EAST PALO ALTO SANITARY DISTRICT SANITARY SEWER MANAGEMENT PLAN (SSMP)

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ABBREVIATIONS

Cal-OSHA	California Office of Occupational Safety and Health Administration
CIP	Capital Improvement Project
CIWQS	California Integrated Water Quality System
FOG	Fats, Oil, and Grease
LRO	Legally Responsible Official
MGD	Million gallons per day
OERP	Overflow Emergency Response Plan
OES	State Office of Emergency Services
RWQCB	Regional Water Quality Control Board, San Francisco Bay Region II
SVCW	Silicon Valley Clean Water
SMCEHD	San Mateo County Environmental Health Department
SSMP	Sewer System Management Plan
SSO	Sanitary Sewer Overflow
SSO WDR	Sanitary Sewer Overflow Waste Discharge Requirements
SWRCB	State Water Resources Control Board
WDR	General Waste Discharge Requirements
WWTP	Waste Water Treatment Plant

GLOSSARY OF TERMS

(from *A Guide for Development of Sanitary Sewer Management Plans* published by the California State Water Resources Control Board dated September 2015)

Collection System – Generic term for any system of pipes or sewer lines used to convey wastewater to a treatment facility.

Enrollee – A public entity that owns or operates a sanitary sewer system and has submitted a complete and approved application for coverage under the SSS WDR.

Lateral (also called Service Lateral) – A segment of pipe that connects a home or building to a sewer main, which may be located beneath a street or easement. The responsibility for maintaining a lateral can be solely that of the Enrollee or the private property owner; or it can be shared between the two or more parties. Local communities dictate lateral responsibility and the basis for a shared arrangement, if it applies. See Lower Lateral and Upper Lateral definitions.

Lower Lateral (also called Service Lateral) – That portion of a lateral usually from the property line or easement line to the sewer main. Enrollees may or may not be responsible for maintenance of this portion of the lateral. If not, the lower lateral is owned and maintained by the property its serves.

Miles of Gravity Sewer – Length of gravity sewer lines/pipes in an Enrollee's sanitary sewer system, expressed in miles.

Miles of Publicly-Owned Laterals – Length of laterals in an Enrollee's sanitary sewer system that the Enrollee is responsible for maintaining, expressed in miles.

Miles of Pressure Sewer (Miles of Force Main) – Length of pressurized sewer lines/pipes in an Enrollee's sanitary sewer system, expressed in miles or portions thereof.

Miles of Private Laterals – Length of private laterals tributary to an Enrollee's sanitary sewer system that private property owners are responsible for maintaining, expressed in miles or portions thereof.

NGO – Non-governmental organization.

Percent Reached Surface Water – Volume of sewage discharged from a sanitary sewer system or private lateral or collection system estimated to have reached surface water divided by the total volume of sewage discharged.

Percent Recovered – Volume of sewage discharged that was disposed of properly, divided by the total volume of sewage discharged.

Private Lateral – Privately owned sewer service lateral.

Private Lateral Sewage Discharge (PLSD) – Sewage discharges caused by blockages or other problems within privately owned laterals, collection systems or other private sewer assets that are tributary to the reporting Enrollee's sanitary sewer system. Normally, this type of sewage

discharge is the responsibility of the private lateral, private asset, or collection system owner.

Sanitary Sewer Overflow (SSO) – Any overflow, spill, release, discharge, or diversion of untreated or partially treated wastewater from a sanitary sewer system. SSOs include:

- Overflows or releases of untreated or partially treated wastewater that reach waters of the United States;
- Overflows or releases of untreated or partially treated wastewater that do not reach waters of the United States; and
- Wastewater backups into buildings and on private property caused by blockages or flow conditions within the publicly-owned portion of a sanitary sewer system.

Sanitary Sewer System – Any system of pipes, pump stations, sewer lines, or other conveyances, upstream of a WWTP head works and which is comprised of more than one mile of pipes and sewer lines, used to collect, and convey wastewater to a publicly owned treatment facility.

Service Lateral – See Lateral.

SSO Category 1 – All discharges of sewage resulting from a failure in an Enrollee's sanitary sewer system that resulted in a discharge to a drainage channel and/or surface water.

SSO Category 2 – All discharges of sewage resulting from a failure in an Enrollee's sanitary sewer system of a volume equal to or greater than 1,000 gallons that did not reach surface water.

SSO Category 3 – All discharges of sewage resulting from a failure in an Enrollee's sanitary sewer system of a volume less than 1,000 gallons that did not reach surface water.

SSO Database – Online reporting system developed, hosted, and maintained by the SWRCB for compliance with the Monitoring and Reporting Program contained in SSS WDR.

Storm Drain – For the purposes of complying with the SSS WDR, any pipe that is part of a Municipal Separate Storm Sewer System (MS4) used for collecting or conveying storm water.

Total # of SSOs per 100 miles of Sewer per Year – Broad metric used to compare the relative performance of Enrollees and their sanitary sewer systems. This metric expresses the number of SSOs for which the reporting Enrollee is responsible, for every 100 miles of pipe or sewer lines in an Enrollee's sanitary sewer system. Due to the large variation in facility specific characteristics, this metric should only be viewed as a rough comparison of the operation and maintenance performance of Enrollees and their sanitary sewer systems. For systems, smaller than 100 miles, this metric tends to skew the result as the miles of pipe get smaller. This metric is calculated as described below:

$$\text{Total \# of SSOs per year} = \frac{(\text{Total \# of SSOs} \times 100)}{((\text{Years}) \times (\text{Miles of Pressure Sewer} + \text{Miles of Gravity Sewer} + \text{Miles of Public Laterals}))}$$

Total Volume of SSOs Reached Surface Water per 100 miles of Sewer – Broad metric used to compare the relative performance of Enrollees and their sanitary sewer systems. This metric expresses the volume of SSOs, for which the reporting Enrollee is responsible, that reached surface water for every 100 miles of pipe or sewer lines in an Enrollee's sanitary sewer system. Because sewage discharges that reach surface water pose a greater threat to public health and the environment, this metric reflects some accounting of the threat posed by SSOs. Due to the large variation in facility specific characteristics, this metric should only be viewed as a rough comparison of the operation and maintenance performance of Enrollees and their sanitary sewer systems. For systems, smaller than 100 miles, this metric tends to skew the result as the miles of pipe get smaller. This metric is calculated as described below:

$$\text{Total Annual Volume of SSOs Reaching Surface Waters} = \frac{\text{(Total volume of SSOs reaching Surface Waters x 100)}}{\text{((Years) x (Miles of Pressure Sewer + Miles of Gravity Sewer + Miles of Public Laterals))}}$$

Total Volume Reached Surface Water – Amount of sewage discharged from a sanitary sewer system, private lateral, or collection system estimated to have reached surface water.

Total Volume Recovered – Amount of sewage discharged that was captured and disposed of properly.

Upper Lateral – Portion of a lateral usually from the building foundation to the property line or easement line where it connects to the Lower Lateral. Enrollees may not own and maintain this portion of a Lateral since responsibility usually lies with the owner of the property that the lateral serves.

WDID – Waste Discharge Identification number assigned as a unique identifier by the SWRCB to each Enrollee for regulatory recordkeeping and data management purposes

INTRODUCTION

This Sanitary Sewer Management Plan (SSMP) has been prepared by the East Palo Alto Sanitary District (EPASD) in accordance with California State Water Resources Control Board (SWRCB) requirements. The SWRCB promulgated a waste discharge requirement (WDR) permit on May 2, 2006 to regulate all sanitary sewer systems greater than 1 mile in length that collect and/or convey untreated or partially treated wastewater to a publicly owned treatment facility in the State of California. This permit is known as SWRCB Order No. 2006-0003, Statewide General Waste Discharge Requirements for Sanitary Sewer Systems (SSS). On July 30, 2013, Attachment A to the Order was promulgated and became effective on September 9, 2013 and is known as Attachment A, SWRCB Order No. WQO 2013-0058-EXEC, amending the Monitoring and Reporting Program for Statewide General Waste Discharge Requirements for Sanitary Sewer Systems (together these documents constitute the "SSS WDR").

This permit requires local public sewer collection system agencies, referred to as "Enrollees," to develop a SSMP. To aid Enrollees in the preparation and revisions of an SSMP, the SWRCB prepared a SSMP preparation guidance document entitled A Guide for Developing and Updating Sewer System Management Plans (SSPMs) (SSMP Guide) dated September 2015. This SSMP has been prepared to comply with the SSS WDRs utilizing the SSMP Guide.

SSMP Organization

The organization of this document is consistent with the SSS WDR and includes the following eleven mandatory elements:

1. Goals
2. Organization
3. Legal Authority
4. Operations and Maintenance Program
5. Design and Performance Provisions
6. Overflow Emergency Response Plan (OERP)
7. Fats, Oils, and Grease (FOG) Control Program
8. System Evaluation and Capacity Assurance Plan (SECAP)
9. Monitoring, Measurement, and Program Modifications
10. SSMP Program Audits
11. Communications Program

System Overview

The EPASD is an independent special district established under California statutes and is responsible for maintaining the sanitary sewers in a portion of the cities of East Palo Alto and Menlo Park, in San Mateo County. The EPASD manages approximately 35 miles of sanitary sewer varying in size from 6 to 24 inches in diameter. The EPASD sanitary sewer serves approximately 6,639 residential units, 148 commercial and 20 industrial connections. The EPASD does not maintain private sewer laterals. The property owners are responsible for private sewer lateral construction, repair, replacement, and maintenance.

The EPASD service area is shown on Figure 1. The approximate limits of the EPASD service area include Menalto Avenue to the West, Ursula Way and Michigan Avenue to the North, Woodland Avenue to the South and the Bay Trail and San Francisquito Creek Trail to the East. The EPASD collection system carries wastewater from the service area to the Palo Alto Regional Water Quality Control Plant, owned and operated by the City of Palo Alto, where it is treated and disposed of in a manner which meets Federal and State standards.

The EPASD was established in 1939 as a result of increased development in the East Palo Alto area. The initial sewer lines were installed as a West Palo Alto project. Construction began after the treatment contract with the City of Palo Alto was signed in 1940 and EPASD facilities were put into operation on September 8, 1942.

The EPASD is governed by a five-member Board of Directors, elected by the registered voters residing within the EPASD. The Board establishes the operating policies of the EPASD including rate setting while EPASD employees carry out those policies on a day-to-day basis.

EPASD employees consist of the General Manager, who is responsible for the administration of all EPASD business, and necessary support staff with office and/or field responsibilities.

Figure 1 EPASD Service Area

1.0 GOALS

1.1 Introduction

The mission of the EPASD is to provide safe, efficient, and cost-effective sanitary sewer services to portions of East Palo Alto and Menlo Park. The goal of the EPASD SSMP is to provide a plan and schedule to properly manage, operate, and maintain all parts of the sanitary sewer system to:

- Provide reliable service,
- Minimize infiltration/inflow (I/I),
- Provide adequate sewer capacity to accommodate design storm flows; and
- Prevent and minimize sanitary sewer overflows (SSOs).

To meet these goals, the EPASD has developed a robust operation and maintenance (O&M) program that includes proactively monitoring, maintaining, and improving the condition of the collection system infrastructure.

2.0 ORGANIZATION

2.1 Introduction

The EPASD maintains an organization structure which meets the requirements of the SSS WDR. This section of the SSMP presents EPASD organizational roles, organization chart, individual staff responsible for each SSMP element, and SSO response and reporting chain of command.

2.2 Organizational Roles

The section includes positions, names, and a brief narrative description of the position's responsibilities for implementing the SSMP as applicable.

Board of Directors - The EPASD is governed by a five-member Board of Directors, each elected to a four-year term. The EPASD is an independent and autonomous political entity that has no legal affiliation with any municipalities located within its service area boundaries. The Board meets monthly and special meetings are held as needed.

General Manager -. The General Manager establishes policy, plans strategy, leads staff, allocates resources, delegates responsibility, authorizes outside contractors to perform services, and may serve as a public information officer.

District Engineer – Designated as a Data Submitter. Manages and administers the capital improvement program (CIP). Inspects CIP projects and ensures that new and rehabilitated assets meet EPASD standards. Need complete list of Data Submitters and LROs.

Maintenance Supervisor - Designated as a legally responsible official (LRO). Manages field operations and maintenance activities, provides relevant information to EPASD management, prepares and implements contingency plans, leads emergency response, investigates and reports SSOs, and trains field crews.

Field Crews - Responds to emergencies. Performs preventive maintenance activities, mobilizes, and responds to notification of stoppages and SSOs.

***ECO Industrial Waste Investigator** - Conducts inspections, response, permitting and compliance for industrial and commercial facilities including restaurants. What does ECO stand for?

***ECO Industrial Waste Inspector. Storm Water** - Conducts inspections, response and compliance for storm water issues including SSOs and prohibited facility discharges.

***ECO Industrial Waste Inspector, Sampling** - Collects samples and inspects discharge locations including creeks and grease removal devices.

***ECO Engineering Tech III** - Inspection for commercial facilities including restaurants.

Manager Communications (Utilities) - Disseminates urgent and pertinent information to the public in a timely manner. The responsibility of the General Manager unless specifically delegated to others.

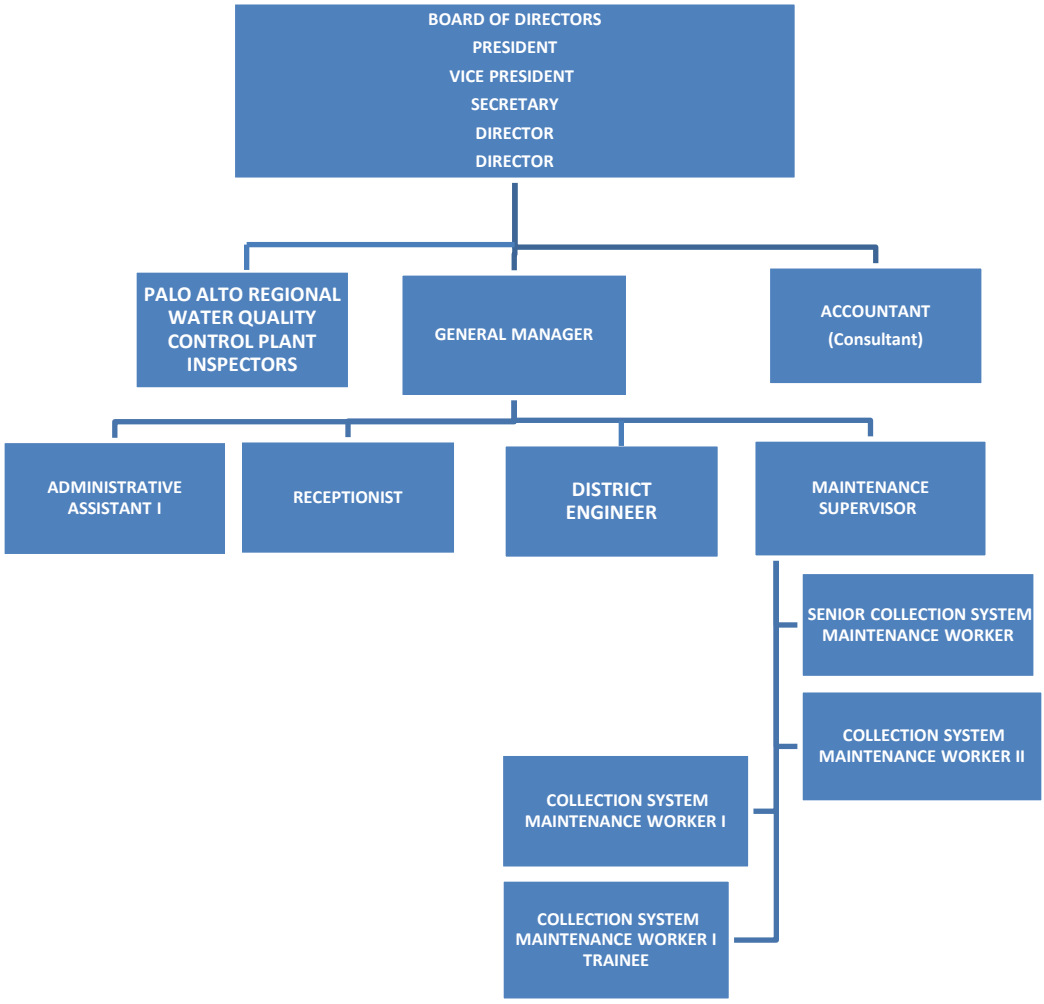
(* Handled by Palo Alto Regional Water Quality Control Plant Personnel)

An organizational chart with position titles showing the lines of authority for overseeing and implementing the SSMP is shown below.

2.3 Organizational Chart

The organization chart for the management, operation, and maintenance of the EPASD's wastewater collection system is shown on Figure 2.

Figure 2. EPASD Organizational Chart



2.4 SSMP Element – Responsible Positions

The General Manager is responsible for overseeing the overall implementation of the SSMP and is identified as an Authorized Representative of the District. The EPASD maintains organizational charts/lists with names and contact information for all management, administrative, and maintenance positions. Various individuals within the EPASD's organization are responsible for implementing one or more of the SSMP elements. The names, positions, and contact information for each of the EPASD staff responsible for implementing specific measures of this SSMP are presented in Table 1 below.

Table 1. SSMP Implementation Responsibility Need to fill in the blanks

SSMP Element	Responsible Position	Responsible Person	Phone Number	Email Address
1. Goals	General Manager	Akintunde Okupe	650-325-9021	aokupe@epasd.com
2. Organization	General Manager	Akintunde Okupe	650-325-9021	kmaxey@epasd.com
3. Legal Authority	General Manager	Akintunde Okupe	650-325-9021	kmaxey@epasd.com
4. Operations and Maintenance Program	Maintenance Supervisor	Jackey Wilson	650-325-9021	jwilson@epasd.com
5. Design and Performance Provisions	General Manager	Akintunde Okupe	650-325-9021	kmaxey@epasd.com
6. Overflow Emergency Response Plan (OERP)	Maintenance Supervisor	Jackey Wilson	650-325-9021	jwilson@epasd.com
7. Fats, Oils, and Grease (FOG) Control Program	ECO Industrial Waste Inspector*			_
8. System Evaluation and Capacity Assurance Plan (SECAP)	District Engineer	Akintunde Okupe	650-325-9021	aokupe@epasd.com
9. Monitoring, Measurement, and Program Modifications	ECO Industrial Waste Inspector*	District Personnel	650-325-9021	_
10. SSMP Program Audits	District Engineer	Akintunde Okupe	650-325-9021	aokupe@epasd.com
11. Communications Program	Maintenance Supervisor	Jackey Wilson	650-325-9021	jwilson@epasd.com
Change Log	Maintenance Supervisor	Jackey Wilson	650-325-9021	jwilson@epasd.com
Appendices	Maintenance Supervisor	Jackey Wilson	650-325-9021	jwilson@epasd.com

* Personnel from the Palo Alto Regional Water Quality Control Plant

The chain of communications for responding to an SSO notification begins with EPASD's Receptionist who receives the call. The receptionist will notify the Maintenance Supervisor who will dispatch the appropriate crews and equipment to the reported overflow location. The Maintenance Supervisor will also consult with the General Manager to determine whether the SSO report is legitimate, and if so, what further notification and reporting actions will be needed. The chain of communication is summarized below: Please verify

Receptionist	Neptina B. White	office: 650-325-9021
Maintenance Supervisor	Jackey Wilson	direct:
General Manager	Akintunde Okupe	direct: 650-704-1140

3.0 LEGAL AUTHORITY

3.1 Introduction

This element of the SSMP presents the EPASD's legal authority to require SSS users and customers to meet performance standards, maintain user-owned assets such as laterals, and pay penalties for non-compliance with enrollee regulations.

3.2 EPASD Legal Authority

As required by the SSS WDR, the EPASD as an independent special district has the necessary legal authority to perform the following:

(a) Prevent illicit discharges into its sanitary sewer system;

(b) Require that sewers and connections be properly designed and constructed;

(c) Ensure access for maintenance, inspection, or repairs for portions of the lateral owned or maintained by the Public Agency;

(d) Limit the discharge of fats, oils, and grease and other debris that may cause blockages, and

(e) Enforce any violation of its sewer ordinances.

EPASD is regulated by several agencies of the United States Government and the State of California, pursuant to the provisions of Federal and State Law. Key Federal and State requirements include:

(a) Federal Water Pollution Control Act, commonly known as the Clean Water Act (33 U.S.C. Section 1251 et seq.);

(b) California Porter Cologne Water Quality Act (California Water Code section 13000 et seq.);

(c) California Code of Regulations Title 23, Division 3, Chapter 9.2, Article 2250;

(d) California Health & Safety Code sections 25100 to 25250;

(e) Resource Conservation and Recovery Act of 1976 (42 U.S.C. Section 6901 et seq.); and

(f) California Government Code, Sections 54739-54740.

These laws provide EPASD with the authority to regulate and/or prohibit, by adoption of an ordinance, and by issuance of control mechanisms, the discharge of any waste, directly or indirectly, to the EPASD sewerage facilities. This authority includes the right to establish limits, conditions, and prohibitions; to establish flow rates or prohibit flows discharged to the EPASD sewerage facilities; to require the development of compliance schedules for the installation of equipment systems and materials by all users; and to take all actions necessary to enforce its authority, whether within or outside the EPASD boundaries, including those users that are tributary to the EPASD or within areas for which the EPASD has contracted to provide sewerage services.

The legal authority to perform the above listed actions are described within the EPASD Sewer Use Ordinance (SUO) Number 39 and the City of Palo Alto (which operates the Regional Water Quality Control Plant) SUO Section 16.09.

Table 2 Legal Authority Checklist includes a list of specific actions the EPASD possesses the necessary legal authority to perform under EPA SUO No. 39 and City of Palo Alto SUO Section 16.09. The EPA SUO No. 39 and City of Palo Alto SUO Section 16.09 are included with this SSMP as Appendix A.

Table 2 - Legal Authority Checklist per EPA SUO No. 39 and City of Palo Alto SUO Section 16.09

Requirement
Public Sewers
Ability to prevent illicit discharges into the wastewater collection system
Ability to require that sewers and connections be properly designed and constructed
Laterals
Ensure access for maintenance, inspection, or repairs for portions of the service lateral owned or maintained by EPASD
FOG Source Control
Ability to limit the discharge of FOG and other debris that may cause blockages
Enforcement
Ability to enforce any violation of EPASD's sewer ordinances
Other Possible Code Sections (Referenced but not required by the SSS WDR)
Public Sewers
Ability to require proper installation, testing, and inspection of new and rehabilitated sewers
Laterals
Provide clear delineation of EPASD responsibility (e.g., mains and lower laterals) and policies (e.g., courtesy cleaning, repair, cleanout installation)
Ability to control I/I from private service laterals
Define lateral ownership and maintenance responsibility
Prohibit vandalism (tampering)
Ability to deal effectively with private lateral problems (e.g., force property owner to correct failed/plugged private building sewer)
Satellite Collection Systems
Ability to control I/I from satellite collection systems, if any
FOG Source Control
Requirements for the installation of GRDs
Ability to set design standards for GRDs
Ability to set maintenance requirements for GRDs

Ability to require application of BMPs
Ability to require record keeping and reporting of GRD maintenance and repair
Authority to inspect grease producing facilities
Enforcement
Prescribe prohibited actions (e.g., illicit connections, discharges)
Provide notice of alleged violations to sewer user

4.0 OPERATION AND MAINTENANCE PROGRAM

The EPASD manages a SSS operation and maintenance (O&M) Program designed to ensure the SSS goals are met and to ensure that the sanitary sewer system continues to operate effectively and efficiently. The O&M Program includes actively maintaining and upgrading aging infrastructure, preventing SSOs, and addressing SSOs if they occur.

In accordance with SSS WDR the O&M Program includes:

(a) Maintenance of an up-to-date map of the sanitary sewer system. The map shows all gravity line segments and manholes, pumping facilities, pressure pipes and valves, and applicable storm water conveyance facilities; Need to expand to say how the maps are maintained, where they are located, how they are updated, and how they tie back to the flow model.
(b) Routine preventive O&M activities; including regular cleaning and inspections of the SSS with more frequent cleaning and maintenance targeted at known problem areas. The O&M Program includes a scheduling system that documents scheduled and conducted activities. The O&M Program includes regular visual and CCTV inspections of manholes and sewer pipes, and a system for ranking the condition of sewer pipes and scheduling rehabilitation.;
(c) Rehabilitation and Replacement (R&R). The O&M Program includes identification and prioritization of system deficiencies and implements short-term and long-term rehabilitation actions to address each deficiency.
(d) Capital improvement plan (CIP). The CIP addresses proper management and protection of the infrastructure assets. The plan includes a time schedule for implementing the short and long term improvements plus a schedule for developing the funds needed for the CIP;
(e) Regular training for staff and contractors performing SSS O&M and monitoring.
(f) Equipment and replacement part inventories, including identification of critical replacement parts.

To facilitate the O&M program the SSS mains are inspected using a remote-controlled carriage mounted video camera. The inspections are videotaped and observable defects in the system are cataloged. The inspection data are used to identify areas that require additional maintenance, spot repairs, or rehabilitation of the system.

In addition to cataloging the system defects, the EPASD O&M program actively works to reduce the introduction of fats, oils, and grease (FOG) into the SSS. The introduction of FOG into the SSS is one of the primary issues causing SSOs industry-wide. The O&M Program addresses this and other problems through mainline hydro-flushing, lateral replacement/repair maintenance, CCTV inspection, grease control, and root control.

The O&M Program includes the following:

Flushing Program: The EPASD operates one hydro-flusher vacuum combo unit that is used to perform cleaning and maintenance of the SSS.

Lateral Maintenance: The District does not own laterals. Lateral emergency maintenance requires operators to mechanically rod, snake, or hydro-flush laterals if the property has a

conforming District Standard cleanout.

Grease Areas: Grease areas are portions of the system that have been identified as being susceptible to an accumulation of FOG, which can restrict flow capacity of the SSS. These locations are maintained on a more frequent cleaning cycle. A grease emulsifier is applied to liquefy the grease prior to hydro-flushing the pipeline.

Root Control: The SSS is susceptible to the invasion of roots from vegetation, which can diminish the pipeline structural integrity and reduce the flow capacity of the pipe. Susceptible pipeline segments are placed on the root control program which entails clearing the pipes with a mechanical saw, hydro-flushing, and applying an herbicidal foam treatment.

CCTV Inspection: The EPASD owns one CCTV inspection truck that includes a remote-control carriage mounted video camera which can be inserted into a sewer manhole and dispatched through the SSS. The video camera is linked to the CCTV truck via a cable which transmits video to the truck and relays commands to the camera. The camera carriage can traverse mainlines as small as 6" and as large as 24". The video camera itself can rotate and tilt to investigate any lateral, joint, or imperfection that is identified. As the CCTV camera moves through the pipe the observable sewer defects and infiltration/inflows are catalogued for future reference and repair. The inspection findings are recorded on the CCTV Inspection Form (Appendix B) and are available for review. The Maintenance Supervisor and District Engineer review defects found in the individual sewer line segments and prioritize repairs and replacements.

Service Calls: The EPASD's Maintenance Department provides 24-hour service to EPASD customers either through response by EPASD crew or with a qualified contractor. EPASD crew are on-call to respond to service problems at all times. The maintenance department response time goal is to respond to all calls in less than one hour. Most response times are far faster than that goal.

Sewer Line Repairs and Construction: SSS mainlines found to have major structural defects are referred to the CIP. Sanitary sewer manholes are repaired as needed to correct structural conditions or to reduce extraneous ground or surface water intrusion.

Capital Improvement Program (CIP): In 1989 the Collection System Master Plan Study (Study) was completed for the SSS. The Study found areas that needed additional capacity for future growth and peak flows within the system. It also identified areas where ground water was leaking into the SSS. In response to the Study, the Wastewater Collection System Infrastructure Program (Program) was started in 1993-94. The Program was a 20-year infrastructure replacement program that incorporated the recommendations from the Master Plan Study. Since the program was started, 11 miles of pipe have been relined, and 26 miles of new wastewater mains have been constructed to improve sewage flows to the treatment plant and prevent spills.

In 2004, a Collection System Master Plan update was completed to determine the effectiveness of the 20-year infrastructure program. The updated study concluded that the District's 20-year CIP infrastructure program had been more effective than originally anticipated and $21.0 million in capacity improvements could be eliminated from the Wastewater Collection System Master Plan.

CIP projects on the wastewater system are now focused on assessing the current condition of the piping and replacing or relining pipe in the system. The 2015 Master Plan identified 15 years of high priority pipeline replacement projects to also improve capacity at an approximate average annual cost of $800,000 per year. In 2021, EPASD issued an addendum to the 2015 Master Plan. The CIP in the 2021 Addendum identifies pipelines that require repair and replacement to prevent manhole surcharging and potential SSOs. It also identifies increases in capacity needed to account for future developments based on modified zoning designations. Pipeline improvements are identified, and the sequence of construction will be determined based on EPASD's observations of existing pipe conditions and new development needs. It is anticipated that approximately $1.0M per year will be allocated to implementing the CIP independent of developer contributions to accelerate specific projects.

Training: EPASD conducts staff and management training pursuant to the list included in Appendix C. In general, each staff participates in one or more training classes per year. Class selections are based on consultation with direct supervisors to evaluate current and future work responsibilities as well as previous training classes completed. Please verify and edit as needed.

Spare Parts and Contingencies: EPASD maintains spare parts for the ____ in the ____. In addition, EPASD has accounts with ___ and ___ rental companies when unique or additional equipment are needed. For larger projects, such as multiple day excavations with traffic control, EPASD has on-call service agreements with ABC and XYZ construction companies.Please verify and fill in the blanks. Also need to develop a list for Appendix F

5.0 DESIGN AND PERFORMANCE PROVISIONS

5.1 Introduction

The EPASD has developed design and performance provisions in accordance with the SSS WDRs including:

(a) Design and construction standards and specifications for the installation of new sanitary sewer systems, pump stations and other appurtenances; and for the rehabilitation and repair of existing sanitary sewer systems; and

(b) Procedures and standards for inspecting and testing the installation of new sewers and sewer appurtenances and for rehabilitation and repair projects.

5.2 Summary

The District has established Sewer System Standard Plans and Standard Specifications requiring that all new sanitary sewer systems and sewer appurtenances, as well as the rehabilitation and repair of existing sewer facilities, be designed and constructed in accordance with the District's established designs. Procedures and standards for inspecting and testing the installation of new sewers, and other appurtenances are also outlined in the established performance provision elements of the Standard Plans and Specifications.

5.3 Supporting Documents

The District's Standard Plans and Specifications can be found at the City of East Palo Alto's web site. A link to the website is shown below: Update this link.

http://38.106.4.240/contractors/forms-permits/standard-requirements-for-sewer-connection

6.0 OVERFLOW EMERGENCY RESPONSE PLAN

6.1 Introduction

The EPASD has developed this Overflow Emergency Response Plan (OERP) in accordance with the SSS WDRs that identifies measures to protect public health and the environment. The OERP includes:

(a) Proper notification procedures so that the primary responders and regulatory agencies are informed of all SSOs in a timely manner;

(b) A program to ensure appropriate response to all SSO;

(c) Procedures to ensure prompt notification to appropriate regulatory agencies and other potentially affected entities (e.g. health agencies, regional water boards, water suppliers, etc…) of all SSOs that could potentially affect public health or reach the waters of the State;

(d) Procedures to ensure that appropriate staff and contractor personnel are aware of and follow the OERP and are appropriately trained;

(e) Procedures to address emergency operations, such as traffic and crowd control and other necessary response activities; and

(f) A program to ensure that all reasonable steps are taken to contain and prevent the discharge of untreated and partially treated wastewater to waters of the United States and to minimize or correct any adverse impact on the environment resulting from the SSOs, including such accelerated or additional monitoring as may be necessary to determine the nature and impact of the discharge.

6.2 General

This OERP is designed to ensure that every SSO reported to the EPASD is promptly responded to by qualified EPASD Maintenance Department Operations staff or qualified EPASD contractors. The OERP also includes provisions to ensure prompt notification of the overflow to the appropriate local, state and federal agencies depending on the volume of the overflow. Agency notification includes potentially affected local utility departments, the San Mateo County Environmental Health Department, the San Mateo County Office of Emergency Services, the California Governor's Office of Emergency Services (CalOES), and the RWQCB as appropriate. The EPASD OERP will be followed for all minor or major SSOs.

EPASD wastewater employees are to respond immediately upon notification to secure and contain areas impacted by an SSO from EPASD owned facilities. EPASD maintains a hydroflusher vacuum truck and a mechanical rodder truck to relieve the causes of SSO and stop the overflow. In addition, the responding crew will work to prevent wastewater from reaching a storm drain, a creek, the San Francisco Bay or any other waters of the United States. In case of a spill on public

property or into a storm drain, the responding crew will contain and clean up the spill as soon as possible to minimize public health hazards and to protect the environment.

6.3 SSO Response Procedures

The OERP's SSO response procedures involve notifying the appropriate crews and/or departments, mobilizing personnel, materials, tools, and equipment to correct or repair any condition that caused or contributed to the SSO, notifying the appropriate concerned agencies, and reporting the incident.

EPASD staff will follow the flow chart and complete the Overflow Sewer Work Order included in Appendix D. The following subsections describe the procedures outlined

A. SSO First Report and First Response: An overflow may be reported by system employees or citizens. The EPASD Receptionist is the primary person responsible for receiving phone calls from the public of possible SSOs. The Receptionist immediately notifies EPASD the Collection System Maintenance Supervisor, who is responsible for dispatching appropriate maintenance personnel or a designated contractors to the SSO location.

   Any calls from the general public received through maintenance operations staff regarding an SSO are also routed through the EPASD Receptionist.

   The emergency phone line to EPASD, (650) 325-9021, is available 24 hours per day.

   1. The Receptionist will record all relevant information regarding the SSO including:

      a) Time and date call was received

      b) Specific location.

      c) Description of problem.

      d) Time possible overflow was noticed by the caller.

      e) Caller's name and phone number.

      f) Observations of the caller (e.g., volume of water present, odor, duration of discharge, back or front of property).

      g) Other relevant information that will enable the responding investigator and crews, if required, to quickly locate, assess, and stop the overflow.

      h) A record of any communication regarding possible overflows must be available to EPASD administration personnel upon request.

   2. The Receptionist will immediately notify the on-call Maintenance Supervisor, who, in tum will dispatch appropriate crew members, equipment, and contractors with Crew Instructions:

3. Sewer overflows observed by EPASD staff during their normal duties will be reported immediately to the Receptionist. In addition, EPASD staff will immediately, in a safety-first manner, assess the situation, stop the overflow, contain the overflow, and/or wait for assistance. Dispatched personnel will record all relevant overflow information and request additional response crews, as needed.

4. EPASD maintenance response staff shall confirm all reported overflows with the Receptionist and General Manager. Until verified, the report of a possible SSO will not be referred to as a "sewer overflow".

5. Responding personnel will complete an initial report at the time of incident. The final report will be completed by the Maintenance Supervisor or the General Manager within 24 hours of confirmation of an overflow. The Maintenance Supervisor or General Manager will be responsible for reviewing, updating, and signing the final report.

B. Dispatch of Crews to Site of SSO

Failure of any element within the wastewater collection system that threatens to cause or causes an SSO will trigger an immediate response to isolate and correct the problem. Crews and equipment will be available to respond to any SSO locations. Crews will be dispatched to any site of a reported SSO immediately. Additional maintenance personnel will be "on call" should extra crews be needed.

1. Dispatching Crews and Crew Instructions

- Upon receiving notification of a SSO, as outlined above, the Maintenance Supervisor will determine what personnel and equipment are likely to be needed at the SSO site and will dispatch an appropriate field service crew as required.

- Responding crews dispatched will receive information from the Maintenance Supervisor regarding known nature of the overflow appropriate personnel, materials, equipment, and course of action.

- Employees being dispatched to the site of an SSO will proceed immediately to the site. Any delays or conflicts in assignments will be immediately reported to the Maintenance Supervisor for resolution.

- Responding crews will report their findings, including possible damage to private and public property to the Maintenance Supervisor immediately. If the Maintenance Supervisor has not received findings from the field crew within 1 hour, the supervisor will contact the response crew to determine the status of the investigation.

- Once an SSO is confirmed, the Maintenance Supervisor will immediately notify the General Manager.

2. Additional Resources

   - The Maintenance Supervisor shall receive and convey to the appropriate parties any requests for additional personnel, material, supplies, and equipment from crews working at the site of an SSO. EPASD maintains emergency response equipment as listed in Appendix E. In addition, EPASD has accounts with the _____ rental company. Need list of major equipment owned and operated by EPASD

   - If an SSO disrupts the normal flow of traffic or causes a traffic safety hazard, the Maintenance Supervisor shall contact the General Manager to arrange for a Police or Community Services Officer to assist with traffic control.

   - In the event of a major SSO that is 1,000 gallons or more, or when there is an immediate impact to public or private property or any waterways, the Maintenance Supervisor shall contact the General Manager for assistance in investigating the SSO.

3. Preliminary Assessment of Damage to Private and Public Property

   - EPASD's focus is to resolve issues or problems originating in District-owned wastewater facilities. The responding crews should use discretion in assisting the property owner/occupant with their property because this step increase the District's liability. The responding crew should understand the repercussions that could be incurred by either providing or failing to provide assistance on private property.

   - The responding crew shall only enter private property with owner permission and for the sole purpose of assessing damage.

   - Still photographs and video footage, if possible, should be taken of the inside and outdoor areas of the sewer overflow and impacted area in order to thoroughly document the nature and extent of the overflow. All photographs must be forwarded to Maintenance Supervisor for filing with the SSO Report.

4. Field Supervision and Inspection

   - In the event of a SSO in excess of 100 gallons or where damage to property has occurred, a Maintenance Supervisor must visit the SSO site within 2 hours of the initial call to ensure that provisions of this overflow response plan and other directives are met.

   - The Maintenance Supervisor is responsible for confirming that the SSO Report was provided to the Regional Water Quality Control Board/Office of Emergency Services within the specified time.

5. Coordination with Hazardous Material Response

- If responding personnel detect the presence of a chemical substance (e.g., oil sheen, foamy residue) on the ground surface, or detect a suspicious odor (e.g., gasoline) not common to the sewer system, the field service representative or response crew should immediately contact the Maintenance Supervisor for the next course of action.
- If the Supervisor determines the need to alert the Menlo Fire or San Mateo County hazardous material response team, the sewer investigator or crew shall await the arrival of the Hazardous Material Response Team to take over the scene. Remember, any vehicle engine, portable pump or open flame (e.g., cigarette lighter) can provide the ignition for an explosion or fire should flammable fluids or vapors be present. Keep a safe distance and observe caution until assistance arrives.
- Upon the arrival of the Hazardous Material Response Team, the crew lead person will take direction from the person with the lead authority of the HazMat team. Only when that authority determines it is safe and appropriate for the responding Wastewater Collections crew to proceed can they then proceed under the SSO ERP with the containment, clean-up activities and correction.

C. Overflow Correction, Containment, and Clean-Up

SSO of various volumes occur from time to time despite concerted prevention efforts. Spills may result from blocked sewers, pipe failures, or mechanical malfunctions among other natural or man-made causes. The EPASD is constantly on alert and should be ready to respond to notification and confirmation of an overflow.

This section describes specific actions to be performed during an SSO.

The objectives of these actions are:

1. To protect public health, the environment, and property from sewage overflows and restore the surrounding area back too normal as soon as possible;
2. To establish perimeters and control zones with appropriate traffic cones and barricades, vehicles or use of natural topography (e.g., hills, berms);
3. To promptly notify the appropriate regulatory agency's communication center of preliminary overflow information and potential impacts;
4. To contain the sewer overflow to the maximum extent possible including preventing the discharge of sewage into the storm system or surface waters; and
5. To minimize the EPASD's exposure to any regulatory agency penalties and fines.

Under most circumstances, the EPASD Operations will handle all response actions with its own maintenance forces. They have the skills and experience to respond rapidly and in the most appropriate manner. An important consideration during an emergency response is to ensure that the temporary actions necessary to divert flows and repair the problem do not produce a problem elsewhere in the system.

Circumstances may arise when the EPASD could benefit from the support of private-sector construction assistance. This may be true in the case of large diameter pipes buried to depths requiring sheet piling and dewatering should excavation be required. The EPASD may also choose to use private contractors for open excavation operations that might exceed one day to complete. A list of available contractors is maintained by EPASD and is included in Appendix F.

D. Responsibilities of Response Crew upon Arrival

It is the responsibility of the first responders who arrive at the site of a SSO to protect the health and safety of the public by mitigating the impact of the overflow to the extent possible. Should the overflow not be the responsibility of the EPASD but there is imminent danger to public health, public or private property, or to waters of the U.S., then prudent emergency action should be taken until the responsible party arrives on the scene and assumes command and control of the incident.

Upon arrival at an SSO, the response crew should do the following:

1. Determine the cause of the overflow, e.g. sewer line blockage, pump station mechanical or electrical failure, sewer line break, etc;
2. Identify and request, if necessary, assistance or additional resources to correct the overflow or to assist in determining cause;
3. Determine if private property is impacted. If yes, the dispatcher should be informed as well as the Maintenance Supervisor of the extent of damages;
4. Take immediate steps to stop the overflow, e.g. relieve pipeline blockage, manually operate pump station controls, repair pipe, etc. Extraordinary steps may be considered where overflows from private property threaten public health and safety (e.g., an overflow running off private property into the public right-of-way); and
5. Request additional personnel, materials, supplies, or equipment that will expedite and minimize the impact of the overflow.

E. Initial Measures for Containment

1. Initiate measures to contain the overflowing sewage and where possible, recover sewage which has already been discharged, minimizing the impact to public health and the environment.
2. The Maintenance Supervisor or person in charge and field staff will:
   - Determine the immediate destination of the overflow, e.g. storm drain, street curb gutter, body of water, creek bed, etc;

- Identify and request the necessary materials and equipment to contain or isolate the overflow, if not readily available; and
- Take immediate steps to contain the overflow, e.g., block or bag storm drains, recover through vacuum truck, divert into downstream manhole, etc.

F. Additional Measures Under Potentially Prolonged Overflow Conditions

In the event of a prolonged sewer line blockage or a sewer line collapse, EPASD staff shall determine if portable by-pass pumping operations should be made around the obstruction.

1. Staff shall take appropriate measures to determine the proper size and number of pumps required to effectively handle the sewage flow.
2. Staff shall implement continuous or periodic monitoring of the by-pass pumping operation as required.
3. Regulatory agency issues shall be addressed in conjunction with emergency repairs.

G. Cleanup

Sewer overflow sites are to be thoroughly cleaned after an overflow. No readily identified residue (e.g., sewage solids, papers, rags, plastics, rubber products) shall remain.

1. Where practical, contaminated areas including storm drain lines are to be thoroughly flushed and cleaned of any sewage or wash-down water. Solids and debris are to be flushed, swept, raked, picked-up and placed in the sewer or transported for proper disposal.
2. The overflow site is to be secured to prevent contact by members of the public until the site has been thoroughly cleaned. Posting if required should be undertaken pursuant to the Section titled Public Advisory Procedure, Section A (page 16 of this document).
3. Where appropriate, the overflow site is to be disinfected and deodorized.
4. Where sewage has resulted in ponding, the pond should be pumped dry and the residue disposed in accordance with applicable regulations and policies.
5. If a ponded area contains sewage which cannot be pumped dry, it may be treated with bleach. If sewage has discharged into a body of water that may contain fish or other aquatic life, bleach or other appropriate disinfectant should not be applied and the California State Fish and Game Department should be contacted for specific instructions.
6. Use of portable aerators may be required where complete recovery of sewage is not practical and where severe oxygen depletion in existing surface water is expected.

6.4 Sanitary Sewer Overflow Reporting Requirements and Procedures

The EPASD shall report SSO based on Spill Categories as defined in the 2013 MRP:

Category 1 – Discharges of untreated or partially treated wastewater of any volume resulting from an EPASD sanitary sewer system failure or flow condition that:

- Reach surface water and/or reach a drainage channel tributary to a surface water; or
- Reach a Municipal Separate Storm Sewer System (MS4) and are not fully captured

and returned to the sanitary sewer system or not otherwise captured and disposed of properly.

Category 2 – Discharges of untreated or partially treated wastewater of **1,000 gallons or greater** resulting from an EPASD sanitary sewer system failure or flow condition that **do not** reach surface water, a drainage, channel, or a MS4 unless the entire SSO discharged to the storm drain system is fully recovered and disposed of properly.

Category 3 – All other discharges of untreated or partially treated wastewater resulting from an EPASD sanitary sewer system failure or flow condition.

Private Lateral Sewage Discharge – Discharges of untreated or partially treated wastewater resulting from blockages or other problems within a privately owned sewer lateral connected to the EPASD sanitary sewer system or from other private sewer assets.

A. Reporting Summary

Category 1 SSOs require immediate notification and subsequent reporting:

- Within two hours of becoming aware of any Category 1 SSO, call Cal OES at **(800) 852-7550** and obtain a notification control number.
- Within three business days of becoming aware of any Category 1 SSO submit draft report by entering data into the California Integrated Water Quality System (CIWQS) database (Appendix G). Need to update Appendix G per CIWQS
- Within 15 calendar days of the SSO end date, certify final report on CIWQS database.
- Conduct water quality sampling and monitoring **within 48 hours** after initial SSO notification when **50,000 gallons or greater** are spilled to surface waters.
- Submit SSO Technical Report within 45 calendar days after the SSO end date when **50,000 gallons or greater** are spilled to surface waters.

Category 2 SSOs require draft and certified final reports:

- Within three business days of becoming aware of any Category 1 SSO submit draft report by entering data into the CIWQS database.
- Within 15 calendar days of the SSO end date, certify final report on CIWQS database.

Category 3 SSOs require only a certified final report within 30 calendar days of the end of the month when the SSO occurred.

Private Lateral Sewer Discharges do not require reporting. EPASD is strongly encouraged to notify Cal OES of discharges greater than or equal to 1,000 gallons of untreated or partially treated wastewater that result or may result in a discharge to surface water resulting from failures or flow conditions within privately owned sewer facilities.

EPASD shall file "No Spill" Certifications to CIWQS either monthly or quarterly. If monthly, within 30 calendar days of the end of the month. If quarterly, within 30 calendar days of the end of the quarter.

EPASD shall update and certify the Collection System Questionnaire every 12 months.

B. Required Information

When calling Cal OES within two hours of a recognized SSO event, EPASD shall report the following information:

- Name of person notifying Cal OES and direct return phone number
- Estimated volume of discharge (gallons)
- If ongoing, estimated rate of continuing discharge (gallons per minute)
- SSO Incident Description
    - Location
    - Brief Narrative
    - On-Scene point of contact (name and cell phone number)
    - Date and time EPASD became aware of SSO
    - SSO cause, if known
    - Indication of whether the SSO has been contained
    - Indication of whether surface water has been impacted
    - Indication of whether a drinking water supply has been, or may be impacted
    - Any other known or suspected impacts

EPASD shall provide updates to Cal OES regarding substantial changes to estimated volumes or estimated impacts until the final certified report is submitted to the CIWQS online SSO database.

C. SSO Electronic Reporting System (CIWQS)

The EPASD shall obtain a CIWQS Online SSO Database account and receive a Username and Password through www.CIWQS@waterboards.ca.gov or by calling (866) 792-4977. This is a controlled and secured website, and as such, EPASD shall keep the Username and Password confidential.

Draft and Certified SSO reports shall contain the following information based on Category level of the SSO:

1. Draft Category 1 SSOs: At a minimum, the following mandatory information shall be reported for a draft Category 1 SSO report:

a. SSO Contact Information: Name and telephone number of EPASD contact person who can answer specific questions about the SSO being reported.

b. SSO Location Name.

c. Location of the overflow event (SSO) by entering GPS coordinates. If a single overflow event results in multiple appearance points, provide GPS coordinates for the appearance point closest to the failure point and describe each additional appearance point in the SSO appearance point explanation field.

d. Whether or not the SSO reached surface water, a drainage channel, or entered and was discharged from a drainage structure.

e. Whether or not the SSO reached a municipal separate storm drain system.

f. Whether or not the total SSO volume that reached a municipal separate storm drain system was fully recovered.

g. Estimate of the SSO volume, inclusive of all discharge point(s).

h. Estimate of the SSO volume that reached surface water, a drainage channel, or was not recovered from a storm drain.

i. Estimate of the SSO volume recovered (if applicable).

j. Number of SSO appearance point(s).

k. Description and location of SSO appearance point(s). If a single sanitary sewer system failure results in multiple SSO appearance points, each appearance point must be described.

l. SSO start date and time.

m. Date and time the EPASD was notified of, or self-discovered, the SSO.

n. Estimated operator arrival time.

o. The date and time Cal OES was called.

p. The Cal OES control number.

2. Certified Category 1 SSOs: At a minimum, the following mandatory information shall be reported for a certified Category 1 SSO report, in addition to all fields in section 8.i.a:

a. Description of SSO destination(s).

b. SSO end date and time.

c. SSO causes (mainline blockage, roots, etc.).

d. SSO failure point (main, lateral, etc.).

e. Whether or not the spill was associated with a storm event.

f. Description of spill corrective action, including steps planned or taken to reduce, eliminate, and prevent reoccurrence of the overflow; and a schedule of major milestones for those steps.

g. Description of spill response activities.

h. Spill response completion date.

i. Whether or not there is an ongoing investigation, the reasons for the investigation and the expected date of completion.

j.Whether or not a beach closure occurred or may have occurred as a result of the SSO.

k.Whether or not health warnings were posted as a result of the SSO.

l. Name of beach(es) closed and/or impacted. If no beach was impacted, NA shall be selected.

m. Name of surface water(s) impacted.

n. If water quality samples were collected, identify parameters the water quality samples were analyzed for. If no samples were taken, NA shall be selected.

o. If water quality samples were taken, identify which regulatory agencies received sample results (if applicable). If no samples were taken, NA shall be selected.

p. Description of methodology(ies) and type of data relied upon for estimations of the SSO volume discharged and recovered.

q.SSO Certification: Upon SSO Certification, the CIWQS Online SSO Database will issue a final SSO identification (ID) number.

3. Draft Category 2 SSOs: At a minimum, the following mandatory information shall be reported for a draft Category 2 SSO report:

a. Items (a) through (n) in section 6.4 (C.1) above for Draft Category 1 SSO.

4. Certified Category 2 SSOs: At a minimum, the following mandatory information shall be reported for a certified Category 2 SSO report:

a. Items (a) through (n) in section 6.4 (C.1) above for Draft Category 1 SSO and Items (a) through (i), and (q) in section 6.4 (C.2) above for Certified Category 1 SSO.

5. Certified Category 3 SSOs: At a minimum, the following mandatory information shall be reported for a certified Category 3 SSO report:

a. Items (a) through (n) in section 6.4 (C.1) above for Draft Category 1 SSO and Items (a) through (e) and (q) in section 6.4 (C.2) above for Certified Category 1 SSO

SSO reports shall be completed by the Maintenance Supervisor and the General Manager shall promptly notify the RWQCB and the Cal OES when the overflow is eliminated.

D. Water Quality Monitoring Program

EPASD will monitor water quality in receiving surface waters when an SSO discharge volume is greater than 50,000 gallons. The monitoring shall consist of collecting and analyzing receiving surface water samples upstream and downstream of the SSO discharge location. The program includes:

1. Identifying the discharge location.
2. Identify sample locations considering spill travel time, surface water characteristics, and safe allowable access:
    - Upstream sample location at least 100 feet from the discharge.
    - Near-downstream location within 50 feet of the discharge at a location where the impacts are likely to be present.
    - Sentinel downstream location approximately 200 feet from the discharge at a location where the impacts are likely to be diluted across the surface water.
3. Collect samples for laboratory analyses within 48 hours of becoming aware of the SSO, within one day of stopping the discharge if it continues longer than 48 hours, and seven days after stopping the discharge.
4. Analyze samples at a certified laboratory for ammonia, total and fecal coliform, e-coli, and biological oxygen demand.
5. Measure water temperature and dissolved oxygen level at each sampling event and location using a properly maintained and calibrated field instruments.
6. Prepare monitoring report documenting the sample location selections, sampling activities, and water quality monitoring results.

E. Reporting to the FOG Program

If an SSO is determined to have been caused by a restaurant or other Food Service Establishment (FSE) by an excessive amount of grease being allowed to enter the sanitary sewer, the information will be relayed to the EPASD's FOG program for a follow-up inspection of the responsible facilities. The FOG program will be notified by email and/or phone within 24 hours of cleanup completion.

The relayed information will include:

- the date, time, address, and cause of the SSO,
- location of all laterals; and
- if there was any interaction with restaurant staff.

Please consult the EPASD's FOG Control Program for further information on procedures during inspection. In addition, anytime routine or requested maintenance such as cleaning or video inspection reveals heavy accumulation of grease in the lines, the FOG program should be notified by phone or e-mail. Contact information for FOG:

Akintunde Okupe
650-704-1140
aokupe@epasd.com

or

Neptina B. White or Frank Lampton
650-325-9021
nwhite@epasd.com
flampkin@epasd.com

6.5 Visual Observations/Estimating Spill Volume

A variety of approaches exist for estimating the volume of a SSO. The following section documents two methods that are commonly used. There are other methods and the person preparing the estimate will use the method most appropriate to the SSO in question using their judgment. A spill calculation method is also shown under Appendix H.

A. Method 1 Eyeball Estimate:

The volume of very small spills can be estimated using an "eyeball estimate." To use this method, imagine the amount of water that would spill from a bucket or barrel. A bucket contains 5 gallons and a barrel contains 50 gallons. If the spill is larger than 50 gallons, try to break the standing water into barrels and then multiply by 50 gallons. This method is useful for contained spills up to 100 gallons.

B. Method 2 Measured Volume:

The volume of some small spills can be estimated using this method if it is not raining. The shape, dimension, and depth of the spilled wastewater are needed. The shape and dimensions are used to calculate the area of the spills and the depth is used to calculate the volume.

- Step 1 Sketch the shape of the contained sewage.
- Step 2 Measure or pace off the dimensions.
- Step 3 Measure the depth in several locations.
- Step 4 Convert the dimensions, including depth to feet.
- Step 5 Calculate the area using the following formulas:
  - Rectangle Area = length x width
  - Circle Area = diameter x diameter x 0.785
  - Triangle Area = base x height x 0.5
- Step 6 Multiply the area times the depth
- Step 7 Multiply the volume by 7.5 to convert it to gallons

C. Method 3 Duration and Flow Rate

Calculating the volume of spills where it is difficult or impossible to measure the area and depth requires a different approach. In this method separate estimates are made of the duration of the spill and flow rate. The methods of estimating duration and flow rate are:

- Duration: The duration is the elapsed time from the start time to the time the spill stopped.

Start time is sometimes difficult to establish. Here are two approaches:

1. For very large overflows, changes in flow on a downstream flow meter can be used to establish the start time. Typically, the daily flow peaks are "cut off" or flattened by the loss of flow. This can be identified by comparing hourly flow data.
2. Conditions at the spill site change with time. Initially there will be limited deposits of grease and toilet paper. After a few days to a week, the grease forms a light-colored residue. After a few weeks to a month the grease turns dark. In both cases the quantity of toilet paper and other materials of sewage origin increase in amount. These changed with time can be used to estimate the start time in the absence of other information.

Sometimes it is simply not possible to estimate start time, however. End time is usually much easier to establish. Field crews on-site observe the "blow down" that occurs when the blockage has been removed. The "blow down" can also be observed in downstream flow meters.

- Flow Rate: The flow rate is the average flow left in the sewer system during the time of the spill stopped.

There are three ways to estimate the flow rate:

1. San Diego Manhole Flow Rate Reference Sheet: Appendix I shows the sewage flowing from a manhole cover for a variety of flow rates. The observations of the field crew are used to select the approximate flow rate from the chart.
2. Flow meter: Changes in flows in the downstream flow meters can be used to estimate the flow rate during the spill (better for large SSOs).
3. Estimate based on upstream connections: Once the location of the spill is known, the number of upstream connections can be determined from block books. Multiply the number of connections by 200 to 250 gallons per day per connection or 8-10 gallons per hour per connection, or other flow rates that are consistent with the City of Palo Alto's lateral data per connection.

Once duration and flow rate have been estimated, the volume of the spill is the product of the duration in hours or days' time the flow rate in gallons per hour or gallons per day.

To estimate the rate of sewer overflow in gallons per minute (GPM) we use one of the following criteria:

1. Direct observations of the overflow; or

2. Measurement of actual overflow from the sewer main.
3. Photographs of the event, when possible.
4. Assessment of any damage to the exterior areas of public/private property. Personnel shall enter private property for purposes of documenting damage to structures, floor and wall coverings, and personal property.

6.6 Customer Satisfaction

The supervisor or response crew confirming the SSO should follow-up in person or by telephone with the citizen(s) reporting the overflow. The cause of the overflow and its resolution will be disclosed to the customer upon request.

6.7 Public Advisory Procedure

This section describes the actions the EPASD should take, in cooperation with the RWQCB, to limit public access to areas potentially impacted by un-permitted discharges of pollutants to surface water bodies from the wastewater collection system.

A. Temporary Signage and Notification

The EPASD has primary responsibility for determining when to post notices of polluted surface water bodies or ground surfaces that result from uncontrolled wastewater discharges from its facilities and to notify affected residents. The postings do not necessarily prohibit use of recreational areas, unless posted otherwise, but provide a warning of potential public health risks due to sewage contamination. An example notice and resident notification letter is included as Appendix J.

6.8 Media Notification Procedure

When an overflow has been confirmed and is a threat to public health the following actions should be taken, if necessary, to notify the media:

A. The responding crew verifies the overflow and reports back to the Supervisor of Wastewater Collections or District Manager.
B. The District Manager, District Engineer and Maintenance Supervisor through the number listed in the table below.
C. After hours and weekend sewer overflows are reported to either the General Manager or District Engineer listed.
D. Calls received by the dispatcher from the media at any time should be referred to District Manager's Office.
E. The following personnel are authorized to be interviewed by the media and are the designated spokespersons:

Contact Name	Office	Mobile
Akintunde Okupe	650-325-9021	650-704-1140
Neptina B. White	650-325-9021	650-704-4136
Frank Lampton	650-325-9021	650-714-3967

6.9 Record Keeping and Certification

EPASD shall maintain SSO and other operations and maintenance records for a minimum of five years. These records shall be made available for review by the RWQCB during onsite inspections or through specific requests.

A. General Records. EPASD shall maintain records to document compliance with the provisions of the SSS WDRs and the 2013 MRP for the wastewater collection system.

B. SSO Records. EPASD shall maintain records for each SSO event, including:

   1. Complaint records documenting responses to all notifications of possible or actual SSOs, including complaints that do not result in SSOs. Each complaint record should include: date, time, and method of notification; date and time the complainant or informant first noticed the possible SSO; narrative description of the complaint with information discharges to surface water; follow-up actions; and final resolution of the complaint.
   2. Records documenting steps and/or remedial actions undertaken by EPASD, using available information, to comply with any SSO responses
   3. Records documenting how estimate(s) of volume(s) discharged and, if applicable, volume(s) recovered were calculated.

C. Records documenting all changes made to the SSMP since its last certification indicating when a subsection(s) of the SSMP was changed and/or updated and who authorized the change or update. These records shall be attached to the SSMP.

D. Electronic monitoring records relied upon for documenting SSO events and/or estimating the SSO volume discharged, including, but not limited to records from:

   1. Supervisory Control and Data Acquisition (SCADA) systems
   2. Alarm system(s)
   3. Flow monitoring device(s) or other instrument(s) used to estimate wastewater levels, flow rates and/or volumes.

E. Certifications. All information reported into the CIWQS Online SSO Database shall be certified by a person designated as the Legally Responsible Official (LRO). EPASD may have more than one LRO.

F. The LRO shall be registered with the State Water Board to certify reports in accordance with the CIWQS protocols for reporting.

G. Data Submitter (DS): An EPASD employee or contractor may enter draft data into the CIWQS Online SSO Database on behalf of EPASD if authorized by the LRO and registered

with the State Water Board. However, only LROs may certify reports in CIWQS.

H. EPASD shall maintain continuous coverage by an LRO. Any change of a registered LRO or DS (e.g., retired staff), including deactivation or a change to the LRO's or DS's contact information, shall be submitted by EPASD to the State Water Board within 30 days of the change by calling (866) 792-4977 or e-mailing help@ciwqs.waterboards.ca.gov.

I. A registered designated person (i.e., an LRO) shall certify all required reports under penalty of perjury laws of the state as stated in the CIWQS Online SSO Database at the time of certification.

6.10 Distribution and Maintenance of the SSO ERP

Annual updates to the SSO ERP should be made to reflect all changes in policies and procedures as may be required to achieve its objectives.

A. Submittal and Availability of the SSO ERP:

Copies of the SSO ERP and any amendments should be distributed to the following departments and functional positions:

- Collection Sewer Maintenance Supervisor
- District Engineer
- Receptionist
- Collection Sewer Computer Technician
- Collection Sewer Sr. Maintenance Worker

All other personnel who may become incidentally involved in responding to overflows should be familiar with the SSO ERP.

B. Review and Update of SSO ERP

The SSO ERP should be reviewed annually and amended as appropriate. Wastewater Collections Operations should:

- Update the SSO ERP with the issuance of a revised or new NPDES permit or state waste discharge permit;
- Conduct annual training sessions with appropriate personnel; and
- Review and update, as needed, the various contact person lists included in the SSO ERP.

The Maintenance Supervisor will be responsible for coordinating all updates to the SSO ERP

7.0 FATS, OILS, AND GREASE

7.1 Background

The prevention of SSO is a priority for the Sanitary District Wastewater Operations. SSOs are primarily caused by blockages in the sewer collection systems. Most sewer line blockages can be attributed to roots, accumulation of FOG, illegal grease dumping, damaged sewer lines, or a combination of these factors. FOG is generated by residential homes and many types of food service establishments (FSE) during food preparation, food service, and kitchen clean-up (dishes, cookware, mop water, equipment cleaning, hood screens and floor mats).

7.2 Implementation of a FOG Control Program

EPASD is required to implement a FOG Control Program due to the significant number of FOG generating FSEs in the District and a history of SSOs. Many of the SSOs are caused wholly or in part by grease blockages. The benefits of a FOG Control Program include a reduction of SSOs, improved public health and safety, avoidance of spill related fines, minimizing property damage claims, minimizing the risk of lawsuits, improving sewer maintenance and an improved FSE business environment.

The Maintenance Supervisor focuses on the FOG Control Program and allows for more frequent and rigorous inspections and enforcement. The position has the lead for enforcement of the FOG related sections of EPASD (see Legal Authority).

7.3 Maintenance and Monitoring

EPASD has had an ongoing preventative maintenance program that includes regular cleaning and inspections of more than 35 miles of collection system piping. In addition, in 2006 the EPASD purchased a Closed-Circuit Television (CCTV) and conducted a cleaning project throughout all of the sanitary sewer lines six inches and greater. This project resulted in a complete inventory and prioritization of the areas in need of root control, repairs, or more frequent cleaning. During this project all instances of high FOG deposition were reported to the GM/Engineer for follow-up. The video footage and data from the CCTV project will be stored in an accessible database.

The SSO Emergency Response Plan (SSO ERP) section of the SSMP describes EPASD maintenance performance responsibilities for the preventative maintenance for the collection system and response to blockages and overflows. EPASD maintenance has identified areas requiring more frequent cleaning based on past experience and upon data collected during the CCTV project. The cleaning equipment used by EPASD includes a hydro flusher vacuum truck. The cleaning schedule of the sewer systems is shown in Appendix K.

7.4 Source Control

EPASD has many restaurants and facilities and a public school that cook and serve food. These areas are known hotspots of FOG discharge.

EPASD also has other generators of grease such as single family homes, apartment buildings and cafeterias. These sources have been primarily addressed with outreach materials. There have been regular inspections and field contacts.

All FSE related building permits are routed through EPASD for review. The EPASD uses this opportunity to work in conjunction with the FSEs and the Building and Planning Departments to find workable solutions for new construction, remodels, and new restaurants in existing buildings.

7.5 Facility Inspection

There are many FSEs in the District. The expanded FOG program will include more rigorous inspections and enforcement. Each facility will be visited quarterly it is important to prioritize the FSEs and conduct more frequent inspections and enforcement where necessary.

The FSEs are categorized by their potential to contribute FOG to the collection system or cause other problems such as storm water violations. Facilities located in hot spots or that have been problematic will be addressed first and receive more frequent inspections. Bringing some facilities into compliance may be a lengthier process requiring multiple follow-up inspections. Some facilities will frequently not meet all requirements and will need ongoing attention. These facilities will be re-visited as necessary. Facilities that demonstrate compliance will receive less attention.

Problematic facilities have:

- experienced back-ups or overflows
- caused FOG build up in the line (identified by CCTV or cleaning records)
- unresolved compliance issues
- failed to follow the Better Management Practices (BMPs)
- failed to keep records
- had storm water violations
- failed to comply with verbal or written directives

FSEs are prioritized in one of the following categories.

- problem FSEs in hot spots
- problem FSEs
- FSEs that have only had minor issues in the past.
- FSEs with potential to generate FOG

7.6 Facility Action Plans

Newsletters with Better Management Practices (BMPs) references are sent to all businesses identified by the EPASD as FSEs.

The letters state:

As-needed inspections are performed by plant personnel. To keep inspections effective and as short as possible, the FSE is asked to gather the following documents/information for discussion at the time of inspection:

- Size and location of your facility's grease removal device (i.e. Grease Trap).
- List of equipment, sinks and/or drains connected to grease removal device.
- Grease removal device maintenance (cleaning) records, e.g. receipts and log for the last three years, as required in Palo Alto Municipal Code (PAMC) Section 16.09.103(d).

Topics covered during inspections will include:

- Best Management Practices (BMPs)
- Prohibition against the use of food waste disposers (grinders)
- Proper cleaning of floor mats (discharge to storm drains is prohibited)
- Housekeeping/cleanliness of dumpster and/or tallow bin area
- Proper disposal of Fats, Oils, and Grease (FOG)
- Location and condition of grease removal device(s)
- Pumper/Hauler (cleaning) records for the last 3 years
- Latest lateral cleaning receipts
- Display of BMP signage near sinks (supplied by Inspector if needed)
- Inspection of the immediate downstream manhole
- Plumbing configuration (diagram if available)

Posters on Best Management Practices (BMPs) for handling FOG will be distributed to FOG generating FSEs during the inspections. The Bay Area Pollution Prevention Group (BAPPG) funded CalFOG to create this poster that is available in English, Spanish, Korean, Chinese and Vietnamese.

7.7 Outreach

Outreach and education are a significant component of the EPASD environmental programs. Newsletters with descriptions of BMPs for food facilities were distributed to educate the FSEs about minimizing the impact of FOG on the collection system.

Outreach for residents has also been a component of the program. East Palo Alto residents have received inserts educating them on the problems caused by improper disposal of FOG to the sewer system. Messages include simple BMPs such as disposing of used cooking oils and grease in the trash after placing them in sealed containers or absorbing them onto paper towels.

Future outreach materials for the public will include information about the FOG drop off program at the East Palo Sanitary District. The FOG waste is contained in two 55 gallon drums, that have double containment, and is removed on average every 12 weeks and more often if needed.

The EPASD also participates in other regional programs such as the www.cleanbay.org "We're All in it Together" campaign and Bay Are Pollution Prevention Group's (BAPPG) FOG workgroup. Regionally generated materials such as posters have been handed out to FSEs and proposed materials such as food scrapers or grease cans will be handed out at community events when available.

7.8 Goals for the FOG Control Program

The primary goal of the FOG program is to work interdepartmentally and with the community to reduce the number, severity, and frequency of SSOs linked to FOG and to reduce the environmental impact, liability, and exposure to the District and the costs associated with SSO clean ups. RWQCP staff will continue to contribute to regional programs such as the statewide CalFOG and BAPPG workgroups.

Inspection and Compliance Goals:
The 2013 Clean Bay Pollution Prevention Plan includes a long-standing goal of inspecting at least one-third of the FSEs each year. The expanded FOG program will include more rigorous inspections and enforcement but will maintain the same goal for the number of inspections. Grease trap component inspection form is included with this SSMP as Appendix L.

Once all of the facilities have received an initial visit it should be possible to determine time demands and refine the prioritization. Setting reasonable goals for inspection frequency for each category and percentage of facilities in compliance will then be possible.

Any FSEs identified through SSO events or sewer cleaning data will be inspected within two days of EPASD notification.

SSO Goals
SSO data will be analyzed each year to help monitor the success of the FOG program.

FOG Chart

Scenario	BMP	Ordinance	UPC
Maintenance Log		The log shall be retained for a period of three years, and shall be available for inspection by city inspectors upon request. 16.09.103(d)	
Sizing of Grease Removal Devise (GRD)			
GAD Required		All grease generating facilities 16.09.103(a,b,c)	Yes
GRD: Interceptors, Traps, Big Dippers	<25% solids + FOG	At a minimum, the contents shall be removed every six months. 16.09.103(d)	
GAD Additives	Okay for larger GAD with longer holding time, cuts down odors		
Lateral/Internal Sewer Cleaning	No, unless SSO/backup occurs		
Equipment to Grease Trap(s) & Big Dipper(s):			
Dishwasher(s)			No
Three Compartment Sink(s)			Yes
Hand Sink(s)			No
Mop Sink(s)			Yes, in new Facilities
Floor Drain(s)			Yes, In new Facilities
Flow Restrictor(s)			Yes
Equipment to Grease Interceptor(s):			
Dishwasher(s)			Yes
Three Compartment Sink(s)			Yes,
Hand Sink(s)			Yes
Mop Sink(s)			Yes
Floor Drain(s)			Yes
Flow Restrictor(s)			Yes
Posters Displayed	Training		
Dry Wipe Plates, Pots, Pans	Required		
Screens in sink drains	Required		
Disposal of food waste to trash	Required		
Safe procedure for disposal of FOG	Required		
Soil! clean-up	Required		
Employee training	Required		
Grinder/Disposer		No new ones allowed, existing out by 1/1/07. 16.09.103(e,f)	
Tallow Bin	Covered with lid	Area clean, Stormwater requirement 16.09.106	
Trash	Covered	Cover requirement, plus grease trap for new facilities	
Floor mat cleaning	Inside	Stormwater requirement 16.09.106	
Exhaust hood & filter cleaning	Inside	Stormwater requirement 16.09.106	
Zinc-free floor finish		<0.01% Zn by weight or contained and treated offsite	
Storm Drains		Labeled 16.09.106(9)	

8.0 SYSTEM EVALUATION AND CAPACITY ASSURANCE PLAN

8.1 Introduction

This section of the SSMP outlines the EPASD's programs and activities to provide adequate capacity.

8.2 Capacity Assessment

The EPASD shall prepare and implement a capital improvement plan (CIP) that will provide hydraulic capacity of key sanitary sewer system elements for dry weather peak flow conditions, as well as the appropriate design storm or wet weather event.

At a minimum, the plan will include:

- Evaluation: Actions needed to evaluate those portions of the sanitary sewer system that are experiencing or contributing to an SSO discharge caused by hydraulic deficiency (if any). The evaluation will provide estimates of peak flows associated with conditions similar to those causing overflow events, estimates of the capacity of key system components, hydraulic deficiencies (including components of the system with limiting capacity) and the major sources that contribute to _the peak flows associated with overflow events.
- Design Criteria: Where design criteria do not exist or are deficient, undertake the evaluation identified in (a) above to establish appropriate design criteria.
- Capacity Enhancement Measures: The steps needed to establish a short- and long-term CIP to address identified hydraulic deficiencies, including prioritization, alternatives analysis, and schedules. The CIP may include increases in pipe size, inflow, and infiltration (1/1) reduction programs, increases and redundancy in pumping capacity, and storage facilities. The CIP shall include an implementation schedule and shall identify sources of funding.
- Schedule: The District shall develop a schedule of completion dates for all portions of the capital improvement program developed in (a)-(c) above. This schedule shall be reviewed and updated consistent with the SSMP review and update requirements as described in Section D. 14 (of the GWDR).

8.3 System Evaluation and Capacity Assurance Plan

1. Evaluation - Collection System Master Plan

The EPASD updated its Master Plan in 2015, and issued the Addendum to the March 2015 East Palo Alto Sanitary District Master Plan Update in April 2021. The 2015 Master Plan and 2021 Addendum are included with this SSMP as Appendix M. The master planning effort evaluated the capacity of the existing sanitary sewer system assets and provided capacity design criteria for future assets. Projects within the EPASD's service area are primarily to serve future redevelopment. The EPASD includes impact fees within the connection fees to help contribute to future downstream projects needed for extra pipe capacity.

2. Evaluation - Hydraulic Model

By metering, the EPASD periodically monitor's the flow in its sanitary sewer system to identify capacity deficiencies and to monitoring the quantity of inflow and infiltration present.

3. Design Criteria

The capacity-related design criteria are included in the SSMP Design and Performance Provisions.

4. Capacity Enhancement Measures - Capital Improvement Program

The EPASD will include publicly funded capacity enhancement projects in its Capital Improvement Program. The Capital Improvement Program includes recommended projects to address capacity deficiencies in the system. The capital improvement projects planned for the next 15 years are described within the Master Plan (Appendix M).

5. Schedule

The schedule for the EPASD's capacity enhancement projects is included in the EPASD's CIP. The CIP in the 2021 Addendum identifies pipelines that require repair and replacement to prevent manhole surcharging and potential SSOs. It also identifies increases in capacity needed to account for future developments based on modified zoning designations. Pipeline improvements are identified, and the sequence of construction will be determined based on EPASD's observations of existing pipe conditions and new development needs. It is anticipated that approximately $1.0M per year will be allocated to implementing the CIP independent of developer contributions to accelerate specific projects.

9.0 MONITORING, MEASURMENT AND PROGRAM MODIFICATIONS

9.1 Introduction

This section of the SSMP outlines the process that the EPASD will follow to evaluate the effectiveness of the SSMP and to identify up-dates that may be needed for a more effective program.

9.2 Regulatory Requirements for the Monitoring, Measurement and Program Modifications Section

The requirements for the Monitoring, Measurement, and Program Modifications (MMPM) section of the SSMP are:

- Each wastewater collection system agency shall monitor the effectiveness of each SSMP element and update and modify SSMP elements to keep them current, accurate, and available for audit as appropriate.
    - The EPASD shall:
        - Maintain relevant information that can be used to establish and prioritize appropriate SSMP activities;
        - Monitor the implementation and, where appropriate, measure the effectiveness of each element of the SSMP;
        - Assess the success of the preventative maintenance program;
        - Update program elements, as appropriate, based on monitoring or performance evaluations; and
        - Identify and illustrate SSO trends, including: frequency, location, and volume.

9.3 Performance Measures

The indicators that the EPASD will use to measure the performance of its wastewater collection system and the effectiveness of its SSMP are:

1. Total number of SSOs;
2. Number of SSOs by each cause (roots, grease debris, pipe failure, capacity, pump station failures, and other);
3. Portion of sewage contained compared to total volume spilled;
4. Volume of spilled sewage discharged to surface water;
5. Planned to actual performance for preventive maintenance; and
6. Planned to actual training activities.

9.4 Baseline Performance

The EPASD has limited historical, or baseline, performance data for the selected performance

measures. Trends will be added when the quantity of data is adequate.

9.5 Performance Monitoring and Program Changes

The EPASD will evaluate the performance of its wastewater collection system at least annually using the performance measures identified in Subsection 9.3 Performance Measures. The EPASD will update the data and analysis in this section at the time of the evaluation.

The EPASD may use other performance measures in its evaluation. The EPASD will prioritize its actions and initiate changes to this SSMP and the related programs based on the results of the evaluation.

10.0 SSMP PROGRAM AUDITS

10.1 SSMP Audit

The EPASD conducts periodic internal audits a minimum of every two years in accordance with SSS WDR requirements including preparation of an audit report. The audit focuses on evaluating the effectiveness of the SSMP and the EPASD compliance with the SSMP requirements including identification of any deficiencies in the SSMP and steps to correct them. The revised SSMP will be certified by the local oversight agency and governing board. The purpose of the audit is to evaluate the effectiveness of the SSMP and its elements and to determine the compliance of EPASD with the SSMP requirements. The audit must identify any deficiencies in the SSMP and any corrective actions taken or to be taken to be in compliance with the SSMP elements. The biennial SSMP Audit Report Form is included with this SSMP as Appendix N.

10.2 Audit Reporting

All audit reports are reviewed and certified by the LRO in accordance with the SSS WDR. Audit reports are kept on file for a minimum of five (5) years and are available to the RWQCB upon request.

11.0 COMMUNICATION PLAN

11.1 Communication Plan

The EPASD will post the SSMP to their website (http://www.epasd.com) and will include contact information for comments. The EPASD also presents performance of the SSMP during the monthly Regular Board Meetings or during the monthly EPASD Engineering Committee Meetings both of which are open to the public.

The EPASD also posts meeting schedules, board meeting agendas and minutes, public information including resolutions, ordinances, and notices, SSO information, “do’s and don’ts” for the sewer line, guidance documents for disposal of hazardous household materials and other sewer related information on the EPASD website.

11.2 SSMP Change Log

The SSMP Change Log lists the specific changes or updates made to the SSMP, the location of the changes within the SSMP, the person who authorized the change or update, and the date of the change or update. The SSMP Change Log is included with this SSMP as Appendix O.

Appendix A

Sewer Use Ordinances

EAST PALO ALTO SANITARY DISTRICT

ORDINANCE NO. 39

"INDUSTRIAL WASTE DISCHARGE"

EAST PALO ALTO SANITARY DISTRICT

Ordinance No. 39

"Industrial Waste Discharge"

Sections:

Section 101	Purpose.
Section 102	Definitions.
Section 103	Responsibility of the Manager.
Section 104	Industrial Waste Discharge Permit.
Section 105	Industrial Waste Discharge Permit Procedure.
Section 106	New Sources and Long-Term Increases in Flow or Concentration.
Section 107	Modification, Suspension or Revocation of Industrial Wastes Discharge Permit.
Section 108	Exceptional Waste.
Section 109	Compliance Schedules.
Section 110	Reporting Requirements For All Permitted Discharges.
Section 111	Personnel Orientation.
Section 112	Waste Sampling Locations.
Section 113	Discharger Monitoring.
Section 114	Trucker's Discharge Prohibited.
Section 115	Limitations on Point of Discharge.
Section 116	Confidentiality.
Section 117	Accidental Discharge Prevention and Reporting.
Section 118	Discharger Self-Monitoring and District Investigation.
Section 119	General Prohibitions.
Section 120	Unpolluted Water.
Section 121	Standards.
Section 122	Prohibition Against Dilution.
Section 123	Requirements for Photographic Materials Processing.
Section 124	Requirements for Dental Facilities Using Silver Amalgams.
Section 124.1	Requirements for Machine Shops.
Section 124.2	Requirements For Cooling Systems, Pools, Spas and Fountains.
Section 124.3	Additional Cooper Limitations For Industrial Waste.
Section 124.4	Requirements for Construction Operations.
Section 125	Standards For Other Industrial Wastes.
Section 126	Damage to Facilities.
Section 127	Notices of Noncompliance.
Section 128	Public Notification of Violations.
Section 129	Compliance with the Pretreatment Regulations.
Section 130	District's Right to Terminate Discharge.

Section 131	Temporary Noncompliance and Increased Loading Reporting.
Section 132	Construction Requirements.
Section 133	CEQA Compliance.
Section 134	Storage of Hazardous Materials Above Sinks.
Section 135	Copper-Based Root Control Chemicals.
Section 136	Grease Disposal Prohibited.
Section 137	Grease Removal Device Required.
Section 137.1	Drains.
Section 138	Storm Drains; Threatened Discharges.
Section 139	Requirements for Vehicle Service Facilities.
Section 140	Criminal Penalties.
Section 141	Civil Remedies and Penalties.
Section 142	Enforcement; Notice of Noncompliance.

Section 101. Purpose. The overall goal of this Ordinance and the East Palo Alto Sanitary District's (the "District") water quality control program is to prevent and control pollution and protect and foster human health and the environment. The specific purpose of this Ordinance is to prevent the discharge of any pollutant into the Sewers which would 1) obstruct or damage the ~~Sewers,~~ Collection System 2) interfere with, inhibit or disrupt the Palo Alto Regional Water Quality Control Plant (the "Plant"), or its treatment processes, operations, or its sludge processes, use or disposal, 3) pass through the treatment system and contribute to violations of the regulatory requirements placed upon the Plant, or 4) result in deterioration of or threaten harm to human health or the environment. It is the intent of the District to update and modify this Ordinance as needed to continue to provide a program for pretreatment of Industrial Waste which is approved by Federal and State regulatory agencies. Therefore, this Ordinance is designed to be no less stringent that the U. S. Environmental Protection Agency "General Pretreatment Regulations for Existing and New Sources of Pollution" published at Title 40 of the Code of Federal Regulations, ("CFR") Part 403, as applicable, and as such regulations may be amended from time to time (the "Pretreatment Regulations").

Section 102. Definitions. The meaning of the following words and phrases, whenever used in this Ordinance, shall be as defined herein. The meaning of words, terms and phrases used in this Ordinance not herein defined which are defined or interpreted or used in the Pretreatment Regulations Terminology for analytical testing shall be that contained in "Guidelines Establishing Test Procedures for the Analysis of Pollutants," published at Title 40, CFR, Part 136.

(a) "Average Concentration" of a substance shall mean the total daily discharge weight of the substance divided by the total daily wastewater volume at the Point of Discharge.

(b) "Berm" means a barrier to the flow of liquid which is not degraded by the subject liquid and is sufficiently high to contain anticipated fluid amounts, or which causes sufficient grade to prevent migration of anticipated fluid amounts.

~~(b)~~ (c) "Cesspool" shall mean a lined or partially lined underground pit into which raw Sanitary Sewage is discharged.

(d) "Collection System" means the pipes, junction boxes, channels and other conveyance apparatus used to move storm water or sewage.

(e) "Cooling Water" means water which is used to cool fluids or equipment in commercial or industrial processes or air conditioning systems.

(f) "Cooling Water System" means the pipes, heat exchangers and other appurtenances used to convey Cooling Water in cooling towers, direct contact cooling systems and similar fixed cooling systems.

(g) "Contaminated Ground Water" means water found beneath the earth's surface which does not meet state or federal standards for drinking water supplies or other specified beneficial uses.~~or for discharge to navigable waters.~~

(h) "Contaminated Water" means water which does not meet state or federal standards for drinking water supplies or for discharge to navigable waters.

(i) "Cycles of Concentration" means the flow rate of water added to a cooling tower water system divided by the flow rate of water discharged from a cooling system.

~~(c)~~ (j) "Discharger" shall mean any Person who discharges, causes, or ~~permits~~ allows the discharge of Industrial Waste into the District's Sewer System.

~~(d)~~ (k) "District" shall mean the East Palo Alto Sanitary District.

~~(e)~~ (l) "District Board" shall mean District's elected governing board.

~~(f)~~ (m) "Domestic Sewage" shall mean the liquid and water-borne wastes derived from the ordinary living processes, free from Industrial Wastes and of such character as to permit satisfactory disposal, without special treatment, into District's Sewer System.

~~(g)~~ (n) "EPA" means the United States Environmental Protection Agency.

~~(h)~~ (o) "Exceptional Waste" shall mean that subset of Industrial Waste specified in Section 108(b).

(p) "Fail-Safe Valve" means an electrically driven valve that is normally closed. The valve can be opened by continuously depressing a switch mechanism that automatically closes the valve when not in used or depressed.

~~(i)~~ (q) "Food Service Facility" shall mean any non-residential establishment that uses or generates Grease when preparing food. Food Service Facility does not mean any facility that prepares food for off-site cooking and consumption, or any facility that does not use or generate Grease in cooking or preparing food.

~~(j)~~ (r) "Grease" shall mean, and includes, fats, oils, waxes or other related constituents. Grease may be of vegetable or animal origin, including butter, lard, margarine, vegetable fats and oils, and fats in meats, cereals, seeds, nuts and certain fruits. Grease may also be of mineral origin, including kerosenes, lubricating oil, and road oil. Grease in the wastewater Collection System is generally present as, but need not be, a floatable solid, a liquid, or colloid, an emulsion, or in a solution.

~~(k)~~ (s) "Grease Removal Device" shall mean an Interceptor, trap, or other mechanical device designed, constructed and intended to remove, hold or otherwise prevent the passage of Grease to the Sanitary Sewer System.

~~(l)~~ (t) "Hazardous Material" shall mean any material so designated by an ordinance or regulation of the District or by other applicable regulations including Chapter 17 of the City of Palo Alto Municipal Code and Part II of Title 22 of the California Code of Regulations.

~~(m)~~ (u) "Industrial Waste" shall mean the waste and wastewater from any production, manufacturing or processing operation of whatever nature, including institutional and commercial operations, where wastewater is used for the removal ~~of significant quantities~~ of waste other than Domestic Sewage.~~from premises connected to the District's Sewers.~~ "Industrial Waste" shall include Contaminated ~~Ground~~ Water ~~and water~~ from construction operations, Contaminated Water from erosion of disturbed land, and Contaminated Water from irrigation runoff.

~~(n)~~ (v) "Instantaneous Maximum" shall mean the highest concentration or other measure of pollutant magnitude taken at any discrete point in time.

~~(o)~~ (w) "Instantaneous Minimum" shall mean the lowest concentration or other measure of pollutant magnitude taken at any discrete point in time.

~~(p)~~ (x) "Interceptor" shall mean a receptacle ~~or trap~~ designed and constructed to intercept, separate, and prevent the passage of prohibited substances into the Sewer System.

~~(x)~~(y)"Machine Shop" means a fixed facility which cuts, grinds, polishes, deburs, or machines metal parts but does not conduct metal finishing as that term is defined by the EPA in 40 CFR Part 433.

~~(y)~~(z)"Metal Fabrication Facility" means a fixed facility that forms, welds and assembles metal pieces, but does not conduct metal finishing as that term is defined by the EPA in 40 CFR Part 433.

(aa)"Monthly Average Measurement" means the sum of all measurements taken during a month divided by the number of measurements taken during the month. The "Monthly Average Measurement" shall be based on a minimum of three measurements; provided, that if the measured value of any measurement is below the analytic detection limit, then the detection limit shall be used in calculating the monthly average.

~~(q)~~ (bb)"Manager" shall mean the District Manager, his or her delegate, or such other Person or Persons as may be designated by the District Board to fulfill the responsibilities of the Manager as specified in this Ordinance.

~~(r)~~ (cc)"NPDES" shall mean National Pollution Discharge Elimination

~~(s)~~ (dd)"Organic Solvent" shall mean any solvent which cont~in~ carbon in its molecular structure.

~~(t)~~ (ee)"Person" shall mean any individual, partnership, firm, association, corporation, or public agency.

~~(u)~~ (ff)"Plant" shall mean the Palo Alto Regional Water Quality Control Plant.

~~(v)~~ (gg)"Point of Discharge" shall mean the point or points designated as such in a permit. Where no designation is made it shall mean the point where the private Sewer joins a public Sewer.

~~(w)~~ (hh)"Pretreatment Regulations" shall mean the "General Pretreatment Regulations of Existing and New Sources of Pollution" published by the U. S. Environmental Protection Agency at Title 40 of the Code of Federal Regulations ("CFR"), Part 403 as now in effect or as those regulations may be later amended from time to time.

~~(x)~~ (ii)"Pretreatment System" shall mean a treatment system at an industrial or commercial facility that is designed to treat water prior to entering the District's Sewer System.

~~(y)~~ (jj) "Sanitary Sewage" ~~or "Sewage"~~ shall mean water-carried wastes from residences, business property, institutions and industrial property excluding groundwater, surface ~~water,~~ and Stormwater ~~and Industrial Wastes~~.

~~(z)~~ (kk) "Secondary Containment" shall have the meaning specified by Title 17 of the City of Palo Alto Municipal Code.

~~(aa)~~ (ll) "Seepage Pit" shall mean a device comprised of one or more pits extending into porous strata, lined with open jointed masonry or similar walls, capped and provided with a means of access such as a manhole cover and into which wastewater disposal system effluent is discharged.

~~(bb)~~ (mm) "Sewage Treatment Plant" shall mean any arrangement of devices and structures used for treating Sanitary Sewage ~~and Industrial Wastes~~.

~~(cc)~~ (nn) "Sewer" shall mean a pipe or conduit for carrying sewage.

~~(dd)~~ (oo) "Sewer System" or "Sanitary Sewer System" shall mean all Sewers, sewage treatment plants and other facilities owned, operated or used by the District for carrying, collecting, treating, and disposing of Sanitary Sewage and Industrial Wastes.

~~(ee)~~ (pp) "Simple Payback Period" means the number of years required to allow the dollar value of an investment in water pollution control to be exceeded by cost savings resulting from the investment.

~~(ee)~~ (qq) "Storm Drains" ~~or "Storm Drain System"~~ shall mean the system of pipes and channels used to collect and convey Stormwater.

~~(ff)~~ (rr) "Stormwater" shall mean flows resulting from rainwater.

~~(gg)~~ (ss) "Unpolluted Water" means water to which no constituent has been added, either intentionally or accidentally, that would render such water unacceptable for disposal to storm or natural drainage or directly to surface waters.

Section 103. Responsibility of the Manager. The Manager shall be responsible for the administration and enforcement of this Ordinance, for conducting an Industrial Waste source control program , and for recommending to the District Board such orders, rules and regulations to the District Board as may be necessary to accomplish the purposes of this Ordinance in accordance with the requirements that are or may be promulgated by EPA, the State of California Water Resources Control Board, the State Department of Health Services, the California Regional Water Quality Control

Board for the San Francisco Bay Region, the Plant or other duly authorized boards or agencies.

Section 104. Industrial Waste Discharge Permit.

(a) It shall be unlawful for any Person or organization to discharge or cause to be discharged any Industrial Waste whatsoever directly or indirectly into the Sewer System without first obtaining a permit for Industrial Waste discharge. Appropriate fees for such permits shall be established by the District. Furthermore, it shall be unlawful for any Person or organization to discharge any Industrial Waste in excess of the quantity or quality limitations or to violate any other requirement set forth in this Ordinance or in a permit for Industrial Waste discharge. It shall be unlawful for any Person or organization, regardless of whether the Person has been issued a permit by the District for Industrial Waste discharges, to discharge Sanitary Sewage including, without limitation, Domestic Sewage, Industrial Waste or Exceptional Waste into any Storm Drains or natural drainage channels which exist within the territory of the District.

(b) A Discharger may submit an advance written request to discharge prohibited wastes not in conformance with this Ordinance or wastes containing concentrations of substances or characteristics in excess of those permitted by this Ordinance. Discharge of such wastes shall not be allowed without an Exceptional Waste permit duly issued.

(c) The permit for any Industrial Waste discharge may include, but is not limited to: requiring pretreatment of wastes before discharge; restriction of peak flow discharges; prohibition of discharge of certain wastewater components; restriction of discharge to certain hours of the day; requiring payment of additional charges to defray increased costs to the District created by the wastewater discharge; requiring sampling and monitoring before and during discharge; and other conditions as may be required to effectuate the purposes of this Ordinance. The permit may also require specific investigations or studies to determine methods of reducing toxic constituents in the discharge.

(d) No permit for Industrial Waste discharge is transferable without the prior written consent of the District Board. A change of ownership (including a transfer of the majority of shares in a corporate Discharger) of the waste generating facility requires a new permit application.

(e) Renewal of an existing Industrial Waste discharge permit requires a new permit application.

Section 105. Industrial Waste Discharge Permit Procedure.

(a) Applicants for a permit for any Industrial Waste discharge shall complete and submit an application form for each Point of Discharge. The District shall establish the contents of the form, and may require additional information on the characteristics of the wastewater discharge beyond that required on the application form. Interested Persons shall be notified of the filing of the application by posting at District's office.

Completed application forms shall be filed by the Discharger not less than one hundred twenty (1203 days in advance of the proposed commencement of discharge. The Discharger shall not commence discharge prior to permit approval.

(b) Prior to approval of a discharge permit, the District Board shall determine whether the discharge is subject to the Categorical Standards provided in the Pretreatment Regulations. The determination will be made by the District Board following the guidelines and procedures of that subpart.

(c) The District Board may impose terms and conditions on the permit which the District Board deems reasonable or necessary to carry out the purposes of this Ordinance. The application may be approved if: (i) the applicant has complied with all requirements of this Ordinance and all other applicable District, State and Federal regulations; (ii) the applicant has furnished all requested information; (iii) the District Board determines that it is satisfied with the devices, equipment, chemicals, and other facilities to be used to sample, meter (where required), convey, treat, and dispose of the Industrial Wastes; (iv) the District Board determines that discharge pursuant to the permit does not present a hazard or threat of hazard to the public health, safety, welfare, natural environment or Sewer System; (v) the Person(s) to be responsible for treatment and control are adequately trained and capable of consistently meeting permit requirements; (vi) the District determines that there exists adequate capacity in the Sewer System and at the Plant to properly handle the applicant's anticipated discharge; and (vii) the applicant has paid to the District all fees required by the District Board.

(d) Every Industrial Waste Discharger shall have a hearing before the District Board, or its designee, before its Industrial Waste discharge permit application is issued or denied, utilizing the following procedures:

(i) The District shall give the Industrial Waste discharge permit applicant ten (10) business days written notice of a public hearing on the application. The Manager shall post a copy of such notice at the District Office for interested persons, and may, in his or her discretion, publish notice of the hearing in a newspaper of general circulation prior to the hearing. The notice shall set forth specifically the place and time for the hearing,

and a date which shall be no less than ten (10) business days from the date of posting of the notice.

(ii) All parties involved shall have the right to offer testimony, whether oral or written, and other tangible evidence bearing on the issues and to be represented by counsel. At the same hearing or at a subsequent District Board meeting after the public hearing on the application, the District Board shall make a preliminary determination on the application. Thereafter, the District Board may, in its discretion, and after providing notice as described in Section 105(d)(i), hold a second public hearing prior to making its final decision on the application.

(iii) The hearing procedures described in this Section 105(d) shall also be applicable to hearings requested by a Discharger regarding permit modification, suspension and revocation pursuant to Sections 106 and 107, District-issued compliance directives pursuant to Section 113, and termination of discharge pursuant to Section 130.

(e) Interested Persons shall be notified of the issuance of permits by posting at the District's office. Any Person interested in the issuance of a specific permit may make a written request to the District to be mailed a copy of the notification of the issuance of that permit. The applicant, interested Persons and other members of the public may appeal the issuance or denial of a permit within forty-five (45) days of issuance or denial and request a hearing on the matter. The hearing procedures contained in Section 105(d) shall be followed. The permit effective date shall not be postponed solely because of the filing of an appeal.

Section 106. New Sources and Long-Term Increases in Flow or Concentration.

(a) Any Person desiring to change the quantity or quality of waste discharged to the Sewer System and/or to discharge wastes or use facilities which are not in conformance with the Person's Industrial Waste discharge permit shall apply for and obtain an amended permit prior to any such discharge or use. An application for an amended permit must be filed one hundred twenty (120) days in advance of the proposed commencement of such discharge or use.

(b) New sources of Industrial Waste discharges and long-term increases in flow or concentration of existing sources shall be in full compliance with the provisions of this Ordinance, including, but not limited to, permit modification procedures, at the time of commencement of discharge. Dischargers subject to this Section 106, upon request of the District, shall complete a waste minimization study in accordance with guidelines published by the Plant, and shall certify that measures have been taken to minimum Industrial Waste constituents in the discharge. Short-term

increases in flow or concentration of waste constituents are governed by Section 131.

Section 107. Modification, Suspension or Revocation of Industrial Wastes Discharge Permit.

(a) Any permit for Industrial Waste discharges may be revoked, made subject to additional terms or conditions, modified or suspended by the District Board in addition to other remedies provided by law, when such action is necessary in order to stop a discharge or a threatened discharge which presents a hazard or threat of a hazard to the public health, safety, welfare, natural environment, Sewer System, or which violates this Ordinance, or which action is intended to implement programs or policies required or requested of the District by appropriate local, State or Federal regulatory agencies.

(b) Any Discharger notified of the District's intent to revoke, make subject to additional terms or conditions, modify, or suspend the Discharger's permit shall immediately comply with directives of the District Board or cease and desist the discharge of all Industrial Wastes or such portion of said wastes as will eliminate, in the District's determination, the wrongful discharge to the Sewer System pending any hearing that the Discharger may request, utilizing the procedure set forth in Section 105~d) of this Ordinance.

(c) The District Board may reinstate any suspended or revoked Industrial Waste discharge permit or modified permit upon proof of satisfactory ability to comply and actual compliance with all discharge requirements, and the payment of any costs, fines, or penalties which may be assessed. The District Board may require any permit holder to develop and implement a compliance schedule for any proposed modification to permit terms and conditions.

Section 108. Exceptional Wastes. The District Board may authorize a Discharger by permit to discharge "Exceptional Wastes" when the factors stated in Section 105(c) are met and the permit will neither result in a violation of any of the prohibitions described in Section 119 of this Ordinance nor any violation of the Pretreatment Regulations. The District shall be compensated by the Discharger for any costs the District incurs in authorizing such discharge including any expense in determining whether such discharge is compatible with the Sewer System and is in compliance with the Pretreatment Regulations.

(a) Permission to discharge Exceptional Wastes may be given either as an addendum to a current permit or by a separate permit. In the case of third parties requesting permission to discharge waste generated by another party or the products of treating waste generated by another party, the waste generator or responsible party must submit a "designation of authorized representative"

("DOAR") to the Manager to authorize the third party to conduct business and sign reports on their behalf. However, a certification that the waste as discharged does not constitute a hazardous waste and the permit and permit application must be signed by such waste generator or responsible party.

(b) Exceptional Wastes are aqueous wastes that may include but are not limited to (i) construction site dewatering where soil or groundwater contamination is present, (ii) groundwater contamination generated as a result of pump tests in preparation for a groundwater cleanup or water generated during sampling events, (iii) aqueous wastes generated by either permanent or mobile hazardous waste treatment units used to treat hazardous waste at the generator's site, and (iv) aqueous wastes generated as a result of site cleanup activities. A permit must be obtained prior to commencement of any such discharge, and requests for such permits shall be submitted no later than twenty (20) working days prior to proposed commencement of discharge. The letter of application shall include the name, address, phone number and title of the responsible party, the on-site contact Person's name, address and twenty-four (24) hour contact telephone number, analytical data on the contaminants and characteristics of the intended discharge, the intended Point of Discharge, the duration, volume, and dates of intended discharge, and a site plan.

(c) A separate charge for processing such requests shall be established by the District Board to recover the District's costs in processing and administering such permits.

Section 109. Compliance Schedules. In the event that an Industrial Waste discharge permit holder or applicant should be affected by a newly promulgated waste discharge standard or an existing discharge permit holder is reclassified as being subject to the Categorical Standards provided in the Pretreatment Regulations due to process changes, or an inspection reveals the presence of regulated processes, or new information becomes available that justifies or requires a reclassification, the Discharger shall, within ninety (90) days of the effective date of a Categorical Standard or reclassification, file a Baseline Monitoring Report. If procedures or installation of facilities, equipment or improvements will be required to meet the Pretreatment Regulations, the Discharger shall include a compliance time schedule which specifies the shortest schedule by which the Discharger will provide such additional pretreatment procedures or facilities, equipment or improvements to attain compliance. The completion date in this schedule shall be the earlier of the established compliance date provided by the applicable Pretreatment Regulations or the established compliance date provided by applicable local regulations.

Section 110. Reporting Requirements For All Permitted Dischargers. All permit holders shall be required to submit

periodic reports to the Manager. Specific reporting requirements shall be specified in the permit, or in compliance directives or in notices of violation, but the minimum reports required for all permitted Dischargers of nondomestic waste are as follows:

(a) Baseline Monitoring Reports.

(b) Compliance reports which shall be submitted within ninety (90) days of the compliance date calculated pursuant to the applicable Pretreatment Standards or District standards. These reports shall state whether applicable standards or requirements are being met on a consistent basis.

Failure to submit required reports by the specified due date shall be considered a violation of the provisions of this Ordinance.

Section 111. Personnel Orientation.

(a) Holders of Industrial Waste discharge permits shall take necessary steps to inform and train appropriate personnel employed by such permit holders of the provisions of this Ordinance.

(b) Such personnel shall include workers and supervisors whose duties pertain in any manner to the handling and management, including, but not limited to, generation, treatment and disposal, of waste discharges regulated by this Ordinance.

(c) Steps to inform and train such personnel shall include:

(i) Orientation of newly employed or assigned personnel;

(ii) Annual orientation of all appropriate personnel; and

(iii) Posting of work stations with signs or equally effective methods of indicating approved methods for disposition of wastes and reporting requirements and instruction for accidental spills and increased loadings.

Section 112. Waste Sampling Locations. Every establishment from which Industrial Wastes are discharged to the Sewer System shall provide and maintain one or more outside manholes, access boxes, junction chambers, metering devices or volume and flow measuring methodologies or other sampling and measuring points approved by the District Board which will allow the separate measuring and sampling of industrial and domestic wastes. The District Board may approve sampling points and measuring devices or methodologies which will permit the combined sampling and measuring of domestic and Industrial Wastes only for establishments discharging prior to the effective date of this Ordinance. Unless otherwise approved by the District Board, domestic and Industrial Wastes shall be kept completely separated upstream of such sampling

and/or measuring points. Establishments that are billed for Sewer service on the basis of sewage effluent constituents shall provide a suitable means for sampling and/or measurement of flow to determine billing constituents. Sampling points shall be so located that they are safe and accessible to District inspectors at any time during which discharge is occurring.

Section 113. Discharger Monitoring.

(a) The District, or its authorized representatives, may conduct all inspection, surveillance, and monitoring procedures necessary to assure compliance with applicable sections of this Ordinance and with applicable Federal, State and local regulations.

(b) Representatives of the District shall be authorized to enter without unreasonable delay, during hours of discharge from the facility or hours of operation, any premises of any Discharger in which an Industrial Waste source or treatment system is located or in which records are required to be kept to assure compliance with this Ordinance and applicable Federal, State and local regulations. Records shall be available to District personnel for inspection and copying.

(c) In addition to any other remedy available to the District, District inspectors may issue compliance directives at the time of the inspection to require the Discharger to implement actions which will correct violations of this Ordinance or the Discharger's permit. Such directives shall be considered as an additional condition on the Discharger's permit and may be reviewed pursuant to the hearing procedure provided in Section 105(d) upon request by the Discharger.

Section 114. Trucker's Discharge Prohibited.

(a) No Person operating vacuum or Cesspool pump trucks or other liquid waste transport trucks shall discharge septic tank, Seepage Pit, Interceptor or Cesspool contents, or other liquid wastes to the Sewer System.

(b) In the event of an emergency and in its sole discretion, the District Board or its designated representative may permit any Person described in Section 114(a) to discharge waste into the Sewer System.

Section 115. Limitations on Point of Discharge. No Person shall discharge any substances directly into a manhole or other opening in the District's Sewer System, other than through an approved building Sewer, or other location approved by the District Board, or its designee.

Section 116. Confidentiality.

(a) Any information submitted to the District pursuant to this Ordinance may be claimed as confidential by the submitter. Any such claim must be asserted at the time of submission in the manner prescribed on the application form or, in the case of other submissions, by stamping the words "confidential business information" on each page containing such information. Information submitted prior to the effective date of this Ordinance may be withdrawn and replaced by submittals stamped "confidential business information". If no such claim is made at the time of submission or within ninety (90) days after this Ordinance becomes effective, the information may be made available to the public without further notice.

(b) Upon receipt of a request for the release of information to the public which includes information which the Discharger has notified the District is claimed to be confidential as provided herein, the District Board, or its designated representative, shall notify the Discharger in writing of the request by certified mail, return receipt requested. The Manager shall release the information to the public, but not earlier than thirty (30) days after the date of mailing the notice of the request for information, unless, prior to the expiration of the 30-day period, the Discharger files an action in an appropriate court for a declaratory judgment that the information is subject to protection under the laws of the State of California or for an injunction prohibiting disclosure of the information to the public and promptly notifies the District of that action. This section does not permit a Discharger to refuse to disclose the information required pursuant to this Ordinance to the District.

(c) Information and data provided to the District pursuant to this section which constitutes effluent or flow data shall be available to the public without restriction.

(d) No Discharger shall discharge any substance unless its composition is made known to the District.

Section 117. Accidental Discharge Prevention and Reporting.

(a) Each Discharger shall provide adequate protection to prevent accidental discharge of hazardous or prohibited materials or other wastes regulated by this Ordinance. Where directed by the District Board, or its designee, the Discharger shall install retention basins, dikes, storage tanks, secondary containment or other facilities in conformance with applicable regulations designed to eliminate, neutralize, offset or otherwise negate the effects of prohibited materials or wastes which may be accidentally discharged in violation of this Ordinance or other applicable regulations.

(b) Whenever any state or federal law or regulation requires any Person to notify any state or federal agency regarding any

accidental discharge, within the District's jurisdiction boundaries, of any prohibited or Hazardous Material or other wastes regulated by this Ordinance, such Person shall also notify the District in the same manner and time. In the event of such accidental discharge, such Person shall also provide to the District copies of all filings, reports and other documents provided by such Person to the state or federal agency regarding the accidental discharge.

Section 118. Discharger Self-Monitoring and District Investigation.

(a) As a condition of discharge, the District Board may require the Discharger to conduct a sampling and analysis program of Discharger's Industrial Waste of a frequency and type required by the District Board to demonstrate compliance with the requirements of this Ordinance. The discharge permit shall specify the minimum frequency and type of samples, flow monitoring, measuring, and analyses to be conducted by the Discharger. The permit may also specify the type of sampling equipment and flow monitoring equipment which must be installed and used. The required self monitoring program will depend on factors such as flow, potential for the discharge to cause interference, passthrough or upset of treatment processes, pollutants present, and prior compliance history (if any) of the Discharger. Additional monitoring ~~requirements~~ may be required by the District Board for violation follow-up, assisting the District in evaluating effects of the discharge, or as part of a compliance directive or notice of violation.

(b) Information to be included in reports of self monitoring, and acceptable sampling and analytical methods are specified in 40 CFR 403.12(g) and 40 CFR 136 as subsequently amended. Samples shall be analyzed at the Discharger's expense, by a laboratory accredited by the State of California Department of Health for such analysis. Information to be included in reports of self monitoring and acceptable sampling and analytical methods are specified in 40 CFR 403.12 (g) and 40 CFR 136. Samples shall be analyzed at the discharger's expense, by a laboratory accredited by the State of California Department of Health for such analysis. The detection limit used by the discharger for those substances reported as nondeductible shall be no greater than one tenth the lowest applicable effluent limit.

(c) The self monitoring reports and notices required by the Pretreatment Regulations shall be submitted to the District or its designee on the dates specified.

(d) The District Board may require self monitoring for facilities for which a permit has not been issued. In addition, the District Board may require investigations or studies to determine methods of reducing toxic constituents in the discharge.

The District Board may also request that information be submitted within a reasonable time concerning the chemical or biological constituents of any substance or chemical product which could potentially be discharged to the Sewer System or the Storm Drain System, which the District Board determines may, alone or in accumulation with other discharges, contribute to a violation by the Plant of any applicable water quality standards or of any of its NPDES permits, or contribute to an upset of Plant processes. ~~or would constitute a violation of the Chapter of the P.A.M.C.~~

(b) The self monitoring reports and notices required by the Pretreatment Regulations shall be submitted to the District or its designee on the dates specified.

(c) The District Board may require self-monitoring for facilities for which a permit has not been issued. In addition, the District Board may require and/or conduct investigations, testing and studies to determine the existence of, and methods of reducing Industrial Waste constituents in the discharge.

Section 119. General Prohibitions. In addition to any other limitations and prohibitions contained in this Ordinance, wWastes discharged into the Sewer System shall not have characteristics which, by themselves or by interaction with other wastes, may:

(a) Endanger the environment or the health and safety of the public or District Personnel

(b) Cause damage to the Sewer System;

(c) Create nuisances such as odors or coloration;

(d) Result in extra cost of collection, transmission, treatment, or disposal;

(e) Interfere with, inhibit or disrupt any wastewater operations of the Plant, or its treatment processes, sludge processes, or operations, in such manner to cause violations of the Plant's NPDES permit, or any regulatory requirement, or result in the use of sludge in non-compliance with any applicable requirements. This prohibition shall apply to discharge violations due to improper flow rates or pollutant concentration and applies to increases in magnitude or duration of violations by the Plant;

(f) Exit the Plant into waters of the United States in quantities or concentrations which contribute to a violation of any regulatory requirement applicable to the Plant. This prohibition shall apply to discharges which increase the magnitude or duration of any violation or period of non-compliance;

(g) Cause the temperature of the influent flow to the Plant to exceed 40°C (104°F);

(h) Prevent, hinder, delay, or impede compliance with effluent quality requirements established by regulatory agencies, or exceed the same;

(i) Cause wastewater quality to fall outside reclamation feasibility limits;

or

(j) Violate the terms and/or conditions of the Discharger's permit.

Section 120. Unpolluted Water. Unpolluted Water shall not be discharged through direct or indirect connection to District's wastewater facilities unless a permit is issued by the District. As used in this Section, Unpolluted Water includes Stormwater from roofs, yards, foundation or under-drainage, which meets all state and federal requirements for discharge to surface waters of the United States. The District may approve the discharge of such water only when the District determines that no reasonable alternative method of disposal is available. If a permit is granted for the discharge of such water into a District Sewer, the user shall pay the applicable charges and fees and shall meet such other conditions as required by the District Board.

Section 121. Standards. The following standards shall apply to all discharges to the Sewer at a point or points determined by the District Board to be consistent with the dilution prohibition contained in Section 122:

(a) The Categorical Standards provided in the Pretreatment Regulations shall apply to all applicable sources. The definitions and procedures for establishing individual effluent limitations shall be as specified therein. Nothing in this Ordinance shall be construed as allowing less stringent limitations.

(b) Local limitations in addition to those specified in other portions of this Section may ~~shall~~ be developed by the District Board based upon the prohibitions contained in Section 119. These limitations will be imposed on appropriate Dischargers via Industrial Waste discharge permits or modifications to existing permits.

(c) In addition to the requirements of (a) and (b) above, the following requirements shall apply where they are more stringent:

Parameter	Average Concentration	Instantaneous Maximum	Instantaneous Minimum
Oil & Grease* (mg/l)	____	20	____
Oil & Grease (total mg/l)	____	200	____
Suspended solids (mg/l)	3000	6000	____
Total Dissolved Solids (mg/l)	5000	10000	____
Temperature, (Degrees F) <30 gpm & <30 minutes:		150 F	
All other times:		120 F	
Fluoride (mg/l)	65	65	
Mercaptans and dissolved sulfides (mg/l)		0.1	
pH**		11.0	5.5

*Gravity separation at a temperature of 20°C and a pH of 4.5.

**Where the pH is monitored continuously, no individual deviation from the above range shall exceed ten (10) minutes in length for discharges less than 10,000 gallons per day nor five (5) minutes in length for discharges greater than 10,000 gallons per day. The total time of deviations during any seven (7) calendar day period shall not exceed a total of 30 minutes. Any pH reading less than or equal to 2.0 or greater than or equal to 12.5 is prohibited.

(d) Dyes. Wastes showing excessive coloration shall not be discharged into the Sewer System. Excessive coloration shall be defined as any coloration in a waste which, for any wave length, displays less than sixty percent (60~o) of the light transmissibility of distilled water under the following conditions:

(i) After filtration through a 0.45 micron membrane filter;

(ii) In the pH range of 5.5 to ~~10.0~~ 11.0;

(iii) Through a one centimeter light path;

(iv) A maximum spectrum band width of 10 ~~millimicrons~~; nanometers;

(v) Through the wave length range from 400 to 800 ~~millimicrons.~~ nanometers.

(e) Explosives. No solids, liquids, or gases which by themselves or by interaction with other substances may create fire or explosion hazards, including wastestreams with a closed cup flashpoint of less than 140 degrees Fahrenheit (60 degrees Celsius) shall be discharged. ~~Discharge of any explosive substance shall be unlawful.~~ Flammable substances including, but not limited to, acetone, alcohols, benzene, gasoline, xylene, hexane and naphtha, shall not be discharged into the Sewer System except where present in contaminated groundwater discharges being discharged under an Exceptional Waste permit issued by the District. Where groundwater discharges contain such contaminants, the Discharger shall monitor the Sewer atmosphere for explosivity and flammability using a properly calibrated meter designed for the purpose. The frequency of such monitoring shall be defined in the permit. Whenever ~~a~~ 10% of lower explosive level is ~~threatened to be~~ exceeded, the Discharger shall immediately cease discharge until the situation is corrected, and verbally notify the Manager or his/her designee of the potential hazard in the Sewer within fifteen (15) minutes of making the determination of threatened explosivity. The Discharger shall follow verbal notification with a written explanation of the cause of the explosive hazard within five (5) working days, with corrective actions taken to alleviate the situation and measures taken to prevent a reoccurrence. The Discharger shall not recommence discharges without prior written approval of the District Board or its designated representative. Where flammable substances are used in processes, separate collection and disposal outside the Sewer System shall be provided.

(f) Oil and Grease. Oil and/or Grease shall not be discharged into the Sewer System if the Average Concentration of floatable oil and/or Grease (defined as that which is subject to gravity separation at a temperature of 20°C and at a pH of 4.5) exceeds 20 mg/liter; nor shall the total oil and/or Grease concentration exceed 200 mg/liter. In addition, the discharge of petroleum oil, non-biodegradable cutting oil, or products of mineral origin that cause interference or pass through, as defined in EPA regulations, shall be prohibited.

(g) Hazardous. Noxious or Malodorous Materials. No Industrial Waste shall be discharged which alone or in combination with other wastes may create a public nuisance, hazard, make human entry into the Sewers ~~abnormally hazardous~~ unsafe, or which constitutes a discharge of Hazardous Materials.

Permitted Dischargers shall be required to certify at least every ~~three (3)~~ six (6) months in their semiannual compliance report that their waste discharges neither constitute hazardous, noxious or malodorous waste, nor include Hazardous Materials, and that during the previous ~~three (3)~~ six (6) months no discharge of hazardous, noxious or malodorous waste or Hazardous Materials has occurred.

Dischargers (including those who are "employees" within the meaning of Title 8, California Code of Regulations, section 5194[g]) shall be required (as a condition of permission to discharge) to file with the Menlo Park Fire Protection District or other public agencies designated by the District a current Hazardous Materials Management Plan ("HMMP") conforming to the requirements of applicable regulations and to have on-site copies of Material Safety Data Sheets (as specified by Title 8, California Code of Regulations, section 5194[g]) for all Hazardous Materials stored, generated, or used at the Discharger's site. The Discharger shall file with the District a copy of the HMMP and copies of all comments received by the Discharger from the Menlo Park Fire Protection District and other public agencies regarding the HMMP. Should any discharge of hazardous, noxious or malodorous waste, or Hazardous Materials, occur, the Discharger shall verbally notify all appropriate agencies including the EPA, the Regional Water Quality Control Board, the Plant and the Manager, or his or her designee, as soon as possible, but in no event later than twenty-four (24) hours after such discharge.

Appropriate records of hazardous waste disposal manifests, inventories of stored virgin and used Hazardous Materials, and other documentation required by the HMMP shall be kept and made available for inspection and/or copying by the District. An appropriate written Hazard Communication Program as specified by Title 8, California Code of Regulations, section 5194, shall be kept by all employers discharging into the District's facilities, and made available for inspection and/or copying by the District.

(h) Organic Solvents. Except as permitted by Section 121(i), wastewater facilities shall not be used as a means of disposal for Organic Solvents. Wastewater discharged to the sewer shall not contain a sum total greater than 1,000 milligrams per liter of acetone, ethanol, methanol, and isopropyl alcohol~~,~~, in any combination. Dischargers having Organic Solvents on site or using same shall provide and use a separate collection and disposal system outside the Sewer System and shall provide safeguards against their accidental discharge to the Sewer. An approved solvent management plan and a plan to prevent entry to a sanitary Sewer by accidental spill shall be filed by the Discharger as a condition of permission to discharge to the Sewer System. Records of appropriate disposal and handling shall be maintained by the Discharger and shall be available for inspection and copying by District representatives.

Organic Solvents shall include, but shall not be limited to, those used in dry cleaning establishments, and shall also include separator water generated by dry cleaning equipment. Neither the Organic Solvent nor the separator water may lawfully be discharged to the Sewer or Storm Drain System.

(i) Total Toxic Organics ("TTO"). The prohibition against disposal of Organic Solvents contained in Section 121(h) may be replaced by a specific limitation on TTO. Any such limitation must be contained in an Industrial Waste discharge permit and be based on either the appropriate Categorical Standard of the Pretreatment Regulations or the following:

TTO shall be as defined under the Pretreatment Regulations. The sum of the TTO shall be less than 1.0 mg/liter (1ppm) as an Instantaneous Maximum. No individual toxic organic compound (except for Phenol) shall exceed 0.75 mg/liter as an Instantaneous Maximum. These limitations are subject to change in the future as the requirements placed on the Plant become more stringent and as the process for establishing the Industrial Waste limitations is refined.

(j) Radioactivity. The discharge of radioactive wastes into the Sewer System shall conform to this Ordinance and to the requirements of California Radiation Control Regulations, Title 17, California Code of Regulations, Chapter 5, Subchapter 4, and as subsequently amended.

(k) Solids. No material shall be discharged to the Sanitary Sewer that will obstruct or damage the Collection System, treatment system, or appurtenances. Specific prohibitions are as follows:

(i) Inert Solids. The discharge of inert solids including, but not limited to sand, glass, metal chips, bone, plastics, etc., into the Sewer is prohibited. Settling chambers or treatment works shall be installed where necessary to prevent the entry of inert solids into the Sewer System.

(ii) Solid Particles. Industrial Wastes shall not contain particulate matter that will not pass through a 1/2 inch screen; this subsection shall not apply to Domestic Sewage from industrial establishments.

(l) Stored Liquid Wastes. Liquid aqueous-based wastes that have been collected and held in tanks or containers shall not be discharged into the Sewer System except at locations authorized by the District to collect such wastes. Wastes of this category include but are not limited to:

(i) Chemical toilet wastes;

(ii) Industrial Wastes collected in containers or tanks;

(iii) Pleasure boat wastes;
(iv) Septic tank pumping; and

(v) Trailer, camper, housecar, or other recreational vehicles wastes.

~~(m) Stormwater. No Stormwater, roof, or yard drainage, foundation or under-drainage shall be discharged into the Sewer System, nor shall any plumbing or piping be connected in such a manner as to make possible the discharge of Stormwater into the Sewer System.~~

~~(n)~~ (m) Toxicity. The following is a nonexclusive list of toxic substances and the maximum concentration allowed for each discharge:
Toxicant

Toxicant	Instantaneous Maximum Concentration
Arsenic	0.1 mg/liter
Barium	5.0 mg/liter
Beryllium	~~1.0~~ 0.75 mg/liter
Boron	1.0 mg/liter
Cadmium	0.1 mg/liter
Chromium, Hexavalent	1.0 mg/liter
Chromium Total	2.0 mg/liter
Cobalt	1.0 mg/liter
Copper	2.0 mg/liter
Cyanide	1.0 mg/liter
Formaldehyde	5.0 mg/liter
Lead	0.5 mg/liter
Manganese	1.0 mg/liter
Mercury	0.05 mg/liter
Nickel	~~1.0~~ 0.5 mg/liter
Phenols	1.0 mg/liter
Selenium	~~2.0~~ 1.0 mg/liter
Silver	0.25 mg/liter
Zinc	2.0 mg/liter

For discharges greater than 50,000 gallons per day the maximum concentration will be one-half of the values listed in the table, with the exceptions of silver and nickel, for which the limits shall remain 0.25 mg/liter 0.5 mg./liter, respectively, regardless of flow.

The maximum concentration allowable for silver set forth in this Section shall not be applicable to Photoprocessors. Silver

limitations for Photoprocessors are as set forth in Section 123. The maximum concentration allowable for copper set forth in this Section shall apply to all discharges except where more stringent maximum concentration limits are specified in Section 124.3.

These limitations are subject to change in the future as the requirements placed on the Plant become more stringent and as the process for establishing the Industrial Waste limitations is refined.

~~(e)~~ (n) Discharge limitations at the point of sampling shall be specified in each discharge permit, based on flow and waste stream information supplied in the Discharger's permit application, applicable Federal categorical limitations on process wastewaters, and other pertinent information. Discharge limitations may be expressed both in terms of total mass discharged and concentration.

Section 122. Prohibition Against Dilution. Except where expressly authorized to do so by an applicable Categorical Standard provided in the Pretreatment Regulations, no Discharger shall ever increase the use of process water, or in any other way, dilute a discharge as a partial or complete substitute for adequate treatment to achieve compliance with such Categorical Standard or any other requirement of this Ordinance.

Section 123. Requirements for Photographic Materials Processing. All Photoprocessors shall comply with either Subsection (2) or Subsection (3) of this Section 123. Persons who fully comply with Subsection (3) shall not be required to obtain an Industrial Waste discharge permit pursuant to Section 104, unless required to do so pursuant to other Sections of this Ordinance, but shall be required to meet all applicable wastewater discharge limits and requirements.

(1) Definitions Applicable to this Section 123.

(i) "Photographic Materials Processing" shall mean developing silver-bearing film, including x-ray film or photographic paper.

(ii) "Photoprocessor" shall mean any Person who owns a Photographic Materials Processing system, or conducts Photographic Materials Processing, including a business that does Photographic Materials Processing or any Person who engages in Photographic Materials Processing.

(iii) "Spent Solutions" shall mean spent fixer, bleach fix, stabilizer from washless systems, silver-bearing cleaning solutions and functionally similar silverbearing solutions other than Washwater.

(iv) "Regeneration" shall mean the treatment of Washwater, fix, or bleach fix for re-use.

(v) "Washwater" shall mean water than has been used to rinse fix or bleach fix from photographic film or paper.

(2) Silver Removal System. Persons who comply with this Subsection (2) shall install and operate in their facilities a silver removal facility, in a manner which shall insure consistent compliance with the following effluent standards:

(i) The maximum allowable discharge concentration of silver shall be 1.0 mg/liter for Photoprocessors which submit documentation to the District Board evidencing utilization of one or more of the following technologies:

(a) Washless minilab equipment that does not discharge Washwater; or

(b) A water recirculating system that reduces Washwater consumption by a minimum of 60%. The reduction shall be based on manufacturer's minimum recommended Washwater rates; and achievement of such reduction shall be documented by the Photoprocessor to the satisfaction of the District Board.

(ii) The maximum allowable discharge concentration of silver shall be 0.5 mg/liter for all silver removal facilities not covered by Subsection (2)(i) of this Section.

(iii) All Spent Solutions and Washwater that are not sent off site shall be treated to insure consistent compliance with the effluent standards set forth in this Subsection (2). Silver removal from Washwater shall be conducted in a manner that does not reduce the effectiveness of the treatment of Spent Solutions.

(iv) The Photoprocessor shall sample the discharge at a frequency determined by the District Board, based upon the flow rate from the facility. However, in no event shall sampling be done less frequently than once a month. A duplicate of each sample collected shall be kept for the use of District inspectors. A sampling port shall be installed in accordance with specifications set forth in the wastewater discharge permit.

(v) Every Person owning or operating a silver removal system shall cause such system to be serviced at least once per year by the manufacturer, equipment distributor, or qualified consultant who shall certify that all equipment in the system is functioning in accordance with the manufacturer's standards for such equipment. A record of system service shall be maintained at

the facility where the system is located, and be available for inspection by District inspectors upon request.

(vi) No Person shall commence operating a silver removal system without having submitted a compliance plan to the District Board at least forty-five (45) days prior to commencing operation of such system. The compliance plan shall contain a description of the silver removal system to be used to meet the discharge limits set forth in this Subsection (2). The compliance plan shall include, but not be limited to, equipment specifications, waste volume estimates, and proposed procedures for sampling and testing.

(vii) Every Person intending to comply with the provisions of this Subsection (2) shall submit an annual report to the District Board on or before February 1st of each year, commencing with the year 1992. The annual report shall contain the following information for the preceding calendar year:

(a) Type and description of silver removal process employed;

(b) Amount of Spent Solutions generated:

(c) Amount of Washwater generated;

(d) Dates of equipment servicing;

(e) Description of any major changes in equipment or operation; and

(f) All wastewater discharge data.

(3) Off-Site Disposal. Persons who comply with this Subsection (3) shall ship or cause to be shipped off-site, for recovery or appropriate disposal, all Spent Solutions or shall regenerate all Spent Solutions on site.

(i) Storage, shipment and disposal of Spent Solutions shall be in accordance with all State, Federal and local requirements.

(ii) Every Person who complies with this Subsection (3) shall maintain, or cause to be maintained, records that detail the purchase date and quantity of all new fixer, bleach-fix, stabilizer and functionally similar solutions kept or used by such Person. Such Person shall also maintain, or cause to be maintained, detailed disposal records that include the date, type and amount of waste solution disposed of; the name, address and identification number of the shipper; and the ultimate destination of each batch of waste solution shipped off site. Such Person shall also maintain, or cause to be maintained, a record of the amount of Spent Solution regenerated on site.

(iii) All records required to be kept pursuant to this Subsection (3) shall be kept for a period of three (3) years at the photoprocessing site, and shall be available for immediate inspection upon request therefore by District inspectors during normal business hours.

(iv) On or before February 1st of each year, commencing with the year 1992, every Photoprocessor intending to comply with this Subsection (3) shall submit to the District Board a summary of the required records maintained by such Photoprocessor relating to purchase and disposition of photographic solutions. The summary shall be on a form provided by the District Board. Along with the summary, every Photoprocessor shall submit a statement certifying that it is in compliance with this Subsection (3) and that the required records are available for inspection.

(v) Photoprocessors that comply with this Subsection (3) need not meet the silver discharge limitations set forth in Subsection (2)(i) or (ii) of this Section, nor the silver discharge limitations set forth in Section 121(n) with respect to the Photographic Materials Processing portion of their operations; provided, however, that those Photoprocessors generating a total of 100 gallons or more per month of Spent Solutions shall be required to meet the silver limitations of Subsection (2) of this Section with respect to Washwater, even if all Spent Solutions are shipped off site.

Section 124. Requirements for Dental Facilities Using Silver Amalgams. Persons who use amalgams containing silver shall install amalgam traps on all equipment that might carry amalgam waste to the Sanitary Sewer System. Each trap shall be cleaned or replaced according to manufacturer guidelines and in a manner that prevents any silver-containing waste from entering the Sanitary Sewer System.

Section 124.1. Requirements for Machine Shops.

(a) All Machine Shops shall be operated in accordance with the following standards.

(1) No person shall dispose of, nor permit the disposal, directly or indirectly of Machine Shop fluids, Hazardous Materials, mop water, or rinsewater from parts cleaning or deburring/tumbling operations into Storm Drains.

(2) No person shall dispose of Machine Shop fluids or rinsewater from parts cleaning or deburring/tumbling operations into the Sanitary Sewer System except pursuant to an Industrial Waste Discharge permit obtained in accordance with this Ordinance.

(3) No Machine Shop shall contain floor drains, excepting only such floor drains as are connected to wastewater

pretreatment systems for which an Industrial Waste Discharge permit has been obtained in accordance with this Ordinance.

(4) Machine Shops shall be cleaned using only those methods of cleaning which ensure that no materials are discharged to the Storm Drain or to the Sanitary Sewer System, except for wastewater that is discharged to the Sanitary Sewer System pursuant to an Industrial Waste Discharge permit obtained in accordance with this Ordinance; provided, however, that a permit shall not be required for facilities that use the following three-step sequence for cleaning floors, or an approved equivalent:

(i) Clean up spills with rags or other absorbent materials;

(ii) Sweep floor using dry absorbent material; and

(iii) Mop floor. Mop water shall be discharged to the Sewer System via a toilet or sink.

(5) All owners and operators of Machine Shops shall ensure that spill prevention, clean-up equipment and absorbent materials are kept in stock at all times and are readily available for use.

(6) All owners and operators of Machine Shops shall post or cause to be posted signs on all Storm Drain inlets located on the property of the facility notifying persons that the discharge of waste into the Storm Drain is illegal.

(7) All owners and operators of Machine Shops shall ensure that all employees who work directly on machine operations or cleanup of such facilities are trained, upon hiring and annually thereafter, regarding best management practices for Machine Shops in accordance with guidelines issued and published by the District.

Section 124.2. Requirements For Cooling Systems, Pools, Spas and Fountains.

(a) It shall be unlawful to discharge water from cooling systems, pools and spas to the Storm Drain System.

(b) No person shall discharge or add to the Sewer or Storm Drain, or add to a cooling system, pool, spa or fountain, any substance that contains any of the following:

(i) Cooper in excess of 2.0 mg/liter;

(ii) Any Tributyl tin compound in excess of 0.1 mg/liter; or

(iii) Chronium in excess of 2.0 mg/liter.

The above concentration limitations shall apply to any one of the above the discharged substances prior to dilution with the cooling system, pool, spa or fountain water.

(c) cooling system discharges.

(i) As of July 1, 1998, cooling system discharges exceeding 2,000 gallons per day shall not exceed a maximum copper concentration in excess of 0.25 mg/liter. The District may impose an alternative requirement to the 0.25 limit when the Cycles of Concentrations routinely exceed ten (10). The alternative requirement may consist of an alternative limit, a mass limit, or a specified maintenance program, or ~~both~~ a combination of these.

(ii) Notwithstanding the effective date of the limits set forth in subparagraph (i), cooling system discharge operations commencing on or after July 1, 1997 shall not be required to comply with those limits until one year after the date of such commencement.

(d) cooling system cleaning. Wastewater from cooling system cleaning where a chemical cleaner or physical scouring is used in the cleaning process shall be sampled prior to discharge to the sewer to ensure compliance with the maximum concentration limits contained in Section 121. For purposes of this section "physical scouring" does not include the use of water at typical water supply pressure. The wastewater shall be analyzed for copper and any other constituents specified by the District. The results of such analysis shall be reviewed by the cooling system operator prior to discharge.

(e) Devices using electricity to dissolve copper or silver into water distribution systems, cooling systems, pools, spas or fountains are prohibited.

Section 124.3 Additional Copper Limitations For Industrial Waste.

(a) Industrial Waste Discharges to the Sewer are subject to the copper limitations contained in this section except for Industrial Waste from the following facilities, including facilities that are components of larger facilities, which are subject to specific limitations set forth in other provisions of this Ordinance.

(i) Vehicle service facilities;

(ii) Photoprocessing facilities;

(iii) Machine Shops; and

(iv Metal Fabrication Facilities.

(b) No later than July 1, 1996, Industrial Waste Discharges to the sewer from Electroplating facilities as defined by the EPA in 40 CFR Part 413 and from Metal Finishing facilities, as defined by the EPA in 40 CFR Part 433, shall meet either (i) or (ii) of this subsection. These requirements shall apply to process wastes containing copper or nickel prior to dilution by non-metal finishing process wastes, domestic waste, and Cooling Water.

(i) The annual average copper concentration for any 12 month period shall not exceed .04 mg/1. In addition all reasonable control measures specified in accordance with standards published by the District shall be installed and implemented; or

(ii) The annual average pounds/day of copper shall not exceed an amount specified by the District in the Industrial Waste Discharge Permit, which is based upon a pollution prevention review conducted by the District. The limitation shall be based upon those control measures having a Simple Payback Period of five years or less. The average annual pounds per day shall be a "rolling" measurement, calculated by multiplying the flow-weighted average copper concentration for all samples taken during any 12 month period. The average annual pounds per day limit may be increased by the District in proportion to increases in production at the Discharger's facility to the extent that such production increases are within the growth allocation specified in the document prepared by Montgomery Watson, and published by the City of Palo Alto, entitled "City of Palo Alto-Local Limits Development-Proposed Local Limits-April, 1994".

(c) As of July 1, 1998, the maximum copper concentration in Industrial Waste Discharges to the Sewer other than those covered by subsections (a) or (b) shall not exceed 0.25 mg/1.

Section 124.4. Requirements for Construction Operations.

(a) A spill response plan for hazardous waste, Hazardous Materials and uncontained construction materials shall be prepared and available at the construction sites for all projects equal to

or greater than five acres of disturbed soil and for any other projects for which the City of East Palo Alto determines is necessary to protect surface waters. Preparation of the plan shall be in accordance with guidelines published by the City of East Palo Alto.

(b) A storm water pollution prevention plan shall be prepared and available at the construction sites for all projects greater than five acres of disturbed soil and for any other projects for which the City of East Palo Alto determines that a storm water management plan is necessary to protect surface waters. Preparation of the plan shall be in accordance with guidelines published by the City of East Palo Alto.

(c) Prior approval shall be obtained from the City of East Palo Alto or designee to discharge water pumped from construction sites to the Storm Drain. The City of East Palo Alto may require gravity settling and filtration upon a determination that either or both would improve the water quality of the discharge. Contaminated Ground Water or water that exceeds state or federal requirements for discharge to navigable waters may not be discharged to the Storm Drain. Such water may be discharged to the Sewer, provided that the requirements of section 121 are met and the approval of the District is obtained.

(d) No cleanup of construction debris from the streets shall result in the discharge of water to the Storm Drain System; nor shall any construction debris be deposited or allowed to be deposited in the Storm Drain System.

Section 125. Standards for Other Industrial Wastes. The District Board may establish standards for any Industrial Wastes not specifically referred to in this Ordinance. When established, those standards shall be adopted as an amendment to this Ordinance or by such other manner as permitted by law.

Section 126. Damage to Facilities. When a discharge causes an obstruction, damage, or any other impairment to District and/or Plant facilities, the District may assess a charge against the Discharger to reimburse the District for costs incurred to clean or repair said facility.

Section 127. Notices of Noncompliance. Unless the District Board finds that the severity of the violation warrants other remedial action and enforcement recourses, it may issue a Notice of Noncompliance which:

(a) Enumerates the violations found; and

(b) Orders compliance by a date certain.

If the violations are not abated in the time period identified, further action may be taken by the District Board including, but not limited to, suspension, revocation or modification of the Discharger's permit pursuant to Section 107.

Section 128. Public Notification of Violations. ~~At least annually, notice shall be provided in a daily newspaper of general circulation, listing those industrial users that were found to have significantly violated the provisions of the Ordinance during the previous twelve (12) months. For the purpose of this provision, a significant violation is: A violation which remains uncorrected forty-five (45) days after notification; a violation that is a part of a pattern of noncompliance over the twelve (12) month period; a violation that involves a failure to accurately report noncompliance; a violation that results in a permit revocation or suspension; a violation that results in damage to public facilities; or a violation that results in civil or criminal penalties.~~ At least annually, notice shall be provided in the largest local daily newspaper listing those industrial users that were found to have significantly violated the provisions of the ordinance during the previous twelve months. For the purpose this provision a significant violation is as defined by the EPA 40 CFR Part 403.8, or a violation meeting criteria established by the District.

Section 129. Compliance with the Pretreatment Regulations. All industrial Dischargers subject to the Pretreatment Regulations shall be in conformance with such, including but not limited to, effluent standards, monitoring requirements, and reporting requirements. In the event of any apparent conflicts between the requirements established in this Ordinance and Federal EPA requirements, the most restrictive limitation shall apply.

Section 130. District's Right to Terminate Discharge. The District reserves the right to terminate Sewer service for noncompliance with the provisions of this Ordinance which appear to present an imminent endangerment to the public health, safety, and welfare. The Discharger shall immediately cease and desist discharge of any waste presenting such a hazard, upon verbal and~or written notice of the Manager. Such termination shall be effective immediately, but shall be reviewable pursuant to the hearing process provided in Section 105(d) provided, however, that the District may, if practicable, expedite the hearing schedule in order to review the termination in less than ten (10) business days.

Section 131. Temporary Noncompliance and Increased Loading Reporting.

(a) Noncompliance with the provisions of this Ordinance that are known to the Discharger shall be reported verbally as soon as possible but no later than twenty-four (24) hours of the

Discharger's knowledge of the noncompliance. A written report to the District shall be submitted within five (5) calendar days explaining the nature, volume and duration of the noncompliance, and mitigation measures taken to correct the noncompliance and to prevent reoccurrence.

Such notifications will not relieve any Discharger of liability for any expense, including but not limited to: costs for counter measures; loss or damage to the Sewer System or treatment plant or treatment process; or liability to reimburse any fines imposed on the District on account thereof; or for damages incurred by any third party.

(b) The reporting requirements of paragraph (a) above shall also apply to any short term, large or unusual increase in flow or concentration of waste constituents regardless of whether noncompliance has resulted. In addition, the cause of the incident (e.g., accidental spill, as described in Section 117) shall be reported. Notices shall be posted in process areas (or other equally effective notification procedures used) giving instruction on reporting such increases.

Section 132. Construction Requirements. Sewers and related appurtenances shall be constructed in accordance with all applicable ordinances and regulations of the District including the District's standard specifications governing construction and installation of wastewater facilities. The owner of every new commercial and industrial building or portion thereof for which a building permit is issued on or after July 1, 1992 must cause such building to be constructed so that Industrial Waste is segregated, by means of separate plumbing, from domestic waste prior to converging with the wastestreams in the Sanitary Sewer System. For the purposes of this section only, the term "new" shall mean and apply to all of the following: newly constructed buildings; building additions that require plumbing for Industrial Waste; and remodeling of existing buildings to accommodate expansion of or change to a use that requires plumbing for Industrial Waste.

Section 133. CEQA Compliance. Every Discharger applying for a permit pursuant to this Ordinance shall fully comply with all applicable requirements of the California Environmental Quality Act ("CEQA"; Cal. Pub. Resources Code §§21000 et seq.) and the State CEQA Guideline (Cal. Code of Regs., Title 14, §§15000 et seq.)

Section 134. Storage of Hazardous Materials Above Sinks. No Person shall store Hazardous Materials above a sink which is connected to the sewer in a commercial or industrial facility. The ~~superintendent~~ District may allow an exception for facilities existing as of January 1, 1995, when the Hazardous Materials are secondarily contained and when constrained to prevent accidental spills caused by earthquakes and other occurrences.

Section 135. Copper-Based Root Control Chemicals. No Person shall discharge, dispose of or add to the Sanitary Sewer System or to the Storm ~~sewer~~ Drain System any substance containing greater than five percent (5%) copper by weight, to control roots or for any other purpose.

Section 136. Grease Disposal Prohibited. No Person shall dispose of any Grease, or cause any Grease to be disposed, by discharge into any drainage piping, by discharge into any public or private Sanitary Sewer, by discharge into any Storm Drain System, or by discharge to any land, street, public way, river, stream or other waterway.

Section 137. Grease Removal Device Required.

(a) The owner of every newly constructed, remodeled, or converted commercial, institutional or industrial facility with one or more Grease generating activities, including Food Service Facilities with new or replacement kitchens, for which a building permit is issued on or after January 1, 1992, shall install or cause to be installed a Grease Interceptor for each Grease generating activity, of a size equal to or greater than the minimum size meeting the definition of "Grease Interceptor", as set forth in Section 108 of the then currently adopted edition of the Uniform Plumbing Code.

(b) The owner of every commercial, institutional or industrial generator of Grease, including Food Service Facilities, serviced by a Sewer collection line found to have a Grease blockage, a history of Grease blockage, or accelerated line maintenance resulting from Grease disposal shall install or cause to be installed, upon notification by the District, a Grease removal device.

(c) The owner of every commercial, institutional or industrial generator of Grease, including Food Service Facilities, for which installation of Grease Removal Devices is not required pursuant to subsection (a) or (b) of this section, shall install or cause to be installed a Grease Removal Device for each Grease generating activity, on or before January 1, 1997.

(d) All Grease Removal Devices shall be installed on the premises where Grease is used or generated and shall be sized in conformance with Chapter 7 of the then currently adopted edition of the Uniform Plumbing Code. The contents of all Grease Removal Devices shall be removed periodically as necessary to prevent violations of this Ordinance. At a minimum, the contents shall be removed every six (6) months. All Grease Removal Devices shall be kept in good repair, and shall be maintained in continuous operation. A log of all Grease removal activities shall be maintained at the facility showing the date of removal, the amount removed and the disposition of the removed contents. The log shall

be retained for a period of three (3) years, and shall be available for inspection by the District.

Section 137.1. Drains.

The owner of every newly constructed, remodeled, or converted commercial or industrial facility shall comply with the following requirements upon commencement of discharge:

(a) Interior (indoor) floor drains to the sewer system may not be placed in areas where hazardous materials, hazardous wastes, industrical wastes, industrial process water, lubrication fluids, vehicle fluids or vehicle equipment cleaning wastewater are used or stored, unless secondary containment is provided for all such materials and equipment. The District may allow an exception to this requirment under the following circumstances:

i. When the drain is connected to a wastewater treatment unit approved by the District;

ii. (for safety showers) When the drain is installed with a temporary plug which remains closed except when the shower is in use, or when the drain is protected from spills by either a covered sump or berm system. If a sump is used, the capacity shall be at least as large as the largest chemical container in the laboratory;

iii. (for industrial process equipment) If the equipment does not contain hazardous waste and if all floor drains are equipped with Fail-Safe Valves which shall be kept closed during periods of operation.

(b) Exterior (outdoor) drains may be connected to the Sewer only if the area in which the drain is located is covered or protected from rainwater run-on by Berms and/or grading, and appropriate wastewater treatment approved by the District is provided. Any loading dock area with a Sanitary Sewer drain must be equipped with a valve which fails closed and is kept closed during periods of operation.

(c) Interior floor drains shall not be connected to the Storm Drain.

(d) Exterior drains are normally to be connected to the Storm Drain; however, such connections shall not be permitted within the following areas:

i. Equipment or vehicle washing areas;

ii. Areas where chemicals, Hazardous Materials, or other uncontained materials are stored unless secondary containment is provided;

iii. Equipment or vehicle fueling areas or fluid changing areas; and

iv. Loading docks where chemicals, Hazardous Materials, garbage, Grease, oil, or waste products are handled.

(e) Fueling areas shall have impermeable floors and rain covers that extend a minimum of 10 feet in each direction from each pump.

(f) Roof drains may discharge to the Storm Drain System, provided that all roof equipment, tanks, and pipes containing other than potable water, cooling system water, or heating system hot water have secondary containment.

(g) Boiler blow drain or Boiler drain lines must be connected to the sewer system and may not discharge to the Storm Drain System.

(h) Condensate lines shall not be connected or allowed to drain to the Storm Drain System.

(i) Copper, copper alloys, lead and lead alloys, including brass, shall not be used in the sewer lines, connectors, or seals coming in contact with sewage except for sink traps and associated connecting pipes.

(j) Secondary containment shall be provided for exterior work areas where motor oil, brake fluid, gasoline, diesel fuel, radiator fluid or other Hazardous Materials or hazardous wastes are used or stored. Drains shall not be installed within the secondary containment areas. The superintendent may allow a drain for work areas (but not for hazardous storage areas) if the secondary containment area is covered and if the drain is connected to a wastewater treatment facility approved by the superintendent.

(k) Sacrificial zinc anodes are not permitted to be in contact with the water supply in a water distribution system.

(l) All laboratory discharge points shall either be connected to a holding tank capable of retaining the non-domestic wastewater flow for a minimum of either hours, or shall be equipped with a shut-off valve and port to allow a spill to be retained within the building plumbing or hauled off site. A sampling port shall be installed, which allows the contents of the tank to be monitored and a valve shall be installed, which allows retention of wastewater. The District may allow an exception when the laboratory is drained to an approved wastewater treatment facility.

(m) Aspirators connected to laboratory sink faucets are prohibited. However, aspirators designed and used for transferring acids and boxes from stationary permanent laboratory sinks to treatment facilities shall be allowed.

(n) Laboratory counter tops and laboratory sinks shall be separated by a lip which prevents Hazardous Materials spilled on the counter top from drainage to the sink.

(o) Sewer traps below laboratory sinks shall be made of glass or other approved transparent materials to allow inspection and to determine frequency of cleaning. Alternatively, a removable plug for cleaning the trap may be provided, in which case a cleaning frequency shall be established by the District based in part upon the recommendations of the facility. Areas where mercury will not be used may be exempted from this requirement by the District. If such an exemption is provided and mercury is subsequently used in the area, the sink trap must be retrofitted to meet this requirement.

(p) Swimming pool discharge drains shall not be connected directly to the Storm Drain System or to the sewer system. When draining is necessary, a hose or other temporary system shall be directed into a sewer (not Storm Drain System) clean out. A sewer cleanout shall be installed in a readily accessible area.

(q) Food service facilities shall have a sink or other area for cleaning floor mats, containers, and equipment which is connected to a Grease Interceptor and the Sanitary Sewer. The sink or cleaning area shall be large enough to clean the largest mat or piece of equipment to be cleaned. After January 1, 1996, new buildings constructed to house food service facilities shall include a covered, Bermed area for a dumpster.

(r) Parking garage floor drains on interior levels shall be connected to an Interceptor and to the Sanitary Sewer System.

Section 138. Storm Drains; ~~Threatened Discharges~~.

(a) It is unlawful to discharge any domestic waste or Industrial Waste into Storm Drains, gutters, creeks, or San Francisco Bay. Unlawful discharges to Storm Drains shall include, but not be limited to, discharges from toilets; sinks; industrial processes; cooling systems; boilers; fabric cleaning; equipment cleaning; vehicle cleaning; construction activities, including, but not limited to painting, paving, concrete placement, sawcutting and grading; swimming pools; spas; and fountains, unless specifically permitted by a discharge permit or unless exempted by the District pursuant to guidelines published by the Plant and approved by the District.

(b) It shall be unlawful to cause Hazardous Materials, domestic waste or Industrial Waste to be deposited in such a manner or location as to constitute a threatened discharge into Storm Drains, gutters, creeks or San Francisco Bay. A "Threatened Discharge" is a condition creating a substantial probability of harm, when the probability and potential extent of harm make it reasonably necessary to take immediate action to prevent, reduce or mitigate damages to persons, property or natural resources. Domestic or Industrial Wastes that are no longer contained in a pipe, tank or other container are considered to be threatened discharges unless they are actively being cleaned up.

(c) Interior floor drains shall not be connected to Storm Drains.

(d) Exterior drains located in the following areas shall not be connected to Storm Drains:

(i) Equipment or vehicle washing areas;

(ii) Areas where equipment fluids are routinely changed;

(iii) Areas where Hazardous Materials, chemicals or other uncontained materials that are easily transported by wind or water are stored and are not secondarily contained; or

(iv) Loading dock areas, except that loading dock drains to the Storm Drain System may be allowed if a valve or equivalent devise is provided which remains closed except when it is raining.

Secondary containment shall be provided for any rooftop equipment, tanks or pipes containing other than potable water, Cooling Water, heating system hot water, steam, water condensate or equivalent substances, which the District determines will otherwise cause a probable discharge to the Storm Drain System.

(e) Storm Drain inlets shall be clearly marked with the words "No dumping! Flows to Bay" or equivalent.

Section 139. Requirements for Vehicle Service Facilities.

(a) Definitions. For the purposes of this section the meaning of the following words and phrases shall be as defined herein.

(1) "Commercial Vehicle Washing Facility" shall mean a commercial facility where Vehicle washing is a primary business

activity. Commercial Vehicle Washing Facilities include, but are not limited to, mobile washing rigs.

(2) "Fleet Washing Facility" shall mean a facility for washing Vehicles, at a location where a business maintains six (6) or more vehicles.

(3) "Ground Surfaces" shall mean and include dirt, gravel, or other unpaved surfaces.

(4) "Vehicle" shall mean a mode of transporting people or things. Vehicles include, but are not limited to, automobiles, trucks, recreational vehicles, tractors, airplanes and boats.

(5) "Vehicle Fluid" shall mean a liquid used in or drained from a motor Vehicle. Vehicle Fluids include, but are not limited to, gasoline, diesel fuel, motor oil, brake fluid, radiator fluid, hydraulic fluid, transmission fluid, and coolant.

(6) "Vehicle Service Facility" shall mean a commercial or industrial facility that conducts one or more of the following operations with respect to Vehicles or components of Vehicles: Vehicle repair, fuel dispensing, Vehicle Fluid replacement, engine and parts cleaning, body repair, Vehicle salvage and wrecking, or Vehicle washing.

(b) All Vehicle Service Facilities shall be operated, on and after October 1, 1992, in accordance with the following standards:

(1) No Person shall dispose of, nor permit the disposal, directly or indirectly, of Vehicle Fluids, Hazardous Materials, or rinsewater from parts cleaning operations into Storm Drains.

(2) All owners and operators of Vehicle Service Facilities shall ensure that any Vehicle Fluid, Hazardous Material, or rinsewater from parts cleaning operations that comes into contact with any floor, pavement or Ground Surface is cleaned up immediately from such surface.

(3) No Person shall dispose of Vehicle Fluids or rinsewater from parts cleaning operations into the Sanitary Sewer System except pursuant to an Industrial Waste Discharge permit obtained in accordance with this Ordinance.

(4) No Vehicle Service Facilities shall contain floor drains, excepting only such floor drains as are connected to wastewater Pretreatment Systems for which an Industrial Waste Discharge permit has been obtained in accordance with the Ordinance.

(5) No tanks, containers or sinks used for parts cleaning or rinsing shall be connected to the Storm Drain System, or to the Sanitary Sewer System except pursuant to an Industrial Waste Discharge permit obtained in accordance with this Ordinance.

(6) No Person shall perform Vehicle Fluid removal outside a building, nor on asphalt or Ground Surfaces, whether inside or outside a building, except in such a manner as to ensure that any spilled Vehicle Fluid will be in an area of Secondary Containment.

(7) Leaking Vehicle Fluids shall be contained or drained.

(8) No Person shall leave unattended drip pans or their open containers containing Vehicle Fluid, unless such containers are in use or in an area of Secondary Containment.

(9) No Person shall discharge wastewater from Vehicle washing operations or wash racks to the Sanitary Sewer System except pursuant to an Industrial Waste Discharge permit obtained in accordance with this Ordinance. Nothing in this subsection shall be construed to prohibit the proper reuse of wastewater.

(10) No Person shall discharge into the Storm Drain water from Vehicle washing operations, except from rinsing of Vehicle exterior surfaces, with water only, for appearance purposes. This exception does not apply to Commercial Vehicle Washing Facilities or Fleet Washing Facilities.

(11) Vehicle Service Facilities shall be cleaned using only those methods of cleaning that ensure that no materials are discharged to the Storm Drain or to the Sanitary Sewer System, except for wastewater which is discharged to the Sanitary Sewer System pursuant to an Industrial Waste Discharge permit obtained in accordance with the Ordinance; provided, however, that a permit shall not be required for facilities that use the following three-step sequence for cleaning floors:

(a) Clean up spills with rags or other absorbent materials;

(b) Sweep floor using dry absorbent material; and

(c) Mop floor. Mop water must be discharged to the Sanitary Sewer via a toilet or sink.

(12) All owners and operators of Vehicle Service Facilities shall ensure that spill prevention and clean-up equipment and absorbent materials are kept in stock at all times and are readily available for use.

(13) No acid-containing batteries shall be stored except within Secondary Containment.

(14) All owners and operators of Vehicle Service Facilities shall ensure that all employees of such facilities are trained, upon hiring and annually thereafter, regarding best management practices in accordance with guidelines issued and published by the District.

(15) All owners and operators of Vehicle Service Facilities shall post or cause to be posted signs on all Storm Drains located on the property of the facility notifying Persons that the discharge of waste into the Storm Drain is illegal.

In the case of any conflict between the provisions of this section and other provisions of this Ordinance, this section will apply.

Section 140. Criminal Penalties. Pursuant to California Health & Safety Code section 6523, any violation of this Ordinance is a misdemeanor punishable by imprisonment in the county jail not to exceed thirty (30) days, or by a fine not to exceed One Thousand Dollars ($1,000), or by both. Each day in which the violation occurs shall constitute a separate violation for purposes of this Section.

Section 141. Civil Remedies and Penalties. The District shall be entitled to take all civil and remedial enforcement measures authorized by law including, without limitation, any or all of the following:

(a) Imposition of civil penalties pursuant to California Government Code section 54740 of up to ~~Six~~ Twenty-Five Thousand Dollars (~~$6,000~~ $25,000) per day for each day in which a violation occurs.

(b) Imposition of civil penalties pursuant to California Code section 54740.5 of up to:

(i) Two Thousand Dollars ($2,000) for each day for failing or refusing to furnish technical or monitoring reports.

(ii) Three Thousand Dollars ($3,000) for each day for failing or refusing to timely comply with any compliance schedule established by or on behalf of the District.

(iii) Five Thousand Dollars ($5,000) for each day for discharges in violation of any waste discharge limitation, permit condition or requirement issued, reissued or adopted by or on behalf of the District.

(iv) Ten Dollars ($10) per gallon for discharges in violation of any suspension, cease and desist orders, or prohibition issued, reissued or adopted by or on behalf of the District.

(c) Injunctive relief to correct any violation pursuant to California Health & Safety Code section 6523.3.

(d) Pursuant to California Health & Safety Code section 6523.2, termination of service to property in which a violation is found to exist.

(e) Cause corrective action to be performed at the expense of a responsible Person pursuant to California Health & Safety Code section 6523.3."

Section 142. Enforcement; Notice of Noncompliance.

Unless the District finds that the severity of the violation warrants immediate action under applicable provisions of this Ordinance or permit revocation or suspension, the Manager shall issue a notice of noncompliance which:

(1) Enumerates the violations found, and

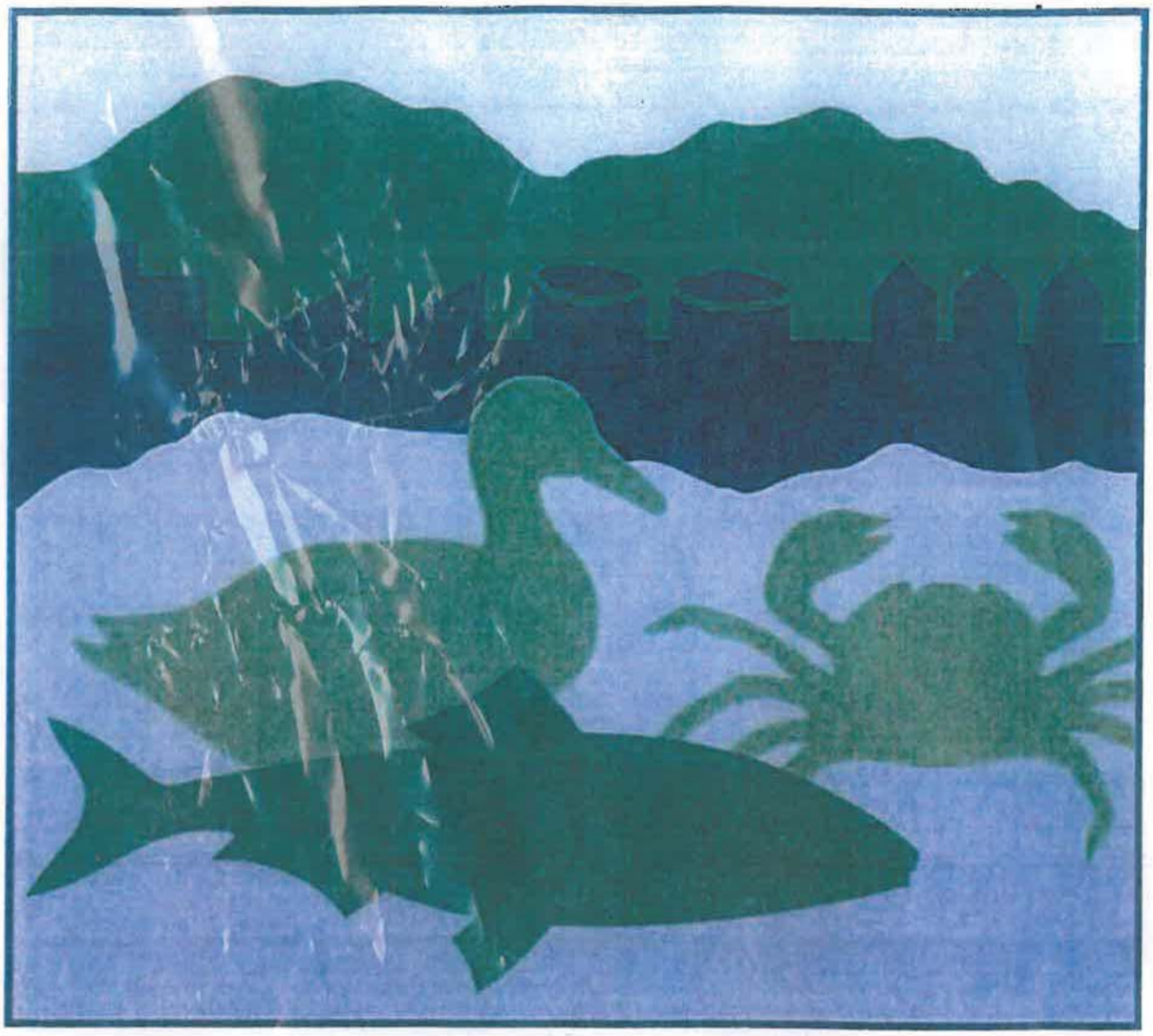
(2) Orders compliance by a date certain.

If the violations are not abated in the time period identified, further action may be taken by the District, including, but not limited to, suspension, revocation or modification of the discharger's permit pursuant to Section 107.

SEWER USE ORDINANCE

REGIONAL WATER QUALITY CONTROL PLANT

2501 Embarcadero Way - Palo Alto, California 94303 - 650/329-2598



Operated by the **CITY OF PALO ALTO** for the East Palo Alto Sanitary District,
Los Altos, Los Altos Hills, Mountain View, Palo Alto, and Stanford

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Chapter 16.09

SEWER USE ORDINANCE*

16.09.005 Purpose.

The overall goal of this chapter and the city's water quality control program is to prevent and control pollution and protect and foster human health and the environment. The specific purpose of this chapter is to prevent the discharge of any pollutant into the sewer system, the storm drain system, or surface waters, which would: 1) obstruct or damage the collection system; 2) interfere with, inhibit or disrupt the Palo Alto Regional Water Quality Control Plant (the "plant"), or its treatment processes, or operations, or its sludge processes, use or disposal; 3) pass through the treatment system and contribute to violations of the regulatory requirements placed upon the plant; or 4) result in or threaten harm to or deterioration of human health or the environment. It is the intent of the city to update and modify this chapter as needed to continue to provide a program for pretreatment of industrial wastes which is approved by federal and state regulatory agencies. Therefore this chapter is designed to be no less stringent than the U.S. Environmental Protection Agency "General Pretreatment Regulations for Existing and New Sources of Pollution" published at Title 40 of the Code of Federal Regulations, Part 403, as applicable, and as such regulations may be amended from time to time (hereinafter the "Pretreatment Regulations"). (Ord. 4252 § 1, 1994: Ord. 3889 § 1 (part), 1989)

16.09.010 Definitions.

The following words and phrases, whenever used in this chapter, shall be as defined herein. Words, terms and phrases used in this chapter not otherwise defined shall be as defined or interpreted or used in the Pretreatment Regulations. Terminology for analytical testing shall be that contained in "Guidelines Establishing Test Procedures for the Analysis of Pollutants," published at Title 40 CFR, Part 136.

"Annual average concentration" means the average concentration of a substance measured over any twelve-month period of time.

"Average concentration" of a substance means the total daily discharge weight of the substance divided by the total daily wastewater volume at the point of discharge.

"Berm" means a barrier to the flow of liquid which is not rendered ineffective by the liquid and is sufficiently high to contain anticipated fluid amounts, or which causes sufficient grade to prevent migration of anticipated fluid amounts.

"Cesspool" means a lined or partially lined underground pit into which raw sanitary sewage is discharged.

"Collection system" means the pipes, junction boxes, channels and other conveyance apparatus used to move storm water or sewage.

"Cooling system blowdown" means water routinely discharged from a cooling water system to maintain efficient operation of the system.

"Cooling water" means water which is used to cool fluids or equipment in commercial or industrial processes or air conditioning systems.

"Cooling water system" means the pipes, heat exchangers and other appurtenances used to convey cooling water in cooling towers, direct contact cooling systems and similar fixed cooling systems. Multiple units of a cooling water system serving a building or piece of equipment are considered as one system if the cooling water distribution system units are physically connected.

"Contaminated ground water" means water found beneath the earth's surface which does not meet state or federal standards for drinking water supplies or other specified beneficial uses.

"Contaminated water" means water that does not meet state or federal standards for discharge to navigable waters.

"Cycles of concentration" means the flow rate of water added to a cooling tower water system divided by the flow rate of water discharged from a cooling system.

"Discharger" means any person who discharges, causes, or permits the discharge of industrial waste into a city sewer or storm drain.

"Domestic waste" means the liquid and waterborne wastes derived from the ordinary living processes, free from industrial wastes and of such character as to permit satisfactory disposal, without special treatment, into the city's sewer system.

"EPA" means the United States Environmental Protection Agency.

"Exceptional waste" means that subset of industrial waste specified in Section 16.09.020(c)(2).

"Fail-safe valve" means an electrically driven valve that is normally closed. The valve can be opened by continuously depressing a switch mechanism that automatically closes the valve when not in use or depressed.

"Food service facility" means any nonresidential establishment that uses or generates grease when preparing food. Food service facility does not include any facility that prepares food for off-site cooking and consumption, or any facility that does not use, generate or dispose of grease in cooking or preparing food.

"Grease" means, and includes, fats, oils, waxes or other related constituents. Grease may be of vegetable or animal origin, including butter, lard, margarine, vegetable fats and oils, and fats in meats, cereals, seeds, nuts and certain fruits. Grease may also be of mineral origin, including kerosene, lubricating oil, and road oil. Grease in the wastewater collection system is generally present as, but need not be, a flotable solid, a liquid, a colloid, an emulsion, or in a solution.

"Grease removal device" means an interceptor, trap or other mechanical device designed, constructed and intended to remove, hold or otherwise prevent the passage of grease to the sanitary sewer.

"Hazardous material" means any material so designated by Title 17 of this code.

"Hazardous waste" means a material designated as a hazardous waste by 40 CFR Part 261 or California Code of Regulations (CCR) Title 22, Division 4.5, Chapter 11.

"Industrial user" means any person that discharges, causes, or permits the discharge of industrial waste into a city sewer or storm drain.

"Industrial waste" means the waste and wastewater from any production, manufacturing or processing operation of whatever nature including institutional and commercial operations where wastewater is used for the removal of waste other than domestic waste. "Industrial waste" shall include contaminated water from construction operations, contaminated water from erosion of disturbed land, and contaminated water from irrigation runoff.

"Instantaneous maximum" means the highest concentration or other measure of pollutant magnitude taken at any discrete point in time.

"Instantaneous minimum" means the lowest concentration or other measure of pollutant magnitude taken at any discrete point in time.

"Interference" means a discharge that, alone or in conjunction with a discharge or discharges from other sources, inhibits or disrupts the Plant, its treatment processes or operations, or its sludge processes, use or disposal.

"Loading dock" means that area of a facility intended for the loading and unloading of trucks, plus an additional radius of ten feet.

"Machine shop" means a fixed facility which cuts, grinds, polishes, deburs, or machines metal parts but does not conduct metal finishing as that term is defined by the

EPA in 40 CFR part 433.

"Metal fabrication facility" means a fixed facility that forms, welds and assembles metal pieces, but does not conduct metal finishing as that term is defined by the EPA in 40 CFR part 433.

"Oil-water separator" means a receptacle designed and constructed to intercept, separate, and prevent the passage of oils and sediments into the sewer system.

"Once-through cooling system" means a cooling system through which water passes through only once before discharge to a drain, including laboratory benchtop cooling systems.

"Organic solvent" means any solvent which contains carbon in its molecular structure.

"Pass-through" means a discharge that exits the Plant into a water of the United States in quantities or concentrations that, alone or in conjunction with a discharge or discharges from other sources, is a cause of a violation of any requirement of the Plant's NPDES permit (including an increase in the magnitude or duration of a violation).

"Person" means any individual, partnership, firm, association, corporation, or public agency.

"Plant" means the Palo Alto Regional Water Quality Control Plant.

"Point of discharge" means the point or points designated as such in the permit. Where no designation is made it shall mean the point where the private sewer joins a public sewer.

"Pretreatment system" means a treatment system at an industrial or commercial facility that is designed to treat water prior to entering the city's sewer system.

"Sampling location" means an access box, valve, spigot or similar structure from which samples representative of an industrial wastewater discharge from a particular process or processes, piece of equipment, activity, building, or facility are collected.

"Sanitary sewage" or "sewage" means water-carried wastes from residences, business property, institutions and industrial property excluding ground water, surface water, and storm waters.

"Secondary containment" means and shall have the meaning specified by Title 17 of this code.

"Seepage pit" means a device comprised of one or more pits extending into porous strata, lined with open-jointed masonry or similar walls, capped and provided with a means of access such as a manhole cover and into which wastewater disposal system effluent is discharged.

"Sewage treatment plant" means any arrangement of devices and structures used for treating sanitary sewage.

"Sewer" means a pipe or conduit for carrying sewage.

"Sewer system" or "sanitary sewer system" means all sewers, treatment plants and other facilities owned or operated by the city of Palo Alto for carrying, collecting, treating, and disposing of sanitary sewage and industrial wastes.

"Significant noncompliance" means violation by an industrial discharger of one or more criteria set forth in 40 CFR 403.8(f)(viii).

"Simple payback period" means the number of years required to allow the dollar value of an investment in water pollution control to be exceeded by cost savings resulting from the investment.

"Slug" means any non-routine discharge that violates any of the specific prohibitions listed in 40 CFR 403.5(b) or Section 16.09.100 of this code.

"Storm drains" or "storm drain system" means the system of pipes and channels used to collect and convey storm water.

"Superintendent" means the manager of the Palo Alto Regional Water Quality Control Plant, his or her designee or such other person as may be designated by the city manager.

"Unpolluted water" means water to which no constituent has been added, either intentionally or accidentally, that would

render such water unacceptable for disposal to storm or natural drainage or directly to surface waters.

"Wet sanding" means the use of water and sandpaper for the removal of paint. (Ord. 4760 § 2, 2002: Ord. 4287 § 1, 1995: Ord. 4252 § 2, 1994: Ord. 4070 § 1, 1992: Ord. 3988 § 1, 1990: Ord. 3889 § 1 (part), 1989)

16.09.015 Responsibility of the superintendent.

The superintendent shall be responsible for the administration and enforcement of the provisions of this chapter, for conducting an industrial waste source control program, and for promulgating such orders, rules and regulations as are necessary to accomplish the purpose of this article in accordance with the requirements that are or may be promulgated by the Environmental Protection Agency, the state of California Water Resources Control Board, the State Department of Health Services, the California Regional Water Quality Control Board for the San Francisco Bay Region or other duly authorized boards or agencies. (Ord. 3889 § 1 (part), 1989)

16.09.020 Industrial waste discharge permit.

(a) It is unlawful for any person or organization to discharge or cause to be discharged any industrial waste whatsoever directly or indirectly into the sewer system without first obtaining a permit for industrial waste discharge. Appropriate fees for such permits are specified in a utility rate schedule of the Palo Alto utilities rates and regulations. Furthermore, it shall be unlawful for any person or organization to discharge any industrial waste in excess of the quantity or quality limitations or to violate any other requirement set forth in this chapter or in a permit for industrial waste discharge.

(b) A discharger may submit an advance written request to discharge prohibited wastes not in conformance with this chapter or wastes containing concentrations of substances or characteristics in excess of those permitted by this chapter. Discharge of such wastes shall not be allowed without an exceptional waste permit duly issued.

(c) The superintendent may authorize a discharger by permit to discharge "exceptional wastes" when the permit will neither result in a violation of any of the provisions of this chapter nor cause any of the effects described in Section 16.09.100 of this code nor any violation of the pretreatment regulations. The city shall be compensated for any costs it incurs in authorizing such discharge including any expense in determining whether such discharge is compatible with the sewer system and is in compliance with the pretreatment regulations.

(1) Permission to discharge exceptional waste may either be given as an addendum to a current permit or by a separate permit. In the case of third parties requesting permission to discharge waste generated by another party, or the products of treating waste generated by another party, the waste generator or responsible party must submit a "designation of authorized representative" [DOAR] to the superintendent to authorize the third party to conduct business and sign reports on their behalf. However, certification that the waste as discharged does not constitute a hazardous waste and the permit and permit application must be signed by such waste generator or responsible party.

(2) Exceptional wastes are aqueous wastes that may include but are not limited to: (i) construction site dewatering where soil or groundwater contamination is present, (ii) groundwater contaminated with organic solvents generated as a result of pump tests in preparation for a groundwater cleanup or water generated during sampling events, (iii) aqueous wastes generated by either permanent or mobile hazardous waste treatment units used to treat hazardous waste

at the generator's site, (iv) and aqueous wastes generated as a result of site cleanup activities. A permit must be obtained prior to commencement of discharge, and requests for such permits shall be submitted no later than twenty working days prior to intended discharge. The letter of application shall include the name, address, phone number and title of the responsible party, on-site contact person's name, address, and twenty-four-hour contact phone number, analytical data on the contaminants and characteristics of the intended discharge, the intended point of discharge, the duration and volume, dates of intended discharge, and a site plan.

(3) A separate charge for processing such requests shall be established by the superintendent to recover the city's costs in processing and administering such permits.

(d) The permit for any industrial waste discharge may include, but is not limited to, requiring pretreatment of wastes before discharge; restriction of peak flow discharges, prohibition of discharge of certain wastewater components: restriction of discharge to certain hours of the day; requiring payment of additional charges to defray increased costs to the city created by the wastewater discharge; requiring sampling and monitoring before and during discharge and other conditions as may be required to effectuate the purpose of this chapter. The permit may also require specific investigations or studies to determine methods of reducing toxic constituents in the discharge.

(e) No permit for industrial waste discharge is transferable without the prior written consent of the superintendent. A change of ownership (including a transfer of the majority of shares in a corporate discharger) of the waste generating facility requires a new permit application.

(f) Any person or organization desiring to change the quantity or quality of waste discharged to the sewer system or to discharge wastes or use facilities which are not in conformance with their industrial waste permit shall apply for and obtain an amended permit prior to any such discharge or use. An application for an amended permit must be filed sixty days in advance of the proposed commencement of such discharge or use of such facilities. (Ord. 4642 § 22, 2000: Ord. 4070 § 2, 1992: Ord. 3889 § 1 (part), 1989)

16.09.030 Industrial wastes discharge permit procedure.

(a) Application for Discharge Permit and Determination of Federal Pretreatment Category. Applicants for a permit for any industrial waste discharge shall complete and submit an application form for each point of discharge. The superintendent shall establish the contents of said form and may require additional information on the characteristics of the wastewater discharge beyond that required on the application form. Interested parties shall be notified of the filing of the application via posting at city hall.

Completed application forms shall be filed by the discharger not less than sixty days in advance of commencing discharge. The discharger shall not commence discharge prior to permit approval.

(b) Determination of Pretreatment Category According to the Pretreatment Regulations. Prior to approval of a discharge permit, the superintendent shall determine whether the discharge is subject to the categorical standards provided in the pretreatment regulations. The determination will be made by the superintendent following the guidelines and procedures of that subpart.

(c) The superintendent may impose terms and conditions on the permit which the superintendent deems reasonable or necessary to carry out the purposes of this chapter. The application shall be approved if (1) the applicant has complied with all requirements of this chapter and all applicable city ordinances, state and federal regulations; (2) the applicant has furnished

all requested information; (3) the city determines that there are adequate devices, equipment, chemicals, and other facilities to sample, meter where desirable, convey, treat, and dispose of the industrial wastes; and (4) the person(s) to be responsible for treatment and control are adequately trained and capable of consistently meeting permit requirements.

(d) Interested parties shall be notified of the issuance of permits via posting at city hall. Interested parties and other members of the public may appeal the issuance of a permit within forty-five days of issuance and request a hearing on the matter. The hearing procedures contained in Section 16.09.050 shall be followed. The permit effective date shall not be postponed solely because of the filing of an appeal. (Ord. 3889 § 1 (part), 1989)

16.09.031 Requirements for facilities affected by categorical pretreatment standards.

In the event that an industrial waste discharge permit holder or applicant is determined to be affected by a newly promulgated categorical waste discharge standard or an existing discharge permit holder is reclassified as being subject to the categorical standards provided in the pretreatment regulations due to process changes, or an inspection reveals the presence of regulated processes, or new information becomes available that justifies or requires a reclassification, the discharger shall, within ninety days of the effective date of a categorical standard or reclassification, file a baseline monitoring report [BMR]. If additional pretreatment, operational, or maintenance procedures, or installation of facilities, equipment or improvements will be required to comply with the categorical standard, the discharger shall include a compliance time schedule which specifies the shortest feasible schedule by which the discharger will provide such additional pretreatment procedures or facilities, equipment or improvements to attain compliance. For purposes of pretreatment regulations, the completion date in this schedule shall not be later than the established compliance date provided by the applicable pretreatment regulations. (Ord. 4760 § 3, 2002: Ord 3889 § 1 (part), 1989)

16.09.032 Requirements for newly constructed, remodeled or converted commercial and industrial facilities.

(a) Dischargers of industrial waste from newly constructed, remodeled or converted commercial and industrial facilities shall be in full compliance with the provisions of this chapter at the time of commencement of discharge. Dischargers from newly constructed, remodeled, or converted commercial and industrial facilities, upon request of the superintendent, shall complete a waste minimization study in accordance with guidelines published by the superintendent, and shall certify that measures have been taken to minimize toxic constituents in the discharge.

(b) The owner of every newly constructed, remodeled, or converted commercial or industrial facility shall comply with the following requirements. These requirements shall apply to remodeled or converted facilities to the extent that the portion of the facility being remodeled or converted is related to the subject of the requirement:

(1) Interior (indoor) floor drains to the sewer system may not be placed in areas where hazardous materials, hazardous wastes, industrial wastes, industrial process water, lubricating fluids, vehicle fluids or vehicle equipment cleaning wastewater are used or stored, unless secondary containment is provided for all such materials and equipment. The superintendent may allow an exception to this requirement under the following circumstances:

(A) When the drain is connected to a

wastewater treatment unit approved by the superintendent;

(B) (For safety showers) When the drain is installed with a temporary plug which remains closed except when the shower is in use, or when the drain is protected from spills by either a covered sump or berm system. If a sump is used, the capacity shall be at least as large as the largest chemical container in the laboratory;

(C) (For industrial process equipment) If the equipment does not contain hazardous waste and if all floor drains are equipped with fail-safe valves which shall be kept closed during periods of operation.

(2) Exterior (outdoor) drains may be connected to the sewer only if the area in which the drain is located is covered or protected from rainwater run-on by berms and/or grading, and appropriate wastewater treatment approved by the superintendent is provided. Any loading dock area with a sanitary sewer drain shall be equipped with a fail-safe valve, which shall be kept closed during periods of operation.

(3) Interior floor drains shall not be connected to the storm drain.

(4) Exterior drains shall be connected to the storm drain. Such connections shall not be permitted within the following areas:

(A) Equipment or vehicle washing areas;

(B) Areas where chemicals, hazardous materials, or other uncontained materials are stored unless secondary containment is provided;

(C) Equipment or vehicle fueling areas or fluid changing areas;

(D) Loading docks where chemicals, hazardous materials, grease, oil, or waste products are handled.

(5) Fueling areas shall have impermeable floors and rain covers that extend a minimum of ten feet in each direction from each pump. Fueling areas shall be designed to prevent water runon to the covered area.

(6) Roof drains may discharge to the storm drain system, provided that all roof equipment, tanks, and pipes containing other than potable water, cooling system water, or heating system hot water have secondary containment.

(7) Boiler drain lines shall be connected to the sewer system and may not be discharged to the storm drain system.

(8) Condensate lines shall not be connected or allowed to drain to the storm drain system.

(9) Copper, copper alloys, lead and lead alloys, including brass, shall not be used in the sewer lines, connectors, or seals coming in contact with sewage, except for sink traps and associated connecting pipes.

(10) Secondary containment shall be provided for exterior work areas where motor oil, brake fluid, gasoline, diesel fuel, radiator fluid or other hazardous materials or hazardous wastes are used or stored. Drains shall not be installed within the secondary containment areas. The superintendent may allow a drain for work areas (but not for hazardous storage areas) if the secondary containment area is covered and if the drain is connected to a wastewater treatment facility approved by the superintendent.

(11) Sacrificial zinc anodes are not permitted to be in contact with the water supply in a water distribution system.

(12) Aspirators connected to laboratory sink faucets are prohibited; however, aspirators designed and used for transferring acids and bases from stationary permanent laboratory sinks to treatment facilities shall be allowed.

(13) Laboratory countertops and laboratory sinks shall be separated by a lip which prevents hazardous materials spilled on the countertop from draining to the sink.

(14) Sewer traps below laboratory sinks shall be made of glass or other approved transparent materials to allow inspection and to determine frequency of cleaning. Alternatively, a removable plug for cleaning the trap may be provided, in which case a cleaning frequency shall be established by the superintendent. In establishing the

cleaning frequency, the superintendent shall consider the recommendations of the facility. The superintendent will grant an exception to this requirement for areas where mercury will not be used; provided, that in the event such an exception is granted and mercury is subsequently used in the area, the sink trap shall be retrofitted to meet this requirement prior to use of the mercury.

(15) Swimming pool discharge drains shall not be connected directly to the storm drain system or to the sewer system. When draining is necessary, a hose or other temporary system shall be directed into a sewer (not storm drain system) clean out. A sewer clean out shall be installed in a readily accessible area.

(16) Food service facilities shall have a sink or other area for cleaning floor mats, containers, and equipment, which is connected to a grease interceptor and the sanitary sewer. The sink or cleaning area shall be large enough to clean the largest mat or piece of equipment to be cleaned. After January 1, 1996, new buildings constructed to house food service facilities shall include a covered, area for a dumpster. The area shall be designed to prevent water runon to the area and runoff from the area. Drains that are installed beneath dumpsters serving food service facilities, shall be connected to a grease removal device.

(17) If installed, parking garage floor drains on interior levels shall be connected to an oil/water separator prior to discharging to the sanitary sewer system. The oil/water separator shall be cleaned at a frequency of at least once every twelve months or more frequently if recommended by the manufacturer or the superintendent. Oil/water separators shall have a minimum capacity of 100 gallons. (Ord. 4760 § 4, 2002: Ord. 4252 § 3, 1994: Ord. 3889 § 1 (part), 1989)

16.09.033 Reporting requirements for all permitted dischargers.

All permit holders shall be required to submit periodic reports to the superintendent. Specific reporting requirements shall be specified in the permit, or in compliance directives or in notices of violation, but the minimum reports required for all permitted dischargers of nondomestic waste are as follows:

(a) Baseline monitoring reports (BMR);

(b) Compliance reports which shall be submitted within ninety days of the compliance date calculated pursuant to the applicable pretreatment standards or local standards. These reports shall state whether applicable standards or requirements are being met on a consistent basis;

(c) Periodic reports of continued compliance [PRCC] shall be submitted semiannually. These reports shall indicate whether applicable pretreatment standards and/or local discharge standards have been met during the reporting period.

(d) Permitted dischargers shall keep records of monitoring activities and results for all monitoring required by the superintendent for a minimum of three years.

Failure to submit required reports by the specified due date shall be considered a violation of the provisions of this chapter. (Ord. 4760 § 5, 2002: Ord. 3889 § 1 (part), 1989)

16.09.035 Personnel orientation.

(a) Holders of industrial waste discharge permits shall take necessary steps to inform appropriate personnel employed by such permit holders of the provisions of this chapter.

(b) Such personnel shall include workers and supervisors whose duties pertain in any manner to the production or removal of waste discharges regulated by this chapter.

(c) Steps to inform such personnel shall include:

(1) Orientation of newly employed or assigned personnel;

(2) Annual orientation of all appropriate personnel; and

(3) Posting of work stations with signs or equally effective methods of indicating approved methods for disposition of wastes and reporting requirements and instructions for accidental spills and increased loadings. (Ord. 3889 § 1 (part), 1989)

16.09.040 Modification, suspension or revocation of industrial wastes discharge permit.

(a) Any permit for industrial wastes discharge may be revoked, made subject to additional terms or conditions, modified or suspended by the superintendent in addition to other remedies provided by law, when such action is necessary in order to stop a discharge or a threatened discharge which presents a hazard or a threat of hazard to the public health, safety, welfare, natural environment, sewer system, or which violates this chapter, or which action is intended to implement programs or policies required or requested of the city by appropriate state or federal regulatory agencies.

(b) Any discharger notified of the city's intent to revoke, make subject to additional terms or conditions, modify, or suspend the discharger's permit shall immediately comply with directives of the superintendent or cease and desist the discharge of all industrial wastes or such portion of said wastes as will eliminate the wrongful discharge to the sewer system pending any hearing that the discharger may request as set forth in Section 16.09.050 of this chapter.

(c) The superintendent shall reissue or reinstate any industrial wastes permit or modified permit upon proof of satisfactory ability to comply and/or compliance with all discharge requirements, and the payment of any costs, fines, or penalties which may be assessed. The superintendent may require any permit holder to develop and implement a compliance schedule for any proposed modification to permit terms and conditions. (Ord 3889 § 1 (part), 1989)

16.09.050 Permit issuance, denial, modification, revocation, or suspension hearing.

(a) Every industrial waste discharger shall have at its request, a hearing before the city manager, or his designee, before the industrial wastes permit application is issued, denied, or the permit is revoked, made subject to additional terms or conditions, modified or suspended.

(b) The superintendent shall give the industrial waste discharger applicant or permit holder ten calendar days' written notice of intent to issue or deny the application or to revoke, make subject to additional terms or conditions, modify or suspend the discharger's permit. The superintendent shall post a copy of such notice at city hall for interested persons. The notice shall set forth specifically the grounds for the superintendent's intention to deny, revoke, or suspend and shall inform the applicant or permit holder or members of the public that they have ten days from the date of receipt of the notice to file a written request for a hearing. The application shall be issued or denied or the permit shall be revoked, modified or suspended if a hearing request is not received within the ten-day period.

(c) If the applicant or permit holder or interested party or parties file(s) a timely hearing request, the city manager, or his designee, shall within ten calendar days from the receipt of the request, set a time and place for the hearing. All parties involved shall have the right to offer testimonial, documentary, and tangible evidence bearing on the issues and to be represented by counsel. The decision of the city manager, or his designee, whether to issue or deny the application or revoke, make subject to additional terms and

conditions, modify or suspend the permit shall be final.
(Ord. 3889 § 1 (part), 1989)

16.09.060 Waste sampling locations.

Every establishment from which industrial wastes are discharged to the sewer system shall provide and maintain one or more sampling locations or metering devices or volume and flow measuring methodologies or other sampling and measuring points approved by the superintendent which will allow the separate measuring and sampling of industrial and domestic wastes. The superintendent may approve sampling locations and measuring devices or methodologies which will permit the combined sampling and measuring of industrial and domestic wastes only for establishments discharging prior to the effective date of the ordinance codified in this chapter. Unless otherwise approved by the superintendent, domestic and industrial wastes shall be kept completely separated upstream of such sampling locations and/or measuring points. Establishments that are billed for sewer service on the basis of sewage effluent constituents shall provide a suitable means for sampling and/or measurement of flow to determine billing constituents in accordance with the utilities rules and regulations. Sampling locations shall be so located that they are safe and accessible to city inspectors at any reasonable time during which discharge is occurring.
(Ord. 4760 § 6, 2002: Ord. 3889 § 1 (part), 1989)

16.09.061 Discharger monitoring.

(a) The superintendent, or his or her authorized representatives, may conduct all inspection, surveillance, and monitoring procedures necessary to assure compliance with applicable sections of this chapter or with federal or state regulations.

(b) Representatives of the superintendent shall be authorized to enter, without unreasonable delay, any premises of any discharger to carry out inspections, surveillance and monitoring to assure compliance with this chapter and applicable federal, state of California, and county of Santa Clara regulations. Records shall be available to city personnel for inspection and copying.

(c) In addition to any other remedy available to the city, city inspectors may issue compliance directives at the time of the inspection to require the discharger to implement actions that will correct violations of this chapter or the permit. Such directive shall be considered as an additional condition on the dischargers' permit and may be reviewed as provided in Section 16.09.050.

(d) Prior to final closure of any industrial facility, the superintendent may require inspection and/or testing of the facility's sanitary sewer lines to ensure that the integrity of the sewer lines has not been compromised and to determine the quantity and pollutant content of sediments. Inspection and/or testing to ensure the integrity of sewer lines may be required when the facility's discharge history includes pH fluctuations, or when past discharges may have compromised or call into question the integrity of the sewer lines. Inspection and/or testing to determine the quantity and pollutant content of sediments may be required when the facility's type of operations and pollutant content of discharges make the presence of contaminated sediments likely. Inspection and testing may include, but not be limited to, pressurized testing, smoke testing, video camera inspection, and/or analytical testing of sediments for pollutants regulated by the facility's discharge permit. Where contaminated sediments or compromised sewer lines are identified, responses may include, but not be limited to, requiring replacement of compromised sewer lines and requiring removal of contaminated sediments from sewer lines. In lieu of

analytical testing, facilities may elect to remove sediments from sewer lines in a manner approved by the superintendent. For the purposes of this section, "final closure" means closure of an industrial facility when an entire building is being vacated by the current operator, or when the uses of an entire building will no longer include use of hazardous materials.
(Ord. 4760 § 7, 2002: Ord. 3889 § 1 (part), 1989)

16.09.070 Trucker's discharge permit.

(a) All persons operating vacuum or "cesspool" pump trucks or other liquid waste transport trucks desiring to discharge septic tank, seepage pit, interceptor or cesspool contents, or other liquid wastes to the sewer system shall first acquire a truckers discharge permit.

(b) Truck transported industrial wastes shall be discharged only at the locations specified by the superintendent for the specific waste. The city shall require payment for treatment and disposal costs or may refuse permission to discharge certain prohibited wastes in accordance with city of Palo Alto's utilities rules and regulations. Denial, suspension, or revocation of such permit shall be in accordance with Sections 16.09.040 and 16.09.050 of this chapter.

16.09.075 Limitations on point of discharge.

No person shall discharge any substances directly into a manhole or other opening in a city sewer, other than through an approved building sewer, or other location approved by the superintendent.
(Ord. 3889 § 1 (part), 1989)

16.09.080 Confidentiality.

(a) Any information submitted to superintendent pursuant to this chapter may be claimed as confidential by the submitter. Any such claim must be asserted at the time of submission in the manner prescribed on the application form or, in the case of other submissions, by stamping the words "confidential business information" on each page containing such information. Information submitted prior to the inclusion of this section in the chapter may be withdrawn and replaced by submittals stamped "confidential business information." If no such claim is made at the time of submission or within ninety days after this section becomes effective, the information may be made available to the public without further notice.

Upon receipt of a request for the release of information to the public which includes information which the discharger has notified the superintendent is claimed to be a trade secret as provided herein, the superintendent shall notify the discharger in writing of the request by certified mail, return receipt requested. The superintendent shall release the information to the public, but not earlier than thirty days after the date of mailing the notice of the request for information, unless, prior to the expiration of the thirty-day period, the discharger files an action in an appropriate court for a declaratory judgment that the information is subject to protection under the laws of the state of California or for an injunction prohibiting disclosure of the information to the public and promptly notifies the superintendent of that action. This section does not permit a discharger to refuse to disclose the information required pursuant to this chapter to the superintendent.

(b) Information and data provided to the superintendent pursuant to this section which constitutes effluent or flow data shall be available to the public without restriction.

(c) A discharger may be prohibited from discharging a substance unless its composition is made known to the superintendent.
(Ord. 3889 § 1 (part), 1989)

16.09.090 Accidental discharge prevention.

Each discharger shall provide adequate protection to prevent accidental discharge of

hazardous or prohibited materials, slugs, or other wastes regulated by this chapter. Where directed by the superintendent, or his designee, the discharger shall install retention basins, dikes, storage tanks, or other facilities in conformance with Chapter 17.12 designed to eliminate, neutralize, offset or otherwise negate the effects of prohibited materials or wastes which may be accidentally discharged in violation of this chapter.
(Ord. 4760 § 8, 2002: Ord. 3889 § 1 (part), 1989)

16.09.091 Storage of hazardous materials above sinks.

No person shall store hazardous materials above a sink that is connected to the sewer in a commercial or industrial facility. The superintendent may allow an exception for facilities existing as of January 1, 1995, when the hazardous materials are secondarily contained and when constrained to prevent accidental spills caused by earthquakes and other occurrences. (Ord. 4252 § 4, 1994: Ord. 4070 § 3, 1992)

16.09.095 Discharger self-monitoring.

(a) As a condition of discharge, the superintendent may require the discharger to conduct a sampling and analysis program of discharger's industrial waste of a frequency and type required by the superintendent to demonstrate compliance with the requirements of this chapter. The discharge permit shall specify the minimum frequency and type of samples, flow monitoring, measuring, and analyses to be conducted by the discharger. The permit may also specify the type of sampling equipment and flow monitoring equipment that must be installed and used. Flow monitoring equipment installed at a permitted discharger's sampling locations shall be calibrated at a frequency of at least once per year or at the frequency recommended by the manufacturer. pH monitoring equipment installed at a permitted discharger's sampling locations shall be calibrated at a frequency of at least once every six months or more frequently if recommended by the manufacturer. The required self-monitoring program will depend on factors such as flow, potential for the discharge to cause interference, pass-through, or upset of treatment processes, pollutants present, and prior compliance history (if any) of the discharger. Additional monitoring may be required by the superintendent for violation follow-up, assisting the city in evaluating effects of the discharge, or as part of a compliance directive or notice of violation.

Information to be included in reports of self-monitoring, and acceptable sampling and analytical methods are specified in 40 CFR 403.12(g) and 40 CFR 136. Discharge permits may require the discharger to conduct self-monitoring using specific analytical methods with specified detection limits to provide information on pollutant mass loading. Samples shall be analyzed at the discharger's expense, by a laboratory accredited by the State of California Department of Health for such analysis. The detection limit used by the discharger for those substances reported as nondetectable shall be no greater than one-tenth the lowest applicable effluent limit.

(b) The self-monitoring reports and notices required by the pretreatment regulations shall be submitted to the superintendent or his designee on the dates specified.

(c) The superintendent may require self-monitoring for facilities for which a permit has not been issued. In addition, the superintendent may require investigations or studies to determine methods of reducing toxic constituents in the discharge. The superintendent may also request that information be submitted within a reasonable time concerning the chemical or biological constituents of any substance or chemical product that could potentially be discharged to the sewer system or the storm drain system or which the superintendent

determines may, alone or in accumulation with other discharges, contribute to a violation by the plant of any applicable water quality standards or of any of its NPDES permits or contribute to an upset of plant processes. (Ord. 4760 § 9, 2002: Ord. 4252 § 5, 1994: Ord. 3889 § 1 (part), 1989)

16.09.100 Prohibitions.

Wastes discharged into the sewer system shall not have characteristics which by themselves or by interaction with other wastes may:

(a) Endanger the health and safety of the public or city personnel;

(b) Cause damage to the sewer system;

(c) Create nuisance such as odors or coloration;

(d) Result in extra cost of collection, treatment, or disposal;

(e) Interfere with, inhibit or disrupt any wastewater treatment process of the plant, its treatment processes, sludge processes, or operations in such manner to cause violations of the plant's NPDES permit, or any regulatory requirement, or result in the use of sludge in noncompliance with any applicable requirements. This shall include instances due to flow rate and/or pollutant concentration and applies to increases in magnitude or duration of violation by the plant;

(f) Exit the plant into waters of the United States in quantities or concentrations which contribute to a violation of any regulatory requirement applicable to the plant. This shall include increases in magnitude or duration of any violation or period of noncompliance;

(g) Cause the temperature of the influent flow to the plant to exceed 40§C (104§F);

(h) Prevent, hinder, delay, or impede compliance with effluent quality requirements established by regulatory agencies, or exceed the same;

(i) Cause wastewater quality to fall outside reclamation feasibility limits.

(Ord. 3889 § 1 (part), 1989)

16.09.101 Root control chemicals.

No person shall discharge, dispose of or add to the sanitary sewer system any substance containing greater than five percent copper by weight, to control roots or for any other purpose. No person shall discharge, dispose or add to the storm drain system any substance to control roots. (Ord. 4760 § 10, 2002: Ord. 4252 § 6, 1994: Ord. 4070 § 4, 1992)

16.09.102 Grease disposal prohibited.

No person shall dispose of any grease, or cause any grease to be disposed, by discharge into any drainage piping, by discharge into any public or private sanitary sewer, by discharge into any storm drainage system, or by discharge to any land, street, public way, river, stream or other waterway. (Ord. 4070 § 5, 1992)

16.09.103 Grease removal device required -- Garbage disposers prohibited.

(a) The owner of every newly constructed, remodeled, or converted commercial or industrial facility with one or more grease generating activities, including food service facilities with new or replacement kitchens, for which a building permit is issued on or after January 1, 1992, shall install or cause to be installed a grease interceptor for each grease generating activity, of a size equal to or greater than the minimum size meeting the definition of "grease interceptor," as set forth in Section 209 of the 1997 Uniform Plumbing Code or the equivalent section of a subsequently adopted edition of the California Plumbing Code.

(b) The owner of every commercial or industrial generator of grease, including food service facilities, serviced by a sewer collection line found to have a grease blockage, a history of grease blockage, or accelerated line maintenance resulting from grease disposal shall install or cause to be installed, upon notification by the superintendent, a grease removal device.

(c) The owner of every commercial or industrial generator of grease, including food service facilities, for which installation of grease removal devices is not required pursuant to subsection (a) or (b) of this section, shall install or cause to be installed a grease removal device for each grease generating activity, on or before January 1, 1997.

(d) All grease removal device(s) shall be installed on the premises where grease is used or generated and shall be sized in conformance with Chapter 10 of the 1997 Uniform Plumbing Code or the equivalent section of a subsequently adopted edition of the California Plumbing Code. The contents of all grease removal devices shall be removed periodically as necessary to prevent violations of this chapter. At a minimum, the contents shall be removed every six months. All grease removal devices shall be kept in good repair, and shall be maintained in continuous operation. A log of all grease removal activities shall be maintained at the facility showing the date of removal, the amount removed and the disposition of the removed contents. The log shall be retained for a period of three years, and shall be available for inspection by city inspectors upon request.

(e) Effective January 1, 2003, the installation of any food waste disposer (grinder) at any food service facility with one or more grease generating activities is prohibited.

(f) Effective January 1, 2007, no food service facility with one or more grease generating activities shall utilize a food waste disposer (grinder) for the purpose of food waste disposal to the sanitary sewer. (Ord. 4760 § 11, 2002: Ord. 4070 § 6, 1992)

16.09.104 Zinc-containing floor finishes.

After January 1, 2003, no person shall discharge or dispose to the sanitary sewer any zinc-containing floor finish or a stripper solution that has been used for the stripping of a zinc-containing floor finish, except when the solutions have been treated in a wastewater treatment unit approved by the superintendent for removal of zinc. For the purposes of this section, zinc-containing floor finishes shall be defined as floor finish solutions containing greater than 0.01% zinc by weight.
(Ord. 4760 § 12, 2002)

16.09.105 Unpolluted water.

(a) Unpolluted water shall not be discharged through direct or indirect connection to the sanitary sewer system unless a permit is issued by the city. As used in this section, unpolluted water shall include stormwater from roofs, yards, foundation or underdrainage, which meets all state and federal requirements for discharge to surface waters of the United States. The city may approve the discharge of such water to the sewer system only when no reasonable alternative method of disposal is available. If a permit is granted for the discharge of such water into the sewer system, the user shall pay the applicable charges and fees and shall meet such other conditions as required by the superintendent.

(b) After January 1, 2003, non-emergency discharges greater than 200 gallons per day from once-through cooling systems using potable water as a coolant shall not be discharged to the sanitary system; provided, that the superintendent may approve an exception in the following instances: (1) for once-through cooling water used for benchtop reflux or distillation or other similarly sized activity or (2) for short term use only, upon the determination that the use is for a research activity for which another source of cooling is not easily available.

(c) After January 1, 2006, non-emergency discharges of any amount from once-through cooling systems using potable water as a coolant shall not be discharged to the sanitary system; provided, that the superintendent may approve an exception in the following instances: (1) for once-through

cooling water used for benchtop reflux or distillation or other similarly sized activity or (2) for short term use only, upon the determination that the use is for a research activity for which another source of cooling is not easily available. (Ord. 4760 § 13, 2002: Ord. 4252 § 7, 1994: Ord. 3889 § 1 (part), 1989)

16.09.106 Storm drains -- Prohibited discharges.

(a) It shall be unlawful to discharge any domestic waste or industrial waste into storm drains, gutters, creeks, or San Francisco Bay. Unlawful discharges to storm drains shall include, but not be limited to, discharges from toilets; sinks; industrial processes; cooling systems; boilers; fabric cleaning; equipment cleaning; vehicle cleaning; construction activities, including, but not limited to, painting, paving, concrete placement, sawcutting and grading; swimming pools; spas; and fountains, or substances added to the storm drain to control root growth, unless specifically permitted by a discharge permit or unless exempted pursuant to guidelines published by the superintendent.

(b) It shall be unlawful to cause hazardous materials, domestic waste or industrial waste to be deposited in such a manner or location as to constitute a threatened discharge into storm drains, gutters, creeks or San Francisco Bay. A "threatened discharge" is a condition creating a substantial probability of harm, when the probability and potential extent of harm make it reasonably necessary to take immediate action to prevent, reduce or mitigate damages to persons, property or natural resources. Domestic or industrial wastes that are no longer contained in a pipe, tank or other container are considered to be threatened discharges unless they are actively being cleaned up.

(c) Interior floor drains shall not be connected to storm drains.

(d) Exterior drains located in the following areas shall not be connected to storm drains:

(1) Equipment or vehicle washing areas;

(2) Areas where equipment fluids are routinely changed;

(3) Areas where hazardous materials, chemicals or other uncontained materials that are easily transported by wind or water are stored and are not secondarily contained; or

(4) Loading dock areas, except that loading dock drains to the storm drain system may be allowed if a valve or equivalent device is provided, which remains closed except when it is raining.

Secondary containment shall be provided for any rooftop equipment, tanks or pipes containing other than potable water, cooling water, heating system hot water, steam, water condensate or equivalent substances, which the superintendent determines will otherwise cause a probable discharge to the storm drain system.

(e) After January 1, 2003, new buildings, except for single-family and duplex residences, shall provide a covered area for a dumpster. The area shall be designed to prevent water runon to the area and runoff from the area.

(f) After January 1, 2003, new multi-family residential development projects with 25 or more units shall provide a covered area for occupants to wash their vehicles. A drain shall be installed to capture all vehicle washwaters and shall be connected to an oil/water separator prior to discharge to the sanitary sewer system. The oil/water separator shall be cleaned at a frequency of at least once every six months or more frequently if recommended by the manufacturer or the superintendent. Oil/water separators shall have a minimum capacity of 100 gallons.

(g) Storm drain inlets shall be clearly marked with the words "No dumping - Flows to Bay," or equivalent. (Ord. 4760 §

14, 2002: Ord. 4252 § 8, 1994: Ord. 3988 § 2, 1990)

16.09.110 Standards.

The following standards shall apply to all discharges to the sewer at a designated sampling location determined by the superintendent to be consistent with the dilution prohibition contained in Section 16.09.121:

(a) The categorical standards set forth in 40 CFR Chapter I, Subchapter N, Parts 405-471 shall apply to all applicable sources. The definitions and procedures for establishing individual effluent limitations shall be as specified therein. Nothing in this chapter shall be construed as allowing less stringent limitations.

(b) Local limitations, in addition to those specified in this section, shall be developed by the superintendent based upon the prohibitions contained in Section 16.09.100. These limitations will be imposed on appropriate dischargers via industrial waste discharge permits or modifications to existing permits.

(c) In addition to the requirements of (a) and (b) above, the following requirements shall apply where they are more stringent:

Parameter	Average Concentration	Instantaneous Max.	Instantaneous Min.
Oil & grease* (mg/l)	–	20	–
Oil & grease (total) (mg/l)	–	200	–
Suspended solids (mg/l)	3000	6000	–
Total dissolved solids (mg/l)	5000	10000	–
Temperature, (Degrees F)			–
< 30 gpm & < 30 minutes		150 F	
All other times		120 F	
Fluoride (mg/l)	65	65	
pH**		11.0	5.0

'* Gravity separation at a temperature of 20°C. and a pH of 4.5.

** Where the pH is monitored continuously, no individual deviation from the above range shall exceed twenty minutes in length for discharges less than ten thousand gallons per day nor ten minutes in length for dischargers greater than ten thousand gallons per day. The total time of deviations during any seven calendar day period shall not exceed a total of sixty minutes. Any pH reading less than or equal to 2.0 or greater than or equal to 12.5 is prohibited.

(d) Dyes. Wastes showing excessive coloration shall not be discharged into the sewer system. Excessive coloration shall be defined as any coloration in a waste which, for any wave length, displays less than sixty percent of the light transmissibility of distilled water under the following conditions:

(1) After filtration through a 0.45 micron membrane filter;

(2) In the pH range of 5.5 to 11.0;

(3) Through a one centimeter light path;

(4) A maximum spectrum band width of 10 nanometers;

(5) Through the wave length range from four hundred to eight hundred nanometers.

(e) Explosives. No solids, liquids, or gases which by themselves or by interaction with other substances may create fire or explosion hazards, including wastestreams with a closed cup flashpoint of less than 140° F. (60° C.) shall be discharged. Flammable substances including, but not limited to, acetone, alcohols, benzene, gasoline, xylene, hexane and naphtha, shall not be discharged into the sewer system except where present in contaminated groundwater discharges being discharged under an exceptional waste permit issued by the city. Where groundwater discharges contain such contaminants, the discharger shall monitor the sewer atmosphere for explosivity and flammability using a properly calibrated meter designed for the purpose. The frequency of such monitoring shall be defined in the permit. Whenever ten percent of the lower explosive level is exceeded, the discharger shall immediately

notify the superintendent of the potential hazard in the sewer within fifteen minutes of making the determination of threatened explosivity. The discharger shall follow verbal notification with a written explanation of the cause of the explosive hazard within five working days, with corrective actions taken to alleviate the situation and measures taken to prevent a reoccurrence. The discharger shall not recommence without prior written approval of the superintendent or his designated representative. Where flammable substances are used in processes, separate collection and disposal outside the sewer system shall be provided.

(f) Oil and Grease. Oil and/or grease shall not be discharged into the sewer system if the average concentration of flotable oil and/or grease (defined as that which is subject to gravity separation at a temperature of 20° C. and at a pH of 4.5) exceeds twenty mg/liter; nor shall the total oil and/or grease concentration exceed two hundred mg/liter. In addition, the discharge of petroleum oil, nonbiodegradable cutting oil, or products of mineral origin in amounts that cause interference or pass through, as defined by EPA regulations, shall be prohibited.

(g) Hazardous, Noxious or Malodorous Substances. No industrial waste shall be discharged which alone or in combination with other wastes may create a public nuisance or hazard, make human entry into the sewers unsafe, or which constitutes a discharge of hazardous waste.

Permitted dischargers shall be required to certify at least every six months in their Periodic Report of Continued Compliance (PRCC) that their waste does not constitute a hazardous waste, and that during the previous six months no discharge of hazardous waste has occurred. Dischargers shall be required (as a condition to permission to discharge) to file with the Palo Alto fire department a current hazardous materials management plan (HMMP) pursuant to Title 17 of this code and to have on site copies of material safety data sheets for all hazardous materials stored, generated, or used at the discharger's site. Should any discharge of a hazardous waste occur, the discharger shall verbally notify the EPA, the Regional Water Quality Control Board and the superintendent as soon as possible, but in no event later than twenty-four hours after such discharge.

Appropriate records of hazardous waste disposal manifests, inventories of stored virgin and used hazardous materials, and other documentation required by the HMMP shall be kept and made available for inspection and/or copying at the city's request.

Mercaptans and dissolved sulfides shall not be discharged in concentrations exceeding 0.1 mg/liter.

(h) Organic Solvents. Except as permitted by other sections of this chapter, the sewer shall not be used as a means of disposal for organic solvents. Wastewater discharged to the sewer shall not contain a sum total greater than one thousand milligrams per liter of acetone, ethanol, methanol, or isopropyl alcohol, in any combination. Dischargers having organic solvents on site or using same shall provide and use a separate collection and disposal system outside the sewer system and shall provide safeguards against their accidental discharge to the sewer. An approved solvent management plan to prevent entry to the sanitary sewer and accidental spill prevention plans shall be filed by the discharger as a condition of permission to discharge to the sanitary sewer. Records of appropriate disposal and handling shall be maintained by the discharger and shall be available for inspection and copying by city personnel.

Organic solvents shall include, but shall not be limited to, those used in dry cleaning establishments, and shall also include separator water generated by dry cleaning equipment. Neither the organic solvent nor

the separator water may lawfully be discharged to the sewer or storm drain system.

(i) Total Toxic Organics. The prohibition against disposal of organic solvents contained in 16.09.110(h) may be replaced by a specific limitation on total toxic organics (TTO). Any such limitation must be contained in an industrial waste permit and either based on the appropriate categorical standard of the pretreatment regulations or the following:

Total toxic organics (TTO) is the sum of all quantifiable values greater than 0.01 mg/l from the list of toxic organic pollutants contained in 40 CFR Part 433.11(e). The sum of the TTO shall be less than 1.0 mg/l as an instantaneous maximum. No individual toxic organic compound (except for phenol) shall exceed 0.75 mg/l as an instantaneous maximum. These limitations are subject to change in the future as the requirements placed on the plant become more stringent and as the process for establishing the industrial waste limitations is refined.

(j) Radioactivity. The discharge of radioactive wastes into the sewer system shall conform to the requirements of California Radiation Control Regulations, Title 17, California Code of Regulations, Chapter 5, Subchapter 4, and as subsequently amended.

(k) Solids. No material shall be discharged to the sanitary sewer that will obstruct or damage the collection system, treatment system, or appurtenances. Specific prohibitions are as follows:

(1) Inert Solids. The discharge of inert solids including, but not limited to sand, glass, metal chips, bone, plastics, etc., into the sewer is prohibited. Settling chambers or treatment works shall be installed where necessary to prevent the entry of inert solids into the sewer system.

(2) Solid Particles. Industrial wastes shall not contain particulate matter that will not pass through a one-half-inch screen; this subsection shall not apply to domestic sewage from industrial establishments.

(l) Stored Liquid Wastes. Liquid aqueous-based wastes that have been collected and held in tanks or containers shall not be discharged into the sewer system except at locations authorized by the superintendent to collect such wastes. Wastes of this category include but are not limited to:

(1) Chemical toilet wastes;

(2) Industrial wastes collected in containers or tanks;

(3) Pleasure boat wastes;

(4) Septic tank pumping;

(5) Trailer, camper, housecar, or other recreational vehicle wastes.

(m) Toxicity. The following is a nonexclusive list of toxic substances and the maximum concentration allowed for each discharge:

Toxicant	Instantaneous Maximum Concentration Allowable
Arsenic	0.1 mg/liter
Barium	5.0 mg/liter
Beryllium	0.75 mg/liter
Boron	1.0 mg/liter
Cadmium	0.1 mg/liter
Chromium, Hexavalent	1.0 mg/liter
Chromium total	2.0 mg/liter
Cobalt	1.0 mg/liter
Copper	2.0 mg/liter
Cyanide	1.0 mg/liter
Formaldehyde	5.0 mg/liter
Lead	0.5 mg/liter
Manganese	1.0 mg/liter
Mercury	0.01 mg/liter
Methyl Tertiary Butyl Ether (MTBE)	0.75 mg/liter
Nickel	0.5 mg/liter
Phenols	1.0 mg/liter
Selenium	1.0 mg/liter
Silver	0.25 mg/liter
Zinc	2.0 mg/liter

For discharges greater than fifty thousand gallons per day through any single sampling location, the maximum concentration will be

one-half the values listed in the table, with the exception of silver, nickel, and mercury, for which the limits shall remain 0.25 mg/liter, 0.5 mg/liter, and 0.01 mg/liter, respectively, regardless of flow.

The maximum concentration allowable for mercury set forth in this section shall not be applicable to dental facilities using mercury-containing amalgam. Dental facility requirements are set forth in Section 16.09.112.

The maximum concentration allowable for silver set forth in this section shall not be applicable to photographic materials processing. Silver limitations for photoprocessors are set forth in Section 16.09.111. The maximum concentration allowable for copper set forth in this section shall apply to all discharges except where more stringent maximum concentration limitations are specified in Section 16.09.116.

These limitations are subject to change in the future as the requirements placed on the plant become more stringent and as the process for establishing the industrial waste limitations is refined.

(n) Discharge limitations at the point of sampling shall be specified in each discharge permit, based on flow and waste stream information supplied in the discharger's permit application, applicable federal categorical limitations on process wastewaters, and other pertinent information. Discharge limitations may be expressed both in terms of total mass discharged and concentration.

(Ord. 4760 § 15, 2002: Ord. 4642 § 23, 2000: Ord. 4252 § 9, 1994: Ord. 4070 § 7, 1992: Ord. 3988 §§ 3 and 4, 1990: Ord. 3889 § 1 (part), 1989)

16.09.111 Requirements for photographic materials processing.

(a) All photoprocessors shall comply with either subdivision (2) or subdivision (3) of this subsection (a). Persons who fully comply with subdivision (3) shall not be required to obtain an industrial waste discharge permit pursuant to Section 16.09.020, unless required to do so pursuant to other sections of this chapter, but shall be required to meet an applicable wastewater discharge limits and requirements.

(1) Definitions.

(A) Photographic Materials Processing. For the purposes of this section, "photographic materials processing" means developing silver-bearing film, including x-ray film, or photographic paper.

(B) Photoprocessor. For the purpose of this section, "photoprocessor" means any person who owns a photographic materials processing system including a business that does photographic materials processing or any person who engages in photographic materials processing.

(C) Spent Solutions. For the purposes of this section "spent solutions" means spent fixer, bleach fix, stabilizer from washless systems, silver-bearing cleaning solutions and functionally similar solutions other than washwater.

(D) Regeneration. For the purposes of this section, "regeneration" means the treatment of washwater, fix, or bleach fix for re-use.

(E) Washwater. For the purposes of this section, "washwater" means water that has been used to rinse fix or bleach fix from photographic film or paper.

(2) Silver Removal System. Persons who comply with this subdivision (2) shall install and operate in their facilities a silver removal system, in a manner which shall insure consistent compliance with the following effluent standards:

(A) The maximum allowable discharge concentration of silver shall be 1.0 mg/liter for photoprocessors that submit documentation satisfactory to the superintendent evidencing utilization of one or more of the following technologies:

(i) Washless minilab equipment; or

(ii) A water recirculating system that reduces washwater consumption by a minimum of sixty percent. The reduction shall be based on manufacturers' minimum recommended washwater rates; and achievement of such reduction shall be documented by the photoprocessor to the satisfaction of the superintendent.

(B) The maximum allowable discharge concentration of silver shall be 0.5 mg/liter for all silver removal facilities not covered by subsection (a)(2)(A) of this section.

(C) All spent solutions and washwater that are not sent off site shall be treated to insure consistent compliance with the effluent standards set forth in this subsection (a)(2). Silver removal from washwater shall be conducted in a manner that does not reduce the effectiveness of the treatment of spent solutions.

(D) The photoprocessor shall sample the discharge at a frequency determined by the superintendent based upon the flow rate from the facility. However, in no event shall sampling be done less frequently than once a month. A duplicate of each sample collected shall be kept for the use of city inspectors. A sampling port shall be installed in accordance with specifications set forth in the wastewater discharge permit.

(E) Every person owning or operating a silver removal system shall cause such system to be serviced at least once per year by the manufacturer, equipment distributor, or qualified consultant who shall certify that all equipment in the system is functioning in accordance with the manufacturer's standards for such equipment. A record of system service shall be maintained at the facility where the system is located, and be available for inspection by city inspectors upon request.

(F) Every person intending to comply with the provisions of this subsection (a)(2), shall submit a compliance plan to the superintendent on or before April 1, 1991. The compliance plan shall contain a description of the silver removal system and any regeneration systems to be used to meet the discharge limits set forth in this subsection (a)(2). The compliance plan shall include, but not be limited to, equipment specifications, waste volume estimates, and proposed procedures for sampling and testing. No person shall commence operating a silver removal system after June 30, 1991, without having submitted a compliance plan to the superintendent at least forty-five days prior to commencing operation of such system.

Every person intending to comply with the provisions of this subsection (a)(2) shall submit an annual report to the superintendent on or before February 1, 1992, and annually thereafter. The annual report shall contain the following information for the preceding calendar year.

(i) Type and description of silver removal processes and any regeneration systems employed;

(ii) Amount of spent solutions generated;

(iii) Dates of equipment servicing;

(iv) Description of any major changes in equipment or operation; and

(v) All wastewater sampling data.

(3) Off-Site Disposal. Persons who comply with this subsection shall ship or cause to be shipped off site, for recovery or appropriate disposal, all spent solutions or shall regenerate all spent solutions on site.

Storage, shipment and disposal of spent solutions shall be in accordance with all state, federal and local requirements.

Every person who complies with this subsection (a)(3) shall maintain, or cause to be maintained, records that detail the purchase date and quantity of all new fixer, bleach-fix, stabilizer and functionally similar solutions kept or used by such person. Such person shall also maintain, or cause to be maintained, detailed disposal records that include the date, type and amount of waste solution disposed of; the name, address and identification number of

the shipper; and the ultimate destination of each batch of waste solution shipped off site. Such person shall also maintain, or cause to be maintained, a record of the amount of spent solutions regenerated on site.

All records required to be kept pursuant to this subsection shall be kept for a period of three years at the photoprocessing site, and shall be available for immediate inspection upon request therefor by city inspectors during normal business hours.

Beginning on or before February 1, 1992, and annually thereafter, every photoprocessor intending to comply with this subsection shall submit to the superintendent a summary of the required records maintained by such photoprocessor relating to purchase and disposition of photographic solutions. The summary shall be on a form provided by the superintendent. Along with the summary, every photoprocessor shall submit a statement certifying that it is in compliance with this subsection and that the required records are available for inspection.

Photoprocessors that comply with this subsection need not meet the silver discharge limitations set forth in subsection(a)(2)(A) or (B) of this section, nor the silver discharge limitations set forth in Section 16.09.110(n) with respect to the photographic materials processing portion of their operations; provided, however, that those photoprocessors generating a total of one hundred gallons or more per month of spent solutions shall be required to meet the silver limitations of subsection (a)(2) of this section with respect to washwater, even if all spent solutions are shipped off site.

(b) Compliance Schedule. The dates by which compliance with either subsection (a)(2) or (a)(3) of this section shall be achieved shall be as follows:

(1) All photoprocessors generating less than twenty gallons per month of spent solutions shall meet the subject requirements on or before September 31, 1991.

(2) All other photoprocessors shall meet the subject requirements on or before June 30, 1991. (Ord 3988 § 5, 1990)

16.09.112 Requirements for dental facilities that remove or place amalgam fillings.

(a) Definitions. For the purposes of this section the following words and phrases shall be as defined herein.

(1) "Amalgam separator" is a device that employs filtration, settlement, centrifugation, or ion exchange to remove amalgam and its metal constituents from a dental office vacuum system before it discharges to the sewer.

(2) "Amalgam waste" means and includes non-contact amalgam (amalgam scrap that has not been in contact with the patient); contact amalgam (including, but not limited to, extracted teeth containing amalgam); amalgam sludge captured by chairside traps, vacuum pump filters, screens, and other amalgam trapping devices; used amalgam capsules; and leaking or unusable amalgam capsules.

(3) "ISO 11143" is the International Organization for Standardization's standard for amalgam separators.

(b) All owners and operators of dental facilities that remove or place amalgam fillings shall comply with the following waste management practices:

(1) No person shall rinse chairside traps, vacuum screens, or amalgam separators equipment in a sink or other connection to the sanitary sewer.

(2) Owners and operators of dental facilities shall ensure that all staff members who handle amalgam waste are trained in the proper handling, management and disposal of mercury-containing material and fixer-containing solutions, and shall maintain training records that shall be available for

inspection by the superintendent or designee during normal business hours.

(3) Amalgam waste shall be stored and managed in accordance with the instructions of the recycler or hauler of such materials.

(4) Bleach and other chlorine-containing disinfectants shall not be used to disinfect the vacuum line system.

(5) The use of bulk mercury is prohibited. Only precapsulated dental amalgam is permitted.

(c) All owners and operators of dental vacuum suction systems, except as set forth in subsections (d) and (e) of this section, shall comply with the following:

(1) An ISO 11143 certified amalgam separator device shall be installed for each dental vacuum suction system on or before March 31, 2005; provided, however, that all dental facilities that are newly constructed on and after the effective date of this ordinance shall include an installed ISO 11143 certified amalgam separator device. The installed device must be ISO 11143 certified as capable of removing a minimum of 95 percent of amalgam. The amalgam separator system shall be certified at flow rates comparable to the flow rate of the actual vacuum suction system operation. Neither the separator device nor the related plumbing shall include an automatic flow bypass. For facilities that require an amalgam separator that exceeds the practical capacity of ISO 11143 test methodology, a non-certified separator will be accepted, provided that smaller units from the same manufacturer and of the same technology are ISO-certified. Alternative materials and methods may be proposed to the superintendent for approval, pursuant to 16.09.165.

(2) Proof of certification and installation records shall be submitted to the superintendent within 30 days of installation.

(3) Amalgam separators shall be maintained in accordance with manufacturer recommendations. Installation, certification, and maintenance records shall be available for immediate inspection upon request therefor by the superintendent or designee during normal business hours.

(d) Facilities with vacuum suction systems that meet all of the following conditions may apply to the superintendent for an exemption to the requirements of subsection (c) of this section:

(1) The systems was installed before October 1, 2003.

(2) The system is a dry vacuum pump system with an air-water separator.

(3) The sedimentation tank is non-bottom draining, with the drain above the anticipated maximum level of accumulated sludge.

(4) Evidence of regular pump outs (a minimum of once a year, or more often if either directed by the manufacturer or necessary to keep solids from exiting through the drain) is maintained and open to inspection by the superintendent during normal business hours.

(5) The system has no direct discharge pipe to the sewer on the bottom of the sedimentation tank.

An owner or operator whose facility meets conditions (1) through (5) may apply for this exemption by written letter to the superintendent. The superintendent or designee will review the system and, if the exemption is approved, shall provide a written letter of exemption.

An exemption obtained pursuant to this subsection (d) shall expire upon installation of a new vacuum system. Upon expiration of the exemption, the facility shall comply

with subsection (c) of this section before commencing further operation.

(e) The following types of dental practice are exempt from this section 16.09.112, provided that removal or placement of amalgam fillings occurs at the facility no more than 3 days per year: (1) Orthodontics; (2) Periodontics; (3) Oral and maxillofacial surgery; (4) Radiology; (5) Oral pathology or oral medicine; (6) Endodontistry and prosthodontistry.

Persons who use amalgams contining silver shall install amalgam traps on all equipment that might carry amalgam waste to the sanitary sewer system. Each trap shall be cleaned or replaced according to manufacturer guidelines and in a manner that prevents any captured waste from entering the sanitary sewer system. (Ord 3988 § 6, 1990)

16.09.113 Requirements for vehicle service facilities.

(a) Definitions. For the purposes of this section the following words and phrases shall be as defined herein.

(1) "Commercial vehicle washing facility" means a commercial facility where vehicle washing is a primary business activity. Commercial vehicle washing facilities include, but are not limited to, mobile washing rigs.

(2) "Fleet washing facility" means a facility for washing vehicles, at a location where a business maintains six or more vehicles.

(3) "Ground surfaces" means and includes dirt, gravel, or other unpaved surfaces.

(4) "Vehicle" means a mode of transporting people or things. Vehicles include, but are not limited to, automobiles, trucks, recreational vehicles, tractors, airplanes and boats.

(5) "Vehicle fluid" means a liquid used in or drained from a motor vehicle. Vehicle fluids include, but are not limited to, gasoline, diesel fuel, motor oil, brake fluid, radiator fluid, hydraulic fluid, transmission fluid, and coolant.

(6) "Vehicle service facility" means a commercial or industrial facility that conducts one or more of the following operations with respect to vehicles or components of vehicles: vehicle repair, fuel dispensing, vehicle fluid replacement, engine and parts cleaning, body repair, vehicle salvage and wrecking, or vehicle washing.

(b) All vehicle service facilities shall be operated, on and after October 1, 1992, in accordance with the following standards:

(1) No person shall dispose of, nor permit the disposal, directly or indirectly, of vehicle fluids, hazardous materials, or rinsewater from parts cleaning operations into storm drains.

(2) All owners and operators of vehicle service facilities shall ensure that any vehicle fluid, hazardous material, or rinsewater from parts cleaning operations that comes into contact with any floor, pavement or ground surface is cleaned up immediately from such surface.

(3) No person shall dispose of vehicle fluids or rinsewater from parts cleaning operations into the sanitary sewer system except pursuant to an industrial waste discharge permit obtained in accordance with this chapter.

(4) No vehicle service facilities shall contain floor drains, excepting only such floor drains as are connected to wastewater pretreatment systems for which an industrial waste discharge permit has been obtained in accordance with this chapter.

(5) No tanks, containers or sinks used for parts cleaning or rinsing shall be connected to the storm drain system, or to the sanitary sewer system except pursuant to an industrial waste discharge permit obtained in accordance with this chapter.

(6) No person shall perform vehicle fluid removal outside a building, nor on asphalt or ground surfaces, whether inside or

outside a building, except in such a manner as to ensure that any spilled fluid will be in an area of secondary containment.

(7) Leaking vehicle fluids shall be contained or drained immediately.

(8) No person shall leave unattended drip parts or other open containers containing vehicle fluid, unless such containers are in use or in an area of secondary containment.

(9) No person shall discharge wastewater from vehicle washing operations or wash racks to the sanitary sewer system, to a storm drain, or onto the ground, except pursuant to an industrial waste discharge permit obtained in accordance with this chapter. Nothing in this subsection shall be construed to prohibit the proper reuse of wastewater.

(10) No person shall discharge into the storm drain water from vehicle washing operations, except from rinsing of vehicle exterior surfaces, with water only, to remove atmospheric dust that deposited on a vehicle when not in use. This exception does not apply to commercial vehicle washing facilities or fleet washing.

(11) Vehicle service facilities shall be cleaned using only those methods of cleaning that ensure that no materials are discharged to the storm drain or to the sanitary sewer system, except for wastewater which is discharged to the sanitary sewer system pursuant to an industrial waste discharge permit obtained in accordance with this chapter; provided, however, that a permit shall not be required for facilities that use the following three-step sequence for cleaning floors:

(A) Clean up spills with rags or other absorbent materials.

(B) Sweep floor using dry absorbent material.

(C) Mop floor. Mop water must be discharged to the sanitary sewer via a toilet or sink.

(12) All owners and operators of vehicle service facilities shall ensure that spill prevention and clean-up equipment and absorbent materials are kept in stock at all times and are readily available for use.

(13) No acid-containing batteries shall be stored except within secondary containment.

(14) All owners and operators of vehicle service facilities shall ensure that all employees of such facilities are trained, upon hiring and annually thereafter, regarding best management practices in accordance with guidelines issued and published by the superintendent.

(15) All owners and operators of vehicle service facilities shall post or cause to be posted signs on all storm drains located on the property of the facility notifying persons that the discharge of waste into the storm drain is illegal.

In the case of any conflict between the provisions of this section and other provisions of this chapter, this section will apply.

(16) No person shall discharge to the sanitary sewer solid materials from wet sanding. Vehicle service facilities using wet sanding processes shall have one or more containers to accumulate wet sanding wastewater and mop water from wet sanding areas. A minimum of 48 hours shall be provided for the settling of solid materials from the water prior to the water's discharge to the sanitary sewer system. An alternative solids removal method may be utilized provided that the method has been demonstrated to be equally effective, and approved by the superintendent. Settled solid materials shall be managed appropriately.

(c) The maximum allowable discharge concentration of zinc for vehicle service facilities shall be 4.0 mg/liter. (Ord. 4760 § 16, 2002: Ord. 4070 § 8, 1992)

16.09.114 Requirements for machine shops.

(a) All machine shops shall be operated

in accordance with the following standards:

(1) No person shall dispose of, nor permit the disposal, directly or indirectly, of machine shop fluids, hazardous materials, mop water, or rinsewater from parts cleaning or deburring/tumbling operations into storm drains.

(2) No person shall dispose of machine shop fluids or rinsewater from parts cleaning or deburring/tumbling operations into the sanitary sewer system except pursuant to an industrial waste discharge permit obtained in accordance with this chapter.

(3) No machine shop shall contain floor drains, excepting only such floor drains as are connected to wastewater pretreatment systems for which an industrial waste discharge permit has been obtained in accordance with this chapter.

(4) Machine shops shall be cleaned using only those methods of cleaning which ensure that no materials are discharged to the storm drain or to the sanitary sewer system, except for wastewater that is discharged to the sanitary sewer system pursuant to an industrial waste discharge permit obtained in accordance with this chapter; provided, however, that a permit shall not be required for facilities that use the following three-step sequence for cleaning floors, or an approved equivalent:

(A) Clean up spills with rags or other absorbent materials;

(B) Sweep floor using dry absorbent material; and

(C) Mop floor. Mop water shall be discharged to the sanitary sewer via a toilet or sink.

(5) All owners and operators or machine shops shall ensure that spill prevention, clean-up equipment and absorbent materials are kept in stock at all times and are readily available for use.

(6) All owners and operators of machine shops shall post or cause to be posted signs on all storm drain inlets located on the property of the facility with the words "No dumping Flows to Bay" or equivalent.

(7) All owners and operators of machine shops shall ensure that all employees who work directly on machine operations or clean up of such facilities are trained, upon hiring and annually thereafter, regarding best management practices for machine shops in accordance with guidelines issued and published by the superintendent. (Ord 4252 § 10, 1994)

16.09.115 Requirements for cooling systems, pools, spas and fountains.*

(a) It shall be unlawful to discharge water from cooling systems, pools and spas to the storm drain system.

(b) No person shall discharge or add to the sewer or storm drain, or add to a cooling system, pool, spa or fountain, any substance that contains any of the following:

(1) Copper in excess of 2.0 mg/liter;

(2) Any tributyl tin compound in excess of 0.1 mg/liter; or

(3) Chromium in excess of 2.0 mg/liter.

The above concentration limitations shall apply to any of the above-listed substances prior to dilution with the cooling system, pool, spa or fountain water.

(c) Cooling System Discharges.

(1) As of July 1, 1998, cooling system discharges exceeding a daily average flow of two thousand gallons shall not exceed a maximum copper concentration of 0.25 mg/l. For the purposes of this section the daily average flow shall be determined by dividing the total cooling system blowdown volume from April through October by the number of days of operation for the same period. The superintendent may impose an alternative requirement to the 0.25 mg/l limit when the cycles of concentrations routinely exceed ten. The alternative requirement may consist of an alternative

limit, a mass limit or a specified maintenance program, or a combination of these.

(2) Notwithstanding the effective date of the limits set forth in subsection (c)(1), cooling system discharge operations commencing on or after July 1, 1997 shall not be required to comply with those limits until one year after the date of such commencement.

(d) Cooling System Cleaning. Wastewater from cleaning of cooling systems, boilers, heat exchangers and associated piping where a chemical cleaner or physical scouring is used in the cleaning process shall be sampled prior to discharge to the sewer to ensure compliance with the maximum concentration limits contained in Section 16.09.110. For purposes of this section, "physical scouring" does not include the use of water at typical water supply pressure; and "associated piping" means piping associated with a heating or cooling system through which water or another heat transfer fluid passes during operation of the system. The wastewater shall be analyzed for copper and any other constituents specified by the superintendent. The results of such analysis shall be reviewed by the cooling system operator prior to discharge.

(e) Devices using electricity to dissolve copper or silver into water distribution systems, cooling systems, pools, spas or fountains are prohibited.

(Ord. 4760 § 17, 2002: Ord. 4252 § 12, 1994)

*Editor's Note: Former Section 16.09.115, Prohibition Against Dilution, previously codified herein and containing portions of Ordinance No.3889 was repealed in its entirety by Ordinance No. 4252. See Section 16.09.121 for prohibition against dilution.

16.09.116 Additional copper limitations for industrial waste.

(a) Industrial waste discharges to the sewer are subject to the copper limitations contained in this section except for industrial waste from the following facilities, including facilities that are components of larger facilities, which are subject to specific limitations set forth in other provisions of this chapter.

(1) Vehicle service facilities;
(2) Photoprocessing facilities;
(3) Machine shops; and
(4) Metal fabrication facilities.

(b) No later than July 1, 1996, industrial waste discharges to the sewer from metal finishing facilities, as defined by the EPA in 40 CFR part 413 and part 433, shall meet either subdivision (1) or (2) of this subsection. These requirements shall apply to process wastes containing copper or nickel prior to dilution by nonmetal finishing process wastes, domestic waste, and cooling water.

(1) The annual average copper concentration for any twelve month period shall not exceed 0.4 mg/l. In addition, all reasonable control measures specified in accordance with standards published by the superintendent shall be installed and implemented; or

(2) The annual average pounds/day of copper shall not exceed an amount specified by the superintendent in the industrial waste discharge permit, which is based upon a pollution prevention review conducted by the city. The limitation shall be based upon those control measures having a simple payback period of five years or less. The average annual pounds per day shall be a "rolling" measurement, calculated by multiplying the flow-weighted average copper concentration for all samples taken during any twelve month period by the total flow for that twelve month period. The average annual pounds per day limit may be increased by the superintendent in proportion to increases in production at the discharger's facility to the extent that such production increases are within the growth allocation specified in the document prepared by Montgomery Watson, and published by the City of Palo Alto, entitled

"City of Palo Alto-Local Limits Development - Proposed Local Limits - April, 1994."

(c) As of July 1, 1998, the maximum copper concentration of industrial waste discharges to the sewer other than those covered by subsections (a) or (b) shall not exceed 0.25 mg/l.

(Ord. 4760 § 18, 2002: Ord. 4252 § 13, 1994)

16.09.117 Requirements for construction Operations.

(a) A spill response plan for hazardous waste, hazardous materials and uncontained construction materials shall be prepared and available at the construction sites for all projects where the proposed construction site is equal to or greater than one acre of disturbed soil and for any other projects for which the city engineer determines that a plan is necessary to protect surface waters. Preparation of the plan shall be in accordance with guidelines published by the city engineer.

(b) A storm water pollution prevention plan shall be prepared and available at the construction sites for all projects equal to or greater than one acre of disturbed soil and for any other projects for which the city engineer determines that a storm water management plan is necessary to protect surface waters. Preparation of the plan shall be in accordance with Chapter 16.28 of this code and with guidelines published by the city engineer.

(c) Prior approval shall be obtained from the city engineer or designee to discharge water pumped from construction sites to the storm drain. The city engineer or designee may require gravity settling and filtration upon a determination that either or both would improve the water quality of the discharge. Contaminated ground water or water that exceeds state or federal requirements for discharge to navigable waters may not be discharged to the storm drain. Such water may be discharged to the sewer, provided that the requirements of Section 16.09.110 are met and the approval of the superintendent is obtained prior to discharge. The City shall be compensated for any costs it incurs in authorizing such discharge, at the rate set forth in the Municipal Fee Schedule.

(d) No cleanup of construction debris from the streets shall result in the discharge of water to the storm drain system; nor shall any construction debris be deposited or allowed to be deposited in the storm drain system.

(Ord. 4760 § 19, 2002: Ord. 4252 § 14, 1994)

16.09.120 Standards for other industrial wastes.

The superintendent may establish standards for any industrial wastes not specifically referred to in this chapter. Said standards shall be published and shall be made available to any person requesting a copy of said standards.

(Ord. 3889 § 1 (part), 1989)

16.09.121 Prohibition against dilution.

Except where expressly authorized to do so by an applicable categorical standard provided in the pretreatment regulations, no discharger shall ever increase the use of process water, or in any other way, dilute a discharge as a partial or complete substitute for adequate treatment to achieve compliance with such categorical standard or any other requirement of this chapter.

(Ord. 4252 § 15, 1994)

16.09.130 Damage to facilities.

When a discharge causes an obstruction, damage, or any other impairment to city facilities, the city may assess a charge against the discharger to reimburse the city for costs incurred to clean or repair said facility. (Ord. 3889 § 1 (part), 1989)

16.09.140 Enforcement - Criminal penalties.

As provided in 1.08 of Title 1 of this code, violations of the provisions of this title shall be subject to criminal penalties. The following designated employee positions may enforce the provisions of this chapter by the issuance of citations. Persons employed in such positions are authorized to exercise the authority provided in Penal Code Section 836.5 and are authorized to issue citations for violations of this chapter. The designated employee positions are: industrial waste inspector; industrial waste investigator; associate engineer; manager, environmental control programs; supervisor, industrial waste; and manager, environmental compliance division. (Ord. 4252 § 16, 1994: Ord. 4070 § 9, 1992: Ord. 3889 § 1 (part), 1989)

16.09.141 Enforcement - Judicial civil penalties.*

Any person who intentionally or negligently violates any provision of this chapter or any provision of any permit issued pursuant to this chapter shall be civilly liable to the city in a sum of not to exceed twenty-five thousand dollars per day for each day in which such violation occurs. The city may petition the Superior Court pursuant to Government Code Section 54740 to impose, assess, and recover such sums. The remedy provided in this section is cumulative and not exclusive, and shall be in addition to the penalty provisions of Chapter 1.08 of this code and all other remedies available to the city under state and federal law. (Ord. 4252 § 18, 1994)

*Editor's Note: Former Section 16.09.141, Public Notification of Violations, previously codified herein and containing portions of Ordinance No.3889 was repealed in its entirety by Ordinance No. 4252. See Section 16.09.144 for public notification of violations.

16.09.142 Enforcement - Administrative civil penalties.

(a) Complaint. The superintendent may serve an administrative complaint on any person who has violated any provision of this chapter. The complaint shall state:

(1) The act or failure that constitutes the violation;

(2) The provisions of law authorizing the civil liability to be imposed; and

(3) The proposed civil penalty.

The complaint shall be served by personal delivery or certified mail on the person subject to requirements that the superintendent alleges were violated, and shall inform the person served that a hearing on the complaint shall be conducted within sixty days after service, unless the person charged with the violation waives his or her right to a hearing.

(b) Hearing. Unless the person charged with the violation(s) waives his or her right to a hearing, the city manager or designee of the city manager shall conduct a hearing within sixty days. If the hearing officer finds that the person has caused a violation, he or she may assess administrative penalties against the person. In determining the amount of the civil penalty, the hearing officer may take into consideration all relevant circumstances, including, but not limited to, the extent of harm caused by the violation, the economic benefit derived through any noncompliance, the nature and persistence of the violation, the length of time over which the violation occurs and corrective action, if any, attempted or taken by the discharger. Civil penalties that may be imposed are as follows:

(1) An amount not to exceed two thousand dollars per day for failing or refusing to furnish technical or monitoring reports;

(2) An amount not to exceed three thousand dollars per day for failing or refusing to comply in a timely fashion with any compliance schedule established by the city;

(3) An amount not to exceed five thousand dollars per day of violation for discharges in violation of any waste discharge limitation, permit condition or requirement issued by the city; and

(4) An amount not to exceed ten dollars per gallon for discharges in violation of any suspension, cease and desist order or other orders, or prohibition issued, reissued or adopted by the city.

(c) Appeal. Any person against whom penalties are assessed by the hearing officer may appeal the decision of the hearing officer within thirty days of notice of the decision. The city council may hear the appeal or deny review of the case. If the city council decides to hear the appeal, it shall conduct the appeal in accordance with procedures established by the council. The decision of the city council shall be in writing and shall be final. All civil penalties imposed in accordance with this section shall be payable within thirty days of the decision of the hearing officer; provided, that if the decision is appealed, all penalties shall be payable within thirty days after the city council decision on the appeal.

(d) Lien. The amount of any civil penalties imposed under this section which have remained delinquent for a period of sixty days shall constitute a lien against the real property of the discharger from which the violation occurred resulting in imposition of the penalty. The superintendent shall cause the amount of uncollected penalty to be recorded with the county recorder, in accordance with Section 54740.5 of the California Government Code, as the same from time to time may be amended. (Ord. 4252 § 19, 1994)

16.09.143 Enforcement - Administrative citation.

Any person who violates any provision of this chapter or any provision of any permit issued pursuant to this chapter shall be subject to the administrative citation provisions contained in Chapter 1.12 of this code. (Ord. 4760 § 20, 2002: Ord. 4287 § 2, 1995: Ord. 4252 § 20, 1994)

16.09.144 Enforcement - Administrative Compliance Order.

Any person who violates any provision of this chapter or any provision of any permit issued pursuant to this chapter shall be subject to the administrative compliance order provisions contained in Chapter 1.16 of this code. (Ord. 4760 § 21, 2002: Ord. 4252 § 21, 1994)

16.09.145 Enforcement - Notice of non-compliance.

(a) Unless the superintendent finds that the severity of the violation warrants immediate action under Sections 16.09.140, 16.09.141 or 16.09.142 or permit revocation or suspension, he or she shall issue a notice of noncompliance which:

(1) Enumerates the violations found; and

(2) Orders compliance by a certain date .

If the violations are not abated in the time period identified further action may be taken by the superintendent, including, but not limited to, suspension, revocation or modification of the discharger's permit pursuant to Section 16.09.040.

(b) Subject to the following limitations, and in addition to the provisions of subsection (a), the superintendent may require a discharger that has violated any discharge limits contained in this chapter to install a temporary system for the capture, testing and release of wastewater:

(1) The requirement will apply to facilities that have produced multiple violations for the same parameter at the same sampling point, when the superintendent determines that appropriate corrective measures have proved difficult to identify or implement.

(2) The requirement will apply only to those specific areas of a facility from which the superintendent determines that the

discharge may be originating, rather than to the entire flow from the facility, unless there is no reasonable way to determine where the discharge may be originating.

(3) The requirement will not be applied in the case of very infrequent violations or when the superintendent determines that a capture system is impractical. If the superintendent determines that a capture system is impractical, the superintendent may require an alternative compliance measure of equivalent effectiveness.

(4) The requirement will be terminated following a demonstration of compliance. Twenty-one consecutive, violation-free calendar days of sampling by the discharger followed by four days of violation-free sampling by the superintendent shall constitute a demonstration of compliance.
(Ord. 4760 § 22, 2002)

16.09.146 Annual publication of significant Noncompliant industrial users.

At least annually, notice shall be provided in the largest local daily newspaper listing those industrial users that were found to have been in significant noncompliance during the previous twelve months.
(Ord. 4760 § 23, 2002)

16.09.150 Compliance with the pretreatment regulations.

All industrial dischargers subject to the pretreatment regulations shall be in conformance with such, including but not limited to, effluent standards, monitoring requirements, and reporting requirements. In the event of any apparent conflicts between the requirements established in this chapter and federal EPA requirements, the most restrictive limitation shall apply.
(Ord. 3889 § 1 (part), 1989)

16.09.152 City right to terminate discharge.

The city reserves the right to terminate sewer service for noncompliance with the provisions of this chapter which reasonably appear to present an imminent endangerment to the health, safety, and welfare of persons. The discharger shall immediately cease discharge of any waste presenting such a hazard, upon verbal and/or written notice of the superintendent or his designated representative. Such termination shall be effective immediately, but shall be reviewable pursuant to the hearing process provided in Section 16.09.050.
(Ord. 3889 § 1 (part), 1989)

16.09.155 Noncompliance and increased loading reporting.

(a) Noncompliance with the provisions of this chapter that are known to the discharger shall be reported verbally as soon as possible but no later than twenty-four hours of the discharger's knowledge of the noncompliance. A written report to the superintendent shall be submitted within five days explaining the nature, volume and duration of the noncompliance, mitigation measures taken to correct the noncompliance and to prevent reoccurrence.

Such notifications will not relieve any discharger of liability for any expense, including but not limited to, costs for countermeasures; loss or damage to the sewer system and/or treatment plant or treatment process; or liability to reimburse any fines imposed on the city on account thereof; or for damages incurred by any third party.

(b) The reporting requirements of subsection (a) above shall also apply to any slug discharge, short term, large or unusual increase in flow or concentration of waste constituents regardless of whether noncompliance has resulted. In addition, the cause of the incident (e.g., accidental spill) shall be reported. Notices shall be posted in process areas (or other equally effective notification procedures used) giving instruction on reporting such increases.
(Ord. 4760 § 24, 2002: Ord. 3889 § 1 (part), 1989)

16.09.160 Construction requirements.

(a) Segregated industrial waste plumbing. The owner of every new commercial and industrial building or portion thereof for which a building permit is issued on or after July 1, 1992 must cause such building to be constructed so that industrial waste is segregated, by means of separate plumbing, from domestic waste prior to converging with other wastestreams in the sanitary sewer system. For the purposes of this section only, the term "new" shall mean and apply to all of the following: newly constructed buildings; building additions that require plumbing for industrial waste; and remodeling of existing buildings to accommodate expansion of or change to a use that requires plumbing for industrial waste.

(b) Copper roofing materials. On and after January 1, 2003, copper metal roofing, copper granule containing asphalt shingles and copper gutters shall not be permitted for use on any residential, commercial or industrial building for which a building permit is required. Copper flashing for use under tiles or slates and small copper ornaments are exempt from this prohibition. Replacement roofing and gutters on historic structures are exempt, provided that the roofing material used shall be prepatinated at the factory. For the purposes of this exemption, the definition of "historic" shall be limited to structures designated as Category 1 or Category 2 buildings in the current edition of the Palo Alto Historical and Architectural Resources Report and Inventory.

(Ord. 4760 § 25, 2002: Ord. 4070 § 10, 1992: Ord. 3889 § 1 (part), 1989)

16.09.165 Alternate materials and methods.

(a) Practical Difficulties.

The superintendent is authorized to modify any of the provisions of this chapter upon application in writing by the owner, a lessee or a duly authorized representative where there are practical difficulties in the way of carrying out the provisions of this chapter, provided that the purpose of this chapter, as set forth in Section 16.09.005, shall be complied with, and substantial justice done. The particulars of such modification and the decision of the superintendent shall be entered upon the records of the plant and a signed copy shall be furnished to the applicant.

(b) Alternate Materials.

The superintendent, upon application in writing by the owner, a lessee or a duly authorized representative, and on notice to the chief building official, is authorized to approve alternate materials or methods, provided that the superintendent finds that the proposed design, use or operation satisfactorily complies with the intent of this chapter and that the material, method of work performed or operation is, for the purpose intended, at least equivalent to that prescribed in this chapter in quality and effectiveness in meeting the purposes of this chapter. Approvals under the authority herein contained shall be subject to the approval of the chief building official whenever the alternate material or method involves matters regulated by any code administered by the chief building official. The particulars of any approval made by the superintendent under this subsection shall be entered upon the records of the plant and a signed copy shall be furnished to the applicant.

Appendix B

CCTV Inspection Form, Pipeline Evaluation Criteria, and Lateral Inspection Log

Example

CCTV Inspection Report

Pipe Graphic Report of PLR G19 X for EPASD

Work Order	Contract	Video	Setup 5
Facility	Operator MERWYN	Van Ref	Surveyed On 09/07/2011
Street Name RUNNYMEDE	City	EAST PALO ALTO	
Location type			
Surface			
Survey purpose		Weather Dry	
Pipe Use	Schedule length Ft	From G19	Depth 4.60 Ft
Shape	Size 8 by ins	To T29	Depth Ft
Material Vitrified clay	Joint spacing Ft	Direction Downstream	
Lining	Year laid	Pre-clean Y	Last cleaned 9/7/2011
General note		Structural Service	Constructional
Location note		Miscellaneous Hydraulic	

0.0 Ft	Start of Survey Manhole/Node [G19] Water level 0
3.0 Ft	Infiltration runner 02 o'clock [Ground Water coming out from Capped Lateral]
8.7 Ft	Lateral or connection exists OK 02 o'clock
10.7 Ft	Lateral or connection exists OK 02 o'clock
27.4 Ft	Infiltration runner 01 o'clock [Ground Water coming out from crack pipe]
27.9 Ft	
68.5 Ft	Lateral or connection exists OK 01 o'clock
86.0 Ft	Lateral or connection exists OK 09 o'clock
86.7 Ft	
88.0 Ft	Lateral or connection exists OK 03 o'clock
95.9 Ft	Infiltration dripper (at joint) 09 o'clock
111.2 Ft	Lateral or connection exists OK 07 o'clock
162.9 Ft	Lateral or connection exists OK 03 o'clock
165.3 Ft	Lateral or connection exists OK 09 o'clock
194.8 Ft	Lateral or connection exists OK 09 o'clock

East Palo Alto

Pipe Replacement Evaluation

The Closed-Circuit Television (CCTV) are observed for the following:

A. Pipe Materials
B. Earth Loading Effect
C. Surrounding Material Migration
D. Location of Water Table
E. Defective Lateral Joints
F. Hydrogen Sulphide attack
G. Loss of Side Support
H. Evaluation of Crack Type
I. Evaluating Broken Pipe
J. Visible Hole
K. Deformation
L. Pipe Collapse
M. Joint Effect
N. Limited Minor Defects (Stage 1)
O. Fractures and Open Break Lines (Stage 2)
P. Loss of Support from the Surrounding Soil (Stage 3)
Q. Defect Distribution
R. Depth, Loading, and Ground Water
S. Roots
T. Fats, Oil, and Grease
U. Obstruction/Blockages
V. Improper Pipe Repairs
W. Soil Quality
X. Position of Ground Water
Y. Loads
Z. Original Pipe Length and Loss
AA. Alignment and Sags

Notes:

Pipes with Stage 1 and Stage 2 defects are replaced immediately.

EAST PALO ALTO SANITARY DISTRICT

MAINTENANCE DEPARTMENT

DAILY LATERAL INSPECTION LOG

Date of Inspection	Address of Inspection	Type of Inspection	Findings Approved/ Disapproved	Inspected By:	Notes for Findings
9/5/19	803 BELL ST	RENOVATION	DISAPPROVED	OF AM	NON CONFORM, CLEANOUT ROOTS IN LATERAL
9/12/19	97 BUCHANAN CT	RENOVATION	DISAPPROVED	OF DM	NON CONFORMING CLEAN-OUT OPPOSITE
9/12/19	180 JASMIN WAY	RENOVATION	DISAPPROVED	MP OF DM	NO CLEAN OUT
9/12/19	198 ELLIOT DR	RENOVATION	DISAPPROVED	MP OF DM	ROOTS & BROKEN LINE
9/13/19	885 SCHEMBRI LN	RENOVATION	DISAPPROVED	OF TN	BROKEN LINE
9/19/19	445 OAK CT	RENOVATION	APPROVED	MP	BRAND NEW LINE UP TO CODE
9/20/19	939 RUNNYMEDE	RENOVATION	APPROVED	OF TN	NEW LINE
9/20/19	180 JASMIN WAY	RENOVATION	DISAPPROVED	OF AM DM	NO CONFORMING CLEANOUT
9/27/19	803 BELL ST	RENOVATION	APPROVED	TN DM	OK
10/2/19	127 ABELIA WAY	REPAIR	APPROVED	OF MM	OK
10/3/19	180 JASMIN WAY	RENOVATION	DISAPPROVED	OF DM	NON CONFORMING/ROOTS
10/3/19	2044 PULGAS	RENOVATION	DISAPPROVED	OF DM	NON-CONFORMING

EAST PALO ALTO SANITARY DISTRICT

MAINTENANCE DEPARTMENT

DAILY LATERAL INSPECTION LOG

Date of Inspection	Address of Inspection	Type of Inspection	Findings Approved/ Disapproved	Inspected By:	Notes for Findings
12/16/19	2260 DUMBARTON AVE	LATERAL / CLEANOUT	DISAPPROVED	OMAR DM TN	MULTIPLE BREAK & ROOTS
12/17/19	108 GREEN ST	LATERAL CONNECTION	APPROVED	MP DM	NEW LINE INSTALLED
12/17/19	160 JASMIN WAY	LATERAL REPLACEMENT	APPROVED	OF DM	NEW LINE INSTALLED
12/18/19	1116 GAILLARDIA WAY	PLAN REVIEW/REN	SEWER REPLACEMENT	MP OF	REPLACE FROM CLEANOUT TO THE WYE
01/08/20	425 DAISY LN	PLAN REVIEW/REN	DISAPPROVED	MP DM	NO CONFORMING CLEAN OUT
01/09/20	2174 RALMAR	PLAN REVIEW/RE	APPROVED	OF DM	LINE IS STILL GOOD CONDITION
01/14/20	2208 CLARKE AVE	PLAN REVIEW/REN	DISAPPROVED	OF TN DM	NO CONFORMING CLEAN OUT
01/27/20	2208 CLARKE AVE	PLAN REVIEW/REN	APPROVED	TN DM BC	NEW CLEAN-OUT INSTALLED
1/29/20	1920 COOLEY AVE	LATERAL REPAIR	APPROVED	OF DM	NEW LATERAL INSTALLED
2/18/20	2312 PULGAS AVE	LATERAL PLAN REVIEW	APPROVED	OF DM	LATERAL IN GOOD CONDITION
03/02/20	2123 CLARKE AVE	PLAN REVIEW	DISAPPROVED	OF DM	REPLACE THE WHOLE LATERAL
03/04/20	2044 PULGAS AVE	PLAN REVIEW	DISAPPROVED	OF DM	MULTIPLE JOINT OFFSET
3/13/20	2142 CAPITOL AVE	PLAN REVIEW	GOOD CONDITION	DM DY OF	LATERAL IN GOOD CONDITION
3/13/20	2170 CLARKE AVE	PLAN REVIEW	DISAPPROVED	DM OF DY	NO CLEAN-OUT

EAST PALO ALTO SANITARY DISTRICT

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DAILY LATERAL INSPECTION LOG

Date of Inspection	Address of Inspection	Type of Inspection	Findings Approved/ Disapproved	Inspected By:	Notes for Findings
3/13/20	2555 PULGAS AVE	CONNECTION INSPECTION			
3/16/20	2346 UNIVERSITY	PLAN REVIEW	DISAPPROVED	OF DM DY	LATERAL NEED TO BE REPLACED
3/19/20	351 ALAMEDA DR	LATERAL REPAIR	APPROVED	OF DM DY	NEW LATERAL
3/25/20	2215 ADDISON	PLAN REVIEW	DISAPPROVED	OF DY	REPLACE LATERAL
4/1/20	425 DAISY LN	PLAN REVIEW	APPROVED	OF DM DY	NEW CLEAN-OUT
4/3/20	2170 CLARKE AVE	PLAN REVIEW	DISAPPROVED	OF DM DY	BROKEN CLEAN
4/14/20	1175 CYPRESS ST	PLAN REVIEW	DISAPPROVED	OF DY	BROKEN CLEANOUT AND PLUGGED STUB
4/14/20	1235 CYPRESS ST	PLAN REVIEW	DISAPPROVED	OF DY	NO-CLEAN OUT
4/15/20	2145 COOLEY AVE	LATERAL REPAIR	APPROVED	OF DM DY	NEW CLEAN OUT & LAT
4/16/20	417 BUCHANAN CT	PLAN REVIEW	APPROVED	OF DM DY	LATERAL IN CLOSE CONN.
4/21/20	1128 COLUMBIA WAY	LATERAL REPAIR	DISAPPROVED	OF DM DY	LATERAL IS BLOCKED AT 20'
4/22/20	2232 TEMPAUCA ST	LATERAL REPAIR	DISAPPROVED	OF DM DY	LATERAL IS BROKEN
4/30/20	1175 CYPRESS ST	PLAN REVIEW	APPROVED	OF DY M	NEW LATERAL

EAST PALO ALTO SANITARY DISTRICT

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DAILY LATERAL INSPECTION LOG

Date of Inspection	Address of Inspection	Type of Inspection	Findings Approved/ Disapproved	Inspected By:	Notes for Findings
5/12/20	2240 COOLEY	LATERAL REPAIR	APPROVED	OF DM DY	NEW LATERAL
5/28/20	2276 ADDISON	PLAN REVIEW	DISAPPROVED	OF DM DY	PIPE TOTALLY BLOCK
5/29/20	425 DAISY LN	PLAN REVIEW	DISAPPROVED	OF DM DY	PIPE BROKEN
6/2/20	1190 CYPRESS ST	PLAN REVIEW	APPROVED	OF DM DY	NEW LATERAL
6/11/20	1235 CYPRESS	PLAN REVIEW	APPROVED	OF DM DY	NEW CLEANOUT
6/17/20	2122 COOLEY AVE 11AM	PLAN REVIEW	APPROVED	OF DY	NEW LATERAL
6/18/20	2276 ADDISON	PLAN REVIEW	APPROVED	OF DY	NEW LATERAL
6/18/20	2216 ADDISON	PLAN REVIEW	APPROVED	OF DY	NEW LATERAL
6/30/20	1856 CLARKE AVE	LATERAL REPAIR	DISAPPROVED	MP DM	ROOT IN JOINTS
7/2/20	625 SACRAMENTO ST	PLAN REVIEW	DISAPPROVED	OF DY	NO CLEAN OUT
7/16/20	860 DONOHOE ST	LATERAL REPAIR	APPROVED	~~OF DY DM~~ MP DM	NEW CLEAN OUT & LATERAL
7/14/20	2269 PULGAS AVE	LATERAL REPAIR	DISAPPROVED	OF DY DM	BROKEN LINE & TAP
7/28/20	2282 MENALTO AVE	NEW CONNECTION	APPROVED	MP DM	NEW CONNECTION
7/31/20	999 BEECH ST	PLAN REVIEW	DISAPPROVED	OF DM	MULTIPLE OFFSET PIPE SAG GET

EAST PALO ALTO SANITARY DISTRICT

MAINTENANCE DEPARTMENT

DAILY LATERAL INSPECTION LOG

Date of Inspection	Address of Inspection	Type of Inspection	Findings Approved/ Disapproved	Inspected By:	Notes for Findings
6/6/20	2255 CLARKE AVE	REPAIR	APPROVED	OF DY DCM	NEW CLEANOUT
8/7/20	796 GREEN ST	PLAN REVIEW	DISAPPROVED	OF DY	ROOTS & OFFSET
8/14/20	2315 OAKWOOD DR	PLAN REVIEW	DISAPPROVED	OF DY DCM	BROKEN/JOINT OFFSET
8/14/20	2260 CLARKE AVE	PLAN REVIEW	DISAPPROVED	OF DY DCM	NO CLEANOUT
8/17/20	2296 PULGAS AVE	PLAN REVIEW	DISAPPROVED	OF DY	NO CONFORMING CLEANOUT
8/17/20	2058 MENALTO AVE	PLAN REVIEW	DISAPPROVED	OF DY	ROOTS & BROKEN
8/28/20	2333 OAKWOOD DR	REPAIR	WORK CONFORMS	NP DY	LATERAL WAS LINED
9/4/20	543 SACRAMENTO	PLAN REVIEW	DISAPPROVED	OF DY DCM	NO CLEANOUTS
9/28/20	2291 EUCLID	REPAIR	APPROVED	NP DY DCM	NEW LATERAL & CLEAN
10/04/20	543 SACRAMENTO	PLAN REVIEW	DISAPPROVED	OF DY DCM	ROOTS & BROKEN PIPE
10/21/20	2118 COOLEY AVE	PLAN REVIEW	DISAPPROVED	OF DCM	NO CONFORM
10/21/20	451 LARKSPUR	PLAN REVIEW	DISAPPROVED	OF DCM	NO CONFORMING CLEANOUT
11/02/20	451 LARKSPUR	PLAN REVIEW	APPROVED	OF DCM	LATERAL IN GOOD CONDITION
11/03/20	2118 COOLEY AVE	PLAN REVIEW	DISAPPROVED	OF DCM	ROOTS INFESTED LATERAL

EAST PALO ALTO SANITARY DISTRICT

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DAILY LATERAL INSPECTION LOG

Date of Inspection	Address of Inspection	Type of Inspection	Findings Approved/ Disapproved	Inspected By:	Notes for Findings
11/17/20	2219 ADDISON AVE	ADU NEW DRIVEWAY	DISAPPROVED	OF DY DM	NO ACCESS / NO CLEANOUT
11/24/20	1332 CAMELIA DR	REPAIR	APPROVED	OF DY DM	NEW LATERAL
12/2/20	1798 BAY RD	NEW CONSTRUCTION	DISAPPROVED	MF OF DY DM	JOINT SEPARATED @ 63 FT
12/2/20	1351 CAMELIA DR	ADU	DISAPPROVED	OF DY DM	NO CLEAN OUT
12/4/20	7 CAMELIA CT	ADU	DISAPPROVED	OF DY DM	BELLOW LINE AT 6 & 12 FT
12/9/20	2121 CLARK AVE	NEW HOUSE	APPROVED	OF DY DM	NEW CONNECTION
12/9/20	644 BELL ST	NEW HOUSE	APPROVED	OF DY DM	LINE IS IN GOOD CONDITION
12/11/20	2294 PALMER AVE	ADU	DISAPPROVED	OF DY DM	NO CLEAN OUT
12/11/20	809 DONOHOE ST	NEW CONSTRUCTION	DISAPPROVED	OF DY DM	NO CLEAN OUT
12/17/20	2346 UNIVERSITY	ADU	APPROVED	OF DY DM	NEW LINE TO THE MAIN
12/18/20	147 VERBENA	ADU	DISAPPROVED	OF DY DM	NO CLEAN-OUT
12/22/20	#7 CAMELIA CT	ADU		OF DY DM	

EAST PALO ALTO SANITARY DISTRICT

MAINTENANCE DEPARTMENT

DAILY LATERAL INSPECTION LOG

Date of Inspection	Address of Inspection	Type of Inspection	Findings Approved/ Disapproved	Inspected By:	Notes for Findings
1/7/21	20 BUCHANAN CT	ADU	APPROVED	MV OF DY DM	LINE IN GOOD CONDITN
1/11/21	1266 W. BAYSHORE RD	SERVICE CALL	DISAPPROVED	OF DY DM	ROOTS/OFFSET C.O
1/11/21	648 WEEKS ST	SERVICE CALL		OF DY DM	ROOTS
1/11/21	2238 POPLAR AVE	ADU	DISAPPROVED	OF DY DM	NO CLEAN-OUT
1/11/21	1261 BEECH ST	ADU	DISAPPROVED	DY OF DM	
1/11/21	1280 CYPRESS ST	ADU	DISAPPROVED	DY OF DM	NO CLEAN-OUT
1/11/21	1290 CYPRESS ST	ADU	DISAPPROVED	DY OF DM	OFFSET
1/11/21	161 DAPHNE WAY	ADU	DISAPPROVED	DY OF DM	OFFSET/BROKEN
1/11/21	140 GARDENIA WAY	ADU	DISAPPROVED	DY OF DM	NO CLEAN-OUT
1/15/21	1266 W. BAYSHORE	REPAIR	APPROVED	OF DY	NEW CATCH
1/20/21	2100 SALAS CT	ADU	DISAPPROVED	OF DY DM	NO CLEAN-OUT
1/20/21	2206 CLARKE AVE	NEW CONNECTION	PAY CONNECTION	OF DY DM	NO CLEANOUT
1/20/21	2361 OAKWOOD	ADU	DISAPPROVED	OF DY DM	NO CLEAN/OUT
1/20/21	642 WEEKS ST	REPAIR	APPROVED	OF DY DM	NEW LATERAL

EAST PALO ALTO SANITARY DISTRICT

MAINTENANCE DEPARTMENT

DAILY LATERAL INSPECTION LOG

Date of Inspection	Address of Inspection	Type of Inspection	Findings Approved/ Disapproved	Inspected By:	Notes for Findings
1/20/21	390 OCONNOR ST	REPAIR	APPROVED	OF DY DM	NEW LATERAL
1/25/21	2100 SAGE CT	ADU	APPROVED	OF DY DM	LATERAL IN GOOD CONDITION
1/27/21	191 JASMIN WAY	ADU	DISAPPROVED	OF DY DM	NO CLEAN OUT
2/2/21	161 DAPHNE WAY	ADU	APPROVED	OF DY DM	NEW LATERAL
2/3/21	2074 OAKWOOD DR	REPAIR	APPROVED	OF DY	NEW LATERAL
2/3/21	1132 BAY RD	ADU	DISAPPROVED	OF DY	NO CLEAN OUT
2/4/21	1011 RUNNYMEDE ST	ADU	APPROVED	OF DY DM	LATERAL IS GOOD
2/8/21	2118 COOLEY AVE	ADU	APPROVED	OF DY DM	NEW LATERAL
2/16/21	147 VERBENA DR	ADU	APPROVED	OF DY DM	NEW CLEAN OUT & LA
2/17/21	1001 GARDEN ST	ADU	DISAPPROVED	OF DY DM	NO CLEAN OUT
2/17/21	875 SCHOOL LN	ADU	DISAPPROVED	OF DY DM	NO CLEAN OUT
3/1/21	2110 & 2112 ADDISON	ADU	DISAPPROVED	OF DY DM	BROKEN LATERAL
3/03/21	2208 DUMBARTON 11:00 AM	REPAIR	APPROVED	OF DY DM	NEW LATERAL
3/4/21	2219 OAKWOOD DR	ADU	APPROVED	DY OF	LATERAL IN GOOD CONDITION

EAST PALO ALTO SANITARY DISTRICT

MAINTENANCE DEPARTMENT

DAILY LATERAL INSPECTION LOG

Date of Inspection	Address of Inspection	Type of Inspection	Findings Approved/ Disapproved	Inspected By:	Notes for Findings
3/9/21	1132 BAY RD	ADC	APPROVED	OF DY DM	LATERAL IN GOOD CONDITION
3/9/21	786 RUNNYMEDE	REPAIR	DISAPPROVED	OF DY DM	HEAVY ROOTS
3/11/21	375 DONOHOE ST	REPAIR		OF DY DM	
3/11/21	1770 GARDEN ST	ADC		OF DY DM	

Appendix C

Training List and Employee Training Tracking Form

EPASD TRAINING CHECK LIST

Fleet & Equipment Program

_____ Commercial/Non-Commercial Driver License(s) & Certification
_____ Pre & Post Trip Vehicle Inspection: (Training, Defensive Driving, Documentation, etc)
_____ Seatbelt Use & Requirements
_____ Radio, Cell Phone Use & Requirements
_____ Vehicle Accident Process & Reporting
_____ Equipment Specific Training & Refreshers _____
_____

Emergency Response:

_____ NIMS/SEMS 100, 200, 300, 700, 800, etc.

Safety Programs & Training: (Identify as required for specific job classification/title)

_____ Knowledge, Awareness & Use of all City/Plant Policy/Procedures/Instructions, etc.
_____ Aerial Lift, Bucket Truck, Scissor/Man/Genie Lift Safety Certification
✓ Asbestos Awareness Safety Training
_____ Bloodborne Pathogens Program & Training
_____ Confined Space Program/Permit and Entry/Rescue Training & Certification
_____ Boom/Crane Safety Certification
_____ DOT Requirements & Testing
_____ Driver Safety, Defensive Driving Training
_____ Electrical Safety Program & Training (Non-Electrician & Electrician NFPA 70E)
_____ Ergonomics & Back Safety Training
_____ Excavation/Trench/Shore Program/SOP & Training
_____ Fall Protection Program & Training
_____ Fire Extinguisher Training
_____ First Aid/CPR/AED Certification Training
_____ Chain Saw Safety Training
_____ Tree Work & Climbing Safety Training
_____ Traffic Work Zone and Flagging Safety Training
_____ Forklift Safety Training
_____ Hazard Communication Program & Training
_____ Hazardous Materials Program & Safety Training
_____ Hazardous Waste Operations First Responder Certification (8 hour)
_____ Hearing Conservation Program, Training & Annual Audiometric Testing
✓ Heat Stress & Illness Program & Training
_____ Ladder & Scaffold Safety Training
_____ Lead Awareness Safety Training
_____ Lockout/Tagout Program & Training (Equipment Specific Procedures)
✓ Respiratory Protection Program, Medical Evaluation, FIT Testing & Training
_____ Hotwork Program/Permit & Welding Safety Training
_____ Management Regulatory Work Shop
_____ Emergency Action Plan

NOTE:
yellow with "✓" have been completed by current staff

_____ Concrete/Masonry Grinding Safety Training & Program/COSP/SOP
_____ Chemical Hygiene Plan & Lab Safety Training
_____ Accident Investigation Training
_____ IIPP Program, Tailgate, Training
_____ Regular Safety Tailgates – ongoing provided by supervisor every 10 days
_____ Additional Safety Training or Certification (s) identified as required: _____

Specific area equipment & safety rules reviewed: _____

Add additional pages as needed to comply with all regulations and as identified on the Training Matrix.

Employee Signature: _____ Date: _____

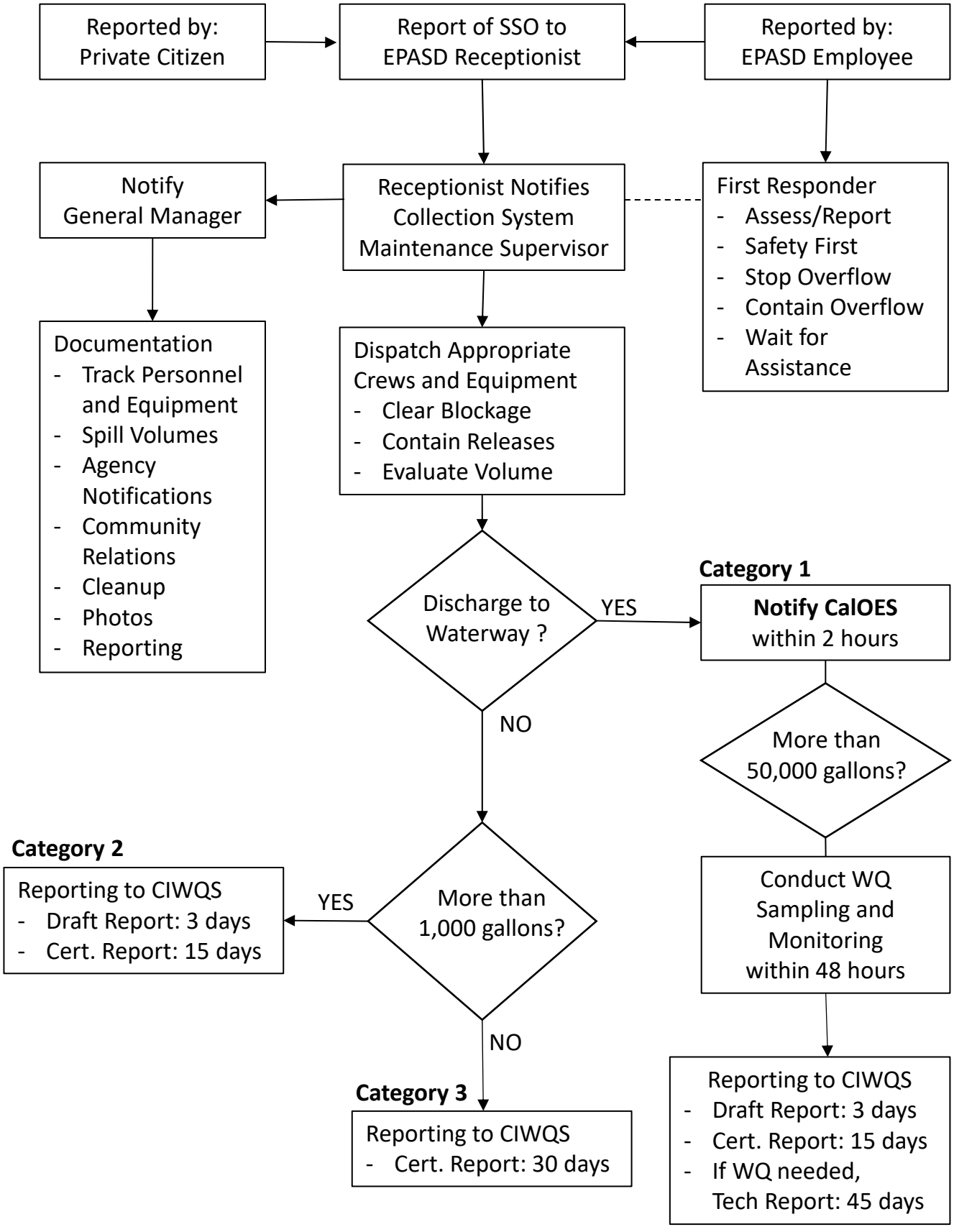
Supervisor Signature: _____ Date: _____

ORD 5/29 Hwy Work Zone Safety - the Basics
REC: Traffic Control Safety
RET: Heat Stress for public employees - Seeing Red
Fall Protection - One Step Beyond

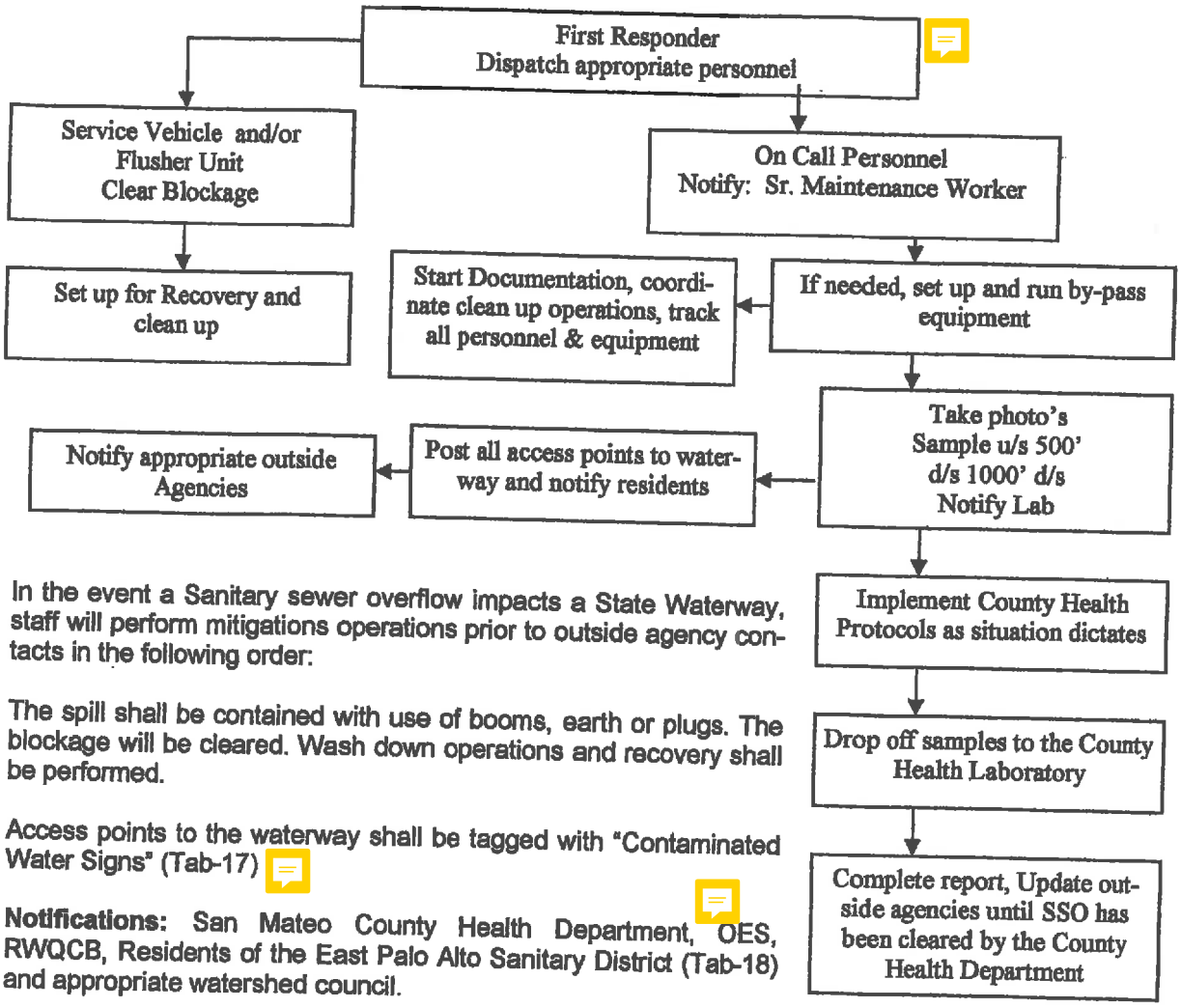
Appendix D

SSO Response and Impact Mitigation Flow Chart and Work Order

SSO Response Flow Chart



3.5. E Impact Mitigation Sanitary sewer overflow, "State Waterway Impact"



In the event a Sanitary sewer overflow impacts a State Waterway, staff will perform mitigations operations prior to outside agency contacts in the following order:

The spill shall be contained with use of booms, earth or plugs. The blockage will be cleared. Wash down operations and recovery shall be performed.

Access points to the waterway shall be tagged with "Contaminated Water Signs" (Tab-17)

Notifications: San Mateo County Health Department, OES, RWQCB, Residents of the East Palo Alto Sanitary District (Tab-18) and appropriate watershed council.

A example of the information reported to the outside agencies is located at Tabs-18 and 18a.

If the waterway is flowing, samples shall be collected 500' upstream of the affected outfall and 1,000' down stream from the outfall and delivered to the County Laboratory.

If there is no flow, recovery pumping operations shall be set-up to recover the overflow. The sample results shall be reviewed by the San Mateo County Health Department and based upon the analytical results, the signs may be removed and closure obtained for the spill event.

❑ Residential ❑ Commercial **Sewer Overflow #**_____

OVERFLOW SEWER WORK ORDER #:_____Weather: _____

1. Name of caller:_____Phone Number:_____

2. Address:_____ Cross Street:_____

3. Called out by:_____at ____a.m./p.m. Date:_____Arrival Time_____at site.
Senior Maintenance Worker called out at: _____
4. Reported as: o c/o overflowing o Overflowing manhole o Back up in home

5. Is water coming out of the o manhole cover hook hole(s) or o clean-out
6. If yes, how high, be specific and record the measurement in inches. _____
8. Review reference sheet of SSO manhole & record estimated GPM: _____
9. Is the overflow contained o YES o NO If yes, How, _____
_____
_____

10. Were you able to retrieve the entire overflow? o Yes o No
11. Was the overflow returned to sanitary sewer? o Yes o No
12. Partial recovery of overflow? o Yes o No o Not Applicable
13. Clean up methods used: oVactor/vacuumed o Hosed down & street swept 14.
Overflow saturated into soil? o Yes o No o n/a
If yes, did we clean up affected area? o Yes o No o n/a
Overflow to creek oYes o No
Over flow to channel o Yes o No **Estimated volume of SSO:** _____
Overflow to culvert o Yes o No
Overflow to Storm Drainage System o Yes o No
_____
_____

15. Affected Agency: o East Palo Alto o Menlo Park

16. Mainline: u/s_____to d/s_____
Overflowing manhole ID #_____ at _____
Line cleared at:_____a.m. / p.m. Duration of overflow:_____
19. Blockage caused by _____Line last cleaned on: _____
Severity Rating:_____ Ops. Performed:_____

20. Initials of Employees & Equipment called Out:

Crew Member(s)	Unit	Time Called	Time Completed
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____

Reported by:_____**Date:**_____

Estimated cost incurred: _____

Appendix E

Major Equipment List

Appendix F

List of Available Contractors and Suppliers

Appendix G

SSO Electronic Reporting Instructions

Attachment B

SANITARY SEWER OVERFLOW REPORT FORM FOR IMMEDIATE REPORTING BY FAX

This form may be used to record SSO information for immediate reporting purposes. Submittal of this form via fax or email to the Water Board within 24 hours of an event satisfies the Immediate Reporting requirement; however, complete reporting must also be submitted using the web-based reporting system, (CIWQS) within 10 business days in which the SSO was identified by the Authority.

1. OES Control number (Not applicable for SSOs <1000 gallons): _____

2. Method of 24-hr Reporting To Regional Board. Check all that apply.
   ☐ Fax (510-622-2450) ☐ email ☐ Voice Mail (510-622-xxxx) ☐ Staff Contacted: _____ (staff name)

3. Date Reported: ____/____/____ (MM/DD/YY)

4. Time Reported: _____:_____ (Military or 24-Hour Time)

5. Reported By: _____ Phone Number: (___)_____-_____

6. Reporting Sewer Agency: _____

7. Responsible Sewer Agency: _____

8. Overflow Street Location: _____
   (If the overflow did not occur at a street location, then use other identifiers, such as the grid information in Thomas Brothers Maps)

   City: _____ Zip Code: _____ County: _____

9. Overflow Start Estimate: Date: ____/____/____ (MM/DD/YYYY);
   Time: _____:_____ (Military or 24-Hour Time)

10. Overflow End: Date: ____/____/____ (MM/DD/YYYY);
    Time: ____:_____ (Military or 24-Hour Time)

11. Estimated Overflow Flow Rate: _____ (gallons per minute)

12. Estimated Total Overflow Volume: _____ (gallons) – See Attachment A for guidance

13. Overflow volume recovered: _____ (gallons)

Attachment C

GUIDE FOR SUBMITTING ELECTRONIC DOCUMENTS SAN FRANCISCO BAY REGIONAL WATER QUALITY CONTROL BOARD

Document Requirements

- Submit all documents to the Board both as a paper copy for staff review and as an electronic file copy via Internet for archiving (electronic reporting is voluntary).
- Submit electronic documents as Portable Document Format (PDF) files.
- The PDF files shall include images of signed, dated and letterhead pages as appropriate. Submit each document as a single PDF file. For example, signed cover letters accompanying reports should be included as the first page(s) of the PDF file. Each report should be submitted as a single PDF file, not as separate chapters, figures, etc.
- The file name should be representative of the document or project. Example: Use "ParkRoadBeniciaRptSept03.pdf" instead of "4365.00 Final"
- Submit files to the appropriate Board staff person's folder in the Board's File Transfer Protocol (FTP) site (see below).

Document Submittal Procedure

1. Access our FTP site via your Internet browser.

   Address: ftp://swrcb2a.swrcb.ca.gov/

   [After accessing the website, right-click on the screen and then Login as:]

   User Name: rb2ftp

   Password: sfbayrb2

2. Click on the "Staff" folder.
3. Open the "Sanitary Sewer Overflow" folder and copy the file into it.
4. Send a confirming e-mail to Greg Walker at gwalker@waterboards.ca.gov.

Appendix H

Spill Calculation Method

SPILL CALCULATION METHOD

To calculate the amount of gallons in a sewage spill, you must determine the volume of the spill. Estimate the volume by determining the area of the spill:

Depth/inches	to Depth/feet	Depth/inches	to Depth/feet
1/16"	0.0052'	1/8"	0.0104'
3/16"	0.0156'	1/4"	0.0208'
5/16"	0.0260'	3/8"	0.0312'
7/16"	0.0364'	1/2"	0.0417'
9/16"	0.0468'	5/8"	0.0521'
11/16"	0.0573'	3/4"	0.0625'

V = L x W x D x 7.48 = GALLONS

EXAMPLE: A spill 15' **L** x 15' **W** x 0.0052' (1/16") **D**
15' x 15' x .0.0052' x 7.48 = 8.7516 gallons

If you are dealing with a spill that has been running into a storm drain, you must estimate the gallons by the determining the following criteria:
Time of reported overflow_____, overflow cleared at _____(time)

Length of Time for o/f_____

Overflow in gallons = 19.191 Constant x (Sq. root / Head in feet) x (Time)
Example: Overflow reported at 14:00 hours and was cleared at 14:15 hours. Overflow through manhole hook hole (std. 1") has a Head of 1.5 inches.

Head in feet = 1.5"/12= .3535'
The square root of .3535 = 0.5945

19.191 **C** x **T**15 minutes x SQ.ROOT 0.5945 = **101.76 GALS or 6.78 gpm.**

The constant consists of; radius of manhole hook hole, area, coefficient of nozzle, the square of 2 for gravity, conversion from secs/min and cu.ft/gallons.

EAST PALO ALTO SANITARY DISTRICT
COLLECTION FACILITIES DIVISION
Street Wastewater Overflow Report - Form# MD-409

Date: **Crew:**

To: **From:**

Location of overflow (street):

Cross street: **U/S Manhole:** (o/f manhole) **D/S Manhole: Dates of overflow:**

Time reported: **Line Cleared @**

Time Completed: **Total overflow time:** **Estimated volume of overflow:**

Receiving waters (if applicable):

Description of incident:

Regulatory agencies notified:

Reported by: **Date:**

Appendix I

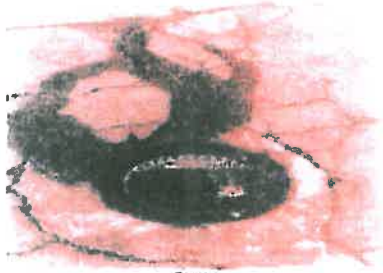
San Diego Manhole Flow Rate Reference Sheet

City of San Diego
Metropolitan Wastewater Department

Reference Sheet for Estimating Sewer Spills from Overflowing Sewer Manholes

All estimates are calculated in gallons per minute (gpm)

Wastewater Collection Division
(619) 654-4160



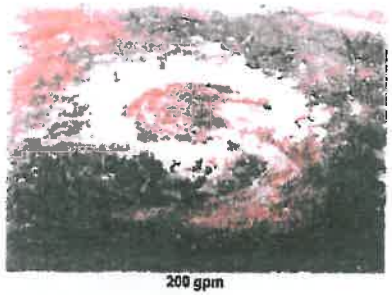
5 gpm

25 gpm

50 gpm

100 gpm

150 gpm



200 gpm

225 gpm

250 gpm

275 gpm

All photos were taken during a demonstration using metered water from a hydrant in cooperation with the City of San Diego's Water Department.

rev 4/99

Appendix J

Temporary Signage and Resident Notification Letter

EPASD

EAST PALO ALTO SANITARY DISTRICT

RAW SEWAGE SPILL

AREA CLOSED

NO ENTRY

- Do not ingest, wade or swim.
- Please keep children and pets out of the area.
- Questions concerning exposure, posting and clean up should be directed to:

EAST PALO ALTO SANITARY DISTRICT

(650) 325-9021

EAST PALO ALTO SANITARY DISTRICT

901 Weeks Street
P. O. Box 51686
East Palo Alto, CA 94303
Phone: (650) 325-9021
Fax: (650) 325-5173
www.epasd.com

Leroy Hawkins, General Manager

Date: ____-____-____

Dear Homeowner:

Please be advised that a raw sewage spill has occurred which may have contaminated the creek/channel at the rear of your property.

The spill was approximately _____ gallons over a _____-hour period and has been reported to the San Mateo County Department of Health, the Regional Water Quality Control and the Office of Emergency Services.

For your protection we are asking that you do not allow children or pets in the creek/channel area behind your property until further notice.

We wish to assure you that the District is taking every measure to ensure the protection of our customers and will keep you advised of the situation.

If you have any questions or concerns regarding this matter please contact Leroy Hawkins at (650) 325-9021.

Appendix K

Se er Pipeline Flus ing Sc edule

"HOT SPOT" LOCATIONS

LEGEND:

- RED - TWICE PER MONTH
- YELLOW - ONCE PER MONTH
- ORANGE - ONCE EVERY TWO MONTHS
- BLUE - ONCE EVERY THREE MONTHS

SEPTEMBER 2014

SEWER PIPELINE
FLUSHING PROGRAM
EAST PALO ALTO SANITARY DISTRICT

Appendix L

Grease Trap Inspection

EPASD

EAST PALO ALTO SANITARY DISTRICT

TO: _____ **APN:** _____

_____

_____

RE: GREASE TRAP COMPONENT INSPECTION

On _____ while performing an inspection on your facility grease trap, the following problems were identified.

- **Cover** - Provides access for cleaning of unit, restricts odors from emanating and prevents the back flow of wastewater on to floors when secured properly (Section 602.02).
  ____ Missing hardware (requires replacement) ____ Unsecured (loose hardware)
  ____ Seal (requires replacement) ____ Cover eroded (requires replacement)
  ____ Stripped (requires re-threading and/or replacement)

- **Baffles** - To help in the separation, perforated baffle plates in the interceptor, opposite the inlet, lessen turbulence as the water enters the intercepting chamber. This results in a quiet, even flow of water, free from the swirling and eddying currents, permitting the "flotation" principle of grease separation to function at its highest efficiency. The more completely turbulence is eliminated, the greater the degree of separation possible (Section 603.01B).
  ____ Missing ____ Eroded ____ Requires Replacement

- **Cleanout Cap** – The cap is removed to view the quality of wastewater discharging to the sanitary sewer system. This cap must be removable for inspection and must be secured properly. The District's discharge limit for grease and oil of animal or vegetable origin is 300 milligrams per liter (Section 602.02, 603.01B).
  ____ Missing ____ Unsecured ____ Broken ____ Requires Replacement
  ____ Unable to open (break free for easy removal)

- **Flow Control Valve** – The flow control fitting gives a predetermined flow rate and assures the elimination of turbulence in the interceptor which could otherwise occur from sudden surges through the drainage line (Section 603.01B).
  ____ Required

- **Follow Up Inspection**: Shall be performed on or before: _____
  DATE

The items checked require your immediate attention. Please contact me within the allotted follow up inspection time period and provide the District with a timetable for completing the above repairs. Failure to respond within the follow up inspection time period will subject your facility to additional cost due to "Non-Conformance."

Should you have any questions or if I can be of further assistance, please contact me at (650) 321-0384.

WBSD Inspector: _____ Facility Contact: _____
Print

N:\forms\md-413a Facility Contact: _____
Signature

SECTION 602 GREASE, OIL AND SAND INTERCEPTORS

(01) Circumstances When Required

Grease, oil and sand interceptors shall be provided when, in the opinion of the District Manager, they are necessary for the proper handling of liquid waste containing grease in excessive amount, or any flammable waste, sand, and other harmful ingredients; except that such interceptors shall not be required for private living quarters or dwelling units. All interceptors shall be located so as to be readily and easily accessible for cleaning and inspection.

(02) Specifications

Grease and oil interceptors shall be constructed of impervious materials capable of withstanding abrupt and extreme changes in temperature. They shall be of substantial construction, water tight, and equipped with easily removable covers which when bolted in place shall be gas tight and water tight.

(03) Owner to Operate and Maintain

All grease, oil and sand interceptors, where required, shall be the properly operated and maintained by the owner, at the owner's expense, at all times.

SECTION 603 PROHIBITIONS

(01) General Prohibitions

No person shall, and it shall be unlawful to, discharge wastes into the wastewater facilities which cause, threaten to cause, or are capable of causing, either alone or by interaction with other substances;

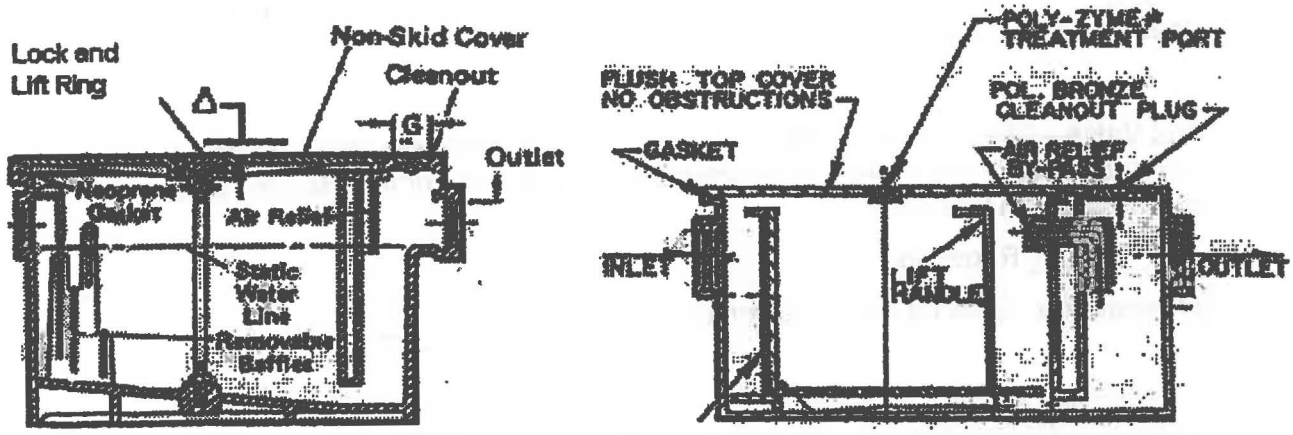
(B) Obstruction of flow, or injury to, the wastewater facilities, or any portion thereof;

(D) Conditions inhibiting or preventing the effective maintenance or operation of the wastewater facility;

(E) Strong or offensive odors, air pollution, or any noxious, toxic, or malodorous gas-or substance, or gas-producing substances.

(02) Storm Drainage and Ground Water

No person shall, and it shall be unlawful to, discharge, cause to be discharged, or permit to be discharged, any storm water, ground water, rain water, street drainage, subsurface drainage, swimming pool drainage, or yard drainage, either directly or indirectly into the wastewater facilities, unless a permit therfor is issued by the District Manager.



EXAMPLE OF TYPICAL GREASE TRAP COMPONENTS

COMPLIANCE DIRECTIVE

Date of issuance: _____ Time: _____ a.m./p.m. Tel. No.: _____
Facility: _____ Contact: _____

Inspection Findings and Requirements		Due Date
Grease Removal Records Required		
☐ Finding	Grease Removal Device (GRD) maintenance records were not available during the inspection. GRD maintenance records must be retained for a minimum of three years and made available to City inspectors upon request (reference PAMC 16.09.103(d)).	
☐ Req.	Submit copies of the prior 12 months GRD maintenance records to our office by the due date. GRD maintenance records shall be made available to City inspectors at the time of inspection.	
Food Waste Disposers Prohibited		
☐ Finding	One or more food waste disposers were observed at the facility. Effective January 1, 2007, food service facilities with one or more grease generating activities shall not utilize a food waste disposer for the purpose of food waste disposal to the sanitary sewer (reference PAMC 16.09.103(f)).	
☐ Req.	Submit documentation to our office by the due date indicating that all food waste disposers have been removed from the facility.	
Discharges Prohibited ☐ Storm Drain (PAMC 16.09.106) ☐ Grease (PAMC 16.09.102)		
☐ Finding	_____	
☐ Req.	Pursuant to Section 16.09.061(c) of the PAMC, you are hereby required to immediately discontinue the discharge of the above stated item(s), remove all materials within _____ hours and dispose of grease and/or hazardous materials (if any), through a licensed contractor. If clean-up is incomplete and/or the schedule is not met, the City will then conduct the necessary clean-up and may recover the costs incurred from the responsible parties. Please submit to our office by the due date documentation of the clean-up/disposal of storm drain system.	
Grease Removal Device (GRD) Maintenance		
☐ Finding	The GRD(s) are not maintained in accordance with the requirements specified in PAMC, which requires that the contents of the device be removed periodically as necessary to prevent violations of PAMC Chapter 16. The minimum required frequency for GRD content removal, as specified in PAMC, is once every 6 months (reference PAMC 16.09.103(d)).	
☐ Req.	The contents of the GRD shall be removed within _____ days. Submit documentation to our office by the due date indicating that the contents of the GRD were removed within the allotted time frame. In addition, submit a cleaning schedule for the GRD.	
Grease Removal Device (GRD) Required		
☐ Finding	There is not an adequate number or size of GRD(s) present at the facility to prevent grease from entering the sanitary sewer system as required by PAMC 16.09.103.	
☐ Req.	Contact our office at (650) 329-2598 to discuss options for appropriate grease removal devices.	

The item(s) checked above represent violation(s) of PAMC Chapter 16 for which there may be administrative civil penalties. Time granted for correction of violation does not preclude any enforcement action by this Department or other agencies.

Comments/additional directives: _____

Print Name: _____ Print Name: _____

Issued by: _____ Received by: _____

East Palo Alto Sanitary District, 901 Weeks St, Palo Alto, CA 94303
Phone: (650) 325-9021, Fax: (650) 325-5371

		YES	NO
ELEMENT 9 – MONITORING, MEASUREMENT, AND PROGRAM MODIFICATIONS			
A.	Does the SSMP accurately portray the methods of tracking and reporting selected performance indicators?	☐	☐
B.	Is the City able to sufficiently evaluate the effectiveness of SSMP elements based on relevant information?	☐	☐
ELEMENT 10 – SSMP AUDITS			
A.	Will the SSMP Audit be submitted with the SSO Annual Report to the Regional Water Board by March 15th of the year following the end of the calendar year being audited?	☐	☐
ELEMENT 11 – COMMUNICATION PROGRAM			
A.	Does the City effectively communicate with the public and other agencies about the development and implementation of the SSMP and continue to address any feedback?	☐	☐

Appendix M

EPASD Master Plans

Master Plan it Addendum

EAST PALO ALTO SANITARY DISTRICT MASTER PLAN UPDATE

FINAL REPORT

March 2015

FREYER & LAURETA INC.

FREYER & LAURETA, INC.
CIVIL ENGINEERS • SURVEYORS • CONSTRUCTION MANAGERS

144 North San Mateo Drive • San Mateo, CA 94401
(650)344-9901 • Fax (650)344-9920 • www.freyerlaureta.com

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Appendix

Executive Summary

In May 2014, East Palo Alto Sanitary District (District) retained Freyer & Laureta, Inc. to update its wastewater collection system master plan. The 2014 Master Plan assesses the conveyance capacity of the District's current sewer collection system pipes and evaluates facilities that may require replacement, develops a prioritized capital improvement plan (CIP), and establishes a connection fee to assist in the funding for the proposed CIP.

ES.1 BACKGROUND AND INTRODUCTION

The main purpose of this update to the sewer collection system master plan (Master Plan) is to evaluate the District's sewer collection system with projected flows under a specific design storm, using a computerized hydraulic model. The purpose of the hydraulic model is to determine whether the system can handle flows without sanitary sewer overflows (SSOs). Where SSOs are predicted by the hydraulic model, this Master Plan provides recommendations to resolve the problem. The Master Plan also recommends a schedule for sewer main replacements.

The District completed a flow monitoring study in 2011/2012. This study provided the flow data that was used as a basis for development and calibration of the District's hydraulic model, which is a component of this Master Plan. The monitoring study performed by V&A Consulting Engineers, was successful in capturing flow data throughout the system during several storm events.

This Master Plan is comprised of the following nine chapters:

- Chapter 1 – Introduction
- Chapter 2 – Existing Wastewater System
- Chapter 3 – System Flows
- Chapter 4 – Inflow & Infiltration Analysis
- Chapter 5 – Hydraulic Model Development
- Chapter 6 – Planning Criteria
- Chapter 7 – Result Summary
- Chapter 8 –Recommendation
- Chapter 9 – Capital Improvement Program

The Master Plan was developed to meet the following objectives:

- Determine system-wide flow characteristics
- Evaluate the existing hydraulic capacity of the collection system
- Determine pipeline potential replacement needs; and
- Develop a prioritized capital improvement program (CIP) and funding approach to provide an affordable and sustainable level of service to the District's ratepayers.

The recommendations that are presented in this Master Plan are considered in conjunction with proposed development of:

1. Ravenswood Villages (University Square)
2. Ravenswood Business Park
3. Four Corners/Bay Road

Future plans of Woodland area and redevelopment are unknown at this time, therefore not included in the scope of this project. As planning in the area progresses, we recommend this Master Plan be updated.

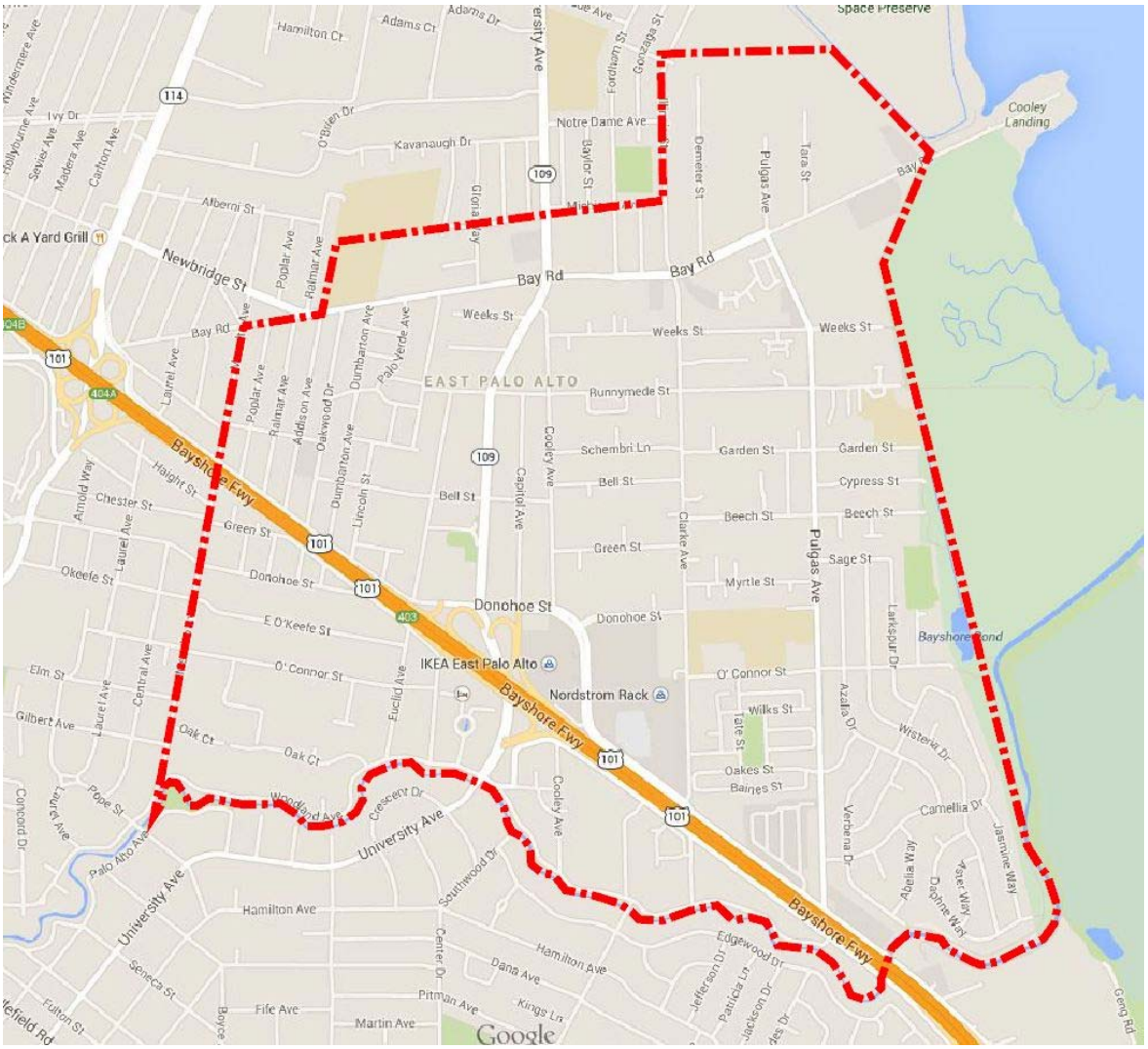
ES.2 EXISTING WASTEWATER SYSTEM

Chapter 2 describes the current system of the District. The District currently provides wastewater collection service to portions of the communities of Menlo Park and East Palo Alto, located in San Mateo County in the San Francisco Bay Area. The District's service area is primarily residential with a few commercial and industrial parcels.

The District's service area, shown on Figure ES-1, encompasses nearly 1,230 acres, or 1.92 square miles. The District's collection system is a gravity system. Approximately 70% of the pipelines are 6" in diameter. The larger collector lines range between 8" and 24" in diameter and contains a siphon beneath the San Francisquito Creek.

The most easterly portion of the system, in East Palo Alto, will experience the greatest change in sewer flows in the future. All pipelines will reach the end of their useful lives and require replacement; however a few sections of mainline will be required to be upsized to handle the future storms and flows.

The District operates and maintains the collection system in accordance with the requirements of the State Water Resources Control Board, as administered through the Statewide SSO Waste Discharge Requirements and RWQCB Sewer System Management Plan guidelines.



ES-1 District's Service Area

ES.3 SYSTEM FLOWS

The methods used to estimate the initial dry weather or base wastewater flow (BWF) component of the collection system hydraulic model is described in Chapter 3. These initial flows were further refined through additional flow meters and information gathered during master planning efforts. The District's BWF, as measured during the 2011/12 flow monitoring program that is discussed below, is 1.53 million gallon per day (mgd). This flow represents an average daily flow for the system.

The initial BWF component was given to us by the V&A study:

- From the data, a model in Hydra 7 was created showing existing conditions

Buildout flows were created by receiving predicted development flows and doing the following:

- Injecting flows into the Hydra model based on the location of predicted development.

ES.4 INFLOW & INFILTRATION ANALYSIS

The V&A Consulting Engineers (V&A) flow monitoring program captured rainfall data useful in our analyses. During their flow monitoring period, the District experienced several relatively short duration storm events, which are ideal for evaluating inflow and infiltration (I&I) and for calibrating the hydraulic model. Using collected data, V&A completed evaluation to quantify the extent of I&I entering the collection system by basin during this period. Chapter 4 further explains the results from the study.

ES.4.1 Data Collection

The flow monitoring program included gravity meters and rain gauges. The eleven meters were located in manholes that delineated the collection system into basins. Table ES-1 presents the flow meter locations and associated flow monitoring basins within the collection system. Depth and velocity readings were collected at each flow meter.

TABLE ES-1. List of Flow Monitoring Sites		
Site	**Location**	**Basin Size (acres)**
A15	Bay Rd, east of Demeter St.	118
B13	Intersection of Bay Rd and Poplar Ave	87
E1	Intersection of Cooley Ave and Green St.	101
E2	Cooley Ave, north of Donohoe St.	149
H3	Intersection of Clarke Ave and Beech St.	74
I3	East end of Beech St.	74
I12	Pulgas Ave, north of Sage St.	135
K4	Intersection O'Connor St and Larkspur Dr	107
K28	Larkspur Dr, south of O'Connor St.	95
T20	75 feet east of end of Cypress St.	171
T13	Along north edge of Palo Alto Municipal Golf Course	-

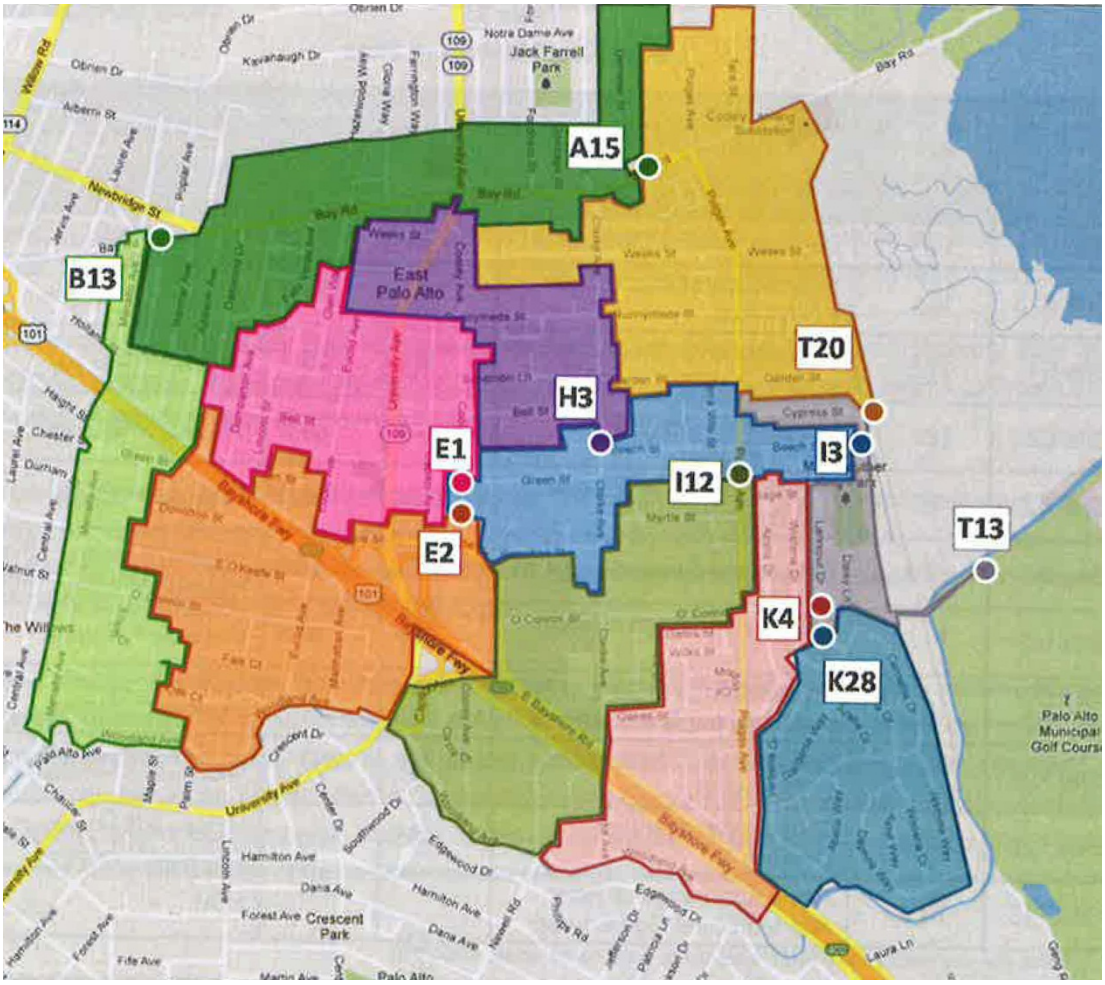


Figure ES-2 Site and Basin Location Map

ES.4.2 Description of Flows

The flow monitoring program measured dry and wet weather flows through the District. The District's BWF, measured across weekday and weekend periods, was 1.53 mgd. BWF includes the wastewater generated from all land uses. The peak wet weather measured flow was 2.80 mgd.

Three main rainfall events occurred during testing which were used in the analysis for the study. The rain events are presented in Table ES-2.

TABLE ES-2 RAINFALL EVENTS	
Rainfall Event	**Event Rainfall (inches)**
Event 1: March 16-17, 2012	0.56
Event 2: March 24-25, 2012	1.14
Event 3: March 27-28, 2012	0.52
Total Over Monitoring Period	**3.30**

ES.4.3 Inflow and Infiltration Analysis

The data collected during the flow monitoring study was plotted against the storm events to compare and analyze the inflow and infiltration. Flows were directly related to the storm events mainly because of specific structures such as downspouts, area drains, and cross connections to catch basins.

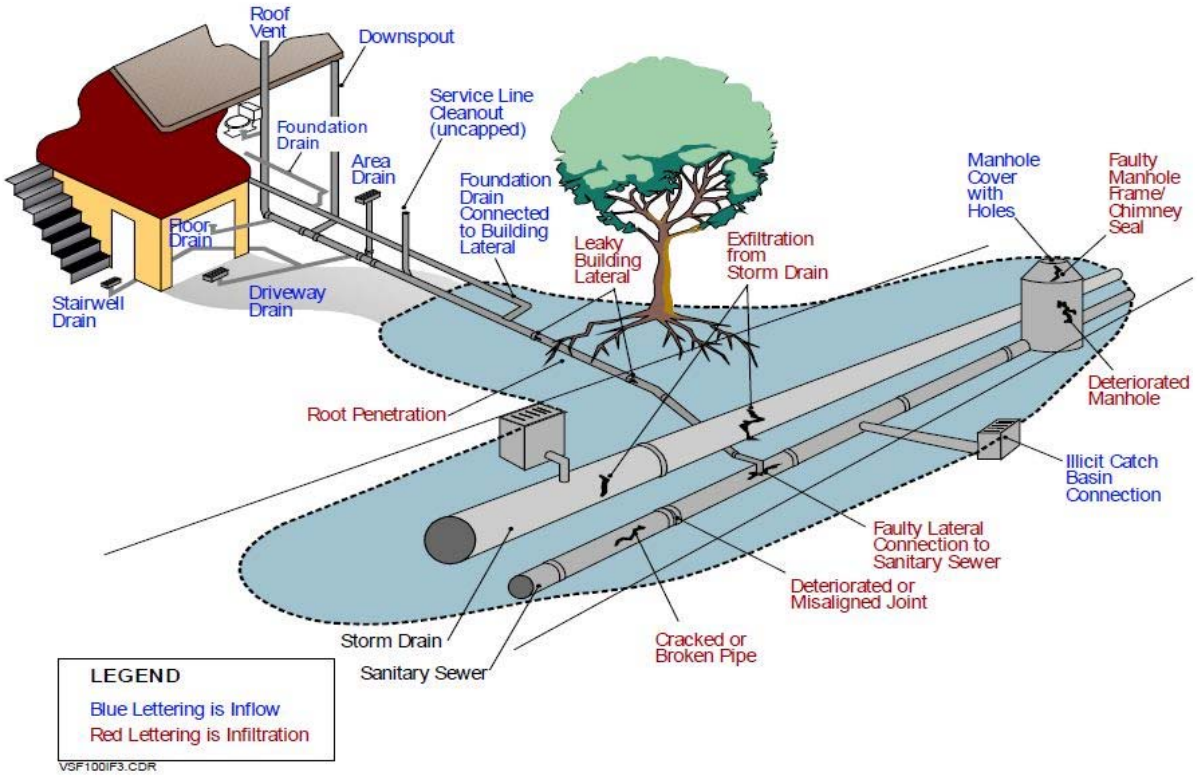


Figure ES-3 – Infiltration and Inflow Diagram

ES.5 HYDRAULIC MODEL DEVELOPMENT

Freyer & Laureta Inc. developed a computer model of the District's system using the program Hydra 7. The pipes were modeled based on the District System Maps, which contained rim & invert elevations and pipe sizes. Once the pipes were modeled with the available information, flows were introduced based on the flow data received. The model was further calibrated using data from flow monitoring performed by District staff using portable meters.

The average dry weather flows were injected into the system. After modeled, a peak wet weather flow scenario was created based on the recorded data. To analyze the system against a predicted storm event, the 10 year 24 hour storm, was modeled. From this model we obtained an understanding of system deficiencies.

Future development will add wastewater flow to the system. These flows were added to the storm event to determine improvement needs of the system.

ES.6 PLANNING CRITERIA

Chapter 6 presents the criteria used to evaluate the system's capacity. The criteria address items such as collection system capacity, pipe slopes, and flow elevation. The District selected a 10 year 24hr storm to be the design storm. Based on V&A's design storm summary, the following flows were used.

Table ES-3 – Design Storm Flows

Site	Peak Dry Weather Flow (mgd)	Peak Wet Weather Flow (mgd)
A15	0.43	1.19
B13	0.11	0.52
E1	0.19	0.59
E2	0.43	1.45
H3	0.23	0.58
I3	1.22	2.76
I12	0.39	0.76
K4	0.35	0.99
K28	0.17	0.68
T20	0.60	1.55
T13	2.31	5.78

ES.7 HYDRAULIC CAPACITY ANALYSIS RESULTS

The Hydra model evaluated the pipe system's ability to convey flows that are expected to occur during the selected 10 year 24 hour design storm. The analysis is further discussed in Chapter 7. The hydraulic model predicted peak hourly flow from the design storm of 5.8 mgd.

Analyses were conducted as follows:

- The system was evaluated for its ability to meet surcharging and flooding criteria. Pipe diameter upsizing that is required to convey peak flows and meet surcharge criteria were determined.

- Proposed improvements were developed and reviewed.

Table ES-4 – Results of Improvements

Monitoring Site	Rim	HGL before improvements	HGL after improvements
T29	4.98	4.82	0.39
B2	16	8.88	4.17
B16	20.39	18.08	14.71
D1	17.33	16.62	9.14
E1	12.09	13.5	4.5
T24	3.66	3.78	0.12
T22	2.81	3.33	-0.08
I11	8.07	7.6	0.84
T18	1.12	2.03	-0.94
T20	2.72	2.68	-0.24
K1	2.02	-0.54	-1.76
K28	3.27	1.23	0
M2	5.62	4.5	1.51
N1	5.32	0.78	-0.44
N8	13.8	4.33	4.33

ES.8 Recommendations

This chapter provides the recommended pipes to be replaced with larger pipes. Recommendations were based on the results from the model and the outcome of the size changes.

ES.9 Capital Improvement Program

This chapter shows a recommended schedule for the recommended improvements. The schedule breaks down the sections of pipe that should be replaced each year for 15 years. This will help set a budget for the District.

Chapter 1 - Introduction

Chapter 1 provides background information on the scope and objectives of the East Palo Alto Sanitary District Wastewater Collection System Master Plan (Master Plan).

1.1 BACKGROUND AND PROJECT OBJECTIVES

The East Palo Alto Sanitary District (District) is responsible for the operation and maintenance of the sanitary sewer collection system that serves most of East Palo Alto and a portion of Menlo Park. The City of East Palo Alto (City) is anticipating redevelopment of portions of the City. Other specific development plans have been submitted to the District for review, and some are currently under construction. The major areas within the District identified for redevelopment include:

- **Ravenswood Villages (University Square)**
- **Ravenswood Business Park**
- **Four Corners/Bay Road**

Future plans of Woodland area and redevelopment are unknown at this time, therefore not included in the scope of this project. As planning in the area progresses, this Master Plan will require updating.

The purpose of this study is to develop a mathematical model of the District's collection system to assess the impact that redevelopment and future projects will have on the District's collection system.

As a first step for this Master Planning effort, V&A created a report for the existing measured flows for the District's system. The report was then analyzed and implemented into a true model to discover problem areas in the network. The objective was to discover and improve capacity issues throughout the District. The plan was broken into tasks for analysis:

Task 1 EPASD Basemap

The existing base drawing of the EPASD collection system in AutoCAD was used with the GIS model provided from the District. These drawings provided the basemap for the system. Included within the drawings was information for pipe sizes, location, inverts and rims of each manhole.

Task 2 – Mathematical Model

A mathematical model of the main lines in the District's system using the computer software program HYDRA 7was developed. The following steps were taken in order to complete the mathematical model:

1) Data Collection

a) Review existing information provided from the District:

i) Physical Data: pipe sizes, pipe materials, pipe ages, manhole rim and inverts.

ii) System Geometry and locations

iii) Influent Flow Data.

iv) Rain Data

v) Troubled Areas.

b) Determine current dry and wet weather flows from the District's collection system.

2) Develop Model

a) Enter existing conditions into the model

Task 3 – Flow Data

Wet and dry weather flow monitoring at eleven manholes in the District was completed. The following steps were taken in order to complete the flow data:

1) Identify manholes monitored – Provided by the District

2) Input given flow data into the model

Task 4 – Mathematical Model Update and Review

The mathematical model was updated to include flow monitoring results and updated redevelopment plans for the City of East Palo Alto. The following steps were taken in order to complete the mathematical model:

1) Data Collection

a) Any additional monitoring information was reviewed and added to the system if necessary.

2) Review Model and Analyze Collection System

a) Utilize the model to evaluate the existing system. Identify capacity deficiencies of the sanitary sewer system for the current condition including both wet and dry weather scenarios.

b) Utilize the model to evaluate the future (with redevelopment) system. Identify capacity deficiencies of the sanitary sewer system for the current condition including both wet and dry weather scenarios.

3) Develop List of Improvements and Recommendations

a) Recommend improvement projects including replacement or parallel pipeline projects for the flooding locations.

1.2 REPORT ORGANIZATION

The Report comprises the following chapters. The sequence of chapters generally conforms to the tasks outlined in the scope of work for the project. This section describes the contents of each of the nine chapters and appendices.

1.2.1 Executive Summary

The Executive Summary provides a comprehensive overview of the Report contents and summarizes key aspects of each chapter.

1.2.2 Chapter 2 – Existing Wastewater System

This chapter describes the District's existing service areas and land uses.

1.2.3 Chapter 3 – System Flows

This chapter presents the methods for determining existing and future dry and wet weather wastewater flows for the purposes of collection system capacity modeling.

1.2.4 Chapter 4 – Flow Monitoring and Inflow/Infiltration Analysis

This chapter summarizes contributions to system-wide inflow and infiltration based on results from V&A Consulting Engineers (V&A).

1.2.5 Chapter 5 – Hydraulic Model Development

This chapter describes the tasks required to build and calibrate the Hydra 7 hydraulic model. The hydraulic model is the primary tool that was used to determine the flows and capacities of the District's major sewers. It was also used for the development of recommendations for the system.

1.2.6 Chapter 6 – Planning Criteria

This chapter documents the planning criteria used to calculate existing and future flows, and to assess whether any hydraulic deficiencies may occur in the collection system. These criteria are based on standard design criteria in use by the District, and modeled criteria that resulted from hydraulic model calibration as discussed in Chapter 4.

1.2.7 Chapter 7 – Capacity Analysis

This chapter presents the results of the existing and future system hydraulic capacity analyses of the District's wastewater collection system. The chapter presents the results of both analyses, identifies existing pipelines that are over capacity, and describes proposed the capital improvement projects.

1.2.8- Chapter 8 – Recommendations

This chapter describes the pipes that should be replaced to reduce surcharging and flooding based on the design scenario.

1.2.9 Chapter 9 – Capital Improvement Program

This chapter provides recommendations for the schedule of the Capital Improvement Plan. The replacements are spread over 15 years as well as the budget.

1.2.10 Appendices

The following appendices to this Wastewater Collection System Master Plan contain additional technical information and assumptions:

- Appendix A – EPASD map
- Appendix B – Flow Monitoring Station Map and Table
- Appendix C – Ravenswood Map
- Appendix D – Ravenswood Existing Land Use
- Appendix E – Ravenswood Plan Concept
- Appendix F – Pipe Recommendations
- Appendix G – CIP Timeline Map
- Appendix H – Flow Results at Downstream Basins
- Appendix I – Basin Map
- Appendix J – Recommended pipes to be upside with costs
- Appendix K – System Improvement Results

1.3 ACRONYMS AND ABBREVIATIONS

The following acronyms and abbreviations have been used throughout this Report to improve document clarity and readability.

ADWF	Average Dry Weather Flow
BWF	Base Wastewater Flow
CCTV	Closed Circuit Television
CIP	Capital Improvement Program
CIPP	Cured in Place Pipe
CIWQS	California Integrated Water Quality System
CMP	Corrugated Metal Pipe
County	County of San Mateo
District	East Palo Alto Sanitary District
DU	Dwelling Unit
DWF	Dry Weather Flow
EPASD	East Palo Alto Sanitary District
F&L	Freyer & Laureta, Inc.
fps	Feet Per Second
GPAD	Gallons Per Acre Per Day
gpcpd	Gallons Per Capita Per Day
gpd	Gallons Per Day
gpd-idm	Gallons Per Day Per Inch-Diameter-Mile
gpm	Gallons Per Minute
GWI	Groundwater Infiltration
HDD	Horizontal Direction Drilling
HDPE	High Density Polyethelyne
HGL	Hydraulic Grade Line
I&I	Inflow and Infiltration
ID	Identification Numbers

Master Plan	East Palo Alto Sanitary District Master Plan
Menlo Park	City of Menlo Park
mgd	Million Gallons Per Day
NASSCO	National Association of Sewer Service Companies
NOAA	National Oceanic and Atmospheric Administration
PVC	Polyvinyl Chloride
Q_A	Average Daily Dry Weather Flow
Q_{PDWF}	Peak Hourly Dry Weather Flow
Q_{PWWF}	Peak Wet Weather Flow
R&R	Rehabilitation and Replacement
Report	Collection System Master Plan Report
RDII	Rainfall-Dependent Inflow and Infiltration
SCS	Soil Conservation Service (now Natural Resource Conservation Service)
SSO	Sanitary Sewer Overflow
SUH	Synthetic Unit Hydrograph
SWRCB	State Water Resources Control Board
TCE	Temporary Construction Easement
V&A	V&A Consulting Engineers
VA	Veteran's Affairs
VCP	Vitrified Clay Pipe
WWF	Wet Weather Flow

CHAPTER 2 – EXISTING WASTEWATER SYSTEM

Chapter 2 describes the District's existing wastewater collection system. System information was obtained through the review of previous reports, documents from V&A, and miscellaneous documents from the District. The following sections of this chapter describe the components of the District's existing wastewater collection system:

- Existing Service Area
- Population Served and Land Use Characteristics
- Existing Collection System Facilities

2.1 EXISTING SERVICE AREA

The District currently provides wastewater collection service to all or portions of the communities of Menlo Park and East Palo Alto. The District's service area is primarily residential with a few commercial and industrial parcels.

As shown on Figure 2-1, the District service area encompasses nearly 1,230 acres, or 1.92 square miles.

The most Easterly portion of the system, in East Palo Alto, will experience the greatest change in sewer flows in the future.

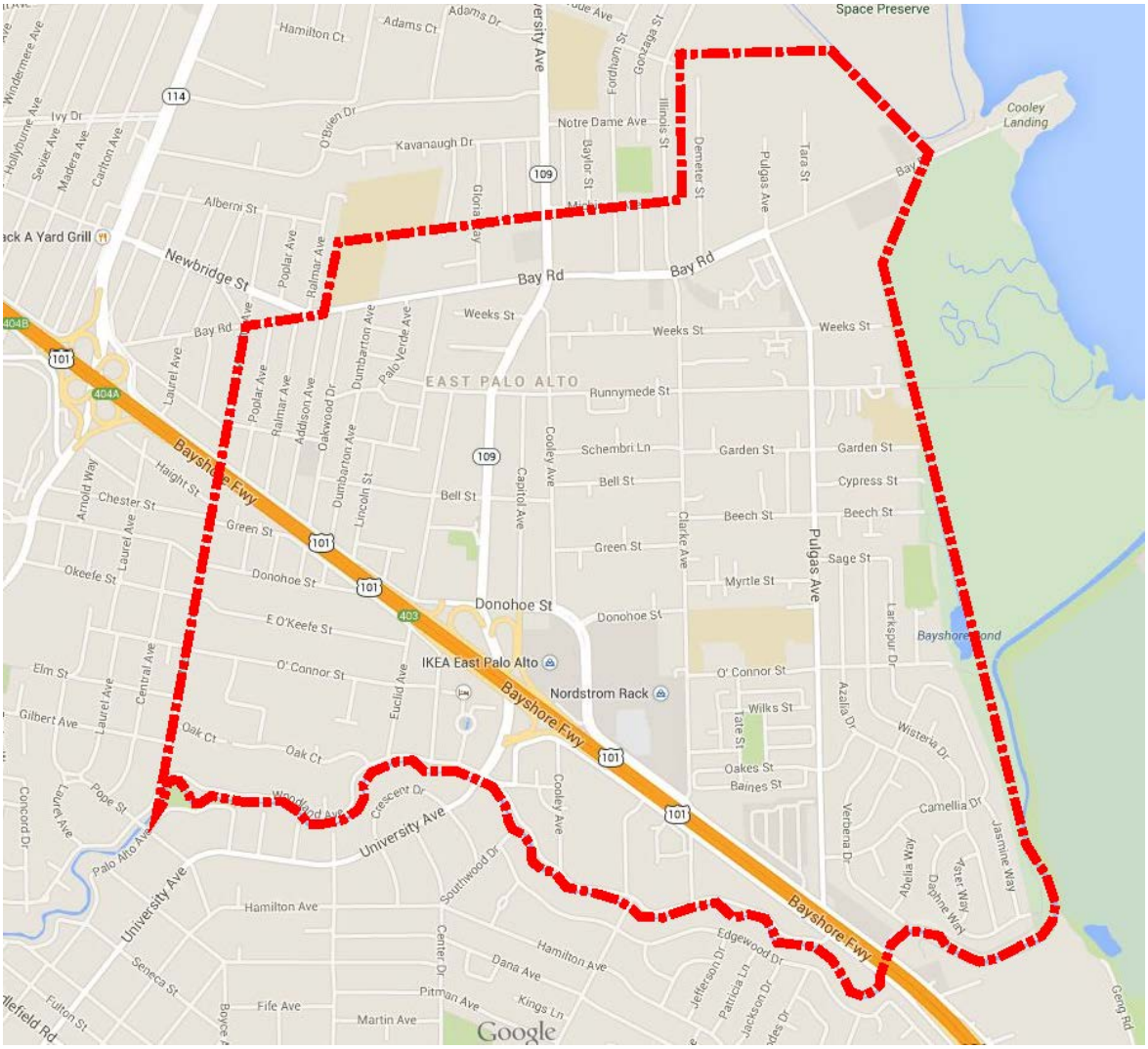


Figure 2-1 District's Service Area

2.2 POPULATION SERVED & LAND USE CHARACTERISTICS

Land use information was derived from several sources collected for the communities served by the District, including:

- Land Use Database – Existing land use data in Geographical Information System (GIS)
- General Plan Information – Additional land use data from East Palo Alto
- Aerial Photographs – Aerial photographs of the service area were reviewed to identify parcels and properties

2.2.2 Build-out and Land Use

The City of East Palo Alto (City) is anticipating redevelopment of portions of the City. Specific development plans have been submitted to the District for review, and some are currently under construction. The major areas within the District identified for redevelopment include:

- **Ravenswood Villages (University Square)** – Residential development on approximately 10 acres of land between Clarke and Pulgas Streets, just south of O'Connor Ave. The development plans include single family residences and apartments. Construction is nearing completion.
- **Ravenswood Business Park –** Approximately 130 acres located along Bay Road in the northeast corner of the District. Proposed development includes industrial, commercial, office and some residential as described in the August 2000 Preliminary Draft of the East Palo Alto Revitalization Plan.
- **Four Corners/Bay Road** – Creation of a new downtown center at the intersection of University Avenue and Bay Road. Proposed mixed-use development including government, community, office, and commercial spaces as described in the August 2000 Preliminary Draft of the East Palo Alto Revitalization Plan.

As previously stated, these locations were the focus of redevelopment for this model and analysis. All other developments were not included in the Master Plan.

2.3 EXISTING COLLECTION SYSTEM FACILITIES

The District is responsible for the operation and maintenance of the sanitary sewer collection system shown in Figure 2-1. The collection system serves most of East Palo Alto and a portion of Menlo Park. The collection system drains to the Palo Alto Regional Water Quality Control Plant (RWQCP) where the District's flows are treated and discharged to the San Francisco Bay by the RWQCP. The District's collection system is a gravity system consisting of sewer pipelines and manholes. Approximately 70% of the pipelines are 6" in diameter. The larger collector lines range between 8" and 24". The trunk line contains a siphon beneath San Francisquito Creek between manholes T15 and T14. The collection system is composed of 15 drainage basins. A letter, A-O, is used to designate each basin. The boundaries of the drainage basins are shown in Appendix I. Table 2-1 shows the characteristics of each

basin. Sections of the system have been replaced; however most of the original pipelines and manholes remain in service. The new manholes are precast, while the original manholes were mostly constructed of brick and mortar. The pipelines were constructed with vitrified clay pipe (VCP), but newer pipelines are being constructed with heavy wall plastic pipe such as PVC or HDPE.

Table 2-1 Basin Information

Basin	Area (acres)	Land Use	Total Length of Sewers	Pipe Diameter (inches)	Approximate Age of Pipes and Manholes
A	106	Industrial	7,888	6-8	20-60 years
B	93	Low Density Residential / Commercial / Medium-High Density Residential	15,080	6-12	55 years <10 years along Menalto <2 years along Bay
C	73	Low Density Residential	12,852	6-8	40-55 years < 10 years along Menalto
D	128	Residential / Commercial	18,756	6-10	40-55 years <2 years on Euclid West Bayshore, and Oakwood.
E	122	Residential / Commercial	18,072	6-12	55 years < 2 years on Bell and Cooley
F	64	Industrial / Residential	4,235	6	55 years
G	30	Low Density Residential	3,715	6	55 years

Basin	Area (acres)	Land Use	Total Length of Sewers	Pipe Diameter (inches)	Approximate Age of Pipes and Manholes
H	124	Residential / Commercial	13,949	6-15	15-55 years
I	78	Low Density Residential	7,143	6-15	10-55 years <5 years on Pulgas
J	36	Low Density Residential	3,824	6-8	55 years <2 years on Cypress
K	66	Low Density Residential	9,046	6-14	15-55 years <2years on Gardenia, Camellia, and Larkspur
L	99	Low Density Residential	15,171	6-10	30-40 years
M	61	Residential / Commercial	5,434	6-10	15-55 years <5 years on O'Connor
N	38	Medium-High Density Residential	2,385	10	15 years
O	102	-	11,094	6-8	30-55 years
Trunk Line	-	-	11,281	18-24	4 years
Total	1,220	-	159,925	6-24	

Chapter 3 – System Flows

Chapter 3 presents the background and methodology used to determine existing and future dry weather wastewater flows for input to the District's collection system hydraulic model. This chapter is organized as follows:

- Sources of System Data
- Estimated Flows

3.1 SOURCES OF SYSTEM DATA

The main sources of data used to estimate wastewater flows for the District's hydraulic model include land use information, aerial photography, and District unit flow factors. All calculations and data were provided by V&A.

The Palo Alto Regional Water Quality Control Plant (RWQCP) records total wastewater flow for the District. These flows are measured from the District's meters. Typically, maximum daily flows in the District occur during the winter months between December and March. Daily flows are lowest during the months of September through November. The dry weather flow capacity of the RWQCP is 38 MGD. The District has an agreement with the RWQCP, which entitles the District to 7.63% of the dry weather capacity of the RWQCP, 2.9 MGD.

Wastewater in the District is composed of sanitary flows and inflow/infiltration (I/I). Sanitary flows are derived from three main sources in the District: commercial, residential, and industrial. I/I is composed mainly of storm water inflow, rain-dependent groundwater infiltration, and groundwater infiltration that enter the collection system through roof drain connections, storm drain cross connections, and manhole covers. Due to the proximity to the San Francisco Bay, the groundwater table within the eastern portion of the District is relatively high, and year-round groundwater infiltration is relatively high. The relative contribution from sanitary and I/I flows varies seasonally. Generally, the wastewater is composed primarily of sanitary flows and some groundwater infiltration during the drier months of summer and fall. I/I flows usually peak during the heavy rain events between January and March and can account for over 50% of the daily flows in the collection system.

3.2 – ESTIMATION OF FLOWS

The initial BWF (average dry weather flow) component was calculated using the following steps:

- Based on the monitoring system put in place by the District, flows were recorded. From those recordings, the flows were averaged to create the BWF. Not all sections were monitored; therefore flows were back calculated to properly distribute flow.
- Once the model was created, additional manholes were monitored and the model adjusted to conservatively show the actual flows.

TABLE 3-1. List of Flow Monitoring Sites

Site	Location	Basin Size (acres)
A15	Bay Rd, East of Demeter St.	118
B13	Intersection of Bay Rd and Poplar Ave	87
E1	Intersection of Cooley Ave and Green St.	101
E2	Cooley Ave, North of Donohoe St.	149
H3	Intersection of Clarke Ave and Beech St.	74
I3	East end of Beech St.	74
I12	Pulgas Ave, North of Sage St.	135
K4	Intersection O'Connor St and Larkspur Dr	107
K28	Larkspur Dr, South of O'Connor St.	95
T20	75 feet East of end of Cypress St.	171
T13	Along North edge of Palo Alto Municipal Golf Course	-

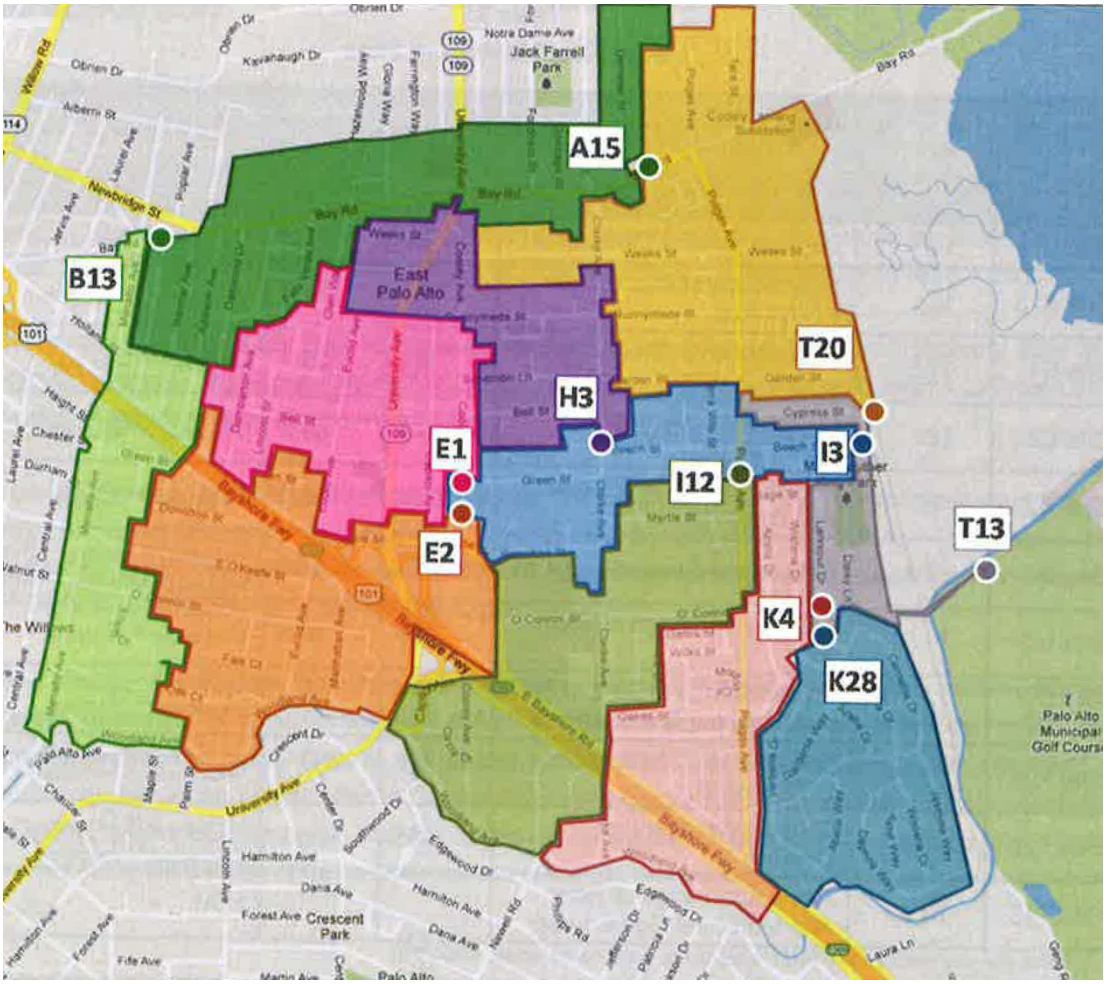


Figure 3-1 Monitoring Station Map

Buildout flows were created by injecting predicted development flows (0.91MGD for ADWF) as follows:

- Locating the development and probably sewer connection points
- Flows were inserted into the sewer model.
- Hydra calculated the flows and the effect on the system downstream and upstream.

3.3 Infiltration and Inflow

3.3.1 Dry Weather Infiltration

A portion of the metered average dry weather flow is due to sanitary flows and the remainder is due to dry weather infiltration. Groundwater infiltration flows studies were developed by

taking the difference between the sanitary flows estimated from water use records and the dry weather flows that were measured during the flow metering performed as part of the study.

3.3.2 Wet Weather Infiltration and Inflow

Wet weather inflow and infiltration is directly related to rainfall amounts, groundwater levels, and soil saturation. Wet weather inflow and infiltration flow can vary dramatically from day to day and over the years. For the purpose of the model, a representative inflow and infiltration flow was developed by V&A.

Chapter 4 Inflow Analysis

4.1 FINDINGS AND RECOMMENDATIONS

The following findings were developed to address potential problems within the system that are the most significant contributors to I&I. Through the control of I&I, the District will also likely reduce the potential for wet weather related sewer system overflows (SSOs).

4.1.1 General Sources of Inflow and Infiltration

I&I are extra flows that enter the sanitary sewer system. I&I can negatively impact the capacity of wastewater collection systems by increasing both peak flows and total flow volume. Rainfall-dependent inflow and infiltration (RDII), groundwater infiltration (GWI), and inflow from illegal connections can all be contributors of I&I.

I&I can enter the collection system through different facilities. Inflow is water that enters the collection system through a direct improper connection. Inflow enters the sewer pipe independent of groundwater level and can be seen in the collection system immediately following a storm. Infiltration is water that enters the collection system by percolating through the ground and then into the collection system through defects in pipelines, manholes, and joints. Infiltration will occur over a longer period of time, and depending on conditions, can occur for days, weeks, or seasonally.

Figure 4-1 provides examples of common I&I sources.

RDII generally occurs after a rainfall event, and can enter the collection system on the same day that the rainfall event begins, and may continue to last for days after the rain event has ended. GWI patterns may reflect movement of the groundwater table, which generally rises gradually during the wet weather season and falls as the dry weather season takes place. GWI may occur rather steadily each day.

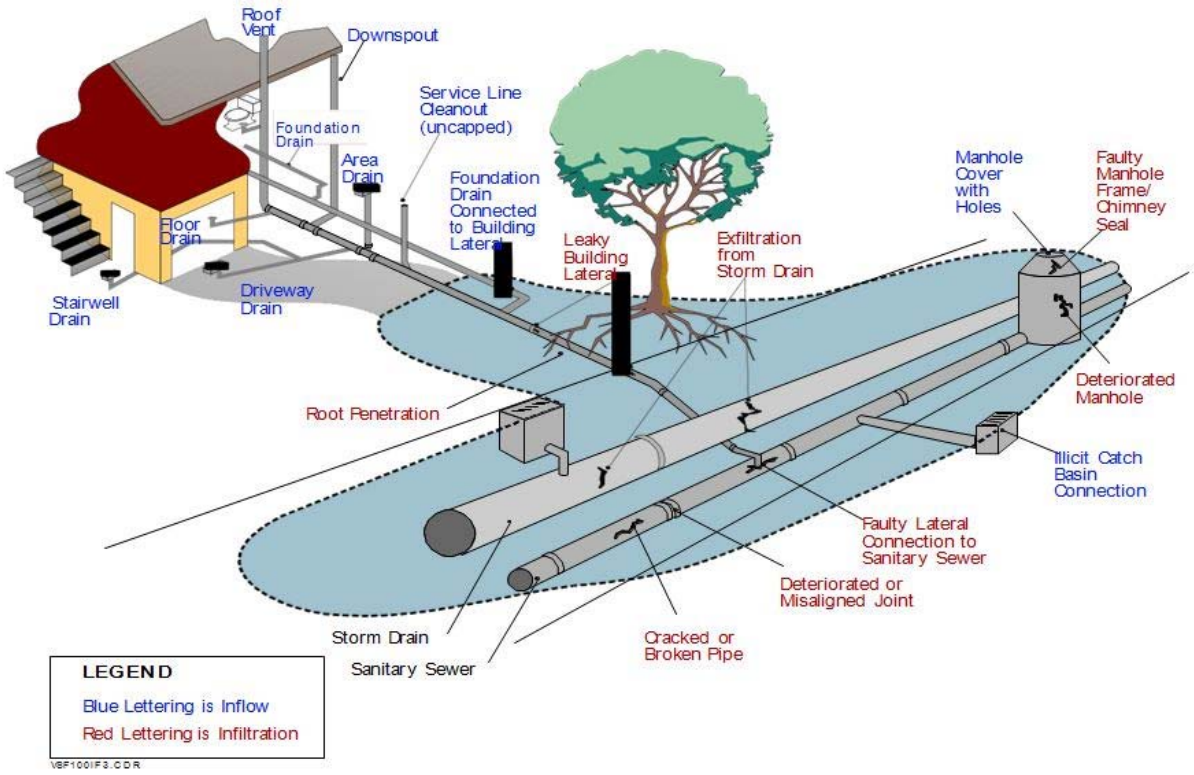


Figure 4-1 Inflow and Infiltration Map

Chapter 5 –Hydraulic Model Development

The computer-based hydraulic sewer model of the District's wastewater collection system, developed using Hydra 7 software, by Pizer Incorporated, is a tool to investigate the flows and to help identify problem areas to create a solution. The hydraulic model is also a tool for performing different scenarios to assess the impacts of future developments, land use changes, and system changes.

5.1 MODEL DEVELOPMENT

The District's hydraulic model creates a mathematical model from the physical and operational information of the system. Hydra simulates flow for the system by taking the given inputed data and running multiple calculations based on parameters set. The modeling results provide information on flow depth, velocity, surcharging, flows and flooding conditions that are used to identify possible system deficiencies. The model is also used to verify the capacity of the proposed system improvements.

The hydraulic model composed of a network of nodes and links. Several types of nodes and links are used for defining the physical entities within the District's system. The following descriptions provide information on elements used in the development of the District's model.

Node: Nodes can represent manholes, split manholes, storage facilities, and outfalls in a collection system. Nodes were also used to create simulated siphons by setting inverts midway through the siphon. All flows loaded into the model are attached to a node structure. The data required for node structures to include elevation data (pipe invert and manhole rim) and manhole diameter.

Links: Links represent pipes that convey wastewater from one point in the system to another. The physical data for the pipe mains include invert elevation, size, length, and friction factor.

5.1.1 Model Description

The hydraulic model configuration was developed using the District's AutoCAD and GIS pipe, manhole information obtained from the District, such as pipeline invert and manhole rim elevations, pipeline diameter and pipeline length data. The GIS model was inserted into the program Hydra. From there the pipe sizes, inverts, and rims were entered to match the provided information.

5.2 DATA VALIDATION

After the model network was constructed, the model was further checked and calibrated.

- Labeled manholes based on the District's label system
- Check the pipe connectivity
- Check for missing or inconsistent data such as missing manhole rim or pipe invert elevations, negative pipe slopes, or abrupt elevation changes
- Identify split manholes and flow distribution
- Field checks and descriptions based on past projects and recordings.

5.3 Model Scenarios

The model was run for both the existing and future flow scenarios. The following is a summary of the input flow files used in each scenario that analyzed:

1. **Average Flow**: The average sanitary flow based on the collected data.
2. **Peak Flows**: The peak sanitary flow files based on the collected data.
3. **10 year 24 hour storm**: The flows given based on a 10 year 24 hour storm estimated response summary from V&A.
4. **Future Flows:** The given predicted flows from future developments.

The scenarios were combined to create the design storm flows, which in this case is the 10 year storm with peak flows including future development. The pipes will be able to handle this situation without flooding.

Chapter 6 - Planning Criteria

Chapter 6 presents planning criteria that can be used to analyze system capacity and size any proposed new pipe recommendations. Planning criteria address items such as collection system capacity, pipe slopes, and maximum depth of flow. The major elements of this chapter include:

- Design Storm
- Hydraulic Deficiency Criteria, and
- New Pipeline Design Criteria

6.1 DESIGN STORM CRITERIA

Design storms are simulated rainfall events used to evaluate collection system capacity under wet weather flow conditions. A design storm has specific recurrence interval and rainfall duration. District's goal is to eliminate all sewer overflows for the 10-year, 24 hour storm event.

The master plan evaluates the ability of the system to convey flows with surcharging under the selected design storm scenario. The District has selected as its design storm a rainfall event of 10-year recurrence intervals and 24-hour duration (10-year, 24-hour storm), as defined by the NOAA rainfall atlas[1].

Table 6-1 shows recorded rainfall data from the V&A report. This information of rainfall was used to create a peak flow scenario combined with a predicted 10 year storm.

TABLE 6-1 RAINFALL EVENTS

Rainfall Event	Event Rainfall (inches)
Event 1: March 16-17, 2012	0.56
Event 2: March 24-25, 2012	1.14
Event 3: March 27-28, 2012	0.52
Total Over Monitoring Period	**3.30**

6.2 EXISTING PIPELINE HYDRAULIC CAPACITY CRITERIA

Hydraulic capacity or deficiency criteria are presented for gravity mains. The criteria sets the standards for determining if a pipe is exceeding allowable surcharging. Under these criteria, a facility may exceed surcharge capacity, yet not overflow. For existing pipelines, the pipe is considered to have a capacity deficiency (surcharge) when, under peak wet weather flow conditions for the design storm, the water level or hydraulic grade line (HGL) is located above the top of pipe. Exceptions to these criteria may be made because of siphons in the system. All capacity deficient pipelines should be considered for replacement over time, as discussed in Chapter 9, Capital Improvement Program.

Chapter 7 Result Summary

Chapter 7.1 - Observations

The following is a summary of general observations about the results of the model:

1. Under the present flow scenarios, the capacity of the existing pipelines is adequate to handle current peak wet weather flows.

2. A large portion of the collection system, including sections of the main trunkline to the RWQCP, is at capacity now, and future buildout flows will overwhelm many of the mains in the existing system. Several sections of pipelines in the model were listed as overcapacity during peak wet weather flow scenarios. The dry weather flow capacity of the RWQCP is 38 MGD. The District has an agreement with the RWQCP, which entitles the District to 7.63% of the dry weather capacity of the RWQCP, approximately 2.9 MGD. The predicted average dry weather flow for both future buildout scenarios exceeds the capacity allotment from the RWQCP.

3. Some pipes may be relatively flat due to settlement

4. The slopes of the District's pipelines are relatively flat. As a result, calculated velocities at average dry weather flow for both the present and future scenarios were often low. The ideal minimum velocity of sewage flows in a gravity pipeline is 2.0 fps to prevent settling of the solids out of the flow. The calculated velocities indicate that the District may have a problem with blockages in the collection system due to the settling out of solids in the flow. In fact, EPASD maintenance crews are required to frequently clean sewer pipelines throughout the District to prevent blockages.

5. The siphon under San Francisquito Creek causes surcharging during both present and future peak flows. EPASD maintenance crews have verified the occurrence of surcharging in this pipeline. Additionally, grease gets trapped in the pipelines just upstream of the siphon requiring frequent routine maintenance.

7.1.1 Surcharged Pipes

The following pipes are surcharged during peak flow, but not including siphons. (Flows based on reported/recorded data)

Table 7-1 Surcharged Pipes

Street	Between MH's	Size	Length
Woodland Ave	D56-D35	6	287
Woodland Ave	D35-D34	6	178
Oak Court	D36-D35	6	251
Menalto Ave	C3-C2	6	398
Menalto Ave	C2-C1	6	204
Bay Rd	B7-B6	12	380
Donohoe Street	D4-D3	8	297
Green Street	H74-H8	12	113
Green Street	H8-H7	12	234
Verbina Drive	L14-L13	6	302
Verbina Drive	L13-L9	6	311
Gaillardia Way	L11-L10	6	360
Azalia Drive	L10-L9	6	275
Azalia Drive	L9-L4	6	163
Gardenia Way	L8-L7	6	73
Gardenia Way	L7-L6	6	261
Gardenia Way	L6-L5	6	215
Gardenia Court	L61-L5	6	153
Gardenia Way	L5-L47	6	277
Abelia Way	L58-L57	6	296

Street	Between MH's	Size	Length
Abelia Way	L57-L53	6	203
Camellia Court	L56-L54	6	327
Camellia Dr	L55-L54	6	149
Camellia Dr	L54-L53	6	370
Camellia Dr	L53-L52	6	219
Camellia Dr	L52-L50	6	224
Camellia Dr	L51-L50	6	80
Azalia Dr	L50-L49	8	224
Azalia Dr	L49-L48	8	234
Azalia Dr	L48-L47	8	229
Azalia Dr	L47-L4	8	88
Gardenia Way	L4-L3	10	248
Wisteria Dr	L22-L3	6	366
Daphine Ct	L62-L34	6	147
Daphine Way	L34-L26	6	288
Aster Way	L30-L27	6	236
Wisteria Drive	L28-L27	6	363
Wisteria Drive	L27-L26	8	261
Wisteria Drive	L26-L25	8	216
Jasmine Way	L43-L44	8	335
Jasmine Way	L44-L45	8	239
Camellia Drive	L46-L45	6	136
Camellia Drive	L45-L25	8	202

Street	Between MH's	Size	Length
Wisteria Drive	L25-L24	8	342
Wisteria Drive	L24-L23	8	387
Wisteria Drive	L23-L3	8	352
Gardenia Way	L3-L2	10	84
Gardenia Way	L2-L1	10	179
Camellia Drive	K35-K34	6	280
Camellia Drive	K34-K33	6	279
Camellia Drive	K33-K32	6	131
Camellia Drive	K37-K32	6	351
Camellia Drive	K32-K30	8	227
Gardenia Way	K30-K31	8	109
Gardenia Way	K31-L1	8	148
Larkspur Dr	L1-L21	10	224
Larkspur Dr	L21-L28	10	69
Larkspur Dr	L28-K4	10	242
O'Connor Street	K5-K4	12	249
O'Connor Street	K4-K3	12	239
O'Connor Street	K3-K2	12	190
O'Connor Street	K2-K1	14	452
O'Connor Street	K1-T15	14	21
N/A	T14-T13	24	479
N/A	T8-T7	24	502
N/A	T3-T2	24	500

7.1.2 Flooding Conditions

The existing pipe system does not have the capacity to support the flows from a 10 year storm with peak flow. Each of the following manholes shows flooding during this condition.

Table 7-2 Manholes with Flooding Condition								
D37	D19	C4	E1	H17	A20	T19		
D36	D5	C3	H9	H14	A19	T18		
D24	D4	C2	H73	H12	A18	L43		
D26	D21	C19	H74	I14	F7	L45		
D25	D10	E44	H8	I9	T25	L24		
D22	D20	E7	H7	A14	T24			
D47	C6	E46	H75	A13	T22			
D21	C5	E6	H34	A12	T20			

Table 7-3 Design Storm Flows		
Site	**Peak Dry Weather Flow (mgd)**	**Peak Flow (mgd)**
A15	0.43	1.19
B13	0.11	0.52
E1	0.19	0.59
E2	0.43	1.45
H3	0.23	0.58
I3	1.22	2.76
I12	0.39	0.76
K4	0.35	0.99
K28	0.17	0.68
T20	0.60	1.55
T13	2.31	5.78

Chapter 8 – Recommendations

8.1 – Pipes to Be Upsized

Based on the model produced, the following pipes did not meet the standard criteria for an acceptable pipe. By upsizing the listed pipes, the capacity of the system increases and will handle future flows.

TABLE 8.1 Upsize Recommendations

Section	Current Size	Recommended Size	Approx Length
C5-C4	6”	8”	328’
C4-C3	6”	8”	436’
C3-C2	6”	8”	398’
C2-C1	6”	8”	205’
D24-D23	8”	12”	350’
D23-D22	8”	12”	74’
D22-D21	8”	12”	149’
D21-D19	8”	12”	391’
D19-D10	10”	12”	49’
D10-D3	10”	12”	490
A14-A13	6”	8”	289’
A13-A12	6”	8”	412’
A12-A11	6”	8”	486’
A11-A10	6”	8”	418’
A20-A19	6”	8”	340’
A19-A18	6”	8”	214’
A18-A16	6”	8”	442’
M4-M3	8”	12”	358
M3-M2	8”	12”	380
M2-M43	8”	12”	48’
E1-H9	12”	18”	270’
H9-H73	12”	18”	247’
H73-H74	12”	18”	101’
H74-H8	12”	18”	113’
H8-H7	12”	18”	234’
H7-H75	12”	18”	90’
H75-H6	12”	18”	260’
H6-H5	12”	18”	9’
H5-H4	15”	18”	260’

Section	Current Size	Recommended Size	Approx Length
H4-H3	15”	18”	8’
H14-H13	8”	12”	447’
H13-H12	8”	12”	108’
H12-H11	8”	12”	334’
H11-H64	8”	12”	199’
H64-H71	8”	12”	161’
H71-H3	8”	12”	35’
H3-H2	15”	24”	31’
H2-I11	15”	24”	37’
I11-I10	15”	24”	380’
I10-I9	15”	24”	222’
I9-I8	15”	24”	155’
I8-I7	15”	24”	239’
I7-I6	15”	24”	259’
I6-I5	18”	24”	411’
I5-I31	18”	24”	135’
I31-I4	18”	24”	322’
I4-I3	18”	24”	243’
I3-T19	18”	24”	189’
A29-T29	18”	24”	346’
T29-T28	18”	24”	234’
T28-T27	18”	24”	163’
T27-T26	18”	24”	356’
T26-T25	18”	24”	306’
T25-T24	18”	24”	283’
T24-T23	18”	24”	317’
T23-T22	18”	24”	447’
T22-T21	18”	24”	198’
T21-T20	18”	24”	339’
T20-T19	18”	24”	332’
T19-T18	21”	24”	500’
T18-T17	21”	24”	541’
T17-T16	21”	24”	482’
T16-T15	24”	30”	35’
T15-T14	24”	30”	279’
T14-T13	24”	30”	479’
A23-A24	6"	8"	251'
A24-A25	6"	8"	254'
A25-A26	6"	8"	235'
A26-A27	6"	8"	311'

Table 8-2 shows the effects of the recommended pipe replacement. The HGL changes dramatically to relieve possible flooding in the system.

Table 8-2 Results of Improvements

Monitoring Site	Rim	HGL before improvements	HGL after improvements
T29	4.98	4.82	0.39
B2	16	8.88	4.17
B16	20.39	18.08	14.71
D1	17.33	16.62	9.14
E1	12.09	13.5	4.5
T24	3.66	3.78	0.12
T22	2.81	3.33	-0.08
I11	8.07	7.6	0.84
T18	1.12	2.03	-0.94
T20	2.72	2.68	-0.24
K1	2.02	-0.54	-1.76
K28	3.27	1.23	0
M2	5.62	4.5	1.51
N1	5.32	0.78	-0.44
N8	13.8	4.33	4.33

Chapter 9 Capital Improvement Project

9.1 Phasing of the Improvements

A 15-year Capital Improvement Program is recommended to address capacity deficiencies in the system. The following phasing is recommended (Appendix G for addition information):

2015-2016 – replacing the siphon and downstream with 30" pipe (795LF)

2016-2017 – replacing part of Beech Street with 24" pipe (1300LF)

2017-2018 – replacing part of Beech Street with 24" pipe (1285LF)

2018-2019 – replacing part of Clarke Ave with 12" pipe (1600LF)

2019-2020 – replacing part of Green Street with 18" pipe (1325LF)

2020-2021 – replacing part of the 18" trunkline with 24" pipe (1025LF)

2021-2022 – replacing part of the 18" trunkline with 24" pipe (835LF)

2022-2023 – replacing part of the 18" trunkline with 24" pipe (985LF)

2023-2024 – replacing part of the 18" trunkline with 24" pipe (905LF)

2024-2025 – replacing part of the 18" trunkline with 24" pipe (1100LF)

2025-2026 – replace freeway crossing at Manhattan Avenue with a new 12" pipe (490LF)

2026-2027 – replacing pipe at two locations. One at O'Connor Street, and the other along Euclid and Bayshore Rd. (1025LF)

2027-2028 – replacing pipe on Pulgas Ave and Tara Street with new 8" pipe (2045LF)

2028-2029 – replacing pipe on Demeter Street with new 8" pipe (1605LF)

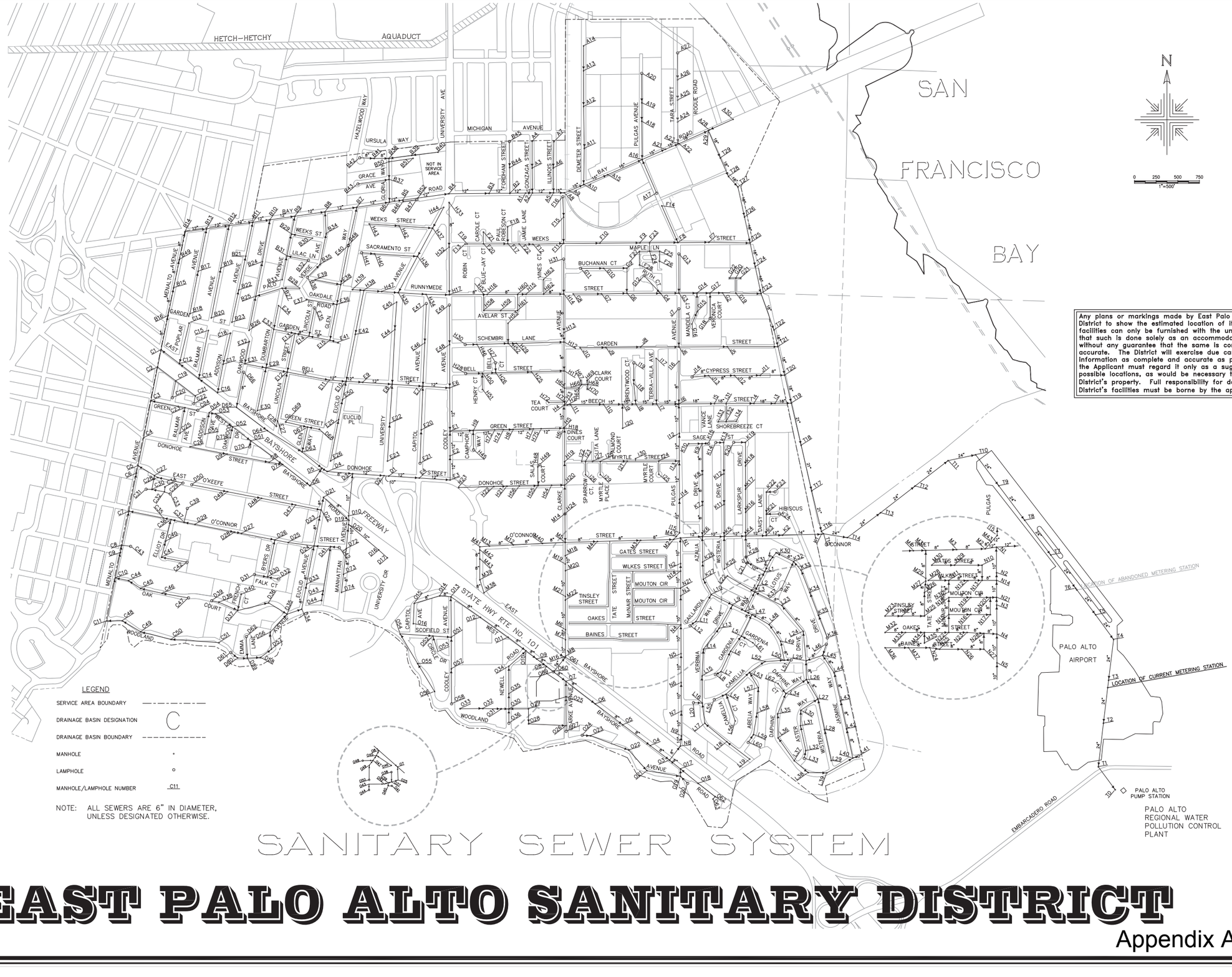
2029-2030 – replacing pipe on Menalto Ave with new 8" pipe (1370LF)

9.2 – Project Costs

The estimated cost of the project would be 12 million dollars, which is based on the number of manholes, length of pipe and includes engineering costs. This spread over a time period of 15 years would result in an average of $800,000.00/yr for 15 years. This does not include the cost for new laterals. In some cases, additional costs are included in the estimate to cover site-specific requirements such as work in high-traffic areas, contaminated soils, and environmentally sensitive areas. The price breakdown can be found on Appendix J.

In addition to these improvements, the District is continuing the televising of main lines, which will further determine pipe sections in need of replacement. Results from the televising may call for changes to scheduling and budget and should also be taken under consideration.

APPENDIX



SANITARY SEWER SYSTEM

EAST PALO ALTO SANITARY DISTRICT

Appendix A

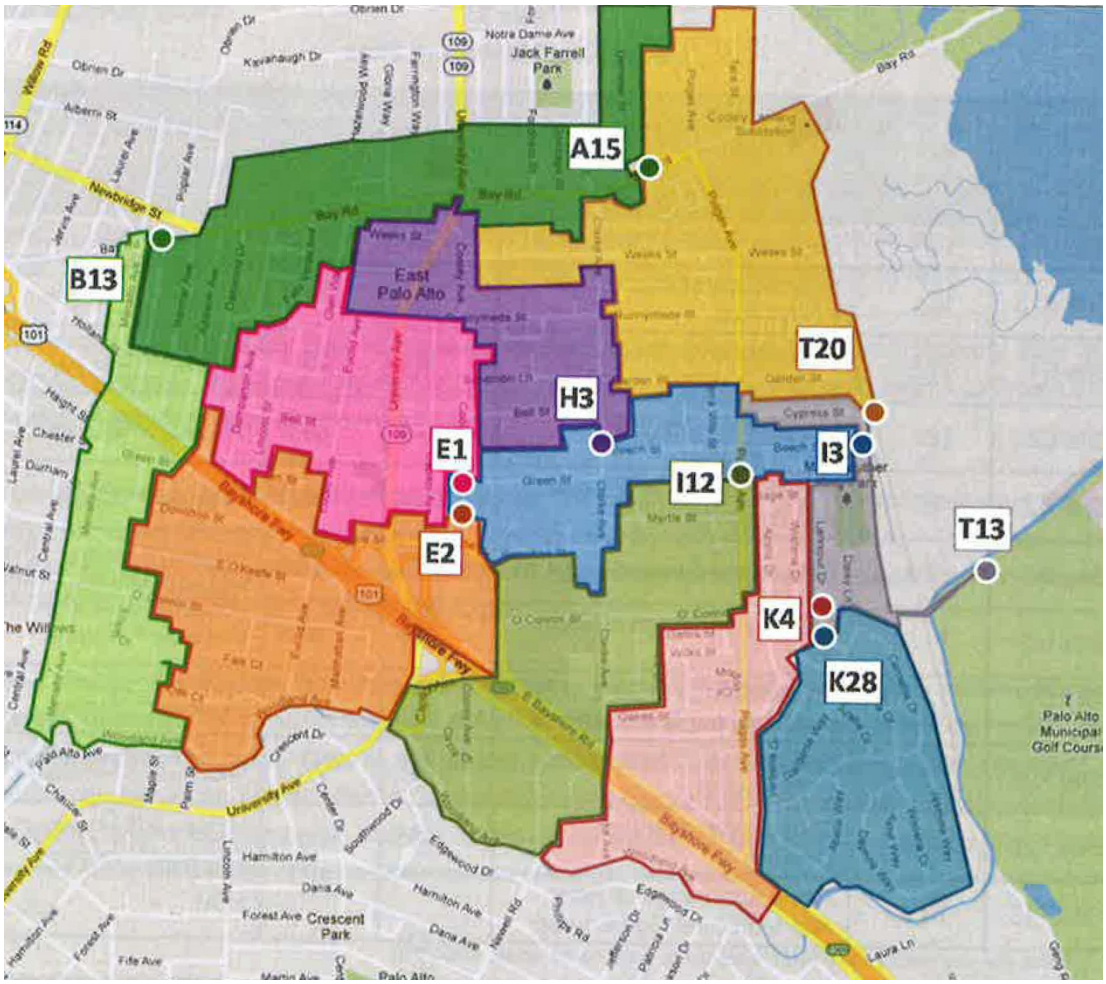
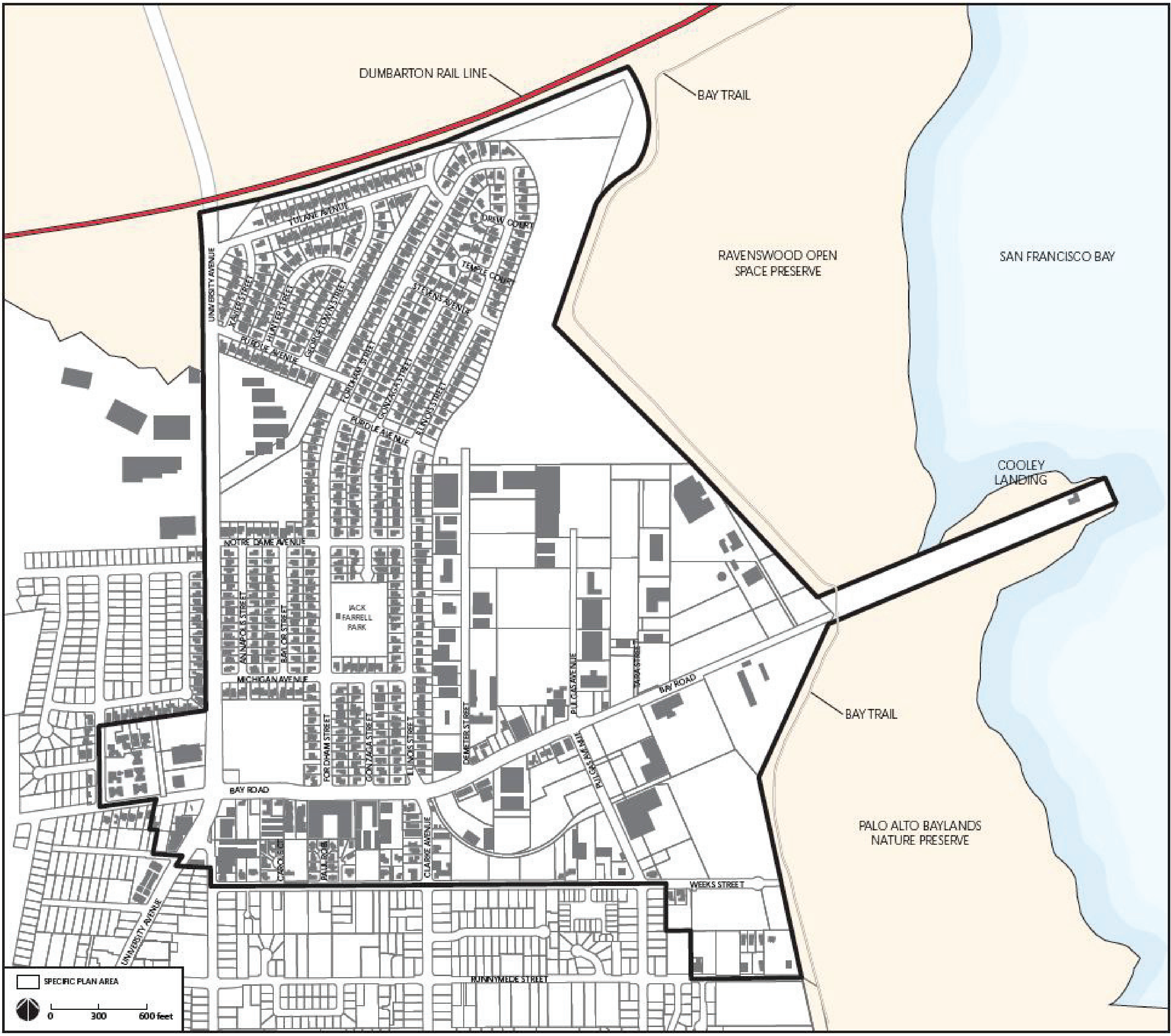


TABLE ES-1. List of Flow Monitoring Sites		
Site	**Location**	**Basin Size (acres)**
A15	Bay Rd, East of Demeter St.	118
B13	Intersection of Bay Rd and Poplar Ave	87
E1	Intersection of Cooley Ave and Green St.	101
E2	Cooley Ave, North of Donohoe St.	149
H3	Intersection of Clarke Ave and Beech St.	74
I3	East end of Beech St.	74
I12	Pulgas Ave, North of Sage St.	135
K4	Intersection O'Connor St and Larkspur Dr	107
K28	Larkspur Dr, South of O'Connor St.	95
T20	75 feet East of end of Cypress St.	171
T13	Along North edge of Palo Alto Municipal Golf Course	-


DUMBARTON RAIL LINE
BAY TRAIL
RAVENSWOOD OPEN SPACE PRESERVE
SAN FRANCISCO BAY
COOLEY LANDING
BAY TRAIL
PALO ALTO BAYLANDS NATURE PRESERVE
TULANE AVENUE
DREW COURT
TEMPLE COURT
STEVENS AVENUE
UNIVERSITY AVENUE
KAISER STREET
HUNTER STREET
GEORGETOWN STREET
PURDUE AVENUE
FORDHAM STREET
GONZAGA STREET
ILLINOIS STREET
PURDUE AVENUE
NOTRE DAME AVENUE
ANNAPOLIS STREET
BAYLOR STREET
JACK FARRELL PARK
MICHIGAN AVENUE
FORDHAM STREET
GONZAGA STREET
ILLINOIS STREET
DEMETER STREET
PULGAS AVENUE
BAY ROAD
BAY ROAD
PULGAS AVENUE
CAROL ST
CLARKE AVENUE
WEEKS STREET
RUNNYMEDE STREET
UNIVERSITY AVENUE
SPECIFIC PLAN AREA
0 300 600 feet

Appendix C

Figure 3-1: Existing Land Use

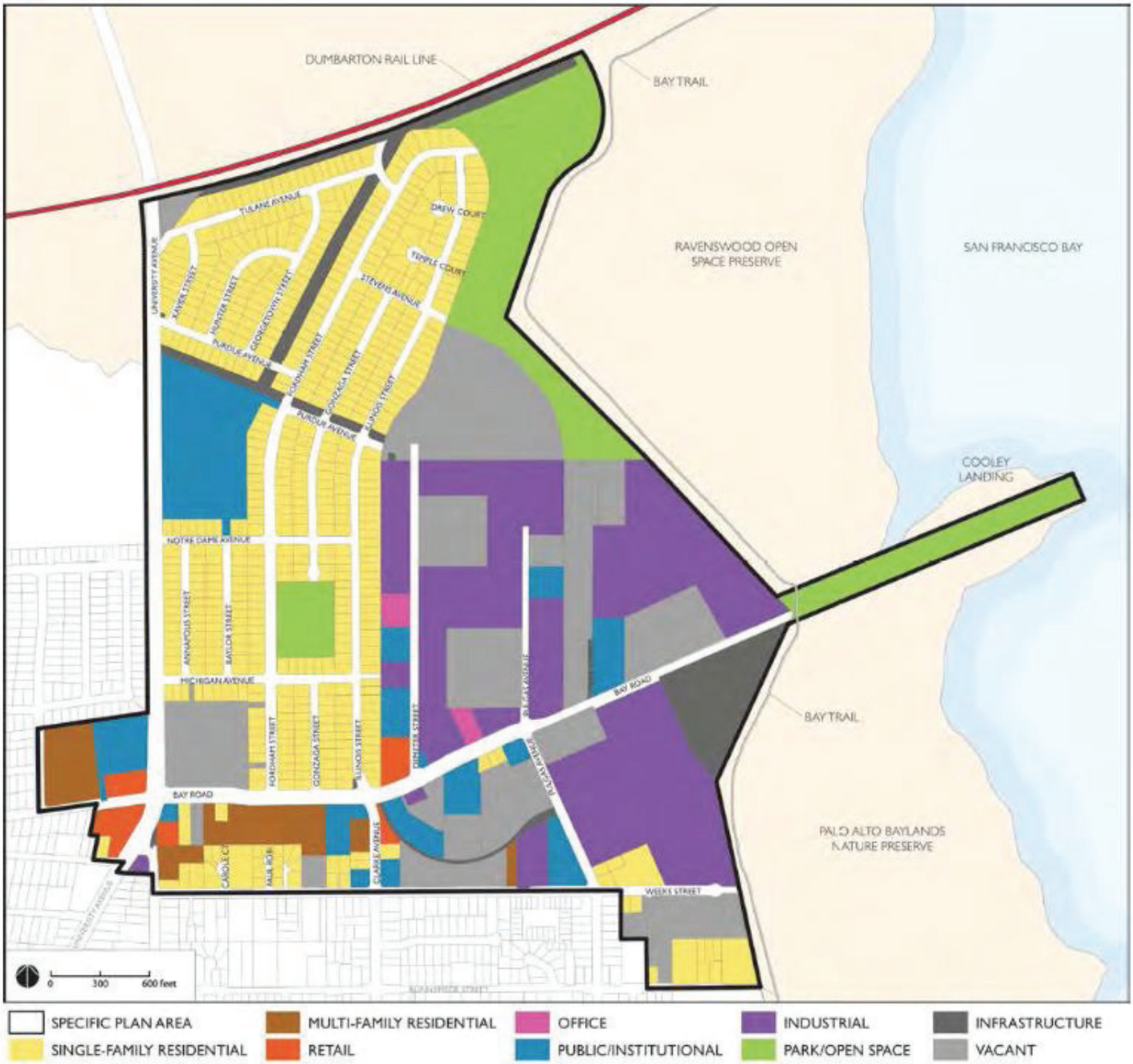
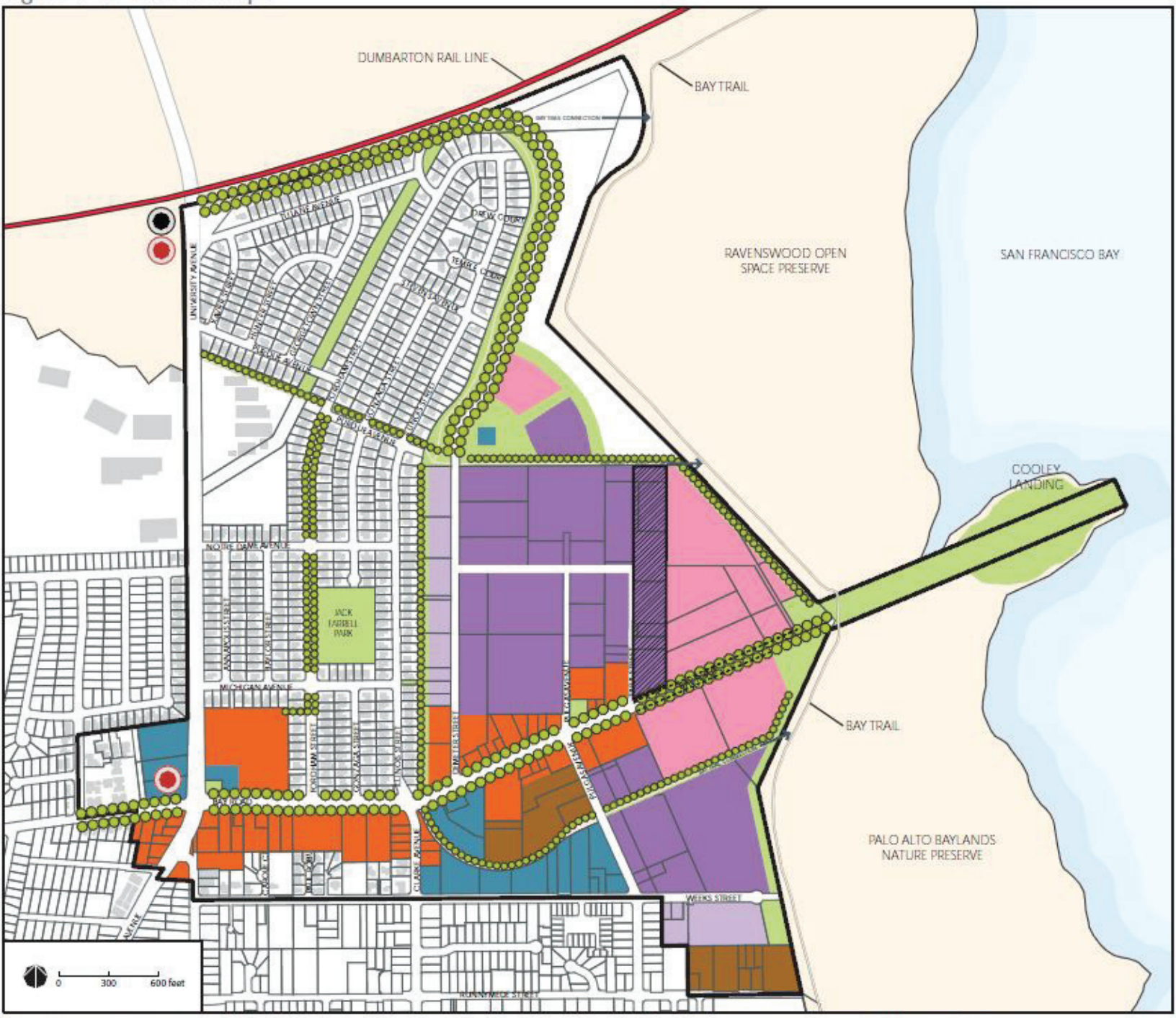


Figure 4-1: Plan Concept



* This Diagram shows a conceptual vision for future land uses in the Specific Plan area. Figure 4-1 does not represent zoning for the Specific Plan Area.

- MIXED USE (OFFICE OR RESIDENTIAL)
- CIVIC / COMMUNITY
- R&D / INDUSTRIAL
- LIGHT INDUSTRIAL
- OFFICE
- OFFICE/R&D/INDUSTRIAL OVERLAY
- RESIDENTIAL
- PARKS / OPEN SPACE
- RAPID BUS / BRT STATION
- DUMBARTON RAIL STATION
- ACTIVE FRONTAGE
- SPECIFIC PLAN AREA

NORTH

GRAPHIC SCALE

500 0 250 500 1000 2000

(IN FEET)
1 inch = 500 ft.

Any plans or markings made by East Palo Alto Sanitary District to show the estimated location of its underground facilities can only be furnished with the understanding that such is done solely as an accommodation and without any guarantee that the same is complete or accurate. The District will exercise due care to make this information as complete and accurate as possible, but, the Applicant must regard it only as a suggestion as to possible locations, as would be necessary to protect the District's property. Full responsibility for damage to the District's facilities must be borne by the applicant.

- UPSIZE TO 8"
- UPSIZE TO 12"
- UPSIZE TO 18"
- UPSIZE TO 24"
- UPSIZE TO 30"

EPASD IMPROVEMENT PLAN
EAST PALO ALTO SANITARY DISTRICT
EAST PALO ALTO, CALIFORNIA

SUBCONSULTANT:

DATE	DESCRIPTION

FREYER & LAURETA, INC.
CIVIL ENGINEERS • SURVEYORS • CONSTRUCTION MANAGERS
144 North San Mateo Drive • San Mateo, CA 94401
(650)344-9921 • Fax (650)344-9920 • www.freyerlaureta.com

DATE:	03/21/13
SCALE:	NTS
DESIGNED:	RJL
DRAWN:	JL
CHECKED:	RJL
PROJ. ENGR:	RJL

SHEET 1 OF 4 SHEET

JOB NO. 2002

Appendix F

LEGEND

- SERVICE AREA BOUNDARY
- PROPOSED PIPE TO BE REPLACED
- DRAINAGE BASIN BOUNDARY
- MANHOLE
- LAMPHOLE
- MANHOLE/LAMPHOLE NUMBER C11

NOTE: ALL SEWERS ARE 6" IN DIAMETER, UNLESS DESIGNATED OTHERWISE.

NORTH

GRAPHIC SCALE

500 0 250 500 1000 2000

(IN FEET)
1 inch = 500 ft.

Any plans or markings made by East Palo Alto Sanitary District to show the estimated location of its underground facilities can only be furnished with the understanding that such is done solely as an accommodation and without any guarantee that the same is complete or accurate. The District will exercise due care to make this information as complete and accurate as possible, but, the Applicant must regard it only as a suggestion as to possible locations, as would be necessary to protect the District's property. Full responsibility for damage to the District's facilities must be borne by the applicant.

CIP TIMELINE

- 2015-2016
- 2016-2017
- 2017-2018
- 2018-2019
- 2019-2020
- 2020-2021
- 2021-2022
- 2022-2023
- 2023-2024
- 2024-2025
- 2025-2026
- 2026-2027
- 2027-2028
- 2028-2029
- 2029-2030

EPASD IMPROVEMENT PLAN

EAST PALO ALTO SANITARY DISTRICT
EAST PALO ALTO, CALIFORNIA

SUBCONSULTANT:

DESCRIPTION	DATE

FREYER & LAURETA, INC.
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144 North San Mateo Drive • San Mateo, CA 94401
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DATE:	03/21/13
SCALE:	NTS
DESIGNED:	RJL
DRAWN:	JL
CHECKED:	RJL
PROJ. ENGR:	RJL

SHEET 1 OF 4 SHEET

JOB NO. 2002

Appendix G

Flow Results at Down stream Basins

Basin	Monitoring Site	Average Flow (cfs)	Peak Flow (cfs)	Storm and Peak Flow (cfs)
A	T29	0.6308	0.9712	3.899
B	B2	0.5438	0.8403	1.57
C	B16	0.171	0.3604	0.7693
D	D1	0.4121	1.2366	2.12
E	E1	0.6185	1.5098	3.026
F	T24	0.6948	1.0058	4.76
G	T22	0.7858	1.0354	4.9
H	I11	0.8969	1.8097	3.938
I	T18	2.1091	3.8491	10.15
J	T20	0.842	1.0574	5.01
K	K1	0.4075	0.98	1.56
L	K28	0.216	0.573	1.0554
M	M2	0.2574	0.8364	0.8976
N	N1	0.156	0.3156	0.4
O	N8	0.1108	0.19	0.2967

Basin	Monitoring Site	Average Flow (mgd)	Peak Flow (mgd)	Wet weather Peak Flow (mgd)
A	T29	0.98	1.50	6.03
B	B2	0.84	1.30	2.43
C	B16	0.26	0.56	1.19
D	D1	0.64	1.91	3.28
E	E1	0.96	2.34	4.68
F	T24	1.08	1.56	7.37
G	T22	1.22	1.60	7.58
H	I11	1.39	2.80	6.09
I	T18	3.26	5.96	15.71
J	T20	1.30	1.64	7.75
K	K1	0.63	1.52	2.41
L	K28	0.33	0.89	1.63
M	M2	0.40	1.29	1.39
N	N1	0.24	0.49	0.62
O	N8	0.17	0.29	0.46

EPASD BASIN MAP

EAST PALO ALTO SANITARY DISTRICT
EAST PALO ALTO, CALIFORNIA

NORTH

GRAPHIC SCALE

500 0 250 500 1000 2000

(IN FEET)
1 inch = 500 ft.

Any plans or markings made by East Palo Alto Sanitary District to show the estimated location of its underground facilities can only be furnished with the understanding that such is done solely as an accommodation and without any guarantee that the same is complete or accurate. The District will exercise due care to make this information as complete and accurate as possible, but, the Applicant must regard it only as a suggestion as to possible locations, as would be necessary to protect the District's property. Full responsibility for damage to the District's facilities must be borne by the applicant.

HETCH-HETCHY AQUADUCT

SAN FRANCISCO BAY

A B C D E F G H I J K L M N O

D10 FREEWAY

STATE HWY 84 AND TOLL BRIDGE

BAYSHORE FREEWAY

EMBARCADERO ROAD

PALO ALTO AIRPORT

LOCATION OF ABANDONED METERING STATION

LOCATION OF CURRENT METERING STATION

PALO ALTO PUMP STATION

PALO ALTO REGIONAL WATER POLLUTION CONTROL PLANT

LEGEND

SERVICE AREA BOUNDARY

PROPOSED PIPE TO BE REPLACED

DRAINAGE BASIN BOUNDARY

MANHOLE

LAMPHOLE

MANHOLE/LAMPHOLE NUMBER C11

NOTE: ALL SEWERS ARE 6" IN DIAMETER, UNLESS DESIGNATED OTHERWISE.

Appendix I

SUBCONSULTANT:

DESCRIPTION	DATE

FREYER & LAURETA, INC.
CIVIL ENGINEERS • SURVEYORS • CONSTRUCTION MANAGERS
144 North San Mateo Drive • San Mateo, CA 94401
(650)344-9901 • Fax (650)344-9920 • www.freyerlaureta.com

DATE:	03/21/13
SCALE:	NTS
DESIGNED:	RJL
DRAWN:	JL
CHECKED:	RJL
PROJ. ENGR:	RJL

SHEET 1 OF 1 SHEET

JOB NO. 2002

Recommended Pipes to be Upsized

Section		Street	Current Size	Recommended Size	Approx Length	Unit Cost	Pipeline Cost	MH	Total Cost	Project Cost
C5	C4	Menalto Avenue	6”	8”	328	180	59,040	6,000	65,040	
C4	C3	Menalto Avenue	6”	8”	436	180	78,480	6,000	84,480	
C3	C2	Menalto Avenue	6”	8”	398	180	71,640	6,000	77,640	
C2	C1	Highway 101 Crossing	6”	8”	205	1200	246,000	10,000	256,000	
										$483,160
D24	D23	Euclid Avenue	8”	12”	350	200	70,000	6,000	76,000	
D23	D22	Euclid Avenue	8”	12”	74	200	14,800	6,000	20,800	
D22	D21	Euclid Avenue	8”	12”	149	200	29,800	6,000	35,800	
D21	D19	W. Bayshore	8”	12”	391	200	78,200	6,000	84,200	
D19	D10	W. Bayshore	10”	12”	49	200	9,800	6,000	15,800	
D10	D3	Highway 101 Crossing	10”	12”	490	1200	588,000	10,000	598,000	
										$830,600
A14	A13	Demeter Street	6”	8”	289	180	52,020	6,000	58,020	
A13	A12	Demeter Street	6”	8”	412	180	74,160	6,000	80,160	
A12	A11	Demeter Street	6”	8”	486	180	87,480	6,000	93,480	
A11	A10	Demeter Street	6”	8”	418	180	75,240	6,000	81,240	
										$312,900
A20	A19	Pulgas Ave. (north of Bay)	6”	8”	340	180	61,200	6,000	67,200	
A19	A18	Pulgas Ave. (north of Bay)	6”	8”	214	180	38,520	6,000	44,520	
A18	A16	Pulgas Ave. (north of Bay)	6”	8”	442	180	79,560	6,000	85,560	
										$197,280
A27	A26	Tara Street	6”	8”	311	180	55,980	6,000	61,980	
A26	A25	Tara Street	6”	8”	234	180	42,120	6,000	48,120	
A25	A24	Tara Street	6”	8”	253	180	45,540	6,000	51,540	
A24	A23	Tara Street	6”	8”	251	180	45,180	6,000	51,180	
										$212,820
M4	M3	O'Connor Street	8”	12”	358	200	71,600	6,000	77,600	
M3	M2	O'Connor Street	8”	12”	380	200	76,000	6,000	82,000	
M2	M43	O'Connor Street	8”	12”	48	200	9,600	6,000	15,600	
										$175,200
E1	H9	Green Street	12”	18”	270	220	59,400	6,000	65,400	
H9	H73	Green Street	12”	18”	247	220	54,340	6,000	60,340	
H73	H74	Green Street	12”	18”	101	220	22,220	6,000	28,220	
H74	H8	Green Street	12”	18”	113	220	24,860	6,000	30,860	
H8	H7	Green Street	12”	18”	234	220	51,480	6,000	57,480	
H7	H75	Green Street	12”	18”	90	220	19,800	6,000	25,800	
H75	H6	Green Street	12”	18”	260	220	57,200	6,000	63,200	
H6	H5	Clarke Street	12”	18”	9	220	1,980	6,000	7,980	
H5	H4	Clarke Street	15”	18”	260	220	57,200	6,000	63,200	
H4	H3	Clarke Street	15”	18”	8	220	1,760	6,000	7,760	
										$410,240
H14	H13	Clarke Street	8”	12”	447	200	89,400	6,000	95,400	
H13	H12	Clarke Street	8”	12”	108	200	21,600	6,000	27,600	
H12	H11	Clarke Street	8”	12”	334	200	66,800	6,000	72,800	
H11	H64	Clarke Street	8”	12”	199	200	39,800	6,000	45,800	
H64	H71	Clarke Street	8”	12”	161	200	32,200	6,000	38,200	
H71	H3	Clarke Street	8”	12”	35	200	7,000	6,000	13,000	
H3	H2	Beech Street	15”	24”	31	300	9,300	6,000	15,300	
H2	I11	Beech Street	15”	24”	37	300	11,100	6,000	17,100	
I11	I10	Beech Street	15”	24”	380	300	114,000	6,000	120,000	
I10	I9	Beech Street	15”	24”	222	300	66,600	6,000	72,600	
I9	I8	Beech Street	15”	24”	155	300	46,500	6,000	52,500	
I8	I7	Beech Street	15”	24”	239	300	71,700	6,000	77,700	
I7	I6	Beech Street	15”	24”	259	300	77,700	6,000	83,700	
I6	I5	Beech Street	18”	24”	411	300	123,300	6,000	129,300	
I5	I31	Beech Street	18”	24”	135	300	40,500	6,000	46,500	
I31	I4	Beech Street	18”	24”	322	300	96,600	6,000	102,600	
I4	I3	Beech Street	18”	24”	243	300	72,900	6,000	78,900	
I3	T19	Beech Street	18”	24”	189	300	56,700	6,000	62,700	
										$1,151,700
A29	T29	Bay Road	18”	24”	346	1000	346,000	10,000	356,000	
T29	T28	Easement (Levee)	18”	24”	234	1000	234,000	10,000	244,000	
T28	T27	Easement (Levee)	18”	24”	163	1000	163,000	10,000	173,000	
T27	T26	Easement (Levee)	18”	24”	356	1000	356,000	10,000	366,000	
T26	T25	Easement (Levee)	18”	24”	306	1000	306,000	10,000	316,000	
T25	T24	Easement (Levee)	18”	24”	283	1000	283,000	10,000	293,000	
T24	T23	Easement (Levee)	18”	24”	317	1000	317,000	10,000	327,000	
T23	T22	Easement (Levee)	18”	24”	447	1000	447,000	10,000	457,000	
T22	T21	Easement (Levee)	18”	24”	198	1000	198,000	10,000	208,000	
T21	T20	Easement (Levee)	18”	24”	339	1000	339,000	10,000	349,000	
T20	T19	Easement (Levee)	18”	24”	332	1000	332,000	10,000	342,000	
T19	T18	Easement (Levee)	21”	24”	500	1000	500,000	10,000	510,000	
T18	T17	Easement (Levee)	21”	24”	541	1000	541,000	10,000	551,000	
T17	T16	Easement (Levee)	21”	24”	482	1000	482,000	10,000	492,000	
T16	T15	Easement (Levee)	24”	30”	35	1200	42,000	10,000	52,000	
T15	T14	Siphon	24”	30”	279	2500	697,500	10,000	707,500	
T14	T13	Easement (Levee)	24”	30”	479	1200	574,800	10,000	584,800	
										$6,328,300
				Total Linear Feet	**18,442**				**Anticipated Cost**	**$10,102,200**

System Improvement Results

Monitoring Site	Rim	HGL before improvements	HGL after improvements
T29	4.98	4.82	0.39
B2	16	8.88	4.17
B16	20.39	18.08	14.71
D1	17.33	16.62	9.14
E1	12.09	13.5	4.5
T24	3.66	3.78	0.12
T22	2.81	3.33	-0.08
I11	8.07	7.6	0.84
T18	1.12	2.03	-0.94
T20	2.72	2.68	-0.24
K1	2.02	-0.54	-1.76
K28	3.27	1.23	0
M2	5.62	4.5	1.51
N1	5.32	0.78	-0.44
N8	13.8	4.33	4.33

2011-2012 SANITARY SEWER FLOW MONITORING AND INFLOW / INFILTRATION STUDY

East Palo Alto Sanitary District

June 2012

V&A

SANITARY SEWER FLOW MONITORING AND INFLOW / INFILTRATION STUDY

East Palo Alto Sanitary District

Prepared for

Prepared by

June 2012

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APPENDIX

Appendix A: Flow Monitoring Sites: Data, Graphs, Information

ABBREVIATIONS, TERMS AND DEFINITIONS USED IN THIS REPORT

Table i.
Abbreviations

Abbreviation	Term
ADWF	average dry weather flow
CCTV	closed-circuit television
CIP	capital improvement plan
CO	carbon monoxide
d/*D*	depth/diameter ratio
FM	flow monitor
gpd	gallons per day
gpm	gallons per minute
GWI	groundwater infiltration
H_2S	hydrogen sulfide
I/I	inflow and infiltration
IDM	inch-diameter-mile (miles of pipeline multiplied by the diameter of the pipeline in inches)
IDW	inverse distance weighting
LEL	lower explosive limit
mgd	million gallons per day
NOAA	National Oceanic and Atmospheric Administration
Q	flow rate
RDI	rainfall-dependent infiltration
RRI	rainfall-responsive infiltration
RG	rain gauge
SSO	sanitary sewer overflow
WEF	Water Environment Federation
WRCC	Western Regional Climate Center

Table ii.
Terms and Definitions

Term	Definition
Attenuation	Flow attenuation in a sewer collection system is the natural process of the reduction of the peak flow rate through redistribution of the same volume of flow over a longer period of time. This occurs as a result of friction (resistance), internal storage and a tendency to reach a steady state along the sewer pipes. As the flows from the basins combine within the trunk sewer lines, the peaks from each basin will (a) not necessary coincide at the same time, and (b) due to the length and time of travel through the trunk sewers, peak flows will ***attenuate*** as the peak flows move downstream. The sum of the peak flows of individual basins upstream will generally be greater than the measured peak flows observed at points downstream.
Average dry weather flow (ADWF)	Average flow rate or pattern from days without noticeable inflow or infiltration response. ADWF usage patterns for weekdays and weekends differ and must be computed separately. ADWF can be expressed as a numeric average or as a curve showing the variation in flow over a day. ADWF includes the influence of normal groundwater infiltration (not related to a rain event).
Basin	Sanitary sewer collection system upstream of a given location (often a flow meter), including all pipelines, inlets, and appurtenances. Also refers to the ground surface area near and enclosed by the pipelines. A basin may refer to the entire collection system upstream from a flow meter or exclude separately monitored basins upstream.
Depth/diameter (*d*/*D*) ratio	Depth of water in a pipe as a fraction of the pipe's diameter. A measure of fullness of the pipe used in capacity analysis.
Design storm	A theoretical storm event of a given duration and intensity that aligns with historical frequency records of rainfall events. For example, a 10-year, 24-hour design storm is a storm event wherein the volume of rain that falls in a 24-hour period would historically occur once every 10 years. Design storm events are used to predict I/I response and are useful for modeling how a collection system will react to a given set of storm event scenarios.
Infiltration and inflow	Infiltration and inflow (I/I) rates are calculated by subtracting the ADWF flow curve from the instantaneous flow measurements taken during and after a storm event. Flow in excess of the baseline consists of inflow, rainfall-responsive infiltration, and rainfall-dependent infiltration. **Combined I/I** is the total sum in gallons of additional flow attributable to a storm event.
Infiltration, *groundwater*	Groundwater infiltration (**GWI**) is groundwater that enters the collection system through pipe defects. GWI depends on the depth of the groundwater table above the pipelines as well as the percentage of the system submerged. The variation of groundwater levels and subsequent groundwater infiltration rates is seasonal by nature. On a day-to-day basis, groundwater infiltration rates are relatively steady and will not fluctuate greatly.
Infiltration, *rainfall-dependent*	Rainfall-dependent infiltration (**RDI**) is similar to groundwater infiltration but occurs as a result of storm water. The storm water percolates into the soil, submerges more of the pipe system, and enters through pipe defects. RDI is the slowest component of storm-related infiltration and inflow, beginning gradually and often lasting 24 hours or longer. The response time depends on the soil permeability and saturation levels.
Infiltration, *rainfall-responsive*	Rainfall-responsive infiltration (**RRI**) is storm water that enters the collection system through pipe defects, but normally in sewers constructed close to the ground surface such as private laterals. RRI is independent of the groundwater

Term	Definition
	table and reaches defective sewers via the pipe trench in which the sewer is constructed, particularly if the pipe is placed in impermeable soil and bedded and backfilled with a granular material. In this case, the pipe trench serves as a conduit similar to a French drain, conveying storm drainage to defective joints and other openings in the system.
Inflow	**Inflow** is defined as water discharged into the sewer system, including private sewer laterals, from **direct** connections such as downspouts, yard and area drains, holes in manhole covers, cross-connections from storm drains, or catch basins. Inflow creates a peak flow problem in the sewer system and often dictates the required capacity of downstream pipes and transport facilities to carry these peak instantaneous flows. Overflows are often attributable to high inflow rates.
Normalization	To run an "apples-to-apples" comparison amongst different basins, calculated metrics must be **normalized**. Individual basins will have different runoff areas, pipe lengths and sanitary flows. There are three common methods of normalization. Depending on the information available, one or all methods can be applied to a given project: ❖ Pipe Length: The metric is divided by the length of pipe in the upstream basin expressed in units of inch-diameter-mile (IDM). ❖ Basin Area: The metric is divided by the estimated drainage area of the basin in acres. ❖ ADWF: The metric is divided by the average dry weather sanitary flow (ADWF).
Normalization, *inflow*	The peak I/I flow rate is used to quantify inflow. Although the instantaneous flow monitoring data will typically show an inflow peak, the inflow response is measured from the I/I flow rate (in excess of baseline flow). This removes the effect of sanitary flow variations and measures only the I/I response: ❖ Pipe Length: The peak I/I flow rate is divided by the length of pipe (IDM) in the upstream basin. The result is expressed in gallons per day (gpd) per IDM (gpd/IDM). ❖ Basin Area: The peak I/I flow rate is divided by the geographic area of the upstream basin. The result is expressed in gpd per acre. ❖ ADWF: The peak I/I flow rate is divided by the average dry weather flow (ADWF). This is a ratio and is expressed without units.
Normalization, *GWI*	The estimated GWI rates are compared to acceptable GWI rates, as defined by the Water Environment Federation, and used to identify basins with high GWI: ❖ Pipe Length: The GWI flow rate is divided by the length of pipe (IDM) in the upstream basin. The result is expressed in gallons per day (gpd) per IDM (gpd/IDM). ❖ Basin Area: The GWI flow rate is divided by the geographic area of the upstream basin. The result is expressed in gpd per acre. ❖ ADWF: The GWI flow rate is divided by the average dry weather flow (ADWF). This is a ratio and is expressed without units.

Term	Definition
Normalization, *RDI*	The estimated RDI rates at a period 24 hours or more after the conclusion of a storm event are used to identify basins with high RDI: ❖ Pipe Length: The RDI flow rate is divided by the length of pipe (IDM) in the upstream basin. The result is expressed in gallons per day (gpd) per IDM (gpd/IDM). ❖ Basin Area: The RDI flow rate is divided by the geographic area of the upstream basin. The result is expressed in gpd per acre. ❖ ADWF: The RDI flow rate is divided by the average dry weather flow (ADWF). This is a ratio and is expressed without units.
Normalization, *total I/I*	The estimated totalized I/I in gallons attributable to a particular storm event is used to identify basins with high total I/I. Because this is a totalized value rather than a rate and can be attributable solely to an individual storm event, the volume of the storm event is also taken into consideration. This allows for a comparison not only between basins but also between storm events: ❖ Pipe Length: Total gallons of I/I is divided by the length of pipe (IDM) in the upstream basin and the rainfall total (inches) of the storm event. The result is expressed in gallons per IDM per inch of rain. ❖ Basin Area (R-Value): Total gallons of I/I is divided by total gallons of rainfall water that fell within the acreage of the basin area. This is a ratio and expressed as a percentage. R-Value is described as "the percentage of rainfall that enters the collection system." Systems with R-Values less than 5%[1] are often considered to be performing well. ❖ ADWF: Total gallons of I/I is divided by the ADWF and the rainfall total of the storm event. The result is expressed in million gallons per MGD of ADWF per inch of rain.
Peaking factor	Ratio of peak measured flow to average dry weather flow. This ratio expresses the degree of fluctuation in flow rate over the monitoring period and is used in capacity analysis.
Surcharge	When the flow level is higher than the crown of the pipe, then the pipeline is said to be in a **surcharged** condition. The pipeline is surcharged when the *d*/*D* ratio is greater than 1.0.
Synthetic hydrograph	A set of algorithms developed to approximate the actual I/I hydrograph. The synthetic hydrograph is developed strictly using rainfall data and response parameters representing response time, recession coefficient and soil saturation.
Weekend/weekday ratio	The ratio of weekend ADWFs to weekday ADWFs. In residential areas, this ratio is typically slightly higher than 1.0. In business districts, depending on type of service, this ratio can be significantly less than 1.0.

[1] Keefe, P.N. "Test Basins for I/I Reduction and SSO Elimination." 1998 WEF Wet Weather Specialty Conference, Cleveland.

EXECUTIVE SUMMARY

Scope and Purpose

V&A has completed sanitary sewer flow monitoring, rainfall monitoring, and inflow and infiltration (I/I) analysis within the City of East Palo Alto (City) for the East Palo Alto Sanitary District (District). Flow and rainfall monitoring was performed over a six-week period at 11 open-channel flow monitoring sites within the District. The flow monitoring period began on February 16, 2012, and ended on April 3, 2012.

The purpose of this study was to measure sanitary sewer flows at the flow monitoring sites and estimate available sewer capacity and infiltration and inflow (I/I) occurring in the basins upstream from the flow monitoring sites.

Site Flow Monitoring and Capacity Results

Peak measured flows and the corresponding flow levels (depths) are important to understand the capacity of the flow monitoring system. Table 1 summarizes the peak recorded flows, levels, *d*/*D* ratios, and peaking factors per site during the flow monitoring period. Capacity analysis data is presented on a site-by-site basis and represents the hydraulic conditions only at the site locations; hydraulic conditions in other areas of the collection system will differ.

Table 1.
Capacity Analysis Summary

Site	ADWF (mgd)	Peak Measured Flow (mgd)	Peaking Factor	Diameter (in)	Peak Level (in)	Peak *d*/*D* Ratio	Level Surcharged above Crown (ft)
Site A15	0.27	0.49	1.84	15	11.31	0.75	-
Site B13	0.06	0.18	3.04	12	4.44	0.37	-
Site E1	0.13	0.26	1.99	11.5	3.06	0.27	-
Site E2	0.25	0.60	2.37	18	4.90	0.27	-
Site H3	0.14	0.27	2.00	8	9.92	1.24	0.2
Site I3	0.83	1.45	1.74	17.5	11.85	0.68	-
Site I12	0.23	0.42	1.81	11.5	4.21	0.37	-
Site K4	0.22	0.53	2.44	12	8.82	0.74	-
Site K28	0.11	0.27	2.49	9.75	5.71	0.59	-
Site T20	0.40	0.73	1.83	17.5	8.42	0.48	-
Site T13	1.53	2.80	1.83	23.5	10.84	0.46	-

The following capacity analysis results are noted:

- **Peaking Factor:** Site B13 had a peaking factor that exceeded typical design threshold limits for the ratio of peak flow to average dry weather flow.
- ***d/D* Ratio:** Site H3 had a *d/D* ratio that exceeded the common design threshold for *d/D* ratio. This site exhibited a surcharged condition throughout a majority of the duration of the study. At the remainder of the sites, there were no capacity constraints during the rainfall events of this study; the local collection system had the ability to handle peak wet weather flows.

Figure 1 shows bar graphs of the capacity results. Figure 2 shows a schematic diagram of the peak measured flows with peak flow levels.

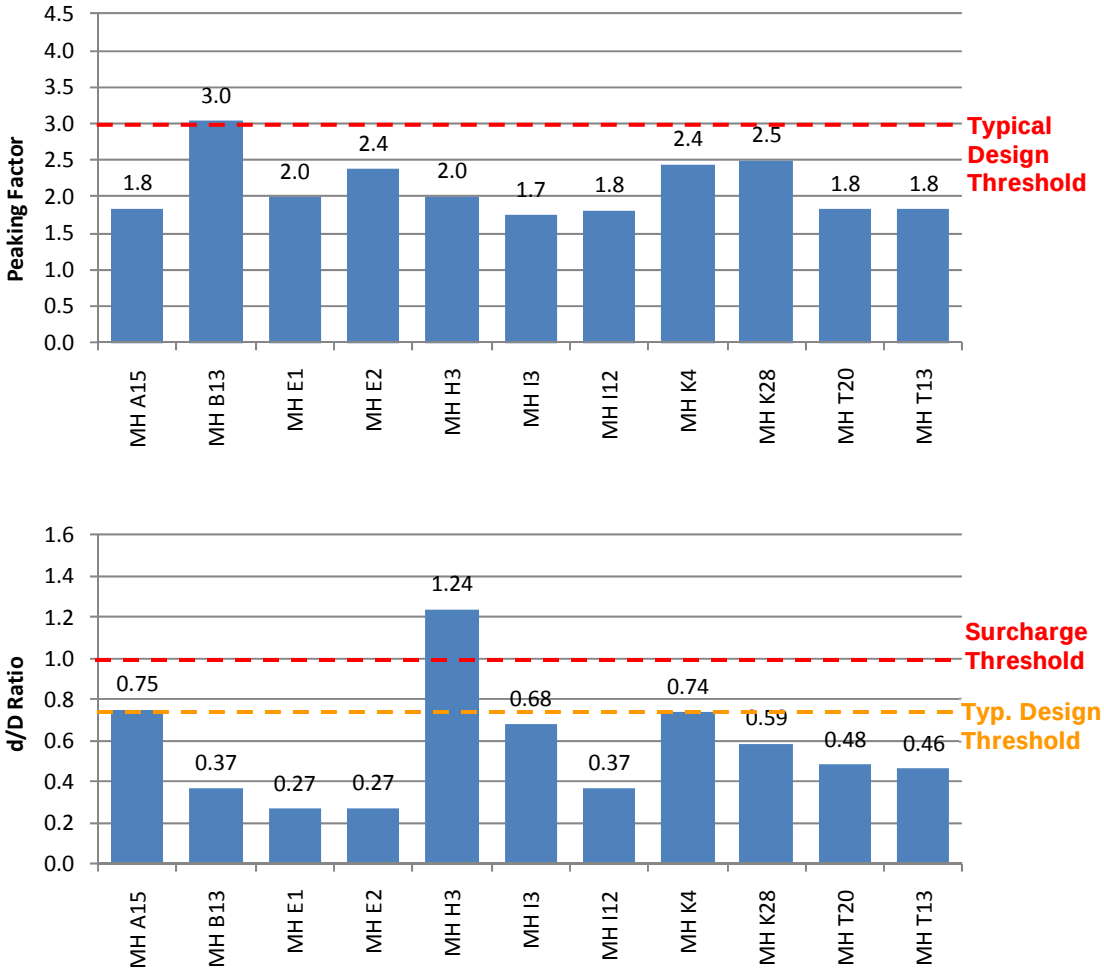


Figure 1. Capacity Summary Bar Graphs: Peaking Factors and Peak *d/D* Ratios

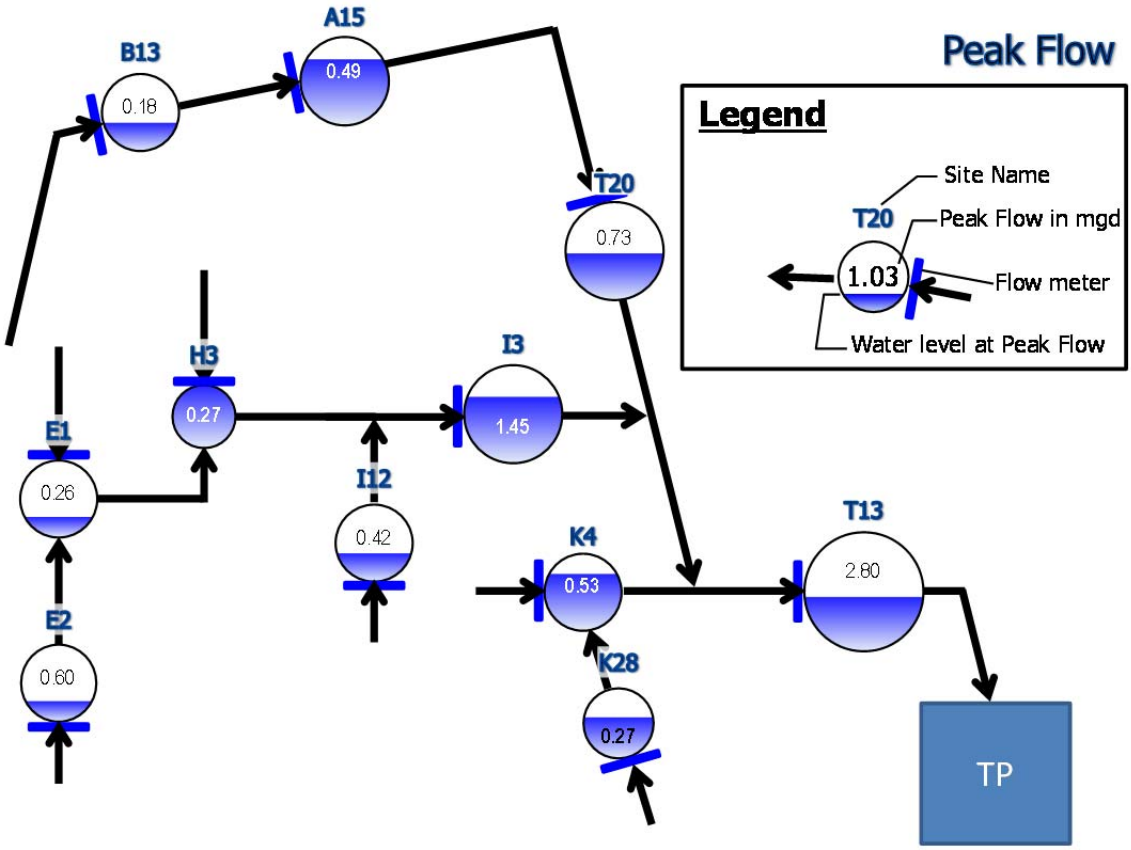


Figure 2. Peak Measured Flow (Flow Schematic)

Basin Inflow and Infiltration Analysis Results

Table 2 summarizes the flow monitoring and I/I results for the six flow monitoring basins that were isolated during this study. Infiltration and inflow rankings are shown such that 1 represents the highest infiltration or inflow contribution and 6 represents the least. Please refer to the *I/I Methods* section for more information on inflow and infiltration analysis methods and ranking methods.

Table 2.
I/I Analysis Summary

Basin	ADWF (mgd)	Inflow Ranking	RDI Ranking	Evidence of High GWI?	Combined I/I Ranking
Basin A15	0.21	10	8	No	6
Basin B13	0.059	4	9	No	7
Basin E1	0.13	6	3	Yes	9
Basin E2	0.25	3	5	No	5
Basin H3	0.14	5	6	No	10
Basin I3	0.08	9	4	No	4
Basin I12	0.23	8	10	No	8
Basin K4	0.22	1	2	Yes	2
Basin K28	0.11	2	1	Yes	1
Basin T20	0.14	7	7	Yes	3

The following inflow/infiltration analysis results are noted:

- **Inflow:** Basins K4 and K28 ranked highest for normalized inflow contribution.
- **Rainfall-Dependent Infiltration:** Basins K4 and K28 ranked highest for normalized RDI contribution.
- **Groundwater Infiltration:** Basins T20, E1, K4 and K28 have GWI rates that were ***above*** the WEF typical low-to-average ratio, indicating excessive groundwater infiltration.
- **Combined I/I:** Basin K28 ranked highest for normalized combined I/I contribution.

Figures 3 through 6 show temperature maps of the overall rankings for each inflow and infiltration component.

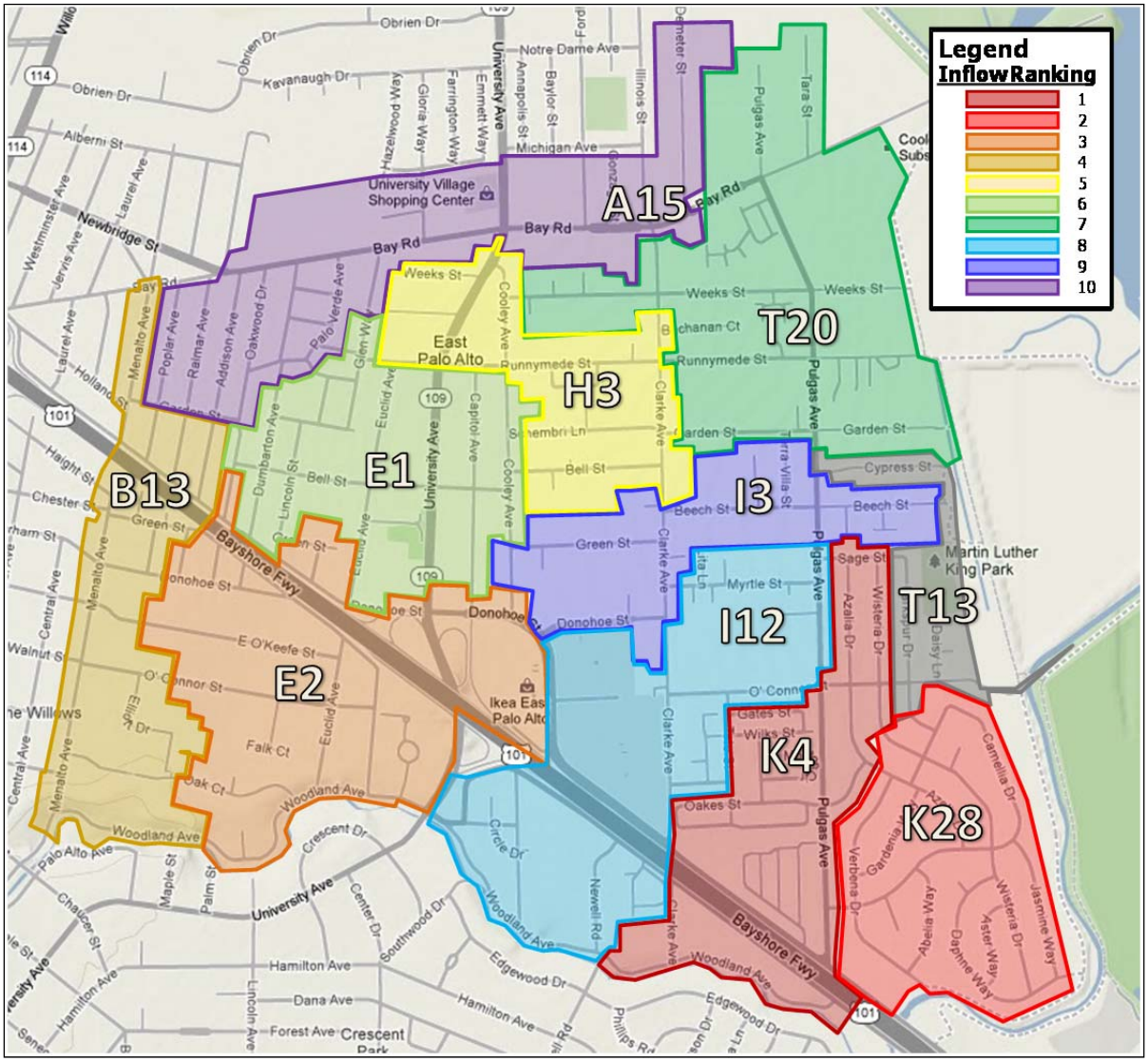


Figure 3. Inflow Temperature Map

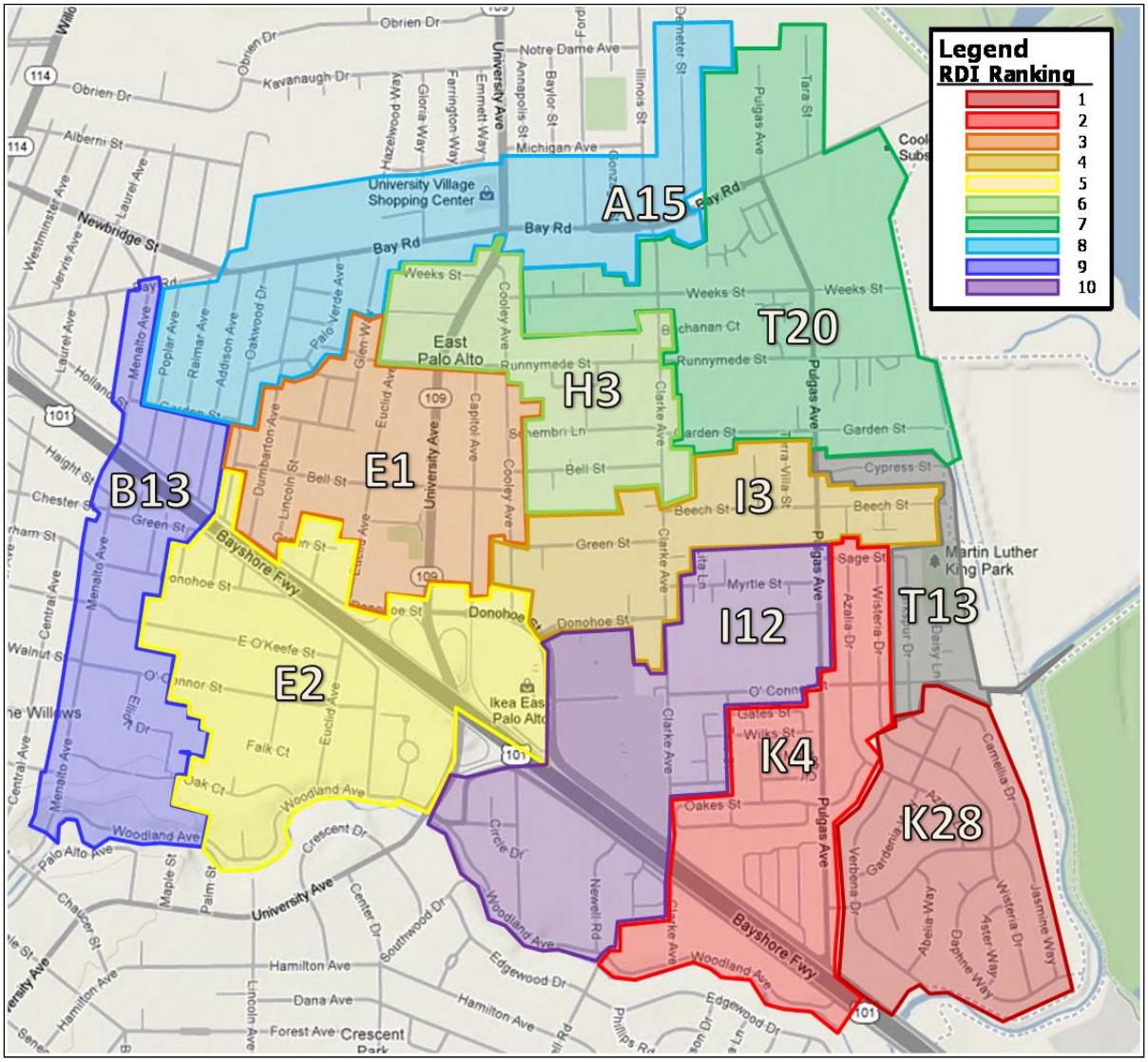


Figure 4. RDI Temperature Map

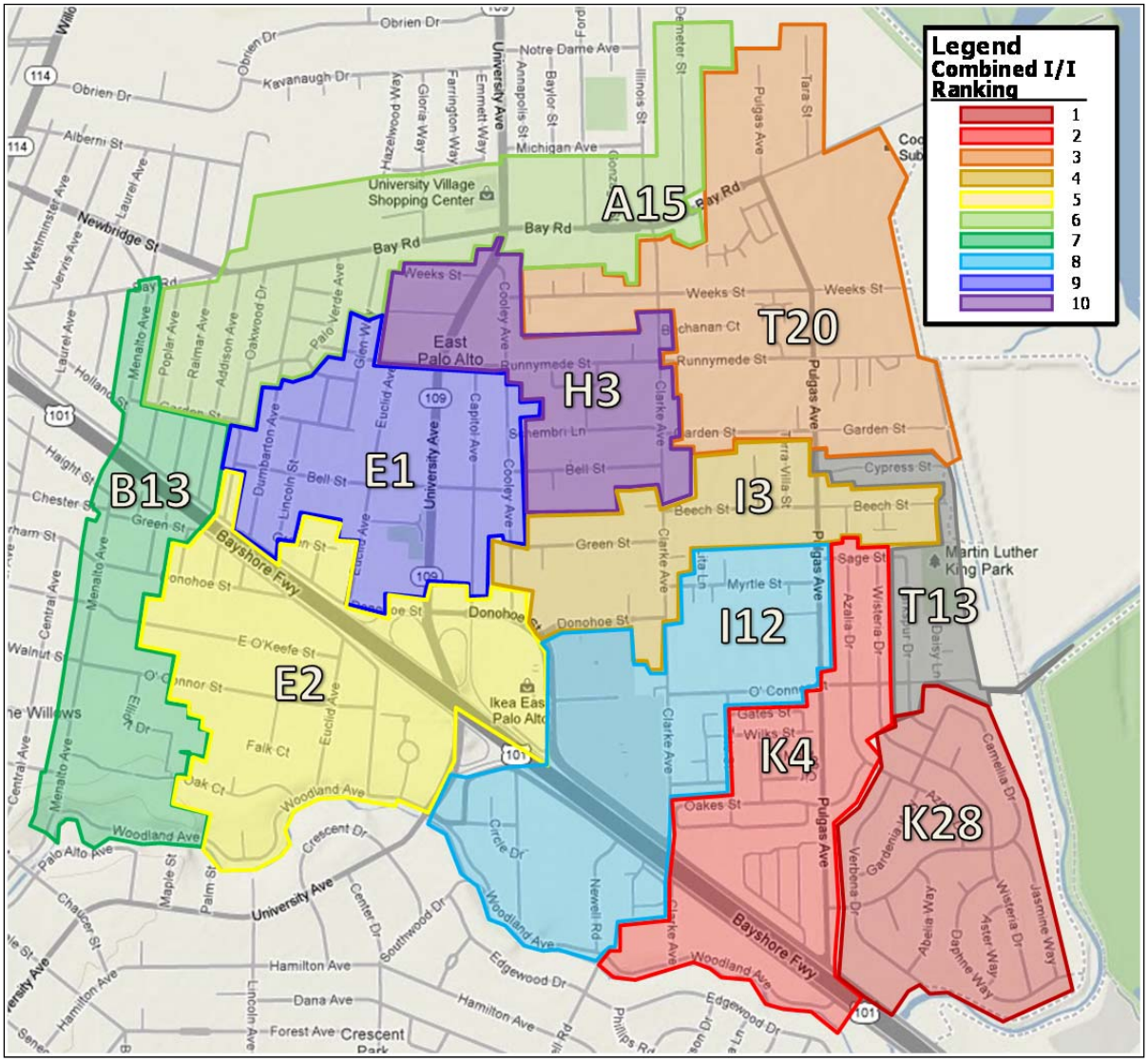


Figure 5. Combined I/I Temperature Map

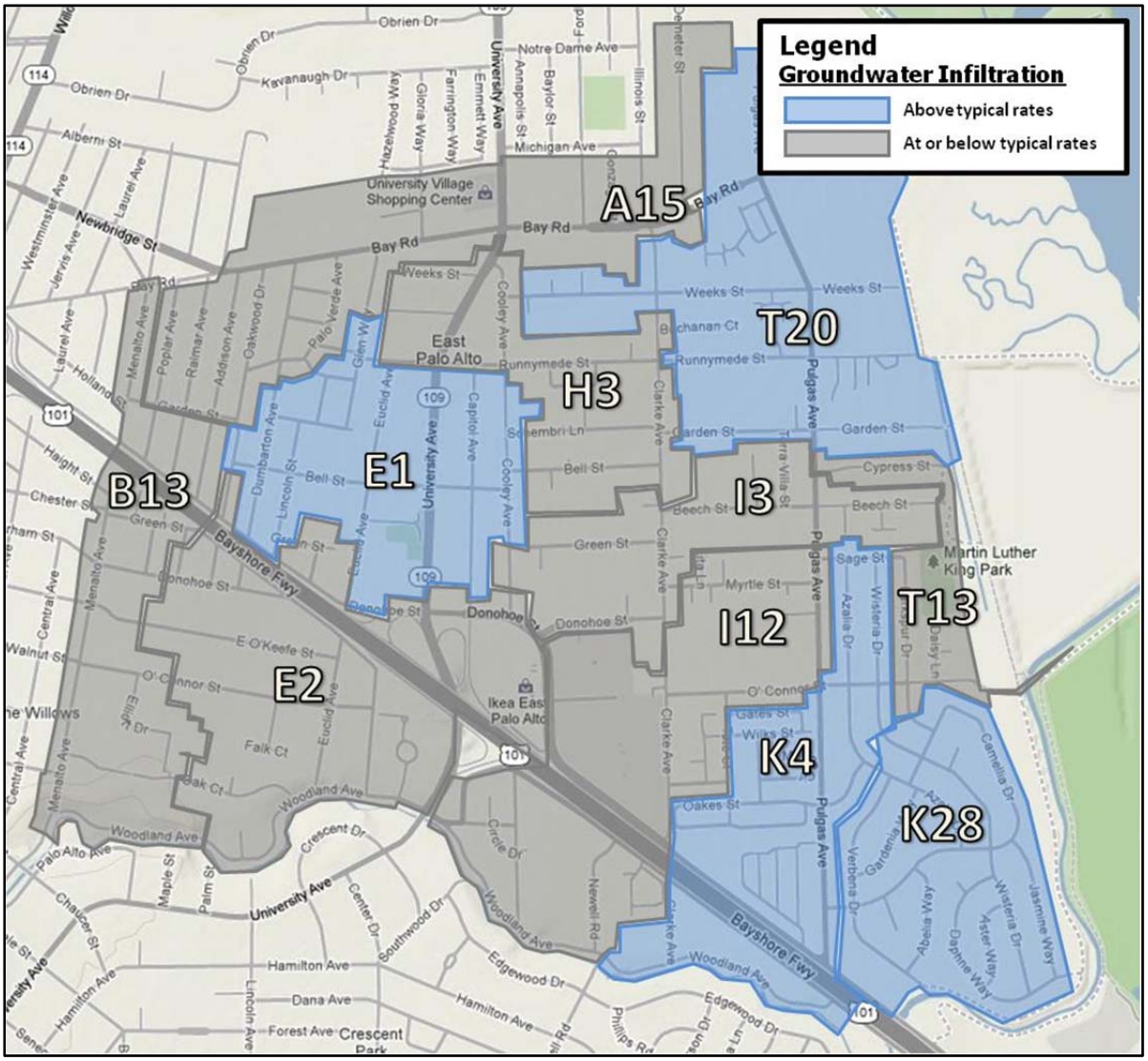


Figure 6. Groundwater Infiltration Temperature Map

Recommendations

V&A advises that future I/I reduction plans consider the following recommendations:

1. **Determine I/I Reduction Program:** The District should examine its I/I reduction needs to determine a future I/I reduction program.
    a. If peak flows, sanitary sewer overflows, and pipeline capacity issues are of greater concern, then priority can be given to investigate and reduce sources of inflow within the basins with the greatest inflow problems. The highest inflow occurred in Basins K4, K28 and E2.
    b. If total infiltration and general pipeline deterioration are of greater concern, then the program can be weighted to investigate and reduce sources of infiltration within the basins with the greatest infiltration problems.
        i. The highest normalized rainfall-dependent infiltration occurred in Basins K28, K4 and E1.
        ii. The highest groundwater infiltration occurred in Basins T13, K28, K4 and E1.
2. **I/I Investigation Methods:** Potential I/I investigation methods include the following:
    a. Smoke testing
    b. Mini-basin flow monitoring
    c. Nighttime reconnaissance work to (1) investigate and determine direct point sources of inflow and (2) determine the areas and pipe reaches responsible for high levels of infiltration contribution.
3. **I/I Reduction Cost-Effectiveness Analysis:** The District should conduct a study to determine which is more cost-effective: (1) locating the sources of inflow and infiltration and systematically rehabilitating or replacing the faulty pipelines or (2) continued treatment of the additional rainfall-dependent I/I flow.

INTRODUCTION

Scope and Purpose

V&A has completed sanitary sewer flow monitoring, rainfall monitoring, and inflow and infiltration (I/I) analysis within the East Palo Alto Sanitary District (District). Flow and rainfall monitoring was performed over a six-week period at 11 open-channel flow monitoring sites within the District's Sewer Basin 16. The flow monitoring period began on February 16, 2012, and ended on April 3, 2012.

The purpose of this study was to measure sanitary sewer flows at the flow monitoring sites and estimate available sewer capacity and infiltration and inflow (I/I) occurring in the basins upstream from the flow monitoring sites, as shown in Figure 7.

Flow Monitoring Sites: Flow monitoring sites are the locations where the flow monitors were placed. Flow monitoring site data may include the flows of one or many drainage basins. To isolate a flow monitoring basin, an addition or subtraction of flows may be required[2]. Capacity and flow rate information is presented on a site-by-site basis.

Flow Monitoring Basins: Flow monitoring basins are localized areas of a sanitary sewer collection system upstream of a given location (often a flow meter), including all pipelines, inlets, and appurtenances. The basin refers to the ground surface area near and enclosed by the pipelines[3]. A basin may refer to the entire collection system upstream from a flow meter or may exclude separately monitored basins upstream. I/I analysis in this report will be conducted on a basin-by-basin basis. For this study subtraction of flows was required to isolate the drainage areas of some flow monitoring basins.

Rain Gauges: Rain data was obtained from rain gauges that are maintained by weather enthusiasts. V&A performed a quality assurance and control review on the rain gauge data and normalized it to the system centroid.

Hydraulic Notes: The flow monitoring sites and associated basins are listed in Table 3 and illustrated in Figure 7. Also shown are the equations (in which *Q* refers to flow rate) used to calculate the flow rate results for each basin from the flow rates recorded at the monitoring sites. Detailed descriptions of the individual flow monitoring sites, including photographs, are included in *Appendix A*.

[2] There is error inherent in flow monitoring. Adding and subtracting flows increases error on an additive basis. For example, if Site A has an error of ±10% and Site B has an error of ±10%, then the resulting flow when subtracting Site A from Site B would have an error of up to ±20%.

[3] The basin areas (in acres) and basin pipe lengths (in IDM) were estimated by V&A by scaling maps provided by the District.

Table 3.
List of Flow Monitoring Sites

Site	Pipe Diameter (in)	Location	Basin Size (acres)	Basin Pipe Length (IDM[4])	Basin Flow Calculation
Site A15	15	Bay Rd., east of Demeter St.	118	30.5	$Q_{A15(Basin)} = Q_{A15(Site)} - Q_{B13(Site)}$
Site B13	12	Intersection of Bay Rd. and Poplar Ave.	87	21.3	$Q_{B13(Basin)} = Q_{B13(Site)}$
Site E1	11.5	Intersection of Cooley Ave. and Green St.	101	25.2	$Q_{E1(Basin)} = Q_{E1(Site)}$
Site E2	18	Cooley Ave., north of Donohoe St.	149	34.2	$Q_{E2(Basin)} = Q_{E2(Site)}$
Site H3	8	Intersection of Clarke Ave. and Beech St.	74	16.0	$Q_{H3(Basin)} = Q_{H3(Site)}$
Site I3	17.5	East end of Beech St.	74	18.8	$Q_{I3(Basin)} = Q_{I3(Site)} - [Q_{E1(Site)} + Q_{E2(Site)} + Q_{H3(Site)} + Q_{I12(Site)}]$
Site I12	11.5	Pulgas Ave., north of Sage St.	135	26.2	$Q_{I12(Basin)} = Q_{I12(Site)}$
Site K4	12	Intersection of O'Connor St. and Larkspur Dr.	107	29.8	$Q_{K4(Basin)} = Q_{K4(Site)}$
Site K28	9.75	Larkspur Dr., south of O'Connor St.	95	25.3	$Q_{K28(Basin)} = Q_{K28(Site)}$
Site T20	17.5	75 feet east of end of Cypress St.	171	35.8	$Q_{T20(Basin)} = Q_{T20(Site)} - [Q_{A15(Site)} + Q_{B13(Site)}]$
Site T13	23.5	Along north edge of Palo Alto Municipal Golf Course	-	-	N/A*

* This site was installed to provide systemwide data, not to isolate Basin T13.

[4] Inch-diameter-mile (miles of pipeline multiplied by the diameter of the pipeline in inches). This is the industry-standard unit of measurement for stating length of pipe within a sanitary drainage basin.

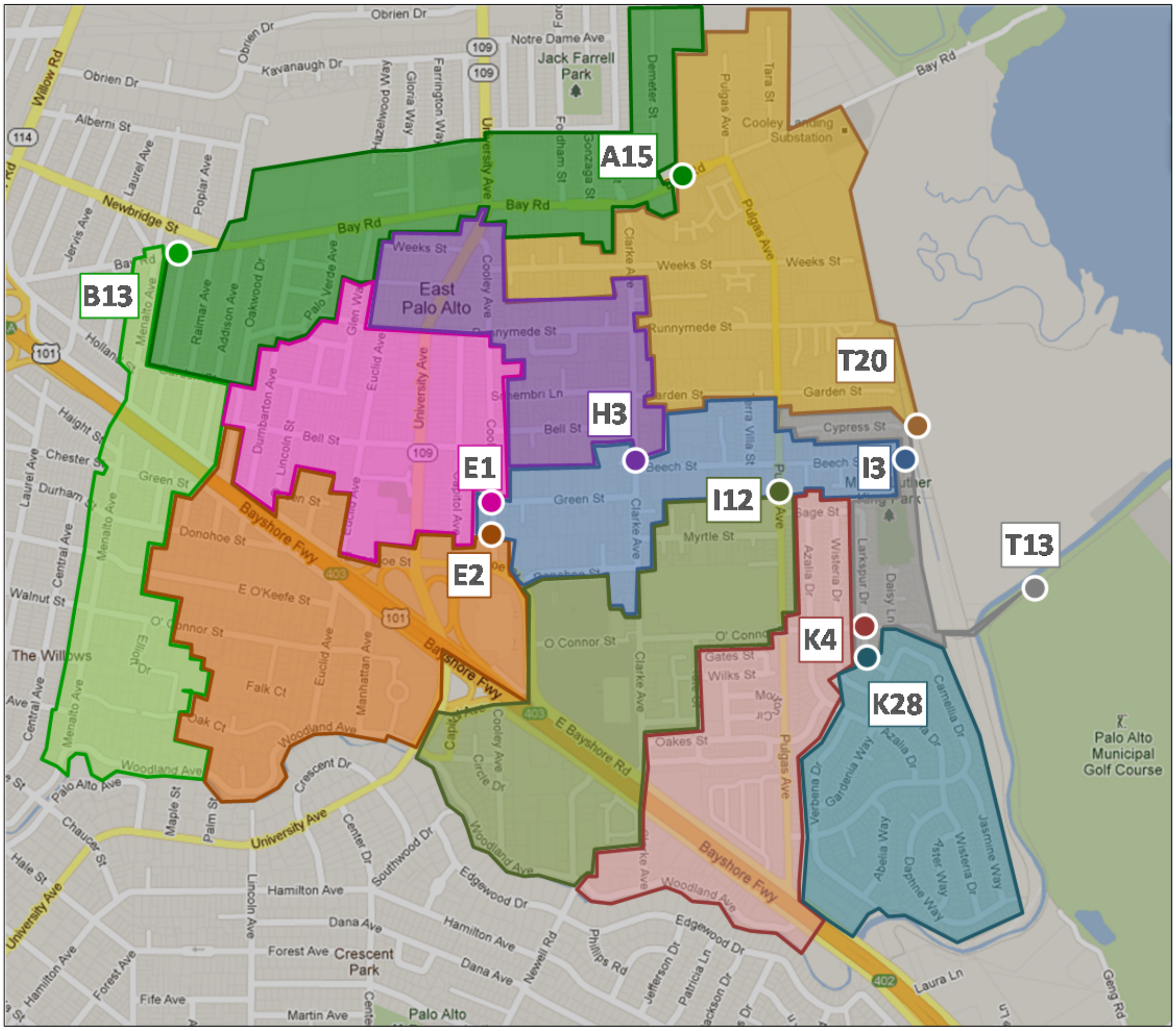


Figure 7. Site and Basin Location Map

METHODS AND PROCEDURES

Confined Space Entry

A confined space (Photo 1) is defined as any space that is large enough and so configured that a person can bodily enter and perform assigned work, has limited or restricted means for entry or exit and is not designed for continuous employee occupancy. In general, the atmosphere must be constantly monitored for sufficient levels of oxygen (19.5% to 23.0%) and the absence of hydrogen sulfide (H_2S) gas, carbon monoxide (CO) gas, and lower explosive limit (LEL) levels. A typical confined space entry crew has members with OSHA-defined responsibilities of Entrant, Attendant and Supervisor. The Entrant is the individual performing the work. He or she is equipped with the necessary personal protective equipment needed to perform the job safely, including a personal four-gas monitor (Photo 2). If it is not possible to maintain line-of-sight with the Entrant, then more Entrants are required until line-of-sight can be maintained. The Attendant is responsible for maintaining contact with the Entrants to monitor the atmosphere on another four-gas monitor and maintaining records of all Entrants, if there are more than one. The Supervisor develops the safe work plan for the job at hand prior to entering.

Photo 1. Confined Space Entry

Photo 2. Typical Personal Four-Gas Monitor

Flow Meter Installation

Eleven Teledyne Isco 2150 meters were installed by V&A in the sewer lines listed in Table 3. Isco 2150 meters use submerged sensors with a pressure transducer to collect depth readings and an ultrasonic Doppler sensor to determine the average fluid velocity. The ultrasonic sensor emits high-frequency (500 kHz) sound waves, which are reflected by air bubbles and suspended particles in the flow. The sensor receives the reflected signal and determines the Doppler frequency shift, which indicates the estimated average flow velocity. Figure 8 shows a typical installation for a flow meter with a submerged sensor.

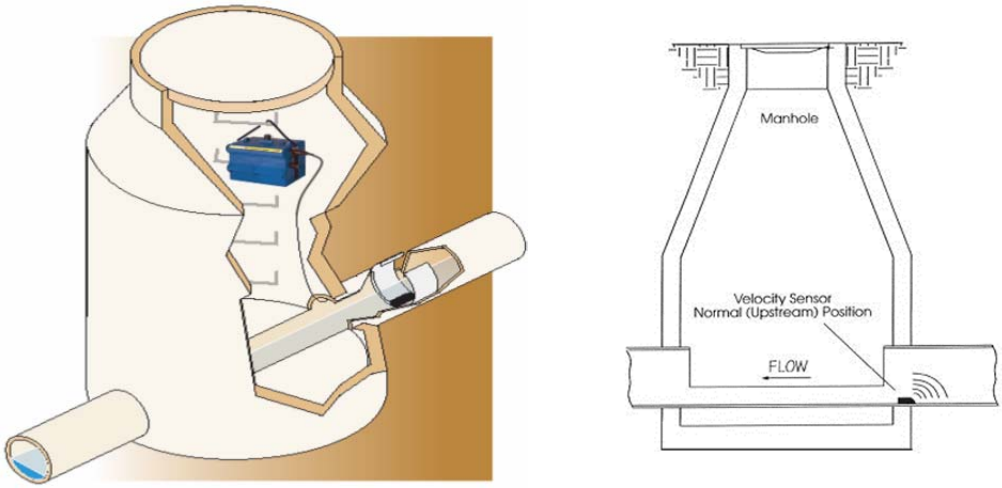


Figure 8. Typical Installation for Flow Meter with Submerged Sensor

Manual level and velocity measurements were taken during installation of the flow meters and again when they were removed. These manual measurements were compared to simultaneous level and velocity readings from the flow meters to ensure proper calibration and accuracy. The pipe diameter was also verified in order to accurately calculate the flow cross-section. The continuous depth and velocity readings were recorded by the flow meters on 5-minute intervals.

Flow Calculation

Data retrieved from the flow meter was placed into a spreadsheet program for analysis. Data analysis includes data comparison to field calibration measurements, as well as necessary geometric adjustments as required for sediment (sediment reduces the pipe's wetted cross-sectional area available to carry flow). Area-velocity flow metering uses the continuity equation,

$$Q = V \cdot A$$

where Q is the volume flow rate, V is the average velocity as determined by the ultrasonic sensor, and A is the cross-sectional area of flow as determined from the depth of flow. For circular pipe,

$$A = \left[\frac{D^2}{4}\cos^{-1}\left(1-\frac{2d}{D}\right)\right] - \left[\left(\frac{D}{2}-d\right)\left(\frac{D}{2}\right)\sin\left(\cos^{-1}\left(1-\frac{2d}{D}\right)\right)\right],$$

where D is the pipe diameter and d is the depth of flow.

RESULTS AND ANALYSIS

Rainfall: Rain Gauge Data

V&A utilized data from rain gauges that are maintained by weather enthusiasts. V&A performed a quality assurance and control review on the rain gauge data and normalized it to the system centroid (Figure 9). All of the rainfall results and subsequent I/I analysis are based on this centroid. There were three main rainfall events that were used for infiltration and inflow analysis for this study, as summarized in Table 4. Figure 10 graphically displays the rainfall activity recorded over the flow monitoring period. Figure 11 shows the rain accumulation plot of the period rainfall, as well as the historical average rainfall[5] in East Palo Alto during this project duration. Rainfall totals for East Palo Alto were at 79% of historical normal levels during this time period.

Figure 9. Rain Gauge Locations

[5] Historical data taken from the WRCC (Station 046646 in Palo Alto): http://www.wrcc.dri.edu/summary/climsmnca.html

Table 4.
Rainfall Events Used for I/I Analysis

Rainfall Event	Event Rainfall (in)
Event 1: March 16 – 17, 2012	0.56
Event 2: March 24 – 25, 2012	1.14
Event 3: March 27 – 28, 2012	0.52
Total over Monitoring Period	*3.30*

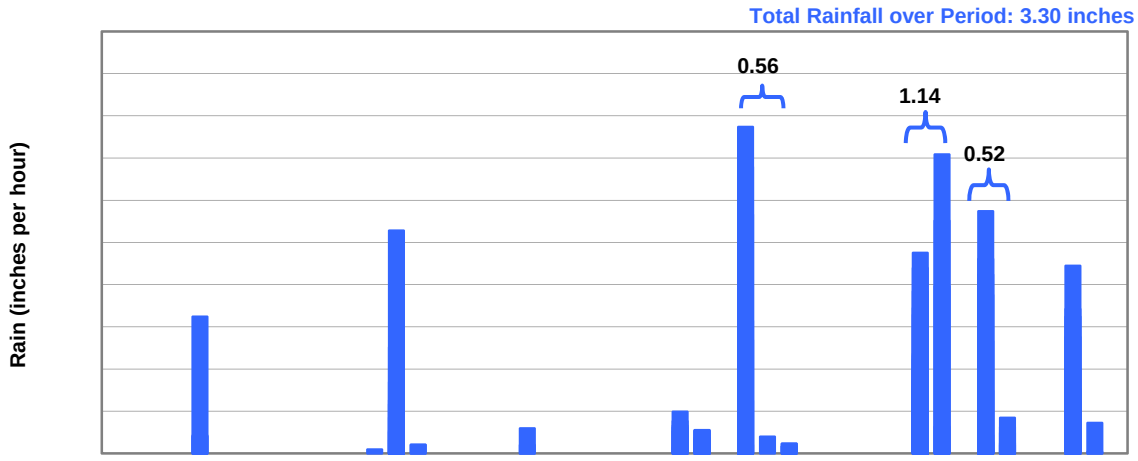


Figure 10. Rainfall Activity over Flow Monitoring Period

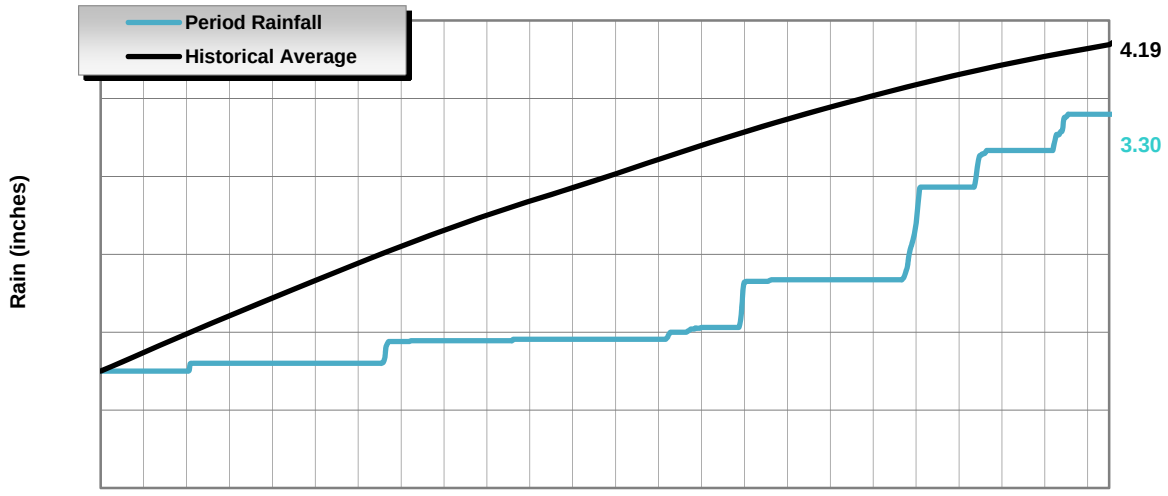


Figure 11. Rainfall Accumulation Plot

Rainfall: Storm Event Classification

It is important to classify the relative size of the major storm event that occurs over the course of a flow monitoring period[6]. Storm events are classified by intensity and duration. Based on historical data, frequency contour maps for storm events of given intensity and duration have been developed by the National Oceanic and Atmospheric Administration (NOAA) for all areas within the continental United States. For example, the NOAA Rainfall Frequency Atlas[7] classifies a 10-year, 24-hour storm event in East Palo Alto (at the location of the system centroid) as 2.69 inches (Figure 12). This means that in any given year, there is a 10% chance that 2.69 inches of rain will fall in any 24-hour period.

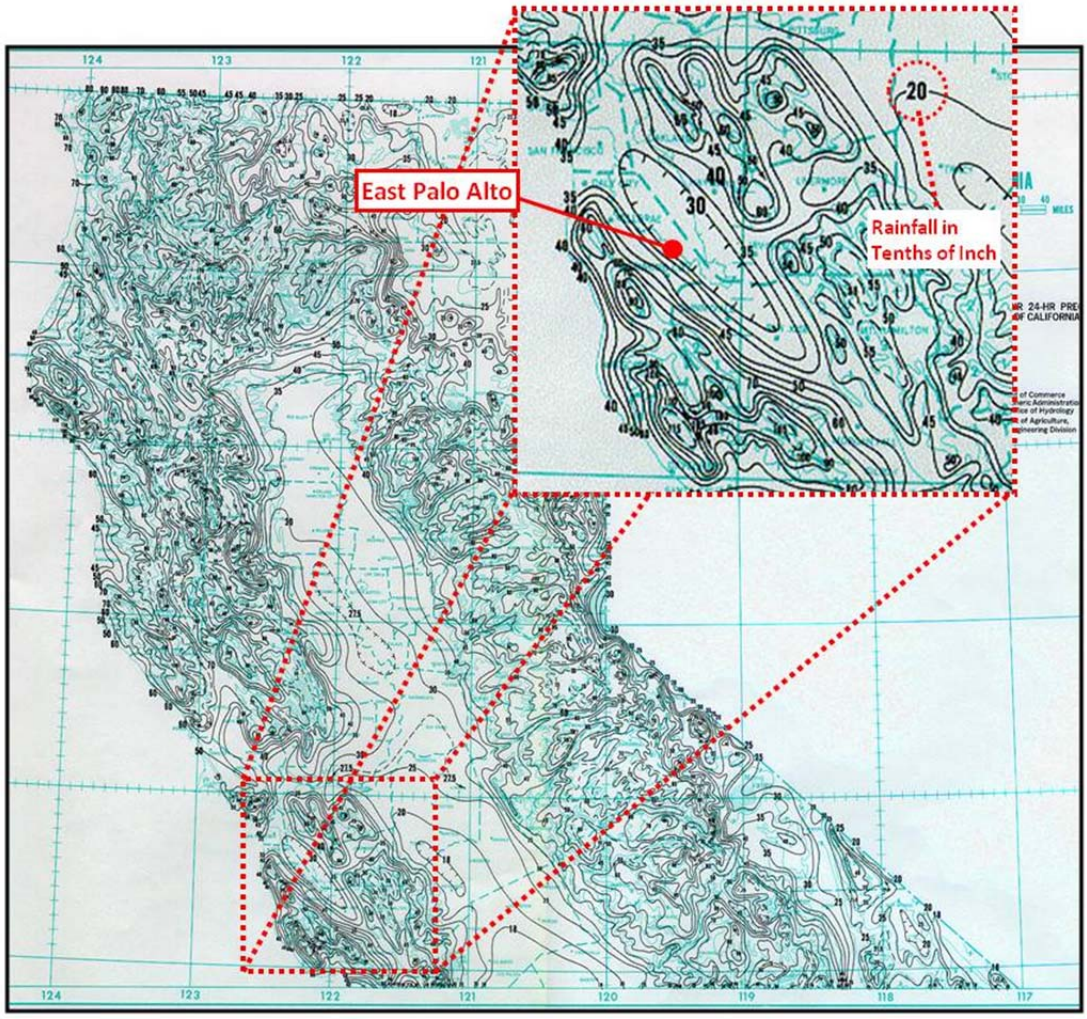


Figure 12. NOAA Northern California Rainfall Frequency Map

From the NOAA frequency maps, for a specific latitude and longitude, the rainfall densities for period durations ranging from 5 minutes to 60 days are known for rain events ranging from 1-year to 100-year

[6] Sanitary sewers are often designed to withstand I/I contribution to sanitary flows for specific-sized "design" storm events.

[7] NOAA Western U.S. Precipitation Frequency Maps Atlas 2, 1973: http://www.wrcc.dri.edu/pcpnfreq.html

intensities. These are plotted to develop a rain event frequency map specific to each rainfall monitoring site. Superimposing the peak measured densities for Events 1, 2 and 3 on the rain event frequency plot determines the classification of the storm event, shown in Figure 13.

All of the rain events that occurred during the flow-monitoring period were classified as being less than 2-year rainfall events.

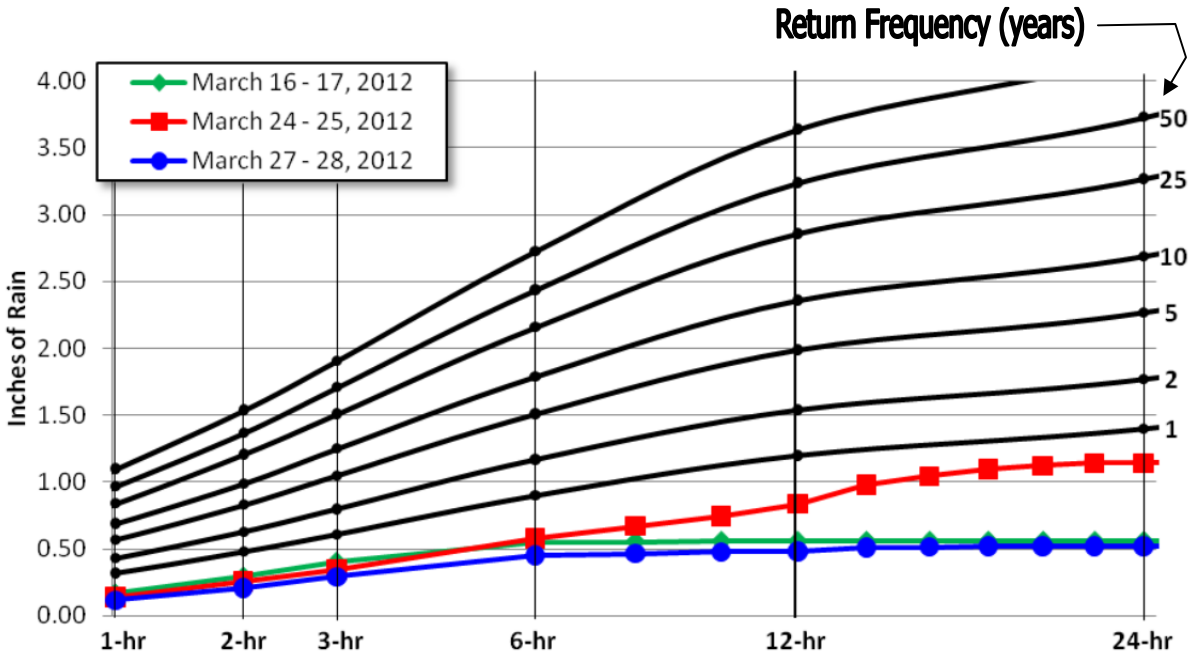


Figure 13. Storm Event Classification

Flow Monitoring: Average Dry Weather Flows

Weekday and weekend flow patterns differ and must be separated when determining average dry weather flows. Days least affected by rainfall were used to estimate weekend and weekday average flows. Table 5 lists the average dry weather flow (ADWF) recorded during this study for the flow monitoring sites. Figure 14 shows a schematic diagram of the average dry weather flows and flow levels. Detailed graphs of the flow monitoring data on a site-by-site basis are included in *Appendix A*.

Table 5.
Dry Weather Flow Summary

Monitoring Site	Weekday ADWF (mgd)	Weekend ADWF (mgd)	Overall ADWF (mgd)	Weekend/ Weekday Ratio
Site A15	0.26	0.27	0.27	1.02
Site B13	0.06	0.06	0.06	1.06
Site E1	0.13	0.13	0.13	1.00
Site E2	0.25	0.25	0.25	1.00
Site H3	0.13	0.14	0.14	1.06
Site I3	0.82	0.85	0.83	1.04
Site I12	0.22	0.25	0.23	1.12
Site K4	0.21	0.23	0.22	1.07
Site K28	0.11	0.12	0.11	1.07
Site T20	0.40	0.41	0.40	1.01
Site T13	1.51	1.59	1.53	1.06

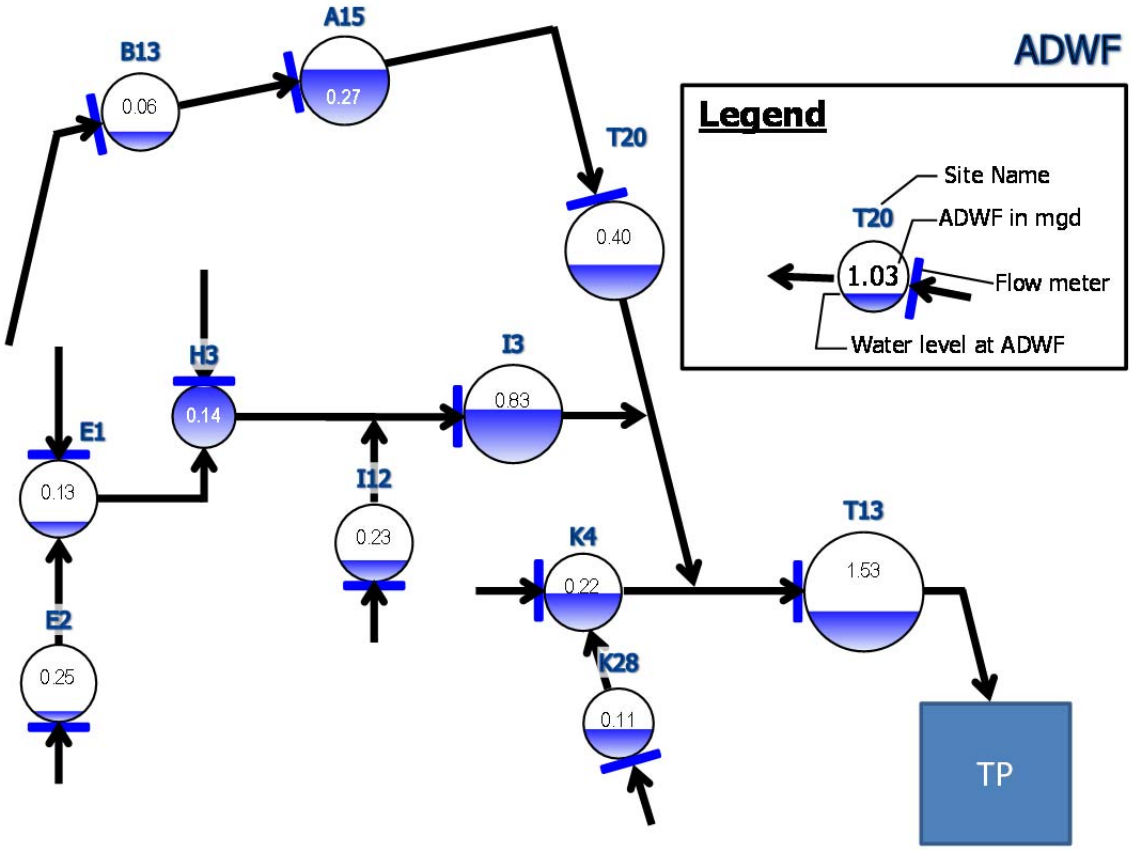


Figure 14. Average Dry Weather Flow (Flow Schematic)

Flow Monitoring: Peak Measured Flows and Pipeline Capacity Analysis

Peak measured flows and the corresponding flow levels (depths) are important to understand the capacity of the flow monitoring system. The peak flows and flow levels reported are from the peak measurements as taken across the entirety of the flow monitoring period and may or may not correspond to a rainfall event. It did not appear that there were any elevated flow levels due to blockages, grease or roots during the flow monitoring study. Additionally, there did not appear to be evidence of backflow conditions due to capacity constraints or the inability of the local collection system to handle peak wet weather flows.

The following capacity analysis terms are defined as follows:

- **Peaking Factor:** Peaking factor is defined as the peak measured flow divided by the average dry weather flow (ADWF). A peaking factor threshold value of 3.0 is commonly used for sanitary sewer design.
- ***d*/*D* Ratio:** The *d*/*D* ratio is the peak measured depth of flow (*d*) divided by the pipe diameter (*D*). A *d*/*D* ratio of 0.75 is a common maximum threshold value used for pipe design. The *d*/*D* ratio for each site was computed based on the maximum depth of flow from the flow monitoring study.

Table 6 summarizes the peak recorded flows, levels, *d*/*D* ratios, and peaking factors per site during the flow monitoring period. Capacity analysis data is presented on a site-by-site basis and represents the hydraulic conditions only at the site locations; hydraulic conditions in other areas of the collection system will differ.

Table 6.
Capacity Analysis Summary

Site	ADWF (mgd)	Peak Measured Flow (mgd)	Peaking Factor	Diameter (in)	Peak Level (in)	Peak *d*/*D* Ratio	Level Surcharged above Crown (ft)
Site A15	0.27	0.49	1.84	15	11.31	0.75	-
Site B13	0.06	0.18	3.04	12	4.44	0.37	-
Site E1	0.13	0.26	1.99	11.5	3.06	0.27	-
Site E2	0.25	0.60	2.37	18	4.90	0.27	-
Site H3	0.14	0.27	2.00	8	9.92	1.24	0.2
Site I3	0.83	1.45	1.74	17.5	11.85	0.68	-
Site I12	0.23	0.42	1.81	11.5	4.21	0.37	-
Site K4	0.22	0.53	2.44	12	8.82	0.74	-
Site K28	0.11	0.27	2.49	9.75	5.71	0.59	-
Site T20	0.40	0.73	1.83	17.5	8.42	0.48	-
Site T13	1.53	2.80	1.83	23.5	10.84	0.46	-

The following capacity analysis results are noted:

- **Peaking Factor:** Site B13 had a peaking factor that exceeded typical design threshold limits for the ratio of peak flow to average dry weather flow.
- ***d/D* Ratio:** Site H3 had a *d*/*D* ratio that exceeded the common design threshold for *d*/*D* ratio. This site exhibited a surcharged condition throughout a majority of the duration of the study. At the remainder of the sites, there were no capacity constraints during the rainfall events of this study; the local collection system had the ability to handle peak wet weather flows.

Figure 15 shows bar graphs of the capacity results. Figure 16 shows a schematic diagram of the peak measured flows with peak flow levels.

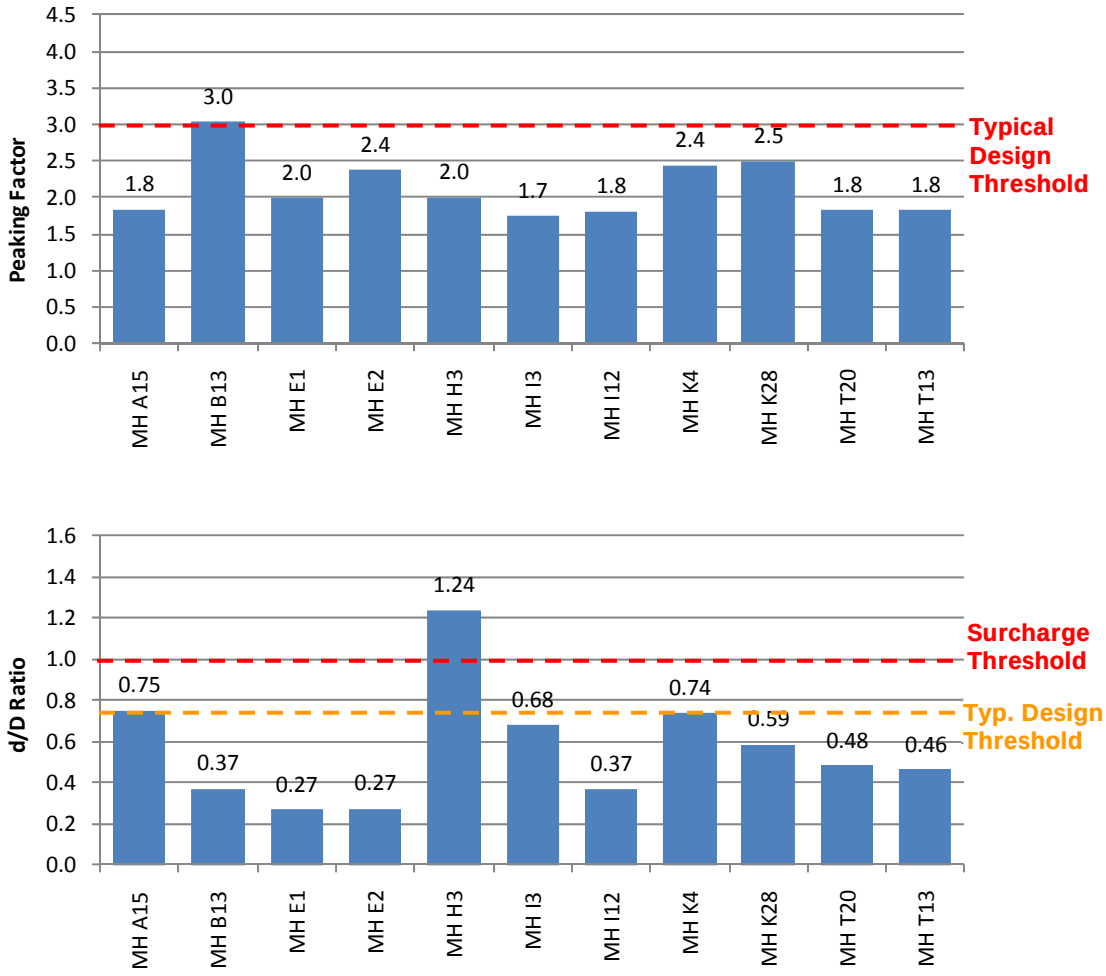


Figure 15. Capacity Summary Bar Graphs: Peaking Factors and Peak *d/D* Ratios

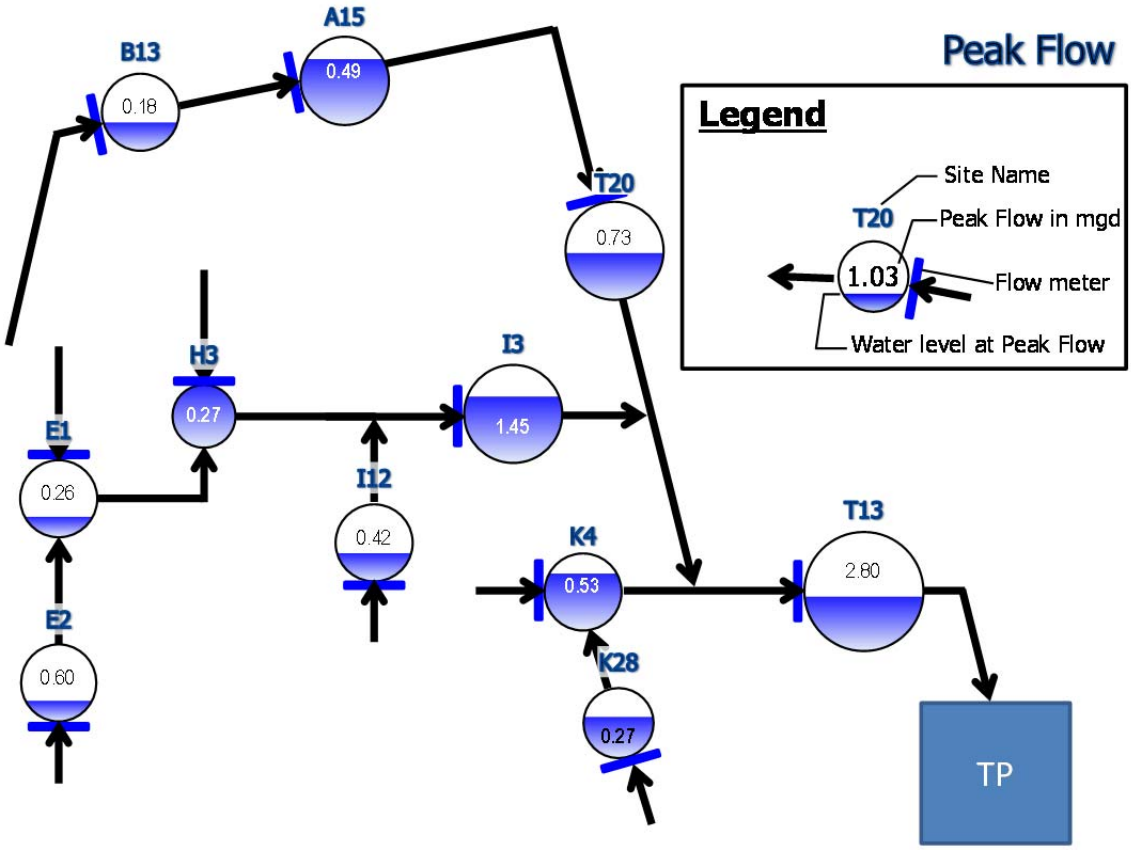


Figure 16. Peak Measured Flow (Flow Schematic)

Inflow / Infiltration Analysis: Definitions and Identification

Inflow and infiltration (I/I) consists of storm water and groundwater that enter the sewer system through pipe defects and improper storm drainage connections and is defined as follows:

Inflow

- **Definition:** Storm water inflow is defined as water discharged into the sewer system, including private sewer laterals, from direct connections such as downspouts, yard and area drains, holes in manhole covers, cross-connections from storm drains, or catch basins.
- **Impact:** This component of I/I creates a peak flow problem in the sewer system and often dictates the required capacity of downstream pipes and transport facilities to carry these peak instantaneous flows. Because the response and magnitude of inflow is tied closely to the intensity of the storm event, the short-term peak instantaneous flows may result in surcharging and overflows within a collection system. Severe inflow may result in sewage dilution, resulting in upsetting the biological treatment (secondary treatment) at the treatment facility.
- **Cost of Source Identification and Removal:** Inflow locations are usually less difficult to find and less expensive to correct. These sources include direct and indirect cross-connections with storm drainage systems, roof downspouts, and various types of surface drains. Generally, the costs to identify and remove sources of inflow are low compared to potential benefits to public health and safety or the costs of building new facilities to convey and treat the resulting peak flows.
- **Graphical Identification:** Inflow is usually recognized graphically by large-magnitude, short-duration spikes immediately following a rain event.

Infiltration

- **Definition:** Infiltration is defined as water entering the sanitary sewer system through defects in pipes, pipe joints, and manhole walls, which may include cracks, offset joints, root intrusion points, and broken pipes.
- **Impact:** Infiltration typically creates long-term annual volumetric problems. The major impact is the cost of pumping and treating the additional volume of water, and of paying for treatment (for municipalities that are billed strictly on flow volume).
- **Cost of Source Detection and Removal:** Infiltration sources are usually harder to find and more expensive to correct than inflow sources. Infiltration sources include defects in deteriorated sewer pipes or manholes that may be widespread throughout a sanitary sewer system.
- **Graphical Identification:** Infiltration is often recognized graphically by a gradual increase in flow after a wet-weather event. The increased flow typically sustains for a period after rainfall has stopped and then gradually drops off as soils become less saturated and as groundwater levels recede to normal levels.

Figure 17 shows sample graphs indicating the typical graphical response patterns for inflow and infiltration.

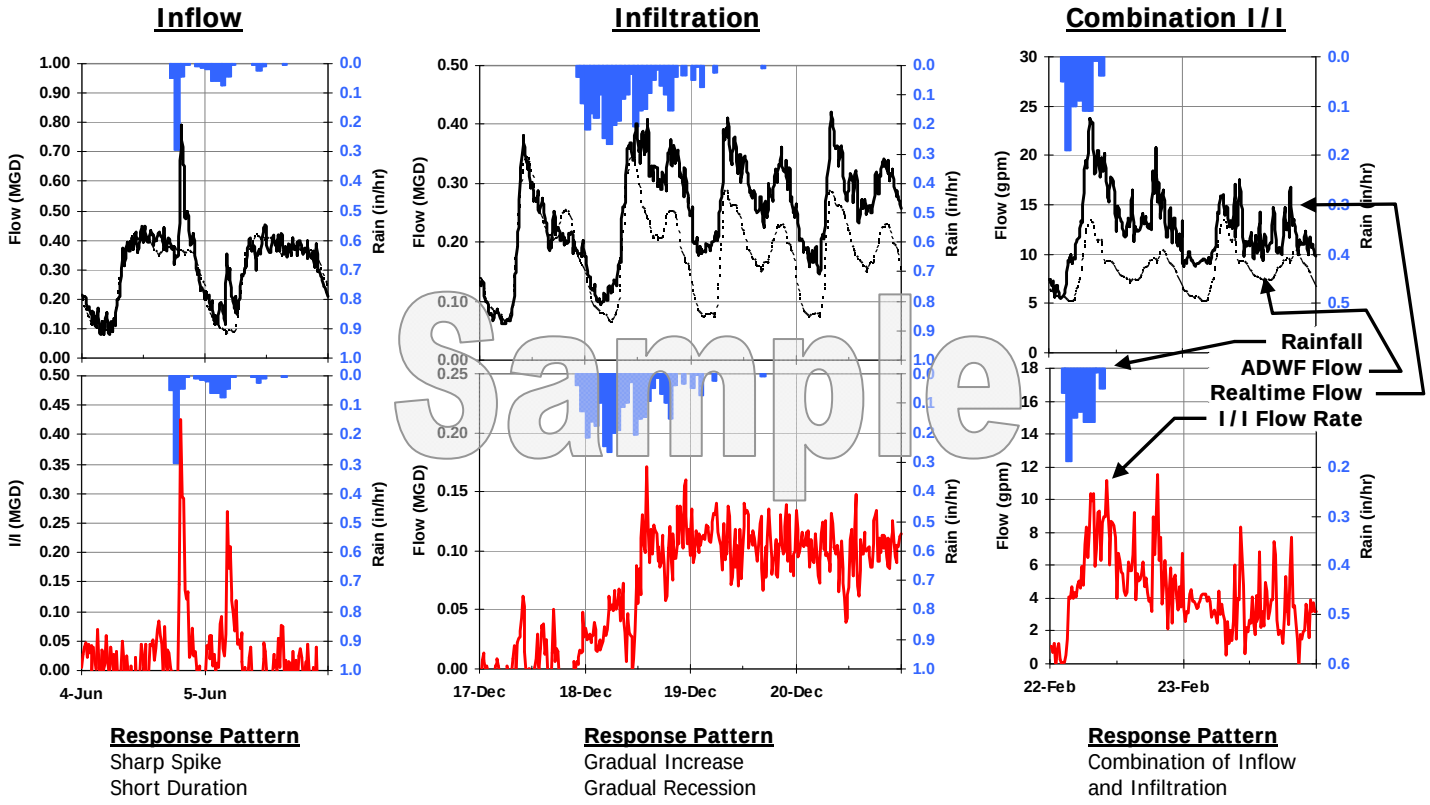


Figure 17. Inflow and Infiltration: Graphical Response Patterns

Infiltration Components

Infiltration can be further subdivided into components as follows:

- **Groundwater Infiltration:** Groundwater infiltration depends on the depth of the groundwater table above the pipelines as well as the percentage of the system submerged. The variation of groundwater levels and subsequent groundwater infiltration rates is seasonal by nature. On a day-to-day basis, groundwater infiltration rates are relatively steady and will not fluctuate greatly.
- **Rainfall-Dependent Infiltration:** This component occurs as a result of storm water and enters the sewer system through pipe defects, as with groundwater infiltration. The storm water first percolates directly into the soil and then migrates to an infiltration point. Typically, the time of concentration for rainfall-related infiltration may be 24 hours or longer, but this depends on the soil permeability and saturation levels.
- **Rainfall-Responsive Infiltration** is storm water which enters the collection system indirectly through pipe defects, but normally in sewers constructed close to the ground surface such as private laterals. Rainfall-responsive infiltration is independent of the groundwater table and reaches defective sewers via the pipe trench in which the sewer is constructed, particularly if the pipe is placed in impermeable soil and bedded and backfilled with a granular material. In this case, the pipe trench serves as a conduit similar to a French drain, conveying storm drainage to defective joints and other openings in the system. This type of infiltration can have a quick response and graphically can look very similar to inflow.

Figure 18 illustrates the possible sources and components of I/I.

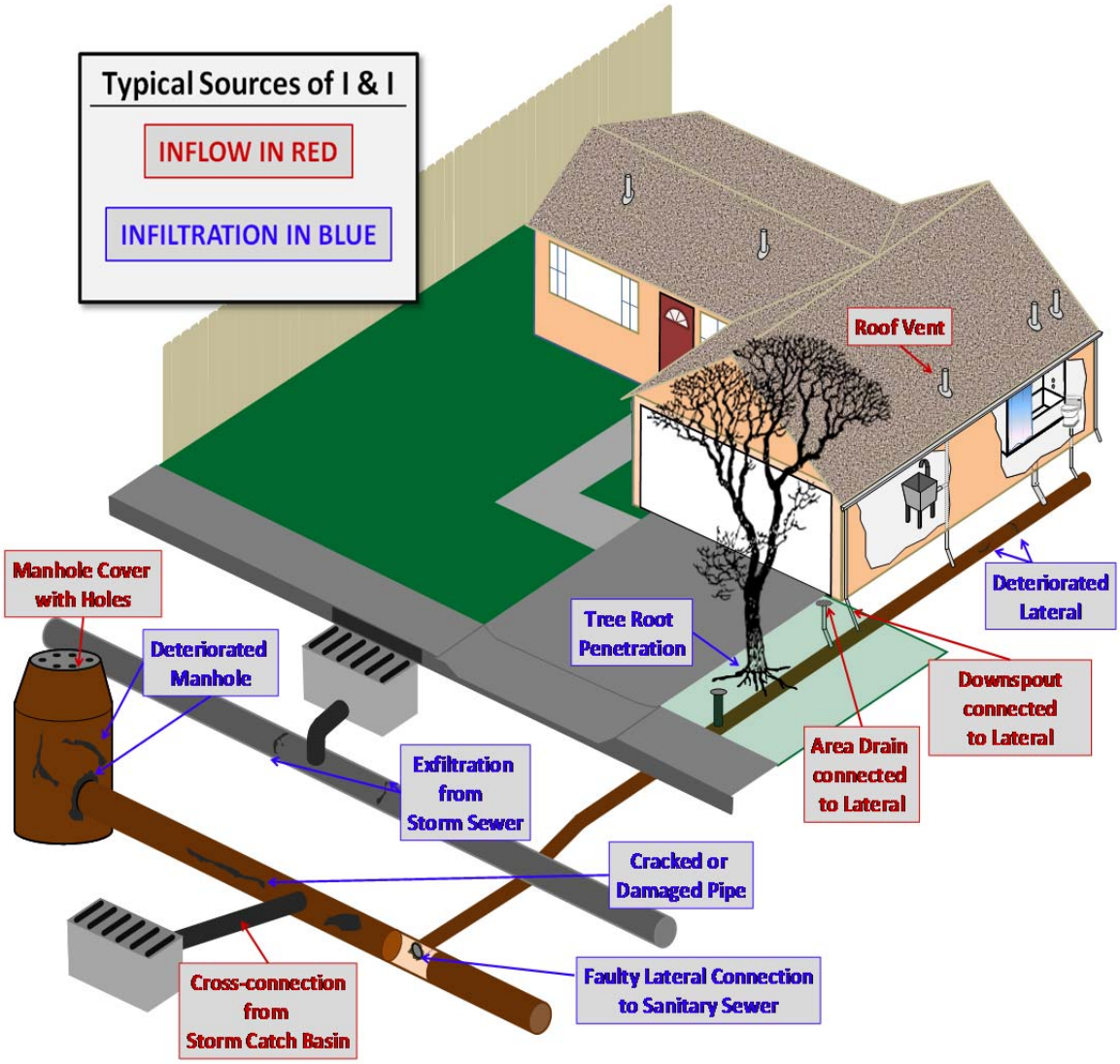


Figure 18. Typical Sources of Infiltration and Inflow

Inflow / Infiltration: Analysis Methods

After differentiating I/I flows from ADWF flows, various calculations can be made to determine which I/I component (inflow or infiltration) is more prevalent at a particular site and to compare the relative magnitudes of the I/I components between drainage basins and between storm events, as follows:

Inflow Indicators

Peak I/I Flow Rate: Inflow is characterized by sharp, direct spikes occurring during a rainfall event. Peak I/I rates are used for inflow analysis[8]. After determining the peak I/I flow rate for a given site, and for a given storm event, there are three ways to *normalize* the peak I/I rates for an "apples-to-apples" comparison amongst the different drainage basins:

- **Peak I/I Flow Rate per IDM:** Peak measured I/I rate divided by length of pipe within the drainage basin, expressed in units of inch-diameter-mile (IDM) (miles of pipeline multiplied by the diameter of the pipeline in inches). Final units are gallons per day (gpd) per IDM.
- **Peak I/I Flow Rate per Acre:** Peak measured I/I rate divided by the geographic area of the upstream basin in acres. Units are gpd per acre.
- **Peak I/I Flow Rate to ADWF Ratio:** Peak measured I/I rate divided by average dry weather flow (ADWF). This is a ratio and is expressed without units.

Infiltration Indicators

Dry Weather Groundwater Infiltration: GWI analysis is conducted by looking at minimum dry weather flow to average dry weather flow ratios and comparing them to established standards to quantify the rate of excess groundwater infiltration. As with inflow, GWI infiltration rates can be normalized by means of pipe length (IDM), basin area (acres), and dry weather flow rates (ADWF). These methods are discussed in further detail in the *Groundwater Analysis* section later in this report.

Rainfall-Dependent Infiltration: Infiltration occurring after the conclusion of a storm event is classified as rainfall-dependent infiltration. Analysis is conducted by looking at the infiltration rates at set periods after the conclusion of a storm event. Depending on the particular collection system and the time required for flows to return to ADWF levels, different set periods may be examined to determine the basins with the greatest or most sustained rainfall-dependent infiltration rates.

Combined I/I Indicators

Total Infiltration: The total inflow and infiltration is measured in gallons per site and per storm event. Because it is based on total I/I volume, it is an indicator of combined inflow and infiltration and is used to identify the overall volumetric influence of I/I within the monitoring basin. As with inflow, pipe length, basin area, and dry weather flow are used to normalize combined I/I for basin comparison:

- **Combined I/I Flow Rate per IDM:** Total infiltration (gallons) divided by length of pipe (IDM) and divided by storm event rainfall (inches of rain). Final units are gallons per day (gpd) per IDM per inch of rain.

[8] I/I flow rate is the realtime flow less the estimated average dry weather flow rate. It is an estimate of flows attributable to rainfall. By using peak measured flow rates (inclusive of ADWF), the I/I flow rate would be skewed higher or lower depending on whether the storm event I/I response occurs during low-flow or high-flow hours.

- **R-Value:** Total infiltration (gallons) divided by the total rainfall that fell within the acreage of that basin (gallons of rainfall). This is expressed as a percentage and is explained as "the percentage of rain that enters the sanitary sewer collection system." Systems with R-values less than 5%[9] are often considered to be performing well.
- **Combined I/I Flow Rate per ADWF:** Total infiltration (gallons) divided by the ADWF (gpd) and divided by storm event rainfall (inches of rain). Final units are million gallons per MGD of ADWF per inch of rain.

Realtime flows were plotted against ADWF flows to analyze the I/I response to rainfall events. Figure 19 illustrates a sample of how this analysis is conducted and some of the measurements that are used to distinguish infiltration and inflow. Similar graphs were generated for the individual flow monitoring sites and can be found in *Appendix A*.

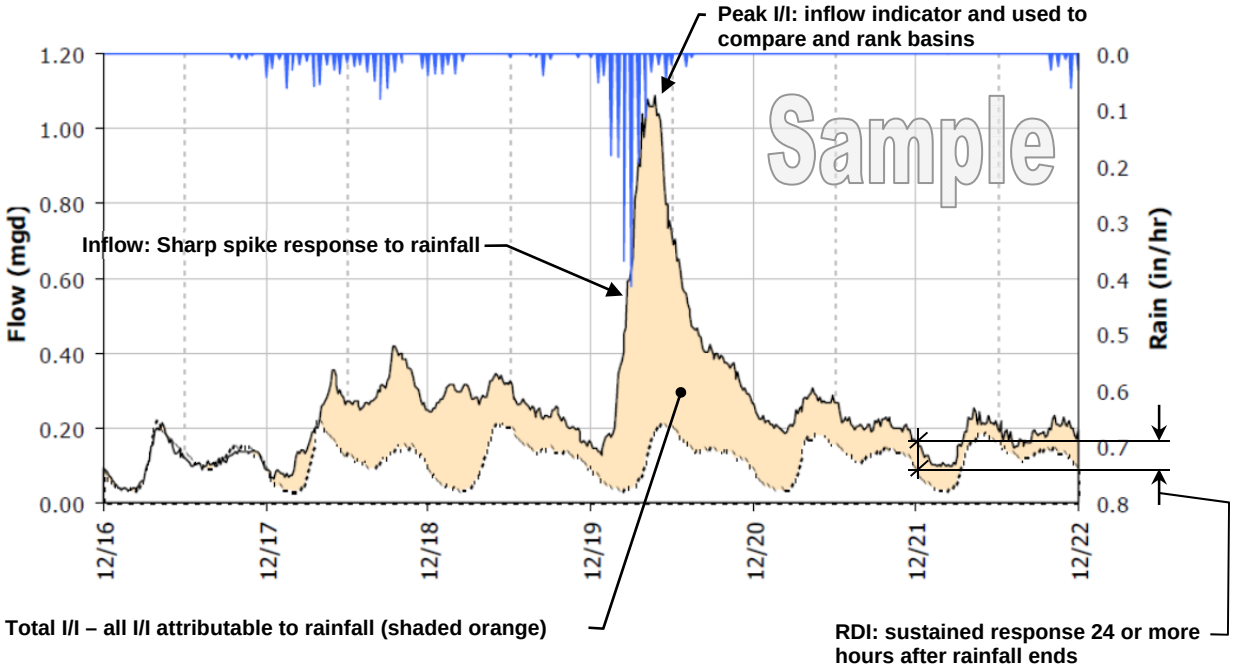


Figure 19. Sample Infiltration and Inflow Isolation Graph

The infiltration and inflow indicators were normalized by pipe length, basin area, and ADWF in this report. Final rankings were determined by weighting the normalization methods by 50%, 25%, and 25%, respectively, with ties broken by pipe length (IDM). The per-IDM method is given a higher weight including the tie-break because, for this study, future I/I rehabilitation and/or reduction efforts are typically budgeted per unit length of pipe. Additionally, the IDM measurement typically has a higher level of accuracy than drainage watershed area and low-flow ADWF.

[9] Keefe, P.N. "Test Basins for I/I Reduction and SSO Elimination." 1998 WEF Wet Weather Specialty Conference, Cleveland.

Inflow / Infiltration: Results

Inflow Results Summary

Inflow is storm water discharged into the sewer system through direct connections such as downspouts, area drains, cross-connections to catch basins, etc. These sources transport rain water into the sewer system directly and the corresponding flow rates are tied closely to the intensity of the storm. This component of I/I often causes a peak flow problem in the sewer system and often dictates the required capacity of downstream pipes and transport facilities to carry these peak instantaneous flows.

Table 7 summarizes the peak measured I/I flows and inflow analysis results for the storm events (refer to the *I/I Methods* section for more information on inflow analysis methods and ranking procedures). Figure 20 shows bar graph summaries of the inflow analysis. Figure 21 shows a temperature map summary of the inflow analysis results per basin.

Table 7.
Basins Inflow Analysis Summary

Basin	ADWF (mgd)	Peak I/I Rate[A] (mgd)	Peak I/I per IDM (gpd/IDM)	Peak I/I per Acre (gpd/acre)	Peak I/I per ADWF	Inflow Ranking[B]
Basin A15	0.21	0.047	1,550	400	0.23	10
Basin B13	0.059	0.09	4,250	1,050	1.55	4
Basin E1	0.13	0.10	3,810	950	0.74	6
Basin E2	0.25	0.21	6,240	1,430	0.84	3
Basin H3	0.14	0.09	5,420	1,170	0.64	5
Basin I3	0.08	0.053	2,820	720	0.66	9
Basin I12	0.23	0.08	3,120	600	0.35	8
Basin K4	0.22	0.21	7,120	1,990	0.97	1
Basin K28	0.11	0.16	6,140	1,630	1.41	2
Basin T20	0.14	0.109	3,050	640	0.81	7
System[C]	1.53	0.87	3,070	760	0.57	-

[A] Average Peak I/I rate for Events 1, 2 and 3.
[B] Ranking of 1 represents most inflow after normalization.
[C] The data for the "System" was taken from Site T13, which was installed for this purpose.

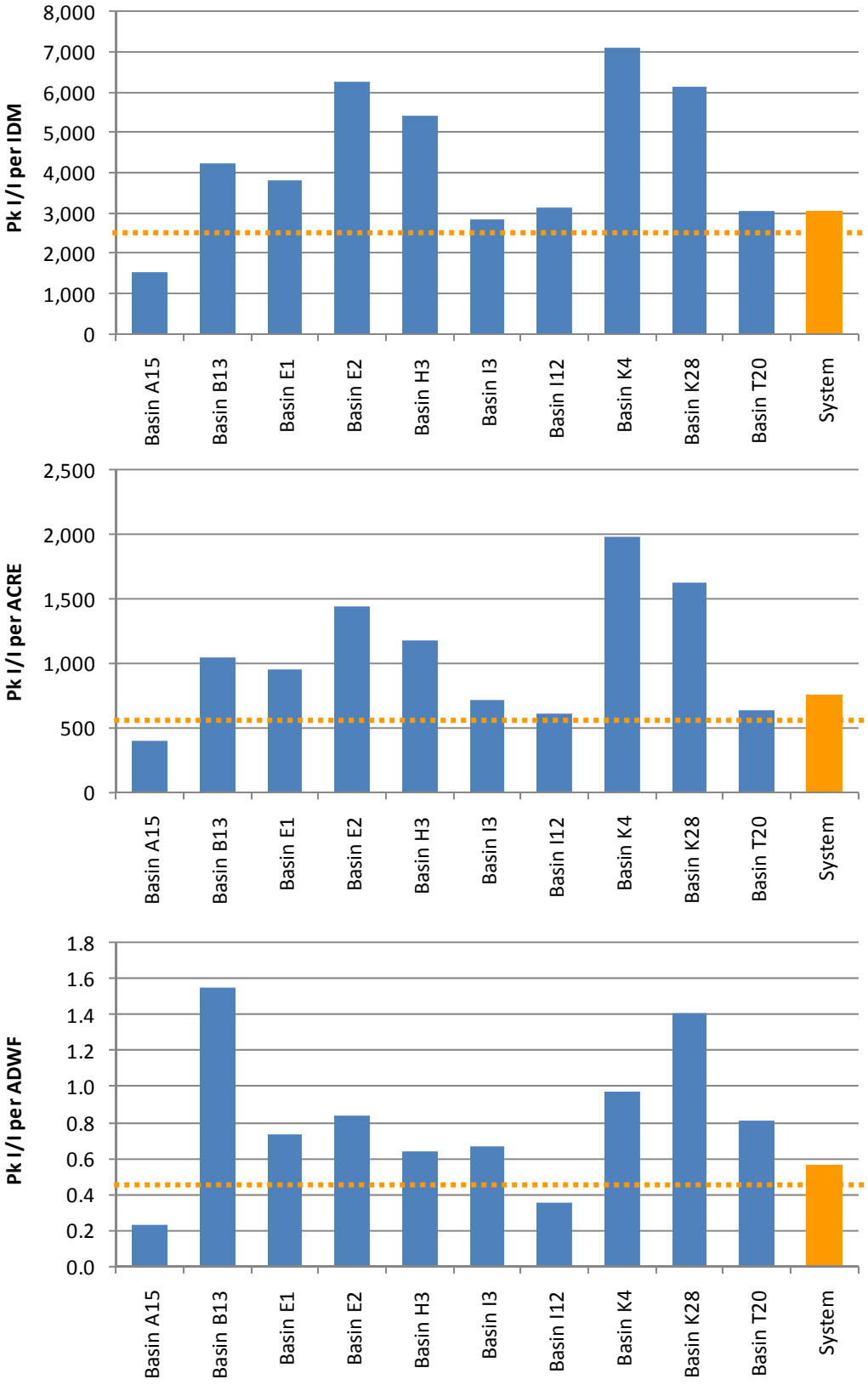


Figure 20. Bar Graphs: Inflow Analysis Summary

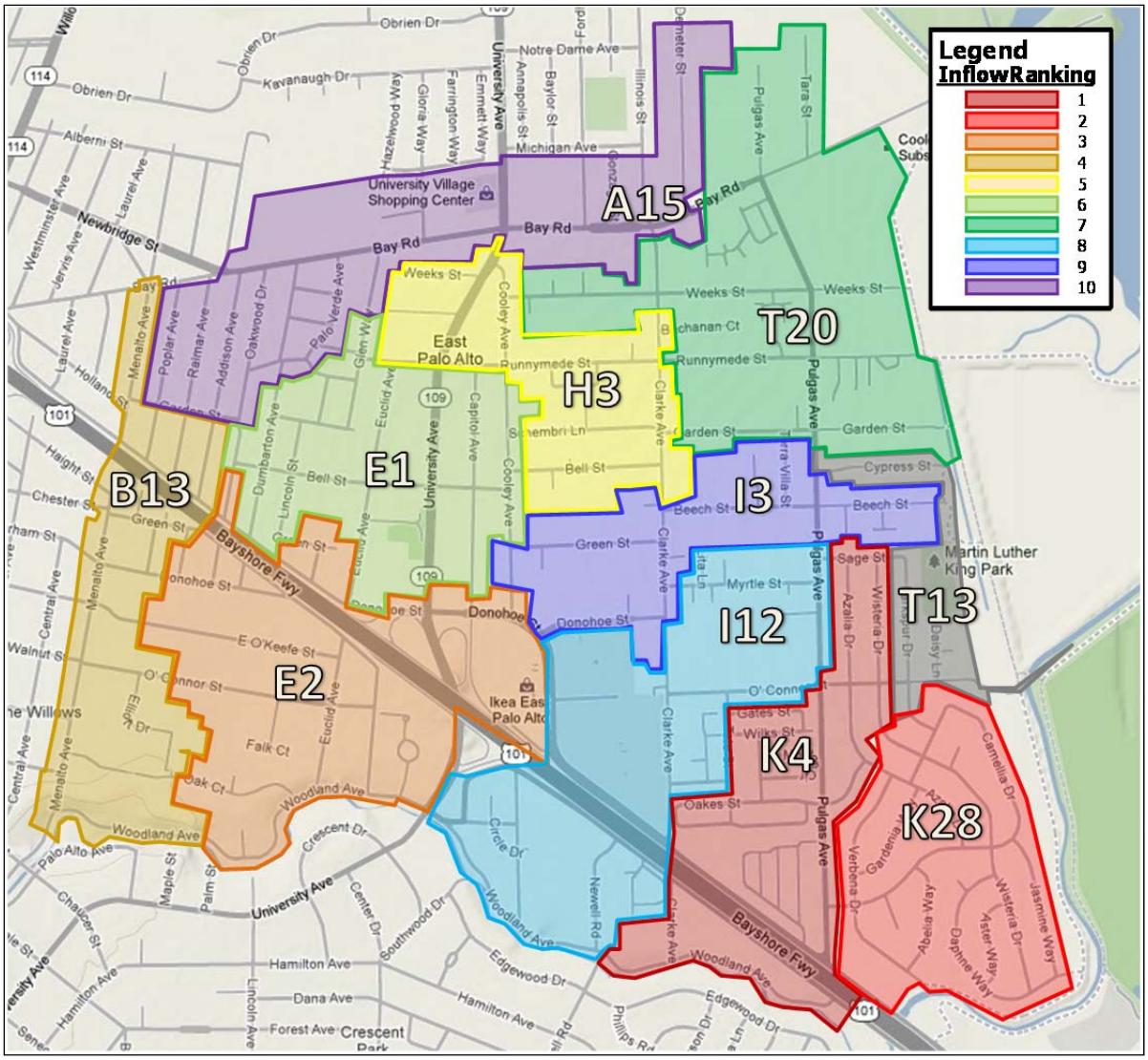


Figure 21. Inflow Temperature Map (by Rank)

The following inflow analysis results are noted:

- Basins K4, K28 and E2 ranked highest for normalized inflow contribution.

Rainfall-Dependent Infiltration Results Summary

Rainfall-dependent infiltration is defined as rain-derived water entering the sanitary sewer system through defects in pipes, pipe joints, and manhole walls, which may include cracks, offset joints, root intrusion points, and broken pipes. Increased flows into the sanitary sewer system are usually tied to groundwater levels and soil saturation levels. Infiltration sources transport rain water into the system *indirectly*; flow levels in the sanitary system increase gradually, are typically sustained for a period after rainfall has stopped, and then gradually drop off as soils become less saturated and as groundwater levels recede to normal. Infiltration typically creates long-term annual volumetric problems. The major impact is the cost of pumping and treating the additional volume of water, and of paying for treatment (for municipalities that are billed strictly on flow volume).

Table 8 summarizes the calculated average RDI flow rates for the three storm events (refer to the *I/I Methods* section for more information on RDI analysis methods and ranking methods). Figure 22 shows bar graph summaries of the RDI analysis. A temperature map by overall ranking is shown in Figure 23.

Table 8.
Basins RDI Analysis Summary

Basin	ADWF (mgd)	RDI Rate[A] (mgd)	RDI per IDM (gpd/IDM)	RDI per Acre (GPAD)	RDI per ADWF	RDI Ranking[B]
Basin A15	0.21	0.018	570	150	8%	8
Basin B13	0.059	0.006	300	70	11%	9
Basin E1	0.13	0.030	1,180	290	23%	3
Basin E2	0.25	0.040	1,170	270	16%	5
Basin H3	0.14	0.016	990	210	12%	6
Basin I3	0.08	0.021	1,100	280	26%	4
Basin I12	0.23	0.000	0	0	0%	10
Basin K4	0.22	0.038	1,280	360	18%	2
Basin K28	0.11	0.056	2,230	590	52%	1
Basin T20	0.14	0.024	660	140	18%	7
System[C]	1.53	0.267	950	230	18%	-

[A] Average RDI rates for Events 1, 2 and 3.
[B] Ranking of 1 represents most RDI after normalization.

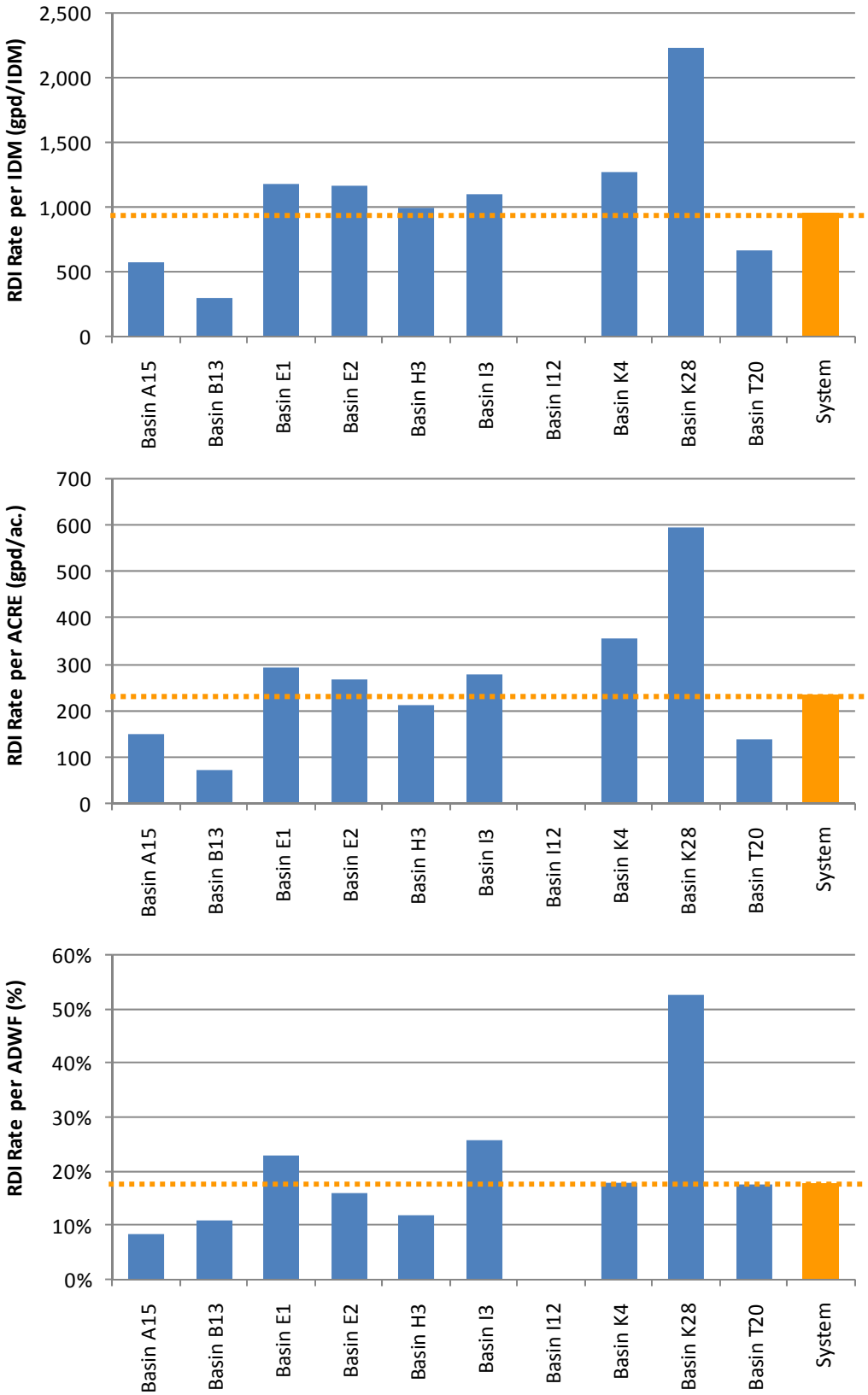


Figure 22. Bar Graphs: RDI Analysis Summary

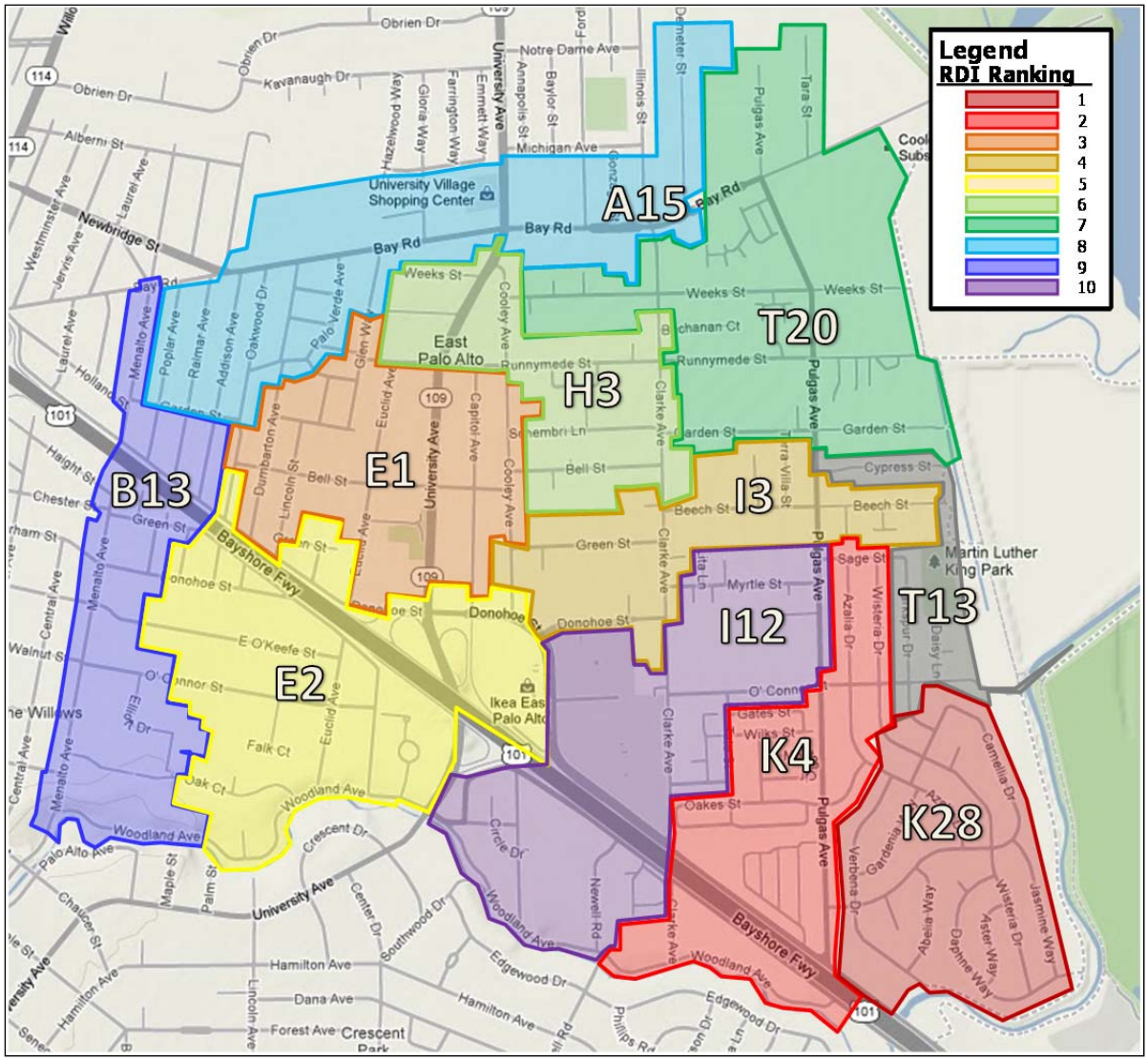


Figure 23. RDI Temperature Map (by Rank)

The following RDI analysis results are noted:

- Basins K28, K4 and E1 ranked highest for normalized RDI contribution.

Groundwater Infiltration Results Summary

Dry weather (ADWF) flow can be expected to have a predictable diurnal flow pattern. While each site is unique, experience has shown that, given a reasonable volume of flow and typical loading conditions, the daily flows fall into a predictable range when compared to the daily average flow. If a site has a large percentage of groundwater infiltration occurring during the periods of dry weather flow measurement, the amplitudes of the peak and low flows will be dampened[10]. Figure 24 shows a sample of two flow monitoring sites, both with nearly the same average daily flow, but with considerably different peak and low flows. In this *sample* case, Site B1 may have a considerable volume of groundwater infiltration.

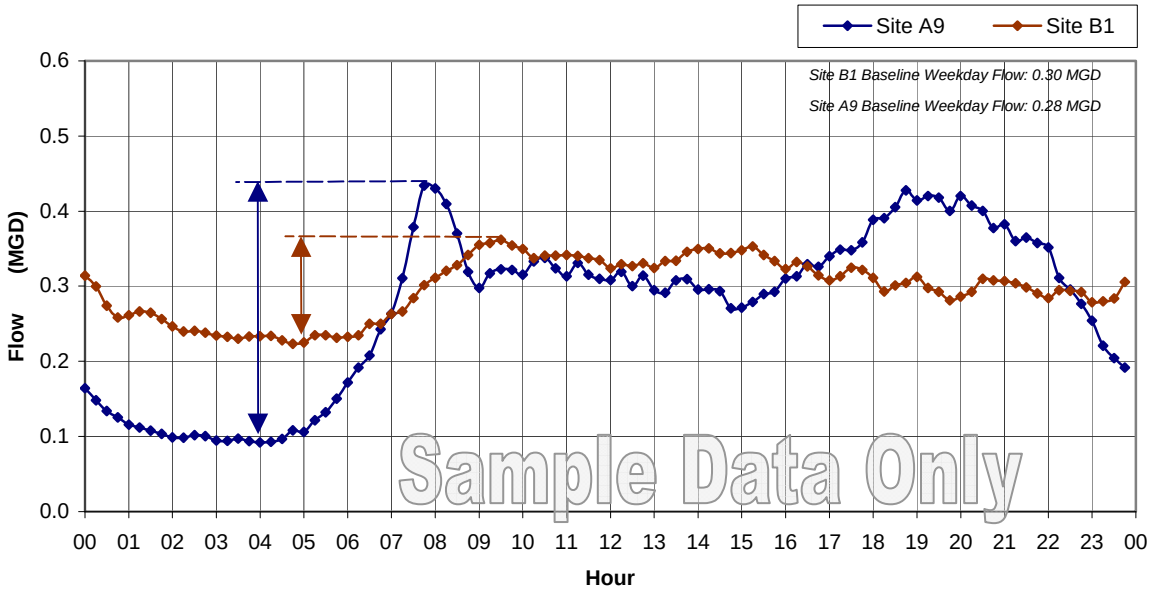


Figure 24. Groundwater Infiltration Sample Figure

It can be useful to compare the low-to-ADWF flow ratios for the flow metering sites. A site with abnormal ratios, and with no other reasons to suspect abnormal flow patterns (such as proximity to a pump station, treatment facilities, etc.), has a possibility of higher levels of groundwater infiltration in comparison to the rest of the collection system. Figure 25 plots the low-to-ADWF flow ratios against the ADWF flows for the sites monitored during this study. The dotted line shows "typical" low-to-ADWF ratios per the Water Environment Federation (WEF)[11]. The following GWI results are noted:

- Basins T20, K28, K4 and E1 have GWI rates that were **above** the WEF typical low-to-average ratio, indicating excessive groundwater infiltration.

Figure 26 shows a color-coded map of the basins with rates of groundwater infiltration considerably above typical groundwater infiltration standards (as set forth by WEF).

[10] In an extreme case, perhaps 0.2 mgd of ADWF flow and 2.0 mgd of groundwater infiltration, the peaks and lows would be barely recognizable; the ADWF flow would be nearly a straight line.

[11] WEF Manual of Practice No. 9, "Design and Construction of Sanitary and Storm Sewers."

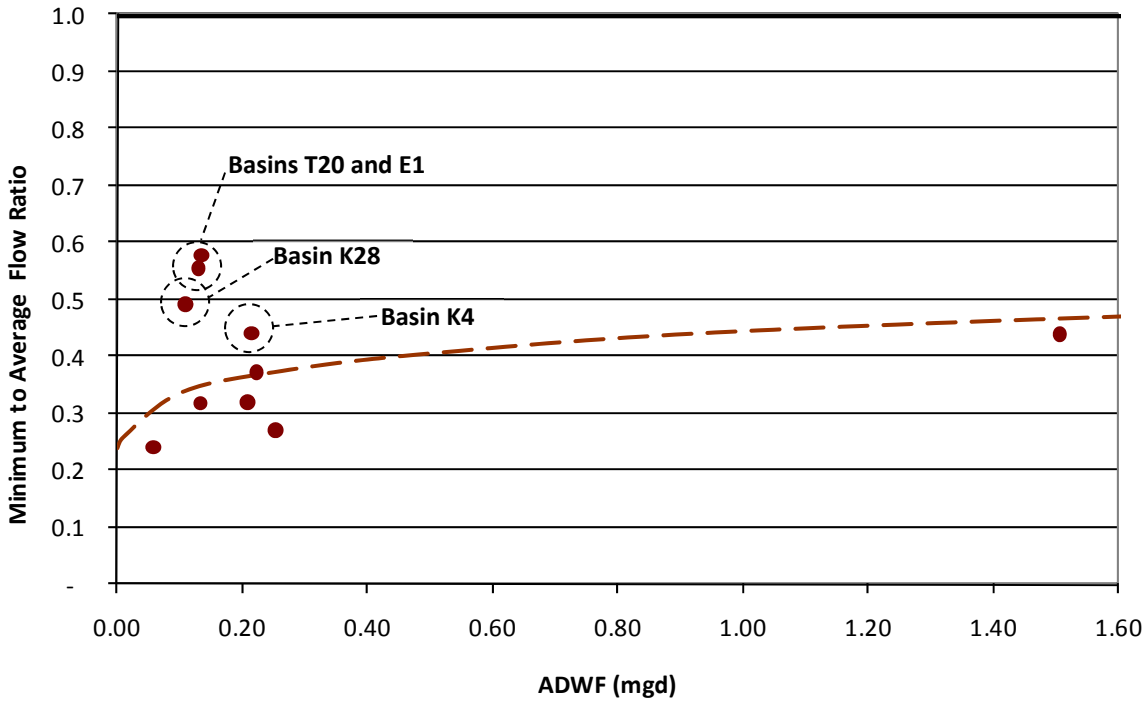


Figure 25. Minimum Flow Ratios vs. ADWF[12]

[12] Due to attenuation, it should be expected that sites with larger flow volumes should not have quite the peak-to-average and low-to-average flow ratios as sites with lesser flow volumes, which is why the WEF typical trend lines slope closer to 1.0 as the ADWF increases, as shown in the figure.

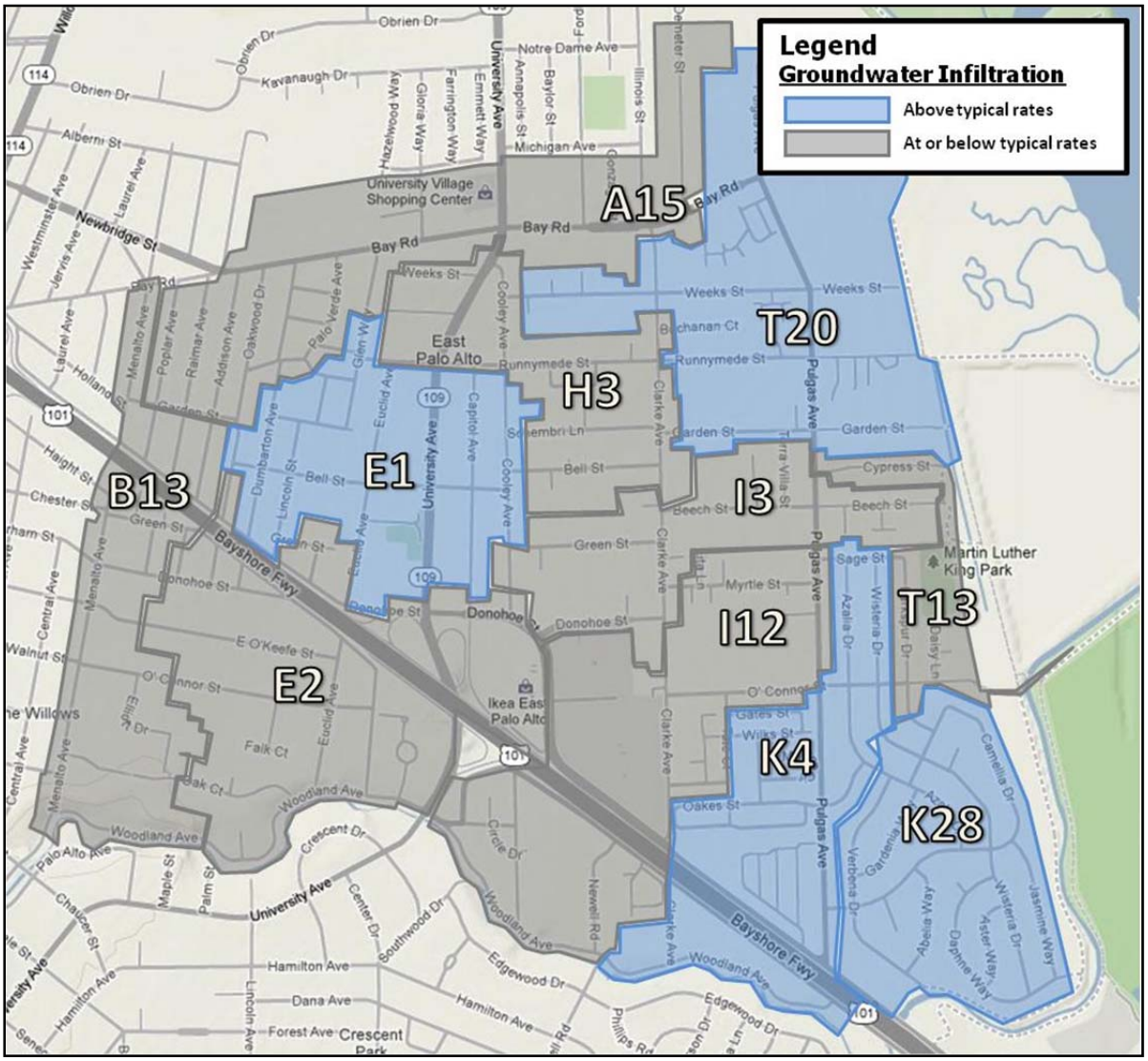


Figure 26. Basins with Groundwater Infiltration

Combined I/I Results Summary

Combined I/I analysis considers the totalized volume (in gallons) of both inflow and rainfall-dependent infiltration over the course of a storm event.

Table 9 summarizes the combined I/I flow results for the storm events (refer to the *I/I Methods* section for more information on combined I/I analysis methods and ranking methods). Figure 27 shows bar graph summaries of the combined I/I analysis. A temperature map by overall ranking is shown in Figure 28.

Table 9.
Basins Combined I/I Analysis Summary

Basin	ADWF (mgd)	Combined I/I [A] (gallons)	Combined I/I per IDM	R-Value (%)	Combined I/I per ADWF	Combined I/I Ranking[B]
Basin A15	0.21	96,000	1,890	1.8%	0.28	6
Basin B13	0.059	47,000	1,340	1.2%	0.49	7
Basin E1	0.13	53,000	1,270	1.2%	0.24	9
Basin E2	0.25	213,000	3,730	3.2%	0.50	5
Basin H3	0.14	29,000	1,090	0.9%	0.13	10
Basin I3	0.08	119,000	3,810	3.6%	0.89	4
Basin I12	0.23	57,000	1,320	0.9%	0.15	8
Basin K4	0.22	234,000	4,720	4.9%	0.64	2
Basin K28	0.11	302,000	7,180	7.0%	1.65	1
Basin T20	0.14	240,000	4,030	3.1%	1.07	3
System[C]	1.53	1,783,000	3,800	3.4%	0.70	-

[A] Sum of I/I for Events 2 and 3.
[B] Ranking of 1 represents most combined I/I (inflow and RDI) after normalization.

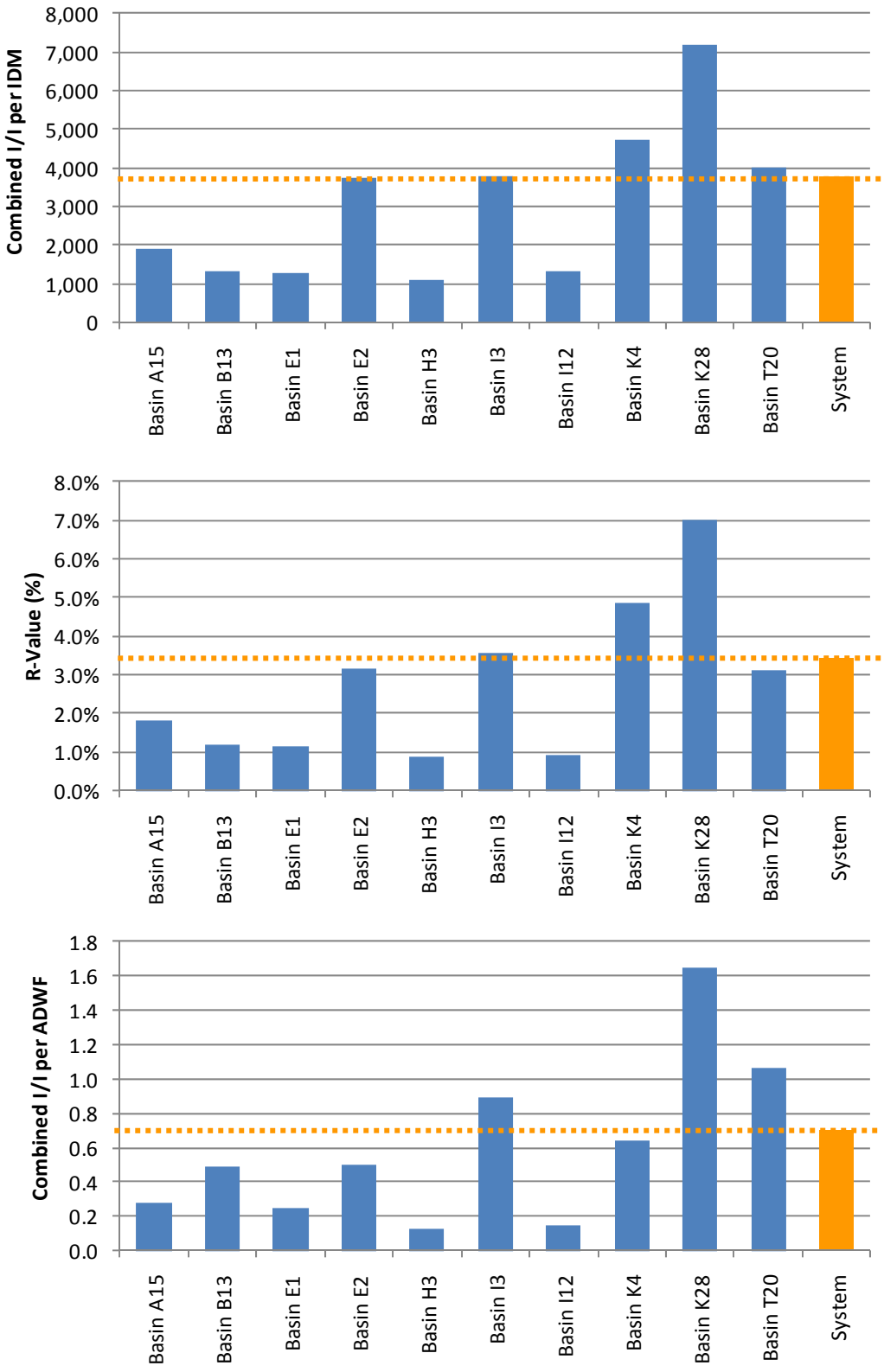


Figure 27. Bar Graphs: Combined I/I Analysis Summary

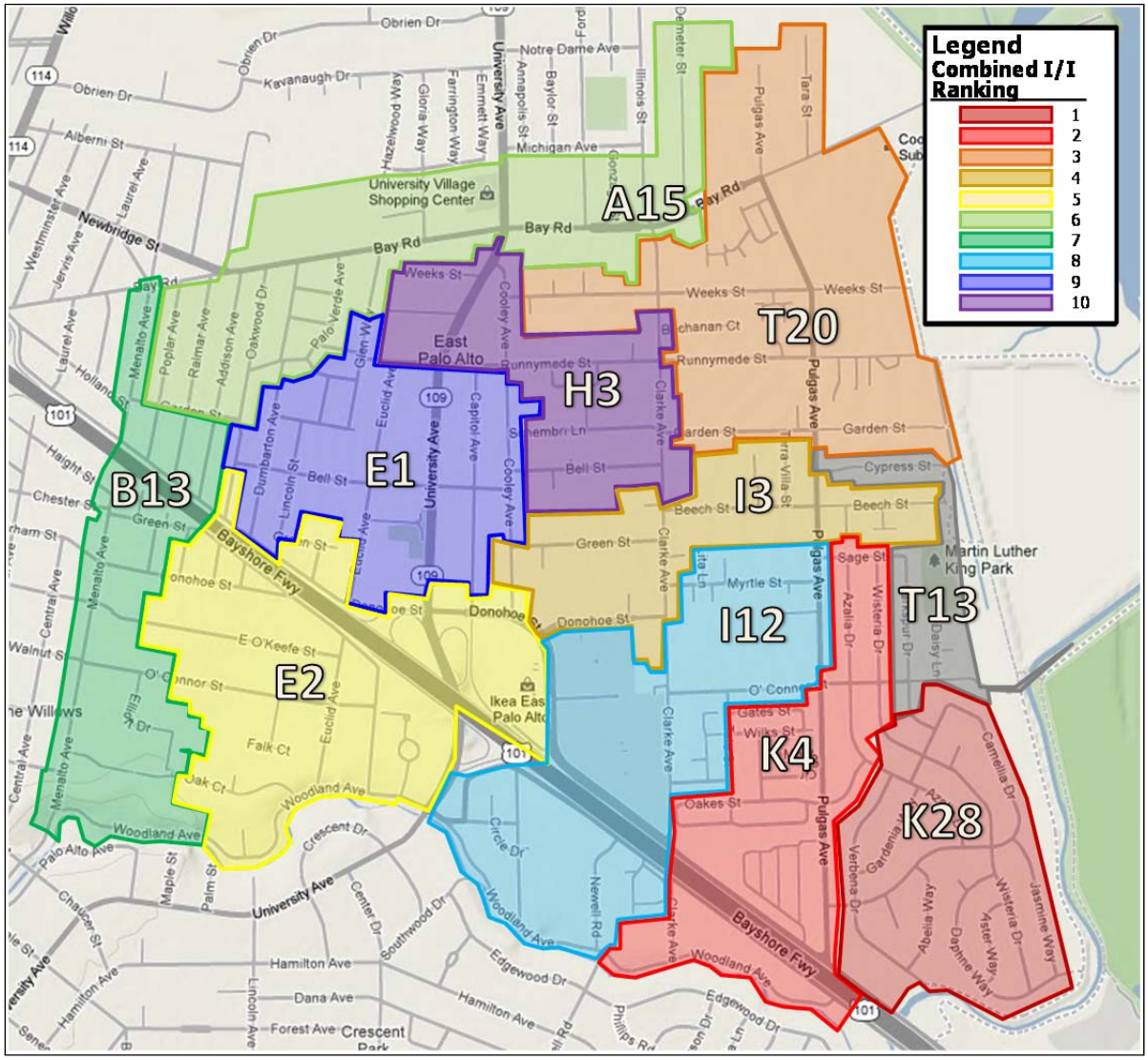


Figure 28. Combined I/I Temperature Map (by Rank)

The following combined I/I analysis results are noted:

- Basins T20, K28 and K4 ranked highest for normalized combined I/I contribution.

Inflow / Infiltration: Synthetic Hydrographs

In order to model design storms, synthetic hydrographs were developed to approximate the actual RDI hydrograph shape in terms of the time to the peak and the recession coefficient. The actual RDI hydrograph was best matched with a synthetic hydrograph by separating the synthetic hydrograph into seven volume components (R1 through R7). The seven components represent different response times to the rainfall event and, therefore, different infiltration or inflow paths into the sewer system. R1 is characterized by a short response time and is assumed to consist of mainly inflow. R7 represents slower response and longer recession times and consists of mostly infiltration. Levels of soil saturation are also considered. Using synthetic hydrograph analysis, appropriate time and recession parameters were estimated by a trial-and-error procedure until a good match was obtained. For example, the hydrograph and its component hydrographs for the period of March 24 to 30, 2012, for Site T13 is shown in Figure 29.

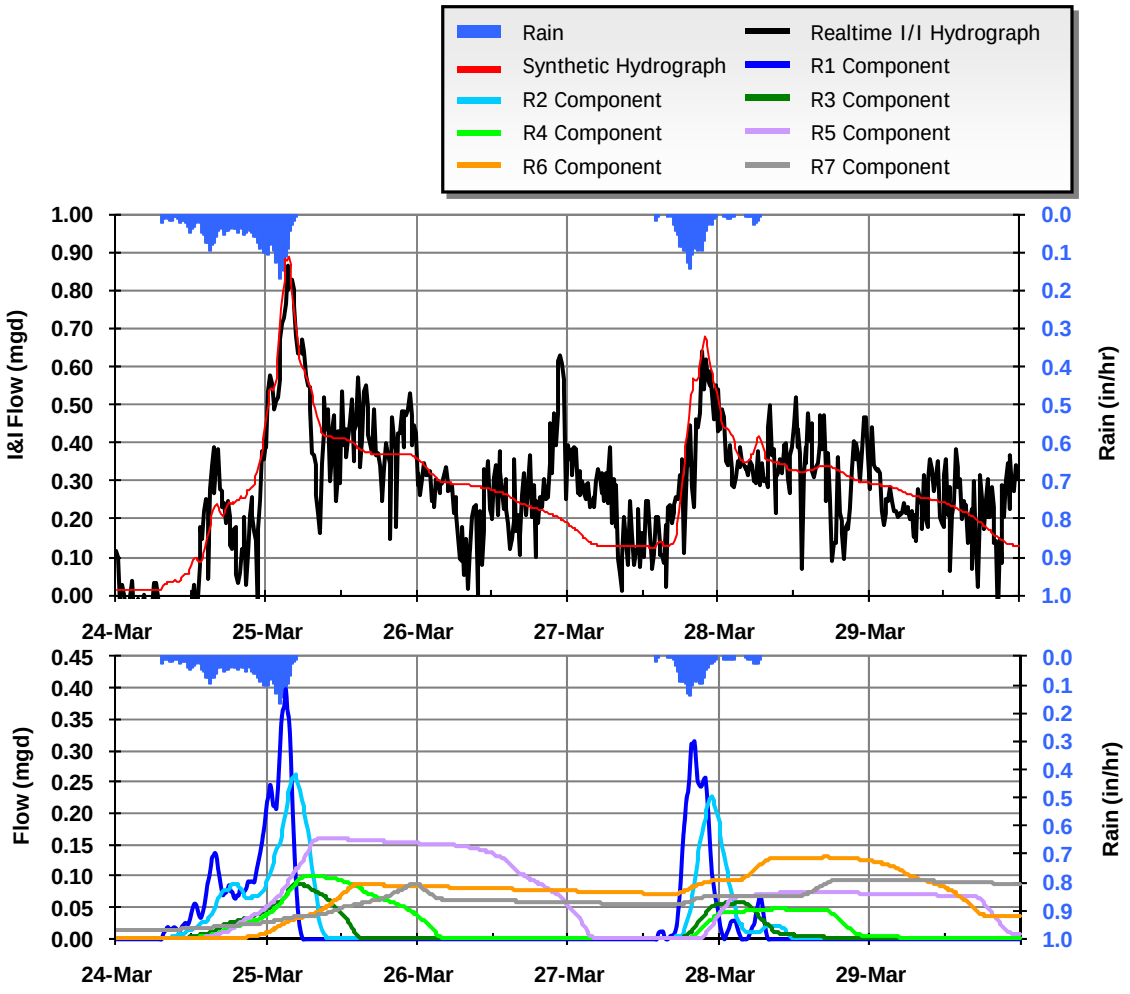


Figure 29. Site T13: Synthetic Hydrograph

Design Storm Development

With the I/I response modeled by a synthetic hydrograph, design storms can be applied. This serves two functions: (a) predicted flows are based on the same storm event and are therefore normalized to each other, making for easier and better comparisons, and (b) the resulting I/I flows can be predicted for a design storm event. This helps to calibrate modeling efforts that will determine if the collection system has adequate capacity to handle very large storm events.

V&A used a 10-year, 24-hour design storm for this analysis. Storm events were taken from the NOAA Precipitation-Frequency Atlas of the Western United States. Figure 30 summarizes the design storm magnitude and profile. This particular profile distribution also fits the NOAA criterion for 2-hour and 6-hour durations, in addition to the 24-hour duration.

10-Year, 24-hour Design Storm	
Hour	**Inches of Rain**
1	0.005
2	0.011
3	0.115
4	0.069
5	0.023
6	0.007
7	0.099
8	0.056
9	0.079
10	0.028
11	0.014
12	0.006
13	0.058
14	0.163
15	0.019
16	0.153
17	0.153
18	0.359
19	0.667
20	0.306
21	0.153
22	0.047
23	0.078
24	0.023
Total:	**2.69**

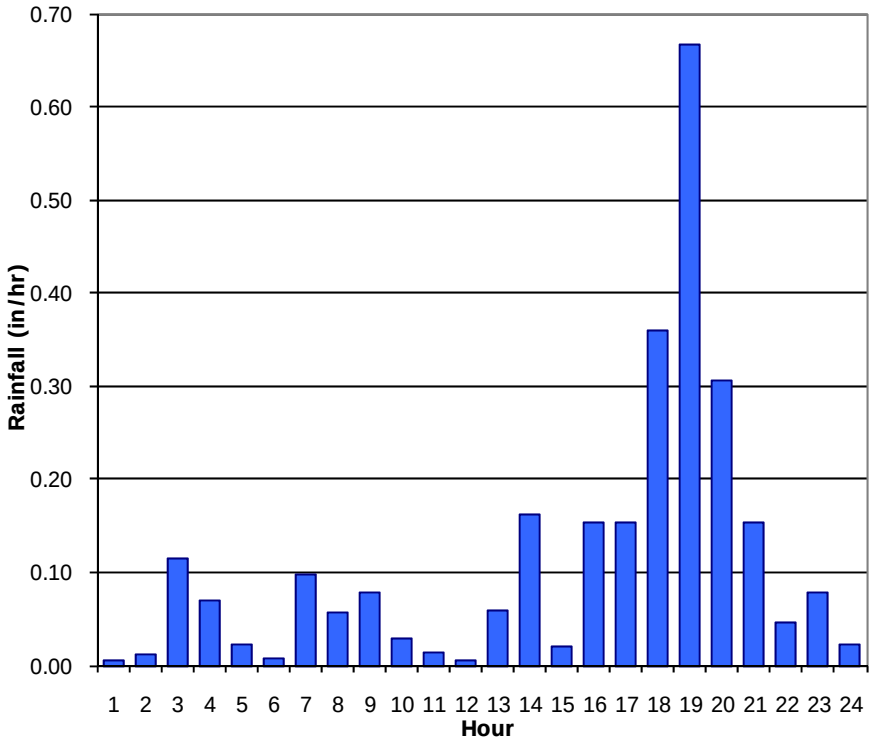


Figure 30. 10-Year, 24-Hour Design Storm Values and Profile

Design Storm Response Summary

The 10-year, 24-hour storm event was applied to the synthetic I/I hydrograph components developed for each flow monitoring site. This method produces the best estimated response to the design storm events. These results assume full ground saturation, and the peak I/I flows from the design storm coincide with peak sanitary flows to get a "worst-case" scenario of peak wet weather flows. Table 10 summarizes the final results for each design storm on a site-by-site basis. Figure 31 shows the synthetic hydrograph response for the design storm event at Site T13.

Table 10.
Design Storm I/I Analysis Summary

Site	Peak Dry Weather Flow (mgd)	Peak I/I Rate (mgd)	Peak Flow (mgd)	Total I/I (gallons)
Site A15	0.43	0.76	1.19	184,000
Site B13	0.11	0.41	0.52	95,000
Site E1	0.19	0.41	0.59	218,000
Site E2	0.43	1.02	1.45	514,000
Site H3	0.23	0.35	0.58	262,000
Site I3	1.22	1.54	2.76	1,048,000
Site I12	0.39	0.37	0.76	94,000
Site K4	0.35	0.65	0.99	481,000
Site K28	0.17	0.50	0.68	516,000
Site T13	0.60	0.95	1.55	729,000
Site T20	2.31	3.47	5.78	3,227,000

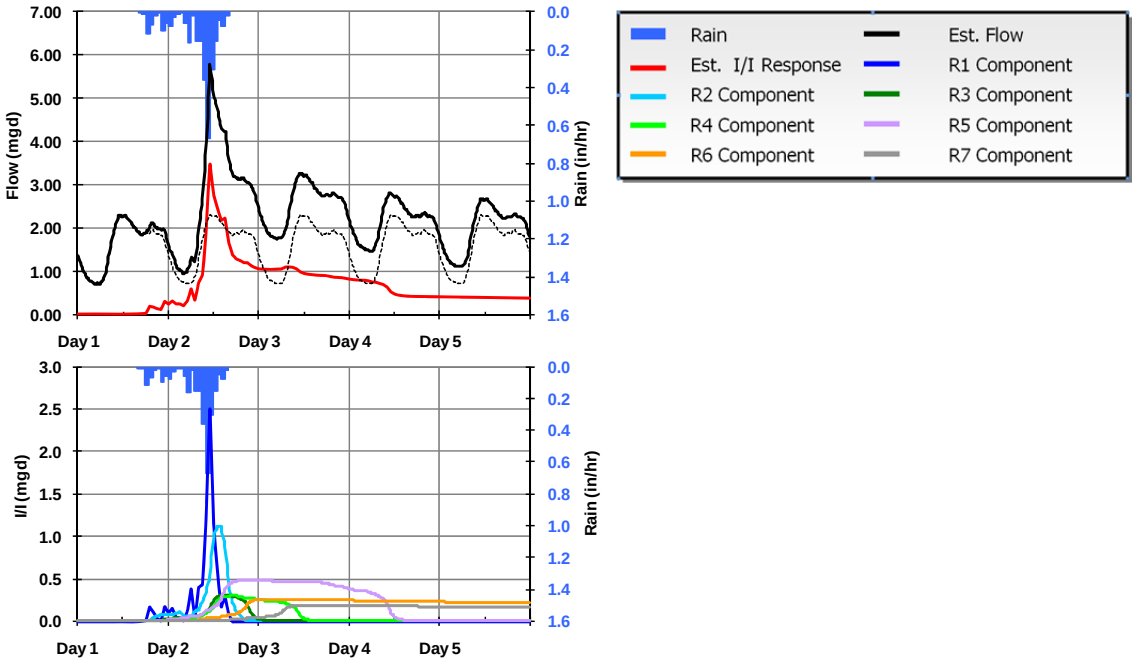


Figure 31. 10-Year, 24-Hour Design Storm: Estimated I/I Response at Site T13

RECOMMENDATIONS

V&A advises that future I/I reduction plans consider the following recommendations:

1. **Determine I/I Reduction Program:** The District should examine its I/I reduction needs to determine a future I/I reduction program.
    a. If peak flows, sanitary sewer overflows, and pipeline capacity issues are of greater concern, then priority can be given to investigate and reduce sources of inflow within the basins with the greatest inflow problems. The highest inflow occurred in Basins K4, K28 and E2.
    b. If total infiltration and general pipeline deterioration are of greater concern, then the program can be weighted to investigate and reduce sources of infiltration within the basins with the greatest infiltration problems.
        i. The highest normalized rainfall-dependent infiltration occurred in Basins K28, K4 and E1.
        ii. The highest groundwater infiltration occurred in Basins K28, K4 and E1.
2. **I/I Investigation Methods:** Potential I/I investigation methods include the following:
    a. Smoke testing
    b. Mini-basin flow monitoring
    c. Nighttime reconnaissance work to (1) investigate and determine direct point sources of inflow and (2) determine the areas and pipe reaches responsible for high levels of infiltration contribution.
3. **I/I Reduction Cost-Effectiveness Analysis:** The District should conduct a study to determine which is more cost-effective: (1) locating the sources of inflow and infiltration and systematically rehabilitating or replacing the faulty pipelines or (2) continued treatment of the additional rainfall-dependent I/I flow.

APPENDIX A

FLOW MONITORING SITES: DATA, GRAPHS, INFORMATION

East Palo Alto Sanitary District

Sanitary Sewer Flow Monitoring and I/I Study

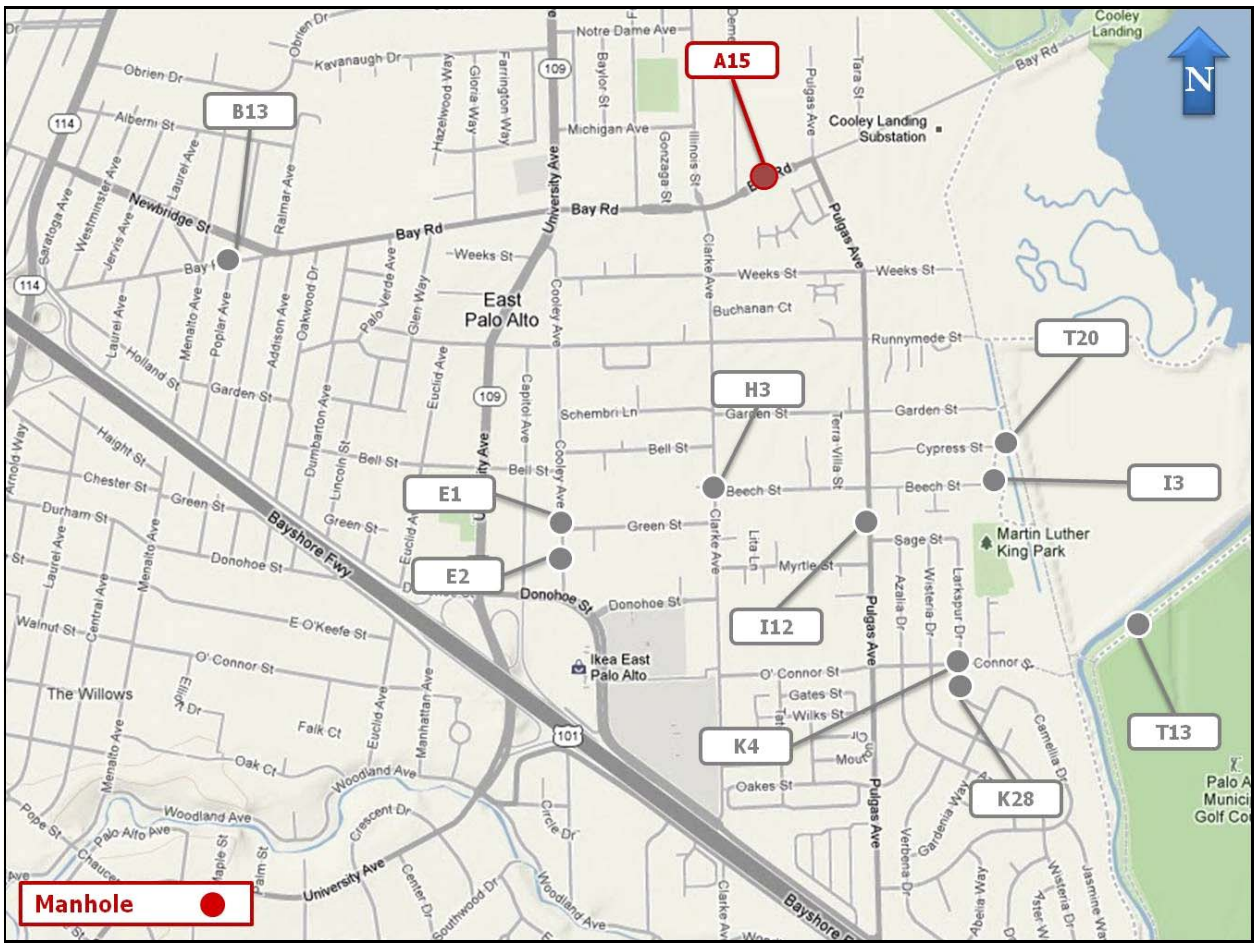
Year 2012

Monitoring Site: MH A15

Location: Bay Road between Demeter Street and Pulgas Avenue

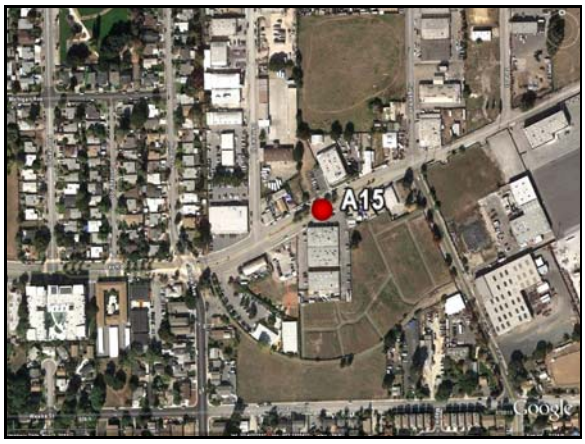
Data Summary Report

Vicinity Map:



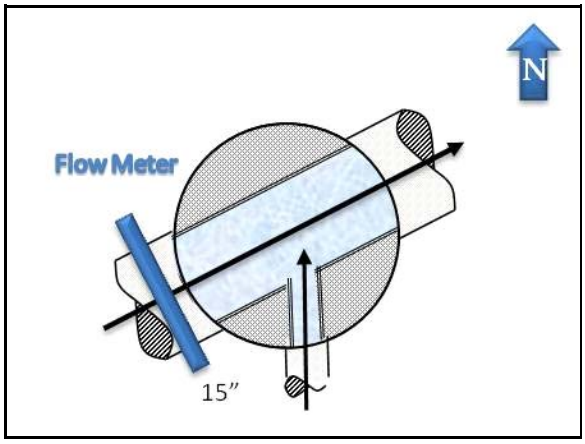
MH A15
Site Information Report

Location:	Bay Road between Demeter Street and Pulgas Avenue
Coordinates:	122.1332° W, 37.4724° N
Elevation:	14 feet
Diameter:	15 inches
Baseline Flow:	0.266 mgd
Peak Measured Flow:	0.683 mgd



Satellite Map

Sanitary Sewer Map



Flow Sketch


View from Street

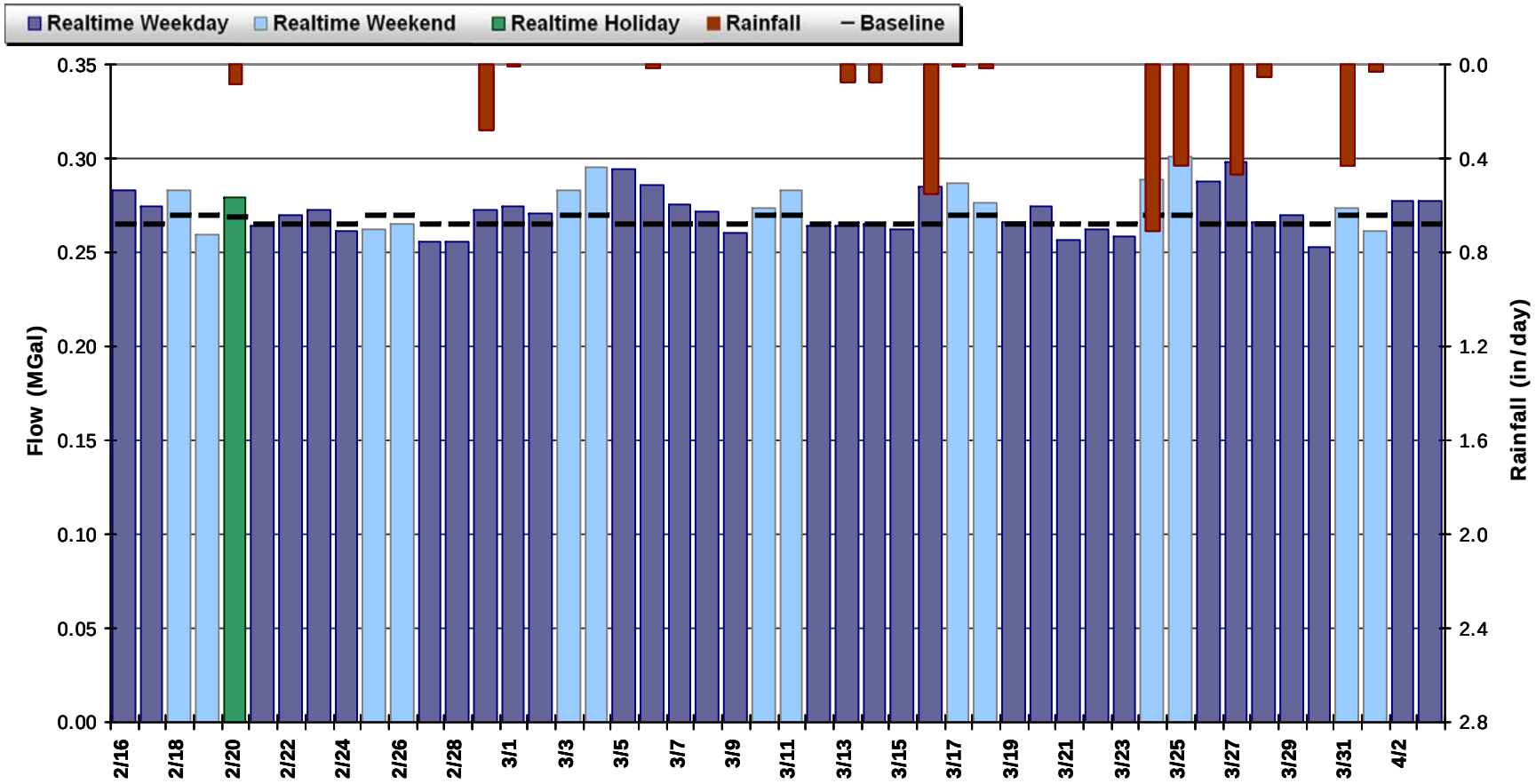

Plan View

MH A15

Period Flow Summary: Daily Flow Totals

Avg Daily Flow: 0.273 MGal **Peak Daily Flow: 0.301 MGal** **Min Daily Flow: 0.253 MGal**

Total Period Rainfall: 3.24 inches

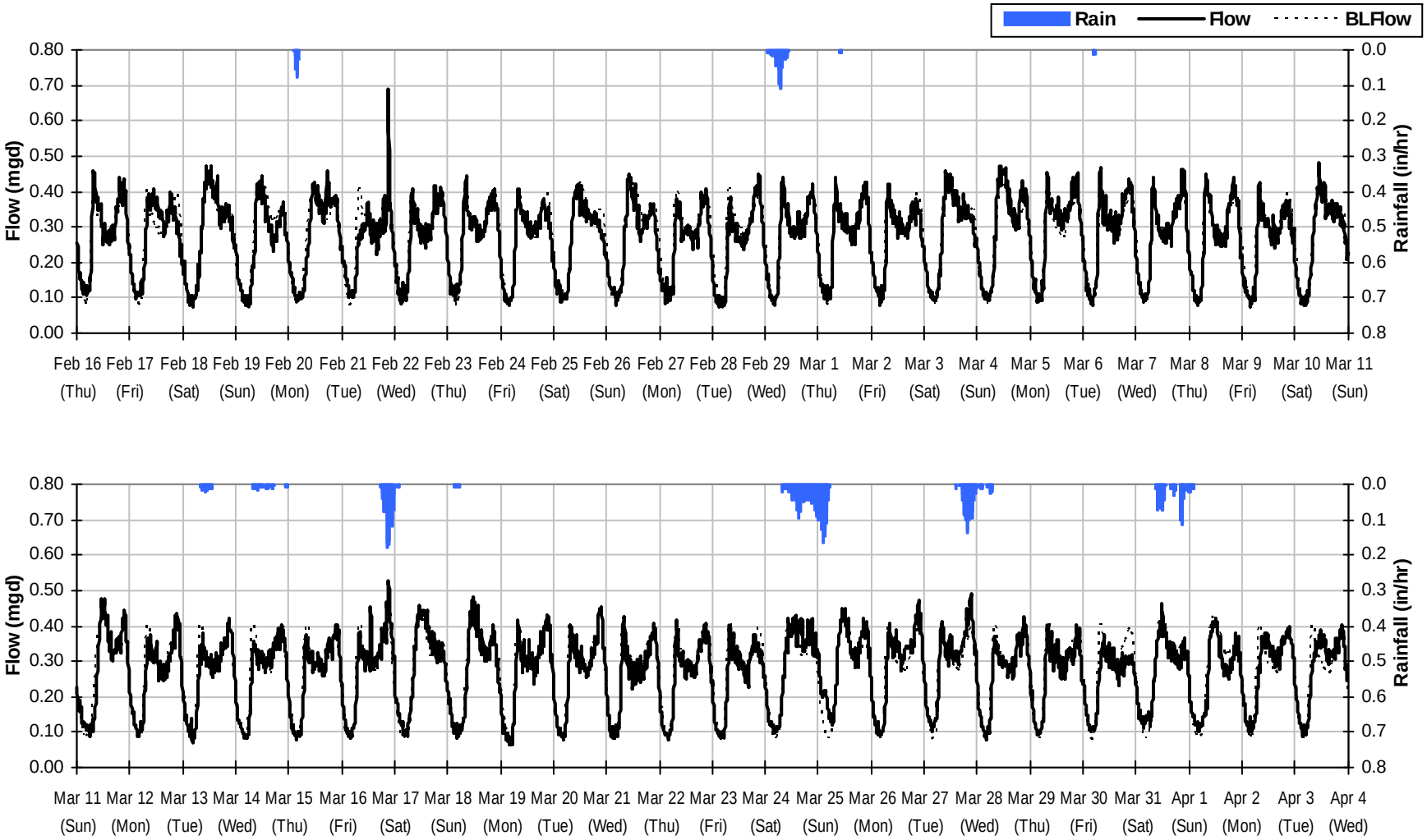


MH A15

Period Flow Summary: February 16 to April 4, 2012

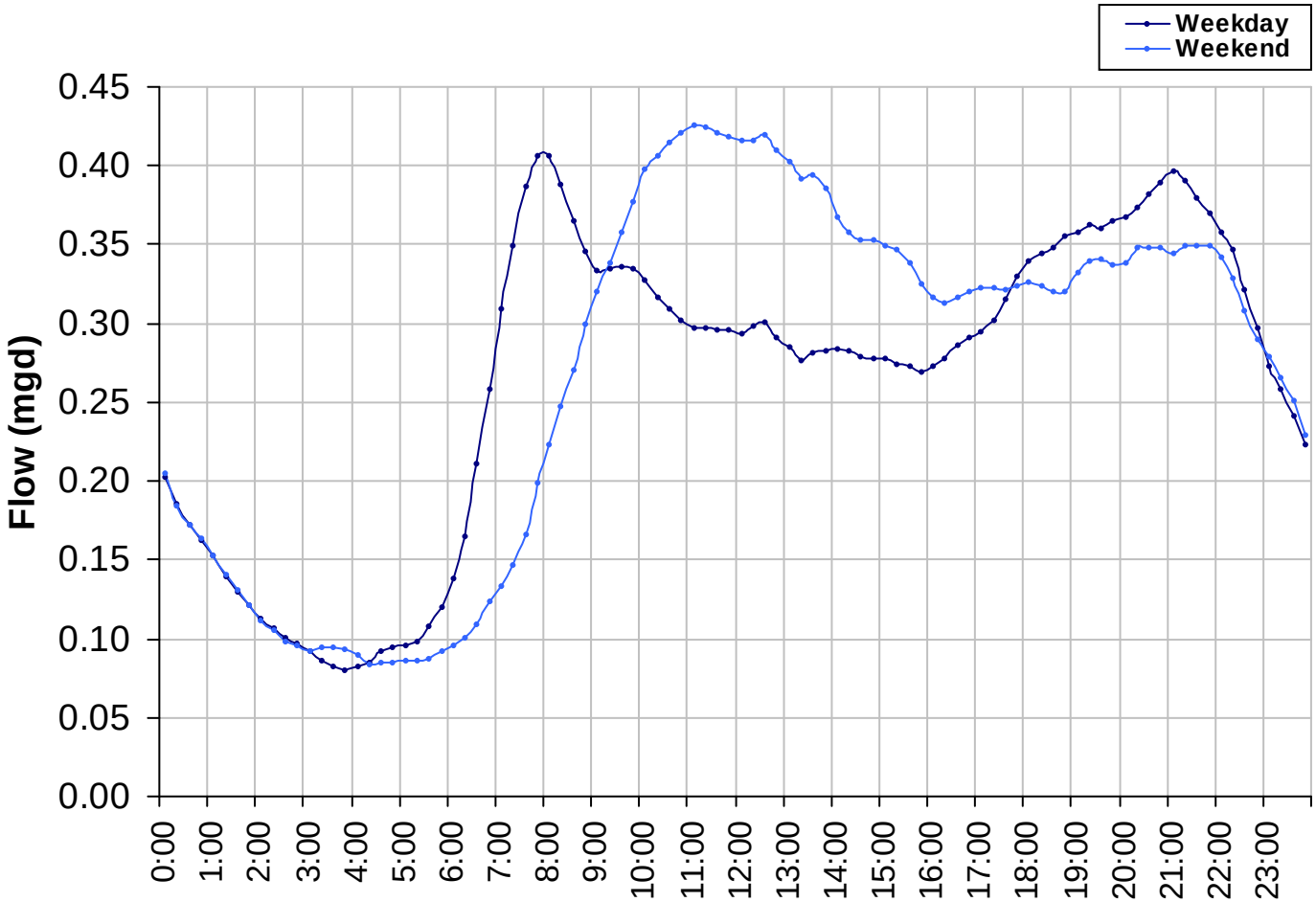
Avg Flow: 0.273 mgd **Peak Flow: 0.683 mgd** **Min Flow: 0.065 mgd**

Total Period Rainfall: 3.24 inches



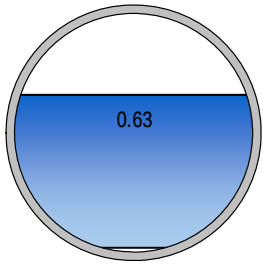
MH A15

Baseline Flow Hydrographs



Baseline Flow:

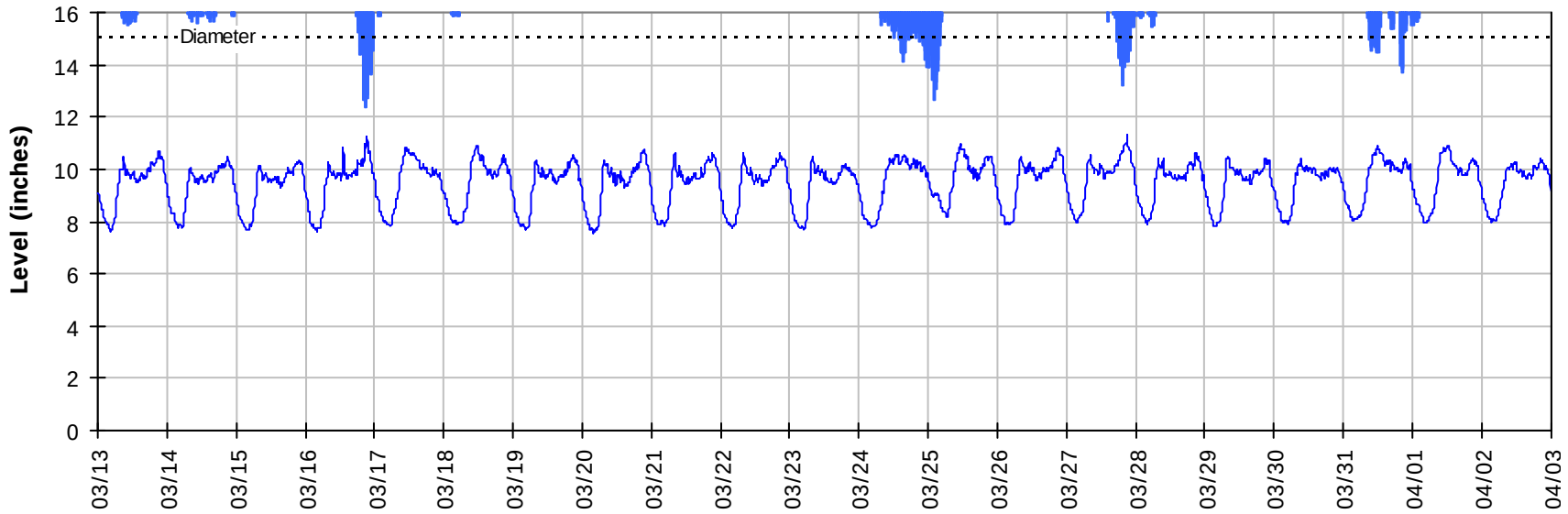
0.266 *mgd*

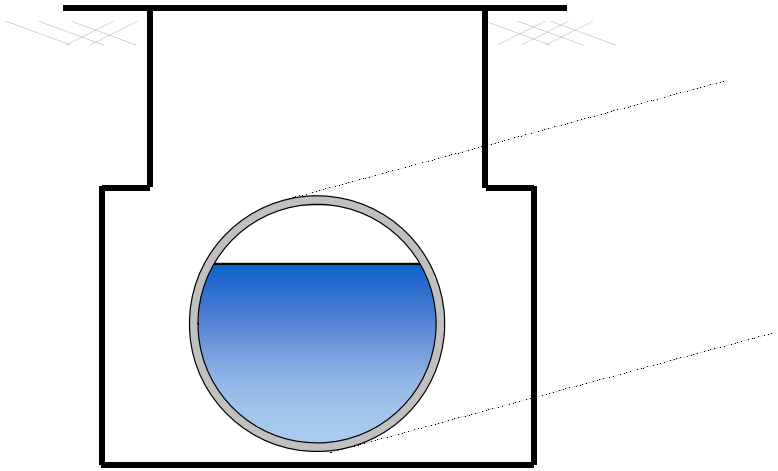


MH A15

Site Capacity and Surcharge Summary

Realtime Flow Levels with Rainfall Data over Monitoring Period





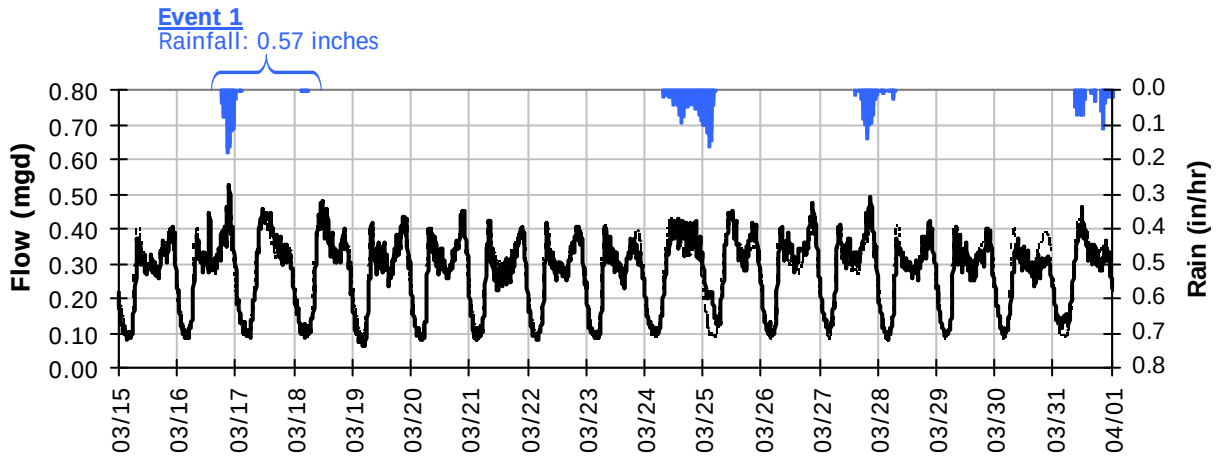
Pipe Diameter: 15 *inches*

Peak Measured Level: 11.3 *inches*

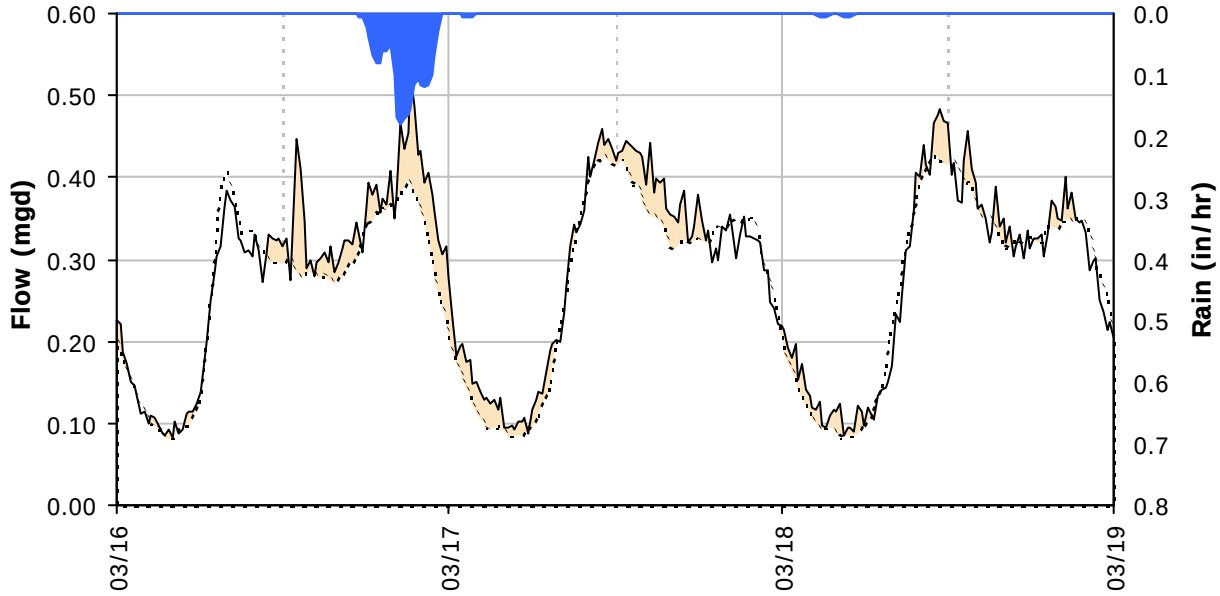
Peak d/D Ratio: 0.75

MH A15
I/I Summary: Event 1

Baseline and Realtime Flows with Rainfall Data over Monitoring Period



Event 1 Detail Graph

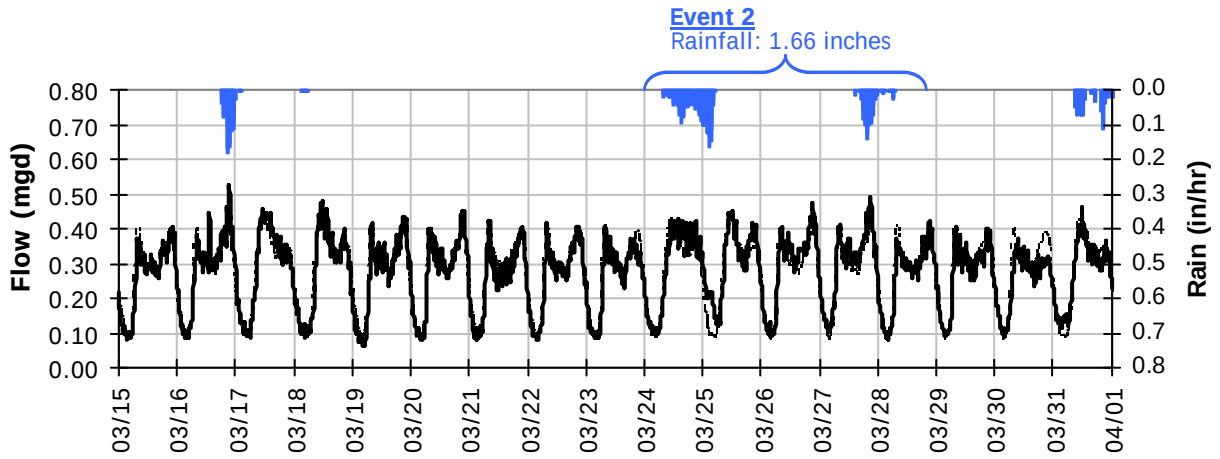


Storm Event I/I Analysis (Rain = 0.57 inches)

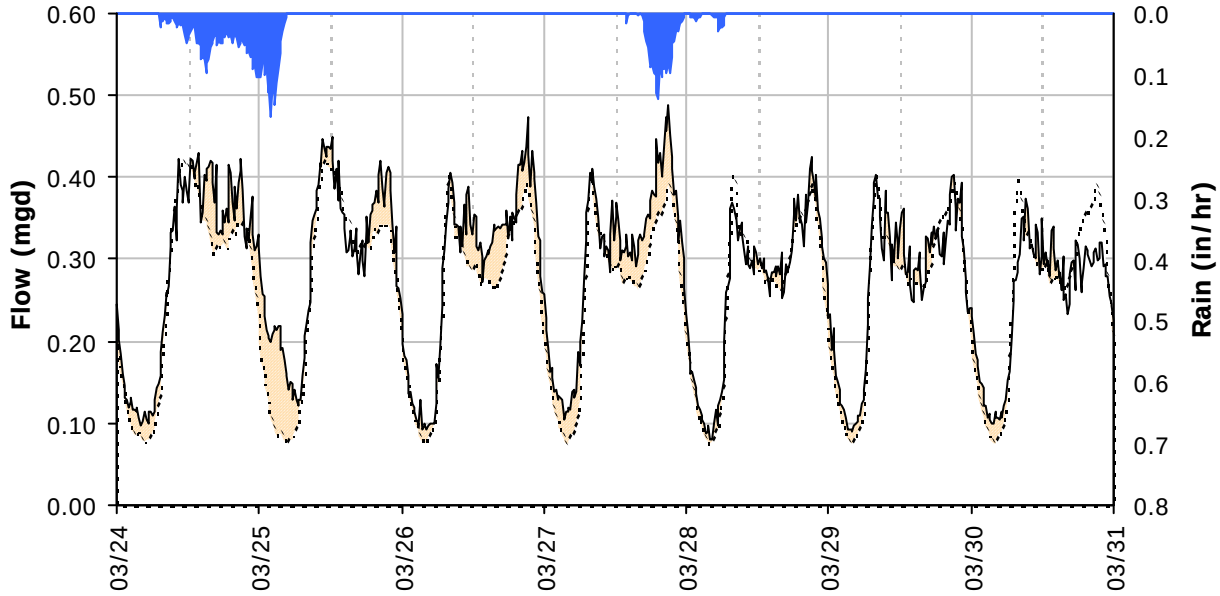
Capacity		Inflow		RDI (infiltration)		Combined I/I	
Peak Flow:	0.53 *mgd*	**Peak I/I Rate:**	0.14 *mgd*	**Infiltration Rate:** (3/18/2012)	0.006 *mgd*	**Total I/I:**	37,000 *gallons*
PF:	1.98	**PkI/I:IDM:**	2,617 *gpd/IDM*	**RDI:IDM:**	123 *gpd/IDM*	**Total I/I:IDM:**	1,244 *gal/IDM/in*
Peak Level:	11.23 *in*	**PkI/I:Acre:**	664 *gpd/acre*	**RDI:Acre:**	31 *gpd/acre*	**R-Value:**	1.2%
d/D Ratio:	0.75	**Pk I/I:ADWF:**	0.51	**RDI (% of BL):**	2%	**Total I/I:ADWF:**	0.24 *per in-rain*

MH A15
I/I Summary: Event 2

Baseline and Realtime Flows with Rainfall Data over Monitoring Period



Event 2 Detail Graph



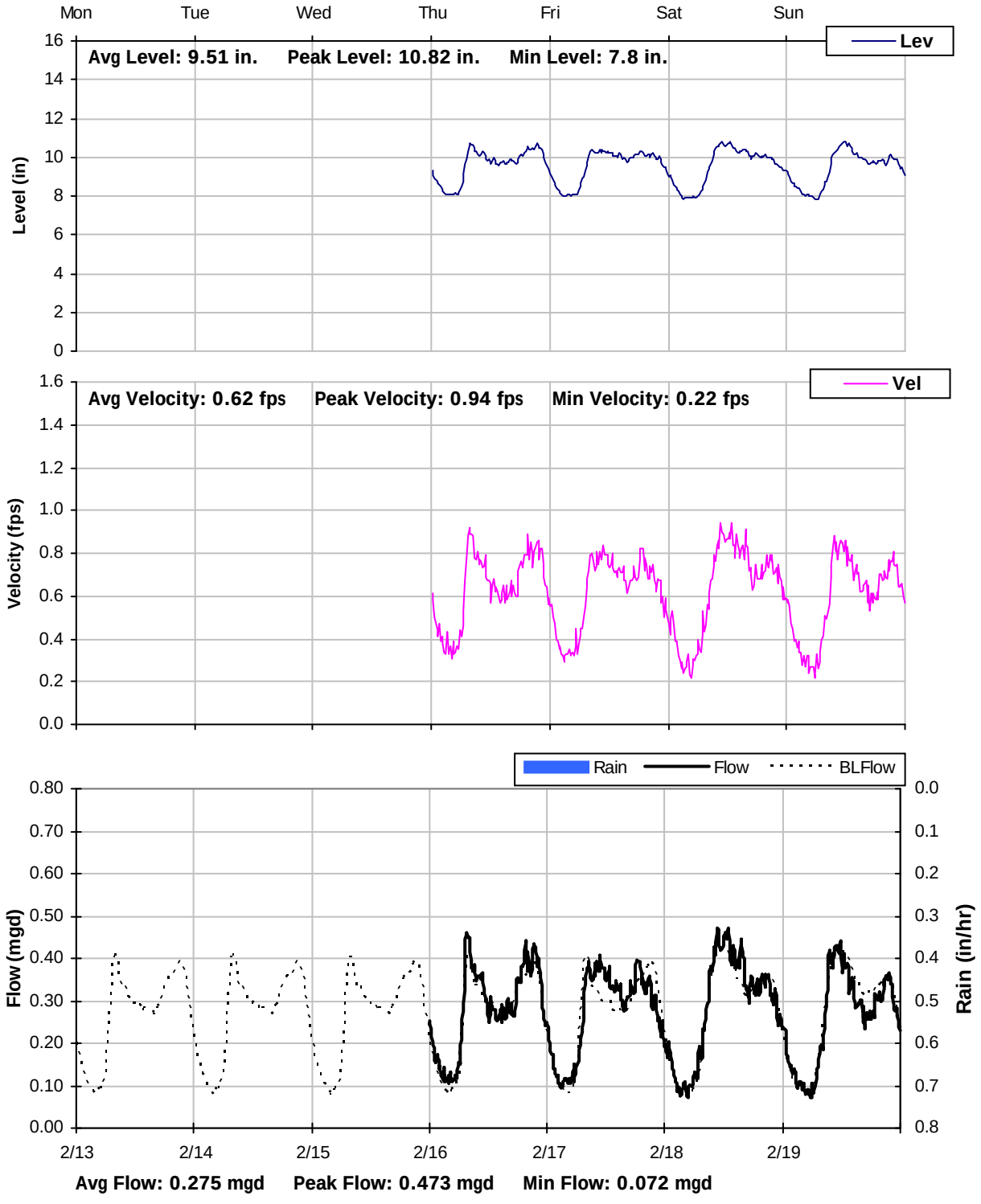
Storm Event I/I Analysis (Rain = 1.66 inches)

Capacity			Inflow			RDI (infiltration)			Combined I/I		
Peak Flow:	0.49	*mgd*	**Peak I/I Rate:**	0.12	*mgd*	**Infiltration Rate:** (3/26/2012)	0.024	*mgd*	**Total I/I:**	143,000	*gallons*
PF:	1.84		**PkI/I:IDM:**	2,401	*gpd/IDM*	**RDI:IDM:**	460	*gpd/IDM*	**Total I/I:IDM:**	1,654	*gal/IDM/in*
Peak Level:	11.31	*in*	**PkI/I:Acre:**	609	*gpd/acre*	**RDI:Acre:**	117	*gpd/acre*	**R-Value:**	1.5%	
d/D Ratio:	0.75		**Pk I/I:ADWF:**	0.47		**RDI (% of BL):**	9%		**Total I/I:ADWF:**	0.32	*per in-rain*

MH A15

Weekly Level, Velocity and Flow Hydrographs

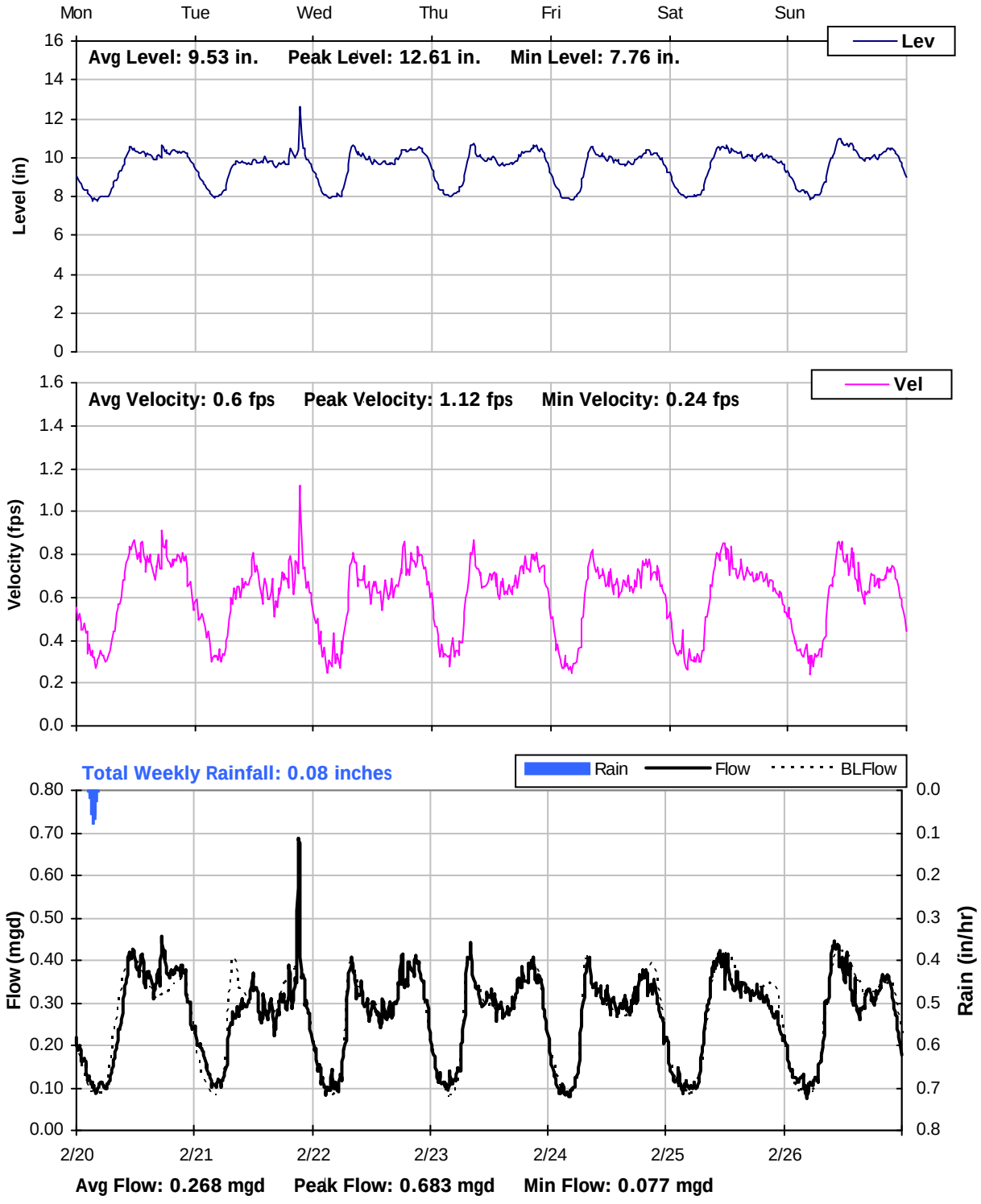
2/13/2012 to 2/20/2012



MH A15

Weekly Level, Velocity and Flow Hydrographs

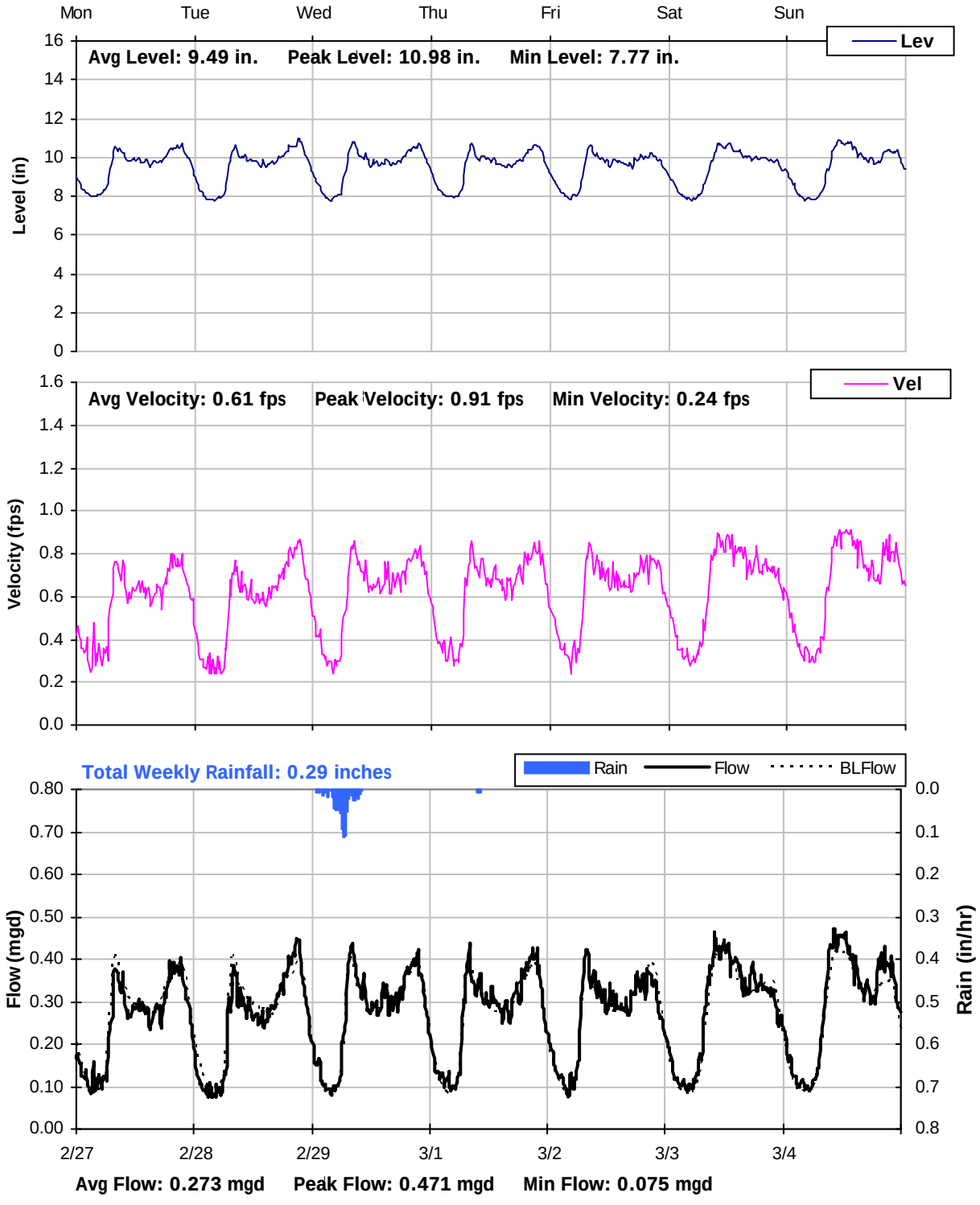
2/20/2012 to 2/27/2012



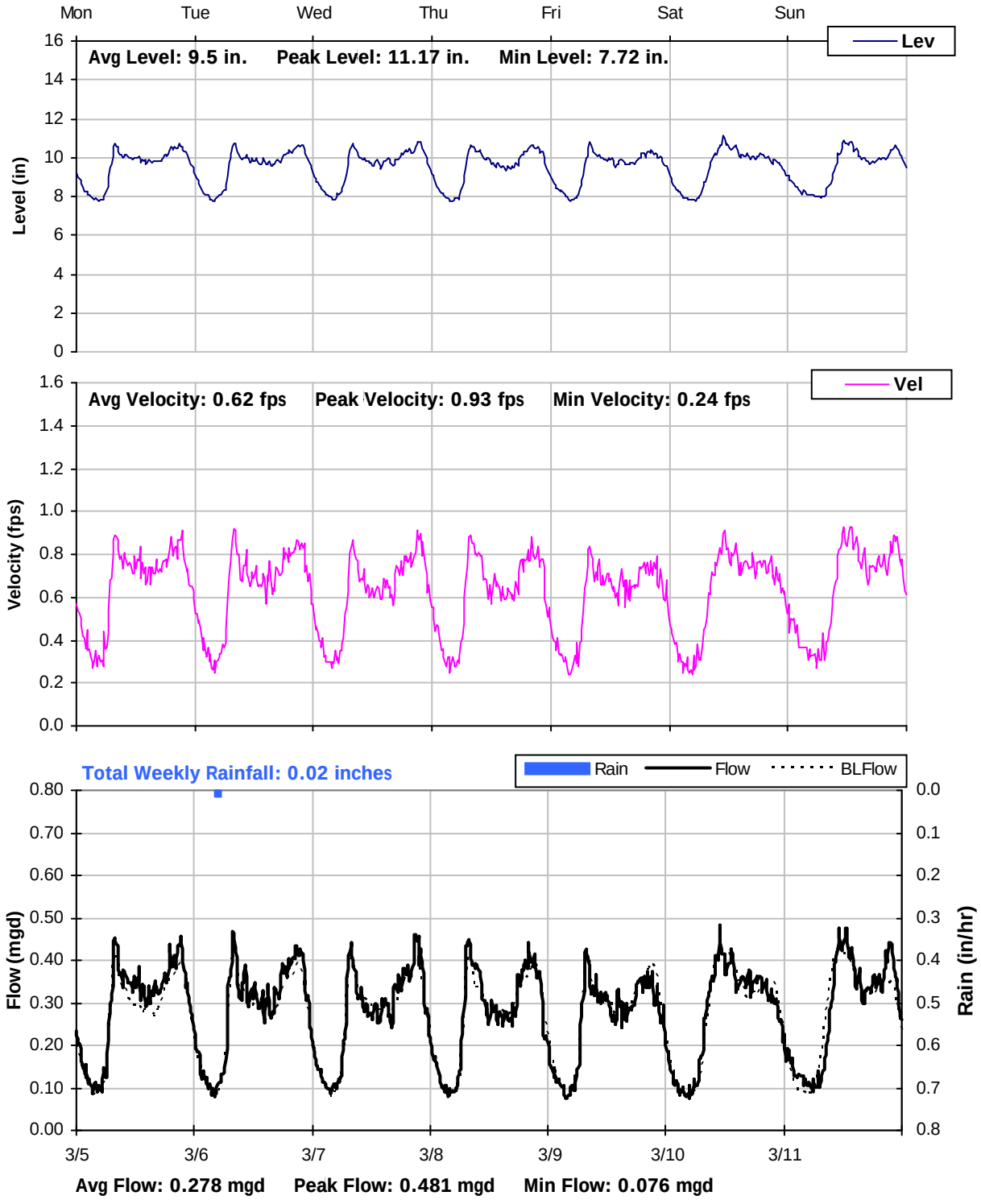
MH A15

Weekly Level, Velocity and Flow Hydrographs

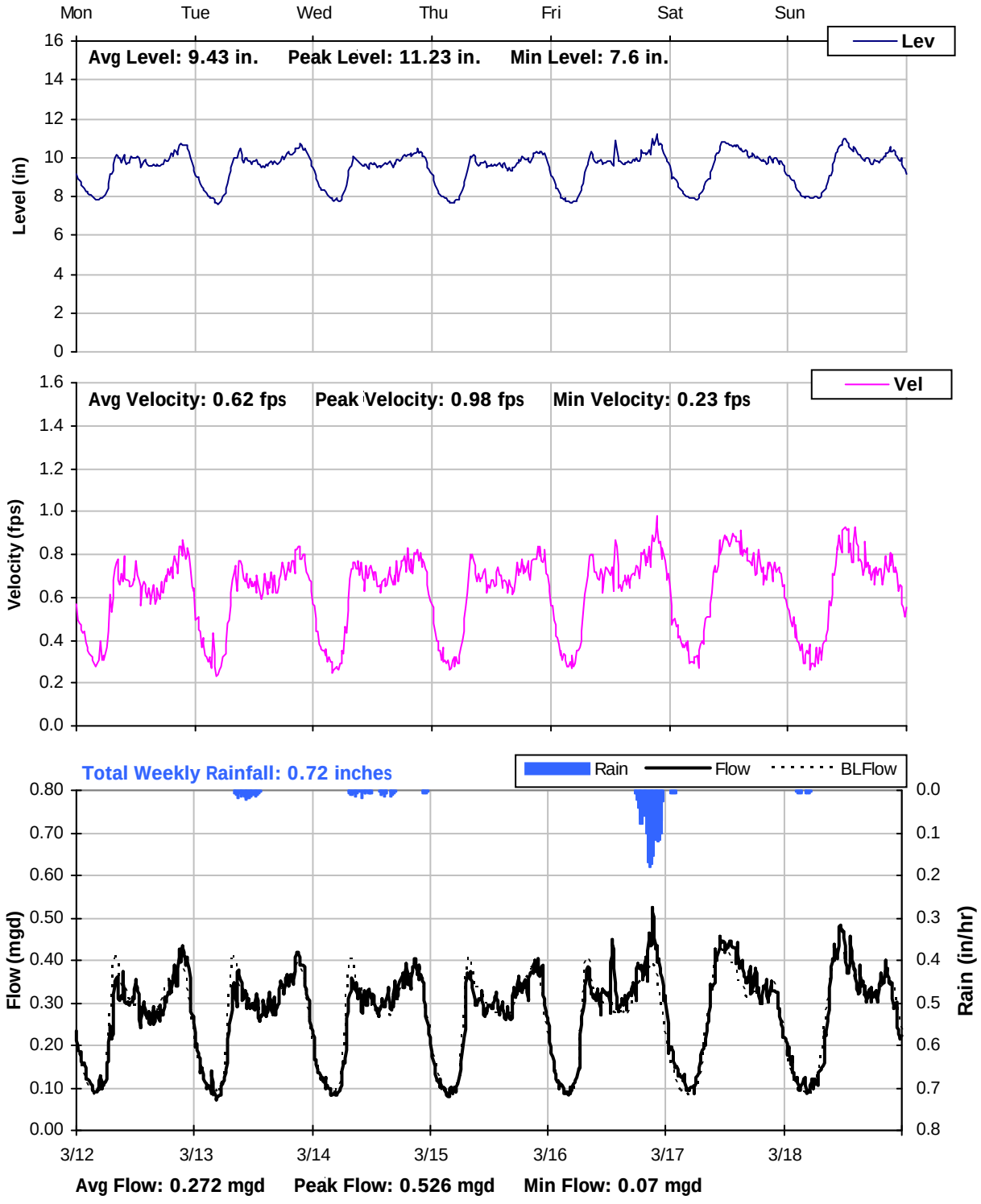
2/27/2012 to 3/5/2012



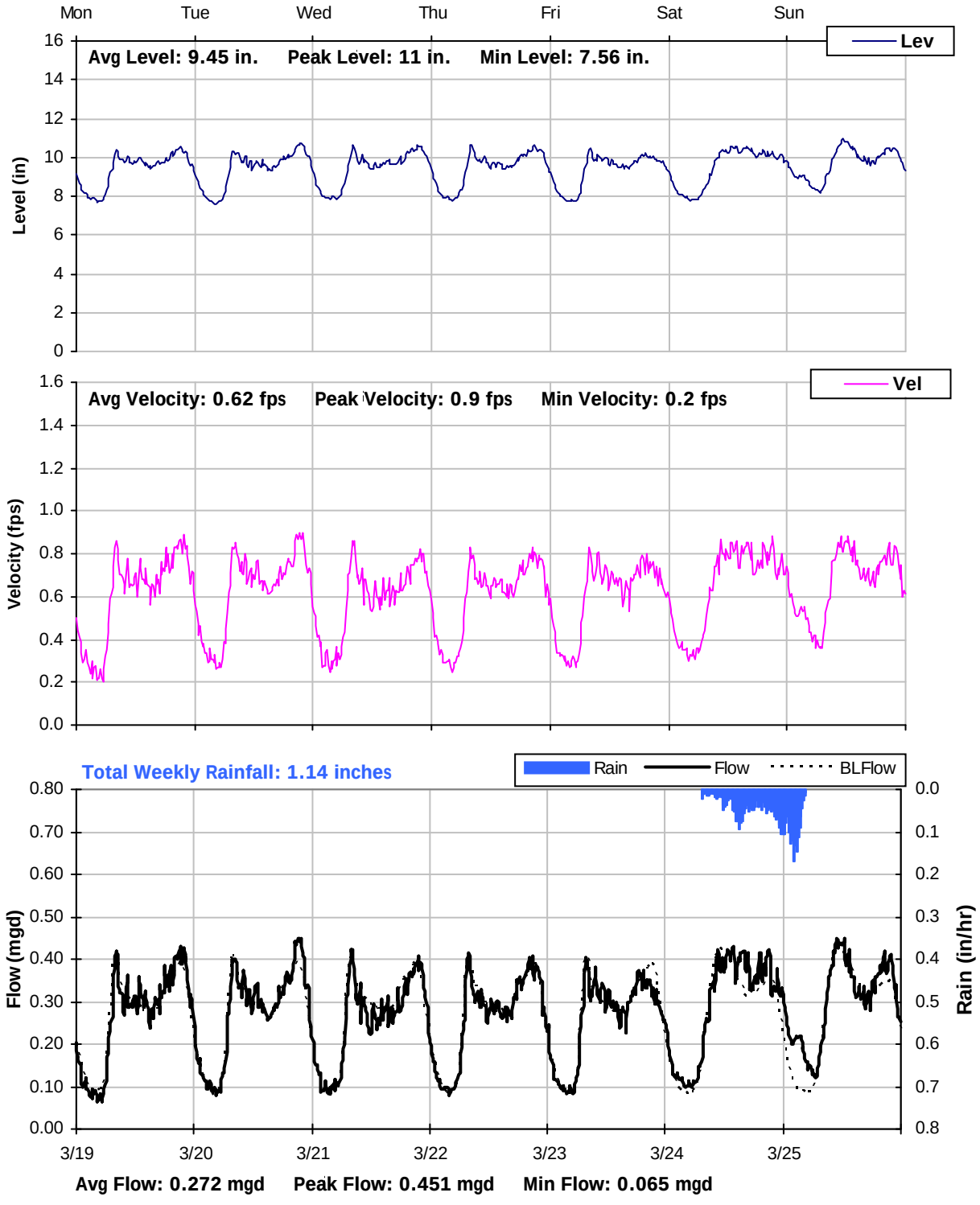
MH A15
Weekly Level, Velocity and Flow Hydrographs
3/5/2012 to 3/12/2012



MH A15
Weekly Level, Velocity and Flow Hydrographs
3/12/2012 to 3/19/2012



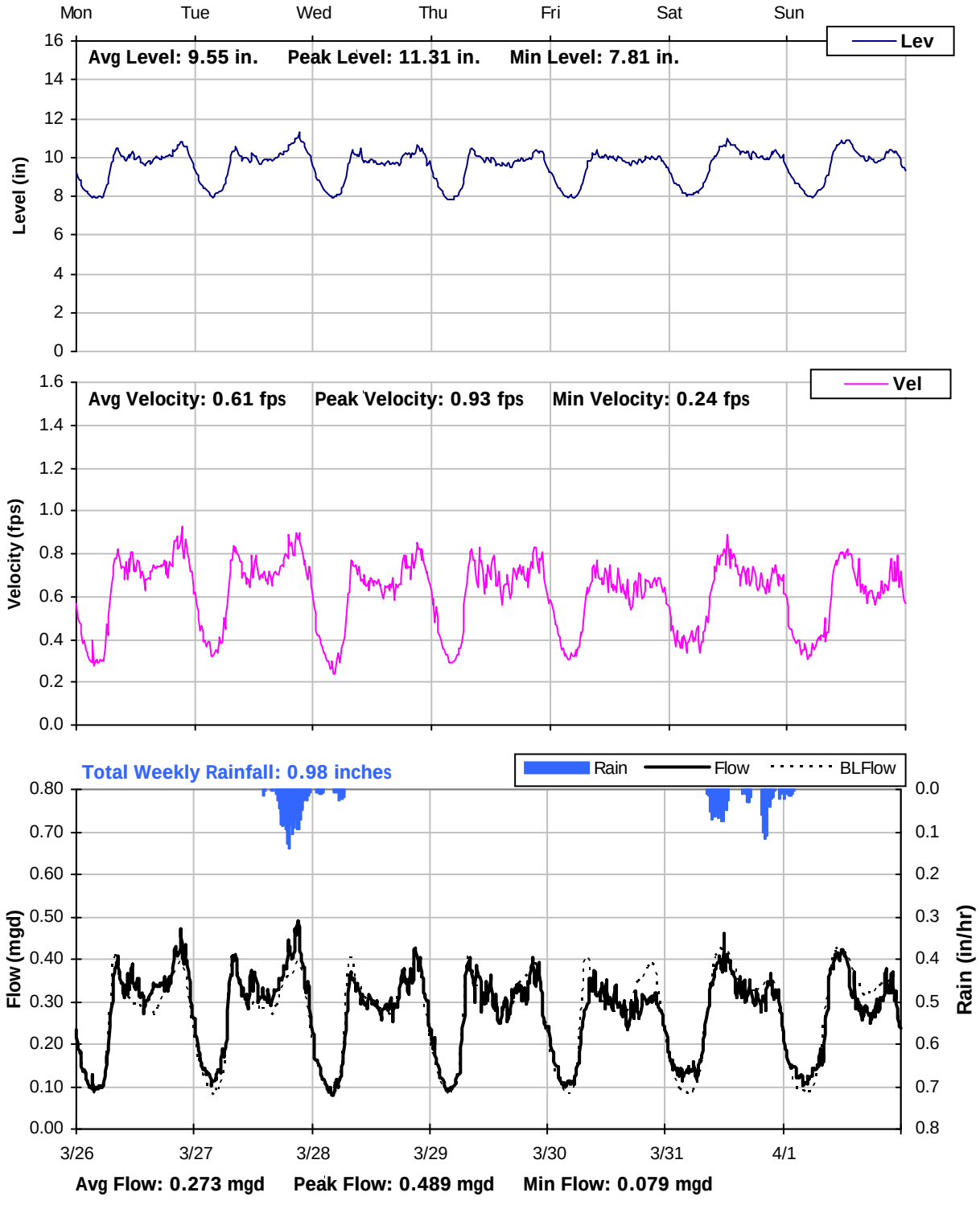
MH A15
Weekly Level, Velocity and Flow Hydrographs
3/19/2012 to 3/26/2012



MH A15

Weekly Level, Velocity and Flow Hydrographs

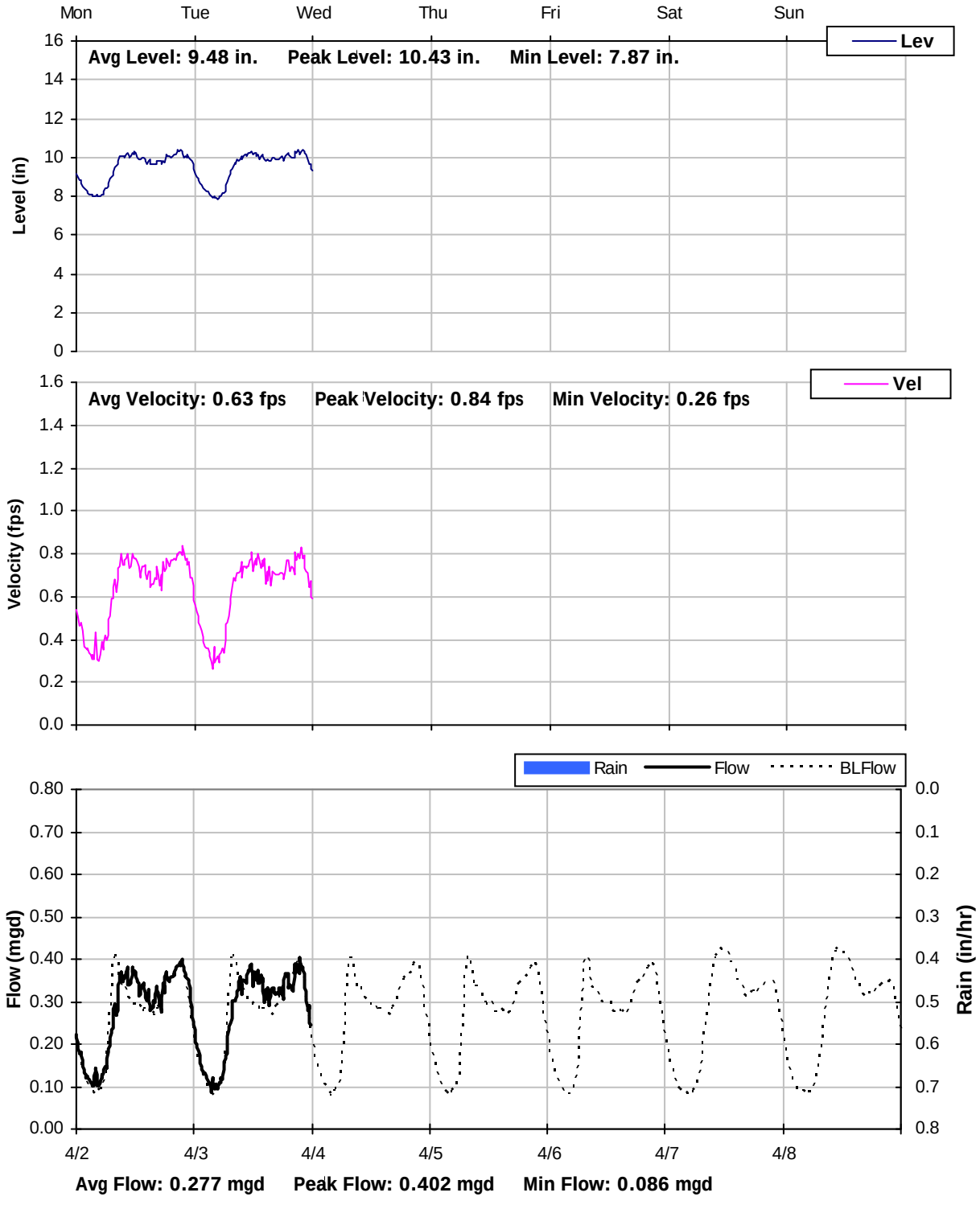
3/26/2012 to 4/2/2012



MH A15

Weekly Level, Velocity and Flow Hydrographs

4/2/2012 to 4/9/2012



East Palo Alto Sanitary District

Sanitary Sewer Flow Monitoring and I/I Study

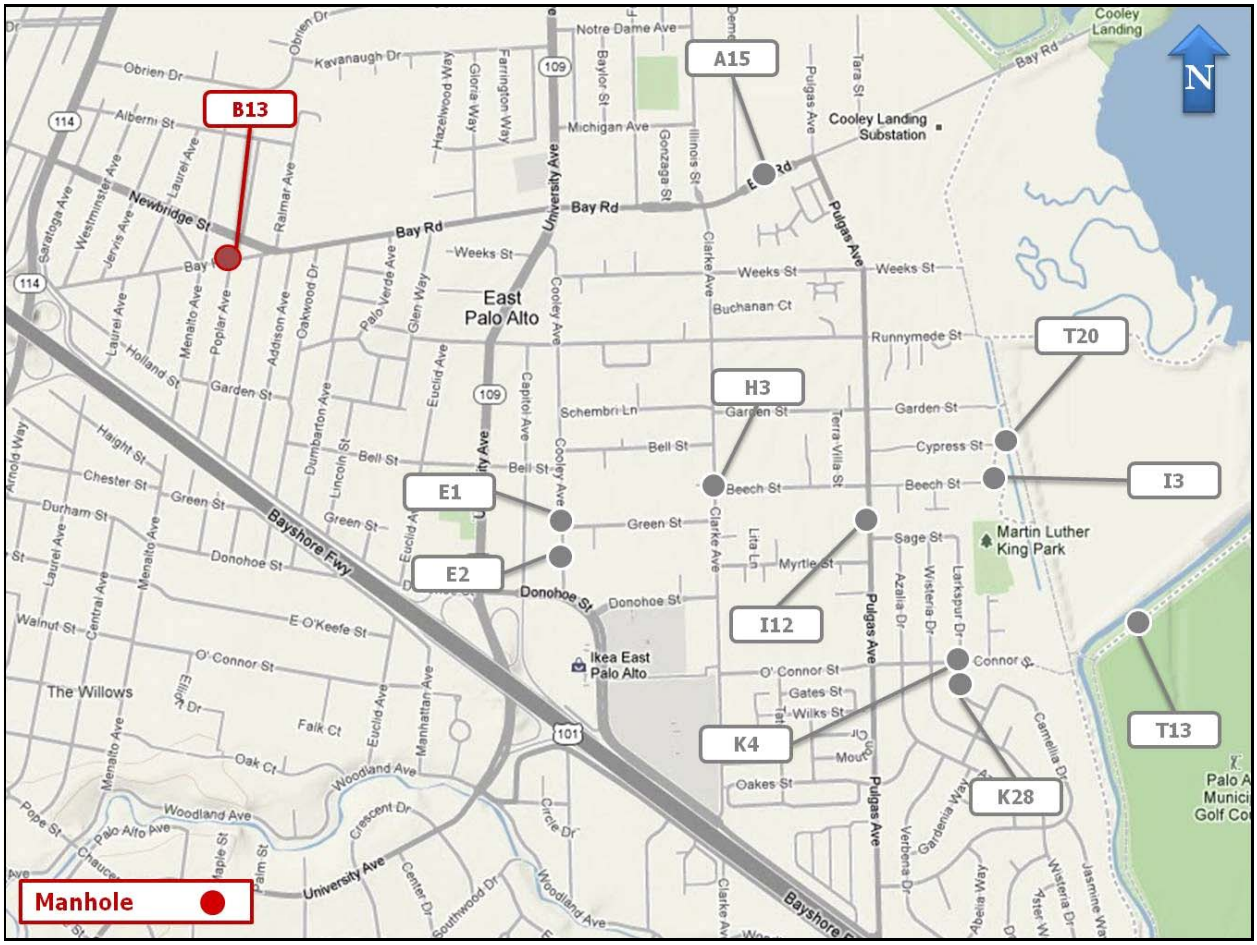
Year 2012

Monitoring Site: MH B13

Location: Bay Road at Poplar Avenue

Data Summary Report

Vicinity Map:



MH B13
Site Information Report

Location: Bay Road at Poplar Avenue

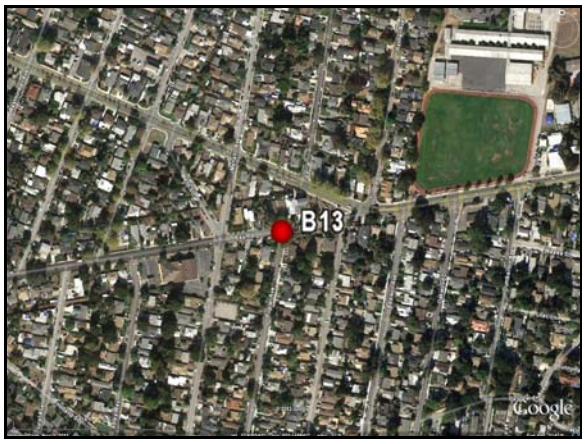
Coordinates: 122.1491° W, 37.4705° N

Elevation: 17 feet

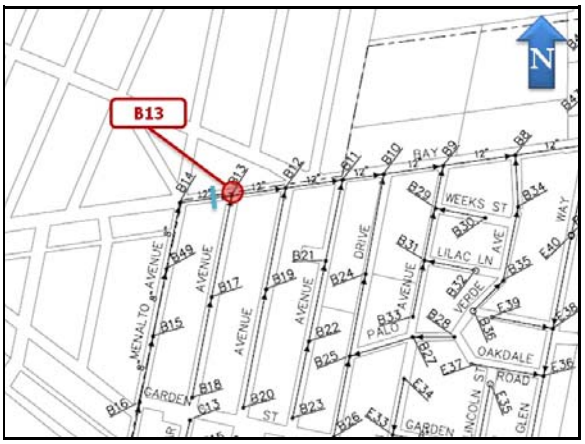
Diameter: 12 inches

Baseline Flow: 0.059 mgd

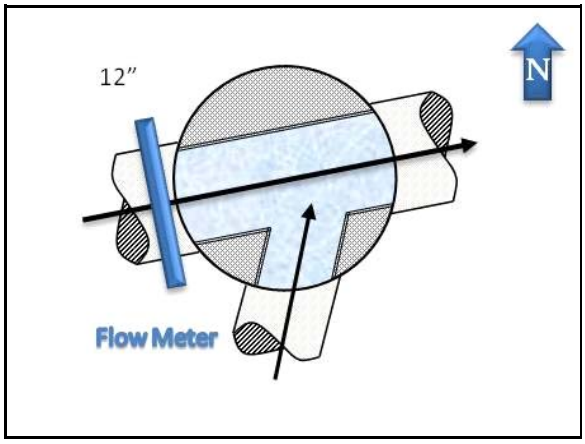
Peak Measured Flow: 0.259 mgd



Satellite Map



Sanitary Sewer Map



Flow Sketch

View from Street

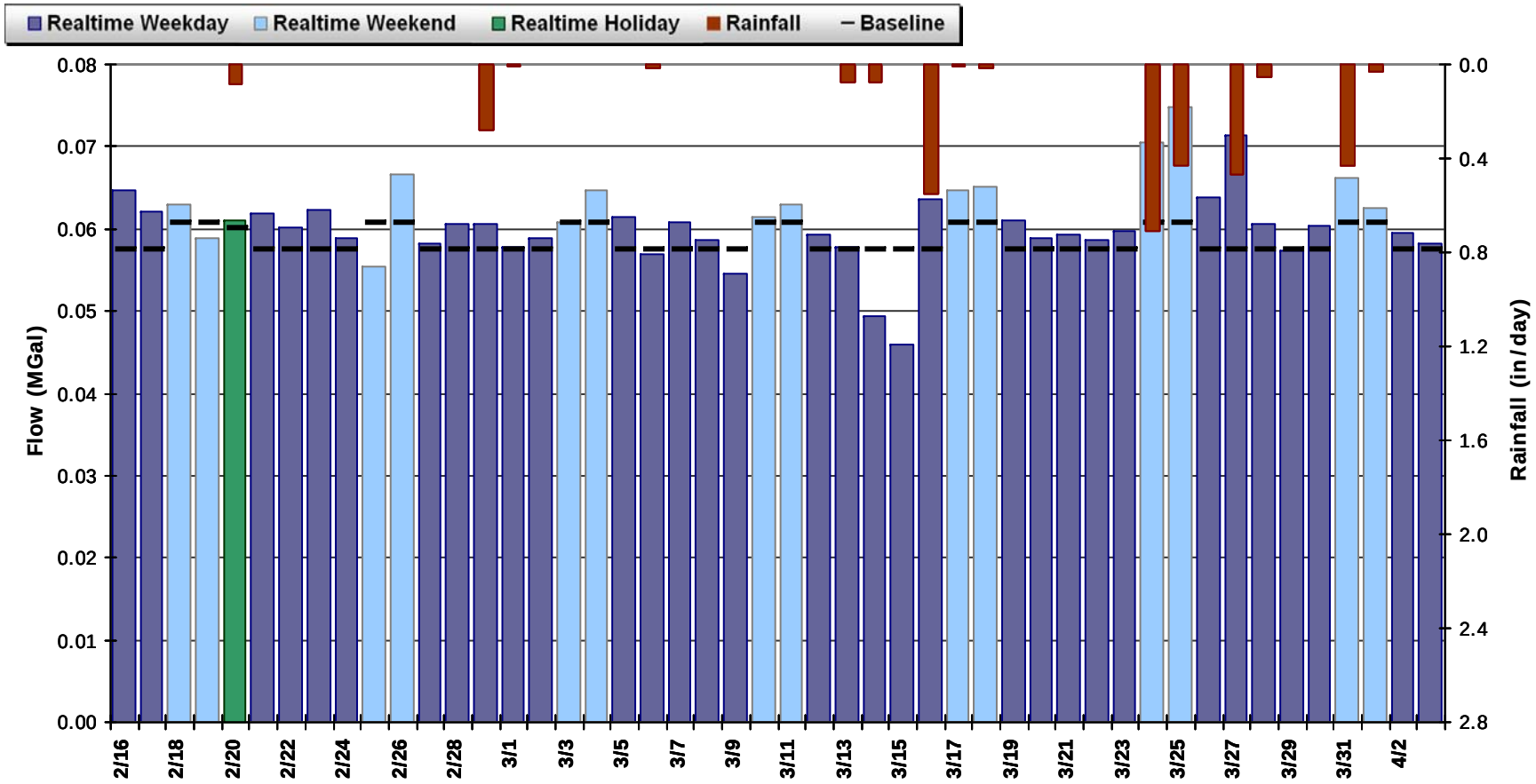
Plan View

MH B13

Period Flow Summary: Daily Flow Totals

Avg Daily Flow: 0.061 MGal **Peak Daily Flow: 0.075 MGal** **Min Daily Flow: 0.046 MGal**

Total Period Rainfall: 3.24 inches

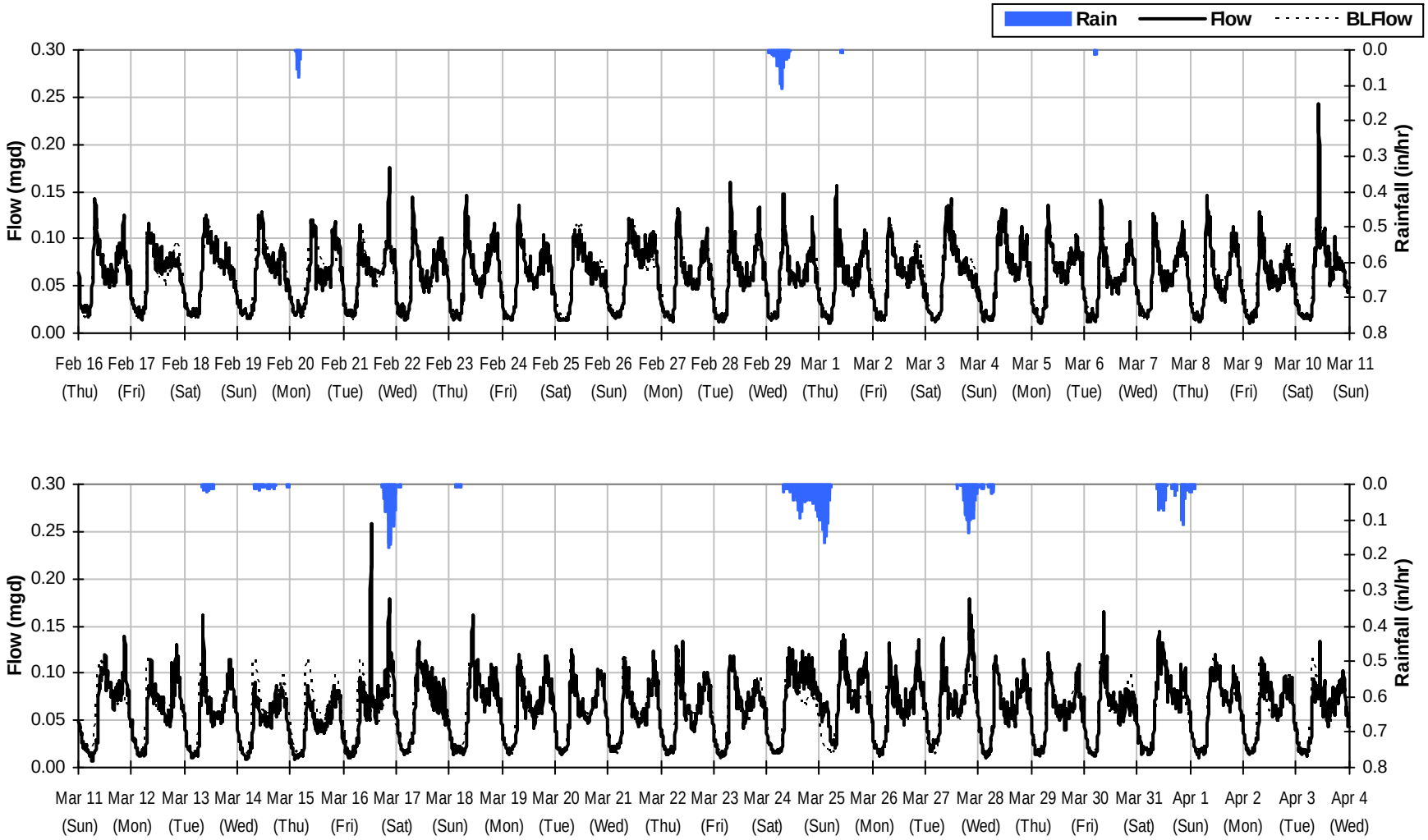


MH B13

Period Flow Summary: February 16 to April 4, 2012

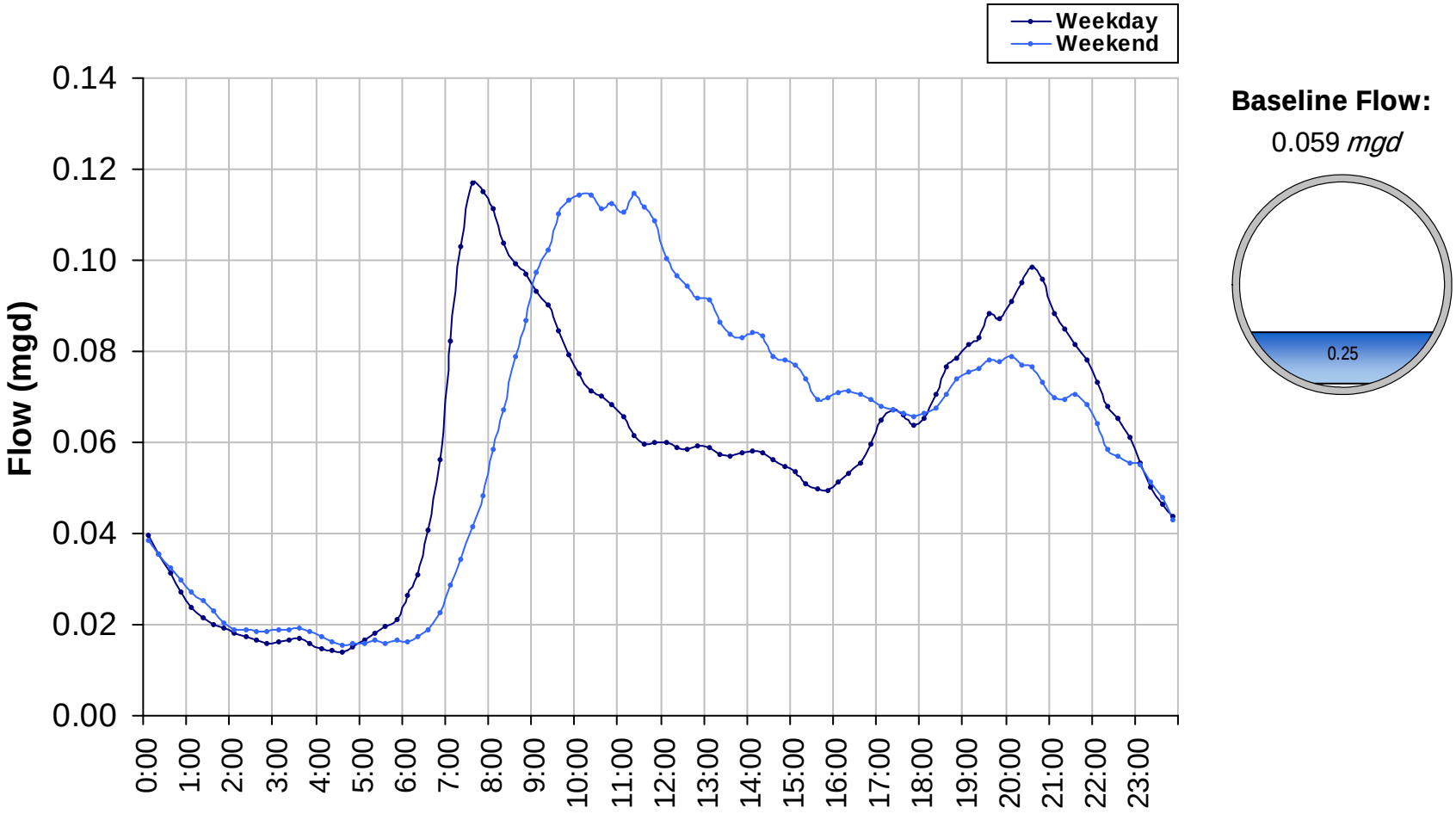
Avg Flow: 0.061 mgd Peak Flow: 0.259 mgd Min Flow: 0.007 mgd

Total Period Rainfall: 3.24 inches



MH B13

Baseline Flow Hydrographs



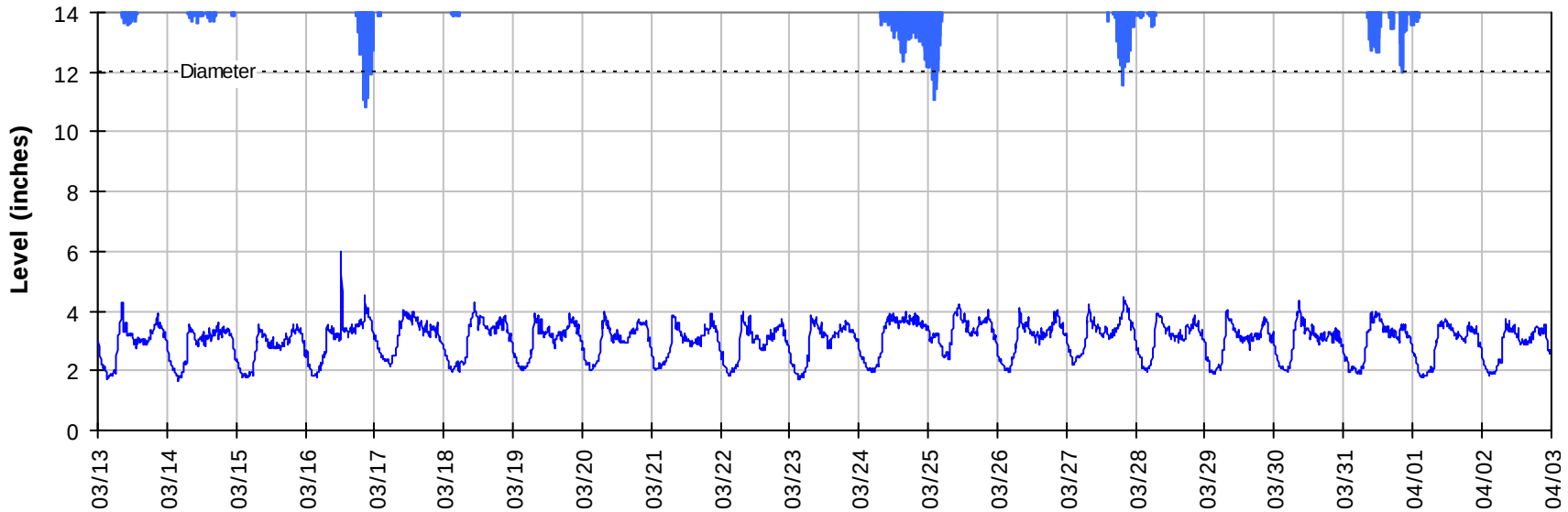
Baseline Flow:

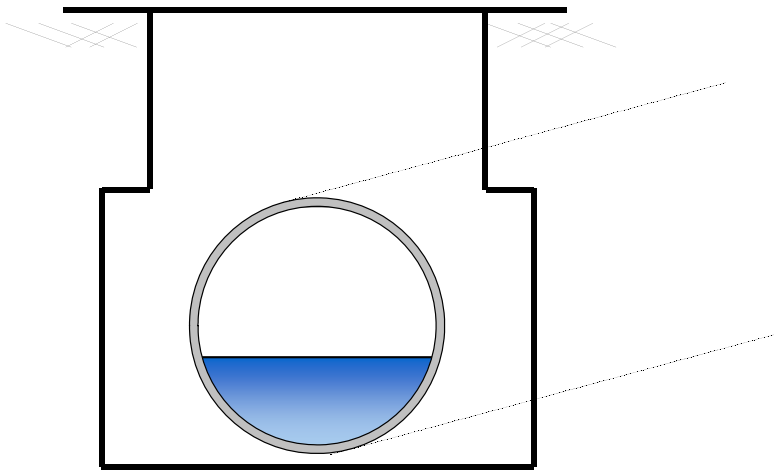
0.059 *mgd*

MH B13

Site Capacity and Surcharge Summary

Realtime Flow Levels with Rainfall Data over Monitoring Period

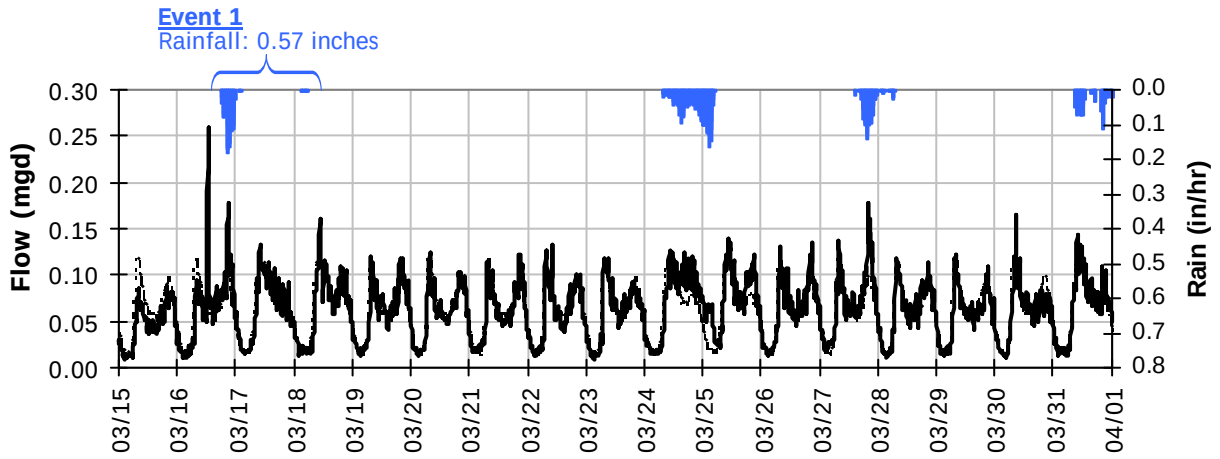




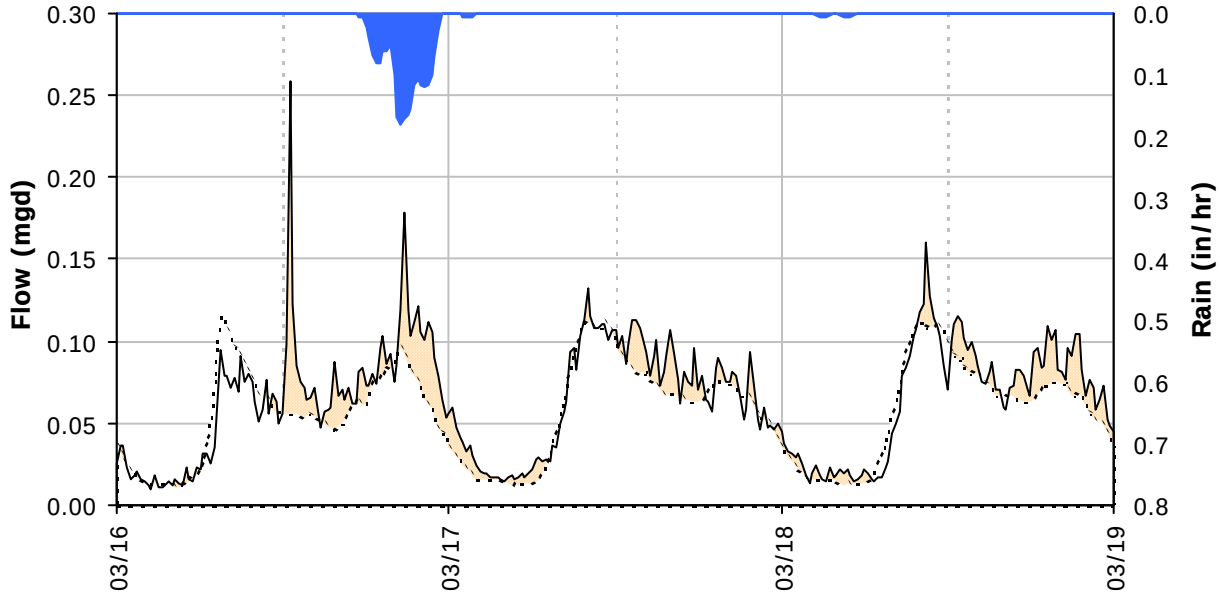
Pipe Diameter:	12	*inches*
Peak Measured Level:	4.54	*inches*
Peak d/D Ratio:	0.38	

MH B13
I/I Summary: Event 1

Baseline and Realtime Flows with Rainfall Data over Monitoring Period



Event 1 Detail Graph

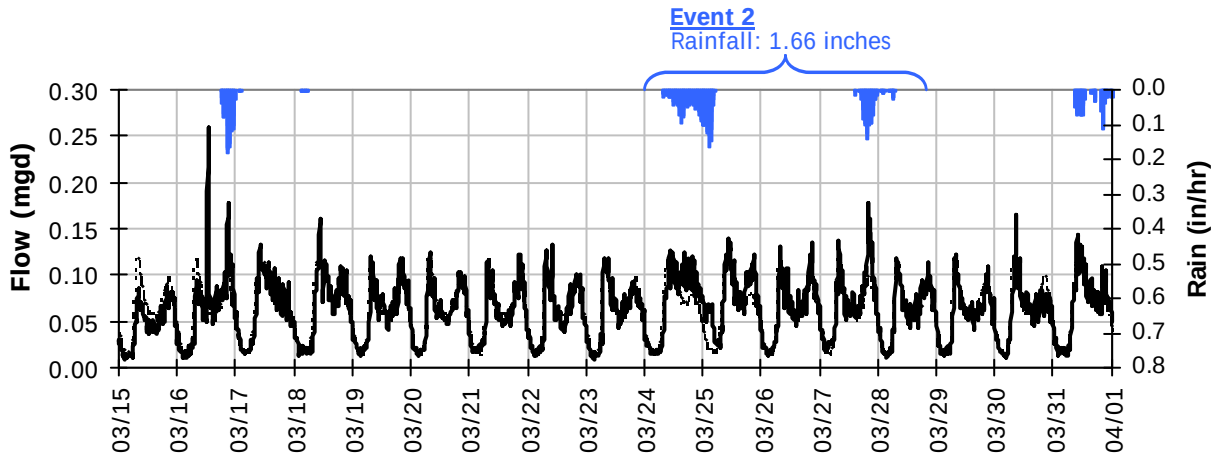


Storm Event I/I Analysis (Rain = 0.57 inches)

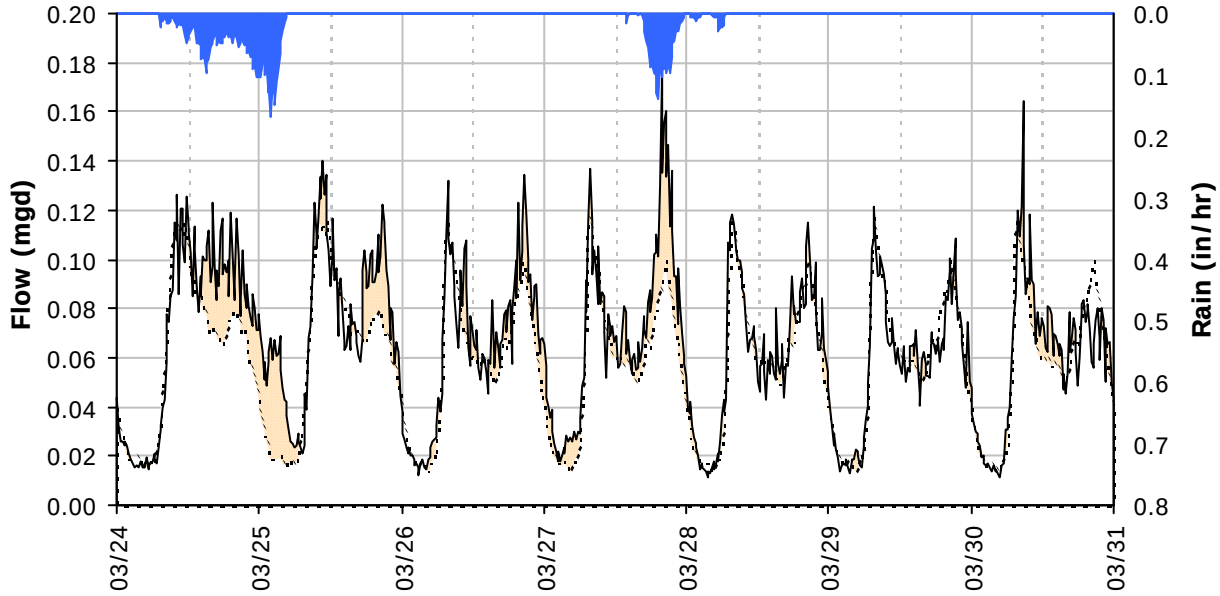
Capacity		Inflow		RDI (infiltration)		Combined I/I	
Peak Flow:	0.18 *mgd*	**Peak I/I Rate:**	0.08 *mgd*	**Infiltration Rate:** (3/18/2012)	0.007 *mgd*	**Total I/I:**	13,000 *gallons*
PF:	3.04	**PkI/I:IDM:**	3,852 *gpd/IDM*	**RDI:IDM:**	314 *gpd/IDM*	**Total I/I:IDM:**	1,042 *gal/IDM/in*
Peak Level:	4.54 *in*	**PkI/I:Acre:**	947 *gpd/acre*	**RDI:Acre:**	77 *gpd/acre*	**R-Value:**	0.9%
d/D Ratio:	0.38	**Pk I/I:ADWF:**	1.40	**RDI (% of BL):**	17%	**Total I/I:ADWF:**	0.38 *per in-rain*

MH B13
I/I Summary: Event 2

Baseline and Realtime Flows with Rainfall Data over Monitoring Period



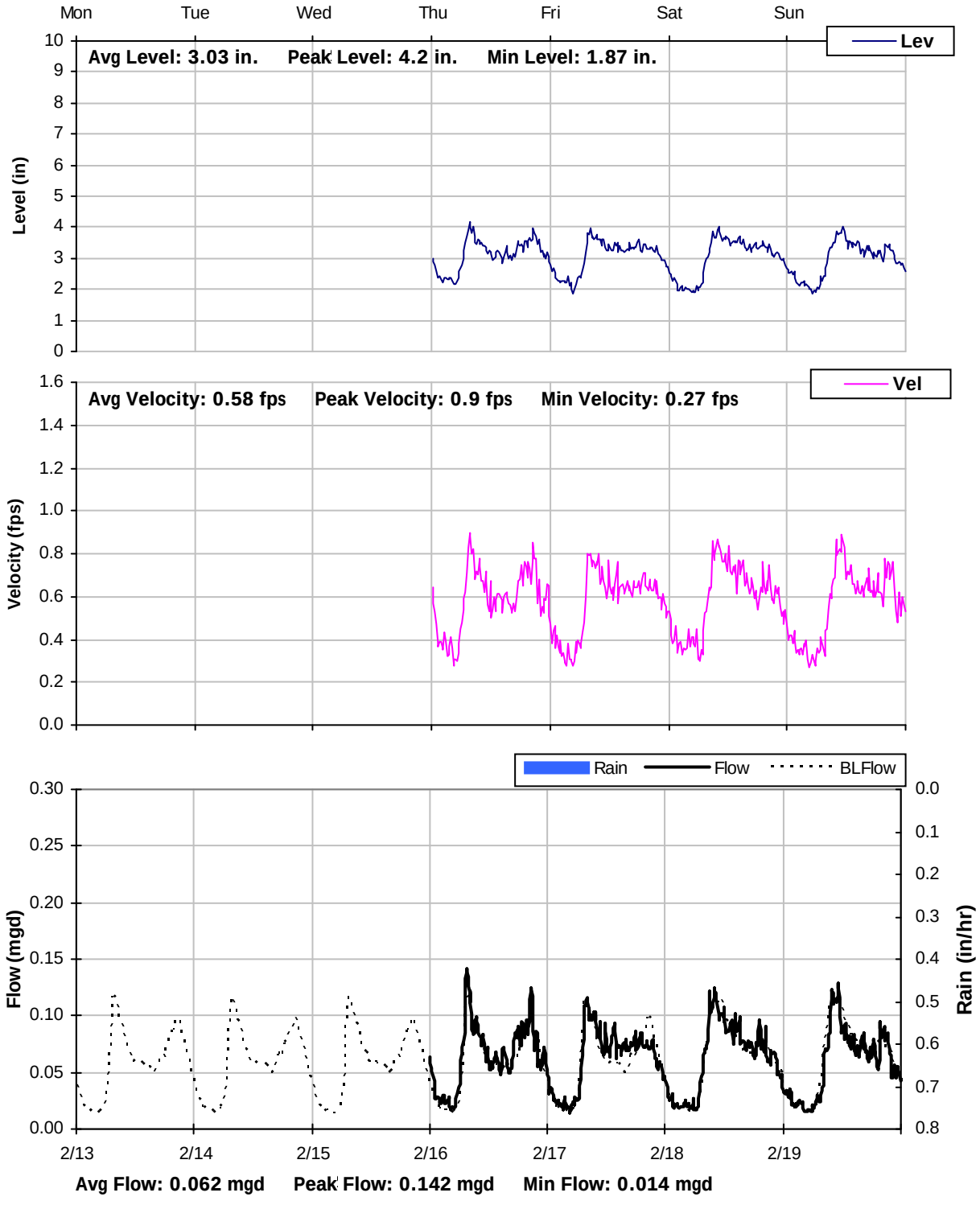
Event 2 Detail Graph



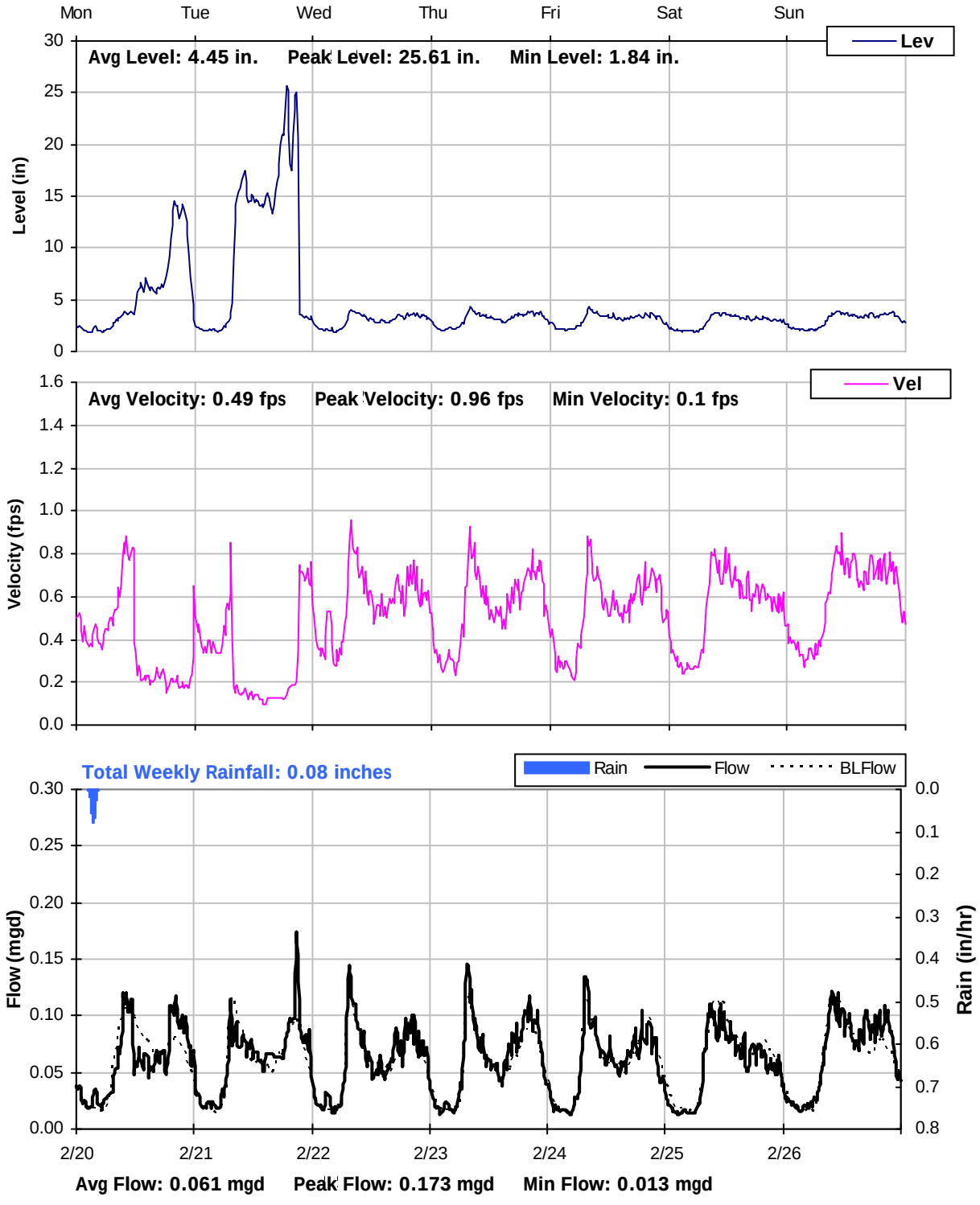
Storm Event I/I Analysis (Rain = 1.66 inches)

Capacity		Inflow		RDI (infiltration)		Combined I/I	
Peak Flow:	0.18 *mgd*	**Peak I/I Rate:**	0.09 *mgd*	**Infiltration Rate:** (3/26/2012)	0.006 *mgd*	**Total I/I:**	47,000 *gallons*
PF:	3.04	**PkI/I:IDM:**	4,250 *gpd/IDM*	**RDI:IDM:**	297 *gpd/IDM*	**Total I/I:IDM:**	1,336 *gal/IDM/in*
Peak Level:	4.44 *in*	**PkI/I:Acre:**	1,045 *gpd/acre*	**RDI:Acre:**	73 *gpd/acre*	**R-Value:**	1.2%
d/D Ratio:	0.37	**Pk I/I:ADWF:**	1.55	**RDI (% of BL):**	11%	**Total I/I:ADWF:**	0.49 *per in-rain*

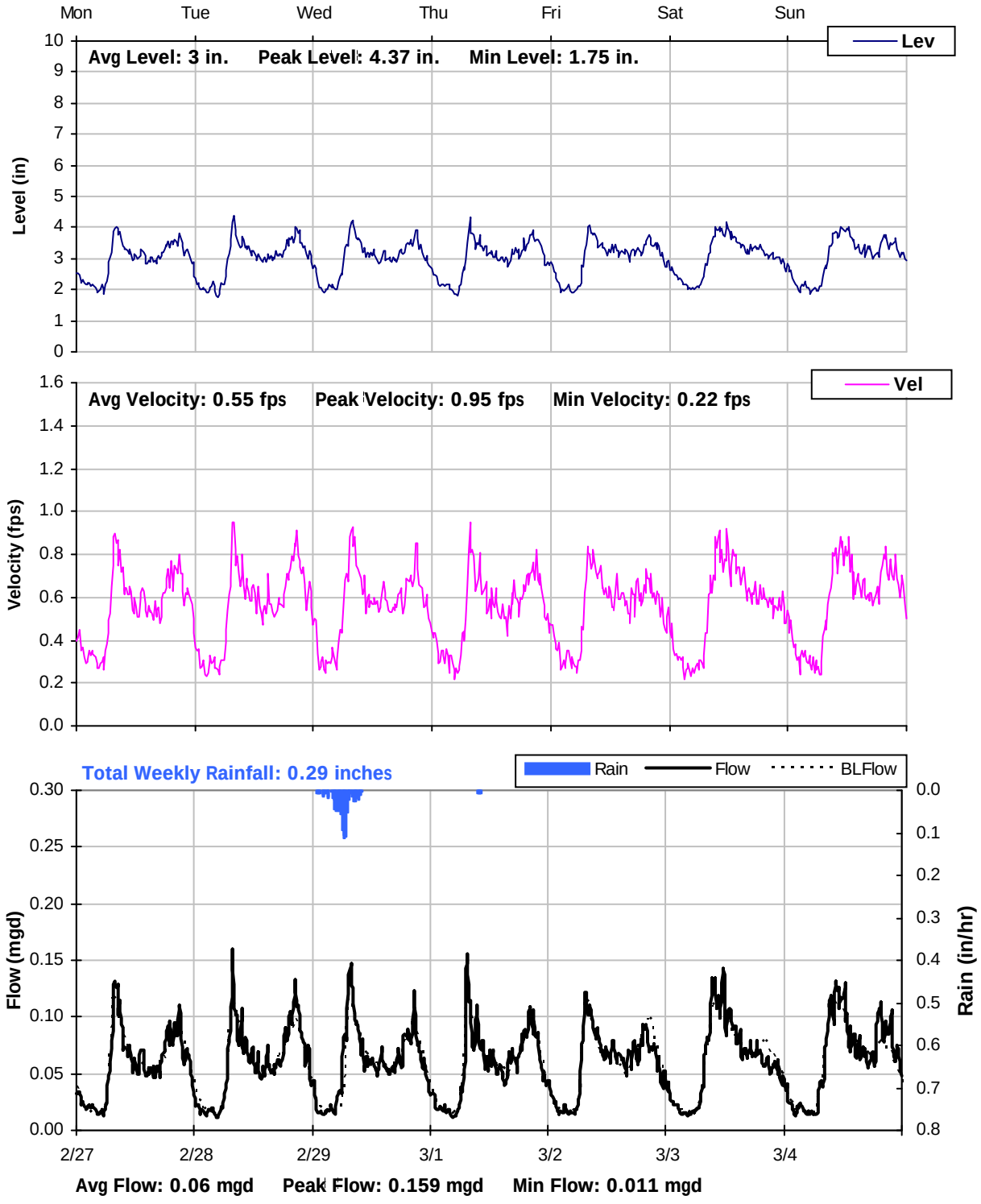
MH B13
Weekly Level, Velocity and Flow Hydrographs
2/13/2012 to 2/20/2012



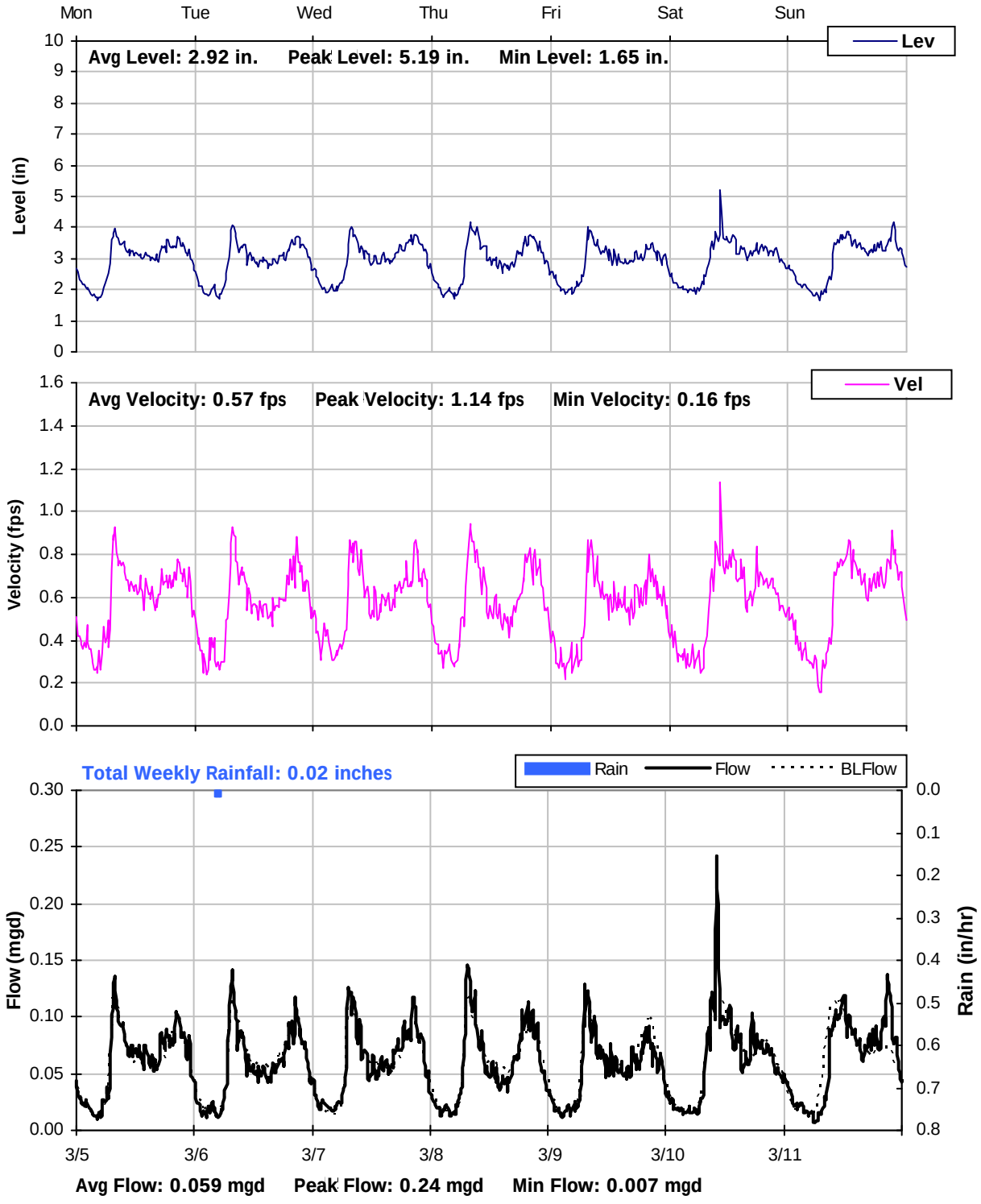
MH B13
Weekly Level, Velocity and Flow Hydrographs
2/20/2012 to 2/27/2012



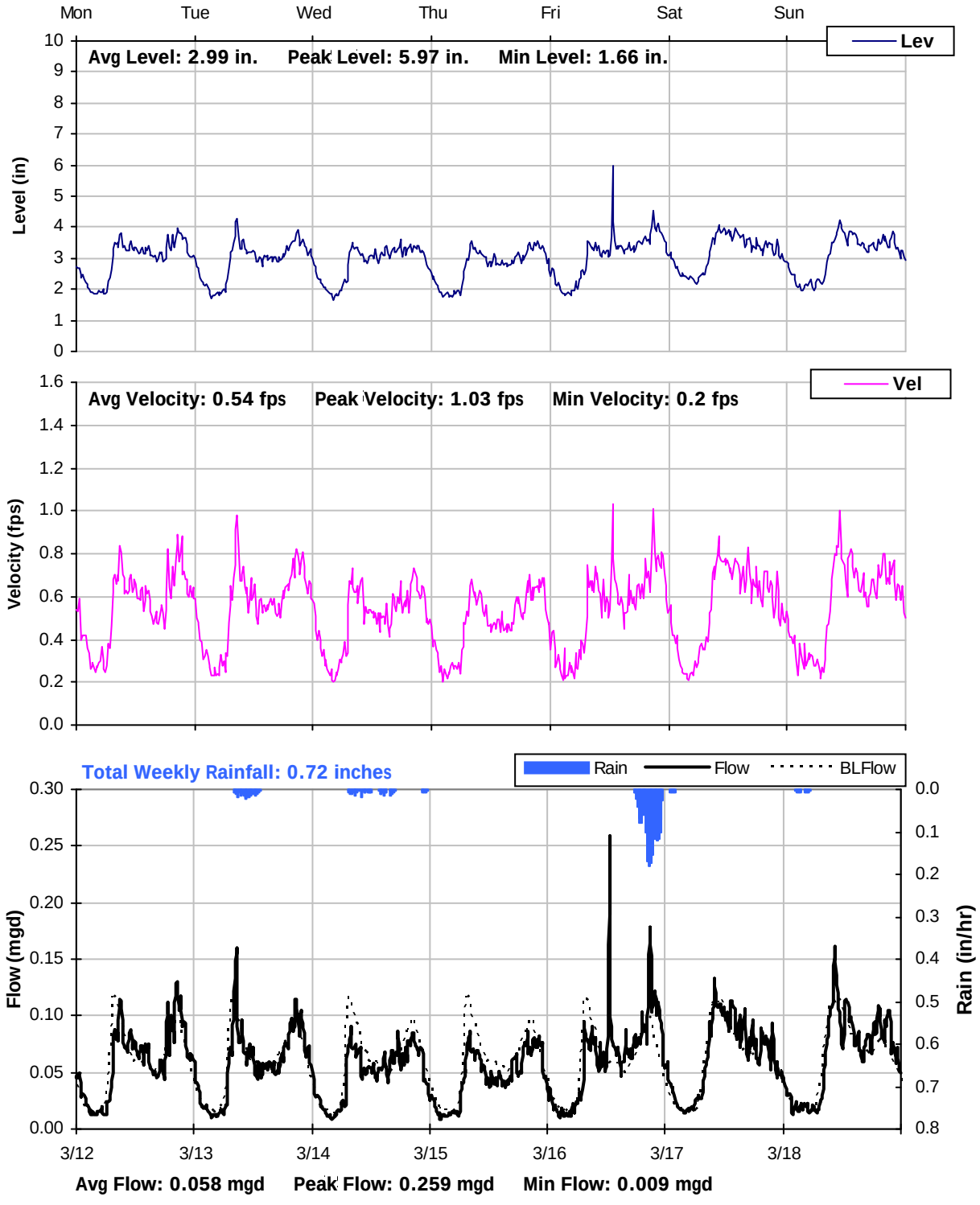
MH B13
Weekly Level, Velocity and Flow Hydrographs
2/27/2012 to 3/5/2012



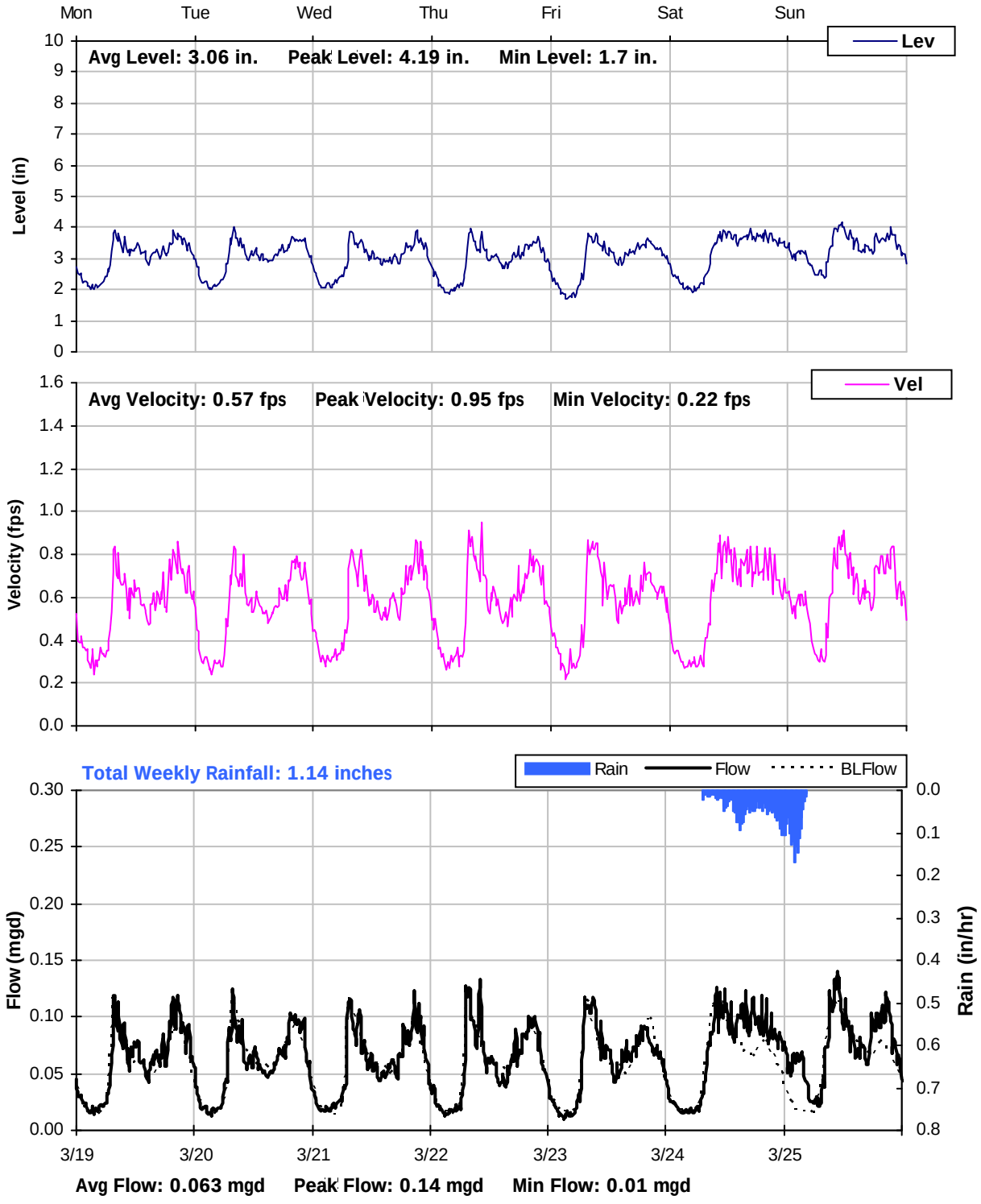
MH B13
Weekly Level, Velocity and Flow Hydrographs
3/5/2012 to 3/12/2012



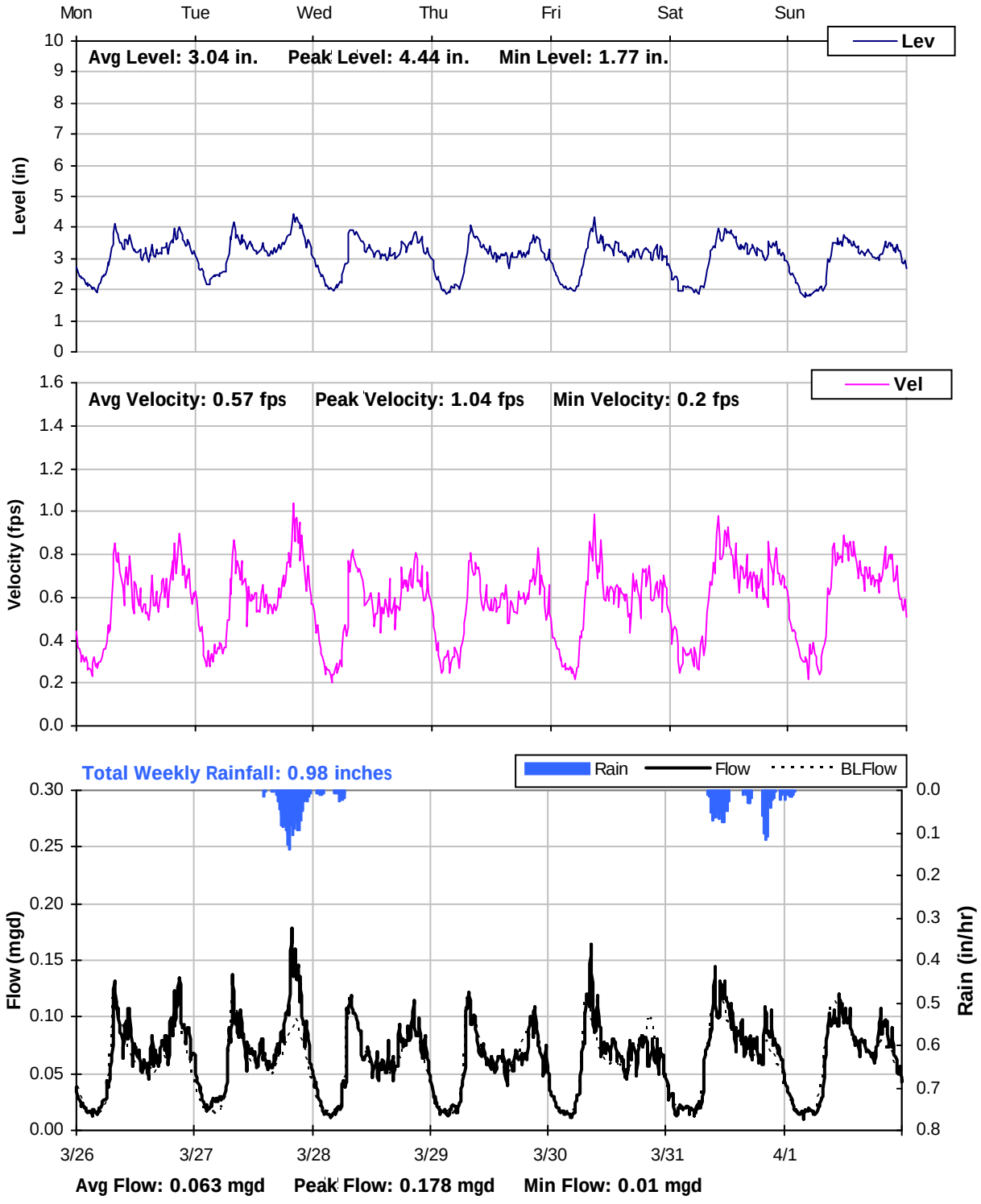
MH B13
Weekly Level, Velocity and Flow Hydrographs
3/12/2012 to 3/19/2012



MH B13
Weekly Level, Velocity and Flow Hydrographs
3/19/2012 to 3/26/2012



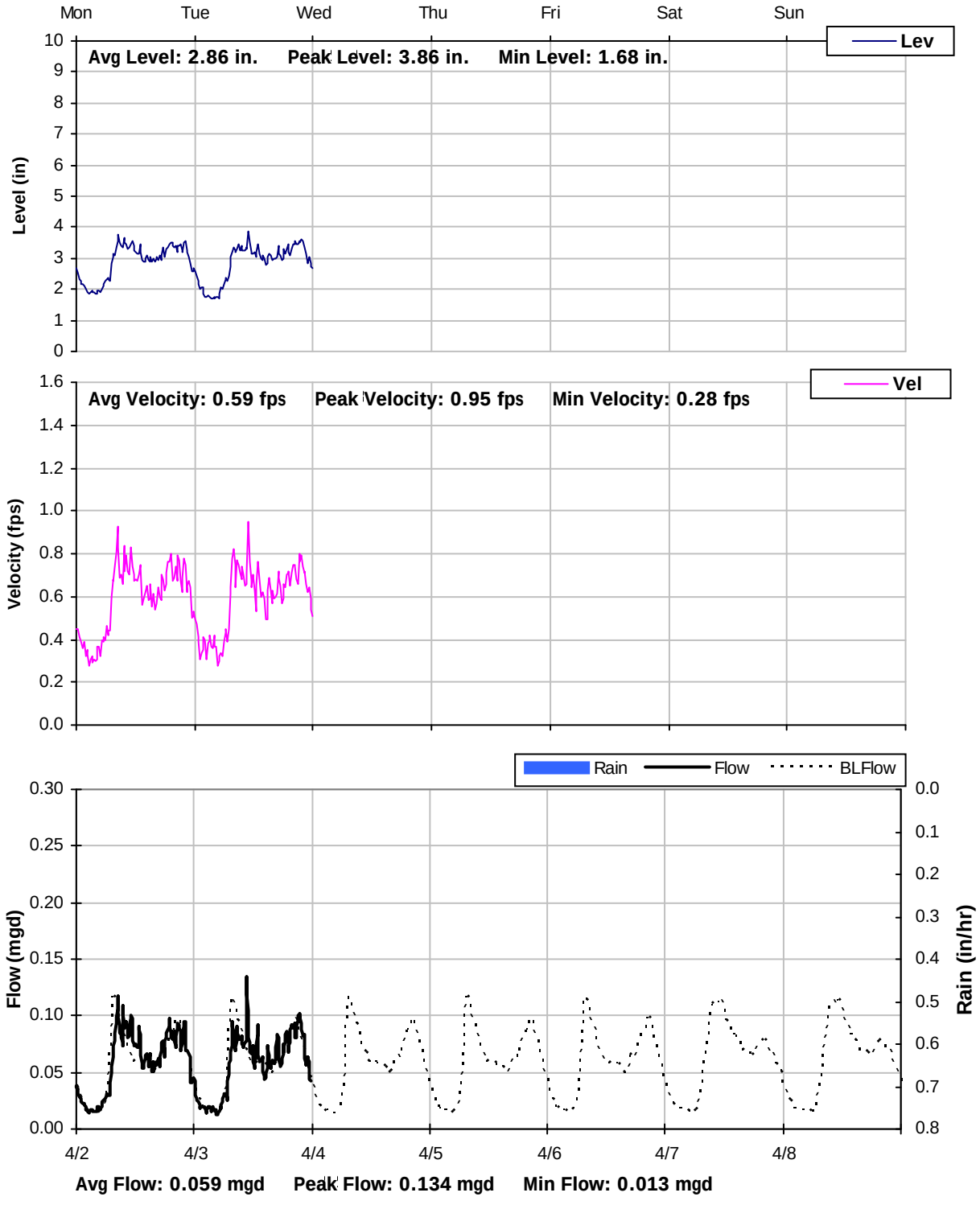
MH B13
Weekly Level, Velocity and Flow Hydrographs
3/26/2012 to 4/2/2012



MH B13

Weekly Level, Velocity and Flow Hydrographs

4/2/2012 to 4/9/2012



East Palo Alto Sanitary District

Sanitary Sewer Flow Monitoring and I/I Study

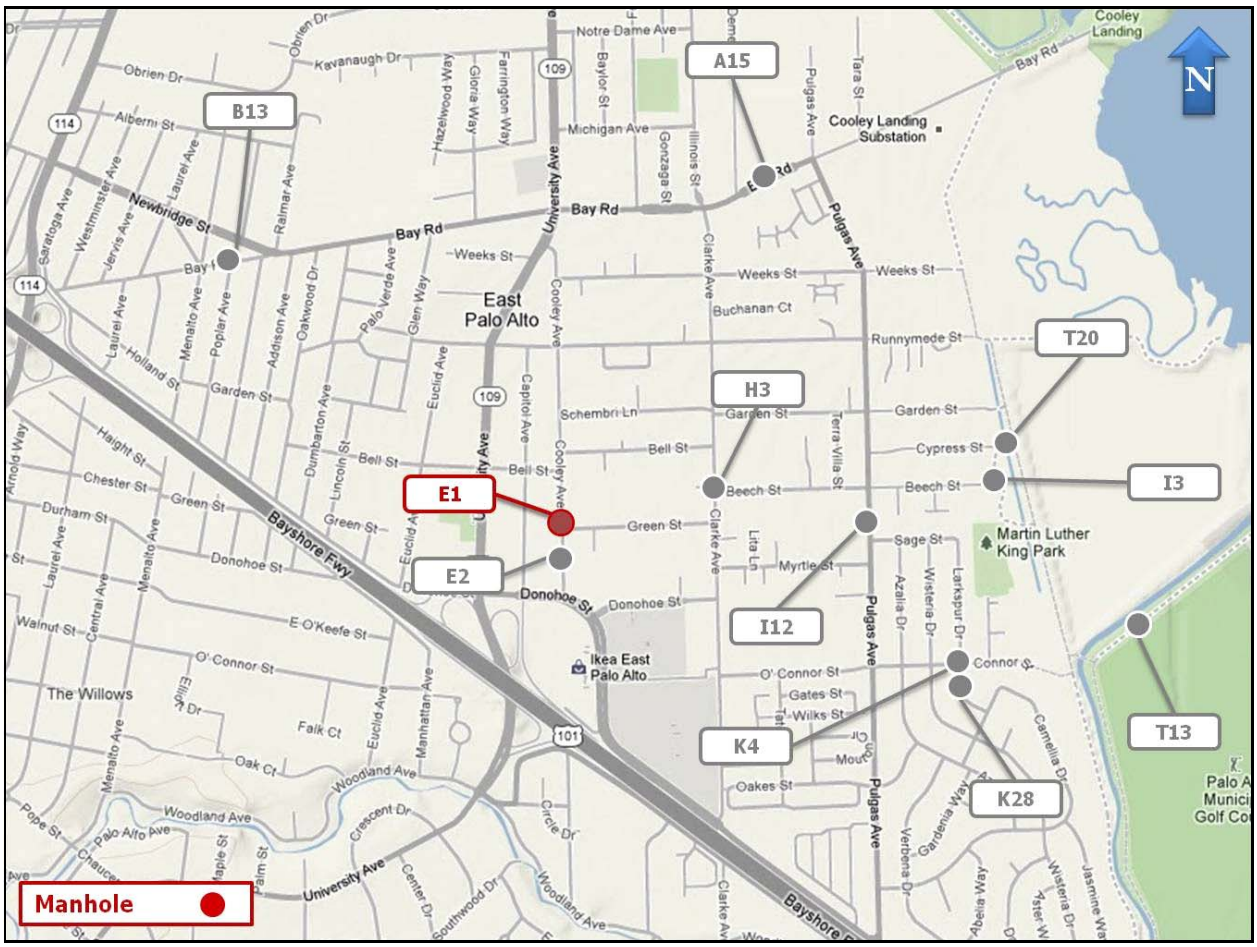
Year 2012

Monitoring Site: MH E1

Location: Cooley Avenue at Green Street

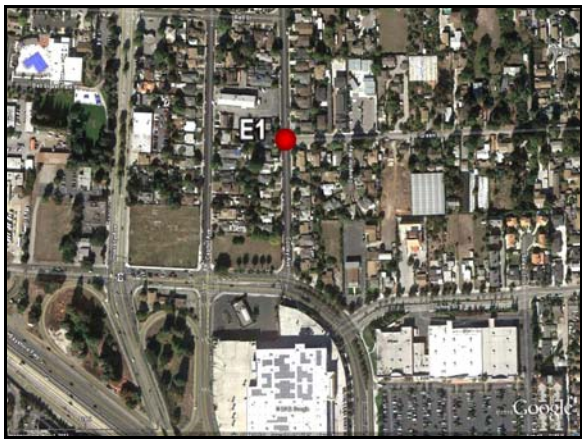
Data Summary Report

Vicinity Map:



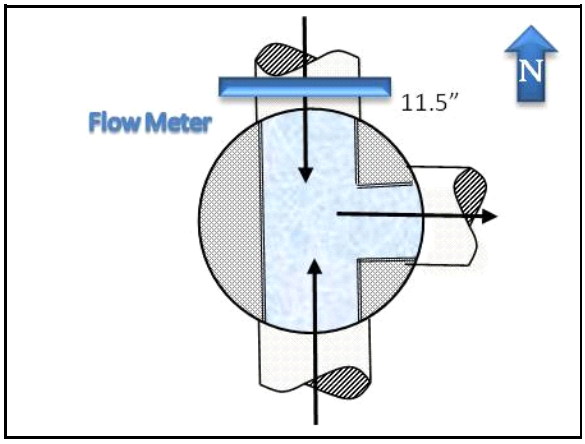
MH E1
Site Information Report

Location:	Cooley Avenue at Green Street
Coordinates:	122.1393° W, 37.4642° N
Elevation:	16 feet
Diameter:	11.5 inches
Baseline Flow:	0.13 mgd
Peak Measured Flow:	0.258 mgd



Satellite Map

Sanitary Sewer Map



Flow Sketch


View from Street

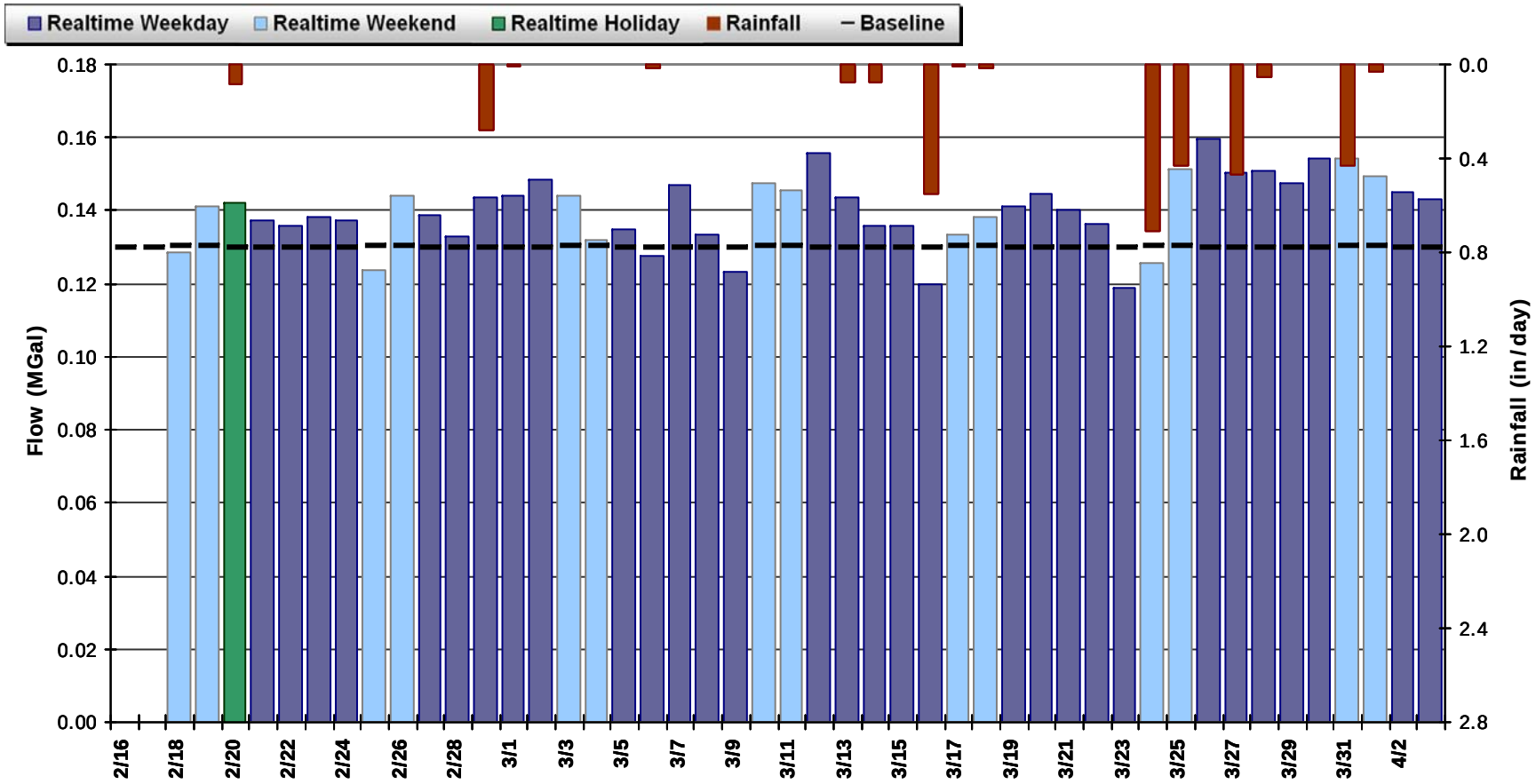

Plan View

MH E1

Period Flow Summary: Daily Flow Totals

Avg Daily Flow: 0.140 MGal **Peak Daily Flow: 0.160 MGal** **Min Daily Flow: 0.119 MGal**

Total Period Rainfall: 3.24 inches

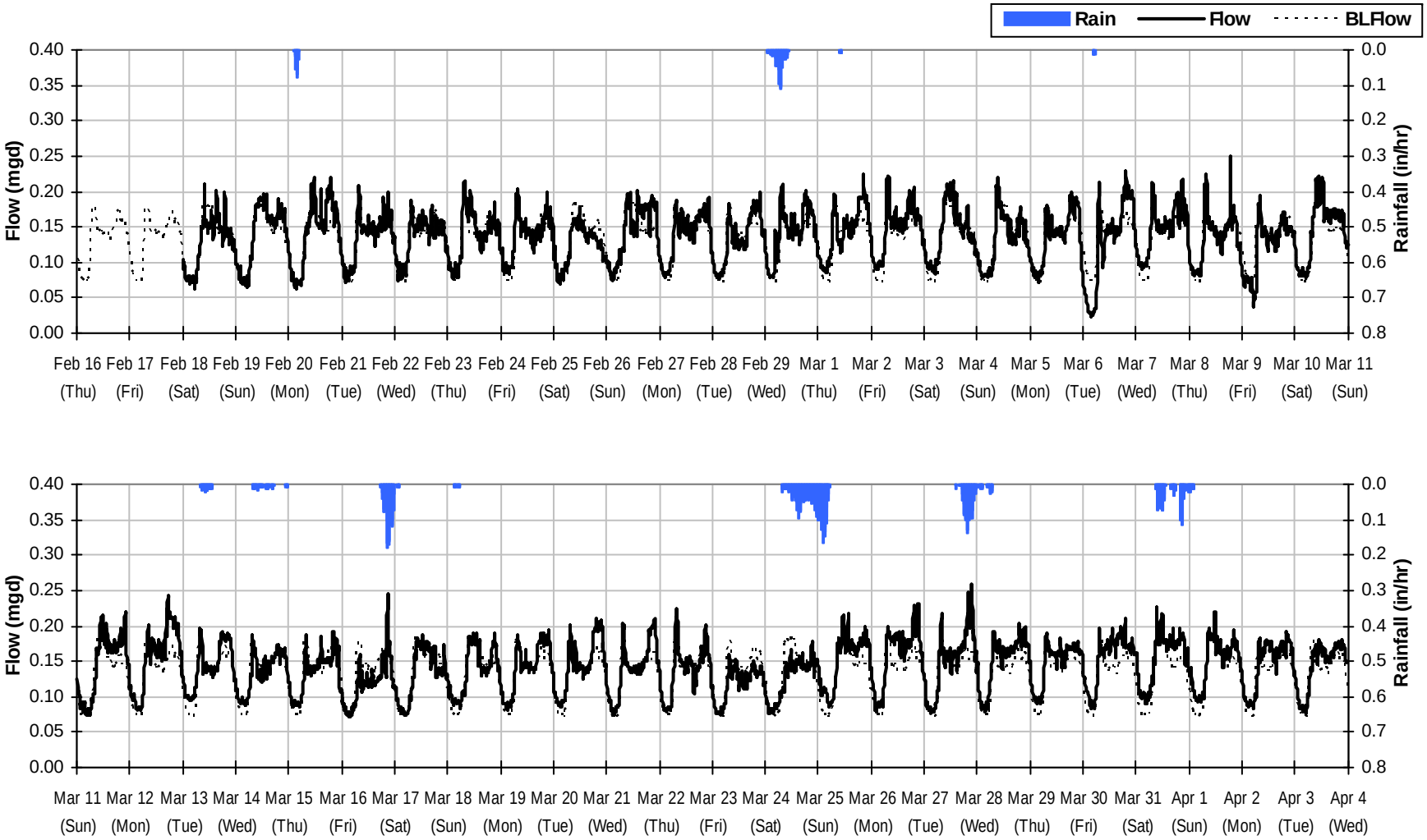


MH E1

Period Flow Summary: February 16 to April 4, 2012

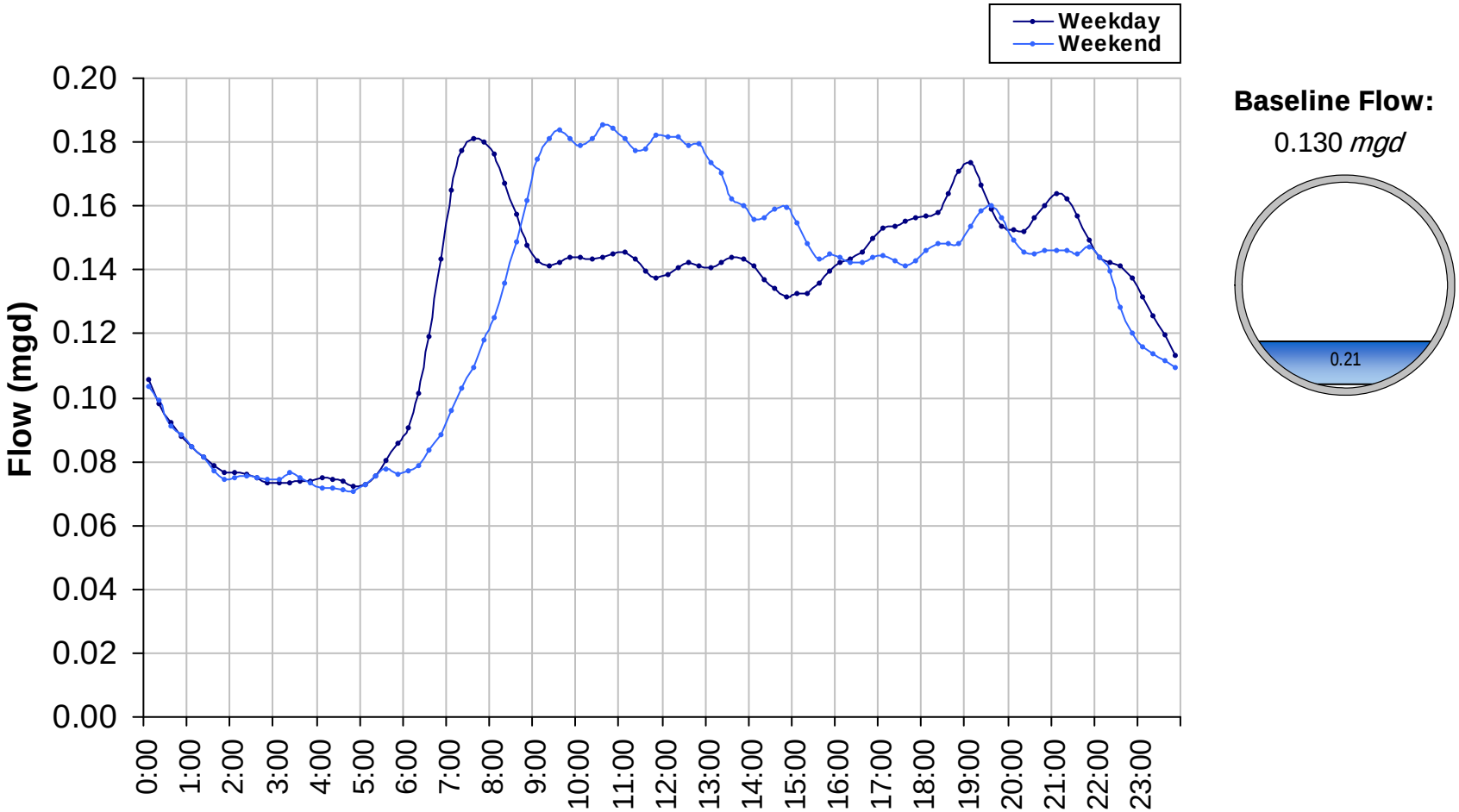
Avg Flow: 0.140 mgd **Peak Flow: 0.258 mgd** **Min Flow: 0.023 mgd**

Total Period Rainfall: 3.24 inches



MH E1

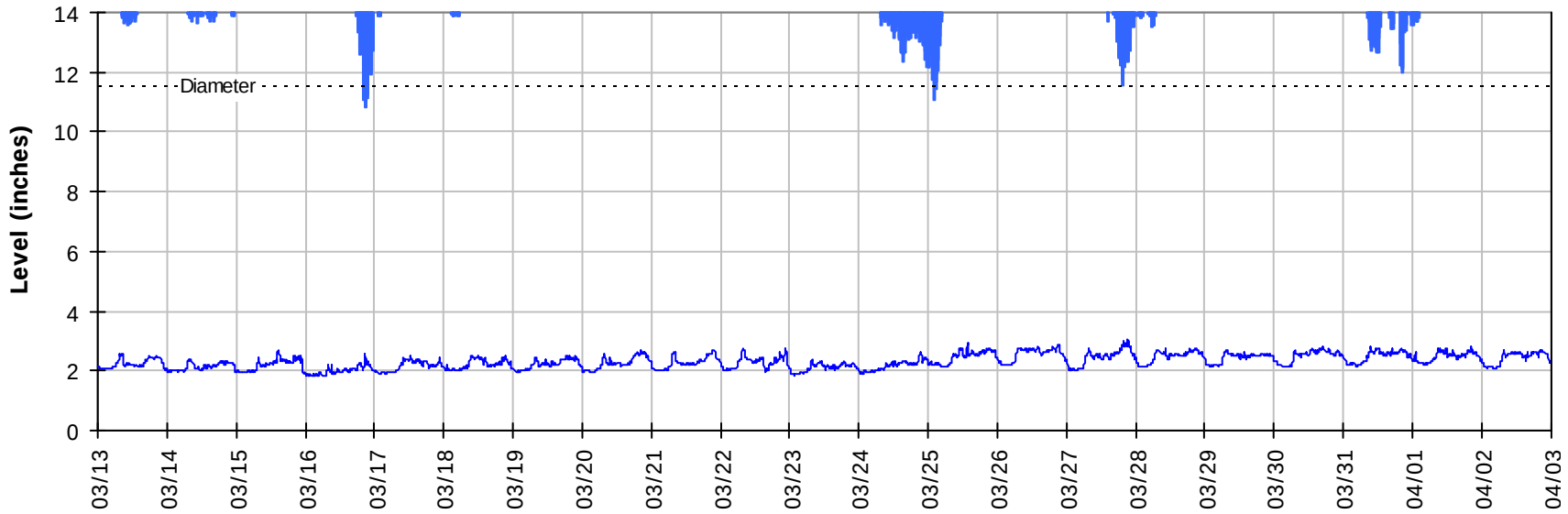
Baseline Flow Hydrographs

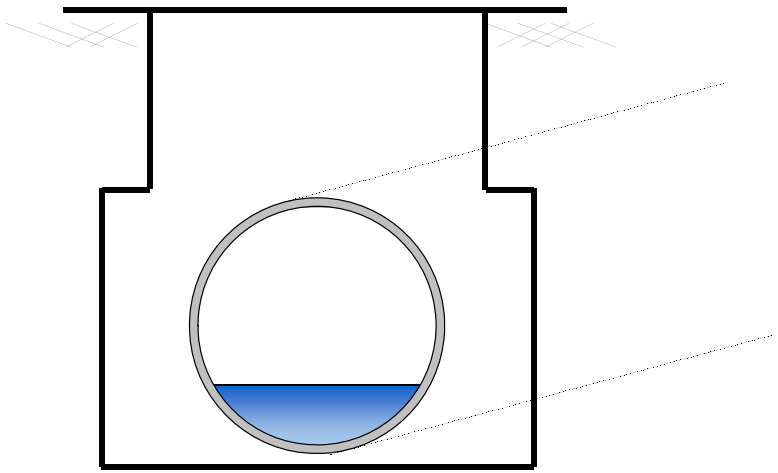


MH E1

Site Capacity and Surcharge Summary

Realtime Flow Levels with Rainfall Data over Monitoring Period

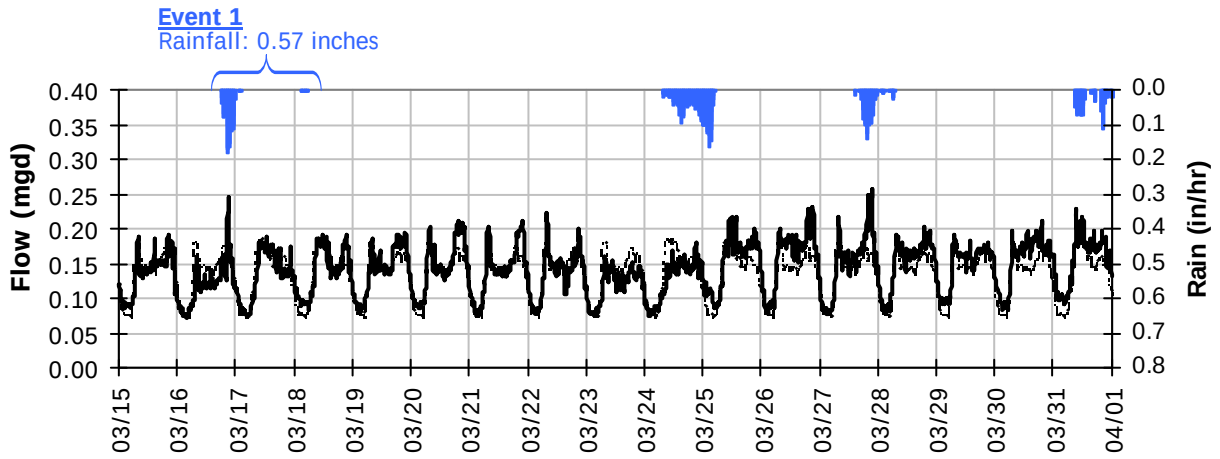




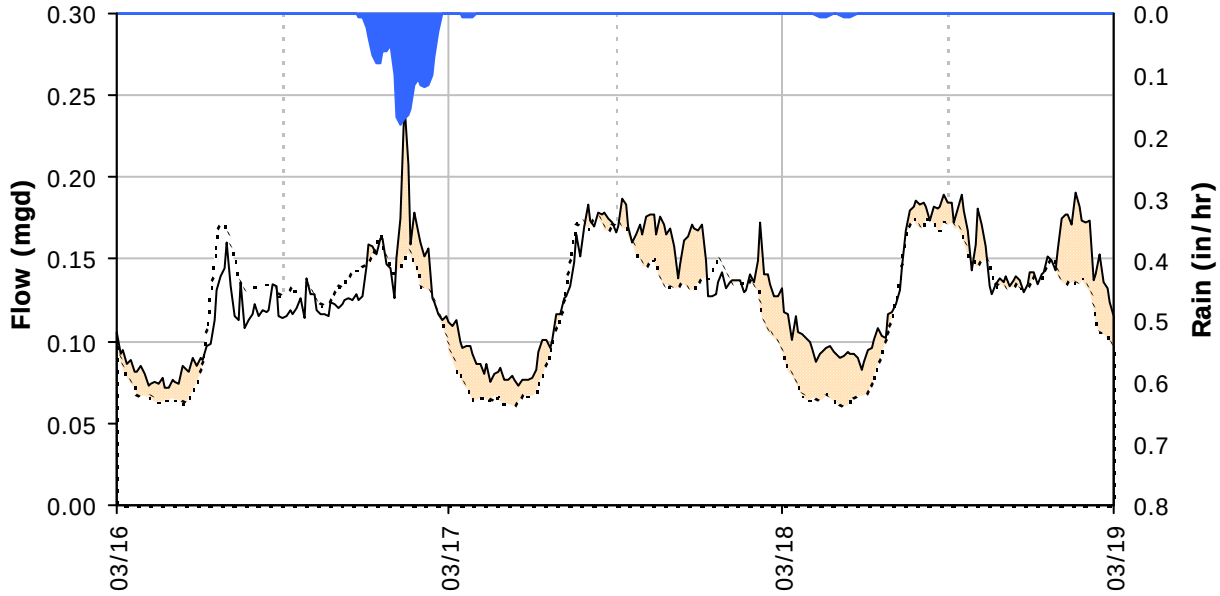
Pipe Diameter:	11.5	*inches*
Peak Measured Level:	3.06	*inches*
Peak d/D Ratio:	0.27	

MH E1
I/I Summary: Event 1

Baseline and Realtime Flows with Rainfall Data over Monitoring Period



Event 1 Detail Graph

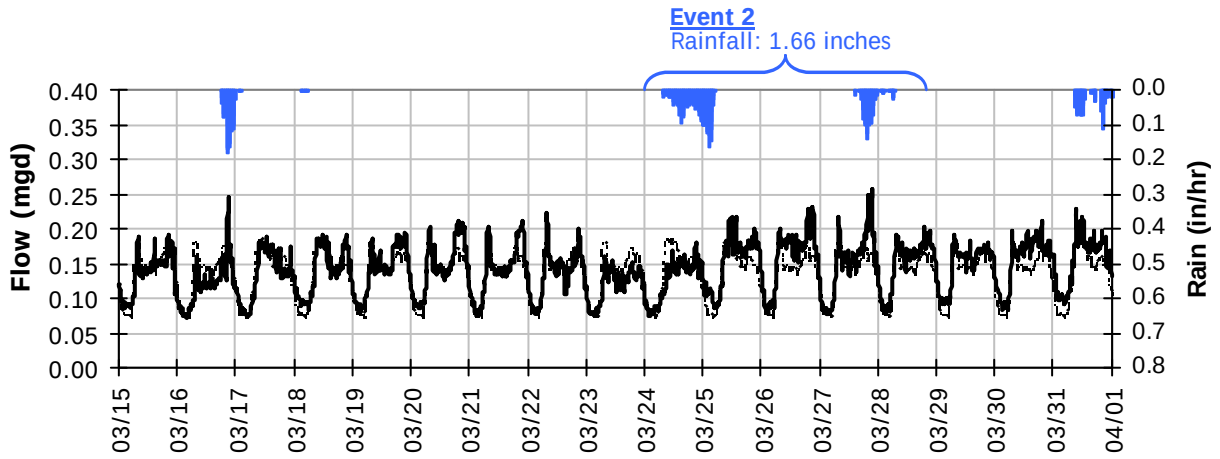


Storm Event I/I Analysis (Rain = 0.57 inches)

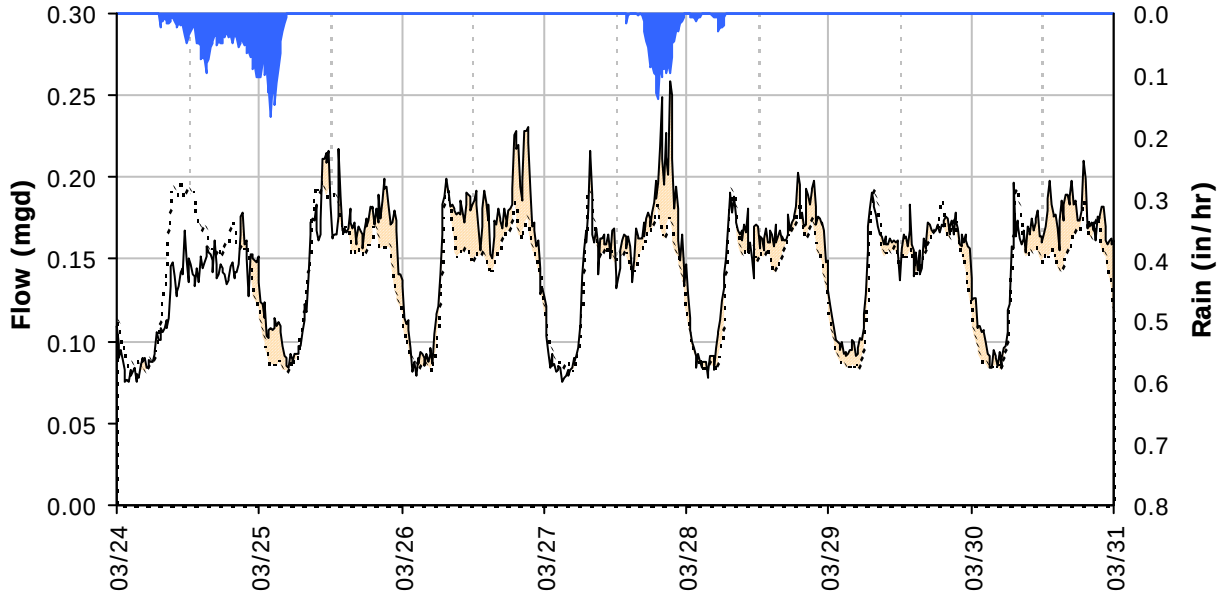
Capacity		Inflow		RDI (infiltration)		Combined I/I	
Peak Flow:	0.25 *mgd*	**Peak I/I Rate:**	0.08 *mgd*	**Infiltration Rate:**	*mgd*	**Total I/I:**	4,000 *gallons*
PF:	1.89	**PkI/I:IDM:**	3,372 *gpd/IDM*	()		**Total I/I:IDM:**	255 *gal/IDM/in*
Peak Level:	2.57 *in*	**PkI/I:Acre:**	838 *gpd/acre*	**RDI:IDM:**	*gpd/IDM*	**R-Value:**	0.2%
d/D Ratio:	0.22	**Pk I/I:ADWF:**	0.65	**RDI:Acre:**	*gpd/acre*	**Total I/I:ADWF:**	0.05 *per in-rain*
				RDI (% of BL):			

MH E1
I/I Summary: Event 2

Baseline and Realtime Flows with Rainfall Data over Monitoring Period



Event 2 Detail Graph



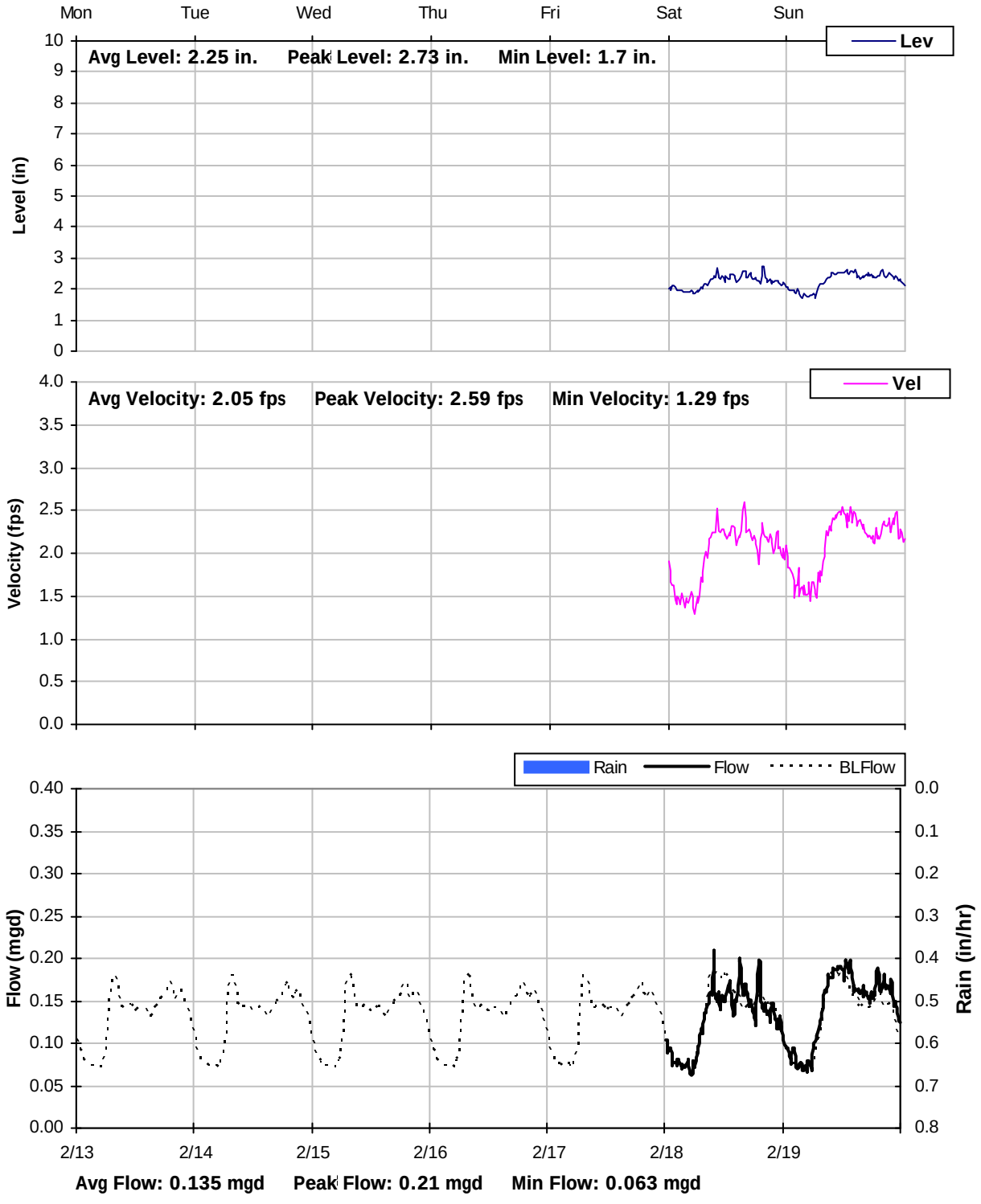
Storm Event I/I Analysis (Rain = 1.66 inches)

Capacity		Inflow		RDI (infiltration)		Combined I/I	
Peak Flow:	0.26 *mgd*	**Peak I/I Rate:**	0.10 *mgd*	**Infiltration Rate:** (3/26/2012)	0.030 *mgd*	**Total I/I:**	53,000 *gallons*
PF:	1.99	**PkI/I:IDM:**	3,813 *gpd/IDM*	**RDI:IDM:**	1,182 *gpd/IDM*	**Total I/I:IDM:**	1,265 *gal/IDM/in*
Peak Level:	3.06 *in*	**PkI/I:Acre:**	948 *gpd/acre*	**RDI:Acre:**	294 *gpd/acre*	**R-Value:**	1.2%
d/D Ratio:	0.27	**Pk I/I:ADWF:**	0.74	**RDI (% of BL):**	23%	**Total I/I:ADWF:**	0.24 *per in-rain*

MH E1

Weekly Level, Velocity and Flow Hydrographs

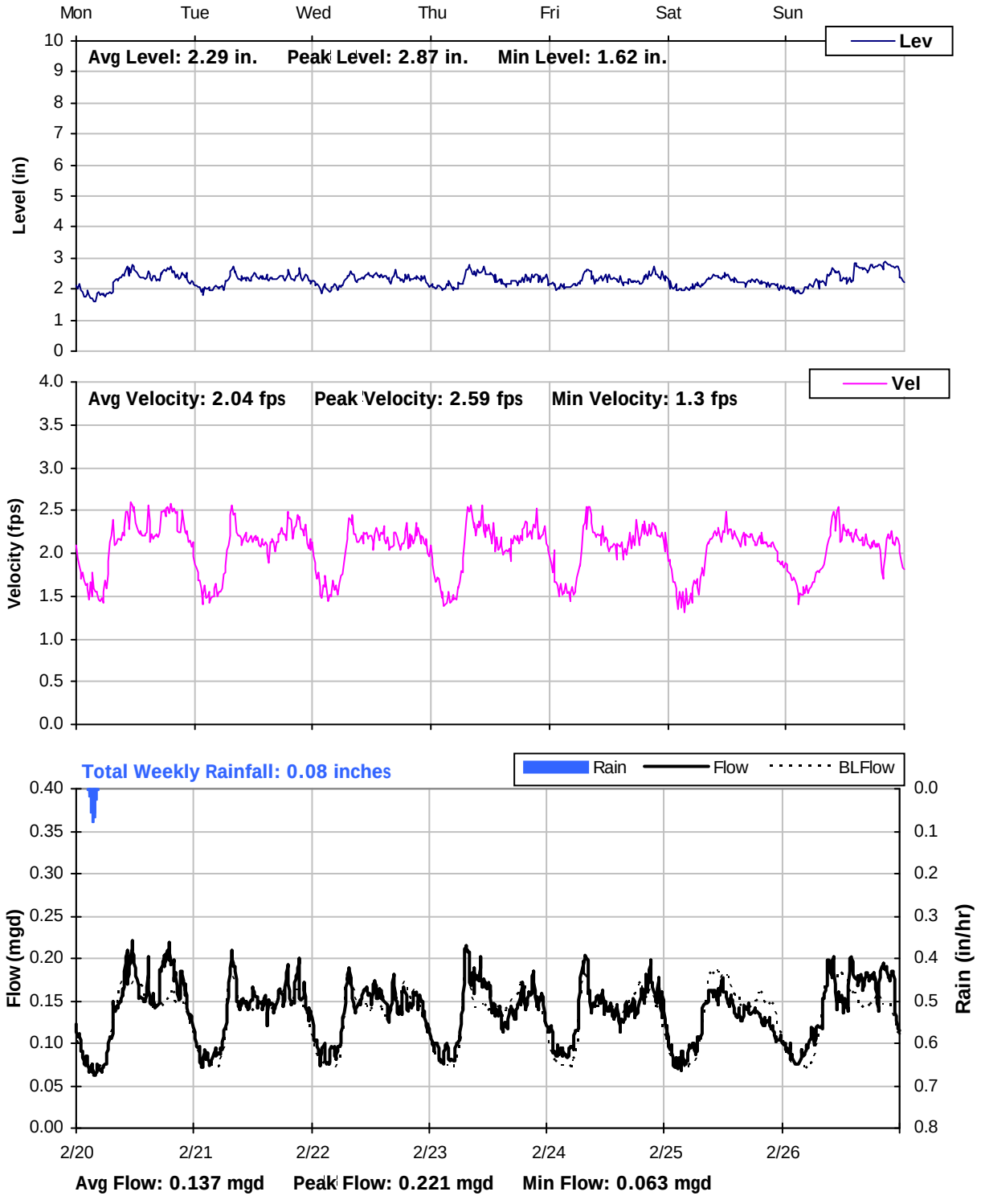
2/13/2012 to 2/20/2012



MH E1

Weekly Level, Velocity and Flow Hydrographs

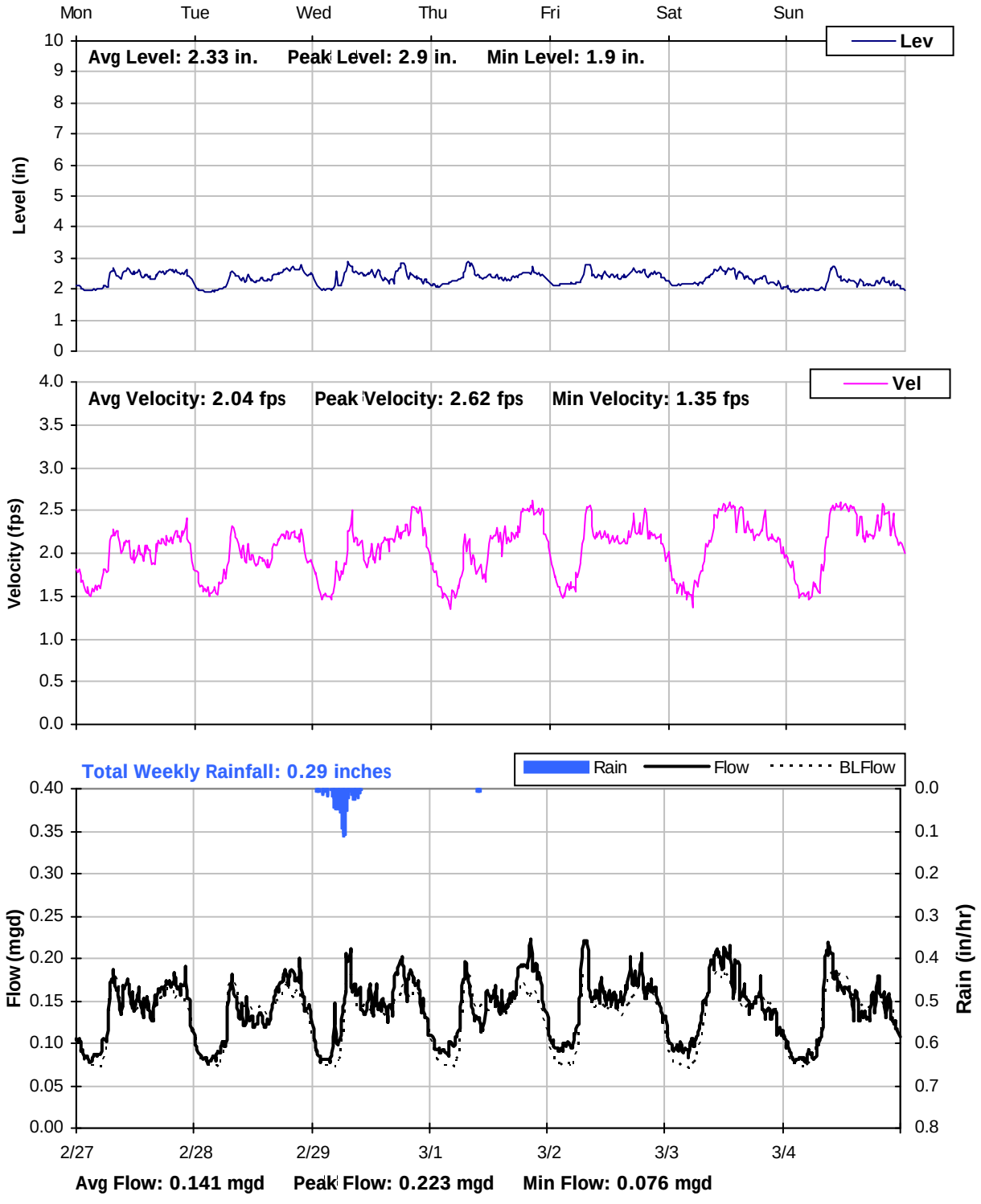
2/20/2012 to 2/27/2012



MH E1

Weekly Level, Velocity and Flow Hydrographs

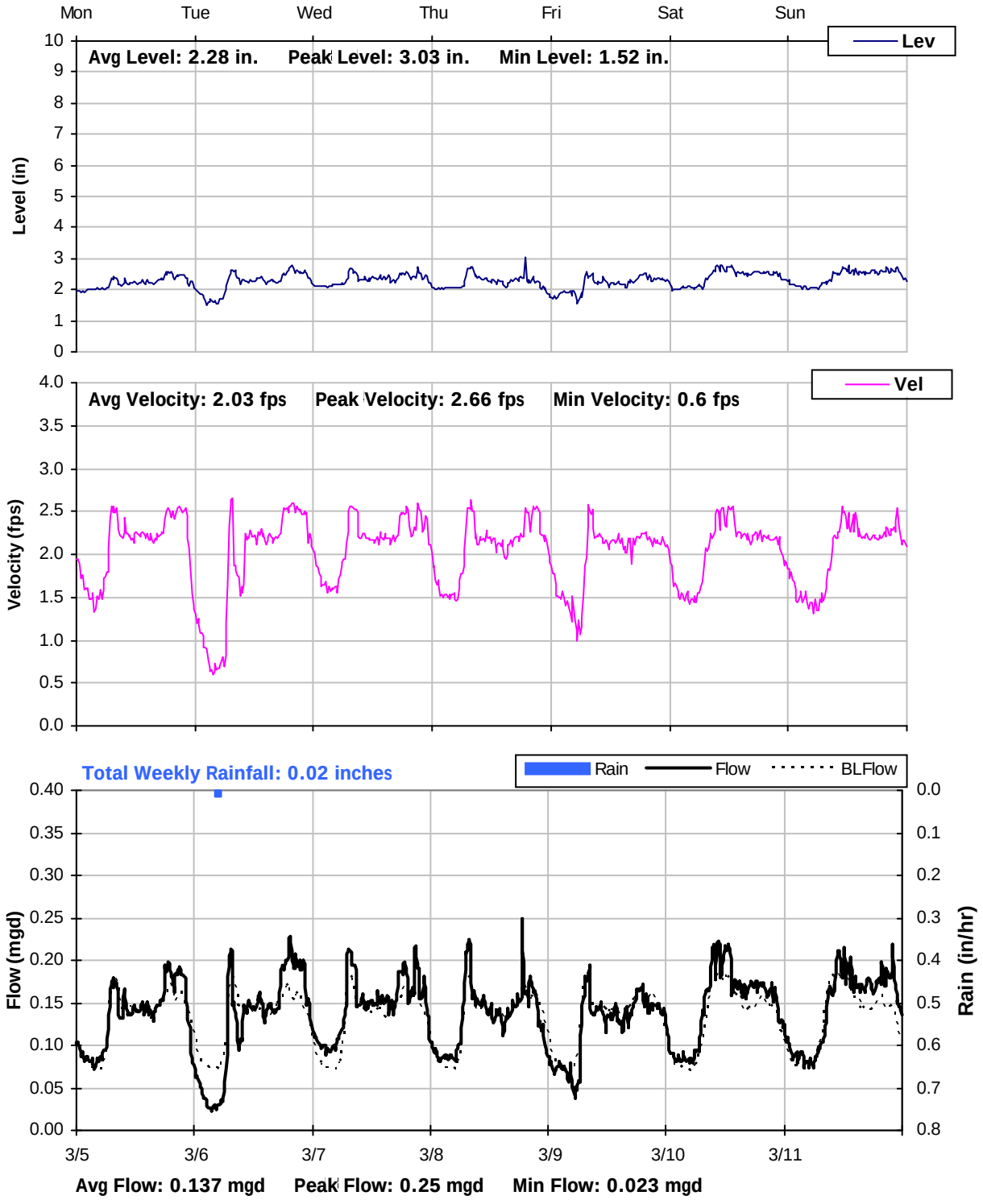
2/27/2012 to 3/5/2012



MH E1

Weekly Level, Velocity and Flow Hydrographs

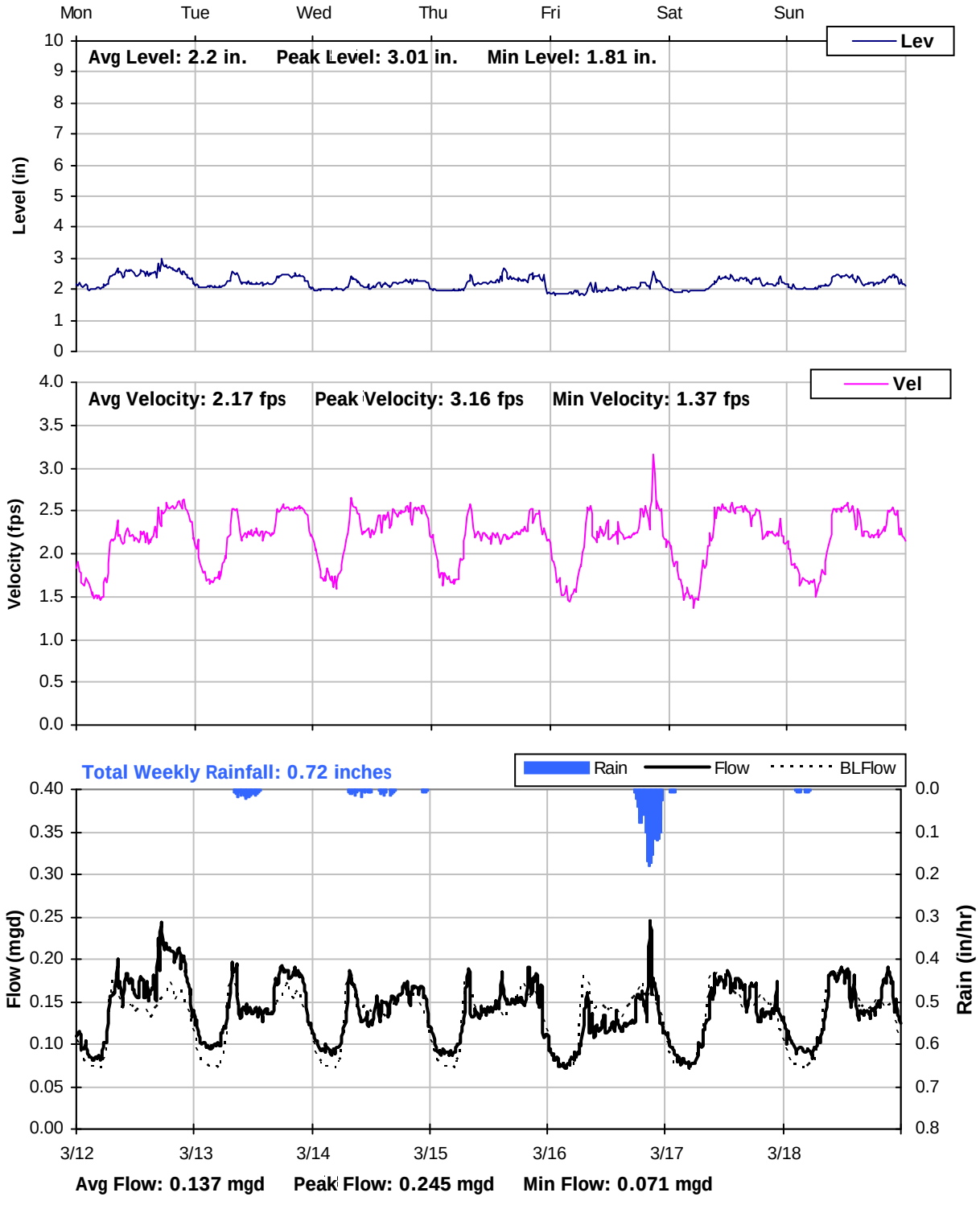
3/5/2012 to 3/12/2012



MH E1

Weekly Level, Velocity and Flow Hydrographs

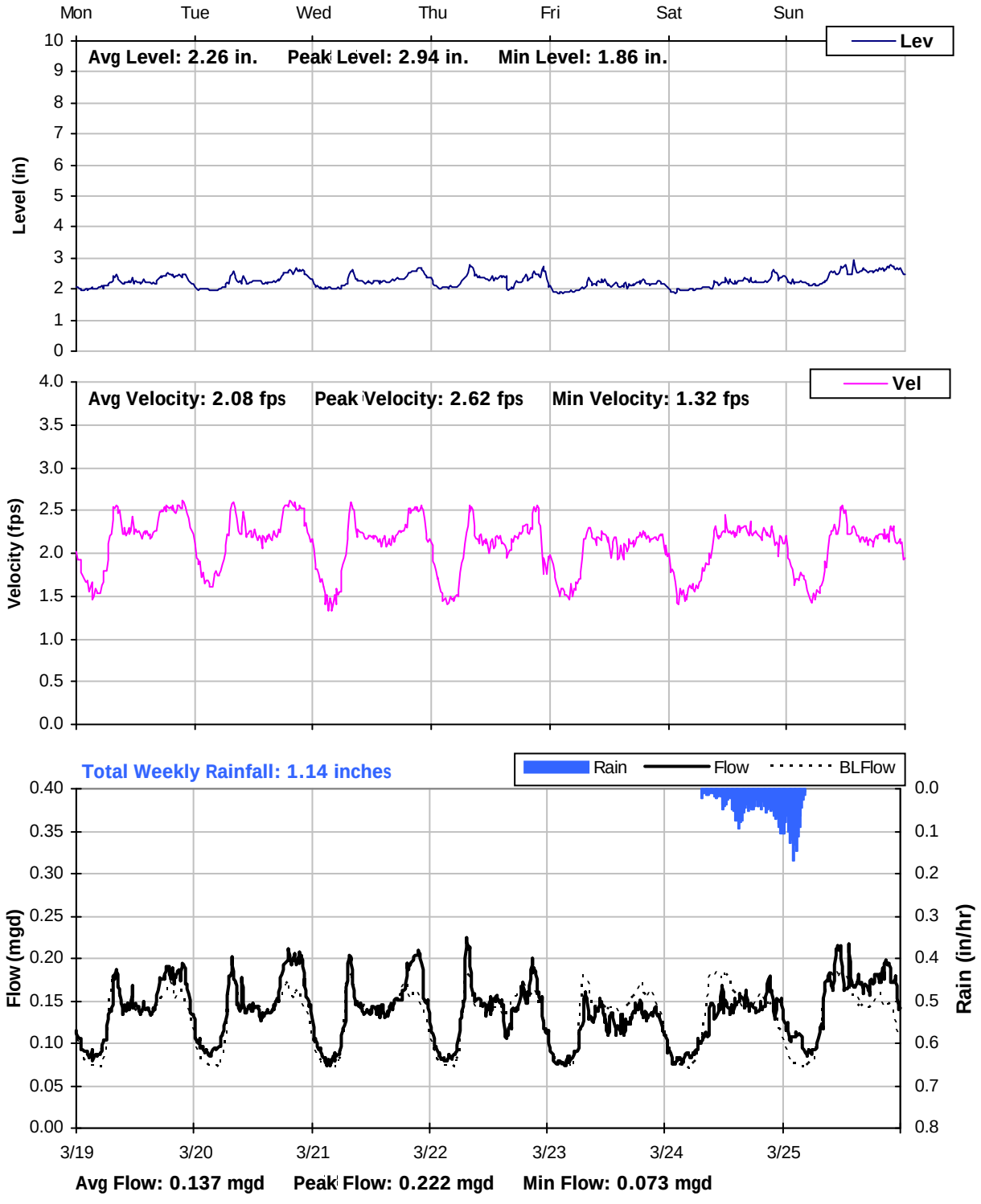
3/12/2012 to 3/19/2012



MH E1

Weekly Level, Velocity and Flow Hydrographs

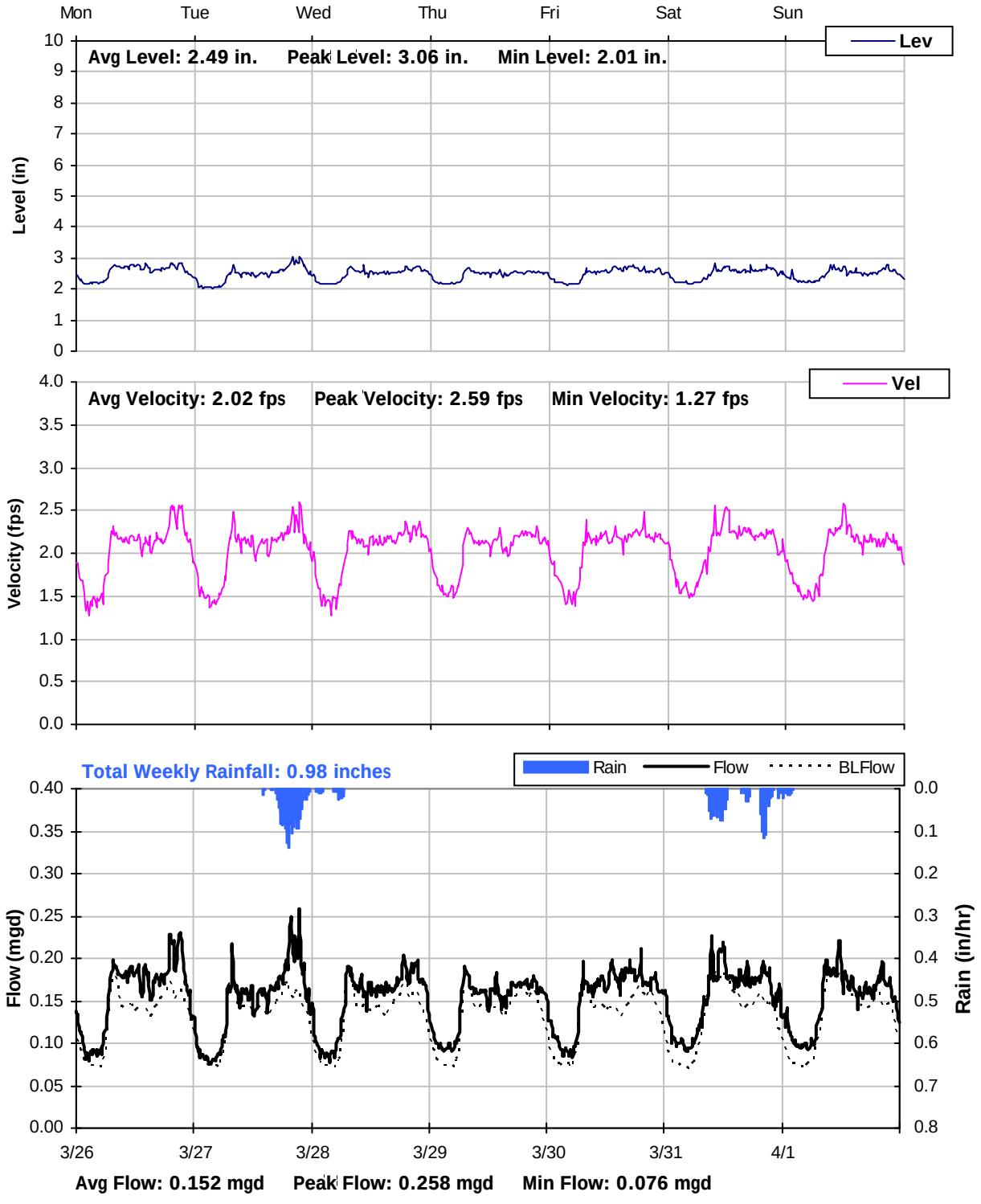
3/19/2012 to 3/26/2012



MH E1

Weekly Level, Velocity and Flow Hydrographs

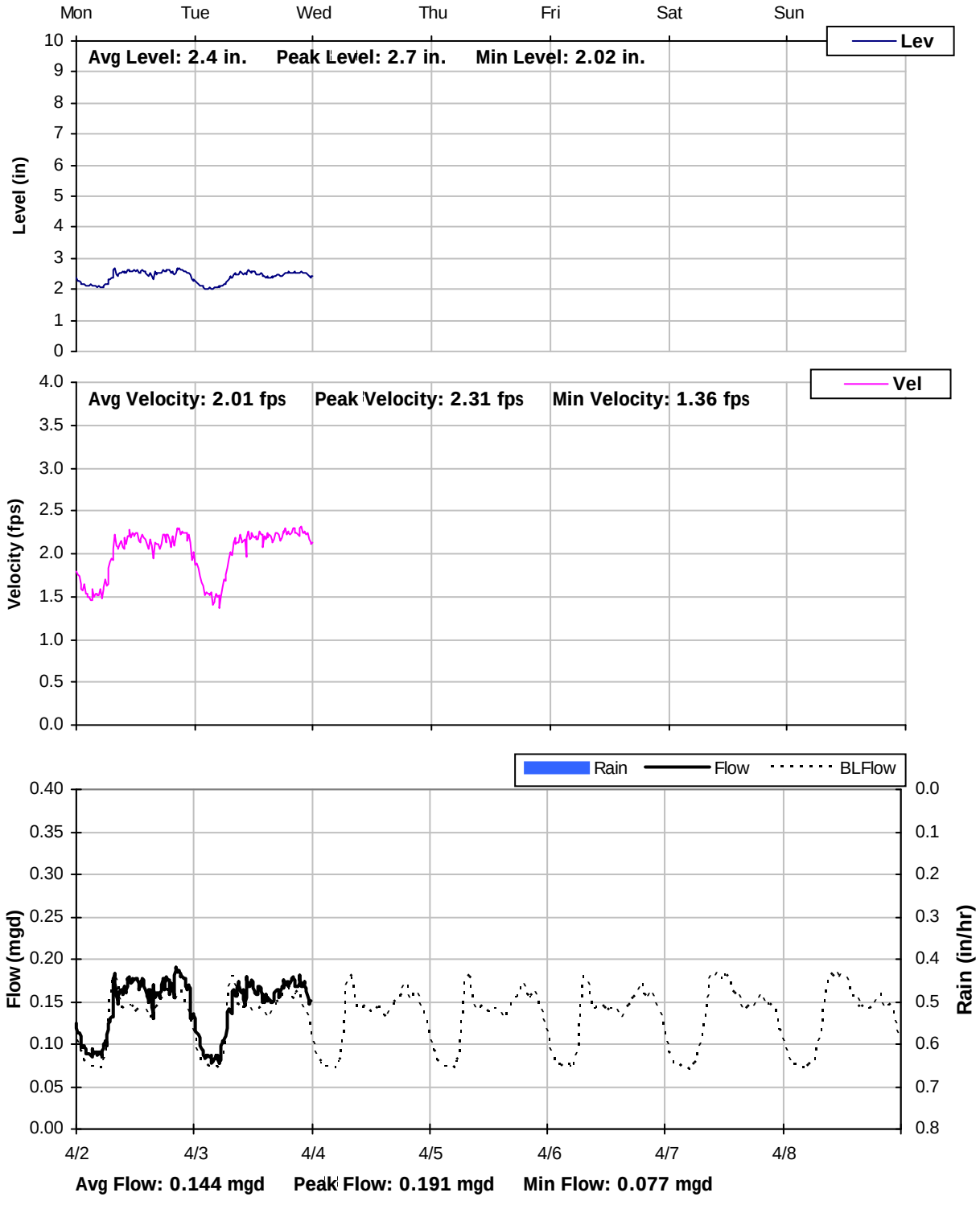
3/26/2012 to 4/2/2012



MH E1

Weekly Level, Velocity and Flow Hydrographs

4/2/2012 to 4/9/2012



East Palo Alto Sanitary District

Sanitary Sewer Flow Monitoring and I/I Study

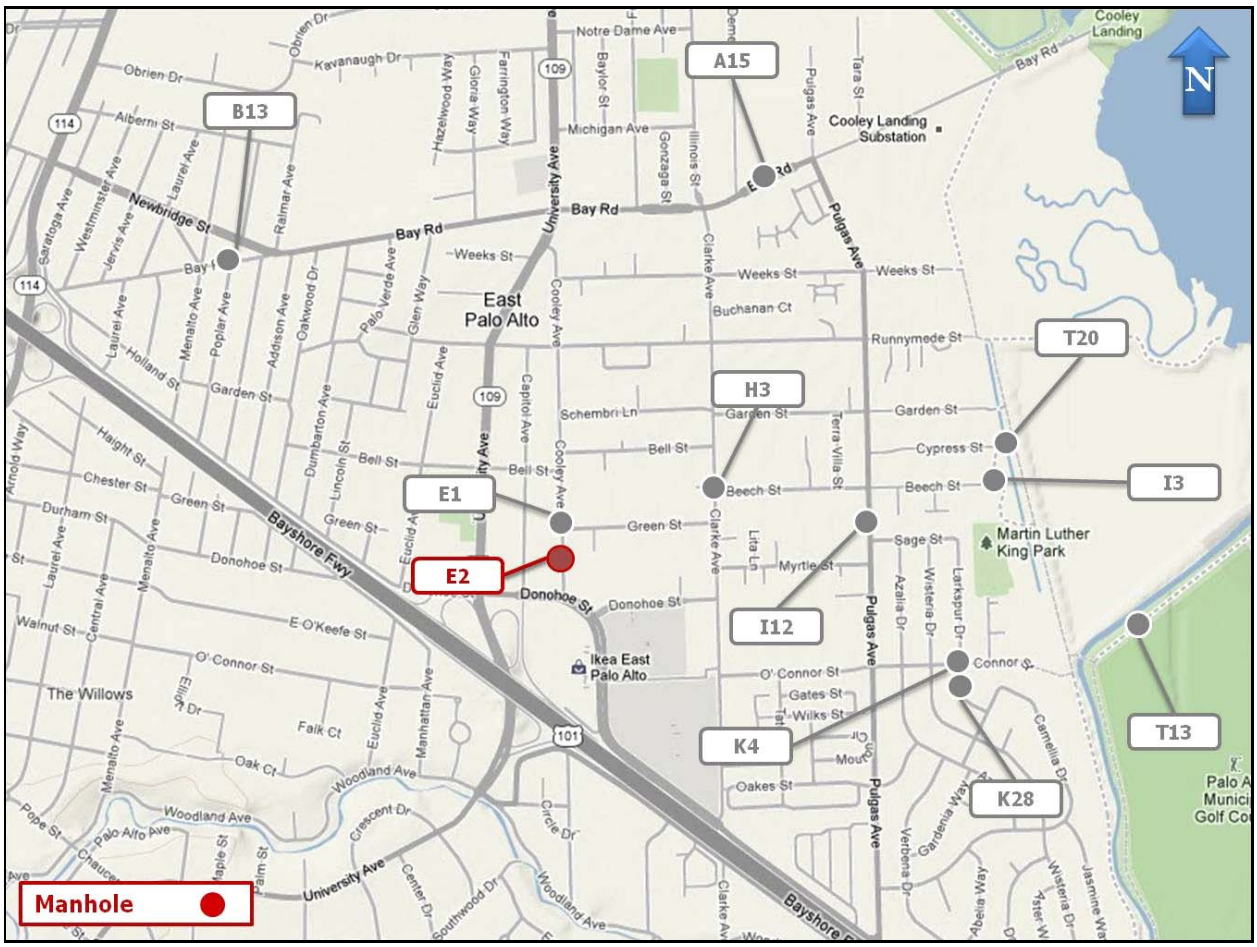
Year 2012

Monitoring Site: MH E2

Location: Cooley Avenue between East Bayshore Road and Green Street

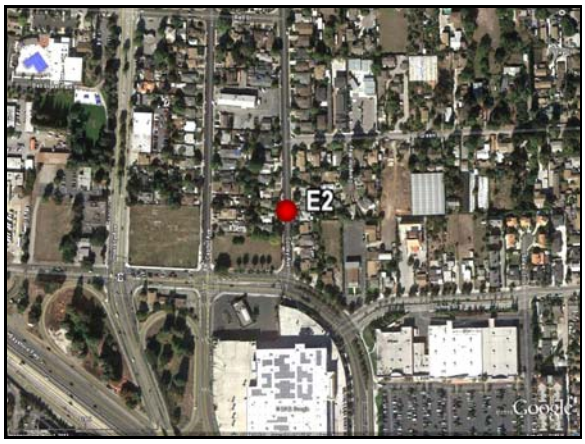
Data Summary Report

Vicinity Map:



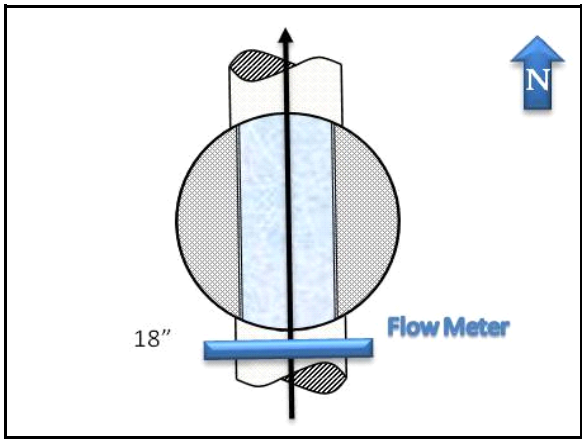
MH E2
Site Information Report

Location:	Cooley Avenue between East Bayshore Road and Green Street
Coordinates:	122.1393° W, 37.4634° N
Elevation:	16 feet
Diameter:	18 inches
Baseline Flow:	0.254 mgd
Peak Measured Flow:	0.632 mgd



Satellite Map

Sanitary Sewer Map



Flow Sketch


View from Street

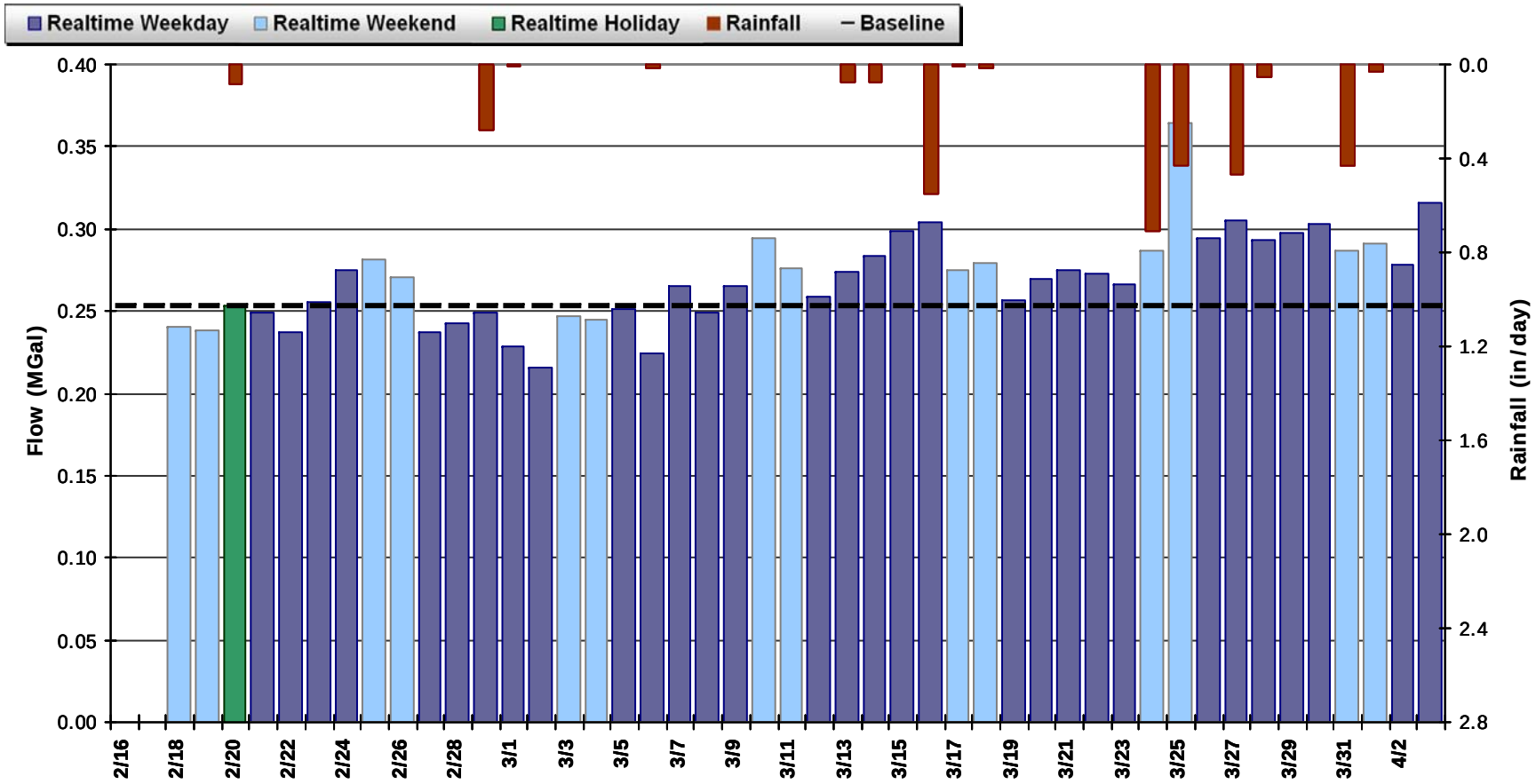

Plan View

MH E2

Period Flow Summary: Daily Flow Totals

Avg Daily Flow: 0.270 MGal **Peak Daily Flow: 0.364 MGal** **Min Daily Flow: 0.216 MGal**

Total Period Rainfall: 3.24 inches

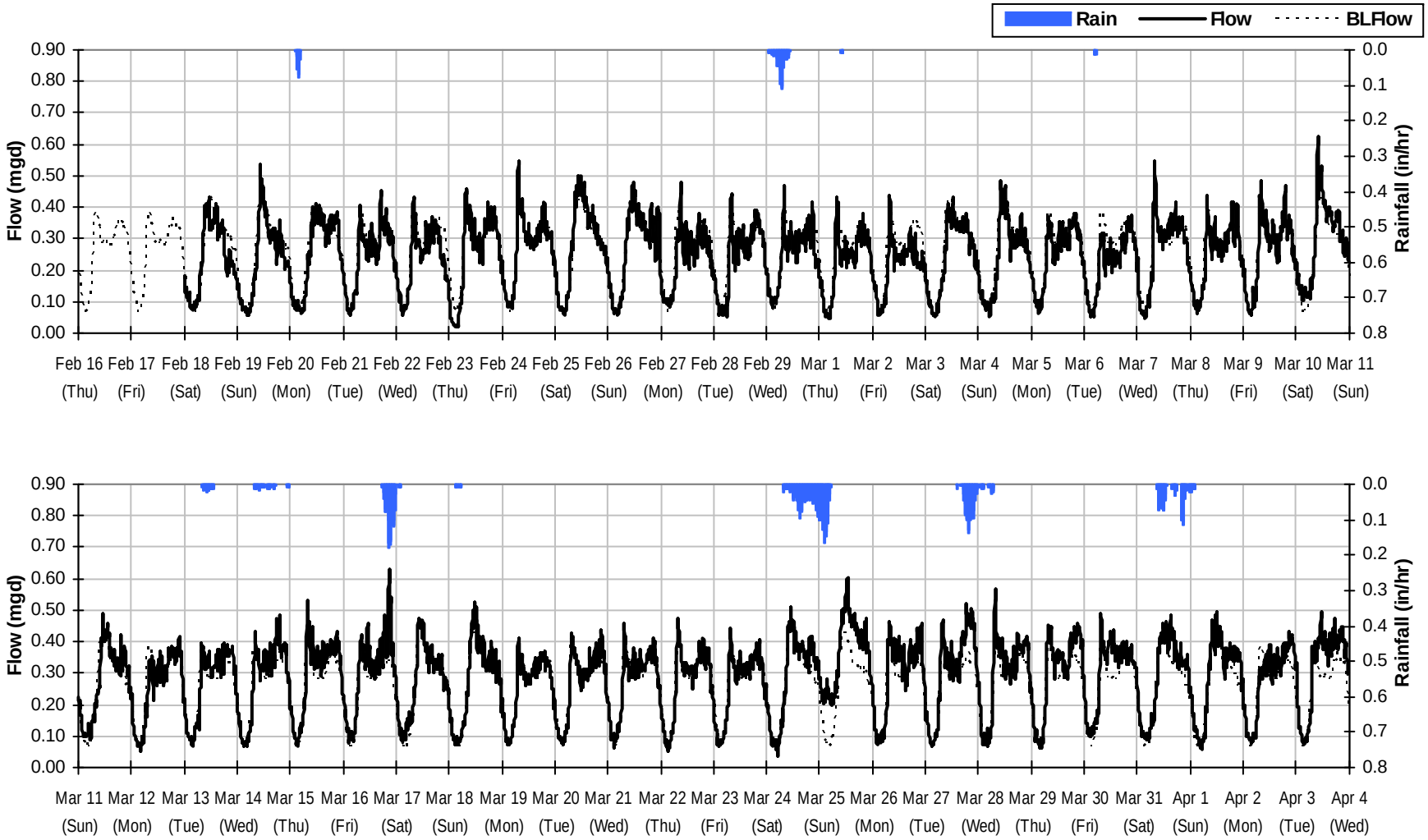


MH E2

Period Flow Summary: February 16 to April 4, 2012

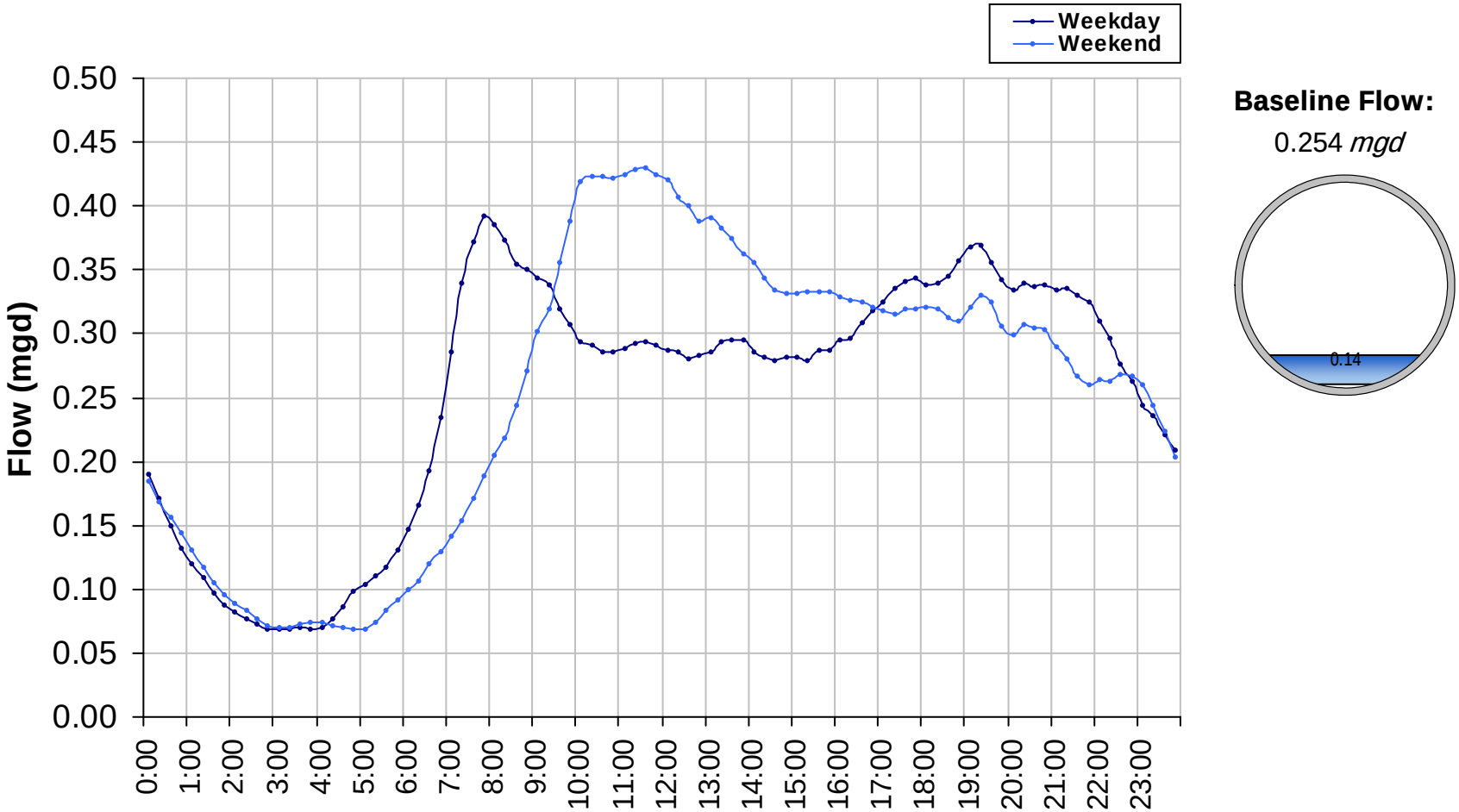
Avg Flow: 0.270 mgd **Peak Flow: 0.632 mgd** **Min Flow: 0.021 mgd**

Total Period Rainfall: 3.24 inches



MH E2

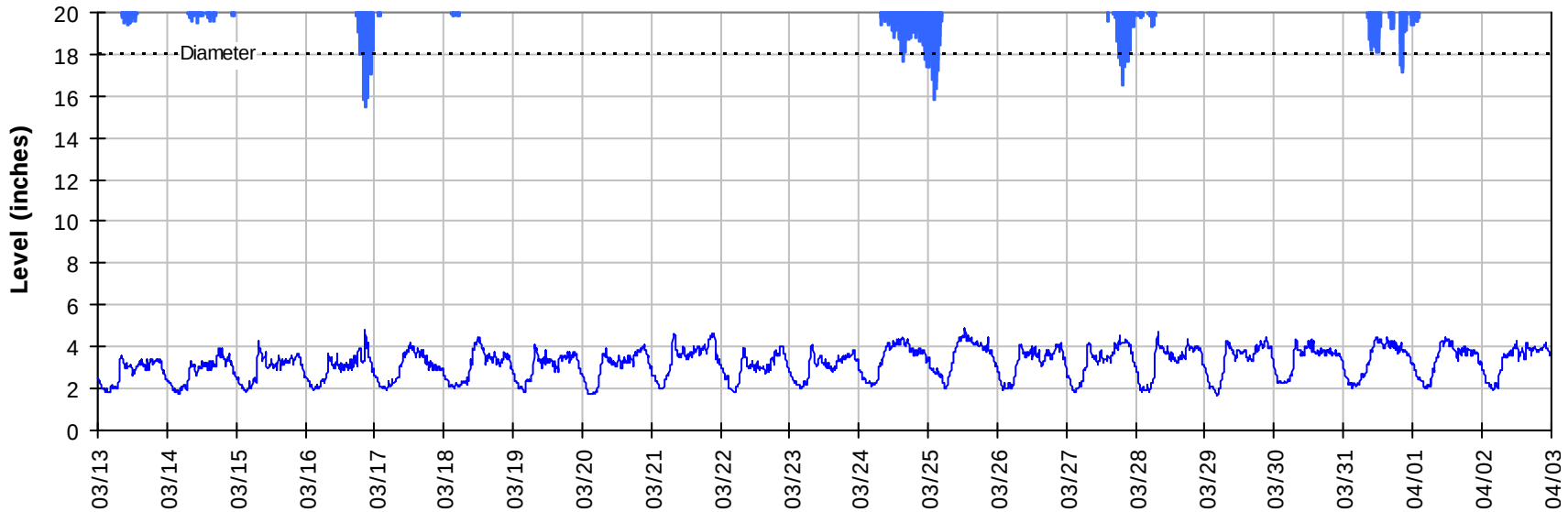
Baseline Flow Hydrographs

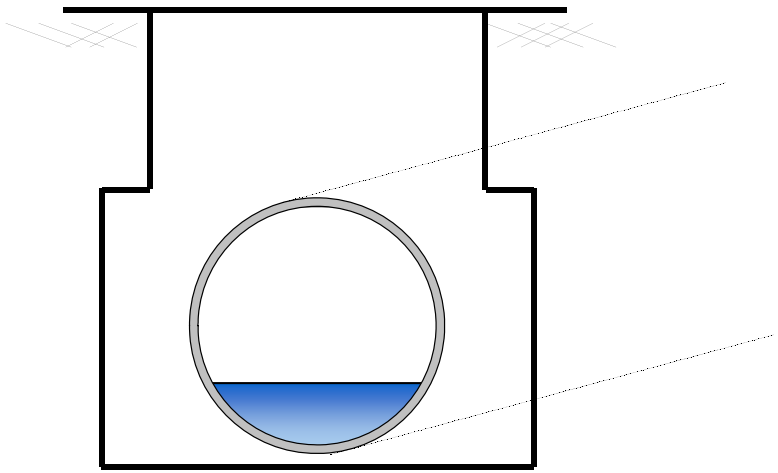


MH E2

Site Capacity and Surcharge Summary

Realtime Flow Levels with Rainfall Data over Monitoring Period





Pipe Diameter: 18 *inches*

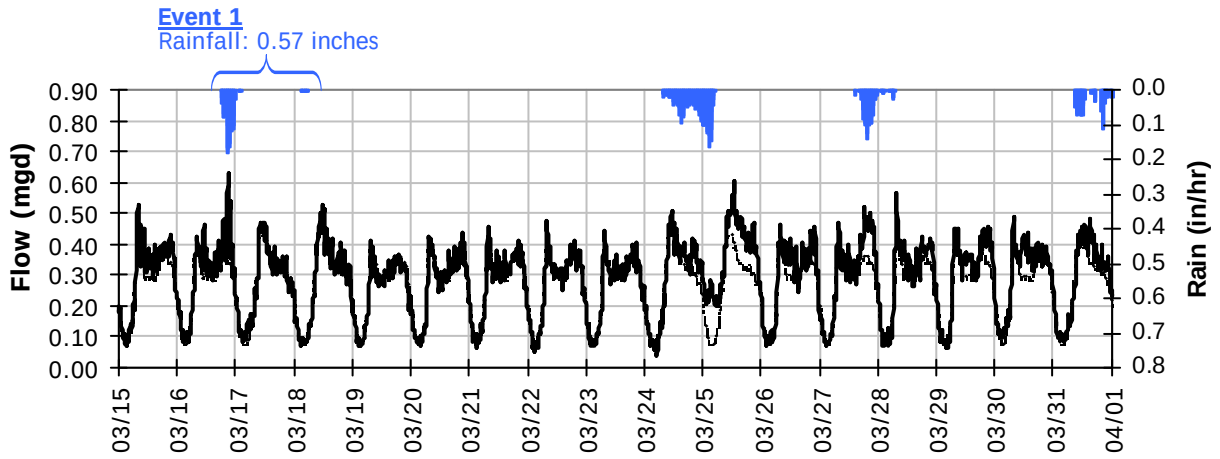
Peak Measured Level: 4.9 *inches*

Peak d/D Ratio: 0.27

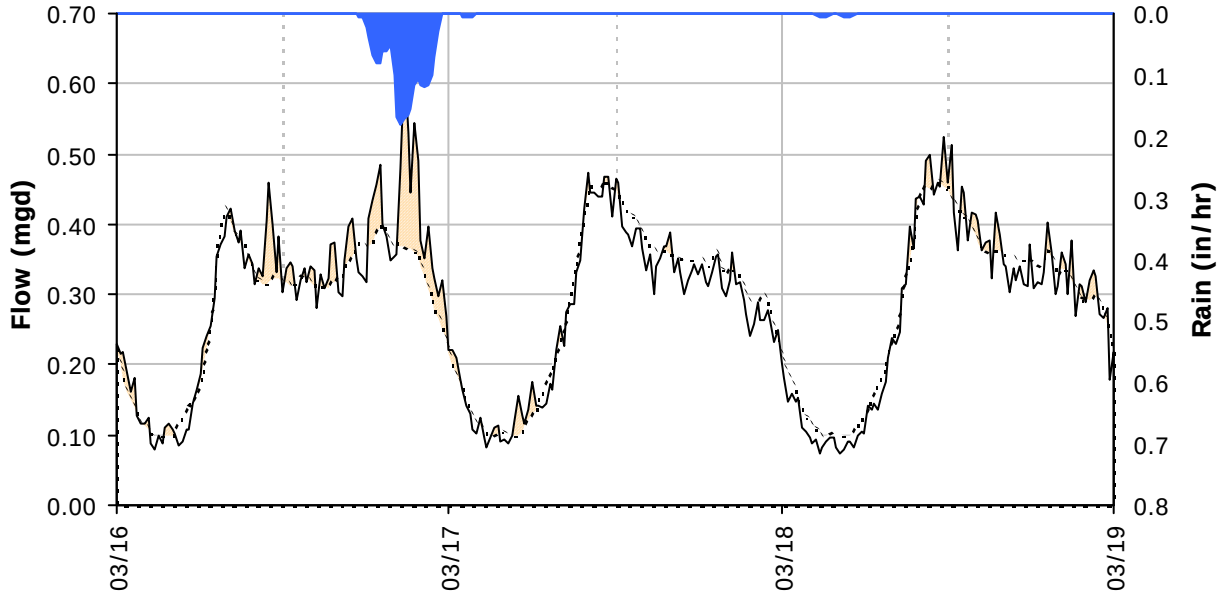
MH E2

I/I Summary: Event 1

Baseline and Realtime Flows with Rainfall Data over Monitoring Period



Event 1 Detail Graph



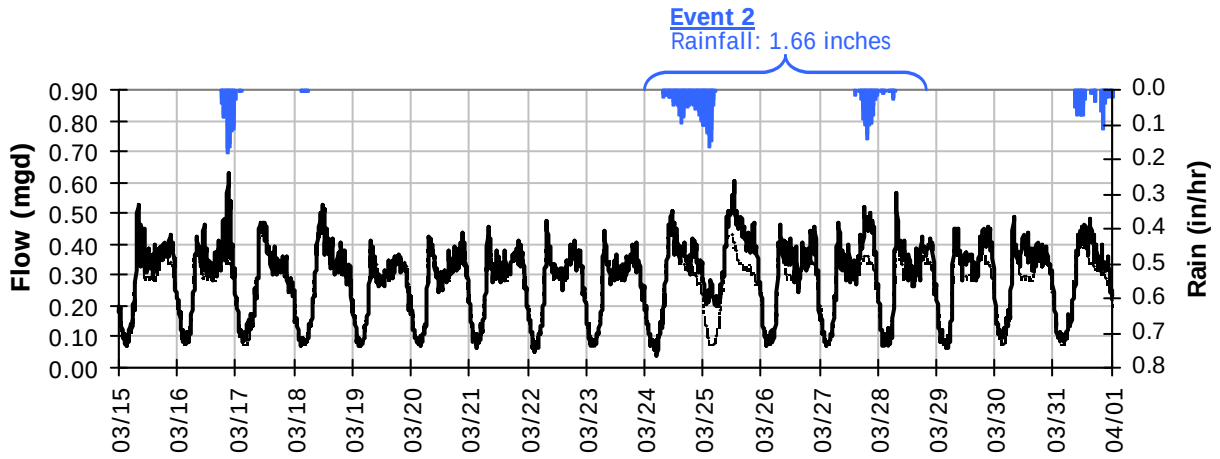
Storm Event I/I Analysis (Rain = 0.57 inches)

Capacity		Inflow		RDI (infiltration)		Combined I/I	
Peak Flow:	0.63 *mgd*	**Peak I/I Rate:**	0.29 *mgd*	**Infiltration Rate:**	*mgd*	**Total I/I:**	17,000 *gallons*
PF:	2.49	**PkI/I:IDM:**	8,560 *gpd/IDM*	()		**Total I/I:IDM:**	857 *gal/IDM/in*
Peak Level:	4.82 *in*	**PkI/I:Acre:**	1,969 *gpd/acre*	**RDI:IDM:**	*gpd/IDM*	**R-Value:**	0.7%
d/D Ratio:	0.27	**Pk I/I:ADWF:**	1.16	**RDI:Acre:**	*gpd/acre*	**Total I/I:ADWF:**	0.12 *per in-rain*
				RDI (% of BL):			

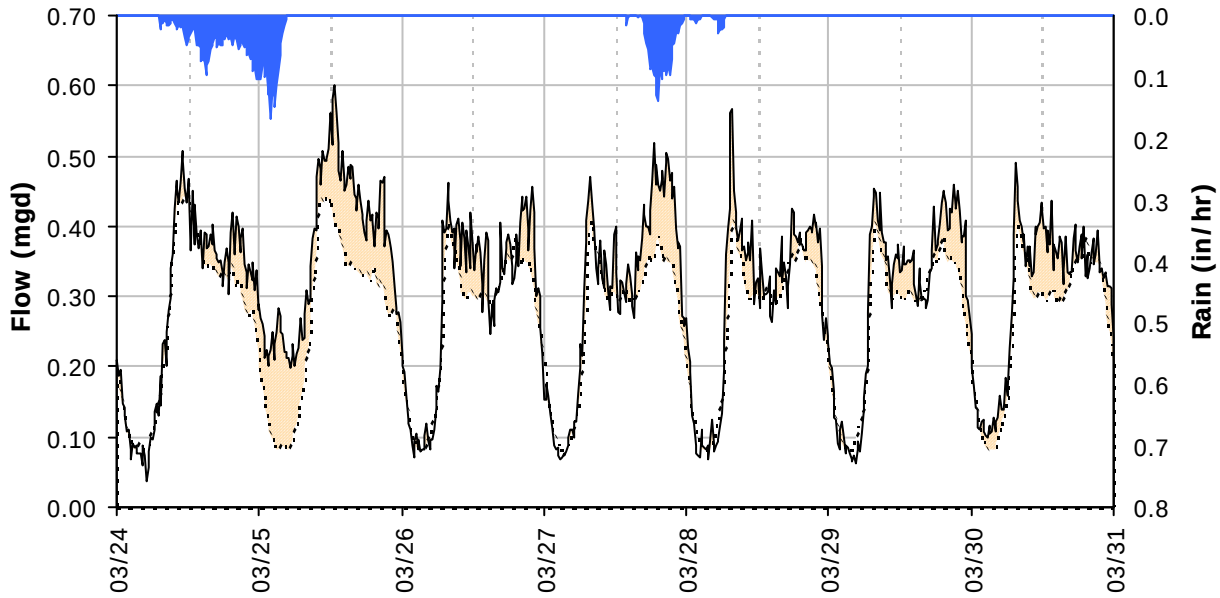
MH E2

I/I Summary: Event 2

Baseline and Realtime Flows with Rainfall Data over Monitoring Period



Event 2 Detail Graph



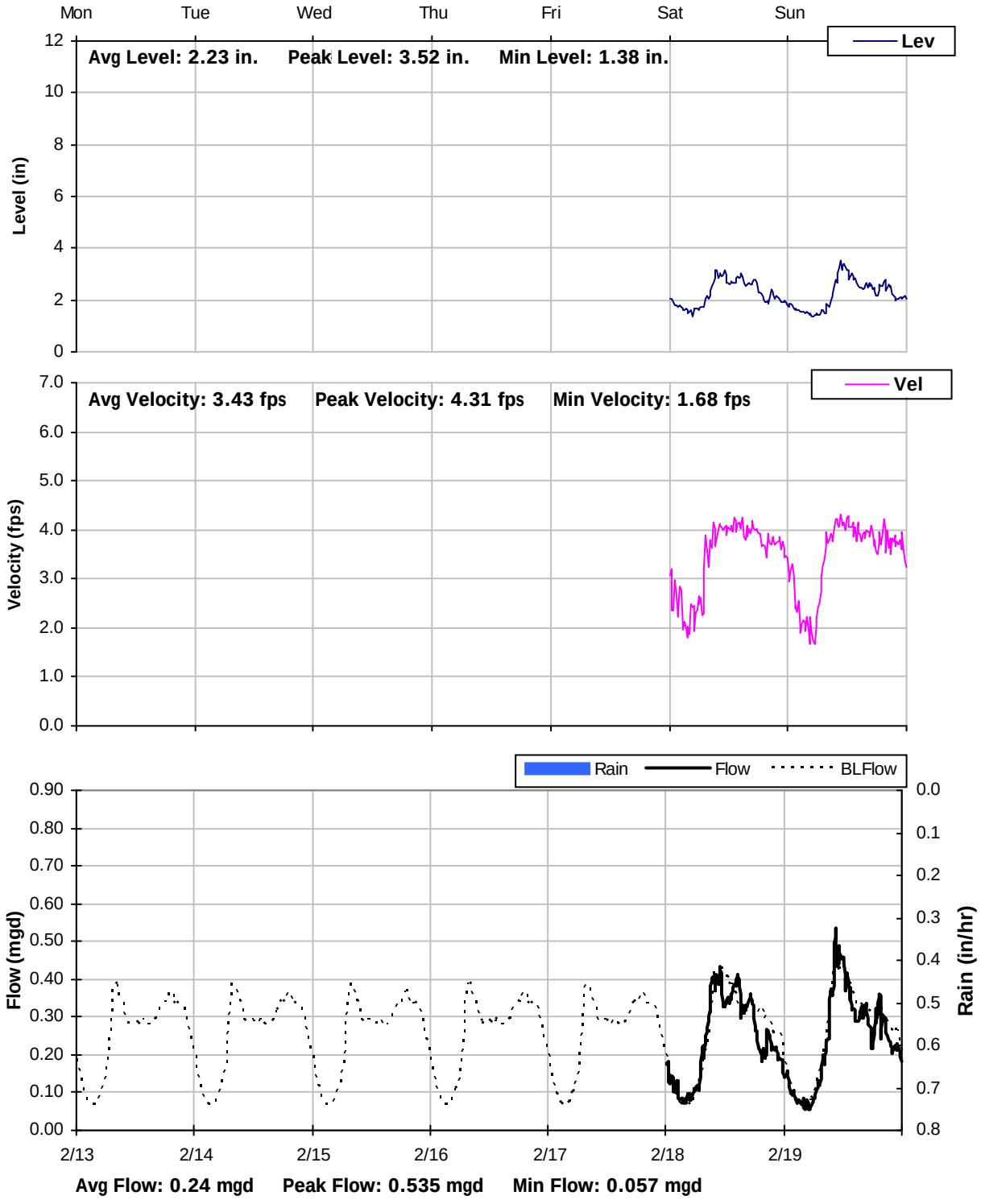
Storm Event I/I Analysis (Rain = 1.66 inches)

Capacity		Inflow		RDI (infiltration)		Combined I/I	
Peak Flow:	0.60 *mgd*	**Peak I/I Rate:**	0.21 *mgd*	**Infiltration Rate:** (3/26/2012)	0.040 *mgd*	**Total I/I:**	213,000 *gallons*
PF:	2.37	**PkI/I:IDM:**	6,237 *gpd/IDM*	**RDI:IDM:**	1,169 *gpd/IDM*	**Total I/I:IDM:**	3,733 *gal/IDM/in*
Peak Level:	4.90 *in*	**PkI/I:Acre:**	1,435 *gpd/acre*	**RDI:Acre:**	269 *gpd/acre*	**R-Value:**	3.2%
d/D Ratio:	0.27	**Pk I/I:ADWF:**	0.84	**RDI (% of BL):**	16%	**Total I/I:ADWF:**	0.50 *per in-rain*

MH E2

Weekly Level, Velocity and Flow Hydrographs

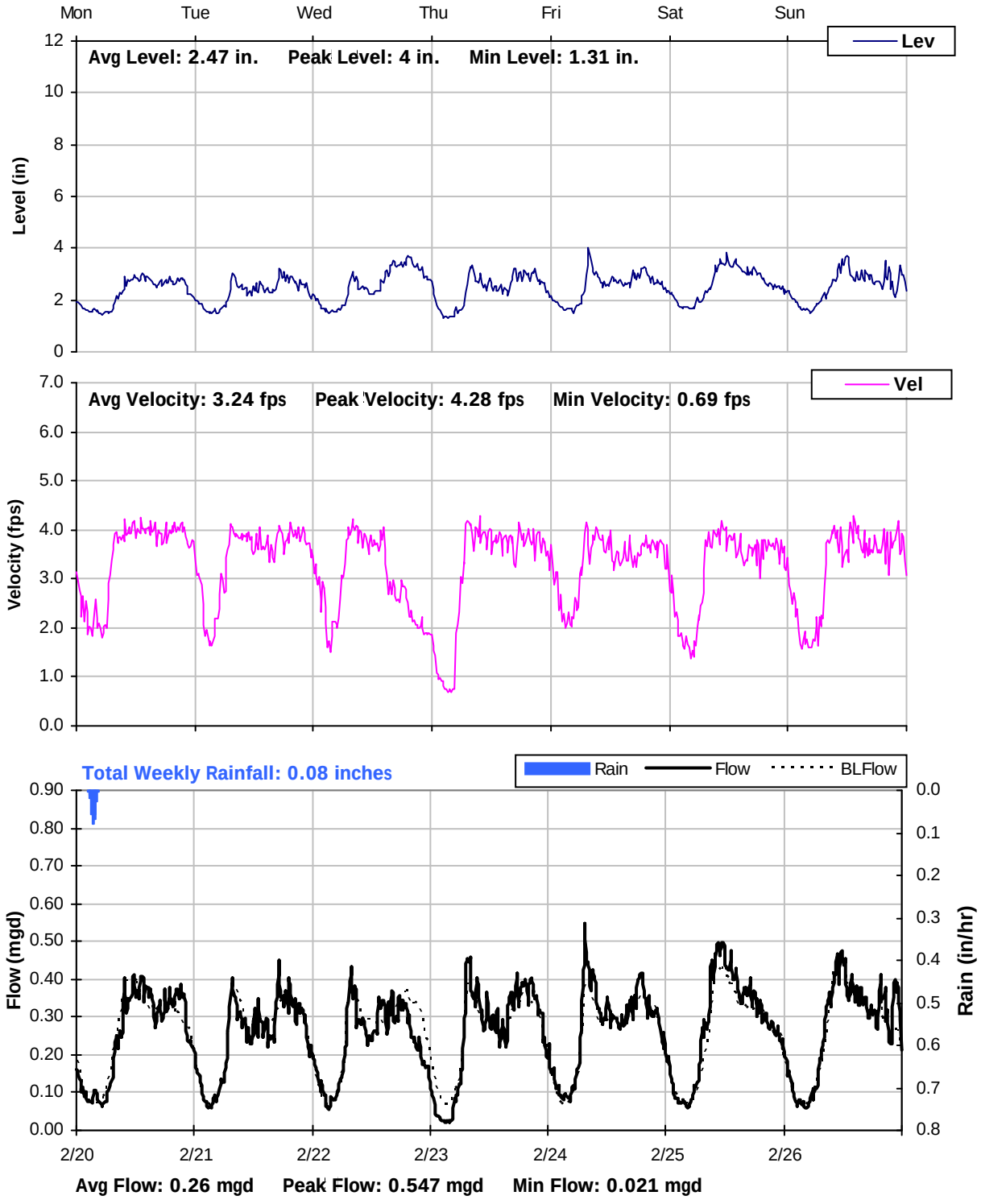
2/13/2012 to 2/20/2012



MH E2

Weekly Level, Velocity and Flow Hydrographs

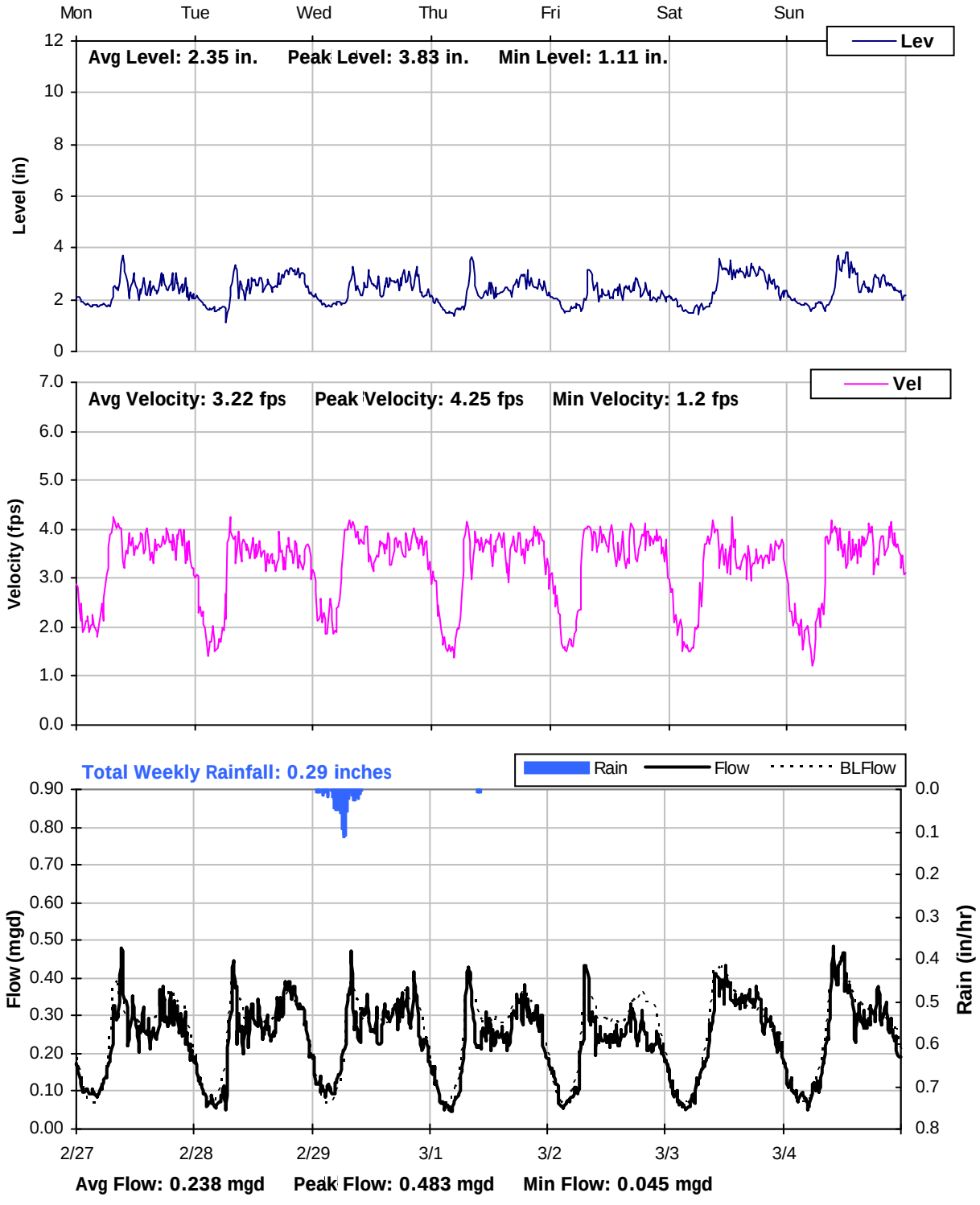
2/20/2012 to 2/27/2012



MH E2

Weekly Level, Velocity and Flow Hydrographs

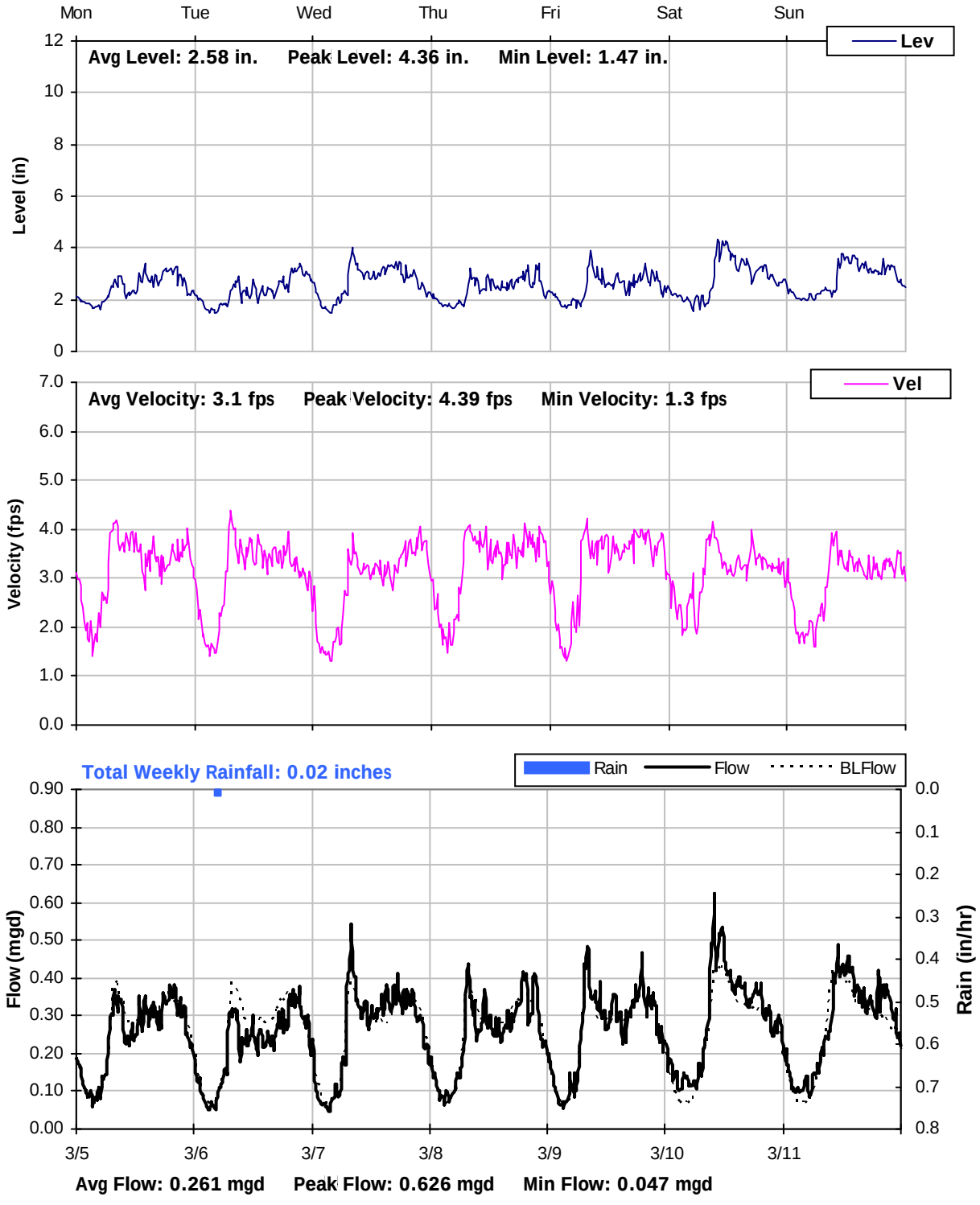
2/27/2012 to 3/5/2012



MH E2

Weekly Level, Velocity and Flow Hydrographs

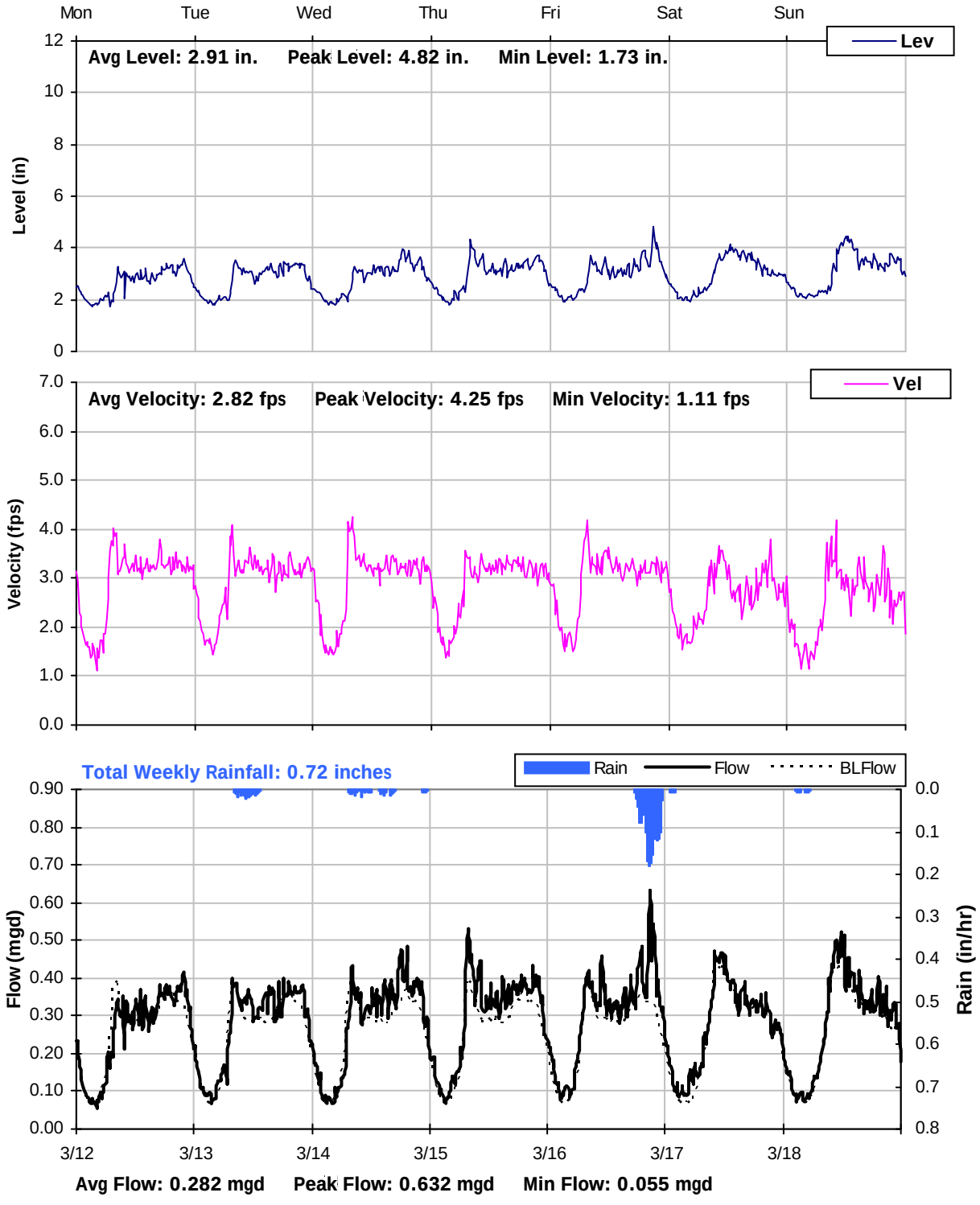
3/5/2012 to 3/12/2012



MH E2

Weekly Level, Velocity and Flow Hydrographs

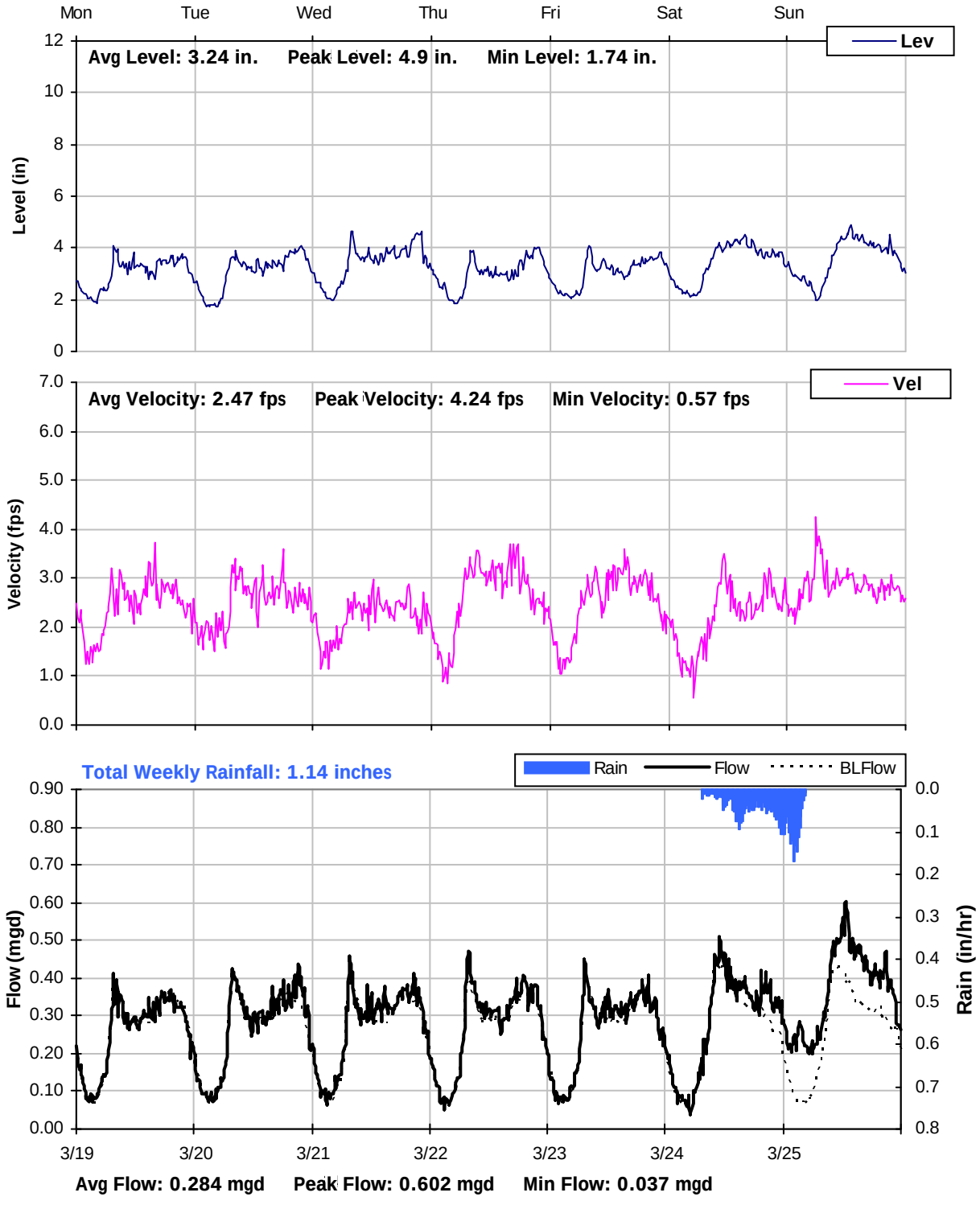
3/12/2012 to 3/19/2012



MH E2

Weekly Level, Velocity and Flow Hydrographs

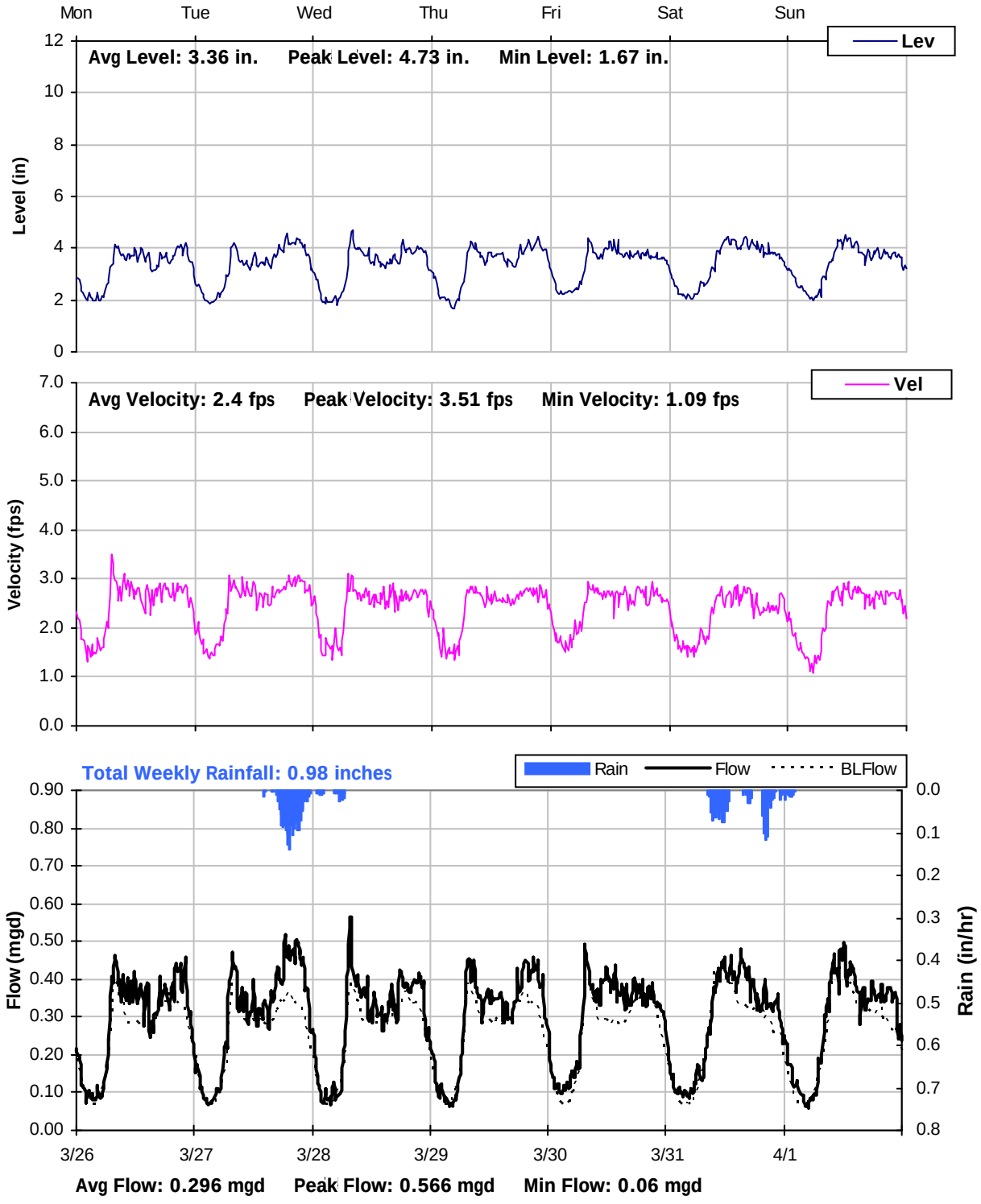
3/19/2012 to 3/26/2012



MH E2

Weekly Level, Velocity and Flow Hydrographs

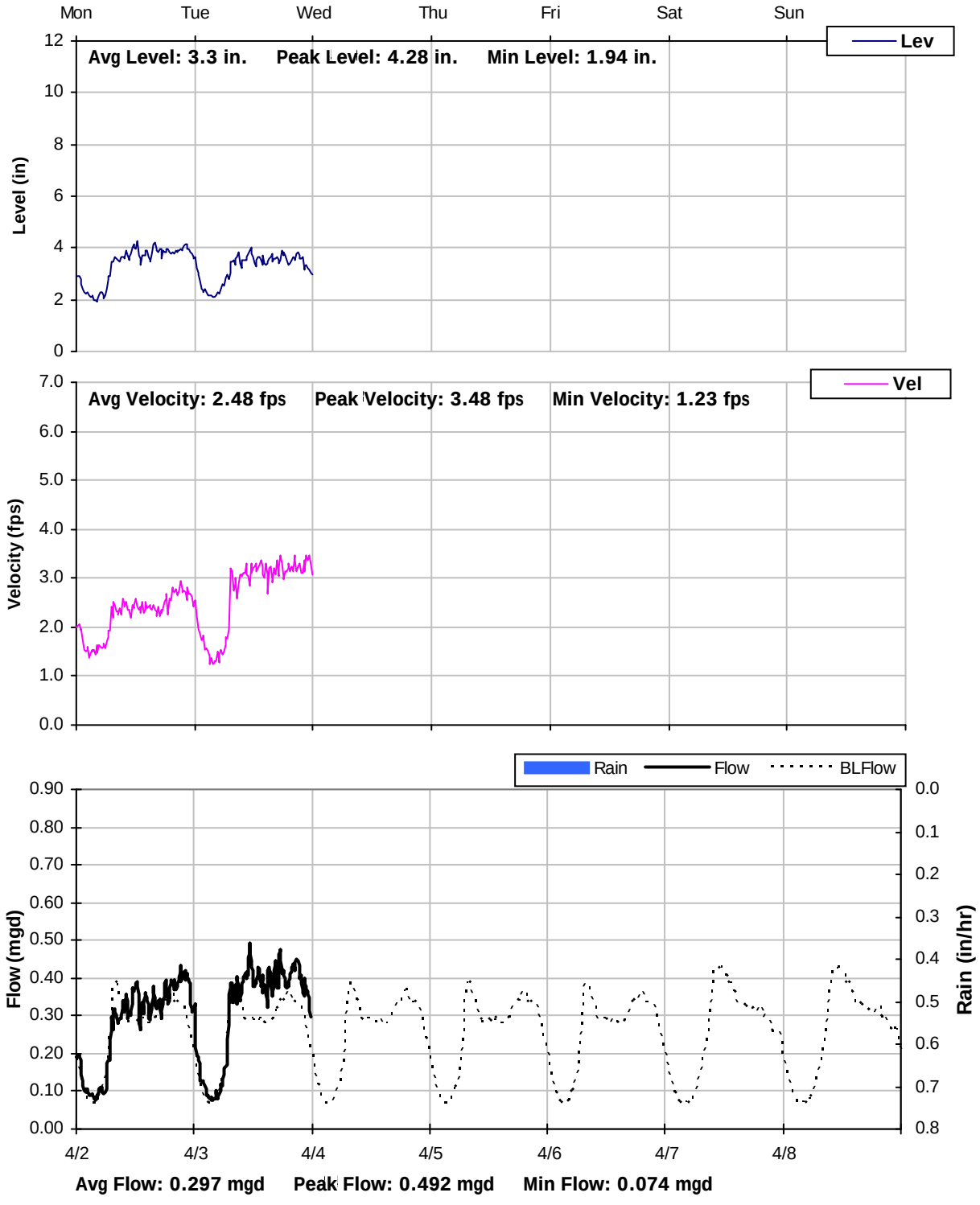
3/26/2012 to 4/2/2012



MH E2

Weekly Level, Velocity and Flow Hydrographs

4/2/2012 to 4/9/2012



East Palo Alto Sanitary District

Sanitary Sewer Flow Monitoring and I/I Study

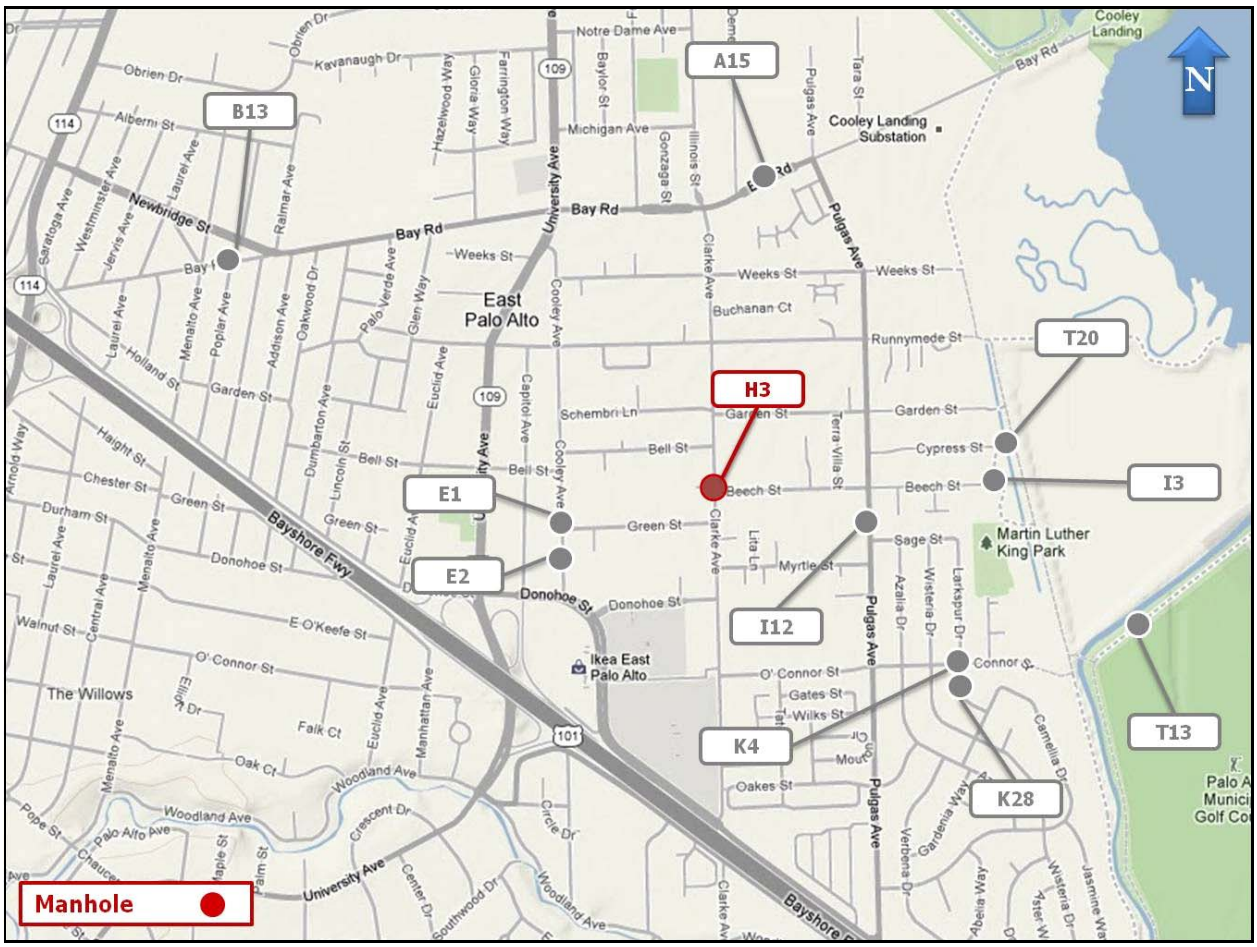
Year 2012

Monitoring Site: MH H3

Location: Clarke Avenue at Beech Street

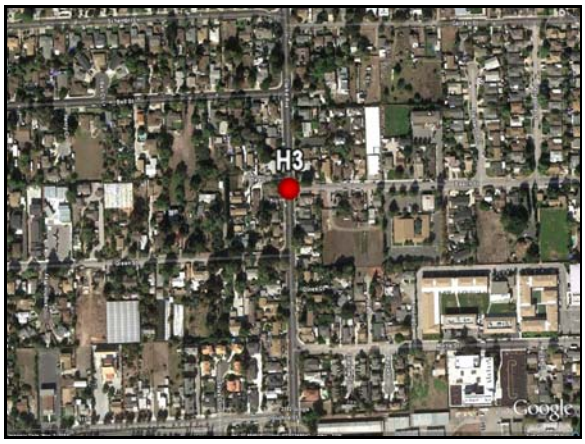
Data Summary Report

Vicinity Map:



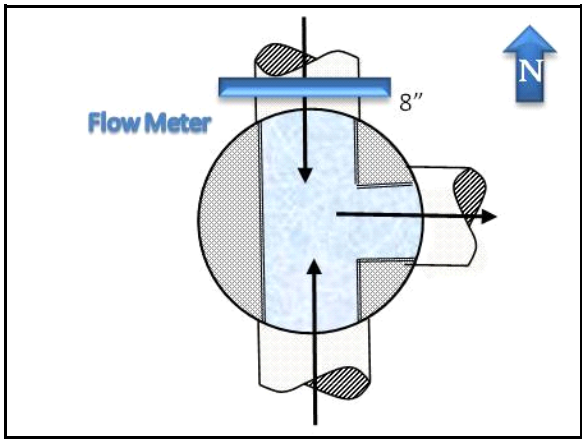
MH H3
Site Information Report

Location:	Clarke Avenue at Beech Street
Coordinates:	122.1347° W, 37.4651° N
Elevation:	12 feet
Diameter:	8 inches
Baseline Flow:	0.135 mgd
Peak Measured Flow:	0.308 mgd



Satellite Map

Sanitary Sewer Map



Flow Sketch


View from Street

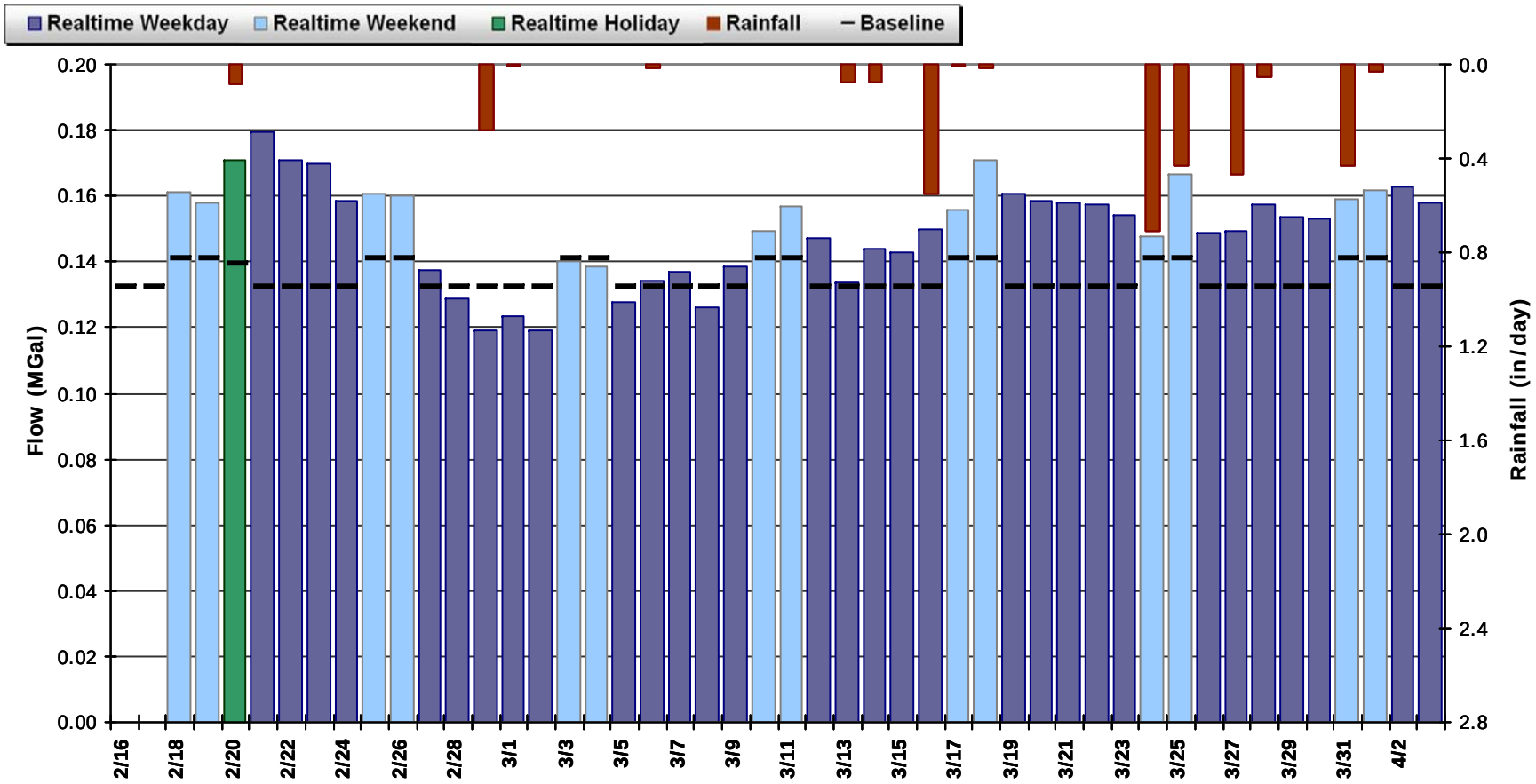

Plan View

MH H3

Period Flow Summary: Daily Flow Totals

Avg Daily Flow: 0.150 MGal **Peak Daily Flow: 0.180 MGal** **Min Daily Flow: 0.119 MGal**

Total Period Rainfall: 3.24 inches

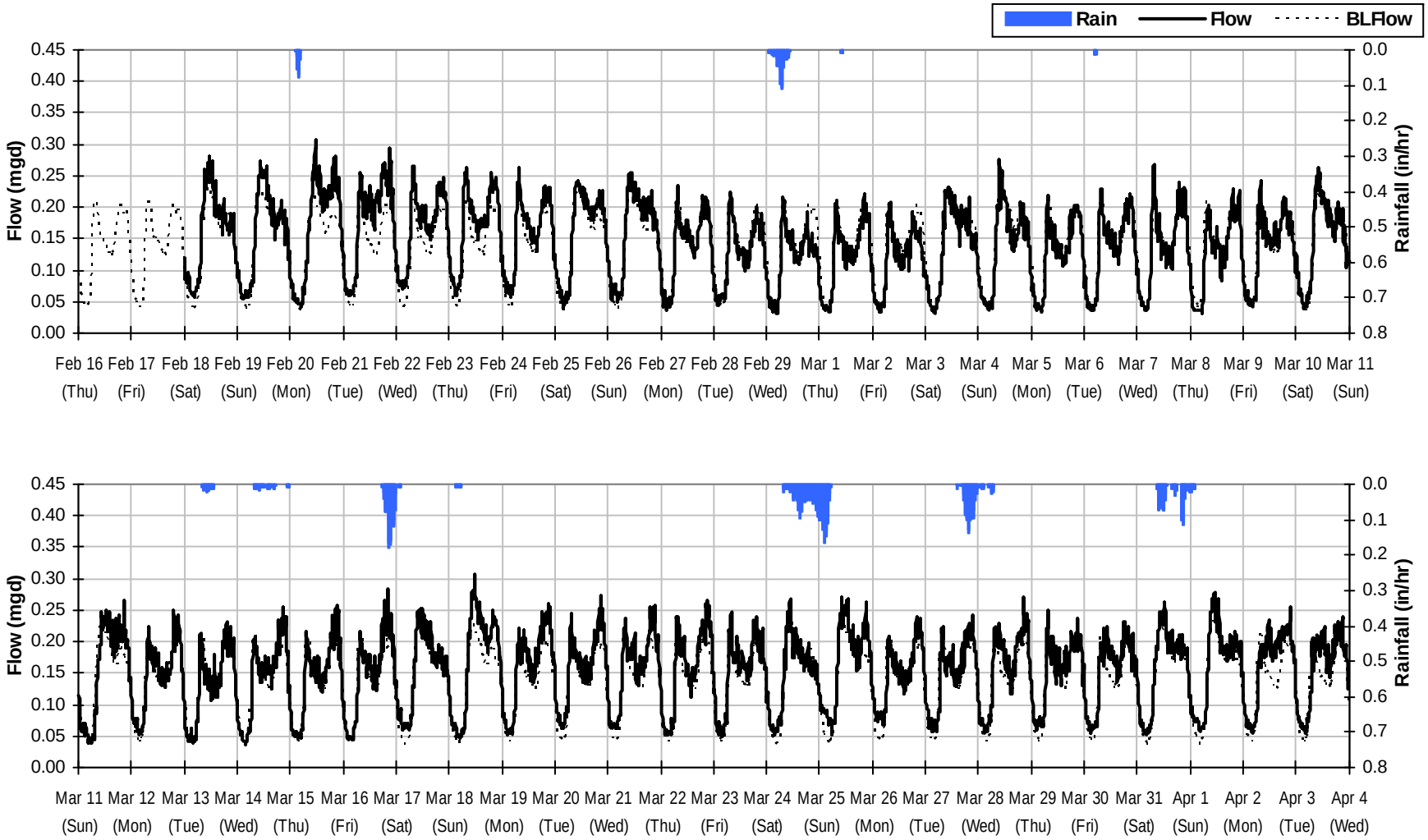


MH H3

Period Flow Summary: February 16 to April 4, 2012

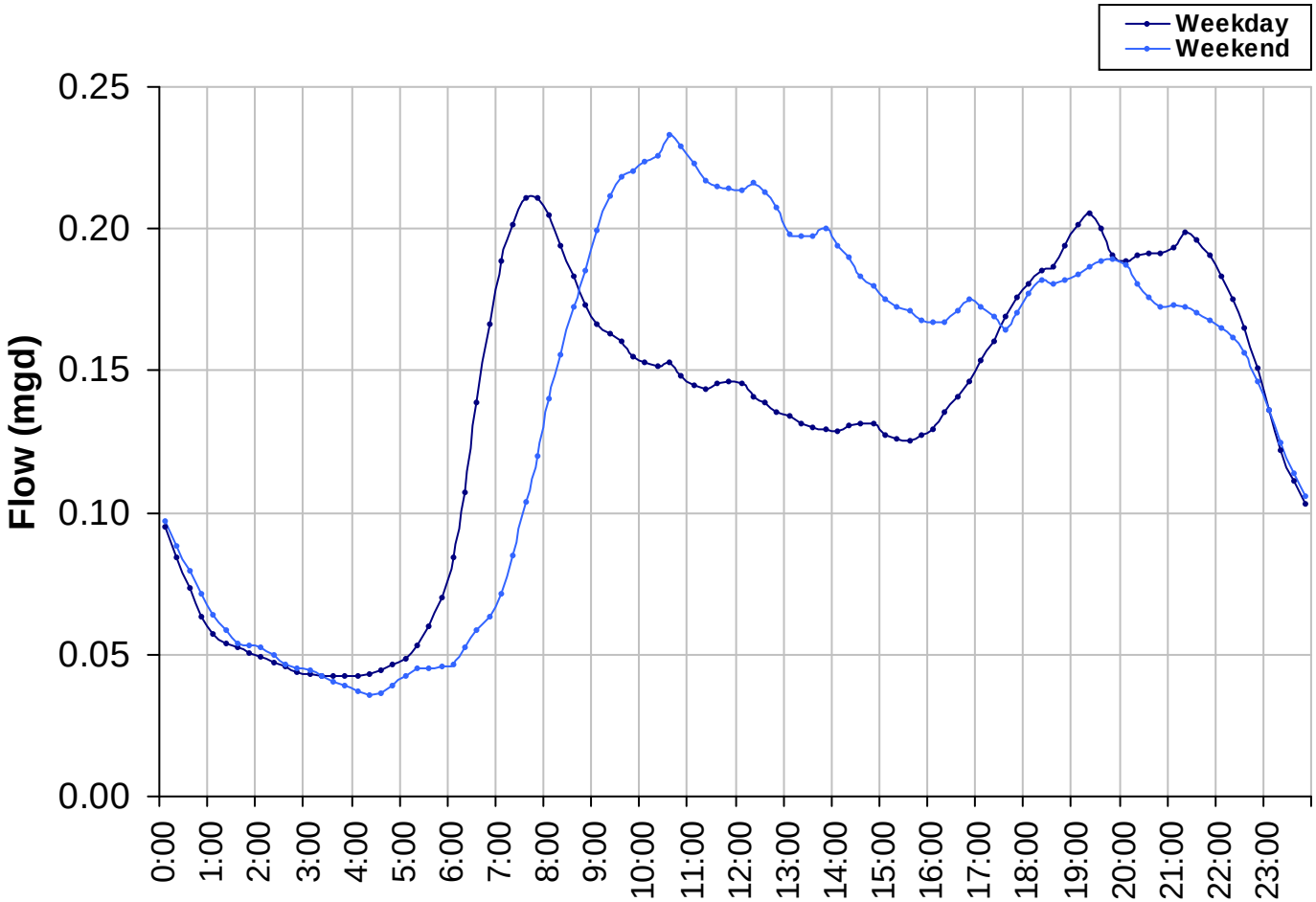
Avg Flow: 0.150 mgd **Peak Flow: 0.308 mgd** **Min Flow: 0.030 mgd**

Total Period Rainfall: 3.24 inches



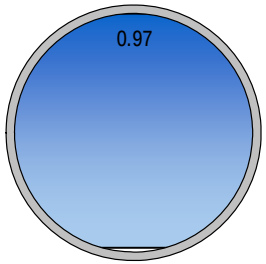
MH H3

Baseline Flow Hydrographs



Baseline Flow:

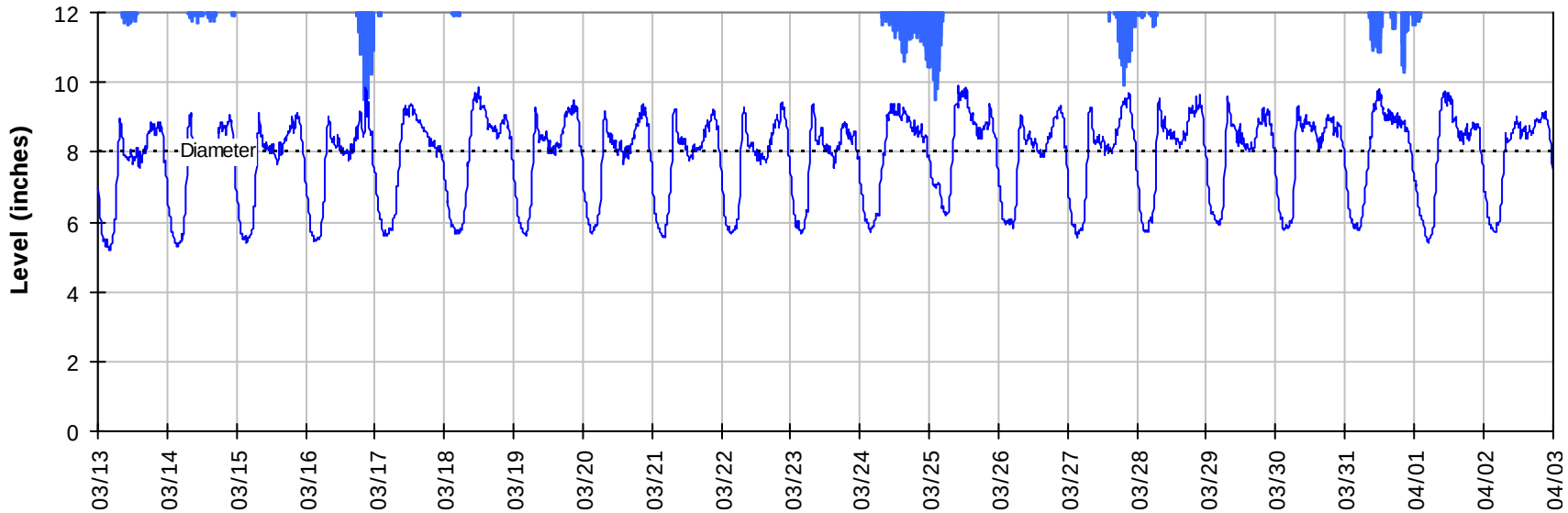
0.135 *mgd*

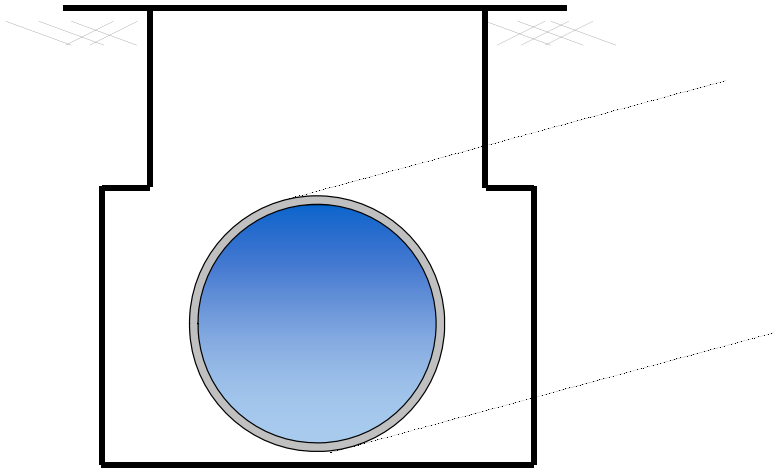


MH H3

Site Capacity and Surcharge Summary

Realtime Flow Levels with Rainfall Data over Monitoring Period





Pipe Diameter: 8 *inches*

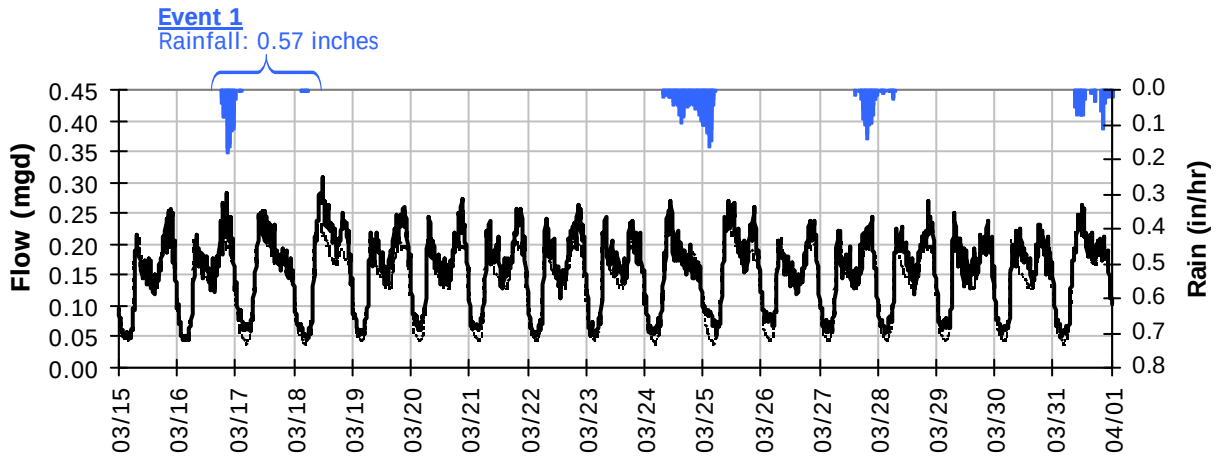
Peak Measured Level: 9.92 *inches*

Peak d/D Ratio: 1.24

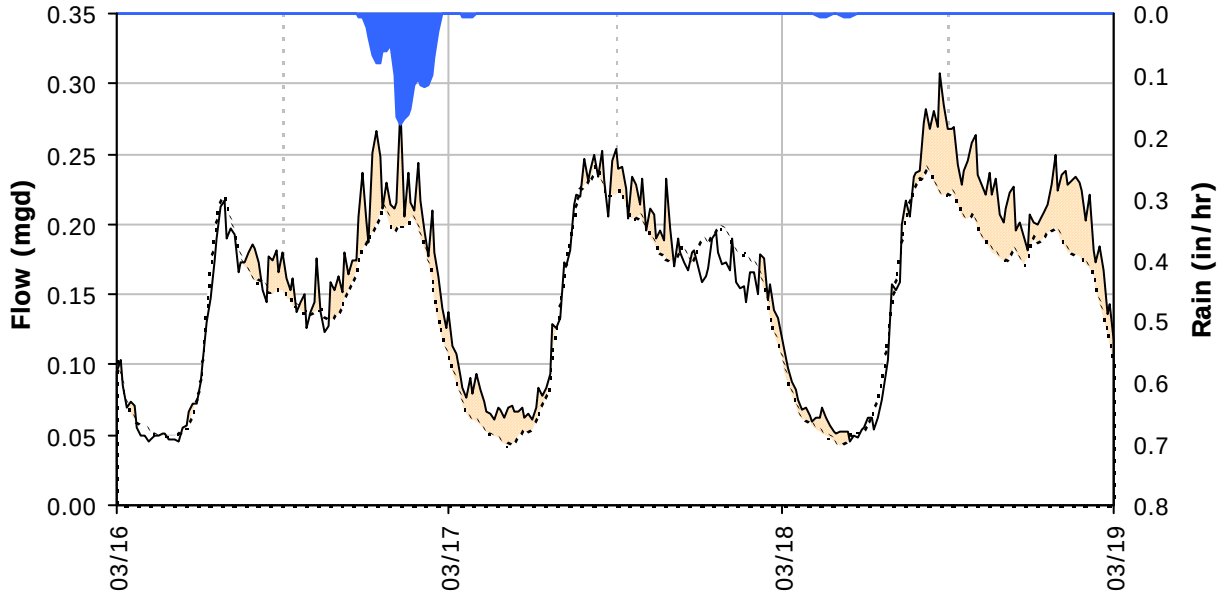
Surcharged 1.9 inches over crown

MH H3
I/I Summary: Event 1

Baseline and Realtime Flows with Rainfall Data over Monitoring Period



Event 1 Detail Graph

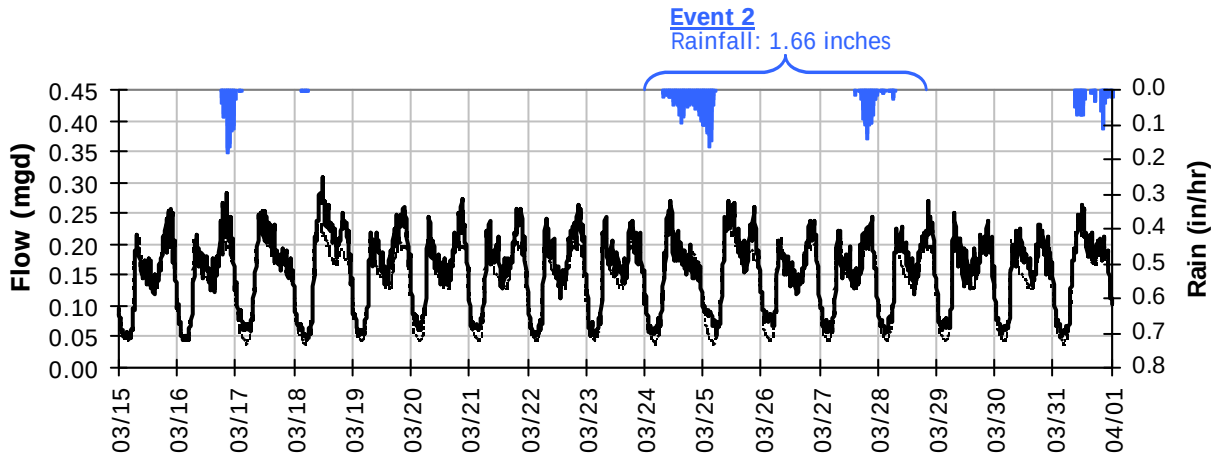


Storm Event I/I Analysis (Rain = 0.57 inches)

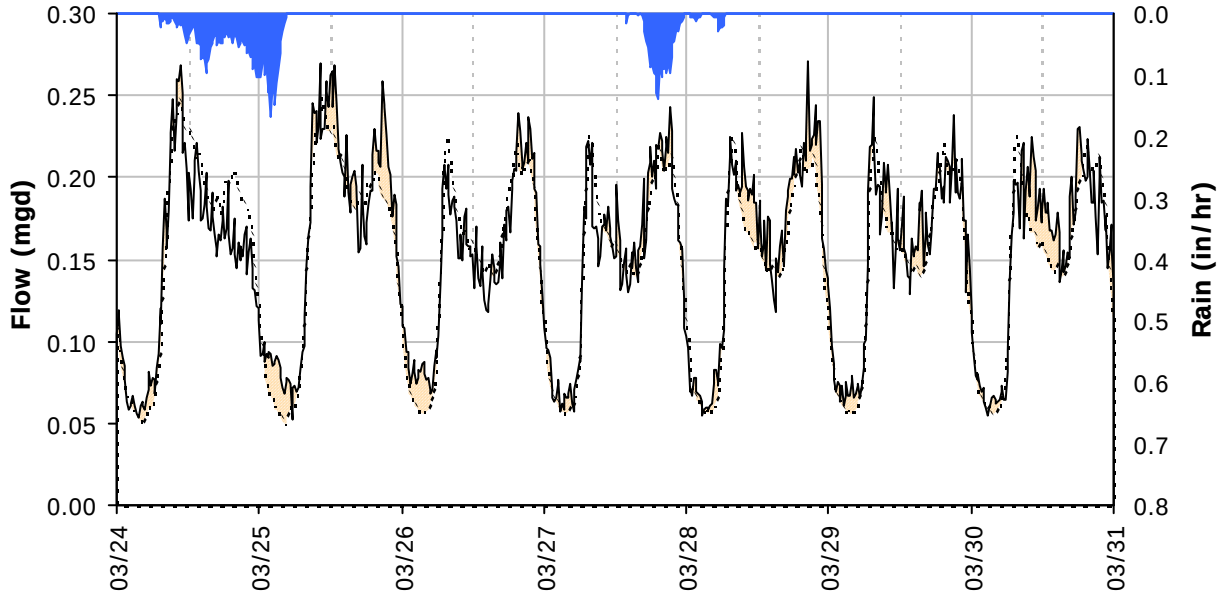
Capacity		Inflow		RDI (infiltration)		Combined I/I	
Peak Flow:	0.28 *mgd*	**Peak I/I Rate:**	0.09 *mgd*	**Infiltration Rate:** (3/18/2012)	0.014 *mgd*	**Total I/I:**	16,000 *gallons*
PF:	2.10	**PkI/I:IDM:**	5,802 *gpd/IDM*	**RDI:IDM:**	907 *gpd/IDM*	**Total I/I:IDM:**	1,748 *gal/IDM/in*
Peak Level:	9.87 *in*	**PkI/I:Acre:**	1,256 *gpd/acre*	**RDI:Acre:**	196 *gpd/acre*	**R-Value:**	1.4%
d/D Ratio:	1.23	**Pk I/I:ADWF:**	0.68	**RDI (% of BL):**	28%	**Total I/I:ADWF:**	0.21 *per in-rain*

MH H3
I/I Summary: Event 2

Baseline and Realtime Flows with Rainfall Data over Monitoring Period



Event 2 Detail Graph



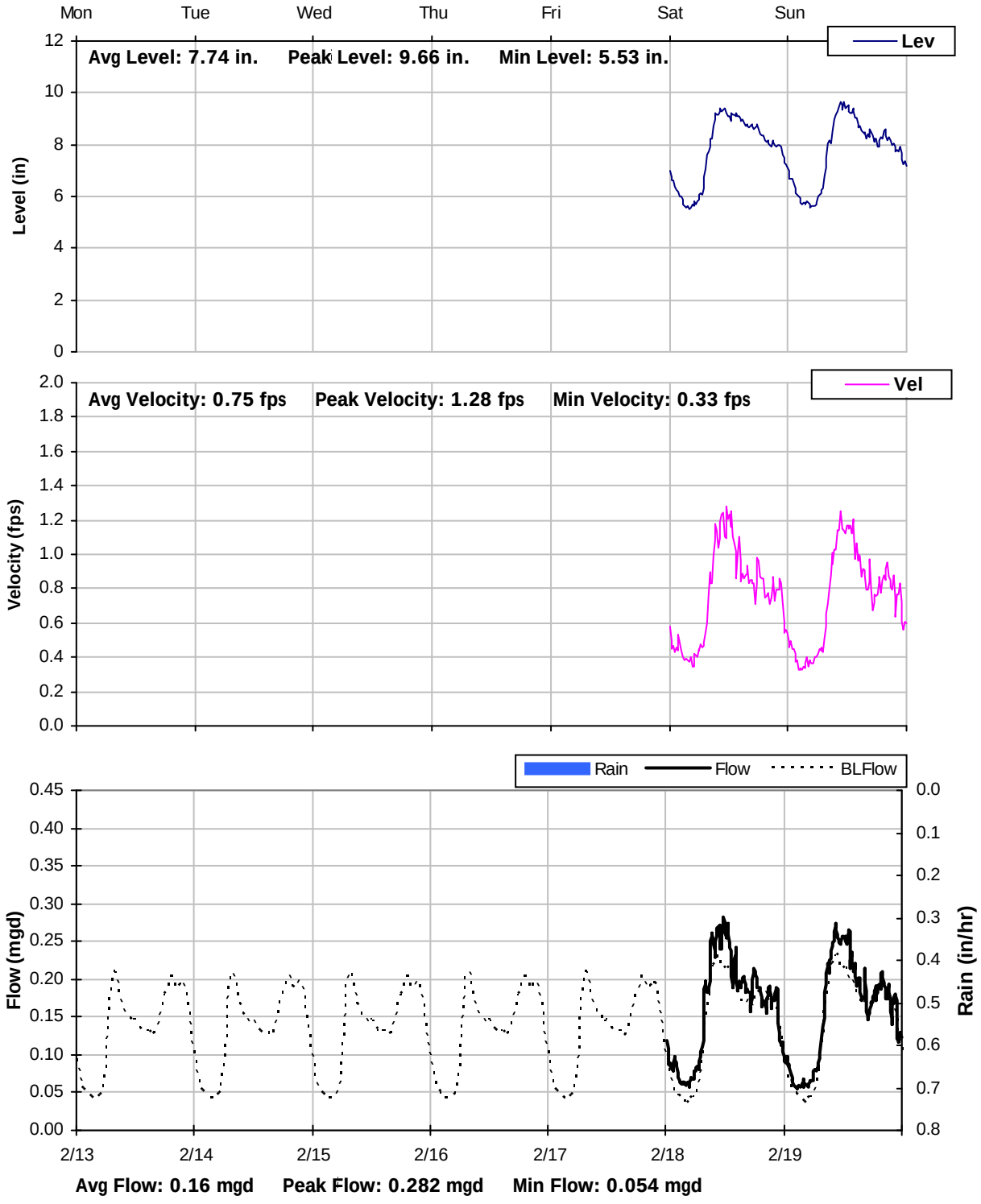
Storm Event I/I Analysis (Rain = 1.66 inches)

Capacity		Inflow		RDI (infiltration)		Combined I/I	
Peak Flow:	0.27 *mgd*	**Peak I/I Rate:**	0.09 *mgd*	**Infiltration Rate:** (3/26/2012)	0.016 *mgd*	**Total I/I:**	29,000 *gallons*
PF:	2.00	**PkI/I:IDM:**	5,420 *gpd/IDM*	**RDI:IDM:**	988 *gpd/IDM*	**Total I/I:IDM:**	1,091 *gal/IDM/in*
Peak Level:	9.92 *in*	**PkI/I:Acre:**	1,173 *gpd/acre*	**RDI:Acre:**	214 *gpd/acre*	**R-Value:**	0.9%
d/D Ratio:	1.24	**Pk I/I:ADWF:**	0.64	**RDI (% of BL):**	12%	**Total I/I:ADWF:**	0.13 *per in-rain*

MH H3

Weekly Level, Velocity and Flow Hydrographs

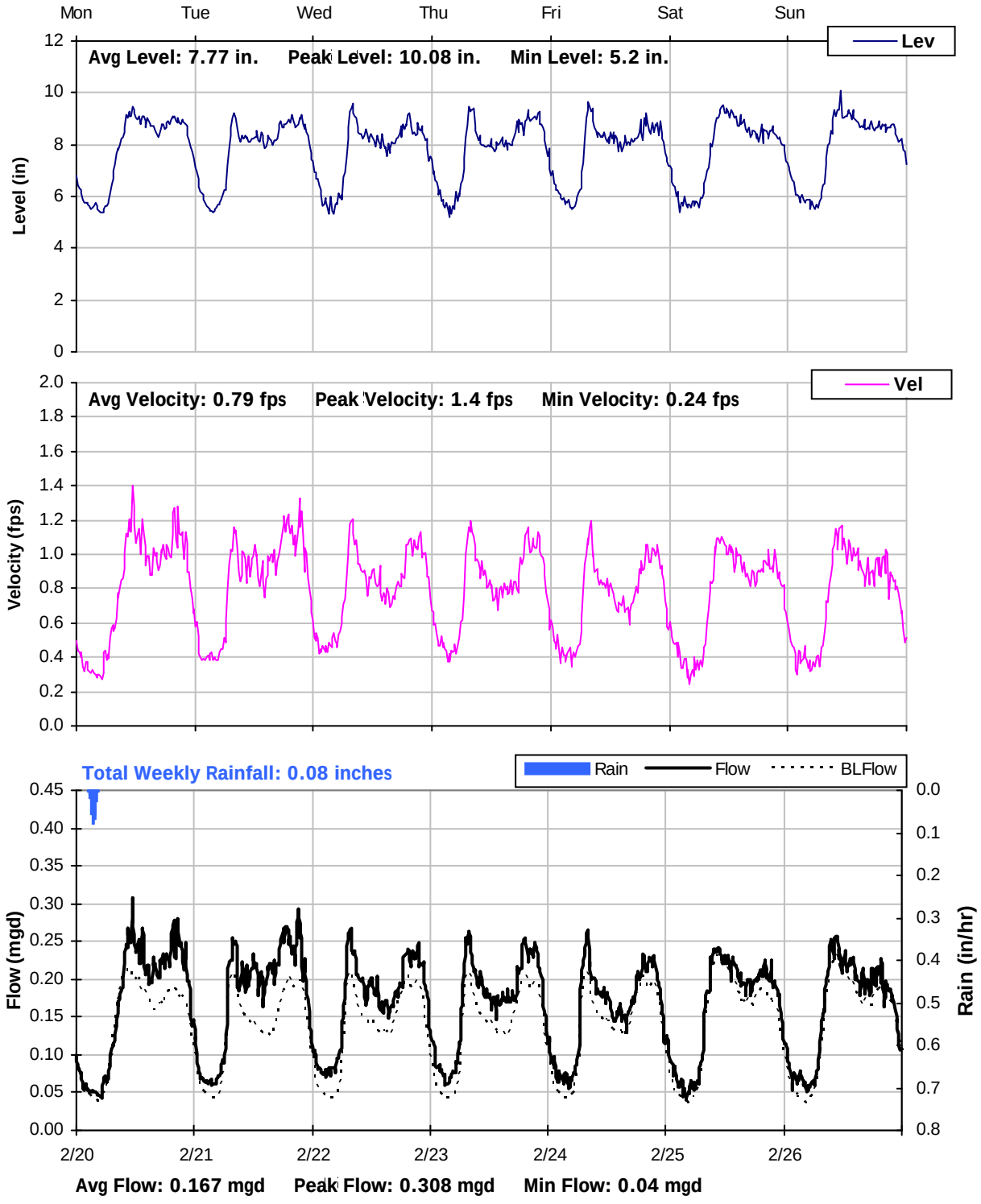
2/13/2012 to 2/20/2012



MH H3

Weekly Level, Velocity and Flow Hydrographs

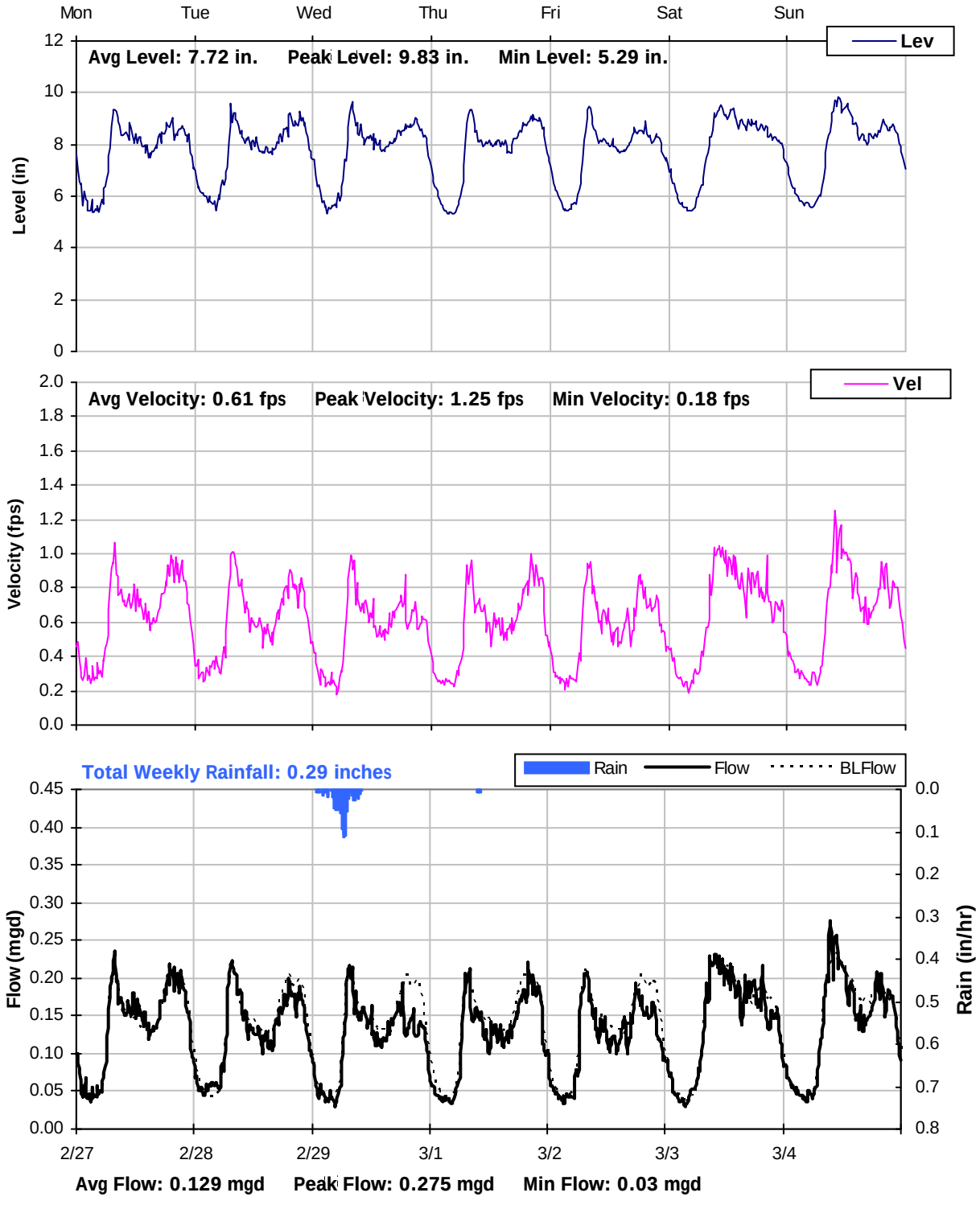
2/20/2012 to 2/27/2012



MH H3

Weekly Level, Velocity and Flow Hydrographs

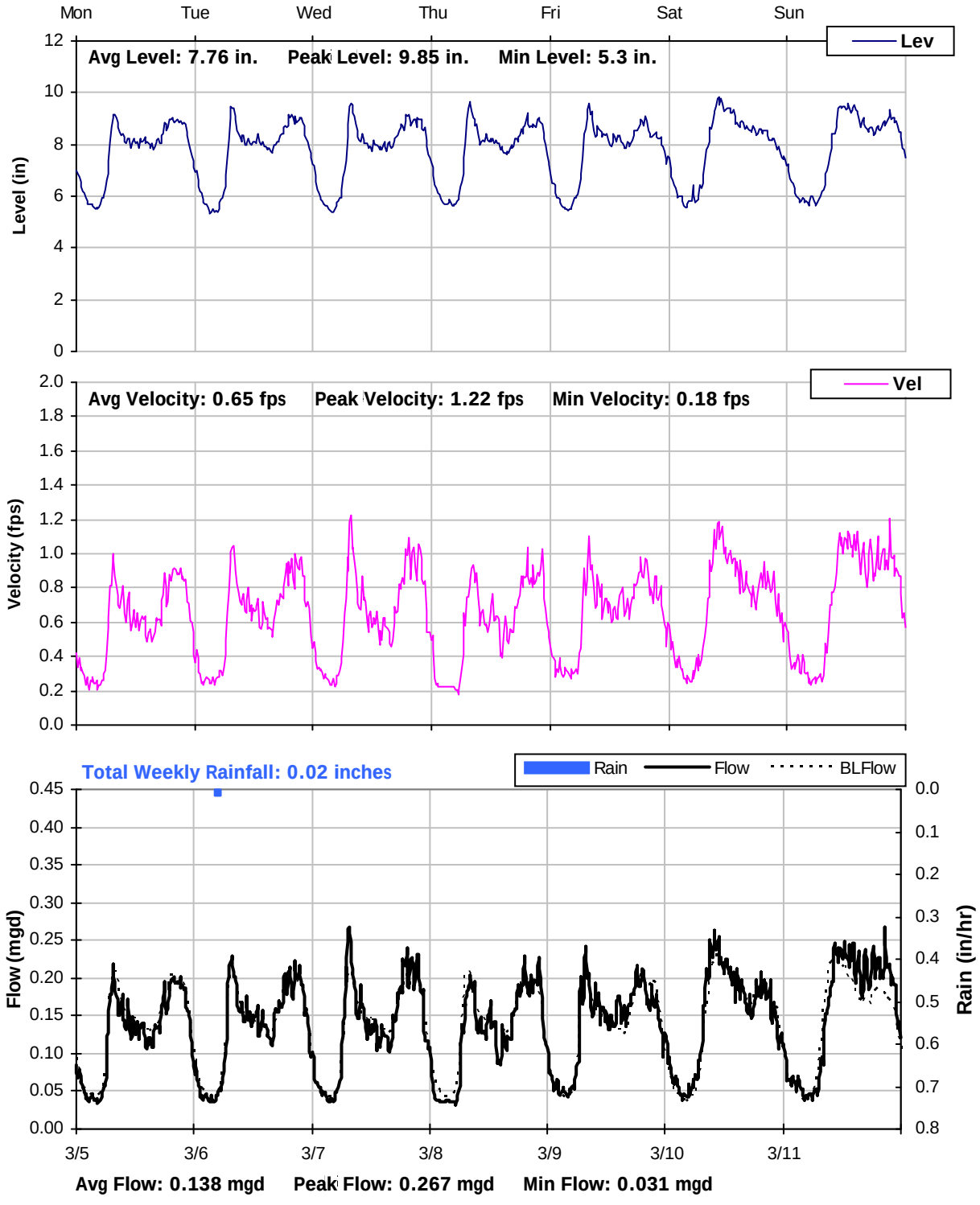
2/27/2012 to 3/5/2012



MH H3

Weekly Level, Velocity and Flow Hydrographs

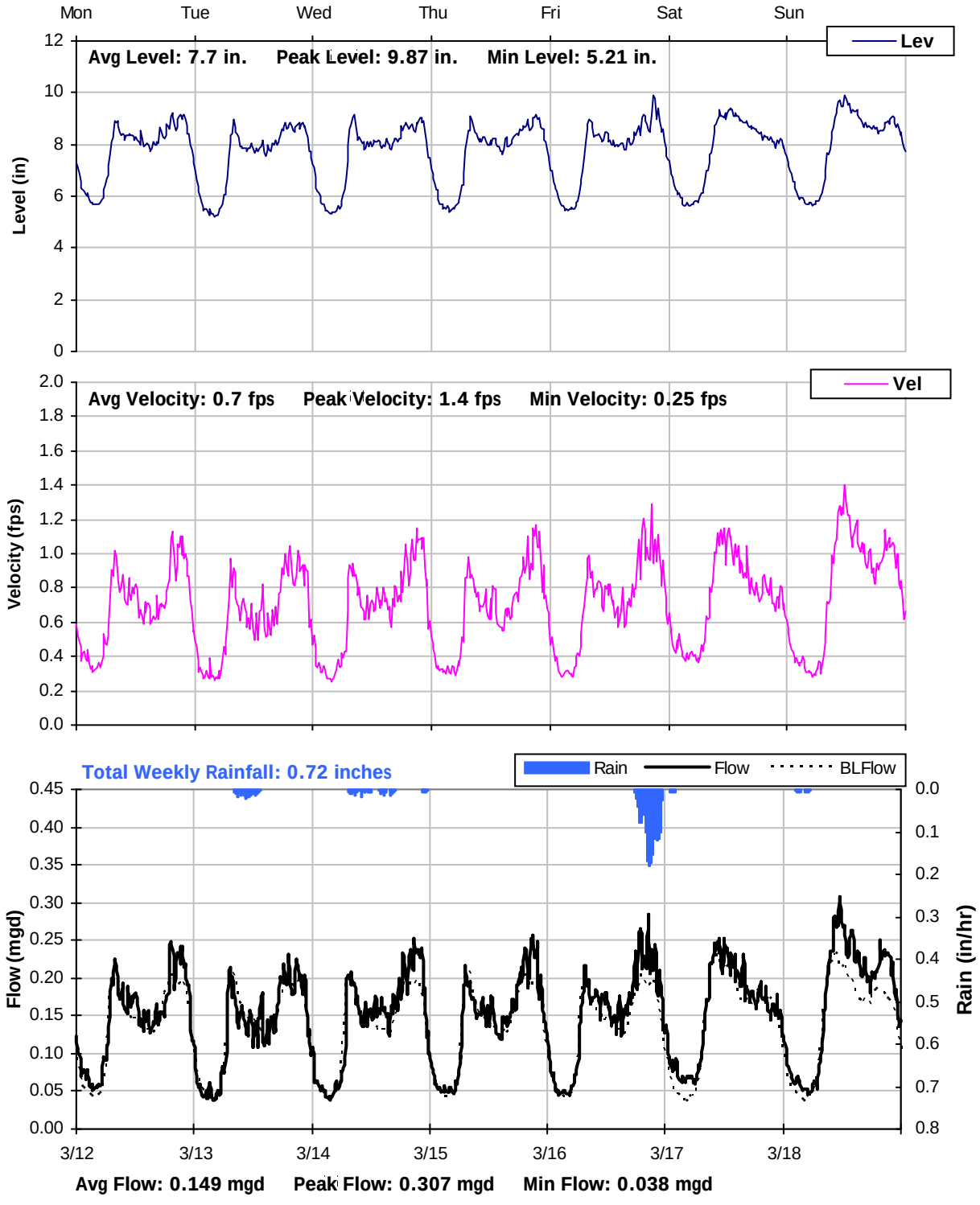
3/5/2012 to 3/12/2012



MH H3

Weekly Level, Velocity and Flow Hydrographs

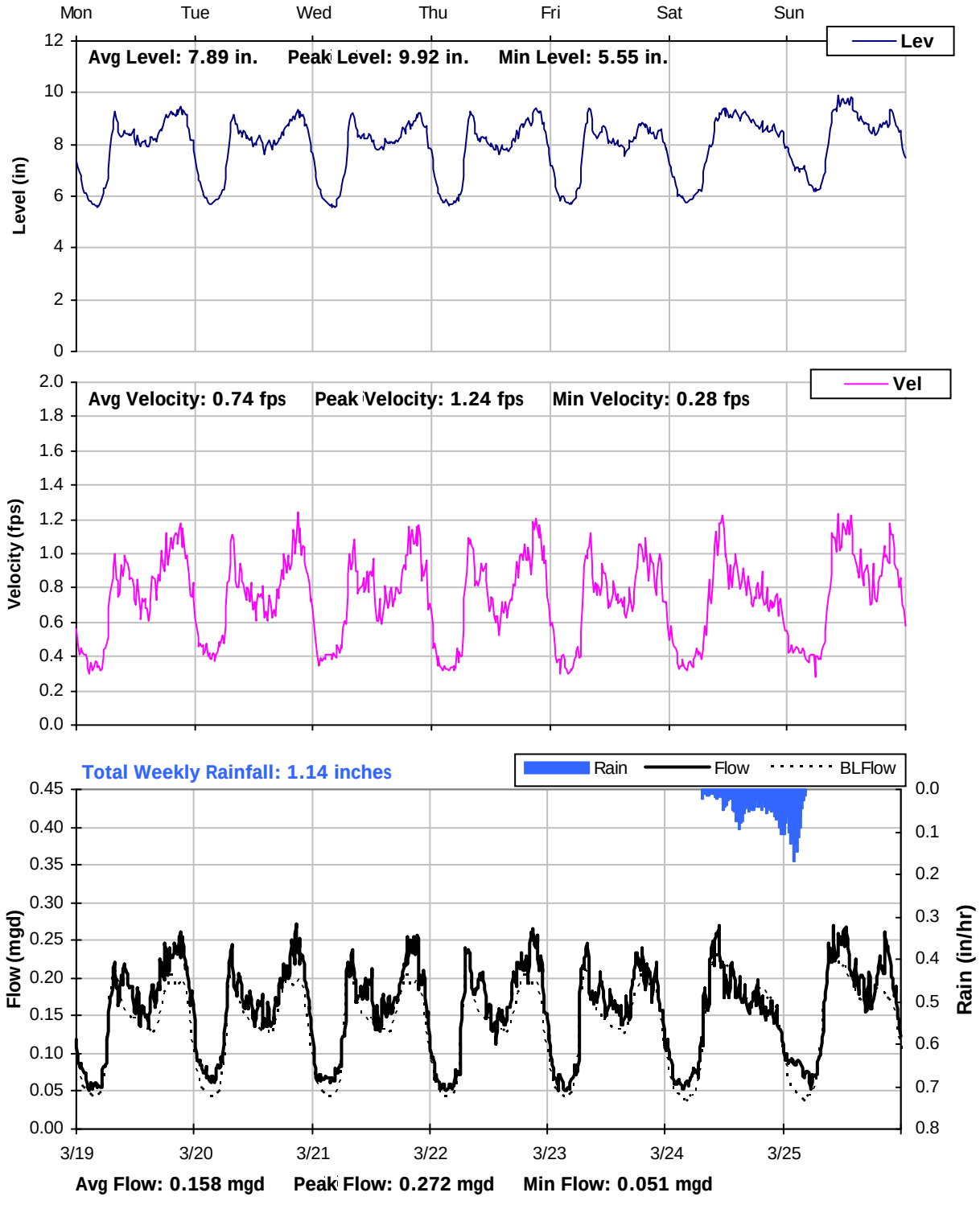
3/12/2012 to 3/19/2012



MH H3

Weekly Level, Velocity and Flow Hydrographs

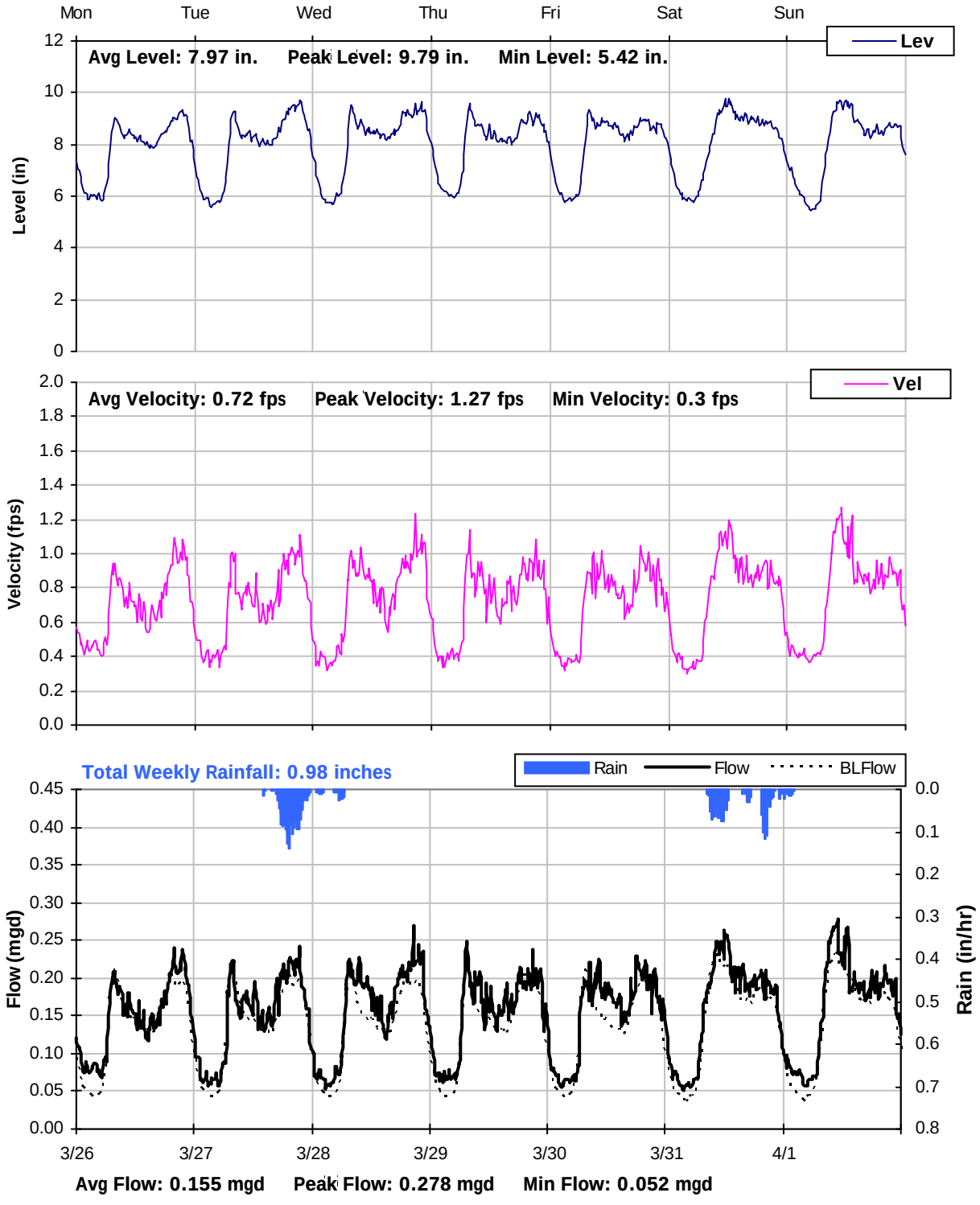
3/19/2012 to 3/26/2012



MH H3

Weekly Level, Velocity and Flow Hydrographs

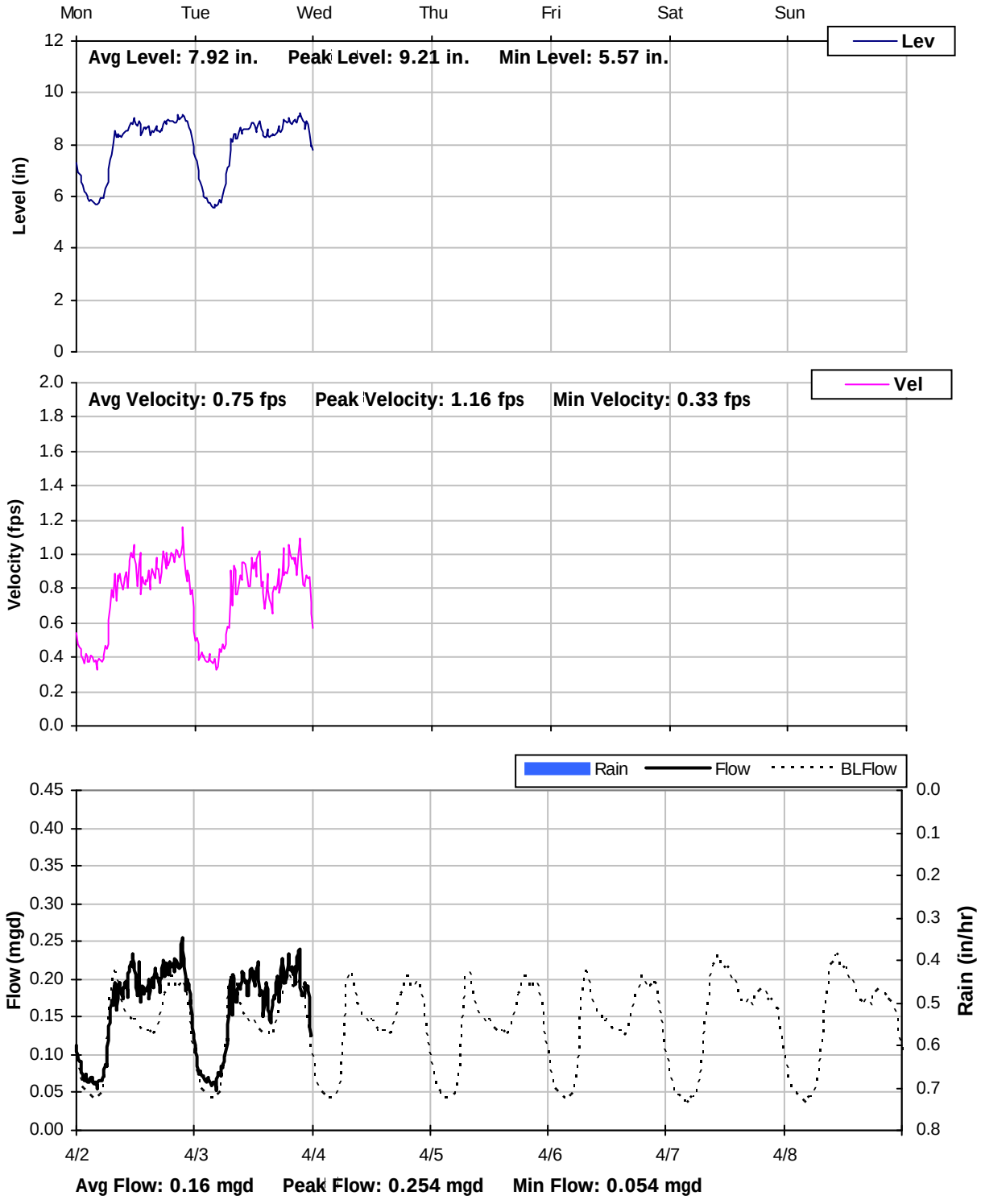
3/26/2012 to 4/2/2012



MH H3

Weekly Level, Velocity and Flow Hydrographs

4/2/2012 to 4/9/2012



East Palo Alto Sanitary District

Sanitary Sewer Flow Monitoring and I/I Study

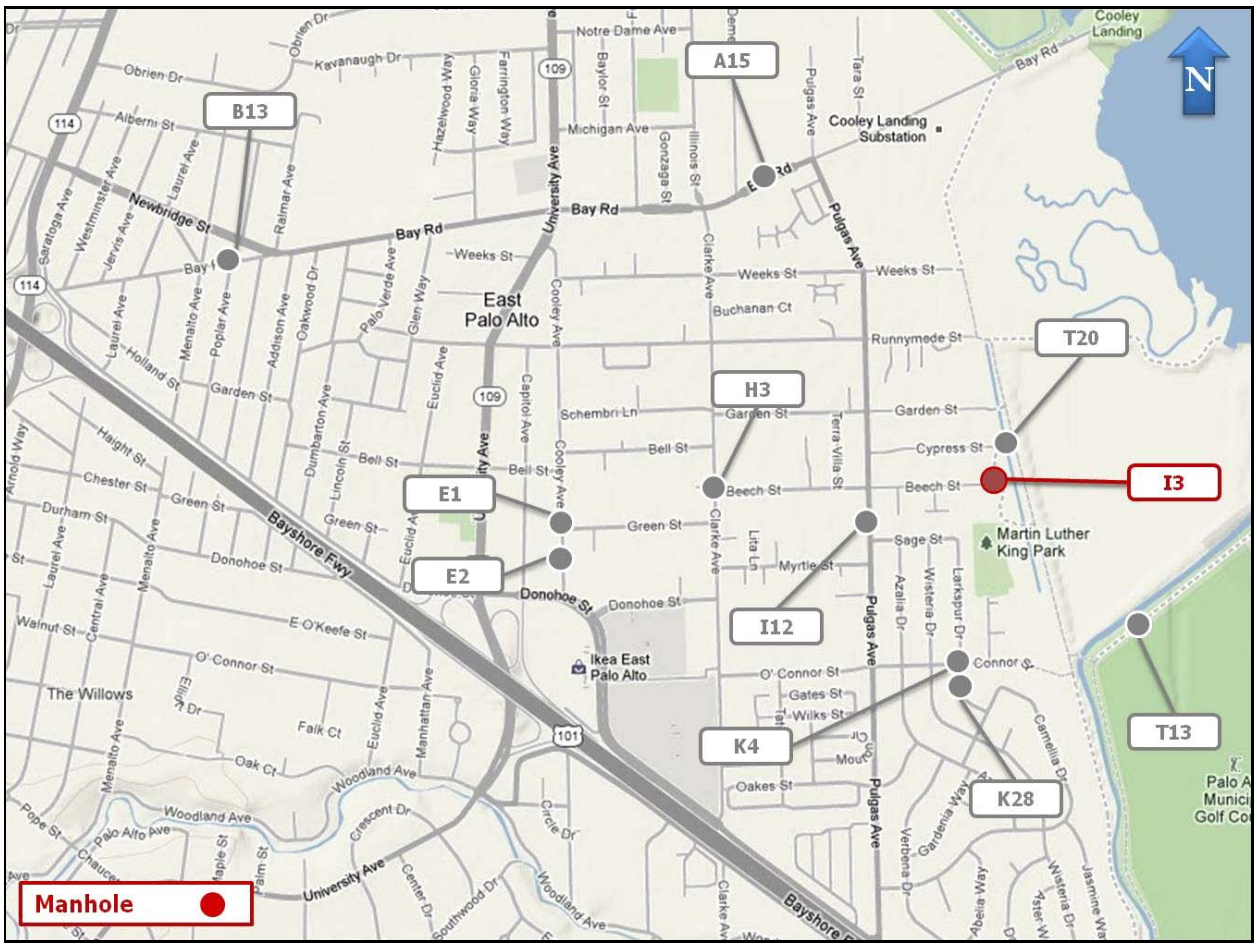
Year 2012

Monitoring Site: MH I3

Location: At the end of Beech Street, east of Pulgas Avenue

Data Summary Report

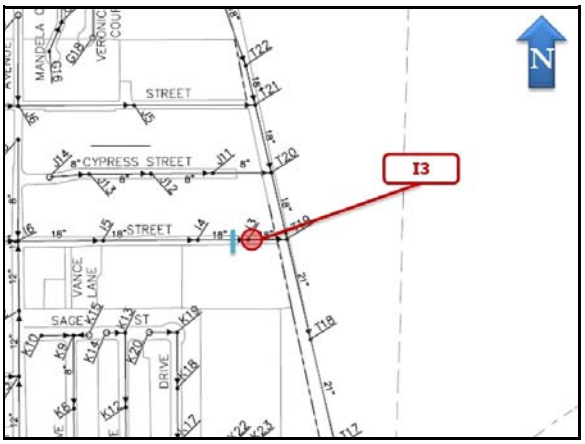
Vicinity Map:



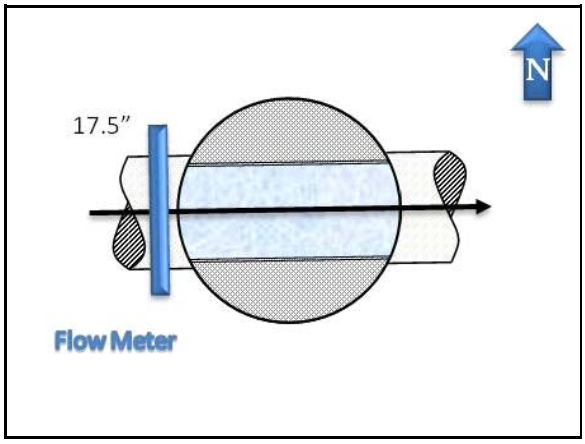
MH I3
Site Information Report

Location:	At the end of Beech Street, east of Pulgas Avenue
Coordinates:	122.1264° W, 37.4652° N
Elevation:	5 feet
Diameter:	17.5 inches
Baseline Flow:	0.829 mgd
Peak Measured Flow:	1.447 mgd

Satellite Map



Sanitary Sewer Map



Flow Sketch


View from Street

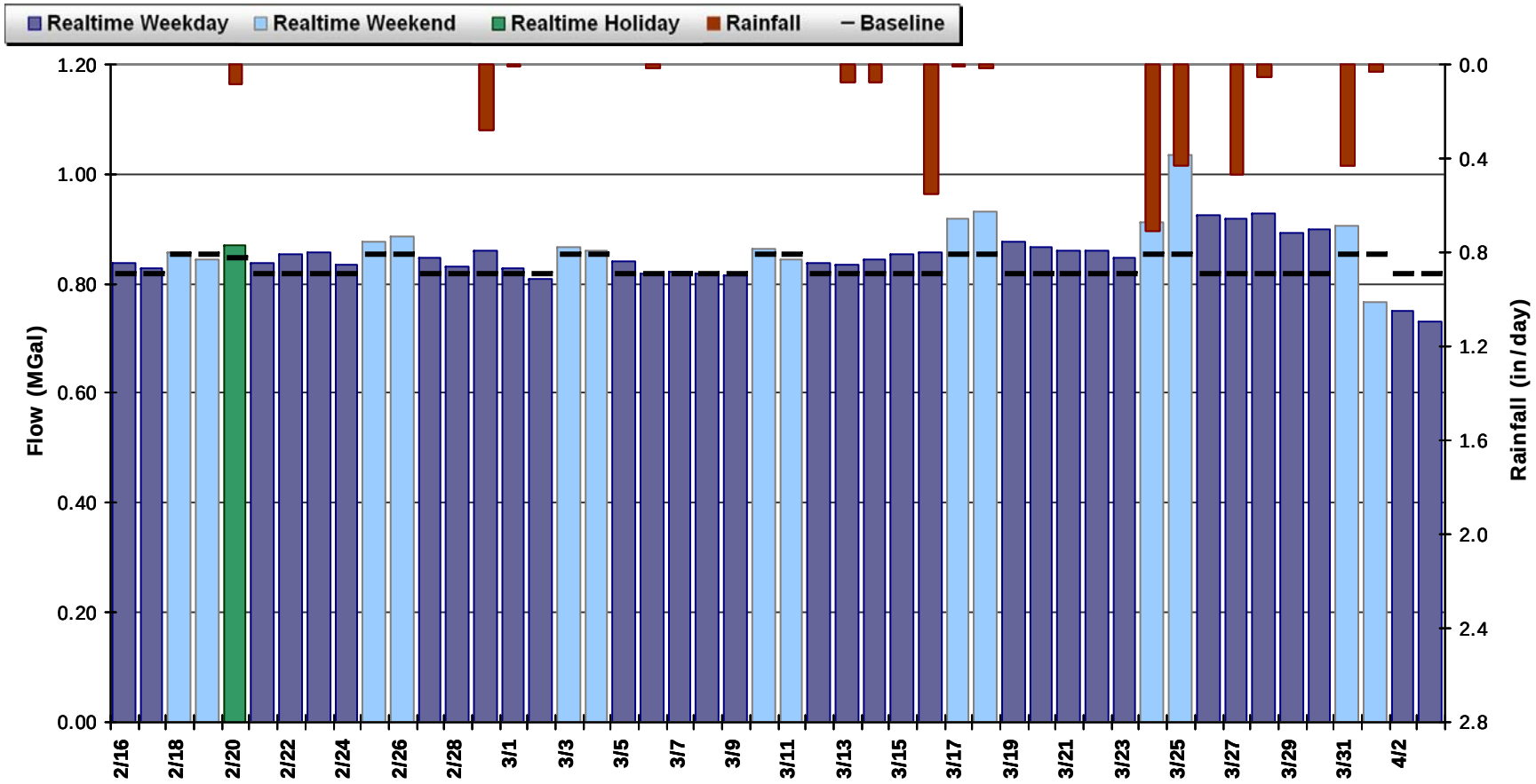

Plan View

MH I3

Period Flow Summary: Daily Flow Totals

Avg Daily Flow: 0.858 MGal **Peak Daily Flow: 1.036 MGal** **Min Daily Flow: 0.732 MGal**

Total Period Rainfall: 3.24 inches

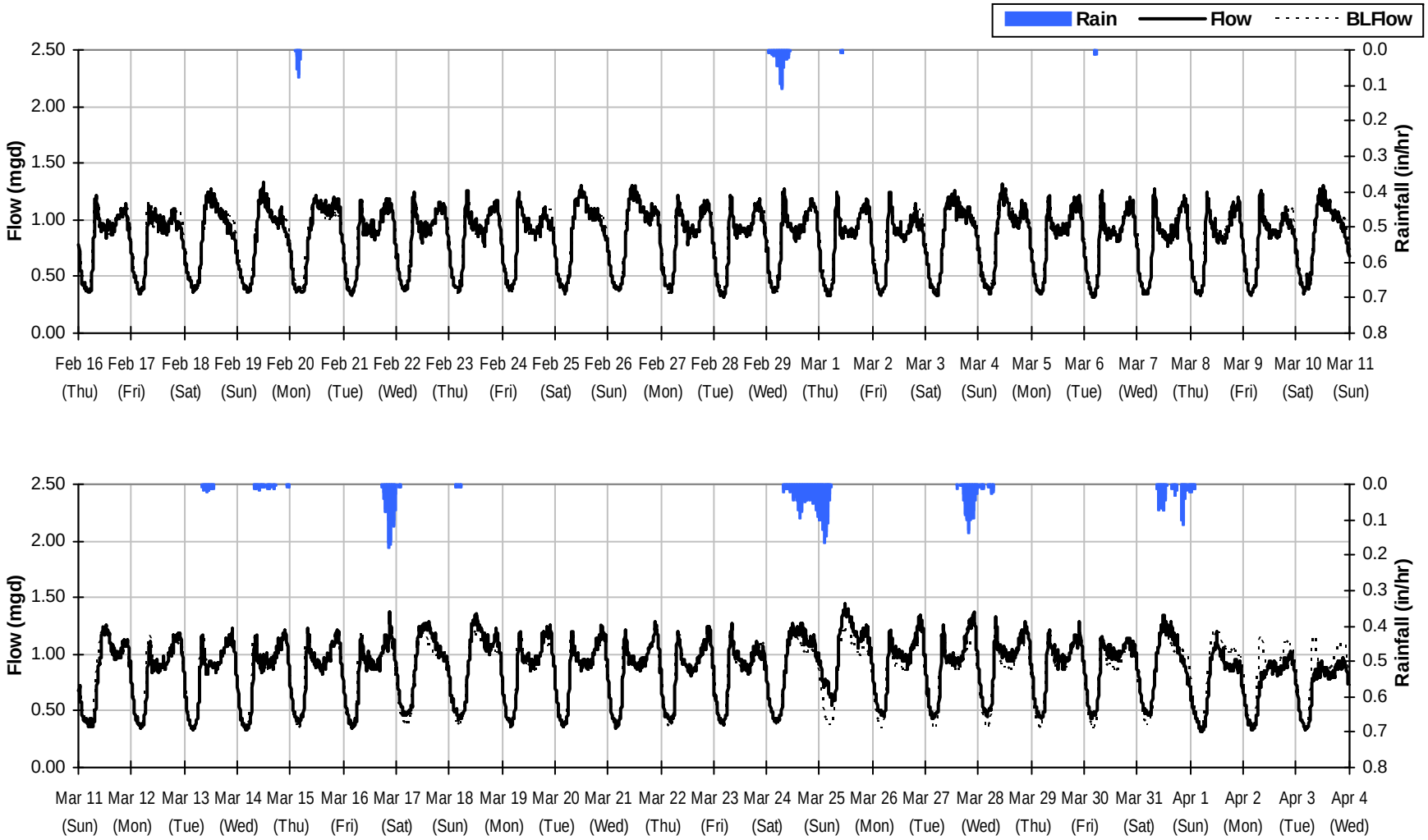


MH I3

Period Flow Summary: February 16 to April 4, 2012

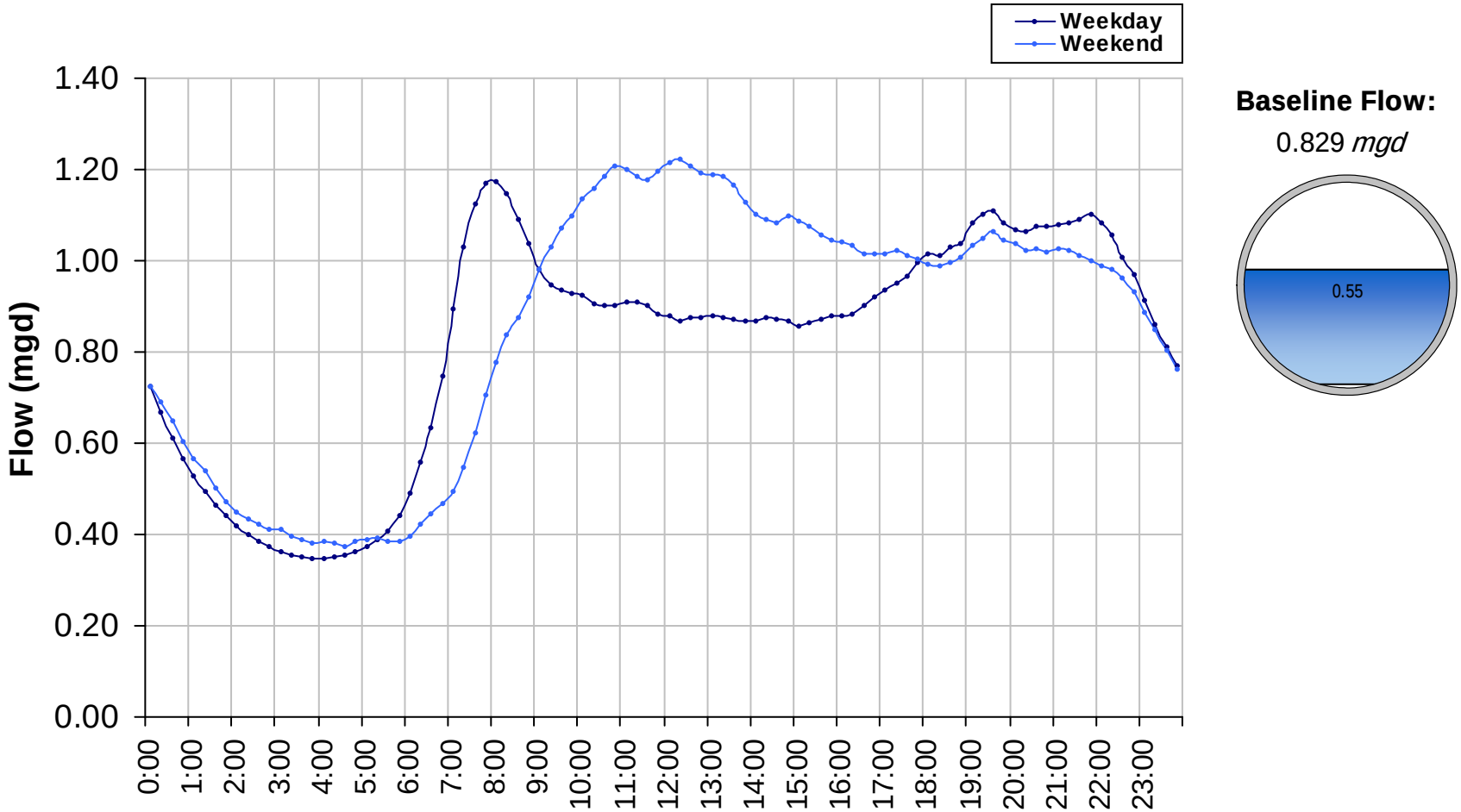
Avg Flow: 0.858 mgd Peak Flow: 1.447 mgd Min Flow: 0.312 mgd

Total Period Rainfall: 3.24 inches



MH I3

Baseline Flow Hydrographs



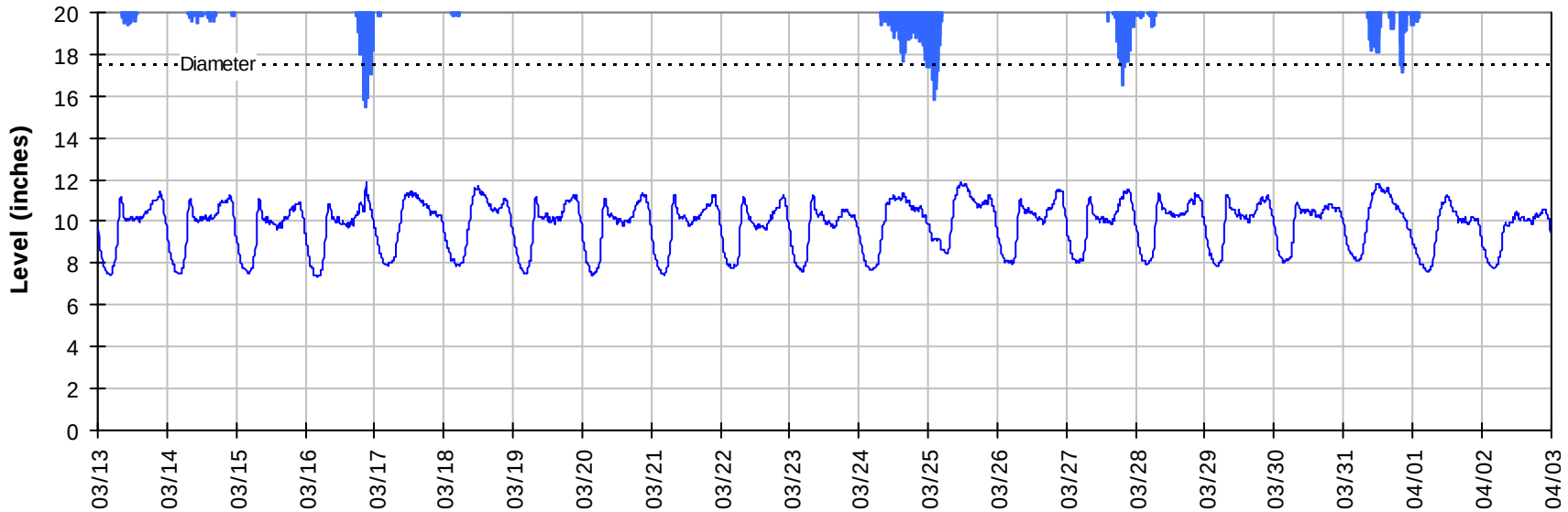
Baseline Flow:

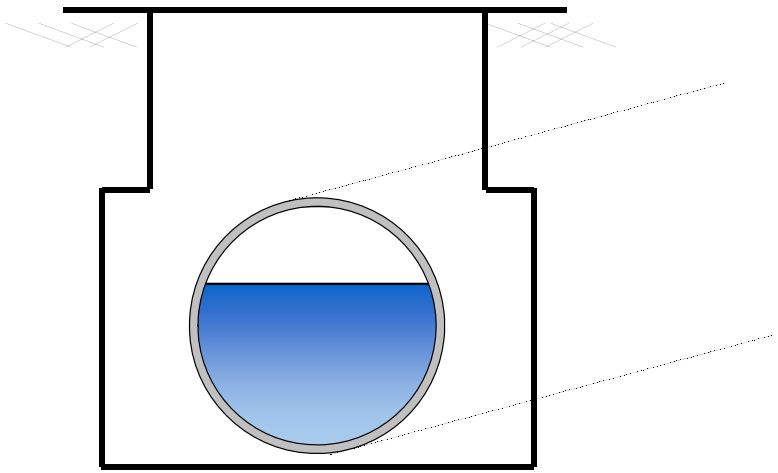
0.829 *mgd*

MH I3

Site Capacity and Surcharge Summary

Realtime Flow Levels with Rainfall Data over Monitoring Period

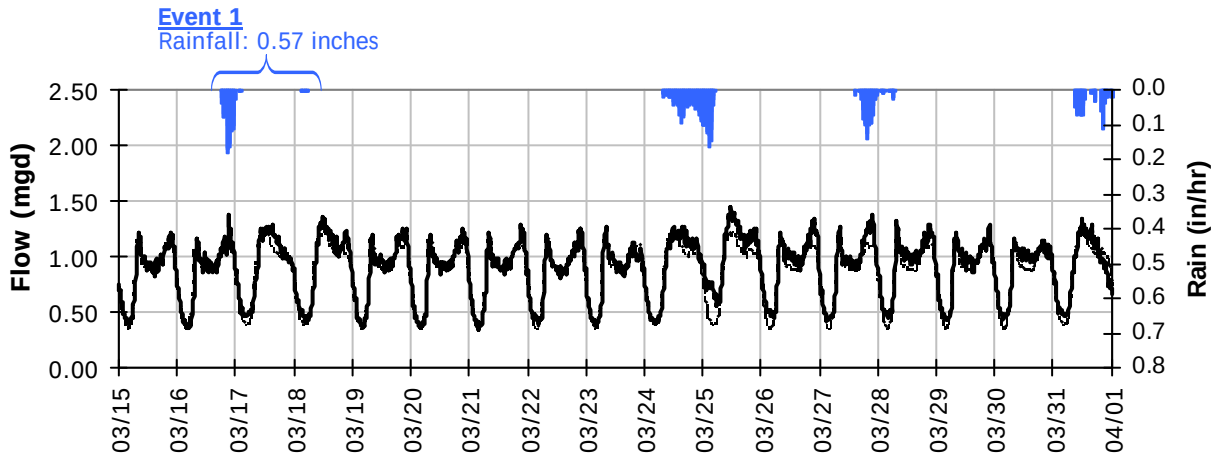




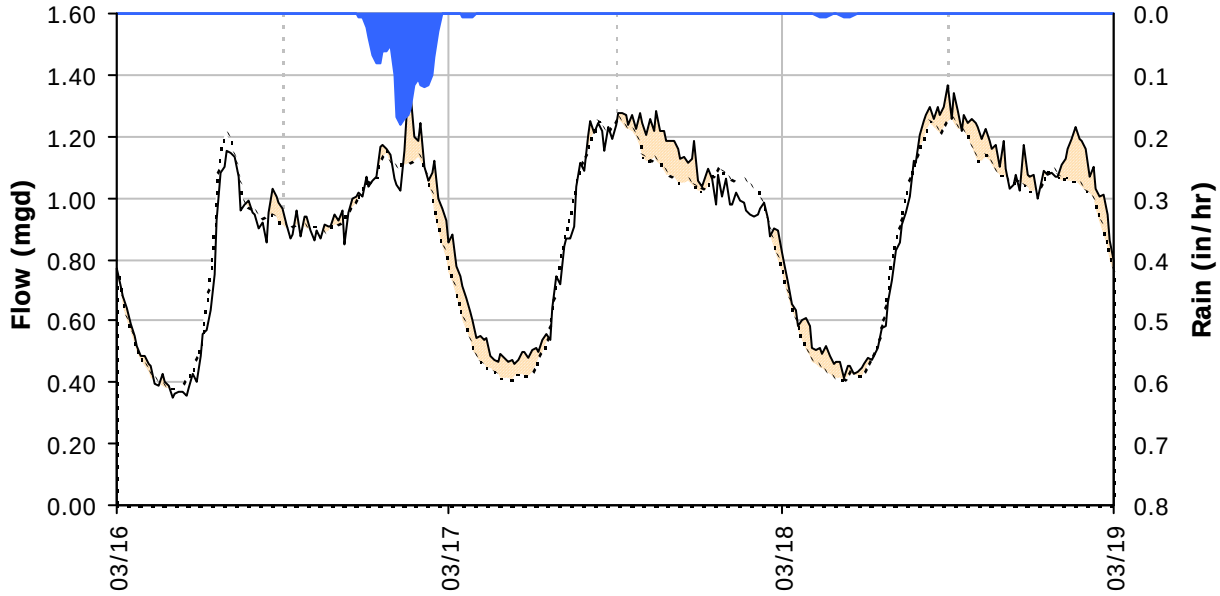
Pipe Diameter:	17.5	*inches*
Peak Measured Level:	11.9	*inches*
Peak d/D Ratio:	0.68	

MH I3
I/I Summary: Event 1

Baseline and Realtime Flows with Rainfall Data over Monitoring Period



Event 1 Detail Graph

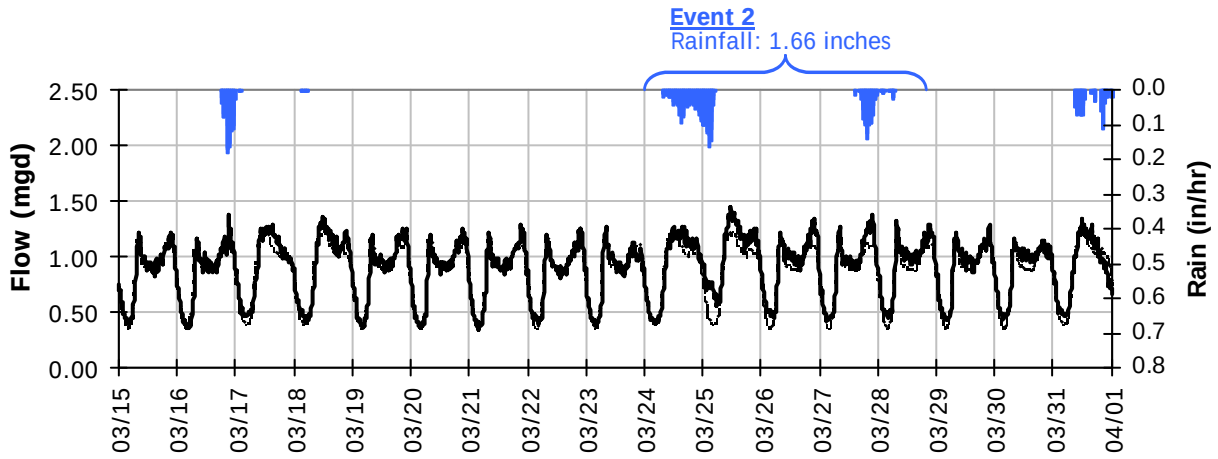


Storm Event I/I Analysis (Rain = 0.57 inches)

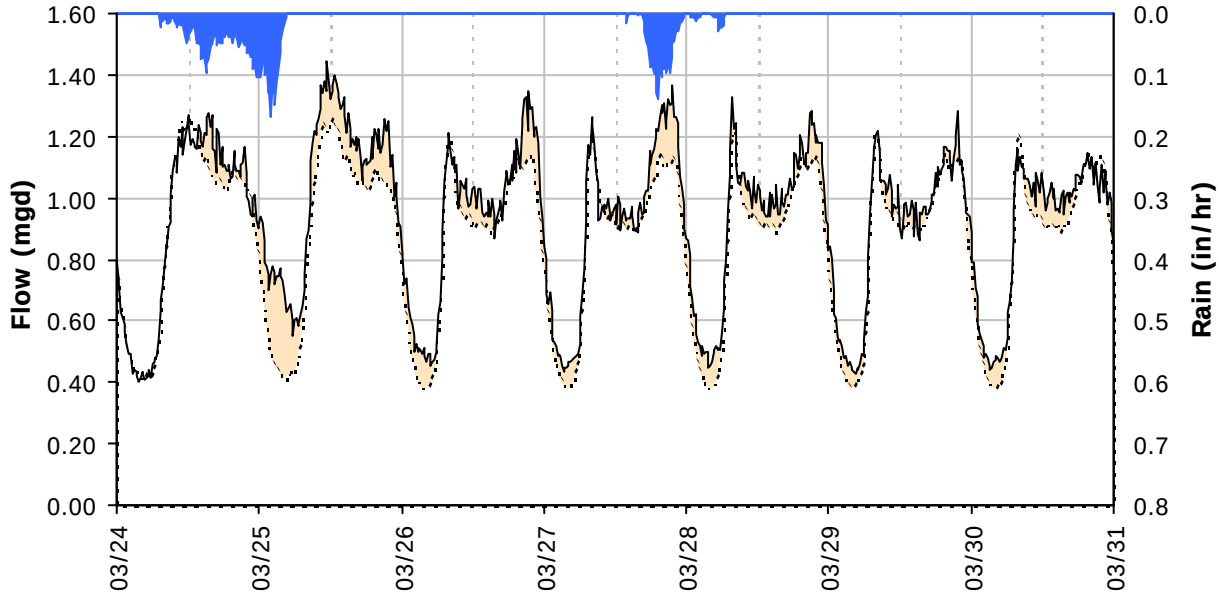
Capacity		Inflow		RDI (infiltration)		Combined I/I	
Peak Flow:	1.37 *mgd*	**Peak I/I Rate:**	0.29 *mgd*	**Infiltration Rate:** (3/18/2012)	0.080 *mgd*	**Total I/I:**	57,000 *gallons*
PF:	1.65	**PkI/I:IDM:**	2,412 *gpd/IDM*	**RDI:IDM:**	663 *gpd/IDM*	**Total I/I:IDM:**	828 *gal/IDM/in*
Peak Level:	11.90 *in*	**PkI/I:Acre:**	545 *gpd/acre*	**RDI:Acre:**	150 *gpd/acre*	**R-Value:**	0.7%
d/D Ratio:	0.68	**Pk I/I:ADWF:**	0.35	**RDI (% of BL):**	17%	**Total I/I:ADWF:**	0.12 *per in-rain*

MH I3
I/I Summary: Event 2

Baseline and Realtime Flows with Rainfall Data over Monitoring Period



Event 2 Detail Graph



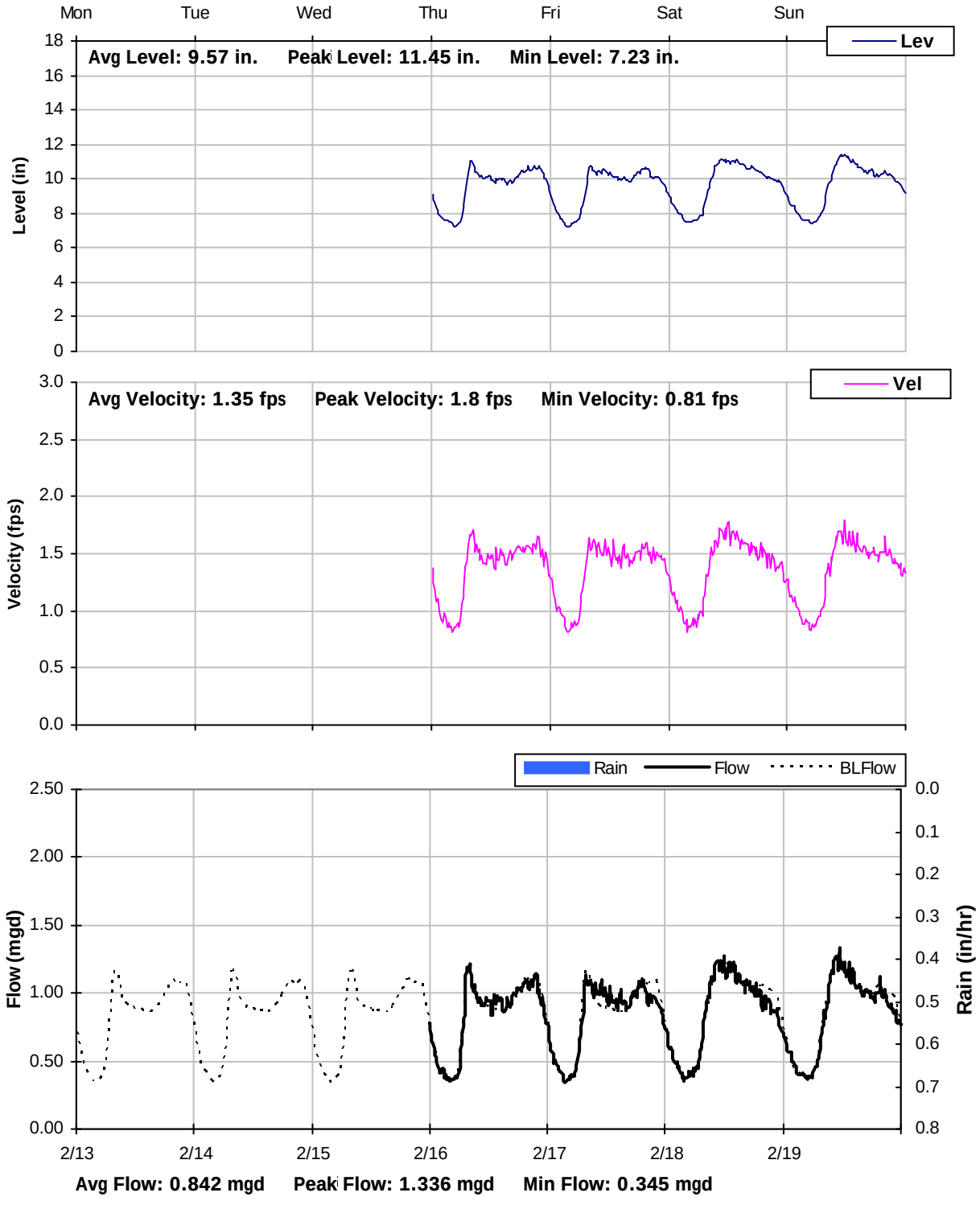
Storm Event I/I Analysis (Rain = 1.66 inches)

Capacity			Inflow			RDI (infiltration)			Combined I/I		
Peak Flow:	1.45	*mgd*	**Peak I/I Rate:**	0.38	*mgd*	**Infiltration Rate:** (3/26/2012)	0.106	*mgd*	**Total I/I:**	471,000	*gallons*
PF:	1.74		**PkI/I:IDM:**	3,179	*gpd/IDM*	**RDI:IDM:**	883	*gpd/IDM*	**Total I/I:IDM:**	2,355	*gal/IDM/in*
Peak Level:	11.85	*in*	**PkI/I:Acre:**	718	*gpd/acre*	**RDI:Acre:**	199	*gpd/acre*	**R-Value:**	2.0%	
d/D Ratio:	0.68		**Pk I/I:ADWF:**	0.46		**RDI (% of BL):**	13%		**Total I/I:ADWF:**	0.34	*per in-rain*

MH I3

Weekly Level, Velocity and Flow Hydrographs

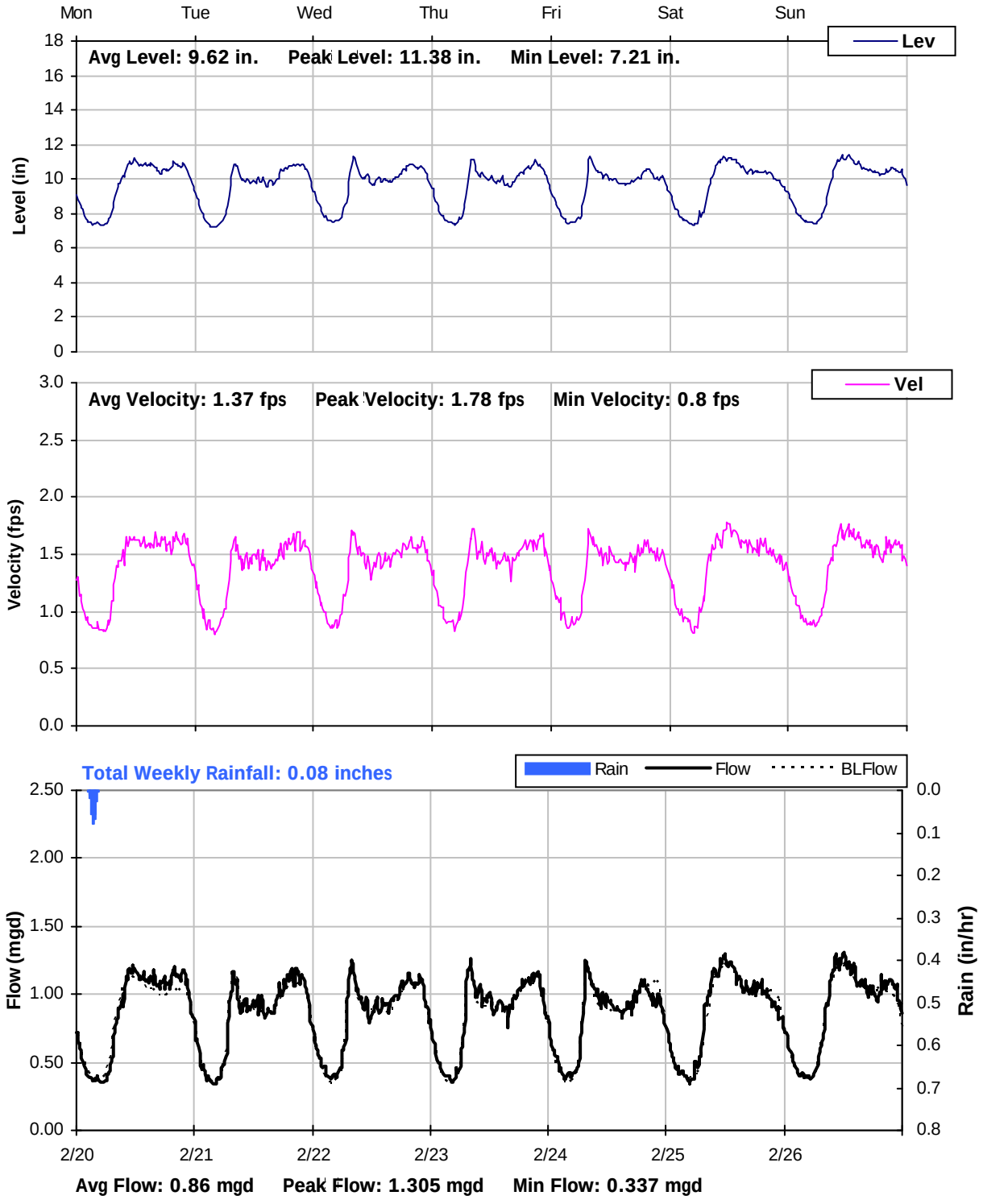
2/13/2012 to 2/20/2012



MH I3

Weekly Level, Velocity and Flow Hydrographs

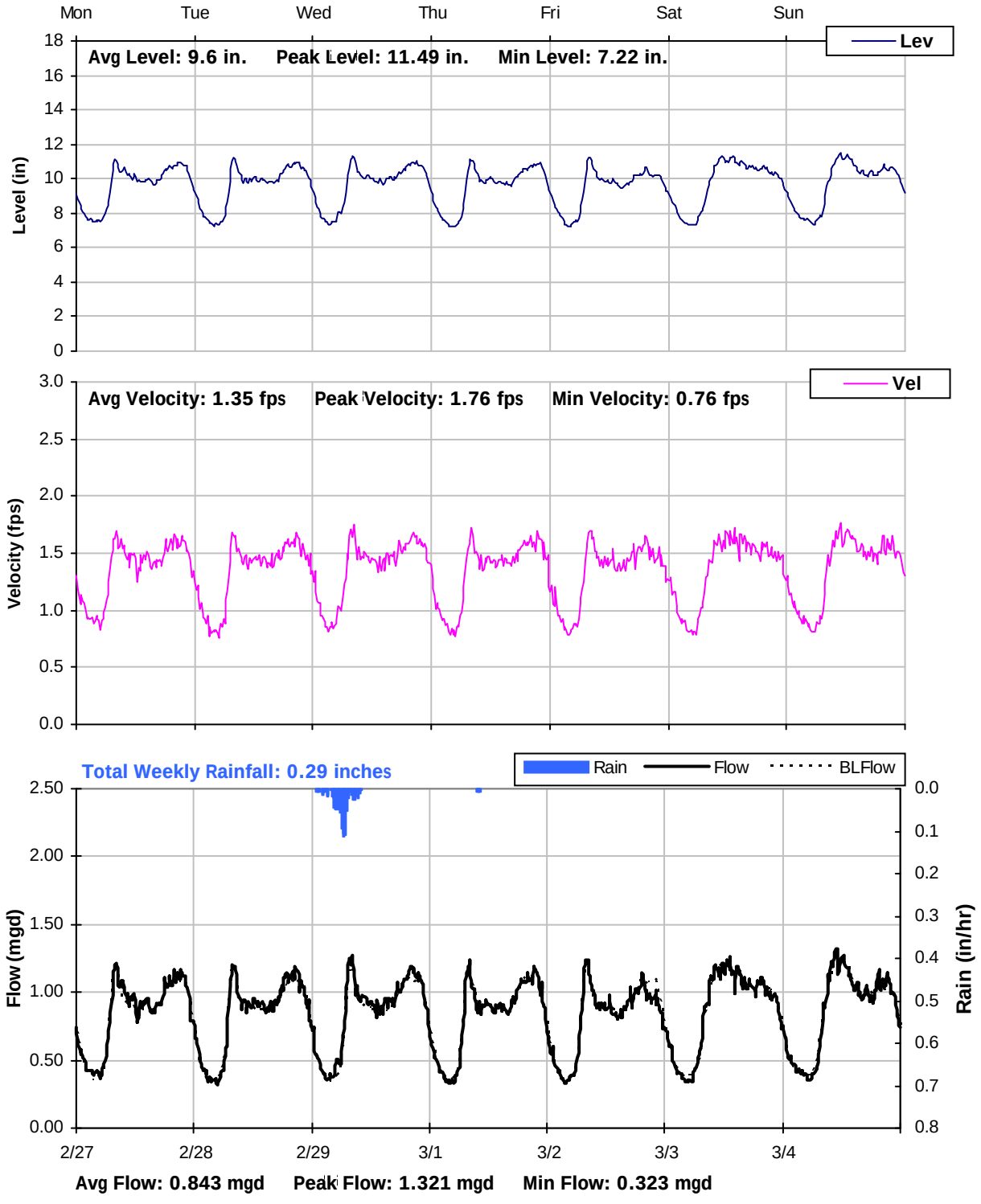
2/20/2012 to 2/27/2012



MH I3

Weekly Level, Velocity and Flow Hydrographs

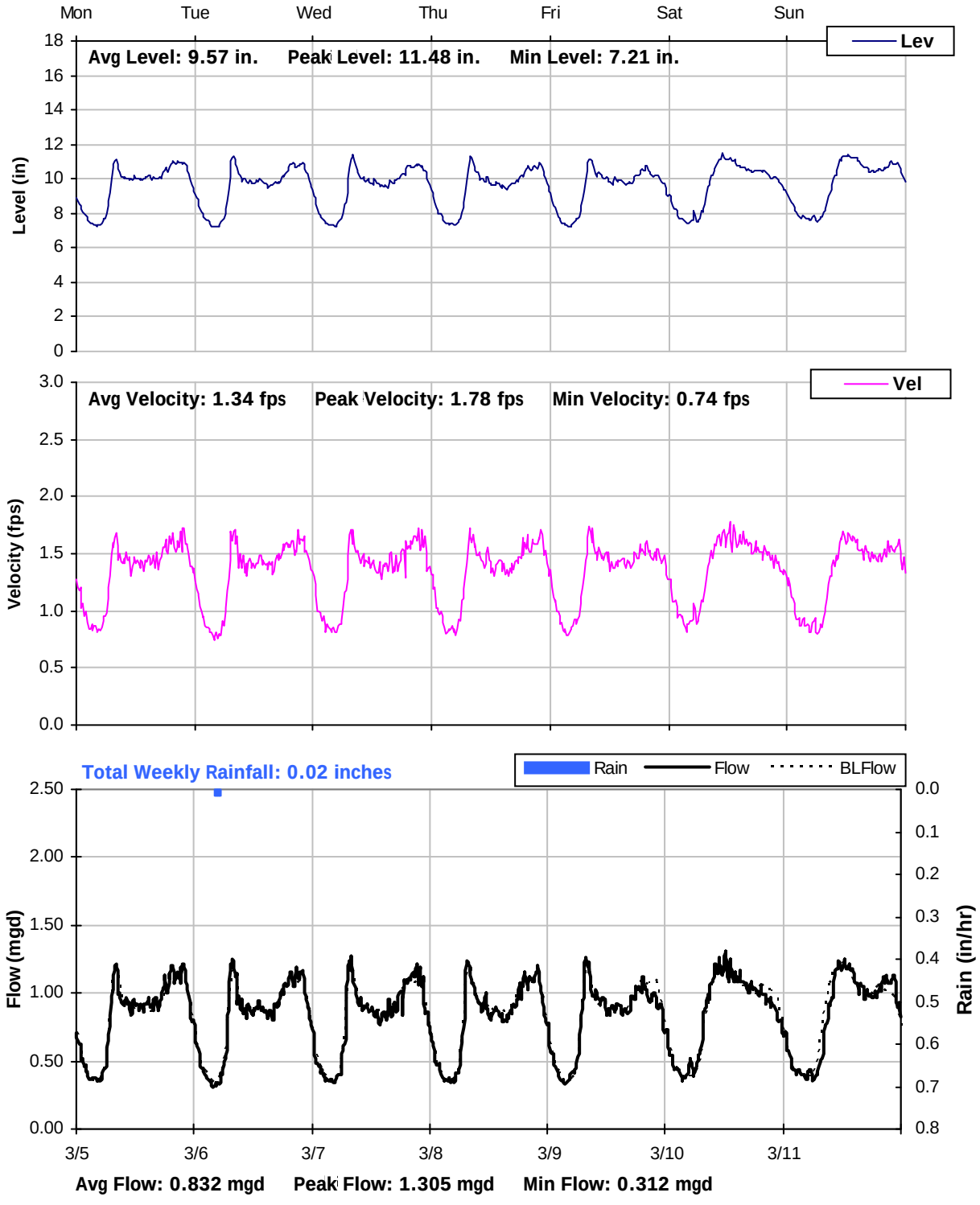
2/27/2012 to 3/5/2012



MH I3

Weekly Level, Velocity and Flow Hydrographs

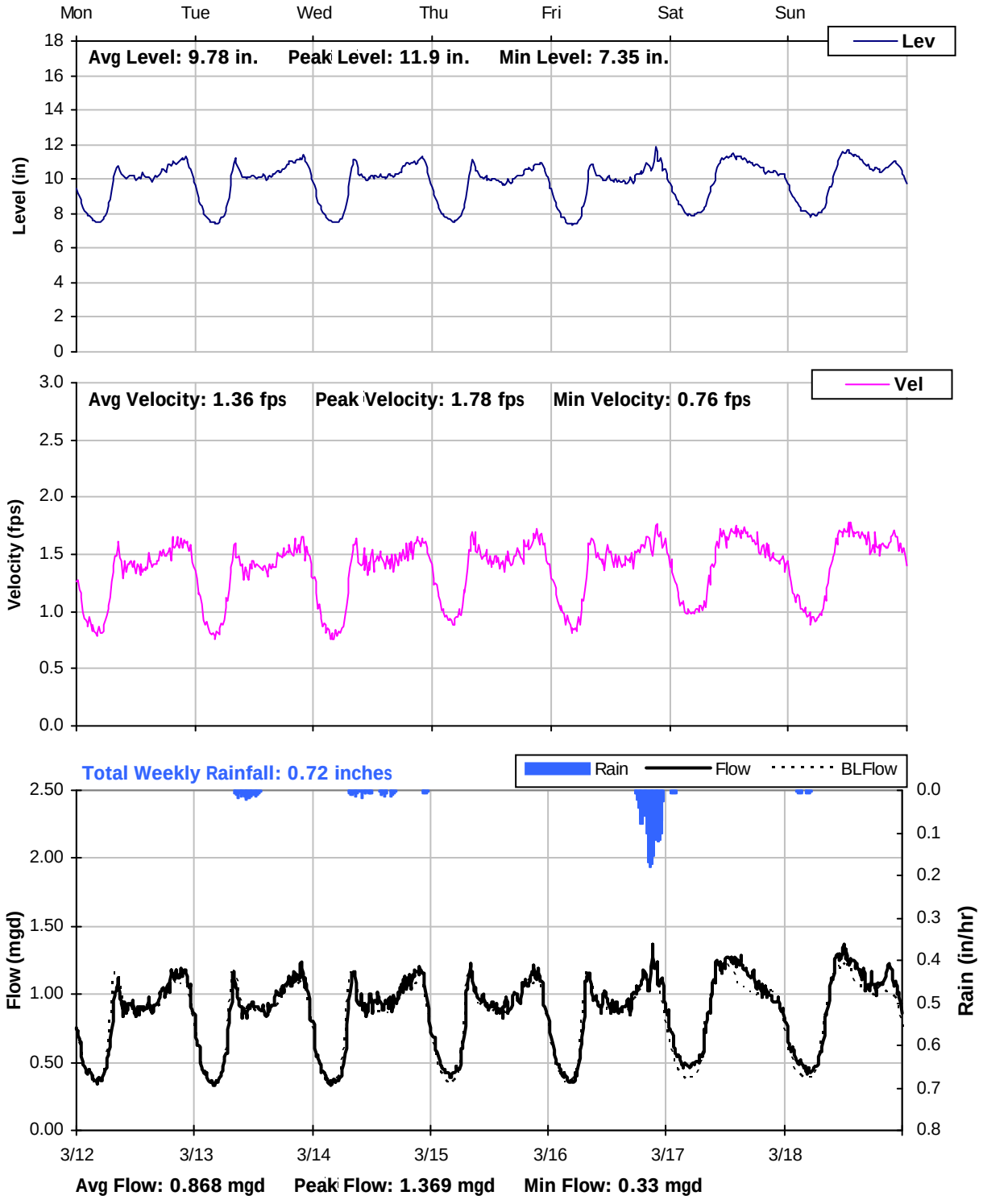
3/5/2012 to 3/12/2012



MH I3

Weekly Level, Velocity and Flow Hydrographs

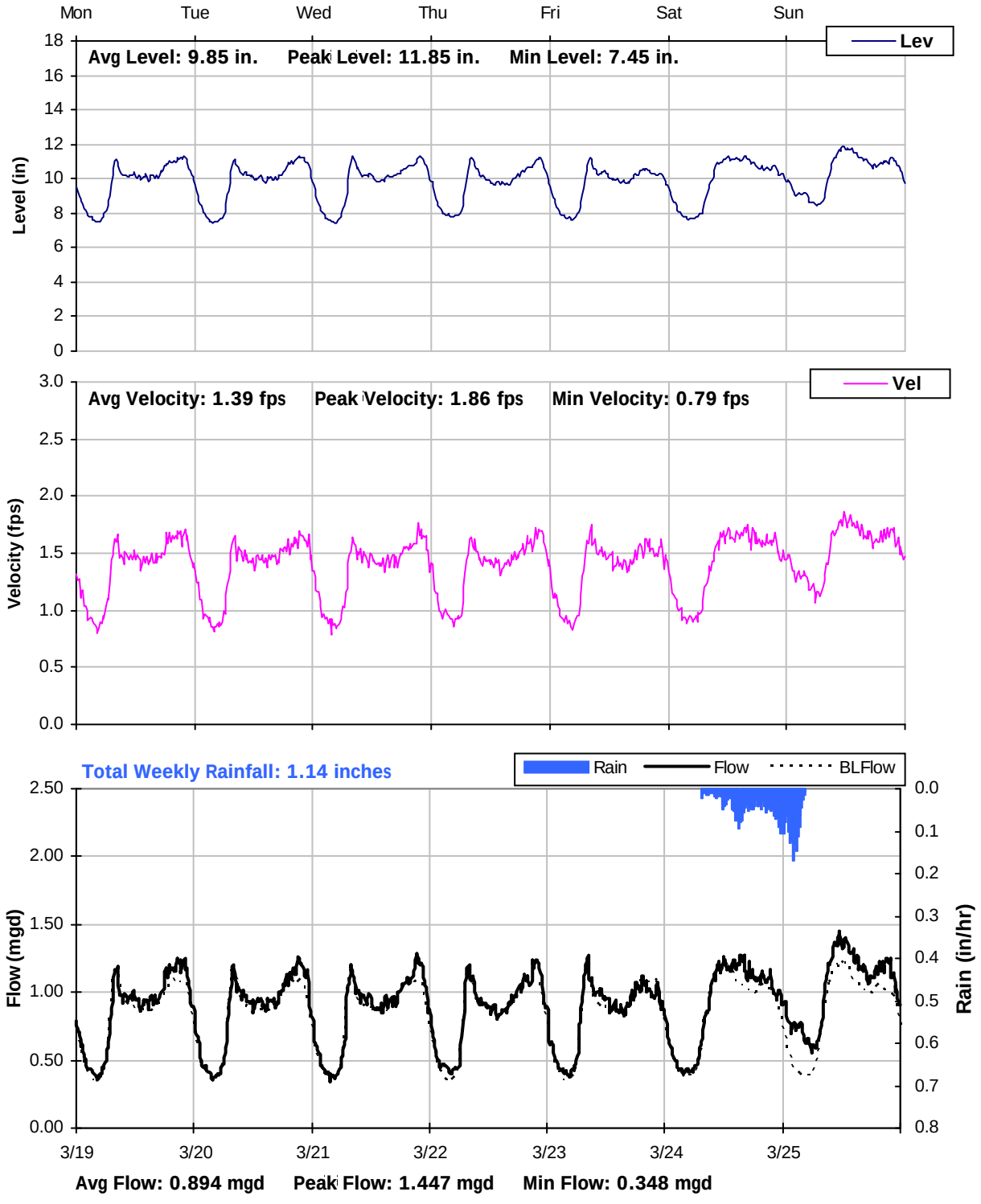
3/12/2012 to 3/19/2012



MH I3

Weekly Level, Velocity and Flow Hydrographs

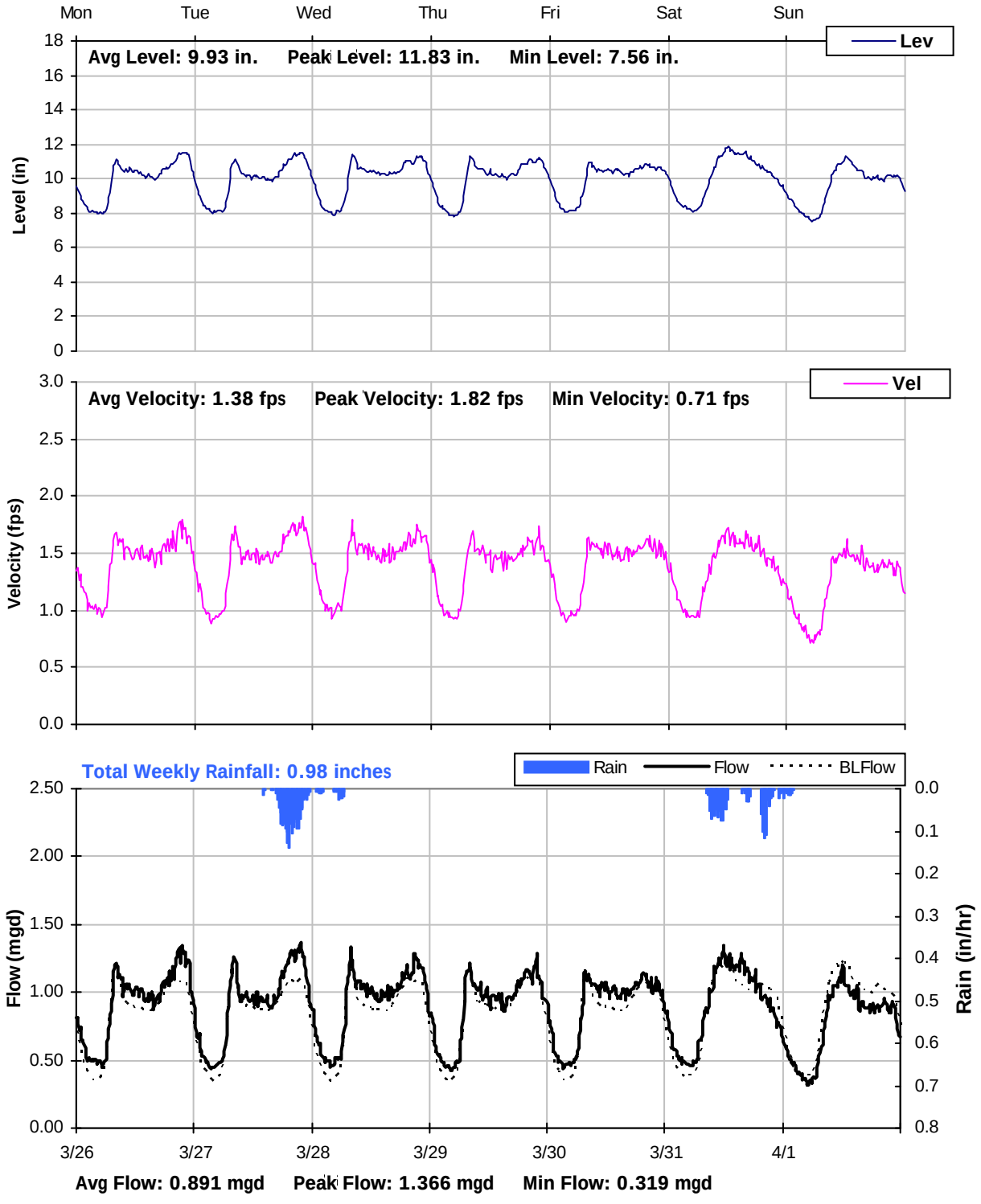
3/19/2012 to 3/26/2012



MH I3

Weekly Level, Velocity and Flow Hydrographs

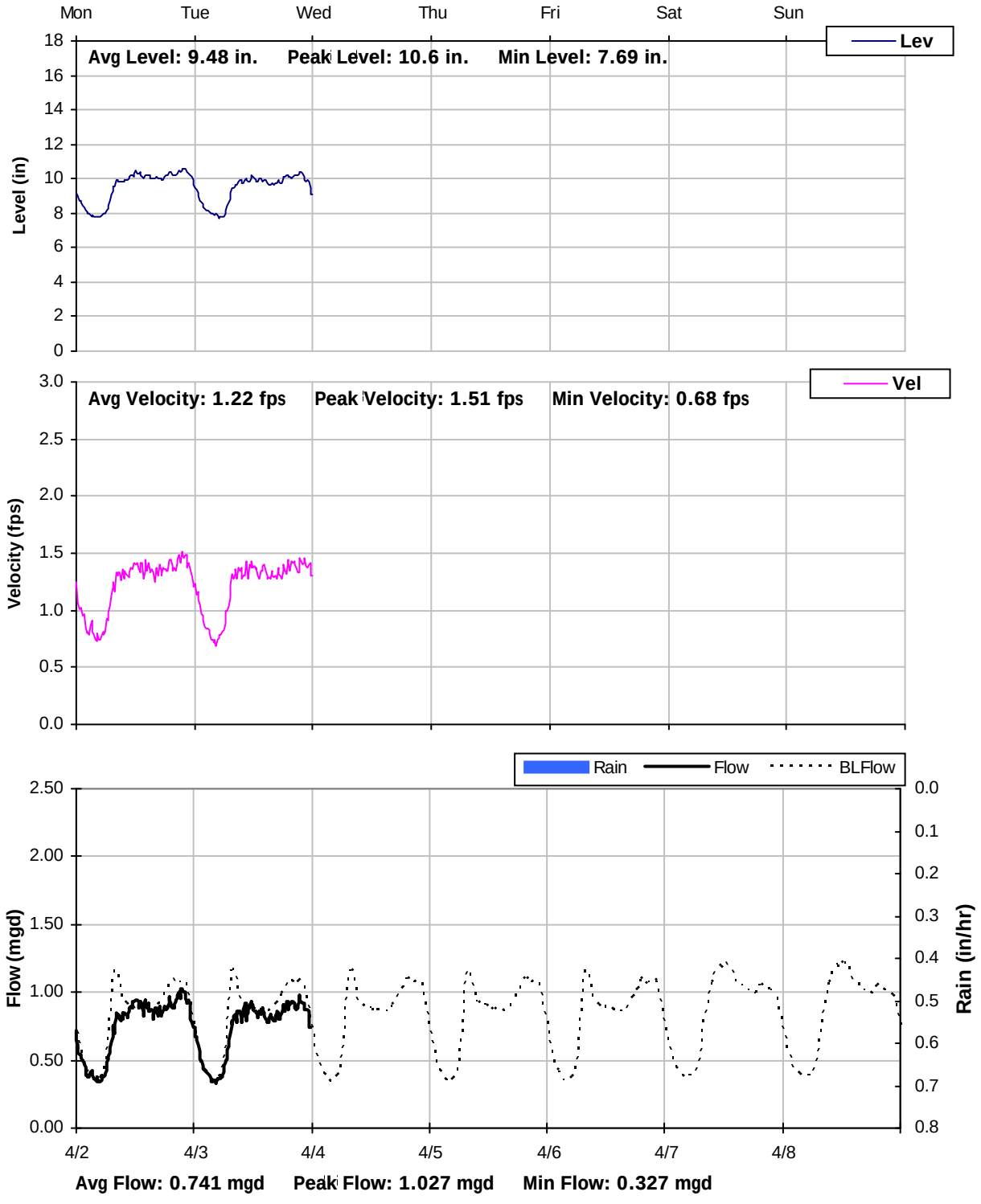
3/26/2012 to 4/2/2012



MH I3

Weekly Level, Velocity and Flow Hydrographs

4/2/2012 to 4/9/2012



East Palo Alto Sanitary District

Sanitary Sewer Flow Monitoring and I/I Study

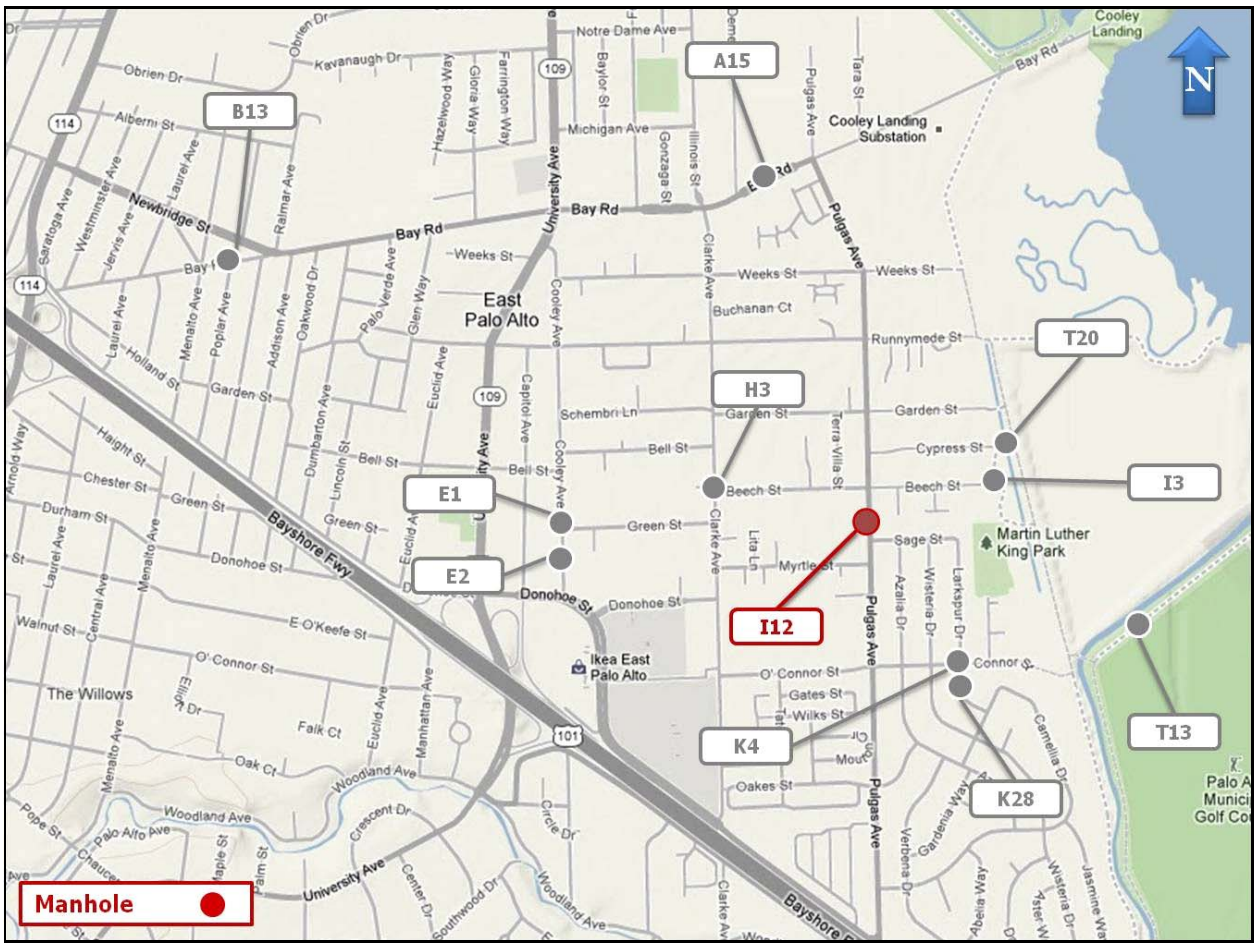
Year 2012

Monitoring Site: MH I12

Location: Pulgas Avenue, north of Sage Street

Data Summary Report

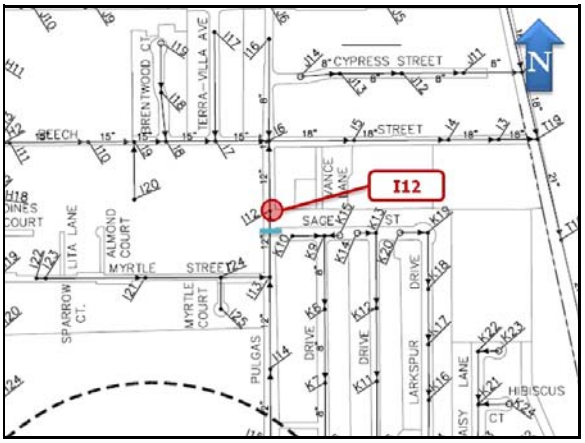
Vicinity Map:



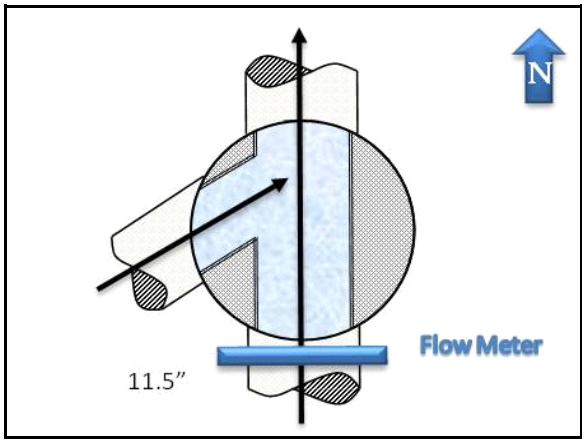
MH I12
Site Information Report

Location:	Pulgas Avenue, north of Sage Street
Coordinates:	122.1302° W, 37.4642° N
Elevation:	7 feet
Diameter:	11.5 inches
Baseline Flow:	0.231 mgd
Peak Measured Flow:	0.456 mgd

Satellite Map



Sanitary Sewer Map



Flow Sketch


View from Street

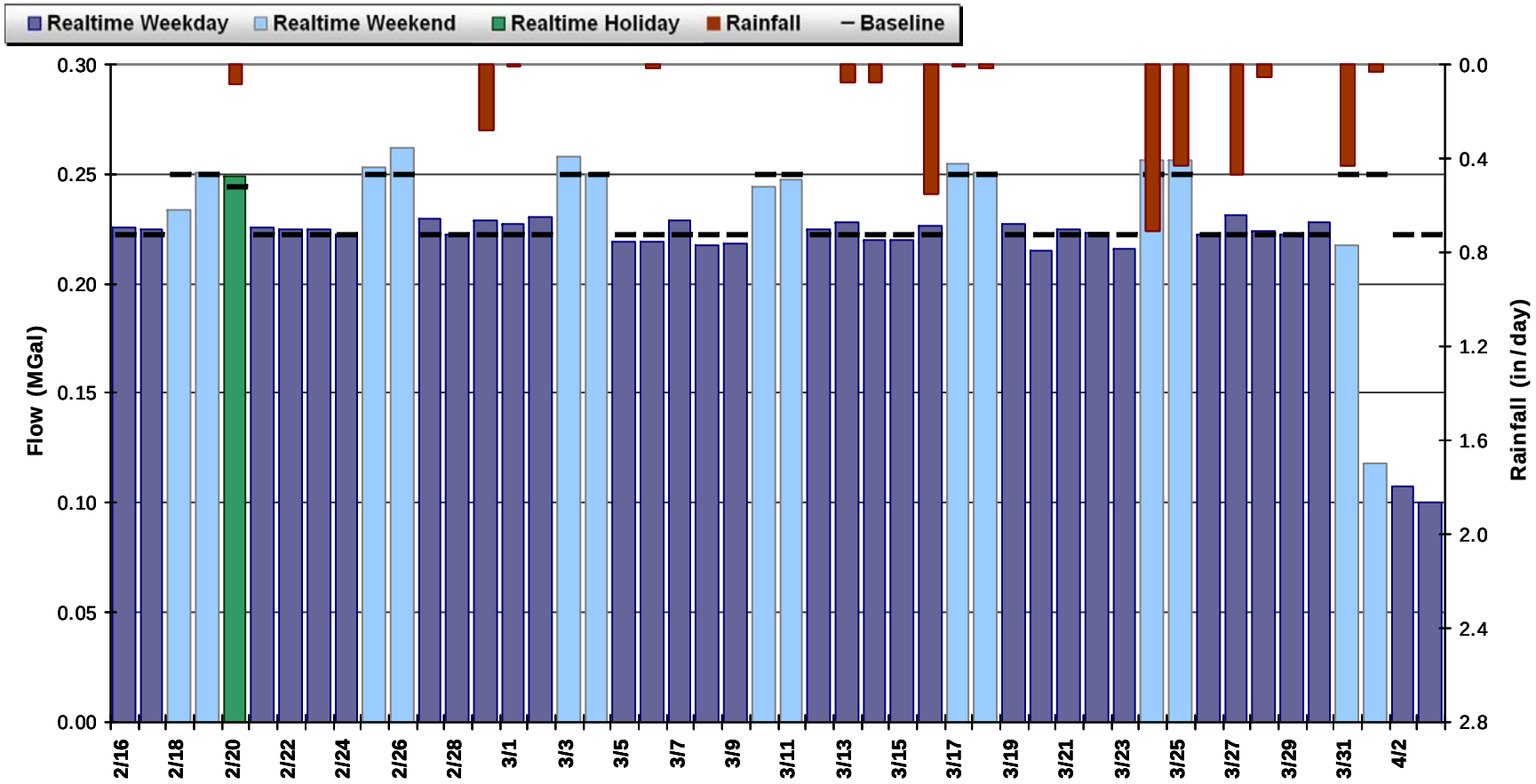

Plan View

MH I12

Period Flow Summary: Daily Flow Totals

Avg Daily Flow: 0.224 MGal **Peak Daily Flow: 0.262 MGal** **Min Daily Flow: 0.100 MGal**

Total Period Rainfall: 3.24 inches

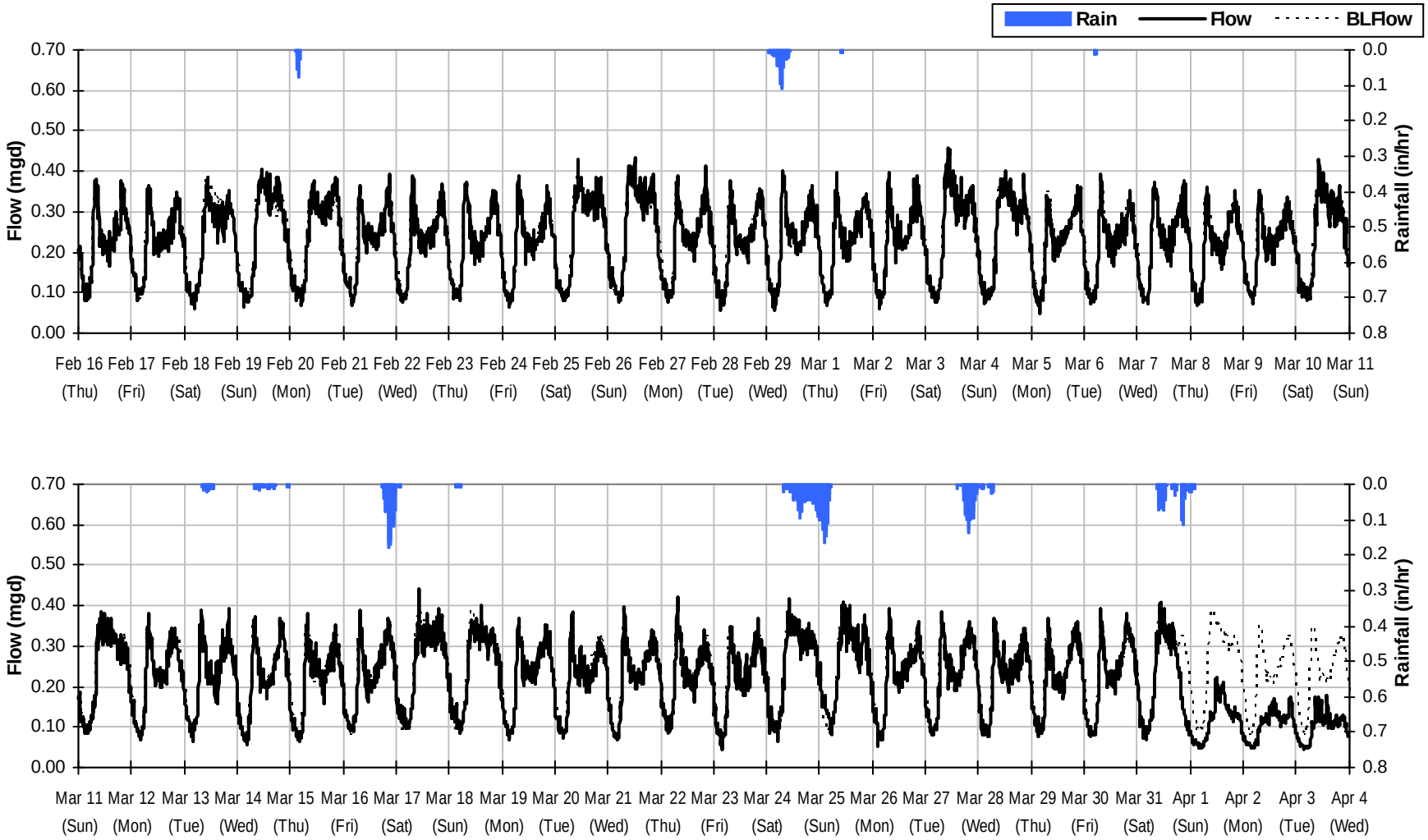


MH I12

Period Flow Summary: February 16 to April 4, 2012

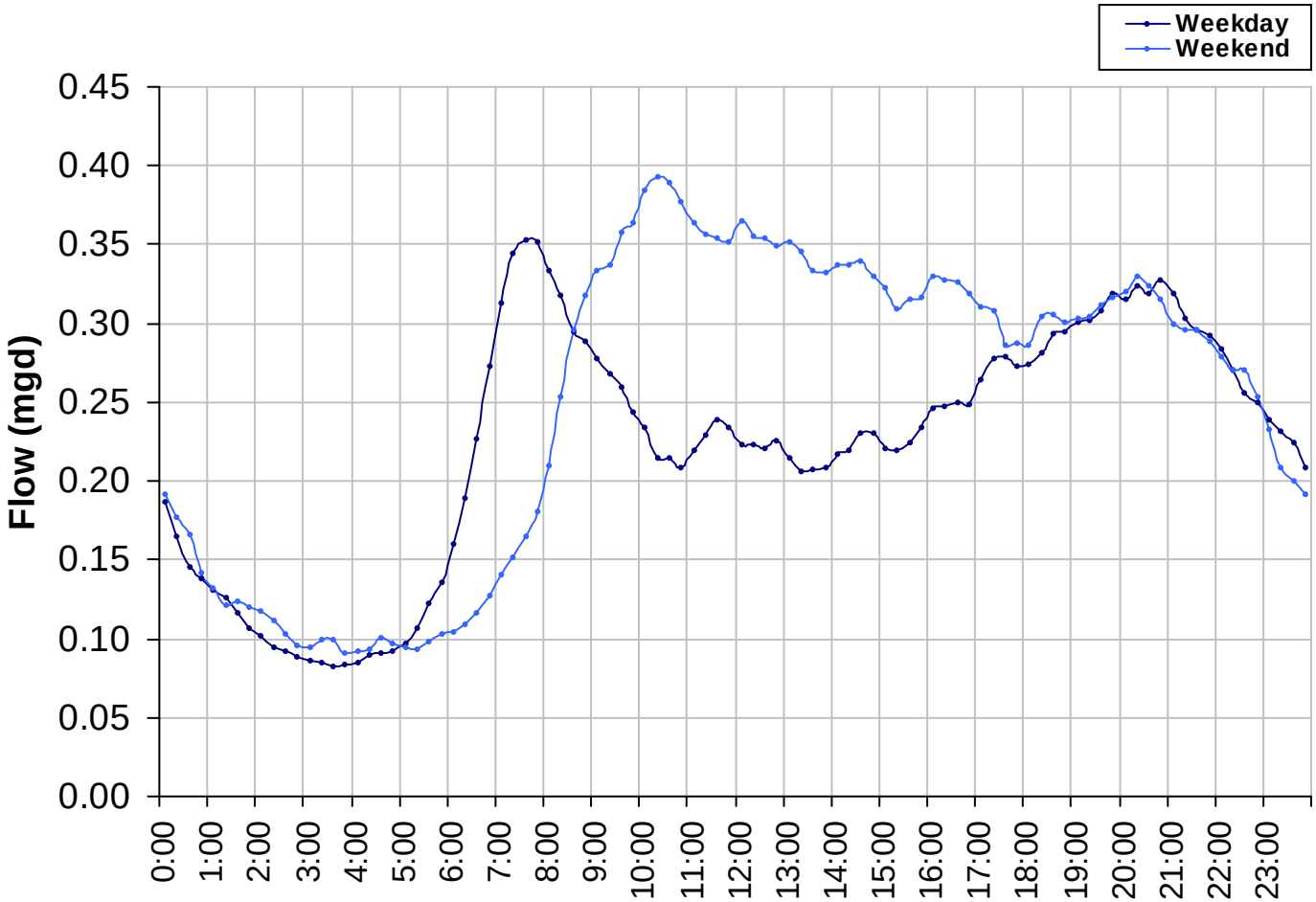
Avg Flow: 0.224 mgd Peak Flow: 0.456 mgd Min Flow: 0.045 mgd

Total Period Rainfall: 3.24 inches



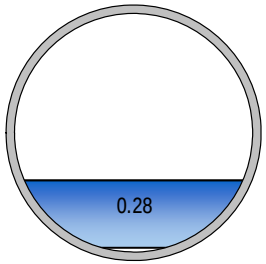
MH I12

Baseline Flow Hydrographs



Baseline Flow:

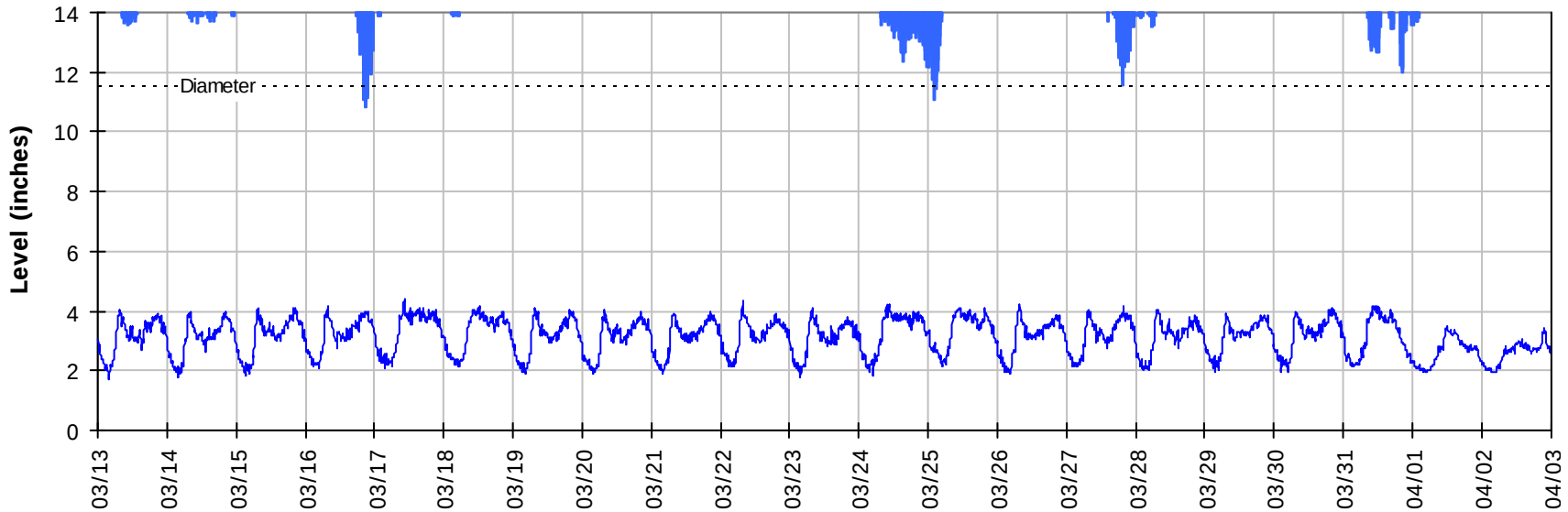
0.231 *mgd*

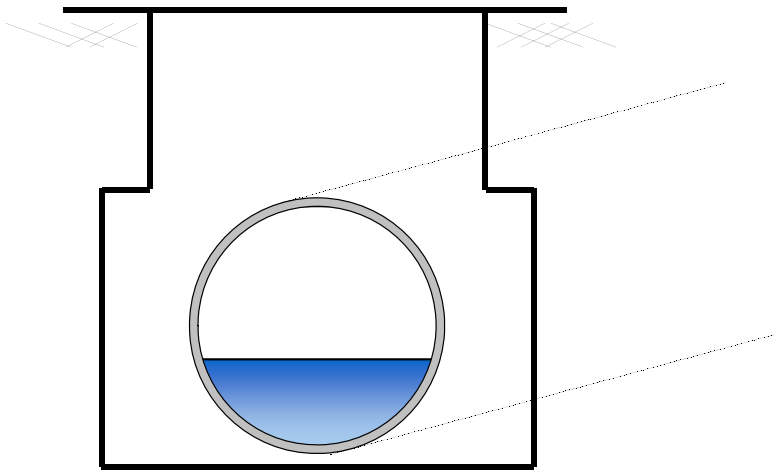


MH I12

Site Capacity and Surcharge Summary

Realtime Flow Levels with Rainfall Data over Monitoring Period

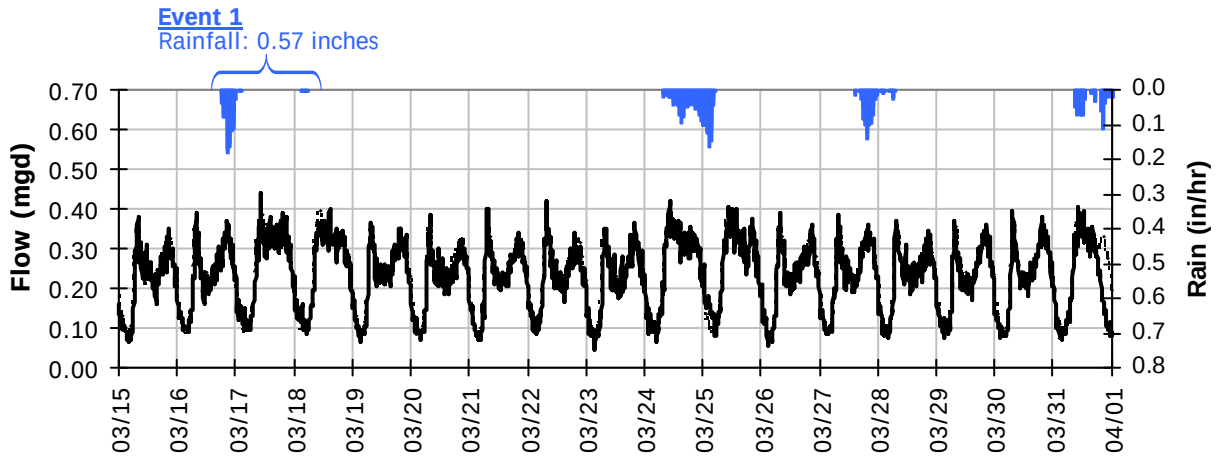




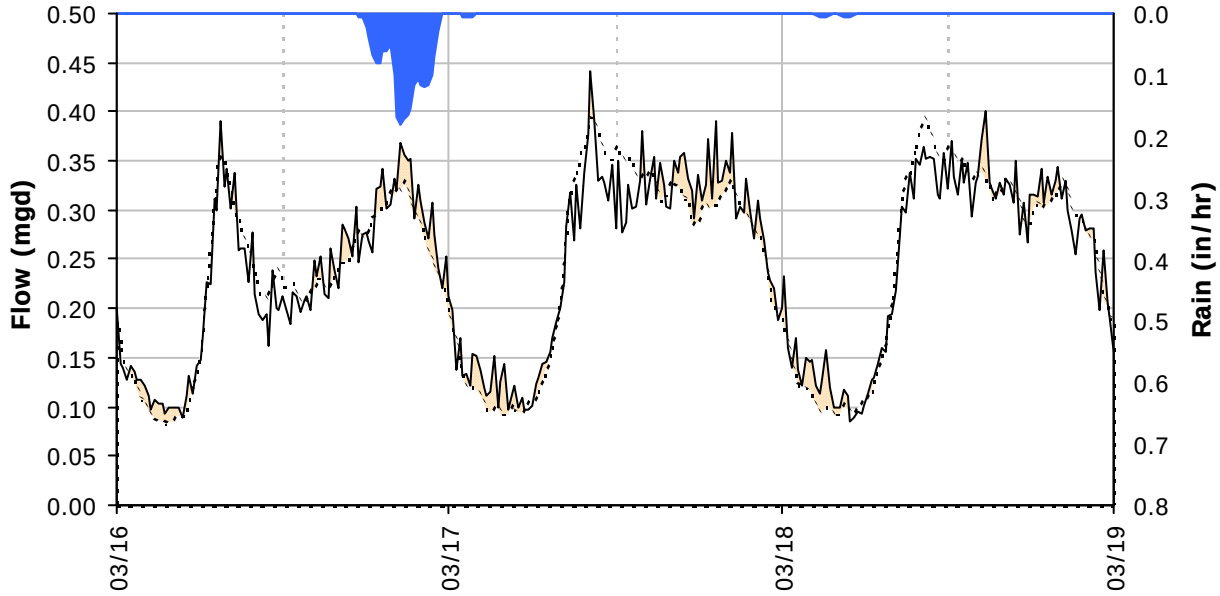
Pipe Diameter:	11.5	*inches*
Peak Measured Level:	4.21	*inches*
Peak d/D Ratio:	0.37	

MH I12
I/I Summary: Event 1

Baseline and Realtime Flows with Rainfall Data over Monitoring Period



Event 1 Detail Graph

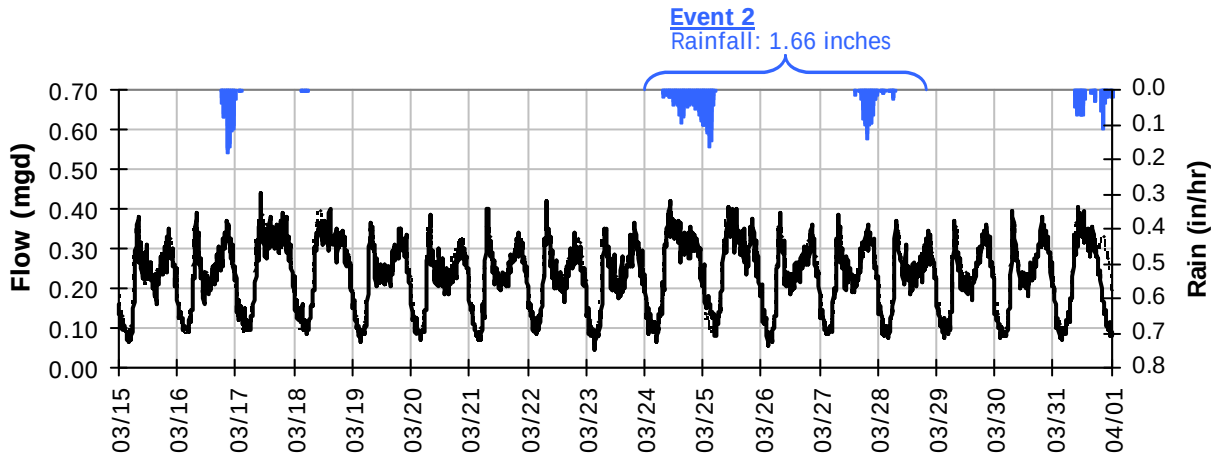


Storm Event I/I Analysis (Rain = 0.57 inches)

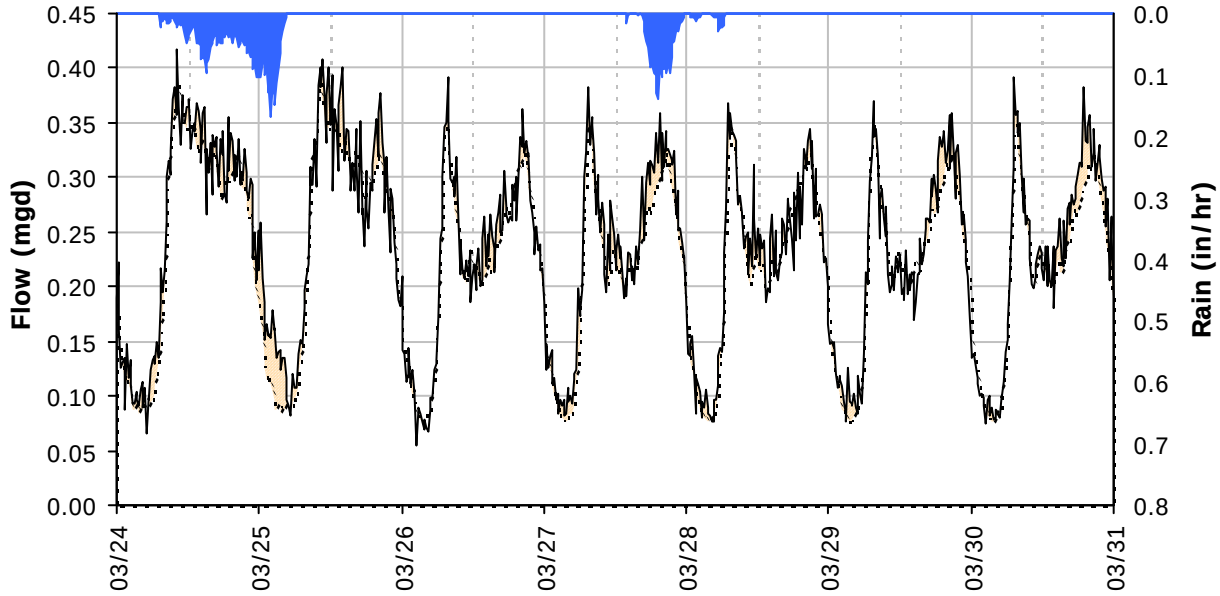
Capacity		Inflow		RDI (infiltration)		Combined I/I	
Peak Flow:	0.37 *mgd*	**Peak I/I Rate:**	0.06 *mgd*	**Infiltration Rate:**	*mgd*	**Total I/I:**	9,000 *gallons*
PF:	1.60	**PkI/I:IDM:**	2,228 *gpd/IDM*	()		**Total I/I:IDM:**	601 *gal/IDM/in*
Peak Level:	3.97 *in*	**PkI/I:Acre:**	432 *gpd/acre*	**RDI:IDM:**	*gpd/IDM*	**R-Value:**	0.4%
d/D Ratio:	0.35	**Pk I/I:ADWF:**	0.25	**RDI:Acre:**	*gpd/acre*	**Total I/I:ADWF:**	0.07 *per in-rain*
				RDI (% of BL):			

MH I12
I/I Summary: Event 2

Baseline and Realtime Flows with Rainfall Data over Monitoring Period



Event 2 Detail Graph



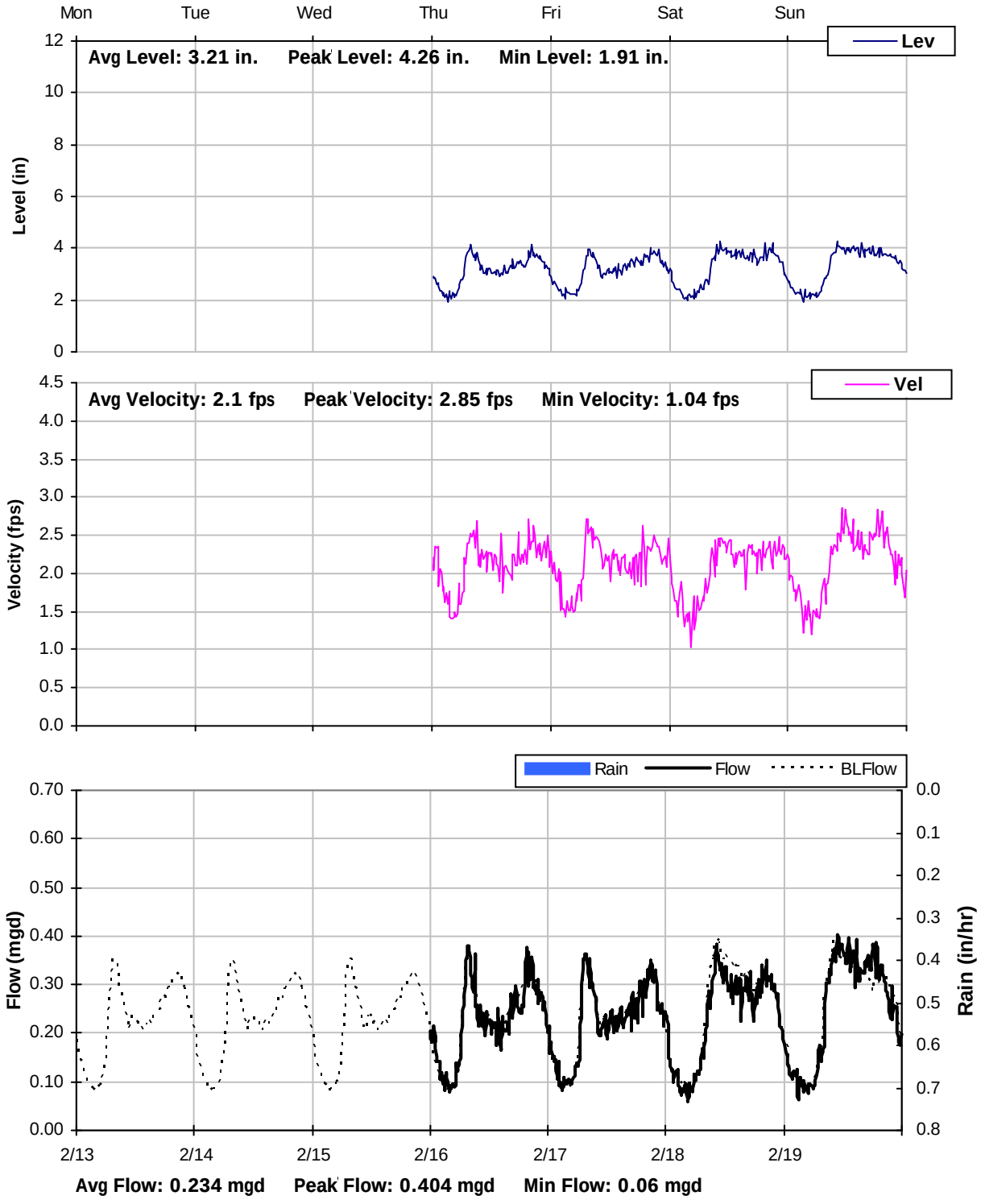
Storm Event I/I Analysis (Rain = 1.66 inches)

Capacity		Inflow		RDI (infiltration)		Combined I/I	
Peak Flow:	0.42 *mgd*	**Peak I/I Rate:**	0.08 *mgd*	**Infiltration Rate:** (3/26/2012)	0.000 *mgd*	**Total I/I:**	57,000 *gallons*
PF:	1.81	**PkI/I:IDM:**	3,117 *gpd/IDM*	**RDI:IDM:**	0 *gpd/IDM*	**Total I/I:IDM:**	1,316 *gal/IDM/in*
Peak Level:	4.21 *in*	**PkI/I:Acre:**	605 *gpd/acre*	**RDI:Acre:**	0 *gpd/acre*	**R-Value:**	0.9%
d/D Ratio:	0.37	**Pk I/I:ADWF:**	0.35	**RDI (% of BL):**	0%	**Total I/I:ADWF:**	0.15 *per in-rain*

MH I12

Weekly Level, Velocity and Flow Hydrographs

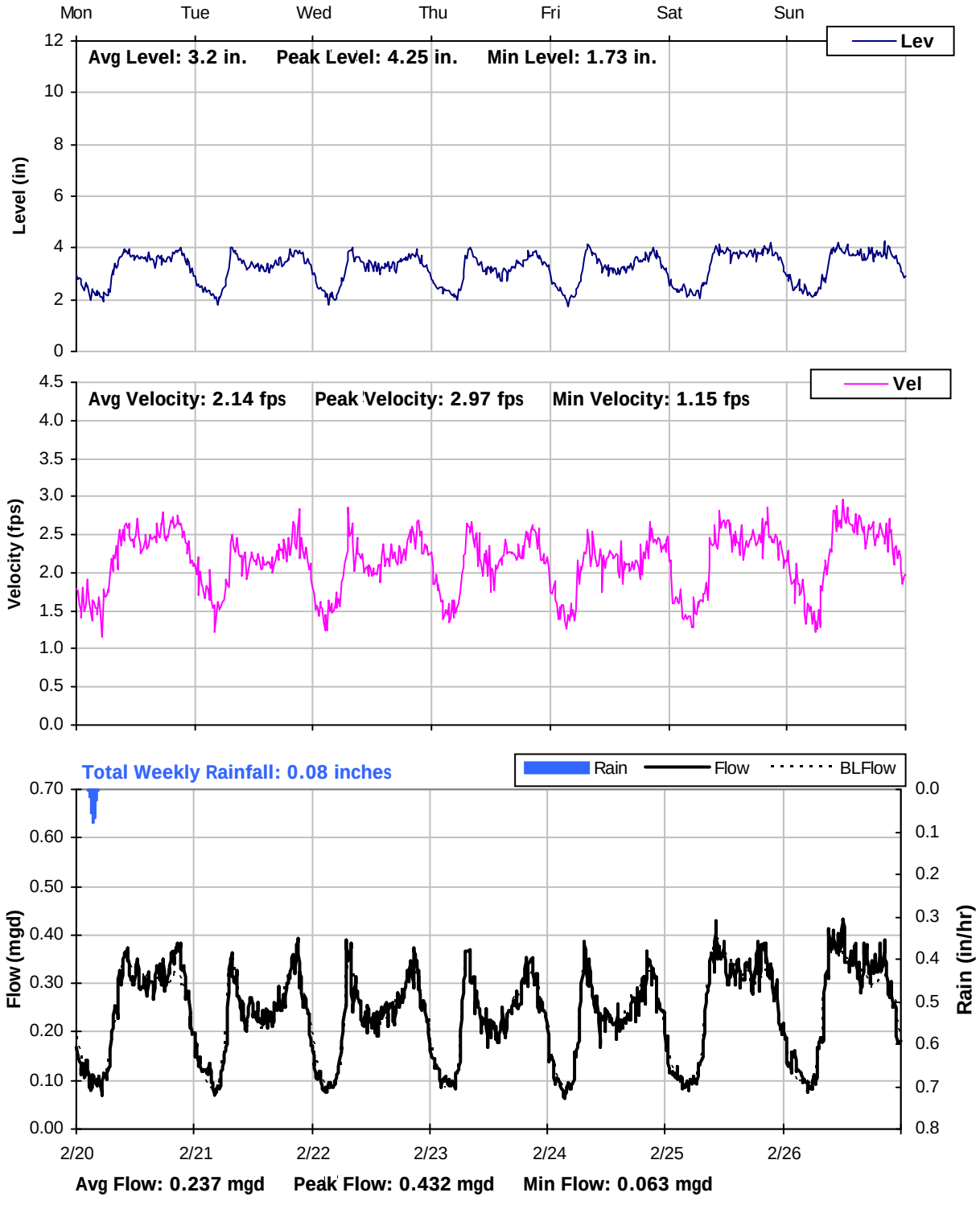
2/13/2012 to 2/20/2012



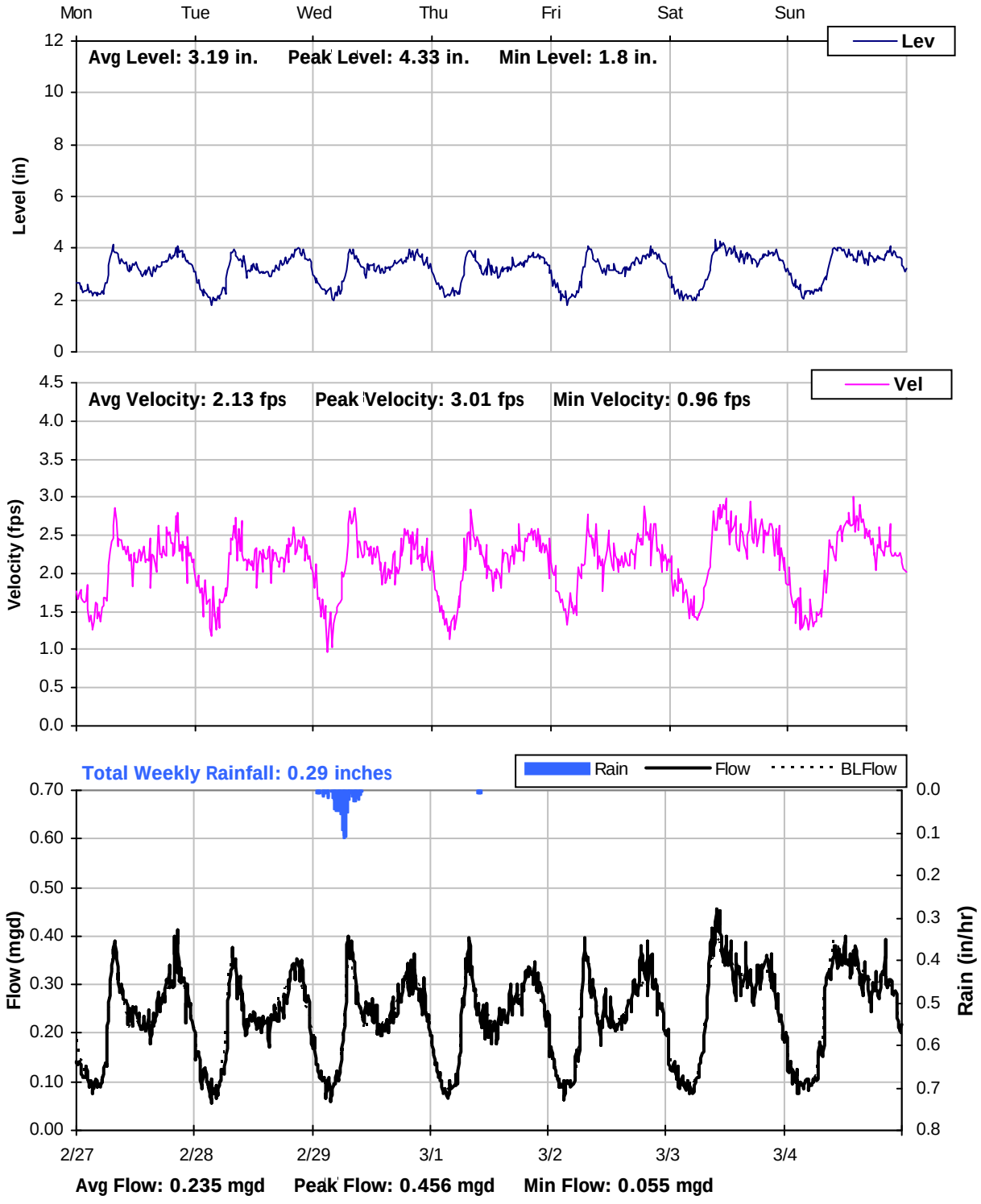
MH I12

Weekly Level, Velocity and Flow Hydrographs

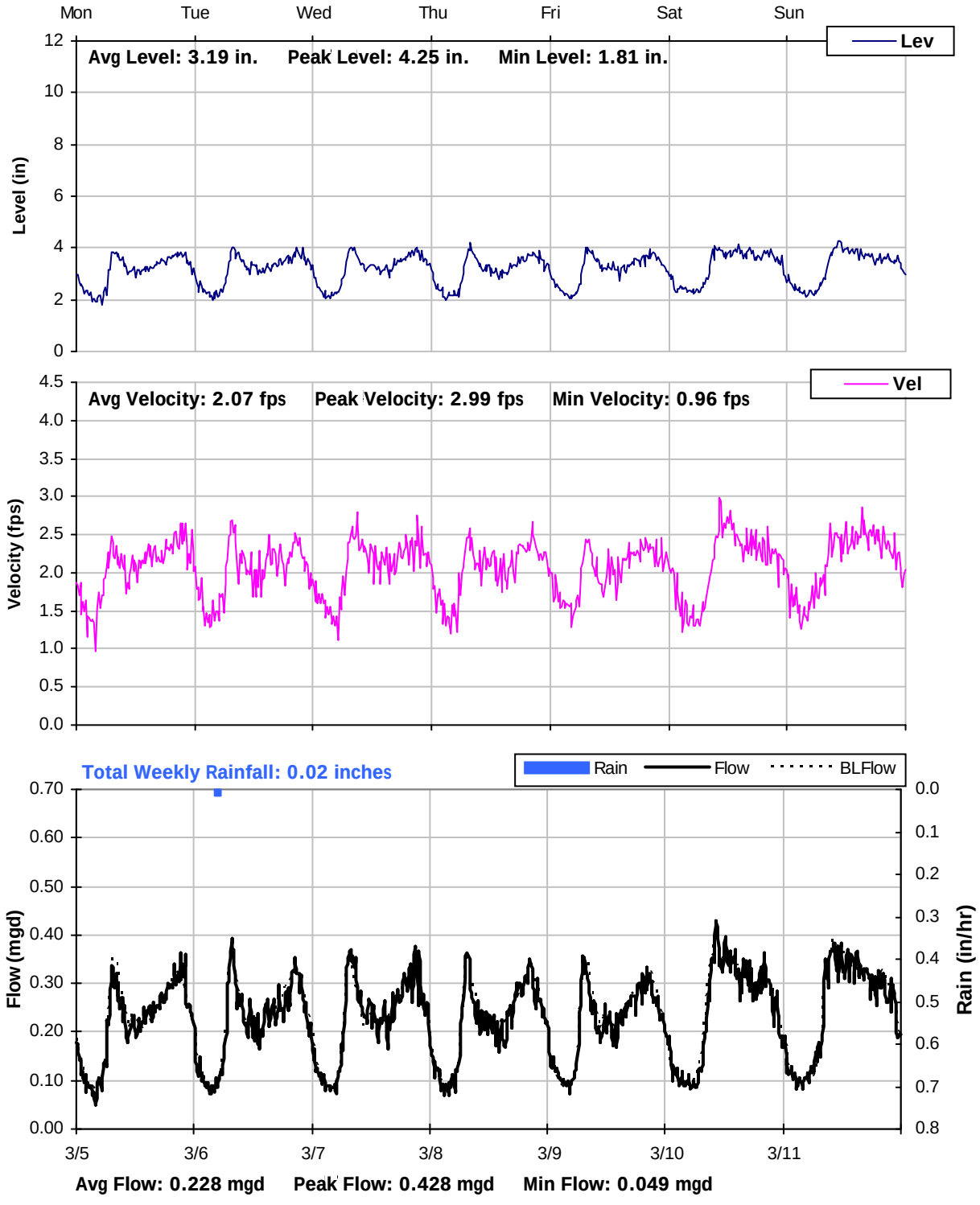
2/20/2012 to 2/27/2012



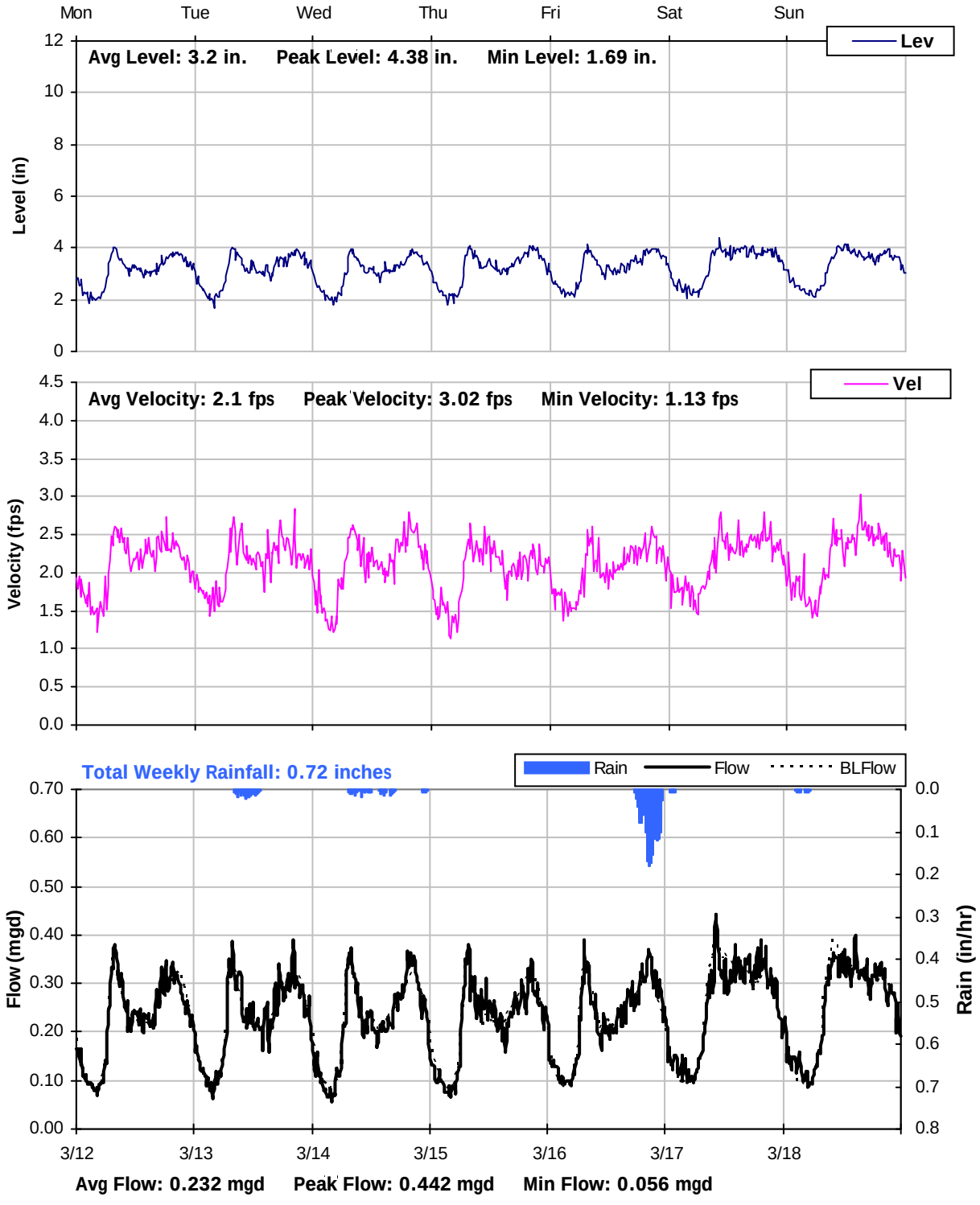
MH I12
Weekly Level, Velocity and Flow Hydrographs
2/27/2012 to 3/5/2012



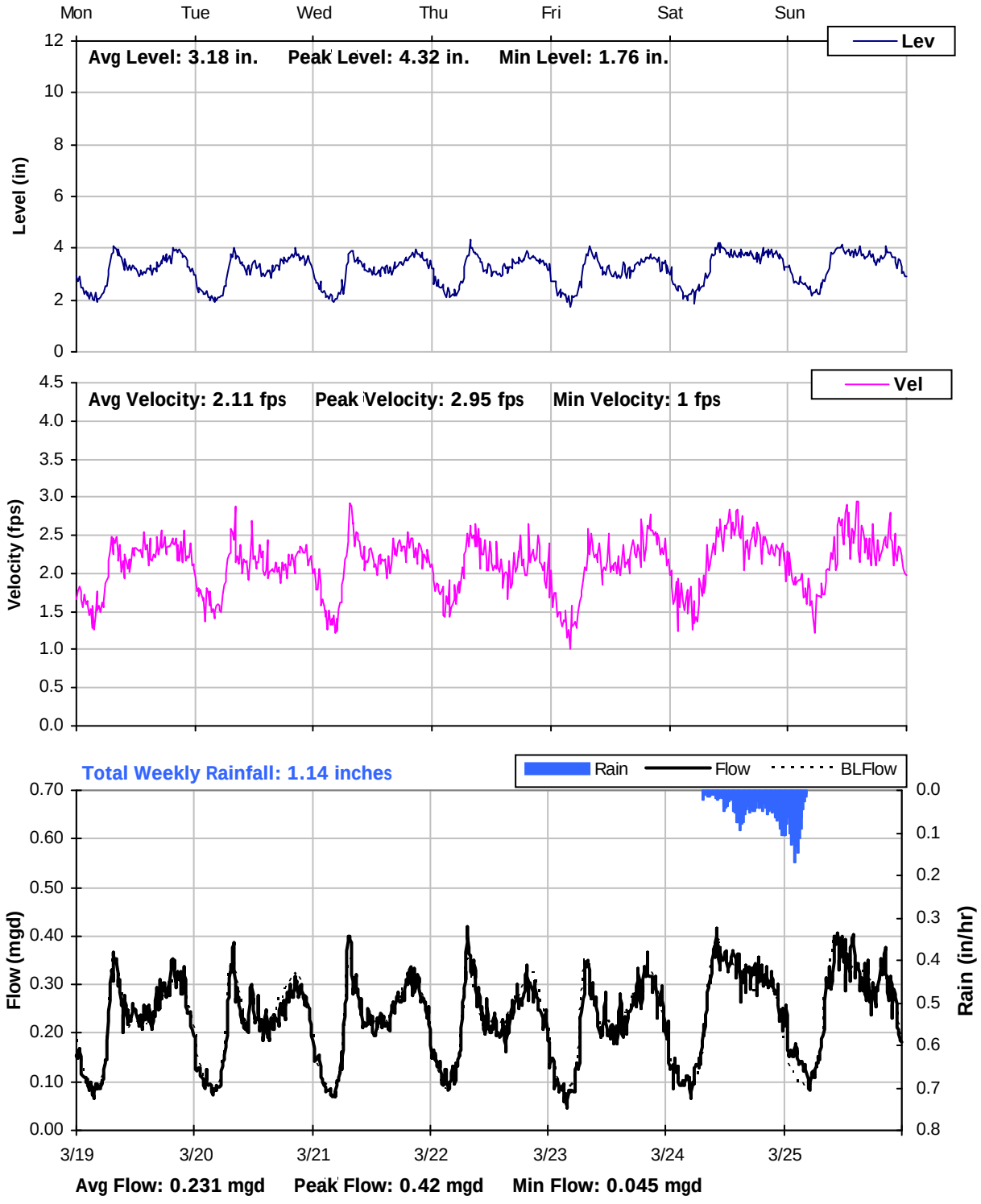
MH I12
Weekly Level, Velocity and Flow Hydrographs
3/5/2012 to 3/12/2012



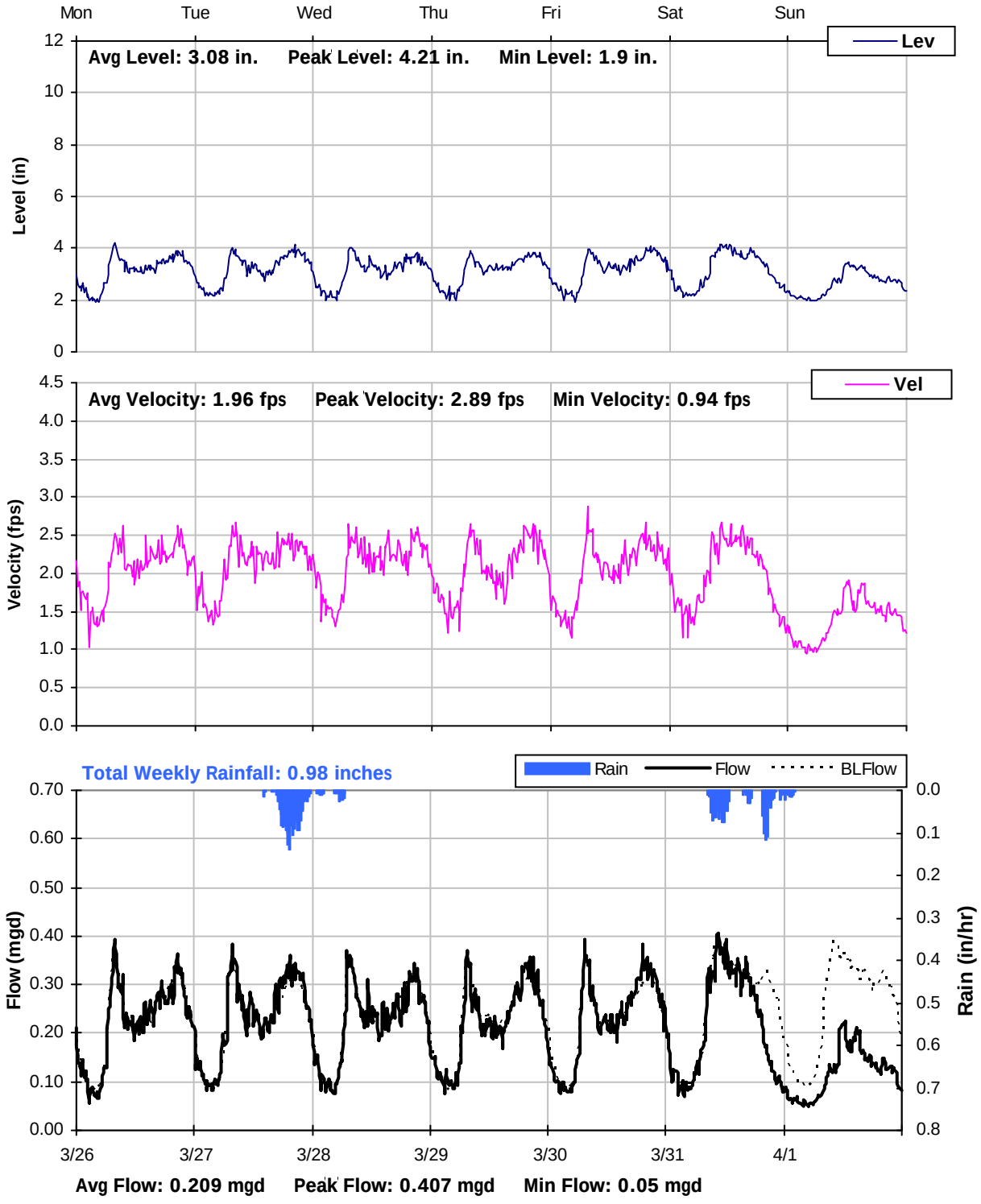
MH I12
Weekly Level, Velocity and Flow Hydrographs
3/12/2012 to 3/19/2012



MH I12
Weekly Level, Velocity and Flow Hydrographs
3/19/2012 to 3/26/2012



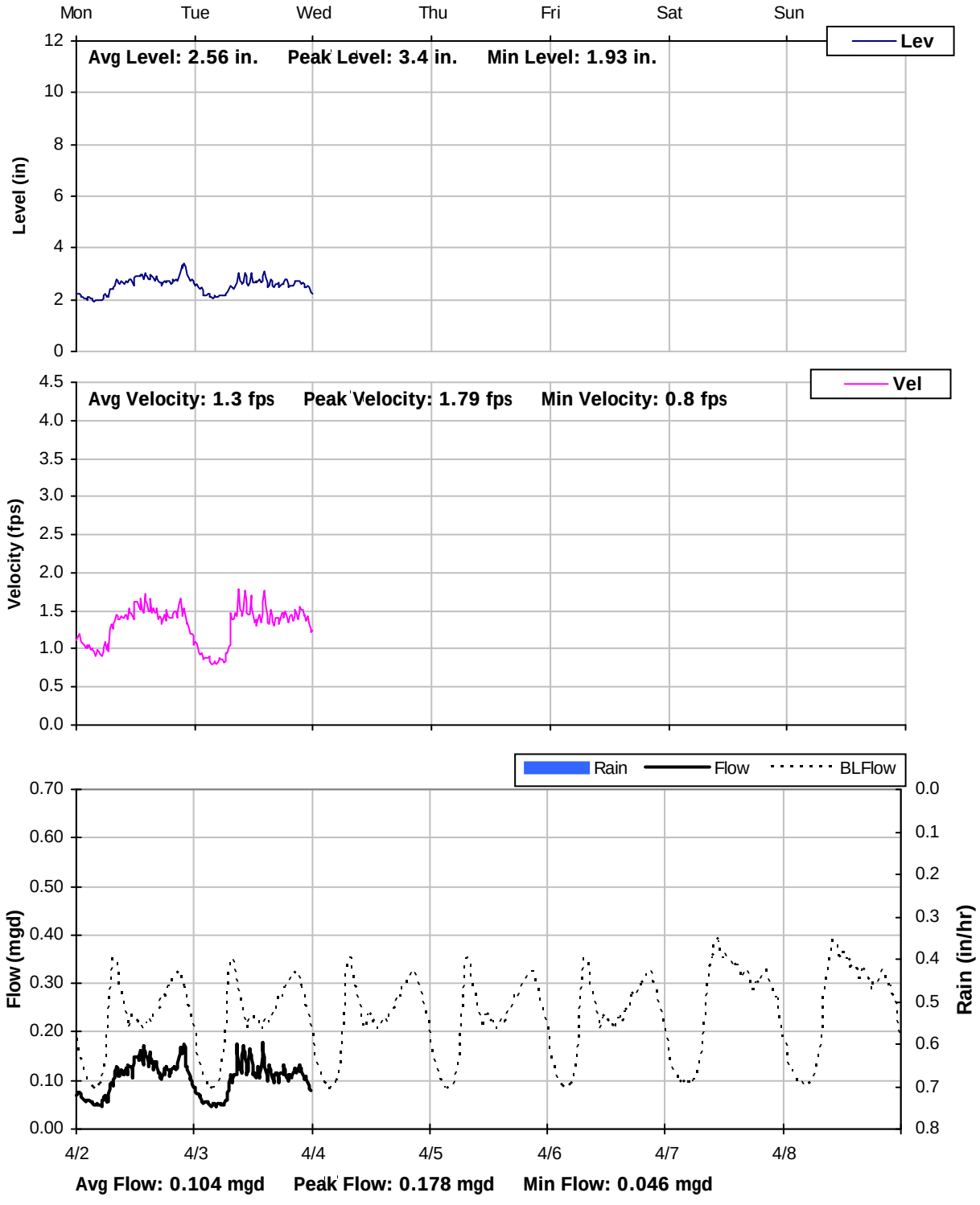
MH I12
Weekly Level, Velocity and Flow Hydrographs
3/26/2012 to 4/2/2012



MH I12

Weekly Level, Velocity and Flow Hydrographs

4/2/2012 to 4/9/2012



East Palo Alto Sanitary District

Sanitary Sewer Flow Monitoring and I/I Study

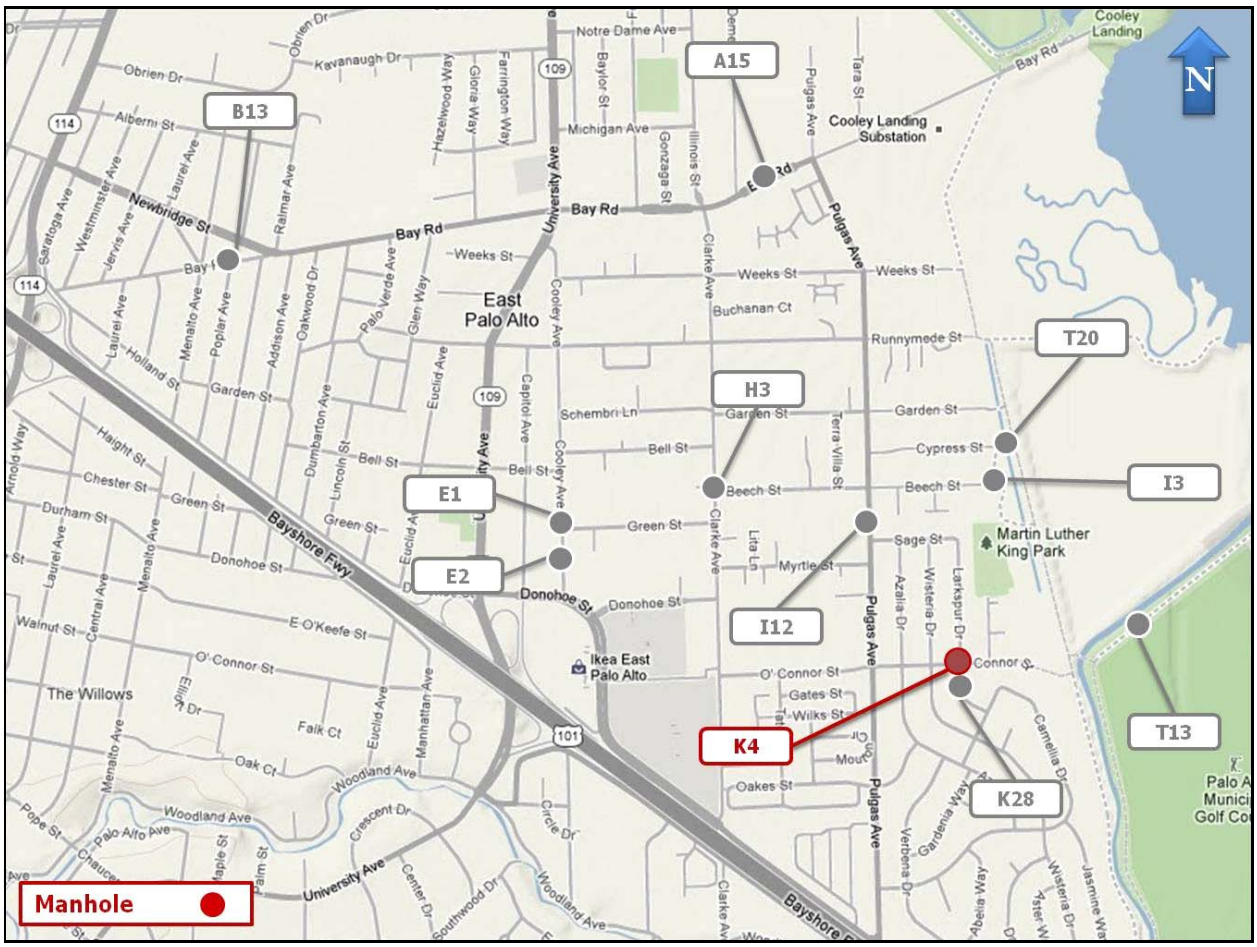
Year 2012

Monitoring Site: MH K4

Location: Intersection of O'Connor Street and Larkspur Drive

Data Summary Report

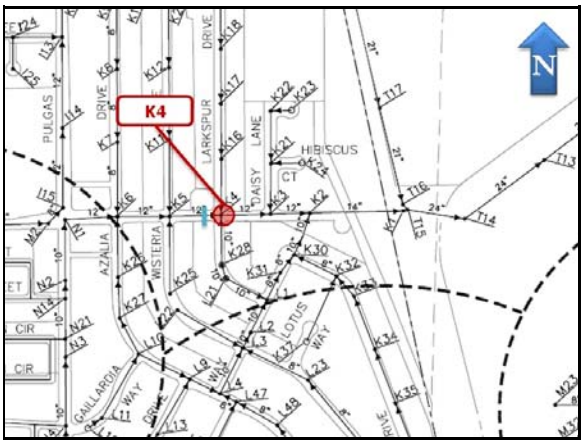
Vicinity Map:



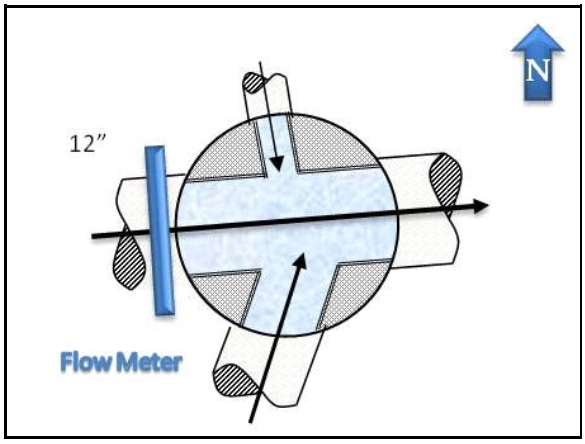
MH K4
Site Information Report

Location:	Intersection of O'Connor Street and Larkspur Drive
Coordinates:	122.1275° W, 37.4610° N
Elevation:	6 feet
Diameter:	12 inches
Baseline Flow:	0.218 mgd
Peak Measured Flow:	0.635 mgd

Satellite Map



Sanitary Sewer Map



Flow Sketch


View from Street

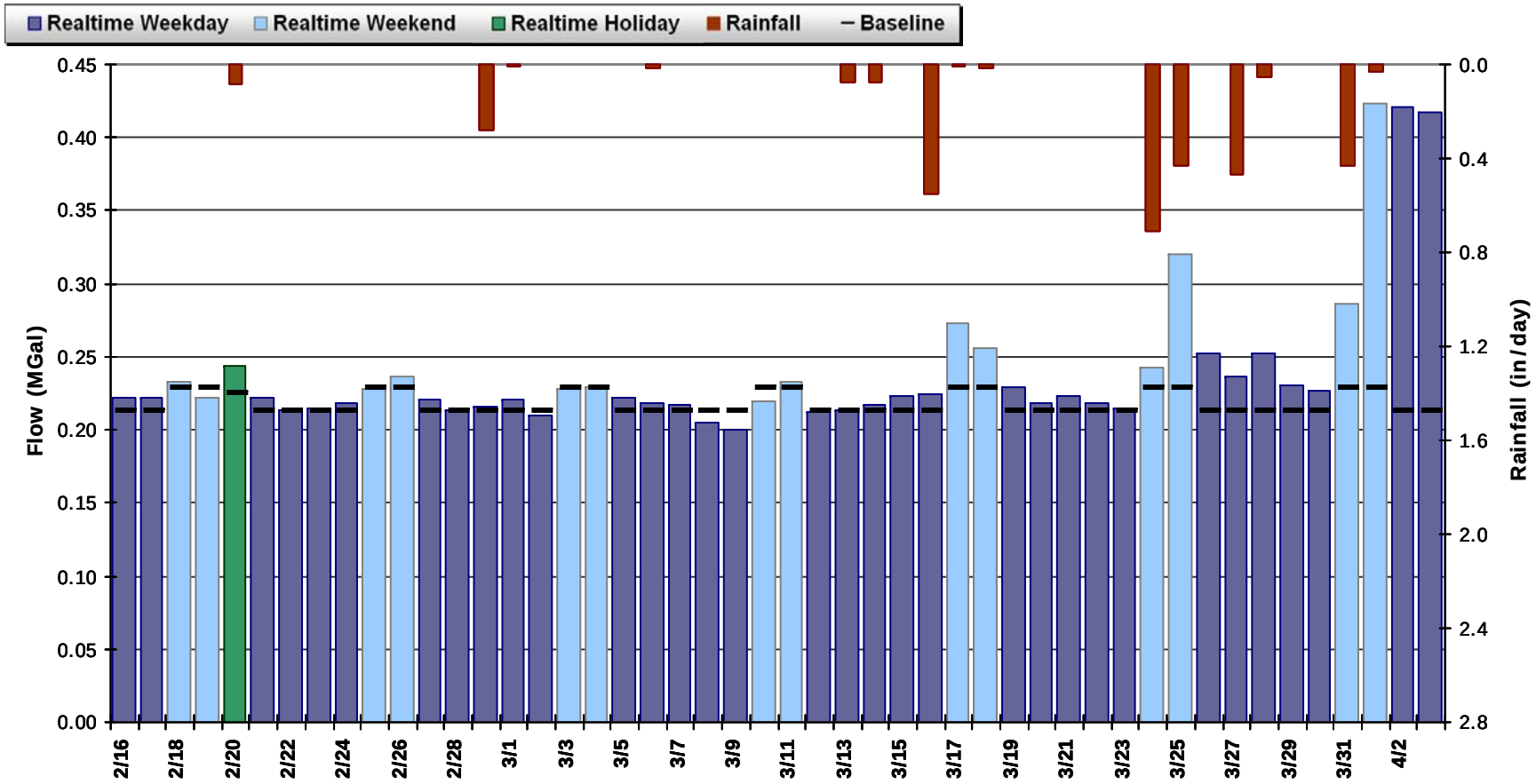

Plan View

MH K4

Period Flow Summary: Daily Flow Totals

Avg Daily Flow: 0.241 MGal **Peak Daily Flow: 0.424 MGal** **Min Daily Flow: 0.201 MGal**

Total Period Rainfall: 3.24 inches

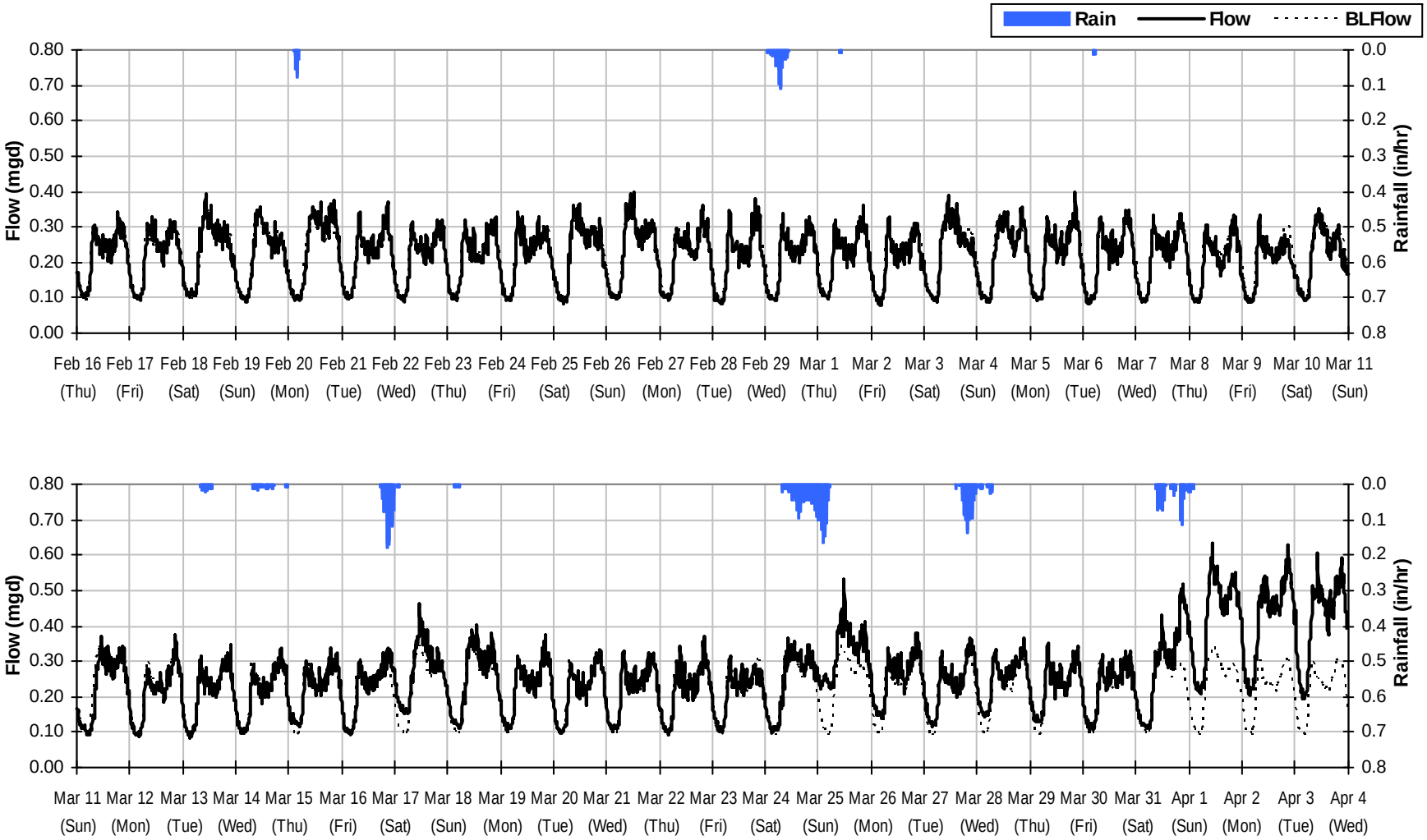


MH K4

Period Flow Summary: February 16 to April 4, 2012

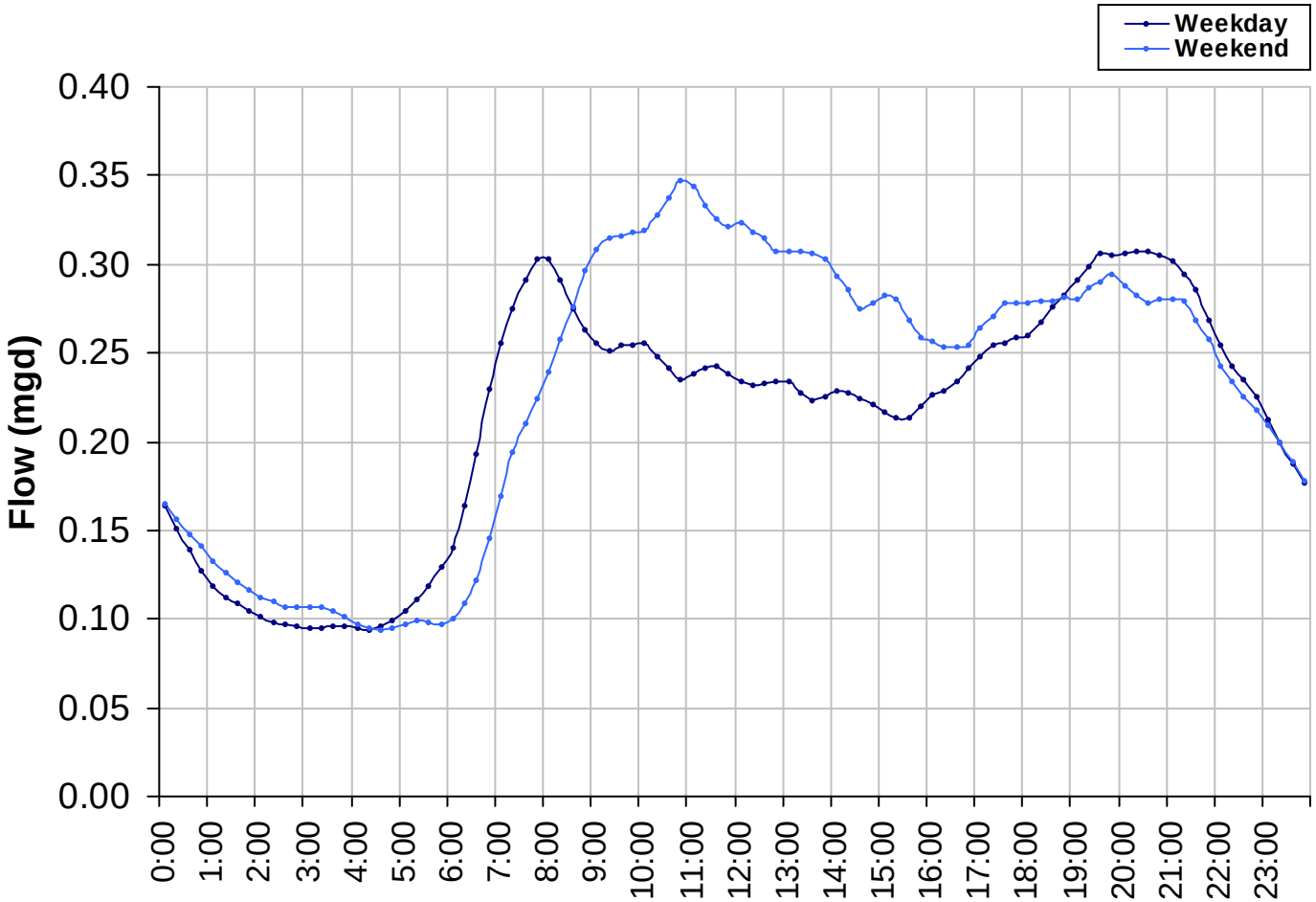
Avg Flow: 0.241 mgd Peak Flow: 0.635 mgd Min Flow: 0.081 mgd

Total Period Rainfall: 3.24 inches



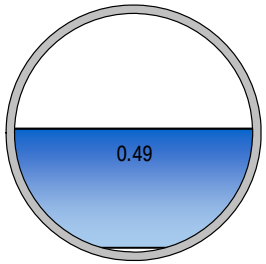
MH K4

Baseline Flow Hydrographs



Baseline Flow:

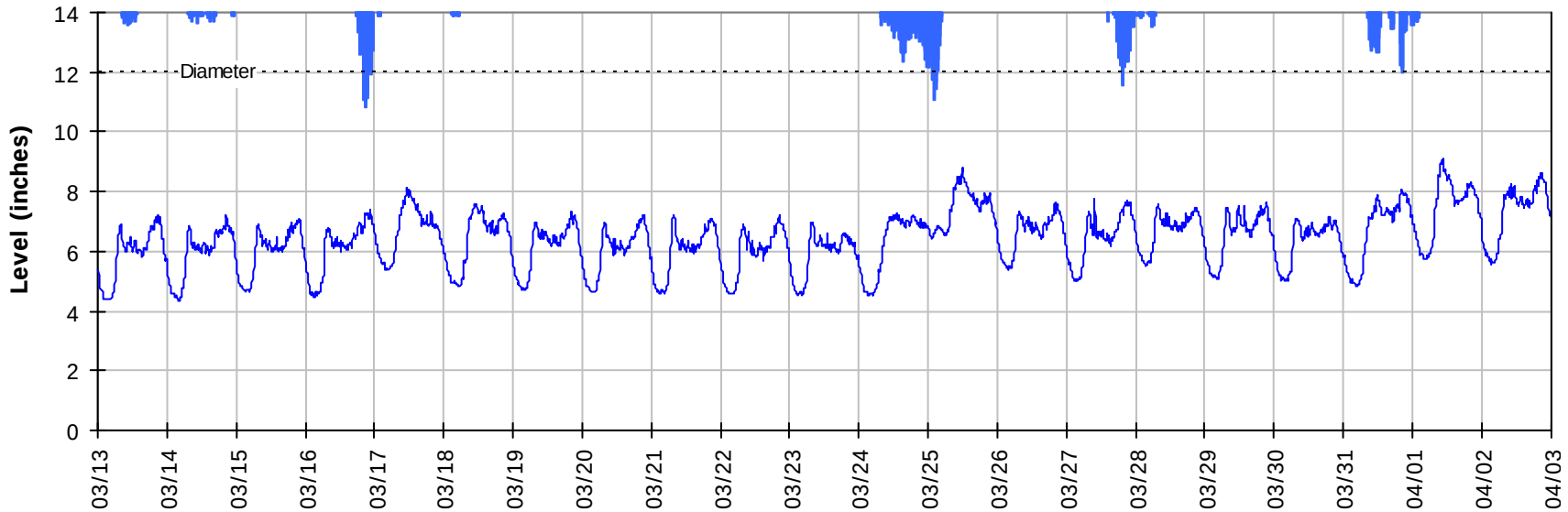
0.218 *mgd*

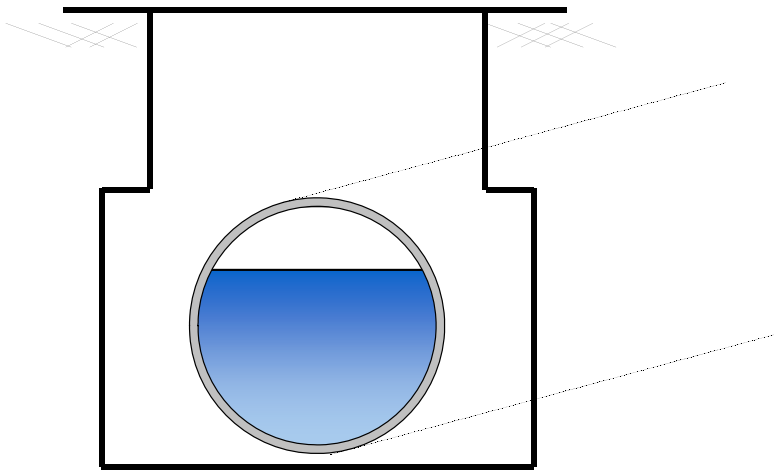


MH K4

Site Capacity and Surcharge Summary

Realtime Flow Levels with Rainfall Data over Monitoring Period





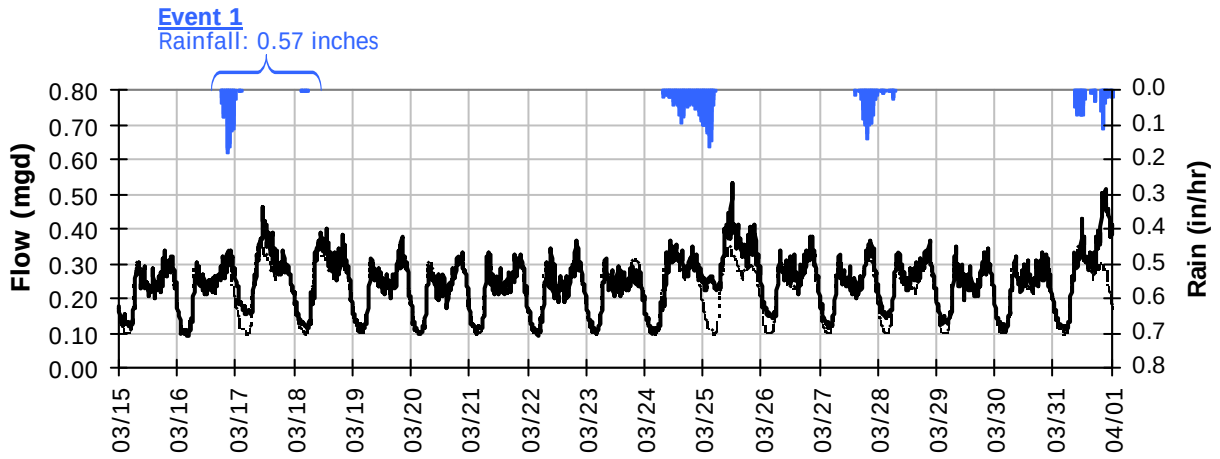
Pipe Diameter: 12 *inches*

Peak Measured Level: 8.82 *inches*

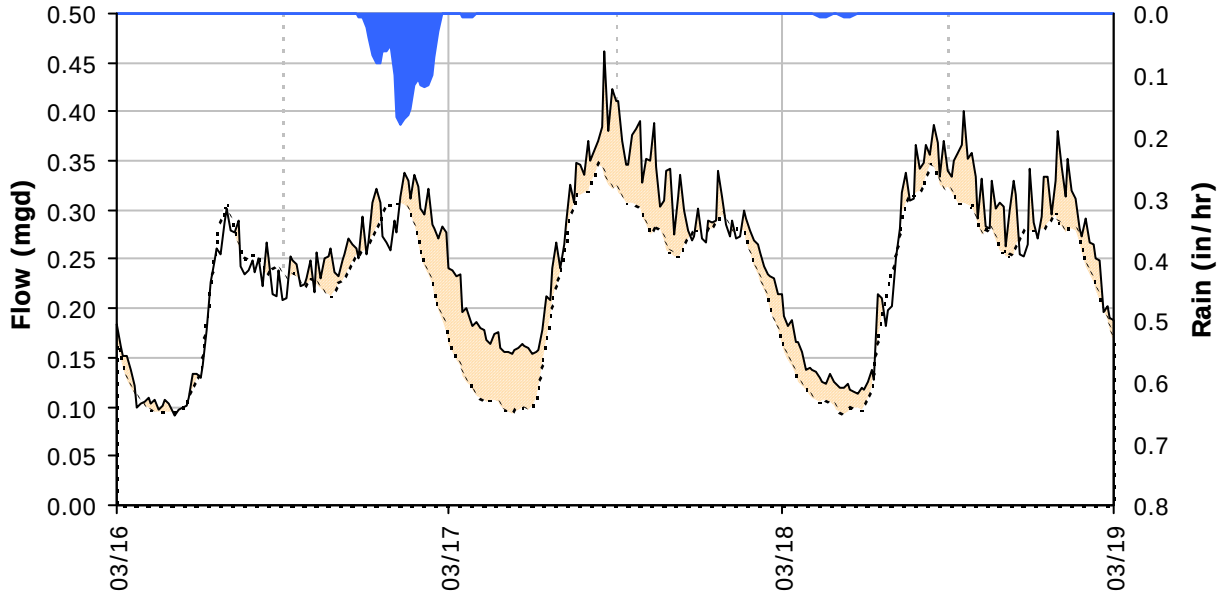
Peak d/D Ratio: 0.74

MH K4
I/I Summary: Event 1

Baseline and Realtime Flows with Rainfall Data over Monitoring Period



Event 1 Detail Graph

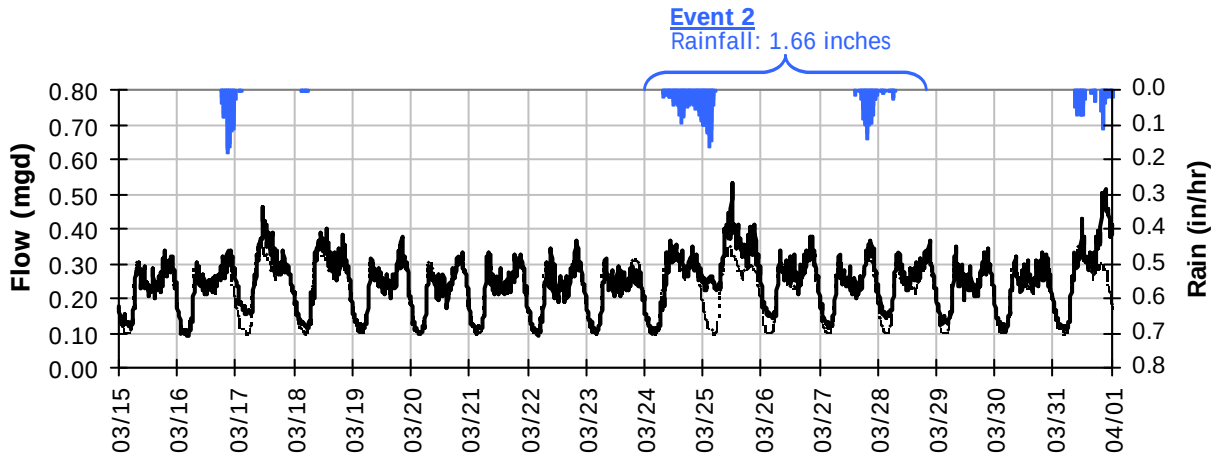


Storm Event I/I Analysis (Rain = 0.57 inches)

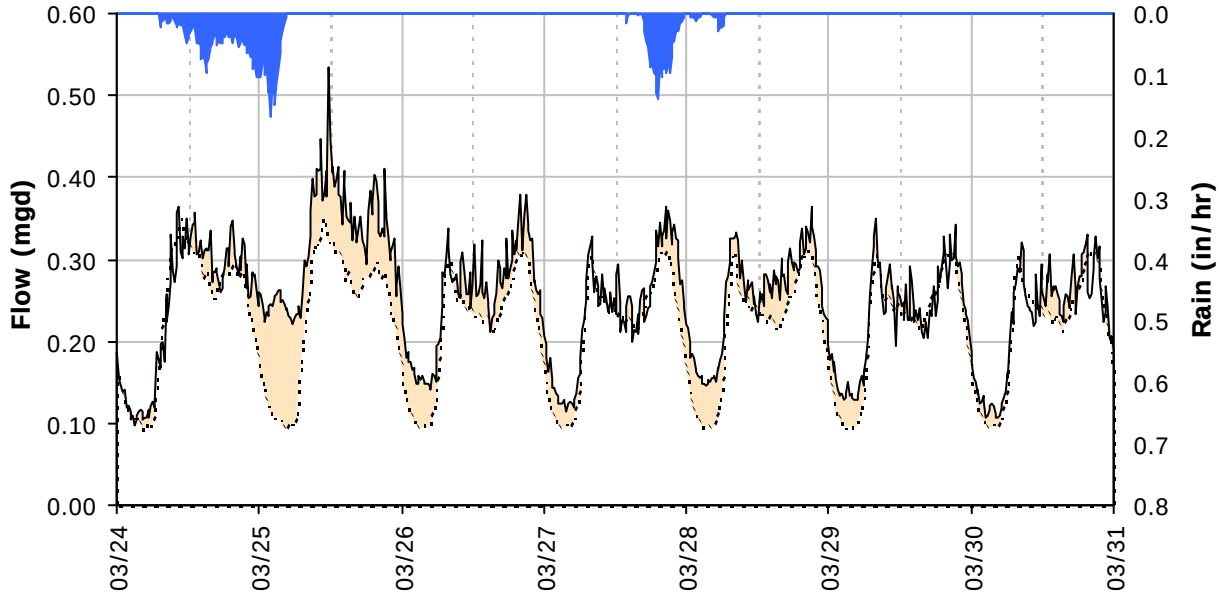
Capacity		Inflow		RDI (infiltration)		Combined I/I	
Peak Flow:	0.46 *mgd*	**Peak I/I Rate:**	0.13 *mgd*	**Infiltration Rate:** (3/18/2012)	0.027 *mgd*	**Total I/I:**	78,000 *gallons*
PF:	2.11	**PkI/I:IDM:**	4,278 *gpd/IDM*	**RDI:IDM:**	898 *gpd/IDM*	**Total I/I:IDM:**	4,593 *gal/IDM/in*
Peak Level:	8.14 *in*	**PkI/I:Acre:**	1,195 *gpd/acre*	**RDI:Acre:**	251 *gpd/acre*	**R-Value:**	4.7%
d/D Ratio:	0.68	**Pk I/I:ADWF:**	0.58	**RDI (% of BL):**	12%	**Total I/I:ADWF:**	0.63 *per in-rain*

MH K4
I/I Summary: Event 2

Baseline and Realtime Flows with Rainfall Data over Monitoring Period



Event 2 Detail Graph



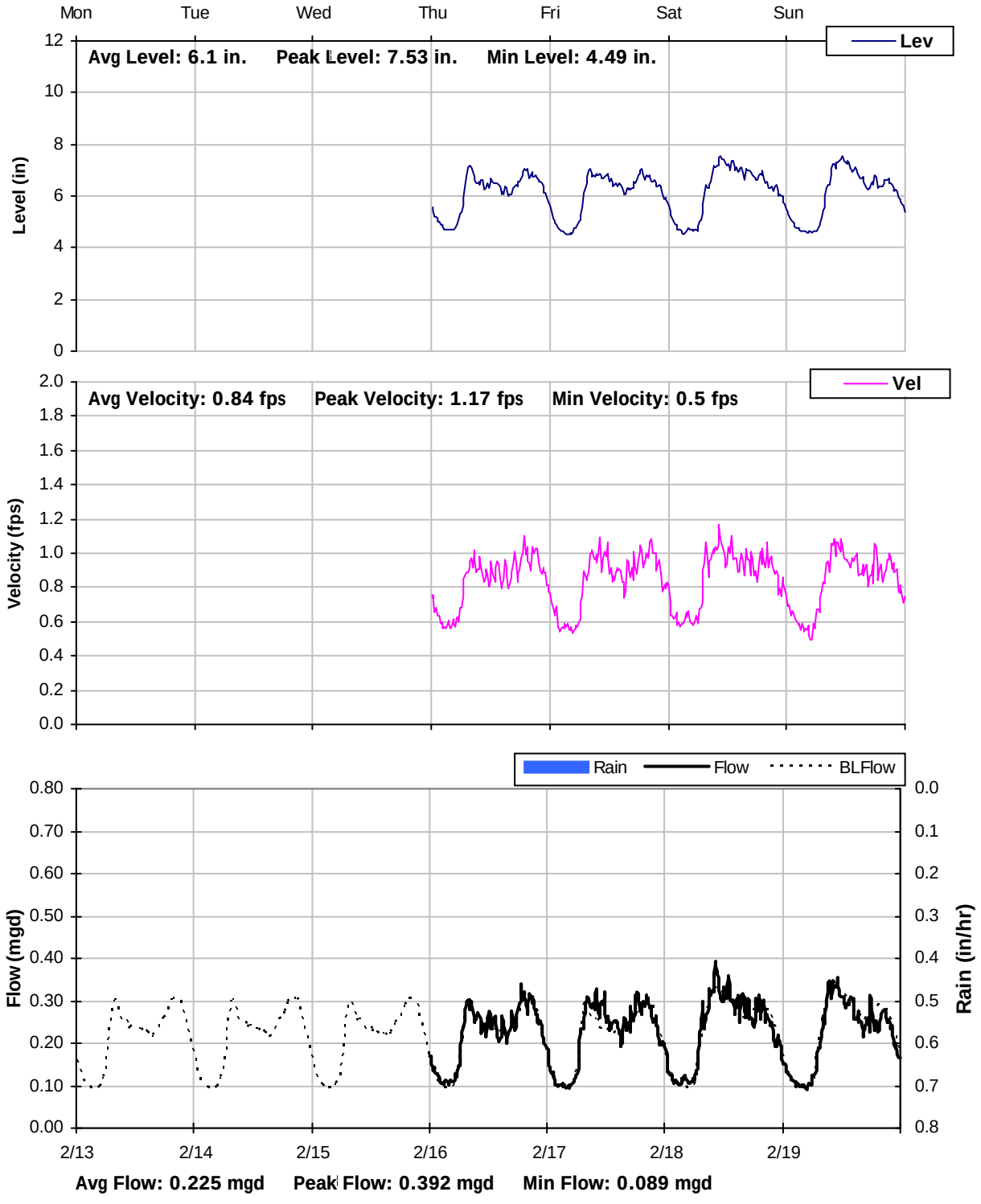
Storm Event I/I Analysis (Rain = 1.66 inches)

Capacity		Inflow		RDI (infiltration)		Combined I/I	
Peak Flow:	0.53 *mgd*	**Peak I/I Rate:**	0.21 *mgd*	**Infiltration Rate:** (3/26/2012)	0.038 *mgd*	**Total I/I:**	234,000 *gallons*
PF:	2.44	**PkI/I:IDM:**	7,116 *gpd/IDM*	**RDI:IDM:**	1,276 *gpd/IDM*	**Total I/I:IDM:**	4,724 *gal/IDM/in*
Peak Level:	8.82 *in*	**PkI/I:Acre:**	1,987 *gpd/acre*	**RDI:Acre:**	356 *gpd/acre*	**R-Value:**	4.9%
d/D Ratio:	0.74	**Pk I/I:ADWF:**	0.97	**RDI (% of BL):**	18%	**Total I/I:ADWF:**	0.64 *per in-rain*

MH K4

Weekly Level, Velocity and Flow Hydrographs

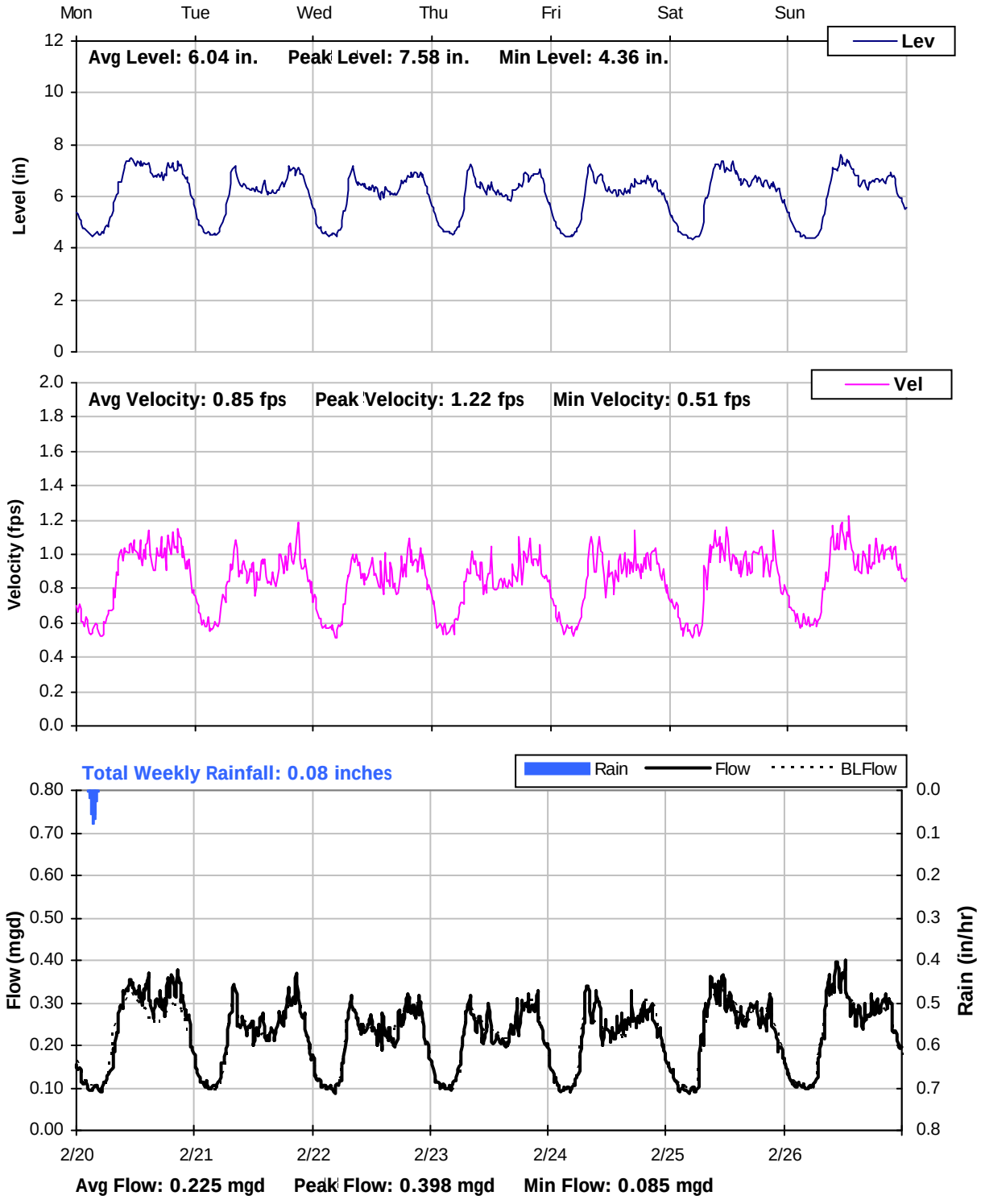
2/13/2012 to 2/20/2012



MH K4

Weekly Level, Velocity and Flow Hydrographs

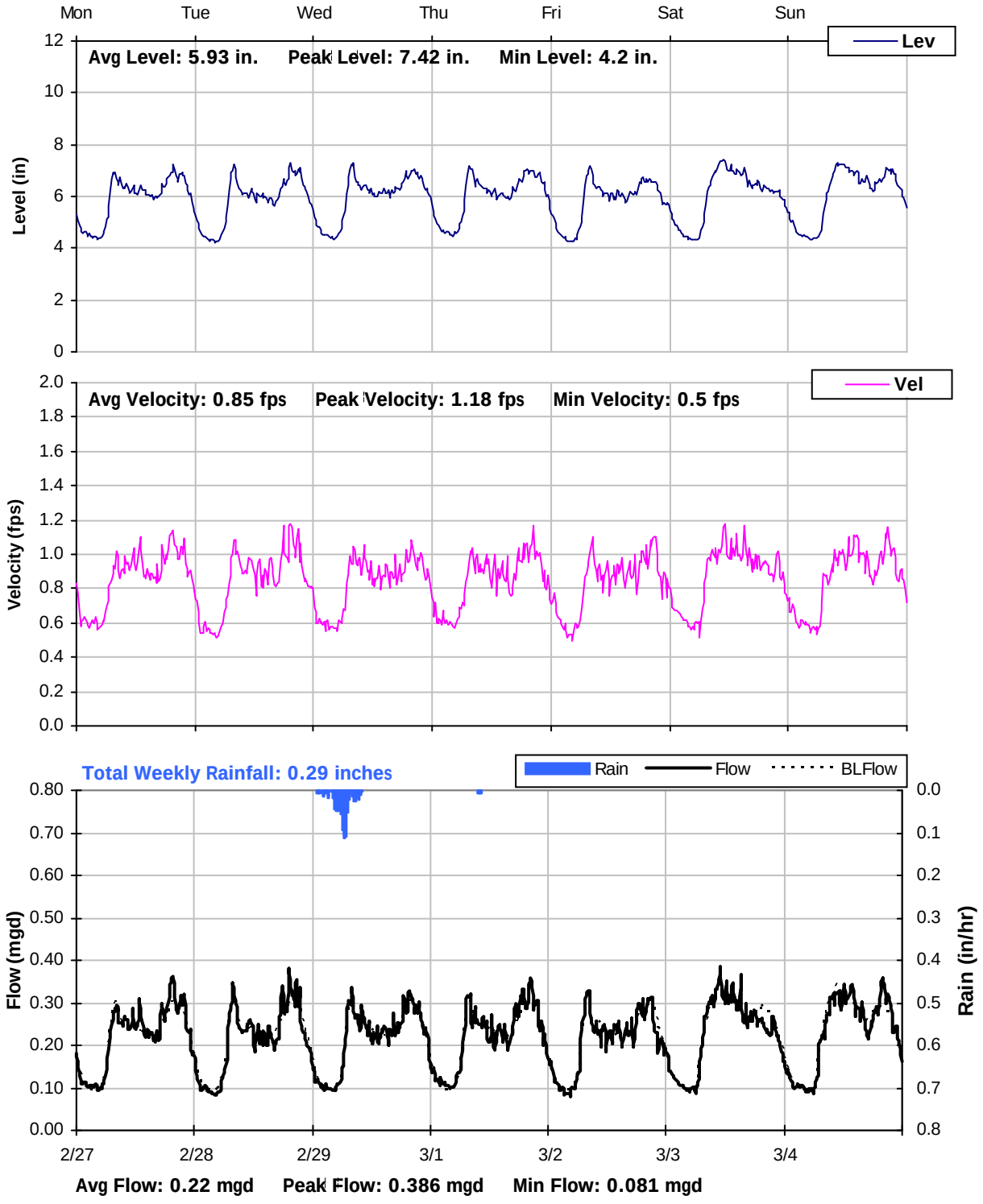
2/20/2012 to 2/27/2012



MH K4

Weekly Level, Velocity and Flow Hydrographs

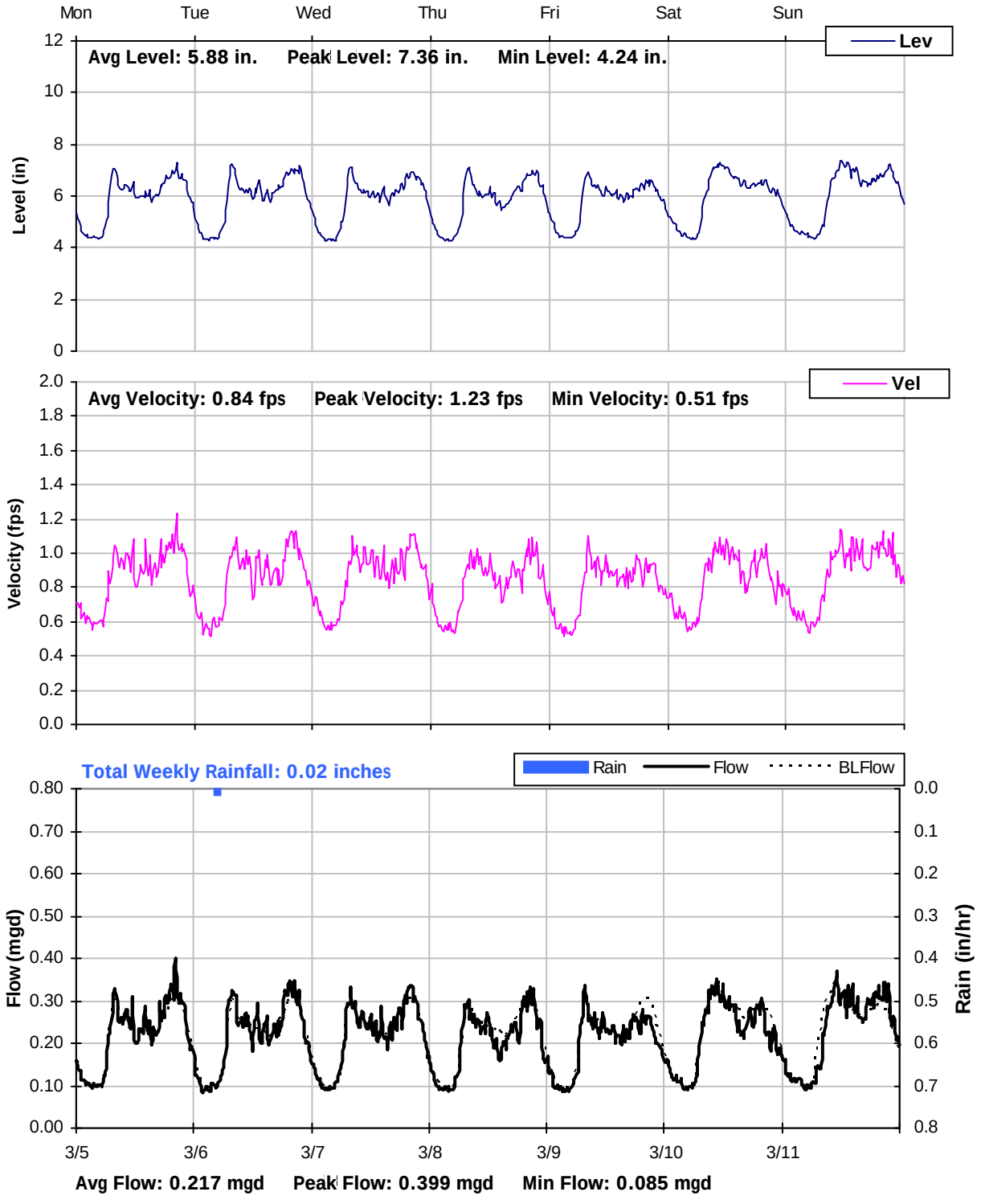
2/27/2012 to 3/5/2012



MH K4

Weekly Level, Velocity and Flow Hydrographs

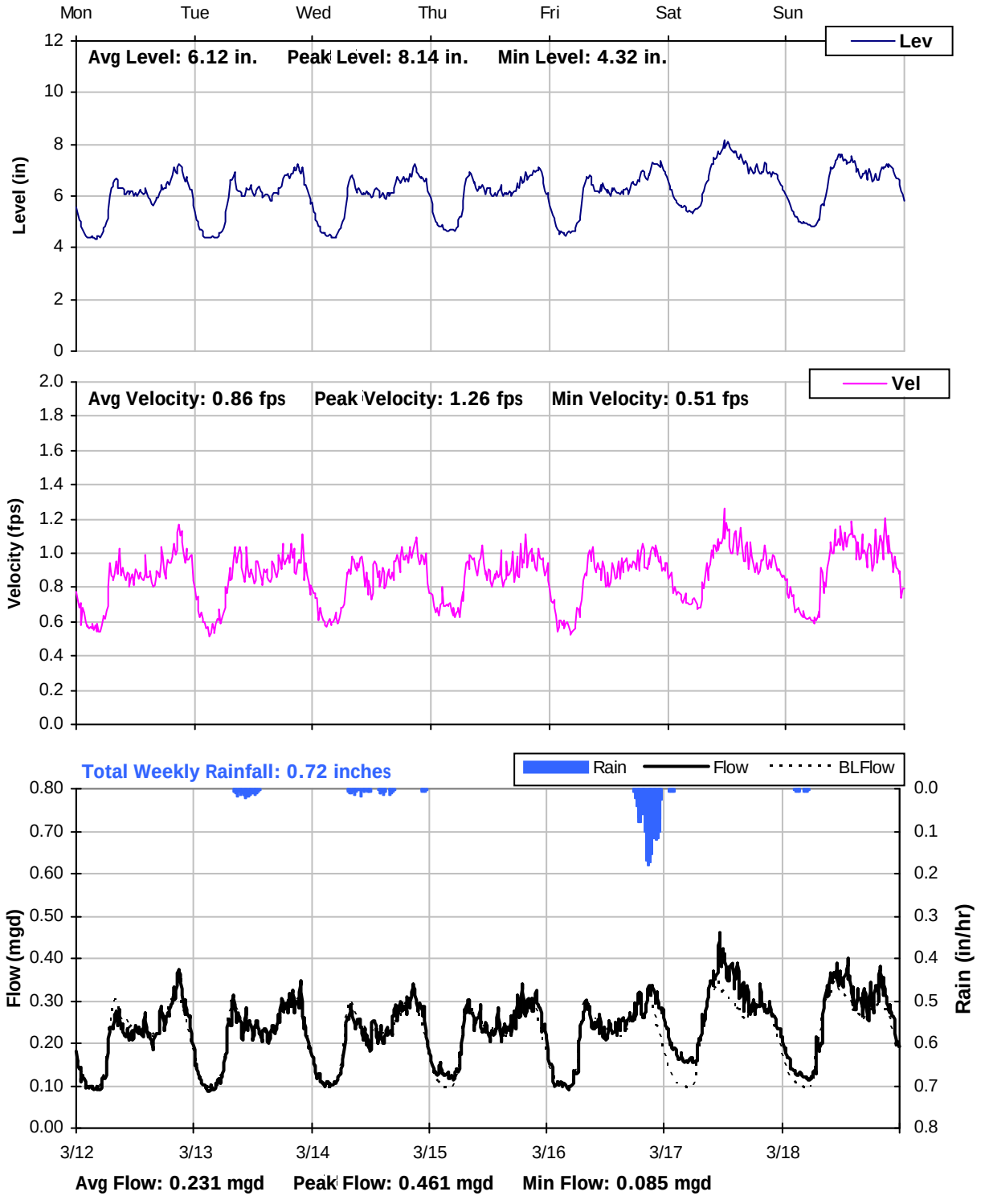
3/5/2012 to 3/12/2012



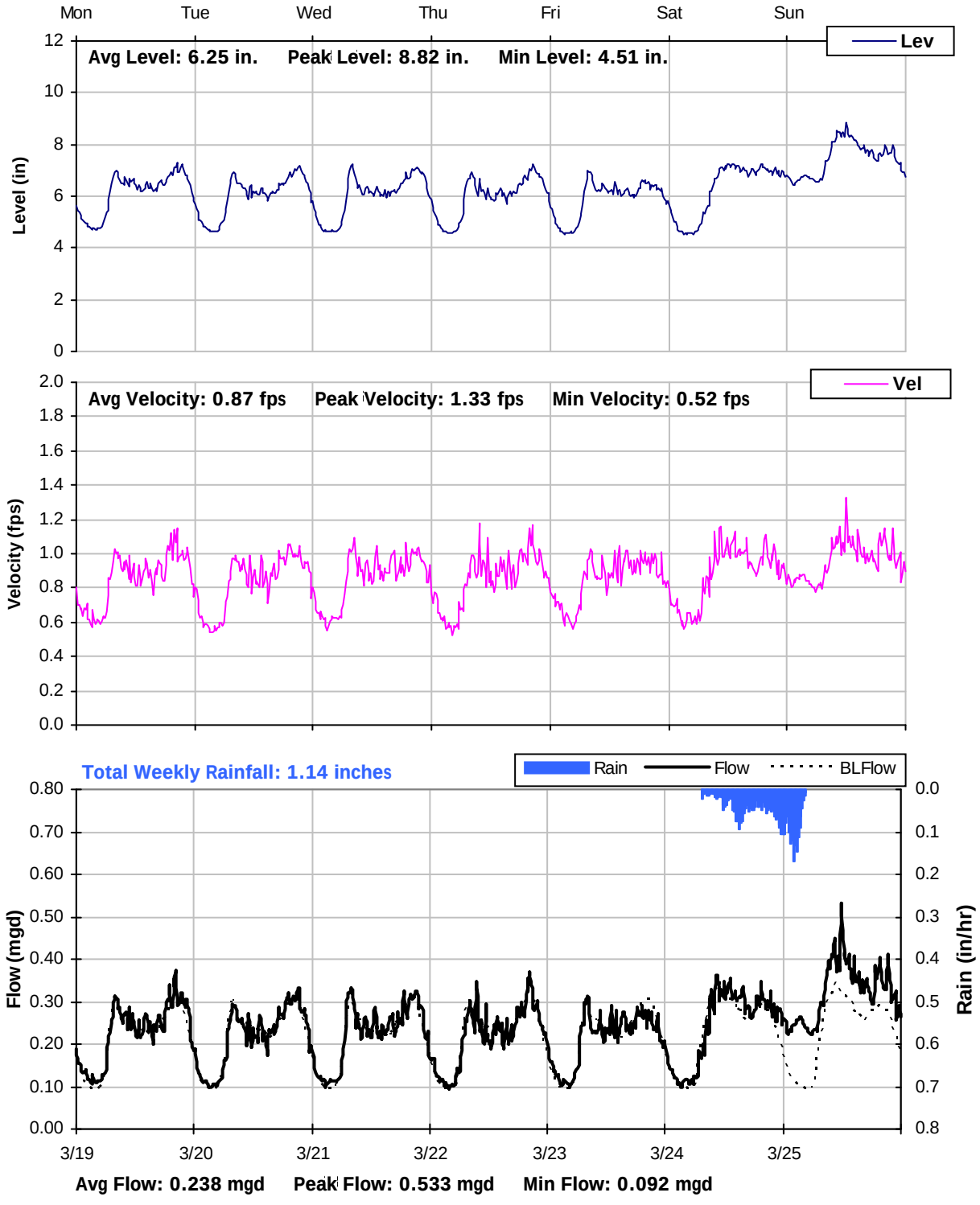
MH K4

Weekly Level, Velocity and Flow Hydrographs

3/12/2012 to 3/19/2012



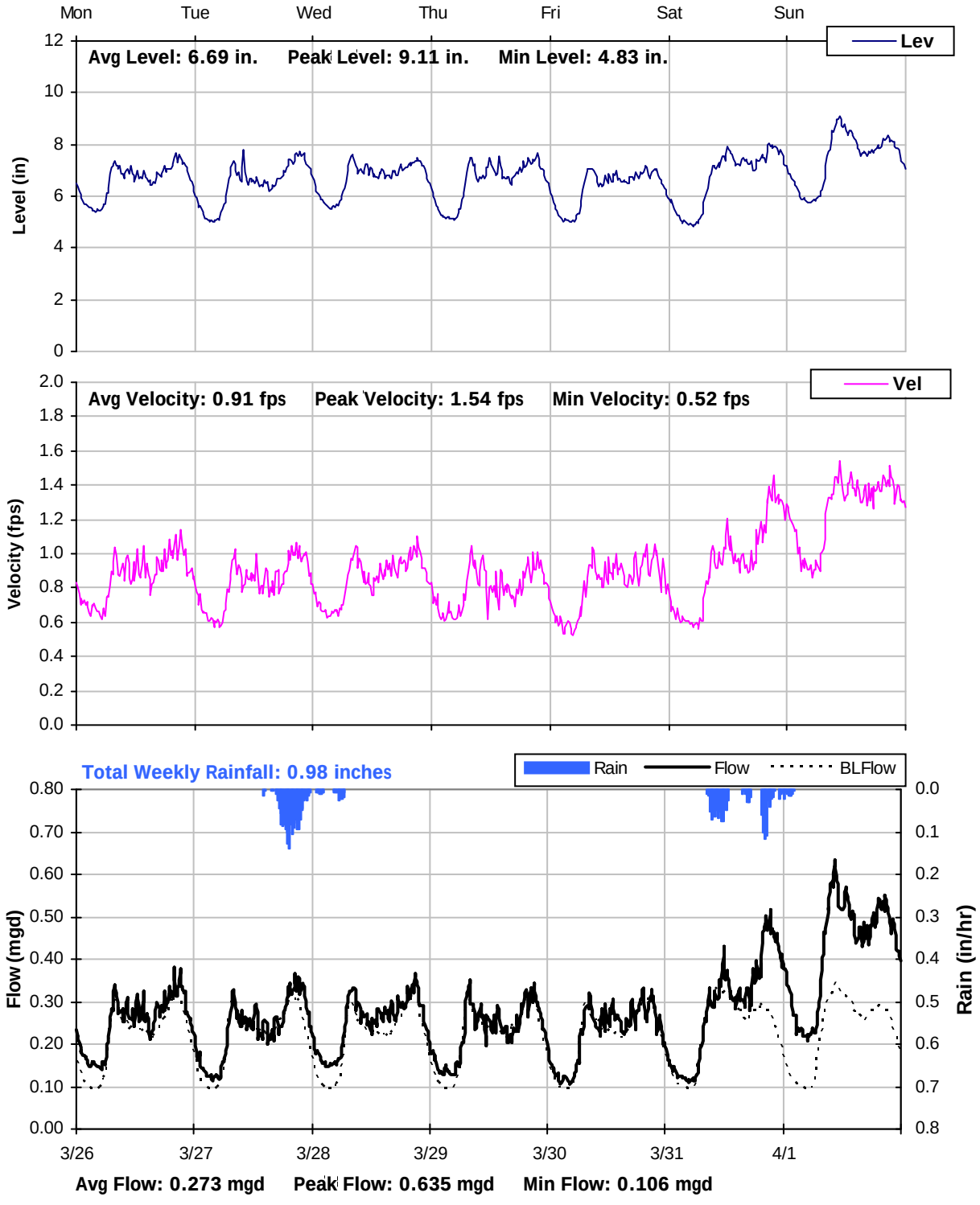
MH K4
Weekly Level, Velocity and Flow Hydrographs
3/19/2012 to 3/26/2012



MH K4

Weekly Level, Velocity and Flow Hydrographs

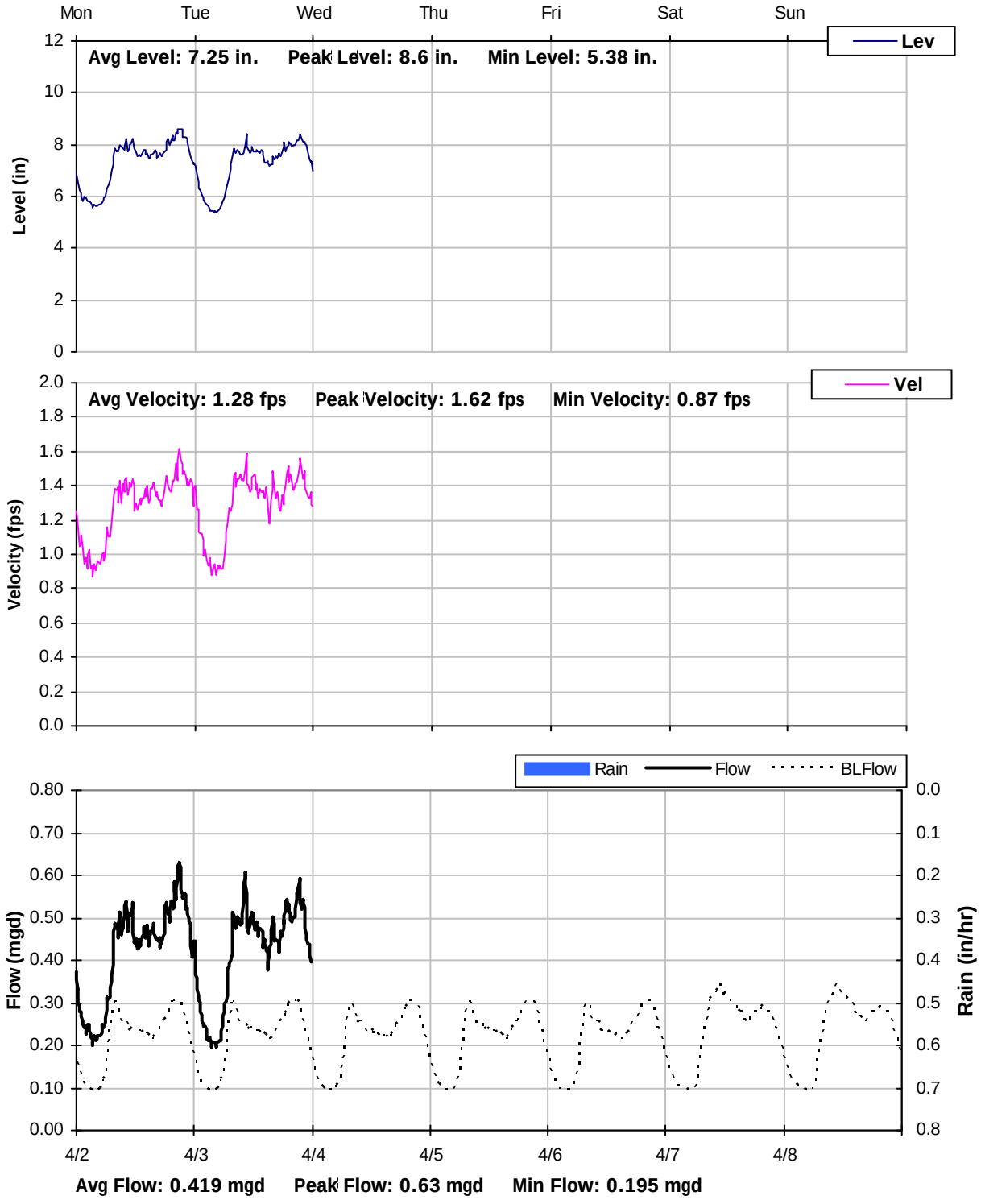
3/26/2012 to 4/2/2012



MH K4

Weekly Level, Velocity and Flow Hydrographs

4/2/2012 to 4/9/2012



East Palo Alto Sanitary District

Sanitary Sewer Flow Monitoring and I/I Study

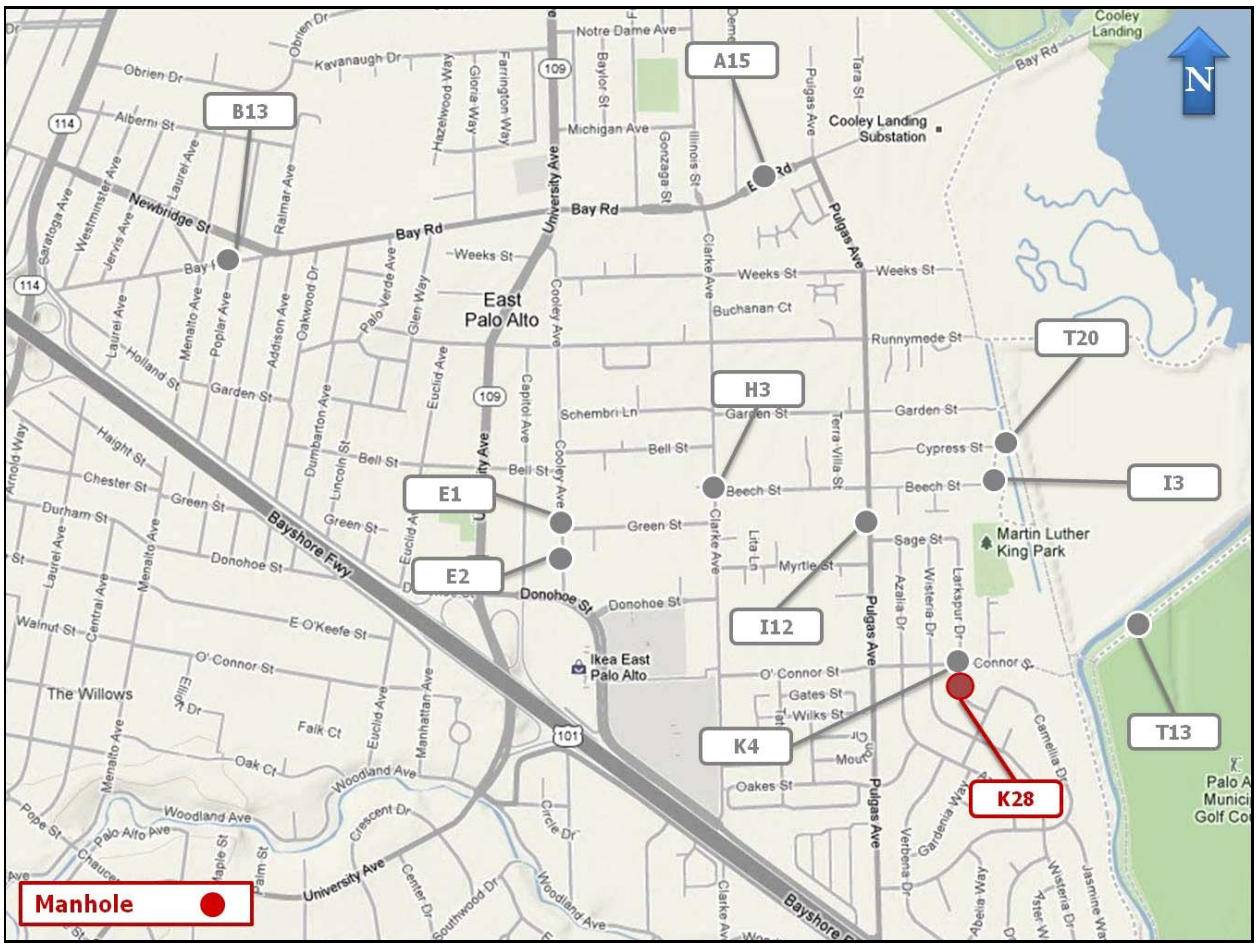
Year 2012

Monitoring Site: MH K28

Location: Larkspur Drive, south of O'Connor Street

Data Summary Report

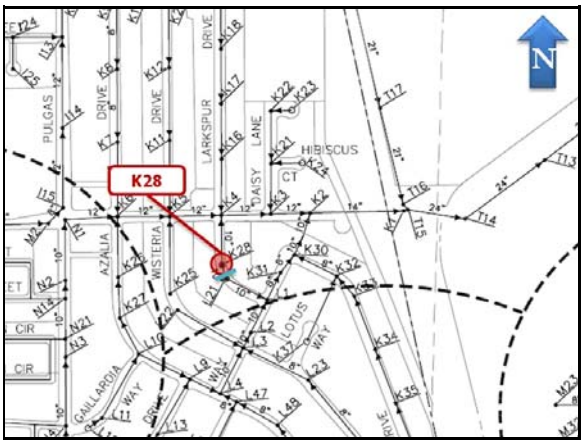
Vicinity Map:



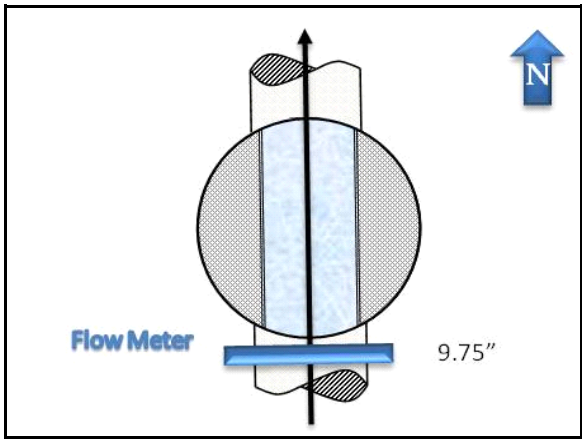
MH K28
Site Information Report

Location:	Larkspur Drive, south of O'Connor Street
Coordinates:	122.1274° W, 37.4603° N
Elevation:	7 feet
Diameter:	9.75 inches
Baseline Flow:	0.11 mgd
Peak Measured Flow:	0.274 mgd

Satellite Map



Sanitary Sewer Map



Flow Sketch


View from Street

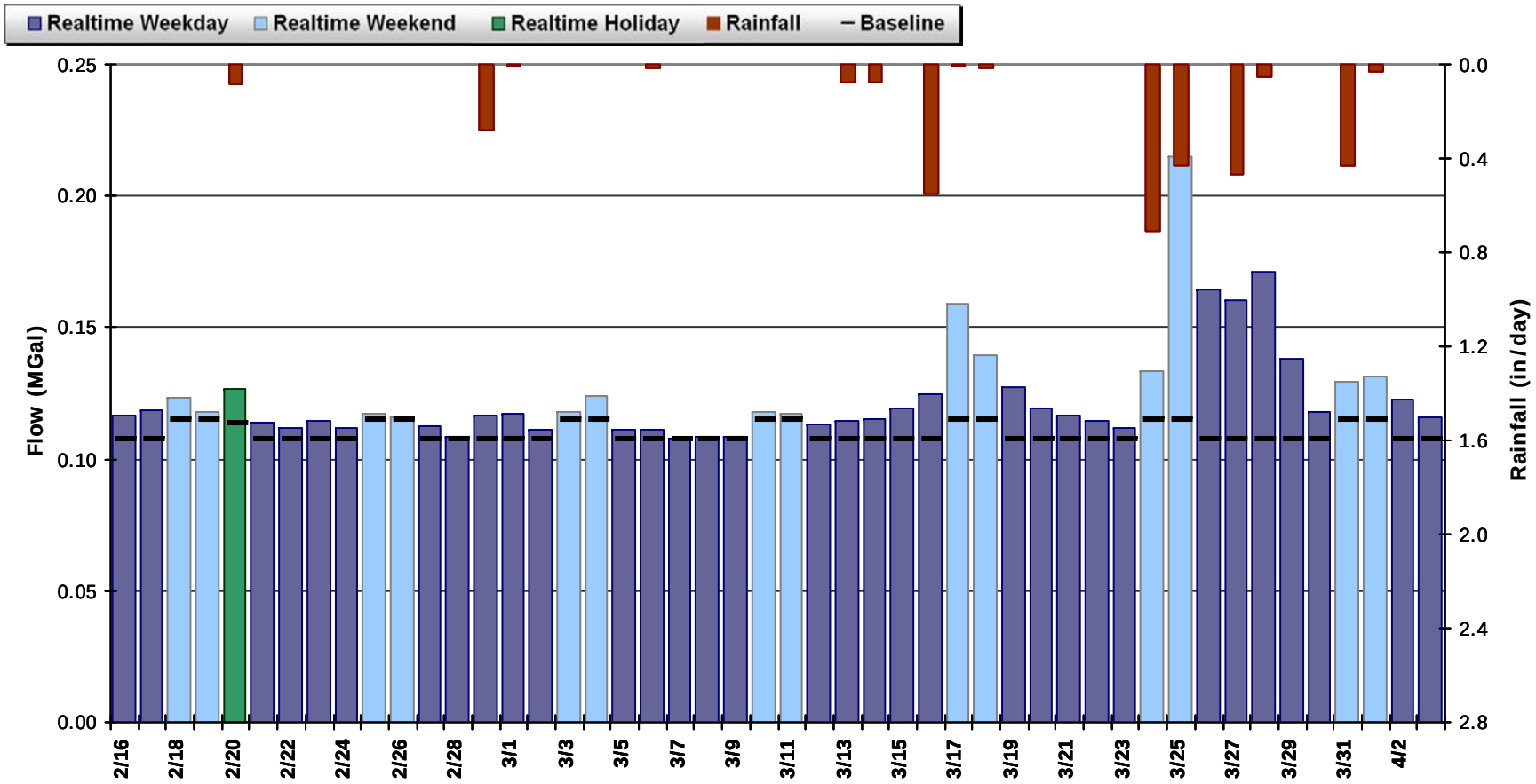

Plan View

MH K28

Period Flow Summary: Daily Flow Totals

Avg Daily Flow: 0.124 MGal **Peak Daily Flow: 0.215 MGal** **Min Daily Flow: 0.108 MGal**

Total Period Rainfall: 3.24 inches

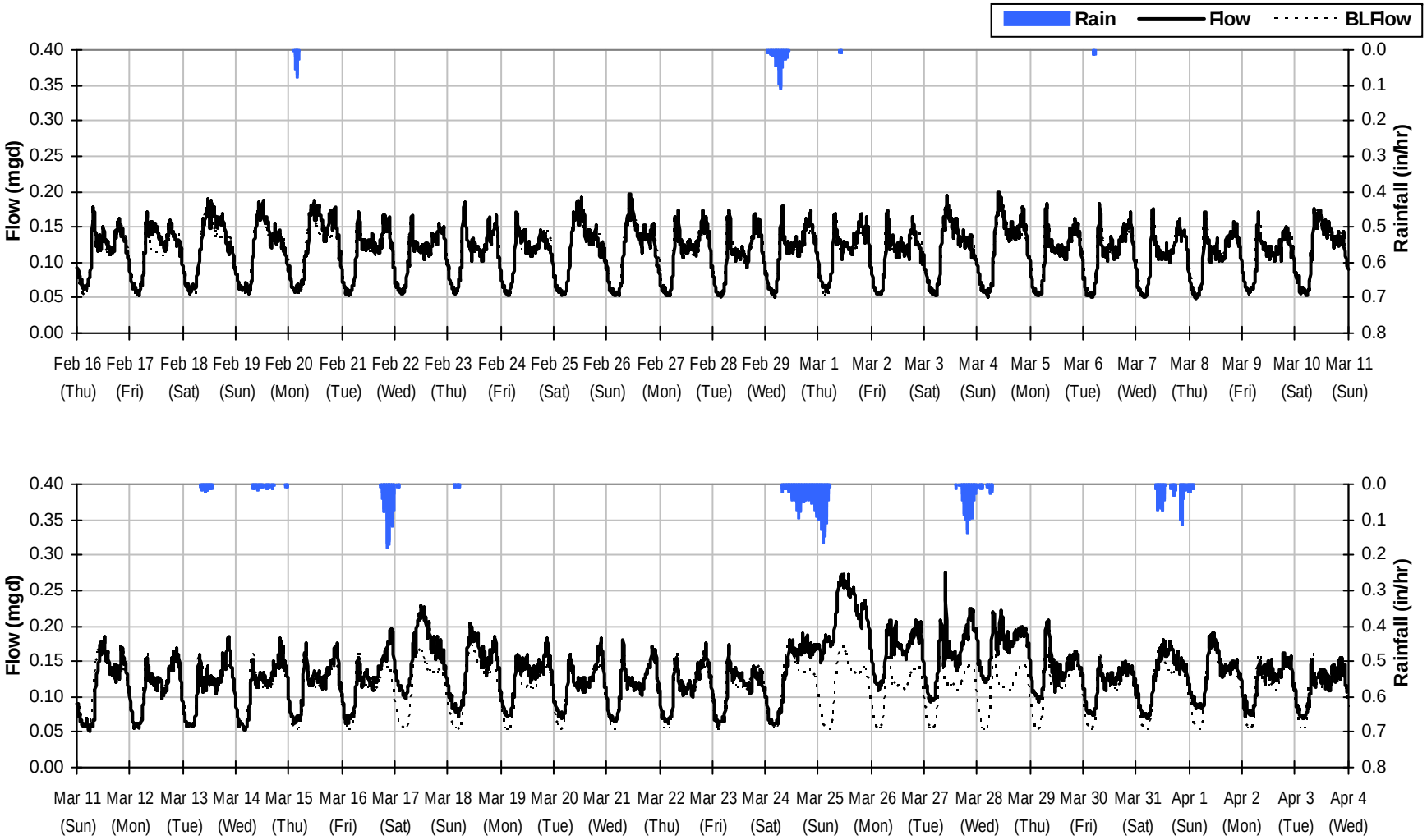


MH K28

Period Flow Summary: February 16 to April 4, 2012

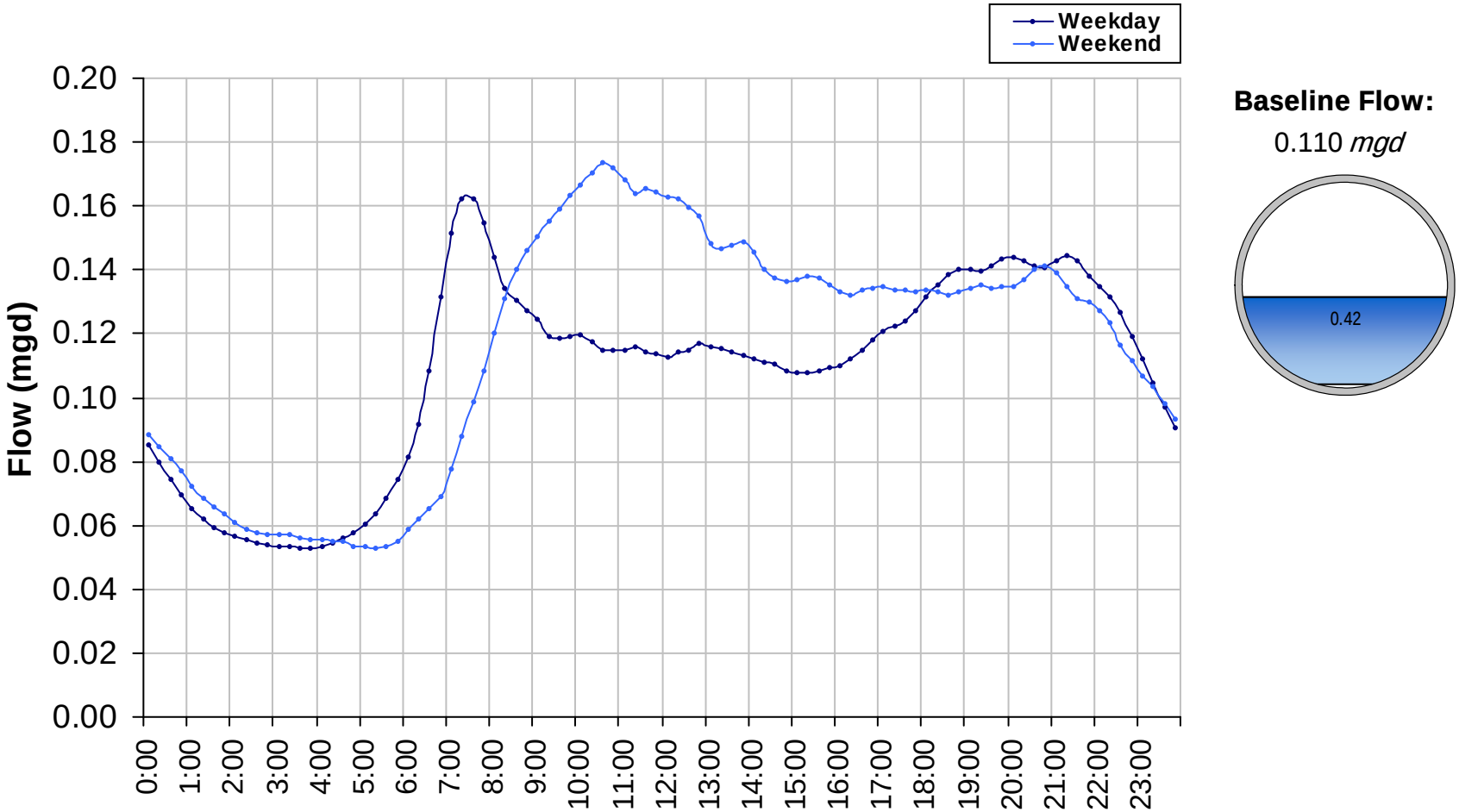
Avg Flow: 0.124 mgd Peak Flow: 0.274 mgd Min Flow: 0.049 mgd

Total Period Rainfall: 3.24 inches



MH K28

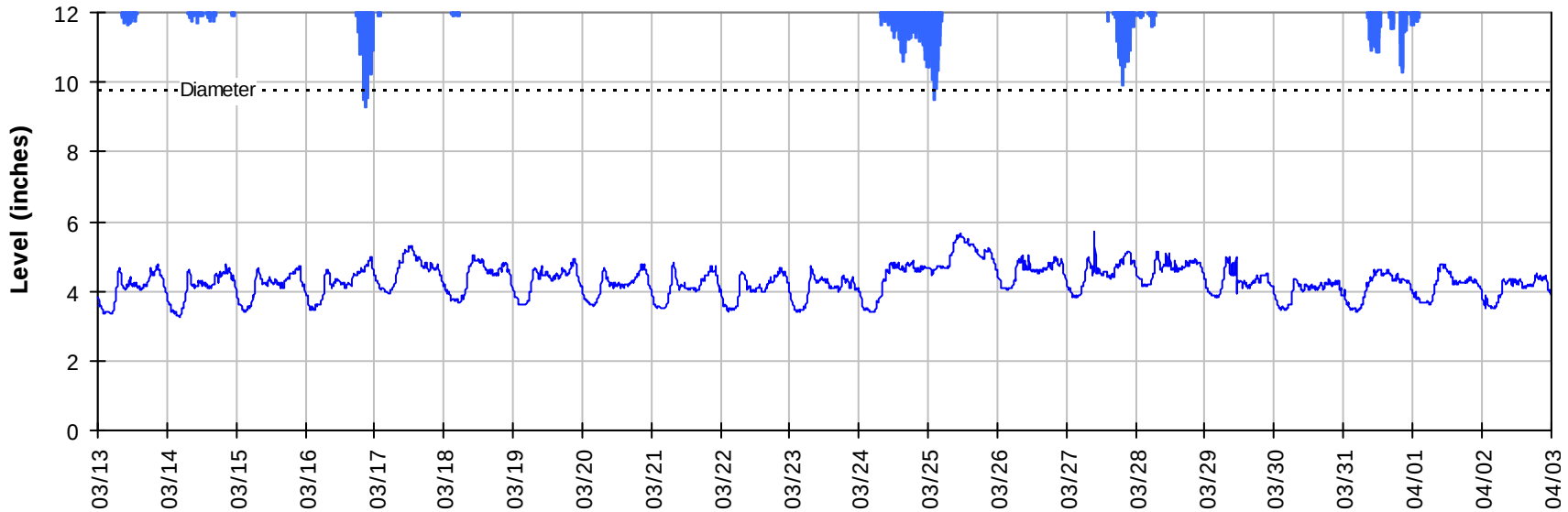
Baseline Flow Hydrographs

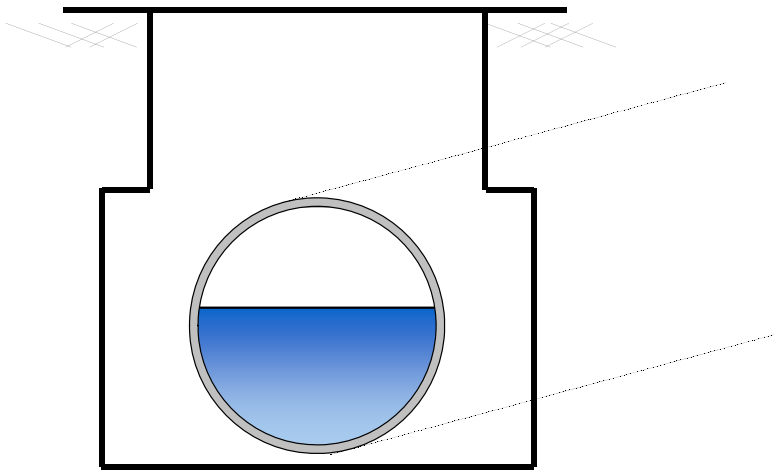


MH K28

Site Capacity and Surcharge Summary

Realtime Flow Levels with Rainfall Data over Monitoring Period

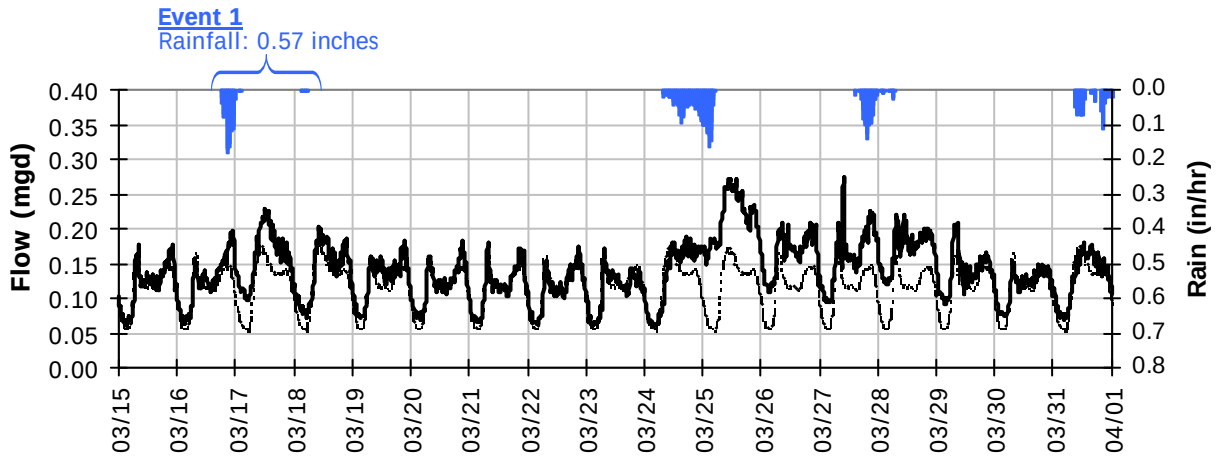




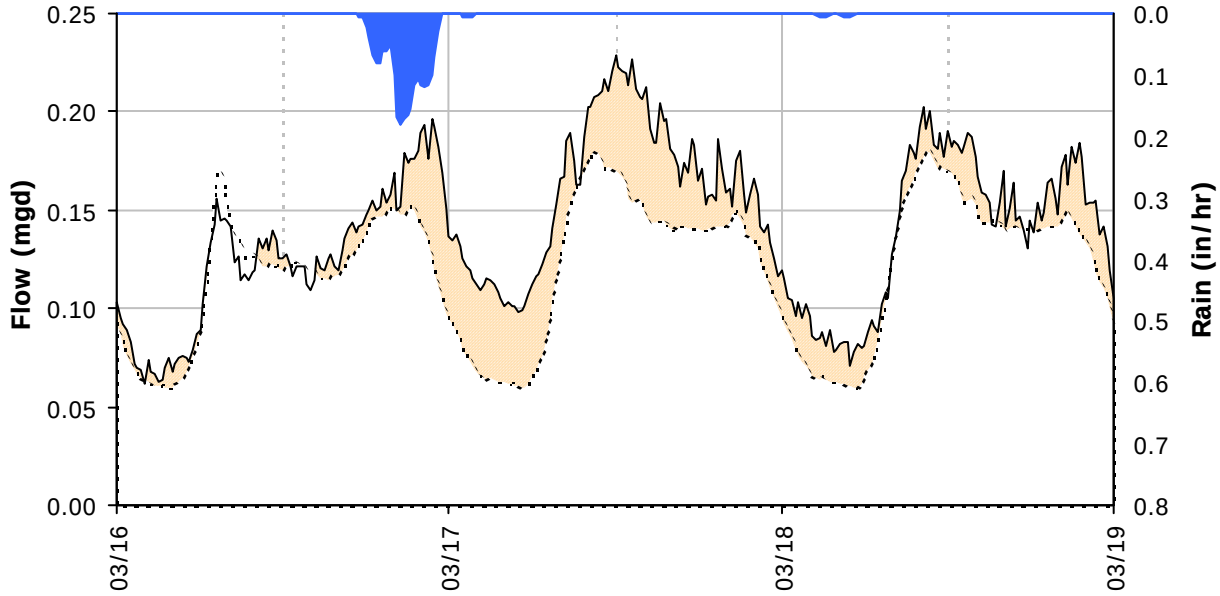
Pipe Diameter:	9.75 *inches*
Peak Measured Level:	5.71 *inches*
Peak d/D Ratio:	0.59

MH K28
I/I Summary: Event 1

Baseline and Realtime Flows with Rainfall Data over Monitoring Period



Event 1 Detail Graph

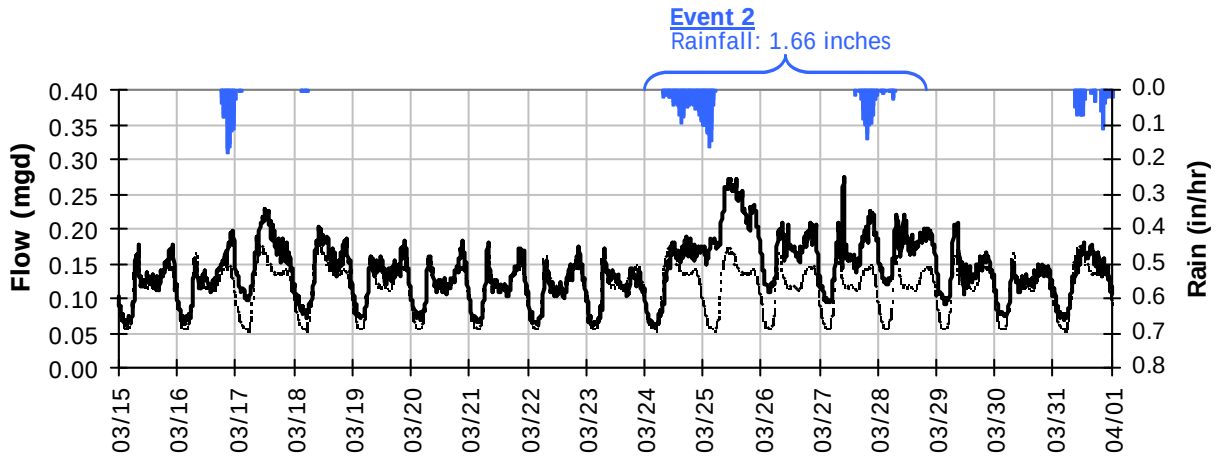


Storm Event I/I Analysis (Rain = 0.57 inches)

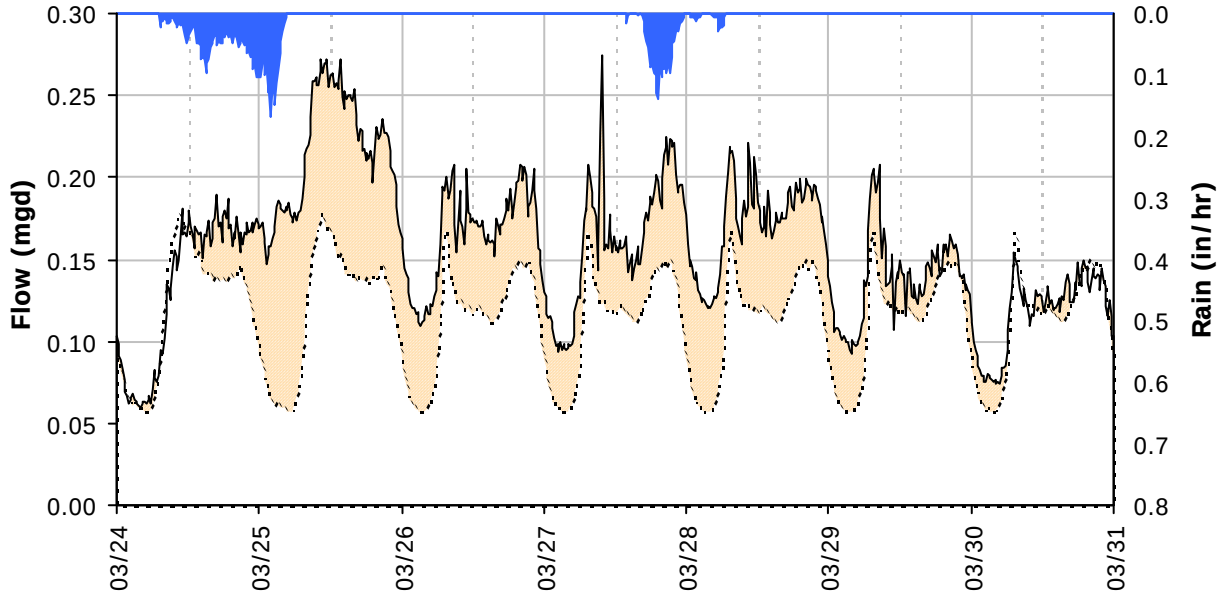
Capacity		Inflow		RDI (infiltration)		Combined I/I	
Peak Flow:	0.23 *mgd*	**Peak I/I Rate:**	0.08 *mgd*	**Infiltration Rate:** (3/18/2012)	0.024 *mgd*	**Total I/I:**	61,000 *gallons*
PF:	2.07	**PkI/I:IDM:**	3,158 *gpd/IDM*	**RDI:IDM:**	950 *gpd/IDM*	**Total I/I:IDM:**	4,226 *gal/IDM/in*
Peak Level:	5.31 *in*	**PkI/I:Acre:**	840 *gpd/acre*	**RDI:Acre:**	253 *gpd/acre*	**R-Value:**	4.1%
d/D Ratio:	0.54	**Pk I/I:ADWF:**	0.73	**RDI (% of BL):**	21%	**Total I/I:ADWF:**	0.97 *per in-rain*

MH K28
I/I Summary: Event 2

Baseline and Realtime Flows with Rainfall Data over Monitoring Period



Event 2 Detail Graph



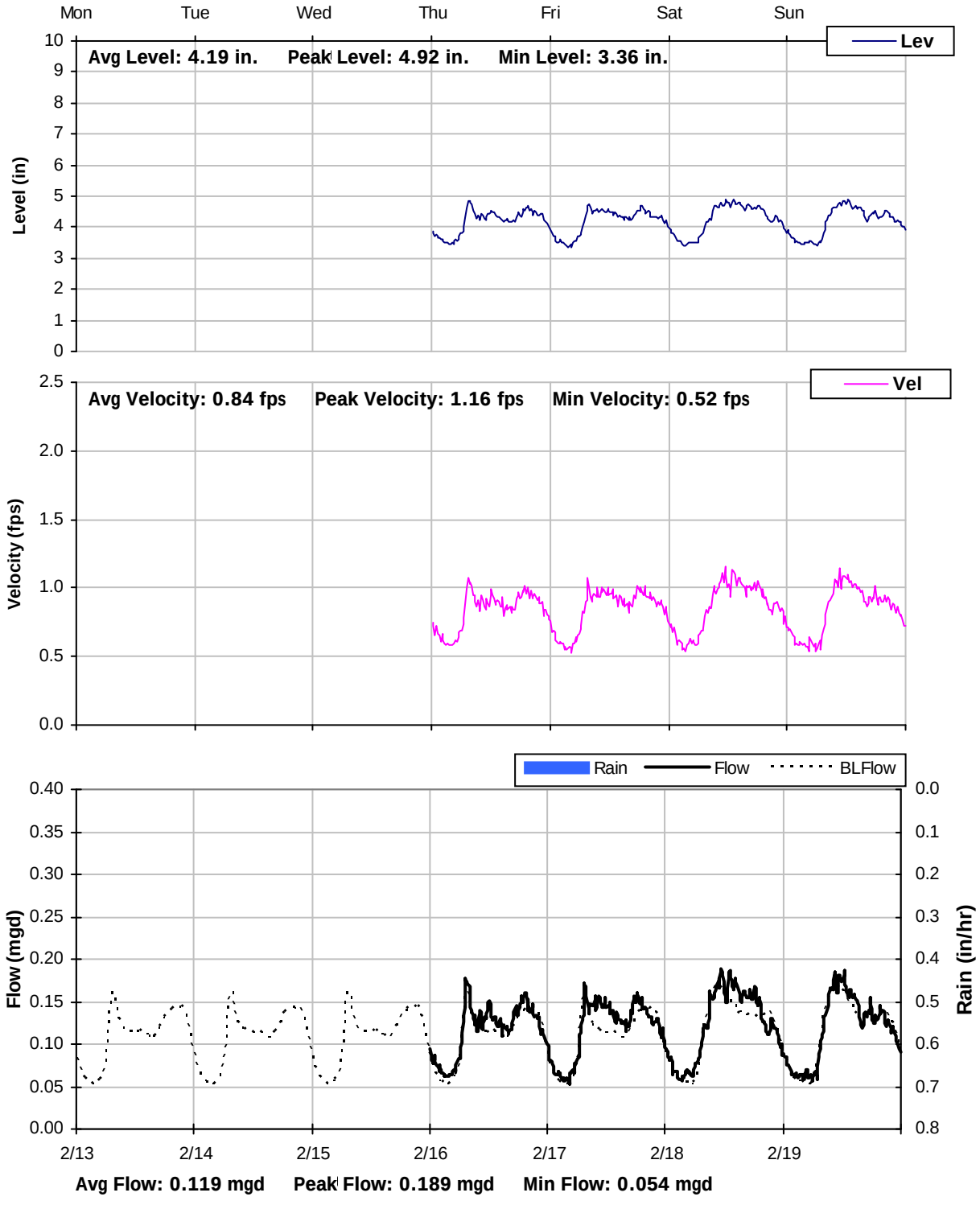
Storm Event I/I Analysis (Rain = 1.66 inches)

Capacity		Inflow		RDI (infiltration)		Combined I/I	
Peak Flow:	0.27 *mgd*	**Peak I/I Rate:**	0.16 *mgd*	**Infiltration Rate:** (3/26/2012)	0.056 *mgd*	**Total I/I:**	302,000 *gallons*
PF:	2.49	**PkI/I:IDM:**	6,135 *gpd/IDM*	**RDI:IDM:**	2,229 *gpd/IDM*	**Total I/I:IDM:**	7,176 *gal/IDM/in*
Peak Level:	5.71 *in*	**PkI/I:Acre:**	1,632 *gpd/acre*	**RDI:Acre:**	593 *gpd/acre*	**R-Value:**	7.0%
d/D Ratio:	0.59	**Pk I/I:ADWF:**	1.41	**RDI (% of BL):**	52%	**Total I/I:ADWF:**	1.65 *per in-rain*

MH K28

Weekly Level, Velocity and Flow Hydrographs

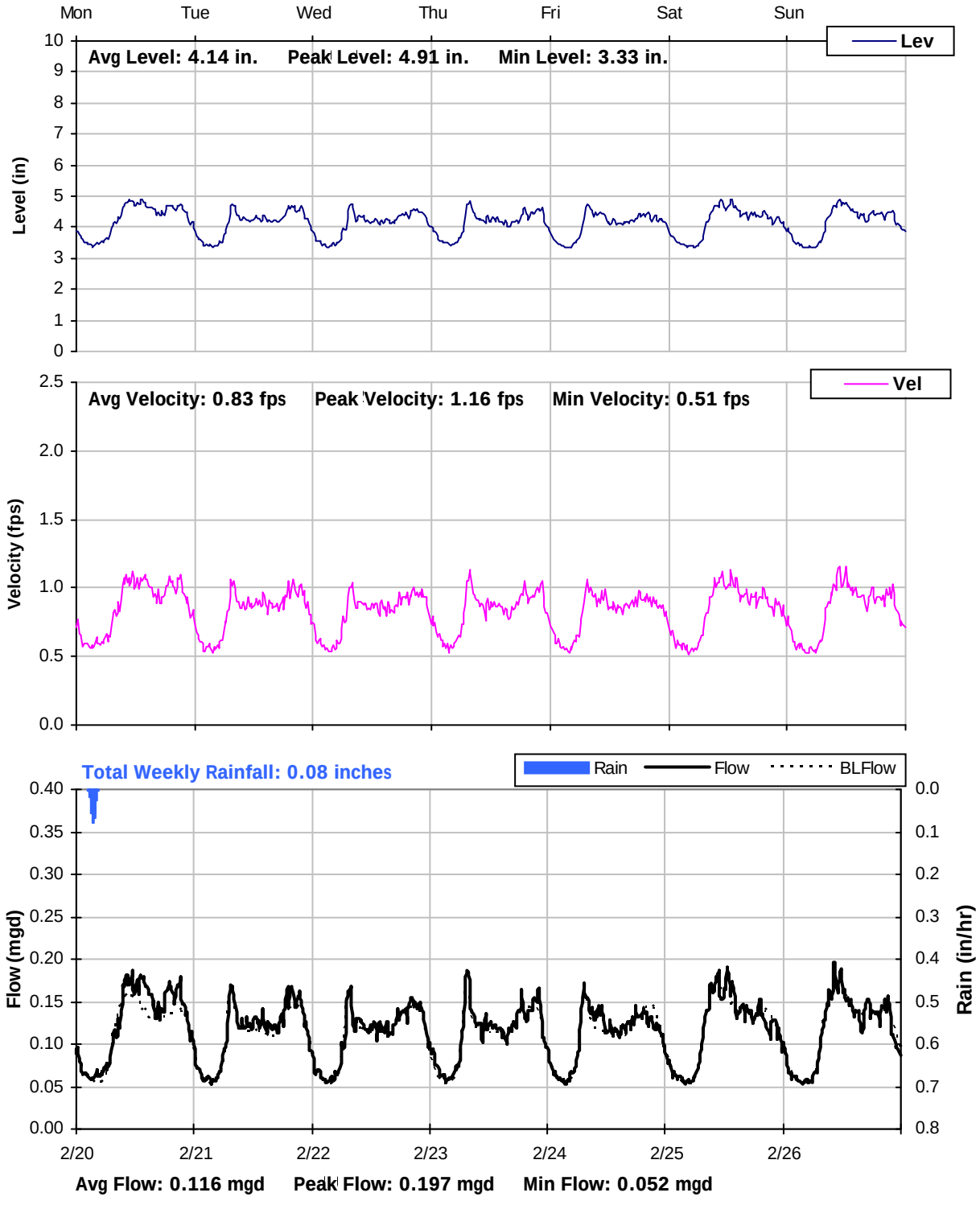
2/13/2012 to 2/20/2012



MH K28

Weekly Level, Velocity and Flow Hydrographs

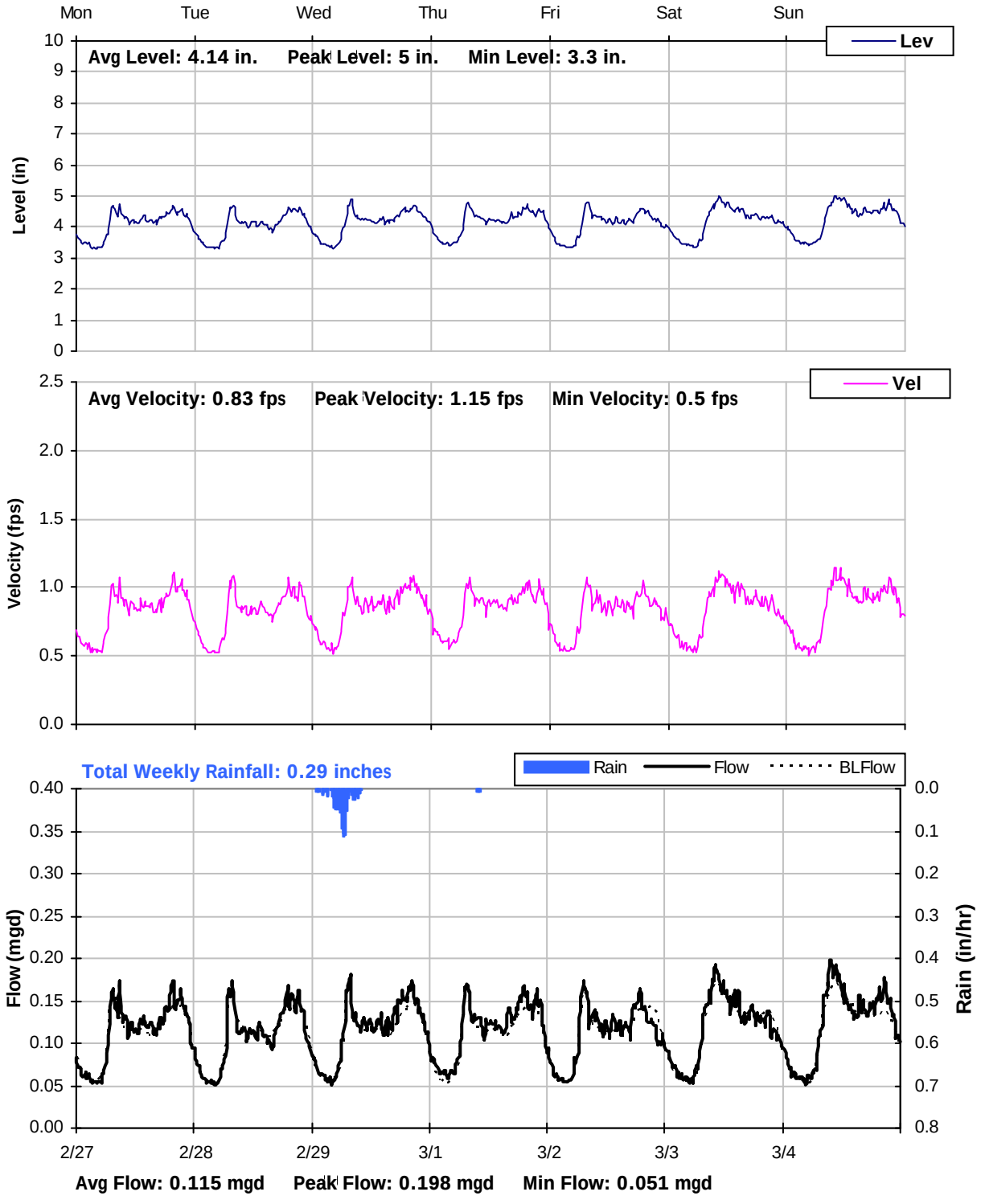
2/20/2012 to 2/27/2012



MH K28

Weekly Level, Velocity and Flow Hydrographs

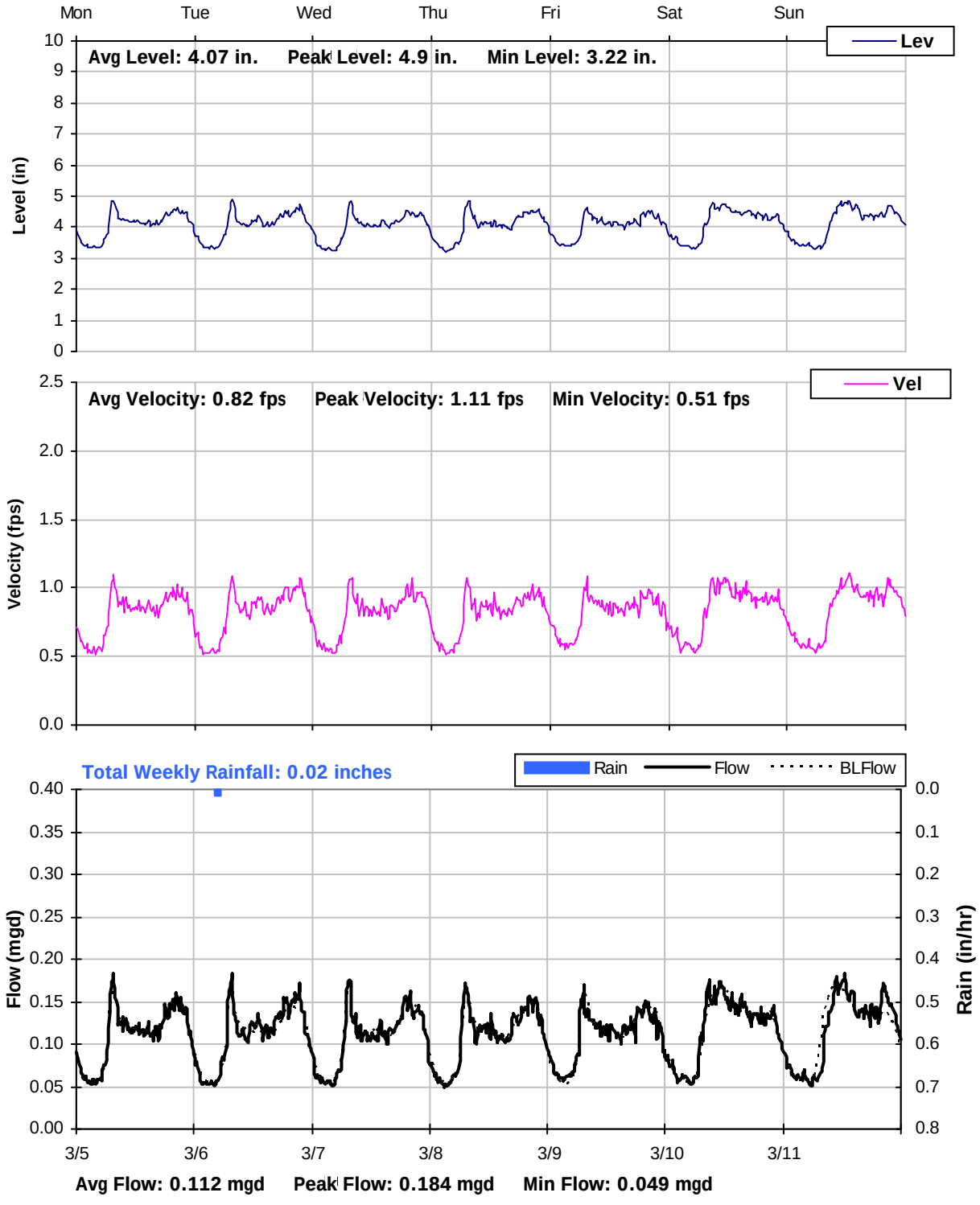
2/27/2012 to 3/5/2012



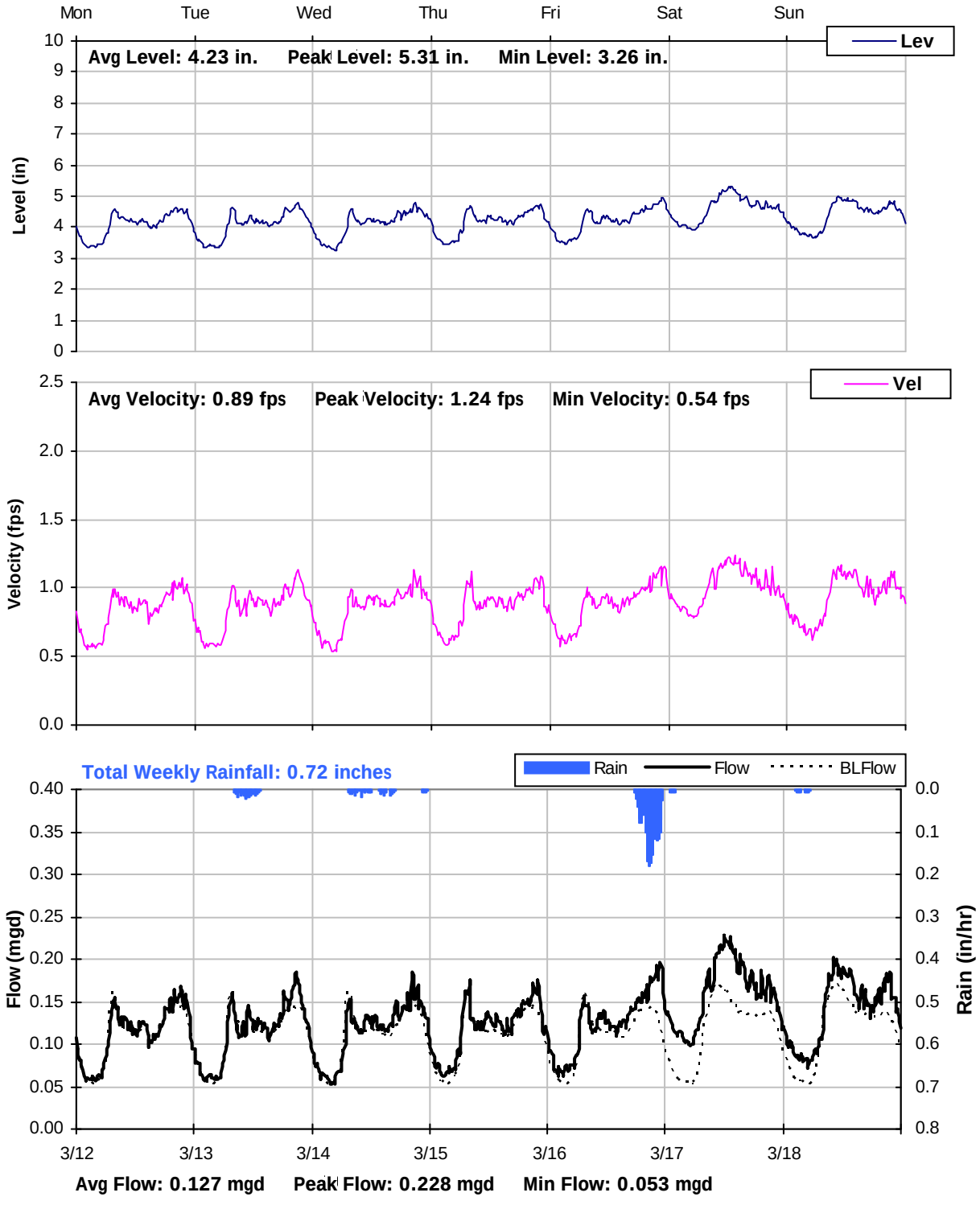
MH K28

Weekly Level, Velocity and Flow Hydrographs

3/5/2012 to 3/12/2012



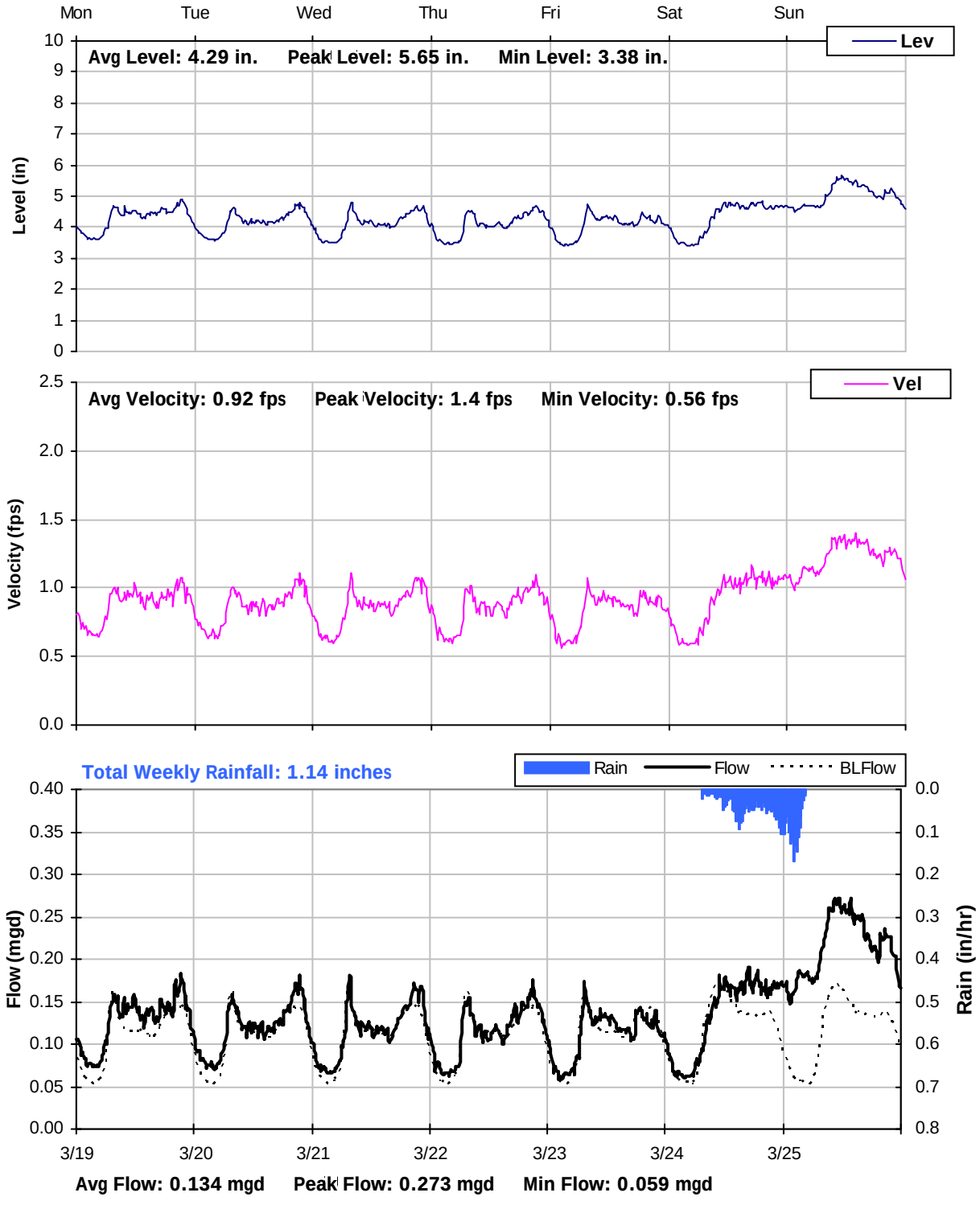
MH K28
Weekly Level, Velocity and Flow Hydrographs
3/12/2012 to 3/19/2012



MH K28

Weekly Level, Velocity and Flow Hydrographs

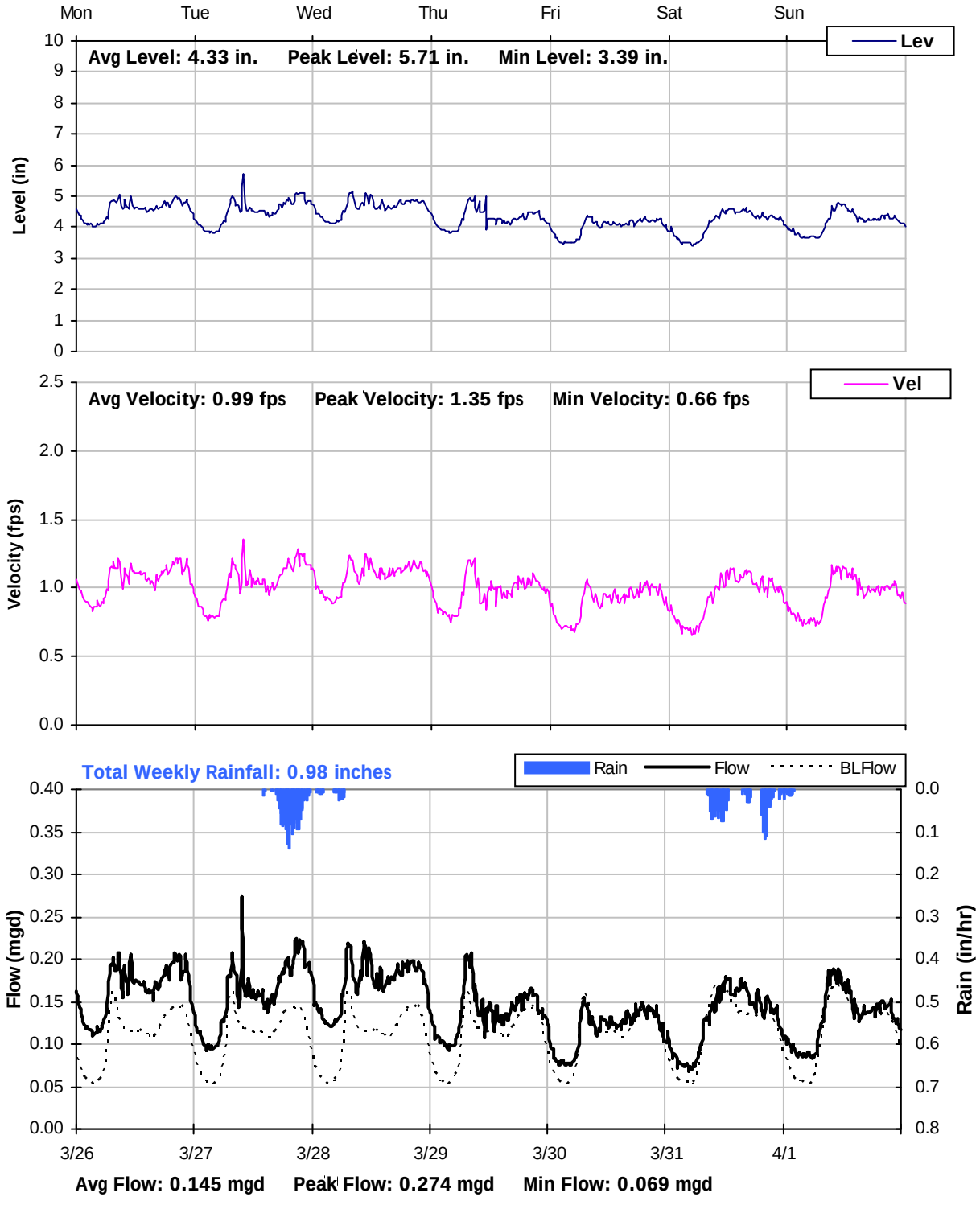
3/19/2012 to 3/26/2012



MH K28

Weekly Level, Velocity and Flow Hydrographs

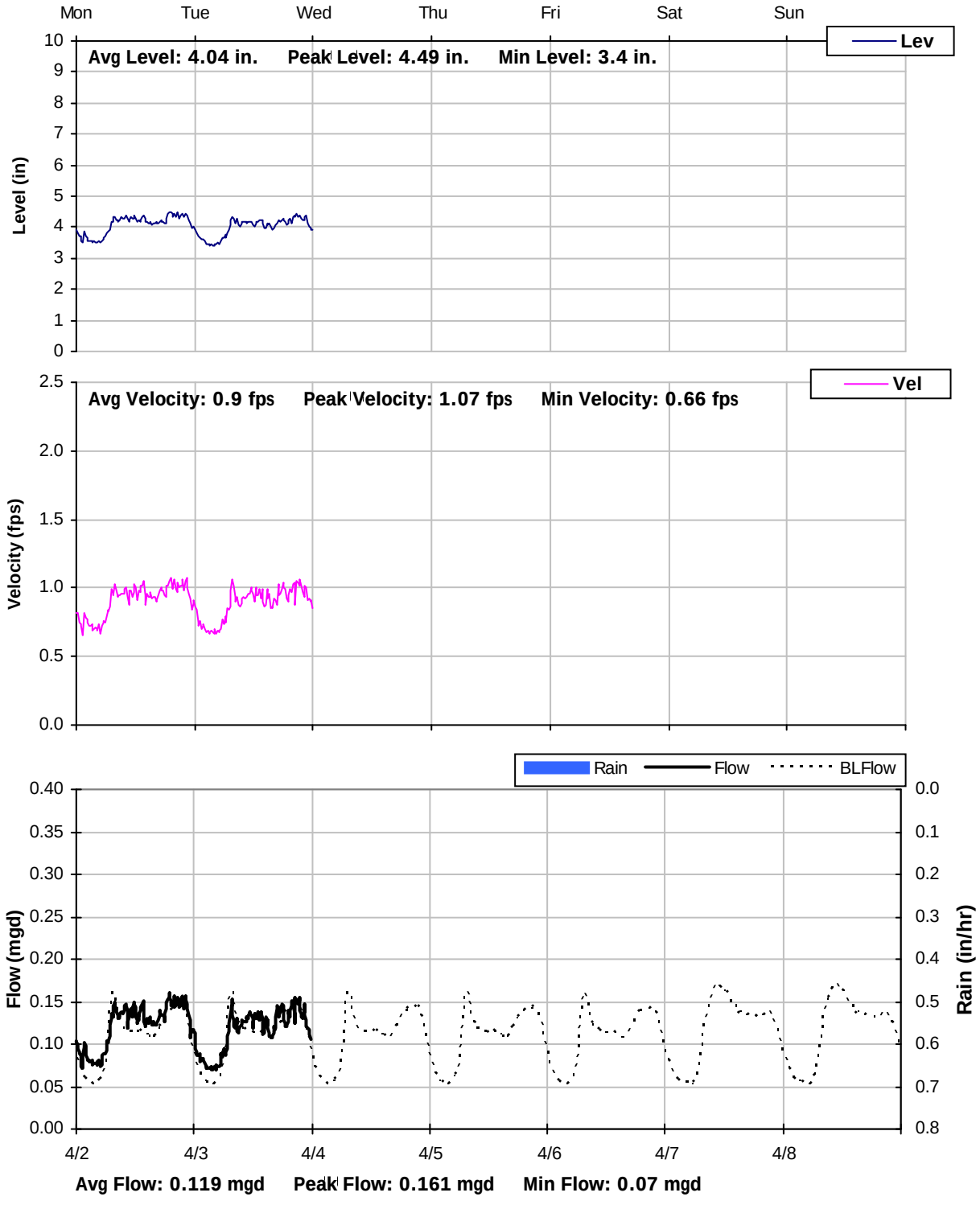
3/26/2012 to 4/2/2012



MH K28

Weekly Level, Velocity and Flow Hydrographs

4/2/2012 to 4/9/2012



East Palo Alto Sanitary District

Sanitary Sewer Flow Monitoring and I/I Study

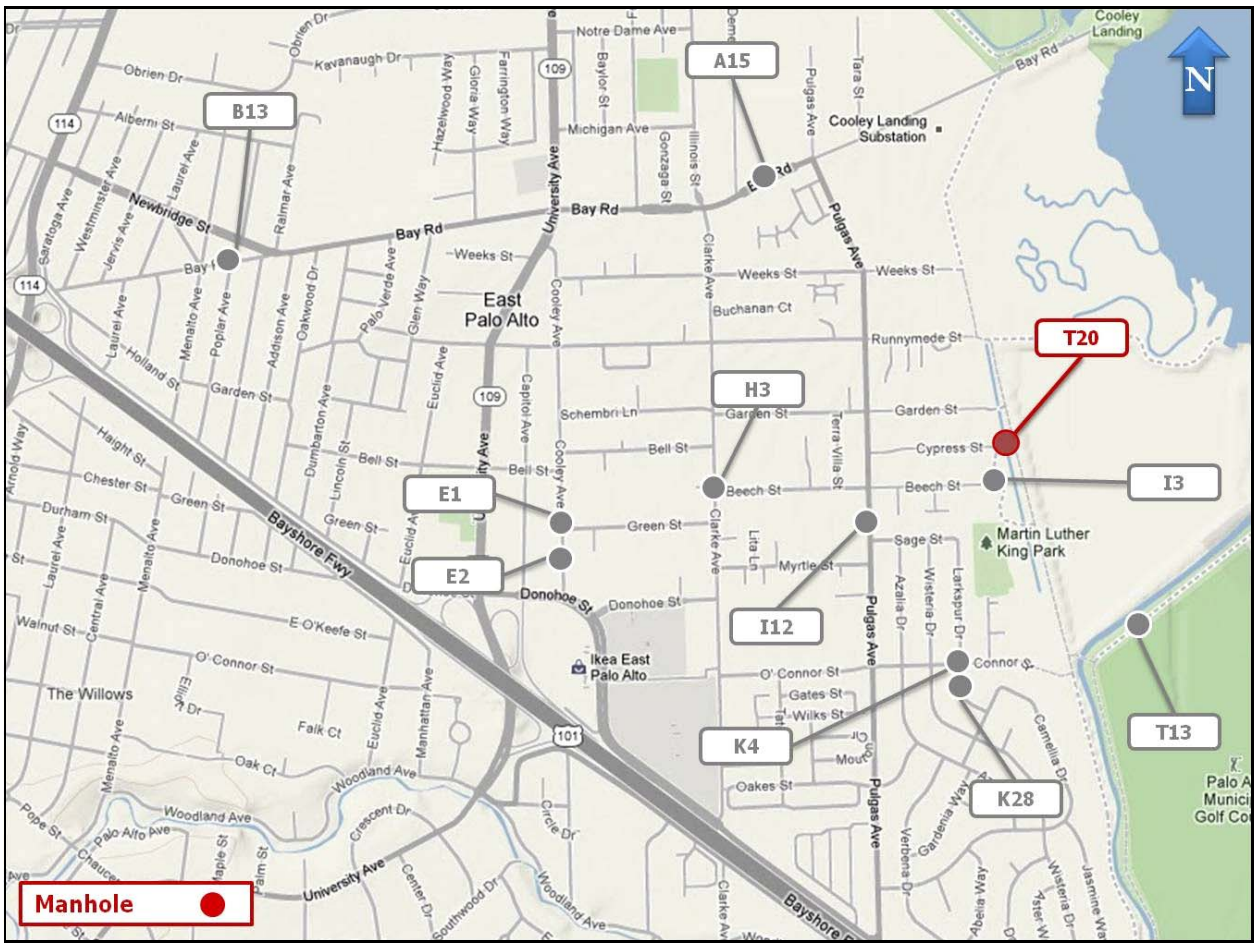
Year 2012

Monitoring Site: MH T20

Location: On the field, at the end of Cypress Street, east of Pulgas Avenue

Data Summary Report

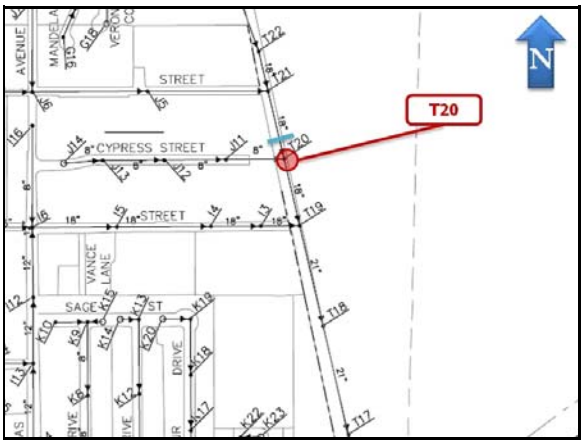
Vicinity Map:



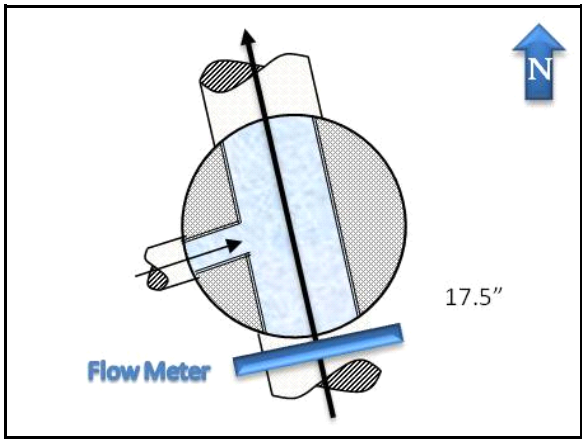
MH T20
Site Information Report

Location:	On the field, at the end of Cypress Street, east of Pulgas Avenue
Coordinates:	122.1260° W, 37.4661° N
Elevation:	5 feet
Diameter:	17.5 inches
Baseline Flow:	0.401 mgd
Peak Measured Flow:	0.763 mgd

Satellite Map



Sanitary Sewer Map



Flow Sketch


View from Street

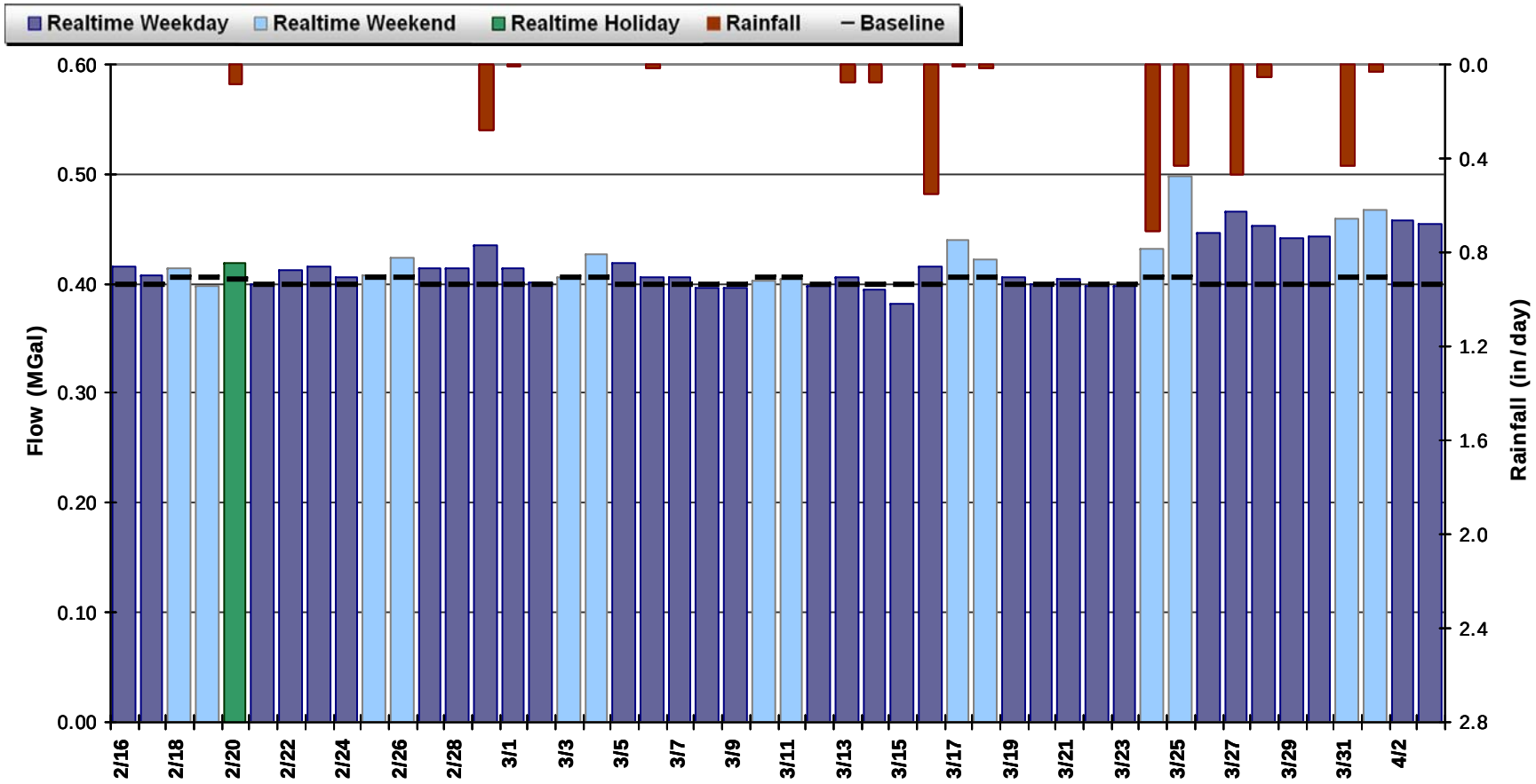

Plan View

MH T20

Period Flow Summary: Daily Flow Totals

Avg Daily Flow: 0.420 MGal **Peak Daily Flow: 0.499 MGal** **Min Daily Flow: 0.382 MGal**

Total Period Rainfall: 3.24 inches

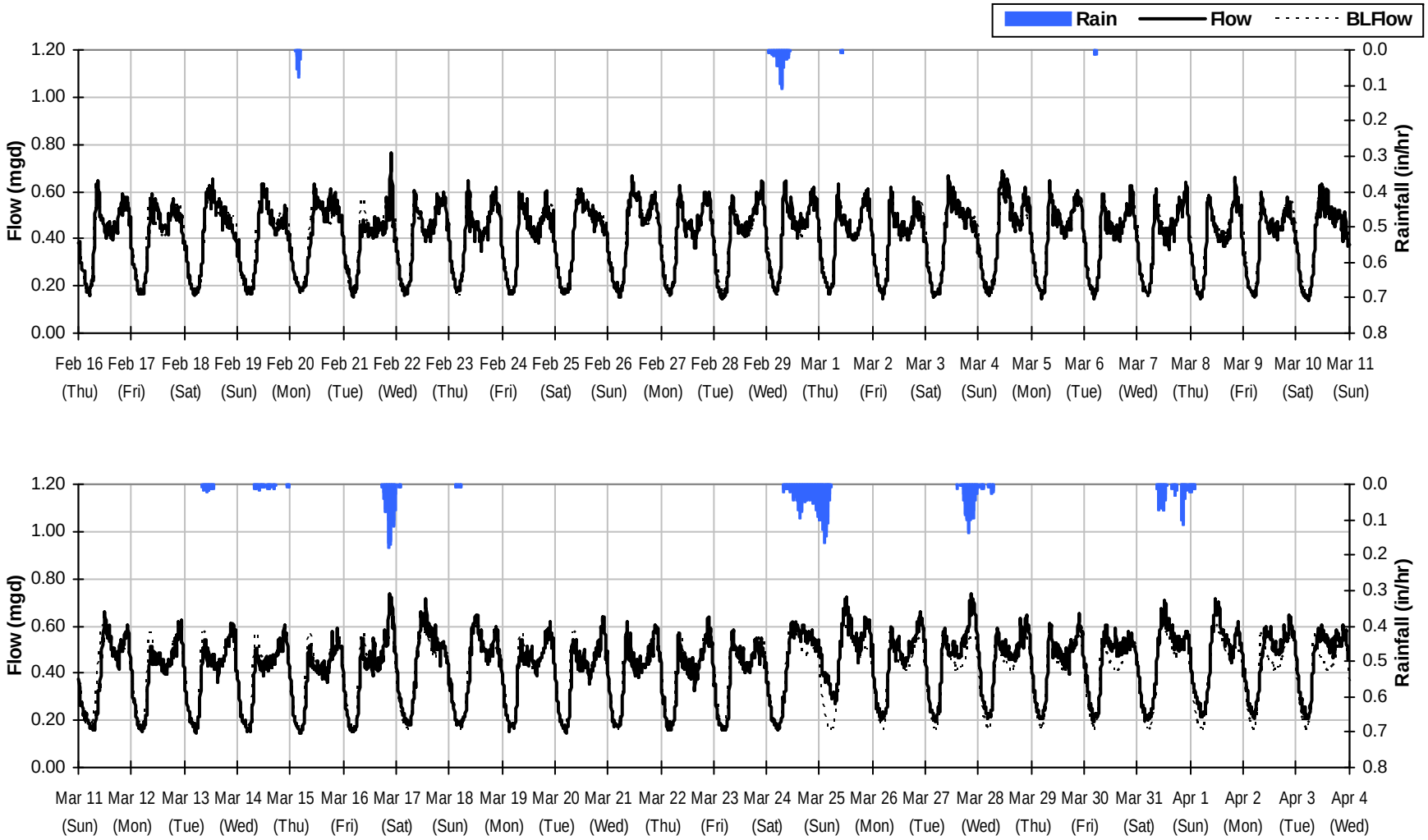


MH T20

Period Flow Summary: February 16 to April 4, 2012

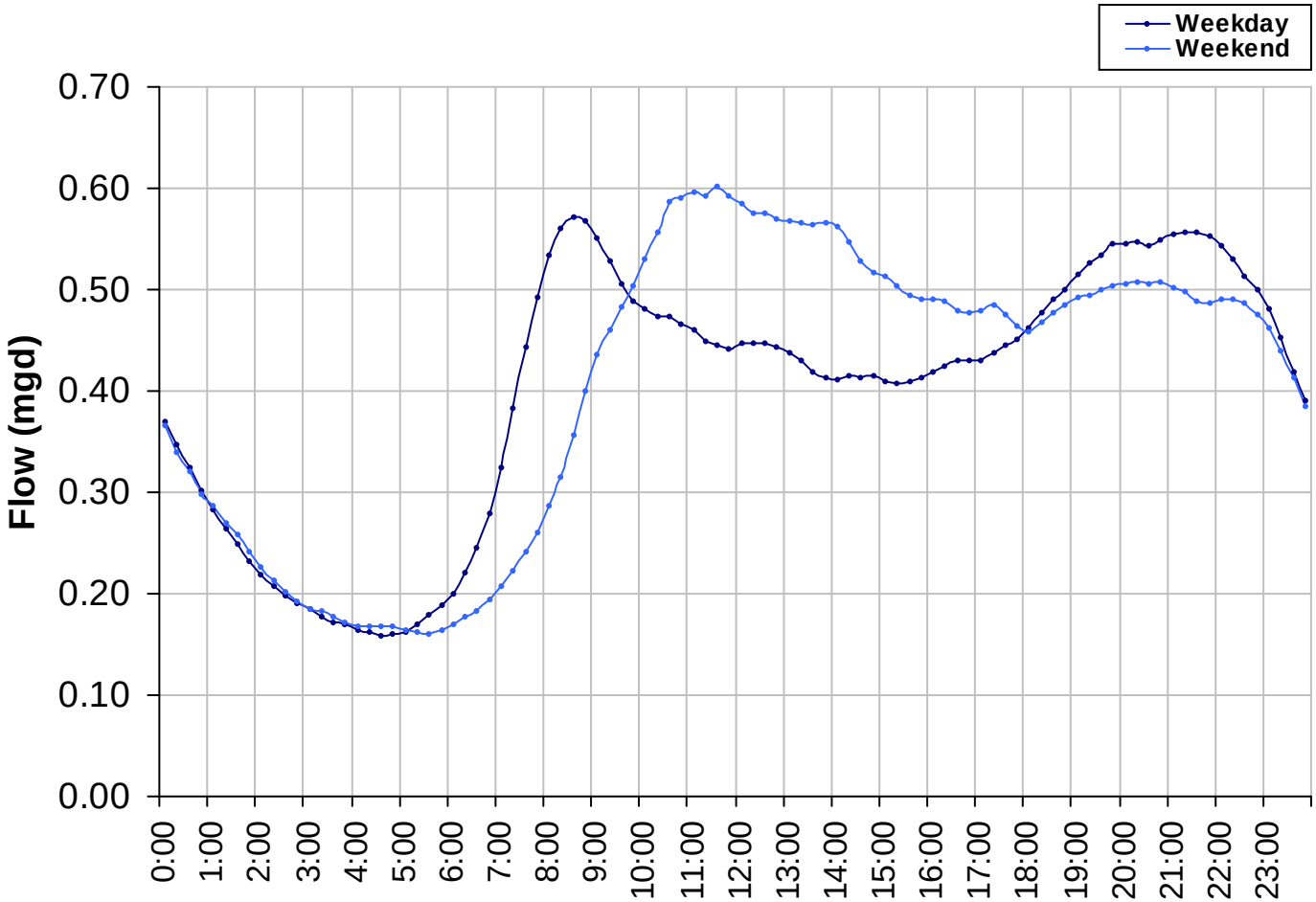
Avg Flow: 0.420 mgd Peak Flow: 0.763 mgd Min Flow: 0.140 mgd

Total Period Rainfall: 3.24 inches



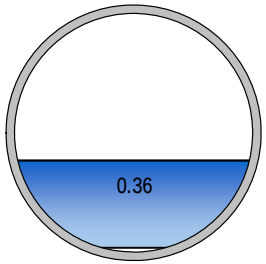
MH T20

Baseline Flow Hydrographs



Baseline Flow:

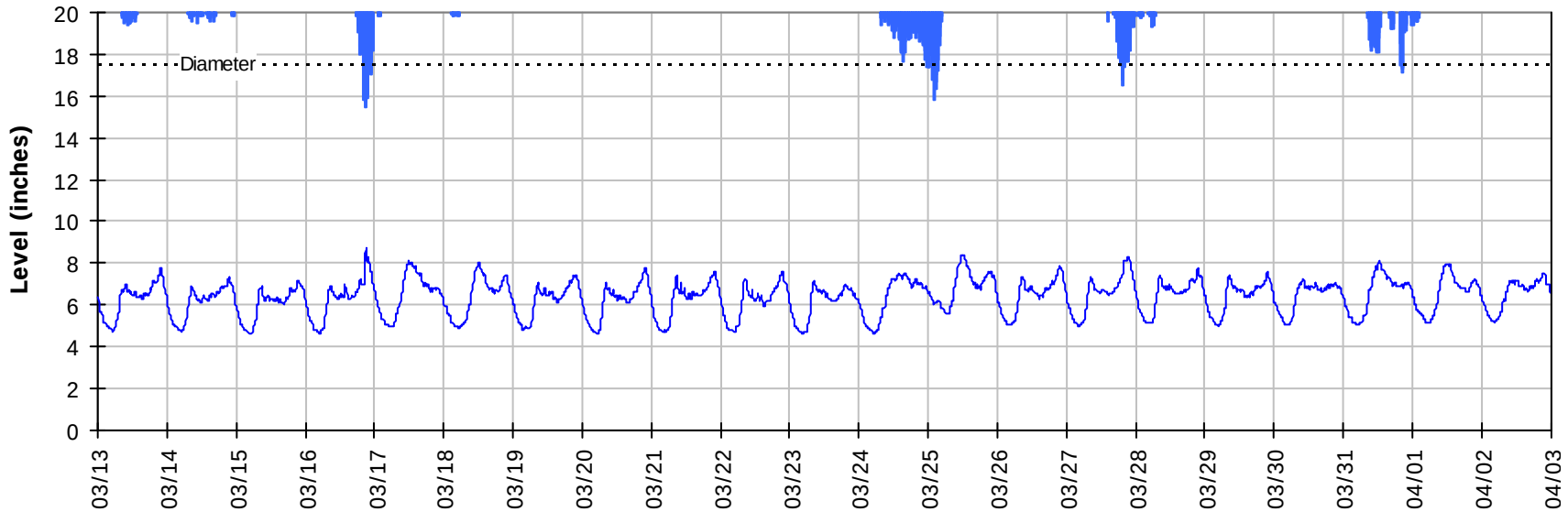
0.401 *mgd*

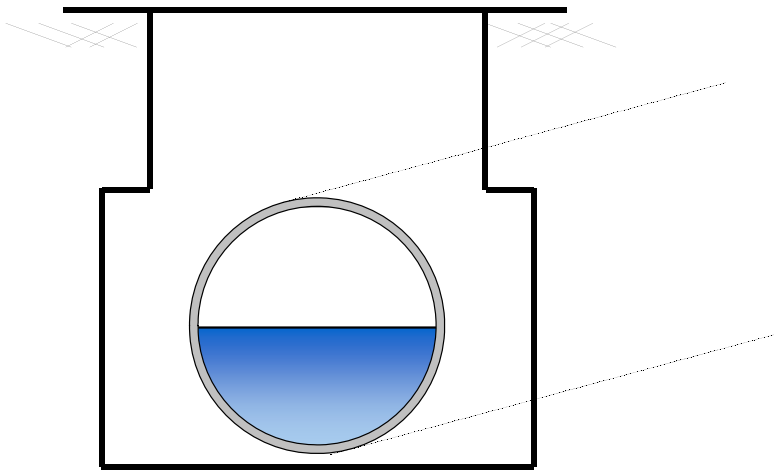


MH T20

Site Capacity and Surcharge Summary

Realtime Flow Levels with Rainfall Data over Monitoring Period

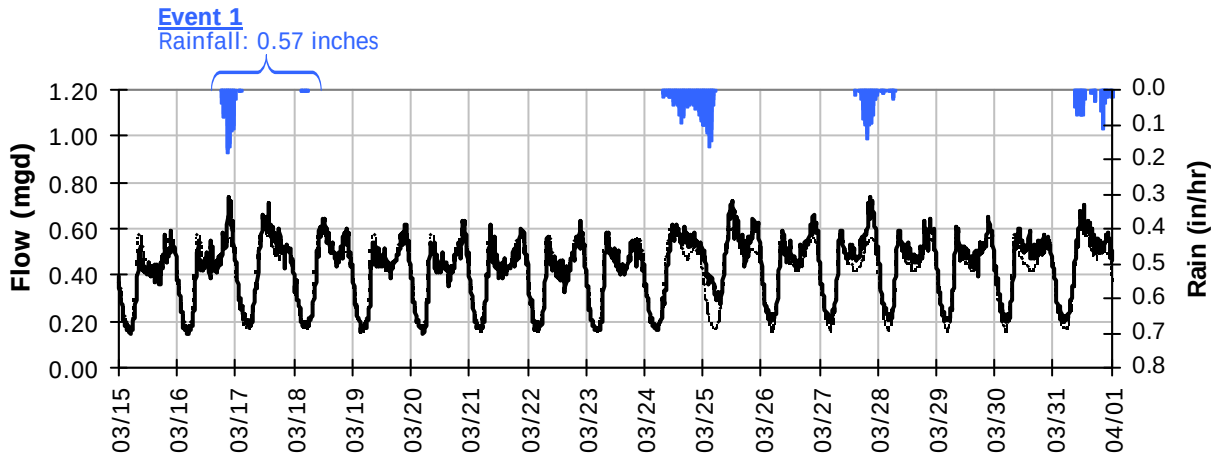




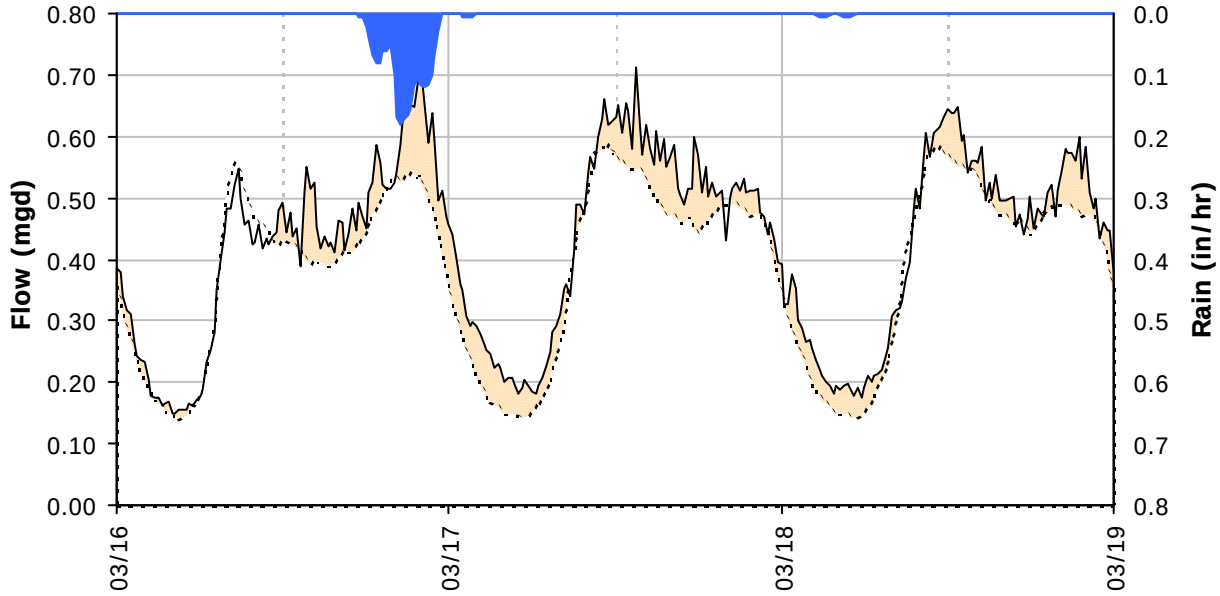
Pipe Diameter:	17.5	*inches*
Peak Measured Level:	8.7	*inches*
Peak d/D Ratio:	0.50	

MH T20
I/I Summary: Event 1

Baseline and Realtime Flows with Rainfall Data over Monitoring Period



Event 1 Detail Graph

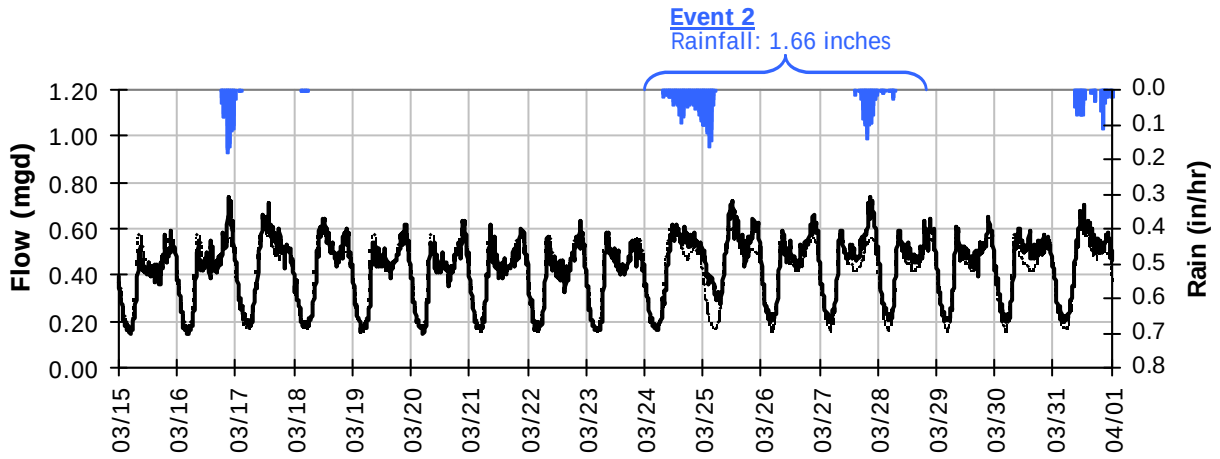


Storm Event I/I Analysis (Rain = 0.57 inches)

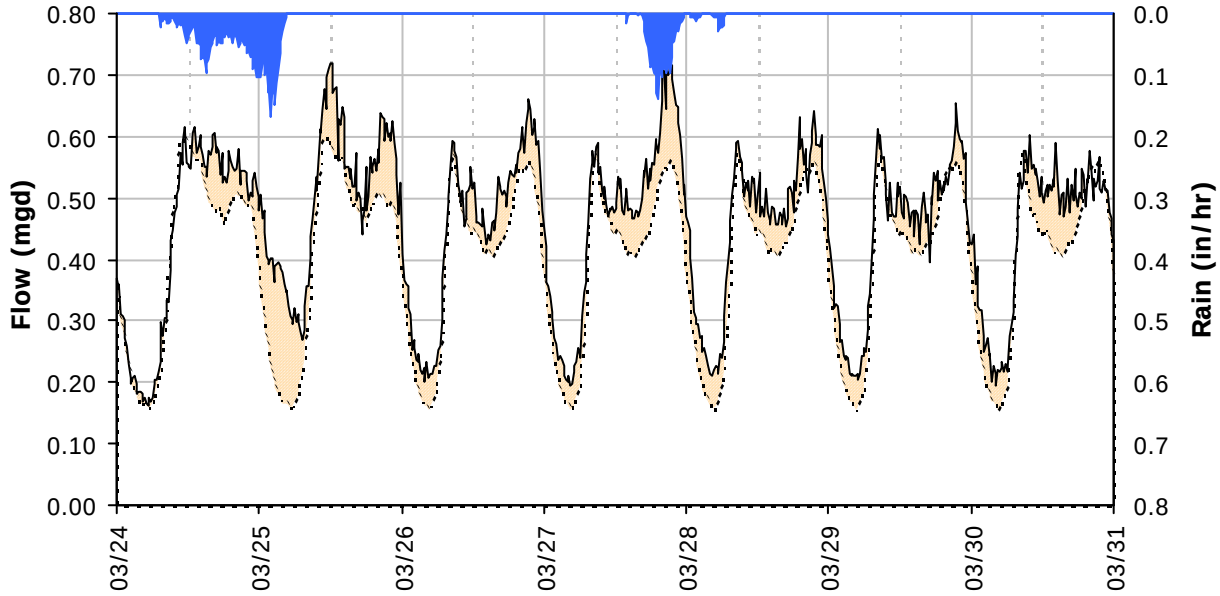
Capacity		Inflow		RDI (infiltration)		Combined I/I	
Peak Flow:	0.74 *mgd*	**Peak I/I Rate:**	0.18 *mgd*	**Infiltration Rate:** (3/18/2012)	0.017 *mgd*	**Total I/I:**	109,000 *gallons*
PF:	1.84	**PkI/I:IDM:**	2,074 *gpd/IDM*	**RDI:IDM:**	192 *gpd/IDM*	**Total I/I:IDM:**	2,177 *gal/IDM/in*
Peak Level:	8.70 *in*	**PkI/I:Acre:**	485 *gpd/acre*	**RDI:Acre:**	45 *gpd/acre*	**R-Value:**	1.9%
d/D Ratio:	0.50	**Pk I/I:ADWF:**	0.45	**RDI (% of BL):**	4%	**Total I/I:ADWF:**	0.48 *per in-rain*

MH T20
I/I Summary: Event 2

Baseline and Realtime Flows with Rainfall Data over Monitoring Period



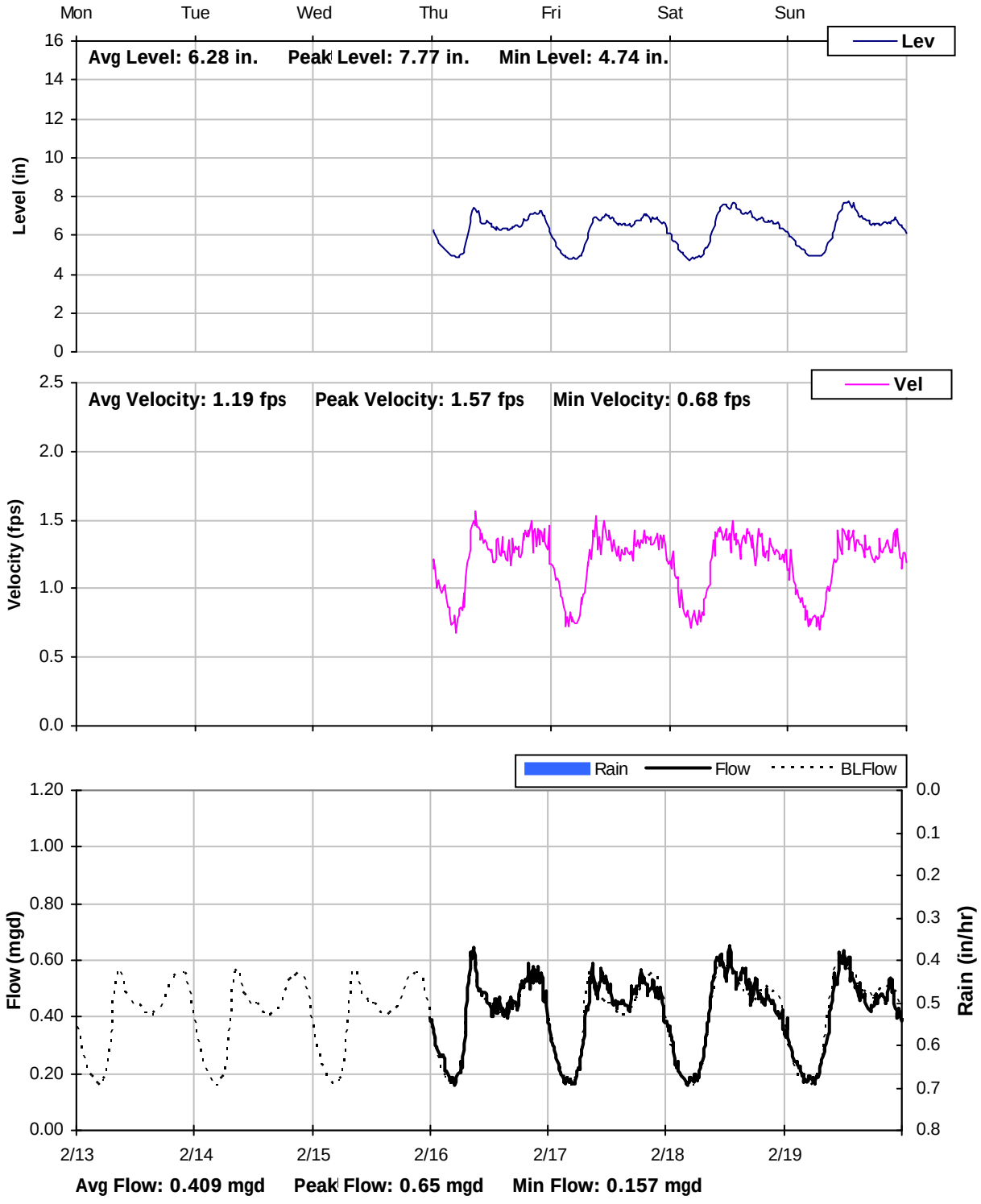
Event 2 Detail Graph



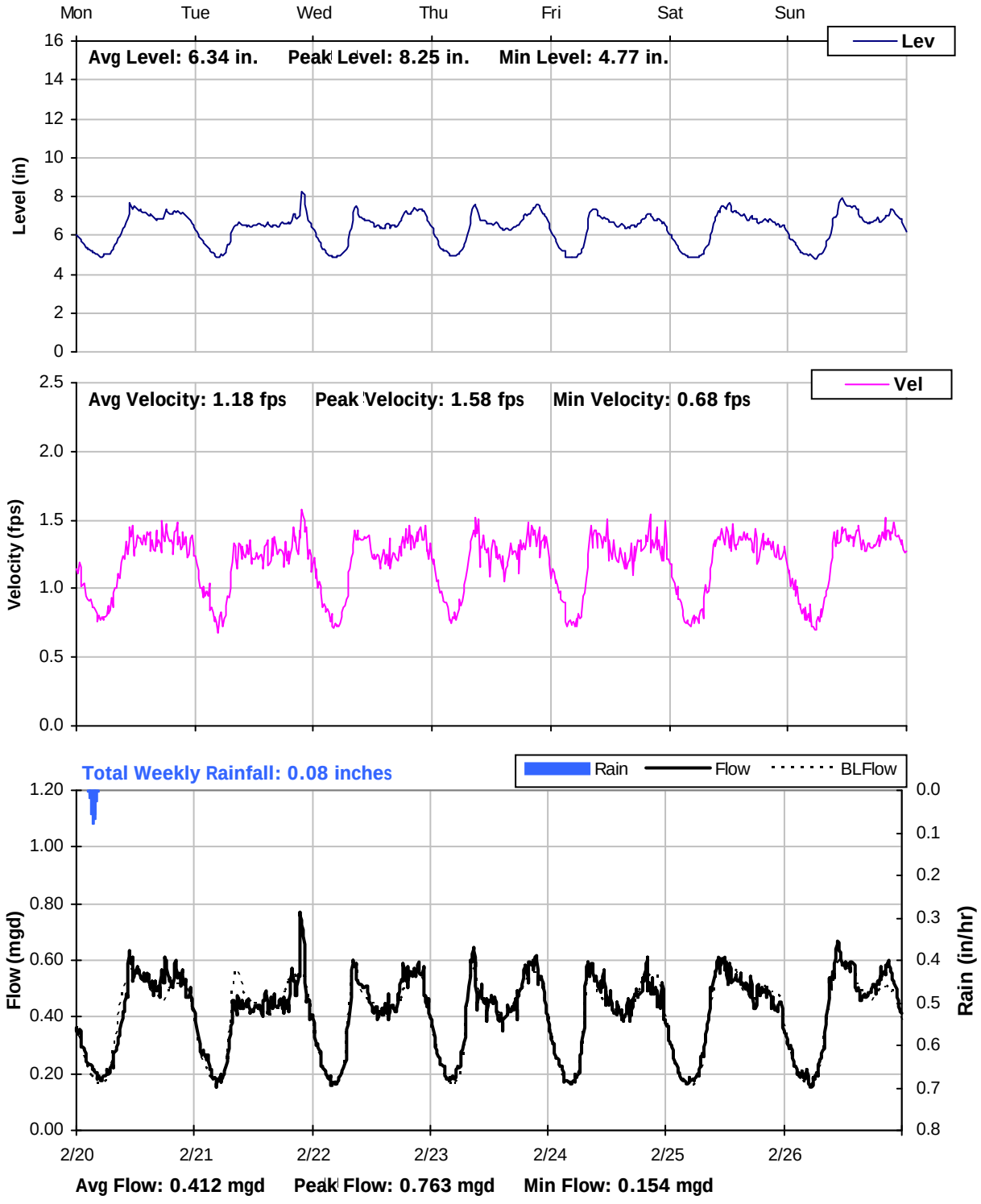
Storm Event I/I Analysis (Rain = 1.66 inches)

Capacity		Inflow		RDI (infiltration)		Combined I/I	
Peak Flow:	0.73 *mgd*	**Peak I/I Rate:**	0.22 *mgd*	**Infiltration Rate:** (3/26/2012)	0.048 *mgd*	**Total I/I:**	383,000 *gallons*
PF:	1.83	**PkI/I:IDM:**	2,455 *gpd/IDM*	**RDI:IDM:**	543 *gpd/IDM*	**Total I/I:IDM:**	2,624 *gal/IDM/in*
Peak Level:	8.42 *in*	**PkI/I:Acre:**	574 *gpd/acre*	**RDI:Acre:**	127 *gpd/acre*	**R-Value:**	2.3%
d/D Ratio:	0.48	**Pk I/I:ADWF:**	0.54	**RDI (% of BL):**	12%	**Total I/I:ADWF:**	0.57 *per in-rain*

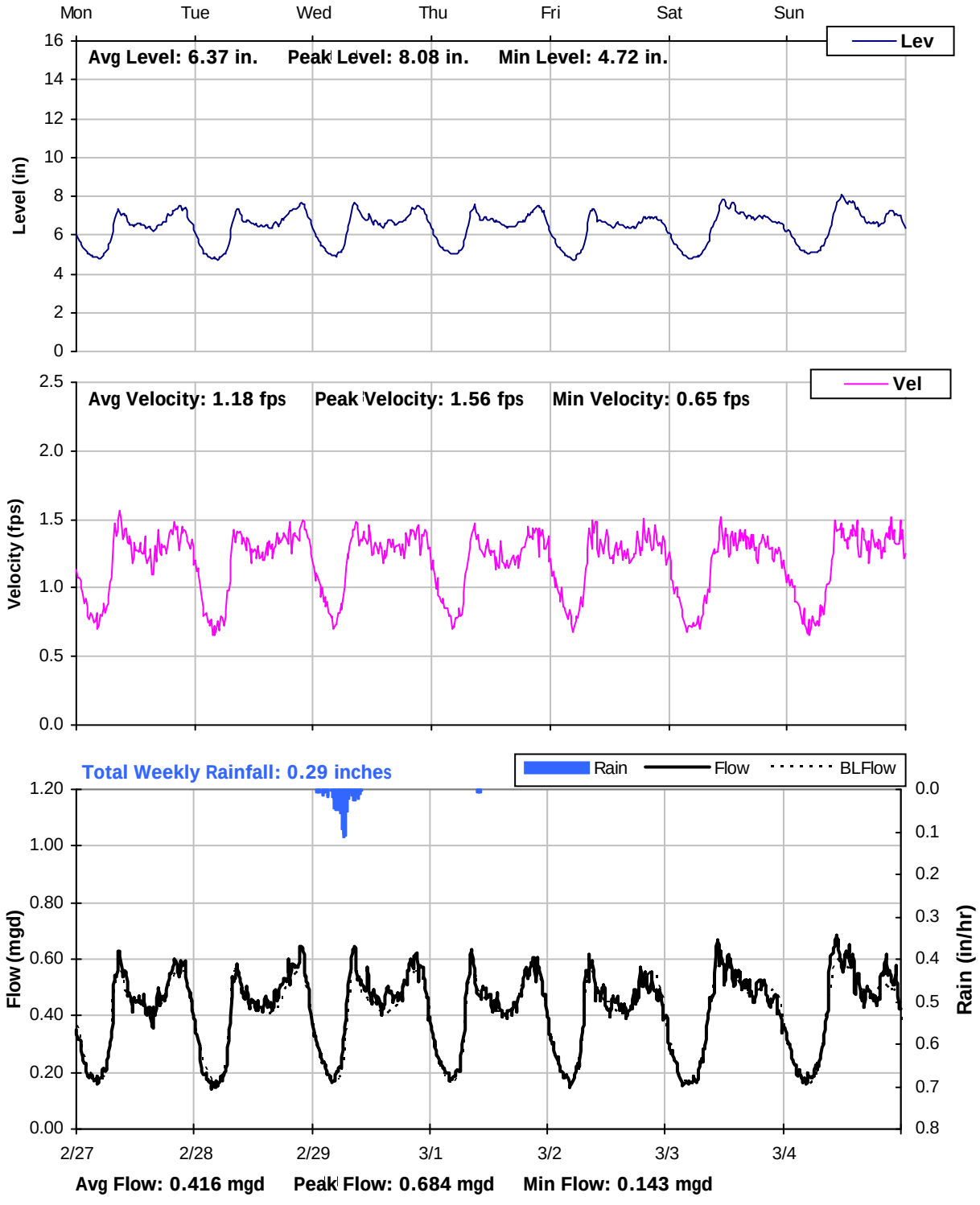
MH T20
Weekly Level, Velocity and Flow Hydrographs
2/13/2012 to 2/20/2012



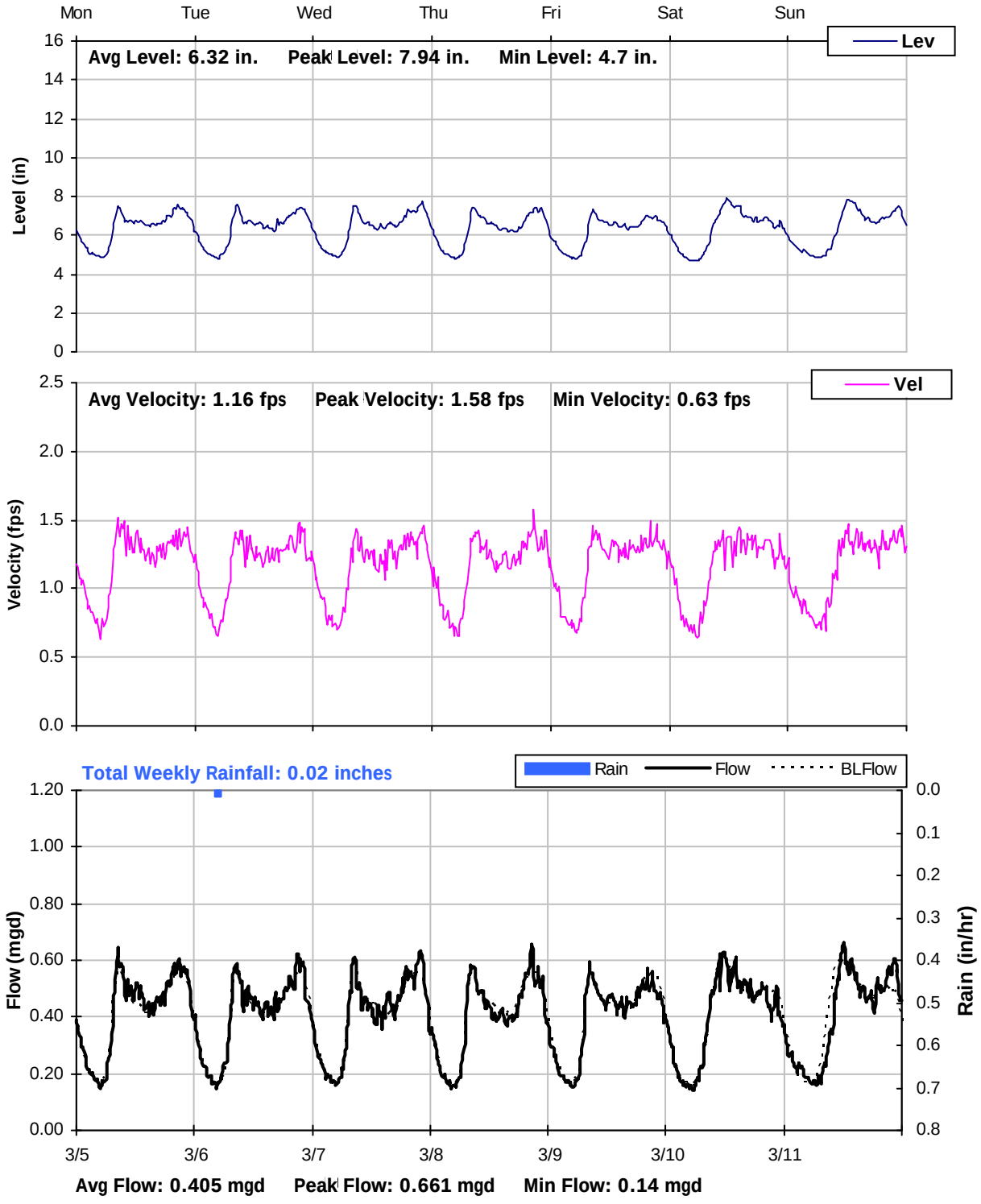
MH T20
Weekly Level, Velocity and Flow Hydrographs
2/20/2012 to 2/27/2012



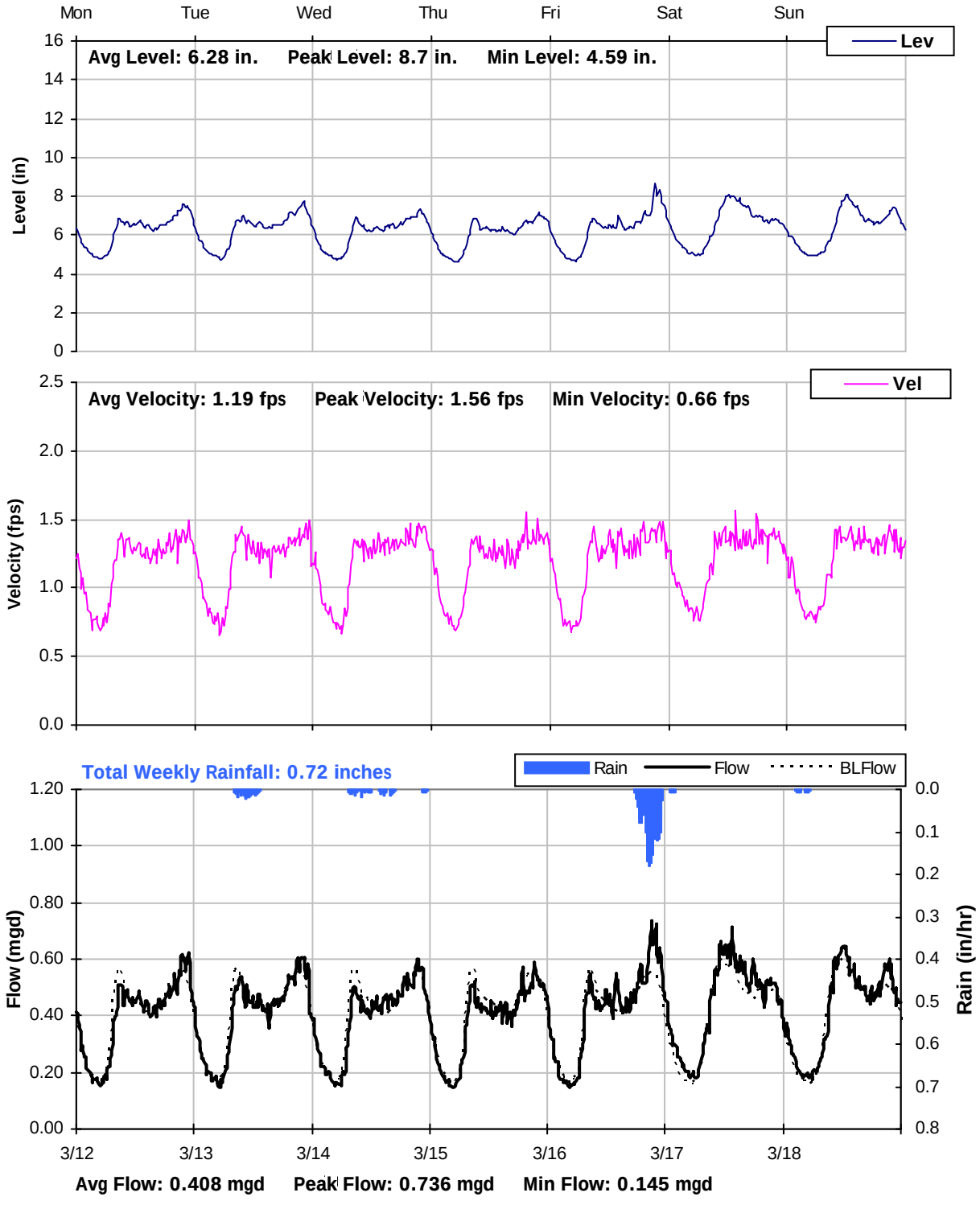
MH T20
Weekly Level, Velocity and Flow Hydrographs
2/27/2012 to 3/5/2012



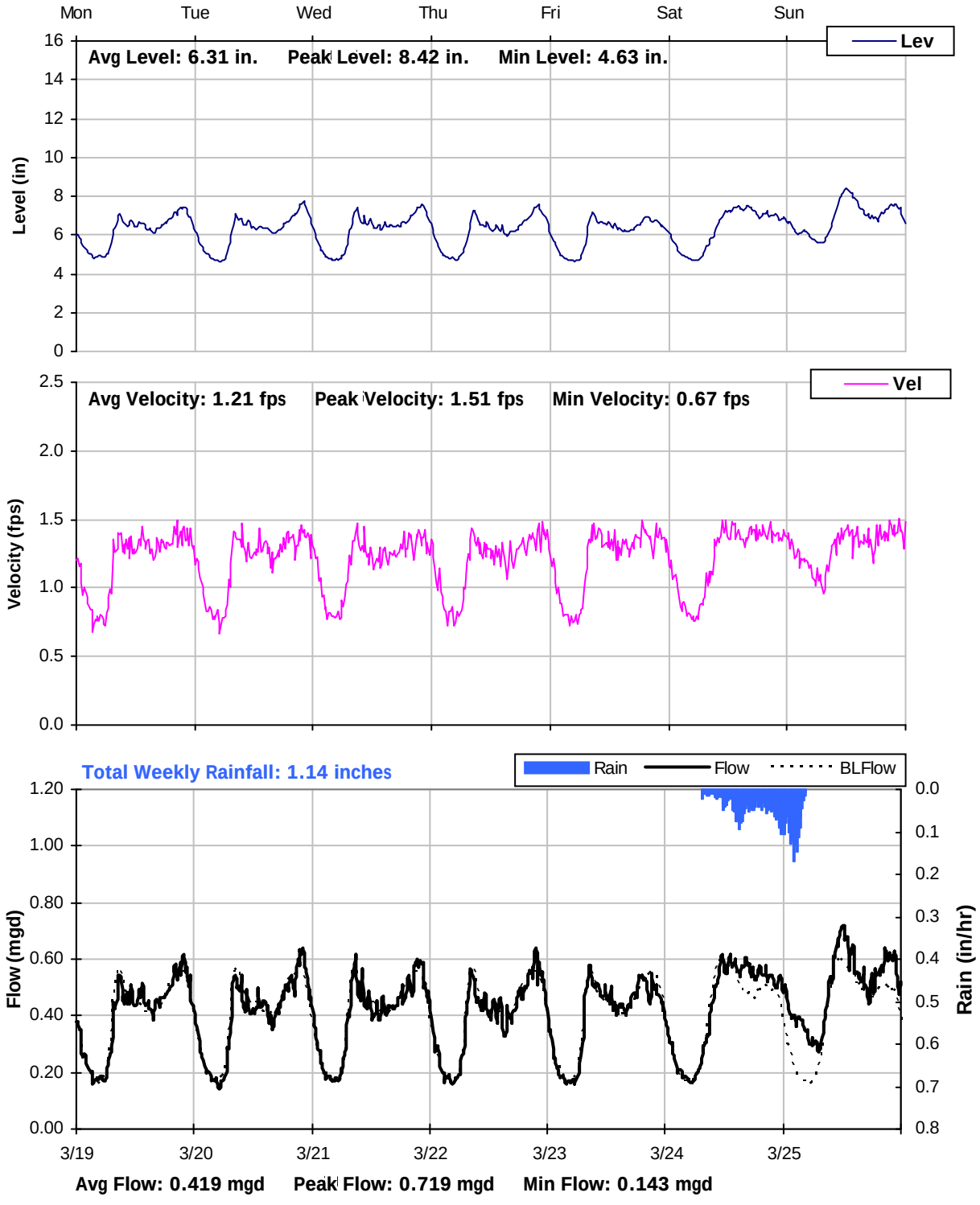
MH T20
Weekly Level, Velocity and Flow Hydrographs
3/5/2012 to 3/12/2012



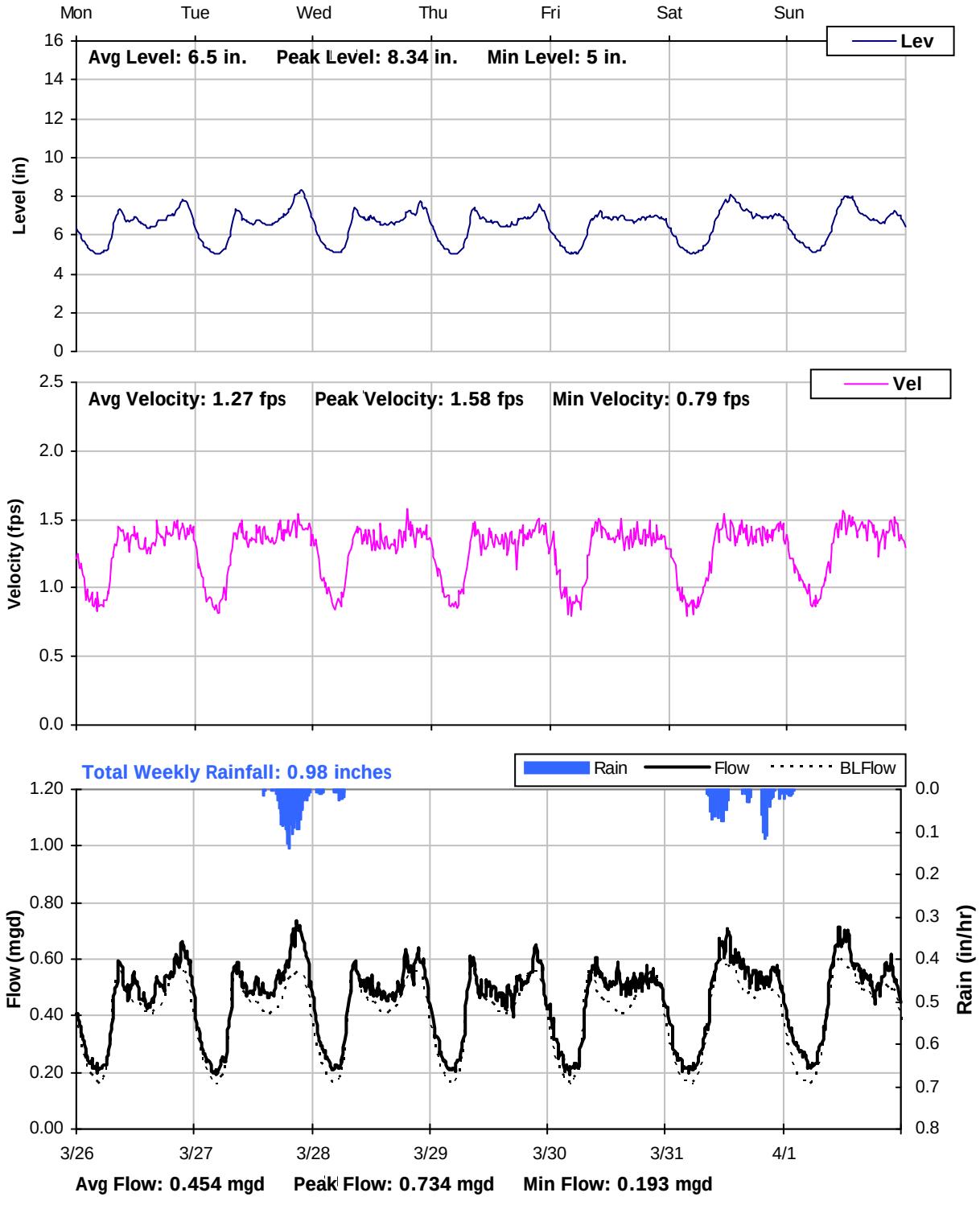
MH T20
Weekly Level, Velocity and Flow Hydrographs
3/12/2012 to 3/19/2012



MH T20
Weekly Level, Velocity and Flow Hydrographs
3/19/2012 to 3/26/2012



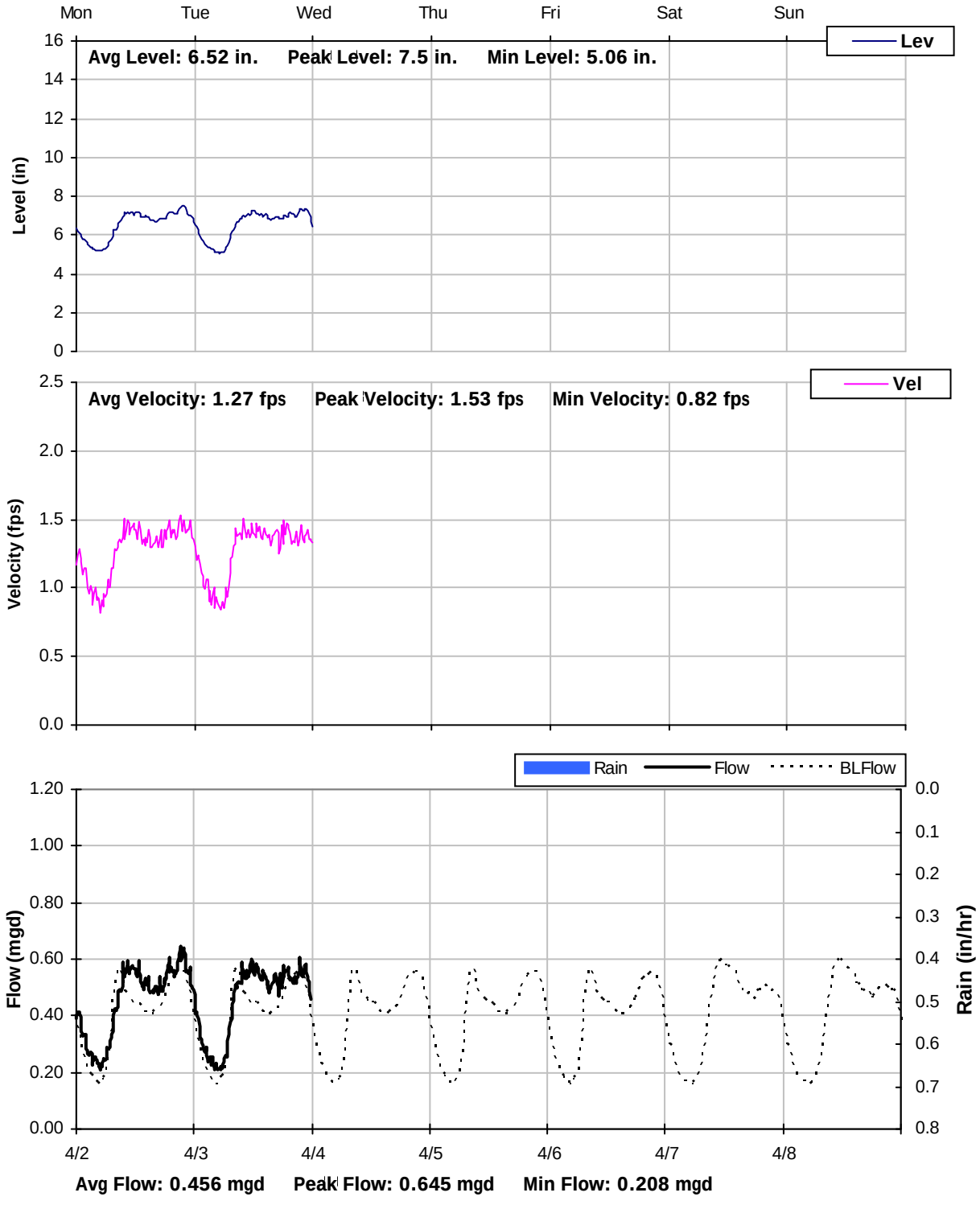
MH T20
Weekly Level, Velocity and Flow Hydrographs
3/26/2012 to 4/2/2012



MH T20

Weekly Level, Velocity and Flow Hydrographs

4/2/2012 to 4/9/2012



East Palo Alto Sanitary District

Sanitary Sewer Flow Monitoring and I/I Study

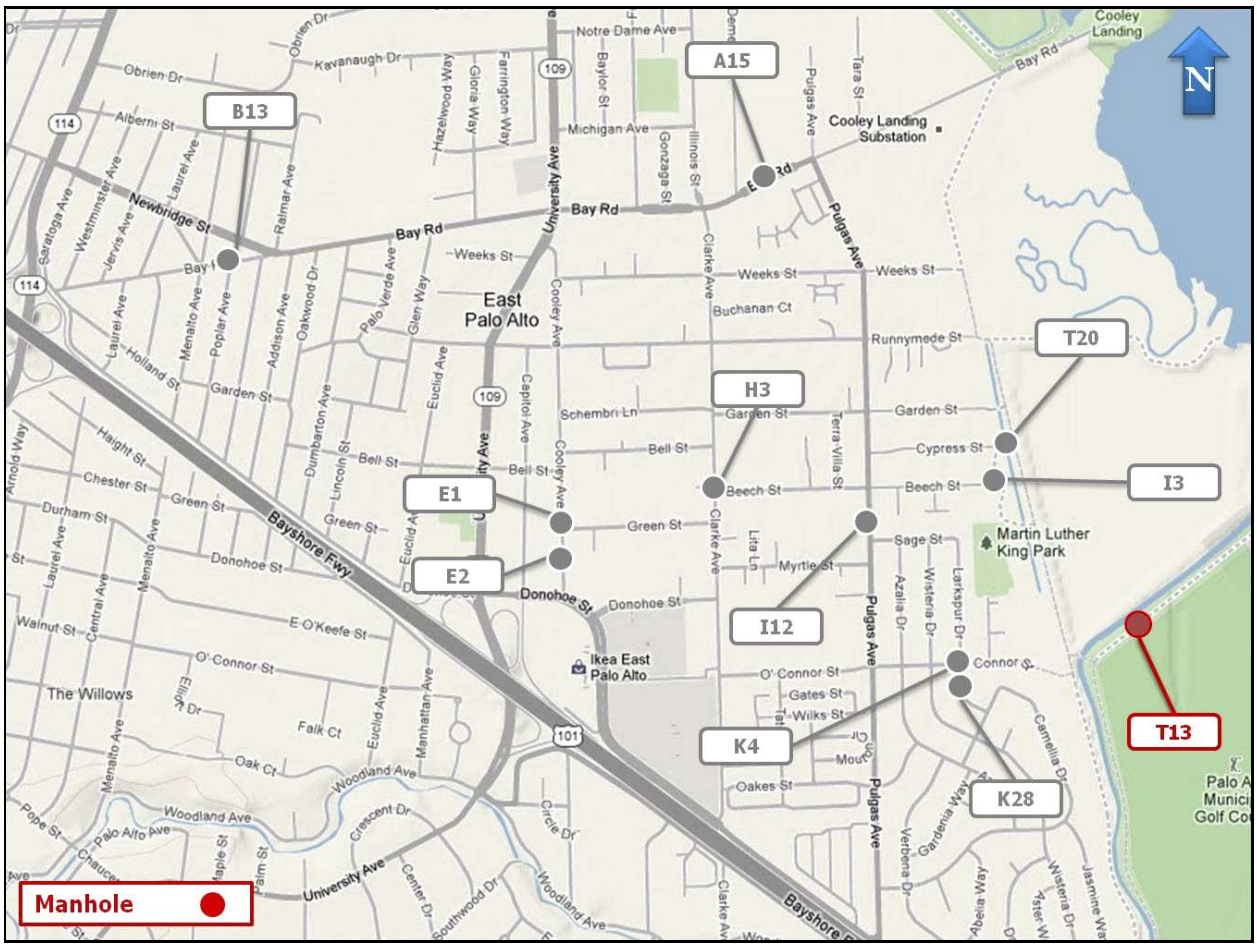
Year 2012

Monitoring Site: MH T13

Location: Northwest side of Palo Alto Golf Course

Data Summary Report

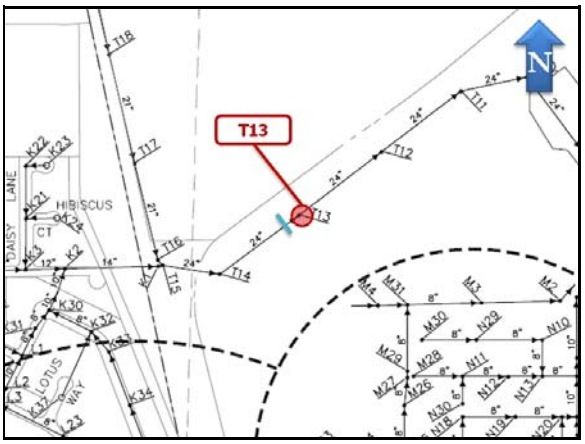
Vicinity Map:



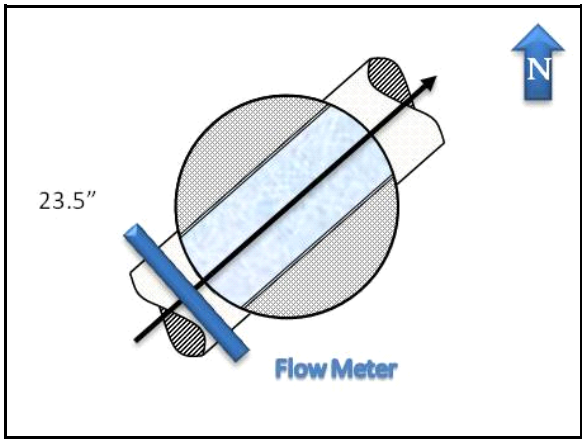
MH T13
Site Information Report

Location:	Northwest side of Palo Alto Golf Course
Coordinates:	122.1221° W, 37.4618° N
Elevation:	8 feet
Diameter:	23.5 inches
Baseline Flow:	1.53 mgd
Peak Measured Flow:	2.8 mgd

Satellite Map



Sanitary Sewer Map



Flow Sketch


View from Street

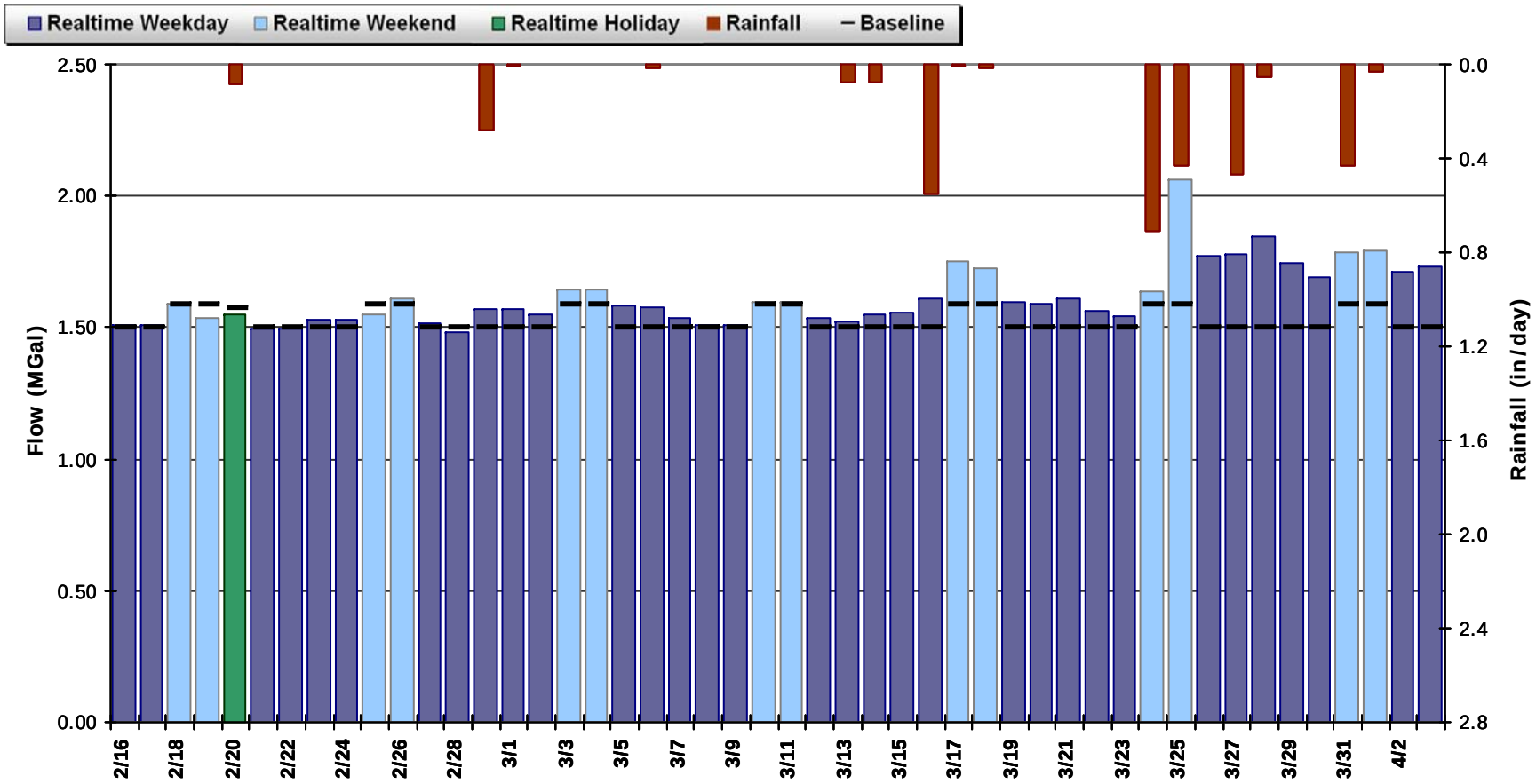

Plan View

MH T13

Period Flow Summary: Daily Flow Totals

Avg Daily Flow: 1.615 MGal **Peak Daily Flow: 2.062 MGal** **Min Daily Flow: 1.484 MGal**

Total Period Rainfall: 3.24 inches

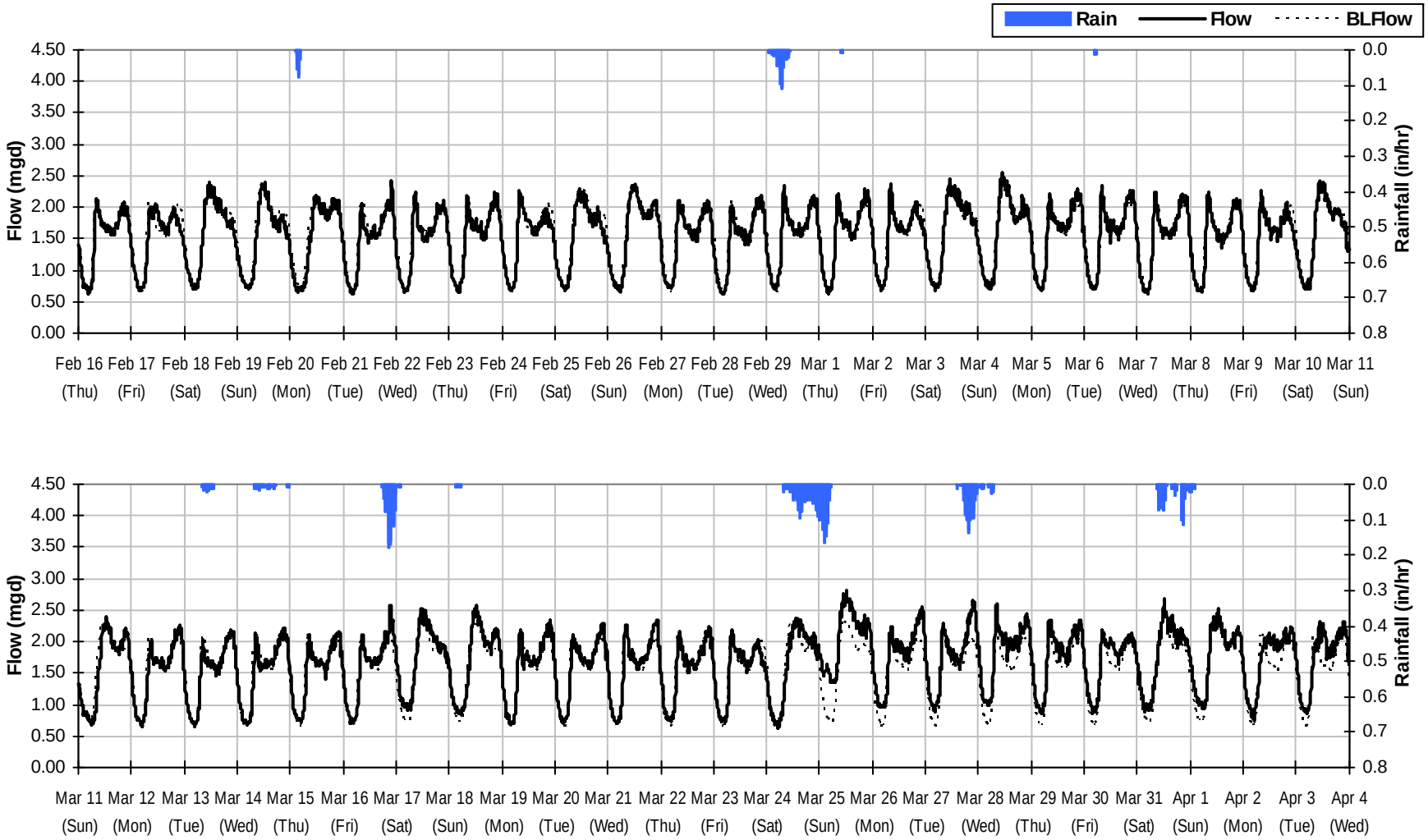


MH T13

Period Flow Summary: February 16 to April 4, 2012

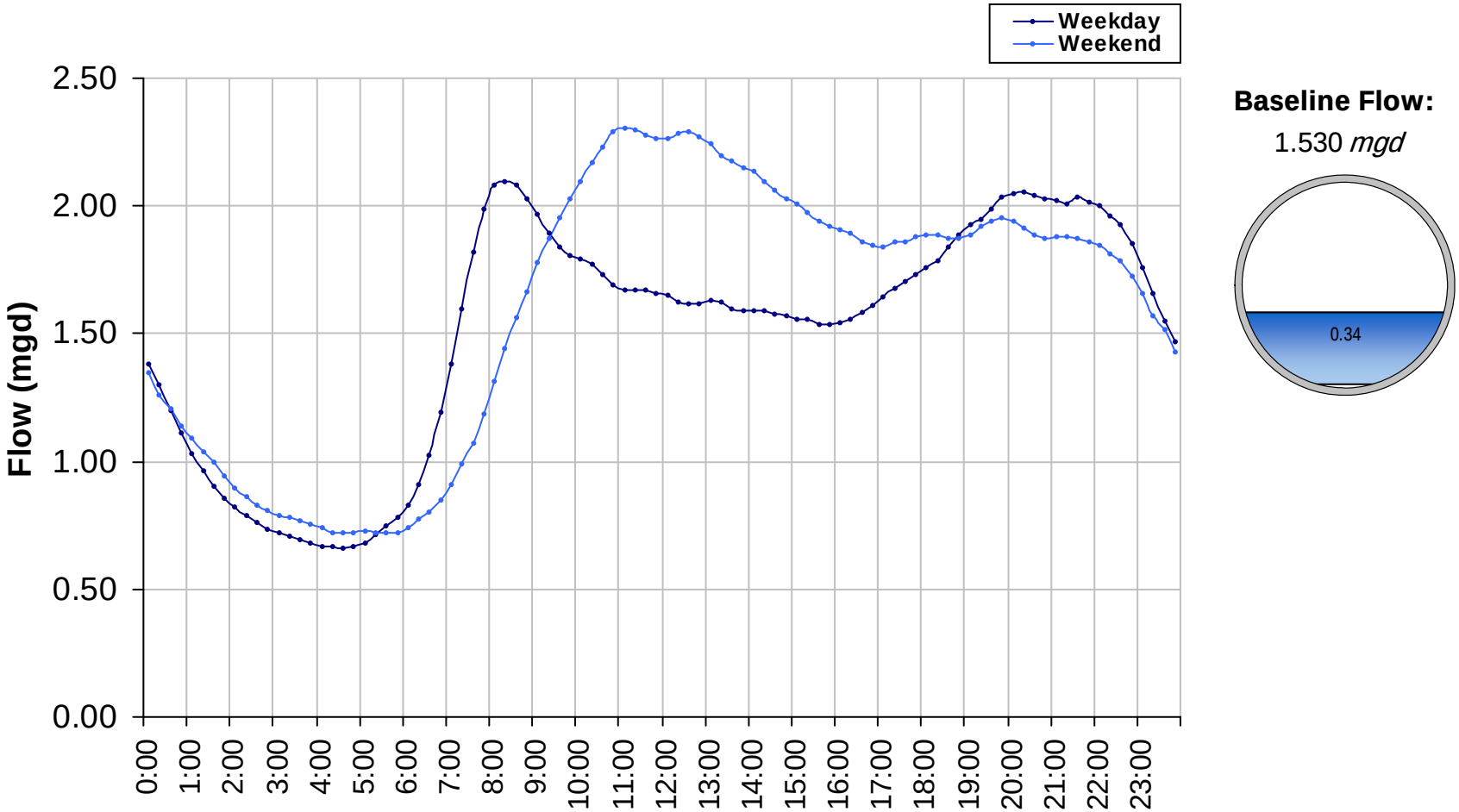
Avg Flow: 1.615 mgd Peak Flow: 2.800 mgd Min Flow: 0.625 mgd

Total Period Rainfall: 3.24 inches



MH T13

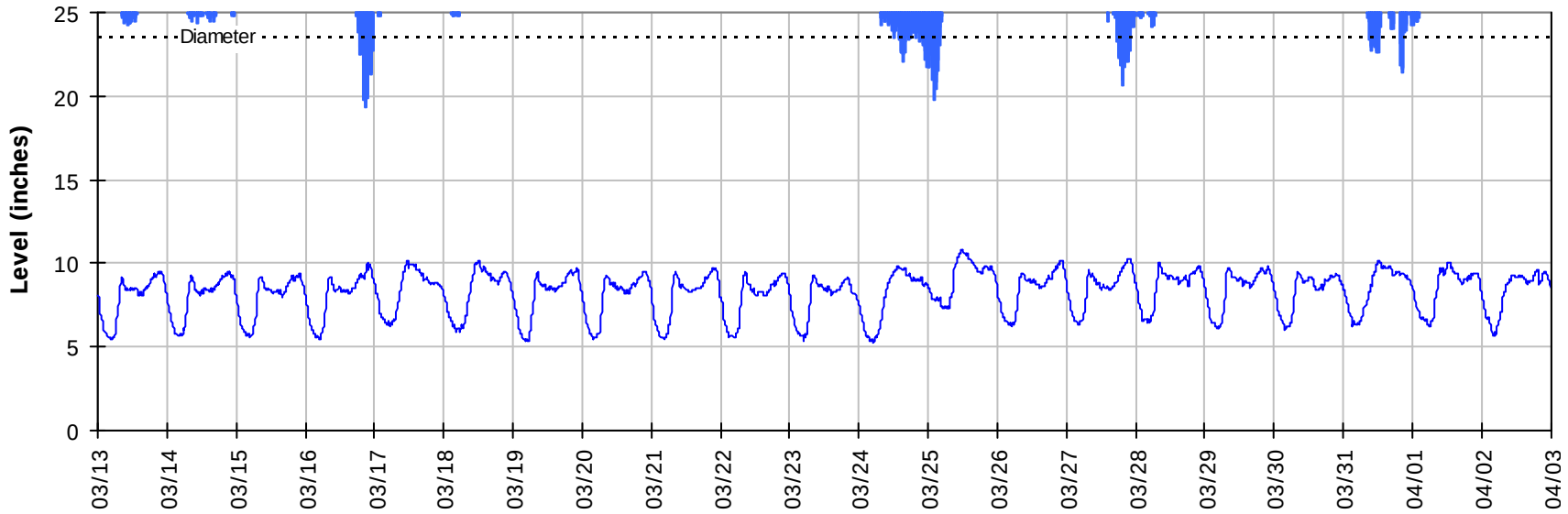
Baseline Flow Hydrographs

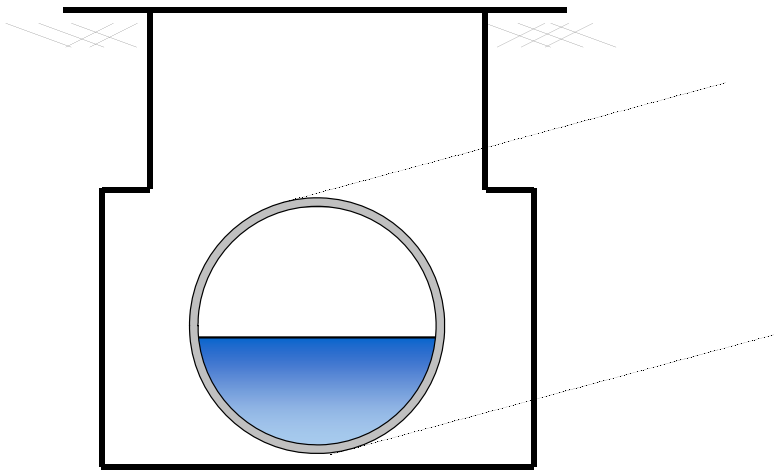


MH T13

Site Capacity and Surcharge Summary

Realtime Flow Levels with Rainfall Data over Monitoring Period

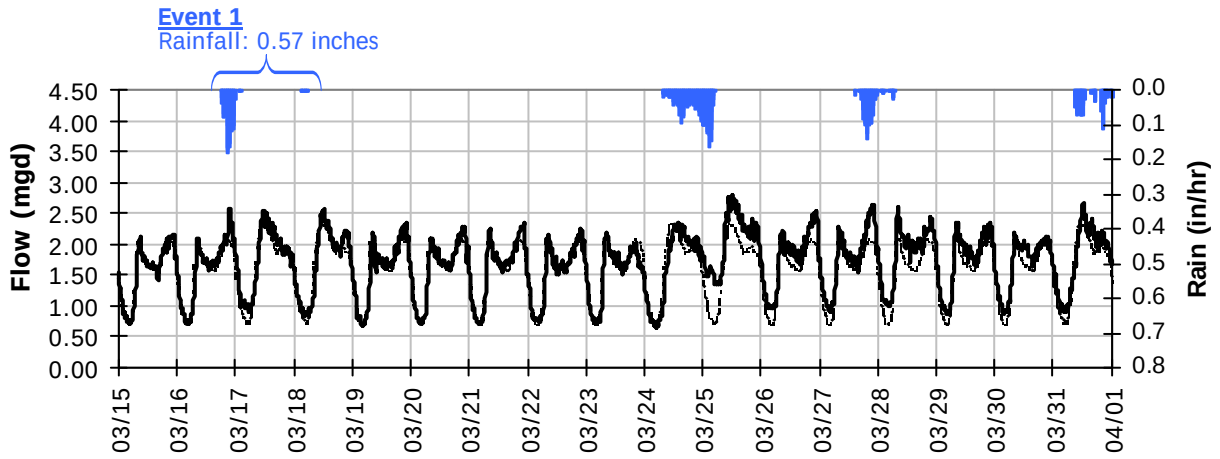




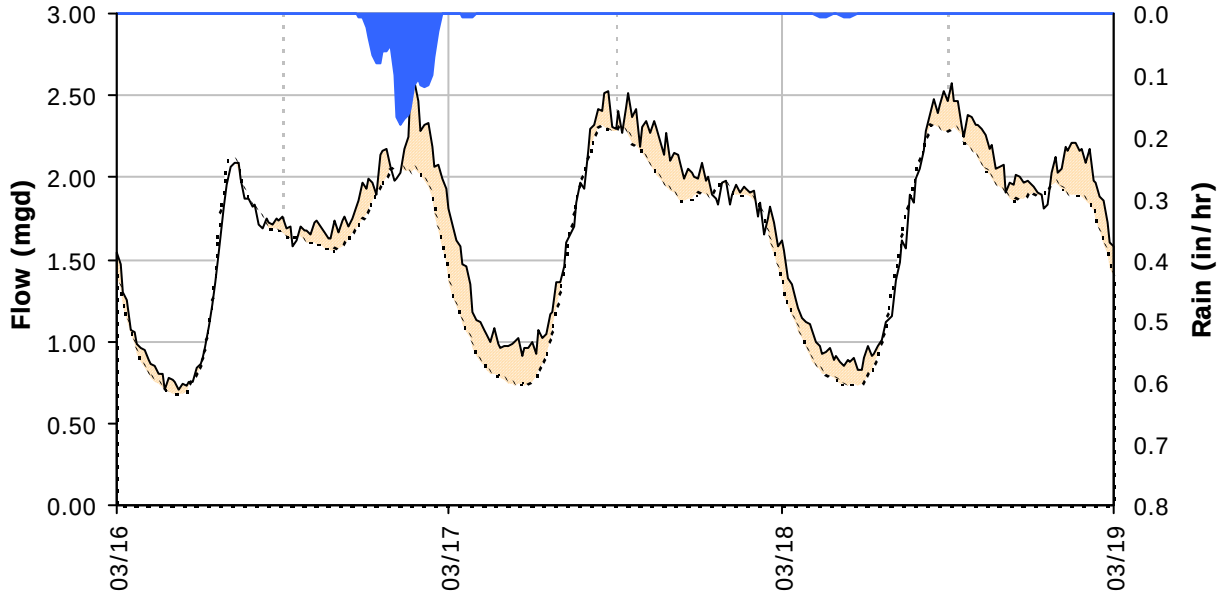
Pipe Diameter:	23.5	*inches*
Peak Measured Level:	10.8	*inches*
Peak d/D Ratio:	0.46	

MH T13
I/I Summary: Event 1

Baseline and Realtime Flows with Rainfall Data over Monitoring Period



Event 1 Detail Graph

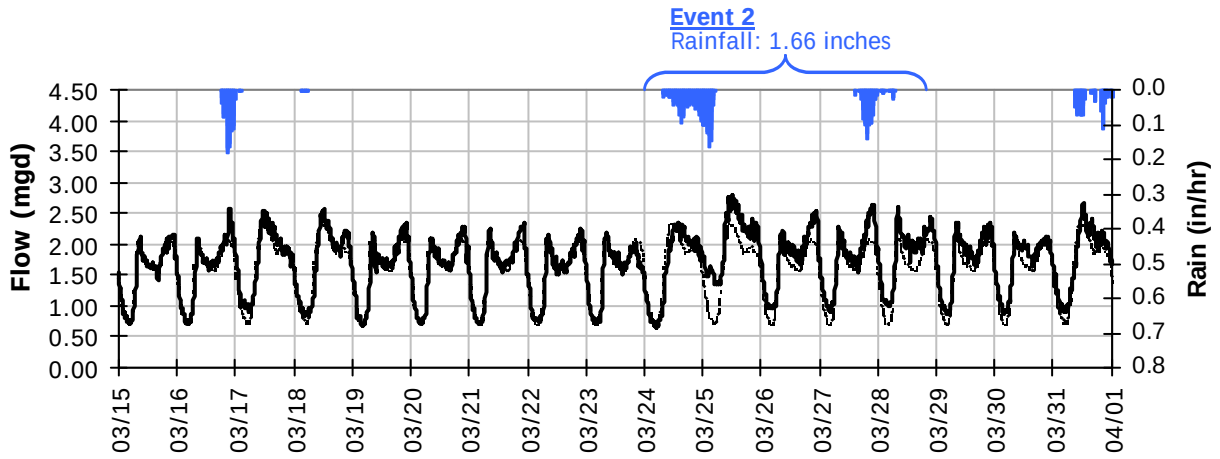


Storm Event I/I Analysis (Rain = 0.57 inches)

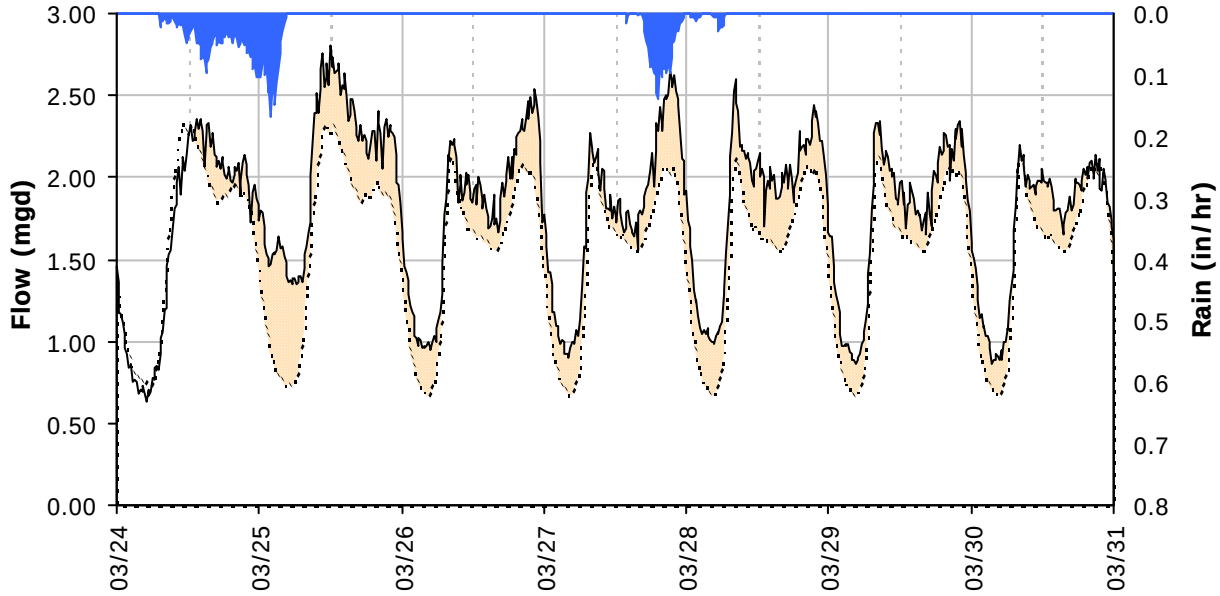
Capacity		Inflow		RDI (infiltration)		Combined I/I	
Peak Flow:	2.58 *mgd*	**Peak I/I Rate:**	0.55 *mgd*	**Infiltration Rate:** (3/18/2012)	0.136 *mgd*	**Total I/I:**	323,000 *gallons*
PF:	1.69	**PkI/I:IDM:**	1,936 *gpd/IDM*	**RDI:IDM:**	482 *gpd/IDM*	**Total I/I:IDM:**	2,000 *gal/IDM/in*
Peak Level:	10.18 *in*	**PkI/I:Acre:**	477 *gpd/acre*	**RDI:Acre:**	119 *gpd/acre*	**R-Value:**	1.8%
d/D Ratio:	0.43	**Pk I/I:ADWF:**	0.36	**RDI (% of BL):**	9%	**Total I/I:ADWF:**	0.37 *per in-rain*

MH T13
I/I Summary: Event 2

Baseline and Realtime Flows with Rainfall Data over Monitoring Period



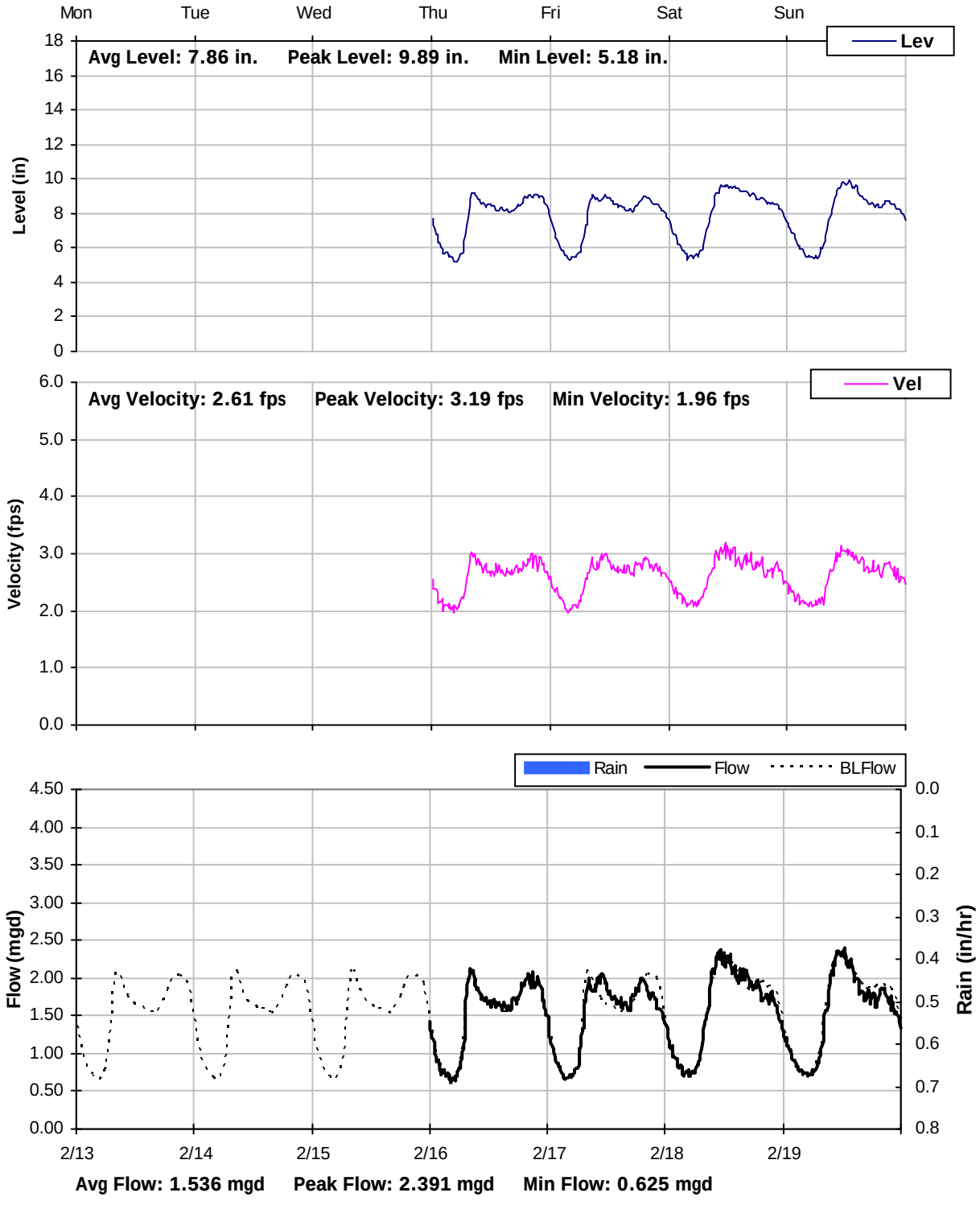
Event 2 Detail Graph



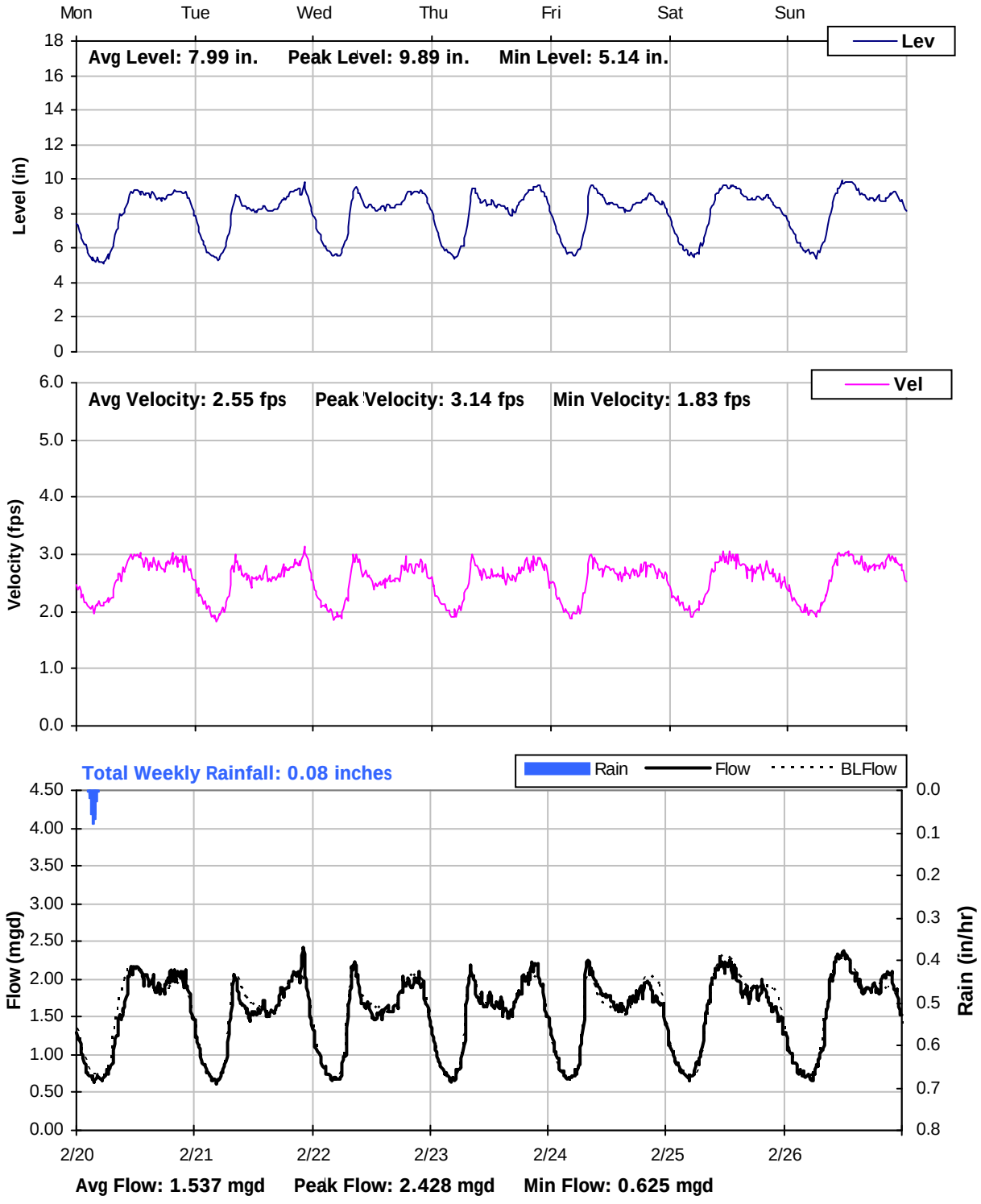
Storm Event I/I Analysis (Rain = 1.66 inches)

Capacity			Inflow			RDI (infiltration)			Combined I/I		
Peak Flow:	2.80	*mgd*	**Peak I/I Rate:**	0.87	*mgd*	**Infiltration Rate:** (3/26/2012)	0.267	*mgd*	**Total I/I:**	1,783,000	*gallons*
PF:	1.83		**PkI/I:IDM:**	3,070	*gpd/IDM*	**RDI:IDM:**	948	*gpd/IDM*	**Total I/I:IDM:**	3,801	*gal/IDM/in*
Peak Level:	10.84	*in*	**PkI/I:Acre:**	756	*gpd/acre*	**RDI:Acre:**	234	*gpd/acre*	**R-Value:**	3.4%	
d/D Ratio:	0.46		**Pk I/I:ADWF:**	0.57		**RDI (% of BL):**	18%		**Total I/I:ADWF:**	0.70	*per in-rain*

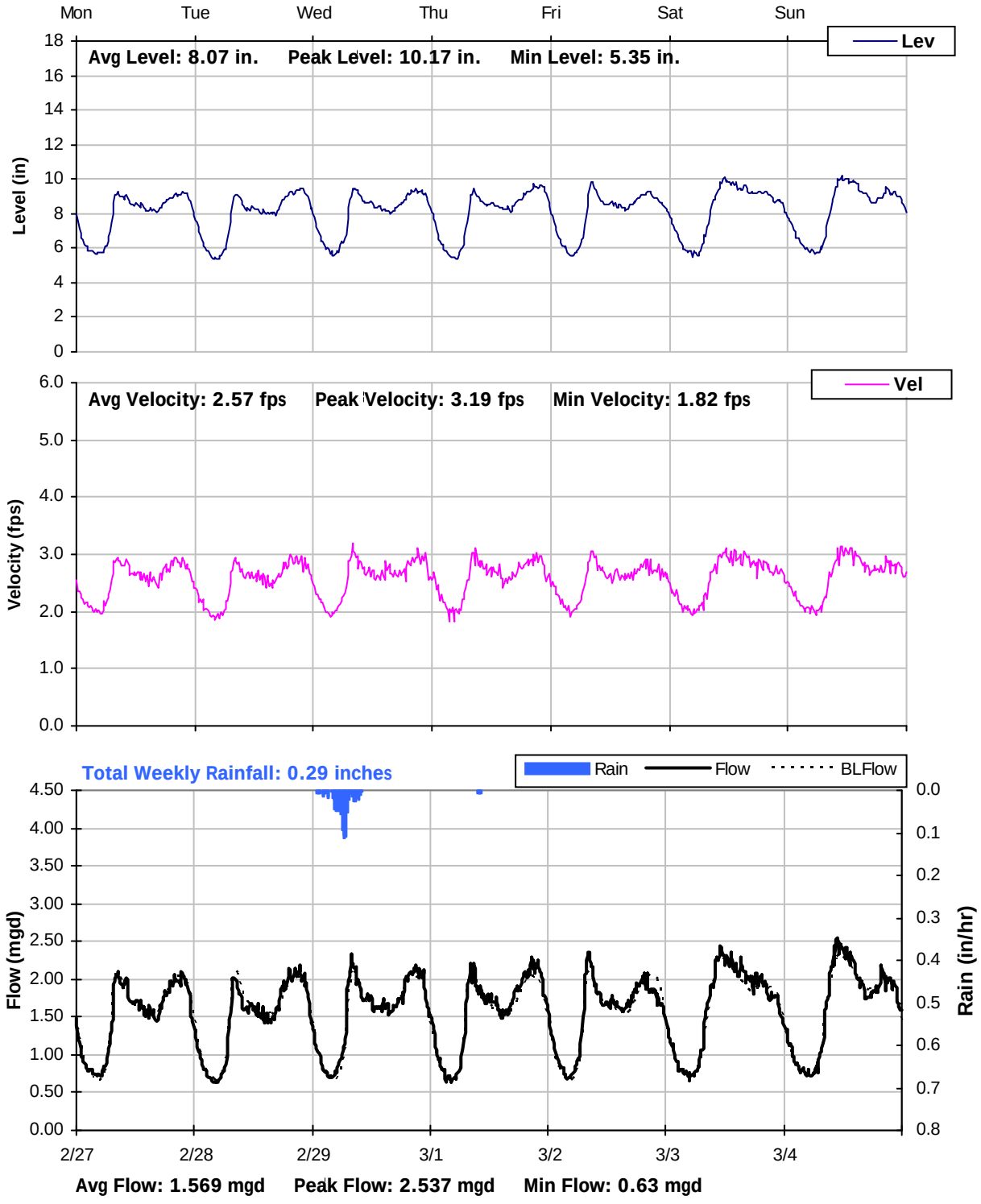
MH T13
Weekly Level, Velocity and Flow Hydrographs
2/13/2012 to 2/20/2012



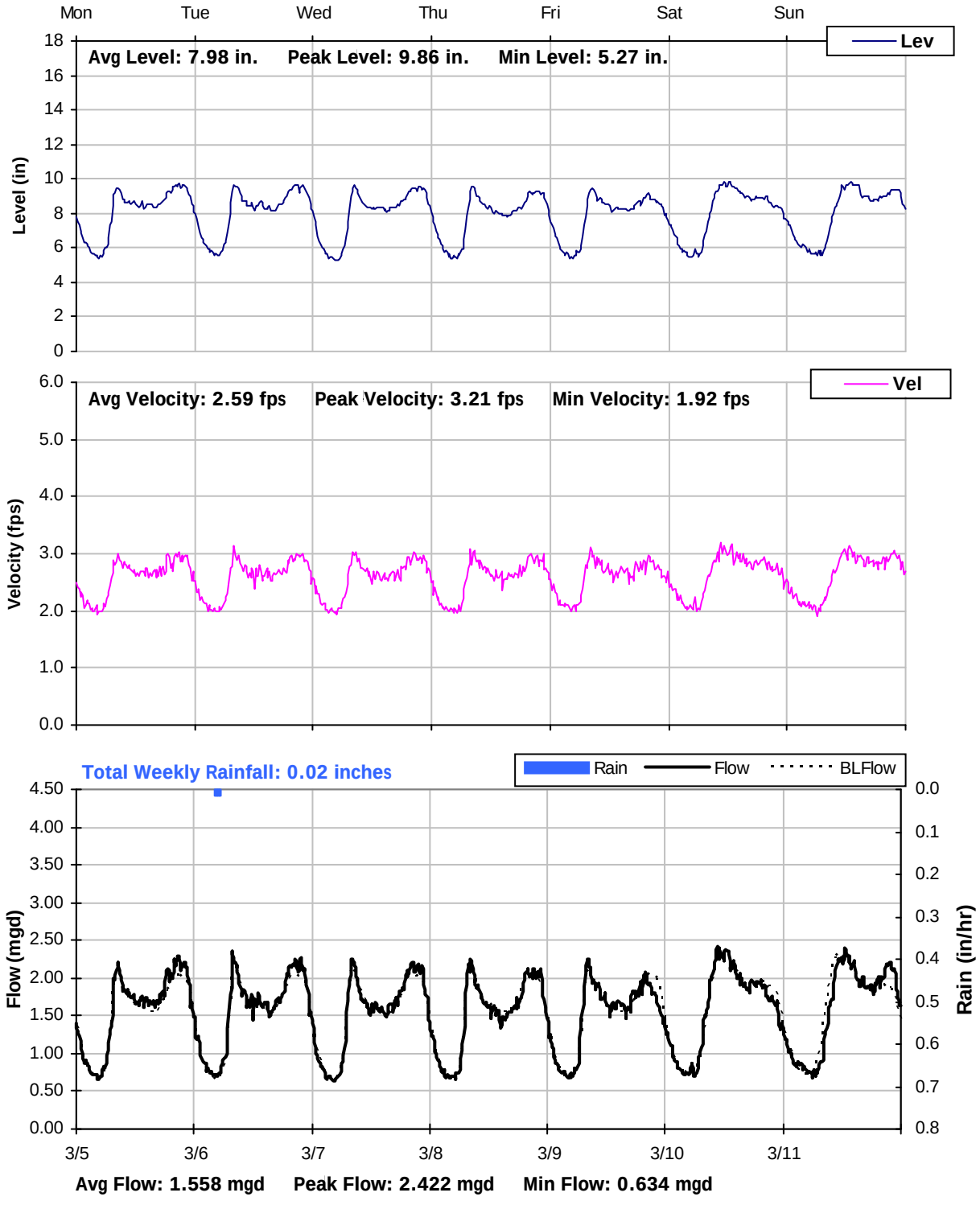
MH T13
Weekly Level, Velocity and Flow Hydrographs
2/20/2012 to 2/27/2012



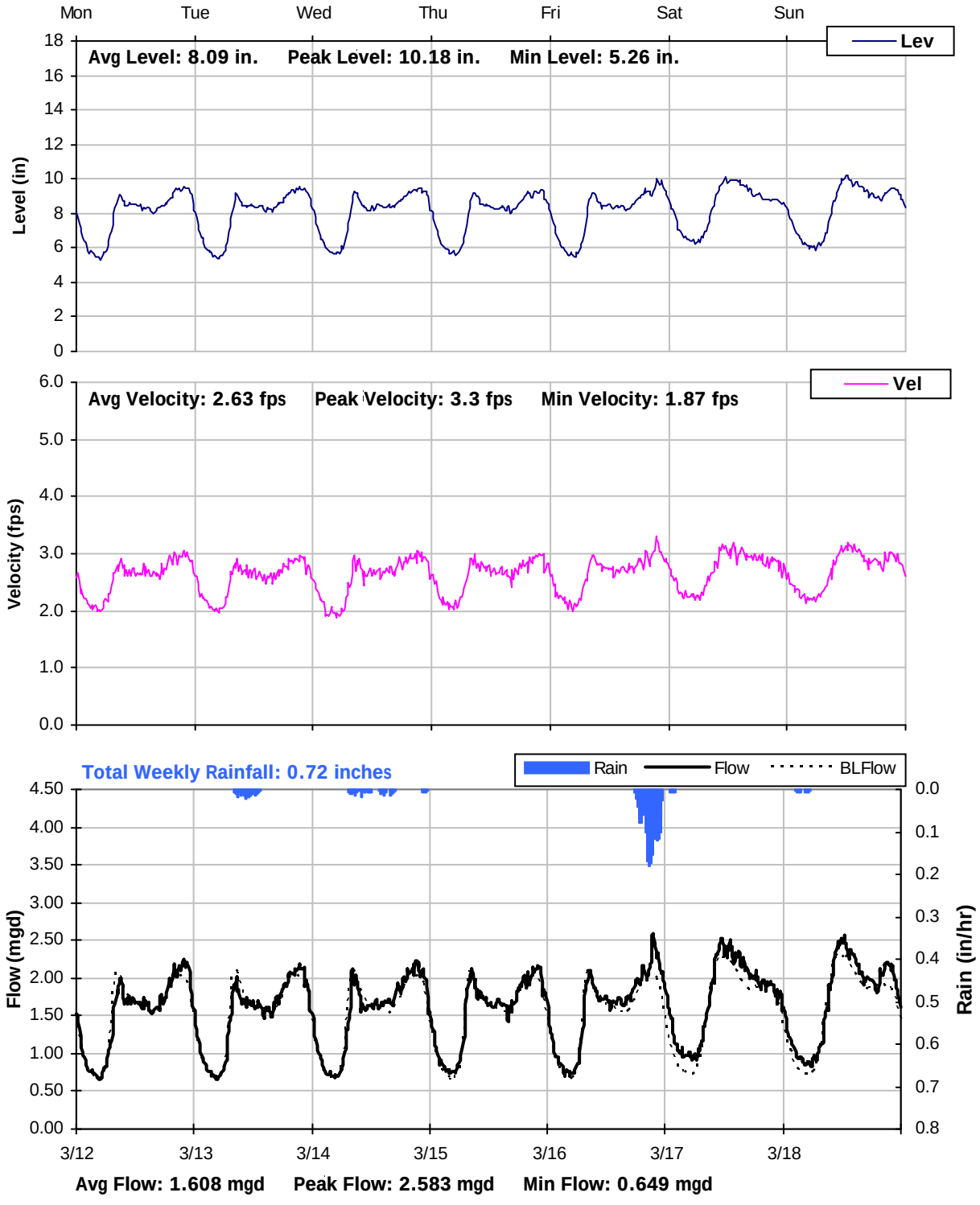
MH T13
Weekly Level, Velocity and Flow Hydrographs
2/27/2012 to 3/5/2012



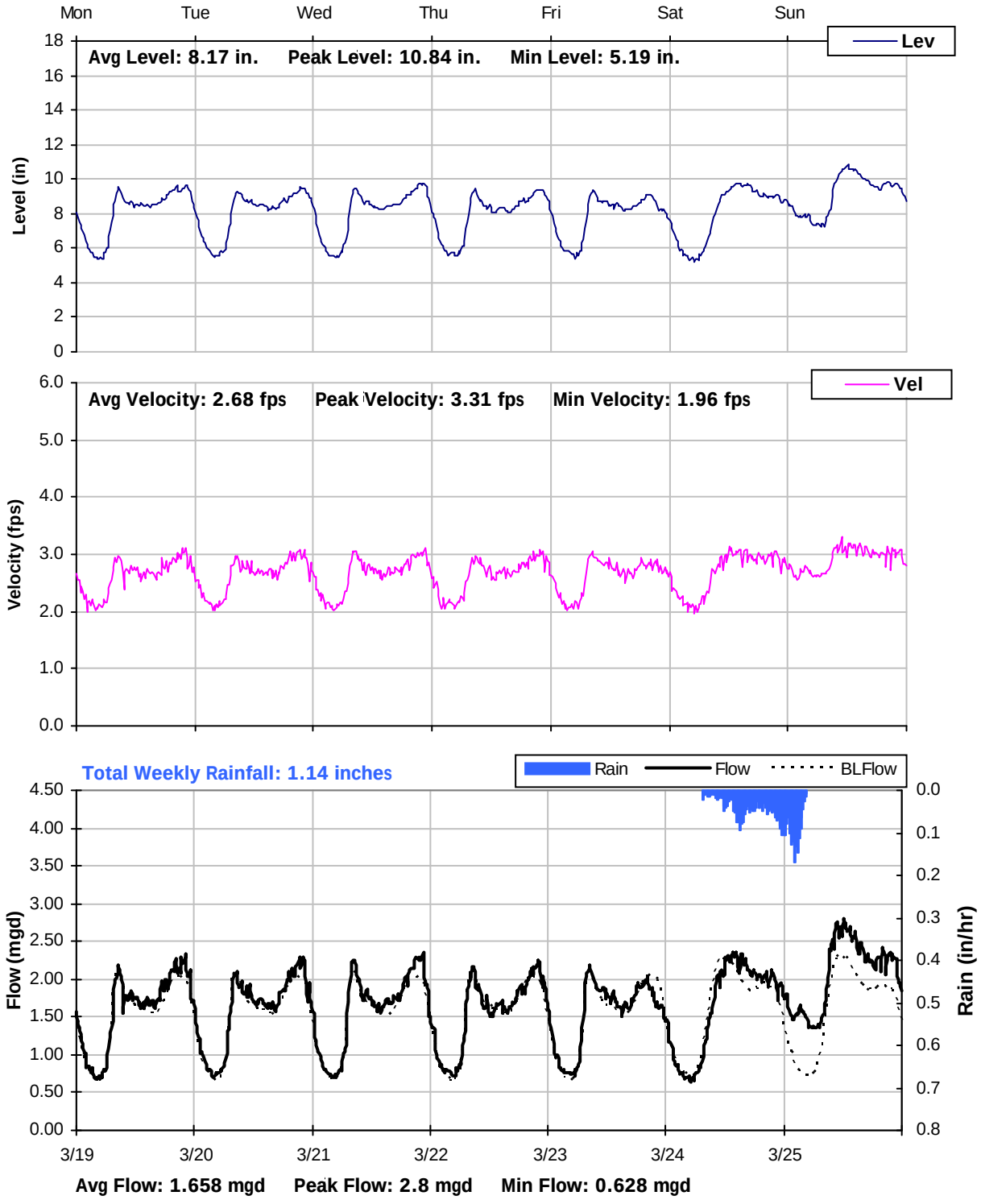
MH T13
Weekly Level, Velocity and Flow Hydrographs
3/5/2012 to 3/12/2012



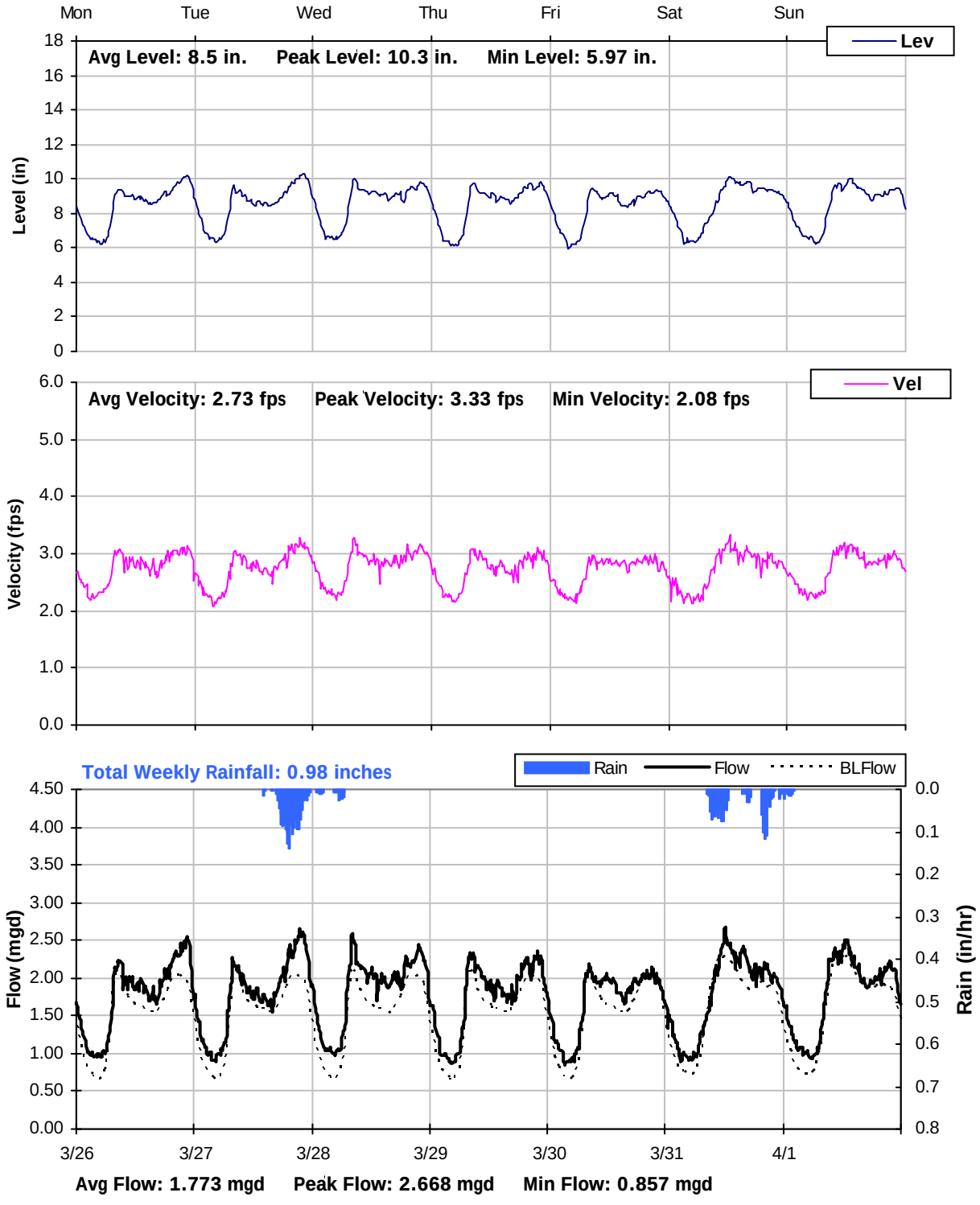
MH T13
Weekly Level, Velocity and Flow Hydrographs
3/12/2012 to 3/19/2012



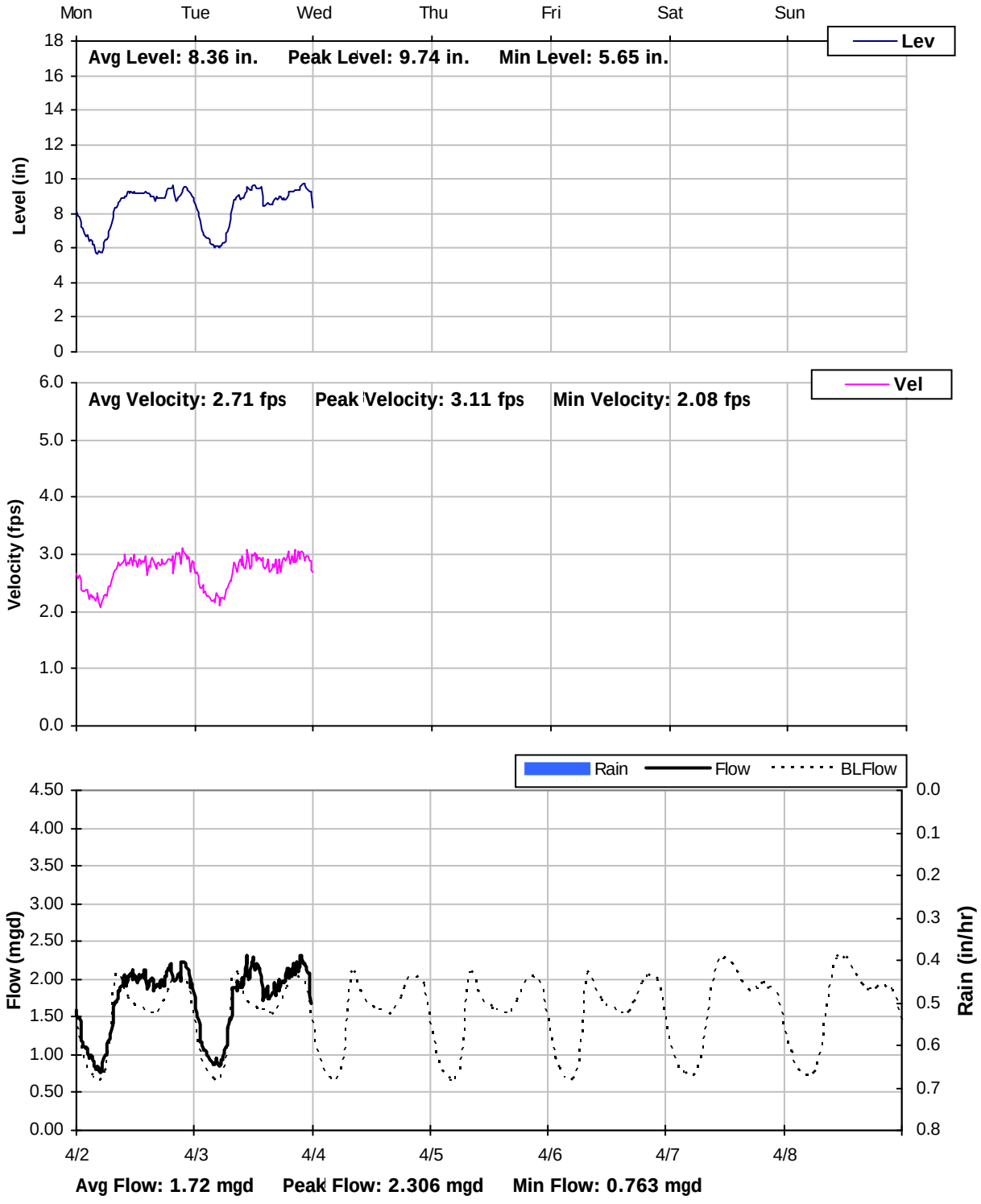
MH T13
Weekly Level, Velocity and Flow Hydrographs
3/19/2012 to 3/26/2012

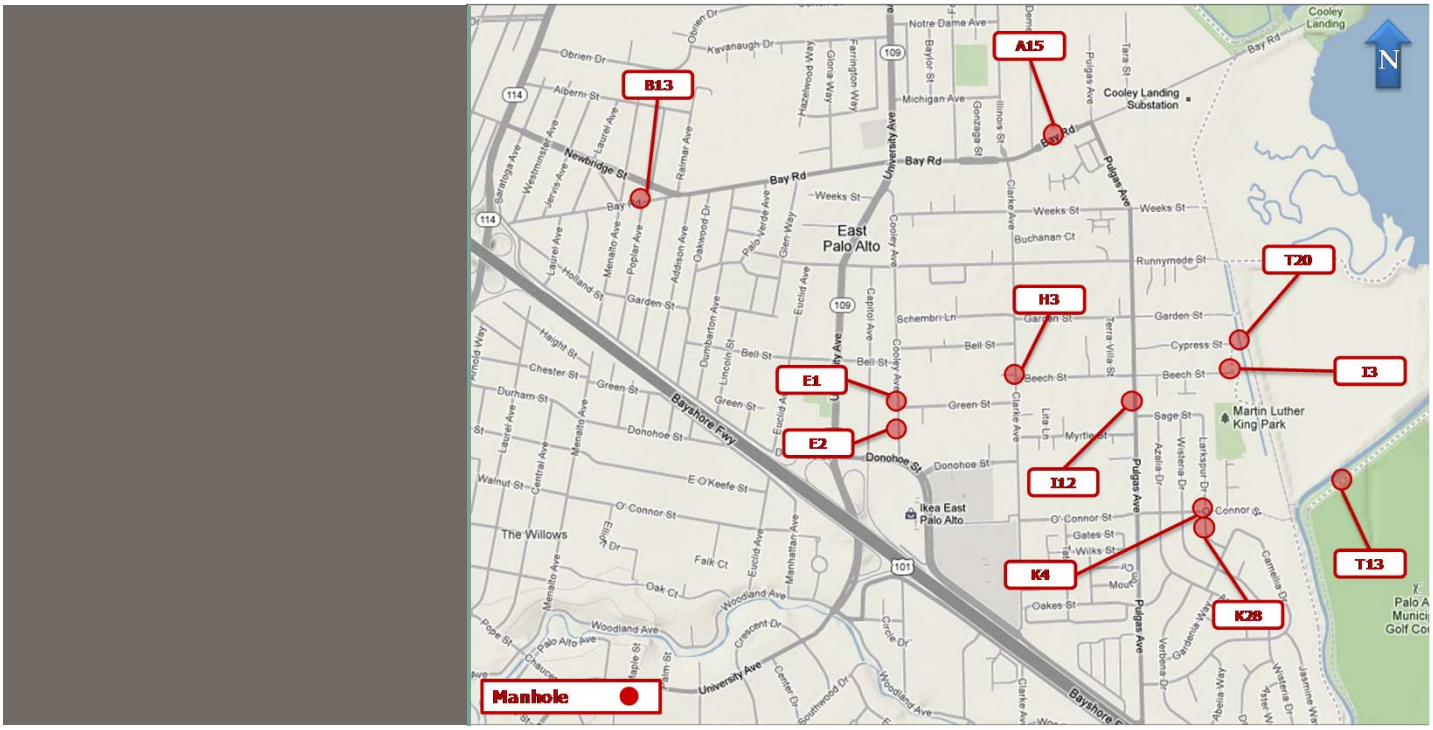


MH T13
Weekly Level, Velocity and Flow Hydrographs
3/26/2012 to 4/2/2012



MH T13
Weekly Level, Velocity and Flow Hydrographs
4/2/2012 to 4/9/2012





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FREYER & LAURETA, INC. CIVIL ENGINEERS • SURVEYORS • CONSTRUCTION MANAGERS

TECHNICAL MEMORANDUM

FINAL – April 28, 2021

To: Akin Okupe, MBA, P.E. (East Palo Alto Sanitary District)

From: Jeffrey Tarantino, P.E. (Freyer & Laureta, Inc.)

Copy: None

RE: Addendum to the March 2015 East Palo Alto Sanitary District Master Plan Update

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Freyer & Laureta, Inc. (F&L) is pleased to present this technical memorandum to the East Palo Alto Sanitary District (District) to serve as an addendum to the District's Master Plan Update dated March 2015 (F&L, 2015), herein referred to as "2015 MP Update."

1 Background

1.1 District Collection System Information

The District currently provides wastewater collection service to portions of the communities of Menlo Park and East Palo Alto, located in San Mateo County in the San Francisco Bay Area. The District's service area is primarily residential with several commercial and industrial parcels.

The District's service area, shown on Figure 1, encompasses nearly 1,230 acres, or 1.92 square miles. The District's collection system is a gravity system with approximately 70-percent of the existing pipelines being six-inch (6-in) diameter. The larger collector lines range between 8-in diameter and 24-in diameter including a siphon beneath the San Francisquito Creek. The District replaced the siphon with two new, parallel siphons in 2017.

The District operates and maintains the collection system in accordance with the requirements of the State Water Resources Control Board, as administered through the Statewide SSO Waste Discharge Requirements and RWQCB Sewer System Management Plan guidelines.

According to the District, the existing collection system has not experienced any SSOs for the past 16-years[1]. The District General Manager reports status of any SSOs to the Board of Directors during each monthly regular board meeting.

[1] Telephone discussions between Akin Okupe, MBA, P.E. (District General Manager) and Jeffrey Tarantino, P.E. (Freyer & Laureta, Inc.) on April 22, 2021.

1.2 Existing Sanitary Sewer Flows

The 2015 MP Update (F&L, 2015) included documentation of the existing flows observed in the collection system based on a flow monitoring study completed in 2011 and 2012. Please refer to the Appendix L of the 2015 MP Update (F&L, 2015) for the 2011-2012 Sanitary Sewer Flow Monitoring and Inflow/Infiltration Study prepared by V&A Consultants dated June 2012, referred to herein as "I/I study" (VA, 2012).

Table 1 provides the location of each of the flow monitoring sites used for the I/I Study including the approximate size of the basin with Figure 2 showing the limits of each of the basins. Table 2 presents a summary of the flow monitoring results including identification of the average dry weather flow (ADWF), peak dry weather flow (PDWF), and peak wet weather flow (PWWF) plus select calculated peaking factors. The PWWF is based on the 10 year, 24-hour design storm event. Please refer to the I/I Study (VA, 2012) for a detailed presentation of the flow monitoring results including calculation of the design storm flows.

1.3 Existing Hydraulic Model

The District maintains a mathematical model of the existing collection system using the computer software program, HYDRA7. The mathematic model using HYDRA was first developed as part of the Master Plan Update prepared by Kennedy/Jenks Consultants dated September 2002 (K/J, 2002), referred to herein as "2002 MP Update." F&L's scope for the 2015 MP Update included updating the existing model to reflect the results of the I/I Study. The current HYDRA7 model reflects the existing conditions of the District's collection system without consideration of future development.

2 Existing Conditions Evaluation

2.1 Identify System Capacity Deficiencies

The District requested that F&L evaluate the existing conditions of the collection system based on the PWWF information presented in Table 2. The District requested that F&L identified pipeline segments where surcharging is predicated to occur and manholes where sanitary sewer overflows (SSOs) are predicated to occur to determine where the existing system does not have adequate capacity to convey PWWF.

In prior studies, the District had directed F&L to identify portions of the existing system that were predicted to experience SSOs during PWWF and improvements required to reduce the potential for predicated SSOs. The previous evaluations (F&L, 2015) developed potential capital improvements that would result in eliminating predicated SSOs but the collection system was allowed to flow under surcharged conditions. As part of this amendment, the District has updated its standards to allow the collection system to flow full but not under surcharged conditions.

For purposes of this addendum, F&L identified all pipeline segments where the depth over diameter (d/D) is predicated by the HYDRA7 model to be 1.0, which indicates that the pipeline segment is flowing under surcharged conditions. Table 3 identifies all segments in the existing

collection system that are predicated to be flowing surcharged under PWWF conditions as well as identifying the downstream manhole rim elevation and predicated hydraulic grade line (HGL) to further identify which manholes may experience SSOs. Where the downstream HGL is predicated to be above the downstream manhole rim elevation, the hydraulic model results indicate the potential for a SSO to occur at the manhole location.

Figure 3 highlights the pipeline segments under existing conditions that are predicated to flow under surcharge conditions during a PWWF. The manholes where a SSO is predicated to occur are also highlighted on Figure 3.

F&L notes that portions of the existing trunk sewer between Manhole T13 and Manhole T1 where flows are discharged to the Palo Alto Regional Water Quality Control Plant are predicated to flow under surcharged conditions but SSOs are not predicated to occur. As shown in Attachment 1, the HGL under current PWWF is shown to vary throughout the alignment and portions of the trunk sewer flow under surcharge but SSOs are not predicted to occur. The District directed an iterative evaluation of the potential available capacity of the trunk sewer between Manhole T13 and Manhole T1 was evaluated to determine the number of Equivalent Dwelling Units (EDUs) that could be connected to the District's collection system before the HGL is predicted to result in excessive surcharge. An iterative evaluation using increments of 100,000 gallons per day (gpd) of additional flows were added to the HYDRA7 model up to 300,000 gpd with the injection occurring at Manhole T14 and the results are presented in Attachment 1. The District used the results of the iterative evaluation to determine that the District will allow an additional 100,000 gpd, which is 415 EDUs[2], to be connected to the collection system before improvements to the trunk sewer are required to eliminate predicated excessive surcharging that could lead to SSOs.

2.2 Identify Existing System Improvements.

F&L performed an iterative evaluation of the existing collection system to identify potential capital improvements to eliminate all surcharging and SSOs identified in Table 3 from occurring during PWWF for the existing collection system. The District determined that predicated surcharging within the trunk sewer between Manhole T13 and Manhole T1 was an acceptable condition because the District has not reported any SSOs along the referenced portion of the trunk sewer.

The proposed improvements identified during the hydraulic model evaluation to eliminate surcharging and SSOs are presented in Table 4. The limits of the proposed improvements are presented on Figure 4.

2.3 Opinion of Probable Project Cost

Based on the existing system improvements, F&L developed conceptual opinion of probable project cost (OPPC) for the planning, design, and construction of the identified improvements including District staff administrative and management budgets. The OPPC includes:

[2] One EDU is equal to 240 gpd based on Section B1.03.2.b of the East Palo Alto Sanitary District Specifications for Design and Construction of Sanitary Collection and Conveyance Facilities dated June 6. 2002.

- Construction budget for proposed pipeline and manhole replacement based on unit pricing for similar projects.
- A construction contingency of 30-percent to reflect the limited level of detail developed for the proposed improvements.
- Allowances for engineering and administrative costs based on industry standards including:
    - 10-percent of construction budget for design;
    - 10-percent of construction budget for environmental and permitting;
    - 15-percent of construction budget for construction management, inspection, and special inspection, and;
    - Five-percent of construction budget for District Administration.

The conceptual OPPC for the proposed improvements described in Section 2.2 is presented in Table 5. Note that the OPPC for the proposed conditions evaluations described in Section 3 follow the same methodology and assumptions for OPPCs.

3 Proposed Conditions Evaluation

3.1 City of East Palo Alto Land Use Changes

The following paragraphs document changes in land use identified in the City of East Palo Alto's (City') 2035 General Plan and the land use at the time of the preparation of the 2015 MP Update. At the time the 2015 MP Update was prepared, the City was beginning the process to update its previous 1999 General Plan and Zoning Ordinance, but the City had not developed a draft general plan update for District's review and comment. Therefore, the 2015 MP Update was based on existing land use information and select specific plans that had been prepared by developers and approved by City Council. The City adopted the 2035 General Plan on October 4, 2016 with the final version being published in March 2017 (2035 General Plan).

Figure 5 presents the zoning at the time of the 2015 MP Update for those parcels where zoning has changed as part of the City's 2035 General Plan with the revised zoning shown on Figure 6. If a parcel is not highlighted on either figure, the zoning at the time of the 2015 Master Plan Update is the same in the 2035 General Plan. To allow easy comparison between the land use changes, the zoning classification shown on Figure 5 utilized the zoning classification from the City's 2035 General Plan. A summary of changes for each parcel is presented in Table 5.

Generally, the changes between the zoning shown on Figure 5 and Figure 6 is changing commercial and office zoning to mixed use or mixed use corridor. The primary changes occurred along University Avenue between Bay Road and Donohoe Street and the existing Target shopping center. Furthermore, some residential zoning changes within the Ravenswood Business District were modified from low density and commercial to high density along Maple Street. Finally, the area along University Avenue west of Highway 101 included changes from commercial to office, mixed use, and medium density residential.

3.2 Calculated Additional Sanitary Sewer Flows

Based on the revised zoning changes, F&L calculated the estimated additional sanitary sewer flows for each of the parcels identified in Table 6. Because the District does not monitor flows

from each of the individual parcels, a multiple step process was followed to calculate the incremental, additional flow by parcel.

The following steps were taken to estimate incremental additional flow by parcel:

1. Existing flow from each parcel was estimated as follows and presented in Table 7;
   1.1. The 2019 Tax Year Billing Charges were reviewed to identify the individual parcel billings.
   1.2. Based on the individual billings, the Equivalent Dwelling Units (EDU) was calculated by dividing the parcel bill by $575 per EDU.
   1.3. The calculated number of EDUs by parcel was then multiplied by 240 gallons per EDU to estimate the existing sanitary sewer flow from each parcel.
2. Total flow from each parcel based on the 2035 General Plan revised zoning was estimated as follows and presented in Table 8;
   2.1. The Maximum and Minimum Allowable Density and Floor to Area (FAR) ratio for each zoning category was identified in the 2035 General Plan;
   2.2. Using 50-percent of the range between maximum and minimum allowable density and FAR for each parcel, the estimated total sanitary sewer flow for residential and non-residential was calculated using the unit flow rates from the Section B1.03.2.b of the East Palo Alto Sanitary District Standard Specifications for Design and Construction of Sanitary Collection and Conveyance Facilities date June 6, 2002, herein referred to as "Standard Specifications" (District, 2002).
3. Total ***additional*** flow by parcel for both ADWF and PDWF is calculated as follows and presented in Table 9;
   3.1. All parcels identified in Table 5 are sorted by Sewer Basin;
   3.2. ADWF for existing conditions presented in Table 7 is subtracted from ADWF for future zoning changes presented in Table 8 separated in residential and non-residential flows, and;
   3.3. PDWF is calculated by multiplying the ADWF for each parcel by the Sewer Basin PDWF Peaking Factor from Table 2.

The additional ADWF and PDWF by parcel is summarized in Table 9 with the total additional ADWF and PDWF presented at the bottom of the table. The projected total ADWF increase of 1.08 million gallons per day (MGD) is consistent with the projected additional potable water demand of 1.07 MGD presented in the City's 2035 General Plan.

The additional ADWF and PDWF presented in Table 9 are then injected into the HYDRA7 model at the locations shown on Figure 7. In addition, Figure 7 highlights all of the parcels listed in Table 5 including the additional ADWF and PDWF by parcel.

3.3 Identify Development PDWF Impacts and Improvements

The District requested that F&L evaluate the impacts of the proposed developments identified in the 2035 General Plan. The District determined that PDWF operating conditions impacts will

be determined by identifying where the proposed developments result in an increase in the d/D in the District's collection system. The evaluation methodology utilizes the marginal costing technique and will allow the District to determine the potential cost share for each development. The cost share determined by the marginal costing technique would allow the District to potentially develop reimbursement agreement with the developer that requires the accelerated CIP so that as new developments are approved that the future development cost share can be collected to reimburse the first developer. The District will develop the reimbursement that will consider the market value of the existing pipe to be replaced. Similar to the evaluation described in Section 2.2, an iterative evaluation to identify the proposed improvements was performed.

Table 10 presents the results of the PDWF impact evaluation and includes:

- Pipeline segments identified to have the d/D increased by the proposed developments;
- Existing pipeline diameter;
- Existing d/D without the additional flows injected;
- Predicted d/D with the additional flows;
- Proposed pipeline diameter for new improvements, and;
- Predicted d/D with the additional flows and proposed pipeline diameter.

The location and limits of the proposed improvements listed in Table 10 are shown in Figure 8. The conceptual OPPC for the proposed improvements is presented in Table 11 using similar assumptions as described in Section 2.3.

3.4 Identify Development PWWF Impacts and Improvements

The proposed developments impacts during PWWF were also evaluated to determine the improvements that may be required in addition to the existing capacity deficiencies due to the updated District design criteria as described in Section 2. The PDWF injections added during the evaluation described in Section 3.3 were added to the PWWF scenario evaluation described in Section 2.1. The PWWF impacts not only include the District's collection system upstream of the existing siphon (Manhole T33) but full buildout anticipated with the new development also requires the construction of a parallel wet weather trunk sewer pipeline to eliminate surcharging between Manhole T12 and Manhole T1.

Table 12 presents the results of the PWWF impact evaluation for the collection system upstream of Manhole T33 and includes:

- Pipeline segments identified to have the d/D increased by the proposed developments;
- Existing pipeline diameter;
- Existing d/D without the additional flows injected;
- Predicted d/D with the additional flows;
- Proposed pipeline diameter for new improvements, and;
- Predicted d/D with the additional flows and proposed pipeline diameter.

The results of the hydraulic evaluation for the trunkline sewer between Manhole T12 and Manhole T1 is presented in Table 14. The table presents the length, diameter, existing PWWF

d/D, and predicated PWWF d/D with full buildout. The proposed improvement to restore the trunkline to existing operating conditions is to construct a parallel pipeline that will convey PWWF that are greater than experienced under existing conditions.

The location and limits of the proposed improvements listed in Table 12 are shown in Figure 9. The conceptual OPPC for the proposed improvements is presented in Table 13 using similar assumptions as described in Section 2.3.

4 Recommended Capital Improvement Program

The final Capital Improvement Program (CIP) will be determined by the District Board of Directors but it is anticipated to be a compilation of the improvements required to accommodate the new developments as identified in Section 3.3 for PDWF improvements and Section 3.4 for PWWF improvements. The proposed CIP is largely to address the PWWF impacts from development and there are select PDWF improvements where required to restore the d/D under the full build out condition to match existing PDWF d/D.

The recommended CIP is presented in Table 15 and the location of the proposed improvements are shown on Figure 10. The conceptual OPPC for the recommended CIP is presented in Table 16. The final CIP will be determined by the District based on the priorities for City approved developments that have completed its new service application process with the District.

5 Capital Improvement Program Implementation Schedule

The sequence and timing of implementing the CIP will be driven by the proposed developments schedule. As the District receives new service applications, the proposed developments flow path can be evaluated in order to identify the improvements that would be required to accommodate the additional flows. The District can evaluate the individual development's proposed sanitary sewer flows and determine when sufficient number of developments receive approval to discharge to the District's collection system that would require construction of the CIP.

If the District chooses to begin implementing the CIP based on operational conditions, the District would likely begin implementing the improvements beginning upstream of the siphon (Manhole T13). The sequence of construction would likely be driven by District's observations of existing pipe conditions.

6 Next Steps

F&L understands that the Master Plan Addendum will be presented to District Board of Directors for final direction on the CIP.

7 References

District, 2002 *East Palo Alto Sanitary District Standard Specifications for Design and Construction of Sanitary Collection and Conveyance Facilities*, East Palo Alto Sanitary District, June 6, 2002

F&L, 2015 *East Palo Alto Sanitary District Master Plan Update*, Freyer & Laureta, Inc., March 2015

K/J, 2002 East Palo Alto Sanitary District Master Plan Update, Kennedy/Jenks Consultants, September 2002

VA, 2012 *2011-2012 Sanitary Sewer Flow Monitoring and Inflow/Infiltration Study,* V&A Consultants, June 2012

ATTACHMENTS

Tables

Table 1: Flow Monitoring Locations
Table 2: Peaking Factor Calculations
Table 3: Predicated Surcharge Under Existing PWWF
Table 4: Capital Improvements to Eliminate Surcharge and SSOs Under Existing PWWF
Table 5: Conceptual OPC Eliminating Surcharge Under Existing PWWF
Table 6: Land Use Changes – 2014 Zoning versus Proposed 2035 Zoning
Table 7: 2014 Zoning Sanitary Sewer Flows
Table 8: 2035 Zoning Sanitary Sewer Flows
Table 9 Proposed Additional Sanitary Sewer Flows
Table 10: Summary of Additional Sanitary Sewer Flows
Table 11: Restoring d/D to Pre-Development Conditions Under Proposed PDWF
Table 12: Conceptual OPPC Restoring d/D to Pre-Development Conditions Under Proposed PDWF
Table 13: Eliminating Surcharge Under Proposed PWWF
Table 14: Trunkline d/D Pre-Development vs Proposed Under PWWF
Table 15: Conceptual OPPC Eliminating Surcharge Under Proposed PWWF
Table 16: Proposed Capital Improvement Program
Table 17: Conceptual OPPC for Proposed CIP

Figures

Figure 1: EPASD Sanitary Sewer Service Area
Figure 2: EPASD Flow Monitoring Sites
Figure 3: Existing PWWF Capacity Deficiencies
Figure 4: Proposed Improvements to Eliminate Surcharging Existing Conditions
Figure 5: City of East Palo Alto 2014 Land Use
Figure 6: City of East Palo Alto 2035 Land Use
Figure 7: Additional Sanitary Flows Injection Locations
Figure 8: PDWF Improvements to Restore d/D Under Proposed Conditions
Figure 9: PWWF Improvements No Surcharge Under Proposed Conditions
Figure 10: Capital Improvements No Surcharge Under Proposed Conditions

Table 1
Flow Monitoring Locations
East Palo Alto Sanitary District

Monitoring Site (1)	Location	Basin Size (Acres)
A15	Bay Rd, east of Demeter St.	118
B13	Intersection of Bay Rd and Poplar Ave	87
E1	Intersection of Cooley Ave and Green St.	101
E2	Cooley Ave, north of Donohoe St.	149
H3	Intersection of Clarke Ave and Beech St.	74
I3	East end of Beech St.	74
I12	Pulgas Ave, north of Sage St.	135
K4	Intersection O'Connor St and Larkspur Dr	107
K28	Larkspur Dr, south of O'Connor St.	95
T20	75 feet east of end of Cypress St.	171
T13	Along north edge of Palo Alto Municipal Golf Course	1,230

Notes
(1) Monitoring sites are identified in Table 3 of the East Palo Alto Sanitary District Sanitary Sewer Flow Monitoring and Inflow/Infiltration Study dated June 2012 prepared by V&A Consulting Engineers, Inc., referred to herein as "Flow Monitoring Study."

Table 2
Peaking Factor Calculations
East Palo Alto Sanitary District

Monitoring Site (1)	ADWF (MGD) (2)	PDWF (MGD) (3)	PWWF (MGD) (4)	PDWF Peaking Factor (5)	PWWF Peaking Factor (6)
A15	0.27	0.43	1.19	1.59	2.77
B13	0.06	0.11	0.52	1.83	4.73
E1	0.13	0.19	0.59	1.46	3.11
E2	0.25	0.43	1.45	1.72	3.37
H3	0.14	0.23	0.58	1.64	2.52
I3	0.83	1.22	2.76	1.47	2.26
I12	0.23	0.39	0.76	1.70	1.95
K4	0.22	0.35	0.99	1.59	2.83
K28	0.11	0.17	0.68	1.55	4.00
T20	0.40	0.60	1.55	1.50	2.58
T13	1.53	2.31	5.78	1.51	2.50

Notes
(1) Monitoring sites are identified in Table 3 of the East Palo Alto Sanitary District Sanitary Sewer Flow Monitoring and Inflow/Infiltratio Study dated June 2012 prepared by V&A Consulting Engineers, Inc., referred to herein as "Flow Monitoring Study."
(2) ADWF is presented in Table 5 of the Flow Monitoring Study
(3) PDWF is presented in Table 7-3 of the East Palo Alto Sanitary District Wastewater Collection System Master Plan Update dated March 2015 prepared by Freyer & Laureta, Inc., herein referred to as "Master Plan Update."
(4) PWWF is presented in Table 7-3 of the Master Plan Update.
(5) PDWF Peaking Factor is calculated by dividing the PDWF by the Overall ADWF.
(6) PWWF Peaking Factor is calculated by dividing the PWWF by the PDW

Abbreviations
ADWF: Average Dry Weather Flow
MGD: Million Gallons per Day
PDWF: Peak Dry Weather Flow
PWWF: Peak Wet Weather Flow

Table 3
Predicated Surcharge Under Existing PWWF
EPASD Master Plan Update
East Palo Alto, California

Segment (1)	Length (Feet) --	Existing Diameter (Inches) (2)	Existing d/D (3)	Downstream Manhole Rim Elevation (feet) (4)	Downstream Manhole HGL (feet) (5)
I24-I13	237	6	1	5.54	5.28
L25-L24	342	8	1	2.38	1.38
L23-L3	351	8	1	3.05	0.983
L3-L2	83	10	1	2.72	0.469
L1-L21	223	10	1	2.74	-0.377
L21-K28	68	10	1	3.27	-0.538
K28-K4	242	10	1	3.55	-1.1
M5-M4	373	8	1	9.9	8.523
I11-I10	380	15	1	7.26	6.837
I10-I9	221	15	1	5.69	5.69
I9-I8	155	15	1	6.15	6.15
I7-I6	259	15	1	4.62	4.62
I6-I5	411	18	1	3.41	3.376
I5-I31	135	18	1	2.94	2.877
I31-I4	321	18	1	1.84	1.704
I4-I3	243	18	1	0.57	0.815
H36-H35	474	6	1	14.34	14.34
H34-H17	269	6	1	12.03	12.03
H17-H57	397	8	1	14.21	14.21
H16-H60	351	8	1	14.57	12.99
H60-H15	99	8	1	14.61	12.63
H14-H13	446	8	1	10.85	10.54
H13-H12	108	8	1	10.15	10.15
H12-H11	333	8	1	9.92	9.92
H11-H64	198	8	1	9.05	9.05
H64-H71	161	8	1	8.35	8.35
H71-H3	35	8	1	8.2	8.16
C12-C1	265	6	1	23.15	16.51
C48-C11	179	6	1	41.2	30.65
C9-C8	84	6	1	29.93	29.28
C8-C7	401	6	1	34.43	28.29
C7-C6	448	6	1	25.82	25.82
C6-C5	87	6	1	25.49	25.49
C5-C4	328	6	1	25.03	24.47
C4-C3	436	6	1	22.97	21.7
C3-C2	398	6	1	21.54	18.55
C2-C1	204	6	1	23.15	16.51
C1-B16	402	8	1	20.39	14.83
B16-B15	327	8	1	20.29	13.47

Table 3
Predicated Surcharge Under Existing PWWF
EPASD Master Plan Update
East Palo Alto, California

Segment (1)	Length (Feet) --	Existing Diameter (Inches) (2)	Existing d/D (3)	Downstream Manhole Rim Elevation (feet) (4)	Downstream Manhole HGL (feet) (5)
B15-B49	331	8	1	17.11	12.09
B49-B14	328	8	1	15.47	10.57
B7-B6	380	12	1	18.29	7.97
B5-B52	176	12	1	20.58	7.33
B4-B3	465	12	1	18.59	5.46
B3-B2	239	12	1	16	4.84
A1-A2	80	12	1	15.82	4.133
A2-A5	244	12	1	14.53	3.45
A5-A8	124	15	1	13.85	3.34
A9-A10	181	15	1	11.42	3.11
A15-A16	435	15	1	8.08	2.38
A16-A21	296	15	1	7.13	2.05
D25-D24	301	6	1	24.01	24.01
D35-D34	178	6	1	33.45	30.14
D33-D24	450	6	1	24.01	24.01
D24-D23	350	8	1	22.62	22.62
D23-D22	73	8	1	22.23	22.23
D22-D21	149	8	1	20.93	20.93
D21-D19	391	8	1	21.54	21.54
D10-D3	489	8	1	21.78	21.78
D5-D4	70	8	1	19	19
D4-D3	296	8	1	18.91	18.91
D3-D2	363	12	1	17.54	17.54
D2-D1	53	12	1	17.33	17.33
D1-E4	354	12	1	16.28	16.28
E4-E3	357	12	1	15.11	14.87
E3-E2	280	12	1	13.48	13.48
E2-E1	283	12	1	12.09	12.09
E1-H9	270	12	1	11.84	11.84
H9-H73	246	12	1	11.36	11.36
H73-H74	101	12	1	11.16	11.16
H74-H8	113	12	1	10.95	10.95
H8-H7	233	12	1	10.51	10.51
H7-H75	90	12	1	10.09	10.09
H75-H6	260	12	1	8.89	8.89
H6-H5	9	12	1	8.95	8.89
H5-H4	260	15	1	8.95	8.97
H4-H3	7	15	1	8.2	8.16
H3-H2	31	15	1	7.99	7.99

Table 3
Predicated Surcharge Under Existing PWWF
EPASD Master Plan Update
East Palo Alto, California

Segment (1)	Length (Feet) --	Existing Diameter (Inches) (2)	Existing d/D (3)	Downstream Manhole Rim Elevation (feet) (4)	Downstream Manhole HGL (feet) (5)
E8-E7	355	8	1	11.77	11.77
E7-E6	311	8	1	11.14	11.14
T28-T27	162	18	1	7.85	1.52
T27-T26	356	18	0.57	7.03	1.42
T26-T25	306	18	0.52	3.95	1.33
T25-T24	282	18	1	3.66	1.22
T19-T18	500	21	1	1.12	-0.42
T18-T17	540	21	1	0.96	-1.65
T17-T16	482	21	1	1.34	-2.74

Notes
(1) Segment indicates the upstream and downstream manholes used to find flow and Depth over Diameter value.
(2) Pipe Diameter directly downstream of upstream manhole.
(3) Calculated by dividing the depth of flow by pipe diameter. This value is evaluated directly downstream of specified manhole under the existing PWWF condition.
(4) Manhole rim elevation from HYDRA7 model.
(5) HGL from HYDRA7 model

Abbreviations
d/D: Depth over Diameter
HGL: Hydraulic Grade Line
PWWF: Peak Wet Weather Flow

Table 4
Capital Improvements to Eliminate
Surcharge and SSOs Under Existing PWWF
EPASD Master Plan Update
East Palo Alto, California

Segment (1)	Length (Feet) --	Existing Diameter (Inches) (2)	Existing d/D (3)	Proposed Diameter (Inches) (2)	Proposed d/D (4)
I24-I13	237	6	1	6	0.72
L25-L24	342	8	1	10	0.53
L24-L23	386	8	0.72	10	0.43
L23-L3	351	8	1	10	0.53
L3-L2	83	10	1	10	0.74
L2-L1	179	10	0.72	10	0.6
L1-L21	223	10	1	12	0.64
L21-K28	68	10	1	14	0.55
K28-K4	242	10	1	14	0.65
M5-M4	373	8	1	8	0.69
H2-I11	37	15	0.53	24	0.24
I11-I10	380	15	1	24	0.39
I10-I9	221	15	1	24	0.36
I9-I8	155	15	1	24	0.47
I8-I7	238	15	0.77	24	0.32
I7-I6	259	15	1	24	0.34
I6-I5	411	18	1	24	0.57
I5-I31	135	18	1	24	0.57
I31-I4	321	18	1	24	0.57
I4-I3	243	18	1	24	0.57
H36-H35	474	6	1	8	0.63
H35-H34	322	6	0.72	8	0.42
H34-H17	269	6	1	8	0.48
H17-H57	397	8	1	10	0.77
H57-H16	40	8	0.57	10	0.36
H16-H60	351	8	1	10	0.48
H60-H15	99	8	1	10	0.48
H15-H62	201	8	0.63	10	0.38
H62-H14	233	8	0.63	10	0.38
H14-H13	446	8	1	12	0.38
H13-H12	108	8	1	12	0.38
H12-H11	333	8	1	12	0.42
H11-H64	198	8	1	12	0.44
H64-H71	161	8	1	12	0.52
H71-H3	35	8	1	12	0.46
C12-C1	265	6	1	8	0.57
C48-C11	179	6	1	6	0.8

Table 4
Capital Improvements to Eliminate
Surcharge and SSOs Under Existing PWWF
EPASD Master Plan Update
East Palo Alto, California

Segment (1)	Length (Feet) --	Existing Diameter (Inches) (2)	Existing d/D (3)	Proposed Diameter (Inches) (2)	Proposed d/D (4)
C9-C8	84	6	1	6	0.72
C8-C7	401	6	1	6	0.8
C7-C6	448	6	1	6	0.72
C6-C5	87	6	1	6	0.72
C5-C4	328	6	1	8	0.51
C4-C3	436	6	1	8	0.48
C3-C2	398	6	1	8	0.51
C2-C1	204	6	1	8	0.78
C1-B16	402	8	1	10	0.48
B16-B15	327	8	1	10	0.5
B15-B49	331	8	1	10	0.5
B49-B14	328	8	1	10	0.5
B7-B6	380	12	1	14	0.81
B6-B5	158	12	0.52	14	0.36
B5-B52	176	12	1	14	0.58
B52-B4	360	12	0.8	14	0.5
B4-B3	465	12	1	14	0.55
B3-B2	239	12	1	14	0.69
B2-A1	181	12	0.82	14	0.51
A1-A2	80	12	1	14	0.63
A2-A5	244	12	1	14	0.63
A5-A8	124	15	1	16	0.77
A8-A9	61	15	0.43	16	0.35
A9-A10	181	15	1	16	0.81
A10-A15	299	15	0.62	16	0.48
A15-A16	435	15	1	16	0.78
A16-A21	296	15	1	16	0.61
A21-A23	155	15	0.59	16	0.47
A23-A22	14	15	0.38	16	0.3
D25-D24	301	6	1	6	0.78
D35-D34	178	6	1	8	0.78
D34-D33	293	6	0.76	8	0.42
D33-D24	450	6	1	8	0.51
D24-D23	350	8	1	10	0.55
D23-D22	73	8	1	10	0.58
D22-D21	149	8	1	10	0.58
D21-D19	391	8	1	10	0.55

Table 4
Capital Improvements to Eliminate
Surcharge and SSOs Under Existing PWWF
EPASD Master Plan Update
East Palo Alto, California

Segment (1)	Length (Feet) --	Existing Diameter (Inches) (2)	Existing d/D (3)	Proposed Diameter (Inches) (2)	Proposed d/D (4)
D19-D10	48	8	0.54	10	0.36
D10-D3	489	8	1	10	0.6
D5-D4	70	8	1	10	0.55
D4-D3	296	8	1	10	0.55
D3-D2	363	12	1	14	0.72
D2-D1	53	12	1	15	0.75
D1-E4	354	12	1	15	0.48
E4-E3	357	12	1	15	0.44
E3-E2	280	12	1	15	0.53
E2-E1	283	12	1	15	0.48
E1-H9	270	12	1	18	0.53
H9-H73	246	12	1	18	0.49
H73-H74	101	12	1	18	0.49
H74-H8	113	12	1	18	0.49
H8-H7	233	12	1	18	0.59
H7-H75	90	12	1	18	0.51
H75-H6	260	12	1	18	0.49
H6-H5	9	12	1	18	0.4
H5-H4	260	15	1	18	0.64
H4-H3	7	15	1	18	0.56
H3-H2	31	15	1	18	0.6
E8-E7	355	8	1	10	0.55
E7-E6	311	8	1	10	0.5
A29-T29	345	18	0.45	24	0.3
T29-T28	234	18	0.43	24	0.28
T28-T27	162	18	1	24	0.54
T27-T26	356	18	0.57	24	0.37
T26-T25	306	18	0.52	24	0.34
T25-T24	282	18	1	24	0.6
T24-T23	317	18	0.53	24	0.34
T23-T22	446	18	0.6	24	0.38
T20-T19	332	18	0.43	24	0.29
T19-T18	500	21	1	24	0.67

Table 4
Capital Improvements to Eliminate
Surcharge and SSOs Under Existing PWWF
EPASD Master Plan Update
East Palo Alto, California

Segment (1)	Length (Feet) --	Existing Diameter (Inches) (2)	Existing d/D (3)	Proposed Diameter (Inches) (2)	Proposed d/D (4)
T18-T17	540	21	1	24	0.67
T17-T16	482	21	1	24	0.71

Notes
(1) Segment indicates the upstream and downstream manholes used to find flow and Depth over Diameter value.
(2) Pipe Diameter directly downstream of upstream manhole.
(3) Calculated by dividing the depth of flow by pipe diameter. This value is evaluated directly downstream of specified manhole under the existing PWWF condition.
(4) Calculated by dividing the depth of flow by pipe diameter. This value is evaluated directly downstream of specified manhole under the existing PWWF condition including pipe size upgrades.

Abbreviations
d/D: Depth over Diameter
PWWF: Peak Wet Weather Flow
SSOs: Sanitary Sewer Overflows

Table 5
Conceptual OPC Eliminating Surcharge Under Existing PWWF (1)
EPASD Master Plan Update
East Palo Alto, California

Item No.	Description	Units	Quantity (2)	Unit Price	Budget
Conceptual Opinion of Probable Construction Cost					
1	Mobilization	ls	1	$ 50,000	$ 50,000
2	Traffic Control	ls	1	$ 20,000	$ 20,000
3	Sheeting, Shoring, and Bracing	ls	1	$ 20,000	$ 20,000
4	6-inch DR 17 HDPE Pipe	lf	1,740	$ 150	$ 261,000
5	8-inch DR 17 HDPE Pipe	lf	3,990	$ 200	$ 798,000
6	10-inch DR 17 HDPE Pipe	lf	6,580	$ 250	$ 1,645,000
7	12-inch DR 17 HDPE Pipe	lf	1,500	$ 300	$ 450,000
8	14-inch DR 17 HDPE Pipe	lf	2,960	$ 350	$ 1,036,000
9	15-inch DR 17 HDPE Pipe	lf	1,330	$ 400	$ 532,000
10	16-inch DR 17 HDPE Pipe	lf	1,570	$ 450	$ 706,500
11	18-inch DR 17 HDPE Pipe	lf	1,620	$ 550	$ 891,000
12	24-inch DR 17 HDPE Pipe	lf	6,700	$ 800	$ 5,360,000
13	Manholes	ea	135	$ 10,000	$ 1,350,000
14	30% Contingency	%	30%	$ 13,119,500	$ 3,935,850
Subtotal - Conceptual Opinion of Probable Construction Cost					**$ 17,055,400**
Engineering and Administration Cost					
15	Design	%	10%	$ 17,055,400	$ 1,705,540
16	Environmental/Permitting	%	10%	$ 17,055,400	$ 1,705,540
17	Construction Management/ Inspection	%	15%	$ 17,055,400	$ 2,558,310
18	District Administration	%	5%	$ 17,055,400	$ 852,770
Subtotal - Engineering and Administration Cost					**$ 6,822,200**
Total Conceptual Opinion of Probable Project Cost					**$ 23,877,600**

Notes
(1) See Table 4 and Figure 4 for limits of improvements.
(2) Quantities rounded to nearest 10 feet.

Table 6
Land Use Changes - 2014 Zoning versus Proposed 2035 Zoning
EPASD Master Plan Update
East Palo Alto, California

APN	Address	2014 Zoning	2035 Zoning
63121400	2091 BAY RD, EAST PALO ALTO	Parks/Recreation/Conservation	Office
63122030	BAY RD, EAST PALO ALTO	Parks/Recreation/Conservation	Office
63132140	1905 BAY RD, EAST PALO ALTO	Parks/Recreation/Conservation	Mixed Use Corridor
63111250	1675 BAY RD, EAST PALO ALTO	Low Density Residential Office	Mixed Use High Mixed Use High
63111230		Parks/Recreation/Conservation	Mixed Use High
63103310	1585 BAY RD, EAST PALO ALTO	Office	Mixed Use High
113530999		Low Density Residential	High Density Residential
113530040	2426 GLORIA WAY, EAST PALO ALTO	Low Density Residential	High Density Residential
113530050	2428 GLORIA WAY, EAST PALO ALTO	Low Density Residential	High Density Residential
113530020	2422 GLORIA WAY, EAST PALO ALTO	Low Density Residential	High Density Residential
113530030	2424 GLORIA WAY, EAST PALO ALTO	Low Density Residential	High Density Residential
113530060	2430 GLORIA WAY, EAST PALO ALTO	Low Density Residential	High Density Residential
113530010	2420 GLORIA WAY, EAST PALO ALTO	Low Density Residential	High Density Residential
113710060	2450 GLORIA WAY, EAST PALO ALTO	Low Density Residential	High Density Residential
113710040	2446 GLORIA WAY, EAST PALO ALTO	Low Density Residential	High Density Residential
113710020	2442 GLORIA WAY, EAST PALO ALTO	Low Density Residential	High Density Residential
113710030	2444 GLORIA WAY, EAST PALO ALTO	Low Density Residential	High Density Residential
113710010	2440 GLORIA WAY, EAST PALO ALTO	Low Density Residential	High Density Residential
113710050	2448 GLORIA WAY, EAST PALO ALTO	Low Density Residential	High Density Residential
113710999		Low Density Residential	High Density Residential
113720999		Low Density Residential	High Density Residential
113720030	2464 GLORIA WAY, EAST PALO ALTO	Low Density Residential	High Density Residential
113720010	2460 GLORIA WAY, EAST PALO ALTO	Low Density Residential	High Density Residential
113720040	2466 GLORIA WAY, EAST PALO ALTO	Low Density Residential	High Density Residential
113720020	2462 GLORIA WAY, EAST PALO ALTO	Low Density Residential	High Density Residential
113740050	2478 GLORIA WAY, EAST PALO ALTO	Low Density Residential	High Density Residential
113740020	2472 GLORIA WAY, EAST PALO ALTO	Low Density Residential	High Density Residential
113740999		Low Density Residential	High Density Residential
113740070	2482 GLORIA WAY, EAST PALO ALTO	Low Density Residential	High Density Residential
113740080	2484 GLORIA WAY, EAST PALO ALTO	Low Density Residential	High Density Residential
113740030	2474 GLORIA WAY, EAST PALO ALTO	Low Density Residential	High Density Residential
113740010	2470 GLORIA WAY, EAST PALO ALTO	Low Density Residential	High Density Residential
113740040	2476 GLORIA WAY, EAST PALO ALTO	Low Density Residential	High Density Residential
113740060	2480 GLORIA WAY, EAST PALO ALTO	Low Density Residential	High Density Residential
63103440	2400 GLORIA WAY, EAST PALO ALTO	Low Density Residential	High Density Residential
63090020	1423-1425A BAY RD, EAST PALO ALTO	Medium Density Residential	Parks/Recreation/Conservation
63090060		Low Density Residential	Public/Institutional
63090080		Low Density Residential	Public/Institutional
63231220	1800 BAY RD, EAST PALO ALTO	Office	Mixed Use Corridor
63231240	1804 BAY RD, EAST PALO ALTO	Office	Mixed Use Corridor
63231250	1798 BAY RD, EAST PALO ALTO	Office	Mixed Use Corridor
63232350	901 WEEKS ST, EAST PALO ALTO	Office	Mixed Use High
63232210	WEEKS ST, EAST PALO ALTO	Office	High Density Residential
63232220	WEEKS ST, EAST PALO ALTO	Office	High Density Residential
63232230	WEEKS ST, EAST PALO ALTO	Office	High Density Residential
63232260	1001 WEEKS ST, EAST PALO ALTO	Office	High Density Residential
63232090	1003 WEEKS ST, EAST PALO ALTO	Office	High Density Residential
63232240	1045 WEEKS ST, EAST PALO ALTO	Office	High Density Residential
63232150	2421 PULGAS AVE, EAST PALO ALTO	Office	High Density Residential
63232300	1095 WEEKS ST, EAST PALO ALTO	Office	High Density Residential
63232250	1085 WEEKS ST, EAST PALO ALTO	Office	High Density Residential
63232160	2447 PULGAS AVE, EAST PALO ALTO	Office	High Density Residential
63221180	2371 CLARKE AVE, EAST PALO ALTO	Low Density Residential	High Density Residential
63221190	2369 CLARKE AVE, EAST PALO ALTO	Low Density Residential	High Density Residential
63221200	891 WEEKS ST, EAST PALO ALTO	Low Density Residential	High Density Residential

Table 6
Land Use Changes - 2014 Zoning versus Proposed 2035 Zoning
EPASD Master Plan Update
East Palo Alto, California

APN	Address	2014 Zoning	2035 Zoning
63221220	867 WEEKS ST, EAST PALO ALTO	Low Density Residential	High Density Residential
63221210	871 WEEKS ST, EAST PALO ALTO	Low Density Residential	High Density Residential
63221230	865 WEEKS ST, EAST PALO ALTO	Low Density Residential	High Density Residential
63221500	863 WEEKS ST, EAST PALO ALTO	Low Density Residential	High Density Residential
63221240		Low Density Residential	High Density Residential
63221250	831 WEEKS ST, EAST PALO ALTO	Low Density Residential	High Density Residential
63221260	819 JAMIE LN, EAST PALO ALTO	Low Density Residential	High Density Residential
63221270	823 JAMIE LN, EAST PALO ALTO	Low Density Residential	High Density Residential
63221280	827 JAMIE LN, EAST PALO ALTO	Low Density Residential	High Density Residential
63221320	817 PAUL ROBESON CT, EAST PALO ALTO	Low Density Residential	High Density Residential
63221310	815 PAUL ROBESON CT, EAST PALO ALTO	Low Density Residential	High Density Residential
63221300	813 PAUL ROBESON CT, EAST PALO ALTO	Low Density Residential	High Density Residential
63221290	811 PAUL ROBESON CT, EAST PALO ALTO	Low Density Residential	High Density Residential
63221380	809 PAUL ROBESON CT, EAST PALO ALTO	Low Density Residential	High Density Residential
63221370	807 PAUL ROBESON CT, EAST PALO ALTO	Low Density Residential	High Density Residential
63221360	805 PAUL ROBESON CT, EAST PALO ALTO	Low Density Residential	High Density Residential
63221350	803 PAUL ROBESON CT, EAST PALO ALTO	Low Density Residential	High Density Residential
63221340	801 WEEKS ST, EAST PALO ALTO	Low Density Residential	High Density Residential
63221390	791 WEEKS ST, EAST PALO ALTO	Low Density Residential	High Density Residential
63221550	785 CAROLE CT, EAST PALO ALTO	Low Density Residential	High Density Residential
63221540	779 CAROLE CT, EAST PALO ALTO	Low Density Residential	High Density Residential
63221530	773 CAROLE CT, EAST PALO ALTO	Low Density Residential	High Density Residential
63221520	767 CAROLE CT, EAST PALO ALTO	Low Density Residential	High Density Residential
63221510	761 WEEKS ST, EAST PALO ALTO	Low Density Residential	High Density Residential
63221410	731 WEEKS ST, EAST PALO ALTO	Low Density Residential	High Density Residential
63221420	717 WEEKS ST, EAST PALO ALTO	Low Density Residential	High Density Residential
63221430	2360 COOLEY AVE, EAST PALO ALTO	Low Density Residential	High Density Residential
63221440	2362-2362 COOLEY AVE, EAST PALO ALTO	Low Density Residential	High Density Residential
63221450	2364 COOLEY AVE, EAST PALO ALTO	Low Density Residential	High Density Residential
63203210	585 WEEKS ST, EAST PALO ALTO	Commercial	Mixed Use High
63203220	579 WEEKS ST, EAST PALO ALTO	Commercial	Low Density Residential
63203230	563 WEEKS ST, EAST PALO ALTO	Commercial	Low Density Residential
63203240	549 WEEKS ST, EAST PALO ALTO	Commercial	Low Density Residential
63203250	541 WEEKS ST, EAST PALO ALTO	Commercial	Low Density Residential
63203260	533 WEEKS ST, EAST PALO ALTO	Commercial	Low Density Residential
63203270		Commercial	Low Density Residential
63203390	1518 BAY RD, EAST PALO ALTO	Commercial	Medium Density Residential
63203370	1508 BAY RD, EAST PALO ALTO	Commercial	Medium Density Residential
63203350	1574 BAY RD, EAST PALO ALTO	Commercial	Medium Density Residential
63203410	1568 BAY RD, EAST PALO ALTO	Commercial	Medium Density Residential
63203400	1560 BAY RD, EAST PALO ALTO	Commercial	Medium Density Residential
63203440	1554 BAY RD, EAST PALO ALTO	Commercial	Medium Density Residential
63203360	1546 BAY RD, EAST PALO ALTO	Commercial	Medium Density Residential
63203450	1538 BAY RD, EAST PALO ALTO	Commercial	Medium Density Residential
63203430	1530 BAY RD, EAST PALO ALTO	Commercial	Medium Density Residential
63203380		Commercial	Medium Density Residential
63202280	2361-2369 UNIVERSITY AVE 101-308, EAST PALO ALTO	High Density Residential	Mixed Use Corridor
63202160	561 SACRAMENTO ST, EAST PALO ALTO	High Density Residential	Mixed Use Corridor
63202100	566 WEEKS ST, EAST PALO ALTO	High Density Residential	Low Density Residential
63202090	564 WEEKS ST, EAST PALO ALTO	High Density Residential	Low Density Residential
63202080	556 WEEKS ST, EAST PALO ALTO	High Density Residential	Low Density Residential
63201270	578 SACRAMENTO ST, EAST PALO ALTO	High Density Residential	Mixed Use Corridor
63201240	2343 UNIVERSITY AVE, EAST PALO ALTO	High Density Residential	Mixed Use Corridor
63201220	2337 UNIVERSITY AVE, EAST PALO ALTO	High Density Residential	Mixed Use Corridor
63201090	576 SACRAMENTO ST, EAST PALO ALTO	High Density Residential	Mixed Use Corridor

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APN	Address	2014 Zoning	2035 Zoning
63201080	566 SACRAMENTO ST, EAST PALO ALTO	High Density Residential	Low Density Residential
63201290	2331 UNIVERSITY AVE, EAST PALO ALTO	High Density Residential	Mixed Use Corridor
63201250	RUNNYMEDE ST, EAST PALO ALTO	High Density Residential	Mixed Use Corridor
63201260	RUNNYMEDE ST, EAST PALO ALTO	High Density Residential	Mixed Use Corridor
63210630	2358 UNIVERSITY AVE, EAST PALO ALTO	Commercial	Mixed Use Corridor
63210450	2377 COOLEY AVE, EAST PALO ALTO	Commercial	Mixed Use Corridor
63210410	2371 COOLEY AVE, EAST PALO ALTO	Commercial	Mixed Use Corridor
63210340	2369 COOLEY AVE, EAST PALO ALTO	Commercial	High Density Residential
63210350	2365 COOLEY AVE, EAST PALO ALTO	Commercial	High Density Residential
63210480	2361 COOLEY AVE, EAST PALO ALTO	Commercial	High Density Residential
63210490	2355 COOLEY AVE, EAST PALO ALTO	Commercial	High Density Residential
63210310	2346 UNIVERSITY AVE, EAST PALO ALTO	High Density Residential	Mixed Use Corridor
63210380	2354 UNIVERSITY AVE, EAST PALO ALTO	High Density Residential	Mixed Use Corridor
63210520	2338 UNIVERSITY AVE, EAST PALO ALTO	High Density Residential	Mixed Use Corridor
114240070	2330 UNIVERSITY AVE # 160, EAST PALO ALTO	High Density Residential	Mixed Use Corridor
114240200	2330 UNIVERSITY AVE # 290, EAST PALO ALTO	High Density Residential	Mixed Use Corridor
114240020	2330 UNIVERSITY AVE # 110, EAST PALO ALTO	High Density Residential	Mixed Use Corridor
114240010	2330 UNIVERSITY AVE # 100, EAST PALO ALTO	High Density Residential	Mixed Use Corridor
114240260	2330 UNIVERSITY AVE # 350, EAST PALO ALTO	High Density Residential	Mixed Use Corridor
114240170	2330 UNIVERSITY AVE # 260, EAST PALO ALTO	High Density Residential	Mixed Use Corridor
114240050	2330 UNIVERSITY AVE # 140, EAST PALO ALTO	High Density Residential	Mixed Use Corridor
114240280	2330 UNIVERSITY AVE # 370, EAST PALO ALTO	High Density Residential	Mixed Use Corridor
114240060	2330 UNIVERSITY AVE # 150, EAST PALO ALTO	High Density Residential	Mixed Use Corridor
114240300	2330 UNIVERSITY AVE # 390, EAST PALO ALTO	High Density Residential	Mixed Use Corridor
114240270	2330 UNIVERSITY AVE # 360, EAST PALO ALTO	High Density Residential	Mixed Use Corridor
114240110	2330 UNIVERSITY AVE # 200, EAST PALO ALTO	High Density Residential	Mixed Use Corridor
114240090	2330 UNIVERSITY AVE # 180, EAST PALO ALTO	High Density Residential	Mixed Use Corridor
114240080	2330 UNIVERSITY AVE # 170, EAST PALO ALTO	High Density Residential	Mixed Use Corridor
114240100	2330 UNIVERSITY AVE # 190, EAST PALO ALTO	High Density Residential	Mixed Use Corridor
114240290	2330 UNIVERSITY AVE # 380, EAST PALO ALTO	High Density Residential	Mixed Use Corridor
114240160	2330 UNIVERSITY AVE # 250, EAST PALO ALTO	High Density Residential	Mixed Use Corridor
114240230	2330 UNIVERSITY AVE # 320, EAST PALO ALTO	High Density Residential	Mixed Use Corridor
114240190	2330 UNIVERSITY AVE # 280, EAST PALO ALTO	High Density Residential	Mixed Use Corridor
114240150	2330 UNIVERSITY AVE # 240, EAST PALO ALTO	High Density Residential	Mixed Use Corridor
114240040	2330 UNIVERSITY AVE # 130, EAST PALO ALTO	High Density Residential	Mixed Use Corridor
114240180	2330 UNIVERSITY AVE # 270, EAST PALO ALTO	High Density Residential	Mixed Use Corridor
114240220	2330 UNIVERSITY AVE # 310, EAST PALO ALTO	High Density Residential	Mixed Use Corridor
114240240	2330 UNIVERSITY AVE # 330, EAST PALO ALTO	High Density Residential	Mixed Use Corridor
114240250	2330 UNIVERSITY AVE # 340, EAST PALO ALTO	High Density Residential	Mixed Use Corridor
114240120	2330 UNIVERSITY AVE # 210, EAST PALO ALTO	High Density Residential	Mixed Use Corridor
114240210	2330 UNIVERSITY AVE # 300, EAST PALO ALTO	High Density Residential	Mixed Use Corridor
114240030	2330 UNIVERSITY AVE # 120, EAST PALO ALTO	High Density Residential	Mixed Use Corridor
114240140	2330 UNIVERSITY AVE # 230, EAST PALO ALTO	High Density Residential	Mixed Use Corridor
114240130	2330 UNIVERSITY AVE # 220, EAST PALO ALTO	High Density Residential	Mixed Use Corridor
63210610	661 RUNNYMEDE ST, EAST PALO ALTO	High Density Residential	Mixed Use Corridor
63210470	633 RUNNYMEDE ST, EAST PALO ALTO	High Density Residential	Mixed Use Corridor
63210360	2300 UNIVERSITY AVE, EAST PALO ALTO	High Density Residential	Mixed Use Corridor
63302340	584 RUNNYMEDE ST, EAST PALO ALTO	Office	Mixed Use Corridor
63302170	2283 UNIVERSITY AVE, EAST PALO ALTO	Office	Mixed Use Corridor
63302180	2281 UNIVERSITY AVE, EAST PALO ALTO	Office	Mixed Use Corridor
63302470	2279 UNIVERSITY AVE, EAST PALO ALTO	Office	Mixed Use Corridor
63302460	2277 UNIVERSITY AVE, EAST PALO ALTO	Office	Mixed Use Corridor
63302210	2263 UNIVERSITY AVE, EAST PALO ALTO	Office	Mixed Use Corridor
63302220	2253 UNIVERSITY AVE, EAST PALO ALTO	Office	Mixed Use Corridor
63302230	2247 UNIVERSITY AVE, EAST PALO ALTO	Office	Mixed Use Corridor
63302330	2201 UNIVERSITY AVE, EAST PALO ALTO	Office	Mixed Use Corridor

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APN	Address	2014 Zoning	2035 Zoning
63302280	575A BELL ST, EAST PALO ALTO	Office	Mixed Use Corridor
63302290	565 BELL ST, EAST PALO ALTO	Office	Mixed Use Corridor
63331420	RUNNYMEDE ST, EAST PALO ALTO	Commercial	Public/Institutional
63331150	2284 UNIVERSITY AVE, EAST PALO ALTO	Commercial	Mixed Use Corridor
63331140	2280 UNIVERSITY AVE, EAST PALO ALTO	Commercial	Mixed Use Corridor
63331130	2276 UNIVERSITY AVE, EAST PALO ALTO	Commercial	Mixed Use Corridor
63331120	2274 UNIVERSITY AVE, EAST PALO ALTO	Commercial	Mixed Use Corridor
63331110	2272 UNIVERSITY AVE, EAST PALO ALTO	Commercial	Mixed Use Corridor
63331100	2268 UNIVERSITY AVE, EAST PALO ALTO	Commercial	Mixed Use Corridor
63331090	2264 UNIVERSITY AVE, EAST PALO ALTO	Commercial	Mixed Use Corridor
63331080	2252 UNIVERSITY AVE, EAST PALO ALTO	Commercial	Mixed Use Corridor
63331070	2248 UNIVERSITY AVE, EAST PALO ALTO	Commercial	Mixed Use Corridor
63331060	2242 UNIVERSITY AVE, EAST PALO ALTO	Commercial	Mixed Use Corridor
63331380	2240 UNIVERSITY AVE, EAST PALO ALTO	Commercial	Mixed Use Corridor
63331410	2220 UNIVERSITY AVE, EAST PALO ALTO	Commercial	Mixed Use Corridor
63331030	2212 UNIVERSITY AVE, EAST PALO ALTO	Commercial	Mixed Use Corridor
63331370	2200 UNIVERSITY AVE, EAST PALO ALTO	Commercial	Mixed Use Corridor
63331190	2291 CAPITOL AVE, EAST PALO ALTO	Commercial	Mixed Use Corridor
63331200	2287 CAPITOL AVE, EAST PALO ALTO	Commercial	Mixed Use Corridor
63331210	2285 CAPITOL AVE, EAST PALO ALTO	Commercial	Mixed Use Corridor
63331220	2277 CAPITOL AVE, EAST PALO ALTO	Commercial	Mixed Use Corridor
63331230	2267 CAPITOL AVE, EAST PALO ALTO	Commercial	Mixed Use Corridor
63331240	2263 CAPITOL AVE, EAST PALO ALTO	Commercial	Mixed Use Corridor
63331250	2255 CAPITOL AVE, EAST PALO ALTO	Commercial	Mixed Use Corridor
63331260	2251 CAPITOL AVE, EAST PALO ALTO	Commercial	Mixed Use Corridor
63331270	2249 CAPITOL AVE, EAST PALO ALTO	Commercial	Mixed Use Corridor
63331280	2245 CAPITOL AVE, EAST PALO ALTO	Commercial	Mixed Use Corridor
63331290	2239 CAPITOL AVE, EAST PALO ALTO	Commercial	Mixed Use Corridor
63331300	2233 CAPITOL AVE, EAST PALO ALTO	Commercial	Mixed Use Corridor
63331310	2227 CAPITOL AVE, EAST PALO ALTO	Commercial	Mixed Use Corridor
63331320	2219 CAPITOL AVE, EAST PALO ALTO	Commercial	Mixed Use Corridor
63331330	2217 CAPITOL AVE, EAST PALO ALTO	Commercial	Mixed Use Corridor
63331340	2205 CAPITOL AVE, EAST PALO ALTO	Commercial	Mixed Use Corridor
63331350	643 BELL ST, EAST PALO ALTO	Commercial	Mixed Use Corridor
63321180	612 BELL ST, EAST PALO ALTO	Commercial	Mixed Use Corridor
63321190	616 BELL ST, EAST PALO ALTO	Commercial	Mixed Use Corridor
63321200	644 BELL ST, EAST PALO ALTO	Commercial	Mixed Use Corridor
63321210	2189 CAPITOL AVE, EAST PALO ALTO	Commercial	Mixed Use Corridor
63321220	2187 CAPITOL AVE, EAST PALO ALTO	Commercial	Mixed Use Corridor
63321230	2181 CAPITOL AVE, EAST PALO ALTO	Commercial	Mixed Use Corridor
63321240	2171 CAPITOL AVE, EAST PALO ALTO	Commercial	Mixed Use Corridor
63321250	2165 CAPITOL AVE, EAST PALO ALTO	Commercial	Mixed Use Corridor
63321260	2161 CAPITOL AVE, EAST PALO ALTO	Commercial	Mixed Use Corridor
63321270	2157 CAPITOL AVE, EAST PALO ALTO	Commercial	Mixed Use Corridor
63321280	2153 CAPITOL AVE, EAST PALO ALTO	Commercial	Mixed Use Corridor
63321290	2149 CAPITOL AVE, EAST PALO ALTO	Commercial	Mixed Use Corridor
63321300	2145 CAPITOL AVE, EAST PALO ALTO	Commercial	Mixed Use Corridor
63321310	2141 CAPITOL AVE, EAST PALO ALTO	Commercial	Mixed Use Corridor
63321320	2133 CAPITOL AVE, EAST PALO ALTO	Commercial	Mixed Use Corridor
63321330	2129 CAPITOL AVE, EAST PALO ALTO	Commercial	Mixed Use Corridor
63321400	2194 UNIVERSITY AVE, EAST PALO ALTO	Commercial	Mixed Use Corridor
63321140	2178 UNIVERSITY AVE, EAST PALO ALTO	Commercial	Mixed Use Corridor
63321130	2172 UNIVERSITY AVE, EAST PALO ALTO	Commercial	Mixed Use Corridor
63321120	2166 UNIVERSITY AVE, EAST PALO ALTO	Commercial	Mixed Use Corridor
63321110	2164 UNIVERSITY AVE, EAST PALO ALTO	Commercial	Mixed Use Corridor
63321100	2160 UNIVERSITY AVE, EAST PALO ALTO	Commercial	Mixed Use Corridor

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APN	Address	2014 Zoning	2035 Zoning
63321410	2148 UNIVERSITY AVE, EAST PALO ALTO	Commercial	Mixed Use Corridor
63321080	2142 UNIVERSITY AVE, EAST PALO ALTO	Commercial	Mixed Use Corridor
63321070		Commercial	Mixed Use Corridor
63321060	2126 UNIVERSITY AVE, EAST PALO ALTO	Commercial	Mixed Use Corridor
63321050	2124 UNIVERSITY AVE, EAST PALO ALTO	Commercial	Mixed Use Corridor
63321420		Commercial	Office
63322150	2198 CAPITOL AVE, EAST PALO ALTO	Commercial	Medium Density Residential
63322160	660 BELL ST, EAST PALO ALTO	Commercial	Medium Density Residential
63322140	2194 CAPITOL AVE, EAST PALO ALTO	Commercial	Medium Density Residential
63322130	2184 CAPITOL AVE, EAST PALO ALTO	Commercial	Medium Density Residential
63322340	2169 COOLEY AVE, EAST PALO ALTO	Commercial	Medium Density Residential
63322110	2162 CAPITOL AVE, EAST PALO ALTO	Commercial	Medium Density Residential
63322500	2159 COOLEY AVE, EAST PALO ALTO	Commercial	Medium Density Residential
63322100	2154 CAPITOL AVE, EAST PALO ALTO	Commercial	Medium Density Residential
63322090	2144 CAPITOL AVE, EAST PALO ALTO	Commercial	Medium Density Residential
63322080	2142 CAPITOL AVE, EAST PALO ALTO	Commercial	Medium Density Residential
63322070	2138 CAPITOL AVE, EAST PALO ALTO	Commercial	Medium Density Residential
63322060	2134 CAPITOL AVE, EAST PALO ALTO	Commercial	Medium Density Residential
63322050	2132 CAPITOL AVE, EAST PALO ALTO	Commercial	Medium Density Residential
63322040	2124 CAPITOL AVE, EAST PALO ALTO	Commercial	Medium Density Residential
63322580	2118 CAPITOL AVE, EAST PALO ALTO	Commercial	Medium Density Residential
63322560	DONOHOE ST, EAST PALO ALTO	High Density Residential	Office
63322410		High Density Residential	Office
63292380	2160 EUCLID AVE, EAST PALO ALTO	Low Density Residential	Mixed Use High
63292370	2117 UNIVERSITY AVE, EAST PALO ALTO	Office, High Density Residential	Mixed Use High
63292180	2101 UNIVERSITY AVE, EAST PALO ALTO	Commercial	Mixed Use High
63291010	1489 E BAYSHORE RD, EAST PALO ALTO	Commercial	Mixed Use Low
63184010	1475 E BAYSHORE RD, EAST PALO ALTO	Commercial	Mixed Use Low
63184020	2056 GLEN WAY, EAST PALO ALTO	Low Density Residential	Mixed Use Low
63184030	2070 GLEN WAY, EAST PALO ALTO	Low Density Residential	Mixed Use Low
63184040	2080 GLEN WAY, EAST PALO ALTO	Low Density Residential	Mixed Use Low
63183080	1435 E BAYSHORE RD, EAST PALO ALTO	Commercial	Mixed Use Low
63183070	2045 GLEN WAY, EAST PALO ALTO	Commercial	Mixed Use Low
63183090		Commercial	Mixed Use Low
63183110	1401 E BAYSHORE RD 2, EAST PALO ALTO	Commercial	Mixed Use Low
63183010	2088 LINCOLN ST, EAST PALO ALTO	Commercial	Mixed Use Low
63181240	1385 E BAYSHORE RD, EAST PALO ALTO	Commercial	Mixed Use Low
63181010	2110 DUMBARTON AVE, EAST PALO ALTO	Commercial	Mixed Use Low
63181230	2097 LINCOLN ST, EAST PALO ALTO	Low Density Residential	Mixed Use Low
63181220	2111 LINCOLN ST, EAST PALO ALTO	Low Density Residential	Mixed Use Low
63155190	2109 DUMBARTON AVE, EAST PALO ALTO	Commercial	Mixed Use Low
63155180	2123 DUMBARTON AVE, EAST PALO ALTO	Commercial	Mixed Use Low
63155010	2106 OAKWOOD DR, EAST PALO ALTO	Commercial	Mixed Use Low
63154260	2119 OAKWOOD DR, EAST PALO ALTO	Commercial	Mixed Use Low
63154200	2110 ADDISON AVE, EAST PALO ALTO	Commercial	Mixed Use Low
63153250	2119 ADDISON AVE, EAST PALO ALTO	Commercial	Mixed Use Low
63153010	1205 E BAYSHORE RD, EAST PALO ALTO	Commercial	Mixed Use Low
63152230	1199 E BAYSHORE RD, EAST PALO ALTO	Commercial	Mixed Use Low
63151170	2159 POPLAR AVE, EAST PALO ALTO	Commercial	Mixed Use Low
63151200	1001 E BAYSHORE RD, EAST PALO ALTO	Commercial	Mixed Use Low
63154240		Parks/Recreation/Conservation	Public/Institutional
63271480		Parks/Recreation/Conservation	Industrial Buffer
63271370	1171 RUNNYMEDE ST, EAST PALO ALTO	Low Density Residential	High Density Residential
63272080	1286 RUNNYMEDE ST, EAST PALO ALTO	Low Density Residential	Public/Institutional
63381190		Low Density Residential	Public/Institutional
63341130	1063 GARDEN ST, EAST PALO ALTO	Low Density Residential	Public/Institutional

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APN	Address	2014 Zoning	2035 Zoning
63341150	1039 GARDEN ST, EAST PALO ALTO	Low Density Residential	Public/Institutional
63600060	1266 BEECH ST, EAST PALO ALTO	Low Density Residential	Parks/Recreation/Conservation
63352170	980 MYRTLE ST, EAST PALO ALTO	Low Density Residential	Public/Institutional
63352480	1050 MYRTLE ST, EAST PALO ALTO	Low Density Residential	Public/Institutional
63491040	2033A PULGAS AVE, EAST PALO ALTO	Low Density Residential	Public/Institutional
63491030	951 OCONNOR ST, EAST PALO ALTO	Low Density Residential	Public/Institutional
63511240	896 DONOHOE ST, EAST PALO ALTO	Commercial	Mixed Use Corridor
63511260	890 DONOHOE ST, EAST PALO ALTO	Commercial	Mixed Use Corridor
63511020	2039 CLARKE AVE, EAST PALO ALTO	Commercial	Mixed Use Corridor
63511030	2035 CLARKE AVE, EAST PALO ALTO	Commercial	Mixed Use Corridor
63511040	2029 CLARKE AVE, EAST PALO ALTO	Commercial	Mixed Use Corridor
63511050	2027 CLARKE AVE, EAST PALO ALTO	Commercial	Mixed Use Corridor
63511060	2023 CLARKE AVE, EAST PALO ALTO	Commercial	Mixed Use Corridor
63511070	2017 CLARKE AVE, EAST PALO ALTO	Commercial	Mixed Use Corridor
63511080	2013 CLARKE AVE, EAST PALO ALTO	Commercial	Mixed Use Corridor
63511090	2009 CLARKE AVE, EAST PALO ALTO	Commercial	Mixed Use Corridor
63511660	899 OCONNOR ST, EAST PALO ALTO	Commercial	Mixed Use Corridor
63511220	862 DONOHOE ST, EAST PALO ALTO	Commercial	Mixed Use Corridor
63511250	860 DONOHOE ST, EAST PALO ALTO	Commercial	Mixed Use Corridor
63511210	864 DONOHOE ST, EAST PALO ALTO	Commercial	Mixed Use Corridor
63511200	866 DONOHOE ST, EAST PALO ALTO	Commercial	Mixed Use Corridor
63511190	872 DONOHOE ST, EAST PALO ALTO	Commercial	Mixed Use Corridor
114460020	1765 EAST BAYSHORE RD, EAST PALO ALTO	Commercial	Mixed Use Corridor
114460090	1765 EAST BAYSHORE RD, EAST PALO ALTO	Commercial	Mixed Use Corridor
114460030	1765 EAST BAYSHORE RD, EAST PALO ALTO	Commercial	Mixed Use Corridor
114460170	1765 EAST BAYSHORE RD, EAST PALO ALTO	Commercial	Mixed Use Corridor
114460060	1765 EAST BAYSHORE RD 206, EAST PALO ALTO	Commercial	Mixed Use Corridor
114460100	1765 EAST BAYSHORE RD, EAST PALO ALTO	Commercial	Mixed Use Corridor
114460270	1765 EAST BAYSHORE RD, EAST PALO ALTO	Commercial	Mixed Use Corridor
114460260	1765 EAST BAYSHORE RD, EAST PALO ALTO	Commercial	Mixed Use Corridor
114460140	1765 EAST BAYSHORE RD, EAST PALO ALTO	Commercial	Mixed Use Corridor
114450060	1765 EAST BAYSHORE RD A1&A2, EAST PALO ALTO	Commercial	Mixed Use Corridor
114460210	1765 EAST BAYSHORE RD 221, EAST PALO ALTO	Commercial	Mixed Use Corridor
114450020	1765 EAST BAYSHORE RD, EAST PALO ALTO	Commercial	Mixed Use Corridor
114460040	1765 EAST BAYSHORE RD, EAST PALO ALTO	Commercial	Mixed Use Corridor
114450040	1765 EAST BAYSHORE RD, EAST PALO ALTO	Commercial	Mixed Use Corridor
114460200	1765 EAST BAYSHORE RD, EAST PALO ALTO	Commercial	Mixed Use Corridor
114450010	1765 EAST BAYSHORE RD, EAST PALO ALTO	Commercial	Mixed Use Corridor
114460050	1765 EAST BAYSHORE RD, EAST PALO ALTO	Commercial	Mixed Use Corridor
114460180	1765 EAST BAYSHORE RD 218, EAST PALO ALTO	Commercial	Mixed Use Corridor
114460250	1765 EAST BAYSHORE RD, EAST PALO ALTO	Commercial	Mixed Use Corridor
114460110	1765 EAST BAYSHORE RD, EAST PALO ALTO	Commercial	Mixed Use Corridor
114460150	1765 EAST BAYSHORE RD, EAST PALO ALTO	Commercial	Mixed Use Corridor
114450050	1765 EAST BAYSHORE RD, EAST PALO ALTO	Commercial	Mixed Use Corridor
114460160	1765 EAST BAYSHORE RD, EAST PALO ALTO	Commercial	Mixed Use Corridor
114460280	1765 EAST BAYSHORE RD, EAST PALO ALTO	Commercial	Mixed Use Corridor
114460120	1765 EAST BAYSHORE RD, EAST PALO ALTO	Commercial	Mixed Use Corridor
114450030	1765 EAST BAYSHORE RD, EAST PALO ALTO	Commercial	Mixed Use Corridor
114460010	1765 EAST BAYSHORE RD, EAST PALO ALTO	Commercial	Mixed Use Corridor
114460220	1765 EAST BAYSHORE RD, EAST PALO ALTO	Commercial	Mixed Use Corridor
114460240	1765 EAST BAYSHORE RD, EAST PALO ALTO	Commercial	Mixed Use Corridor
114460290	1765 EAST BAYSHORE RD, EAST PALO ALTO	Commercial	Mixed Use Corridor
114460070	1765 EAST BAYSHORE RD, EAST PALO ALTO	Commercial	Mixed Use Corridor
114460130	1765 EAST BAYSHORE RD, EAST PALO ALTO	Commercial	Mixed Use Corridor
114460300	1765 EAST BAYSHORE RD, EAST PALO ALTO	Commercial	Mixed Use Corridor

Table 6
Land Use Changes - 2014 Zoning versus Proposed 2035 Zoning
EPASD Master Plan Update
East Palo Alto, California

APN	Address	2014 Zoning	2035 Zoning
114460190	1765 EAST BAYSHORE RD, EAST PALO ALTO	Commercial	Mixed Use Corridor
114460230	1765 EAST BAYSHORE RD, EAST PALO ALTO	Commercial	Mixed Use Corridor
114460080	1765 EAST BAYSHORE RD, EAST PALO ALTO	Commercial	Mixed Use Corridor
63511520	1761 E BAYSHORE RD, EAST PALO ALTO	Commercial	Mixed Use High
63511680	1751 EAST BAYSHORE RD, EAST PALO ALTO	Commercial	Mixed Use High
63511690	1745 E BAYSHORE BLVD, EAST PALO ALTO	Commercial	Mixed Use High
63511490	1731 E BAYSHORE RD, EAST PALO ALTO	Commercial	Mixed Use High
63511630	1721 E BAYSHORE RD, EAST PALO ALTO	Commercial	Mixed Use High
63511720	1775 E BAYSHORE RD, EAST PALO ALTO	Commercial	Mixed Use High
63312400		Commercial	Office
63665020	1960-1962 TATE ST, EAST PALO ALTO	Medium Density Residential	Parks/Recreation/Conservation
63676020	1960-1962 TATE ST, EAST PALO ALTO	Medium Density Residential	Parks/Recreation/Conservation
134241370		High Density Residential	Low Density Residential
134241090	1885 E BAYSHORE RD SPC 9, EAST PALO ALTO	High Density Residential	Low Density Residential
134241100	1885 E BAYSHORE RD SPC 10, EAST PALO ALTO	High Density Residential	Low Density Residential
134241360		High Density Residential	Low Density Residential
134241120		High Density Residential	Low Density Residential
134241891	1885 E BAYSHORE RD, EAST PALO ALTO	High Density Residential	Low Density Residential
134241400	1885 E BAYSHORE RD SPC 40, EAST PALO ALTO	High Density Residential	Low Density Residential
134241750	1885 E BAYSHORE RD SPC 75, EAST PALO ALTO	High Density Residential	Low Density Residential
134241680		High Density Residential	Low Density Residential
134241080		High Density Residential	Low Density Residential
134241650		High Density Residential	Low Density Residential
134241791	1885 E BAYSHORE RD SPC 79, EAST PALO ALTO	High Density Residential	Low Density Residential
134241630	1885 E BAYSHORE RD, EAST PALO ALTO	High Density Residential	Low Density Residential
134241140	1885 E BAYSHORE RD #14, EAST PALO ALTO	High Density Residential	Low Density Residential
134241520		High Density Residential	Low Density Residential
134241720	1885 E BAYSHORE RD SPC 72, EAST PALO ALTO	High Density Residential	Low Density Residential
134241240	1885 E BAYSHORE RD SPC 24, EAST PALO ALTO	High Density Residential	Low Density Residential
134241340		High Density Residential	Low Density Residential
134241380		High Density Residential	Low Density Residential
134241810		High Density Residential	Low Density Residential
134241261	1885 E BAYSHORE RD SPC 26, EAST PALO ALTO	High Density Residential	Low Density Residential
134242180		High Density Residential	Low Density Residential
134241980	1885 E BAYSHORE RD SPC 98, EAST PALO ALTO	High Density Residential	Low Density Residential
134241221	1885 E BAYSHORE RD SPC 22, EAST PALO ALTO	High Density Residential	Low Density Residential
134241960	1885 E BAYSHORE RD #96, EAST PALO ALTO	High Density Residential	Low Density Residential
134241580	1885 E BAYSHORE RD SPC 58, EAST PALO ALTO	High Density Residential	Low Density Residential
134241870		High Density Residential	Low Density Residential
134241350	1885 E BAYSHORE RD, EAST PALO ALTO	High Density Residential	Low Density Residential
134241991		High Density Residential	Low Density Residential
134241780	1885 E BAYSHORE RD SPC 78, EAST PALO ALTO	High Density Residential	Low Density Residential
134241550	1885 E BAYSHORE BLVD #55, EAST PALO ALTO	High Density Residential	Low Density Residential
134241200	1885 E BAYSHORE RD SPC 20, EAST PALO ALTO	High Density Residential	Low Density Residential
134241770	1885 E BAYSHORE RD SPC 77, EAST PALO ALTO	High Density Residential	Low Density Residential
134242070		High Density Residential	Low Density Residential
134241660	1885 E BAYSHORE RD SPC 66, EAST PALO ALTO	High Density Residential	Low Density Residential
134241150		High Density Residential	Low Density Residential
134242131	1885 E BAYSHORE RD SPC 112, EAST PALO ALTO	High Density Residential	Low Density Residential
134242110		High Density Residential	Low Density Residential
134241530	1885 E BAYSHORE RD SPC 53, EAST PALO ALTO	High Density Residential	Low Density Residential
134241070		High Density Residential	Low Density Residential
134241640	1885 E BAYSHORE RD SPC 64, EAST PALO ALTO	High Density Residential	Low Density Residential
134241590	1885 E BAYSHORE RD #59, EAST PALO ALTO	High Density Residential	Low Density Residential
134241160	1885 E BAYSHORE RD #16, EAST PALO ALTO	High Density Residential	Low Density Residential
134241790		High Density Residential	Low Density Residential

Table 6
Land Use Changes - 2014 Zoning versus Proposed 2035 Zoning
EPASD Master Plan Update
East Palo Alto, California

APN	Address	2014 Zoning	2035 Zoning
134241560	1885 E BAYSHORE RD SPC 56, EAST PALO ALTO	High Density Residential	Low Density Residential
134241060		High Density Residential	Low Density Residential
134241921	1885 E BAYSHORE RD SPC 92, EAST PALO ALTO	High Density Residential	Low Density Residential
134241390		High Density Residential	Low Density Residential
134241010	1885 E BAYSHORE RD SPC 1, EAST PALO ALTO	High Density Residential	Low Density Residential
134242140		High Density Residential	Low Density Residential
134241330	1885 E BAYSHORE RD SPC 33, EAST PALO ALTO	High Density Residential	Low Density Residential
134241300		High Density Residential	Low Density Residential
134241850		High Density Residential	Low Density Residential
134241670	1885 E BAYSHORE RD SPC 67, EAST PALO ALTO	High Density Residential	Low Density Residential
134242050		High Density Residential	Low Density Residential
134241800		High Density Residential	Low Density Residential
134241510	1885 E BAYSHORE RD SPC 51, EAST PALO ALTO	High Density Residential	Low Density Residential
134241311	1855 E BAYSHORE RD #31, EAST PALO ALTO	High Density Residential	Low Density Residential
134241050	1885 E BAYSHORE RD SPC 5, EAST PALO ALTO	High Density Residential	Low Density Residential
134241831	1885 E BAYSHORE RD SPC 83, EAST PALO ALTO	High Density Residential	Low Density Residential
134241110	1885 E BAYSHORE RD SPC 11, EAST PALO ALTO	High Density Residential	Low Density Residential
134241950	1885 E BAYSHORE RD SPC 95, EAST PALO ALTO	High Density Residential	Low Density Residential
134241860		High Density Residential	Low Density Residential
134241700	1885 E BAYSHORE RD #70, EAST PALO ALTO	High Density Residential	Low Density Residential
134241930	1885 E BAYSHORE RD SPC 93, EAST PALO ALTO	High Density Residential	Low Density Residential
134241821	1885 E BAYSHORE RD SPC 82, EAST PALO ALTO	High Density Residential	Low Density Residential
134242040	1885 E BAYSHORE RD #103, EAST PALO ALTO	High Density Residential	Low Density Residential
134241681		High Density Residential	Low Density Residential
134241290	1885 E BAYSHORE RD SPC 29, EAST PALO ALTO	High Density Residential	Low Density Residential
134241470	1885 E BAYSHORE RD SPC 47, EAST PALO ALTO	High Density Residential	Low Density Residential
134241690	1885 E BAYSHORE RD SPC 69, EAST PALO ALTO	High Density Residential	Low Density Residential
134241410		High Density Residential	Low Density Residential
134241900	1885 E BAYSHORE RD SPC 90, EAST PALO ALTO	High Density Residential	Low Density Residential
134241420	1885 E BAYSHORE RD SPC 42, EAST PALO ALTO	High Density Residential	Low Density Residential
134241910	1885 E BAYSHORE RD SPC 91, EAST PALO ALTO	High Density Residential	Low Density Residential
134241190	1885 E BAYSHORE RD SPC 19, EAST PALO ALTO	High Density Residential	Low Density Residential
134241230		High Density Residential	Low Density Residential
134241270	1885 E BAYSHORE RD SPC 27, EAST PALO ALTO	High Density Residential	Low Density Residential
134241210		High Density Residential	Low Density Residential
134242150		High Density Residential	Low Density Residential
134241490	1885 E BAYSHORE RD SPC 49, EAST PALO ALTO	High Density Residential	Low Density Residential
134241801	1885 E BAYSHORE RD #80, EAST PALO ALTO	High Density Residential	Low Density Residential
134241280	1885 E BAYSHORE RD SPC 28, EAST PALO ALTO	High Density Residential	Low Density Residential
134242060	1885 E BAYSHORE RD SPC 105, EAST PALO ALTO	High Density Residential	Low Density Residential
134241880		High Density Residential	Low Density Residential
134241180		High Density Residential	Low Density Residential
134242100		High Density Residential	Low Density Residential
134241761		High Density Residential	Low Density Residential
63492270	1885 E BAYSHORE RD, EAST PALO ALTO	High Density Residential	Low Density Residential
134241310		High Density Residential	Low Density Residential
134241570	1885 E BAYSHORE RD SPC 57, EAST PALO ALTO	High Density Residential	Low Density Residential
134241020	1885 E BAYSHORE RD SPC 2, EAST PALO ALTO	High Density Residential	Low Density Residential
63492280	1933 PULGAS AVE, EAST PALO ALTO	Commercial	Medium Density Residential
63492070	1927 E BAYSHORE RD, EAST PALO ALTO	Commercial	Mixed Use Corridor
63492480	1895 E BAYSHORE RD, EAST PALO ALTO	Commercial	Mixed Use Corridor
63571090	1905 E BAYSHORE RD, EAST PALO ALTO	Commercial	Mixed Use Corridor
63571080	1961 E BAYSHORE RD, EAST PALO ALTO	Commercial	Mixed Use Corridor
63571060	1985 E BAYSHORE RD, EAST PALO ALTO	Commercial	Mixed Use Corridor
63571070	1981 E BAYSHORE RD, EAST PALO ALTO	Commercial	Mixed Use Corridor
63501020	1874 W BAYSHORE RD, EAST PALO ALTO	Commercial	Mixed Use Low

Table 6
Land Use Changes - 2014 Zoning versus Proposed 2035 Zoning
EPASD Master Plan Update
East Palo Alto, California

APN	Address	2014 Zoning	2035 Zoning
63501030	1870 W BAYSHORE RD, EAST PALO ALTO	Commercial	Mixed Use Low
63501040	1879 WOODLAND AVE, EAST PALO ALTO	Commercial	Mixed Use Low
63501050	1875 WOODLAND AVE, EAST PALO ALTO	Commercial	Mixed Use Low
63515060	1821 CLARKE AVE, EAST PALO ALTO	High Density Residential	Low Density Residential
63515070	1805 CLARKE AVE, EAST PALO ALTO	High Density Residential	Low Density Residential
63515080	1787 WOODLAND AVE, EAST PALO ALTO	High Density Residential	Low Density Residential
63515230	1785 WOODLAND AVE, EAST PALO ALTO	High Density Residential	Low Density Residential
63484130	1957 COOLEY AVE, EAST PALO ALTO	Commercial	High Density Residential
63484090	1949 COOLEY AVE, EAST PALO ALTO	Commercial	High Density Residential
63484100	1941 COOLEY AVE, EAST PALO ALTO	Commercial	High Density Residential
63484110	685 SCOFIELD AVE, EAST PALO ALTO	Commercial	High Density Residential
63484060	1934 CAPITOL AVE, EAST PALO ALTO	Commercial	High Density Residential
63484050	1920 CAPITOL AVE, EAST PALO ALTO	Commercial	High Density Residential
63484040	1916 CAPITOL AVE, EAST PALO ALTO	Commercial	High Density Residential
63484030	1908 CAPITOL AVE, EAST PALO ALTO	Commercial	High Density Residential
63484020	1902 CAPITOL AVE, EAST PALO ALTO	Commercial	High Density Residential
63484010	655 SCOFIELD AVE, EAST PALO ALTO	Commercial	High Density Residential
63483040	1943 CAPITOL AVE, EAST PALO ALTO	Commercial	High Density Residential
63483050	1609 WOODLAND AVE, EAST PALO ALTO	Commercial	High Density Residential
63483030	1909 CAPITOL AVE, EAST PALO ALTO	Commercial	Medium Density Residential
63482030	611 CIRCLE DR, EAST PALO ALTO	Commercial	Medium Density Residential
63482020	621 CIRCLE DR, EAST PALO ALTO	Commercial	Medium Density Residential
63482010	641 CIRCLE DR, EAST PALO ALTO	Commercial	Medium Density Residential
63481120	660 SCOFIELD AVE, EAST PALO ALTO	Commercial	Medium Density Residential
63481130	610 CIRCLE DR, EAST PALO ALTO	Commercial	Medium Density Residential
63481140	620 CIRCLE DR, EAST PALO ALTO	Commercial	Medium Density Residential
63481150	630 CIRCLE DR, EAST PALO ALTO	Commercial	Medium Density Residential
63481160	640 CIRCLE DR, EAST PALO ALTO	Commercial	Medium Density Residential
63481170	650 CIRCLE DR, EAST PALO ALTO	Commercial	Medium Density Residential
63481110	652 SCOFIELD AVE, EAST PALO ALTO	Commercial	Medium Density Residential
63481100	644 SCOFIELD AVE, EAST PALO ALTO	Commercial	Medium Density Residential
63481090	1621 WOODLAND AVE, EAST PALO ALTO	Commercial	Medium Density Residential
63481080	1629 WOODLAND AVE, EAST PALO ALTO	Commercial	Medium Density Residential
63481070	1637 WOODLAND AVE, EAST PALO ALTO	Commercial	Medium Density Residential
63481060	1643 WOODLAND AVE, EAST PALO ALTO	Commercial	Medium Density Residential
63481050	1651 WOODLAND AVE, EAST PALO ALTO	Commercial	Medium Density Residential
63481040	1669 WOODLAND AVE, EAST PALO ALTO	Commercial	Medium Density Residential
63481030	1671 WOODLAND AVE, EAST PALO ALTO	Commercial	Medium Density Residential
63481020	1681 WOODLAND AVE, EAST PALO ALTO	Commercial	Medium Density Residential
63481010	1699 WOODLAND AVE, EAST PALO ALTO	Commercial	Medium Density Residential
63481210	1901 COOLEY AVE, EAST PALO ALTO	Commercial	Medium Density Residential
63481220	1905 COOLEY AVE, EAST PALO ALTO	Commercial	Medium Density Residential
63481190	1909 COOLEY AVE, EAST PALO ALTO	Commercial	Medium Density Residential
63481180	1917 COOLEY AVE, EAST PALO ALTO	Commercial	Medium Density Residential
63680050		Commercial	Office
63680150	2050 UNIVERSITY AVE, EAST PALO ALTO	Commercial	Office
63680130	2000 UNIVERSITY AVE, EAST PALO ALTO	Commercial	Office
63680020	1900 UNIVERSITY AVE, EAST PALO ALTO	Commercial	Office
63680100		Commercial	Office
63680110		Commercial	Office
63680190	2000 UNIVERSITY AVE, EAST PALO ALTO	Commercial	Office
63680090		Commercial	Office
63680180		Commercial	Office
63680060		Commercial	Office
63282080	2033 MANHATTAN AVE, EAST PALO ALTO	Commercial	High Density Residential
63282090	2001 MANHATTAN AVE, EAST PALO ALTO	Commercial	High Density Residential

Table 6
Land Use Changes - 2014 Zoning versus Proposed 2035 Zoning
EPASD Master Plan Update
East Palo Alto, California

APN	Address	2014 Zoning	2035 Zoning
63473150	1995 MANHATTAN AVE, EAST PALO ALTO	Commercial	High Density Residential
63473160	1991 MANHATTAN AVE, EAST PALO ALTO	Commercial	High Density Residential
63473170	1965 MANHATTAN AVE, EAST PALO ALTO	Commercial	High Density Residential
63473180	1955 MANHATTAN AVE, EAST PALO ALTO	Commercial	High Density Residential
63473190	1919 MANHATTAN AVE, EAST PALO ALTO	Commercial	High Density Residential
63473200	1901 MANHATTAN AVE, EAST PALO ALTO	Commercial	High Density Residential
63442360	330 DONOHOE ST, EAST PALO ALTO	Low Density Residential	High Density Residential

Notes
(1) Assessor Parcel Number (APNs) for all parcels is provided and street addresses are included when the parcel has an assigned address. If no address is available, the cell is left blank.
(2) 2014 zoning is the zoning for the parcel at the time of the preparation of the 2015 Master Plan for the East Palo Alto Sanitary District.
(3) 2035 Zoning is for the City of East Palo Alto's recently adopted General Plan.

Table 7
2014 Zoning Sanitary Sewer Flows
EPASD Master Plan Update
East Palo Alto Sanitary District

APN (1)	Address (1)	Land Use from EDS (2)	Equivalent Dwelling Units (3)	Average Daily Flow for Residential , GPD (4)
063-103-310	1585 BAY RD, EAST PALO ALTO	Restaurant	30	7,240
063-103-440	2400 GLORIA WAY, EAST PALO ALTO	Res-Multpl	40	9,600
063-111-230	BETWEEN 1585 AND 1675 BAY RD, EAST PALO ALTO	Public	0	0
063-111-250	1675 BAY RD, EAST PALO ALTO	Commercial	1	240
063-121-400	2091 BAY RD, EAST PALO ALTO	Commercial	1	240
063-122-030	1990 BAY RD, EAST PALO ALTO	Res-Single	1	240
063-132-140	1905 BAY RD, EAST PALO ALTO	Industrial	1	240
063-151-170	2159 POPLAR AVE, EAST PALO ALTO	Res-Multpl	2	480
063-151-200	1001 E BAYSHORE RD, EAST PALO ALTO	Res-Single	1	240
063-152-230	1199 E BAYSHORE RD, EAST PALO ALTO	Church	1	240
063-153-010	1205 E BAYSHORE RD, EAST PALO ALTO	No hookup	0	0
063-153-250	2119 ADDISON AVE, EAST PALO ALTO	Manual	0	0
063-154-200	2110 ADDISON AVE, EAST PALO ALTO	Commercial	1	240
063-154-260	2119 OAKWOOD DR, EAST PALO ALTO	Res-Multpl	1	240
063-155-010	2106 OAKWOOD DR, EAST PALO ALTO	Commercial	1	240
063-155-180	2123 DUMBARTON AVE, EAST PALO ALTO	Res-Single	1	240
063-155-190	2109 DUMBARTON AVE, EAST PALO ALTO	Res-Multpl	1	240
063-181-010	2110 DUMBARTON AVE, EAST PALO ALTO	Res-Multpl	1	240
063-181-220	2111 LINCOLN ST, EAST PALO ALTO	Res-Single	1	240
063-181-230	2097 LINCOLN ST, EAST PALO ALTO	Res-Single	1	240
063-181-240	1385 E BAYSHORE RD, EAST PALO ALTO	No hookup	0	0
063-183-010	2088 LINCOLN ST, EAST PALO ALTO	Res-Multpl	1	240
063-183-070	2045 GLEN WAY, EAST PALO ALTO	Res-Multpl	1	240
063-183-080	1441 E BAYSHORE RD, EAST PALO ALTO	Commercial	1	240
063-183-090	, EAST PALO ALTO	No hookup	0	0
063-183-110	1401 E BAYSHORE RD 2, EAST PALO ALTO	Res-Multpl	0	0
063-184-010	1475 E BAYSHORE RD, EAST PALO ALTO	Commercial	0	0
063-184-020	2056 GLEN WAY, EAST PALO ALTO	Res-Multpl	0	0
063-184-030	2070 GLEN WAY, EAST PALO ALTO	Res-Multpl	0	0
063-184-040	2080 GLEN WAY, EAST PALO ALTO	Manual	0	0
063-201-080	566 SACRAMENTO ST, EAST PALO ALTO	Res-Multpl	1	240
063-201-090	576 SACRAMENTO ST, EAST PALO ALTO	Res-Single	1	240
063-201-220	2337 UNIVERSITY AVE, EAST PALO ALTO	Res-Single	1	240
063-201-240	2343 UNIVERSITY AVE, EAST PALO ALTO	Res-Multpl	1	240
063-201-250	RUNNYMEDE ST, EAST PALO ALTO	Res-Multpl	1	240
063-201-260	RUNNYMEDE ST, EAST PALO ALTO	Res-Single	1	240
063-201-270	578 SACRAMENTO ST, EAST PALO ALTO	Res-Multpl	1	240
063-201-290	2331 UNIVERSITY AVE, EAST PALO ALTO	Res-Single	1	240
063-202-080	556 WEEKS ST, EAST PALO ALTO	Res-Single	1	240
063-202-090	564 WEEKS ST, EAST PALO ALTO	Res-Single	1	240
063-202-100	566 WEEKS ST, EAST PALO ALTO	Res-Single	1	240
063-202-160	561 SACRAMENTO ST, EAST PALO ALTO	Res-Multpl	1	240
063-202-280	2361-2369 UNIVERSITY AVE 101-308, EAST PALO ALTO	Res-Multpl	1	240
063-203-210	585 WEEKS ST, EAST PALO ALTO	Res-Single	1	240
063-203-220	579 WEEKS ST, EAST PALO ALTO	Res-Single	1	240
063-203-230	563 WEEKS ST, EAST PALO ALTO	Res-Multpl	1	240
063-203-240	549 WEEKS ST, EAST PALO ALTO	Res-Single	1	240
063-203-250	541 WEEKS ST, EAST PALO ALTO	Res-Multpl	1	240
063-203-260	533 WEEKS ST, EAST PALO ALTO	Res-Single	1	240
063-203-270	, EAST PALO ALTO	No hookup	0	0
063-203-350	1574 BAY RD, EAST PALO ALTO	Res-Single	1	240

Table 7
2014 Zoning Sanitary Sewer Flows
EPASD Master Plan Update
East Palo Alto Sanitary District

APN (1)	Address (1)	Land Use from EDS (2)	Equivalent Dwelling Units (3)	Average Daily Flow for Residential , GPD (4)
063-203-360	1546 BAY RD, EAST PALO ALTO	Res-Single	1	240
063-203-370	1508 BAY RD, EAST PALO ALTO	Res-Single	1	240
063-203-380	, NO DATA	No hookup	0	0
063-203-390	1518 BAY RD, EAST PALO ALTO	Res-Single	1	240
063-203-400	1560 BAY RD, EAST PALO ALTO	Res-Single	1	240
063-203-410	1568 BAY RD, EAST PALO ALTO	Res-Single	1	240
063-203-430	1530 BAY RD, EAST PALO ALTO	Res-Single	1	240
063-203-440	1554 BAY RD, EAST PALO ALTO	Res-Single	1	240
063-203-450	1538 BAY RD, EAST PALO ALTO	Res-Single	1	240
063-210-310	2346 UNIVERSITY AVE, EAST PALO ALTO	Res-Multpl	1	240
063-210-340	2369 COOLEY AVE, EAST PALO ALTO	Res-Single	1	240
063-210-350	2365 COOLEY AVE, EAST PALO ALTO	Res-Single	1	240
063-210-360	2300 UNIVERSITY AVE, EAST PALO ALTO	Res-Single	1	240
063-210-380	2354 UNIVERSITY AVE, EAST PALO ALTO	Res-Single	1	240
063-210-410	2371 COOLEY AVE, EAST PALO ALTO	Res-Single	1	240
063-210-450	2377 COOLEY AVE, EAST PALO ALTO	Res-Single	1	240
063-210-470	633 RUNNYMEDE ST, EAST PALO ALTO	Res-Single	1	240
063-210-480	2361 COOLEY AVE, EAST PALO ALTO	Res-Single	1	240
063-210-490	2355 COOLEY AVE, EAST PALO ALTO	Res-Multpl	1	240
063-210-520	2338 UNIVERSITY AVE, EAST PALO ALTO	Res-Multpl	1	240
063-210-610	661 RUNNYMEDE ST, EAST PALO ALTO	Res-Single	1	240
063-210-630	2358 UNIVERSITY AVE, EAST PALO ALTO	Res-Multpl	1	240
063-221-180	2371 CLARKE AVE, EAST PALO ALTO	Res-Single	1	240
063-221-190	2369 CLARKE AVE, EAST PALO ALTO	Res-Single	1	240
063-221-200	891 WEEKS ST, EAST PALO ALTO	Church	1	240
063-221-210	871 WEEKS ST, EAST PALO ALTO	Res-Single	1	240
063-221-220	867 WEEKS ST, EAST PALO ALTO	Res-Single	1	240
063-221-230	865 WEEKS ST, EAST PALO ALTO	Res-Single	1	240
063-221-240	, NO DATA	No hookup	0	0
063-221-250	831 WEEKS ST, EAST PALO ALTO	Res-Single	1	240
063-221-260	819 JAMIE LN, EAST PALO ALTO	No hookup	0	0
063-221-270	823 JAMIE LN, EAST PALO ALTO	No hookup	0	0
063-221-280	827 JAMIE LN, EAST PALO ALTO	No hookup	0	0
063-221-290	811 PAUL ROBESON CT, EAST PALO ALTO	Res-Single	1	240
063-221-300	813 PAUL ROBESON CT, EAST PALO ALTO	Res-Single	1	240
063-221-310	815 PAUL ROBESON CT, EAST PALO ALTO	Res-Single	1	240
063-221-320	817 PAUL ROBESON CT, EAST PALO ALTO	Res-Single	1	240
063-221-340	801 WEEKS ST, EAST PALO ALTO	Res-Single	1	240
063-221-350	803 PAUL ROBESON CT, EAST PALO ALTO	Res-Single	1	240
063-221-360	805 PAUL ROBESON CT, EAST PALO ALTO	Res-Single	1	240
063-221-370	807 PAUL ROBESON CT, EAST PALO ALTO	Res-Single	1	240
063-221-380	809 PAUL ROBESON CT, EAST PALO ALTO	Res-Single	1	240
063-221-390	791 WEEKS ST, EAST PALO ALTO	Res-Single	1	240
063-221-410	731 WEEKS ST, EAST PALO ALTO	Res-Single	1	240
063-221-420	717 WEEKS ST, EAST PALO ALTO	Res-Single	1	240
063-221-430	2360 COOLEY AVE, EAST PALO ALTO	Res-Single	1	240
063-221-440	2362-2362 COOLEY AVE, EAST PALO ALTO	Res-Multpl	1	240
063-221-450	2364 COOLEY AVE, EAST PALO ALTO	Res-Single	1	240
063-221-500	863 WEEKS ST, EAST PALO ALTO	Res-Single	1	240
063-221-510	761 WEEKS ST, EAST PALO ALTO	Res-Single	1	240
063-221-520	767 CAROLE CT, EAST PALO ALTO	Res-Single	1	240
063-221-530	773 CAROLE CT, EAST PALO ALTO	Res-Single	1	240
063-221-540	779 CAROLE CT, EAST PALO ALTO	Res-Single	1	240

Table 7
2014 Zoning Sanitary Sewer Flows
EPASD Master Plan Update
East Palo Alto Sanitary District

APN (1)	Address (1)	Land Use from EDS (2)	Equivalent Dwelling Units (3)	Average Daily Flow for Residential , GPD (4)
063-221-550	785 CAROLE CT, EAST PALO ALTO	Res-Single	1	240
063-231-220	1800 BAY RD, EAST PALO ALTO	Commercial	1	240
063-231-240	1804 BAY RD, EAST PALO ALTO	Commercial	1	240
063-231-250	1798 BAY RD, EAST PALO ALTO	Medical	1	240
063-232-090	1003 WEEKS ST, EAST PALO ALTO	Commercial	11	2,743
063-232-150	2421 PULGAS AVE, EAST PALO ALTO	Restaurant	6	1,545
063-232-160	2447 PULGAS AVE, EAST PALO ALTO	Commercial	1	302
063-232-210	WEEKS ST, EAST PALO ALTO	No hookup	0	0
063-232-220	WEEKS ST, EAST PALO ALTO	Commercial	0	0
063-232-230	WEEKS ST, EAST PALO ALTO	No hookup	0	0
063-232-240	1045 WEEKS ST, EAST PALO ALTO	Commercial	1	240
063-232-250	1085 WEEKS ST, EAST PALO ALTO	Manual	0	0
063-232-260	1001 WEEKS ST, EAST PALO ALTO	Church	1	240
063-232-300	1095 WEEKS ST, EAST PALO ALTO	Commercial	1	336
063-232-350	901 WEEKS ST, EAST PALO ALTO	Public	0	0
063-271-370	1171 RUNNYMEDE ST, EAST PALO ALTO	Church	1	240
063-271-480	, EAST PALO ALTO	No hookup	0	0
063-282-080	2033 MANHATTAN AVE, EAST PALO ALTO	Res-Multpl	1	240
063-282-090	2001 MANHATTAN AVE, EAST PALO ALTO	Res-Multpl	1	240
063-291-010	1489 E BAYSHORE RD, EAST PALO ALTO	Commercial	1	240
063-292-180	2101 UNIVERSITY AVE, EAST PALO ALTO	Industrial	2	474
063-292-370	2117 UNIVERSITY AVE, EAST PALO ALTO	#N/A	5	1,209
063-292-380	2160 EUCLID AVE, EAST PALO ALTO	#N/A	5	1,209
063-302-170	2283 UNIVERSITY AVE, EAST PALO ALTO	Res-Single	1	240
063-302-180	2281 UNIVERSITY AVE, EAST PALO ALTO	Res-Single	1	240
063-302-210	2263 UNIVERSITY AVE, EAST PALO ALTO	Res-Multpl	1	240
063-302-220	2253 UNIVERSITY AVE, EAST PALO ALTO	Res-Single	1	240
063-302-230	2247 UNIVERSITY AVE, EAST PALO ALTO	Res-Multpl	1	240
063-302-280	575A BELL ST, EAST PALO ALTO	Res-Single	1	240
063-302-290	565 BELL ST, EAST PALO ALTO	Res-Single	1	240
063-302-330	2201 UNIVERSITY AVE, EAST PALO ALTO	Church	1	240
063-302-340	584 RUNNYMEDE ST, EAST PALO ALTO	Res-Single	1	240
063-302-460	2277 UNIVERSITY AVE, EAST PALO ALTO	Res-Single	1	240
063-302-470	2279 UNIVERSITY AVE, EAST PALO ALTO	Res-Single	1	240
063-312-400	, NO DATA	#N/A	1	240
063-321-050	2124 UNIVERSITY AVE, EAST PALO ALTO	Res-Single	1	240
063-321-060	2126 UNIVERSITY AVE, EAST PALO ALTO	Manual	0	0
063-321-070	, EAST PALO ALTO	No hookup	0	0
063-321-080	2142 UNIVERSITY AVE, EAST PALO ALTO	Commercial	1	240
063-321-100	2160 UNIVERSITY AVE, EAST PALO ALTO	Commercial	2	388
063-321-110	2164 UNIVERSITY AVE, EAST PALO ALTO	Res-Single	1	240
063-321-120	2166 UNIVERSITY AVE, EAST PALO ALTO	Res-Single	1	240
063-321-130	2172 UNIVERSITY AVE, EAST PALO ALTO	Res-Single	1	240
063-321-140	2178 UNIVERSITY AVE, EAST PALO ALTO	Res-Single	1	240
063-321-180	612 BELL ST, EAST PALO ALTO	Res-Single	1	240
063-321-190	616 BELL ST, EAST PALO ALTO	Res-Single	1	240
063-321-200	644 BELL ST, EAST PALO ALTO	Res-Multpl	1	240
063-321-210	2189 CAPITOL AVE, EAST PALO ALTO	Res-Single	1	240
063-321-220	2187 CAPITOL AVE, EAST PALO ALTO	Res-Single	1	240
063-321-230	2181 CAPITOL AVE, EAST PALO ALTO	Res-Single	1	240
063-321-240	2171 CAPITOL AVE, EAST PALO ALTO	Res-Single	1	240
063-321-250	2165 CAPITOL AVE, EAST PALO ALTO	Res-Single	1	240
063-321-260	2161 CAPITOL AVE, EAST PALO ALTO	Res-Single	1	240

Table 7
2014 Zoning Sanitary Sewer Flows
EPASD Master Plan Update
East Palo Alto Sanitary District

APN (1)	Address (1)	Land Use from EDS (2)	Equivalent Dwelling Units (3)	Average Daily Flow for Residential , GPD (4)
063-321-270	2157 CAPITOL AVE, EAST PALO ALTO	Res-Single	1	240
063-321-280	2153 CAPITOL AVE, EAST PALO ALTO	Res-Single	1	240
063-321-290	2149 CAPITOL AVE, EAST PALO ALTO	Res-Single	1	240
063-321-300	2145 CAPITOL AVE, EAST PALO ALTO	Res-Single	1	240
063-321-310	2141 CAPITOL AVE, EAST PALO ALTO	Res-Single	1	240
063-321-320	2133 CAPITOL AVE, EAST PALO ALTO	Res-Single	1	240
063-321-330	2129 CAPITOL AVE, EAST PALO ALTO	Res-Single	1	240
063-321-400	2194 UNIVERSITY AVE, EAST PALO ALTO	Commercial	1	240
063-321-410	2148 UNIVERSITY AVE, EAST PALO ALTO	Restaurant	1	240
063-321-420	, NO DATA	#N/A	1	240
063-322-040	2124 CAPITOL AVE, EAST PALO ALTO	Res-Single	1	240
063-322-050	2132 CAPITOL AVE, EAST PALO ALTO	Res-Single	1	240
063-322-060	2134 CAPITOL AVE, EAST PALO ALTO	Res-Single	1	240
063-322-070	2138 CAPITOL AVE, EAST PALO ALTO	Res-Single	1	240
063-322-080	2142 CAPITOL AVE, EAST PALO ALTO	Res-Single	1	240
063-322-090	2144 CAPITOL AVE, EAST PALO ALTO	Res-Multpl	1	240
063-322-100	2154 CAPITOL AVE, EAST PALO ALTO	Res-Single	1	240
063-322-110	2162 CAPITOL AVE, EAST PALO ALTO	Church	1	240
063-322-130	2184 CAPITOL AVE, EAST PALO ALTO	Church	1	240
063-322-140	2194 CAPITOL AVE, EAST PALO ALTO	Res-Single	1	240
063-322-150	2198 CAPITOL AVE, EAST PALO ALTO	Res-Single	1	240
063-322-160	660 BELL ST, EAST PALO ALTO	Res-Single	1	240
063-322-340	2169 COOLEY AVE, EAST PALO ALTO	Church	1	344
063-322-410	, NO DATA	0	0	0
063-322-500	2159 COOLEY AVE, EAST PALO ALTO	Res-Single	1	240
063-322-560	DONOHOE ST, EAST PALO ALTO	Res-Single	1	240
063-322-580	2118 CAPITOL AVE, EAST PALO ALTO	#N/A	0	0
063-331-030	2212 UNIVERSITY AVE, EAST PALO ALTO	Res-Single	1	240
063-331-060	2242 UNIVERSITY AVE, EAST PALO ALTO	Res-Single	1	240
063-331-070	2248 UNIVERSITY AVE, EAST PALO ALTO	Res-Multpl	1	240
063-331-080	2252 UNIVERSITY AVE, EAST PALO ALTO	Res-Single	1	240
063-331-090	2264 UNIVERSITY AVE, EAST PALO ALTO	Res-Single	1	240
063-331-100	2268 UNIVERSITY AVE, EAST PALO ALTO	Res-Single	1	240
063-331-110	2272 UNIVERSITY AVE, EAST PALO ALTO	Res-Single	1	240
063-331-120	2274 UNIVERSITY AVE, EAST PALO ALTO	Res-Single	1	240
063-331-130	2276 UNIVERSITY AVE, EAST PALO ALTO	Res-Single	1	240
063-331-140	2280 UNIVERSITY AVE, EAST PALO ALTO	Res-Single	1	240
063-331-150	2284 UNIVERSITY AVE, EAST PALO ALTO	Res-Single	1	240
063-331-190	2291 CAPITOL AVE, EAST PALO ALTO	Res-Single	1	240
063-331-200	2287 CAPITOL AVE, EAST PALO ALTO	Res-Single	1	240
063-331-210	2285 CAPITOL AVE, EAST PALO ALTO	Res-Single	1	240
063-331-220	2277 CAPITOL AVE, EAST PALO ALTO	Res-Single	1	240
063-331-230	2267 CAPITOL AVE, EAST PALO ALTO	Res-Single	1	240
063-331-240	2263 CAPITOL AVE, EAST PALO ALTO	Res-Single	1	240
063-331-250	2255 CAPITOL AVE, EAST PALO ALTO	Res-Single	1	240
063-331-260	2251 CAPITOL AVE, EAST PALO ALTO	Res-Single	1	240
063-331-270	2249 CAPITOL AVE, EAST PALO ALTO	Res-Single	1	240
063-331-280	2245 CAPITOL AVE, EAST PALO ALTO	Res-Single	1	240
063-331-290	2239 CAPITOL AVE, EAST PALO ALTO	Res-Single	1	240
063-331-300	2233 CAPITOL AVE, EAST PALO ALTO	Res-Single	1	240
063-331-310	2227 CAPITOL AVE, EAST PALO ALTO	Res-Single	1	240
063-331-320	2219 CAPITOL AVE, EAST PALO ALTO	Res-Single	1	240
063-331-330	2217 CAPITOL AVE, EAST PALO ALTO	Res-Single	1	240

Table 7
2014 Zoning Sanitary Sewer Flows
EPASD Master Plan Update
East Palo Alto Sanitary District

APN (1)	Address (1)	Land Use from EDS (2)	Equivalent Dwelling Units (3)	Average Daily Flow for Residential , GPD (4)
063-331-340	2205 CAPITOL AVE, EAST PALO ALTO	Res-Single	1	240
063-331-350	643 BELL ST, EAST PALO ALTO	Res-Single	1	240
063-331-370	2200 UNIVERSITY AVE, EAST PALO ALTO	Office	1	358
063-331-380	2240 UNIVERSITY AVE, EAST PALO ALTO	Commercial	1	240
063-331-410	2220 UNIVERSITY AVE, EAST PALO ALTO	Restaurant	7	1,695
063-442-360	330 DONOHOE ST, EAST PALO ALTO	Church	1	240
063-473-150	1995 MANHATTAN AVE, EAST PALO ALTO	Res-Multpl	14	3,418
063-473-160	1991 MANHATTAN AVE, EAST PALO ALTO	Res-Multpl	14	3,418
063-473-170	1965 MANHATTAN AVE, EAST PALO ALTO	Res-Multpl	14	3,418
063-473-180	1955 MANHATTAN AVE, EAST PALO ALTO	Res-Multpl	14	3,418
063-473-190	1919 MANHATTAN AVE, EAST PALO ALTO	Res-Multpl	14	3,418
063-473-200	1901 MANHATTAN AVE, EAST PALO ALTO	Res-Multpl	14	3,418
063-481-010	1699 WOODLAND AVE, EAST PALO ALTO	Res-Single	1	240
063-481-020	1681 WOODLAND AVE, EAST PALO ALTO	Res-Multpl	1	240
063-481-030	1671 WOODLAND AVE, EAST PALO ALTO	Res-Multpl	1	240
063-481-040	1669 WOODLAND AVE, EAST PALO ALTO	Res-Single	1	240
063-481-050	1651 WOODLAND AVE, EAST PALO ALTO	Res-Multpl	1	240
063-481-060	1643 WOODLAND AVE, EAST PALO ALTO	Res-Multpl	1	240
063-481-070	1637 WOODLAND AVE, EAST PALO ALTO	Res-Multpl	1	240
063-481-080	1629 WOODLAND AVE, EAST PALO ALTO	Res-Single	1	240
063-481-090	1621 WOODLAND AVE, EAST PALO ALTO	Res-Multpl	1	240
063-481-100	644 SCOFIELD AVE, EAST PALO ALTO	Res-Multpl	1	240
063-481-110	652 SCOFIELD AVE, EAST PALO ALTO	Res-Multpl	1	240
063-481-120	660 SCOFIELD AVE, EAST PALO ALTO	Res-Multpl	1	240
063-481-130	610 CIRCLE DR, EAST PALO ALTO	Res-Multpl	1	240
063-481-140	620 CIRCLE DR, EAST PALO ALTO	Res-Multpl	1	240
063-481-150	630 CIRCLE DR, EAST PALO ALTO	Res-Single	1	240
063-481-160	640 CIRCLE DR, EAST PALO ALTO	Res-Single	1	240
063-481-170	650 CIRCLE DR, EAST PALO ALTO	Res-Single	1	240
063-481-180	1917 COOLEY AVE, EAST PALO ALTO	Res-Multpl	1	240
063-481-190	1909 COOLEY AVE, EAST PALO ALTO	Res-Multpl	1	240
063-481-210	1901 COOLEY AVE, EAST PALO ALTO	Res-Multpl	1	240
063-481-220	1905 COOLEY AVE, EAST PALO ALTO	Res-Multpl	1	240
063-482-010	641 CIRCLE DR, EAST PALO ALTO	Res-Single	1	240
063-482-020	621 CIRCLE DR, EAST PALO ALTO	Res-Multpl	1	240
063-482-030	611 CIRCLE DR, EAST PALO ALTO	Res-Multpl	1	240
063-483-030	1909 CAPITOL AVE, EAST PALO ALTO	Res-Multpl	1	240
063-483-040	1943 CAPITOL AVE, EAST PALO ALTO	Res-Multpl	1	240
063-483-050	1609 WOODLAND AVE, EAST PALO ALTO	Res-Multpl	1	240
063-484-010	655 SCOFIELD AVE, EAST PALO ALTO	Res-Multpl	1	240
063-484-020	1902 CAPITOL AVE, EAST PALO ALTO	Res-Single	1	240
063-484-030	1908 CAPITOL AVE, EAST PALO ALTO	Res-Single	1	240
063-484-040	1916 CAPITOL AVE, EAST PALO ALTO	Res-Multpl	1	240
063-484-050	1920 CAPITOL AVE, EAST PALO ALTO	Res-Multpl	1	240
063-484-060	1934 CAPITOL AVE, EAST PALO ALTO	Res-Multpl	1	240
063-484-090	1949 COOLEY AVE, EAST PALO ALTO	Res-Multpl	1	240
063-484-100	1941 COOLEY AVE, EAST PALO ALTO	Res-Multpl	1	240
063-484-110	685 SCOFIELD AVE, EAST PALO ALTO	Res-Multpl	1	240
063-484-130	1957 COOLEY AVE, EAST PALO ALTO	Res-Multpl	1	240
063-492-070	1927 E BAYSHORE RD, EAST PALO ALTO	Res-Single	1	240
063-492-280	1933 PULGAS AVE, EAST PALO ALTO	Commercial	1	240
063-492-480	1895 E BAYSHORE RD, EAST PALO ALTO	Res-Single	1	240
063-501-020	1874 W BAYSHORE RD, EAST PALO ALTO	Commercial	1	240

Table 7
2014 Zoning Sanitary Sewer Flows
EPASD Master Plan Update
East Palo Alto Sanitary District

APN (1)	Address (1)	Land Use from EDS (2)	Equivalent Dwelling Units (3)	Average Daily Flow for Residential , GPD (4)
063-501-030	1870 W BAYSHORE RD, EAST PALO ALTO	Commercial	1	240
063-501-040	1879 WOODLAND AVE, EAST PALO ALTO	Res-Multpl	1	240
063-501-050	1875 WOODLAND AVE, EAST PALO ALTO	Res-Single	1	240
063-511-020	2039 CLARKE AVE, EAST PALO ALTO	Res-Single	1	240
063-511-030	2035 CLARKE AVE, EAST PALO ALTO	Res-Single	1	240
063-511-040	2029 CLARKE AVE, EAST PALO ALTO	Res-Single	1	240
063-511-050	2027 CLARKE AVE, EAST PALO ALTO	Res-Single	1	240
063-511-060	2023 CLARKE AVE, EAST PALO ALTO	Res-Single	1	240
063-511-070	2017 CLARKE AVE, EAST PALO ALTO	Res-Single	1	240
063-511-080	2013 CLARKE AVE, EAST PALO ALTO	Res-Single	1	240
063-511-090	2009 CLARKE AVE, EAST PALO ALTO	Res-Single	1	240
063-511-190	872 DONOHOE ST, EAST PALO ALTO	Res-Single	1	240
063-511-200	866 DONOHOE ST, EAST PALO ALTO	Res-Single	1	240
063-511-210	864 DONOHOE ST, EAST PALO ALTO	Res-Single	1	240
063-511-220	862 DONOHOE ST, EAST PALO ALTO	Res-Single	1	240
063-511-240	896 DONOHOE ST, EAST PALO ALTO	Res-Single	1	240
063-511-250	860 DONOHOE ST, EAST PALO ALTO	Res-Single	1	240
063-511-260	890 DONOHOE ST, EAST PALO ALTO	Res-Single	1	240
063-511-490	1731 E BAYSHORE RD, EAST PALO ALTO	Restaurant	23	5,615
063-511-520	1761 E BAYSHORE RD, EAST PALO ALTO	Commercial	1	240
063-511-630	1721 E BAYSHORE RD, EAST PALO ALTO	Restaurant	21	4,925
063-511-660	899 OCONNOR ST, EAST PALO ALTO	Commercial	1	240
063-511-680	1751 EAST BAYSHORE RD, EAST PALO ALTO	Commercial	1	240
063-511-690	1745 E BAYSHORE BLVD, EAST PALO ALTO	Commercial	6	1,467
063-511-720	1775 E BAYSHORE RD, EAST PALO ALTO	Commercial	6	1,499
063-515-060	1821 CLARKE AVE, EAST PALO ALTO	Res-Single	1	240
063-515-070	1805 CLARKE AVE, EAST PALO ALTO	Res-Single	1	240
063-515-080	1787 WOODLAND AVE, EAST PALO ALTO	Res-Single	1	240
063-515-230	1785 WOODLAND AVE, EAST PALO ALTO	Res-Single	1	240
063-571-060	1985 E BAYSHORE RD, EAST PALO ALTO	Commercial	1	240
063-571-070	1981 E BAYSHORE RD, EAST PALO ALTO	No hookup	0	0
063-571-080	1961 E BAYSHORE RD, EAST PALO ALTO	Commercial	1	240
063-571-090	1905 E BAYSHORE RD, EAST PALO ALTO	Industrial	1	240
063-680-020	1900 UNIVERSITY AVE, EAST PALO ALTO	Office	15	3,500
063-680-050	, NO DATA	#N/A	15	3,500
063-680-060	, NO DATA	#N/A	15	3,500
063-680-090	, EAST PALO ALTO	No hookup	0	0
063-680-100	, EAST PALO ALTO	Commercial	1	240
063-680-110	, EAST PALO ALTO	Commercial	1	240
063-680-130	2000 UNIVERSITY AVE, EAST PALO ALTO	Office	19	4,567
063-680-150	2050 UNIVERSITY AVE, EAST PALO ALTO	Motel	19	4,567
063-680-180	, EAST PALO ALTO	No hookup	0	0
063-680-190	2000 UNIVERSITY AVE, EAST PALO ALTO	Office	1	240

Table 7
2014 Zoning Sanitary Sewer Flows
EPASD Master Plan Update
East Palo Alto Sanitary District

APN (1)	Address (1)	Land Use from EDS (2)	Equivalent Dwelling Units (3)	Average Daily Flow for Residential , GPD (4)
113-530-010 to 113-530-999	2420 GLORIA WAY, EAST PALO ALTO	Res-Multpl	7	1,680
113-710-010 to 113-710-999	2440 GLORIA WAY, EAST PALO ALTO	Res-Multpl	7	1,680
113-720-010 to 113-720-999	2460 GLORIA WAY, EAST PALO ALTO	Res-Multpl	5	1,200
113-740-010 to 113-740-999	2470 GLORIA WAY, EAST PALO ALTO	Res-Multpl	9	2,160
114-240-010 to 114-240-300	2330 UNIVERSITY AVE, EAST PALO ALTO	Res-Multpl	30	7,200
114-450-010 to 114-460-300	1765 EAST BAYSHORE RD, EAST PALO ALTO	Res-Multpl	36	8,640

Notes:

(1) Properties that have changed Zoning Figure 4-12: General Plan Land Use and Figure 4-16: Ravenswood / 4 Corners TOP Specific Plan Land Use City of East Palo Alto General Plan "Existing Conditions Report, February 2014" Vs Figure 4-2: General Plan Land Use Designations City of East Palo Alto General Plan "Vista 2035, Final Version: March 2017"

(2) Land use from EDS (Engineering Data Services) Service Fee Calculation sheet.

(3) Equivalent Dwelling Units. Unit= (Past Billing amount from EDS)/$575

(4) ADWF Equivalent Dwellings, calculated by multiplying 240 gallons per dwelling unit per day by the total number of units. Based on Section B1.03.2.b of the East Palo Alto Sanitary District Standard Specifications for Design and Construction of Sanitary Collection and Conveyance Facilities date June 6, 2002. Units converted from GPD (Gallons Per Day) to CFS. Based Based off 24 hours in a day, 60 minutes in a hour, and 60 seconds in a minute.

Abbreviations

ADWF: Average Dry Weather Flow
APN: Assessors Parcel Number
CFS: Cubic Feet per Second
MGD: Million Gallons Per Day
PDWF: Peak Dry Weather Flow

Table 8
2035 Zoning Sanitary Sewer Flows
EPASD Master Plan Update
East Palo Alto Sanitary District

APN (1)	Address (1)	Current EPA General Plan Zoning	Maximum Density and FAR Extents (2)	Acres per Parcel (3)	Average du per Parcel (4)	Average Non-Residential Development, SF (5)	Average Daily Flow Residential, GPD (6)	Average Daily Flow Non-Residential, GPD (7)
063-103-310	1585 BAY RD, EAST PALO ALTO	Mixed Use High	86 du/a; 2.5 FAR	0.81	35	43,891	8,319	4,389
063-103-440	2400 GLORIA WAY, EAST PALO ALTO	High Density Residential	22-43 du/a	2.00	43	0	10,342	0
063-111-230	BETWEEN 1585 AND 1675 BAY RD, EAST PALO ALTO	Mixed Use High	86 du/a; 2.5 FAR	0.23	10	12,513	2,372	1,251
063-111-250	1675 BAY RD, EAST PALO ALTO	Mixed Use High	86 du/a; 2.5 FAR	6.03	259	328,120	62,189	32,812
063-121-400	2091 BAY RD, EAST PALO ALTO	Office	3.0 FAR	0.83	0	54,548	0	5,455
063-122-030	1990 BAY RD, EAST PALO ALTO	Office	3.0 FAR	4.71	0	307,727	0	30,773
063-132-140	1905 BAY RD, EAST PALO ALTO	Mixed Use Corridor	65 du/a; 1.75 FAR	0.43	14	16,202	3,316	1,620
063-151-170	2159 POPLAR AVE, EAST PALO ALTO	Mixed Use Low	22 du/a; 1.0 FAR	0.13	1	2,929	355	293
063-151-200	1001 E BAYSHORE RD, EAST PALO ALTO	Mixed Use Low	22 du/a; 1.0 FAR	0.08	1	1,773	215	177
063-152-230	1199 E BAYSHORE RD, EAST PALO ALTO	Mixed Use Low	22 du/a; 1.0 FAR	0.26	3	5,605	679	561
063-153-010	1205 E BAYSHORE RD, EAST PALO ALTO	Mixed Use Low	22 du/a; 1.0 FAR	0.12	1	2,648	321	265
063-153-250	2119 ADDISON AVE, EAST PALO ALTO	Mixed Use Low	22 du/a; 1.0 FAR	0.12	1	2,572	312	257
063-154-200	2110 ADDISON AVE, EAST PALO ALTO	Mixed Use Low	22 du/a; 1.0 FAR	0.15	2	3,331	404	333
063-154-260	2119 OAKWOOD DR, EAST PALO ALTO	Mixed Use Low	22 du/a; 1.0 FAR	0.27	3	5,878	712	588
063-155-010	2106 OAKWOOD DR, EAST PALO ALTO	Mixed Use Low	22 du/a; 1.0 FAR	0.17	2	3,747	454	375
063-155-180	2123 DUMBARTON AVE, EAST PALO ALTO	Mixed Use Low	22 du/a; 1.0 FAR	0.11	1	2,454	297	245
063-155-190	2109 DUMBARTON AVE, EAST PALO ALTO	Mixed Use Low	22 du/a; 1.0 FAR	0.17	2	3,742	454	374
063-181-010	2110 DUMBARTON AVE, EAST PALO ALTO	Mixed Use Low	22 du/a; 1.0 FAR	0.22	2	4,705	570	470
063-181-220	2111 LINCOLN ST, EAST PALO ALTO	Mixed Use Low	22 du/a; 1.0 FAR	0.12	1	2,660	322	266
063-181-230	2097 LINCOLN ST, EAST PALO ALTO	Mixed Use Low	22 du/a; 1.0 FAR	0.11	1	2,488	302	249
063-181-240	1385 E BAYSHORE RD, EAST PALO ALTO	Mixed Use Low	22 du/a; 1.0 FAR	0.10	1	2,232	270	223
063-183-010	2088 LINCOLN ST, EAST PALO ALTO	Mixed Use Low	22 du/a; 1.0 FAR	0.11	1	2,476	300	248
063-183-070	2045 GLEN WAY, EAST PALO ALTO	Mixed Use Low	22 du/a; 1.0 FAR	0.18	2	3,894	472	389
063-183-080	1441 E BAYSHORE RD, EAST PALO ALTO	Mixed Use Low	22 du/a; 1.0 FAR	0.24	3	5,172	627	517
063-183-090	, EAST PALO ALTO	Mixed Use Low	22 du/a; 1.0 FAR	0.09	1	1,898	230	190
063-183-110	1401 E BAYSHORE RD 2, EAST PALO ALTO	Mixed Use Low	22 du/a; 1.0 FAR	0.21	2	4,512	547	451
063-184-010	1475 E BAYSHORE RD, EAST PALO ALTO	Mixed Use Low	22 du/a; 1.0 FAR	0.23	3	5,053	612	505
063-184-020	2056 GLEN WAY, EAST PALO ALTO	Mixed Use Low	22 du/a; 1.0 FAR	0.21	2	4,526	549	453
063-184-030	2070 GLEN WAY, EAST PALO ALTO	Mixed Use Low	22 du/a; 1.0 FAR	0.18	2	3,872	469	387
063-184-040	2080 GLEN WAY, EAST PALO ALTO	Mixed Use Low	22 du/a; 1.0 FAR	0.19	2	4,205	510	420
063-201-080	566 SACRAMENTO ST, EAST PALO ALTO	Low Density Residential	0-12 du/a	0.19	1	0	272	0
063-201-090	576 SACRAMENTO ST, EAST PALO ALTO	Mixed Use Corridor	65 du/a; 1.75 FAR	0.22	7	8,209	1,680	821
063-201-220	2337 UNIVERSITY AVE, EAST PALO ALTO	Mixed Use Corridor	65 du/a; 1.75 FAR	0.13	4	4,964	1,016	496
063-201-240	2343 UNIVERSITY AVE, EAST PALO ALTO	Mixed Use Corridor	65 du/a; 1.75 FAR	0.14	5	5,292	1,083	529
063-201-250	RUNNYMEDE ST, EAST PALO ALTO	Mixed Use Corridor	65 du/a; 1.75 FAR	0.35	11	13,216	2,705	1,322
063-201-260	RUNNYMEDE ST, EAST PALO ALTO	Mixed Use Corridor	65 du/a; 1.75 FAR	0.11	4	4,295	879	430
063-201-270	578 SACRAMENTO ST, EAST PALO ALTO	Mixed Use Corridor	65 du/a; 1.75 FAR	0.15	5	5,553	1,136	555
063-201-290	2331 UNIVERSITY AVE, EAST PALO ALTO	Mixed Use Corridor	65 du/a; 1.75 FAR	0.45	15	17,157	3,511	1,716
063-202-080	556 WEEKS ST, EAST PALO ALTO	Low Density Residential	0-12 du/a	0.18	1	0	252	0
063-202-090	564 WEEKS ST, EAST PALO ALTO	Low Density Residential	0-12 du/a	0.17	1	0	249	0
063-202-100	566 WEEKS ST, EAST PALO ALTO	Low Density Residential	0-12 du/a	0.17	1	0	244	0
063-202-160	561 SACRAMENTO ST, EAST PALO ALTO	Mixed Use Corridor	65 du/a; 1.75 FAR	0.52	17	19,723	4,036	1,972
063-202-280	2361-2369 UNIVERSITY AVE 101-308, EAST PALO ALTO	Mixed Use Corridor	65 du/a; 1.75 FAR	1.01	33	38,579	7,895	3,858
063-203-210	585 WEEKS ST, EAST PALO ALTO	Mixed Use High	86 du/a; 2.5 FAR	0.15	6	7,995	1,515	800
063-203-220	579 WEEKS ST, EAST PALO ALTO	Low Density Residential	0-12 du/a	0.15	1	0	213	0
063-203-230	563 WEEKS ST, EAST PALO ALTO	Low Density Residential	0-12 du/a	0.44	3	0	637	0
063-203-240	549 WEEKS ST, EAST PALO ALTO	Low Density Residential	0-12 du/a	0.15	1	0	213	0
063-203-250	541 WEEKS ST, EAST PALO ALTO	Low Density Residential	0-12 du/a	0.14	1	0	209	0
063-203-260	533 WEEKS ST, EAST PALO ALTO	Low Density Residential	0-12 du/a	0.14	1	0	204	0
063-203-270	, EAST PALO ALTO	Low Density Residential	0-12 du/a	0.13	1	0	194	0
063-203-350	1574 BAY RD, EAST PALO ALTO	Medium Density Residential	12-22 du/a	0.17	2	0	442	0
063-203-360	1546 BAY RD, EAST PALO ALTO	Medium Density Residential	12-22 du/a	0.15	2	0	404	0
063-203-370	1508 BAY RD, EAST PALO ALTO	Medium Density Residential	12-22 du/a	0.25	3	0	666	0
063-203-380	, NO DATA	Medium Density Residential	12-22 du/a	0.12	1	0	312	0
063-203-390	1518 BAY RD, EAST PALO ALTO	Medium Density Residential	12-22 du/a	0.33	4	0	869	0
063-203-400	1560 BAY RD, EAST PALO ALTO	Medium Density Residential	12-22 du/a	0.15	2	0	386	0
063-203-410	1568 BAY RD, EAST PALO ALTO	Medium Density Residential	12-22 du/a	0.15	2	0	409	0
063-203-430	1530 BAY RD, EAST PALO ALTO	Medium Density Residential	12-22 du/a	0.16	2	0	411	0
063-203-440	1554 BAY RD, EAST PALO ALTO	Medium Density Residential	12-22 du/a	0.13	1	0	356	0
063-203-450	1538 BAY RD, EAST PALO ALTO	Medium Density Residential	12-22 du/a	0.14	2	0	368	0
063-210-310	2346 UNIVERSITY AVE, EAST PALO ALTO	Mixed Use Corridor	65 du/a; 1.75 FAR	0.21	7	7,835	1,603	783
063-210-340	2369 COOLEY AVE, EAST PALO ALTO	High Density Residential	22-43 du/a	0.12	3	0	614	0
063-210-350	2365 COOLEY AVE, EAST PALO ALTO	High Density Residential	22-43 du/a	0.12	3	0	637	0
063-210-360	2300 UNIVERSITY AVE, EAST PALO ALTO	Mixed Use Corridor	65 du/a; 1.75 FAR	0.20	7	7,627	1,561	763
063-210-380	2354 UNIVERSITY AVE, EAST PALO ALTO	Mixed Use Corridor	65 du/a; 1.75 FAR	0.17	6	6,548	1,340	655
063-210-410	2371 COOLEY AVE, EAST PALO ALTO	Mixed Use Corridor	65 du/a; 1.75 FAR	0.11	4	4,228	865	423
063-210-450	2377 COOLEY AVE, EAST PALO ALTO	Mixed Use Corridor	65 du/a; 1.75 FAR	0.09	3	3,257	666	326
063-210-470	633 RUNNYMEDE ST, EAST PALO ALTO	Mixed Use Corridor	65 du/a; 1.75 FAR	0.11	4	4,256	871	426
063-210-480	2361 COOLEY AVE, EAST PALO ALTO	High Density Residential	22-43 du/a	0.16	3	0	817	0
063-210-490	2355 COOLEY AVE, EAST PALO ALTO	High Density Residential	22-43 du/a	0.17	4	0	856	0
063-210-520	2338 UNIVERSITY AVE, EAST PALO ALTO	Mixed Use Corridor	65 du/a; 1.75 FAR	0.22	7	8,249	1,688	825
063-210-610	661 RUNNYMEDE ST, EAST PALO ALTO	Mixed Use Corridor	65 du/a; 1.75 FAR	0.23	8	8,831	1,807	883
063-210-630	2358 UNIVERSITY AVE, EAST PALO ALTO	Mixed Use Corridor	65 du/a; 1.75 FAR	0.17	6	6,659	1,363	666
063-221-180	2371 CLARKE AVE, EAST PALO ALTO	High Density Residential	22-43 du/a	0.13	3	0	693	0
063-221-190	2369 CLARKE AVE, EAST PALO ALTO	High Density Residential	22-43 du/a	0.15	3	0	761	0
063-221-200	891 WEEKS ST, EAST PALO ALTO	High Density Residential	22-43 du/a	0.29	6	0	1,482	0
063-221-210	871 WEEKS ST, EAST PALO ALTO	High Density Residential	22-43 du/a	0.13	3	0	675	0
063-221-220	867 WEEKS ST, EAST PALO ALTO	High Density Residential	22-43 du/a	0.19	4	0	961	0
063-221-230	865 WEEKS ST, EAST PALO ALTO	High Density Residential	22-43 du/a	0.19	4	0	992	0

Table 8
2035 Zoning Sanitary Sewer Flows
EPASD Master Plan Update
East Palo Alto Sanitary District

APN (1)	Address (1)	Current EPA General Plan Zoning	Maximum Density and FAR Extents (2)	Acres per Parcel (3)	Average du per Parcel (4)	Average Non-Residential Development, SF (5)	Average Daily Flow Residential, GPD (6)	Average Daily Flow Non-Residential, GPD (7)
063-221-240	, NO DATA	High Density Residential	22-43 du/a	0.65	14	0	3,375	0
063-221-250	831 WEEKS ST, EAST PALO ALTO	High Density Residential	22-43 du/a	0.19	4	0	982	0
063-221-260	819 JAMIE LN, EAST PALO ALTO	High Density Residential	22-43 du/a	0.11	2	0	591	0
063-221-270	823 JAMIE LN, EAST PALO ALTO	High Density Residential	22-43 du/a	0.15	3	0	777	0
063-221-280	827 JAMIE LN, EAST PALO ALTO	High Density Residential	22-43 du/a	0.19	4	0	1,002	0
063-221-290	811 PAUL ROBESON CT, EAST PALO ALTO	High Density Residential	22-43 du/a	0.12	3	0	609	0
063-221-300	813 PAUL ROBESON CT, EAST PALO ALTO	High Density Residential	22-43 du/a	0.10	2	0	515	0
063-221-310	815 PAUL ROBESON CT, EAST PALO ALTO	High Density Residential	22-43 du/a	0.11	2	0	555	0
063-221-320	817 PAUL ROBESON CT, EAST PALO ALTO	High Density Residential	22-43 du/a	0.11	2	0	563	0
063-221-340	801 WEEKS ST, EAST PALO ALTO	High Density Residential	22-43 du/a	0.11	2	0	566	0
063-221-350	803 PAUL ROBESON CT, EAST PALO ALTO	High Density Residential	22-43 du/a	0.11	2	0	570	0
063-221-360	805 PAUL ROBESON CT, EAST PALO ALTO	High Density Residential	22-43 du/a	0.09	2	0	477	0
063-221-370	807 PAUL ROBESON CT, EAST PALO ALTO	High Density Residential	22-43 du/a	0.11	2	0	590	0
063-221-380	809 PAUL ROBESON CT, EAST PALO ALTO	High Density Residential	22-43 du/a	0.11	2	0	551	0
063-221-390	791 WEEKS ST, EAST PALO ALTO	High Density Residential	22-43 du/a	0.89	19	0	4,576	0
063-221-410	731 WEEKS ST, EAST PALO ALTO	High Density Residential	22-43 du/a	0.30	7	0	1,564	0
063-221-420	717 WEEKS ST, EAST PALO ALTO	High Density Residential	22-43 du/a	0.22	5	0	1,149	0
063-221-430	2360 COOLEY AVE, EAST PALO ALTO	High Density Residential	22-43 du/a	0.14	3	0	744	0
063-221-440	2362-2362 COOLEY AVE, EAST PALO ALTO	High Density Residential	22-43 du/a	0.14	3	0	700	0
063-221-450	2364 COOLEY AVE, EAST PALO ALTO	High Density Residential	22-43 du/a	0.16	3	0	818	0
063-221-500	863 WEEKS ST, EAST PALO ALTO	High Density Residential	22-43 du/a	0.13	3	0	675	0
063-221-510	761 WEEKS ST, EAST PALO ALTO	High Density Residential	22-43 du/a	0.17	4	0	892	0
063-221-520	767 CAROLE CT, EAST PALO ALTO	High Density Residential	22-43 du/a	0.14	3	0	747	0
063-221-530	773 CAROLE CT, EAST PALO ALTO	High Density Residential	22-43 du/a	0.13	3	0	677	0
063-221-540	779 CAROLE CT, EAST PALO ALTO	High Density Residential	22-43 du/a	0.13	3	0	662	0
063-221-550	785 CAROLE CT, EAST PALO ALTO	High Density Residential	22-43 du/a	0.13	3	0	679	0
063-231-220	1800 BAY RD, EAST PALO ALTO	Mixed Use Corridor	65 du/a; 1.75 FAR	0.23	7	8,613	1,763	861
063-231-240	1804 BAY RD, EAST PALO ALTO	Mixed Use Corridor	65 du/a; 1.75 FAR	0.90	29	34,383	7,036	3,438
063-231-250	1798 BAY RD, EAST PALO ALTO	Mixed Use Corridor	65 du/a; 1.75 FAR	1.38	45	52,467	10,737	5,247
063-232-090	1003 WEEKS ST, EAST PALO ALTO	High Density Residential	22-43 du/a	0.58	12	0	2,999	0
063-232-150	2421 PULGAS AVE, EAST PALO ALTO	High Density Residential	22-43 du/a	0.77	17	0	3,966	0
063-232-160	2447 PULGAS AVE, EAST PALO ALTO	High Density Residential	22-43 du/a	0.32	7	0	1,666	0
063-232-210	WEEKS ST, EAST PALO ALTO	High Density Residential	22-43 du/a	1.13	24	0	5,850	0
063-232-220	WEEKS ST, EAST PALO ALTO	High Density Residential	22-43 du/a	0.64	14	0	3,319	0
063-232-230	WEEKS ST, EAST PALO ALTO	High Density Residential	22-43 du/a	0.90	19	0	4,631	0
063-232-240	1045 WEEKS ST, EAST PALO ALTO	High Density Residential	22-43 du/a	0.98	21	0	5,062	0
063-232-250	1085 WEEKS ST, EAST PALO ALTO	High Density Residential	22-43 du/a	0.11	2	0	553	0
063-232-260	1001 WEEKS ST, EAST PALO ALTO	High Density Residential	22-43 du/a	0.35	8	0	1,807	0
063-232-300	1095 WEEKS ST, EAST PALO ALTO	High Density Residential	22-43 du/a	0.21	4	0	1,070	0
063-232-350	901 WEEKS ST, EAST PALO ALTO	Mixed Use High	86 du/a; 2.5 FAR	0.46	20	24,865	4,713	2,487
063-271-370	1171 RUNNYMEDE ST, EAST PALO ALTO	High Density Residential	22-43 du/a	0.90	19	0	4,622	0
063-271-480	, EAST PALO ALTO	Industrial Buffer	0.75 to 3.0 FAR	0.83	0	45,961	0	4,596
063-282-080	2033 MANHATTAN AVE, EAST PALO ALTO	High Density Residential	22-43 du/a	0.51	11	0	2,631	0
063-282-090	2001 MANHATTAN AVE, EAST PALO ALTO	High Density Residential	22-43 du/a	0.69	15	0	3,568	0
063-291-010	1489 E BAYSHORE RD, EAST PALO ALTO	Mixed Use Low	22 du/a; 1.0 FAR	0.45	5	9,783	1,186	978
063-292-180	2101 UNIVERSITY AVE, EAST PALO ALTO	Mixed Use High	86 du/a; 2.5 FAR	0.33	14	17,860	3,385	1,786
063-292-370	2117 UNIVERSITY AVE, EAST PALO ALTO	Mixed Use High	86 du/a; 2.5 FAR	0.77	33	41,778	7,918	4,178
063-292-380	2160 EUCLID AVE, EAST PALO ALTO	Mixed Use High	86 du/a; 2.5 FAR	3.99	172	217,239	41,174	21,724
063-302-170	2283 UNIVERSITY AVE, EAST PALO ALTO	Mixed Use Corridor	65 du/a; 1.75 FAR	0.24	8	9,103	1,863	910
063-302-180	2281 UNIVERSITY AVE, EAST PALO ALTO	Mixed Use Corridor	65 du/a; 1.75 FAR	0.21	7	7,997	1,636	800
063-302-210	2263 UNIVERSITY AVE, EAST PALO ALTO	Mixed Use Corridor	65 du/a; 1.75 FAR	0.46	15	17,653	3,613	1,765
063-302-220	2253 UNIVERSITY AVE, EAST PALO ALTO	Mixed Use Corridor	65 du/a; 1.75 FAR	0.21	7	7,983	1,634	798
063-302-230	2247 UNIVERSITY AVE, EAST PALO ALTO	Mixed Use Corridor	65 du/a; 1.75 FAR	0.30	10	11,258	2,304	1,126
063-302-280	575A BELL ST, EAST PALO ALTO	Mixed Use Corridor	65 du/a; 1.75 FAR	0.20	6	7,476	1,530	748
063-302-290	565 BELL ST, EAST PALO ALTO	Mixed Use Corridor	65 du/a; 1.75 FAR	0.19	6	7,242	1,482	724
063-302-330	2201 UNIVERSITY AVE, EAST PALO ALTO	Mixed Use Corridor	65 du/a; 1.75 FAR	1.41	46	53,812	11,012	5,381
063-302-340	584 RUNNYMEDE ST, EAST PALO ALTO	Mixed Use Corridor	65 du/a; 1.75 FAR	0.39	13	14,888	3,047	1,489
063-302-460	2277 UNIVERSITY AVE, EAST PALO ALTO	Mixed Use Corridor	65 du/a; 1.75 FAR	0.36	12	13,569	2,777	1,357
063-302-470	2279 UNIVERSITY AVE, EAST PALO ALTO	Mixed Use Corridor	65 du/a; 1.75 FAR	0.23	7	8,788	1,798	879
063-312-400	, NO DATA	Office	3.0 FAR	0.35	0	22,556	0	2,256
063-321-050	2124 UNIVERSITY AVE, EAST PALO ALTO	Mixed Use Corridor	65 du/a; 1.75 FAR	0.28	9	10,643	2,178	1,064
063-321-060	2126 UNIVERSITY AVE, EAST PALO ALTO	Mixed Use Corridor	65 du/a; 1.75 FAR	0.23	7	8,711	1,783	871
063-321-070	, EAST PALO ALTO	Mixed Use Corridor	65 du/a; 1.75 FAR	0.05	2	1,984	406	198
063-321-080	2142 UNIVERSITY AVE, EAST PALO ALTO	Mixed Use Corridor	65 du/a; 1.75 FAR	0.19	6	7,128	1,459	713
063-321-100	2160 UNIVERSITY AVE, EAST PALO ALTO	Mixed Use Corridor	65 du/a; 1.75 FAR	0.37	12	13,973	2,859	1,397
063-321-110	2164 UNIVERSITY AVE, EAST PALO ALTO	Mixed Use Corridor	65 du/a; 1.75 FAR	0.18	6	6,772	1,386	677
063-321-120	2166 UNIVERSITY AVE, EAST PALO ALTO	Mixed Use Corridor	65 du/a; 1.75 FAR	0.17	6	6,661	1,363	666
063-321-130	2172 UNIVERSITY AVE, EAST PALO ALTO	Mixed Use Corridor	65 du/a; 1.75 FAR	0.17	6	6,660	1,363	666
063-321-140	2178 UNIVERSITY AVE, EAST PALO ALTO	Mixed Use Corridor	65 du/a; 1.75 FAR	0.17	5	6,371	1,304	637
063-321-180	612 BELL ST, EAST PALO ALTO	Mixed Use Corridor	65 du/a; 1.75 FAR	0.11	4	4,282	876	428
063-321-190	616 BELL ST, EAST PALO ALTO	Mixed Use Corridor	65 du/a; 1.75 FAR	0.12	4	4,548	931	455
063-321-200	644 BELL ST, EAST PALO ALTO	Mixed Use Corridor	65 du/a; 1.75 FAR	0.15	5	5,729	1,172	573
063-321-210	2189 CAPITOL AVE, EAST PALO ALTO	Mixed Use Corridor	65 du/a; 1.75 FAR	0.14	5	5,402	1,106	540
063-321-220	2187 CAPITOL AVE, EAST PALO ALTO	Mixed Use Corridor	65 du/a; 1.75 FAR	0.12	4	4,432	907	443
063-321-230	2181 CAPITOL AVE, EAST PALO ALTO	Mixed Use Corridor	65 du/a; 1.75 FAR	0.17	6	6,626	1,356	663
063-321-240	2171 CAPITOL AVE, EAST PALO ALTO	Mixed Use Corridor	65 du/a; 1.75 FAR	0.15	5	5,776	1,182	578
063-321-250	2165 CAPITOL AVE, EAST PALO ALTO	Mixed Use Corridor	65 du/a; 1.75 FAR	0.15	5	5,590	1,144	559
063-321-260	2161 CAPITOL AVE, EAST PALO ALTO	Mixed Use Corridor	65 du/a; 1.75 FAR	0.15	5	5,779	1,183	578
063-321-270	2157 CAPITOL AVE, EAST PALO ALTO	Mixed Use Corridor	65 du/a; 1.75 FAR	0.15	5	5,850	1,197	585
063-321-280	2153 CAPITOL AVE, EAST PALO ALTO	Mixed Use Corridor	65 du/a; 1.75 FAR	0.15	5	5,682	1,163	568
063-321-290	2149 CAPITOL AVE, EAST PALO ALTO	Mixed Use Corridor	65 du/a; 1.75 FAR	0.16	5	5,921	1,212	592

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APN (1)	Address (1)	Current EPA General Plan Zoning	Maximum Density and FAR Extents (2)	Acres per Parcel (3)	Average du per Parcel (4)	Average Non-Residential Development, SF (5)	Average Daily Flow Residential, GPD (6)	Average Daily Flow Non-Residential, GPD (7)
063-321-300	2145 CAPITOL AVE, EAST PALO ALTO	Mixed Use Corridor	65 du/a; 1.75 FAR	0.16	5	5,988	1,225	599
063-321-310	2141 CAPITOL AVE, EAST PALO ALTO	Mixed Use Corridor	65 du/a; 1.75 FAR	0.15	5	5,901	1,208	590
063-321-320	2133 CAPITOL AVE, EAST PALO ALTO	Mixed Use Corridor	65 du/a; 1.75 FAR	0.15	5	5,669	1,160	567
063-321-330	2129 CAPITOL AVE, EAST PALO ALTO	Mixed Use Corridor	65 du/a; 1.75 FAR	0.11	3	4,007	820	401
063-321-400	2194 UNIVERSITY AVE, EAST PALO ALTO	Mixed Use Corridor	65 du/a; 1.75 FAR	0.43	14	16,237	3,323	1,624
063-321-410	2148 UNIVERSITY AVE, EAST PALO ALTO	Mixed Use Corridor	65 du/a; 1.75 FAR	0.25	8	9,620	1,969	962
063-321-420	, NO DATA	Office	3.0 FAR	1.64	0	107,405	0	10,740
063-322-040	2124 CAPITOL AVE, EAST PALO ALTO	Medium Density Residential	12-22 du/a	0.16	2	0	419	0
063-322-050	2132 CAPITOL AVE, EAST PALO ALTO	Medium Density Residential	12-22 du/a	0.17	2	0	455	0
063-322-060	2134 CAPITOL AVE, EAST PALO ALTO	Medium Density Residential	12-22 du/a	0.16	2	0	421	0
063-322-070	2138 CAPITOL AVE, EAST PALO ALTO	Medium Density Residential	12-22 du/a	0.16	2	0	419	0
063-322-080	2142 CAPITOL AVE, EAST PALO ALTO	Medium Density Residential	12-22 du/a	0.16	2	0	414	0
063-322-090	2144 CAPITOL AVE, EAST PALO ALTO	Medium Density Residential	12-22 du/a	0.16	2	0	435	0
063-322-100	2154 CAPITOL AVE, EAST PALO ALTO	Medium Density Residential	12-22 du/a	0.20	2	0	520	0
063-322-110	2162 CAPITOL AVE, EAST PALO ALTO	Medium Density Residential	12-22 du/a	0.22	2	0	573	0
063-322-130	2184 CAPITOL AVE, EAST PALO ALTO	Medium Density Residential	12-22 du/a	0.19	2	0	510	0
063-322-140	2194 CAPITOL AVE, EAST PALO ALTO	Medium Density Residential	12-22 du/a	0.24	3	0	645	0
063-322-150	2198 CAPITOL AVE, EAST PALO ALTO	Medium Density Residential	12-22 du/a	0.13	1	0	356	0
063-322-160	660 BELL ST, EAST PALO ALTO	Medium Density Residential	12-22 du/a	0.13	1	0	343	0
063-322-340	2169 COOLEY AVE, EAST PALO ALTO	Medium Density Residential	12-22 du/a	0.69	8	0	1,810	0
063-322-410	, NO DATA	Office	3.0 FAR	0.17	0	11,099	0	1,110
063-322-500	2159 COOLEY AVE, EAST PALO ALTO	Medium Density Residential	12-22 du/a	0.22	2	0	593	0
063-322-560	DONOHOE ST, EAST PALO ALTO	Office	3.0 FAR	0.72	0	46,920	0	4,692
063-322-580	2118 CAPITOL AVE, EAST PALO ALTO	Medium Density Residential	12-22 du/a	0.16	2	0	431	0
063-331-030	2212 UNIVERSITY AVE, EAST PALO ALTO	Mixed Use Corridor	65 du/a; 1.75 FAR	0.20	7	7,656	1,567	766
063-331-060	2242 UNIVERSITY AVE, EAST PALO ALTO	Mixed Use Corridor	65 du/a; 1.75 FAR	0.16	5	6,118	1,252	612
063-331-070	2248 UNIVERSITY AVE, EAST PALO ALTO	Mixed Use Corridor	65 du/a; 1.75 FAR	0.16	5	6,105	1,249	610
063-331-080	2252 UNIVERSITY AVE, EAST PALO ALTO	Mixed Use Corridor	65 du/a; 1.75 FAR	0.16	5	6,092	1,247	609
063-331-090	2264 UNIVERSITY AVE, EAST PALO ALTO	Mixed Use Corridor	65 du/a; 1.75 FAR	0.16	5	6,078	1,244	608
063-331-100	2268 UNIVERSITY AVE, EAST PALO ALTO	Mixed Use Corridor	65 du/a; 1.75 FAR	0.16	5	6,065	1,241	606
063-331-110	2272 UNIVERSITY AVE, EAST PALO ALTO	Mixed Use Corridor	65 du/a; 1.75 FAR	0.16	5	6,052	1,238	605
063-331-120	2274 UNIVERSITY AVE, EAST PALO ALTO	Mixed Use Corridor	65 du/a; 1.75 FAR	0.21	7	8,187	1,675	819
063-331-130	2276 UNIVERSITY AVE, EAST PALO ALTO	Mixed Use Corridor	65 du/a; 1.75 FAR	0.14	5	5,449	1,115	545
063-331-140	2280 UNIVERSITY AVE, EAST PALO ALTO	Mixed Use Corridor	65 du/a; 1.75 FAR	0.14	5	5,443	1,114	544
063-331-150	2284 UNIVERSITY AVE, EAST PALO ALTO	Mixed Use Corridor	65 du/a; 1.75 FAR	0.14	5	5,436	1,113	544
063-331-190	2291 CAPITOL AVE, EAST PALO ALTO	Mixed Use Corridor	65 du/a; 1.75 FAR	0.15	5	5,555	1,137	556
063-331-200	2287 CAPITOL AVE, EAST PALO ALTO	Mixed Use Corridor	65 du/a; 1.75 FAR	0.15	5	5,592	1,144	559
063-331-210	2285 CAPITOL AVE, EAST PALO ALTO	Mixed Use Corridor	65 du/a; 1.75 FAR	0.15	5	5,629	1,152	563
063-331-220	2277 CAPITOL AVE, EAST PALO ALTO	Mixed Use Corridor	65 du/a; 1.75 FAR	0.14	5	5,333	1,091	533
063-331-230	2267 CAPITOL AVE, EAST PALO ALTO	Mixed Use Corridor	65 du/a; 1.75 FAR	0.13	4	5,120	1,048	512
063-331-240	2263 CAPITOL AVE, EAST PALO ALTO	Mixed Use Corridor	65 du/a; 1.75 FAR	0.14	4	5,149	1,054	515
063-331-250	2255 CAPITOL AVE, EAST PALO ALTO	Mixed Use Corridor	65 du/a; 1.75 FAR	0.14	4	5,179	1,060	518
063-331-260	2251 CAPITOL AVE, EAST PALO ALTO	Mixed Use Corridor	65 du/a; 1.75 FAR	0.14	4	5,208	1,066	521
063-331-270	2249 CAPITOL AVE, EAST PALO ALTO	Mixed Use Corridor	65 du/a; 1.75 FAR	0.14	4	5,238	1,072	524
063-331-280	2245 CAPITOL AVE, EAST PALO ALTO	Mixed Use Corridor	65 du/a; 1.75 FAR	0.14	4	5,267	1,078	527
063-331-290	2239 CAPITOL AVE, EAST PALO ALTO	Mixed Use Corridor	65 du/a; 1.75 FAR	0.18	6	6,726	1,376	673
063-331-300	2233 CAPITOL AVE, EAST PALO ALTO	Mixed Use Corridor	65 du/a; 1.75 FAR	0.18	6	6,808	1,393	681
063-331-310	2227 CAPITOL AVE, EAST PALO ALTO	Mixed Use Corridor	65 du/a; 1.75 FAR	0.15	5	5,530	1,132	553
063-331-320	2219 CAPITOL AVE, EAST PALO ALTO	Mixed Use Corridor	65 du/a; 1.75 FAR	0.14	5	5,465	1,118	547
063-331-330	2217 CAPITOL AVE, EAST PALO ALTO	Mixed Use Corridor	65 du/a; 1.75 FAR	0.12	4	4,464	914	446
063-331-340	2205 CAPITOL AVE, EAST PALO ALTO	Mixed Use Corridor	65 du/a; 1.75 FAR	0.16	5	6,151	1,259	615
063-331-350	643 BELL ST, EAST PALO ALTO	Mixed Use Corridor	65 du/a; 1.75 FAR	0.16	5	5,924	1,212	592
063-331-370	2200 UNIVERSITY AVE, EAST PALO ALTO	Mixed Use Corridor	65 du/a; 1.75 FAR	0.40	13	15,313	3,134	1,531
063-331-380	2240 UNIVERSITY AVE, EAST PALO ALTO	Mixed Use Corridor	65 du/a; 1.75 FAR	0.24	8	9,056	1,853	906
063-331-410	2220 UNIVERSITY AVE, EAST PALO ALTO	Mixed Use Corridor	65 du/a; 1.75 FAR	0.44	14	16,713	3,420	1,671
063-442-360	330 DONOHOE ST, EAST PALO ALTO	High Density Residential	22-43 du/a	0.98	21	0	5,056	0
063-473-150	1995 MANHATTAN AVE, EAST PALO ALTO	High Density Residential	22-43 du/a	0.17	4	0	870	0
063-473-160	1991 MANHATTAN AVE, EAST PALO ALTO	High Density Residential	22-43 du/a	0.38	8	0	1,957	0
063-473-170	1965 MANHATTAN AVE, EAST PALO ALTO	High Density Residential	22-43 du/a	0.28	6	0	1,449	0
063-473-180	1955 MANHATTAN AVE, EAST PALO ALTO	High Density Residential	22-43 du/a	0.34	7	0	1,738	0
063-473-190	1919 MANHATTAN AVE, EAST PALO ALTO	High Density Residential	22-43 du/a	0.46	10	0	2,355	0
063-473-200	1901 MANHATTAN AVE, EAST PALO ALTO	High Density Residential	22-43 du/a	0.58	13	0	3,003	0
063-481-010	1699 WOODLAND AVE, EAST PALO ALTO	Medium Density Residential	12-22 du/a	0.17	2	0	441	0
063-481-020	1681 WOODLAND AVE, EAST PALO ALTO	Medium Density Residential	12-22 du/a	0.16	2	0	414	0
063-481-030	1671 WOODLAND AVE, EAST PALO ALTO	Medium Density Residential	12-22 du/a	0.16	2	0	432	0
063-481-040	1669 WOODLAND AVE, EAST PALO ALTO	Medium Density Residential	12-22 du/a	0.18	2	0	475	0
063-481-050	1651 WOODLAND AVE, EAST PALO ALTO	Medium Density Residential	12-22 du/a	0.24	3	0	637	0
063-481-060	1643 WOODLAND AVE, EAST PALO ALTO	Medium Density Residential	12-22 du/a	0.18	2	0	484	0
063-481-070	1637 WOODLAND AVE, EAST PALO ALTO	Medium Density Residential	12-22 du/a	0.19	2	0	508	0
063-481-080	1629 WOODLAND AVE, EAST PALO ALTO	Medium Density Residential	12-22 du/a	0.17	2	0	461	0
063-481-090	1621 WOODLAND AVE, EAST PALO ALTO	Medium Density Residential	12-22 du/a	0.17	2	0	436	0
063-481-100	644 SCOFIELD AVE, EAST PALO ALTO	Medium Density Residential	12-22 du/a	0.21	2	0	556	0
063-481-110	652 SCOFIELD AVE, EAST PALO ALTO	Medium Density Residential	12-22 du/a	0.15	2	0	386	0
063-481-120	660 SCOFIELD AVE, EAST PALO ALTO	Medium Density Residential	12-22 du/a	0.18	2	0	475	0
063-481-130	610 CIRCLE DR, EAST PALO ALTO	Medium Density Residential	12-22 du/a	0.18	2	0	475	0
063-481-140	620 CIRCLE DR, EAST PALO ALTO	Medium Density Residential	12-22 du/a	0.19	2	0	498	0
063-481-150	630 CIRCLE DR, EAST PALO ALTO	Medium Density Residential	12-22 du/a	0.18	2	0	465	0
063-481-160	640 CIRCLE DR, EAST PALO ALTO	Medium Density Residential	12-22 du/a	0.18	2	0	479	0
063-481-170	650 CIRCLE DR, EAST PALO ALTO	Medium Density Residential	12-22 du/a	0.21	2	0	553	0
063-481-180	1917 COOLEY AVE, EAST PALO ALTO	Medium Density Residential	12-22 du/a	0.21	2	0	564	0
063-481-190	1909 COOLEY AVE, EAST PALO ALTO	Medium Density Residential	12-22 du/a	0.21	2	0	548	0

Table 8
2035 Zoning Sanitary Sewer Flows
EPASD Master Plan Update
East Palo Alto Sanitary District

APN (1)	Address (1)	Current EPA General Plan Zoning	Maximum Density and FAR Extents (2)	Acres per Parcel (3)	Average du per Parcel (4)	Average Non-Residential Development, SF (5)	Average Daily Flow Residential, GPD (6)	Average Daily Flow Non-Residential, GPD (7)
063-481-210	1901 COOLEY AVE, EAST PALO ALTO	Medium Density Residential	12-22 du/a	0.20	2	0	529	0
063-481-220	1905 COOLEY AVE, EAST PALO ALTO	Medium Density Residential	12-22 du/a	0.18	2	0	488	0
063-482-010	641 CIRCLE DR, EAST PALO ALTO	Medium Density Residential	12-22 du/a	0.15	2	0	387	0
063-482-020	621 CIRCLE DR, EAST PALO ALTO	Medium Density Residential	12-22 du/a	0.16	2	0	430	0
063-482-030	611 CIRCLE DR, EAST PALO ALTO	Medium Density Residential	12-22 du/a	0.19	2	0	497	0
063-483-030	1909 CAPITOL AVE, EAST PALO ALTO	Medium Density Residential	12-22 du/a	0.23	2	0	595	0
063-483-040	1943 CAPITOL AVE, EAST PALO ALTO	High Density Residential	22-43 du/a	0.25	5	0	1,281	0
063-483-050	1609 WOODLAND AVE, EAST PALO ALTO	High Density Residential	22-43 du/a	0.50	11	0	2,603	0
063-484-010	655 SCOFIELD AVE, EAST PALO ALTO	High Density Residential	22-43 du/a	0.09	2	0	489	0
063-484-020	1902 CAPITOL AVE, EAST PALO ALTO	High Density Residential	22-43 du/a	0.12	2	0	596	0
063-484-030	1908 CAPITOL AVE, EAST PALO ALTO	High Density Residential	22-43 du/a	0.21	5	0	1,088	0
063-484-040	1916 CAPITOL AVE, EAST PALO ALTO	High Density Residential	22-43 du/a	0.33	7	0	1,689	0
063-484-050	1920 CAPITOL AVE, EAST PALO ALTO	High Density Residential	22-43 du/a	0.20	4	0	1,038	0
063-484-060	1934 CAPITOL AVE, EAST PALO ALTO	High Density Residential	22-43 du/a	0.54	12	0	2,793	0
063-484-090	1949 COOLEY AVE, EAST PALO ALTO	High Density Residential	22-43 du/a	0.31	7	0	1,582	0
063-484-100	1941 COOLEY AVE, EAST PALO ALTO	High Density Residential	22-43 du/a	0.34	7	0	1,757	0
063-484-110	685 SCOFIELD AVE, EAST PALO ALTO	High Density Residential	22-43 du/a	0.41	9	0	2,091	0
063-484-130	1957 COOLEY AVE, EAST PALO ALTO	High Density Residential	22-43 du/a	0.74	16	0	3,836	0
063-492-070	1927 E BAYSHORE RD, EAST PALO ALTO	Mixed Use Corridor	65 du/a; 1.75 FAR	0.19	6	7,139	1,461	714
063-492-280	1933 PULGAS AVE, EAST PALO ALTO	Medium Density Residential	12-22 du/a	2.14	24	0	5,646	0
063-492-480	1895 E BAYSHORE RD, EAST PALO ALTO	Mixed Use Corridor	65 du/a; 1.75 FAR	0.25	8	9,521	1,948	952
063-501-020	1874 W BAYSHORE RD, EAST PALO ALTO	Mixed Use Low	22 du/a; 1.0 FAR	0.50	5	10,818	1,311	1,082
063-501-030	1870 W BAYSHORE RD, EAST PALO ALTO	Mixed Use Low	22 du/a; 1.0 FAR	0.23	3	5,052	612	505
063-501-040	1879 WOODLAND AVE, EAST PALO ALTO	Mixed Use Low	22 du/a; 1.0 FAR	0.24	3	5,119	620	512
063-501-050	1875 WOODLAND AVE, EAST PALO ALTO	Mixed Use Low	22 du/a; 1.0 FAR	0.20	2	4,456	540	446
063-511-020	2039 CLARKE AVE, EAST PALO ALTO	Mixed Use Corridor	65 du/a; 1.75 FAR	0.12	4	4,698	961	470
063-511-030	2035 CLARKE AVE, EAST PALO ALTO	Mixed Use Corridor	65 du/a; 1.75 FAR	0.13	4	5,094	1,043	509
063-511-040	2029 CLARKE AVE, EAST PALO ALTO	Mixed Use Corridor	65 du/a; 1.75 FAR	0.26	8	9,897	2,025	990
063-511-050	2027 CLARKE AVE, EAST PALO ALTO	Mixed Use Corridor	65 du/a; 1.75 FAR	0.12	4	4,482	917	448
063-511-060	2023 CLARKE AVE, EAST PALO ALTO	Mixed Use Corridor	65 du/a; 1.75 FAR	0.14	4	5,275	1,079	527
063-511-070	2017 CLARKE AVE, EAST PALO ALTO	Mixed Use Corridor	65 du/a; 1.75 FAR	0.13	4	4,908	1,004	491
063-511-080	2013 CLARKE AVE, EAST PALO ALTO	Mixed Use Corridor	65 du/a; 1.75 FAR	0.13	4	4,857	994	486
063-511-090	2009 CLARKE AVE, EAST PALO ALTO	Mixed Use Corridor	65 du/a; 1.75 FAR	0.13	4	4,834	989	483
063-511-190	872 DONOHOE ST, EAST PALO ALTO	Mixed Use Corridor	65 du/a; 1.75 FAR	0.21	7	8,007	1,639	801
063-511-200	866 DONOHOE ST, EAST PALO ALTO	Mixed Use Corridor	65 du/a; 1.75 FAR	0.18	6	6,898	1,412	690
063-511-210	864 DONOHOE ST, EAST PALO ALTO	Mixed Use Corridor	65 du/a; 1.75 FAR	0.15	5	5,844	1,196	584
063-511-220	862 DONOHOE ST, EAST PALO ALTO	Mixed Use Corridor	65 du/a; 1.75 FAR	0.11	3	4,040	827	404
063-511-240	896 DONOHOE ST, EAST PALO ALTO	Mixed Use Corridor	65 du/a; 1.75 FAR	0.11	4	4,244	868	424
063-511-250	860 DONOHOE ST, EAST PALO ALTO	Mixed Use Corridor	65 du/a; 1.75 FAR	0.16	5	6,145	1,258	615
063-511-260	890 DONOHOE ST, EAST PALO ALTO	Mixed Use Corridor	65 du/a; 1.75 FAR	0.12	4	4,566	934	457
063-511-490	1731 E BAYSHORE RD, EAST PALO ALTO	Mixed Use High	86 du/a; 2.5 FAR	2.51	108	136,888	25,945	13,689
063-511-520	1761 E BAYSHORE RD, EAST PALO ALTO	Mixed Use High	86 du/a; 2.5 FAR	2.64	114	143,790	27,253	14,379
063-511-630	1721 E BAYSHORE RD, EAST PALO ALTO	Mixed Use High	86 du/a; 2.5 FAR	0.67	29	36,236	6,868	3,624
063-511-660	899 OCONNOR ST, EAST PALO ALTO	Mixed Use Corridor	65 du/a; 1.75 FAR	0.08	2	2,872	588	287
063-511-680	1751 EAST BAYSHORE RD, EAST PALO ALTO	Mixed Use High	86 du/a; 2.5 FAR	4.24	182	231,026	43,787	23,103
063-511-690	1745 E BAYSHORE BLVD, EAST PALO ALTO	Mixed Use High	86 du/a; 2.5 FAR	0.67	29	36,743	6,964	3,674
063-511-720	1775 E BAYSHORE RD, EAST PALO ALTO	Mixed Use High	86 du/a; 2.5 FAR	6.12	263	333,269	63,165	33,327
063-515-060	1821 CLARKE AVE, EAST PALO ALTO	Low Density Residential	0-12 du/a	0.19	1	0	272	0
063-515-070	1805 CLARKE AVE, EAST PALO ALTO	Low Density Residential	0-12 du/a	0.35	2	0	509	0
063-515-080	1787 WOODLAND AVE, EAST PALO ALTO	Low Density Residential	0-12 du/a	0.18	1	0	261	0
063-515-230	1785 WOODLAND AVE, EAST PALO ALTO	Low Density Residential	0-12 du/a	0.35	2	0	507	0
063-571-060	1985 E BAYSHORE RD, EAST PALO ALTO	Mixed Use Corridor	65 du/a; 1.75 FAR	1.38	45	52,597	10,764	5,260
063-571-070	1981 E BAYSHORE RD, EAST PALO ALTO	Mixed Use Corridor	65 du/a; 1.75 FAR	0.66	21	25,211	5,159	2,521
063-571-080	1961 E BAYSHORE RD, EAST PALO ALTO	Mixed Use Corridor	65 du/a; 1.75 FAR	1.44	47	54,786	11,212	5,479
063-571-090	1905 E BAYSHORE RD, EAST PALO ALTO	Mixed Use Corridor	65 du/a; 1.75 FAR	0.25	8	9,439	1,932	944
063-680-020	1900 UNIVERSITY AVE, EAST PALO ALTO	Office	3.0 FAR	2.31	0	150,737	0	15,074
063-680-050	, NO DATA	Office	3.0 FAR	0.02	0	1,566	0	157
063-680-060	, NO DATA	Office	3.0 FAR	0.02	0	1,566	0	157
063-680-090	, EAST PALO ALTO	Office	3.0 FAR	0.13	0	8,177	0	818
063-680-100	, EAST PALO ALTO	Office	3.0 FAR	0.13	0	8,273	0	827
063-680-110	, EAST PALO ALTO	Office	3.0 FAR	0.35	0	22,595	0	2,259
063-680-130	2000 UNIVERSITY AVE, EAST PALO ALTO	Office	3.0 FAR	2.14	0	139,586	0	13,959
063-680-150	2050 UNIVERSITY AVE, EAST PALO ALTO	Office	3.0 FAR	3.35	0	218,937	0	21,894
063-680-180	, EAST PALO ALTO	Office	3.0 FAR	0.01	0	533	0	53
063-680-190	2000 UNIVERSITY AVE, EAST PALO ALTO	Office	3.0 FAR	3.92	0	256,076	0	25,608

Table 8
2035 Zoning Sanitary Sewer Flows
EPASD Master Plan Update
East Palo Alto Sanitary District

APN (1)	Address (1)	Current EPA General Plan Zoning	Maximum Density and FAR Extents (2)	Acres per Parcel (3)	Average du per Parcel (4)	Average Non-Residential Development, SF (5)	Average Daily Flow Residential, GPD (6)	Average Daily Flow Non-Residential, GPD (7)
113-530-010 to 113-530-999	2420 GLORIA WAY, EAST PALO ALTO	High Density Residential	22-43 du/a	0.47	10	0	2,443	0
113-710-010 to 113-710-999	2440 GLORIA WAY, EAST PALO ALTO	High Density Residential	22-43 du/a	0.25	5	0	1,277	0
113-720-010 to 113-720-999	2460 GLORIA WAY, EAST PALO ALTO	High Density Residential	22-43 du/a	0.21	4	0	1,074	0
113-740-010 to 113-740-999	2470 GLORIA WAY, EAST PALO ALTO	High Density Residential	22-43 du/a	0.33	7	0	1,683	0
114-240-010 to 114-240-300	2330 UNIVERSITY AVE, EAST PALO ALTO	Mixed Use Corridor	65 du/a; 1.75 FAR	0.46	15	17,593	3,600	1,759
114-450-010 to 114-460-300	1765 EAST BAYSHORE RD, EAST PALO ALTO	Mixed Use Corridor	65 du/a; 1.75 FAR	1.04	34	39,597	8,103	3,960

Notes:
(1) Properties that have changed Zoning Figure 4-12: General Plan Land Use and Figure 4-16: Ravenswood / 4 Corners TOP Specific Plan Land Use City of East Palo Alto General Plan "Existing Conditions Report, February 2014" Vs Figure 4-2: General Plan Land Use Designations City of East Palo Alto General Plan "Vista 2035, Final Version: March 2017"
(2) du/a and FAR based on Section 4 Table 4-2 of City of East Palo Alto General Plan "Vista 2035, Final Version: March 2017"
(3) Square footage of parcel divided 43,560 feet (1 Acre Equivalent).
(4) Average Dwelling units per number of acres in parcel is calculated to be 50% of the maximum number of units allowed in the General Plan.
(5) Calculated by multiplying 50% of the maximum FAR for the land use allowed by the General Plan and square feet of parcel.
(6) ADWF Residential Dwellings, calculated by multiplying 240 gallons per dwelling unit per day by the total number of units. Based on Section B1.03.2.b of the East Palo Alto Sanitary District Standard Specifications for Design and Construction of Sanitary Collection and Conveyance Facilities date June 6, 2002. Units converted from GPD (Gallons Per Day) to CFS. Based off 24 hours in a day, 60 minut a hour, and 60 seconds in a minute.
(7) ADWF Non-Residential , calculated by multiplying 0.1 gallons per day per square foot. Based on Section B1.03.3 for Office and Retail of the East Palo Alto Sanitary District Standard Specifications for Design and Construction of Sanitray Collection and Conveyance Facilities dated June 6, 2002. Units converted from GPD (Gallons Per Day) to CFS assuming flows are discharged over 24 hours in a day.

Abbreviations
ADWF: Average Dry Weather Flow
APN: Assessors Parcel Number
CFS: Cubic Feet per Second
MGD: Million Gallons Per Day
PDWF: Peak Dry Weather Flow

Table 9
Proposed Additional Sanitary Sewer Flows
EPASD Master Plan Update
East Palo Alto Sanitary District

APN (1)	Address (1)	Sanitary Sewer Sub-Basins	Peaking Factor (2)	Delta Residential Average Daily Flow, GPD (3)	Delta Non-Residential Average Daily Flow, GPD (4)	Residential ADWF, CFS (5)	Non-Residential ADWF, CFS (6)	Residential PDWF, CFS (7)	Non-Residential PDWF, CFS (8)	Total ADWF, CFS	Total PDWF, CFS
063-231-220	1800 BAY RD, EAST PALO ALTO	A15	1.59	1,523	861	0.0023	0.0013	0.0037	0.0021	0.0037	0.0058
063-231-240	1804 BAY RD, EAST PALO ALTO	A15	1.59	6,796	3,438	0.0105	0.0053	0.0166	0.0084	0.0158	0.0251
063-231-250	1798 BAY RD, EAST PALO ALTO	A15	1.5	10,497	5,247	0.0162	0.0081	0.0242	0.0121	0.0242	0.0364
063-103-310	1585 BAY RD, EAST PALO ALTO	A15	1.59	1,079	4,389	0.0017	0.0068	0.0026	0.0107	0.0084	0.0134
063-103-440	2400 GLORIA WAY, EAST PALO ALTO	A15	1.59	742	0	0.0011	0.0000	0.0018	0.0000	0.0011	0.0018
063-111-230	BETWEEN 1585 AND 1675 BAY RD, EAST PALO ALTO	A15	1.59	2,372	1,251	0.0037	0.0019	0.0058	0.0031	0.0056	0.0089
063-111-250	1675 BAY RD, EAST PALO ALTO	A15	1.59	61,949	32,812	0.0954	0.0505	0.1517	0.0803	0.1459	0.2320
063-203-350	1574 BAY RD, EAST PALO ALTO	A15	1.59	202	0	0.0003	0.0000	0.0005	0.0000	0.0003	0.0005
063-203-360	1546 BAY RD, EAST PALO ALTO	A15	1.59	164	0	0.0003	0.0000	0.0004	0.0000	0.0003	0.0004
063-203-380	, NO DATA	A15	1.59	312	0	0.0005	0.0000	0.0008	0.0000	0.0005	0.0008
063-203-400	1560 BAY RD, EAST PALO ALTO	A15	1.59	146	0	0.0002	0.0000	0.0004	0.0000	0.0002	0.0004
063-203-410	1568 BAY RD, EAST PALO ALTO	A15	1.59	169	0	0.0003	0.0000	0.0004	0.0000	0.0003	0.0004
063-203-430	1530 BAY RD, EAST PALO ALTO	A15	1.59	171	0	0.0003	0.0000	0.0004	0.0000	0.0003	0.0004
063-203-440	1554 BAY RD, EAST PALO ALTO	A15	1.59	116	0	0.0002	0.0000	0.0003	0.0000	0.0002	0.0003
063-203-450	1538 BAY RD, EAST PALO ALTO	A15	1.59	128	0	0.0002	0.0000	0.0003	0.0000	0.0002	0.0003
113-530-010 to 113-530-999	2420 GLORIA WAY, EAST PALO ALTO	A15	1.59	763	0	0.0012	0.0000	0.0019	0.0000	0.0012	0.0019
113-710-010 to 113-710-999	2440 GLORIA WAY, EAST PALO ALTO	A15	1.59	0	0	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
113-720-010 to 113-720-999	2460 GLORIA WAY, EAST PALO ALTO	A15	1.59	0	0	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
113-740-010 to 113-740-999	2470 GLORIA WAY, EAST PALO ALTO	A15	1.59	0	0	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
063-151-170	2159 POPLAR AVE, EAST PALO ALTO	B13	1.83	0	293	0.0000	0.0005	0.0000	0.0008	0.0005	0.0008
063-151-200	1001 E BAYSHORE RD, EAST PALO ALTO	B13	1.83	0	177	0.0000	0.0003	0.0000	0.0005	0.0003	0.0005
063-152-230	1199 E BAYSHORE RD, EAST PALO ALTO	B13	1.83	439	561	0.0007	0.0009	0.0012	0.0016	0.0015	0.0028
063-153-010	1205 E BAYSHORE RD, EAST PALO ALTO	B13	1.83	321	265	0.0005	0.0004	0.0009	0.0007	0.0009	0.0017
063-153-250	2119 ADDISON AVE, EAST PALO ALTO	B13	1.83	312	257	0.0005	0.0004	0.0009	0.0007	0.0009	0.0016
063-154-200	2110 ADDISON AVE, EAST PALO ALTO	B13	1.83	164	333	0.0003	0.0005	0.0005	0.0009	0.0008	0.0014
063-154-260	2119 OAKWOOD DR, EAST PALO ALTO	B13	1.72	472	588	0.0007	0.0009	0.0013	0.0016	0.0016	0.0028
063-322-500	2159 COOLEY AVE, EAST PALO ALTO	E1	1.46	353	0	0.0005	0.0000	0.0008	0.0000	0.0005	0.0008
063-321-190	616 BELL ST, EAST PALO ALTO	E1	1.46	691	455	0.0011	0.0007	0.0016	0.0010	0.0018	0.0026
063-321-200	644 BELL ST, EAST PALO ALTO	E1	1.46	932	573	0.0014	0.0009	0.0021	0.0013	0.0023	0.0034
063-321-210	2189 CAPITOL AVE, EAST PALO ALTO	E1	1.46	866	540	0.0013	0.0008	0.0019	0.0012	0.0022	0.0032
063-321-220	2187 CAPITOL AVE, EAST PALO ALTO	E1	1.46	667	443	0.0010	0.0007	0.0015	0.0010	0.0017	0.0025
063-321-230	2181 CAPITOL AVE, EAST PALO ALTO	E1	1.46	1,116	663	0.0017	0.0010	0.0025	0.0015	0.0027	0.0040
063-321-240	2171 CAPITOL AVE, EAST PALO ALTO	E1	1.46	942	578	0.0015	0.0009	0.0021	0.0013	0.0023	0.0034
063-321-250	2165 CAPITOL AVE, EAST PALO ALTO	E1	1.46	904	559	0.0014	0.0009	0.0020	0.0013	0.0023	0.0033
063-321-260	2161 CAPITOL AVE, EAST PALO ALTO	E1	1.46	943	578	0.0015	0.0009	0.0021	0.0013	0.0023	0.0034
063-321-270	2157 CAPITOL AVE, EAST PALO ALTO	E1	1.46	957	585	0.0015	0.0009	0.0022	0.0013	0.0024	0.0035
063-321-280	2153 CAPITOL AVE, EAST PALO ALTO	E1	1.46	923	568	0.0014	0.0009	0.0021	0.0013	0.0023	0.0034
063-321-290	2149 CAPITOL AVE, EAST PALO ALTO	E1	1.46	972	592	0.0015	0.0009	0.0022	0.0013	0.0024	0.0035
063-321-300	2145 CAPITOL AVE, EAST PALO ALTO	E1	1.46	985	599	0.0015	0.0009	0.0022	0.0013	0.0024	0.0036
063-321-310	2141 CAPITOL AVE, EAST PALO ALTO	E1	1.46	968	590	0.0015	0.0009	0.0022	0.0013	0.0024	0.0035
063-321-320	2133 CAPITOL AVE, EAST PALO ALTO	E1	1.46	920	567	0.0014	0.0009	0.0021	0.0013	0.0023	0.0033
063-321-330	2129 CAPITOL AVE, EAST PALO ALTO	E1	1.46	580	401	0.0009	0.0006	0.0013	0.0009	0.0015	0.0022
063-322-040	2124 CAPITOL AVE, EAST PALO ALTO	E1	1.46	179	0	0.0003	0.0000	0.0004	0.0000	0.0003	0.0004
063-322-050	2132 CAPITOL AVE, EAST PALO ALTO	E1	1.46	215	0	0.0003	0.0000	0.0005	0.0000	0.0003	0.0005
063-322-060	2134 CAPITOL AVE, EAST PALO ALTO	E1	1.46	181	0	0.0003	0.0000	0.0004	0.0000	0.0003	0.0004
063-322-070	2138 CAPITOL AVE, EAST PALO ALTO	E1	1.46	179	0	0.0003	0.0000	0.0004	0.0000	0.0003	0.0004
063-322-080	2142 CAPITOL AVE, EAST PALO ALTO	E1	1.46	174	0	0.0003	0.0000	0.0004	0.0000	0.0003	0.0004
063-322-090	2144 CAPITOL AVE, EAST PALO ALTO	E1	1.46	195	0	0.0003	0.0000	0.0004	0.0000	0.0003	0.0004
063-322-100	2154 CAPITOL AVE, EAST PALO ALTO	E1	1.46	280	0	0.0004	0.0000	0.0006	0.0000	0.0004	0.0006
063-322-110	2162 CAPITOL AVE, EAST PALO ALTO	E1	1.46	333	0	0.0005	0.0000	0.0007	0.0000	0.0005	0.0007
063-322-130	2184 CAPITOL AVE, EAST PALO ALTO	E1	1.46	270	0	0.0004	0.0000	0.0006	0.0000	0.0004	0.0006
063-322-140	2194 CAPITOL AVE, EAST PALO ALTO	E1	1.46	405	0	0.0006	0.0000	0.0009	0.0000	0.0006	0.0009
063-322-150	2198 CAPITOL AVE, EAST PALO ALTO	E1	1.46	116	0	0.0002	0.0000	0.0003	0.0000	0.0002	0.0003
063-322-160	660 BELL ST, EAST PALO ALTO	E1	1.46	103	0	0.0002	0.0000	0.0002	0.0000	0.0002	0.0002
063-322-340	2169 COOLEY AVE, EAST PALO ALTO	E1	1.46	1,466	0	0.0023	0.0000	0.0033	0.0000	0.0023	0.0033
063-322-580	2118 CAPITOL AVE, EAST PALO ALTO	E1	1.47	431	0	0.0007	0.0000	0.0010	0.0000	0.0007	0.0010
063-321-050	2124 UNIVERSITY AVE, EAST PALO ALTO	E1	1.46	1,938	1,064	0.0030	0.0016	0.0044	0.0024	0.0046	0.0068
063-321-060	2126 UNIVERSITY AVE, EAST PALO ALTO	E1	1.46	1,783	871	0.0027	0.0013	0.0040	0.0020	0.0041	0.0060
063-321-070	, EAST PALO ALTO	E1	1.46	406	198	0.0006	0.0003	0.0009	0.0004	0.0009	0.0014
063-321-080	2142 UNIVERSITY AVE, EAST PALO ALTO	E1	1.46	1,219	713	0.0019	0.0011	0.0027	0.0016	0.0030	0.0043
063-321-100	2160 UNIVERSITY AVE, EAST PALO ALTO	E1	1.46	2,472	1,397	0.0038	0.0022	0.0056	0.0031	0.0060	0.0087
063-321-110	2164 UNIVERSITY AVE, EAST PALO ALTO	E1	1.46	1,146	677	0.0018	0.0010	0.0026	0.0015	0.0028	0.0041
063-321-120	2166 UNIVERSITY AVE, EAST PALO ALTO	E1	1.46	1,123	666	0.0017	0.0010	0.0025	0.0015	0.0028	0.0040
063-321-130	2172 UNIVERSITY AVE, EAST PALO ALTO	E1	1.46	1,123	666	0.0017	0.0010	0.0025	0.0015	0.0028	0.0040
063-321-140	2178 UNIVERSITY AVE, EAST PALO ALTO	E1	1.46	1,064	637	0.0016	0.0010	0.0024	0.0014	0.0026	0.0038
063-321-180	612 BELL ST, EAST PALO ALTO	E1	1.46	636	428	0.0010	0.0007	0.0014	0.0010	0.0016	0.0024
063-321-400	2194 UNIVERSITY AVE, EAST PALO ALTO	E1	1.46	3,083	1,624	0.0047	0.0025	0.0069	0.0037	0.0072	0.0106
063-321-410	2148 UNIVERSITY AVE, EAST PALO ALTO	E1	1.46	1,729	962	0.0027	0.0015	0.0039	0.0022	0.0041	0.0060

Table 9
Proposed Additional Sanitary Sewer Flows
EPASD Master Plan Update
East Palo Alto Sanitary District

APN (1)	Address (1)	Sanitary Sewer Sub-Basins	Peaking Factor (2)	Delta Residential Average Daily Flow, GPD (3)	Delta Non-Residential Average Daily Flow, GPD (4)	Residential ADWF, CFS (5)	Non-Residential ADWF, CFS (6)	Residential PDWF, CFS (7)	Non-Residential PDWF, CFS (8)	Total ADWF, CFS	Total PDWF, CFS
063-292-380	2160 EUCLID AVE, EAST PALO ALTO	E1	1.46	39,965	21,724	0.0615	0.0335	0.0899	0.0488	0.0950	0.1387
063-155-010	2106 OAKWOOD DR, EAST PALO ALTO	E1	1.46	214	375	0.0003	0.0006	0.0005	0.0008	0.0009	0.0013
063-155-180	2123 DUMBARTON AVE, EAST PALO ALTO	E1	1.46	57	245	0.0001	0.0004	0.0001	0.0006	0.0005	0.0007
063-155-190	2109 DUMBARTON AVE, EAST PALO ALTO	E1	1.46	214	374	0.0003	0.0006	0.0005	0.0008	0.0009	0.0013
063-181-010	2110 DUMBARTON AVE, EAST PALO ALTO	E1	1.46	330	470	0.0005	0.0007	0.0007	0.0011	0.0012	0.0018
063-181-220	2111 LINCOLN ST, EAST PALO ALTO	E1	1.46	82	266	0.0001	0.0004	0.0002	0.0006	0.0005	0.0008
063-181-230	2097 LINCOLN ST, EAST PALO ALTO	E1	1.46	62	249	0.0001	0.0004	0.0001	0.0006	0.0005	0.0007
063-181-240	1385 E BAYSHORE RD, EAST PALO ALTO	E1	1.46	270	223	0.0004	0.0003	0.0006	0.0005	0.0008	0.0011
063-302-170	2283 UNIVERSITY AVE, EAST PALO ALTO	E1	1.46	1,623	910	0.0025	0.0014	0.0036	0.0020	0.0039	0.0057
063-302-180	2281 UNIVERSITY AVE, EAST PALO ALTO	E1	1.46	1,396	800	0.0022	0.0012	0.0031	0.0018	0.0034	0.0049
063-302-210	2263 UNIVERSITY AVE, EAST PALO ALTO	E1	1.46	3,373	1,765	0.0052	0.0027	0.0076	0.0040	0.0079	0.0116
063-302-220	2253 UNIVERSITY AVE, EAST PALO ALTO	E1	1.46	1,394	798	0.0021	0.0012	0.0031	0.0018	0.0034	0.0049
063-302-230	2247 UNIVERSITY AVE, EAST PALO ALTO	E1	1.46	2,064	1,126	0.0032	0.0017	0.0046	0.0025	0.0049	0.0072
063-302-280	575A BELL ST, EAST PALO ALTO	E1	1.46	1,290	748	0.0020	0.0012	0.0029	0.0017	0.0031	0.0046
063-302-290	565 BELL ST, EAST PALO ALTO	E1	1.46	1,242	724	0.0019	0.0011	0.0028	0.0016	0.0030	0.0044
063-302-330	2201 UNIVERSITY AVE, EAST PALO ALTO	E1	1.46	10,772	5,381	0.0166	0.0083	0.0242	0.0121	0.0249	0.0363
063-302-340	584 RUNNYMEDE ST, EAST PALO ALTO	E1	1.46	2,807	1,489	0.0043	0.0023	0.0063	0.0033	0.0066	0.0097
063-302-460	2277 UNIVERSITY AVE, EAST PALO ALTO	E1	1.46	2,537	1,357	0.0039	0.0021	0.0057	0.0031	0.0060	0.0088
063-302-470	2279 UNIVERSITY AVE, EAST PALO ALTO	E1	1.46	1,558	879	0.0024	0.0014	0.0035	0.0020	0.0038	0.0055
063-331-030	2212 UNIVERSITY AVE, EAST PALO ALTO	E1	1.46	1,327	766	0.0020	0.0012	0.0030	0.0017	0.0032	0.0047
063-331-060	2242 UNIVERSITY AVE, EAST PALO ALTO	E1	1.46	1,012	612	0.0016	0.0009	0.0023	0.0014	0.0025	0.0037
063-331-070	2248 UNIVERSITY AVE, EAST PALO ALTO	E1	1.46	1,009	610	0.0016	0.0009	0.0023	0.0014	0.0025	0.0036
063-331-080	2252 UNIVERSITY AVE, EAST PALO ALTO	E1	1.46	1,007	609	0.0016	0.0009	0.0023	0.0014	0.0025	0.0036
063-331-090	2264 UNIVERSITY AVE, EAST PALO ALTO	E1	1.46	1,004	608	0.0015	0.0009	0.0023	0.0014	0.0025	0.0036
063-331-100	2268 UNIVERSITY AVE, EAST PALO ALTO	E1	1.46	1,001	606	0.0015	0.0009	0.0023	0.0014	0.0025	0.0036
063-331-110	2272 UNIVERSITY AVE, EAST PALO ALTO	E1	1.46	998	605	0.0015	0.0009	0.0022	0.0014	0.0025	0.0036
063-331-120	2274 UNIVERSITY AVE, EAST PALO ALTO	E1	1.46	1,435	819	0.0022	0.0013	0.0032	0.0018	0.0035	0.0051
063-331-130	2276 UNIVERSITY AVE, EAST PALO ALTO	E1	1.46	875	545	0.0013	0.0008	0.0020	0.0012	0.0022	0.0032
063-331-140	2280 UNIVERSITY AVE, EAST PALO ALTO	E1	1.46	874	544	0.0013	0.0008	0.0020	0.0012	0.0022	0.0032
063-331-150	2284 UNIVERSITY AVE, EAST PALO ALTO	E1	1.46	873	544	0.0013	0.0008	0.0020	0.0012	0.0022	0.0032
063-331-370	2200 UNIVERSITY AVE, EAST PALO ALTO	E1	1.46	2,775	1,531	0.0043	0.0024	0.0062	0.0034	0.0066	0.0097
063-331-380	2240 UNIVERSITY AVE, EAST PALO ALTO	E1	1.46	1,613	906	0.0025	0.0014	0.0036	0.0020	0.0039	0.0057
063-331-410	2220 UNIVERSITY AVE, EAST PALO ALTO	E1	1.46	1,725	1,671	0.0027	0.0026	0.0039	0.0038	0.0052	0.0076
063-331-190	2291 CAPITOL AVE, EAST PALO ALTO	E1	1.46	897	556	0.0014	0.0009	0.0020	0.0012	0.0022	0.0033
063-331-200	2287 CAPITOL AVE, EAST PALO ALTO	E1	1.46	904	559	0.0014	0.0009	0.0020	0.0013	0.0023	0.0033
063-331-210	2285 CAPITOL AVE, EAST PALO ALTO	E1	1.46	912	563	0.0014	0.0009	0.0021	0.0013	0.0023	0.0033
063-331-220	2277 CAPITOL AVE, EAST PALO ALTO	E1	1.46	851	533	0.0013	0.0008	0.0019	0.0012	0.0021	0.0031
063-331-230	2267 CAPITOL AVE, EAST PALO ALTO	E1	1.46	808	512	0.0012	0.0008	0.0018	0.0012	0.0020	0.0030
063-331-240	2263 CAPITOL AVE, EAST PALO ALTO	E1	1.46	814	515	0.0013	0.0008	0.0018	0.0012	0.0020	0.0030
063-331-250	2255 CAPITOL AVE, EAST PALO ALTO	E1	1.46	820	518	0.0013	0.0008	0.0018	0.0012	0.0021	0.0030
063-331-260	2251 CAPITOL AVE, EAST PALO ALTO	E1	1.46	826	521	0.0013	0.0008	0.0019	0.0012	0.0021	0.0030
063-331-270	2249 CAPITOL AVE, EAST PALO ALTO	E1	1.46	832	524	0.0013	0.0008	0.0019	0.0012	0.0021	0.0030
063-331-280	2245 CAPITOL AVE, EAST PALO ALTO	E1	1.46	838	527	0.0013	0.0008	0.0019	0.0012	0.0021	0.0031
063-331-290	2239 CAPITOL AVE, EAST PALO ALTO	E1	1.46	1,136	673	0.0018	0.0010	0.0026	0.0015	0.0028	0.0041
063-331-300	2233 CAPITOL AVE, EAST PALO ALTO	E1	1.46	1,153	681	0.0018	0.0010	0.0026	0.0015	0.0028	0.0041
063-331-310	2227 CAPITOL AVE, EAST PALO ALTO	E1	1.46	892	553	0.0014	0.0009	0.0020	0.0012	0.0022	0.0032
063-331-320	2219 CAPITOL AVE, EAST PALO ALTO	E1	1.46	878	547	0.0014	0.0008	0.0020	0.0012	0.0022	0.0032
063-331-330	2217 CAPITOL AVE, EAST PALO ALTO	E1	1.46	674	446	0.0010	0.0007	0.0015	0.0010	0.0017	0.0025
063-331-340	2205 CAPITOL AVE, EAST PALO ALTO	E1	1.46	1,019	615	0.0016	0.0009	0.0023	0.0014	0.0025	0.0037
063-331-350	643 BELL ST, EAST PALO ALTO	E1	1.46	972	592	0.0015	0.0009	0.0022	0.0013	0.0024	0.0035
063-282-080 (18)	2033 MANHATTAN AVE, EAST PALO ALTO	E2	1.72	2,391	0	0.0037	0.0000	0.0063	0.0000	0.0118	0.0203
063-282-090 (18)	2001 MANHATTAN AVE, EAST PALO ALTO	E2	1.72	3,328	0	0.0051	0.0000	0.0088	0.0000	0.0118	0.0203
063-282-070 (18)	2054 EUCLID AVE, EAST PALO ALTO	E2	1.72							0.0118	0.0203
063-282-060 (18)	2044 EUCLID AVE, EAST PALO ALTO	E2	1.72							0.0118	0.0203
063-282-050 (18)	2040 EUCLID AVE, EAST PALO ALTO	E2	1.72							0.0118	0.0203
063-282-040 (18)	2036 EUCLID AVE, EAST PALO ALTO	E2	1.72							0.0118	0.0203
063-282-030 (18)	2032 EUCLID AVE, EAST PALO ALTO	E2	1.72							0.0118	0.0203
063-282-020 (18)	2012 EUCLID AVE, EAST PALO ALTO	E2	1.72							0.0118	0.0203
063-282-010 (18)	501 OCONNOR ST, EAST PALO ALTO	E2	1.72							0.0118	0.0203
063-281-110 (18)	420 E OKEEFE ST, EAST PALO ALTO	E2	1.72							0.0118	0.0203
063-281-100 (18)	2043 EUCLID AVE, EAST PALO ALTO	E2	1.72							0.0118	0.0203
063-281-040 (18)	2031 EUCLID AVE, EAST PALO ALTO	E2	1.72							0.0118	0.0203
063-281-030 (18)	2025 EUCLID AVE, EAST PALO ALTO	E2	1.72							0.0118	0.0203
063-281-020 (18)	2021 EUCLID AVE, EAST PALO ALTO	E2	1.72							0.0118	0.0203
063-183-010	2088 LINCOLN ST, EAST PALO ALTO	E2	1.72	60	248	0.0001	0.0004	0.0002	0.0007	0.0005	0.0008
063-183-070	2045 GLEN WAY, EAST PALO ALTO	E2	1.72	232	389	0.0004	0.0006	0.0006	0.0010	0.0010	0.0016
063-183-080	1441 E BAYSHORE RD, EAST PALO ALTO	E2	1.72	387	517	0.0006	0.0008	0.0010	0.0014	0.0014	0.0024
063-183-090	, EAST PALO ALTO	E2	1.72	230	190	0.0004	0.0003	0.0006	0.0005	0.0006	0.0011
063-183-110	1401 E BAYSHORE RD 2, EAST PALO ALTO	E2	1.72	547	451	0.0008	0.0007	0.0014	0.0012	0.0015	0.0026
063-184-010	1475 E BAYSHORE RD, EAST PALO ALTO	E2	1.72	612	505	0.0009	0.0008	0.0016	0.0013	0.0017	0.0030
063-184-020	2056 GLEN WAY, EAST PALO ALTO	E2	1.72	549	453	0.0008	0.0007	0.0015	0.0012	0.0015	0.0027
063-184-030	2070 GLEN WAY, EAST PALO ALTO	E2	1.72	469	387	0.0007	0.0006	0.0012	0.0010	0.0013	0.0023

Table 9
Proposed Additional Sanitary Sewer Flows
EPASD Master Plan Update
East Palo Alto Sanitary District

APN (1)	Address (1)	Sanitary Sewer Sub-Basins	Peaking Factor (2)	Delta Residential Average Daily Flow, GPD (3)	Delta Non-Residential Average Daily Flow, GPD (4)	Residential ADWF, CFS (5)	Non-Residential ADWF, CFS (6)	Residential PDWF, CFS (7)	Non-Residential PDWF, CFS (8)	Total ADWF, CFS	Total PDWF, CFS
063-184-040	2080 GLEN WAY, EAST PALO ALTO	E2	1.72	510	420	0.0008	0.0006	0.0013	0.0011	0.0014	0.0025
063-291-010	1489 E BAYSHORE RD, EAST PALO ALTO	E2	1.72	946	978	0.0015	0.0015	0.0025	0.0026	0.0030	0.0051
063-473-150 (19)	1995 MANHATTAN AVE, EAST PALO ALTO	E2	1.72	0	0	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
063-473-160 (19)	1991 MANHATTAN AVE, EAST PALO ALTO	E2	1.72	0	0	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
063-473-170 (19)	1965 MANHATTAN AVE, EAST PALO ALTO	E2	1.72	0	0	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
063-473-180 (19)	1955 MANHATTAN AVE, EAST PALO ALTO	E2	1.72	0	0	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
063-473-190 (19)	1919 MANHATTAN AVE, EAST PALO ALTO	E2	1.72	0	0	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
063-473-200 (19)	1901 MANHATTAN AVE, EAST PALO ALTO	E2	1.72	0	0	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
063-442-360 (19)	330 DONOHOE ST, EAST PALO ALTO	E2	1.72	4,816	0	0.0074	0.0000	0.0128	0.0000	0.0074	0.0128
063-292-180	2101 UNIVERSITY AVE, EAST PALO ALTO	E2	1.46	2,911	1,786	0.0045	0.0028	0.0065	0.0040	0.0072	0.0106
063-292-370 (9)	2117 UNIVERSITY AVE, EAST PALO ALTO	E2	1.46	6,709	4,178	0.0103	0.0064	0.0151	0.0094	0.0154	0.0225
063-312-400 (13)	, NO DATA	E2	1.72	0	2,256	0.0000	0.0035	0.0000	0.0060	0.0000	0.0000
063-321-420 (11)	, NO DATA	E2	1.46	0	10,740	0.0000	0.0165	0.0000	0.0241	0.0070	0.0102
063-322-410 (11)	, NO DATA	E2	1.47	0	1,110	0.0000	0.0017	0.0000	0.0025	0.0070	0.0103
063-322-560 (11)	DONOHOE ST, EAST PALO ALTO	E2	1.47	0	4,692	0.0000	0.0072	0.0000	0.0106	0.0070	0.0103
063-680-020 (13)	1900 UNIVERSITY AVE, EAST PALO ALTO	E2	1.72	0	15,074	0.0000	0.0232	0.0000	0.0399	0.0000	0.0000
063-680-050 (13)	, NO DATA	E2	1.72	0	157	0.0000	0.0002	0.0000	0.0004	0.0000	0.0000
063-680-060 (13)	, NO DATA	E2	1.72	0	157	0.0000	0.0002	0.0000	0.0004	0.0000	0.0000
063-680-090 (13)	, EAST PALO ALTO	E2	1.72	0	818	0.0000	0.0013	0.0000	0.0022	0.0000	0.0000
063-680-100 (13)	, EAST PALO ALTO	E2	1.72	0	827	0.0000	0.0013	0.0000	0.0022	0.0000	0.0000
063-680-110 (13)	, EAST PALO ALTO	E2	1.72	0	2,259	0.0000	0.0035	0.0000	0.0060	0.0000	0.0000
063-680-130 (13)	2000 UNIVERSITY AVE, EAST PALO ALTO	E2	1.72	0	13,959	0.0000	0.0215	0.0000	0.0370	0.0000	0.0000
063-680-150 (13)	2050 UNIVERSITY AVE, EAST PALO ALTO	E2	1.72	0	21,894	0.0000	0.0337	0.0000	0.0580	0.0000	0.0000
063-680-180 (13)	, EAST PALO ALTO	E2	1.72	0	53	0.0000	0.0001	0.0000	0.0001	0.0000	0.0000
063-680-190 (13)	2000 UNIVERSITY AVE, EAST PALO ALTO	E2	1.72	0	25,608	0.0000	0.0394	0.0000	0.0678	0.0000	0.0000
063-210-340	2369 COOLEY AVE, EAST PALO ALTO	H3	1.64	374	0	0.0006	0.0000	0.0009	0.0000	0.0006	0.0009
063-210-350	2365 COOLEY AVE, EAST PALO ALTO	H3	1.64	397	0	0.0006	0.0000	0.0010	0.0000	0.0006	0.0010
063-210-410	2371 COOLEY AVE, EAST PALO ALTO	H3	1.64	625	423	0.0010	0.0007	0.0016	0.0011	0.0016	0.0026
063-210-450	2377 COOLEY AVE, EAST PALO ALTO	H3	1.64	426	326	0.0007	0.0005	0.0011	0.0008	0.0012	0.0019
063-210-480	2361 COOLEY AVE, EAST PALO ALTO	H3	1.64	577	0	0.0009	0.0000	0.0015	0.0000	0.0009	0.0015
063-210-490	2355 COOLEY AVE, EAST PALO ALTO	H3	1.64	616	0	0.0009	0.0000	0.0016	0.0000	0.0009	0.0016
063-221-430	2360 COOLEY AVE, EAST PALO ALTO	H3	1.5	504	0	0.0008	0.0000	0.0012	0.0000	0.0008	0.0012
063-221-440	2362-2362 COOLEY AVE, EAST PALO ALTO	H3	1.5	460	0	0.0007	0.0000	0.0011	0.0000	0.0007	0.0011
063-221-450	2364 COOLEY AVE, EAST PALO ALTO	H3	1.5	578	0	0.0009	0.0000	0.0013	0.0000	0.0009	0.0013
063-201-080	566 SACRAMENTO ST, EAST PALO ALTO	H3	1.64	32	0	0.0000	0.0000	0.0001	0.0000	0.0000	0.0001
063-201-090	576 SACRAMENTO ST, EAST PALO ALTO	H3	1.64	1,440	821	0.0022	0.0013	0.0036	0.0021	0.0035	0.0057
063-201-220	2337 UNIVERSITY AVE, EAST PALO ALTO	H3	1.64	776	496	0.0012	0.0008	0.0020	0.0013	0.0020	0.0032
063-201-240	2343 UNIVERSITY AVE, EAST PALO ALTO	H3	1.64	843	529	0.0013	0.0008	0.0021	0.0013	0.0021	0.0035
063-201-250	RUNNYMEDE ST, EAST PALO ALTO	H3	1.64	2,465	1,322	0.0038	0.0020	0.0062	0.0033	0.0058	0.0096
063-201-260	RUNNYMEDE ST, EAST PALO ALTO	H3	1.64	639	430	0.0010	0.0007	0.0016	0.0011	0.0016	0.0027
063-201-270	578 SACRAMENTO ST, EAST PALO ALTO	H3	1.64	896	555	0.0014	0.0009	0.0023	0.0014	0.0022	0.0037
063-201-290 (10)	2331 UNIVERSITY AVE, EAST PALO ALTO	H3	1.64	3,271	1,716	0.0050	0.0026	0.0083	0.0043	0.0097	0.0159
063-202-160	561 SACRAMENTO ST, EAST PALO ALTO	H3	1.64	3,796	1,972	0.0058	0.0030	0.0096	0.0050	0.0089	0.0146
063-202-280	2361-2369 UNIVERSITY AVE 101-308, EAST PALO ALTO	H3	1.64	7,655	3,858	0.0118	0.0059	0.0193	0.0097	0.0177	0.0291
063-210-310	2346 UNIVERSITY AVE, EAST PALO ALTO	H3	1.64	1,363	783	0.0021	0.0012	0.0034	0.0020	0.0033	0.0054
063-210-360	2300 UNIVERSITY AVE, EAST PALO ALTO	H3	1.64	1,321	763	0.0020	0.0012	0.0033	0.0019	0.0032	0.0053
063-210-380	2354 UNIVERSITY AVE, EAST PALO ALTO	H3	1.64	1,100	655	0.0017	0.0010	0.0028	0.0017	0.0027	0.0044
063-210-470	633 RUNNYMEDE ST, EAST PALO ALTO	H3	1.64	631	426	0.0010	0.0007	0.0016	0.0011	0.0016	0.0027
063-210-520	2338 UNIVERSITY AVE, EAST PALO ALTO	H3	1.64	1,448	825	0.0022	0.0013	0.0037	0.0021	0.0035	0.0057
063-210-610	661 RUNNYMEDE ST, EAST PALO ALTO	H3	1.64	1,567	883	0.0024	0.0014	0.0040	0.0022	0.0038	0.0062
063-210-630	2358 UNIVERSITY AVE, EAST PALO ALTO	H3	1.64	1,123	666	0.0017	0.0010	0.0028	0.0017	0.0028	0.0045
114-240-010 to 114-240-300	2330 UNIVERSITY AVE, EAST PALO ALTO	H3	1.64	0	1,759	0.0000	0.0027	0.0000	0.0044	0.0027	0.0044
063-202-080	556 WEEKS ST, EAST PALO ALTO	H3	1.64	12	0	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
063-202-090	564 WEEKS ST, EAST PALO ALTO	H3	1.64	9	0	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
063-202-100	566 WEEKS ST, EAST PALO ALTO	H3	1.64	4	0	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
063-203-210	585 WEEKS ST, EAST PALO ALTO	H3	1.64	1,275	800	0.0020	0.0012	0.0032	0.0020	0.0032	0.0052
063-203-220	579 WEEKS ST, EAST PALO ALTO	H3	1.64	0	0	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
063-203-230	563 WEEKS ST, EAST PALO ALTO	H3	1.64	397	0	0.0006	0.0000	0.0010	0.0000	0.0006	0.0010
063-203-240	549 WEEKS ST, EAST PALO ALTO	H3	1.64	0	0	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
063-203-250	541 WEEKS ST, EAST PALO ALTO	H3	1.64	0	0	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
063-203-260	533 WEEKS ST, EAST PALO ALTO	H3	1.64	0	0	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
063-203-270	, EAST PALO ALTO	H3	1.64	194	0	0.0003	0.0000	0.0005	0.0000	0.0003	0.0005
063-203-370	1508 BAY RD, EAST PALO ALTO	H3	1.59	426	0	0.0007	0.0000	0.0010	0.0000	0.0007	0.0010
063-203-390	1518 BAY RD, EAST PALO ALTO	H3	1.59	629	0	0.0010	0.0000	0.0015	0.0000	0.0010	0.0015
063-511-490	1731 E BAYSHORE RD, EAST PALO ALTO	I12	1.47	20,330	13,689	0.0313	0.0211	0.0460	0.0310	0.0524	0.0770
063-511-520	1761 E BAYSHORE RD, EAST PALO ALTO	I12	1.47	27,013	14,379	0.0416	0.0221	0.0612	0.0326	0.0637	0.0937
063-511-630	1721 E BAYSHORE RD, EAST PALO ALTO	I12	1.7	1,943	3,624	0.0030	0.0056	0.0051	0.0095	0.0086	0.0146
063-511-660	899 OCONNOR ST, EAST PALO ALTO	I12	1.7	348	287	0.0005	0.0004	0.0009	0.0008	0.0010	0.0017
063-511-680	1751 EAST BAYSHORE RD, EAST PALO ALTO	I12	1.7	43,547	23,103	0.0671	0.0356	0.1140	0.0605	0.1026	0.1745
063-511-690	1745 E BAYSHORE BLVD, EAST PALO ALTO	I12	1.7	5,497	3,674	0.0085	0.0057	0.0144	0.0096	0.0141	0.0240
063-511-720	1775 E BAYSHORE RD, EAST PALO ALTO	I12	1.7	61,666	33,327	0.0950	0.0513	0.1614	0.0872	0.1463	0.2487

Table 9
Proposed Additional Sanitary Sewer Flows
EPASD Master Plan Update
East Palo Alto Sanitary District

APN (1)	Address (1)	Sanitary Sewer Sub-Basins	Peaking Factor (2)	Delta Residential Average Daily Flow, GPD (3)	Delta Non-Residential Average Daily Flow, GPD (4)	Residential ADWF, CFS (5)	Non-Residential ADWF, CFS (6)	Residential PDWF, CFS (7)	Non-Residential PDWF, CFS (8)	Total ADWF, CFS	Total PDWF, CFS
063-483-030	1909 CAPITOL AVE, EAST PALO ALTO	I12	1.7	355	0	0.0005	0.0000	0.0009	0.0000	0.0005	0.0009
063-483-040	1943 CAPITOL AVE, EAST PALO ALTO	I12	1.7	1,041	0	0.0016	0.0000	0.0027	0.0000	0.0016	0.0027
063-483-050	1609 WOODLAND AVE, EAST PALO ALTO	I12	1.7	2,363	0	0.0036	0.0000	0.0062	0.0000	0.0036	0.0062
063-484-010	655 SCOFIELD AVE, EAST PALO ALTO	I12	1.7	249	0	0.0004	0.0000	0.0007	0.0000	0.0004	0.0007
063-484-020	1902 CAPITOL AVE, EAST PALO ALTO	I12	1.7	356	0	0.0005	0.0000	0.0009	0.0000	0.0005	0.0009
063-484-030	1908 CAPITOL AVE, EAST PALO ALTO	I12	1.7	848	0	0.0013	0.0000	0.0022	0.0000	0.0013	0.0022
063-484-040	1916 CAPITOL AVE, EAST PALO ALTO	I12	1.7	1,449	0	0.0022	0.0000	0.0038	0.0000	0.0022	0.0038
063-484-050	1920 CAPITOL AVE, EAST PALO ALTO	I12	1.7	798	0	0.0012	0.0000	0.0021	0.0000	0.0012	0.0021
063-484-060	1934 CAPITOL AVE, EAST PALO ALTO	I12	1.7	2,553	0	0.0039	0.0000	0.0067	0.0000	0.0039	0.0067
063-482-010	641 CIRCLE DR, EAST PALO ALTO	I12	1.7	147	0	0.0002	0.0000	0.0004	0.0000	0.0002	0.0004
063-482-020	621 CIRCLE DR, EAST PALO ALTO	I12	1.7	190	0	0.0003	0.0000	0.0005	0.0000	0.0003	0.0005
063-482-030	611 CIRCLE DR, EAST PALO ALTO	I12	1.7	257	0	0.0004	0.0000	0.0007	0.0000	0.0004	0.0007
063-484-090	1949 COOLEY AVE, EAST PALO ALTO	I12	1.7	1,342	0	0.0021	0.0000	0.0035	0.0000	0.0021	0.0035
063-484-100	1941 COOLEY AVE, EAST PALO ALTO	I12	1.7	1,517	0	0.0023	0.0000	0.0040	0.0000	0.0023	0.0040
063-484-110	685 SCOFIELD AVE, EAST PALO ALTO	I12	1.7	1,851	0	0.0029	0.0000	0.0048	0.0000	0.0029	0.0048
063-484-130	1957 COOLEY AVE, EAST PALO ALTO	I12	1.7	3,596	0	0.0055	0.0000	0.0094	0.0000	0.0055	0.0094
063-481-010	1699 WOODLAND AVE, EAST PALO ALTO	I12	1.7	201	0	0.0003	0.0000	0.0005	0.0000	0.0003	0.0005
063-481-020	1681 WOODLAND AVE, EAST PALO ALTO	I12	1.7	174	0	0.0003	0.0000	0.0005	0.0000	0.0003	0.0005
063-481-030	1671 WOODLAND AVE, EAST PALO ALTO	I12	1.7	192	0	0.0003	0.0000	0.0005	0.0000	0.0003	0.0005
063-481-040	1669 WOODLAND AVE, EAST PALO ALTO	I12	1.7	235	0	0.0004	0.0000	0.0006	0.0000	0.0004	0.0006
063-481-050	1651 WOODLAND AVE, EAST PALO ALTO	I12	1.7	397	0	0.0006	0.0000	0.0010	0.0000	0.0006	0.0010
063-481-060	1643 WOODLAND AVE, EAST PALO ALTO	I12	1.7	244	0	0.0004	0.0000	0.0006	0.0000	0.0004	0.0006
063-481-070	1637 WOODLAND AVE, EAST PALO ALTO	I12	1.7	268	0	0.0004	0.0000	0.0007	0.0000	0.0004	0.0007
063-481-080	1629 WOODLAND AVE, EAST PALO ALTO	I12	1.7	221	0	0.0003	0.0000	0.0006	0.0000	0.0003	0.0006
063-481-090	1621 WOODLAND AVE, EAST PALO ALTO	I12	1.7	196	0	0.0003	0.0000	0.0005	0.0000	0.0003	0.0005
063-481-100	644 SCOFIELD AVE, EAST PALO ALTO	I12	1.7	316	0	0.0005	0.0000	0.0008	0.0000	0.0005	0.0008
063-481-110	652 SCOFIELD AVE, EAST PALO ALTO	I12	1.7	146	0	0.0002	0.0000	0.0004	0.0000	0.0002	0.0004
063-481-120	660 SCOFIELD AVE, EAST PALO ALTO	I12	1.7	235	0	0.0004	0.0000	0.0006	0.0000	0.0004	0.0006
063-481-130	610 CIRCLE DR, EAST PALO ALTO	I12	1.7	235	0	0.0004	0.0000	0.0006	0.0000	0.0004	0.0006
063-481-140	620 CIRCLE DR, EAST PALO ALTO	I12	1.7	258	0	0.0004	0.0000	0.0007	0.0000	0.0004	0.0007
063-481-150	630 CIRCLE DR, EAST PALO ALTO	I12	1.7	225	0	0.0003	0.0000	0.0006	0.0000	0.0003	0.0006
063-481-160	640 CIRCLE DR, EAST PALO ALTO	I12	1.7	239	0	0.0004	0.0000	0.0006	0.0000	0.0004	0.0006
063-481-170	650 CIRCLE DR, EAST PALO ALTO	I12	1.7	313	0	0.0005	0.0000	0.0008	0.0000	0.0005	0.0008
063-481-180	1917 COOLEY AVE, EAST PALO ALTO	I12	1.7	324	0	0.0005	0.0000	0.0008	0.0000	0.0005	0.0008
063-481-190	1909 COOLEY AVE, EAST PALO ALTO	I12	1.7	308	0	0.0005	0.0000	0.0008	0.0000	0.0005	0.0008
063-481-210	1901 COOLEY AVE, EAST PALO ALTO	I12	1.7	289	0	0.0004	0.0000	0.0008	0.0000	0.0004	0.0008
063-481-220	1905 COOLEY AVE, EAST PALO ALTO	I12	1.7	248	0	0.0004	0.0000	0.0007	0.0000	0.0004	0.0007
063-511-020	2039 CLARKE AVE, EAST PALO ALTO	I3	1.47	721	470	0.0011	0.0007	0.0016	0.0011	0.0018	0.0027
063-511-030	2035 CLARKE AVE, EAST PALO ALTO	I3	1.47	803	509	0.0012	0.0008	0.0018	0.0012	0.0020	0.0030
063-511-040	2029 CLARKE AVE, EAST PALO ALTO	I3	1.47	1,785	990	0.0027	0.0015	0.0040	0.0022	0.0043	0.0063
063-511-050	2027 CLARKE AVE, EAST PALO ALTO	I3	1.47	677	448	0.0010	0.0007	0.0015	0.0010	0.0017	0.0025
063-511-060	2023 CLARKE AVE, EAST PALO ALTO	I3	1.47	839	527	0.0013	0.0008	0.0019	0.0012	0.0021	0.0031
063-511-070	2017 CLARKE AVE, EAST PALO ALTO	I3	1.47	764	491	0.0012	0.0008	0.0017	0.0011	0.0019	0.0028
063-511-080	2013 CLARKE AVE, EAST PALO ALTO	I3	1.47	754	486	0.0012	0.0007	0.0017	0.0011	0.0019	0.0028
063-511-090	2009 CLARKE AVE, EAST PALO ALTO	I3	1.47	749	483	0.0012	0.0007	0.0017	0.0011	0.0019	0.0028
063-511-190	872 DONOHOE ST, EAST PALO ALTO	I3	1.47	1,399	801	0.0022	0.0012	0.0032	0.0018	0.0034	0.0050
063-511-200	866 DONOHOE ST, EAST PALO ALTO	I3	1.47	1,172	690	0.0018	0.0011	0.0027	0.0016	0.0029	0.0042
063-511-210	864 DONOHOE ST, EAST PALO ALTO	I3	1.47	956	584	0.0015	0.0009	0.0022	0.0013	0.0024	0.0035
063-511-220	862 DONOHOE ST, EAST PALO ALTO	I3	1.47	587	404	0.0009	0.0006	0.0013	0.0009	0.0015	0.0022
063-511-240	896 DONOHOE ST, EAST PALO ALTO	I3	1.47	628	424	0.0010	0.0007	0.0014	0.0010	0.0016	0.0024
063-511-250	860 DONOHOE ST, EAST PALO ALTO	I3	1.47	1,018	615	0.0016	0.0009	0.0023	0.0014	0.0025	0.0037
063-511-260	890 DONOHOE ST, EAST PALO ALTO	I3	1.47	694	457	0.0011	0.0007	0.0016	0.0010	0.0018	0.0026
114-450-010 to 114-460-300	1765 EAST BAYSHORE RD, EAST PALO ALTO	I3	1.72	0	3,960	0.0000	0.0061	0.0000	0.0105	0.0061	0.0105
063-571-060	1985 E BAYSHORE RD, EAST PALO ALTO	K28	1.55	10,524	5,260	0.0162	0.0081	0.0251	0.0126	0.0243	0.0377
063-571-070	1981 E BAYSHORE RD, EAST PALO ALTO	K28	1.55	5,159	2,521	0.0079	0.0039	0.0123	0.0060	0.0118	0.0183
063-571-080	1961 E BAYSHORE RD, EAST PALO ALTO	K28	1.55	10,972	5,479	0.0169	0.0084	0.0262	0.0131	0.0253	0.0393
063-571-090	1905 E BAYSHORE RD, EAST PALO ALTO	K28	1.55	1,692	944	0.0026	0.0015	0.0040	0.0023	0.0041	0.0063
063-492-350 (14)	1805 E BAYSHORE RD #1-94, EAST PALO ALTO	K4	1.59							0.0338	0.0537
063-492-070	1927 E BAYSHORE RD, EAST PALO ALTO	K4	1.59	1,221	714	0.0019	0.0011	0.0030	0.0017	0.0030	0.0047
063-492-280	1933 PULGAS AVE, EAST PALO ALTO	K4	1.59	5,406	0	0.0083	0.0000	0.0132	0.0000	0.0083	0.0132
063-492-480	1895 E BAYSHORE RD, EAST PALO ALTO	K4	1.59	1,708	952	0.0026	0.0015	0.0042	0.0023	0.0041	0.0065
063-515-070	1805 CLARKE AVE, EAST PALO ALTO	K4	1.59	269	0	0.0004	0.0000	0.0007	0.0000	0.0004	0.0007
063-515-080	1787 WOODLAND AVE, EAST PALO ALTO	K4	1.59	21	0	0.0000	0.0000	0.0001	0.0000	0.0000	0.0001
063-515-230	1785 WOODLAND AVE, EAST PALO ALTO	K4	1.59	267	0	0.0004	0.0000	0.0007	0.0000	0.0004	0.0007
063-501-020	1874 W BAYSHORE RD, EAST PALO ALTO	K4	1.59	1,071	1,082	0.0016	0.0017	0.0026	0.0026	0.0033	0.0053
063-501-030	1870 W BAYSHORE RD, EAST PALO ALTO	K4	1.59	372	505	0.0006	0.0008	0.0009	0.0012	0.0014	0.0021
063-501-040	1879 WOODLAND AVE, EAST PALO ALTO	K4	1.59	380	512	0.0006	0.0008	0.0009	0.0013	0.0014	0.0022
063-501-050	1875 WOODLAND AVE, EAST PALO ALTO	K4	1.59	300	446	0.0005	0.0007	0.0007	0.0011	0.0011	0.0018
063-515-060	1821 CLARKE AVE, EAST PALO ALTO	K4	1.59	32	0	0.0000	0.0000	0.0001	0.0000	0.0000	0.0001
063-132-140	1905 BAY RD, EAST PALO ALTO	T20	1.5	3,076	1,620	0.0047	0.0025	0.0071	0.0037	0.0072	0.0108
063-131-350 (17)	2519 PULGAS AVE, EAST PALO ALTO	T20	1.5							0.0091	0.0137

Table 9
Proposed Additional Sanitary Sewer Flows
EPASD Master Plan Update
East Palo Alto Sanitary District

APN (1)	Address (1)	Sanitary Sewer Sub-Basins	Peaking Factor (2)	Delta Residential Average Daily Flow, GPD (3)	Delta Non-Residential Average Daily Flow, GPD (4)	Residential ADWF, CFS (5)	Non-Residential ADWF, CFS (6)	Residential PDWF, CFS (7)	Non-Residential PDWF, CFS (8)	Total ADWF, CFS	Total PDWF, CFS
063-121-400	2091 BAY RD, EAST PALO ALTO	T20	1.5	0	5,455	0.0000	0.0084	0.0000	0.0126	0.0084	0.0126
063-122-030	1990 BAY RD, EAST PALO ALTO	T20	1.5	0	30,773	0.0000	0.0474	0.0000	0.0711	0.0474	0.0711
063-221-180	2371 CLARKE AVE, EAST PALO ALTO	T20	1.5	453	0	0.0007	0.0000	0.0010	0.0000	0.0007	0.0010
063-221-190	2369 CLARKE AVE, EAST PALO ALTO	T20	1.5	521	0	0.0008	0.0000	0.0012	0.0000	0.0008	0.0012
063-221-200	891 WEEKS ST, EAST PALO ALTO	T20	1.5	1,242	0	0.0019	0.0000	0.0029	0.0000	0.0019	0.0029
063-221-210	871 WEEKS ST, EAST PALO ALTO	T20	1.5	435	0	0.0007	0.0000	0.0010	0.0000	0.0007	0.0010
063-221-220	867 WEEKS ST, EAST PALO ALTO	T20	1.5	721	0	0.0011	0.0000	0.0017	0.0000	0.0011	0.0017
063-221-230	865 WEEKS ST, EAST PALO ALTO	T20	1.5	752	0	0.0012	0.0000	0.0017	0.0000	0.0012	0.0017
063-221-240	, NO DATA	T20	1.5	3,375	0	0.0052	0.0000	0.0078	0.0000	0.0052	0.0078
063-221-250	831 WEEKS ST, EAST PALO ALTO	T20	1.5	742	0	0.0011	0.0000	0.0017	0.0000	0.0011	0.0017
063-221-260	819 JAMIE LN, EAST PALO ALTO	T20	1.5	591	0	0.0009	0.0000	0.0014	0.0000	0.0009	0.0014
063-221-270	823 JAMIE LN, EAST PALO ALTO	T20	1.5	777	0	0.0012	0.0000	0.0018	0.0000	0.0012	0.0018
063-221-280	827 JAMIE LN, EAST PALO ALTO	T20	1.5	1,002	0	0.0015	0.0000	0.0023	0.0000	0.0015	0.0023
063-221-290	811 PAUL ROBESON CT, EAST PALO ALTO	T20	1.5	369	0	0.0006	0.0000	0.0009	0.0000	0.0006	0.0009
063-221-300	813 PAUL ROBESON CT, EAST PALO ALTO	T20	1.5	275	0	0.0004	0.0000	0.0006	0.0000	0.0004	0.0006
063-221-310	815 PAUL ROBESON CT, EAST PALO ALTO	T20	1.5	315	0	0.0005	0.0000	0.0007	0.0000	0.0005	0.0007
063-221-320	817 PAUL ROBESON CT, EAST PALO ALTO	T20	1.5	323	0	0.0005	0.0000	0.0007	0.0000	0.0005	0.0007
063-221-340	801 WEEKS ST, EAST PALO ALTO	T20	1.5	326	0	0.0005	0.0000	0.0008	0.0000	0.0005	0.0008
063-221-350	803 PAUL ROBESON CT, EAST PALO ALTO	T20	1.5	330	0	0.0005	0.0000	0.0008	0.0000	0.0005	0.0008
063-221-360	805 PAUL ROBESON CT, EAST PALO ALTO	T20	1.5	237	0	0.0004	0.0000	0.0005	0.0000	0.0004	0.0005
063-221-370	807 PAUL ROBESON CT, EAST PALO ALTO	T20	1.5	350	0	0.0005	0.0000	0.0008	0.0000	0.0005	0.0008
063-221-380	809 PAUL ROBESON CT, EAST PALO ALTO	T20	1.5	311	0	0.0005	0.0000	0.0007	0.0000	0.0005	0.0007
063-221-500	863 WEEKS ST, EAST PALO ALTO	T20	1.5	435	0	0.0007	0.0000	0.0010	0.0000	0.0007	0.0010
063-221-390	791 WEEKS ST, EAST PALO ALTO	T20	1.5	4,336	0	0.0067	0.0000	0.0100	0.0000	0.0067	0.0100
063-221-410	731 WEEKS ST, EAST PALO ALTO	T20	1.5	1,324	0	0.0020	0.0000	0.0031	0.0000	0.0020	0.0031
063-221-420	717 WEEKS ST, EAST PALO ALTO	T20	1.5	909	0	0.0014	0.0000	0.0021	0.0000	0.0014	0.0021
063-221-510	761 WEEKS ST, EAST PALO ALTO	T20	1.5	652	0	0.0010	0.0000	0.0015	0.0000	0.0010	0.0015
063-221-520	767 CAROLE CT, EAST PALO ALTO	T20	1.5	507	0	0.0008	0.0000	0.0012	0.0000	0.0008	0.0012
063-221-530	773 CAROLE CT, EAST PALO ALTO	T20	1.5	437	0	0.0007	0.0000	0.0010	0.0000	0.0007	0.0010
063-221-540	779 CAROLE CT, EAST PALO ALTO	T20	1.5	422	0	0.0006	0.0000	0.0010	0.0000	0.0006	0.0010
063-221-550	785 CAROLE CT, EAST PALO ALTO	T20	1.5	439	0	0.0007	0.0000	0.0010	0.0000	0.0007	0.0010
063-253-320 (15)	965 WEEKS STREET, EAST PALO ALTO	T20	1.5							0.0037	0.0056
063-232-090	1003 WEEKS ST, EAST PALO ALTO	T20	1.5	257	0	0.0004	0.0000	0.0006	0.0000	0.0004	0.0006
063-232-150	2421 PULGAS AVE, EAST PALO ALTO	T20	1.5	2,421	0	0.0037	0.0000	0.0056	0.0000	0.0037	0.0056
063-232-160	2447 PULGAS AVE, EAST PALO ALTO	T20	1.5	1,364	0	0.0021	0.0000	0.0032	0.0000	0.0021	0.0032
063-232-210 (12)	WEEKS ST, EAST PALO ALTO	T20	1.5	5,850	0	0.0090	0.0000	0.0135	0.0000	0.0168	0.0253
063-232-220 (12)	WEEKS ST, EAST PALO ALTO	T20	1.5	3,319	0	0.0051	0.0000	0.0077	0.0000	0.0168	0.0253
063-232-230 (12)	WEEKS ST, EAST PALO ALTO	T20	1.5	4,631	0	0.0071	0.0000	0.0107	0.0000	0.0168	0.0253
063-232-240	1045 WEEKS ST, EAST PALO ALTO	T20	1.5	4,822	0	0.0074	0.0000	0.0111	0.0000	0.0074	0.0111
063-232-250	1085 WEEKS ST, EAST PALO ALTO	T20	1.5	553	0	0.0009	0.0000	0.0013	0.0000	0.0009	0.0013
063-232-260	1001 WEEKS ST, EAST PALO ALTO	T20	1.5	1,567	0	0.0024	0.0000	0.0036	0.0000	0.0024	0.0036
063-232-300	1095 WEEKS ST, EAST PALO ALTO	T20	1.5	734	0	0.0011	0.0000	0.0017	0.0000	0.0011	0.0017
063-232-350	901 WEEKS ST, EAST PALO ALTO	T20	1.5	4,713	2,487	0.0073	0.0038	0.0109	0.0057	0.0111	0.0166

Table 9
Proposed Additional Sanitary Sewer Flows
EPASD Master Plan Update
East Palo Alto Sanitary District

APN (1)	Address (1)	Sanitary Sewer Sub-Basins	Peaking Factor (2)	Delta Residential Average Daily Flow, GPD (3)	Delta Non-Residential Average Daily Flow, GPD (4)	Residential ADWF, CFS (5)	Non-Residential ADWF, CFS (6)	Residential PDWF, CFS (7)	Non-Residential PDWF, CFS (8)	Total ADWF, CFS	Total PDWF, CFS
063-271-370	1171 RUNNYMEDE ST, EAST PALO ALTO	T20	1.5	4,382	0	0.0067	0.0000	0.0101	0.0000	0.0067	0.0101
063-271-090 (16)	1201 RUNNYMEDE ST, EAST PALO ALTO	T20	1.5							0.0053	0.0080
063-271-480	, EAST PALO ALTO	T20	1.5	0	4,596	0.0000	0.0071	0.0000	0.0106	0.0071	0.0106

Notes:
(1) Properties that have changed Zoning Figure 4-12: General Plan Land Use and Figure 4-16: Ravenswood / 4 Corners TOP Specific Plan Land Use City of East Palo Alto General Plan "Existi
Report, February 2014" Vs Figure 4-2: General Plan Land Use Designations City of East Palo Alto General Plan "Vista 2035, Final Version: March 2017"
(2) Per Section 5.3.2 of the "East Palo Alto Sanitary District Master Plan Update, March 2015". For modeling scenarios, peak sanitary flows based on the collected data. Collected data for P
for each sub-basin are shown in Table 2.
(3) Delta Residential Flows is calculated by taking the Average Daily Flow for Residential areas from Table 8 minus the Average Daily Flow for Residential area from Table 7. If calculation re
decrease of flow, the flow change is shown as "0" because it is not anticipated that the land use changes will result in flow reductions.
(4) Delta Non-Residential Flows is calculated by taking the Average Faily Flow for Non-Residential areas from Table 8 minus the Average Daily Flow for Non-Residential areas from Table 7.
(5) ADWF Residential Dwellings, calculated by multiplying 240 gallons per dwelling unit per day by the total number of units. Based on Section B1.03.2.b of the East Palo Alto Sanitary Distı
Specifications for Design and Construction of Sanitary Collection and Conveyance Facilities date June 6, 2002. Units converted from GPD (Gallons Per Day) to CFS based off 24 hours in
in a hour, and 60 seconds in a minute.
(6) ADWF Non-Residential , calculated by multiplying 0.1 gallons per day per square foot. Based on Section B1.03.3 for Office and Retail of the East Palo Alto Sanitary District Standard Spe
Design and Construction of Sanitray Collection and Conveyance Facilities dated June 6, 2002. Units converted from GPD (Gallons Per Day) to CFS. Based off 24 hours in a day, 60 minute
seconds in a minute.
(7) PDWF Residential Dwellings, calculated by multiplying Average Dry Weather Flows (5) by the Peaking Factor (2). Units converted from GPD to CFS. Based off 24 hours a day, 60 minutes
60 seconds in a minute.
(8) PDWF Non-Residential, calculated by multiplying Average Dry Weather Flows (6) by the Peaking Factor (2). Units converted from GPD to CFS. Based off 24 hours a day, 60 minutes in a
seconds in a minute.
(9) ADWF based on sewer demand documented in the January 7, 2020 University Plaza Phase 2 memorandum, the project is anticipated to increase ADWF by 9,946 gpd.
(10) ADWF based on sewer demand documented in the July 30, 2019 2331 University Ave Engineering Proposal , the project is anticipated to increase ADWF by 7,680 gpd.
(11) ADWF identified in the fee calculation for the University Plaza Phase 1 project included in the June 29, 2015 email from Freyer & Laureta, Inc. Anticipated increase to ADWF by 13,528
projected ADWF was split between the three parcels.
(12) ADWF based on sewer demand documented in the December 18, 2019 Mid-Pen Housing Engineering Proposal , the project is anticipated to increase ADWF by 32,640 gpd. The proje
split between the three parcels.
(13) Development has already occurred or not possible at proposed parcel.
(14) ADWF based on sewer demand documented in the March 4, 2020 Light Tree Apartments memorandum, the project is anticipated to increase ADWF by 21,841 gpd.
(15) ADWF based on sewer demand documented in July 8, 2020 Weeks Street Townhomes Sewer Flow Evaluation Tables. ADWF is anticipated to increase 2,400 gpd.
(16) ADWF based on sewer demand documented in May 8, 2018 1201 Runnymede Water Demand Analysis by Engineering Consultants Inc. ADWF is anticipated to increase 3,615 gpd.
(17) ADWF based on sewer demand documented in August 20, 2020 2519 Pulgas Ave memorandum. ADWF is anticipated to increase 5,881 gpd.
(18) ADWF based on sewer demand documented in August 19, 2020 Woodland Park Apartments memorandum. ADWF is anticipated to increase 106,560 gpd. The projected ADWF was s
fourteen parcels.

Abbreviations
ADWF: Average Dry Weather Flow
APN: Assessors Parcel Number
CFS: Cubic Feet per Second
MGD: Million Gallons Per Day
PDWF: Peak Dry Weather Flow

Table 10
Summary of Additional Sanitary Sewer Flows
EPASD Master Plan Update
East Palo Alto Sanitary District

APN	Address	2014 Zoning	2035 Zoning	ADWF Increase (CFS) (1) (2)	PDWF Increase (CFS) (1) (2)
063-103-310	1585 BAY RD, EAST PALO ALTO	Low Density Residential	Mixed Use High	0.0037	0.0058
063-103-440	2400 GLORIA WAY, EAST PALO ALTO	Low Density Residential	High Density Residential	0.0158	0.0251
063-111-230	BETWEEN 1585 AND 1675 BAY RD, EAST PALO ALTO	Parks/Recreation/Conservation	Mixed Use High	0.0242	0.0364
063-111-250	1675 BAY RD, EAST PALO ALTO	Low Density Residential Office	Mixed Use High Mixed Use High	0.0084	0.0134
063-121-400	2091 BAY RD, EAST PALO ALTO	Parks/Recreation/Conservation	Office	0.0011	0.0018
063-122-030	BAY RD, EAST PALO ALTO	Parks/Recreation/Conservation	Office	0.0056	0.0089
063-131-350	2519 PULGAS AVE, EAST PALO ALTO	(4)	(4)	0.0037	0.0056
063-132-140	1905 BAY RD, EAST PALO ALTO	Parks/Recreation/Conservation	Mixed Use Corridor	0.0009	0.0013
063-151-170	2159 POPLAR AVE, EAST PALO ALTO	Commercial	Mixed Use Low	0.1459	0.2320
063-151-200	1001 E BAYSHORE RD, EAST PALO ALTO	Commercial	Mixed Use Low	0.0003	0.0005
063-152-230	1199 E BAYSHORE RD, EAST PALO ALTO	Commercial	Mixed Use Low	0.0003	0.0004
063-153-010	1205 E BAYSHORE RD, EAST PALO ALTO	Commercial	Mixed Use Low	0.0005	0.0008
063-153-250	2119 ADDISON AVE, EAST PALO ALTO	Commercial	Mixed Use Low	0.0002	0.0004
063-154-200	2110 ADDISON AVE, EAST PALO ALTO	Commercial	Mixed Use Low	0.0003	0.0004
063-154-260	2119 OAKWOOD DR, EAST PALO ALTO	Commercial	Mixed Use Low	0.0003	0.0004
063-155-010	2106 OAKWOOD DR, EAST PALO ALTO	Commercial	Mixed Use Low	0.0002	0.0003
063-155-180	2123 DUMBARTON AVE, EAST PALO ALTO	Commercial	Mixed Use Low	0.0012	0.0019
063-155-190	2109 DUMBARTON AVE, EAST PALO ALTO	Commercial	Mixed Use Low	0.0000	0.0000
063-181-010	2110 DUMBARTON AVE, EAST PALO ALTO	Commercial	Mixed Use Low	0.0000	0.0000
063-181-220	2111 LINCOLN ST, EAST PALO ALTO	Low Density Residential	Mixed Use Low	0.0000	0.0000
063-181-230	2097 LINCOLN ST, EAST PALO ALTO	Low Density Residential	Mixed Use Low	0.0005	0.0008
063-181-240	1385 E BAYSHORE RD, EAST PALO ALTO	Commercial	Mixed Use Low	0.0003	0.0005
063-183-010	2088 LINCOLN ST, EAST PALO ALTO	Commercial	Mixed Use Low	0.0015	0.0028
063-183-070	2045 GLEN WAY, EAST PALO ALTO	Commercial	Mixed Use Low	0.0009	0.0017
063-183-080	1435 E BAYSHORE RD, EAST PALO ALTO	Commercial	Mixed Use Low	0.0009	0.0016
063-183-090	BETWEEN 1401 AND 1435 E BAYSHORE RD, EAST PALO ALTO	Commercial	Mixed Use Low	0.0008	0.0014
063-183-110	1401 E BAYSHORE RD 2, EAST PALO ALTO	Commercial	Mixed Use Low	0.0005	0.0008
063-184-010	1475 E BAYSHORE RD, EAST PALO ALTO	Commercial	Mixed Use Low	0.0018	0.0026
063-184-020	2056 GLEN WAY, EAST PALO ALTO	Low Density Residential	Mixed Use Low	0.0023	0.0034
063-184-030	2070 GLEN WAY, EAST PALO ALTO	Low Density Residential	Mixed Use Low	0.0022	0.0032
063-184-040	2080 GLEN WAY, EAST PALO ALTO	Low Density Residential	Mixed Use Low	0.0017	0.0025
063-201-080	566 SACRAMENTO ST, EAST PALO ALTO	High Density Residential	Low Density Residential	0.0027	0.0040
063-201-090	576 SACRAMENTO ST, EAST PALO ALTO	High Density Residential	Mixed Use Corridor	0.0023	0.0034
063-201-220	2337 UNIVERSITY AVE, EAST PALO ALTO	High Density Residential	Mixed Use Corridor	0.0118	0.0203
063-201-240	2343 UNIVERSITY AVE, EAST PALO ALTO	High Density Residential	Mixed Use Corridor	0.0118	0.0203
063-201-250	RUNNYMEDE ST, EAST PALO ALTO	High Density Residential	Mixed Use Corridor	0.0023	0.0033
063-201-260	RUNNYMEDE ST, EAST PALO ALTO	High Density Residential	Mixed Use Corridor	0.0023	0.0034
063-201-270	578 SACRAMENTO ST, EAST PALO ALTO	High Density Residential	Mixed Use Corridor	0.0024	0.0035

Table 10
Summary of Additional Sanitary Sewer Flows
EPASD Master Plan Update
East Palo Alto Sanitary District

APN	Address	2014 Zoning	2035 Zoning	ADWF Increase (CFS) (1) (2)	PDWF Increase (CFS) (1) (2)
063-201-290	2331 UNIVERSITY AVE, EAST PALO ALTO	High Density Residential	Mixed Use Corridor	0.0023	0.0034
063-202-080	556 WEEKS ST, EAST PALO ALTO	High Density Residential	Low Density Residential	0.0024	0.0035
063-202-090	564 WEEKS ST, EAST PALO ALTO	High Density Residential	Low Density Residential	0.0024	0.0036
063-202-100	566 WEEKS ST, EAST PALO ALTO	High Density Residential	Low Density Residential	0.0024	0.0035
063-202-160	561 SACRAMENTO ST, EAST PALO ALTO	High Density Residential	Mixed Use Corridor	0.0023	0.0033
063-202-280	2361-2369 UNIVERSITY AVE 101-308, EAST PALO ALTO	High Density Residential	Mixed Use Corridor	0.0015	0.0022
063-203-210	585 WEEKS ST, EAST PALO ALTO	Commercial	Mixed Use High	0.0003	0.0004
063-203-220	579 WEEKS ST, EAST PALO ALTO	Commercial	Low Density Residential	0.0003	0.0005
063-203-230	563 WEEKS ST, EAST PALO ALTO	Commercial	Low Density Residential	0.0003	0.0004
063-203-240	549 WEEKS ST, EAST PALO ALTO	Commercial	Low Density Residential	0.0003	0.0004
063-203-250	541 WEEKS ST, EAST PALO ALTO	Commercial	Low Density Residential	0.0003	0.0004
063-203-260	533 WEEKS ST, EAST PALO ALTO	Commercial	Low Density Residential	0.0003	0.0004
063-203-270	BETWEEN 1518 BAY RD AND 533 WEEKS ST, EAST PALO ALTO	Commercial	Low Density Residential	0.0004	0.0006
063-203-350	1574 BAY RD, EAST PALO ALTO	Commercial	Medium Density Residential	0.0005	0.0007
063-203-360	1546 BAY RD, EAST PALO ALTO	Commercial	Medium Density Residential	0.0004	0.0006
063-203-370	1508 BAY RD, EAST PALO ALTO	Commercial	Medium Density Residential	0.0006	0.0009
063-203-380	BETWEEN 1518 AND 1530 BAY RD, EAST PALO ALTO	Commercial	Medium Density Residential	0.0002	0.0003
063-203-390	1518 BAY RD, EAST PALO ALTO	Commercial	Medium Density Residential	0.0002	0.0002
063-203-400	1560 BAY RD, EAST PALO ALTO	Commercial	Medium Density Residential	0.0023	0.0033
063-203-410	1568 BAY RD, EAST PALO ALTO	Commercial	Medium Density Residential	0.0007	0.0010
063-203-430	1530 BAY RD, EAST PALO ALTO	Commercial	Medium Density Residential	0.0046	0.0068
063-203-440	1554 BAY RD, EAST PALO ALTO	Commercial	Medium Density Residential	0.0041	0.0060
063-203-450	1538 BAY RD, EAST PALO ALTO	Commercial	Medium Density Residential	0.0009	0.0014
063-210-310	2346 UNIVERSITY AVE, EAST PALO ALTO	High Density Residential	Mixed Use Corridor	0.0030	0.0043
063-210-340	2369 COOLEY AVE, EAST PALO ALTO	Commercial	High Density Residential	0.0060	0.0087
063-210-350	2365 COOLEY AVE, EAST PALO ALTO	Commercial	High Density Residential	0.0028	0.0041
063-210-360	2300 UNIVERSITY AVE, EAST PALO ALTO	High Density Residential	Mixed Use Corridor	0.0028	0.0040
063-210-380	2354 UNIVERSITY AVE, EAST PALO ALTO	High Density Residential	Mixed Use Corridor	0.0028	0.0040
063-210-410	2371 COOLEY AVE, EAST PALO ALTO	Commercial	Mixed Use Corridor	0.0026	0.0038
063-210-450	2377 COOLEY AVE, EAST PALO ALTO	Commercial	Mixed Use Corridor	0.0016	0.0024
063-210-470	633 RUNNYMEDE ST, EAST PALO ALTO	High Density Residential	Mixed Use Corridor	0.0072	0.0106
063-210-480	2361 COOLEY AVE, EAST PALO ALTO	Commercial	High Density Residential	0.0041	0.0060
063-210-490	2355 COOLEY AVE, EAST PALO ALTO	Commercial	High Density Residential	0.0950	0.1387
063-210-520	2338 UNIVERSITY AVE, EAST PALO ALTO	High Density Residential	Mixed Use Corridor	0.0009	0.0013
063-210-610	661 RUNNYMEDE ST, EAST PALO ALTO	High Density Residential	Mixed Use Corridor	0.0005	0.0007
063-210-630	2358 UNIVERSITY AVE, EAST PALO ALTO	Commercial	Mixed Use Corridor	0.0009	0.0013
063-221-180	2371 CLARKE AVE, EAST PALO ALTO	Low Density Residential	High Density Residential	0.0010	0.0016
063-221-190	2369 CLARKE AVE, EAST PALO ALTO	Low Density Residential	High Density Residential	0.0012	0.0018

Table 10
Summary of Additional Sanitary Sewer Flows
EPASD Master Plan Update
East Palo Alto Sanitary District

APN	Address	2014 Zoning	2035 Zoning	ADWF Increase (CFS) (1) (2)	PDWF Increase (CFS) (1) (2)
063-221-200	891 WEEKS ST, EAST PALO ALTO	Low Density Residential	High Density Residential	0.0005	0.0008
063-221-210	871 WEEKS ST, EAST PALO ALTO	Low Density Residential	High Density Residential	0.0005	0.0007
063-221-220	867 WEEKS ST, EAST PALO ALTO	Low Density Residential	High Density Residential	0.0008	0.0011
063-221-230	865 WEEKS ST, EAST PALO ALTO	Low Density Residential	High Density Residential	0.0039	0.0057
063-221-240	BETWEEN 831 AND 863 WEEKS ST, EAST PALO ALTO	Low Density Residential	High Density Residential	0.0034	0.0049
063-221-250	831 WEEKS ST, EAST PALO ALTO	Low Density Residential	High Density Residential	0.0079	0.0116
063-221-260	819 JAMIE LN, EAST PALO ALTO	Low Density Residential	High Density Residential	0.0034	0.0049
063-221-270	823 JAMIE LN, EAST PALO ALTO	Low Density Residential	High Density Residential	0.0049	0.0072
063-221-280	827 JAMIE LN, EAST PALO ALTO	Low Density Residential	High Density Residential	0.0031	0.0046
063-221-290	811 PAUL ROBESON CT, EAST PALO ALTO	Low Density Residential	High Density Residential	0.0030	0.0044
063-221-300	813 PAUL ROBESON CT, EAST PALO ALTO	Low Density Residential	High Density Residential	0.0249	0.0363
063-221-310	815 PAUL ROBESON CT, EAST PALO ALTO	Low Density Residential	High Density Residential	0.0066	0.0097
063-221-320	817 PAUL ROBESON CT, EAST PALO ALTO	Low Density Residential	High Density Residential	0.0060	0.0088
063-221-340	801 WEEKS ST, EAST PALO ALTO	Low Density Residential	High Density Residential	0.0032	0.0047
063-221-350	803 PAUL ROBESON CT, EAST PALO ALTO	Low Density Residential	High Density Residential	0.0025	0.0037
063-221-360	805 PAUL ROBESON CT, EAST PALO ALTO	Low Density Residential	High Density Residential	0.0025	0.0036
063-221-370	807 PAUL ROBESON CT, EAST PALO ALTO	Low Density Residential	High Density Residential	0.0025	0.0036
063-221-380	809 PAUL ROBESON CT, EAST PALO ALTO	Low Density Residential	High Density Residential	0.0025	0.0036
063-221-390	791 WEEKS ST, EAST PALO ALTO	Low Density Residential	High Density Residential	0.0025	0.0036
063-221-410	731 WEEKS ST, EAST PALO ALTO	Low Density Residential	High Density Residential	0.0025	0.0036
063-221-420	717 WEEKS ST, EAST PALO ALTO	Low Density Residential	High Density Residential	0.0035	0.0051
063-221-430	2360 COOLEY AVE, EAST PALO ALTO	Low Density Residential	High Density Residential	0.0022	0.0032
063-221-440	2362-2362 COOLEY AVE, EAST PALO ALTO	Low Density Residential	High Density Residential	0.0022	0.0032
063-221-450	2364 COOLEY AVE, EAST PALO ALTO	Low Density Residential	High Density Residential	0.0022	0.0032
063-221-500	863 WEEKS ST, EAST PALO ALTO	Low Density Residential	High Density Residential	0.0066	0.0097
063-221-510	761 WEEKS ST, EAST PALO ALTO	Low Density Residential	High Density Residential	0.0039	0.0057
063-221-520	767 CAROLE CT, EAST PALO ALTO	Low Density Residential	High Density Residential	0.0052	0.0076
063-221-530	773 CAROLE CT, EAST PALO ALTO	Low Density Residential	High Density Residential	0.0022	0.0033
063-221-540	779 CAROLE CT, EAST PALO ALTO	Low Density Residential	High Density Residential	0.0023	0.0033
063-221-550	785 CAROLE CT, EAST PALO ALTO	Low Density Residential	High Density Residential	0.0023	0.0033
063-231-220	1800 BAY RD, EAST PALO ALTO	Office	Mixed Use Corridor	0.0021	0.0031
063-231-240	1804 BAY RD, EAST PALO ALTO	Office	Mixed Use Corridor	0.0020	0.0030
063-231-250	1798 BAY RD, EAST PALO ALTO	Office	Mixed Use Corridor	0.0020	0.0030
063-232-090	1003 WEEKS ST, EAST PALO ALTO	Office	High Density Residential	0.0021	0.0030
063-232-150	2421 PULGAS AVE, EAST PALO ALTO	Office	High Density Residential	0.0021	0.0030
063-232-160	2447 PULGAS AVE, EAST PALO ALTO	Office	High Density Residential	0.0021	0.0030
063-232-210	WEEKS ST, EAST PALO ALTO	Office	High Density Residential	0.0021	0.0031
063-232-220	WEEKS ST, EAST PALO ALTO	Office	High Density Residential	0.0028	0.0041
063-232-230	WEEKS ST, EAST PALO ALTO	Office	High Density Residential	0.0028	0.0041
063-232-240	1045 WEEKS ST, EAST PALO ALTO	Office	High Density Residential	0.0022	0.0032

Table 10
Summary of Additional Sanitary Sewer Flows
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East Palo Alto Sanitary District

APN	Address	2014 Zoning	2035 Zoning	ADWF Increase (CFS) (1) (2)	PDWF Increase (CFS) (1) (2)
063-232-250	1085 WEEKS ST, EAST PALO ALTO	Office	High Density Residential	0.0022	0.0032
063-232-260	1001 WEEKS ST, EAST PALO ALTO	Office	High Density Residential	0.0017	0.0025
063-232-300	1095 WEEKS ST, EAST PALO ALTO	Office	High Density Residential	0.0025	0.0037
063-232-350	901 WEEKS ST, EAST PALO ALTO	Office	Mixed Use High	0.0024	0.0035
063-253-320	965 WEEKS STREET, EAST PALO ALTO	(4)	(4)	0.0037	0.0056
063-271-090	1201 RUNNYMEDE ST, EAST PALO ALTO	(4)	(4)	0.0004	0.0006
063-271-370	1171 RUNNYMEDE ST, EAST PALO ALTO	Low Density Residential	High Density Residential	0.0016	0.0028
063-271-480	1199 WEEKS ST, EAST PALO ALTO	Parks/Recreation/Conservation	Industrial Buffer	0.0118	0.0203
063-281-020	2021 EUCLID AVE, EAST PALO ALTO	(4)	(4)	0.0071	0.0106
063-281-030	2025 EUCLID AVE, EAST PALO ALTO	(4)	(4)	0.0053	0.0080
063-281-040	2031 EUCLID AVE, EAST PALO ALTO	(4)	(4)	0.0067	0.0101
063-281-100	2043 EUCLID AVE, EAST PALO ALTO	(4)	(4)	0.0111	0.0166
063-281-110	420 E OKEEFE ST, EAST PALO ALTO	(4)	(4)	0.0011	0.0017
063-282-010	501 OCONNOR ST, EAST PALO ALTO	(4)	(4)	0.0024	0.0036
063-282-020	2012 EUCLID AVE, EAST PALO ALTO	(4)	(4)	0.0009	0.0013
063-282-030	2032 EUCLID AVE, EAST PALO ALTO	(4)	(4)	0.0074	0.0111
063-282-040	2036 EUCLID AVE, EAST PALO ALTO	(4)	(4)	0.0168	0.0253
063-282-050	2040 EUCLID AVE, EAST PALO ALTO	(4)	(4)	0.0168	0.0253
063-282-060	2044 EUCLID AVE, EAST PALO ALTO	(4)	(4)	0.0168	0.0253
063-282-070	2054 EUCLID AVE, EAST PALO ALTO	(4)	(4)	0.0021	0.0032
063-282-080	2033 MANHATTAN AVE, EAST PALO ALTO	Commercial	High Density Residential	0.0118	0.0203
063-282-090	2001 MANHATTAN AVE, EAST PALO ALTO	Commercial	High Density Residential	0.0118	0.0203
063-291-010	1489 E BAYSHORE RD, EAST PALO ALTO	Commercial	Mixed Use Low	0.0118	0.0203
063-292-180	2101 UNIVERSITY AVE, EAST PALO ALTO	Commercial	Mixed Use High	0.0118	0.0203
063-292-370	2117 UNIVERSITY AVE, EAST PALO ALTO	Office, High Density Residential	Mixed Use High	0.0118	0.0203
063-292-380	2160 EUCLID AVE, EAST PALO ALTO	Low Density Residential	Mixed Use High	0.0118	0.0203
063-302-170	2283 UNIVERSITY AVE, EAST PALO ALTO	Office	Mixed Use Corridor	0.0118	0.0203
063-302-180	2281 UNIVERSITY AVE, EAST PALO ALTO	Office	Mixed Use Corridor	0.0118	0.0203
063-302-210	2263 UNIVERSITY AVE, EAST PALO ALTO	Office	Mixed Use Corridor	0.0118	0.0203
063-302-220	2253 UNIVERSITY AVE, EAST PALO ALTO	Office	Mixed Use Corridor	0.0118	0.0203
063-302-230	2247 UNIVERSITY AVE, EAST PALO ALTO	Office	Mixed Use Corridor	0.0118	0.0203
063-302-280	575A BELL ST, EAST PALO ALTO	Office	Mixed Use Corridor	0.0005	0.0008
063-302-290	565 BELL ST, EAST PALO ALTO	Office	Mixed Use Corridor	0.0015	0.0026
063-302-330	2201 UNIVERSITY AVE, EAST PALO ALTO	Office	Mixed Use Corridor	0.0017	0.0030
063-302-340	584 RUNNYMEDE ST, EAST PALO ALTO	Office	Mixed Use Corridor	0.0015	0.0027
063-302-460	2277 UNIVERSITY AVE, EAST PALO ALTO	Office	Mixed Use Corridor	0.0013	0.0023
063-302-470	2279 UNIVERSITY AVE, EAST PALO ALTO	Office	Mixed Use Corridor	0.0014	0.0025
063-312-400	WEST OF 2033 COOLEY AVE, EAST PALO ALTO	Commercial	Office	0.0030	0.0051
063-321-050	2124 UNIVERSITY AVE, EAST PALO ALTO	Commercial	Mixed Use Corridor	0.0000	0.0000
063-321-060	2126 UNIVERSITY AVE, EAST PALO ALTO	Commercial	Mixed Use Corridor	0.0000	0.0000

Table 10
Summary of Additional Sanitary Sewer Flows
EPASD Master Plan Update
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APN	Address	2014 Zoning	2035 Zoning	ADWF Increase (CFS) (1) (2)	PDWF Increase (CFS) (1) (2)
063-321-070	BETWEEN 2142 AND 2126 UNIVERSITY AVE, EAST PALO ALTO	Commercial	Mixed Use Corridor	0.0000	0.0000
063-321-080	2142 UNIVERSITY AVE, EAST PALO ALTO	Commercial	Mixed Use Corridor	0.0000	0.0000
063-321-100	2160 UNIVERSITY AVE, EAST PALO ALTO	Commercial	Mixed Use Corridor	0.0000	0.0000
063-321-110	2164 UNIVERSITY AVE, EAST PALO ALTO	Commercial	Mixed Use Corridor	0.0000	0.0000
063-321-120	2166 UNIVERSITY AVE, EAST PALO ALTO	Commercial	Mixed Use Corridor	0.0074	0.0128
063-321-130	2172 UNIVERSITY AVE, EAST PALO ALTO	Commercial	Mixed Use Corridor	0.0072	0.0106
063-321-140	2178 UNIVERSITY AVE, EAST PALO ALTO	Commercial	Mixed Use Corridor	0.0154	0.0225
063-321-180	612 BELL ST, EAST PALO ALTO	Commercial	Mixed Use Corridor	0.0000	0.0000
063-321-190	616 BELL ST, EAST PALO ALTO	Commercial	Mixed Use Corridor	0.0070	0.0102
063-321-200	644 BELL ST, EAST PALO ALTO	Commercial	Mixed Use Corridor	0.0017	0.0025
063-321-210	2189 CAPITOL AVE, EAST PALO ALTO	Commercial	Mixed Use Corridor	0.0070	0.0103
063-321-220	2187 CAPITOL AVE, EAST PALO ALTO	Commercial	Mixed Use Corridor	0.0070	0.0103
063-321-230	2181 CAPITOL AVE, EAST PALO ALTO	Commercial	Mixed Use Corridor	0.0000	0.0000
063-321-240	2171 CAPITOL AVE, EAST PALO ALTO	Commercial	Mixed Use Corridor	0.0000	0.0000
063-321-250	2165 CAPITOL AVE, EAST PALO ALTO	Commercial	Mixed Use Corridor	0.0000	0.0000
063-321-260	2161 CAPITOL AVE, EAST PALO ALTO	Commercial	Mixed Use Corridor	0.0000	0.0000
063-321-270	2157 CAPITOL AVE, EAST PALO ALTO	Commercial	Mixed Use Corridor	0.0000	0.0000
063-321-280	2153 CAPITOL AVE, EAST PALO ALTO	Commercial	Mixed Use Corridor	0.0000	0.0000
063-321-290	2149 CAPITOL AVE, EAST PALO ALTO	Commercial	Mixed Use Corridor	0.0000	0.0000
063-321-300	2145 CAPITOL AVE, EAST PALO ALTO	Commercial	Mixed Use Corridor	0.0000	0.0000
063-321-310	2141 CAPITOL AVE, EAST PALO ALTO	Commercial	Mixed Use Corridor	0.0000	0.0000
063-321-320	2133 CAPITOL AVE, EAST PALO ALTO	Commercial	Mixed Use Corridor	0.0000	0.0000
063-321-330	2129 CAPITOL AVE, EAST PALO ALTO	Commercial	Mixed Use Corridor	0.0006	0.0009
063-321-400	2194 UNIVERSITY AVE, EAST PALO ALTO	Commercial	Mixed Use Corridor	0.0006	0.0010
063-321-410	2148 UNIVERSITY AVE, EAST PALO ALTO	Commercial	Mixed Use Corridor	0.0016	0.0026
063-321-420	BETWEEN 2124 UNIVERSITY AVE AND 630 DONOHOE ST, EAST PALO ALTO	Commercial	Office	0.0012	0.0019
063-322-040	2124 CAPITOL AVE, EAST PALO ALTO	Commercial	Medium Density Residential	0.0009	0.0015
063-322-050	2132 CAPITOL AVE, EAST PALO ALTO	Commercial	Medium Density Residential	0.0009	0.0016
063-322-060	2134 CAPITOL AVE, EAST PALO ALTO	Commercial	Medium Density Residential	0.0008	0.0012
063-322-070	2138 CAPITOL AVE, EAST PALO ALTO	Commercial	Medium Density Residential	0.0007	0.0011
063-322-080	2142 CAPITOL AVE, EAST PALO ALTO	Commercial	Medium Density Residential	0.0000	0.0001
063-322-090	2144 CAPITOL AVE, EAST PALO ALTO	Commercial	Medium Density Residential	0.0035	0.0057
063-322-100	2154 CAPITOL AVE, EAST PALO ALTO	Commercial	Medium Density Residential	0.0020	0.0032
063-322-110	2162 CAPITOL AVE, EAST PALO ALTO	Commercial	Medium Density Residential	0.0021	0.0035
063-322-130	2184 CAPITOL AVE, EAST PALO ALTO	Commercial	Medium Density Residential	0.0058	0.0096
063-322-140	2194 CAPITOL AVE, EAST PALO ALTO	Commercial	Medium Density Residential	0.0016	0.0027
063-322-150	2198 CAPITOL AVE, EAST PALO ALTO	Commercial	Medium Density Residential	0.0022	0.0037
063-322-160	660 BELL ST, EAST PALO ALTO	Commercial	Medium Density Residential	0.0089	0.0146
063-322-340	2169 COOLEY AVE, EAST PALO ALTO	Commercial	Medium Density Residential	0.0177	0.0291

Table 10
Summary of Additional Sanitary Sewer Flows
EPASD Master Plan Update
East Palo Alto Sanitary District

APN	Address	2014 Zoning	2035 Zoning	ADWF Increase (CFS) (1) (2)	PDWF Increase (CFS) (1) (2)
063-322-410	SOUTH OF 2119 COOLEY AVE, EAST PALO ALTO	High Density Residential	Office	0.0033	0.0054
063-322-500	2159 COOLEY AVE, EAST PALO ALTO	Commercial	Medium Density Residential	0.0032	0.0053
063-322-560	DONOHOE ST, EAST PALO ALTO	High Density Residential	Office	0.0027	0.0044
063-322-580	2118 CAPITOL AVE, EAST PALO ALTO	Commercial	Medium Density Residential	0.0016	0.0027
063-331-030	2212 UNIVERSITY AVE, EAST PALO ALTO	Commercial	Mixed Use Corridor	0.0035	0.0057
063-331-060	2242 UNIVERSITY AVE, EAST PALO ALTO	Commercial	Mixed Use Corridor	0.0000	0.0000
063-331-070	2248 UNIVERSITY AVE, EAST PALO ALTO	Commercial	Mixed Use Corridor	0.0000	0.0000
063-331-080	2252 UNIVERSITY AVE, EAST PALO ALTO	Commercial	Mixed Use Corridor	0.0000	0.0000
063-331-090	2264 UNIVERSITY AVE, EAST PALO ALTO	Commercial	Mixed Use Corridor	0.0032	0.0052
063-331-100	2268 UNIVERSITY AVE, EAST PALO ALTO	Commercial	Mixed Use Corridor	0.0000	0.0000
063-331-110	2272 UNIVERSITY AVE, EAST PALO ALTO	Commercial	Mixed Use Corridor	0.0006	0.0010
063-331-120	2274 UNIVERSITY AVE, EAST PALO ALTO	Commercial	Mixed Use Corridor	0.0000	0.0000
063-331-130	2276 UNIVERSITY AVE, EAST PALO ALTO	Commercial	Mixed Use Corridor	0.0000	0.0000
063-331-140	2280 UNIVERSITY AVE, EAST PALO ALTO	Commercial	Mixed Use Corridor	0.0000	0.0000
063-331-150	2284 UNIVERSITY AVE, EAST PALO ALTO	Commercial	Mixed Use Corridor	0.0003	0.0005
063-331-190	2291 CAPITOL AVE, EAST PALO ALTO	Commercial	Mixed Use Corridor	0.0007	0.0010
063-331-200	2287 CAPITOL AVE, EAST PALO ALTO	Commercial	Mixed Use Corridor	0.0010	0.0015
063-331-210	2285 CAPITOL AVE, EAST PALO ALTO	Commercial	Mixed Use Corridor	0.0097	0.0159
063-331-220	2277 CAPITOL AVE, EAST PALO ALTO	Commercial	Mixed Use Corridor	0.0524	0.0770
063-331-230	2267 CAPITOL AVE, EAST PALO ALTO	Commercial	Mixed Use Corridor	0.0637	0.0937
063-331-240	2263 CAPITOL AVE, EAST PALO ALTO	Commercial	Mixed Use Corridor	0.0086	0.0146
063-331-250	2255 CAPITOL AVE, EAST PALO ALTO	Commercial	Mixed Use Corridor	0.0010	0.0017
063-331-260	2251 CAPITOL AVE, EAST PALO ALTO	Commercial	Mixed Use Corridor	0.1026	0.1745
063-331-270	2249 CAPITOL AVE, EAST PALO ALTO	Commercial	Mixed Use Corridor	0.0141	0.0240
063-331-280	2245 CAPITOL AVE, EAST PALO ALTO	Commercial	Mixed Use Corridor	0.1463	0.2487
063-331-290	2239 CAPITOL AVE, EAST PALO ALTO	Commercial	Mixed Use Corridor	0.0005	0.0009
063-331-300	2233 CAPITOL AVE, EAST PALO ALTO	Commercial	Mixed Use Corridor	0.0016	0.0027
063-331-310	2227 CAPITOL AVE, EAST PALO ALTO	Commercial	Mixed Use Corridor	0.0036	0.0062
063-331-320	2219 CAPITOL AVE, EAST PALO ALTO	Commercial	Mixed Use Corridor	0.0004	0.0007
063-331-330	2217 CAPITOL AVE, EAST PALO ALTO	Commercial	Mixed Use Corridor	0.0005	0.0009
063-331-340	2205 CAPITOL AVE, EAST PALO ALTO	Commercial	Mixed Use Corridor	0.0013	0.0022
063-331-350	643 BELL ST, EAST PALO ALTO	Commercial	Mixed Use Corridor	0.0022	0.0038
063-331-370	2200 UNIVERSITY AVE, EAST PALO ALTO	Commercial	Mixed Use Corridor	0.0012	0.0021
063-331-380	2240 UNIVERSITY AVE, EAST PALO ALTO	Commercial	Mixed Use Corridor	0.0039	0.0067
063-331-410	2220 UNIVERSITY AVE, EAST PALO ALTO	Commercial	Mixed Use Corridor	0.0002	0.0004
063-442-360	330 DONOHOE ST, EAST PALO ALTO	Low Density Residential	High Density Residential	0.0003	0.0005
063-473-150	1995 MANHATTAN AVE, EAST PALO ALTO	Commercial	High Density Residential	0.0004	0.0007
063-473-160	1991 MANHATTAN AVE, EAST PALO ALTO	Commercial	High Density Residential	0.0021	0.0035
063-473-170	1965 MANHATTAN AVE, EAST PALO ALTO	Commercial	High Density Residential	0.0023	0.0040
063-473-180	1955 MANHATTAN AVE, EAST PALO ALTO	Commercial	High Density Residential	0.0029	0.0048

Table 10
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East Palo Alto Sanitary District

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063-473-190	1919 MANHATTAN AVE, EAST PALO ALTO	Commercial	High Density Residential	0.0055	0.0094
063-473-200	1901 MANHATTAN AVE, EAST PALO ALTO	Commercial	High Density Residential	0.0003	0.0005
063-481-010	1699 WOODLAND AVE, EAST PALO ALTO	Commercial	Medium Density Residential	0.0003	0.0005
063-481-020	1681 WOODLAND AVE, EAST PALO ALTO	Commercial	Medium Density Residential	0.0006	0.0010
063-481-030	1671 WOODLAND AVE, EAST PALO ALTO	Commercial	Medium Density Residential	0.0004	0.0006
063-481-040	1669 WOODLAND AVE, EAST PALO ALTO	Commercial	Medium Density Residential	0.0004	0.0007
063-481-050	1651 WOODLAND AVE, EAST PALO ALTO	Commercial	Medium Density Residential	0.0003	0.0006
063-481-060	1643 WOODLAND AVE, EAST PALO ALTO	Commercial	Medium Density Residential	0.0003	0.0005
063-481-070	1637 WOODLAND AVE, EAST PALO ALTO	Commercial	Medium Density Residential	0.0014	0.0024
063-481-080	1629 WOODLAND AVE, EAST PALO ALTO	Commercial	Medium Density Residential	0.0006	0.0011
063-481-090	1621 WOODLAND AVE, EAST PALO ALTO	Commercial	Medium Density Residential	0.0038	0.0055
063-481-100	644 SCOFIELD AVE, EAST PALO ALTO	Commercial	Medium Density Residential	0.0005	0.0008
063-481-110	652 SCOFIELD AVE, EAST PALO ALTO	Commercial	Medium Density Residential	0.0002	0.0004
063-481-120	660 SCOFIELD AVE, EAST PALO ALTO	Commercial	Medium Density Residential	0.0004	0.0006
063-481-130	610 CIRCLE DR, EAST PALO ALTO	Commercial	Medium Density Residential	0.0004	0.0006
063-481-140	620 CIRCLE DR, EAST PALO ALTO	Commercial	Medium Density Residential	0.0004	0.0007
063-481-150	630 CIRCLE DR, EAST PALO ALTO	Commercial	Medium Density Residential	0.0003	0.0006
063-481-160	640 CIRCLE DR, EAST PALO ALTO	Commercial	Medium Density Residential	0.0004	0.0006
063-481-170	650 CIRCLE DR, EAST PALO ALTO	Commercial	Medium Density Residential	0.0005	0.0008
063-481-180	1917 COOLEY AVE, EAST PALO ALTO	Commercial	Medium Density Residential	0.0005	0.0008
063-481-190	1909 COOLEY AVE, EAST PALO ALTO	Commercial	Medium Density Residential	0.0005	0.0008
063-481-210	1901 COOLEY AVE, EAST PALO ALTO	Commercial	Medium Density Residential	0.0004	0.0008
063-481-220	1905 COOLEY AVE, EAST PALO ALTO	Commercial	Medium Density Residential	0.0004	0.0007
063-482-010	641 CIRCLE DR, EAST PALO ALTO	Commercial	Medium Density Residential	0.0018	0.0027
063-482-020	621 CIRCLE DR, EAST PALO ALTO	Commercial	Medium Density Residential	0.0020	0.0030
063-482-030	611 CIRCLE DR, EAST PALO ALTO	Commercial	Medium Density Residential	0.0043	0.0063
063-483-030	1909 CAPITOL AVE, EAST PALO ALTO	Commercial	Medium Density Residential	0.0003	0.0005
063-483-040	1943 CAPITOL AVE, EAST PALO ALTO	Commercial	High Density Residential	0.0004	0.0006
063-483-050	1609 WOODLAND AVE, EAST PALO ALTO	Commercial	High Density Residential	0.0021	0.0031
063-484-010	655 SCOFIELD AVE, EAST PALO ALTO	Commercial	High Density Residential	0.0019	0.0028
063-484-020	1902 CAPITOL AVE, EAST PALO ALTO	Commercial	High Density Residential	0.0019	0.0028
063-484-030	1908 CAPITOL AVE, EAST PALO ALTO	Commercial	High Density Residential	0.0019	0.0028
063-484-040	1916 CAPITOL AVE, EAST PALO ALTO	Commercial	High Density Residential	0.0034	0.0050
063-484-050	1920 CAPITOL AVE, EAST PALO ALTO	Commercial	High Density Residential	0.0029	0.0042
063-484-060	1934 CAPITOL AVE, EAST PALO ALTO	Commercial	High Density Residential	0.0024	0.0035
063-484-090	1949 COOLEY AVE, EAST PALO ALTO	Commercial	High Density Residential	0.0015	0.0022
063-484-100	1941 COOLEY AVE, EAST PALO ALTO	Commercial	High Density Residential	0.0016	0.0024
063-484-110	685 SCOFIELD AVE, EAST PALO ALTO	Commercial	High Density Residential	0.0025	0.0037
063-484-130	1957 COOLEY AVE, EAST PALO ALTO	Commercial	High Density Residential	0.0018	0.0026
063-492-070	1927 E BAYSHORE RD, EAST PALO ALTO	Commercial	Mixed Use Corridor	0.0061	0.0105
063-492-280	1933 PULGAS AVE, EAST PALO ALTO	Commercial	Medium Density Residential	0.0243	0.0377

Table 10
Summary of Additional Sanitary Sewer Flows
EPASD Master Plan Update
East Palo Alto Sanitary District

APN	Address	2014 Zoning	2035 Zoning	ADWF Increase (CFS) (1) (2)	PDWF Increase (CFS) (1) (2)
063-492-350	1805 E BAYSHORE RD #1-94, EAST PALO ALTO	(4)	(4)	0.0007	0.0010
063-492-480	1895 E BAYSHORE RD, EAST PALO ALTO	Commercial	Mixed Use Corridor	0.0118	0.0183
063-501-020	1874 W BAYSHORE RD, EAST PALO ALTO	Commercial	Mixed Use Low	0.0253	0.0393
063-501-030	1870 W BAYSHORE RD, EAST PALO ALTO	Commercial	Mixed Use Low	0.0041	0.0063
063-501-040	1879 WOODLAND AVE, EAST PALO ALTO	Commercial	Mixed Use Low	0.0338	0.0537
063-501-050	1875 WOODLAND AVE, EAST PALO ALTO	Commercial	Mixed Use Low	0.0030	0.0047
063-511-020	2039 CLARKE AVE, EAST PALO ALTO	Commercial	Mixed Use Corridor	0.0083	0.0132
063-511-030	2035 CLARKE AVE, EAST PALO ALTO	Commercial	Mixed Use Corridor	0.0041	0.0065
063-511-040	2029 CLARKE AVE, EAST PALO ALTO	Commercial	Mixed Use Corridor	0.0004	0.0007
063-511-050	2027 CLARKE AVE, EAST PALO ALTO	Commercial	Mixed Use Corridor	0.0000	0.0001
063-511-060	2023 CLARKE AVE, EAST PALO ALTO	Commercial	Mixed Use Corridor	0.0004	0.0007
063-511-070	2017 CLARKE AVE, EAST PALO ALTO	Commercial	Mixed Use Corridor	0.0033	0.0053
063-511-080	2013 CLARKE AVE, EAST PALO ALTO	Commercial	Mixed Use Corridor	0.0014	0.0021
063-511-090	2009 CLARKE AVE, EAST PALO ALTO	Commercial	Mixed Use Corridor	0.0014	0.0022
063-511-190	872 DONOHOE ST, EAST PALO ALTO	Commercial	Mixed Use Corridor	0.0011	0.0018
063-511-200	866 DONOHOE ST, EAST PALO ALTO	Commercial	Mixed Use Corridor	0.0000	0.0001
063-511-210	864 DONOHOE ST, EAST PALO ALTO	Commercial	Mixed Use Corridor	0.0072	0.0108
063-511-220	862 DONOHOE ST, EAST PALO ALTO	Commercial	Mixed Use Corridor	0.0091	0.0137
063-511-240	896 DONOHOE ST, EAST PALO ALTO	Commercial	Mixed Use Corridor	0.0084	0.0126
063-511-250	860 DONOHOE ST, EAST PALO ALTO	Commercial	Mixed Use Corridor	0.0474	0.0711
063-511-260	890 DONOHOE ST, EAST PALO ALTO	Commercial	Mixed Use Corridor	0.0007	0.0010
063-511-490	1731 E BAYSHORE RD, EAST PALO ALTO	Commercial	Mixed Use High	0.0008	0.0012
063-511-520	1761 E BAYSHORE RD, EAST PALO ALTO	Commercial	Mixed Use High	0.0019	0.0029
063-511-630	1721 E BAYSHORE RD, EAST PALO ALTO	Commercial	Mixed Use High	0.0007	0.0010
063-511-660	899 OCONNOR ST, EAST PALO ALTO	Commercial	Mixed Use Corridor	0.0011	0.0017
063-511-680	1751 EAST BAYSHORE RD, EAST PALO ALTO	Commercial	Mixed Use High	0.0012	0.0017
063-511-690	1745 E BAYSHORE BLVD, EAST PALO ALTO	Commercial	Mixed Use High	0.0052	0.0078
063-511-720	1775 E BAYSHORE RD, EAST PALO ALTO	Commercial	Mixed Use High	0.0011	0.0017
063-515-060	1821 CLARKE AVE, EAST PALO ALTO	High Density Residential	Low Density Residential	0.0009	0.0014
063-515-070	1805 CLARKE AVE, EAST PALO ALTO	High Density Residential	Low Density Residential	0.0038	0.0062
063-515-080	1787 WOODLAND AVE, EAST PALO ALTO	High Density Residential	Low Density Residential	0.0028	0.0045
063-515-230	1785 WOODLAND AVE, EAST PALO ALTO	High Density Residential	Low Density Residential	0.0027	0.0044
063-571-060	1985 E BAYSHORE RD, EAST PALO ALTO	Commercial	Mixed Use Corridor	0.0012	0.0018
063-571-070	1981 E BAYSHORE RD, EAST PALO ALTO	Commercial	Mixed Use Corridor	0.0015	0.0023
063-571-080	1961 E BAYSHORE RD, EAST PALO ALTO	Commercial	Mixed Use Corridor	0.0006	0.0009
063-571-090	1905 E BAYSHORE RD, EAST PALO ALTO	Commercial	Mixed Use Corridor	0.0004	0.0006
063-680-020	1900 UNIVERSITY AVE, EAST PALO ALTO	Commercial	Office	0.0005	0.0007
063-680-050	NORTH EAST OF 2050 UNIVERSITY AVE, EAST PALO ALTO	Commercial	Office	0.0005	0.0007
063-680-060	NORTH EAST OF 2050 UNIVERSITY AVE, EAST PALO ALTO	Commercial	Office	0.0002	0.0003

Table 10
Summary of Additional Sanitary Sewer Flows
EPASD Master Plan Update
East Palo Alto Sanitary District

APN	Address	2014 Zoning	2035 Zoning	ADWF Increase (CFS) (1) (2)	PDWF Increase (CFS) (1) (2)
063-680-090	BETWEEN 1546 AND 1586 WOODLAND AVE, EAST PALO ALTO	Commercial	Office	0.0005	0.0008
063-680-100	SOUTHEAST OF 1900 UNIVERISTY AVE, EAST PALO ALTO	Commercial	Office	0.0005	0.0008
063-680-110	SOUTHWEST OF 2000 UNIVERISTY AVE, EAST PALO ALTO	Commercial	Office	0.0004	0.0005
063-680-130	2000 UNIVERSITY AVE, EAST PALO ALTO	Commercial	Office	0.0005	0.0008
063-680-150	2050 UNIVERSITY AVE, EAST PALO ALTO	Commercial	Office	0.0005	0.0007
063-680-180	SOUTH OF 2000 UNIVERISTY AVE, EAST PALO ALTO	Commercial	Office	0.0007	0.0010
063-680-190	2000 UNIVERSITY AVE, EAST PALO ALTO	Commercial	Office	0.0067	0.0100
113-530-010 to 113-530-999	2420 GLORIA WAY, EAST PALO ALTO	Low Density Residential	High Density Residential	0.0020	0.0031
113-710-010 to 113-710-999	2440 GLORIA WAY, EAST PALO ALTO	Low Density Residential	High Density Residential	0.0014	0.0021
113-720-010 to 113-720-999	2460 GLORIA WAY, EAST PALO ALTO	Low Density Residential	High Density Residential	0.0010	0.0015
113-740-010 to 113-740-999	2470 GLORIA WAY, EAST PALO ALTO	Low Density Residential	High Density Residential	0.0008	0.0012
114-240-010 to 114-240-300	2330 UNIVERSITY AVE, EAST PALO ALTO	High Density Residential	Mixed Use Corridor	0.0007	0.0010
114-450-010 to 114-460-300	1765 EAST BAYSHORE RD, EAST PALO ALTO	Commercial	Mixed Use Corridor	0.0006	0.0010
			Total (CFS)	**1.6705**	**2.6297**
			Total (MGD) (3)	**1.08**	**1.70**

Notes:
(1) Increase in ADWF and PDWF is the difference between the estimated flows from 2014 presented in Table 7 and the projected flows based on the Vision 2035 General Plan Update presented in Table 8.
(2) ADWF and PDWF assumes that flows are contributed from all land uses over a standard 24-hour day.
(3) Total ADWF Increase in MGD is consistent with the projected increase in water demand in the Year 2040 presented in Section 3 of the City of East Palo Alto's 2015 Urban Water Management Plan date June 2016.The City of East Palo Alto water supply allocation from the San Francisco Public Utilities Commission was 1.96 MGD and the General Plan projects a maximum demand of 3.03 MGD in the Year 2040 representing an increase of 1.07 MGD in average day demand.
(4) Flows from parcels based on New Service Applications submitted to the District. Please see Table 8 for calculation of injected flows.

Abbreviations
ADWF: Average Dry Weather Flow
APN: Assessors Parcel Number
CFS: Cubic Feet per Second
MGD: Million Gallons Per Day
PDWF: Peak Dry Weather Flow

Table 11
Restoring d/D to Pre-development Conditions Under Proposed PDWF
EPASD Master Plan Update
East Palo Alto, California

Manhole (1)	Length (Feet) --	Existing Diameter (Inches) (2)	Existing PDWF d/D (3)	Predicted d/D (4)	Proposed Diameter (Inches) (2)	Proposed d/D (5)
C12-C1 (6)	265	6	0.64	0.72	6	0.6
B7-B6	380	12	1	1	15	0.46
B6-B5	158	12	0.38	0.38	15	0.24
B5-B52	176	12	0.6	0.6	15	0.37
B52-B4	360	12	0.52	0.52	15	0.32
B4-B3	465	12	0.56	0.68	15	0.42
B3-B2	239	12	0.7	1	15	0.5
B2-A1	181	12	0.52	0.62	15	0.38
A1-A2	80	12	0.66	0.82	15	0.46
A2-A5	244	12	0.66	1	15	0.46
A5-A8	124	15	0.67	1	18	0.49
A8-A9	61	15	0.32	0.37	18	0.25
A9-A10	181	15	0.7	1	18	0.53
A10-A15	300	15	0.43	0.51	18	0.35
A15-A16	435	15	0.69	1	18	0.52
A16-A21	296	15	0.54	0.67	18	0.43
A21-A23	155	15	0.42	0.5	18	0.33
A23-A22	14	15	0.27	0.32	18	0.23
A29-T29	345	18	0.32	0.39	21	0.32
T29-T28	234	18	0.31	0.37	21	0.3
T28-T27	162	18	0.59	0.77	21	0.57
T27-T26	356	18	0.4	0.49	21	0.39
T26-T25	306	18	0.36	0.45	21	0.35
T25-T24	282	18	0.63	1	24	0.53
T24-T23	317	18	0.36	0.47	24	0.47
T23-T22	446	18	0.39	0.52	24	0.52
T20-T19	332	18	0.29	0.37	24	0.37
T19-T18	500	21	0.56	0.78	26	0.53
T18-T17	540	21	0.55	0.78	26	0.53
T17-T16	482	21	0.58	1	26	0.55
D22-D21	149	8	0.6	0.78	10	0.48
D21-D19	391	8	0.57	0.72	10	0.46
D19-D10	48	8	0.39	0.45	10	0.31
D10-D3	489	8	0.66	1	10	0.5
D5-D4	70	8	0.78	0.84	10	0.46

Table 11
Restoring d/D to Pre-development Conditions Under Proposed PDWF
EPASD Master Plan Update
East Palo Alto, California

Manhole	Length (Feet)	Existing Diameter (Inches)	Existing PDWF d/D	Predicted d/D	Proposed Diameter (Inches)	Proposed d/D
D4-D3	296	8	0.78	0.84	10	0.46
D3-D2	363	12	0.8	1	15	0.51
D2-D1	53	12	1	1	15	0.67
D1-E4	354	12	0.66	0.82	15	0.46
E4-E3	357	12	0.58	0.7	15	0.42
E3-E2	280	12	0.74	1	15	0.5
E2-E1	283	12	0.66	0.82	15	0.46
E1-H9	270	12	0.8	1	15	0.62
H9-H73	246	12	0.72	1	15	0.58
H73-H74	101	12	0.72	1	15	0.58
H74-H8	113	12	0.72	1	15	0.58
H8-H7	233	12	1	1	15	0.67
H7-H75	90	12	0.74	1	15	0.59
H75-H6	260	12	0.72	1	15	0.58
H6-H5	9	12	0.58	1	15	0.46
H5-H4	260	15	0.67	1	18	0.57
H4-H3	7	15	0.58	0.82	18	0.51
H3-H2	31	15	0.56	0.77	18	0.49
H2-11	37	15	0.34	0.43	18	0.31
I11-I10	380	15	0.56	0.78	18	0.51
I10-I9	221	15	0.51	0.69	18	0.45
I9-I8	155	15	0.72	1	18	0.63
I8-I7	238	15	0.46	1	18	0.41
I7-I6	259	15	0.5	0.67	18	0.44
I6-I5	411	18	0.72	1	21	0.65
I5-I31	135	18	0.72	1	21	0.66
I31-I4	321	18	0.72	1	21	0.66
I4-I3	243	18	0.72	1	21	0.66
H36-H35 (6)	474	6	0.32	1	6	0.45
H17-H57	397	8	0.33	0.75	12	0.34
H57-H16	40	8	0.18	0.36	12	0.18
H16-H60	351	8	0.24	0.48	12	0.24
H60-H15	99	8	0.24	0.45	12	0.22
H15-H62	201	8	0.21	0.36	12	0.18
H62-H14	233	8	0.21	0.36	12	0.18
M38-M39	158	8	0.36	0.84	12	0.36
M39-M43	241	8	0.36	0.84	12	0.36
M43-M42	104	8	0.45	1	12	0.44
M42-M41	37	8	0.27	1	12	0.28

Table 11
Restoring d/D to Pre-development Conditions Under Proposed PDWF
EPASD Master Plan Update
East Palo Alto, California

Manhole	Length (Feet)	Existing Diameter (Inches)	Existing PDWF d/D	Predicted d/D	Proposed Diameter (Inches)	Proposed d/D
M41-M13	111	8	0.36	0.84	12	0.36
M13-M12	276	8	0.36	0.84	12	0.36
M12-M40	337	8	0.36	0.84	12	0.36
M40-M5	263	8	0.36	0.84	12	0.36
M5-M4	373	8	0.78	1	12	0.52
M4-M31	143	8	0.66	1	12	0.48
M31-M3	357	10	0.6	1	12	0.54
M3-M2	380	10	0.65	1	12	0.58
I43-I15	62	12	0.32	0.44	15	0.29
I15-I14	386	12	0.76	1	15	0.62
I14-I13	444	12	0.56	1	15	0.48
I13-I12	320	12	0.58	1	15	0.48
I12-I6	339	12	0.58	1	15	0.46
O9-O8 (6)	140	6	0.6	0.72	6	0.6
O7-O6 (6)	427	8	0.69	0.81	8	0.66
L53-L52 (6)	218	6	0.8	0.8	6	0.64
L52-L50	224	6	1	1	8	0.57
L50-L49	224	8	0.57	0.57	10	0.36
L49-L48	233	8	1	1	10	0.5
L7-L6 (6)	261	6	0.72	0.72	6	0.6
L9-L4 (6)	162	6	0.72	0.72	6	0.6
L23-L3(6)	351	8	0.69	0.69	8	0.6
L3-L2	83	10	1	1	12	0.58
L2-L1	179	10	0.77	0.77	12	0.48
L1-L21	223	10	1	1	14	0.55
L21-K28	68	10	1	1	14	0.6
K28-K4	242	10	1	1	15	0.64
K4-K3	238	12	1	1	15	0.51
K3-K2	190	12	1	1	15	0.58
K2-K1	451	14	0.69	0.74	15	0.54
D66-D65 (6)	413	6	0.72	0.72	6	0.6
C2-C1	204	6	1	1	8	0.48
D35-D34	178	6	1	1	8	0.54
D34-D33	292	6	0.56	0.56	8	0.3
D33-D24	450	6	0.72	0.72	8	0.39
N3-N21 (6)	89	10	0.55	0.7	10	0.6
N21-N14 (6)	196	10	0.58	0.74	10	0.624

Table 11
Restoring d/D to Pre-development Conditions Under Proposed PDWF
EPASD Master Plan Update
East Palo Alto, California

Manhole	Length (Feet)	Existing Diameter (Inches)	Existing PDWF d/D	Predicted d/D	Proposed Diameter (Inches)	Proposed d/D
N14-N2 (6)	88	10	0.6	0.77	10	0.624
N2-N1 (6)	296	10	0.58	0.72	10	0.6
E8-E7	355	8	0.48	1	12	0.38
E7-E6	311	8	0.42	1	12	0.36

Notes
(1) Manhole used to find flow and Depth over Diameter value.
(2) Pipe Diameter directly downstream of Manhole.
(3) Calculated by dividing the depth of flow by pipe diameter. This value is evaluated directly downstream of specified manhole under the existing PDWF condition.
(4) Calculated by dividing the depth of flow by pipe diameter. This value is evaluated directly downstream of specified manhole under the existing PDWF condition including proposed injection
(5) Calculated by dividing the depth of flow by pipe diameter. This value is evaluated directly downstream of specified manhole under the existing PDWF condition including proposed injection and pipe size upgrades.
(6) d/D improves with same size HDPE upgrade.
(7) Sizing of pipes in district map and model differed. Sizing found in model was used as basis for design.

Abbreviations
d/D: Depth over Diameter

Table 12

Conceptual OPPC Restoring d/D to Pre-development Conditions Under Proposed PDWF (1)

EPASD Master Plan Update

East Palo Alto, California

Item No.	Description	Units	Quantity (2)	Unit Price	Budget
Conceptual Opinion of Probable Construction Cost					
1	Mobilization	ls	1	$ 50,000	$ 50,000
2	Traffic Control	ls	1	$ 20,000	$ 20,000
3	Sheeting, Shoring, and Bracing	ls	1	$ 20,000	$ 20,000
4	6-inch DR 17 HDPE Pipe	lf	1,930	$ 150	$ 289,500
5	8-inch DR 17 HDPE Pipe	lf	2,130	$ 200	$ 426,000
6	10-inch DR 17 HDPE Pipe	lf	2,570	$ 250	$ 642,500
7	12-inch DR 17 HDPE Pipe	lf	5,030	$ 300	$ 1,509,000
8	14-inch DR 17 HDPE Pipe	lf	290	$ 350	$ 101,500
9	15-inch DR 17 HDPE Pipe	lf	7,970	$ 400	$ 3,188,000
10	18-inch DR 17 HDPE Pipe	lf	3,150	$ 550	$ 1,732,500
11	21-inch DR 17 HDPE Pipe	lf	2,510	$ 650	$ 1,631,500
12	24-inch DR 17 HDPE Pipe	lf	1,380	$ 800	$ 1,104,000
13	26-inch DR 17 HDPE Pipe	lf	1,520	$ 900	$ 1,368,000
14	Manholes	ea	147	$ 10,000	$ 1,470,000
15	30% Contingency	%	30%	$ 13,552,500	$ 4,065,750
Subtotal - Conceptual Opinion of Probable Construction Cost					**$ 17,618,300**
Engineering and Administration Cost					
16	Design	%	10%	$ 17,618,300	$ 1,761,830
17	Environmental/Permitting	%	10%	$ 17,618,300	$ 1,761,830
18	Construction Management/ Inspection	%	15%	$ 17,618,300	$ 2,642,745
19	District Administration	%	5%	$ 17,618,300	$ 880,915
Subtotal - Engineering and Administration Cost					**$ 7,047,300**
Total Conceptual Opinion of Probable Project Cost					**$ 24,665,600**

Notes

(1) See Table 11 and Figure 8 for limits of improvements.

(2) Quantities rounded to nearest 10 feet.

Table 13
Eliminating Surcharge Under Proposed PWWF
EPASD Master Plan Update
East Palo Alto, California

Manhole (1)	Length (Feet) --	Existing Diameter (Inches) (2)	Predicted d/D (3)	Proposed Diameter (Inches) (2)	Proposed d/D (4)
I24-I13	237	6	1	6	0.72
L25-L24	342	8	1	10	0.53
L24-L23	386	8	0.72	10	0.43
L23-L3	351	8	1	10	0.53
L3-L2	83	10	1	12	0.54
L2-L1	179	10	0.72	12	0.46
L1-L21	223	10	1	12	0.64
L21-K28	68	10	1	14	0.55
K28-K4	242	10	1	14	0.65
K4-K3	238	12	1	14	0.5
K3-K2	190	12	1	14	0.55
M38-M39	158	8	1	10	0.48
M39-M43	241	8	1	10	0.48
M43-M42	104	8	1	10	0.6
M42-M41	37	8	0.6	10	0.36
M41-M13	111	8	1	10	0.48
M13-M12	276	8	1	10	0.48
M12-M40	337	8	1	10	0.48
M40-M5	263	8	1	10	0.77
M5-M4	373	8	1	10	0.67
M4-M31	143	8	1	10	0.77
M31-M3	357	10	1	10	0.56
M3-M2	380	10	1	12	0.58
I15-I14	386	12	1	14	0.72
I14-I13	444	12	1	14	0.55
I13-I12	320	12	1	14	0.57
I12-I6	339	12	1	14	0.57
I6-I5	411	18	1	24	0.69
I5-I31	135	18	1	24	0.69
I31-I4	321	18	1	24	0.69
I4-I3	243	18	1	24	0.69
H36-H35	474	6	1	10	0.55
H35-H34	322	6	1	10	0.34
H34-H17	269	6	1	10	0.41
H17-H57	397	8	1	12	0.66
H57-H16	40	8	0.69	12	0.66
H16-H60	351	8	1	12	0.32
H60-H15	99	8	1	12	0.42

Table 13
Eliminating Surcharge Under Proposed PWWF
EPASD Master Plan Update
East Palo Alto, California

Manhole (1)	Length (Feet) --	Existing Diameter (Inches) (2)	Predicted d/D (3)	Proposed Diameter (Inches) (2)	Proposed d/D (4)
H15-H62	201	8	0.75	12	0.34
H62-H14	233	8	0.75	12	0.34
H14-H13	446	8	1	12	0.44
H13-H12	108	8	1	12	0.42
H12-H11	333	8	1	12	0.46
H11-H64	198	8	1	12	0.48
H64-H71	161	8	1	12	0.48
H71-H3	35	8	1	12	0.56
C12-C1	265	6	1	8	0.6
C48-C11	179	6	6	6	0.8
C9-C8	84	6	1	6	0.72
C8-C7	401	6	1	6	0.8
C7-C6	448	6	1	6	0.72
C6-C5	87	6	1	6	0.72
C5-C4	328	6	1	8	0.51
C4-C3	436	6	1	8	0.48
C3-C2	398	6	1	8	0.51
C2-C1	204	6	1	8	0.78
C1-B16 (5)	402	8	1	8	0.69
B16-B15 (5)	327	8	1	8	0.75
B15-B49 (5)	331	8	1	8	0.75
B49-B14 (5)	328	8	1	8	0.72
B7-B6	380	12	1	14	0.81
B6-B5	158	12	0.52	14	0.36
B5-B52	176	12	1	14	0.58
B52-B4	360	12	0.8	14	0.5
B4-B3	465	12	1	14	0.62
B3-B2	239	12	1	14	0.79
B2-A1	181	12	1	14	0.56
A1-A2	80	12	1	14	0.7
A2-A5	244	12	1	14	0.7
A5-A8	124	15	1	18	0.67
A8-A9	61	15	0.48	18	0.32
A9-A10	181	15	1	18	0.73
A10-A15	299	15	0.7	18	0.44
A15-A16	435	15	1	18	0.7
A16-A21	296	15	1	18	0.56
A21-A23	155	15	0.67	18	0.43

Table 13
Eliminating Surcharge Under Proposed PWWF
EPASD Master Plan Update
East Palo Alto, California

Manhole (1)	Length (Feet) --	Existing Diameter (Inches) (2)	Predicted d/D (3)	Proposed Diameter (Inches) (2)	Proposed d/D (4)
A23-A22	14	15	0.42	18	0.28
D25-D24	301	6	1	8	0.45
D35-D34	178	6	1	8	0.78
D34-D33	293	6	0.76	8	0.42
D33-D24	450	6	1	10	0.51
D24-D23	350	8	1	10	0.55
D23-D22	73	8	1	10	0.58
D22-D21	149	8	1	10	0.67
D21-D19	391	8	1	10	0.62
D19-D10	48	8	0.6	10	0.38
D10-D3	489	8	1	10	0.67
D5-D4	70	8	1	10	0.58
D4-D3	296	8	1	10	0.58
D3-D2	363	12	1	15	0.69
D2-D1	53	12	1	16	1
D1-E4	354	12	1	16	0.54
E4-E3	357	12	1	16	0.48
E3-E2	280	12	1	16	0.59
E2-E1	283	12	1	16	0.54
E1-H9	270	12	1	16	0.8
H9-H73	246	12	1	16	0.7
H73-H74	101	12	1	18	0.64
H74-H8	113	12	1	18	0.57
H8-H7	233	12	1	18	0.69
H7-H75	90	12	1	18	0.59
H75-H6	260	12	1	18	0.59
H6-H5	9	12	1	18	0.47
H5-H4	260	15	1	18	0.79
H4-H3	7	15	1	18	0.67
H3-H2	31	15	1	18	0.71
H2-I11	37	15	0.61	18	0.41
I11-I10	380	15	1	18	0.72
I10-I9	221	15	1	18	0.64
I9-I8	155	15	1	20	0.77
I8-I7	238	15	1	20	0.48
I7-I6	259	15	1	20	0.52
E8-E7	355	8	1	10	0.72
E7-E6	311	8	1	10	0.67

Table 13
Eliminating Surcharge Under Proposed PWWF
EPASD Master Plan Update
East Palo Alto, California

Manhole (1)	Length (Feet) --	Existing Diameter (Inches) (2)	Predicted d/D (3)	Proposed Diameter (Inches) (2)	Proposed d/D (4)
A29-T29	345	18	0.51	24	0.33
T29-T28	234	18	0.48	24	0.32
T28-T27	162	18	1	24	0.62
T27-T26	356	18	0.65	24	0.42
T26-T25	306	18	0.6	24	0.38
T25-T24	282	18	1	24	0.73
T24-T23	317	18	0.63	24	0.4
T23-T22	446	18	0.72	24	0.44
T20-T19	332	18	0.49	28	0.27
T19-T18	500	21	1	28	0.62
T18-T17	540	21	1	28	0.61
T17-T16	482	21	1	28	0.64
T12-T1	5280	(6)	(6)	18	1

Notes
(1) Manhole used to find Q and Depth over Diameter value.
(2) Pipe Diameter directly downstream of Manhole.
(3) Calculated by dividing the depth of flow by pipe diameter.
This value is evaluated directly downstream of specified manhole
under the existing PWWF condition including proposed injections.
(4) Calculated by dividing the depth of flow by pipe diameter.
This value is evaluated directly downstream of specified
manhole under the existing PWWF condition including proposed
injections and pipe size upgrades.
(5) d/D improves with same size HDPE upgrade.
(6) The new 18-inch diameter pipeline is the wet weather parallel pipeline.
See Table 14 for model data.

Abbreviations
d/D: Depth over Diameter

Table 14
Trunkline d/D Pre-development vs Proposed Under PWWF
EPASD Master Plan Update
East Palo Alto, California

Manhole	Length (Feet)	Existing Diameter (Inches)	Existing PDWF d/D	Predicted d/D
(1)	--	(2)	(3)	(4)
T12-T11	482	24	1	1
T11-T10	326	24	0.68	1
T10-T9	447	24	1	1
T9-T8	498	24	1	1
T8-T7	502	24	1	1
T7-T6	481	24	0.68	1
T6-T5	382	24	1	1
T5-T4	352	24	1	1
T4-T3	475	24	0.48	0.56
T3-T2	500	24	1	1
T2-T1	506	24	0.76	1
T1-END	329	24	0.45	0.52

Notes
(1) Manhole used to find flow and Depth over Diameter value.
(2) Pipe Diameter directly downstream of Manhole.
(3) Calculated by dividing the depth of flow by pipe diameter. This value is evaluated directly downstream of specified manhole under the existing PDWF condition.
(4) Calculated by dividing the depth of flow by pipe diameter. This value is evaluated directly downstream of specified manhole under the existing PDWF condition including proposed injections.

Abbreviations
d/D: Depth over Diameter

Table 15
Conceptual OPPC Eliminating Surcharge Under Proposed PWWF (1)
EPASD Master Plan Update
East Palo Alto, California

Item No.	Description	Units	Quantity (2)	Unit Price	Budget
Conceptual Opinion of Probable Construction Cost					
1	Mobilization	ls	1	$ 50,000	$ 50,000
2	Traffic Control	ls	1	$ 20,000	$ 20,000
3	Sheeting, Shoring, and Bracing	ls	1	$ 20,000	$ 20,000
4	6-inch DR 17 HDPE Pipe	lf	1,440	$ 150	$ 216,000
5	8-inch DR 17 HDPE Pipe	lf	3,790	$ 200	$ 758,000
6	10-inch DR 17 HDPE Pipe	lf	7,530	$ 250	$ 1,882,500
7	12-inch DR 17 HDPE Pipe	lf	3,470	$ 300	$ 1,041,000
8	14-inch DR 17 HDPE Pipe	lf	4,510	$ 350	$ 1,578,500
9	15-inch DR 17 HDPE Pipe	lf	360	$ 400	$ 144,000
10	16-inch DR 17 HDPE Pipe	lf	1,840	$ 450	$ 828,000
11	18-inch DR 17 HDPE Pipe (3)	lf	8,590	$ 550	$ 4,724,500
12	20-inch DR 17 HDPE Pipe	lf	650	$ 600	$ 390,000
13	24-inch DR 17 HDPE Pipe	lf	3,560	$ 800	$ 2,848,000
14	28-inch DR 17 HDPE Pipe	lf	1,850	$ 950	$ 1,757,500
15	Manholes (3)	ea	168	$ 10,000	$ 1,680,000
16	30% Contingency	%	30%	$ 17,938,000	$ 5,381,400
Subtotal - Conceptual Opinion of Probable Construction Cost					**$ 23,319,400**
Engineering and Administration Cost					
17	Design	%	10%	$ 23,319,400	$ 2,331,940
18	Environmental/Permitting	%	10%	$ 23,319,400	$ 2,331,940
19	Construction Management/ Inspection	%	15%	$ 23,319,400	$ 3,497,910
20	District Administration	%	5%	$ 23,319,400	$ 1,165,970
Subtotal - Engineering and Administration Cost					**$ 9,327,800**
Total Conceptual Opinion of Probable Project Cost					**$ 32,647,200**

Notes
(1) See Table 13, Table 14 and Figure 9 for limits of improvements.
(2) Quantities rounded to nearest 10 feet.
(3) Includes new parallel wet weather sewer main.

Table 16
Proposed Capital Improvement Program
EPASD Master Plan Update
East Palo Alto, California

Manhole (1)	Length (Feet) --	Existing Diameter (Inches) (2)	PDWF Predicted d/D (3)	PWWF Predicted d/D (3)	Proposed Diameter (Inches) (2)	PDWF Proposed d/D (4)	PWWF Proposed d/D (4)
I24-I13	237	6	0.48	1	6	0.44	0.72
L25-L24	342	8	0.69	1	10	0.43	0.53
L24-L23	386	8	0.54	0.72	10	0.36	0.43
L23-L3	351	8	0.69	1	10	0.43	0.53
L3-L2	83	10	1	1	12	0.58	0.54
L2-L1	179	10	0.77	0.72	12	0.48	0.46
L1-L21	223	10	1	1	14	0.55	0.5
L21-K28	68	10	1	1	14	0.6	0.55
K28-K4	242	10	1	1	15	0.64	0.58
K4-K3	238	12	1	1	15	0.51	0.45
K3-K2	190	12	1	1	15	0.58	0.5
K2-K1	451	14	0.74	0.74	15	0.54	0.48
N3-N21 (6)	89	10	0.7	0.58	10	0.6	0.38
N21-N14 (6)	196	10	0.74	0.6	10	0.624	0.38
N14-N2 (6)	88	10	0.77	0.6	10	0.624	0.4
N2-N1 (6)	296	10	0.72	0.58	10	0.6	0.38
O9-O8 (6)	140	6	0.72	0.68	6	0.6	0.56
O7-O6 (6)	427	8	0.81	0.66	8	0.66	0.57
L53-L52 (6)	218	6	0.8	0.52	6	0.64	0.48
L52-L50	224	6	1	0.76	8	0.57	0.42
L50-L49	224	8	0.57	76	10	0.36	0.26
L49-L48	233	8	1	0.6	10	0.5	0.38
L7-L6 (6)	261	6	0.72	0.4	6	0.6	0.32
L9-L4 (6)	162	6	0.72	0.8	6	0.6	0.64
M38-M39	158	8	0.84	1	12	0.36	0.36
M39-M43	241	8	0.84	1	12	0.36	0.36
M43-M42	104	8	1	1	12	0.44	0.46
M42-M41	37	8	1	0.6	12	0.28	0.28
M41-M13	111	8	0.84	1	12	0.36	0.36
M13-M12	276	8	0.84	1	12	0.36	0.36
M12-M40	337	8	0.84	1	12	0.36	0.36
M40-M5	263	8	0.84	1	12	0.36	0.36
M5-M4	373	8	1	1	12	0.52	0.54
M4-M31	143	8	1	1	12	0.48	0.48
M31-M3	357	10	1	1	12	0.54	0.56
M3-M2	380	10	1	1	12	0.58	0.58
I43-I15	62	12	0.44	0.44	15	0.29	0.29
I15-I14	386	12	1	1	15	0.62	0.64
I14-I13	444	12	1	1	15	0.48	0.48
I13-I12	320	12	1	1	15	0.48	0.51
I12-I6	339	12	1	1	15	0.46	0.51
I6-I5	411	18	1	1	24	0.52	0.69
I5-I31	135	18	1	1	24	0.53	0.69

Table 16
Proposed Capital Improvement Program
EPASD Master Plan Update
East Palo Alto, California

Manhole (1)	Length (Feet) --	Existing Diameter (Inches) (2)	PDWF Predicted d/D (3)	PWWF Predicted d/D (3)	Proposed Diameter (Inches) (2)	PDWF Proposed d/D (4)	PWWF Proposed d/D (4)
I31-I4	321	18	1	1	24	0.53	0.69
I4-I3	243	18	1	1	24	0.52	0.69
H36-H35	474	6	1	1	10	0.34	0.55
H35-H34	322	6	0.44	1	10	0.22	0.34
H34-H17	269	6	0.52	1	10	0.24	0.41
H17-H57	397	8	0.75	1	12	0.34	0.66
H57-H16	40	8	0.36	0.69	12	0.18	0.66
H16-H60	351	8	0.48	1	12	0.24	0.32
H60-H15	99	8	0.45	1	12	0.22	0.42
H15-H62	201	8	0.36	0.75	12	0.18	0.34
H62-H14	233	8	0.36	0.75	12	0.18	0.34
H14-H13	446	8	0.45	1	12	0.24	0.44
H13-H12	108	8	0.42	1	12	0.22	0.42
H12-H11	333	8	0.48	1	12	0.24	0.46
H11-H64	198	8	0.48	1	12	0.24	0.48
H64-H71	161	8	0.57	1	12	0.28	0.48
H71-H3	35	8	0.51	1	12	0.26	0.56
C12-C1	265	6	0.72	1	8	0.39	0.6
C48-C11	179	6	0.56	6	6	0.48	0.8
C9-C8	84	6	0.52	1	6	0.44	0.72
C8-C7	401	6	0.56	1	6	0.48	0.8
C7-C6	448	6	0.52	1	6	0.44	0.72
C6-C5	87	6	0.52	1	6	0.44	0.72
C5-C4	328	6	0.56	1	8	0.33	0.51
C4-C3	436	6	0.56	1	8	0.33	0.48
C3-C2	398	6	0.56	1	8	0.33	0.51
C2-C1	204	6	1	1	8	0.48	0.78
C1-B16 (5)	402	8	0.51	1	8	0.45	0.69
B16-B15 (5)	327	8	0.54	1	8	0.48	0.75
B15-B49 (5)	331	8	0.54	1	8	0.48	0.75
B49-B14 (5)	328	8	0.54	1	8	0.45	0.72
B7-B6	380	12	1	1	15	0.46	0.46
B6-B5	158	12	0.38	0.52	15	0.24	0.24
B5-B52	176	12	0.6	1	15	0.37	0.37
B52-B4	360	12	0.52	0.8	15	0.32	0.32
B4-B3	465	12	0.68	1	15	0.42	0.42
B3-B2	239	12	1	1	15	0.5	0.5
B2-A1	181	12	0.62	1	15	0.38	0.38
A1-A2	80	12	0.82	1	15	0.46	0.46
A2-A5	244	12	1	1	15	0.46	0.46
A5-A8	124	15	1	1	18	0.49	0.67
A8-A9	61	15	0.37	0.48	18	0.25	0.32
A9-A10	181	15	1	1	18	0.53	0.73

Table 16
Proposed Capital Improvement Program
EPASD Master Plan Update
East Palo Alto, California

Manhole (1)	Length (Feet) --	Existing Diameter (Inches) (2)	PDWF Predicted d/D (3)	PWWF Predicted d/D (3)	Proposed Diameter (Inches) (2)	PDWF Proposed d/D (4)	PWWF Proposed d/D (4)
A10-A15	299	15	0.51	0.7	18	0.35	0.44
A15-A16	435	15	1	1	18	0.52	0.7
A16-A21	296	15	0.67	1	18	0.43	0.56
A21-A23	155	15	0.5	0.67	18	0.33	0.43
A23-A22	14	15	0.32	0.42	18	0.23	0.28
D66-D65 (6)	413	6	0.72	0.68	6	0.6	0.6
D25-D24	301	6	0.36	1	8	0.21	0.45
D35-D34	178	6	1	1	8	0.54	0.78
D34-D33	293	6	0.56	0.76	8	0.3	0.42
D33-D24	450	6	0.72	1	10	0.39	0.51
D24-D23	350	8	0.57	1	10	0.38	0.55
D23-D22	73	8	0.66	1	10	0.38	0.58
D22-D21	149	8	0.78	1	10	0.48	0.67
D21-D19	391	8	0.72	1	10	0.46	0.62
D19-D10	48	8	0.45	0.6	10	0.31	0.38
D10-D3	489	8	1	1	10	0.5	0.67
D5-D4	70	8	0.84	1	10	0.46	0.58
D4-D3	296	8	0.84	1	10	0.46	0.58
D3-D2	363	12	1	1	15	0.51	0.69
D2-D1	53	12	1	1	16	0.6	1
D1-E4	354	12	0.82	1	16	0.42	0.54
E4-E3	357	12	0.7	1	16	0.38	0.48
E3-E2	280	12	1	1	16	0.45	0.59
E2-E1	283	12	0.82	1	16	0.42	0.54
E1-H9	270	12	1	1	16	0.56	0.8
H9-H73	246	12	1	1	16	0.51	0.7
H73-H74	101	12	1	1	18	0.48	0.64
H74-H8	113	12	1	1	18	0.43	0.57
H8-H7	233	12	1	1	18	0.51	0.69
H7-H75	90	12	1	1	18	0.44	0.59
H75-H6	260	12	1	1	18	0.44	0.59
H6-H5	9	12	1	1	18	0.36	0.47
H5-H4	260	15	1	1	18	0.57	0.79
H4-H3	7	15	0.82	1	18	0.51	0.67
H3-H2	31	15	0.77	1	18	0.49	0.71
H2-I11	37	15	0.43	0.61	18	0.31	0.41
I11-I10	380	15	0.78	1	18	0.51	0.72
I10-I9	221	15	0.69	1	18	0.45	0.64
I9-I8	155	15	1	1	20	0.53	0.77
I8-I7	238	15	1	1	20	0.36	0.48
I7-I6	259	15	0.67	1	20	0.38	0.52
E8-E7	355	8	1	1	12	0.38	0.52
E7-E6	311	8	1	1	12	0.36	0.48

Table 16
Proposed Capital Improvement Program
EPASD Master Plan Update
East Palo Alto, California

Manhole (1)	Length (Feet) --	Existing Diameter (Inches) (2)	PDWF Predicted d/D (3)	PWWF Predicted d/D (3)	Proposed Diameter (Inches) (2)	PDWF Proposed d/D (4)	PWWF Proposed d/D (4)
A29-T29	345	18	0.39	0.51	24	0.26	0.33
T29-T28	234	18	0.37	0.48	24	0.25	0.32
T28-T27	162	18	0.77	1	24	0.47	0.62
T27-T26	356	18	0.49	0.65	24	0.32	0.42
T26-T25	306	18	0.45	0.6	24	0.3	0.38
T25-T24	282	18	1	1	24	0.53	0.73
T24-T23	317	18	0.47	0.63	24	0.31	0.4
T23-T22	446	18	0.52	0.72	24	0.34	0.44
T20-T19	332	18	0.37	0.49	28	0.21	0.27
T19-T18	500	21	0.78	1	28	0.47	0.62
T18-T17	540	21	0.78	1	28	0.46	0.61
T17-T16	482	21	1	1	28	0.49	0.64
T12-T1	6260	(6)	(6)	(6)	18	1	1

Notes
(1) Manhole used to find Q and Depth over Diameter value.
(2) Pipe Diameter directly downstream of Manhole.
(3) Calculated by dividing the depth of flow by pipe diameter.
This value is evaluated directly downstream of specified manhole
under the existing PWWF condition including proposed injections.
(4) Calculated by dividing the depth of flow by pipe diameter.
This value is evaluated directly downstream of specified
manhole under the existing PWWF condition including proposed
injections and pipe size upgrades.
(5) d/D improves with same size HDPE upgrade.
(6) The new 18-inch diameter pipeline is the wet weather parallel pipeline.

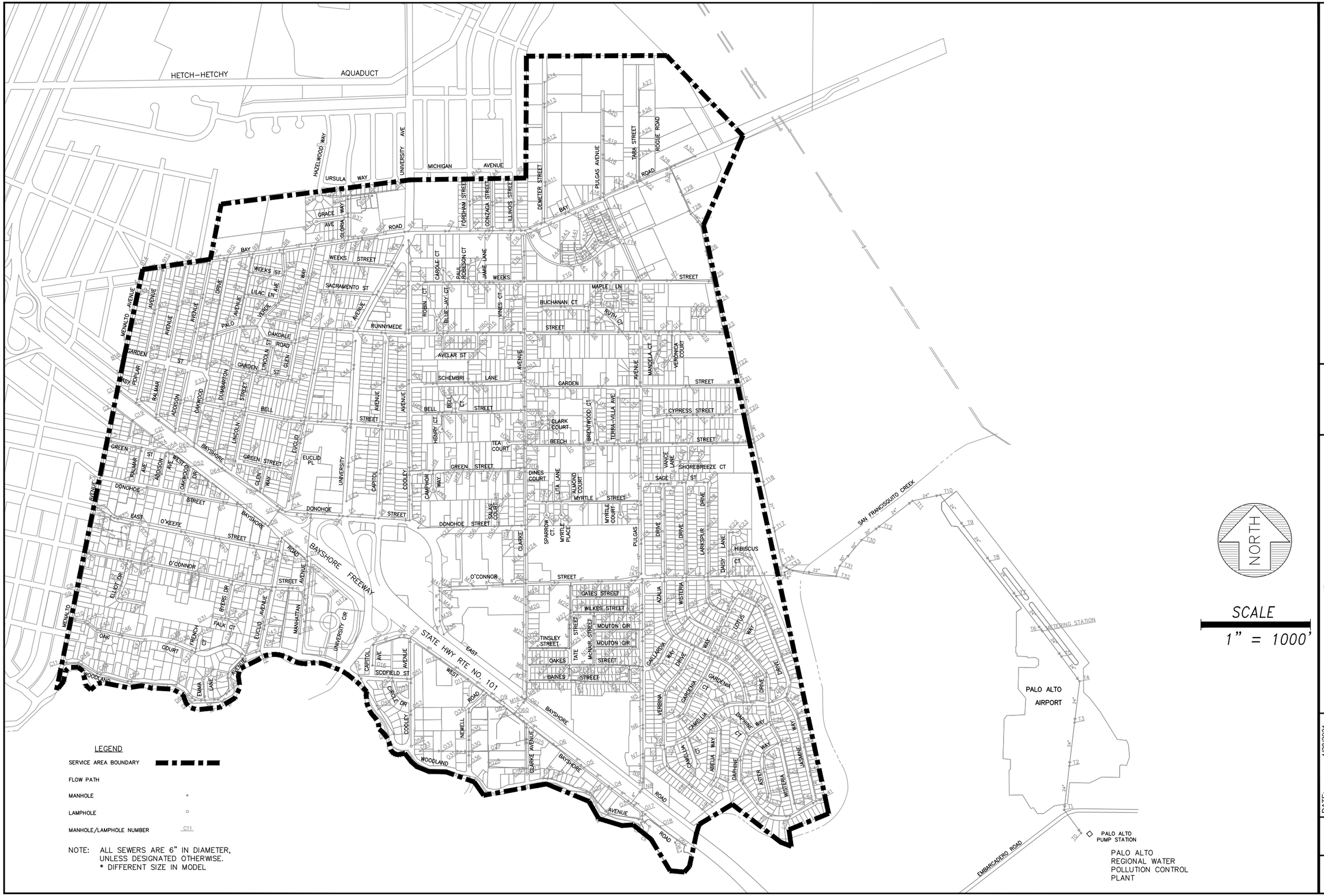
Abbreviations
d/D: Depth over Diameter

Table 17
Conceptual OPPC for Proposed CIP (1)
EPASD Master Plan Update
East Palo Alto, California

Item No.	Description	Units	Quantity (2)	Unit Price	Budget
Conceptual Opinion of Probable Construction Cost					
1	Mobilization	ls	1	$ 50,000	$ 50,000
2	Traffic Control	ls	1	$ 20,000	$ 20,000
3	Sheeting, Shoring, and Bracing	ls	1	$ 20,000	$ 20,000
4	6-inch DR 17 HDPE Pipe	lf	2,810	$ 150	$ 421,500
5	8-inch DR 17 HDPE Pipe	lf	4,440	$ 200	$ 888,000
6	10-inch DR 17 HDPE Pipe	lf	5,590	$ 250	$ 1,397,500
7	12-inch DR 17 HDPE Pipe	lf	6,320	$ 300	$ 1,896,000
8	14-inch DR 17 HDPE Pipe	lf	290	$ 350	$ 101,500
9	15-inch DR 17 HDPE Pipe	lf	5,310	$ 400	$ 2,124,000
10	16-inch DR 17 HDPE Pipe	lf	1,840	$ 450	$ 828,000
11	18-inch DR 17 HDPE Pipe (3)	lf	8,590	$ 550	$ 4,724,500
12	20-inch DR 17 HDPE Pipe	lf	650	$ 600	$ 390,000
13	24-inch DR 17 HDPE Pipe	lf	3,560	$ 800	$ 2,848,000
14	28-inch DR 17 HDPE Pipe	lf	1,850	$ 950	$ 1,757,500
15	Manholes (3)	ea	185	$ 10,000	$ 1,850,000
16	30% Contingency	%	30%	$ 19,316,500	$ 5,794,950
Subtotal - Conceptual Opinion of Probable Construction Cost					**$ 25,111,500**
Engineering and Administration Cost					
17	Design	%	10%	$ 25,111,500	$ 2,511,150
18	Environmental/Permitting	%	10%	$ 25,111,500	$ 2,511,150
19	Construction Management/ Inspection	%	15%	$ 25,111,500	$ 3,766,725
20	District Administration	%	5%	$ 25,111,500	$ 1,255,575
Subtotal - Engineering and Administration Cost					**$ 10,044,600**
Total Conceptual Opinion of Probable Project Cost					**$ 35,156,100**

Notes
(1) See Table 16 and Figure 10 for limits of improvements.
(2) Quantities rounded to nearest 10 feet.
(3) Includes new parallel wet weather sewer main.

EPASD SANITARY SEWER SERMCE AREA
EPASD MASTER PLAN UPDATE
EAST PALO ALTO, CA



LEGEND

- SERVICE AREA BOUNDARY
- FLOW PATH
- MANHOLE
- LAMPHOLE
- MANHOLE/LAMPHOLE NUMBER C11

NOTE: ALL SEWERS ARE 6" IN DIAMETER, UNLESS DESIGNATED OTHERWISE.
* DIFFERENT SIZE IN MODEL

SCALE
1" = 1000'

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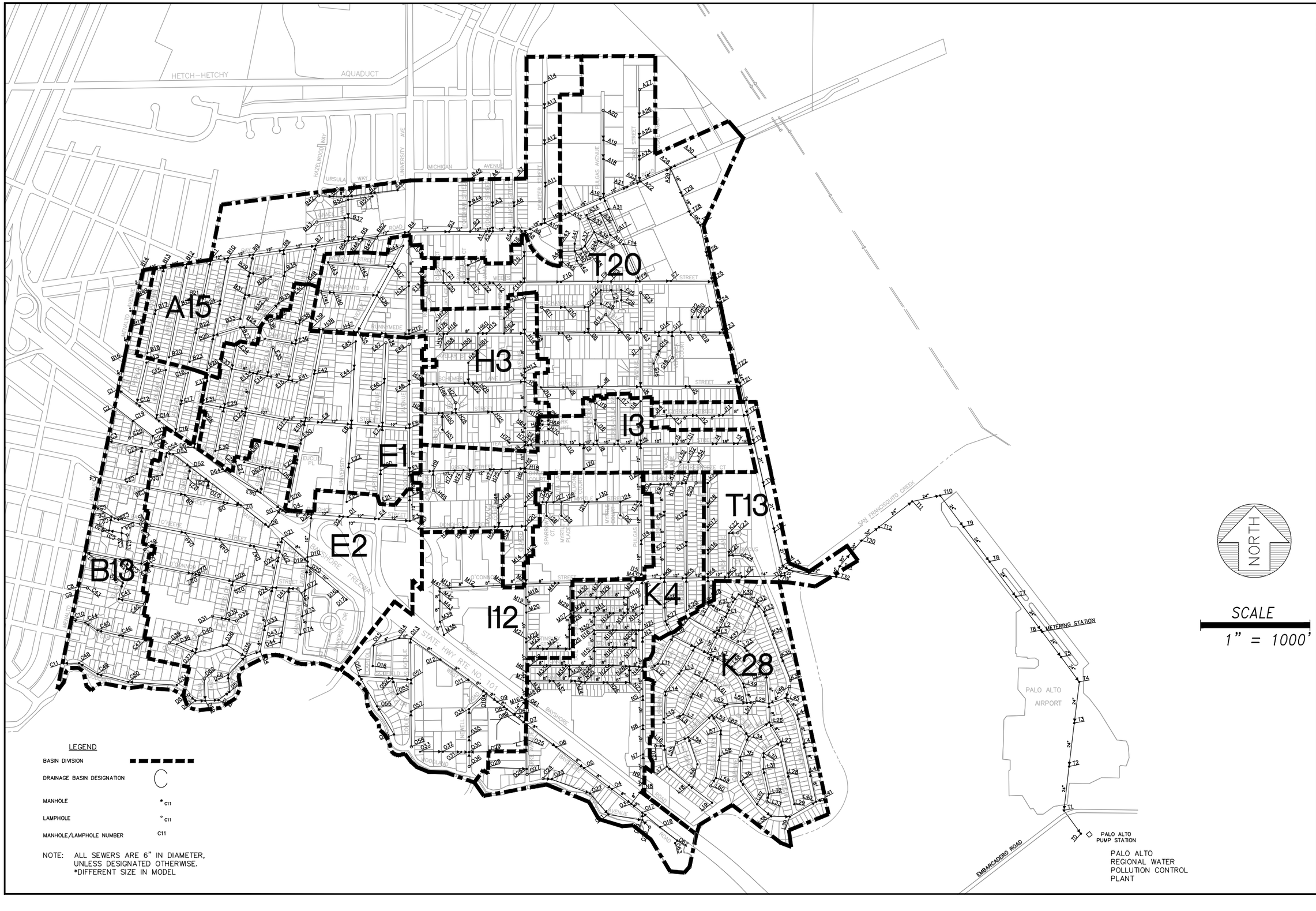
DRAWN:	RAM
CHECKED:	JF
PROJ. ENGR:	JJT

FIGURE
1

JOB NO.
2052



EPASD BASIN FLOW MONITORING SITES

EPASD MASTER PLAN UPDATE
EAST PALO ALTO, CA

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FIGURE 2

JOB NO. 2052

EXISTING PWWF CAPACITY DEFICIENCIES
EPASD MASTER PLAN UPDATE
EAST PALO ALTO, CA

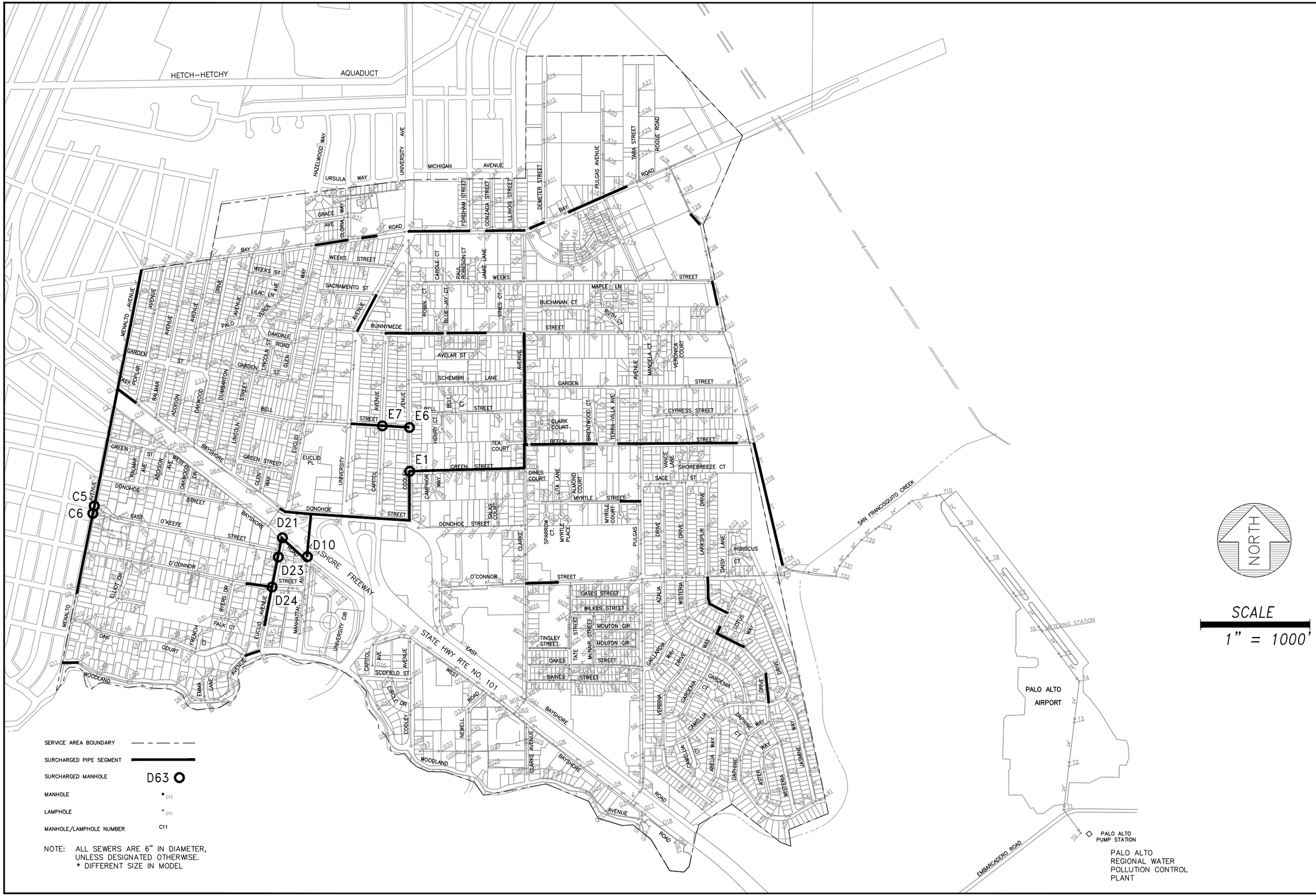

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FIGURE
3

JOB NO.
2052

PROPOSED IMPROVEMENTS TO ELIMINATE SURCHARGING EXISTING CONDITIONS

EPASD MASTER PLAN UPDATE

EAST PALO ALTO, CA

REPLACE 1565LF WITH NEW HDPE 16" SS

REPLACE 2448LF WITH NEW HDPE 24" SS

REPLACE 2283LF WITH NEW HDPE 14" SS

REPLACE 1065LF WITH NEW HDPE 8" SS

REPLACE 1281LF WITH NEW HDPE 12" SS

REPLACE 1388LF WITH NEW HDPE 10" SS

REPLACE 265LF WITH NEW HDPE 8" SS

REPLACE 2602LF WITH NEW HDPE 10" SS

REPLACE 666LF WITH NEW HDPE 10" SS

REPLACE 2400LF WITH NEW HDPE 24" SS

T22–T20 EXISTING HDPE 24" SS

REPLACE 1854LF WITH NEW HDPE 24" SS

REPLACE 1620LF WITH NEW HDPE 18" SS

REPLACE 237LF WITH NEW HDPE 6" SS

REPLACE 1366LF WITH NEW HDPE 8" SS

REPLACE 366LF WITH NEW HDPE 10" SS

REPLACE 1327LF WITH NEW HDPE 15" SS

REPLACE 301LF WITH NEW HDPE 6" SS

REPLACE 363LF WITH NEW HDPE 14" SS

REPLACE 1500LF WITH NEW HDPE 10" SS

REPLACE 373LF WITH NEW HDPE 8" SS

REPLACE 310LF WITH NEW HDPE 14" SS

REPLACE 223LF WITH NEW HDPE 12" SS

REPLACE 1020LF WITH NEW HDPE 6" SS

REPLACE 921LF WITH NEW HDPE 8" SS

REPLACE 179LF WITH NEW HDPE 6" SS

REPLACE 1341LF WITH NEW HDPE 10" SS

HETCH–HETCHY AQUADUCT

BAYSHORE FREEWAY

STATE HWY RTE NO. 101

SAN FRANCISQUITO CREEK

METERING STATION

PALO ALTO AIRPORT

PALO ALTO PUMP STATION

EMBARCADERO ROAD

PALO ALTO REGIONAL WATER POLLUTION CONTROL PLANT

LEGEND

SERVICE AREA BOUNDARY

PROPOSED PIPE TO BE REPLACED

MANHOLE

LAMPHOLE

MANHOLE/LAMPHOLE NUMBER C11

NOTE: ALL SEWERS ARE 6" IN DIAMETER, UNLESS DESIGNATED OTHERWISE.
* DIFFERENT SIZE IN MODEL

UPSIZE TO 6"
UPSIZE TO 8"
UPSIZE TO 10"
UPSIZE TO 12"
UPSIZE TO 14"
UPSIZE TO 15"
UPSIZE TO 16"
UPSIZE TO 18"
UPSIZE TO 24"

NORTH

SCALE
1" = 1000'

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PROJ. ENGR:	JJT

FIGURE
4

JOB NO.
2052

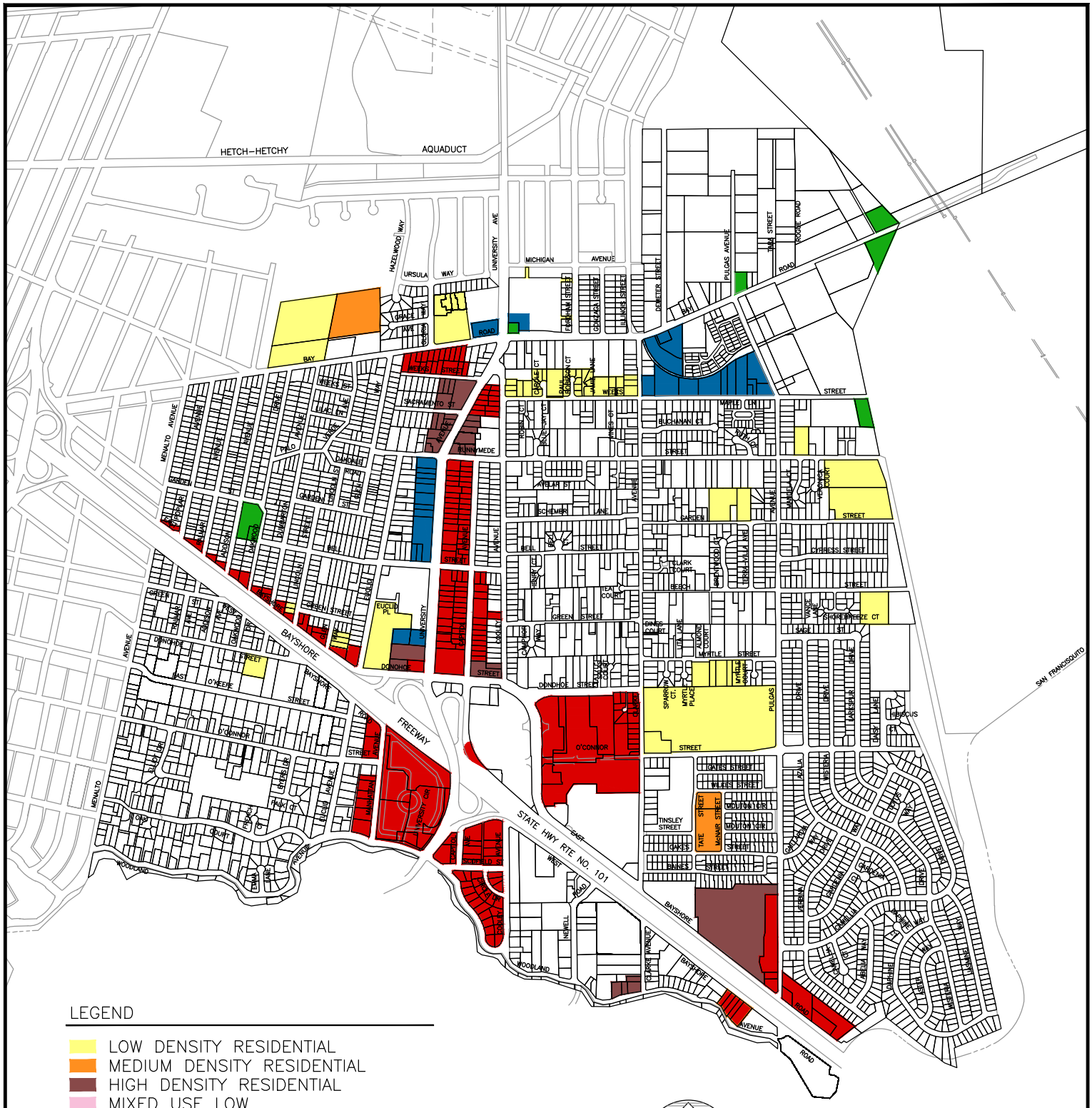

FIGURE 5

SCALE
1" = 1/4 Mile

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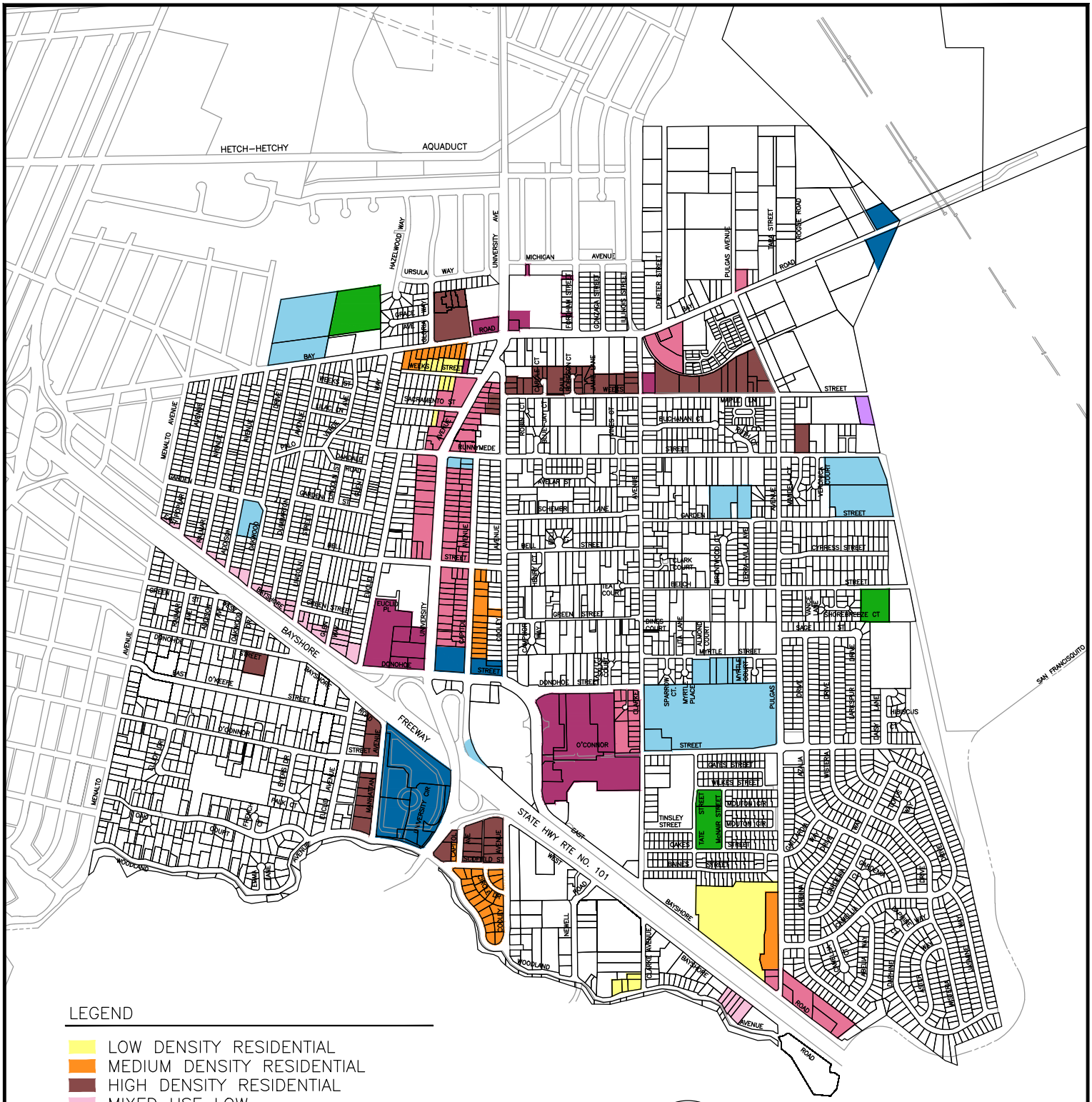
CITY OF EAST PALO ALTO

2014 LAND USE

MASTER PLAN UPDATE



LEGEND

- LOW DENSITY RESIDENTIAL
- MEDIUM DENSITY RESIDENTIAL
- HIGH DENSITY RESIDENTIAL
- MIXED USE LOW
- MIXED USE CORRIDOR
- MIXED USE HIGH
- COMMERCIAL
- OFFICE
- INDUSTRIAL BUFFER
- PARKS/RECREATION/CONSERVATION
- PUBLIC/INSTITUTIONAL

FIGURE 6

SCALE
1" = 1/4 Mile

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CITY OF EAST PALO ALTO

2035 LAND USE

MASTER PLAN UPDATE

LEGEND

- SERVICE AREA BOUNDARY
- DRAINAGE BASIN DESIGNATION — C
- PARCEL DIVISIONS
- FLOW INJECTION
- INJECTION MANHOLE — D63
- MANHOLE — C11
- LAMPHOLE — C11
- MANHOLE/LAMPHOLE NUMBER — C11

PALO ALTO
REGIONAL WATER
POLLUTION CONTROL
PLANT

NORTH

SCALE
1" = 1000'

MANHOLE INJECTION FLOW

MANHOLE	AVERAGE DRY WEATHER FLOW (CFS)	PEAK DRY WEATHER FLOW (CFS)
A8	0.0437	0.0673
A16	0.0072	0.0108
A18	0.0091	0.0137
A30	0.0558	0.0837
B4	0.1644	0.2614
C16	0.0064	0.0116
D1	0.0436	0.0637
D5	0.0140	0.0241
D8	0.0074	0.0128
D22	0.1649	0.2836
E1	0.0005	0.0008
E20	0.0403	0.0589
E22	0.0425	0.0621
E24	0.0950	0.1387
E30	0.0053	0.0077
E45	0.1148	0.1676
E47	0.0380	0.0554
F8	0.0796	0.1194
F11	0.0214	0.0321
F20	0.0176	0.0264
G2	0.0053	0.0080
G14	0.0067	0.0101
H24	0.0399	0.0601
H32	0.0082	0.0131
H36	0.0772	0.1266
H42	0.0058	0.0094
M32	0.0338	0.0537
M38	0.3887	0.6341
N8	0.0809	0.1261
O3	0.0072	0.0115
O16	0.0154	0.0262
O27	0.0009	0.0014
O51	0.0137	0.0233
O58	0.0081	0.0138
T25	0.0071	0.0106

ADDITIONAL SANITARY FLOWS INJECTION LOCATIONS
EPASD MASTER PLAN UPDATE
EAST PALO ALTO, CA

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FIGURE
7

JOB NO.
2052

PDWF IMPROVEMENTS RESTORE d/D UNDER PROPOSED CONDITIONS

EPASD MASTER PLAN UPDATE

EAST PALO ALTO, CA

REPLACE 1566LF WITH NEW HDPE 18" SS

REPLACE 1403LF WITH NEW HDPE 21" SS

REPLACE 2283LF WITH NEW HDPE 15" SS

REPLACE 1045LF WITH NEW HDPE 24" SS

REPLACE 1321LF WITH NEW HDPE 12" SS

T22–T20 EXISTING HDPE 24" SS

REPLACE 265LF WITH NEW HDPE 6" SS

REPLACE 332LF WITH NEW HDPE 24" SS

REPLACE 413LF WITH NEW HDPE 6" SS

REPLACE 1522LF WITH NEW HDPE 26" SS

REPLACE 666LF WITH NEW HDPE 12" SS

REPLACE 1110LF WITH NEW HDPE 21" SS

REPLACE 474LF WITH NEW HDPE 8" SS

REPLACE 204LF WITH NEW HDPE 8" SS

REPLACE 1121LF WITH NEW HDPE 15" SS

REPLACE 366LF WITH NEW HDPE 10" SS

REPLACE 3012LF WITH NEW HDPE 15" SS

REPLACE 1588LF WITH NEW HDPE 18" SS

REPLACE 1077LF WITH NEW HDPE 10" SS

REPLACE 1551LF WITH NEW HDPE 15" SS

REPLACE 920LF WITH NEW HDPE 8" SS

REPLACE 2780LF WITH NEW HDPE 12" SS

REPLACE 291LF WITH NEW HDPE 14" SS

REPLACE 669LF WITH NEW HDPE 10" SS

REPLACE 262LF WITH NEW HDPE 12" SS

REPLACE 162LF WITH NEW HDPE 6" SS

REPLACE 351LF WITH NEW HDPE 8" SS

REPLACE 261LF WITH NEW HDPE 6" SS

REPLACE 218LF WITH NEW HDPE 6" SS

REPLACE 457LF WITH NEW HDPE 10" SS

REPLACE 224LF WITH NEW HDPE 8" SS

REPLACE 140LF WITH NEW HDPE 6" SS

REPLACE 427LF WITH NEW HDPE 8" SS

HETCH–HETCHY AQUADUCT

BAYSHORE FREEWAY

STATE HWY RTE NO. 101

SAN FRANCISQUITO CREEK

METERING STATION

PALO ALTO AIRPORT

PALO ALTO PUMP STATION

EMBARCADERO ROAD

PALO ALTO REGIONAL WATER POLLUTION CONTROL PLANT

LEGEND

SERVICE AREA BOUNDARY

PROPOSED PIPE TO BE REPLACED

MANHOLE

LAMPHOLE

MANHOLE/LAMPHOLE NUMBER C11

NOTE: ALL SEWERS ARE 6" IN DIAMETER, UNLESS DESIGNATED OTHERWISE.
* DIFFERENT SIZE IN MODEL

UPSIZE TO 6"
UPSIZE TO 8"
UPSIZE TO 10"
UPSIZE TO 12"
UPSIZE TO 14"
UPSIZE TO 15"
UPSIZE TO 18"
UPSIZE TO 21"
UPSIZE TO 24"
UPSIZE TO 26"

NORTH

SCALE
1" = 1000'

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PROJ. ENGR:	JJT

FIGURE
8

JOB NO.
2052

PWWF IMPROVEMENTS NO SURCHARGE UNDER PROPOSED CONDITIONS

EPASD MASTER PLAN UPDATE

EAST PALO ALTO, CA

HETCH–HETCHY AQUADUCT

REPLACE 1565LF WITH NEW HDPE 18" SS

REPLACE 2448LF WITH NEW HDPE 24" SS

REPLACE 2283LF WITH NEW HDPE 14" SS

REPLACE 1065LF WITH NEW HDPE 10" SS

REPLACE 652LF WITH NEW HDPE 20" SS

T22–T20 EXISTING HDPE 24" SS

REPLACE 265LF WITH NEW HDPE 8" SS

REPLACE 2602LF WITH NEW HDPE 12" SS

REPLACE 666LF WITH NEW HDPE 10" SS

REPLACE 1742LF WITH NEW HDPE 18" SS

REPLACE 1854LF WITH NEW HDPE 28" SS

REPLACE 366LF WITH NEW HDPE 10" SS

REPLACE 2754LF WITH NEW HDPE 8" SS

REPLACE 237LF WITH NEW HDPE 6" SS

REPLACE 1110LF WITH NEW HDPE 24" SS

REPLACE 1843LF WITH NEW HDPE 16" SS

REPLACE 1489LF WITH NEW HDPE 14" SS

REPLACE 363LF WITH NEW HDPE 15" SS

REPLACE 1950LF WITH NEW HDPE 10" SS

REPLACE 380LF WITH NEW HDPE 12" SS

REPLACE 738LF WITH NEW HDPE 14" SS

NEW PARALELL 18" HDPE SS 6260 LF

REPLACE 485LF WITH NEW HDPE 12" SS

REPLACE 1020LF WITH NEW HDPE 6" SS

REPLACE 301LF WITH NEW HDPE 8" SS

REPLACE 471LF WITH NEW HDPE 8" SS

REPLACE 179LF WITH NEW HDPE 6" SS

REPLACE 2400LF WITH NEW HDPE 10" SS

REPLACE 1079LF WITH NEW HDPE 10" SS

SAN FRANCISQUITO CREEK

WATERING STATION

PALO ALTO AIRPORT

PALO ALTO PUMP STATION

PALO ALTO REGIONAL WATER POLLUTION CONTROL PLANT

EMBARCADERO ROAD

STATE HWY RTE NO. 101

BAYSHORE FREEWAY

LEGEND

SERVICE AREA BOUNDARY

PROPOSED PIPE TO BE REPLACED

MANHOLE

LAMPHOLE

MANHOLE/LAMPHOLE NUMBER C11

NOTE: ALL SEWERS ARE 6" IN DIAMETER, UNLESS DESIGNATED OTHERWISE.
* DIFFERENT SIZE IN MODEL

UPSIZE TO 6"
UPSIZE TO 8"
UPSIZE TO 10"
UPSIZE TO 12"
UPSIZE TO 14"
UPSIZE TO 15"
UPSIZE TO 16"
UPSIZE TO 18"
UPSIZE TO 20"
UPSIZE TO 24"
UPSIZE TO 28"

NORTH

SCALE 1" = 1000'

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FIGURE 9

JOB NO. 2052

COMBINED IMPROVEMENTS NO SURCHARGE UNDER PROPOSED CONDITIONS

EPASD MASTER PLAN UPDATE
EAST PALO ALTO, CA

REPLACE 1565LF WITH NEW HDPE 18" SS

REPLACE 2448LF WITH NEW HDPE 24" SS

REPLACE 2283LF WITH NEW HDPE 15" SS

REPLACE 1065LF WITH NEW HDPE 10" SS

REPLACE 652LF WITH NEW HDPE 20" SS

T22–T20 EXISTING HDPE 24" SS

REPLACE 265LF WITH NEW HDPE 8" SS

REPLACE 2602LF WITH NEW HDPE 12" SS

REPLACE 666LF WITH NEW HDPE 12" SS

REPLACE 1742LF WITH NEW HDPE 18" SS

REPLACE 1854LF WITH NEW HDPE 28" SS

REPLACE 413LF WITH NEW HDPE 6" SS

REPLACE 366LF WITH NEW HDPE 10" SS

REPLACE 2754LF WITH NEW HDPE 8" SS

REPLACE 1110LF WITH NEW HDPE 24" SS

REPLACE 237LF WITH NEW HDPE 6" SS

REPLACE 1121LF WITH NEW HDPE 15" SS

REPLACE 1843LF WITH NEW HDPE 16" SS

REPLACE 1551LF WITH NEW HDPE 15" SS

REPLACE 363LF WITH NEW HDPE 15" SS

REPLACE 1950LF WITH NEW HDPE 10" SS

REPLACE 291LF WITH NEW HDPE 14" SS

NEW PARALELL 18" HDPE SS 6260 LF

REPLACE 2780LF WITH NEW HDPE 12" SS

REPLACE 669LF WITH NEW HDPE 10" SS

REPLACE 1020LF WITH NEW HDPE 6" SS

REPLACE 301LF WITH NEW HDPE 8" SS

REPLACE 471LF WITH NEW HDPE 8" SS

REPLACE 162LF WITH NEW HDPE 6" SS

REPLACE 179LF WITH NEW HDPE 6" SS

REPLACE 261LF WITH NEW HDPE 6" SS

REPLACE 1079LF WITH NEW HDPE 10" SS

REPLACE 218LF WITH NEW HDPE 6" SS

REPLACE 457LF WITH NEW HDPE 10" SS

REPLACE 224LF WITH NEW HDPE 8" SS

REPLACE 140LF WITH NEW HDPE 6" SS

REPLACE 427LF WITH NEW HDPE 8" SS

HETCH–HETCHY AQUADUCT

SAN FRANCISQUITO CREEK

WATERING STATION

PALO ALTO AIRPORT

PALO ALTO PUMP STATION

PALO ALTO REGIONAL WATER POLLUTION CONTROL PLANT

EMBARCADERO ROAD

STATE HWY RTE NO. 101

BAYSHORE FREEWAY

LEGEND

SERVICE AREA BOUNDARY

PROPOSED PIPE TO BE REPLACED

MANHOLE

LAMPHOLE

MANHOLE/LAMPHOLE NUMBER C11

NOTE: ALL SEWERS ARE 6" IN DIAMETER, UNLESS DESIGNATED OTHERWISE.
* DIFFERENT SIZE IN MODEL

UPSIZE TO 6"
UPSIZE TO 8"
UPSIZE TO 10"
UPSIZE TO 12"
UPSIZE TO 14"
UPSIZE TO 15"
UPSIZE TO 16"
UPSIZE TO 18"
UPSIZE TO 20"
UPSIZE TO 24"
UPSIZE TO 28"

NORTH

SCALE
1" = 1000'

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CHECKED:	JF
PROJ. ENGR:	JJT

FIGURE
10

JOB NO.
2052

Appendix N

Annual SSMP Audit Report Form

East Palo Alto Sanitation District
Sewer System Management Plan (SSMP)
2021 Biennial Audit Report Checklist

The purpose of the Biennial SSMP Audit is to evaluate the effectiveness of EPASD's SSMP and to identify deficiencies, if any, and steps to correct them. The audit is submitted pursuant to the San Francisco Bay Regional Water Quality Control Board's Sewer System Management Plan Development Guide, July 2005.

Directions: Please check **YES** or **No** for each question. If **NO** is answered for any question, describe the updates/changes needed and the timeline to complet those changes in the *"Sewer System Management Plan Change Log"* that follows this form.

		YES	NO
ELEMENT 1 - GOALS			
A.	Are the goals stated in the SSMP still appropriate and accurate?	☑	☐
ELEMENT 2 - ORGANIZATION			
A.	Is the EPASD Telephone List Current?	☐	☑
B.	Is the Sanitary Sewer Overflow (SSO) Responder Telephone List current?	☐	☑
C.	Is Figure 1, *EPASD Organization Chart* , current?	☑	☐
D.	Are the position descriptions an accurate portrayal of staff responsibilities?	☑	☐
E.	Is the *Chain of Communication for Responding to SSOs* accurate and up to date?	☐	☑
ELEMENT 3 - LEGAL AUTHORITY	Does the SSMP contain excerpts from the current EPASD ordinances and regulations documenting the District's legal authority to:		
A.	Prevent illicit discharges?	☑	☐
B.	Require proper design and construction of sewers and connections?	☑	☐
C.	Ensure access for maintenance, inspection, or repairs for portions of the lateral owned or mainteaind by EPASD?	☑	☐
D.	Limit discharges of fats, oil, and grease?	☑	☐
E.	Enforce any violation of its sewer ordinances?	☑	☐
ELEMENT 4 - OPERATIONS AND MAINTENANCE			
	Collection System Maps		
A.	Does the SSMP reference the current process and procedures for maintaining EPASD's wastewater collection system maps?	☐	☑
B.	Are EPASD's wastewater collection system maps complete, current, and sufficiently detailed?	☑	☐
	Resources and Budget		
C.	Does EPASD allocate sufficiennt funds for the effective operation, maintenance, and repair of the wastewater collection system and is the current budget structure documented in the SSMP?	☐	☑
	Prioritized Preventive Maintenance		
D.	Does the SSMP describe current preventive maintenance activities and the system for prioritizing the cleaning of sewer lines?	☑	☐
E.	Based upon information in the Annual SSO Report, are EPASD's preventive maintenance activites sufficient and effective in minimizing SSOs and blockages?	☑	☐
	Scheduled Inspections and Condition Assessments		
F.	Is there an ongoing condition assessment program sufficient to develop a capital improvement plan addressing the proper management and protection of infrastructure assets? Are the current components of this program documented in the SSMP?	☑	☐

	Contingency Equipment and Replacment History		
G.	Does the SSMP list the major equipment currently used in the operation and maintenance of the collection system and document the procedures of inventroy management	☐	☑
H.	Are contingency equipment and relacement parts sufficient to respond to emergencies and properly conduct regular mainteance?	☐	☑
	Training		
I.	Is the training calendar current?	☐	☑
J.	Does the SSMP document current training expectations and programs within EPASD?	☐	☑
	Outreach to Plumbers and Building Contractors		
K.	Does the SSMP document current outreach efforts to plumbers and building contrators?	☐	☑
ELEMENT 5 - DESIGN AND PERFORMANCE STANDARDS			
A.	Does the SSMP contain current design and construction standards for the installation of new sanitary sewer systems, pump stations and other appurtenances and for the rehabilitation and repair of existing sanitary sewer systems?	☐	☑
B.	Does the SSMP document current procedures and standards for inspecting and testing the installation of new sewers, pumps, and other appurtenances and the rehabilitaion and repair of existing sewer lines?	☐	☑
ELEMENT 6 - OVERFLOW EMERGENCY RESPONSE PLAN			
A.	Does EPASD's Sanitary Sewer Overflow Emergency Response Plan establish procedures for the emergency response, notification, and reporting of sanitary sewer overflows (SSOs)?	☑	☐
B.	Are EPASD staff and contractor personnel approriately trained on the procedures of the Overflow Emergency Response Plan?	☐	☑
C.	Considering performance indicator data in the Annual SSO Report, is the Overflow Emergency Response Plan effective in handling SSOs in order to safeguard public health and the environment?	☑	☐
ELEMENT 7 - FATS, OILS, AND GREASE (FOG) CONTROL PROGRAM			
A.	Does the Fats, Oils, and Grease (FOG) Control Program include efforts to educate the public on the proper handling and disposal of FOG?	☑	☐
B.	Does EPASD's FOG Control Porgram identify sections of the collection system subject to FOG blockages, estalish a cleaning schedule and address source control measures to minimize these blockages?	☑	☐
C.	Are requirements for grease removal devices, best management practices (BMP), record keeping, and reporting established in EPASD's FOG Control Program?	☑	☐
D.	Does the City have sufficient legal authority to implement and enforce the FOG Control Program?	☑	☐
E.	Is the current FOG program effective in minimizing blockages of sewer line resulting from discharges of FOG to the system?	☑	☐
ELEMENT 8 - SYSTEM EVALUATION AND CAPACITY ASSURANCE PLAN			
A.	Does the EPASD Sanitary Sewer System Master Plan evaluate hydraulic deficiencies in the system, establish sufficient design criteriarecommend both short and long term cpapcity enhancement and improvement projects?	☑	☐
B.	Does EPASD's Capital Improvement Plan (CIP) establish a schedule of approximate completion dates for both short and long-term improvements, and is the schedule reviewed and updated to reflect current budgetary capabilities and activity accomplishmets?	☑	☐

ELEMENT 9 - MONITORING, MEASUREMENT, AND PROGRAM MODIFICATIONS			
A.	Maintain relevant information to establish, evaluate, and prioritize SSMP activities	☑	☐
B.	Monitor implemntation of the SSMP	☑	☐
C.	Measure, where appropriate, performance of the elements of the SSMP	☑	☐
D.	Assess success of the preventive maintenance program	☑	☐
E.	Update SSMP program elements based on monitoring or performance	☑	☐
F.	Identify and illustrate SSO trends	☑	☐
ELEMENT 10 - SSMP PROGRAM AUDITS			
A.	Conduct periodic audits and document results in audit reports	☑	☐
B.	Record results and changes made and/or corrective actions taken	☑	☐
ELEMENT 11 - COMMUNICATIONS PROGRAM			
A.	Communicate with the public regarding preparation of the SSMP	☑	☐
B.	Communicate with the public regarding SSMP performance	☑	☐
C.	Communicate with Palo Alto Regional Water Quality Control Plant, City of Palo Alto and other tributary or satellite systems	☑	☐

Appendix O

SSMP Change Log

East Palo Alto Sanitation District
Sewer System Management Plan (SSMP)
Change Log

Date	SSMP Element	Description of Change/Revision	Authorized by:	Date Completed
Aug-21	2	EPASD Telephone List - updated		
Aug-21	2	SSO Responder Telephone list - added		
Aug-21	2	Figure 2 Organization Chart - updated		7/22/2021
Aug-21	2	SSO Response Chain of Communication - defined		7/22/2021
Aug-21	4	Process and procedures for updating system maps - added		
Aug-21	4	Budget structure documented in the SSMP - added		
Aug-21	4	List of major equipment - added		
Aug-21	4	Spare parts list and contingencies (rental companies) - added		
Aug-21	4	Training Calendar - updated		
Aug-21	4	Training expectations defined in SSMP - added		
Aug-21	5	Website link to design standards - updated		
Aug-21	5	Website link to performance standards - updated		
Aug-21	6	OERP updates per the 2013 MRP - added		7/22/2021
Aug-21	6	Documentation of training on the OERP - added		
Aug-21	7	Documentation of FSE inspection schedule and results - added		
Aug-21	10	Biennial audit report form - updated		7/22/2021
Aug-21	10	SSMP Change Log - updated		7/22/2021
Aug-21	11	Communications with PARWQC Plant and others - added		