02/20 13:03	1.75	64.47	2.55
2020/02/20 13:18	1.66	57.75	2.45
2020/02/20 13:33	1.65	51.94	2.23
2020/02/20 13:48	1.66	52.57	2.23
2020/02/20 14:03	1.62	50.70	2.23
2020/02/20 14:18	1.59	44.65	2.01
2020/02/20 14:33	1.62	52.37	2.30
2020/02/20 14:48	1.62	52.37	2.30
2020/02/20 15:03	1.59	44.65	2.01
2020/02/20 15:18	1.59	43.16	1.94
2020/02/20 15:33	1.59	43.16	1.94
2020/02/20 15:48	1.57	38.85	1.79
2020/02/20 16:03	1.57	38.85	1.79
2020/02/20 16:18	1.62	42.50	1.87

TimeStamp	Level (in)	Flow (gpm)	Velocity (fps)
2020/02/20 16:33	1.64	51.00	2.21
2020/02/20 16:48	1.65	51.62	2.21
2020/02/20 17:03	1.65	54.40	2.33
2020/02/20 17:18	1.64	53.75	2.33
2020/02/20 17:33	1.64	53.99	2.34
2020/02/20 17:48	1.64	53.99	2.34
2020/02/20 18:03	1.64	53.75	2.33
2020/02/20 18:18	1.64	53.99	2.34
2020/02/20 18:33	1.64	51.60	2.24
2020/02/20 18:48	1.64	50.23	2.18
2020/02/20 19:03	1.64	51.60	2.24
2020/02/20 19:18	1.64	50.23	2.18
2020/02/20 19:33	1.71	53.30	2.18
2020/02/20 19:48	1.76	60.36	2.36
2020/02/20 20:03	1.79	62.07	2.37
2020/02/20 20:18	1.79	61.71	2.36
2020/02/20 20:33	1.76	60.36	2.36
2020/02/20 20:48	1.83	66.77	2.47
2020/02/20 21:03	1.82	66.06	2.47
2020/02/20 21:18	1.82	71.89	2.69
2020/02/20 21:33	1.82	71.89	2.69
2020/02/20 21:48	1.82	71.89	2.69
2020/02/20 22:03	1.79	53.85	2.06
2020/02/20 22:18	1.75	52.08	2.06
2020/02/20 22:33	1.73	50.88	2.03
2020/02/20 22:48	1.73	50.88	2.03
2020/02/20 23:03	1.53	42.37	2.03
2020/02/20 23:18	1.43	38.54	2.03
2020/02/20 23:33	1.41	35.50	1.90
2020/02/20 23:48	1.41	34.47	1.84
2020/02/21 00:03	1.41	33.42	1.79
2020/02/21 00:18	1.41	33.42	1.79
2020/02/21 00:33	1.30	28.45	1.71
2020/02/21 00:48	1.33	28.13	1.64
2020/02/21 01:03	1.33	28.13	1.64
2020/02/21 01:18	1.29	28.02	1.71
2020/02/21 01:33	1.21	24.23	1.63
2020/02/21 01:48	1.21	24.23	1.63
2020/02/21 02:03	1.04	19.91	1.66
2020/02/21 02:18	1.03	19.14	1.63
2020/02/21 02:33	0.91	16.12	1.63
2020/02/21 02:48	0.87	14.56	1.57
2020/02/21 03:03	0.87	15.05	1.63
2020/02/21 03:18	0.86	13.82	1.53
2020/02/21 03:33	0.86	13.82	1.53

TimeStamp	Level (in)	Flow (gpm)	Velocity (fps)
2020/02/21 03:48	0.83	14.31	1.66
2020/02/21 04:03	0.86	15.02	1.66
2020/02/21 04:18	0.89	15.74	1.66
2020/02/21 04:33	1.05	20.24	1.66
2020/02/21 04:48	1.05	17.97	1.47
2020/02/21 05:03	1.11	19.34	1.47
2020/02/21 05:18	1.14	20.07	1.47
2020/02/21 05:33	1.16	20.79	1.47
2020/02/21 05:48	1.25	28.81	1.85
2020/02/21 06:03	1.26	29.28	1.85
2020/02/21 06:18	1.26	30.97	1.95
2020/02/21 06:33	1.33	31.63	1.85
2020/02/21 06:48	1.40	38.31	2.08
2020/02/21 07:03	1.44	39.96	2.08
2020/02/21 07:18	1.64	47.91	2.08
2020/02/21 07:33	1.72	54.30	2.20
2020/02/21 07:48	1.72	54.30	2.20
2020/02/21 08:03	1.72	54.26	2.19
2020/02/21 08:18	1.72	50.03	2.02
2020/02/21 08:33	1.71	53.64	2.19
2020/02/21 08:48	1.71	53.64	2.19
2020/02/21 09:03	1.71	62.96	2.58
2020/02/21 09:18	1.71	62.96	2.58
2020/02/21 09:33	1.71	63.30	2.59
2020/02/21 09:48	1.71	63.30	2.59
2020/02/21 10:03	1.71	62.96	2.58
2020/02/21 10:18	1.71	62.96	2.58
2020/02/21 10:33	1.71	58.07	2.38
2020/02/21 10:48	1.71	50.54	2.07
2020/02/21 11:03	1.71	58.07	2.38
2020/02/21 11:18	1.71	57.81	2.37
2020/02/21 11:33	1.68	56.48	2.37
2020/02/21 11:48	1.65	55.15	2.37
2020/02/21 12:03	1.65	55.15	2.37
2020/02/21 12:18	1.64	50.09	2.17
2020/02/21 12:33	1.64	50.09	2.17
2020/02/21 12:48	1.62	48.82	2.15
2020/02/21 13:03	1.62	48.82	2.15
2020/02/21 13:18	1.62	48.82	2.15
2020/02/21 13:33	1.62	50.32	2.21
2020/02/21 13:48	1.62	51.50	2.26
2020/02/21 14:03	1.62	51.50	2.26
2020/02/21 14:18	1.64	58.24	2.53
2020/02/21 14:33	1.64	55.33	2.40
2020/02/21 14:48	1.64	52.13	2.26

TimeStamp	Level (in)	Flow (gpm)	Velocity (fps)
2020/02/21 15:03	1.64	48.75	2.12
2020/02/21 15:18	1.64	45.24	1.96
2020/02/21 15:33	1.43	34.00	1.79
2020/02/21 15:48	1.43	34.00	1.79
2020/02/21 16:03	1.43	37.21	1.96
2020/02/21 16:18	1.55	44.26	2.07
2020/02/21 16:33	1.55	44.26	2.07
2020/02/21 16:48	1.55	44.26	2.07
2020/02/21 17:03	1.55	43.32	2.03
2020/02/21 17:18	1.55	43.32	2.03
2020/02/21 17:33	1.55	43.32	2.03
2020/02/21 17:48	1.59	53.66	2.42
2020/02/21 18:03	1.61	56.97	2.53
2020/02/21 18:18	1.69	61.24	2.53
2020/02/21 18:33	1.69	62.78	2.60
2020/02/21 18:48	1.71	63.52	2.60
2020/02/21 19:03	1.72	64.26	2.60
2020/02/21 19:18	1.73	65.49	2.62
2020/02/21 19:33	1.73	66.37	2.65
2020/02/21 19:48	1.73	66.37	2.65
2020/02/21 20:03	1.73	66.37	2.65
2020/02/21 20:18	1.73	62.86	2.51
2020/02/21 20:33	1.72	62.14	2.51
2020/02/21 20:48	1.71	52.14	2.13
2020/02/21 21:03	1.71	61.36	2.51
2020/02/21 21:18	1.69	60.65	2.51
2020/02/21 21:33	1.69	60.65	2.51
2020/02/21 21:48	1.69	60.65	2.51
2020/02/21 22:03	1.69	62.27	2.58
2020/02/21 22:18	1.66	60.81	2.58
2020/02/21 22:33	1.66	60.81	2.58
2020/02/21 22:48	1.69	62.27	2.58
2020/02/21 23:03	1.72	64.33	2.60
2020/02/21 23:18	1.72	45.92	1.86
2020/02/21 23:33	1.72	46.64	1.89
2020/02/21 23:48	1.36	31.24	1.77
2020/02/22 00:03	1.32	29.87	1.77
2020/02/22 00:18	1.32	29.87	1.77
2020/02/22 00:33	1.32	31.00	1.84
2020/02/22 00:48	1.23	28.21	1.84
2020/02/22 01:03	1.23	28.21	1.84
2020/02/22 01:18	1.22	27.75	1.84
2020/02/22 01:33	1.11	24.06	1.83
2020/02/22 01:48	1.05	22.32	1.83
2020/02/22 02:03	1.03	21.47	1.83

TimeStamp	Level (in)	Flow (gpm)	Velocity (fps)
2020/02/22 02:18	0.90	17.45	1.80
2020/02/22 02:33	0.90	17.88	1.84
2020/02/22 02:48	0.90	17.88	1.84
2020/02/22 03:03	0.89	17.34	1.83
2020/02/22 03:18	0.91	18.14	1.83
2020/02/22 03:33	1.01	21.03	1.83
2020/02/22 03:48	1.01	20.61	1.79
2020/02/22 04:03	1.01	20.59	1.79
2020/02/22 04:18	1.05	21.86	1.79
2020/02/22 04:33	1.14	24.42	1.79
2020/02/22 04:48	1.14	24.87	1.83
2020/02/22 05:03	1.05	22.27	1.83
2020/02/22 05:18	1.05	22.27	1.83
2020/02/22 05:33	1.14	24.52	1.80
2020/02/22 05:48	1.14	24.35	1.79
2020/02/22 06:03	1.14	24.35	1.79
2020/02/22 06:18	1.14	24.35	1.79
2020/02/22 06:33	1.14	22.75	1.67
2020/02/22 06:48	1.19	26.70	1.83
2020/02/22 07:03	1.23	29.33	1.91
2020/02/22 07:18	1.29	31.26	1.91
2020/02/22 07:33	1.48	40.02	2.00
2020/02/22 07:48	1.51	43.13	2.10
2020/02/22 08:03	1.66	53.22	2.26
2020/02/22 08:18	1.66	53.36	2.26
2020/02/22 08:33	1.73	56.41	2.26
2020/02/22 08:48	1.66	53.36	2.26
2020/02/22 09:03	1.68	54.00	2.26
2020/02/22 09:18	1.68	54.00	2.26
2020/02/22 09:33	1.75	58.60	2.32
2020/02/22 09:48	1.76	63.24	2.47
2020/02/22 10:03	1.76	60.08	2.35
2020/02/22 10:18	1.78	60.76	2.35
2020/02/22 10:33	1.78	60.76	2.35
2020/02/22 10:48	1.78	60.76	2.35
2020/02/22 11:03	1.80	62.11	2.35
2020/02/22 11:18	1.80	63.85	2.41
2020/02/22 11:33	1.73	63.01	2.52
2020/02/22 11:48	1.73	63.01	2.52
2020/02/22 12:03	1.73	64.88	2.59
2020/02/22 12:18	1.73	66.79	2.67
2020/02/22 12:33	1.93	80.77	2.78
2020/02/22 12:48	1.93	77.67	2.67
2020/02/22 13:03	1.93	77.67	2.67
2020/02/22 13:18	1.76	64.45	2.52

TimeStamp	Level (in)	Flow (gpm)	Velocity (fps)
2020/02/22 13:33	1.66	56.78	2.41
2020/02/22 13:48	1.64	54.17	2.35
2020/02/22 14:03	1.64	54.17	2.35
2020/02/22 14:18	1.64	53.50	2.32
2020/02/22 14:33	1.66	54.80	2.32
2020/02/22 14:48	1.68	55.45	2.32
2020/02/22 15:03	1.71	56.77	2.32
2020/02/22 15:18	1.72	57.43	2.32
2020/02/22 15:33	1.73	58.43	2.34
2020/02/22 15:48	1.73	59.65	2.39
2020/02/22 16:03	1.73	59.65	2.39
2020/02/22 16:18	1.73	59.20	2.37
2020/02/22 16:33	1.68	56.51	2.37
2020/02/22 16:48	1.64	57.82	2.51
2020/02/22 17:03	1.64	57.82	2.51
2020/02/22 17:18	1.68	59.94	2.51
2020/02/22 17:33	1.65	58.53	2.51
2020/02/22 17:48	1.65	58.38	2.50
2020/02/22 18:03	1.68	53.27	2.23
2020/02/22 18:18	1.66	51.78	2.19
2020/02/22 18:33	1.65	51.16	2.19
2020/02/22 18:48	1.66	51.78	2.19
2020/02/22 19:03	1.66	52.10	2.21
2020/02/22 19:18	1.65	53.19	2.28
2020/02/22 19:33	1.62	51.91	2.28
2020/02/22 19:48	1.64	58.63	2.55
2020/02/22 20:03	1.64	58.98	2.56
2020/02/22 20:18	1.65	59.70	2.56
2020/02/22 20:33	1.64	51.57	2.24
2020/02/22 20:48	1.68	58.77	2.46
2020/02/22 21:03	1.71	54.72	2.24
2020/02/22 21:18	1.71	54.72	2.24
2020/02/22 21:33	1.71	55.69	2.28
2020/02/22 21:48	1.71	55.69	2.28
2020/02/22 22:03	1.66	50.37	2.13
2020/02/22 22:18	1.50	42.57	2.10
2020/02/22 22:33	1.48	39.40	1.97
2020/02/22 22:48	1.43	36.61	1.93
2020/02/22 23:03	1.47	38.88	1.97
2020/02/22 23:18	1.48	42.00	2.10
2020/02/22 23:33	1.47	38.88	1.97
2020/02/22 23:48	1.39	36.63	2.02
2020/02/23 00:03	1.39	38.85	2.14
2020/02/23 00:18	1.32	36.07	2.14
2020/02/23 00:33	1.26	31.96	2.02

TimeStamp	Level (in)	Flow (gpm)	Velocity (fps)
2020/02/23 00:48	1.25	31.81	2.04
2020/02/23 01:03	1.25	32.19	2.06
2020/02/23 01:18	1.22	30.79	2.04
2020/02/23 01:33	1.08	23.92	1.89
2020/02/23 01:48	1.12	27.29	2.04
2020/02/23 02:03	1.08	24.36	1.92
2020/02/23 02:18	1.07	23.47	1.89
2020/02/23 02:33	1.07	22.58	1.82
2020/02/23 02:48	1.07	22.58	1.82
2020/02/23 03:03	0.98	20.06	1.82
2020/02/23 03:18	0.94	18.34	1.77
2020/02/23 03:33	0.94	18.34	1.77
2020/02/23 03:48	0.94	18.34	1.77
2020/02/23 04:03	0.93	17.64	1.74
2020/02/23 04:18	0.93	15.76	1.55
2020/02/23 04:33	0.84	13.74	1.55
2020/02/23 04:48	0.84	13.74	1.55
2020/02/23 05:03	0.93	17.64	1.74
2020/02/23 05:18	0.97	18.24	1.69
2020/02/23 05:33	0.98	18.63	1.69
2020/02/23 05:48	0.98	19.27	1.75
2020/02/23 06:03	1.00	19.80	1.76
2020/02/23 06:18	1.05	21.76	1.79
2020/02/23 06:33	1.04	21.35	1.79
2020/02/23 06:48	1.05	22.56	1.85
2020/02/23 07:03	1.18	26.56	1.85
2020/02/23 07:18	1.21	27.47	1.85
2020/02/23 07:33	1.39	33.61	1.85
2020/02/23 07:48	1.39	33.78	1.86
2020/02/23 08:03	1.40	35.98	1.95
2020/02/23 08:18	1.51	43.42	2.11
2020/02/23 08:33	1.59	44.01	1.98
2020/02/23 08:48	1.64	45.66	1.98
2020/02/23 09:03	1.68	47.33	1.98
2020/02/23 09:18	1.71	48.45	1.98
2020/02/23 09:33	1.90	56.48	1.98
2020/02/23 09:48	1.93	57.47	1.98
2020/02/23 10:03	1.93	60.18	2.07
2020/02/23 10:18	1.96	66.66	2.25
2020/02/23 10:33	1.98	69.11	2.28
2020/02/23 10:48	1.96	67.75	2.28
2020/02/23 11:03	1.90	65.04	2.28
2020/02/23 11:18	1.90	65.96	2.31
2020/02/23 11:33	1.78	58.86	2.28
2020/02/23 11:48	1.73	56.91	2.28

TimeStamp	Level (in)	Flow (gpm)	Velocity (fps)
2020/02/23 12:03	1.73	60.42	2.42
2020/02/23 12:18	1.73	65.30	2.61
2020/02/23 12:33	1.73	65.30	2.61
2020/02/23 12:48	1.73	65.30	2.61
2020/02/23 13:03	1.71	57.10	2.34
2020/02/23 13:18	1.69	56.44	2.34
2020/02/23 13:33	1.69	56.44	2.34
2020/02/23 13:48	1.69	63.71	2.64
2020/02/23 14:03	1.69	63.71	2.64
2020/02/23 14:18	1.69	63.71	2.64
2020/02/23 14:33	1.69	63.71	2.64
2020/02/23 14:48	1.69	51.98	2.15
2020/02/23 15:03	1.69	48.81	2.02
2020/02/23 15:18	1.68	51.37	2.15
2020/02/23 15:33	1.68	51.74	2.17
2020/02/23 15:48	1.68	51.74	2.17
2020/02/23 16:03	1.69	52.35	2.17
2020/02/23 16:18	1.66	53.04	2.25
2020/02/23 16:33	1.69	52.35	2.17
2020/02/23 16:48	1.69	56.48	2.34
2020/02/23 17:03	1.69	56.48	2.34
2020/02/23 17:18	1.69	56.48	2.34
2020/02/23 17:33	1.71	54.31	2.22
2020/02/23 17:48	1.72	54.94	2.22
2020/02/23 18:03	1.69	49.11	2.03
2020/02/23 18:18	1.64	46.82	2.03
2020/02/23 18:33	1.71	49.68	2.03
2020/02/23 18:48	1.71	58.93	2.41
2020/02/23 19:03	1.68	57.57	2.41
2020/02/23 19:18	1.71	58.93	2.41
2020/02/23 19:33	1.71	55.57	2.27
2020/02/23 19:48	1.71	51.58	2.11
2020/02/23 20:03	1.71	51.58	2.11
2020/02/23 20:18	1.71	55.57	2.27
2020/02/23 20:33	1.71	59.75	2.44
2020/02/23 20:48	1.71	62.14	2.54
2020/02/23 21:03	1.72	62.86	2.54
2020/02/23 21:18	1.72	62.86	2.54
2020/02/23 21:33	1.72	60.45	2.44
2020/02/23 21:48	1.72	58.75	2.38
2020/02/23 22:03	1.72	58.75	2.38
2020/02/23 22:18	1.66	56.06	2.38
2020/02/23 22:33	1.64	48.33	2.10
2020/02/23 22:48	1.58	46.00	2.10
2020/02/23 23:03	1.54	41.28	1.96

TimeStamp	Level (in)	Flow (gpm)	Velocity (fps)
2020/02/23 23:18	1.32	32.26	1.91
2020/02/23 23:33	1.30	30.53	1.84
2020/02/23 23:48	1.30	30.46	1.83
2020/02/24 00:03	1.32	28.74	1.70
2020/02/24 00:18	1.32	28.74	1.70
2020/02/24 00:33	1.32	29.28	1.74
2020/02/24 00:48	1.32	28.74	1.70
2020/02/24 01:03	1.21	25.18	1.70
2020/02/24 01:18	1.18	24.92	1.74
2020/02/24 01:33	1.18	24.92	1.74
2020/02/24 01:48	1.18	23.63	1.65
2020/02/24 02:03	1.01	19.66	1.71
2020/02/24 02:18	0.97	18.49	1.71
2020/02/24 02:33	0.83	14.75	1.71
2020/02/24 02:48	0.83	14.70	1.70
2020/02/24 03:03	0.83	14.75	1.71
2020/02/24 03:18	1.00	19.20	1.70
2020/02/24 03:33	1.01	18.21	1.58
2020/02/24 03:48	1.01	16.61	1.45
2020/02/24 04:03	1.00	16.21	1.44
2020/02/24 04:18	0.96	15.13	1.43
2020/02/24 04:33	0.86	12.94	1.43
2020/02/24 04:48	0.83	12.41	1.44
2020/02/24 05:03	0.83	12.41	1.44
2020/02/24 05:18	0.83	12.33	1.43
2020/02/24 05:33	0.87	14.93	1.61
2020/02/24 05:48	0.89	16.50	1.74
2020/02/24 06:03	1.43	32.99	1.74
2020/02/24 06:18	1.46	38.59	1.98
2020/02/24 06:33	1.46	42.84	2.20
2020/02/24 06:48	1.61	50.59	2.25
2020/02/24 07:03	1.65	56.18	2.41
2020/02/24 07:18	1.69	58.21	2.41
2020/02/24 07:33	1.71	58.89	2.41
2020/02/24 07:48	1.71	55.02	2.25
2020/02/24 08:03	1.71	49.08	2.01
2020/02/24 08:18	1.69	48.52	2.01
2020/02/24 08:33	1.65	46.82	2.01
2020/02/24 08:48	1.65	45.33	1.94
2020/02/24 09:03	1.65	46.82	2.01
2020/02/24 09:18	1.61	48.36	2.15
2020/02/24 09:33	1.61	41.95	1.87
2020/02/24 09:48	1.61	47.03	2.09
2020/02/24 10:03	1.61	47.03	2.09
2020/02/24 10:18	1.61	47.03	2.09

TimeStamp	Level (in)	Flow (gpm)	Velocity (fps)
2020/02/24 10:33	1.61	47.03	2.09
2020/02/24 10:48	1.61	47.03	2.09
2020/02/24 11:03	1.64	57.61	2.50
2020/02/24 11:18	1.64	57.61	2.50
2020/02/24 11:33	1.64	52.13	2.26
2020/02/24 11:48	1.71	54.61	2.23
2020/02/24 12:03	1.64	52.13	2.26
2020/02/24 12:18	1.64	52.13	2.26
2020/02/24 12:33	1.64	51.46	2.23
2020/02/24 12:48	1.65	52.16	2.24
2020/02/24 13:03	1.65	52.16	2.24
2020/02/24 13:18	1.65	49.70	2.13
2020/02/24 13:33	1.65	49.70	2.13
2020/02/24 13:48	1.65	52.16	2.24
2020/02/24 14:03	1.66	51.31	2.17
2020/02/24 14:18	1.62	49.48	2.17
2020/02/24 14:33	1.66	53.83	2.28
2020/02/24 14:48	1.62	51.91	2.28
2020/02/24 15:03	1.58	47.68	2.17
2020/02/24 15:18	1.58	50.12	2.29
2020/02/24 15:33	1.58	50.12	2.29
2020/02/24 15:48	1.58	45.17	2.06
2020/02/24 16:03	1.54	43.47	2.06
2020/02/24 16:18	1.58	45.17	2.06
2020/02/24 16:33	1.55	43.81	2.05
2020/02/24 16:48	1.55	43.58	2.04
2020/02/24 17:03	1.55	43.58	2.04
2020/02/24 17:18	1.59	44.48	2.00
2020/02/24 17:33	1.59	44.48	2.00
2020/02/24 17:48	1.59	44.92	2.02
2020/02/24 18:03	1.62	46.05	2.02
2020/02/24 18:18	1.66	47.74	2.02
2020/02/24 18:33	1.66	47.74	2.02
2020/02/24 18:48	1.72	49.43	2.00
2020/02/24 19:03	1.72	48.49	1.96
2020/02/24 19:18	1.73	49.04	1.96
2020/02/24 19:33	1.73	47.71	1.91
2020/02/24 19:48	1.72	47.17	1.91
2020/02/24 20:03	1.69	47.37	1.96
2020/02/24 20:18	1.69	51.28	2.12
2020/02/24 20:33	1.69	56.00	2.32
2020/02/24 20:48	1.69	56.00	2.32
2020/02/24 21:03	1.75	58.79	2.32
2020/02/24 21:18	1.76	59.46	2.32
2020/02/24 21:33	1.82	77.07	2.88

TimeStamp	Level (in)	Flow (gpm)	Velocity (fps)
2020/02/24 21:48	1.82	77.07	2.88
2020/02/24 22:03	2.00	88.13	2.88
2020/02/24 22:18	2.00	85.33	2.79
2020/02/24 22:33	1.73	59.65	2.39
2020/02/24 22:48	1.65	53.01	2.27
2020/02/24 23:03	1.64	52.37	2.27
2020/02/24 23:18	1.64	51.46	2.23
2020/02/24 23:33	1.61	50.22	2.23
2020/02/24 23:48	1.59	46.96	2.11
2020/02/25 00:03	1.29	33.68	2.06
2020/02/25 00:18	1.23	31.60	2.06
2020/02/25 00:33	1.22	30.14	2.00
2020/02/25 00:48	1.22	30.12	2.00
2020/02/25 01:03	1.15	26.86	1.94
2020/02/25 01:18	0.97	20.95	1.94
2020/02/25 01:33	0.97	20.95	1.94
2020/02/25 01:48	0.96	19.67	1.86
2020/02/25 02:03	0.94	17.12	1.65
2020/02/25 02:18	0.89	15.07	1.59
2020/02/25 02:33	0.89	15.10	1.59
2020/02/25 02:48	0.89	13.50	1.42
2020/02/25 03:03	0.89	13.50	1.42
2020/02/25 03:18	0.89	13.50	1.42
2020/02/25 03:33	0.80	12.72	1.55
2020/02/25 03:48	0.80	12.72	1.55
2020/02/25 04:03	0.79	12.40	1.55
2020/02/25 04:18	0.79	12.40	1.55
2020/02/25 04:33	0.80	12.72	1.55
2020/02/25 04:48	0.98	16.40	1.49
2020/02/25 05:03	0.98	16.40	1.49
2020/02/25 05:18	1.00	17.27	1.53
2020/02/25 05:33	1.09	20.47	1.59
2020/02/25 05:48	1.09	20.47	1.59
2020/02/25 06:03	1.16	24.41	1.73
2020/02/25 06:18	1.34	31.50	1.81
2020/02/25 06:33	1.34	33.89	1.95
2020/02/25 06:48	1.37	37.09	2.07
2020/02/25 07:03	1.58	45.43	2.07
2020/02/25 07:18	1.62	47.16	2.07
2020/02/25 07:33	1.71	50.65	2.07
2020/02/25 07:48	1.78	56.73	2.19
2020/02/25 08:03	1.78	55.74	2.15
2020/02/25 08:18	1.78	63.40	2.45
2020/02/25 08:33	1.71	59.90	2.45
2020/02/25 08:48	1.71	58.97	2.41

TimeStamp	Level (in)	Flow (gpm)	Velocity (fps)
2020/02/25 09:03	1.64	55.57	2.41
2020/02/25 09:18	1.64	56.03	2.43
2020/02/25 09:33	1.64	55.57	2.41
2020/02/25 09:48	1.66	57.39	2.43
2020/02/25 10:03	1.66	57.39	2.43
2020/02/25 10:18	1.69	58.84	2.44
2020/02/25 10:33	1.69	55.37	2.29
2020/02/25 10:48	1.69	55.37	2.29
2020/02/25 11:03	1.69	55.37	2.29
2020/02/25 11:18	1.69	57.36	2.37
2020/02/25 11:33	1.62	48.48	2.13
2020/02/25 11:48	1.61	51.25	2.28
2020/02/25 12:03	1.61	51.66	2.30
2020/02/25 12:18	1.61	51.25	2.28
2020/02/25 12:33	1.61	51.25	2.28
2020/02/25 12:48	1.61	51.31	2.28
2020/02/25 13:03	1.61	51.31	2.28
2020/02/25 13:18	1.62	51.71	2.27
2020/02/25 13:33	1.62	51.71	2.27
2020/02/25 13:48	1.54	42.28	2.00
2020/02/25 14:03	1.53	40.91	1.96
2020/02/25 14:18	1.53	40.91	1.96
2020/02/25 14:33	1.53	40.91	1.96
2020/02/25 14:48	1.53	43.55	2.09
2020/02/25 15:03	1.55	46.81	2.19
2020/02/25 15:18	1.59	52.38	2.36
2020/02/25 15:33	1.59	52.38	2.36
2020/02/25 15:48	1.59	52.61	2.37
2020/02/25 16:03	1.54	50.01	2.37
2020/02/25 16:18	1.53	38.68	1.86
2020/02/25 16:33	1.47	36.68	1.86
2020/02/25 16:48	1.47	38.85	1.97
2020/02/25 17:03	1.47	38.85	1.97
2020/02/25 17:18	1.59	47.16	2.12
2020/02/25 17:33	1.62	54.62	2.40
2020/02/25 17:48	1.62	54.66	2.40
2020/02/25 18:03	1.62	54.62	2.40
2020/02/25 18:18	1.62	54.35	2.39
2020/02/25 18:33	1.62	54.62	2.40
2020/02/25 18:48	1.68	60.23	2.52
2020/02/25 19:03	1.69	57.70	2.39
2020/02/25 19:18	1.79	64.67	2.47
2020/02/25 19:33	1.79	65.98	2.52
2020/02/25 19:48	1.71	60.42	2.47
2020/02/25 20:03	1.71	60.42	2.47

TimeStamp	Level (in)	Flow (gpm)	Velocity (fps)
2020/02/25 20:18	1.71	60.42	2.47
2020/02/25 20:33	1.71	61.88	2.53
2020/02/25 20:48	1.72	66.22	2.68
2020/02/25 21:03	1.72	66.22	2.68
2020/02/25 21:18	1.80	67.80	2.56
2020/02/25 21:33	1.80	67.80	2.56
2020/02/25 21:48	1.80	67.80	2.56
2020/02/25 22:03	1.72	63.13	2.55
2020/02/25 22:18	1.72	56.22	2.27
2020/02/25 22:33	1.71	54.34	2.22
2020/02/25 22:48	1.64	51.21	2.22
2020/02/25 23:03	1.64	50.34	2.19
2020/02/25 23:18	1.64	50.34	2.19
2020/02/25 23:33	1.64	48.51	2.11
2020/02/25 23:48	1.64	48.51	2.11
2020/02/26 00:03	1.29	31.24	1.91
2020/02/26 00:18	1.28	28.59	1.78
2020/02/26 00:33	1.26	27.49	1.73
2020/02/26 00:48	1.25	27.05	1.73
2020/02/26 01:03	1.23	27.25	1.78
2020/02/26 01:18	1.19	25.32	1.73
2020/02/26 01:33	1.19	24.90	1.71
2020/02/26 01:48	1.08	23.42	1.85
2020/02/26 02:03	1.03	20.83	1.78
2020/02/26 02:18	1.00	18.25	1.62
2020/02/26 02:33	1.00	18.25	1.62
2020/02/26 02:48	1.01	19.29	1.68
2020/02/26 03:03	0.94	16.19	1.56
2020/02/26 03:18	0.94	16.19	1.56
2020/02/26 03:33	0.96	16.67	1.57
2020/02/26 03:48	0.96	17.10	1.62
2020/02/26 04:03	0.91	15.62	1.57
2020/02/26 04:18	0.96	17.10	1.62
2020/02/26 04:33	0.96	17.10	1.62
2020/02/26 04:48	0.96	17.20	1.63
2020/02/26 05:03	0.97	19.07	1.76
2020/02/26 05:18	1.04	21.62	1.81
2020/02/26 05:33	1.05	22.58	1.85
2020/02/26 05:48	1.15	25.68	1.85
2020/02/26 06:03	1.44	35.60	1.85
2020/02/26 06:18	1.44	36.15	1.88
2020/02/26 06:33	1.47	37.43	1.90
2020/02/26 06:48	1.47	42.13	2.13
2020/02/26 07:03	1.69	51.54	2.13
2020/02/26 07:18	1.71	52.14	2.13

TimeStamp	Level (in)	Flow (gpm)	Velocity (fps)
2020/02/26 07:33	1.71	59.45	2.43
2020/02/26 07:48	1.71	59.45	2.43
2020/02/26 08:03	1.71	51.77	2.12
2020/02/26 08:18	1.71	57.25	2.34
2020/02/26 08:33	1.72	59.01	2.39
2020/02/26 08:48	1.71	57.25	2.34
2020/02/26 09:03	1.71	57.25	2.34
2020/02/26 09:18	1.75	60.37	2.39
2020/02/26 09:33	1.75	60.37	2.39
2020/02/26 09:48	1.72	61.47	2.49
2020/02/26 10:03	1.72	61.47	2.49
2020/02/26 10:18	1.72	64.79	2.62
2020/02/26 10:33	1.72	64.79	2.62
2020/02/26 10:48	1.72	64.79	2.62
2020/02/26 11:03	1.72	62.37	2.52
2020/02/26 11:18	1.65	58.81	2.52
2020/02/26 11:33	1.64	51.39	2.23
2020/02/26 11:48	1.61	49.60	2.21
2020/02/26 12:03	1.61	49.60	2.21
2020/02/26 12:18	1.58	48.35	2.20
2020/02/26 12:33	1.55	45.63	2.13
2020/02/26 12:48	1.55	45.63	2.13
2020/02/26 13:03	1.55	45.63	2.13
2020/02/26 13:18	1.64	53.53	2.32
2020/02/26 13:33	1.64	57.05	2.48
2020/02/26 13:48	1.64	57.05	2.48
2020/02/26 14:03	1.64	57.05	2.48
2020/02/26 14:18	1.61	53.65	2.39
2020/02/26 14:33	1.61	53.65	2.39
2020/02/26 14:48	1.61	49.12	2.19
2020/02/26 15:03	1.57	44.50	2.06
2020/02/26 15:18	1.50	41.33	2.04
2020/02/26 15:33	1.50	41.70	2.06
2020/02/26 15:48	1.50	41.70	2.06
2020/02/26 16:03	1.50	43.74	2.16
2020/02/26 16:18	1.57	46.68	2.16
2020/02/26 16:33	1.57	48.17	2.22
2020/02/26 16:48	1.57	48.17	2.22
2020/02/26 17:03	1.61	51.93	2.31
2020/02/26 17:18	1.61	51.93	2.31
2020/02/26 17:33	1.62	53.72	2.36
2020/02/26 17:48	1.62	53.75	2.36
2020/02/26 18:03	1.62	53.75	2.36
2020/02/26 18:18	1.62	53.72	2.36
2020/02/26 18:33	1.62	53.72	2.36

TimeStamp	Level (in)	Flow (gpm)	Velocity (fps)
2020/02/26 18:48	1.62	55.94	2.46
2020/02/26 19:03	1.62	54.14	2.38
2020/02/26 19:18	1.62	54.14	2.38
2020/02/26 19:33	1.68	58.70	2.46
2020/02/26 19:48	1.69	59.39	2.46
2020/02/26 20:03	1.71	59.45	2.43
2020/02/26 20:18	1.86	67.16	2.43
2020/02/26 20:33	1.86	67.16	2.43
2020/02/26 20:48	1.86	67.16	2.43
2020/02/26 21:03	1.84	66.45	2.43
2020/02/26 21:18	1.78	62.93	2.43
2020/02/26 21:33	1.72	60.82	2.46
2020/02/26 21:48	1.72	62.14	2.51
2020/02/26 22:03	1.72	62.14	2.51
2020/02/26 22:18	1.72	60.14	2.43
2020/02/26 22:33	1.72	57.24	2.31
2020/02/26 22:48	1.65	50.24	2.15
2020/02/26 23:03	1.65	50.24	2.15
2020/02/26 23:18	1.55	46.06	2.15
2020/02/26 23:33	1.51	46.18	2.25
2020/02/26 23:48	1.51	46.18	2.25
2020/02/27 00:03	1.33	38.45	2.25
2020/02/27 00:18	1.28	32.49	2.02
2020/02/27 00:33	1.18	26.08	1.82
2020/02/27 00:48	1.14	24.54	1.80
2020/02/27 01:03	1.05	22.15	1.82
2020/02/27 01:18	1.05	22.15	1.82
2020/02/27 01:33	1.14	26.14	1.92
2020/02/27 01:48	1.14	26.14	1.92
2020/02/27 02:03	1.04	22.95	1.92
2020/02/27 02:18	1.03	21.70	1.85
2020/02/27 02:33	0.90	17.45	1.80
2020/02/27 02:48	0.90	17.45	1.80
2020/02/27 03:03	0.90	17.45	1.80
2020/02/27 03:18	0.96	19.04	1.80
2020/02/27 03:33	0.98	20.34	1.84
2020/02/27 03:48	0.98	20.34	1.84
2020/02/27 04:03	0.96	18.78	1.77
2020/02/27 04:18	0.91	17.39	1.75
2020/02/27 04:33	0.91	17.60	1.77
2020/02/27 04:48	0.91	17.60	1.77
2020/02/27 05:03	1.01	20.40	1.77
2020/02/27 05:18	1.01	21.19	1.84
2020/02/27 05:33	1.04	22.99	1.92
2020/02/27 05:48	1.04	23.30	1.95

TimeStamp	Level (in)	Flow (gpm)	Velocity (fps)
2020/02/27 06:03	1.23	30.83	2.01
2020/02/27 06:18	1.30	35.47	2.14
2020/02/27 06:33	1.65	55.71	2.39
2020/02/27 06:48	1.69	57.73	2.39
2020/02/27 07:03	1.71	63.33	2.59
2020/02/27 07:18	1.79	69.58	2.66
2020/02/27 07:33	1.83	71.89	2.66
2020/02/27 07:48	1.83	62.11	2.30
2020/02/27 08:03	1.83	62.11	2.30
2020/02/27 08:18	1.73	57.48	2.30
2020/02/27 08:33	1.72	56.82	2.30
2020/02/27 08:48	1.72	56.03	2.27
2020/02/27 09:03	1.71	56.32	2.30
2020/02/27 09:18	1.65	53.72	2.30
2020/02/27 09:33	1.65	53.72	2.30
2020/02/27 09:48	1.65	52.69	2.26
2020/02/27 10:03	1.65	53.72	2.30
2020/02/27 10:18	1.66	52.28	2.22
2020/02/27 10:33	1.66	54.84	2.32
2020/02/27 10:48	1.65	51.23	2.20
2020/02/27 11:03	1.64	53.53	2.32
2020/02/27 11:18	1.64	53.53	2.32
2020/02/27 11:33	1.61	52.24	2.32
2020/02/27 11:48	1.54	48.62	2.30
2020/02/27 12:03	1.61	52.79	2.35
2020/02/27 12:18	1.62	53.69	2.36
2020/02/27 12:33	1.62	52.61	2.31
2020/02/27 12:48	1.62	52.61	2.31
2020/02/27 13:03	1.62	52.61	2.31

XIV. APPENDIX – SEWER NORMAL DEPTH FLOW CALCUALTIONS

```
**************************************************************************
            HYDRAULIC ELEMENTS - I  PROGRAM PACKAGE
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                  Analysis prepared by:

                   Alan R. Short, PE


--------------------------------------------------------------------------
 TIME/DATE OF STUDY: 18:37 03/11/2020
==========================================================================
 Problem Descriptions:
  City of Gardena Sewer Line Analysis
  Pre-Development Condition (flow rate = 0.197 cfs)

**************************************************************************
>>>>PIPEFLOW HYDRAULIC INPUT INFORMATION<<<<
--------------------------------------------------------------------------
   PIPE DIAMETER (FEET) =   0.670
   PIPE SLOPE (FEET/FEET) =  0.0048
   PIPEFLOW (CFS) =        0.20
   MANNINGS FRICTION FACTOR = 0.013000
==========================================================
   CRITICAL-DEPTH FLOW INFORMATION:
--------------------------------------------------------------------------
   CRITICAL DEPTH (FEET) =      0.20
   CRITICAL FLOW AREA (SQUARE FEET) =     0.091
   CRITICAL FLOW TOP-WIDTH (FEET) =   0.616
   CRITICAL FLOW PRESSURE + MOMENTUM (POUNDS) =          1.31
   CRITICAL FLOW VELOCITY (FEET/SEC.) =     2.175
   CRITICAL FLOW VELOCITY HEAD (FEET) =          0.07
   CRITICAL FLOW HYDRAULIC DEPTH (FEET) =      0.15
   CRITICAL FLOW SPECIFIC ENERGY (FEET) =          0.28
==========================================================
   NORMAL-DEPTH FLOW INFORMATION:
--------------------------------------------------------------------------
   NORMAL DEPTH (FEET) =      0.22
   FLOW AREA (SQUARE FEET) =      0.10
   FLOW TOP-WIDTH (FEET) =     0.629
   FLOW PRESSURE + MOMENTUM (POUNDS) =          1.32
   FLOW VELOCITY (FEET/SEC.) =         1.960
   FLOW VELOCITY HEAD (FEET) =         0.060
   HYDRAULIC DEPTH (FEET) =      0.16
   FROUDE NUMBER =     0.864
   SPECIFIC ENERGY (FEET) =          0.28
==========================================================
```

```
**************************************************************************
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                  Analysis prepared by:

                   Alan R. Short, PE

--------------------------------------------------------------------------
 TIME/DATE OF STUDY: 18:43 03/11/2020
==========================================================
 Problem Descriptions:
 City of Gardena
 Post-Development flow analysis (flow rate = 0.229 cfs)

**************************************************************************
>>>>PIPEFLOW HYDRAULIC INPUT INFORMATION<<<<
--------------------------------------------------------------------------
   PIPE DIAMETER (FEET) =   0.670
   PIPE SLOPE (FEET/FEET) =  0.0048
   PIPEFLOW (CFS) =        0.23
   MANNINGS FRICTION FACTOR = 0.013000
==========================================================
   CRITICAL-DEPTH FLOW INFORMATION:
--------------------------------------------------------------------------
   CRITICAL DEPTH (FEET) =      0.22
   CRITICAL FLOW AREA (SQUARE FEET) =     0.101
   CRITICAL FLOW TOP-WIDTH (FEET) =   0.629
   CRITICAL FLOW PRESSURE + MOMENTUM (POUNDS) =          1.58
   CRITICAL FLOW VELOCITY (FEET/SEC.) =     2.271
   CRITICAL FLOW VELOCITY HEAD (FEET) =          0.08
   CRITICAL FLOW HYDRAULIC DEPTH (FEET) =      0.16
   CRITICAL FLOW SPECIFIC ENERGY (FEET) =          0.30
==========================================================
   NORMAL-DEPTH FLOW INFORMATION:
--------------------------------------------------------------------------
   NORMAL DEPTH (FEET) =      0.24
   FLOW AREA (SQUARE FEET) =      0.11
   FLOW TOP-WIDTH (FEET) =     0.641
   FLOW PRESSURE + MOMENTUM (POUNDS) =          1.60
   FLOW VELOCITY (FEET/SEC.) =         2.043
   FLOW VELOCITY HEAD (FEET) =         0.065
   HYDRAULIC DEPTH (FEET) =      0.17
   FROUDE NUMBER =     0.861
   SPECIFIC ENERGY (FEET) =          0.30
==========================================================
```