REGIONAL WATER QUALITY CONTROL PLANT

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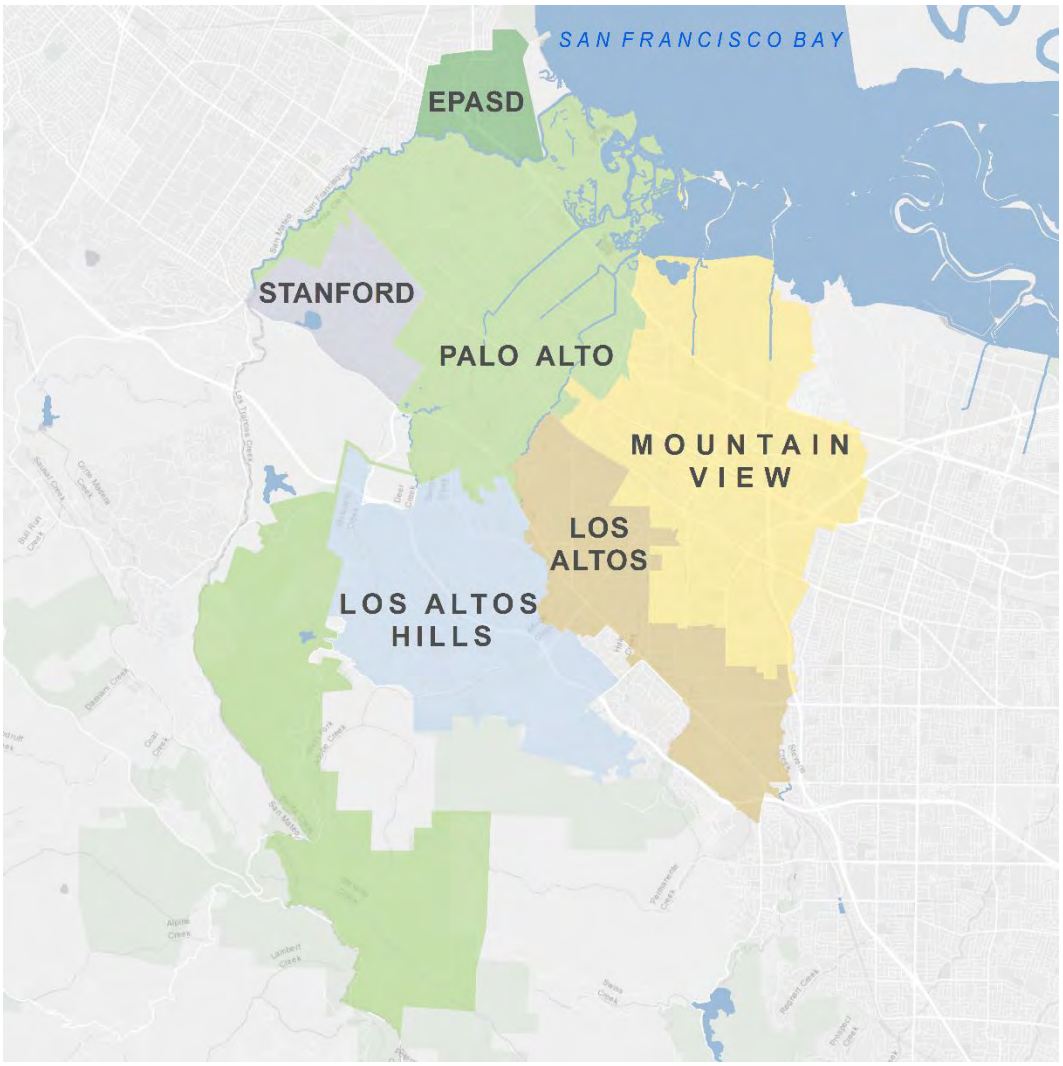
2017

PRETREATMENT PROGRAM ANNUAL REPORT



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

PALO ALTO REGIONAL WATER QUALITY CONTROL PLANT
2017 PRETREATMENT PROGRAM ANNUAL REPORT

Report Date:	February 28, 2018
Period Covered by This Report:	January 1, 2017 to December 31, 2017
Period Covered by Previous Report:	January 1, 2016 to December 31, 2016
NPDES Permit Holder:	City of Palo Alto
Name of Wastewater Treatment Plant:	Palo Alto Regional Water Quality Control Plant
NPDES Permit Number:	CA0037834

Person to contact concerning information contained in this report:

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Manager, Environmental Control Programs
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Palo Alto, CA 94303
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I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

2/26/18
Date

James A. Allen
Signature of Official

JAMES ALLEN
Manager, Palo Alto Regional Water Quality Control Plant

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PALO ALTO REGIONAL WATER QUALITY CONTROL PLANT
2017 PRETREATMENT PROGRAM ANNUAL REPORT
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B. INTRODUCTION

B.1 Background

The Palo Alto Regional Water Quality Control Plant (RWQCP or Plant) provides advanced secondary treatment of domestic, commercial, and industrial wastewater collected from the cities of Los Altos, Mountain View, and Palo Alto; the town of Los Altos Hills; the East Palo Alto Sanitary District; and the Stanford University campus, which is located in an unincorporated area of Santa Clara County (Partner Agencies or Partners). The RWQCP service area covers approximately 37,800 acres and includes a residential population of approximately 222,000 people. Wastewater treatment processes at the Plant, as detailed below, include screening and grit removal, primary sedimentation, biological treatment (fixed film reactors and activated sludge), secondary clarification, filtration (dual media filter), and disinfection. The Plant discharges under NPDES Permit No. CA0037834, Order No. R2-2014-0024, adopted by the San Francisco Bay Regional Water Quality Control Board on June 11, 2014.

In 2017, the Plant's average daily influent flow was 20.58 million gallons per day (MGD). Of the wastewater flow to the RWQCP, about 60 percent is estimated to come from residential sources, 30 percent from commercial businesses and institutions, and ten percent from industrial sources (approximately three percent from permitted industrial dischargers based on prior studies).

The City of Palo Alto wastewater collection system is a separate sanitary sewer system consisting of approximately 216.35 miles of pipe, ranging from 4 inches to 72 inches in diameter, and one lift station. Outside the City of Palo Alto, wastewater is conveyed to the Plant by several satellite collection systems owned and operated by the cities of Los Altos and Mountain View, the town of Los Altos Hills, the East Palo Alto Sanitary District, and Stanford University. Each Partner Agency is responsible for an ongoing program of maintenance and capital improvements for sewer lines and pump stations within its respective jurisdiction to ensure adequate capacity and reliability. Other responsibilities include managing sanitary sewer overflows, controlling inflow and infiltration, and implementing collection system maintenance.

The communities served by the Plant are composed primarily of low-density residential housing. Several industrial areas and commercial districts are contained within the service area. The majority of the service area has been fully developed and major increases in population or industrial discharges to the Plant are not anticipated. Recent years have seen a trend towards high density infill and the conversion of under-utilized light industrial and commercial properties into residential and mixed commercial residential properties. A shift continues toward office space, software development, and research and development facilities with few remaining larger industrial facilities.

B.2 Pretreatment Program

The RWQCP Pretreatment Program (Program), in conjunction with the Source Control Program, operates under the Environmental Services Division (ESD), Watershed Protection Group (WPG), of the City of Palo Alto Public Works Department (PWD). This multi-jurisdictional Program was approved by the U.S. Environmental Protection Agency (EPA) on July 23, 1981. Since its

inception, the Program has been implemented in accordance with Federal and State regulations as well as local ordinances.

This report focuses on the discharge activities and compliance status of significant industrial users (SIU) within the RWQCP service area during calendar year 2017. This report does not present the results of monitoring at non-SIU commericial and industrial facilities, nor the results of sampling conducted for research purposes.

B.3 2017 Pretreatment Program Summary

In 2017, the Program regulated 55 Industrial Users (IU) consisting of seven Categorical Industrial Users (CIU), two non-categorical Significant Industrial Users (NCSIU), and 46 non-SIU facilities. CIU and NCSIU facilities are regulated by "Full" Industrial Waste Discharge Permits and Non-SIU facilities are regulated by either a "Basic" or "Best Management Practices (BMP)" Industrial Waste Discharge Permit dependent upon discharge characteristics and volume. All IUs are inspected a minimum of once per year. Additional inspections may be performed by RWQCP staff to investigate instances of noncompliance, to follow-up on earlier inspections, or to determine the accuracy of industrial waste discharge permit applications, etc. During 2017, five permitted facilities closed and zero new IUs were permitted within the service area.

The Program also performs inspections at commercial facilities such as photo processors, dental offices and vehicle service facilities, and performs monitoring (sample collection and analysis) at permitted photo processors and vehicle service facilities. In 2017, inspections were conducted at 26 dental offices, one photo processor, and 200 vehicle service facilities. Two non-permitted industrial facilities within the RWQCP service area were inspected as part of the Annual IU Survey.

B.4 Contributing Jurisdiction Agreements

RWQCP has jurisdictional agreements with its Partners that delineate Program responsibilities. The City of Palo Alto administers the Program for the entire RWQCP service area, except for in the City of Mountain View. City of Mountain View staff administers most Program elements in the City of Mountain View with the exception of IU and Vehicle Service Facility monitoring, which is performed by RWQCP staff. The roles and responsibilities for each Partner are detailed in the following Partner Agreements:

- Contract No. C237 Between the City of Palo Alto and the East Palo Alto Sanitary District, March 11, 1940, as amended;

- Contract No. C869 Between the City of Palo Alto and the Board of Trustees of the Leland Stanford Junior University, November 30, 1956, as amended;

- Agreement No. 2876 Between the City of Palo Alto and the Town of Los Altos Hills, March 18, 1968, as amended; and

- Contract No. C2963 Between the City of Palo Alto, the City of Mountain View and the City of Los Altos, October 10, 1968, as amended.

B.5 2017 PCI Summary

On June 22, 2017, Tetra Tech, Inc. (Tetra Tech) performed a Pretreatment Compliance Inspection (PCI) of the Program. The PCI included an in-depth interview with City of Palo Alto and City of Mountain View staff regarding details of the Program, followed by SIU site visits to assess the competency of Palo Alto and Mountain View inspection staff. Tetra Tech also performed an extensive file review of Program documents. RWQCP received the PCI Summary Report (Report) from the San Francisco Bay Regional Water Quality Control Board (Water Board) on February 20, 2018. The Report includes two primary requirements and four recommendations resulting from the PCI. RWQCP will review the Report in detail and provide the Water Board with a response to the required and recommended actions by April 27, 2018. A summary of the requirements and recommendations is as follows:

Requirements:

1. The City of Mountain View Landfill permit lists the sample type as a "24-hour composite", but does not specify that it must be a flow-proportional composite sample. Mountain View is required to revise the permit to specify that flow-proportional composite samples are required as specified in 40 CFR 403.12(g)(3).

2. The federal regulations at 40 CFR 403.17(c) require all SIUs to notify the control authority of any bypass. If the industrial user knows in advance of the need for a bypass, the user shall submit prior notice to the City, at least ten days prior if possible. If an unanticipated bypass exceeds the applicable pretreatment standards, the user must submit an oral notification within 24 hours of becoming aware and written notice within five days of the time the user became aware of the bypass. The permits for Hammon Plating and the City of Mountain View Landfill require the permittees to notify the City verbally and in writing of an unauthorized bypass. This is inconsistent with the federal requirements, which do not condition reporting of bypasses on whether they are authorized. The City and Mountain View are required to revise the permits to require notification of all anticipated, and unanticipated, bypasses that exceed applicable pretreatment standards, pursuant to 40 CFR 403.17(c).

Recommendations:

1. The City of Mountain View Landfill permit lists the sample type as a "24-hour composite", but does not specify that it must be a flow-proportional composite sample. It is recommended that Mountain View revise the permit to clarify that time-proportional sampling is allowed only when authorized in writing by Mountain View.

2. The federal regulations at 40 CFR 403.8(f)(1)(B)(3) require the District to include applicable effluent limits in the industrial user permits, based on categorical pretreatment standards, local limits, and state or local law. The copper local limit

included in Hammon Plating's permit has a footnote which states, "…all reasonable control measures specified in accordance with standards published by the superintendent shall be installed and implemented." It is unclear which control measures are required to be installed and implemented. The inspection team recommends that the City specify which control measures shall be installed and implemented at Hammon Plating.

3. According to City personnel, the City inspects its SIUs semiannually. Mountain View conducts annual compliance inspections at its SIUs. The City was unsure whether the City's approved program requires semiannual compliance inspections at all SIUs. The inspection team recommends that the City review its program approval documents to determine whether the City is required to conduct compliance inspections twice per year at all SIUs. If the program does require semiannual compliance inspections, Mountain View is also required to conduct semiannual compliance inspections at its SIUs.

4. During the site visit at Hammon Plating, the inspectors observed hazardous waste drums without accumulation dates. It is recommended that the City follow-up with Hammon Plating staff to ensure that all drums containing hazardous wastes are labeled with an accumulation date.

C. DEFINITIONS

The following words and phrases, whenever used in Chapter 16.09 of the Palo Alto Municipal Code (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.

"Authorized representative" means an authorized or duly authorized representative as defined below:

(a) If the discharger is a corporation:

(1) The president, secretary, treasurer, or a vice-president of the corporation in charge of a principal business function, or any other person who performs similar policy or decision-making functions for the corporation; or

(2) The manager of one or more manufacturing, production, or operating facilities, provided the manager is authorized to make management decisions that govern the operation of the regulated facility including having the explicit or implicit duty of making major capital investment recommendations, and initiate and direct other comprehensive measures to assure long-term environmental compliance with environmental laws and regulations; can ensure that the necessary systems are established or actions taken to gather complete and accurate information for discharge permit requirements; and where authority to sign documents has been assigned or delegated to the manager in accordance with corporate procedures.

(b) If the discharger is a partnership or sole proprietorship: a general partner or proprietor, respectively.

(c) If the discharger is a federal, state, or local governmental facility: a director or highest official appointed or designated to oversee the operation and performance of the activities of the government facility, or their designee.

(d) The individuals described in paragraphs (a) through (c), above, may designate a duly authorized representative if the authorization is in writing, the authorization specifies the individual or position responsible for the overall operation of the facility from which the discharge originates, or with overall responsibility for environmental matters for the organization, and the written authorization is submitted to the superintendent.

"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 ridge, lip or other raised 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.

"Best Management Practices" or "BMPs" means schedules of activities, prohibitions of practices, maintenance procedures and other management practices to implement the prohibitions in this chapter. BMPs include treatment requirements, operating procedures and practices to control plant site runoff, spillage or leaks, sludge or waste disposal or drainage from materials storage.

"Biochemical oxygen demand" or "BOD" means the quantity of oxygen utilized in the biochemical oxidation of organic matter under standard laboratory procedures.

"Categorical discharger" shall mean any discharger subject to categorical pretreatment standards.

"Categorical pretreatment standard" means any regulation containing pollutant discharge limits promulgated by EPA that apply to a specific category of dischargers and that appear in 40 CFR Chapter I, Subchapter N, Parts 405-471.

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

"City" means City of Palo Alto.

"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 groundwater" 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.

"County" shall mean the County of Santa Clara.

"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 the cooling tower.

"Discharge" means the introduction of any pollutant or of any industrial, commercial or domestic waste into the sanitary sewer system or storm drain system.

"Discharger" means any person or entity who has the potential to or who discharges, causes, or permits the discharge of any pollutant or of any industrial, commercial or domestic waste into the sanitary sewer system or storm drain system.

"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 sewer system.

"Enforcement response plan" or "ERP" means the document describing the guidelines for identifying violations of and enforcing specific local limits; pretreatment standards and requirements; and the requirements of this chapter.

"EPA" means the United States Environmental Protection Agency.

"Exceptional waste" means that subset of industrial waste specified in Section 16.09.080(c)(2).

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

"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 sanitary sewer system is generally present as, but need not be, a floatable solid, a liquid, a colloid, an emulsion, or in a solution.

"Hazardous material" means any material so designated by Title 17 of this code [Palo Alto Municipal Code].

"Hazardous waste" means a material designated as a hazardous waste by either state or federal regulations.

"Industrial waste" means the waste or wastewater from any production, manufacturing or processing operation of whatever nature including institutional and commercial. "Industrial waste" shall not include domestic waste. "Industrial waste" shall include contaminated water from construction operations, contaminated water from erosion of disturbed land, and contaminated water from irrigation runoff.

"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, or exceeds the design capacity of the sanitary sewer system.

"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, deburrs, 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.

"New source" means a new or modified building, structure, facility or installation as defined in EPA 40 CFR part 403.3(m) from which there is or may be a discharge subject to proposed or existing pretreatment standards.

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

"Once-through cooling system" means a cooling system through which water passes through only once before discharge to a drain, including laboratory bench top 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 requirement" means any substantive or procedural requirement related to pretreatment imposed on a discharger, other than a pretreatment standard.

"Pretreatment standards" means prohibited discharge standards, categorical pretreatment standards and local limits.

"Pretreatment system" means a treatment system at an industrial or commercial facility that is designed to reduce the amount of pollutants, eliminate pollutants, or alter the nature of the pollutant properties in the waste water prior to discharge to the sanitary sewer system.

"Root control chemicals" means any chemical introduced into pipes in order to inhibit or kill roots in the pipe.

"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 buildings, institutions, and industrial establishments, excluding ground, surface and storm waters, subsurface drainage and also excluding industrial waste.

"Sanitary sewer overflow" or "SSO" means any overflow, spill, release, discharge or diversion of untreated or partially treated wastewater from the sanitary sewer system. SSOs include:

(a) Overflows or releases of untreated or partially treated wastewater that reaches waters of the United States;

(b) Overflows or releases of untreated or partially treated wastewater that do not reach waters of the United States; and

(c) Wastewater backups into buildings and on private property that are caused by blockages or flow conditions within the sanitary sewer system.

"Secondary containment" means and shall have the meaning specified by the hazardous materials storage ordinance (Title 17, Palo Alto Municipal 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 the collection system, all sewers, treatment plants and other facilities owned or operated by the city for carrying, collecting, storing, treating, reclaiming and disposing of sanitary sewage and industrial wastes.

"Significant industrial user" (SIU) means, except as provided in (c) and (d):

(a) A discharger subject to categorical pretreatment standards; or

(b) A discharger that:

(1) Discharges an average of 25,000 gpd or more of process wastewater to the sanitary sewer system (excluding sanitary, noncontact cooling and boiler blowdown wastewater);

(2) Contributes a process waste stream which makes up 5% or more of the average dry weather hydraulic or organic capacity of the sanitary sewer system; or

(3) Is designated as such by the superintendent on the basis that it has a reasonable potential for adversely affecting the sanitary sewer system's operation or for violating any pretreatment standard or requirement.

(c) The superintendent may determine that a discharger subject to categorical pretreatment standards is a non-significant categorical industrial user (non-SCIU) rather than a significant industrial user on a finding that the discharger never discharges more than 100 gallons per day (gpd) of total categorical wastewater (excluding sanitary, non-contact cooling and boiler blowdown wastewater, unless specifically included in the pretreatment standard) and the following conditions are met:

(1) The discharger, prior to superintendent's finding, has consistently complied with all applicable categorical pretreatment standards and requirements;

(2) The discharger annually submits the certification statement required in 16.09.135(a)(3), together with any additional information necessary to support the certification statement; and

(3) The discharger never discharges any untreated concentrated wastewater.

(d) Upon a finding that a discharger meeting the criteria in subsection (b) of this definition has no reasonable potential for adversely affecting the sanitary sewer system's operation or for violating any pretreatment standard or requirement, the superintendent may at any time, on its own initiative or in response to a petition received from a discharger, determine that such discharger should not be considered a significant industrial user.

"Significant noncompliance" means a violation or series of violations by a discharger of one or more criteria set forth in 40 CFR 403.8(f)(2)(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.

"Single toxic organic" or "STO" shall mean the highest quantifiable value for any individual toxic organic compound.

"Slug discharge" means any discharge of a non-routine, episodic nature, including but not limited to an accidental spill or a non-customary batch discharge of wastewater, material or waste of high volume or pollutant concentration which violates any of the specific prohibitions listed in 40 CFR 403.5(b) or Sections 16.09.045 or 16.09.050 or that has a reasonable potential to cause interference or pass-through or in any other way violate the plant's regulations, local limits, or sanitary sewer system requirements or NPDES permit conditions.

"Storm drains" or "storm drain system" means the system of pipes, gutters, surface conveyance 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.

"Total toxic organics" or "TTO" shall mean the sum of all quantifiable toxic organic compound concentrations greater than 0.010 mg/liter.

"Toxic organic compound" shall mean any organic pollutant contained in 40 CFR Part 433.11(e).

"Unpolluted water" means water to which no constituent has been added, either intentionally or accidentally, that would render such water unacceptable for disposal to the storm drain system or natural drainage or directly to surface waters.

"Wastewater" the liquid and water-carried wastes generated by a domestic, commercial and or industrial facility, whether treated or untreated, discharged into or permitted to enter the sewer system.

"Wet sanding" means the use of water and sandpaper for the removal of paint.

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D. DISCUSSION OF UPSET, INTERFERENCE AND PASS THROUGH

In 2017, there were no discharges from nondomestic users that were known or suspected of causing RWQCP upset, interference or pass through.

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E. INFLUENT, EFFLUENT AND BIOSOLIDS MONITORING RESULTS

E.1 Sampling Procedures and Analysis

The RWQCP complied with the pretreatment monitoring requirements for influent, effluent, and biosolids listed in Attachment E – Monitoring and Reporting Program (MRP) – of NPDES No. CA0037834, Order No. R2-2014-0024, and monitored for the parameters using the required sampling and testing methodologies. Sampling procedures, sample dechlorination, sample compositing, and data validation (applicable quality assurance/quality control) were performed in accordance with the techniques prescribed in 40 CFR Part 136 and amendments thereto. Sampling procedures including methods of dechlorination, compositing, and data validation, are available upon request.

E.2 Tabular Summary of Compounds Detected

A tabular summary of the Volatile Organic Compounds (VOC) and Semi-Volatile Organic Compounds (BNA) detected for the monitoring data generated during 2017 can be found on pages E – 2 through E – 11 of this report. Discussion surrounding VOC and BNA compounds that were detected in plant influent, effluent, and biosolids monitoring data during 2017 can be found in Section E.3 of this report. Influent and effluent monitoring data for metals and cyanide for 2017 can be found in Section E.5 of this report.

PALO ALTO REGIONAL WATER QUALITY CONTROL PLANT
ORGANIC VOLATILE POLLUTANT REPORT FOR WINTER 2017
Contract Lab/Caltest Analytical- EPA 624 (GCMS)

	2017 WET SEASON		INFLUENT
	Sample Date		2/7/2017
	Analysis Date		2/9/2017
	Daily Average Flow (mgd)		34.79
	Monthly Average Flow (mgd)		30.56
PRIORITY POLLUTANT VOLATILES	MDL (ug/L)	RL (ug/L)	(ug/L)
Acrolein	8.5	10	*
Acrylonitrile	9.0	10	*
Benzene	0.90	2.5	*
Bromodichloromethane	0.80	2.5	*
Bromoform	0.75	2.5	*
Bromomethane(Methyl Bromide)	1.5	2.5	*
Carbon tetrachloride	0.80	2.5	*
Chlorobenzene	0.90	2.5	*
Chloroethane (Ethyl Chloride)	1.9	2.5	*
2-Chloroethyl vinyl ether	1.4	5.0	*
Chloroform	0.95	2.5	*
Chloromethane (Methyl Chloride)	1.5	2.5	*
Dibromochloromethane	0.85	2.5	*
1,2-Dichlorobenzene	1.4	2.5	**3.7**
1,3-Dichlorobenzene	0.90	2.5	**4.0**
1,4-Dichlorobenzene	0.90	2.5	**2.8**
Dichlorodifluoromethane(F-12)	1.5	2.5	*
1,1-Dichloroethane	0.95	2.5	*
1,2-Dichloroethane(EDC)	0.90	2.5	*
1,1-Dichloroethene	1.0	2.5	*
cis-1,2-Dichloroethene	1.0	2.5	*
trans-1,2-Dichloroethene	1.1	2.5	*
1,2-Dichloropropane	0.90	2.5	*
cis-1,3-Dichloropropene	1.0	2.5	*
trans-1,3-Dichloropropene	0.80	2.5	*
Dichlorotrifluoroethane(F123)	1.5	2.5	*
Ethylbenzene	1.3	2.5	*
Methyl tert-butyl ether(MTBE)	0.75	2.5	*
Methylene chloride	2.0	2.5	*

WINTER 2017 EPA 624 Caltest Analytical Data (continued)

	2017 WET SEASON		INFLUENT
PRIORITY POLLUTANT VOLATILES	MDL (ug/L)	RL (ug/L)	ug/L
Styrene	0.95	2.5	*
1,1,2,2-Tetrachloroethane	0.75	2.5	*
Tetrachloroethene (PCE)	0.95	2.5	*
Toluene	0.95	2.5	*
1,2,4 Trichlorobenzene	1.2	2.5	*
1,1,2-Trichloroethane	0.80	2.5	*
1,1,1-Trichloroethane (TCA)	0.95	2.5	*
Trichloroethene (TCE)	1.0	2.5	*
Trichlorofluoromethane (F-11)	1.4	2.5	*
Trichlorotrifluorethane (F113)	1.8	2.5	*
Vinyl chloride	1.2	2.5	*
Xylenes, total	2.4	2.5	*
NON-PRIORITY POLLUTANTS			
Volatile (open scan)			ug/L
No TICs Detected			
Quality Control			
(Internal standards)		**Range**	**% Recovery**
4-Bromofluorobenzene	(SS)	70-130	98
Dibromofluoromethane	(SS)	70-130	99
1,2-Dichloroethane-d4	(SS)	70-130	97
Toluene-d8	(SS)	70-130	93

NOTES:
*** =** the mass spectral signal for this compound was not detected at or above the Reporting Limit.
DNQ = data not quantifiable result between MDL and RL

PALO ALTO REGIONAL WATER QUALITY CONTROL PLANT
ORGANIC VOLATILE POLLUTANT REPORT FOR WINTER 2017
Contract Lab/Caltest Analytical- EPA 625 (GCMS)

	2017 WET SEASON		INFLUENT
	Sample Date		2/7/2017
	Analysis Date		3/2/2017
	Daily Average Flow (mgd)		34.79
	Monthly Average Flow (mgd)		30.56
PRIORITY POLLUTANT SEMIVOLATILES	MDL (ug/L)	RL (ug/L)	(ug/L)
Acenapthene	0.02	0.30	*
Acenapthylene	0.02	0.20	*
Anthracene	0.01	0.30	*
Benzidine	4	5	*
Benzo(a)anthracene	0.02	0.30	*
Benzo(a)pyrene	0.02	0.30	*
Benzo(b)fluoranthene	0.02	0.30	*
Benzo(g,h,i)perylene	0.02	0.10	*
Benzo(k)fluoranthene	0.02	0.30	*
Benzyl butyl phthalate	0.50	5.0	*
4-Bromophenyl phenyl ether	0.50	5.0	*
bis(2-Chloroethoxy) methane	0.50	5.0	*
bis(2-Chloroethyl) ether	0.40	1.0	*
bis(2-Chloroisopropyl) ether	0.40	2.0	*
4-Chloro-3-methylphenol	0.50	1.0	*
2-Chloronaphthalene	0.40	5.0	*
2-Chlorophenol	0.40	2.0	*
4-Chlorophenyl phenyl ether	0.50	5.0	*
Chrysene	0.02	0.30	*
Dibenzo(a,h)anthracene	0.02	0.10	*
3,3'-Dichlorobenzidine	5	5	*
2,4-Dichlorophenol	0.40	1.0	*
Diethylphthalate	0.50	2.0	**DNQ 1.0**
2,4-Dimethylphenol	0.40	2.0	*
Dimethylphthalate	0.50	2.0	*
Di-n-butylphthalate	0.40	5.0	*
2,4-Dinitrophenol	0.20	5.0	*
2,4-Dinitrotoluene	0.40	5.0	*
2,6-Dinitrotoluene	0.40	5.0	*

WINTER 2017 EPA 625 Caltest Analytical Data (continued)

	2017 WET SEASON		INFLUENT
PRIORITY POLLUTANT SEMIVOLATILES	MDL (ug/L)	RL (ug/L)	ug/L
Di-n-octylphthalate	2.00	5	*
1,2-Diphenylhydrazine/Azobenzene	0.50	1	*
bis(2-Ethylhexyl)phthalate	2.50	5	**DNQ 4.6**
Fluoranthene	0.02	0.05	*
Fluorene	0.0	0.1	*
Hexachlorobenzene	0.40	1	*
Hexachlorobutadiene	0.40	1	*
Hexachlorocyclo pentadiene	0.3	1	*
Hexachloroethane	0.4	1	*
Indeno(1,2,3-cd)pyrene	0.0	0.05	*
Isophorone	0.5	1	*
2-Methyl-4,6-dinitrophenol	0.3	5	*
Napthalene	0.0	0.2	*
Nitrobenzene	0.5	1	*
2-Nitrophenol	0.4	5	*
4-Nitrophenol	0.5	5	*
N-Nitrosodimethylamine	0.3	5	*
N-Nitroso-di-n-propylamine	0.5	5	*
N-Nitrosodiphenylamine	0.3	1	*
Pentachlorophenol	0.4	1	*
Phenanthrene	0.0	0.05	*
Phenol	0.3	1	*
Pyrene	0.0	0.05	*
1,2,4-Trichlorobenzene	0.4	5	*
2,4,6-Trichlorophenol	0.5	5	*
NON-PRIORITY POLLUTANTS			
SemiVolatile (open scan)			ug/L
Cyclotetradecane [TIC]			77
Cyclohexadecane [TIC]			50
5- Octadecene, (E)- [TIC]			170
Decene [TIC]			27
Ethanol, 2-(dodecyloxy)- [TIC]			19
Cholesterol [TIC]			38
Cyclohexanol, 5-methyl-2-(1-methylethyl) [TIC]			31
Ethanol, 2-phenoxy- [TIC]			12
Oleic acid [TIC]			660
Heptadecanoic acid [TIC]			33
Cholestanol [TIC]			25

Hexadecanoic acid [TIC]			520
Cyclohexane, 1-(1,5-dimethylhexyl)-4-(4- [TIC]			17
Quality Control			
Surrogates		**Range**	**% Recovery**
2-Fluorobiphenyl	(SS)	10-130	61
2-Fluorophenol	(SS)	10-130	22
Nitrobenzene-d5	(SS)	10-130	42
Phenol-d6	(SS)	10-130	19
Terphenyl-d14	(SS)	20-160	149
2,4,6-Tribromophenol	(SS)	10-130	70

NOTES:
*** =** the mass spectral signal for this compound was not detected at or above the Reporting Limit.
DNQ = data not quantifiable result between MDL and RL

PALO ALTO REGIONAL WATER QUALITY CONTROL PLANT
ORGANIC VOLATILE POLLUTANT REPORT FOR SUMMER2017
Contract Lab/Caltest Analytical- EPA 624 (GCMS)

	2017 DRY SEASON		INFLUENT
	Sample Date		8/8/2017
	Analysis Date		8/11/2017
	Daily Average Flow (mgd)		18.15
	Monthly Average Flow (mgd)		17.86
PRIORITY POLLUTANT VOLATILES	MDL (ug/L)	RL (ug/L)	(ug/L)
Acrolein	8.5	20	*
Acrylonitrile	9.0	10	*
Benzene	0.90	2.5	*
Bromodichloromethane	0.80	2.5	**2.7**
Bromoform	0.75	2.5	*
Bromomethane(Methyl Bromide)	1.5	2.5	**2.5**
Carbon tetrachloride	0.80	2.5	*
Chlorobenzene	0.90	2.5	*
Chloroethane(Ethyl Chloride)	1.9	2.5	*
2-Chloroethyl vinyl ether	1.4	5.0	*
Chloroform	0.95	2.5	**6.4**
Chloromethane (Methyl Chloride)	1.5	2.5	*
Dibromochloromethane	0.85	2.5	**3.3**
1,2-Dichlorobenzene	1.4	2.5	*****
1,3-Dichlorobenzene	0.90	2.5	*****
1,4-Dichlorobenzene	0.90	2.5	*****
Dichlorodifluoromethane(F-12)	1.5	2.5	*
1,1-Dichloroethane	0.95	2.5	*
1,2-Dichloroethane(EDC)	0.90	2.5	*
1,1-Dichloroethene	1.0	2.5	*
cis-1,2-Dichloroethene	1.0	2.5	*
trans-1,2-Dichloroethene	1.1	2.5	*
1,2-Dichloropropane	0.90	2.5	*
cis-1,3-Dichloropropene	1.0	2.5	*
trans-1,3-Dichloropropene	0.80	2.5	*
Dichlorotrifluoroethane(F123)	1.5	2.5	*
Ethylbenzene	1.3	2.5	*
Methyl tert-butyl ether(MTBE)	0.75	2.5	*
Methylene chloride	2.0	2.5	*

SUMMER 2017 EPA 624 Caltest Analytical Data (continued)

	2017 DRY SEASON		INFLUENT
PRIORITY POLLUTANT VOLATILES	MDL (ug/L)	RL (ug/L)	ug/L
Styrene	0.95	2.5	*****
1,1,2,2-Tetrachloroethane	0.75	2.5	*
Tetrachloroethene (PCE)	0.95	2.5	*
Toluene	0.95	2.5	**DNQ 1.1**
1,2,4 Trichlorobenzene	1.2	2.5	*
1,1,2-Trichloroethane	0.80	2.5	*
1,1,1-Trichloroethane (TCA)	0.95	2.5	*
Trichloroethene (TCE)	1.0	2.5	**DNQ 1.2**
Trichlorofluoromethane (F-11)	1.4	2.5	*
Trichlorotrifluorethane (F113)	1.8	2.5	*
Vinyl chloride	1.2	2.5	*
Xylenes, total	2.4	2.5	*****
NON-PRIORITY POLLUTANTS			
Volatile (open scan)			ug/L
Sulfur Dioxide- [TIC]			100
Quality Control			
(Internal standards)		**Range**	**% Recovery**
4-Bromofluorobenzene	(SS)	70-130	101
Dibromofluoromethane	(SS)	70-130	103
1,2-Dichloroethane-d4	(SS)	70-130	96
Toluene-d8	(SS)	70-130	96

NOTES:
*** =** the mass spectral signal for this compound was not detected at or above the Reporting Limit.
DNQ = data not quantifiable result between MDL and RL

PALO ALTO REGIONAL WATER QUALITY CONTROL PLANT
ORGANIC VOLATILE POLLUTANT REPORT FOR SUMMER 2017
Contract Lab/Caltest Analytical- EPA 625 (GCMS)

	2017 DRY SEASON		INFLUENT
	Sample Date		8/25/2017
	Analysis Date		9/13/2017
	Daily Average Flow (mgd)		17.75
	Monthly Average Flow (mgd)		17.86
PRIORITY POLLUTANT SEMIVOLATILES	MDL (ug/L)	RL (ug/L)	(ug/L)
Acenapthene	0.10	5.0	*
Acenapthylene	0.10	5.0	*
Anthracene	0.05	5.0	*
Benzidine	20	25	*
Benzo(a)anthracene	0.10	5.0	*
Benzo(a)pyrene	0.10	5.0	*
Benzo(b)fluoranthene	0.10	5.0	*
Benzo(g,h,i)perylene	0.10	5.0	*
Benzo(k)fluoranthene	0.10	5.0	*
Benzyl butyl phthalate	2.50	10	*
4-Bromophenyl phenyl ether	2.50	10	*
bis(2-Chloroethoxy) methane	2.50	5.0	*
bis(2-Chloroethyl) ether	2.00	5.0	*
bis(2-Chloroisopropyl) ether	2.00	5.0	*
4-Chloro-3-methylphenol	2.50	5.0	*
2-Chloronaphthalene	2.00	5.0	*
2-Chlorophenol	2.00	10.0	*
4-Chlorophenyl phenyl ether	2.50	10.0	*
Chrysene	0.10	5.0	*
Dibenzo(a,h)anthracene	0.10	5.0	*
3,3'-Dichlorobenzidine	20	25	*
2,4-Dichlorophenol	2.00	5.0	*
Diethylphthalate	2.50	5.0	**DNQ 3.0**
2,4-Dimethylphenol	2.00	5.0	*
Dimethylphthalate	2.50	5.0	*
Di-n-butylphthalate	2.00	5.0	*
2,4-Dinitrophenol	1.00	10	*
2,4-Dinitrotoluene	2.00	5.0	*
2,6-Dinitrotoluene	2.00	5.0	*

SUMMER 2017 EPA 624 Caltest Analytical Data (continued)

	2017 DRY SEASON		INFLUENT
PRIORITY POLLUTANT SEMIVOLATILES	MDL (ug/L)	RL (ug/L)	ug/L
Di-n-octylphthalate	8.00	20	*
1,2-Diphenylhydrazine/Azobenzene	2.50	5	*
bis(2-Ethylhexyl)phthalate	10.00	20	*
Fluoranthene	0.10	5	*
Fluorene	0.1	5	*
Hexachlorobenzene	2.00	5	*
Hexachlorobutadiene	2.00	5	*
Hexachlorocyclo pentadiene	1.5	5	*
Hexachloroethane	2.0	5	*
Indeno(1,2,3-cd)pyrene	0.1	5	*
Isophorone	2.5	5	*
2-Methyl-4,6-dinitrophenol	1.5	10	*
Napthalene	0.1	5	*
Nitrobenzene	2.5	5	*
2-Nitrophenol	2.0	10	*
4-Nitrophenol	2.5	5	*
N-Nitrosodimethylamine	1.5	5	*
N-Nitroso-di-n-propylamine	2.5	5	*
N-Nitrosodiphenylamine	1.5	5	*
Pentachlorophenol	2.0	5	*
Phenanthrene	0.1	5	*
Phenol	1.5	5	**7.1**
Pyrene	0.1	5	*
1,2,4-Trichlorobenzene	2.0	5	*
2,4,6-Trichlorophenol	2.5	10	*
NON-PRIORITY POLLUTANTS			
SemiVolatile (open scan)			ug/L
5- Octadecene, (E)- [TIC]			200
Cholesterol [TIC]			3800
Oleic acid [TIC]			8200
Hexadecanoic acid [TIC]			6900
Tetradecanoic acid [TIC]			820
Hexadecenoic acid [TIC]			130
1- Octadecene [TIC]			180
Octadecanoid acid [TIC]			5500

SUMMER 2017 EPA 624 Caltest Analytical Data (continued)

Quality Control			
Surrogates		**Range**	**% Recovery**
2-Fluorobiphenyl	(SS)	10-130	33
2-Fluorophenol	(SS)	10-130	25
Nitrobenzene-d5	(SS)	10-130	27
Phenol-d6	(SS)	10-130	23
Terphenyl-d14	(SS)	10-190	87
2,4,6-Tribromophenol	(SS)	20-160	103

NOTES:
*** =** the mass spectral signal for this compound was not detected at or above the Reporting Limit.
DNQ = data not quantifiable result between MDL and RL

E.3 Influent, Effluent, and Biosolids Monitoring Results

The following organic priority pollutants were detected in the Plant influent during 2017:

1,2-Dichlorobenzene is used in the synthesis of agrochemicals and insecticides. It is also used for removal of carbon-based contamination from metal surfaces.

1,3-Dichlorobenzene is produced as a byproduct of the chlorination of benzene.

1,4-Dichlorobenzene is used as a disinfectant, pesticide and deodorant. 1,4-Dichlorobenzene is used to control moths, mold and mildew, and can also be found in urinal cakes.

Bis(2-ethylhexyl) phthalate is a common plasticizer for polymeric materials (plastic pipe). Bis(2-ethylhexyl) phthalate is used primarily as a plasticizer during polyvinyl chloride and polymer production, and is likely released into wastewater during water contact with plastic materials.

Bromodichloromethane is a trihalomethane that can occur in municipally-treated drinking water as a by-product of the chlorine disinfection process.

Bromomethane is an agricultural pesticide and soil sterilant used for production of such crops as strawberries and almonds in California.

Chloroform is likely to enter the environment with its use as an industrial solvent, extractant, and cleaning agent, as well as from indirect production in the chlorination of drinking water, wastewater, and cooling water. Artificial sources of chloroform include automobile exhaust, extractants, solvents, dry cleaning agents, fumigants, and synthetic rubber. If released into water, chloroform will be primarily lost by evaporation into the atmosphere.

Dibromochloromethane is a trihalomethane that can occur in municipally-treated drinking water as a by-product of the chlorine disinfection process.

Diethylphthalate is used as a plasticizer and it can be found in a wide range of commercial products including toothbrushes, automobile parts, tools, toys, and food packaging. Diethyl phthalate can be released fairly easily from these products, as it is not part of the chain of chemicals (polymers) that makes up the plastic. Diethyl phthalate is also used in cosmetics, insecticides, and aspirin.

Phenol is a common and important industrial chemical that enters wastewater during its use in resins, plastics, and adhesives. It is frequently found in wastewater from other commercial sources.

Toluene is used as a general purpose solvent, a fuel additive, and a chemical manufacturing constituent. Considerable amounts are discharged during the storage, transport, and disposal of fuels and oils.

Trichloroethene (TCE) is used as a solvent to remove grease from metal during the manufacture of a variety of products, including building/furniture materials, fixtures, fabricated metals, and electric/electronic equipment. TCE is also used as a paint stripper, adhesive solvent, an ingredient in paints and varnishes, and in the manufacture of other chemicals. All organic priority pollutants were detected at concentrations characteristic of influent typically received at this facility.

No pollutants were detected in sufficient concentration to upset, interfere, or pass through the treatment plant. During 2017, there were no compounds requiring pretreatment monitoring that exceeded NPDES effluent limitations.

E.4 Incinerator Ash Quarterly Sampling Results

PALO ALTO REGIONAL WATER QUALITY CONTROL PLANT

INCINERATOR ASH REPORT 2017

Sludge dewatering method: Belt filter presses followed by incineration

FEB 2017 INCINERATOR QUARTERLY ASH REPORT								
Analytes	**TTLC**				**STLC**			
	Sample Collection Dates: 11/01/2016-01/28/2017; Composited 02/02/2017							
	Prepare Date:		02/17-23/2017		Prepare Date:		03/06/2017	
	Analysis Date:		02/17-28/2017		Analysis Date:		03/07-09/2017	
	TTLC Max. Limit (mg/kg)	RL/MDL (mg/kg)	mg/kg (Dry Weight)	Method	STLC Max. Limit (mg/L)	RL/MDL (mg/L)	mg/L	Method
Antimony	500	2.0/0.051	**7.0**	A	15			
Arsenic	500	2.5/1.5	**5.0**	A	5			
Barium	10,000	1.0/0.51	**700**	A	100	0.05/0.010	**14**	B
Beryllium	75	0.51/0.15	**DNQ 0.49**	A	0.75			
Cadmium	100	2.0/0.051	**DNQ 1.6**	A	1			
Chromium	2,500	1.0/0.30	**73**	A	560			
Cobalt	8,000	0.51/0.025	**18**	A	80			
Copper	2,500	8.1/3.0	**1,900**	A	25	0.40/0.20	**35**	B
Lead	1,000	1.0/0.20	**65**	A	5	0.05/0.020	**0.22**	B
Mercury	20	0.020/0.00082	**DNQ 0.00205**	D	0.2			
Molybdenum	3,500	2.0/0.51	**31**	A	350			
Nickel	2,000	1.0/3.0	**83**	A	20			
Selenium	100	2.0/0.51	**8.2**	A	1			
Silver	500	1.0/0.020	**14**	A	5	0.03/0.003	**ND**	B
Thallium	700	2.0/0.061	**DNQ 0.07**	A	7			
Vanadium	2,400	5.1/2.5	**70**	A	24			
Zinc	5,000	40/16	**2,600**	A	250			
Cyanide	---	0.08/0.080	**0.71**	E	---			

Total Solids in Ash	**Method**	**Analysis Date**
100.0%	F	02/14/2017

ND = Not detected at or above the detection limit.
DNQ = Data not quantified, result between MDL and RL.
NOTE = (1) All data in the table are based on Quarterly Composites made up of ash from Nov, Dec, Jan 2017.
NR = Not required this reporting period.

Methods [A-F] Caltest Analytical
A = SW846 – 3050B/6020
B = SW846 – 3010/6020
C = SW846 – 7470A
D = SW846 – 7471A
E = SW846 – 9012A
F = SM2540G

PALO ALTO REGIONAL WATER QUALITY CONTROL PLANT

INCINERATOR ASH REPORT 2017

Sludge dewatering method: Belt filter presses followed by incineration

MAY 2017 INCINERATOR QUARTERLY ASH REPORT								
Analytes	**TTLC**				**STLC**			
	Sample Collection Dates: 02/07/2017-04/23/2017; Composited 05/04/2017							
	Prepare Date:		05/09-11/2017		Prepare Date:		05/16-17/2017	
	Analysis Date:		05/10-16/2017		Analysis Date:		05/23-25/2017	
	TTLC Max. Limit (mg/kg)	RL/MDL (mg/kg)	mg/kg (Dry Weight)	Method	STLC Max. Limit (mg/L)	RL/MDL (mg/L)	mg/L	Method
Antimony	500	2.0/0.050	**7.9**	A	15	0.10/0.025	**0.28**	B
Arsenic	500	2.5/1.5	**4.6**	A	5			
Barium	10,000	1.0/0.50	**590**	A	100	0.05/0.010	**8.3**	B
Beryllium	75	0.50/0.15	**DNQ 0.46**	A	0.75			
Cadmium	100	2.0/0.050	**DNQ 1.0**	A	1			
Chromium	2,500	1.0/0.30	**77**	A	560			
Cobalt	8,000	0.50/0.025	**17**	A	80			
Copper	2,500	7.9/3.0	**1,700**	A	25	0.40/0.20	**33**	B
Lead	1,000	1.0/0.20	**58**	A	5	0.05/0.020	**0.15**	B
Mercury	20	0.020/0.00081	**DNQ 0.0025**	D	0.2	0.50/0.40	**ND**	C
Molybdenum	3,500	2.0/0.50	**29**	A	350			
Nickel	2,000	1.0/0.30	**91**	A	20			
Selenium	100	2.0/0.50	**11**	A	1			
Silver	500	1.0/0.020	**12**	A	5	0.03/0.003	**ND**	B
Thallium	700	2.0/0.060	**ND**	A	7			
Vanadium	2,400	5.0/2.5	**87**	A	24			
Zinc	5,000	40/16	**2,400**	A	250			

Total Solids in Ash	**Method**	**Analysis Date**
100.0%	F	05/10/2017

ND = Not detected at or above the detection limit.
DNQ = Data not quantified, result between MDL and RL.
NOTE = (1) All data in the table are based on Quarterly Composites made up of ash from Feb, Mar, Apr 2017.

Methods [A-F] Caltest Analytical
A = SW846 – 3050B/6020
B = SW846 – 3010/6020
C = SW846 – 7470A
D = SW846 – 7471A
E = SW846 – 9012A
F = SM2540G

PALO ALTO REGIONAL WATER QUALITY CONTROL PLANT

INCINERATOR ASH REPORT 2017

Sludge dewatering method: Belt filter presses followed by incineration

AUG 2017 INCINERATOR QUARTERLY ASH REPORT								
Analytes	**TTLC**				**STLC**			
	Sample Collection Dates: 04/30/2017-07/24/2017; Composited 08/07/2017							
	Prepare Date:		08/11-21/2017		Prepare Date:		08/17-21/2017	
	Analysis Date:		08/17-22/2017		Analysis Date:		08/22-25/2017	
	TTLC Max. Limit (mg/kg)	RL/MDL (mg/kg)	mg/kg (Dry Weight)	Method	STLC Max. Limit (mg/L)	RL/MDL (mg/L)	mg/L	Method
Antimony	500	2.0/0.050	**11.0**	A	15	0.10/0.025	**0.39**	B
Arsenic	500	2.5/1.5	**4.9**	A	5	0.05/0.030	**0.27**	B
Barium	10,000	1.0/0.50	**550**	A	100	0.05/0.010	**6.2**	B
Beryllium	75	0.50/0.15	**DNQ 0.38**	A	0.75	0.01/0.0050	**DNQ 0.008**	B
Cadmium	100	2.0/0.050	**DNQ 1.3**	A	1	0.01/0.0040	**0.02**	B
Chromium	2,500	2.5/2.5	**68**	A	560	0.05/0.050	**0.21**	B
Cobalt	8,000	0.50/0.025	**16**	A	80	0.02/0.00080	**0.18**	B
Copper	2,500	10/3.8	**2,100**	A	25	0.80/0.40	**44**	B
Lead	1,000	1.0/0.20	**64**	A	5	0.05/0.020	**0.22**	B
Mercury	20	0.020/0.00081	**ND**	D	0.2	0.50/0.30	**DNQ 0.29**	C
Molybdenum	3,500	2.0/0.50	**37**	A	350	0.10/0.040	**2.7**	B
Nickel	2,000	1.0/0.30	**86**	A	20	0.05/0.010	**0.59**	B
Selenium	100	2.0/0.50	**9.6**	A	1	0.10/0.050	**DNQ 0.08**	B
Silver	500	1.0/0.020	**15**	A	5	0.03/0.0030	**DNQ 0.005**	B
Thallium	700	2.0/0.060	**DNQ 0.09**	A	7	0.05/0.025	**ND**	B
Vanadium	2,400	5.0/5.0	**74**	A	24	0.02/0.015	**2.2**	B
Zinc	5,000	50/20	**3,200**	A	250	1.6/0.80	**47**	B
Cyanide	---	0.080/0.080	**0.66**	E	---			B

Total Solids in Ash	**Method**	**Analysis Date**
100.0%	F	08/12/2017

ND = Not detected at or above the detection limit.
DNQ = Data not quantified, result between MDL and RL.
NOTE = (1) All data in the table are based on Quarterly Composites made up of ash from 3 month period 2017.
NR = Not required this reporting period.

Methods [A-F] Caltest Analytical
A = SW846 – 3050B/6020
B = SW846 – 3010/6020
C = SW846 – 7470A
D = SW846 – 7471A
E = SW846 – 9012A
F = SM2540G

PALO ALTO REGIONAL WATER QUALITY CONTROL PLANT

INCINERATOR ASH REPORT 2017

Sludge dewatering method: Belt filter presses followed by incineration

NOV 2017 INCINERATOR QUARTERLY ASH REPORT								
Analytes	**TTLC**				**STLC**			
	Sample Collection Dates: 07/31/2017-10/30/2017; Composited 11/06/2017							
	Prepare Date:		11/14-15/2017		Prepare Date:		11/13-14/2017	
	Analysis Date:		11/11-30/2017		Analysis Date:		11/15-20/2017	
	TTLC Max. Limit (mg/kg)	RL/MDL (mg/kg)	mg/kg (Dry Weight)	Method	STLC Max. Limit (mg/L)	RL/MDL (mg/L)	mg/L	Method
Aluminum	NA	810/810	**23,000**	A				
Antimony	500	0.080/0.030	**7.7**	A	15			
Arsenic	500	0.080/0.030	**5.0**	A	5			
Barium	10,000	0.50/0.50	**740**	A	100	0.05/0.010	**18**	B
Beryllium	75	0.080/0.030	**0.62**	A	0.75			
Boron	NA	2.00/2.00	**100**	A				
Cadmium	100	0.080/0.010	**1.1**	A	1			
Chromium	2,500	1.0/0.05	**67**	A	560			
Cobalt	8,000	0.080/0.005	**15**	A	80			
Copper	2,500	4.000/1.500	**1.600**	A	25	0.40/0.20	**39**	B
Lead	1,000	0.080/0.040	**52**	A	5	0.05/0.020	**0.28**	B
Lithium	NA	0.4/0.2	**12**	A				
Manganese	NA	6.0/6.0	**2,900**	A				
Mercury	20	0.020/0.00080	**DNQ 0.0008**	D	0.2	0.50/0.40	**ND**	C
Molybdenum	3,500	0.080/0.030	**33**	A	350			
Nickel	2,000	0.080/0.030	**75**	A	20			
Selenium	100	0.400/0.100	**5.4**	A	1			
Silver	500	0.080/0.004	**9.3**	A	5	0.03/0.0030	**ND**	B
Sodium	NA	0.020/0.010	**6.6**	A				
Strontium	NA	0.4/0.2	**250**	A				
Thallium	700	0.080/0.012	**0.088**	A	7			
Tin	NA	1/0.4	**92**	A				
Titanium	NA	20/7.6	**2,200**	A				
Vanadium	2,400	2.000/0.400	**70**	A	24			
Zinc	5,000	20.00/20.00	**2,500**	A	250			
Cyanide	---	0.080/0.080	**0.89**	E				

Total Solids in Ash	**Method**	**Analysis Date**
100.0%	F	11/08/2017

Methods [A-F] Caltest Analytical
A = SW846 – 3050B/6020
B = SW846 – 3010/6020
C = SW846 – 7470A
D = SW846 – 7471A
E = SW846 – 9012A
F = SM2540G

ND = Not detected at or above the detection limit.
DNQ = Data not quantified, result between MDL and RL.
NOTE = (1) All data in the table are based on Quarterly Composites made up of ash from 3 month period 2017.
NR = Not required this reporting period.

E.5 2017 Influent and Effluent Metals Monitoring Data

In 2017, the Plant saw an increase in influent mass loadings for chromium, copper, nickel, silver and selenium when compared with influent mass loadings from the previous year. Influent mass loadings for arsenic, cadmium, lead, mercury and zinc saw decreases year over year. The data is in line with previous year's data and does not suggest any changes in the Plant's long term influent loading trends for metals. The continued trend of low metal concentrations in the Plant influent suggests that the Program's outreach efforts and control programs remain effective and sufficient. Effluent concentrations for all priority pollutants remained within limitations specified in the Plant's NPDES Permit, with effluent mass loadings remaining generally stable for at least the past five years. All priority pollutant metals detected in the Plant effluent were below the Plant's NPDES Permit limitations during 2017.

In 2017, the Plant's influent mercury mass loading dropped by approximately 10% to 11.46 lb/yr compared to 2016's 12.69 lb/yr. The 2017 influent mercury mass loading represents a decrease of approximately 56% compared to the average influent mercury mass loading for the years prior to the addition of dental amalgam pretreatment requirements in the Sewer Use Ordinance (1989-2004). Further discussion can be found in the 2018 Clean Bay Plan.

In 2017, influent selenium mass loading increased by approximately 12% to 131.24 lb/year and effluent selenium mass loading increased by approximately 24% to 109.96 lb/yr compared with 116.72 lb/yr and 88.72 lb/yr respectively in 2016. This marks the second year in a row that selenium mass loading in the Plant's influent and effluent increased more than 10% year over year. The 2017 influent selenium mass loading is approximately 24% greater than the average of the past five years' data (105.67 lb/yr, 2012-2016), but 16% lower than the historical max of 156 lb/yr (1991). The 2017 effluent selenium mass loading is approximately 22% greater than the average of the past five years' data (90.43 lb/yr, 2012-2016), but 16% lower than the historical max of 130 lb/yr (1993 and 1995). Mass balance calculations and trunkline analysis estimate that approximately 26% of the selenium mass entering the Plant is from inflow and infiltration. Historical data indicates significantly increased influent and effluent selenium concentrations, and thus loadings, from 2008 to present. This can be attributed to a change in laboratory methodology from ICPMS-Elan 6000-with hydride (FIAS) technology to ICPMS-Elan DRC II-reaction cell. The previously used hydride technology, which only captures selenite, under-reported the total measured selenium concentration, whereas the reaction cell method measures selenite, selenate, and other organic selenium species. Further discussion can be found in the 2017 Clean Bay Plan.

In 2017, influent cyanide concentrations were generally reported as DNQ values with an RL of 3 µg/L and MDL of 0.90 µg/L. The mean influent cyanide concentration was 3.24 µg/L, median 1.60 µg/L, and standard deviation of 5.61 µg/L. A single influent cyanide sample result greater than the RL value occurred on June 4, 2017 with an associated concentration of 21 µg/L. The annual average influent cyanide loading appears to have increased by approximately 45% in 2017 due to this singular event in conjunction with the higher influent plant flow in 2017, compared to 2016's influent plant flow. However, the annual average influent cyanide concentration in 2017 was approximately 35% lower than the annual average influent cyanide concentration in 2016. Program staff investigated all known industrial sources of cyanide within

the RWQCP service area, including three CIUs, and also reviewed the Plant's hauled liquid waste discharge logs. It was determined that the single high influent cyanide result, which occurred on a Sunday, was not caused by an IU discharge. Effluent cyanide loading decreased in 2017 and no adverse effects resulted from the singular increased influent cyanide result. Removing the singular elevated influent cyanide result from the annual influent cyanide data yields an adjusted mean influent cyanide concentration of 1.63 µg/L, median 1.60 µg/L, and standard deviation 0.41 µg/L.

Table E.5-1
Influent Metals Loadings

Pollutant	Loading (lb/yr)				% Change 2017 vs. 2016	% Change 2017 vs. 5 yr. Avg.
	2013	2016	2017	5 yr. Avg.[1]		
Arsenic	82.17	71.90	71.80	79.82	-0.14	-10.04
Cadmium	17.42	18.43	14.29	19.15	-22.46	-25.38
Chromium	119.64	119.21	142.81	126.58	19.80	12.82
Copper	3,849.28	4,134.72	4,344.10	4,168.78	5.06	4.21
Lead	166.10	172.91	139.39	163.81	-19.39	-14.91
Mercury	9.35	12.69	11.46	10.82	-9.72	5.89
Nickel	435.27	429.70	462.12	449.04	7.54	2.91
Silver	37.58	34.78	37.96	38.13	9.14	-0.43
Selenium	109.54	116.72	131.24	110.63	12.44	18.63
Zinc	8,823.61	10,500.20	8,967.00	9,496.96	-14.60	-5.58
Total Metals	13,649.95	15,611.26	14,322.17	14,663.70	-8.26	-2.33
Flow (MGD)[2]	21.00	19.39	21.35	19.98	10.09	6.87

[1]2013 – 2017
[2]Monthly average sample day flow (08:00 a.m. – 07:59 a.m.)

Table E.5-2
Effluent Metals Loadings

Pollutant	Loading (lb/yr)				% Change 2017 vs. 2016	% Change 2017 vs. 5 yr. Avg.
	2013	2016	2017	5 yr. Avg.[1]		
Arsenic	69.23	71.00	66.00	70.50	-7.04	-6.39
Cadmium	8.55	7.92	6.90	8.00	-12.88	-13.72
Chromium	17.57	21.82	22.74	20.55	4.20	10.64
Copper	703.04	619.35	587.93	614.27	-5.07	-4.29
Lead	13.51	9.57	10.24	11.76	6.97	-12.89
Mercury	0.12	0.10	0.10	0.10	8.93	7.68
Nickel	296.21	269.11	308.98	279.02	14.82	10.74
Silver	1.24	1.54	1.68	1.91	9.20	-12.21
Selenium	90.69	88.72	109.96	89.21	23.95	23.26
Zinc	3,299.72	4,067.68	3,022.00	3,514.30	-25.71	-14.01
Total Metals	4,499.90	5,156.80	4,136.53	4,609.61	-19.78	-10.26
Flow (MGD)[2]	20.35	22.40	21.92	20.58	-2.14	6.52

[1]2013 – 2017
[2]Monthly average sample day flow (08:00 a.m. – 07:59 a.m.)

Table E.5-3
Summary of Influent Metals and Cyanide 1992 – 2017

ppb

Year	Flow (MGD)	As	Cd	Cr	Cu	Pb	Hg	Ni	Ag	Se	Zn	CN
1992	21.20	2.70	0.80	6.00	87.00	15.00	0.60	7.80	8.80	1.60	189.00	105.00
1993	27.70	6.40	0.50	3.80	86.10	10.90	0.40	12.40	6.10	1.80	176.00	15.40
1994	22.40	1.70	0.50	4.00	64.00	14.50	0.40	10.80	4.00	1.30	175.00	16.80
1995	26.00	1.50	0.00	3.30	69.00	7.30	0.30	7.40	2.80	1.80	161.00	13.60
1996	25.60	1.20	0.30	2.90	52.00	8.10	0.30	5.70	2.70	0.60	153.70	7.00
1997	26.10	1.10	0.30	2.10	52.00	4.70	0.30	5.60	2.80	0.70	162.10	*
1998	28.50	1.40	0.30	5.01	44.00	4.20	0.20	6.90	2.50	1.10	156.50	1.20
1999	25.70	1.20	0.40	3.90	55.00	5.70	0.20	9.90	4.10	0.70	171.70	6.80
2000	27.71	1.20	0.50	3.90	64.00	6.40	0.24	8.10	3.00	0.80	174.70	3.00
2001	25.79	1.19	0.39	5.75	51.13	3.94	0.27	9.92	2.54	0.76	145.00	3.05
2002	24.95	1.06	0.35	5.15	49.58	3.65	0.31	6.80	2.47	0.63	142.34	4.45
2003	24.90	1.00	0.30	3.90	51.00	3.30	0.27	5.80	2.30	0.80	135.00	2.90
2004	24.05	1.10	0.30	4.20	56.00	4.40	0.36	6.00	2.20	0.70	146.80	5.30
2005	25.90	1.10	0.30	4.50	66.00	5.10	0.23	7.20	1.80	0.80	137.80	4.20
2006	26.90	1.10	0.30	3.80	61.00	3.80	0.20	6.00	1.70	0.80	131.00	4.50
2007	23.11	1.10	0.34	4.76	58.10	3.53	0.20	6.44	1.25	0.85	142.81	1.70
2008	22.26	1.01	0.27	4.24	70.61	2.98	0.20	5.91	0.97	1.37	153.11	1.73
2009	21.80	1.26	0.33	2.70	61.16	2.76	0.17	5.64	0.76	1.92	140.97	1.80
2010	22.30	1.25	0.32	2.50	69.71	3.08	0.22	6.76	0.72	1.94	128.84	1.74
2011	22.33	1.17	0.27	2.07	67.17	2.75	0.17	7.14	0.59	1.63	132.76	1.19
2012	21.74	1.30	0.30	2.06	64.60	3.20	0.16	7.58	0.63	1.60	137.00	0.98
2013	21.00	1.30	0.28	1.89	60.73	2.63	0.15	6.70	0.59	1.73	139.25	1.47
2014	19.22	1.45	0.28	2.10	72.71	2.79	0.15	7.01	0.62	1.62	154.47	1.30
2015	18.93	1.49	0.51	2.14	73.12	3.01	0.21	8.58	0.75	1.66	174.76	1.80
2016	19.39	1.21	0.31	2.01	69.85	2.92	0.21	7.26	0.59	1.97	177.38	2.46
2017	**21.35**	**1.08**	**0.21**	**2.13**	**69.20**	**2.14**	**0.08**	**6.93**	**0.59**	**1.57**	**140.00**	**1.60**

lb/yr

Year	Flow (MGD)	As	Cd	Cr	Cu	Pb	Hg	Ni	Ag	Se	Zn	CN
1992	21.20	174.00	49.00	385.00	5,546.00	944.00	37.00	497.00	574.00	105.00	12,012.00	6,675.00
1993	27.70	485.00	35.00	154.00	6,266.00	792.00	32.00	897.00	452.00	139.00	12,781.00	693.00
1994	22.40	112.00	32.70	274.00	4,354.00	985.00	28.30	725.00	275.00	92.00	11,905.00	1,186.00
1995	26.00	120.00	0.00	263.00	5,420.00	597.00	27.80	589.00	224.00	142.00	12,545.00	1,056.00
1996	25.60	96.70	23.90	223.80	4,020.20	620.70	22.80	439.40	211.00	49.90	11,835.60	655.10
1997	26.10	86.90	25.30	156.40	4,170.70	367.70	20.10	444.00	228.50	59.10	12,761.30	*
1998	28.50	129.00	29.00	452.00	3,748.00	369.00	17.00	595.00	214.00	110.00	13,298.00	301.00
1999	25.70	93.10	34.50	307.40	4,264.70	446.90	15.70	773.70	317.50	55.40	13,417.00	531.40
2000	27.71	99.20	40.30	326.60	5,289.00	535.00	20.50	687.00	251.00	68.10	14,656.00	254.00
2001	25.79	92.86	30.44	449.20	4,008.28	309.36	20.82	777.32	199.45	59.45	11,336.48	239.29
2002	24.95	80.34	26.22	392.63	3,686.00	275.38	23.50	516.78	186.31	47.52	10,737.66	336.22
2003	24.90	75.90	25.30	297.70	3,990.50	247.60	20.12	440.90	169.40	60.50	10,241.70	219.70
2004	24.05	80.70	22.90	315.30	4,300.10	319.40	26.41	447.60	164.40	54.40	10,787.50	389.20
2005	25.90	83.50	26.40	353.10	5,214.10	399.40	17.96	563.50	139.40	65.80	10,835.40	326.40
2006	26.90	90.30	27.90	307.30	4,857.10	315.70	16.14	495.80	137.40	70.60	10,567.90	361.40
2007	23.11	77.45	24.17	338.14	4,125.19	250.88	14.23	456.90	88.97	59.77	10,110.66	119.54
2008	22.26	69.01	18.55	287.68	4,782.28	201.65	13.79	401.67	66.19	92.99	10,353.63	117.64
2009	21.80	83.05	21.95	181.02	4,052.09	183.32	11.53	375.98	50.52	128.52	9,372.25	100.21
2010	22.30	85.99	21.53	171.75	4,750.12	209.17	14.50	465.63	48.72	138.01	8,782.28	118.48
2011	22.33	80.78	18.61	141.75	4,613.10	187.94	11.26	491.57	40.39	113.64	9,081.08	80.28
2012	21.74	85.17	19.37	136.03	4,262.11	210.10	10.81	503.24	41.26	106.46	9,012.68	150.64
2013	21.00	82.17	17.42	119.64	3,849.28	166.10	9.35	435.27	37.58	109.54	8,823.61	92.67
2014	19.22	86.05	16.59	125.21	4,246.65	164.20	8.89	415.97	36.98	97.84	9,068.17	75.90
2015	18.93	87.16	29.02	126.02	4,269.15	176.43	11.72	502.12	43.33	97.81	10,125.83	102.45
2016	19.39	71.90	18.43	119.21	4,134.72	172.91	12.69	429.70	34.78	116.72	10,500.20	145.38
2017	**21.35**	**71.80**	**14.29**	**142.81**	**4,344.10**	**139.39**	**11.46**	**462.12**	**37.96**	**131.24**	**8,967.00**	**211.80**

TOTAL METALS (As, Cd, Cr, Cu, Pb, Hg, Ni, Ag, Se, Zn):

* CN result inconclusive

Year	lb/Year	%CHANGE
1992	20,323.00	0.00
1993	22,033.00	7.76
1994	18,783.00	-17.30
1995	19,927.80	5.74
1996	17,544.00	-13.59
1997	18,320.00	4.24
1998	18,961.00	3.38
1999	19,725.90	3.88
2000	21,972.70	10.23
2001	17,283.66	-27.13
2002	15,972.34	-8.21
2003	15,569.62	-2.59
2004	16,518.71	5.75

Year	lb/Year	%CHANGE
2005	17,698.56	6.67
2006	16,886.14	-4.81
2007	15,546.35	-8.62
2008	16,287.43	4.55
2009	14,460.23	-12.64
2010	14,687.70	1.55
2011	14,780.12	0.63
2012	14,387.23	-2.73
2013	13,649.95	-5.40
2014	14,266.55	4.32
2015	15,468.60	7.77
2016	15,611.26	0.91
2017	14,322.17	-9.00

Table E.5-4
Summary of Effluent Metals and Cyanide 1992 – 2017

ppb

Year	Flow	As	Cd	Cr	Cu	Pb	Hg	Ni	Ag	Se	Zn	CN
1992	21.20	2.80	1.00	5.00	11.70	1.30	0.10	4.50	0.70	1.40	66.30	11.10
1993	27.70	6.20	0.20	1.00	9.50	1.00	0.10	6.20	0.30	1.70	59.00	5.20
1994	22.40	1.50	0.20	1.00	6.00	1.10	0.10	4.90	0.20	1.30	59.00	5.10
1995	26.00	1.50	0.20	1.00	7.00	1.00	0.10	3.50	0.20	1.60	54.00	5.10
1996	25.60	1.10	0.20	1.00	5.00	1.00	0.04	3.20	0.20	0.40	53.60	3.40
1997	26.10	0.90	0.20	0.90	6.40	0.80	0.02	3.40	0.20	0.50	55.70	3.30
1998	28.50	1.10	0.20	1.30	6.90	0.50	0.01	4.40	0.20	0.40	49.40	3.10
1999	25.70	0.90	0.20	0.80	5.30	0.60	0.01	4.30	0.20	0.40	58.30	3.00
2000	27.67	0.90	0.20	0.78	7.20	0.62	0.01	4.60	0.20	0.46	58.17	3.03
2001	25.73	0.93	0.20	0.63	5.41	0.43	0.01	4.83	0.20	0.58	47.25	3.16
2002	24.88	0.88	0.22	0.74	6.97	0.41	0.01	3.92	0.20	0.48	44.83	3.91
2003	24.88	0.90	0.20	0.80	7.10	0.40	0.01	3.30	0.20	0.70	45.90	3.50
2004	23.80	0.80	0.20	0.60	8.80	0.50	0.01	3.10	0.20	0.60	50.30	2.80
2005	25.90	0.80	0.20	0.60	8.10	0.40	0.00	3.30	0.20	0.60	43.90	3.50
2006	26.90	0.90	0.20	0.60	8.10	0.40	0.00	3.30	0.20	0.70	44.90	3.10
2007	22.82	0.89	0.20	0.60	9.25	0.40	0.00	3.42	0.20	1.10	52.00	2.00
2008	21.91	0.80	0.20	0.60	8.82	0.40	0.00	3.17	0.20	1.32	54.60	1.66
2009	21.53	1.02	0.20	0.53	8.11	0.40	0.00	3.29	0.20	1.49	49.88	1.69
2010	21.40	1.12	0.20	0.50	6.29	0.40	0.00	4.30	0.20	1.63	41.79	1.60
2011	20.17	1.12	0.10	0.34	7.73	0.25	0.00	4.93	0.06	1.43	38.69	1.80
2012	22.95	1.10	0.12	0.29	8.47	0.20	0.00	5.03	0.01	1.60	50.00	1.52
2013	20.35	1.12	0.14	0.29	11.29	0.22	0.00	4.78	0.02	1.47	53.18	1.54
2014	19.21	1.26	0.14	0.35	10.81	0.20	0.00	4.75	0.05	1.37	59.38	1.60
2015	19.01	1.22	0.36	0.35	9.03	0.24	0.00	4.16	0.04	1.31	63.11	1.63
2016	22.40	1.04	0.12	0.32	9.06	0.14	0.00	3.94	0.02	1.30	59.49	1.93
2017	**21.92**	**0.93**	**0.10**	**0.31**	**9.04**	**0.13**	**0.00**	**4.52**	**0.02**	**1.56**	**46.70**	**1.60**

lb/yr

Year	Flow	As	Cd	Cr	Cu	Pb	Hg	Ni	Ag	Se	Zn	CN
1992	21.20	183.00	65.00	323.00	755.00	84.00	7.60	290.00	46.00	93.00	4,289.00	715.00
1993	27.70	471.00	16.00	41.00	698.00	81.00	7.00	455.00	19.30	130.00	4,358.00	382.00
1994	22.40	104.00	15.00	71.00	417.00	74.00	6.80	334.00	14.70	92.00	3,992.00	345.00
1995	26.00	119.00	16.00	79.00	513.00	79.00	8.80	278.00	16.00	130.00	4,233.00	396.00
1996	25.60	82.90	15.60	78.10	383.30	78.10	3.10	246.70	15.80	33.20	4,125.40	260.80
1997	26.10	75.20	15.90	75.60	509.00	65.90	1.50	269.70	16.30	41.80	4,393.60	257.80
1998	28.50	103.70	17.30	133.50	579.90	41.30	1.10	374.10	17.30	52.70	4,194.80	268.50
1999	25.70	72.00	16.20	61.80	407.90	48.10	0.80	330.90	15.60	33.90	4,536.20	235.20
2000	27.67	72.50	16.90	66.00	603.70	51.20	0.50	385.00	16.90	38.60	4,885.80	256.00
2001	25.73	71.99	15.66	49.69	424.62	34.08	0.42	377.78	15.66	45.39	3,711.15	246.38
2002	24.88	67.05	16.38	56.00	519.40	30.99	0.53	297.01	15.15	36.00	3,382.52	297.87
2003	24.88	64.90	15.10	57.70	529.30	32.60	0.38	250.80	15.10	54.80	3,468.90	267.90
2004	23.80	55.00	13.40	42.80	628.80	30.30	0.41	207.10	13.40	37.30	3,358.90	195.50
2005	25.90	63.30	16.00	50.10	638.80	31.80	0.31	259.30	15.60	44.70	3,414.70	272.20
2006	26.90	72.70	16.20	49.20	647.10	32.40	0.29	266.70	16.20	56.50	3,581.30	245.80
2007	22.82	60.48	13.89	41.67	639.39	27.78	0.22	232.56	13.89	75.76	3,598.27	139.00
2008	21.91	53.20	13.38	40.13	588.98	26.75	0.20	213.10	13.38	88.95	3,649.08	110.77
2009	21.53	66.01	13.09	35.03	529.78	26.19	0.17	215.33	13.09	97.56	3,262.89	92.47
2010	21.40	72.18	13.04	32.60	399.34	26.13	0.14	279.50	13.04	108.89	2,687.12	104.32
2011	20.17	87.76	6.03	20.48	407.55	15.58	0.16	303.71	3.63	87.76	2,367.15	110.64
2012	22.95	79.43	8.88	22.47	579.91	16.46	0.23	353.02	1.77	109.26	3,429.05	105.19
2013	20.35	69.23	8.55	17.57	703.04	13.51	0.12	296.21	1.24	90.69	3,299.72	97.01
2014	19.21	74.69	8.31	20.62	634.58	11.63	0.08	279.28	2.96	80.95	3,478.30	92.38
2015	19.01	71.60	8.31	20.01	526.43	13.82	0.07	241.51	2.15	75.72	3,703.80	94.68
2016	22.40	71.00	7.92	21.82	619.35	9.57	0.10	269.11	1.54	88.72	4,067.68	131.62
2017	**21.92**	**66.00**	**6.90**	**22.74**	**587.93**	**10.24**	**0.10**	**308.98**	**1.68**	**109.96**	**3,022.00**	**120.40**

TOTAL METALS (As, Cd, Cr, Cu, Pb, Hg, Ni, Ag, Se, Zn):

Year	lb/Year	%CHANGE	Year	lb/Year	%CHANGE
1992	6,135.60	0.00	2005	4,534.61	3.25
1993	6,276.30	2.24	2006	4,738.59	4.30
1994	5,120.50	-22.57	2007	4,703.92	-0.74
1995	5,471.80	6.42	2008	4,687.14	-0.36
1996	5,062.20	-8.09	2009	4,259.15	-10.05
1997	5,464.50	7.36	2010	3,631.98	-17.27
1998	5,515.70	0.93	2011	3,299.81	-10.07
1999	5,523.40	0.14	2012	4,600.48	28.27
2000	6,137.10	10.00	2013	4,499.90	-2.24
2001	4,746.46	-29.30	2014	4,591.40	1.99
2002	4,421.02	-7.36	2015	4,663.42	1.54
2003	4,489.58	1.53	2016	5,156.80	9.57
2004	4,387.41	-2.33	2017	4,136.53	-24.66

Table E.5-5

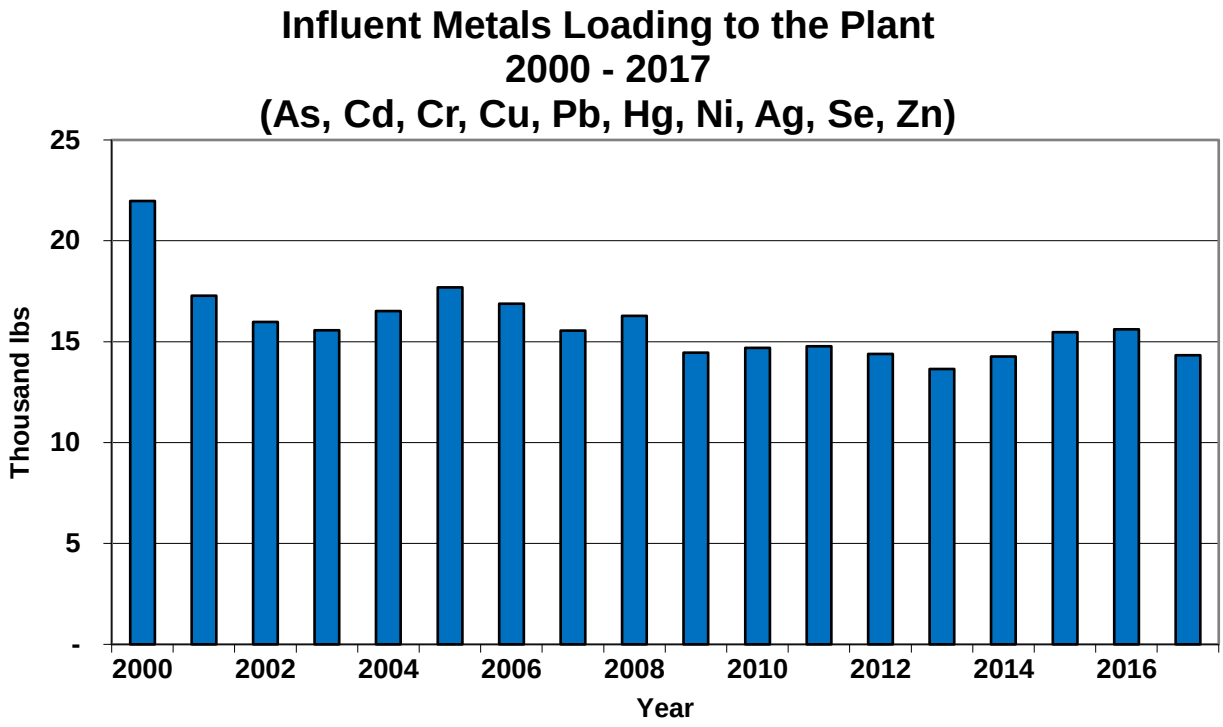
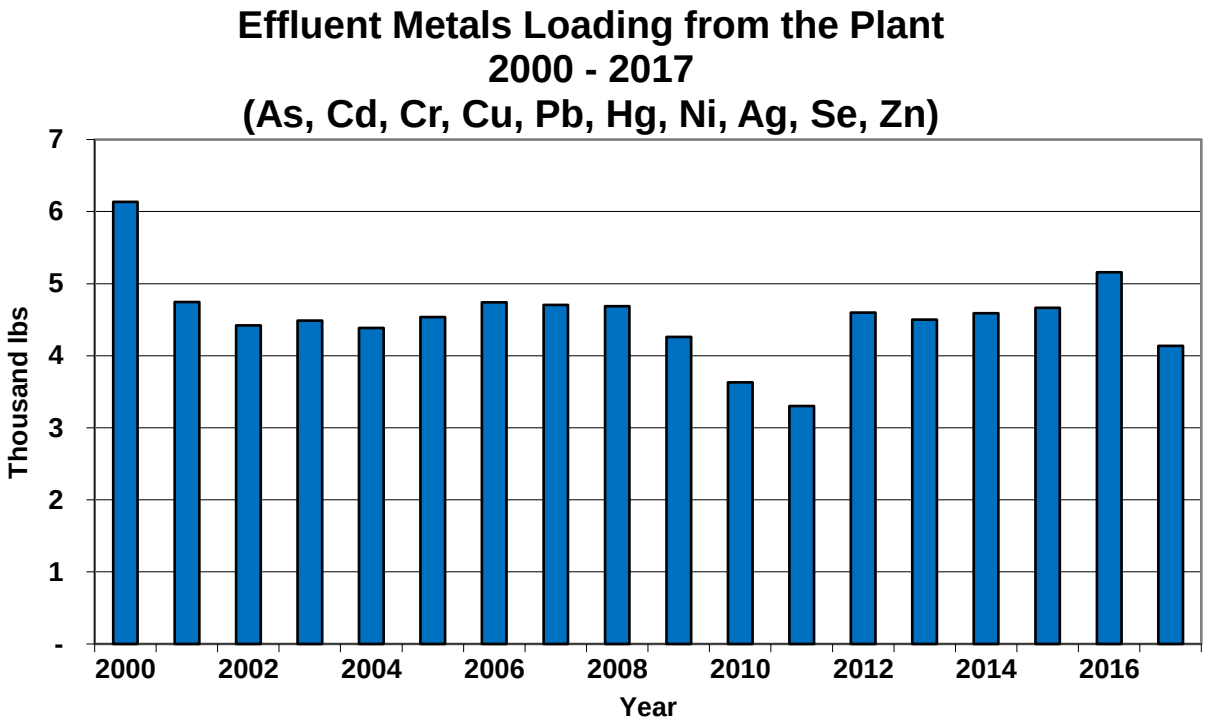
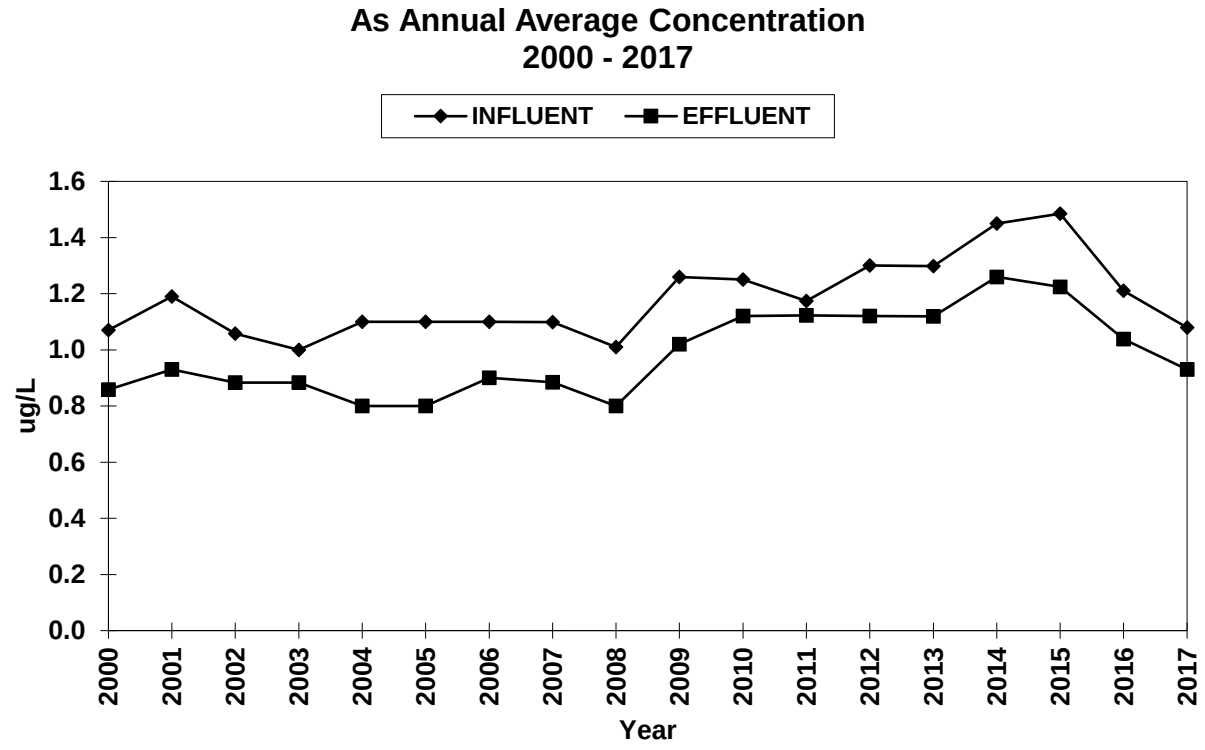
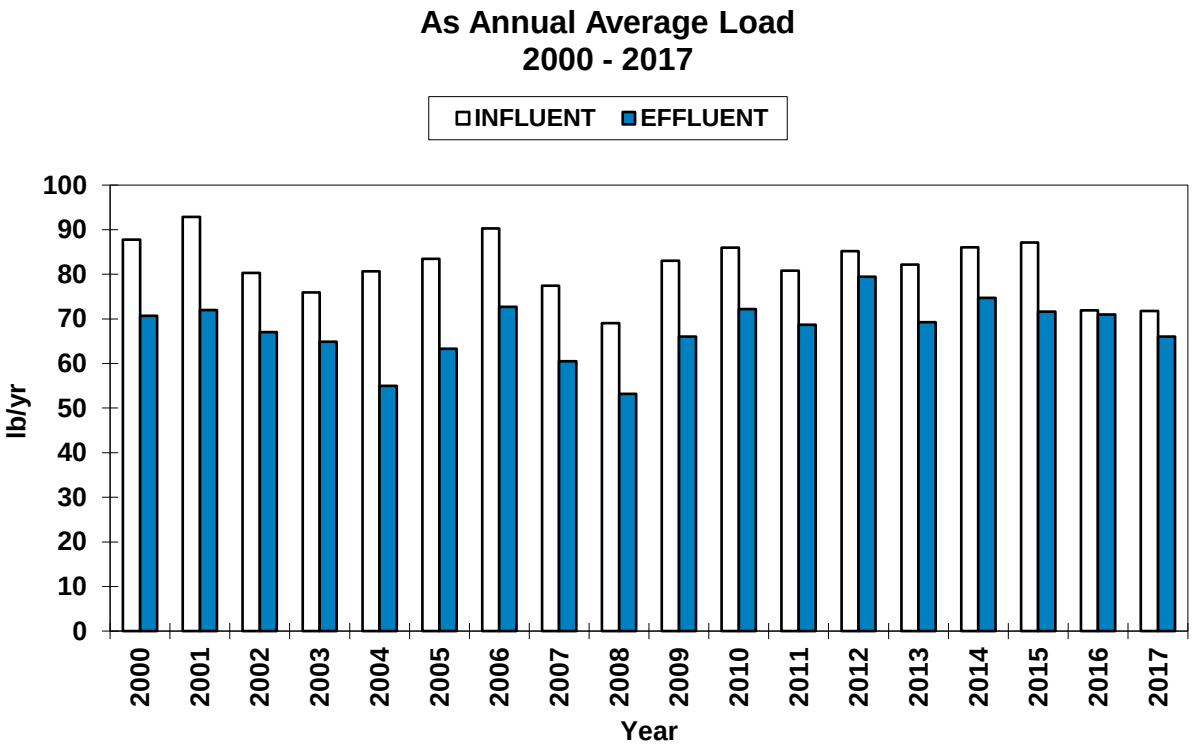
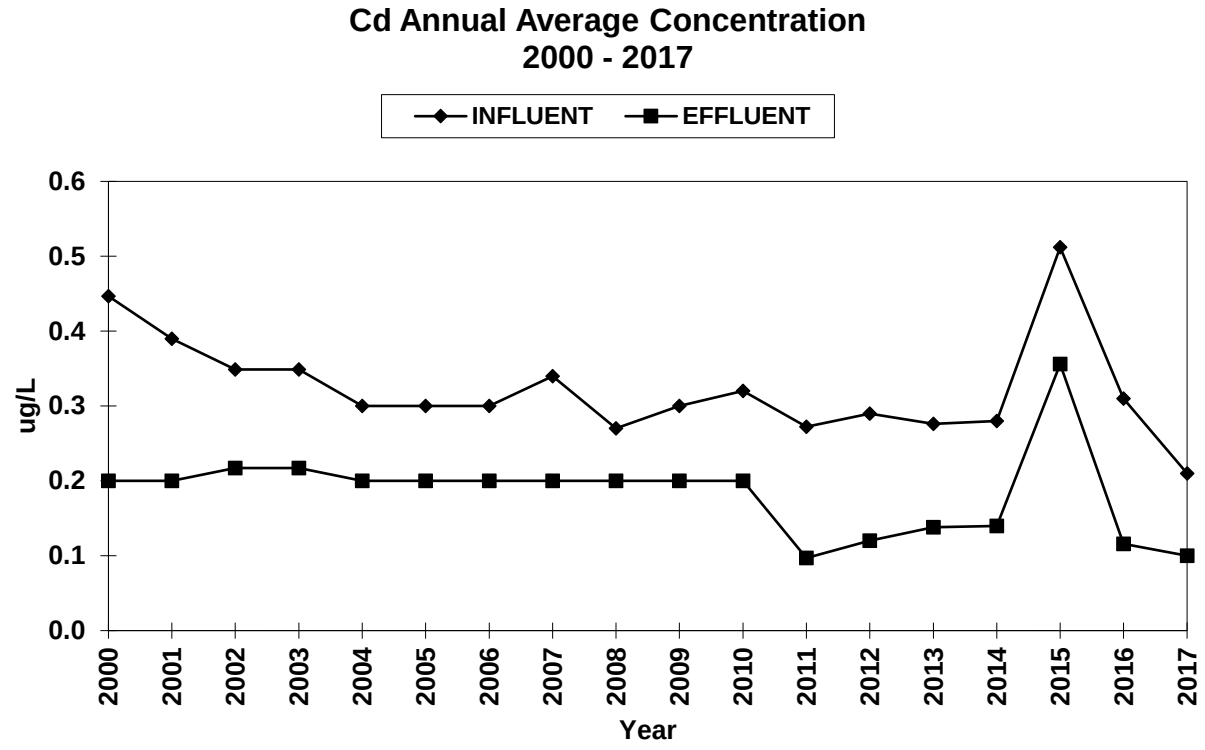


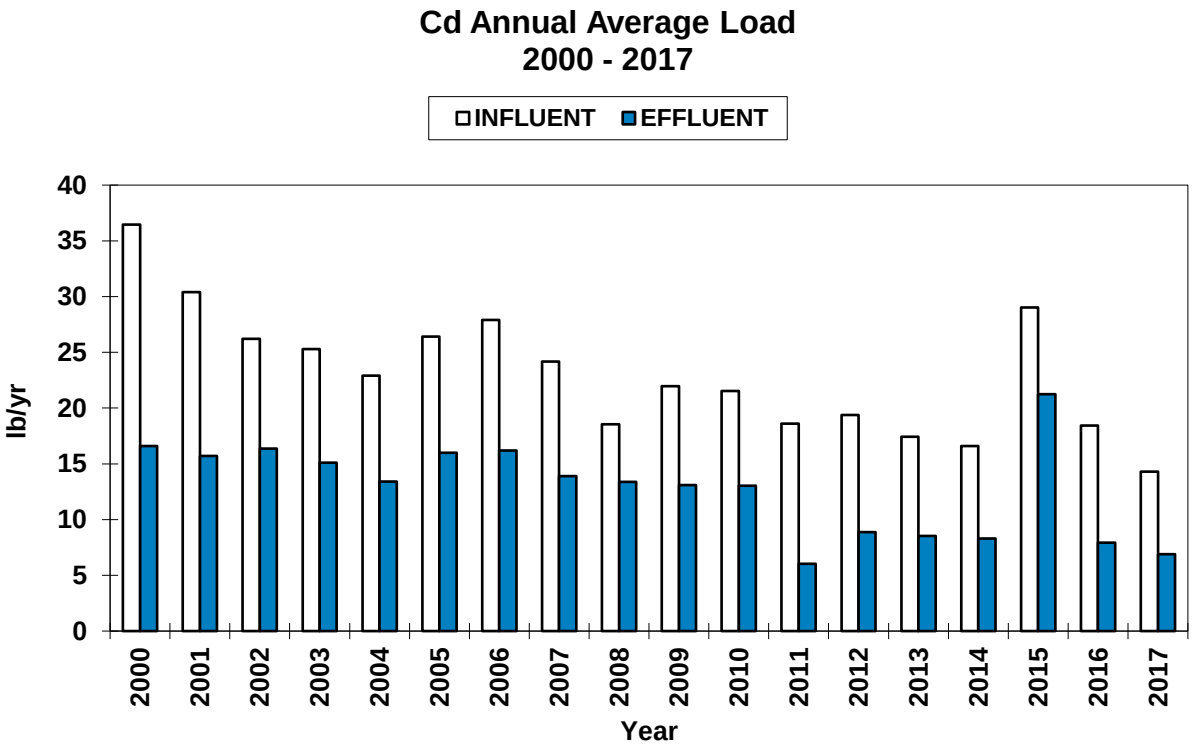
Table E.5-6

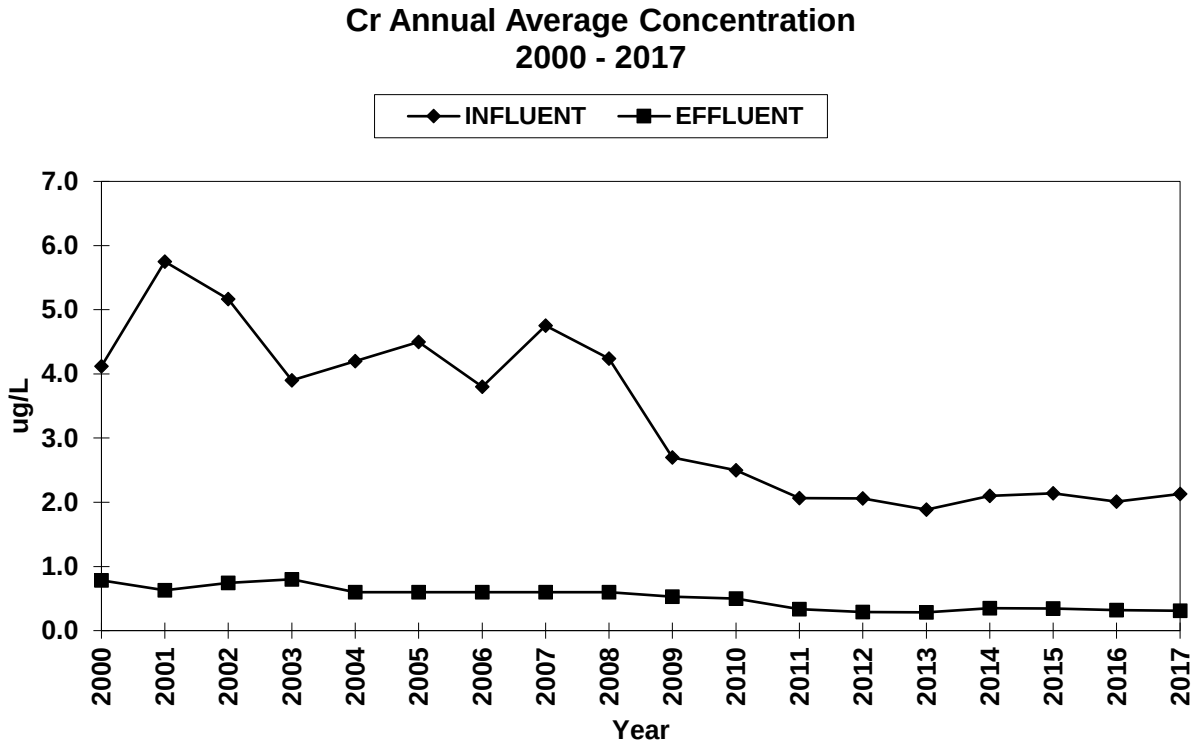


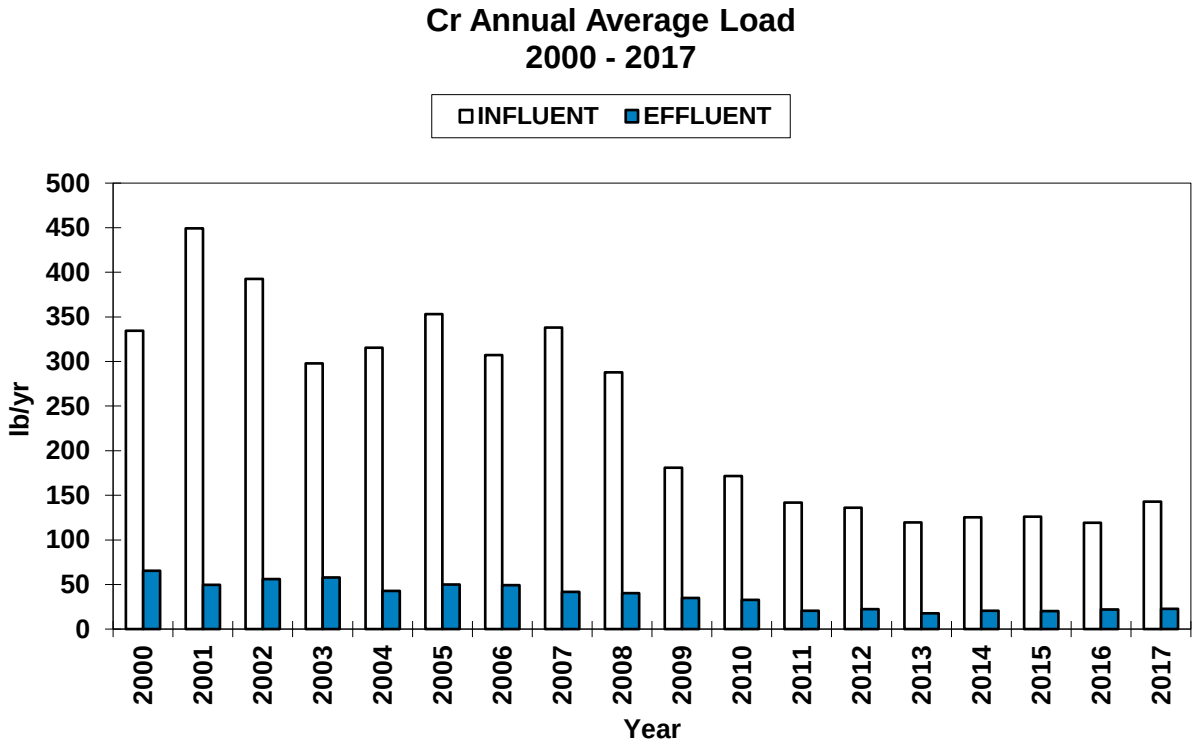

As Annual Average Concentration
2000 - 2017
INFLUENT
EFFLUENT
ug/L
1.6
1.4
1.2
1.0
0.8
0.6
0.4
0.2
0.0
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
2017
Year

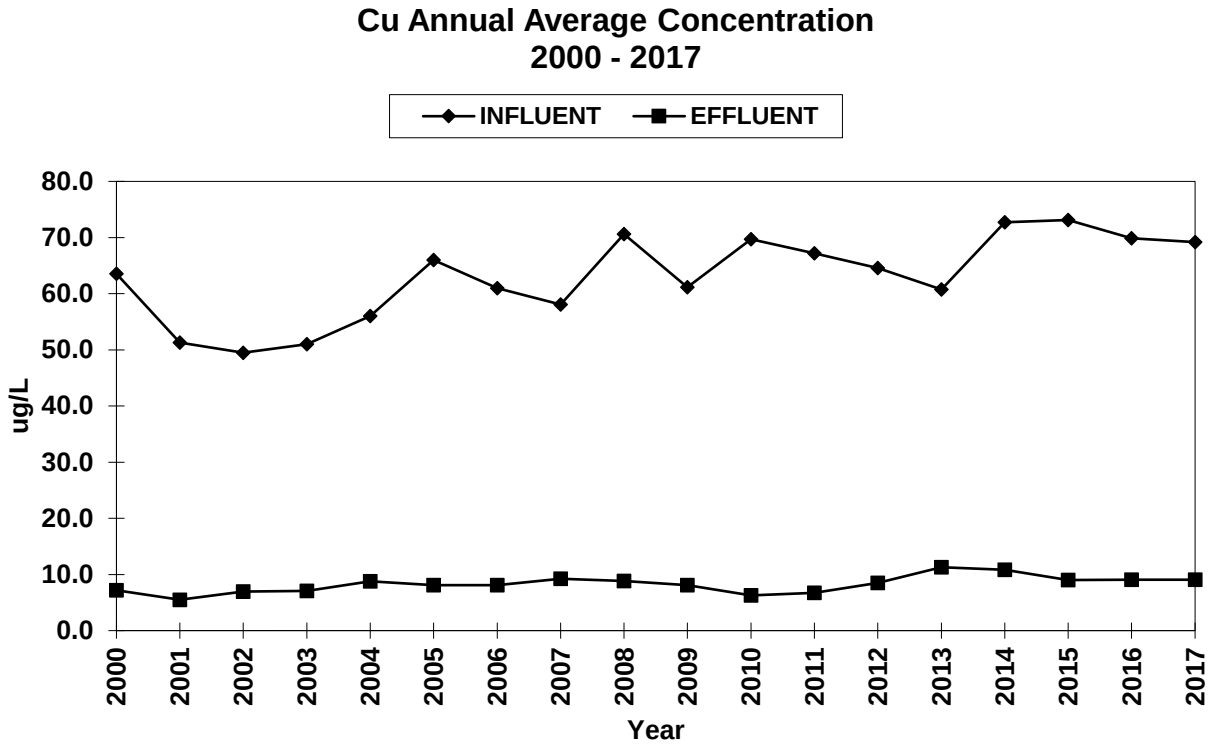

As Annual Average Load
2000 - 2017
INFLUENT
EFFLUENT
lb/yr
100
90
80
70
60
50
40
30
20
10
0
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
2017
Year

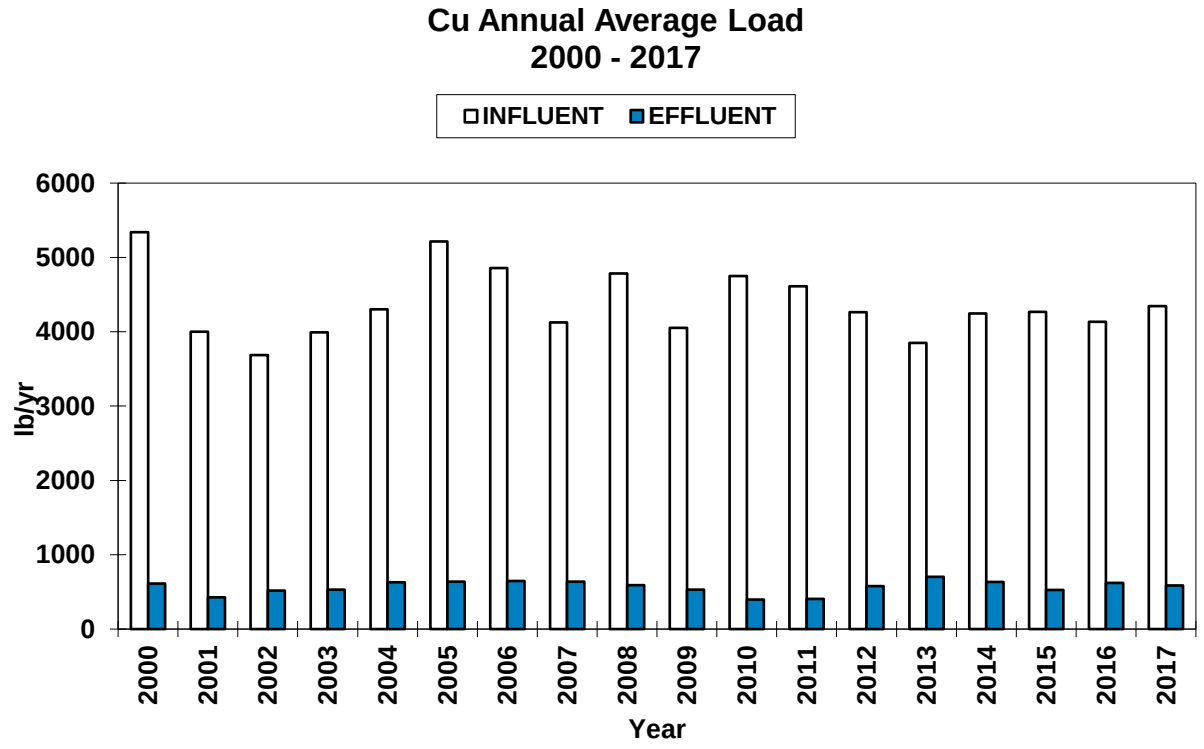

Cd Annual Average Concentration
2000 - 2017
INFLUENT
EFFLUENT
ug/L
0.6
0.5
0.4
0.3
0.2
0.1
0.0
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
2017
Year

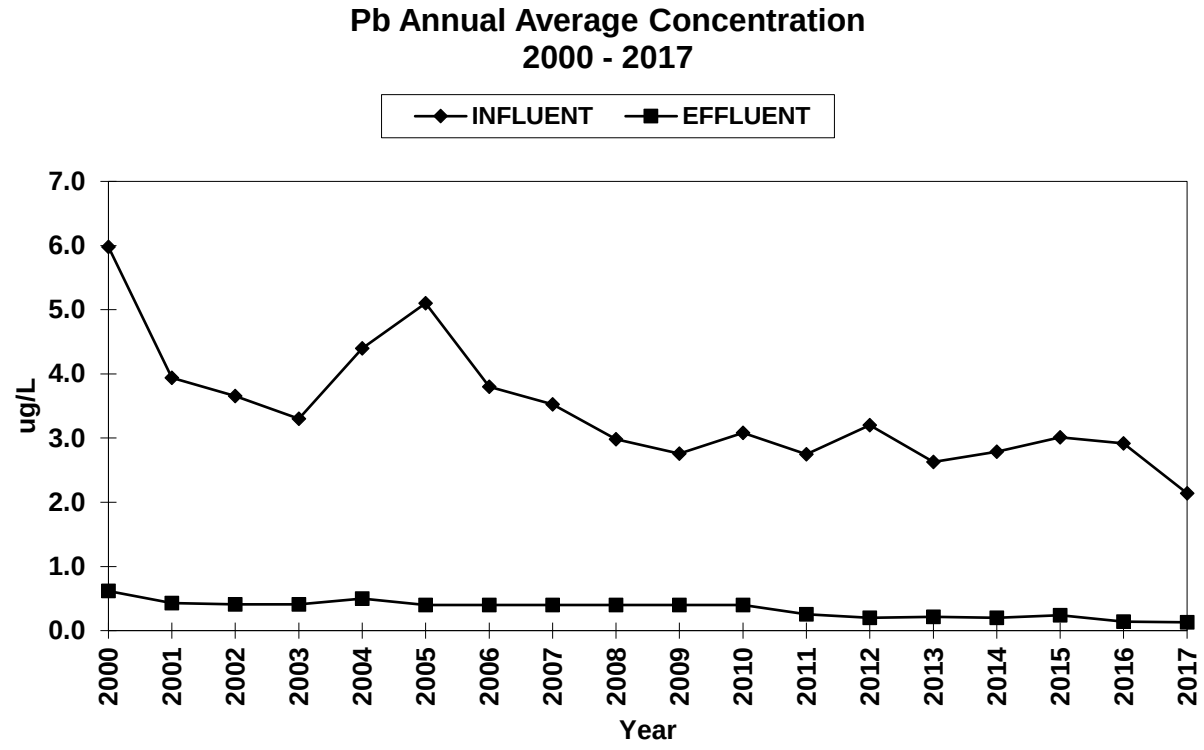

Cd Annual Average Load
2000 - 2017
INFLUENT
EFFLUENT
lb/yr
40
35
30
25
20
15
10
5
0
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
2017
Year

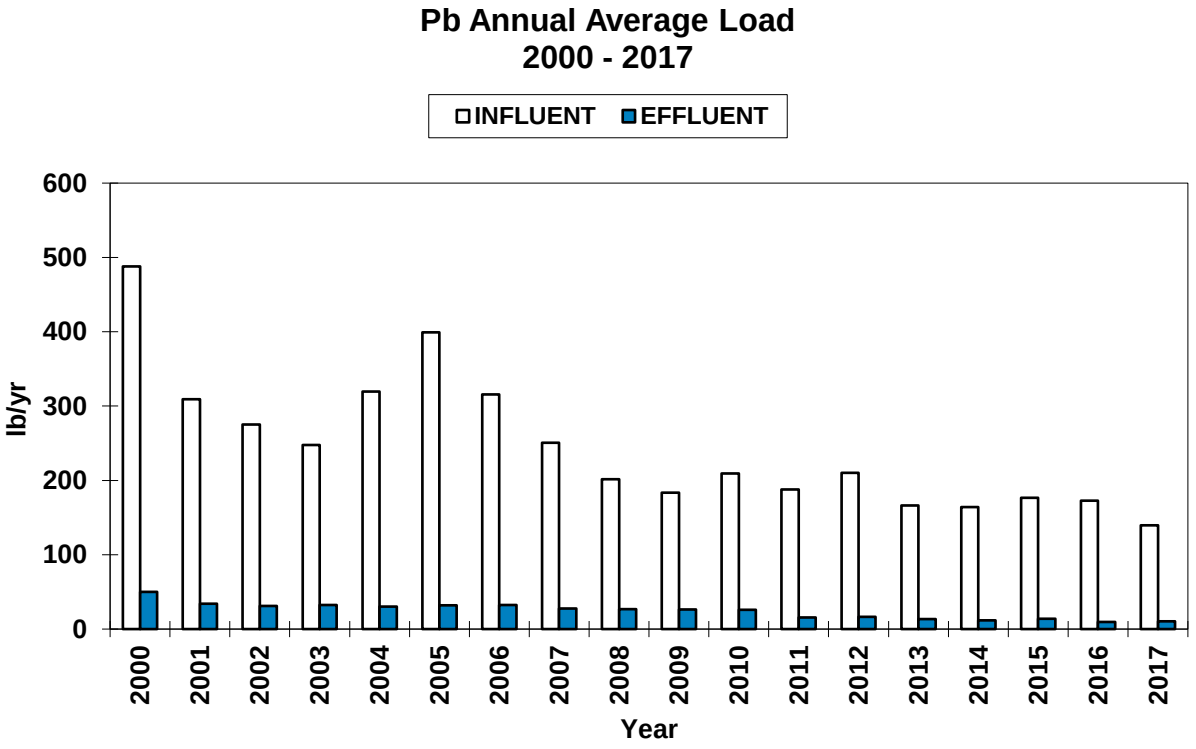

Cr Annual Average Concentration
2000 - 2017
INFLUENT
EFFLUENT
ug/L
7.0
6.0
5.0
4.0
3.0
2.0
1.0
0.0
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
2017
Year

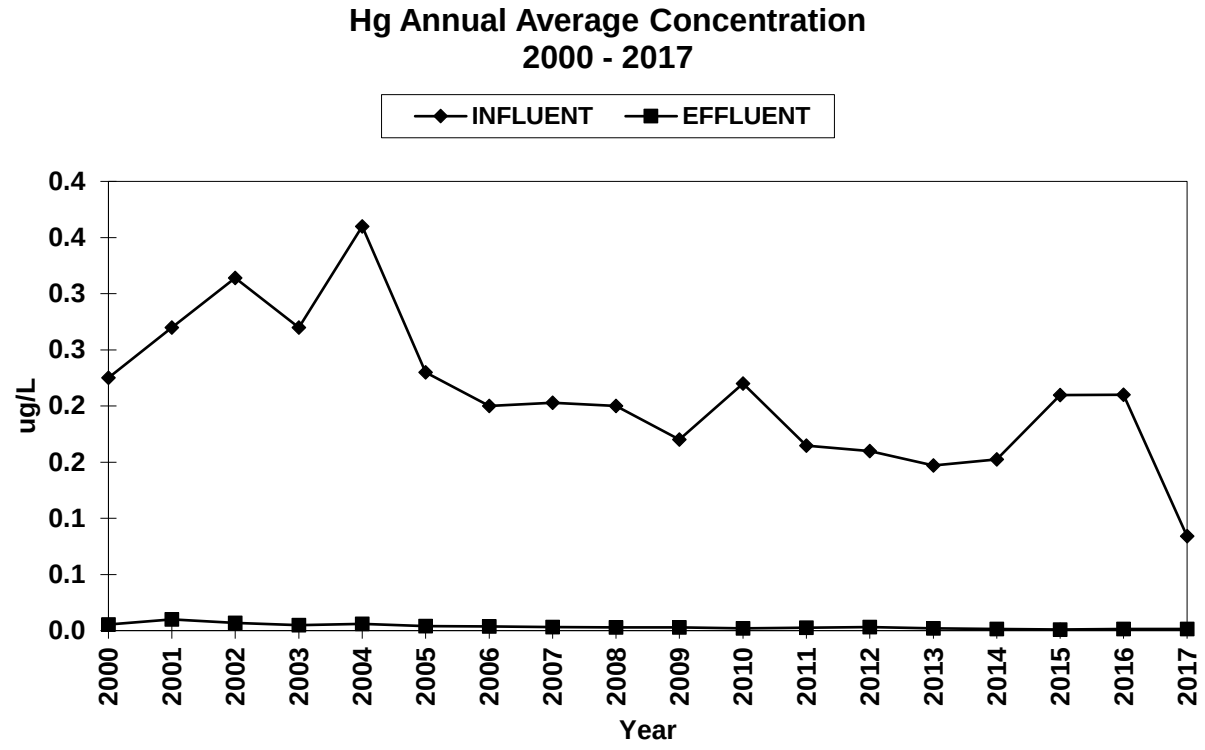

Cr Annual Average Load
2000 - 2017
INFLUENT
EFFLUENT
lb/yr
500
450
400
350
300
250
200
150
100
50
0
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
2017
Year

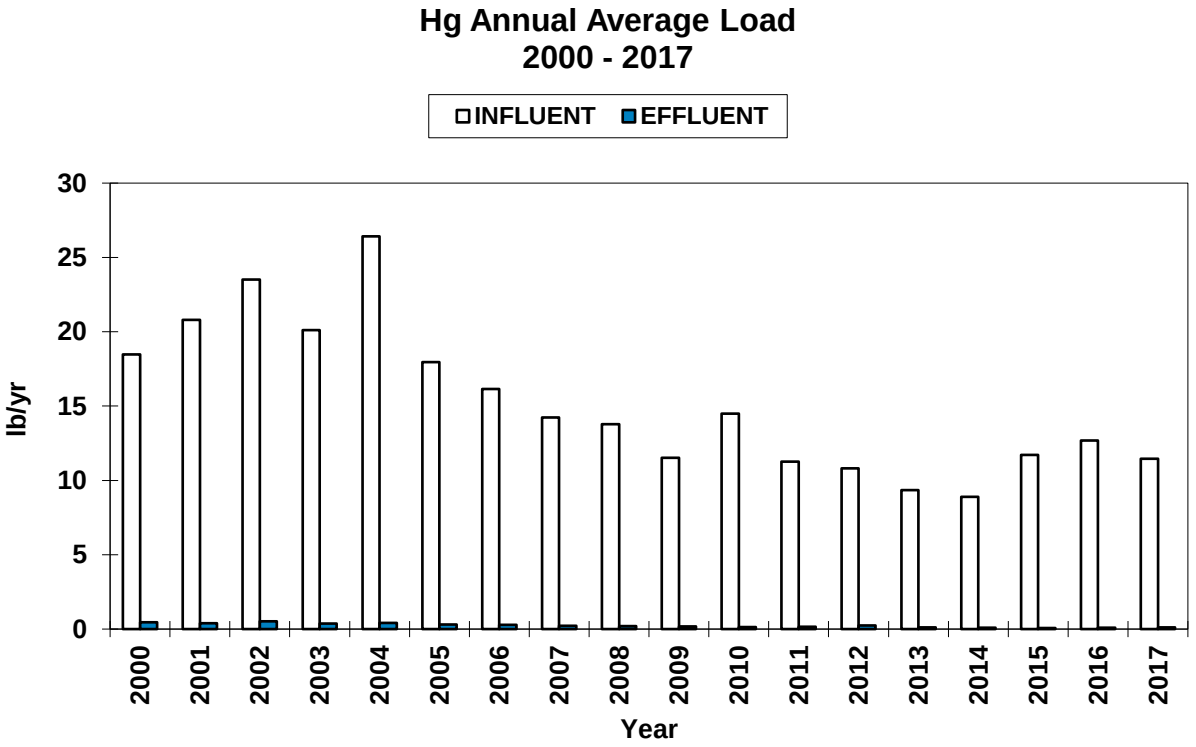

Cu Annual Average Concentration
2000 - 2017
INFLUENT
EFFLUENT
80.0
70.0
60.0
50.0
40.0
30.0
20.0
10.0
0.0
ug/L
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
2017
Year


Cu Annual Average Load
2000 - 2017
INFLUENT
EFFLUENT
6000
5000
4000
3000
2000
1000
0
lb/yr
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
2017
Year

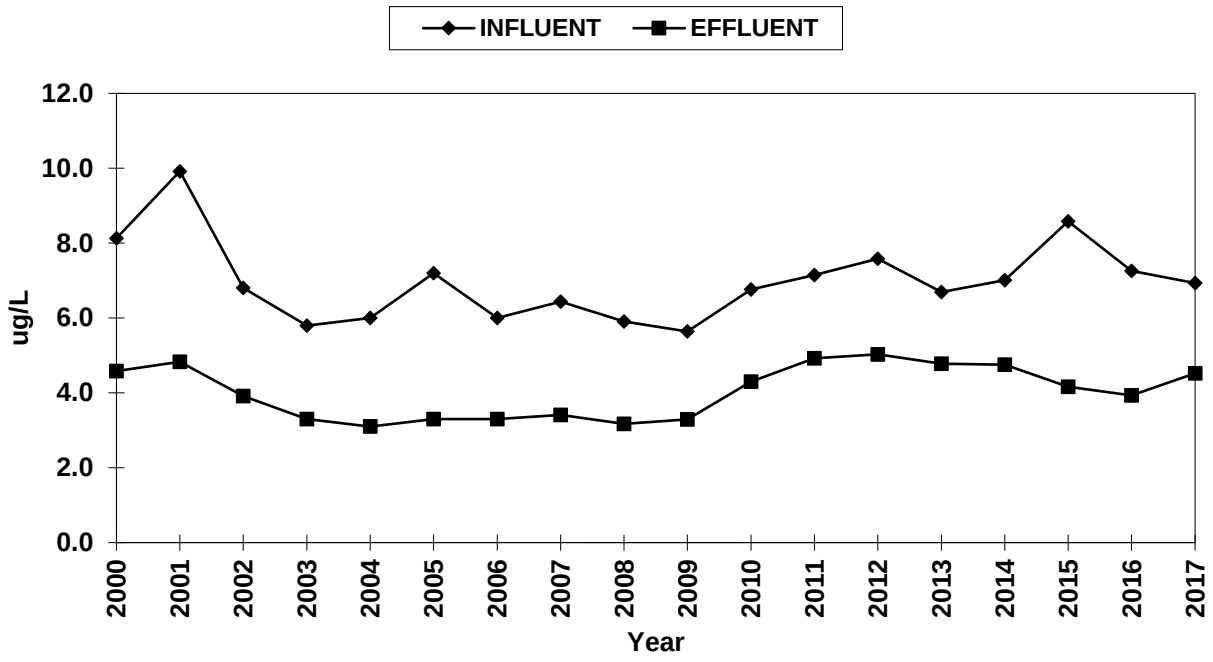

Pb Annual Average Concentration
2000 - 2017
INFLUENT
EFFLUENT
ug/L
7.0
6.0
5.0
4.0
3.0
2.0
1.0
0.0
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
2017
Year


Pb Annual Average Load
2000 - 2017
INFLUENT
EFFLUENT
lb/yr
600
500
400
300
200
100
0
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
2017
Year

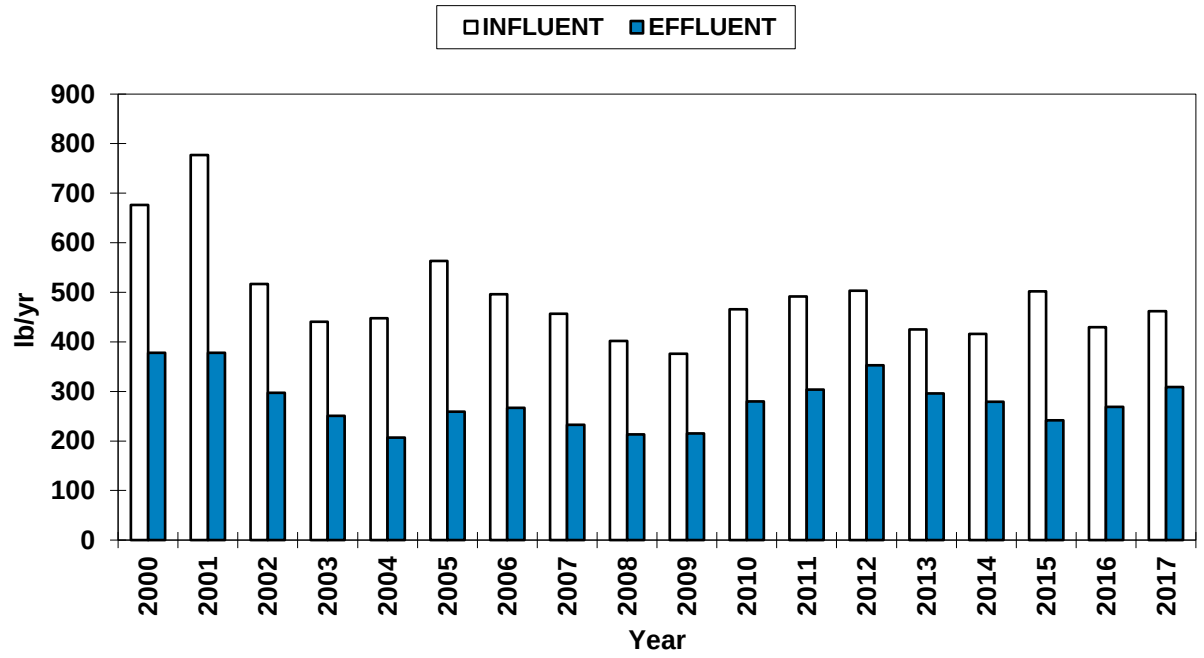

Hg Annual Average Concentration
2000 - 2017
INFLUENT
EFFLUENT
ug/L
0.4
0.4
0.3
0.3
0.2
0.2
0.1
0.1
0.0
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
2017
Year

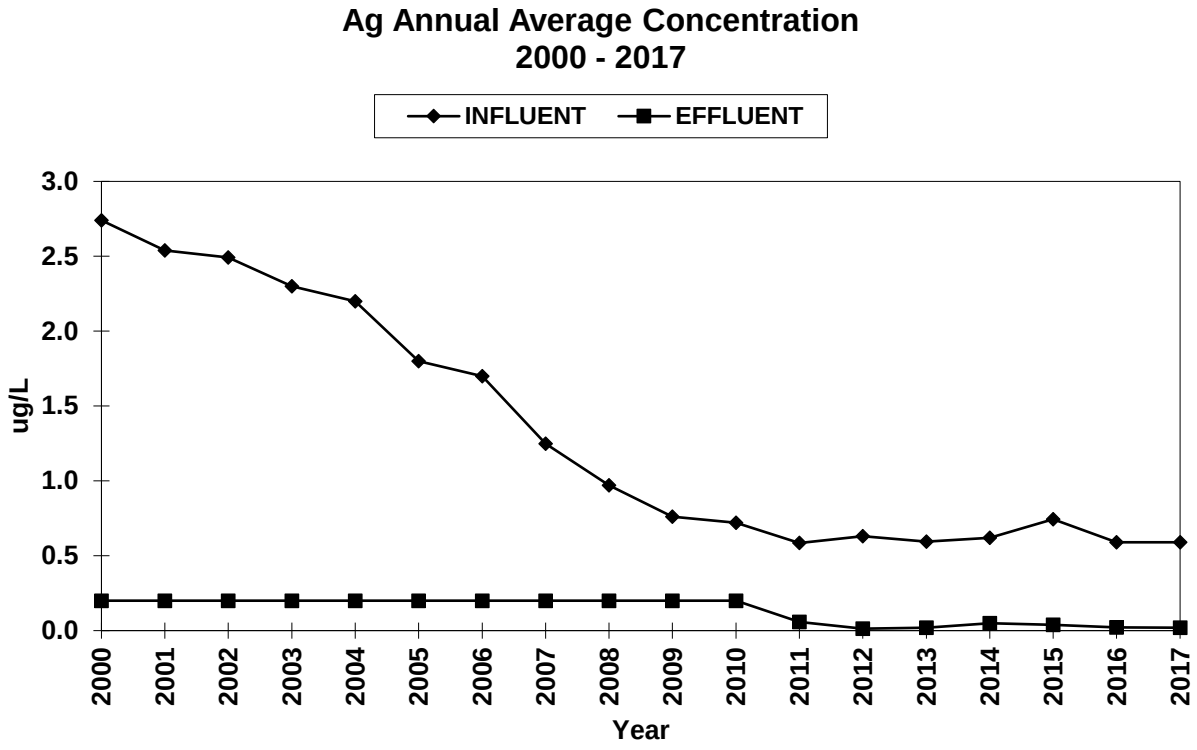

Hg Annual Average Load
2000 - 2017
INFLUENT
EFFLUENT
lb/yr
30
25
20
15
10
5
0
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
2017
Year

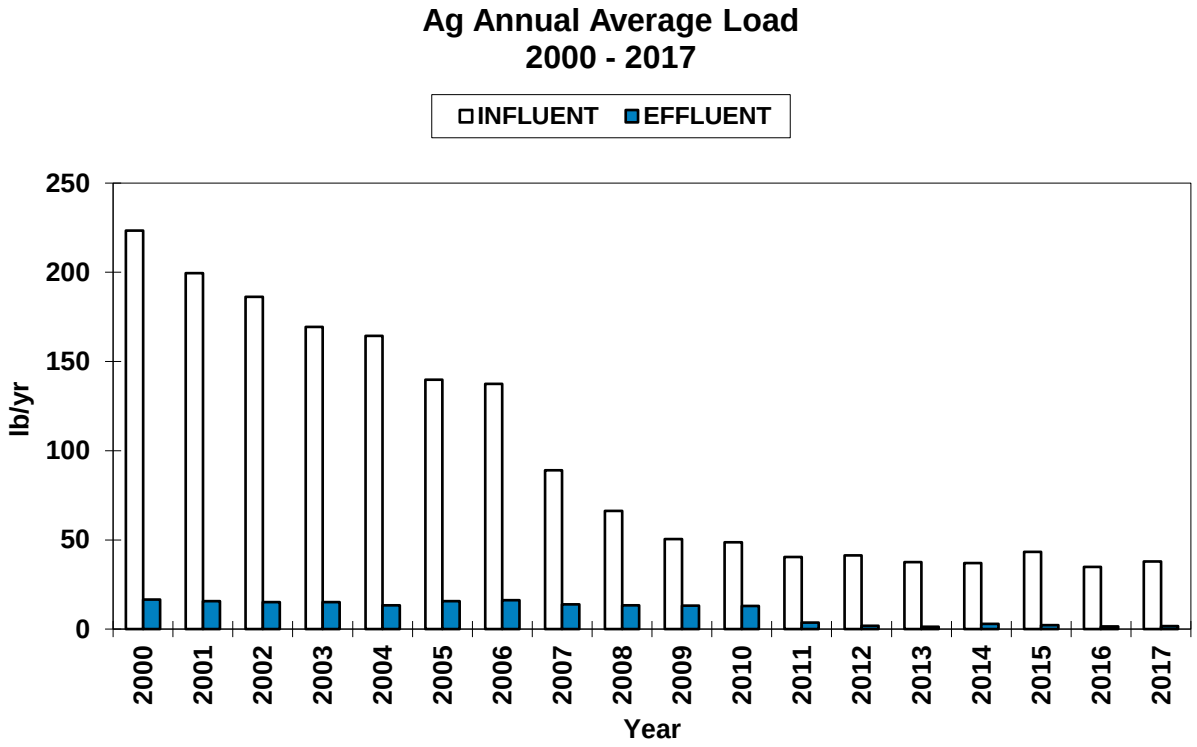
Ni Annual Average Concentration
2000 - 2017

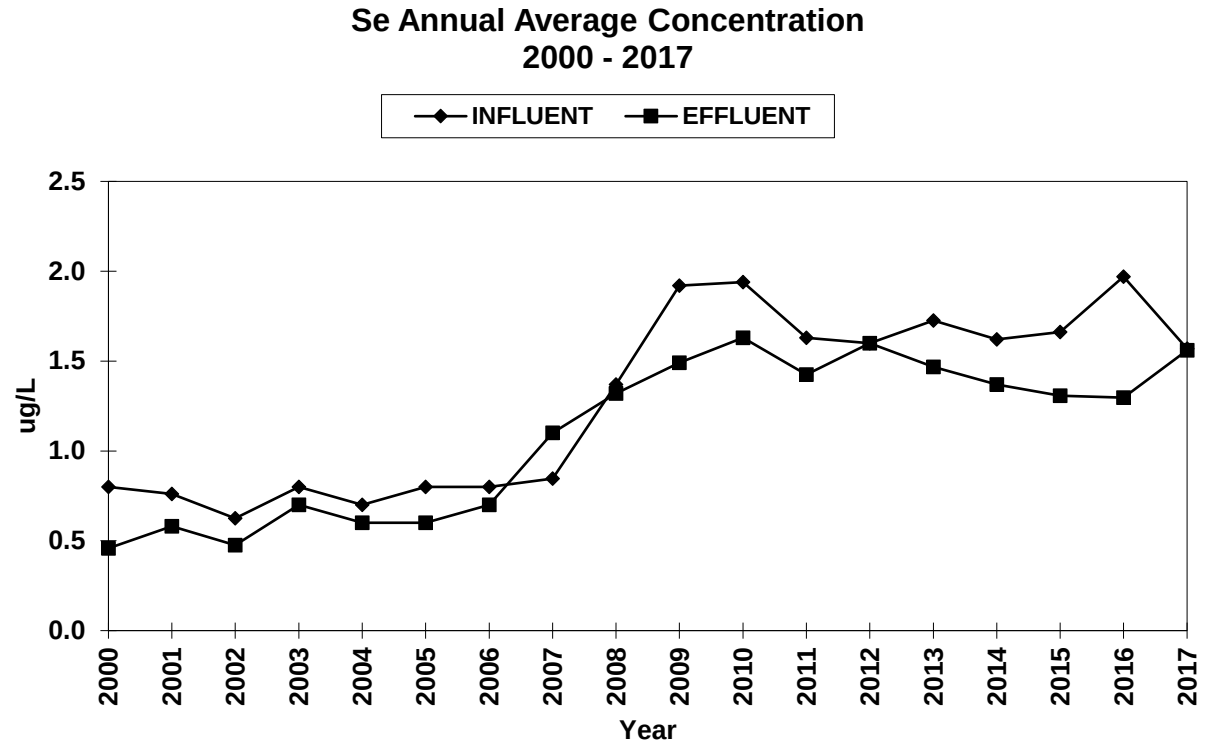


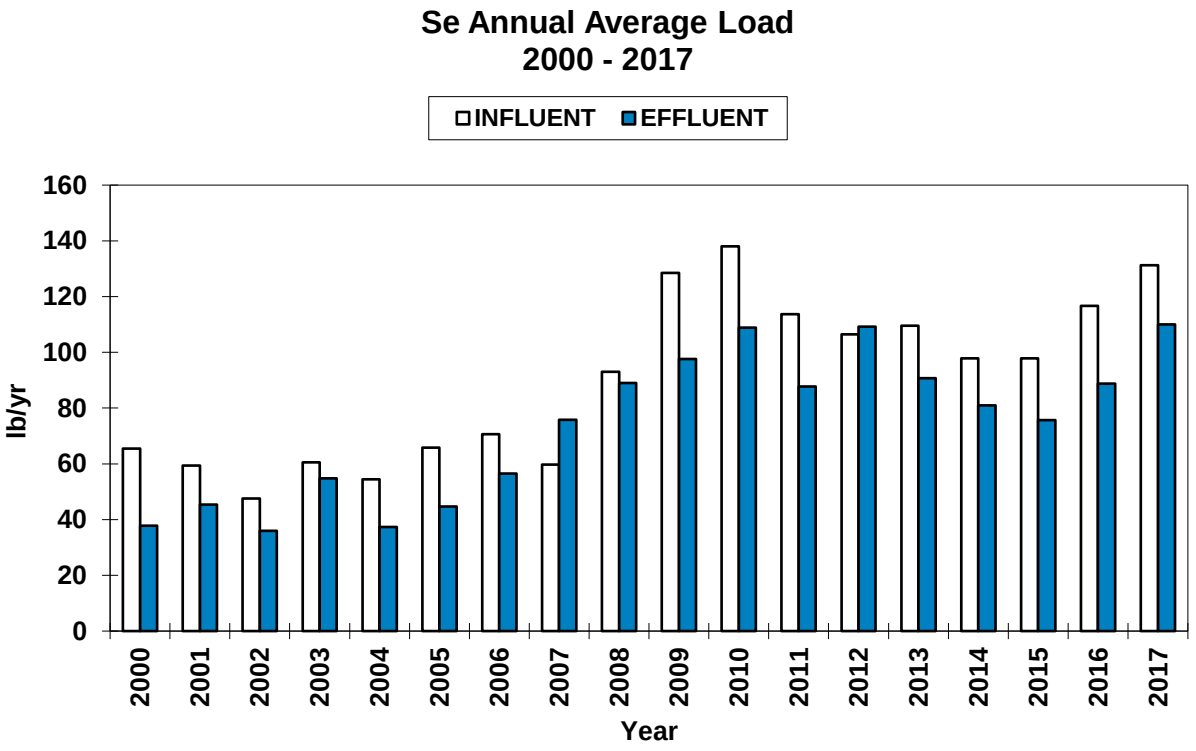
Ni Annual Average Load
2000 - 2017



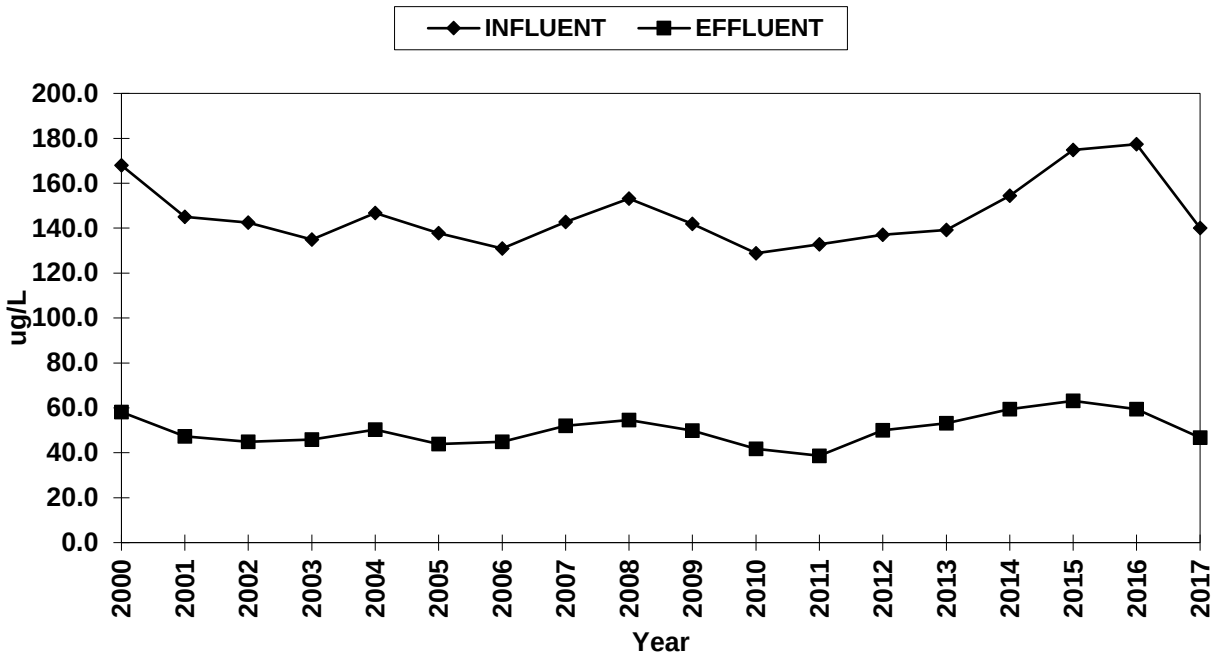

Ag Annual Average Concentration
2000 - 2017
INFLUENT
EFFLUENT
3.0
2.5
2.0
1.5
1.0
0.5
0.0
ug/L
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
2017
Year


Ag Annual Average Load
2000 - 2017
INFLUENT
EFFLUENT
250
200
150
100
50
0
lb/yr
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
2017
Year

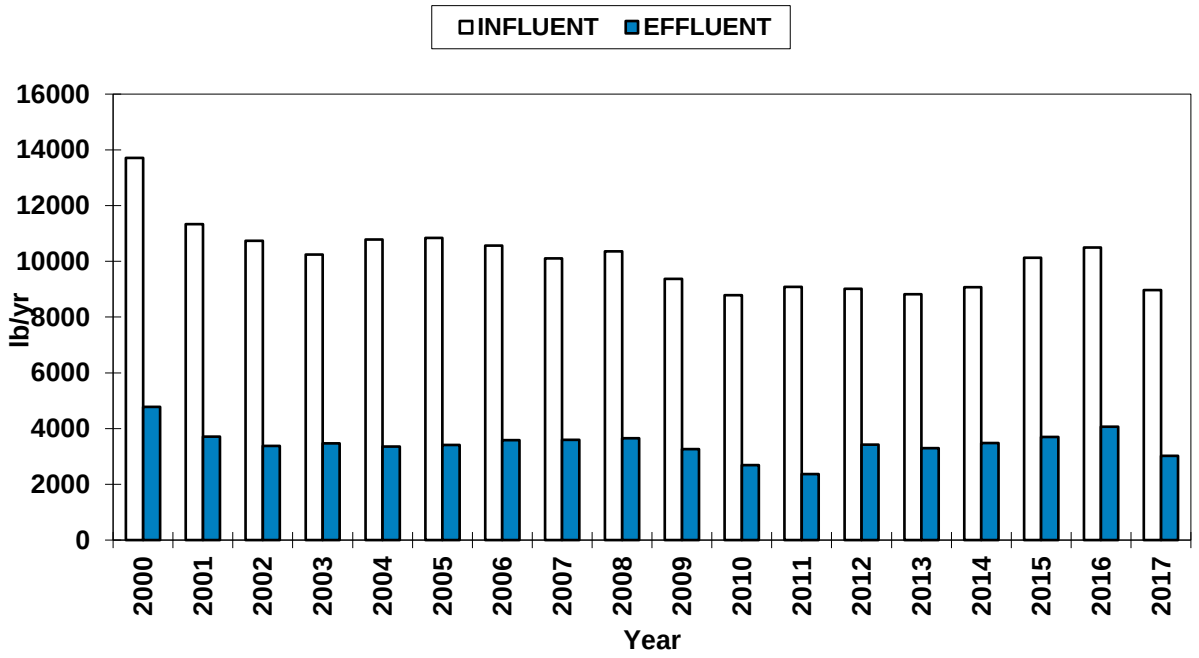

Se Annual Average Concentration
2000 - 2017
INFLUENT
EFFLUENT
ug/L
2.5
2.0
1.5
1.0
0.5
0.0
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
2017
Year

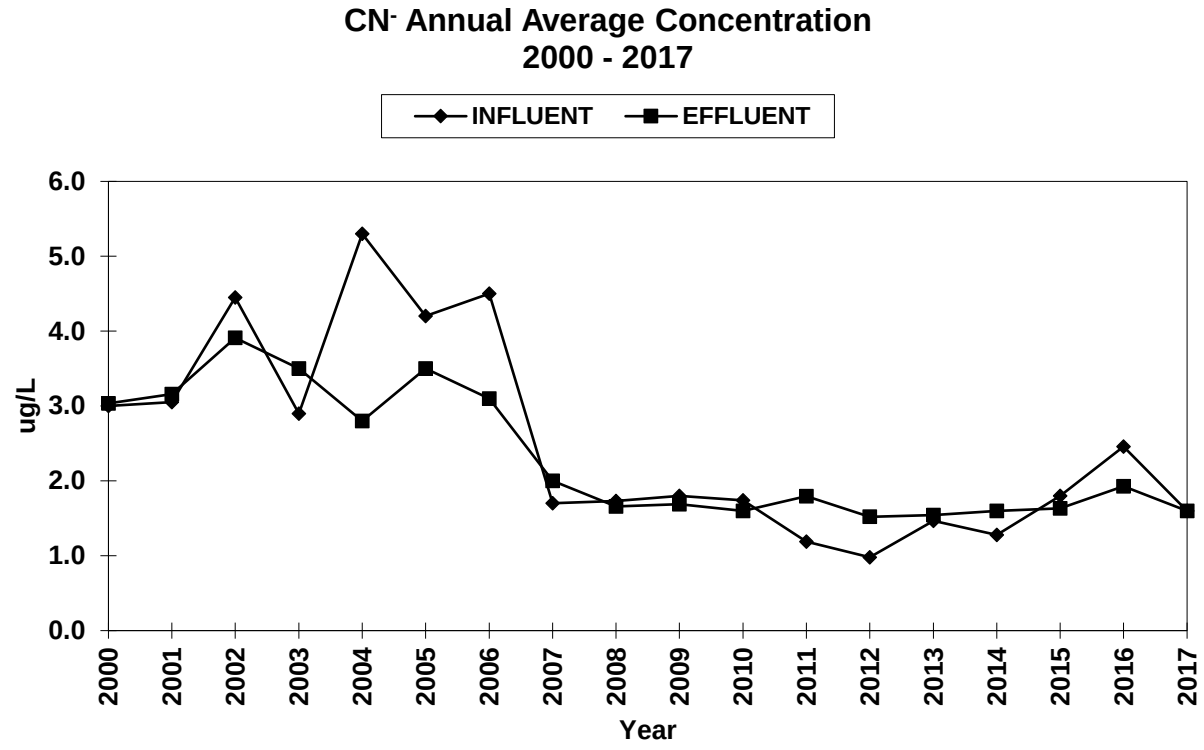

Se Annual Average Load
2000 - 2017
INFLUENT
EFFLUENT
lb/yr
160
140
120
100
80
60
40
20
0
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
2017
Year

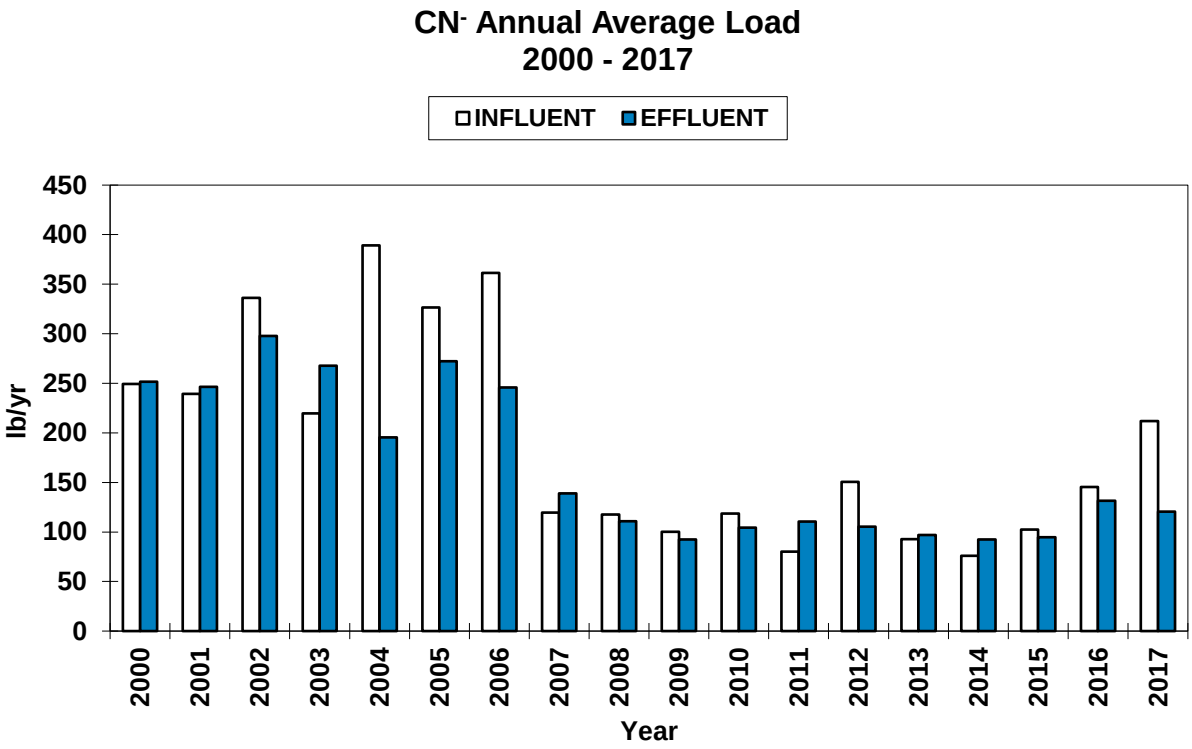
Zn Annual Average Concentration
2000 - 2017



Zn Annual Average Load
2000 - 2017




CN- Annual Average Concentration
2000 - 2017
INFLUENT
EFFLUENT
ug/L
6.0
5.0
4.0
3.0
2.0
1.0
0.0
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
2017
Year


CN- Annual Average Load
2000 - 2017
INFLUENT
EFFLUENT
lb/yr
450
400
350
300
250
200
150
100
50
0
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
2017
Year

F. INSPECTION, SAMPLING AND ENFORCEMENT PROGRAMS

F.1 Inspection Program

Inspection frequencies are set and may be modified based on the type of facility, discharge volume, facility size, and compliance history. Minimum inspection frequencies are summarized in Table F.1-1. POTW staff conducts the following types of inspections:

- **Pre-Permit Inspection**
  Pre-Permit inspections are scheduled with the IU to gather and verify information on manufacturing and treatment processes, regulated and unregulated processes, chemical storage and handling, waste disposal practices, proper secondary containment, flow rates, plumbing and piping layouts and other pertinent information needed to confirm information provided by the IU and to determine the appropriate permit type and permit provisions for the facility.

- **Violation Inspections**
  Any inspection and/or monitoring performed to investigate the source(s) of noncompliance and or to determine the status of previously found problems or noncompliance.

- **Routine Compliance Inspections**
  Annual or semiannual facility inspections typically scheduled with the IU to verify information contained in Periodic Reports of Continued Compliance, verify compliance with permit provisions, and to determine if any changes to the facility or operations have occurred that have not been previously reported to the POTW.

- **Special Investigation Inspections**
  Site inspections conducted at the request of IUs or performed as a result of process or treatment changes, spills, bypasses or upsets, or other unanticipated events.

- **Sampling Inspections**
  Unannounced inspections conducted during POTW staff visits to sites for sample collection. Sampling inspections include the following elements as applicable:

  1. Checking samples for pH and recording the results;
  2. Comparing field pH results with IU pH monitoring equipment results;
  3. Recording IU flow meter totalizer readings;
  4. Observing IU sample point(s) and sampling equipment; and
  5. Recording and addressing abnormalities observed in effluent conditions and/or pretreatment systems.

TABLE F.1-1
Minimum Inspection Frequencies

Facility Type	Minimum Inspection Frequency
Categorical/SIU	Annual
Categorical (Zero Discharge)	Annual
Non-Categorical (SIU)	Annual
Non-Categorical (non-SIU)	Annual
Best Management Practices (BMP)	Annual
Permitted Vehicle Service Facility	Annual
Non-Permitted Vehicle Service Facility	Annual
Photo Processing	Annual
Groundwater	Once during permit cycle
Machine Shops	Once during permit cycle
Food Service Establishments	Typically once every 3-years
Dental offices that remove or replace amalgam	20% each year

F.2 Sampling Program

Compliance monitoring of SIUs by POTW staff occurs at a minimum twice per year.

The base sampling program consists of the following:

Sampling Frequency

- **Semi-annual Sampling**
  - Metals: Ag, As, Cd, Cr, Cu, Hg, Ni, Pb, Se and Zn
  - pH
  - STO/TTO

- **Annual Sampling**
  - CN

CIUs with process wastewater discharges are monitored at a minimum for all federally regulated pollutants, expect for pollutants for which a monitoring waiver has been granted. Additional pollutants may be monitored if present in IU operations. Violation follow-up sampling is limited to the pollutants that were in violation.

Sampling Descriptions

- **Routine Sampling**
  SIUs are sampled at least annually for priority pollutant metals, cyanide and TTO. CIUs are typically sampled on a monthly basis.

- **Follow-up Sampling**
  Violations of discharge standards are resampled in accordance with the requirements contained in 40 CFR 403.12(g)(2). The initial resample is typically performed by the IU. Once the facility has returned to consistent compliance as demonstrated by follow-up self-monitoring, the POTW typically performs 4-consecutive business days of follow-up monitoring to confirm compliance.

- **Compliance Schedule Sampling**
  IUs found to be in significant non-compliance for three successive quarters are generally put on an intensive monitoring schedule or a compliance schedule. Such monitoring is conducted at the IUs expense by an outside contractor hired by the POTW or the contributing jurisdiction in which the IU is located.

- **Investigative Sampling**
  POTW staff during the course of an inspection or other situation may take investigative samples at any time where the inspector needs information on the composition of a waste stream or observes indications of potential non-compliance.

- **Revenue Sampling**

  POTW staff is responsible for collecting samples used to determine the strength of contributing waste streams for recovery of POTW operation and maintenance costs from the Partners. To determine the annual charges for each Partner, main trunklines for each contributing jurisdiction are monitored 14 days each year. Samples are taken once each month from ten main trunk lines. The days of revenue sampling are staggered so that at the end of the year, one or more samples have been collected on each day of the week. Chemical oxygen demand, suspended solids, and ammonia samples are used to determine the strength of contributing waste streams. In addition, the following pollutants or pollutant properties are monitored: Ag, As, Ca, Cd, Cl-, Cr, CN, Cu, Hg, Mg, Na, Ni, Pb, pH, Specific Conductance, Se, TDS, TTO and Zn.

<u>Quality Assurance</u>

- **Sample Scheduling**
  RWQCP staff generates the sampling schedule in coordination with the POTW Laboratory Personnel, taking into account laboratory and sampling staff schedules.

- **Sample Chain of Custody**
  Self-monitoring results submitted by IUs must be accompanied by an appropriate Chain of custody sheet. Chain of custody sheets must accurately document or reflect the details of each sampling event and at a minimum must contain the following information for each sample taken:

    i. The date, time, exact location, and method of sampling.

1. If composite samples are taken with an automatic sampler, the sample date/time must specify the start date/time, the end date/time, and the sample collection date/time;
2. The date/time of each grab sample for multiple grab composites;

ii. The sample bottle/container type;
iii. The preservative used in each bottle/container;
iv. The date/time of sample preservation and pH analysis;
v. Indication if sample was stored and transported with cooling;
vi. The pollutant or pollutant properties to be analyzed;
vii. For cyanide samples an indication that oxidants were tested for and if present neutralized prior to sample preservation;
viii. For TTO samples taken, an indication that an approved neutralizing agent such as sodium thiosulfate was added to the sample if oxidants were present;
ix. Names and signatures of the person or persons taking the samples; and
x. Indication if sampling container(s) were sealed with custody seals.

In addition, the following information shall be submitted for each sample taken:

xi. Certified laboratory sampling analysis results;
xii. The analytical techniques/methods used for sample analysis;
xiii. The dates the laboratory analysis were performed;
xiv. Who performed the laboratory analysis;
xv. For grab samples, the volume of wastewater discharged through the sampling location on the day of sampling; and
xvi. For composite samples, the volume of wastewater discharged at the point of sampling between the sample start and end times.

F.3 Enforcement Response Plan Implementation

The City of Palo Alto and the City of Mountain View both have their own Enforcement Response Plans (ERP). These plans describe how noncompliance with IU discharge permits, local Sewer Use Ordinances, and/or the National Pretreatment Standards is addressed. The RWQCP ERP was first approved in 1991 with subsequent revisions in 1996, 2002, 2010, 2013, and 2017.

G. UPDATED LIST OF REGULATED SIUs

G.1 Categorical Industrial Users

FACILITY NAME & ADDRESS	QTR	INSPECTIONS	SAMPLING EVENTS		COMPLIANCE STATUS	ENFORCEMENT ACTIONS						APPLICABLE LIMITS
			POTW	IU		VW	WL	NON	CA	FINE	CIV	
Applied Nanostructures, Inc.	1		3		IC	1						Table G.5-2
415 Clyde Avenue, Unit 102-104 Mountain View, CA 94043	2		4	5	IC	2						
Metal Finishing Point Source Category 40 CFR 433.17 (PSNS)	3	1	3	1	CC							
	4		3	2	CC							
Cal Spray, Inc.	1		3		CC							Table G.5-1
1905 Bay Road East Palo Alto, CA 94303	2	1	3	1	CC							
Metal Finishing Point Source Category 40 CFR 433.15 (PSES)	3		3		CC							
	4	1	3	1	CC							
Communications & Power Industries, LLC	1		9	9	IC							Table G.5-2
811 Hansen Way Palo Alto, CA 94304	2	1	6	8	IC							
Metal Finishing Point Source Category 40 CFR 433.17 (PSNS)	3		9	9	CC	2						
	4	1	7	10	CC							
Hammon Plating Corporation	1		6	21	CC			1				Table G.5-1
890 Commercial Street Palo Alto, CA 94303	2	2	6	20	CC							
Metal Finishing Point Source Category 40 CFR 433.17 (PSNS)	3		6	19	CC							
	4	1	7	20	CC							
Space Systems/Loral, LLC	1			Zero process discharge. No self-monitoring required.	CC							Table G.5-2
1034/1036 E. Meadow Circle Palo Alto, CA 94303	2	1			CC							
Metal Finishing Point Source Category 40 CFR 433.17 (PSNS)(Zero Discharge)	3				CC							
	4	1			CC							

G.1 Categorical Industrial Users (continued)

FACILITY NAME & ADDRESS	QTR	INSPECTIONS	SAMPLING EVENTS		COMPLIANCE STATUS	ENFORCEMENT ACTIONS						APPLICABLE LIMITS
			POTW	IU		VW	WL	NON	CA	FINE	CIV	
Space Systems/Loral, LLC 3825 Fabian Way Palo Alto, CA 94303 Metal Finishing Point Source Category 40 CFR 433.15 (PSES) Electrical and Electronic Component Point Source Category 40 CFR 469.18(PSNS)	1		18	13	CC							Table G.5-1 Table G.5-3
	2	1	18	15	CC							
	3		14	12	CC							
	4	1	12	14	CC							
Teledyne Microwave 1274 Terra Bella Avenue Mountain View, CA 94043 Metal Finishing Point Source Category 40 CFR 433.15 (PSES)(Zero Discharge)	1	1		Zero process discharge. No self-monitoring required.	CC							Table G.5-1
	2				CC							
	3				CC							
	4				CC							

Note: All SIUs within the RWQCP service area are required to submit a Toxic Organics Management Plan for RWQCP review/approval prior to obtaining an Industrial Waste Discharge permit.

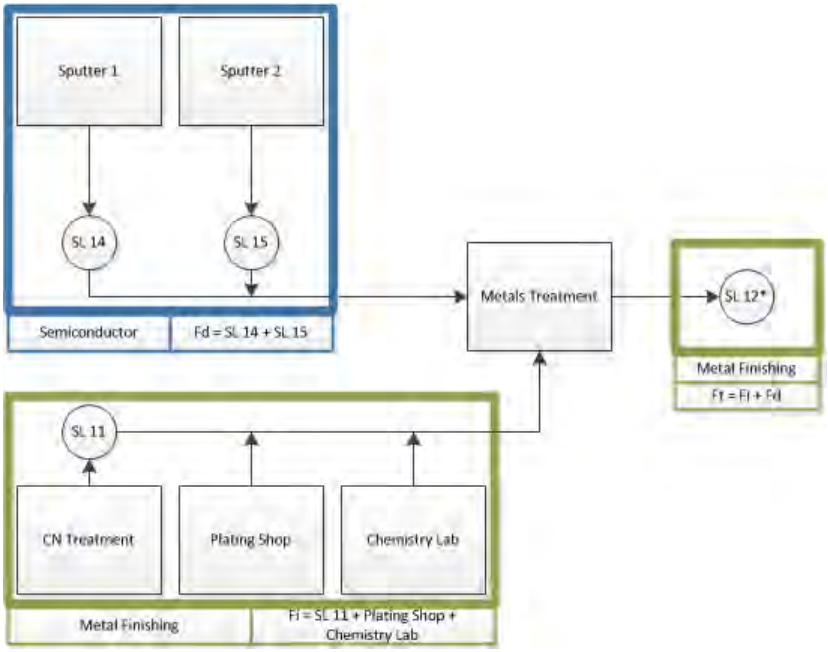
G.2 Categorical Industrial User Additions/Removals 2017

In 2017, no categorical industrial users were added or removed from the list of SIUs submitted in the previous annual report.

G.3 Applicable Combined Waste Stream Formula Calculations

Space Systems/Loral, LLC's 3825 Fabian Way facility located in Palo Alto is the only CIU in the RWQCP service area regulated using the combined waste stream formula to determine discharge limits. The alternative discharge limits for the facility were calculated using the following information and figures:

Facility Block Flow Diagram



Combined Waste Stream Formula Calculations

$$C_T = \left(\frac{\sum_{i=1}^{N} C_i F_i}{\sum_{i=1}^{N} F_i}\right)\left(\frac{F_T - F_D}{F_T}\right) = C_i\left(\frac{F_T - F_D}{F_T}\right)$$

Maximum for any 1 day:

$$C_{T(Cd)} = \left(\frac{(0.69\ \text{mg/L})(789\ \text{gpd})}{789\ \text{gpd}}\right)\left(\frac{(1{,}419\ \text{gpd} - 630\ \text{gpd})}{1{,}419\ \text{gpd}}\right) = (0.69\ \text{mg/L})(0.556) = 0.38\ \text{mg/L Cd}$$

$$C_{T(Cr)} = \left(\frac{(2.77\ \text{mg/L})(789\ \text{gpd})}{789\ \text{gpd}}\right)\left(\frac{(1{,}419\ \text{gpd} - 630\ \text{gpd})}{1{,}419\ \text{gpd}}\right) = (2.77\ \text{mg/L})(0.556) = 1.54\ \text{mg/L Cr}$$

$$C_{T(Cu)} = \left(\frac{(3.38\ \text{mg/L})(789\ \text{gpd})}{789\ \text{gpd}}\right)\left(\frac{(1{,}419\ \text{gpd} - 630\ \text{gpd})}{1{,}419\ \text{gpd}}\right) = (3.38\ \text{mg/L})(0.556) = 1.88\ \text{mg/L Cu}$$

$$C_{T(Pb)} = \left(\frac{(0.69\ \text{mg/L})(789\ \text{gpd})}{789\ \text{gpd}}\right)\left(\frac{(1{,}419\ \text{gpd} - 630\ \text{gpd})}{1{,}419\ \text{gpd}}\right) = (0.69\ \text{mg/L})(0.556) = 0.38\ \text{mg/L Pb}$$

$$C_{T(Ni)} = \left(\frac{(3.98\ mg/L)(789\ gpd)}{789\ gpd}\right)\left(\frac{(1{,}419\ gpd - 630\ gpd)}{1{,}419\ gpd}\right) = (3.98\ mg/L)(0.556) = 2.21\ mg/L\ Ni$$

$$C_{T(Ag)} = \left(\frac{(0.43\ mg/L)(789\ gpd)}{789\ gpd}\right)\left(\frac{(1{,}419\ gpd - 630\ gpd)}{1{,}419\ gpd}\right) = (0.43\ mg/L)(0.556) = 0.24\ mg/L\ Ag$$

$$C_{T(Zn)} = \left(\frac{(2.61\ mg/L)(789\ gpd)}{789\ gpd}\right)\left(\frac{(1{,}419\ gpd - 630\ gpd)}{1{,}419\ gpd}\right) = (2.61\ mg/L)(0.556) = 1.45\ mg/L\ Zn$$

$$C_{T(CN)} = N/A$$

$$C_{T(TTO)} = \left(\frac{(2.13\ mg/L)(789\ gpd) + (1.37\ mg/L)(630\ gpd)}{1{,}419\ gpd}\right)\left(\frac{(1{,}419\ gpd - 0\ gpd)}{1{,}419\ gpd}\right) = 1.79\ mg/L\ TTO$$

Monthly average shall not exceed:

$$C_{T(Cd)} = \left(\frac{(0.26\ mg/L)(789\ gpd)}{789\ gpd}\right)\left(\frac{(1{,}419\ gpd - 630\ gpd)}{1{,}419\ gpd}\right) = (0.26\ mg/L)(0.556) = 0.14\ mg/L\ Cd$$

$$C_{T(Cr)} = \left(\frac{(1.71\ mg/L)(789\ gpd)}{789\ gpd}\right)\left(\frac{(1{,}419\ gpd - 630\ gpd)}{1{,}419\ gpd}\right) = (1.71\ mg/L)(0.556) = 0.95\ mg/L\ Cr$$

$$C_{T(Cu)} = \left(\frac{(2.07\ mg/L)(789\ gpd)}{789\ gpd}\right)\left(\frac{(1{,}419\ gpd - 630\ gpd)}{1{,}419\ gpd}\right) = (2.07\ mg/L)(0.556) = 1.15\ mg/L\ Cu$$

$$C_{T(Pb)} = \left(\frac{(0.43\ mg/L)(789\ gpd)}{789\ gpd}\right)\left(\frac{(1{,}419\ gpd - 630\ gpd)}{1{,}419\ gpd}\right) = (0.43\ mg/L)(0.556) = 0.24\ mg/L\ Pb$$

$$C_{T(Ni)} = \left(\frac{(2.38\ mg/L)(789\ gpd)}{789\ gpd}\right)\left(\frac{(1{,}419\ gpd - 630\ gpd)}{1{,}419\ gpd}\right) = (2.38\ mg/L)(0.556) = 1.32\ mg/L\ Ni$$

$$C_{T(Ag)} = \left(\frac{(0.24\ mg/L)(789\ gpd)}{789\ gpd}\right)\left(\frac{(1{,}419\ gpd - 630\ gpd)}{1{,}419\ gpd}\right) = (0.24\ mg/L)(0.556) = 0.13\ mg/L\ Ag$$

$$C_{T(Zn)} = \left(\frac{(1.48\ mg/L)(789\ gpd)}{789\ gpd}\right)\left(\frac{(1{,}419\ gpd - 630\ gpd)}{1{,}419\ gpd}\right) = (1.48\ mg/L)(0.556) = 0.82\ mg/L\ Zn$$

$$C_{T(CN)} = N/A$$

$$C_{T(TTO)} = N/A$$

G.3 Applicable Combined Waste Stream Formula Calculations (continued)

Alternative Concentration Limits Summary Table

Pollutant or pollutant property		Maximum for any 1 day (C_i)(mg/L)		Monthly average shall not exceed (C_i)(mg/L)		Average daily flow (F_{i1}) of stream i_1 (gpd)	Average daily flow (F_{i2}) of stream i_2 (gpd)	Average daily flow dilution streams (F_D) (gpd)	Average daily total flow through combined treatment (F_T)(gpd)	Alternative concentration limit (C_T)(mg/L) for 433.15 at SL 12	
433.15	469.18	433.15	469.18	433.15	469.18	433.15	469.18			Maximum for any 1 day	Monthly average shall not exceed
Cd		0.69		0.26		789		630	1,419	0.38	0.14
Cr		2.77		1.71		789		630	1,419	1.54	0.95
Cu		3.38		2.07		789		630	1,419	1.88	1.15
Pb		0.69		0.43		789		630	1,419	0.38	0.24
Ni		3.98		2.38		789		630	1,419	2.21	1.32
Ag		0.43		0.24		789		630	1,419	0.24	0.13
Zn		2.61		1.48		789		630	1,419	1.45	0.82
CN[2]		1.20		0.65		97		1,322	1,419	N/A	N/A
TTO[3]	TTO	2.13	1.37			789	630		1,419	1.79	N/A

[1] There is no Maximum for any 1 day or 30 consecutive day average for Cd, Cr, Cu, Pb, Ni, Ag, Zn, or CN for 40 CFR 469.18.

[2] 433.15 CN is sampled at Sampling Location 11 immediately downstream from CN pretreatment prior to mixing with other streams.

[3] For TTO, there is no monthly or 30 consecutive day average limits in 40 CFR 433.15 or 40 CFR 469.18.

[4] Flow data used: April 30, 2015 – October 31, 2015.

G.4 Non-categorical Significant Industrial Users

FACILITY NAME & ADDRESS	QTR	INSPECTIONS	SAMPLING EVENTS		COMPLIANCE STATUS	ENFORCEMENT ACTIONS						APPLICABLE LIMITS
			POTW	IU		VW	WL	NON	CA	FINE	CIV	
City of Mountain View Landfill	1			4	CC							
3070 North Shoreline Boulevard Mountain View, CA 94043	2	1	2		CC							
SIC 4953 Closed Landfill	3			2	CC							
	4		3		CC							
NASA Ames Research Center	1		5	11	CC							
Mail Stop 204-15 Moffett Field, CA 94035	2	1		11	CC							
SIC 9661 Space Research & Technology	3		5	18	CC							
	4	1		10	CC							

G.5 Non-categorical SIU Additions/Removals 2017

In 2017, Genencor, A Danisco Division (Genencor) was removed from the list of SIUs submitted in the previous annual report. Genencor was removed from the list of SIUs for the following reasons:

- Genencor is not subject to categorical Pretreatment Standards;
- Genencor discharges an average of less than 25,000 gallons per day of process wastewater;
- Genencor does not contribute a process wastestream that makes up five percent or more of the average dry-weather hydraulic or organic capacity of the Plant; and
- Genencor is not designated as an SIU by the RWQCP.

Genencor's Industrial Waste Discharge Permit, reissued on January 30, 2017, removed the SIU classification that had previously been applied to the IU.

G.6 Federal Categorical Standards

TABLE G.6-1

Metal Finishing Point Source Category 40 CFR 433.15 (PSES)		**Applicable CIUs:** Cal Spray, Inc. Space Systems/Loral, LLC
Parameter	**Maximum for any 1 day (mg/L)**	**Monthly average shall not exceed (mg/L)**
Cadmium (T)	0.69	0.26
Chromium (T)	2.77	1.71
Copper (T)	3.38	2.07
Lead (T)	0.69	0.43
Nickel (T)	3.98	2.38
Silver (T)	0.43	0.24
Zinc (T)	2.61	1.48
Cyanide (T)	1.20	0.65
TTO	2.13	

TABLE G.6-2

Metal Finishing Point Source Category 40 CFR 433.17 (PSNS)		**Applicable CIUs:** Applied Nanostructures, Inc. Communications & Power Industries, LLC Hammon Plating Corporation
Parameter	**Maximum for any 1 day (mg/L)**	**Monthly average shall not exceed (mg/L)**
Cadmium (T)	0.11	0.07
Chromium (T)	2.77	1.71
Copper (T)	3.38	2.07
Lead (T)	0.69	0.43
Nickel (T)	3.98	2.38
Silver (T)	0.43	0.24
Zinc (T)	2.61	1.48
Cyanide (T)	1.20	0.65
TTO	2.13	

TABLE G.6-3

Electrical and Electronic Components Point Source Category 40 CFR 469.18 (PSNS)		**Applicable CIUs:** Space Systems/Loral, LLC
Parameter	**Maximum for any 1 day (mg/L)**	**Monthly average shall not exceed (mg/L)**
TTO	1.37	

TABLE G.6-4

Alternative Concentration Limits for Space Systems/Loral, LLC 40 CFR 433.15 (PSES)		**Applicable CIUs:** Space Systems/Loral, LLC
Parameter	**Maximum for any 1 day (mg/L)**	**Monthly average shall not exceed (mg/L)**
Cadmium (T)	0.38	0.14
Chromium (T)	1.54	0.95
Copper (T)	1.88	1.15
Lead (T)	0.38	0.24
Nickel (T)	2.21	1.32
Silver (T)	0.24	0.13
Zinc (T)	1.45	0.82
Cyanide (T)	N/A	N/A
TTO	1.79	N/A

TABLE G.6-5

Local Copper Limits for Metal Finishing & Electroplating Facilities Palo Alto Municipal Code 16.09.045		**Applicable CIUs:** Communications & Power Industries, LLC
Parameter	**Annual Average Limit (mg/L)**	**Annual Average Mass Limit (lb/yr)**
Cu	N/A	10.18

TABLE G.6-6

Local Copper Limits for Metal Finishing & Electroplating Facilities Palo Alto Municipal Code 16.09.045		**Applicable CIUs:** Hammon Plating Corporation
Parameter	**Annual Average Limit (mg/L)**	**Annual Average Mass Limit (lb/yr)**
Cu	0.40	N/A

G.7 Local Limits

Local Discharge Limits and Analytical Detection Levels

Pollutants	Local Maximum Limits[1] (mg/l)	Maximum Allowable Analytical Detection Levels (mg/l)
Arsenic	0.1	0.01
Barium	5.0	0.5
Beryllium	0.75	0.075
Boron	1.0	0.1
Cadmium	0.1	0.01
Chromium, Hexavalent	1.0	0.1
Chromium, total	2.0	0.2
Cobalt	1.0	0.1
Copper	0.25[2]	0.025
Cyanide	0.5	0.05
Dissolved Sulfides	0.1	0.01
Fluoride	65	6.5
Formaldehyde	5.0	0.5
Lead	0.5	0.05
Manganese	1.0	0.1
Mercaptans	0.1	0.01
Mercury	0.01	0.001
Methyl Tertiary Butyl Ether (MTBE)	0.75	0.075
Nickel	0.5	0.05
Phenols	1.0	0.1
Selenium	1.0	0.1
Silver	0.25	0.025
Single Toxic Organic	0.75	0.075
Total Toxic Organics	1.0	0.1
Zinc	2.0[3]	0.2
Conventional Pollutants	**Local Maximum Limit**	**Maximum Allowable Analytical Detection Levels (mg/l)**
Oil and Grease[4]	20 mg/l	2
Oil and Grease (total)	200 mg/l	20
Suspended Solids	3,000[5] mg/l	300
Total Dissolved Solids	5,000[6] mg/l	500
Conventional Pollutant	**Local Minimum Limit**	**Local Maximum Limit**
pH	5.0	11.0

[1]For discharges with annual average flows greater than fifty thousand gallons per day through any single sampling location, the maximum allowable limits shall be one-half the values listed in the table, with the exception of copper, mercury, MTBE, nickel, and silver, for which the limits shall remain 0.25 mg/L, 0.010 mg/L, 0.75 mg/L, 0.50 mg/L, and 0.25 mg/L, respectively, regardless of flow.
[2]The local maximum copper limit for cooling system discharges less than 2,000 gpd, Vehicle Services, Photoprocessing, Machine Shops shall be 2.0 mg/L. See Section 16.09.045 of the Sewer Use Ordinance for details and for metal finisher requirements.
[3]The local maximum zinc limit for vehicle service facilities shall be 4.0 mg/L.
[4]Gravity separation at a temperature of 20°C, and a pH of 4.5.
[5]Applies to composite samples only. The local maximum limit for instantaneous samples shall be 6,000 mg/L.
[6]Applies to composite samples only. The local maximum limit for instantaneous samples shall be 10,000 mg/L.

H. SIU COMPLIANCE ACTIVITIES

H.1 Inspection and Sampling Summary

See Tables G.1 and G.4 for a summary of all the SIU inspections and sampling activities conducted by RWQCP and sampling activites conducted by each SIU in 2017.

H.2 Enforcement Summary

See Tables G.1 and G.4 for a summary of SIU compliance and enforcemnt activities during 2017. Details regarding specific SIU noncompliance and enforcement actions can be found in Tables H.2-1 and H.2-2 below.

TABLE H.2-1

FACILITY NAME & ADDRESS	DATE	SAMPLED BY	FLOW (gpd)	PARAMETER/ VIOLATION	RESULT (mg/L)	LIMIT (mg/L)		ENFORCEMENT	
						LOCAL	FEDERAL	DATE	ACTION
Applied Nanostructures, Inc. 415 Clyde Avenue, Unit 102-104 Mountain View, CA 94043 Metal Finishing Point Source Category 40 CFR 433.17 (PSNS)	02/15/2017	POTW	1	Cu	0.315	0.25		03/28/2017	Verbal Warning
	04/04/2017	IU	15	Cu	0.66	0.25		04/18/2017	Verbal Warning
	05/24/2017	IU	15	Cu	0.33	0.25		06/06/2017	Verbal Warning

Verbal Warning issued on 3/28/2017 in response to 2/15/2017 copper violation at Sampling Location 1, requiring investigation of the cause and one business day of follow-up self-monitoring for copper during business hours. IU's 4/4/2017 follow-up copper sampling result, required by 3/28/2017 verbal warning, received on 4/18/2017 indicating noncompliance. Verbal Warning issued on 4/18/2017 in response to IU's 4/4/2017 copper violation at Sampling Location 1, requiring further investigation of the cause and one business day of follow-up self-monitoring for copper during business hours. IU's 5/24/2017 follow-up copper sampling result, required by 4/18/2017 verbal warning, received on 6/6/2017 indicating noncompliance. Verbal Warning issued on 6/6/2017 in response to IU's 5/24/2017 copper violation at Sampling Location 1 requiring further investigation of the cause and one business day of follow-up self-monitoring for copper during business hours. IU identified several non-process flows that were routed to Sampling Location 1. After diverting non-process flows, IU performed follow-up copper sampling on 6/8/2017 and the result demonstrated compliance.

TABLE H.2-2

FACILITY NAME & ADDRESS	DATE	SAMPLED BY	FLOW (gpd)	PARAMETER/ VIOLATION	RESULT (mg/L)	LIMIT (mg/L)		ENFORCEMENT	
						LOCAL	FEDERAL	DATE	ACTION
Communications & Power Industries, LLC 811 Hansen Way Palo Alto, CA 94304 Metal Finishing Point Source Category 40 CFR 433.17 (PSNS)	01/10/2017	IU	300	Failure to preserve sample within 15 minutes				07/18/2017	Verbal Warning
	04/12/2017	IU	800	Failure to preserve sample within 15 minutes				07/18/2017	Verbal Warning
Verbal warning issued on 7/18/2017 in response to IU's 1/10/2017 and 4/12/2017 failures to preserve required CN samples within 15-minutes of collection at Sampling Location 2 as reported in IU's 7/14/2017 PRCC submittal.									

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I. BASELINE MONITORING REPORT UPDATE

No new CIUs were added to the Pretreatment Program since the last annual report.

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J. PRETREATMENT PROGRAM CHANGES

Legal Authority

No changes were made to the Pretreatment Program's legal authority during the past year.

Local Limits

No changes were made to the Pretreatment Program's local limits during the past year.

Monitoring/Inspection Program and Frequency

No changes were made to the Pretreatment Program's monitoring/inspection program and frequency during the past year.

Enforcement Protocol

The RWQCP's Enforcement Response Plan was modified in 2018 to reflect job title changes and included minor language changes.

Program's Administrative Structure

No changes were made to the Pretreatment Program's administrative structure during the past year.

Staffing Level

During 2017, one new Associate Engineer position was created for the Stormwater/FOG Program. The position was filled in November 2017.

Resource Requirements

No changes were made to the Pretreatment Program's resource requirements during the past year.

Funding Mechanism

No changes were made to the Pretreatment Program's funding mechanism during the past year.

Organizational Chart

No changes were made to the Pretreatment Program's management structure during the past year.

Program Modifications

The RWQCP is currently in the process of revising its SUO. Proposed changes to the SUO include, but are not limited to, reassessment of the local limits, changes to meet the requirements of the newly promulgated Dental Office Point Source Category (40 CFR Part 441), and the addition of several optional streamlining rules not incorporated into the 2010 SUO update.

K. PRETREATMENT PROGRAM BUDGET

While the Pretreatment Program is a multi-jurisdictional program, most industrial and commercial dischargers are located within the cities of Palo Alto and Mountain View. Palo Alto Pretreatment Program staff include the Watershed Protection Manager, one Program Manager, two Associate Engineers, and three Industrial Waste Inspectors.

Mountain View operates a portion of the RWQCP Pretreatment Program. Mountain View's Environmental Protection Division staff include one Manager, one Senior Inspector, one Water Environment Specialist, and one Environmental and Safety Protection Inspector.

RWQCP regulates one CIU in the East Palo Alto Sanitary District. Palo Alto Pretreatment Program staff conducts sampling and inspections at this facility, creates discharge permits, and issues enforcement actions. EPASD finalizes and issues Industrial Waste Discharge Permits.

During Fiscal Year 2017 (July 1, 2016 – June 30, 2017), the total budget for the RWQCP Pretreatment Program was $1,632,684. Funding for the Pretreatment Program is provided by the RWQCP Partner Agencies, with costs apportioned among the Partner Agencies based upon total industrial discharge volume or plant capacity allocation. Additional details regarding Pretreatment Program expenses is available upon request.

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L. PUBLIC PARTICIPATION SUMMARY

RWQCP did not find any Industrial Users in Significant Noncompliance with applicable Pretreatment Requirements during 2017 and therefore did not publish any Notices of Significant Noncompliance in a newspaper(s) of general circulation that provides meaningful public notice within the jurisdiction(s) served by RWQCP during 2017.

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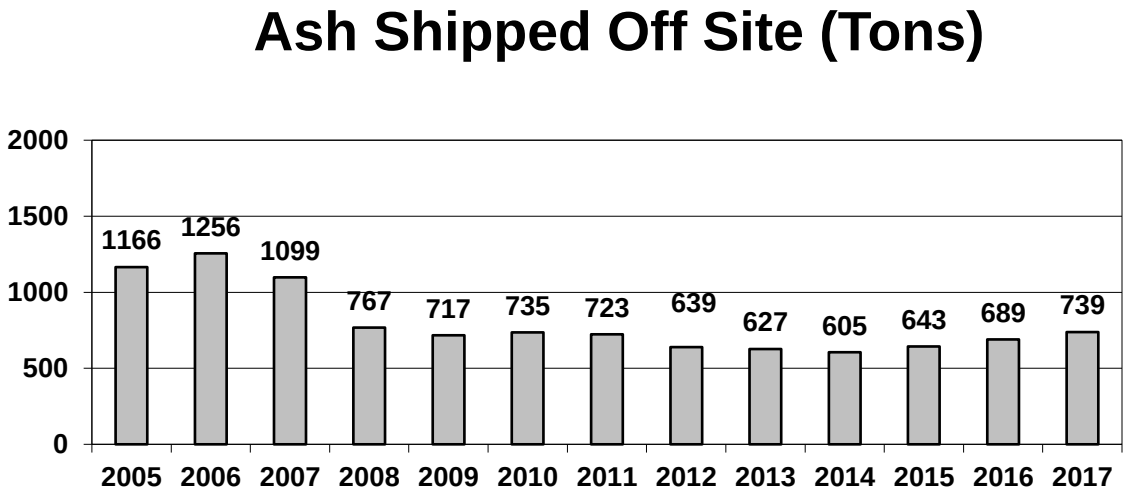
M. BIOSOLIDS STORAGE AND DISPOSAL PRACTICES

The RWQCP's primary and secondary solids are incinerated and the resulting ash is shipped off site. Approximately 739.40 tons of ash was shipped offsite in 2017.

Prior to October 1993, the ash was shipped to a copper smelter for use as a flux and for its silver and gold content. This use of the ash became no longer feasible due to shipping costs as well as the reduced metals content of the ash. Offset Agri Industries previously contracted with the RWQCP to haul ash to farm and pasture land in California's Central Valley. The ash was applied as a soil amendment for its phosphate and micro nutrient content (copper and zinc). In 2007, the RWQCP began shipping its incinerator ash to a hazardous waste landfill due to copper STLC levels that exceeded the California hazardous waste limit. The ash meets all other hazardous waste limits.

The RWQCP has considered certification of the ash as a California Food and Agricultural Department approved soil amendment. The ash has a total available phosphate content that qualifies it for use as a commercial fertilizer under California's Food and Agricultural Code, and it meets the Code's limits on arsenic, cadmium, and lead content. The molybdenum content in the ash is approximately twice the level at which the Food and Agricultural Code requires a label stating that application of the fertilizer may result in forage crops containing levels of molybdenum which are toxic to ruminant animals. The primary source of molybdenum in the service area is in cooling system chemicals where it can be used as a corrosion inhibitor or as a trace element for tracking the concentration of other treatment chemicals. Controls on molybdenum use in cooling systems were included in the 2010 ordinance revision. All industrial facilities have been surveyed for use of molybdenum containing chemicals and those found to have molybdenum containing chemicals were required to phase out their use; however the molybdenum concentrations remain high in the ash. Additional information can be found in the 2018 Clean Bay Plan.



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N. OTHER POLLUTANT REDUCTION ACTIVITIES

N.1 Dental Offices

In May of 2004, the Palo Alto Sewer Use Ordinance (SUO) was revised requiring dental offices that place or remove dental amalgam to install amalgam separators by March 31, 2005. The City of Mountain View adopted a similar sewer use ordinance provision for dental offices. Initial inspections following adoption of the ordinance were conducted at all applicable dental offices within the RWQCP service area to confirm compliance with the dental amalgam separator requirements in the SUO.

Dental offices that place or remove dental amalgam are required to submit an annual certification form detailing their operations and waste handling procedures. In 2017, 100 percent of the 143 applicable dental offices certified that they were in compliance with the amalgam separator requirements. Each year approximately 20 percent of applicable dental offices within the RWQCP service area are inspected in an attempt to inspect 100 percent of dental offices within the service area every five years. In 2017, Program staff inspected 26 dental offices and confirmed that required BMP's were in place and that amalgam separators were properly maintained.

On July 14, 2017, the United States Environmental Protection Agency (USEPA) promulgated new technology-based pretreatment standards (codified at 40 CFR Part 441 – Dental Office Point Source Category) to reduce discharges of mercury from dental dischargers into publicly owned treatment works (POTWs). Program staff is currently revising the SUO, including a revision to the SUO's requirements for dental facilities that place or remove dental amalgam, to maintain consistency with the newly promulgated pretreatment standards for the Dental Office Point Source Category. Additional Program details can be found in the 2018 Clean Bay Plan.

N.2 Fats, Oils and Grease (FOG) Program

The Environmental Services Division (ESD) has maintained a food service establishment (FSE) FOG Control Program (FOG Program) in Palo Alto since 1996.

Additional FOG Program details can be found in the 2018 Clean Bay Plan.

N.3 Industrial Waste Discharge Permits

The RWQCP issues Industrial Waste Discharge Permits to IUs located in the cities of Los Altos and Palo Alto; the town of Los Altos Hills; and the Stanford University campus. The City of Mountain View and the East Palo Alto Sanitary District issue discharge permits to IUs within their respective jurisdictions.

The Pretreatment Program issues several types of Industrial Waste Discharge Permits to industrial facilities dependent upon facility type, operations, discharge characteristics and flow rates.

Industrial Waste Discharge Permits are also issued to dischargers of pretreated contaminated groundwater to the sanitary sewer and Exceptional Waste Discharge Permits may be issued for short duration discharges such as construction site dewatering or other one-time discharges.

Application fees are required prior to the issuance of an Industrial Waste Discharge Permit in the RWQCP service area, except for permits issued by the City of Mountain View, which does not require IUs to pay an application fee. The City of Palo Alto Fiscal Year 2018 Adopted Municipal Fee Schedule has established the following application fees:

- Industrial Waste Discharge – Best Management Practices (BMP): $491
- Industrial Waste Discharge – Basic: $1,447
- Industrial Waste Discharge – Full: $2,431
- Industrial Waste Discharge – Exceptional: $866
- Industrial Waste Discharge – Groundwater: $866

The following types of Industrial Wastewater Discharge Permits are issued by the RWQCP and its Partner Agencies. Industrial Waste Discharge permits continue to be modified as new information or operational changes warrant.

Permit Type		**Duration***	**Category**
Industrial Waste Discharge	Full	5 years	All Categorical and Non-Categorical SIUs
	Basic	5 years	Non-Categorical and Non-SIU with moderate pollutants of concern
	BMP	5 years	Non-Categorical and Non-SIU with minimal pollutants of concern
	Zero Discharge	5 years	All Categorical with no categorical process discharges
Ground Water		5 years	Fuel, solvents, or heavy metal contaminated sites
Vehicle Service Facilities		5 years	All vehicle service facilities with process wastewater discharges
Machine Shops		5 years	Commercial machine shops engaged in grinding, machining, and fabrication of metal parts
Photo Processing		5 years	Any photo processing sites treating fixer solution. All other photo processing facilities are not permitted, but must submit an annual hauling certification
Exceptional Discharge		Short duration	Temporary discharge of waste water, i.e. contaminated groundwater, construction de-watering activities, other one-time discharges

* Mountain View issues Industrial Waste Discharge Permits with three-year duration.

N.4 New Industrial Waste Discharge Permits

In 2017, zero Industrial Waste Discharge Permits were issued to new IUs within the RWQCP service area.

N.5 Industrial Waste Discharge Permit Renewals

In 2017, eight Industrial Waste Discharge Permits were renewed in Palo Alto, zero Industrial Waste Discharge Permits were renewed in Mountain View, and zero Industrial Waste Discharge Permits were renewed in the East Palo Alto Sanitary District.

N.6 Public Information and Awareness Programs

The RWQCP keeps interested parties aware of its pollution prevention activities through its website (www.cityofpaloalto.org/cleanbay), Plant tours, fact sheets, brochures, and through other outreach mechanisms. Citizens are given updates on Plant activities at public meetings and at other public events such as Earth Day, California Coastal Cleanup Day, and National River Cleanup Day.

Details regarding RWQCP pollution prevention and outreach programs can be found in the 2018 Clean Bay Plan.

N.7 Contaminated Groundwater

During 2017, five permitted groundwater dischargers in the RWQCP service area discharged a total of 15.80 million gallons of pretreated contaminated groundwater into the sanitary sewer. Groundwater discharges accounted for approximately 0.21% of the Plant's annual influent flow. Prior to issuance of each Groundwater Discharge Permit, the applicant must submit a Water Reuse Study to the RWQCP. Groundwater Discharge Permits may include monitoring requirements for metals, Total Toxic Organics (TTO), and Total Extractable and Purgeable Petroleum Hydrocarbons. Monitoring may also be required for Total Dissolved Solids and chloride, due to their impact on the RWQCP's wastewater reclamation program. Groundwater dischargers, except for construction dewatering, submit a Periodic Report of Continued Compliance (PRCC) on January 15 and July 15 of each calendar year. The PRCC includes the discharger's compliance status during the reporting period, an enumeration of any violations which took place during the reporting period, the total volume of groundwater discharged during the reporting period, and other information such as the treatment method, average and maximum flow rates, and percentage of groundwater reused.

The RWQCP encourages the reuse of groundwater and recognizes the impact of groundwater discharges on the Plant. However, permits will continue to be issued to those dischargers who demonstrate a lack of reuse alternatives as long as Plant capacity is available.

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O. OTHER SUBJECTS

O.1 Department of Pesticide Regulation Sewershed Study

In the Spring of 2017, Program staff assisted the California Department of Pesticide Regulation (DPR) with a study examining passage of fiproles and imidcloprid from urban pest control uses through wastewater treatment plants in Northern California. Program staff assisted DPR by performing sampling monitoring on its main trunklines and at key locations in the RWQCP service area where urban pest control chemicals are likely to be present (commercial pest control facility, dog groomer, laundromat, etc.). Program staff also digitized physical sewer system maps delineating the sewershed boundaries (extents of major trunklines) for the RWQCP service area so that DPR could spatially analyze the sampling data using GIS software.

O.2 San Francisco Estuary Institute Microplactics Study

In the Summer of 2017, Program staff participated in a regional microplastics study performed by the San Francisco Estuary Institute (SFEI). The study focused on characterizing the types and volume of microplastics discharged from POTWs into the San Francisco Bay. Program staff worked with SFEI to develop sampling techniques/methods as well as designed and built custom sampling equipment for SFEI so that sampling of POTW effluent could be performed in a consistent manner at all POTWs participating in the study. Program staff also helped SFEI identify the most representative sampling location within the Plant. RWQCP participation in this project lasted approximately three months.

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P. PERMIT COMPLIANCE SYSTEM (PCS) DATA ENTRY FORM

PPS1

POTW Name: Palo Alto Regional Water Quality Control Plant

NPDES Permit #: CA0037834

Period Covered By This Report: 1/1/2017 (PSSD) 12/31/2017 (PSED)

Number of Significant Industrial Users in SNC with Pretreatment Compliance Schedule:	0 (SSNC)
Number of Notices of Violation and Administrative Orders Issued Against Significant Industrial Users:	0 (FENF)
Number of Civil & Criminal Judicial Action Against Significant Industrial Users:	0 (JUDI)
Number of Significant Industrial Users with Significant Violations Published:	0 (SVPU)
Number of Industrial Users From Which Penalties Have Been Collected:	0 (IUPN)