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City of Brawley

Local Limits Study

Prepared by

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Acronyms and Abbreviations

ACGIH	American Conference of Governmental Industrial Hygienists
ADRE	Average Daily Removal Efficiency
AHL	Allowable Headworks Loading
BOD_5	5-day Biochemical Oxygen Demand
CFR	Code of Federal Regulations
COD	Chemical Oxygen Demand
CWA	Clean Water Act
DAF	Dissolved Air Floatation
gpd	Gallons per Day
IPP	Industrial Pretreatment Program
IU(s)	Industrial User(s)
MAHL(s)	Maximum Allowable Headworks Loading(s)
MAIL(s)	Maximum Allowable Industrial Loading(s)
MGD	Million Gallons per Day
MRE	Mean Removal Efficiency
NIOSH	National Institute for occupational Safety and Health
NPDES	National Pollutant Discharge Elimination System
OSHA	Occupational Safety and Health Administration
PMH	Pioneers Memorial Hospital
POC(s)	Pollutant(s) of Concern
POTW	Publicly Owned Treatment Works
RWQCB	Regional Water Quality Control Board
SAF	Suspended Air Floatation
SIU(s)	Significant Industrial User(s)
STEL(s)	Short-Term Exposure Limit(s)
SUO	Sewer Use Ordinance
TKN	Total Kjehldahl Nitrogen
TSS	Total Suspended Solid
TOC	Total Organic Carbon
TWA-TLV	Time-Weighted Average Threshold Limit Value
UCL(s)	Uniform Concentration Limit(s)
USEPA	U.S. Environmental Protection Agency
UV	Ultraviolet
VOC	Volatile Organic Compound
WQBEL(s)	Water Quality-Based Effluent Limitation(s)
WQS(s)	Water Quality Standard(s)
WWTP	Wastewater Treatment Plant

1. Introduction

1.1 Background

The U.S. Environmental Protection Agency (USEPA) developed the National Pretreatment Program to protect water quality by reducing the level of pollutants discharged by industry and other nondomestic wastewater sources to Publicly Owned Treatment Works (POTWs). The statutory authority for the National Pretreatment Program lies in the Clean Water Act (CWA). Under Section 307(b) of CWA, the USEPA developed the National Pretreatment Program, as a core part of the National Pollutant Discharge Elimination System (NPDES) Pretreatment Standards. The objectives of the Program are to prevent the introduction of pollutants into POTWs that could pass through or interfere with POTW operation, resulting in adverse receiving water quality impacts; to improve opportunities to recycle and reclaim wastewaters and sludge; and to prevent worker health and safety problems. To meet the requirements of the 1977 amendment of the CWA, USEPA promulgated its General Pretreatment Regulations in June 1978 (40 Code of Federal Regulations (CFR) Part 403 – General Pretreatment Regulations for Existing and New Sources of Pollutants). These regulations are used for development and implementation of local and state pretreatment programs.

The General Pretreatment Regulations require that POTWs develop and implement their local limits based on site-specific conditions. POTWs should consider the following factors in developing local limits: POTW treatability; NPDES compliance history; condition of the receiving water body; water quality of the receiving water body; POTW's retention, use, and disposal of sewage sludge; and worker health and safety concerns.

The City of Brawley must develop an Industrial Pretreatment Program (IPP) as required by the Regional Water Quality Control Board (RWQCB), Colorado River Basin Region, and specified in Section VI.C.5.b of the City's NPDES Permit No. CA0104523 for the City of Brawley Wastewater Treatment Plant (WWTP). As a prerequisite to implementation of the IPP, the City needs to develop local limits to protect their treatment plant, the sewer system, sludge, and receiving water from potentially harmful pollutants in industrial and commercial discharges. Local limits will enforce the specific and general prohibitions based upon the maximum loading of pollutants that can be accepted by WWTP.

1.2 Scope of Work

The purpose of this *Local Limits Study* report is to develop and recommend local limits for the City of Brawley in accordance with RWQCB's requirements and bring the City of Brawley into compliance with their NPDES discharge permit. This report will focus on the identification of pollutants of concern (POCs), flow and load analysis, maximum allowable headworks loadings (MAHL) analysis, and local limits development. Additionally, the City's current sewer use ordinance (SUO) will be reviewed and updated to incorporate local limits.

1.3 Wastewater Treatment and Collection System

1.3.1 Brawley WWTP

The City of Brawley collects and treats wastewater from approximately 5,400 commercial and residential wastewater accounts. The City owns and operates a wastewater collection system and treatment facility that receives wastewater from the entire city. Significant upgrades of the WWTP were conducted in 2011.

The City's WWTP provides a full secondary level of wastewater treatment. The facility consists of preliminary screening, three Biolac® activated sludge treatment units equipped with diffusers, three secondary clarifiers, and ultraviolet (UV) disinfection. The treated effluent is discharged to the New River. The wasted activated sludge is thickened in a sludge thickening units and dewatered in a centrifuge sludge dewatering unit, and then dried using solar greenhouse sludge drying structures. No primary sludge is produced since the Biolac® process operates without primary treatment. **Figure 1.1** presents a process flow diagram of Brawley WWTP, and **Table 1.1** summarizes the WWTP design criteria.

The WWTP conducts self-monitoring activities. Influent samples are collected at the headworks before the mechanical bar screen, and effluent samples are collected immediately after UV disinfection and before the effluent weir. All samples are composite samples and are analyzed at either the on-site laboratory or at a contract laboratory.

Brawley's WWTP design capacity is 5.9 mgd. The average annual flow between 2010 and 2011 was 3.8 mgd. The maximum monthly flow for these periods was 4.5 mgd.

Table 1.1 Brawley WWTP Design Criteria

Description	Units	Criteria
Preliminary Treatment		
Bar Screen		
Number		1
Capacity	mgd	16
Screenings Washer/Compactor		
Number		1
Capacity	mgd	70
Vortex Grit Tank		
Number		1
Capacity	mgd	16
Grit Pump		
Number		1
Capacity	gpm	250
Grit Separator/Washer		
Number		1

Description	Units	Criteria
Capacity	gpm	250
Activated Sludge Aeration		
Number		3
Dimension (top), per basin	ft	220 x 180
Dimension (bottom), per basin	ft	169 x 129
Water Depth	ft	14
Volume, per basin	10^6 gal	2.9
Aeration Blower		
Number		4
Capacity, each	cfm	2,200
Horsepower, each	hp	150
Secondary Clarifiers		
Number		3
Diameter, each	ft	80
Surface Area, each	ft^2	5,027
Side Water Depth	ft	14.85
Return Activated Sludge (RAS) Pump		
Number		5 (3 duty and 2 standby)
Capacity, each	gpm	4,950
Horsepower, each	hp	25
Waste Activated Sludge (WAS) Pump		
Number		2 (1 duty and 1 standby)
Capacity, each	gpm	250
Horsepower	hp/each	3
Gravity Thickener		
Number		1
Diameter	ft	50
Side Water Depth	ft	12
Sludge Holding Tank		
Number		1
Diameter	ft	50
Side Water Depth	ft	12
Sludge Holding Tank Blower		2 (530 cfm, each)
Centrifuge Sludge Dewatering		
Number		1
Capacity	gpm	200

Description	Units	Criteria
Solar Green House		
Number		2
Dimension	ft	204 x 42
UV Disinfection		
Number		1
Capacity	mgd	16
Chemical Feed System		
Ferric Facility		1
Storage Tank		1 (1,000 gallon)
Metering Pump		2 (0 – 1.0 gph)
Polymer Facility		
Storage Tank		1 (1,000 gallon)
Metering Pump		4 (0.15 – 7.5 gph)

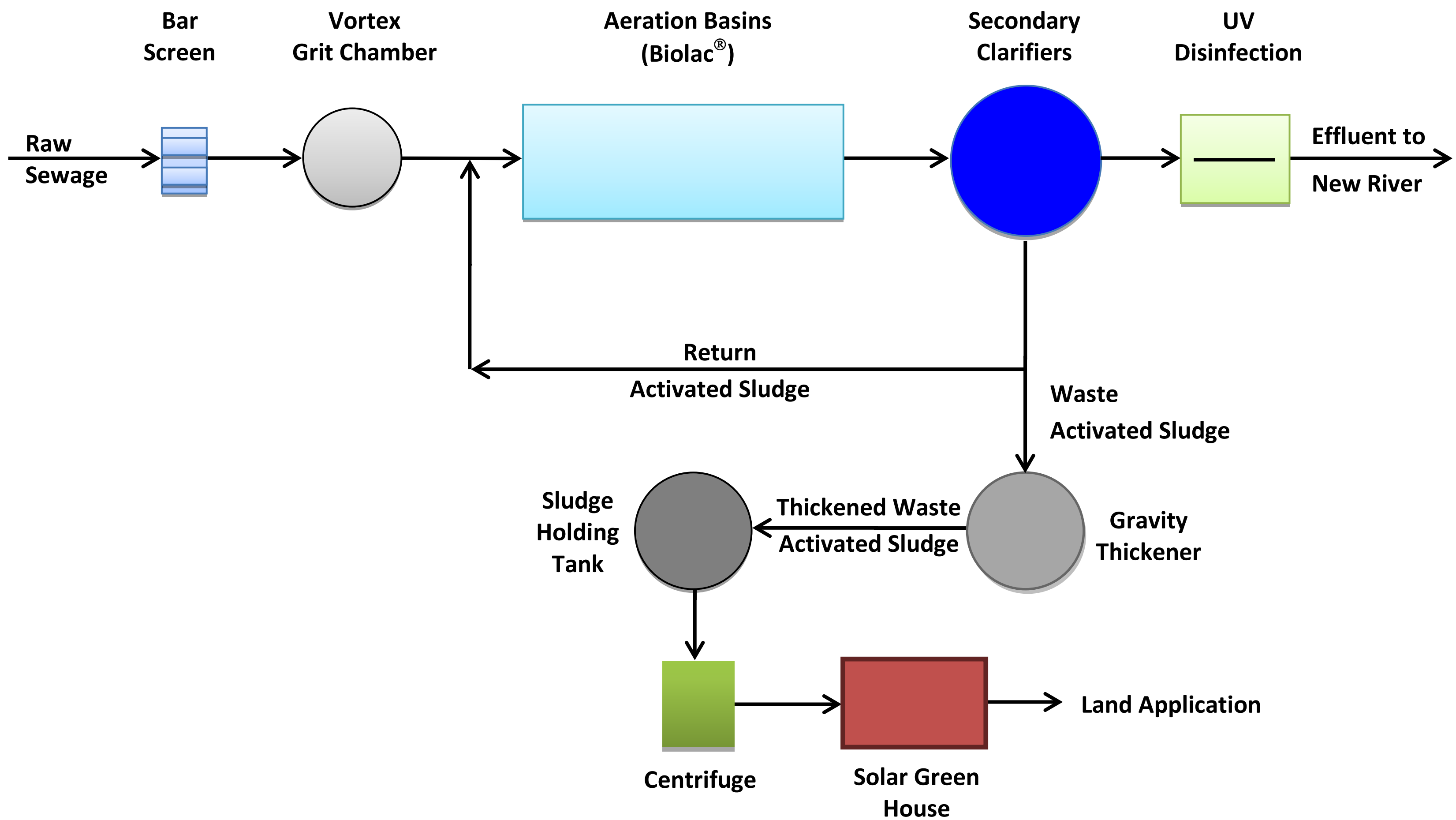

Figure 1.1: Brawley WWTP Process Flow Diagram

The City's wastewater collection system was established over 70 years ago. The system includes two lift stations, approximately 65 miles of wastewater collection lines ranging from 6 to 30 inches, and 1.5 miles of 10-inch force main. The City's WWTP serves approximately 5,400 connections. Among these, approximately 4,900 are single and multiple family residential units. The remaining connections are industrial and commercial. **Table 1.2** presents a summary of the collection system lines.

Table 1.2 Wastewater Collection Line Summary

Line Size (inches)	Total Length (feet)
6	7,696
8	224,040
10	14,398
12	10,998
14	1,763
15	31,741
18	21,008
21	29,838
30	398
Total Linear Footage	341,880
10-inch force main	7,998

The City's wastewater collection system is a gravity flow system and generally follows the major drainage features of the service area. The majority of the system is a combined sanitary and storm sewer system. All of the collectors and the force main flow to the City's WWTP, which ultimately discharges to the New River.

The City operates two lift stations that pump wastewater into nearby gravity sewers. They are the Citrus View Sewage Lift Station No. 2 and the South Brawley Sewage Lift Station No. 1. **Table 1.3** lists these lift stations and their rated capacities and design details.

Table 1.3 Lift Station Design Data

Items	Unit	Citrus View Lift Station No. 2	South Brawley Lift Station No. 1
Wet Well Volume	Gallons	3,170	6,830
Number of Pump		2	2
Pump Discharge Flow	gpm	200	1,200
Pump Type		Constant Speed	Constant Speed

1.3.2 Industrial Users

The City of Brawley WWTP receives wastewater from two significant dischargers, National Beef and Pioneers Memorial Hospital. These dischargers discharge wastewater into sewer system at a constant flow. Significant industrial users (SIUs) are defined in 40 CFR 403.4 as follows:

- All users subject to Categorical Pretreatment Standards under 40 CFR 403.6 and 40 CRF chapter I, subchapter N.
- Any other industrial user that:
    - discharges an average of 25,000 gpd or more of process wastewater to the WWTP (excluding sanitary, non-contact cooling and boiler blowdown wastewater)
    - contributes a process waste stream that makes up 5 percent or more of the average dry weather hydraulic or organic capacity of the WWTP; or
    - is designated as such by the City, as defined in 40 CFR 403.12(a), on the basis that the industrial user has a reasonable potential for adversely affecting the WWTP's operation or for violating any pretreatment standard or requirement.

National Beef (formerly known as Brawley Beef) owns and operates a meat packing facility that processes approximately 2,400 head of cattle per day. The National Beef plant discharges approximately 1.61 mgd of partially treated wastewater from its beef processing and livestock operations. National Beef has an agreement with the City of Brawley which allows it to discharge up to 2.1 mgd of flow to the City's collection system.

National Beef currently operates a pretreatment facility that was intended to remove a substantial amount of BOD, TSS, ammonia, and oil & grease. The treated wastewater is discharged to the Brawley WWTP. The pretreatment facility consists of the following unit processes:

1) Two Dissolved Air Floatation units (DAF) – Remove fats, grease and suspended solids.
2) One covered anaerobic pond (Pond No. 1) – Hydrolyze fats and protein into simpler organic material with production of methane and carbon dioxide.
3) One aerobic pond (Pond No. 2) – Remove organic material and oxidize ammonia to nitrate.

4) One clarifier at Pond No. 3 inlet – Settle mixed liquor flowing from Pond No. 2 to allow return of solids to Pond No. 2 inlet and wasting of solids to the belt press.
5) One suspended air floatation (SAF™) flotation cell – Remove solids before discharge to the sanitary sewer.
6) One belt press – Thicken WAS to 20% solids.

Table 1.4 presents the monthly wastewater flow discharged from the National Beef pretreatment facility from January through July 2012.

Table 1.4 Nation Beef Wastewater Flow

Month	Wastewater Flow (mgd)
January, 2012	1.68
February, 2012	1.55
March, 2012	1.52
April, 2012	1.66
May, 2012	1.63
June, 2012	1.63
July, 2012	1.63
Monthly Average Flow	1.61

Pioneers Memorial Hospital (PMH) is an acute care facility which has approximately 110 beds. The average water use in PMH is approximately 68,000 gpd. The wastewater flow is estimated using the assumption that 80 percent of water used flows back into City's sewer system. The wastewater generated in PMH may contain a variety of toxic organic substances such as pharmaceuticals, radionuclides, solvents, and disinfectants for medical purposes.

1.4 Project Methodology

To determine the appropriate local limit implementation procedures, the MAHL is calculated for each pollutant of concern. A MAHL is the estimated maximum loading of a pollutant that can be received at a WWTP's headworks without causing pass through or interference. An allowable headworks loading (AHL) is the estimated maximum loading of a pollutant that can be received at a WWTP's headworks that should not cause a WWTP to violate a particular operational restriction or environmental criterion. A pollutant's MAHL is determined by first calculating its AHL for each environmental criterion. The most stringent AHL is the MAHL. AHLs are developed to prevent interference or pass through.

Developing and implementing local limits using the MAHL approach will be accomplished by the following five steps recommended in *2004 USEPA Local Limits Development Guidance*.

1) Determine the Pollutants of Concern (POCs): As a first step, the pollutants to be evaluated to determine the need for local limits will be identified. The known environmental criteria (e.g. NPDES limits, water quality criteria, sludge quality criteria, etc.) will be applied to screening pollutants.
2) Collect and Analyze Data: After identifying the POCs, the data used in MAHL calculations will be collected by sampling and analysis of selected wastewater streams, sludge, commercial and domestic discharge (Refer to Appendix I).
3) Calculate MAHLs for each POC: AHLs for each POC will be calculated based on WWTP removal efficiency and on environmental criteria for pass through and interference. The most stringent AHL will determine the MAHL.
4) Designate and Implement Local Limits: The MAHLs will be compared with the actual and potential loadings for determination of local limits. If needed, appropriate local limits will be developed. The process includes determining the amount of each pollutant that can be allocated to industrial users (IUs), submitting a development package to the Approval Authority for review and approval, incorporating the local limits into local law, and applying the local limits to the IUs.
5) Address Collection System Concerns: Collection system concerns such as fires and explosions, corrosion, flow obstructions, high temperature, and toxic gases, vapor or fumes will be addressed, and limits set as necessary.

2. Identification of Pollutants of Concern

2.1 Introduction

A pollutant of concern (POC) is defined as any pollutant that might reasonably be expected to be discharged to the wastewater treatment plant in sufficient amounts to cause pass through or interfere with the treatment process; cause problems in the collection system; jeopardize its workers; cause operational problems; or exceed the California Water Quality Standard (WQS) or National Pollutant Discharge Elimination System (NPDES) permit effluent limitations. POCs are identified in accordance with *2004 USEPA Local Limits Development Guidance.*

2.2 Criteria for Potential Pollutants of Concern

To develop potential POCs, the following regulatory standards were reviewed:

- Brawley WWTP NPDES Permit (2010)
- 40 CFR Part 131, Water Quality Standards; Establishment of Numeric Criteria for Priority Toxic Pollutants for the State of California (2000)
- Federal Sewage Sludge Standards (1995)
- Process Inhibition Threshold Values for Activated Sludge and Nitrification
- Discharge Screening Levels based on Explosivity and Fume Toxicity (2002)
- OSHA, ACGIH and NIOSH Exposure Levels (2002 and 2003)

2.2.1 Regulatory Review

<u>NPDES Permit</u>

The current NPDES permit for the City of Brawley regulates the treatment plant discharge effluent for flow, BOD_5, pH, TSS, oil and grease, total ammonia (as nitrogen), copper (total recoverable), selenium (total recoverable), cyanide, and bis(2-ethylhexyl)phthalate. The effluent limitations for both BOD_5 and TSS are 30 mg/L as an average monthly and 45 mg/L as an average weekly. The average monthly percent removal of BOD_5 and TSS should be more than 85 percent. The effluent limitation for total ammonia is 2.1 mg/L as a monthly average and 3.2 mg/L as a weekly average. The oil and grease in the effluent must not exceed a daily maximum of 25 mg/L. In addition, the NPDES permit contains limits for copper, selenium, cyanide and bis(2-ethylhexyl)phthalate which are determined by the Water Quality-Based Effluent Limitations (WQBELs) required by Section 301(b) of the CWA and Section 122.44(d). The effluent limitations for copper are 52 μg/L daily maximum and 21 μg/L monthly average. The effluent limitations for selenium are 8.2 μg/L daily maximum and 4.1 μg/L monthly average. The effluent limitations for cyanide are 9.2 µg/L daily maximum and 3.0 µg/L monthly average. The effluent limitations for bis(2-ethylhexyl)phthalate are 12 µg/L daily maximum and 5.9 µg/L monthly average. **Table 2.1** presents current NPDES final effluent limitations expressed as concentration and daily mass limits.

Table 2.1 Summary of NPDES Effluent Limitations

Parameters	Units	Effluent Limitations				
		Average Monthly	Average Weekly	Maximum Daily	Instantaneous Minimum	Instantaneous Maximum
Flow	mgd	5.9	-	-	-	-
BOD_5 at 20^{o}C	mg/L	30	45	-	-	-
	lb/day[1]	1,476	2,214	-	-	-
TSS	mg/L	30	45	-	-	-
	lb/day[1]	1,476	2,214	-	-	-
Oil and Grease	mg/L	-	-	25	-	-
	lb/day[1]	-	-	1,230	-	-
pH	Standard units	-	-	-	6.0	9.0
Total Ammonia as Nitrogen	mg/L	2.1	-	3.2	-	-
	lb/day[1]	103	-	157	-	-
Copper, total recoverable	µg/L	21	-	52	-	-
	lb/day[1]	1	-	2.6	-	-
Selenium, total recoverable	µg/L	4.1	-	8.2	-	-
	lb/day[1]	0.20	-	0.40	-	-
Cyanide[2]	µg/L	3.0	-	9.2	-	-
	lb/day[1]	0.15	-	0.45	-	-
Bis(2-Ethylhexyl)Phthalate	µg/L	5.9	-	12	-	-
	lb/day[1]	0.29	-	0.59	-	-

[1] The mass-based effluent limitations are based on a design capacity of 5.9 mgd.
[2] Expressed as free cyanide.

Water Quality-Based Effluent Limitations (WQBELs)

The current NPDES permit does not contain effluent limitations for toxic pollutants other than copper, selenium, cyanide and bis(2-ethylhexyl)phthalate. However, the final effluent quality is governed by the California Surface WQSs and should meet WQBELs applicable to the New River, which is the ultimate discharge point of treatment plant effluent. WQS have been established for protection of freshwater aquatic life, human health, and wildlife. For all parameters that have the reasonable potential to cause or contribute to an excursion above a WQS, numeric WQBELs are established. **Table 2.2** summarizes the water quality criteria established for priority pollutants that have been detected in the effluent of the WWTP.

Table 2.2 Summary of Pertinent Water Quality-Based Effluent Limitations

Parameter	Most Stringent Criteria	Fresh Water		Human Health for Consumption of Organisms Only
		Acute	Chronic	
	µg/L	µg/L	µg/L	µg/L
Arsenic	150	340	150	-
Cadmium	2.2	4.3	2.2	-
Copper	31	52	31	-
Lead	19	477	19	-
Mercury	0.051	-	-	0.051
Nickel	169	1,516	169	4,600
Selenium	5	20	5	-
Silver	44	44	-	-
Zinc	388	388	388	-
Bis(2-Ethylhexyl)Phtalate	5.9	-	-	5.9

Reference: Brawley NPDES Permit, Attachment F, Table F-10 and California CTR (2000)

Sludge Quality Standards

The sludge generated at the Brawley WWTP will be hauled off by a private contractor and applied to farmland or applied by the City on parks and public green areas in the future. The sludge quality standards for land application are established by federal sludge regulations (40 CFR Part 503, Standards for the Use or Disposal of Sewage Sludge), as presented in **Table 2.3**. Each state can establish its own sludge use and disposal standards as long as they are at least as stringent or are as protective as the federal requirement. USEPA recommends that the wastewater treatment facility consider the attainment of the "Clean Sludge" standards from 40 CFR 503, and that achievement of these standards is consistent with the objectives of the National Pretreatment Program.

Table 2.3 Sludge Land Application Limits

Pollutant	Ceiling Concentration mg/kg	Monthly Average Pollutant Concentration (Clean Sludge) mg/kg	Cumulative Pollutant Loading Rate kg/hectare	Annual Pollutant Loading Rate kg/hectare/365 days
Arsenic	75	41	41	2
Cadmium	85	39	39	1.9
Copper	4,300	1,500	1,500	75
Lead	840	300	300	15
Mercury	57	17	17	0.85
Molybdenum	75	-	-	-
Nickel	420	420	420	21
Selenium	100	100	100	5
Zinc	7,500	2,800	2,800	140

Process Inhibition Criteria

In addition to pollutants with NPDES effluent limitations, USEPA recommends that a WWTP consider pollutants that may interfere with POTW operation to be potential POCs. The Brawley WWTP operates an extended aeration activated sludge process (i.e. Biolac®) to remove organics, solids, and ammonia (i.e. nitrification) in the wastewater. Inhibition threshold levels for activated sludge, and nitrification were obtained from *2004 USEPA Local Limits Development Guidance.* **Table 2.4** summarizes inhibition threshold levels.

Table 2.4 Literature Inhibition Values (Most Stringent Values)

Pollutants	Activated Sludge Inhibition Threshold (mg/L)	Nitrification Inhibition Threshold (mg/L)
Metal/Nonmetal Inorganics		
Ammonia	480	-
Arsenic	0.1	1.5
Cadmium	1 - 10	5.2
Chloride	-	180
Chromium (VI)	1	1 - 10
Chromium (III)	10 - 50	-
Chromium (Total)	1 - 100	0.25 - 1.9
Copper	1	0.05 - 0.48
Cyanide	0.1 - 5	0.34 - 0.5
Iodine	10	-
Lead	1 - 5	0.5
Mercury	0.1 - 1	-
Nickel	1.0 - 2.5	0.25 - 0.5
Silver	-	-
Sulfate	-	-
Sulfide	25 - 30	-
Zinc	0.3 - 5	0.08-0.5
Organics		
Acrylonitrile	-	-
Anthracene	500	-
Benzene	100 - 500	-
Carbon Tetrachloride	-	-
Chlorobenzene	-	-
Chloroform	-	10
2-Chlorophenol	5	-

Pollutants	Activated Sludge Inhibition Threshold (mg/L)	Nitrification Inhibition Threshold (mg/L)
1,2 Dichlorobenzene	5	-
1,3 Dichlorobenzene	5	-
1,4 Dichlorobenzene	5	-
2,4 Dichlorophenol	64	64
2,4 Dimethylphenol	40 - 200	-
2,4 Dinitrophenol	-	150
2,4 Dinitrotoluene	5	-
2,4 Diphenylhydrazine	5	-
Ethylbenzene	200	-
Hexachlorobenzene	5	-
Methylchloride	-	-
Naphthalene	500	-
Nitrobenzene	30 - 500	-
Pentachlorophenol	0.95	-
Phenanthrene	500	-
Phenol	50 - 200	4
Tetrachloroethylene	-	-
Toluene	200	-
Trichloroethylene	-	-
2,4,6 Trichlorophenol	50 - 100	-
Surfactants	100 - 500	-

Collection System Criteria

Explosive and flammable pollutants discharged to the WWTP can accumulate and threaten the collection system, as well as the health and safety of plant workers. Therefore, local limits should regulate the discharge of these pollutants. In the *2004 USEPA Local Limits Development Guidance, Appendix I,* discharge screening levels for explosivity and fume toxicity are evaluated.

The fume toxicity of pollutants discharged to the WWTP can cause an adverse health effect when the plant worker is exposed to these pollutants. The time-weighted average threshold limit value (TWA-TLV) and short-term exposure limits (STELs) for gases that pose the threat of acute or chronic health effects in people can be found in the *2004 USEPA Local Limits Development Guidance, Appendix I.*

Volatile organic compound (VOC) vapors can be toxic and carcinogenic, and may produce acute and chronic health effects when plant workers are exposed to these VOC vapors. Also, acidic discharges can combine with nonvolatile substances which then produce toxic gases and vapors (e.g. sulfide and cyanide to hydrogen sulfide and hydrogen cyanide). To respond to this, local limits based on the maximum recommended levels of these POCs should be established. A list of pollutants and the NIOSH, OSHA, and ACGIH guidelines and exposure levels can be found in *2004 USEPA Local Limits Development Guidance, Appendix J.*

2.3 Screening

A POC is any pollutant that might be expected to be discharged to the sewer system in sufficient amounts to pass through or interfere with the treatment works, contaminate sludge, cause problems in the collection system, or jeopardize workers. Screening of potential POCs is in accordance with USEPA guidelines and all pollutants categorized as POCs will be used for determination of local limits.

2.3.1 Methodology

To identify POCs, various types of pollutant information were reviewed. Most of the data provided by the City for review were readily available from monitoring data collected by the City for regulatory compliance. The following data were compiled and reviewed to identify the pollutants that should be evaluated to determine the need for local limits:

- Monthly WWTP influent and effluent concentration data for 2010 and 2011
- Yearly sludge monitoring data for 2011 and 2012
- Yearly priority pollutants analysis data (effluent and receiving water) for 2010 and 2011

The summary of monthly WWTP influent and effluent, yearly sludge monitoring data and yearly priority pollutants analysis data is presented in Appendix II.

The data were also reviewed to ensure that the influent and/or effluent priority pollutant scans contained the following pollutants:

- Toxic pollutants designated in the NPDES permit and/or State WQSs that apply to the WWTP effluent or receiving water stream segment (i.e. New River)
- Organic toxic pollutants and toxic metals listed in 40 CFR Part 122, Appendix D, Table II and Table III
- Any toxic pollutants and hazardous substances required to be identified by existing dischargers if expected to be present, as listed in 40 CFR Part 122, Appendix D, Table V
- Any pollutants that are present and may cause a potential impact to the collection system, treatment works, worker health and safety or air quality
- Any pollutants that may impact treatment performance (i.e. process inhibition criteria)
- Any pollutants in sludge listed in 40 CFR 503 Standards for the Use or Disposal of Sewage Sludge.
- Any pollutants that are recommended by the Regional Water Quality Control Board (RWQCB)

USEPA recommends that the POTW conduct screening for any pollutant found in the priority pollutant scans of influent, effluent, or sludge to determine whether the pollutant should be listed as a POC. Although a pollutant is considered as a potential POC, the POTW may determine, based on the pollutant's concentration and on other data from industrial users and commercial dischargers, that the pollutant need not be selected as a POC for the full headworks analysis.

The USEPA provides guidance for identifying POCs, which is described in *2004 USEPA Local Limits Development Guidance.* A pollutant is considered a potential POC if it meets any of the following screening criteria.

1) A pollutant is on USEPA's list of 15 pollutants that a WWTP should assume to be of concern.

2) A pollutant has a pre-existing local limit.

3) A pollutant is limited by a permit or applicable environmental criteria.

4) A pollutant has caused operational problems in the past.

5) A pollutant has important implications for the protection of the treatment works, collection system, or the health and safety of WWTP workers.

The POCs were examined by evaluating industrial discharge, influent, effluent, and sludge concentrations for regulatory compliance. Using the screening criteria above, 19 POCs were identified, as described in the following section.

2.3.2 Results

1) National POCs

The USEPA has identified 15 pollutants often found in WWTP sludge and effluent that it considers potential POCs. The following are national POCs listed in *2004 USEPA Local Limits Development Guidance.*

10 Original POCs		5 New POCs
○ Arsenic	○ Cadmium	○ Molybdenum
○ Chromium	○ Copper	○ Selenium
○ Cyanide	○ Lead	○ BOD_5
○ Mercury	○ Nickel	○ TSS
○ Silver	○ Zinc	○ Ammonia

The USEPA recommends that each WWTP, at a minimum, screen for the presence of the 15 national pollutants using data on industrial user discharges and collected from samples of WWTP influent, effluent, and sludge.

All 15 pollutants were detected one or more times in the industrial discharge, influent, effluent, and/or sludge samples from 2010 through 2011 and will be carried forward for determination of local limits.

2) Pre-existing Local Limits

In 2005, the City of Brawley established local limits for the various pollutants in the City's SUO (Section 22.18). However, these limits were based on instantaneous maximum concentration. Limits based on daily maximum concentration or on monthly average concentration were not established for pollutants. In this report, new limits for pollutants will be evaluated and established based on daily maximum and/or monthly average concentration.

3) Pollutants Limited by Permit or Other Environmental Criteria

The Brawley NPDES permit contains effluent limitations for BOD_5, TSS, oil and grease, ammonia, copper, selenium, cyanide, and bis(2-ethylhexyl)phthalate. BOD_5, TSS, ammonia, copper, selenium, and cyanide are national POCs and therefore already included. From local limits sampling analysis data conducted in August 2012, Bis(2-ethylhexyl)phthalate was detected in industrial discharge (i.e. National Beef pretreated wastewater discharge), WWTP influent and effluent, or sludge samples. The average concentration was ranged from 0.05 mg/L to 0.16 mg/L. Therefore, bis(2-ethylhexyl)phthalate was included in potential POCs.

California WQSs have been established for several pollutants that have been detected in the plant influent or effluent. **Table 2.2** summarized WQS for specific pollutants which were detected in WWTP effluent monitoring data. Most of pollutants except bis(2-ethylhexyl)phthalate are already included in national POCs. Bis(2-ethylhexyl)phthalate will be included in potential POCs.

- Bis(2-ethylhexyl)phthalate

4) Sludge Quality Standards

Pollutants regulated by 40 CFR 503 include arsenic, cadmium, copper, lead, mercury, nickel, selenium, and zinc. All of these pollutants are national POCs and have already been selected to be analyzed for local limits.

5) Process Inhibition Criteria

All metal and organic compounds detected in recent plant monitoring have been selected as POCs. The threshold inhibition concentrations of these pollutants will be used to develop AHLs based on inhibition criteria.

6) Collection System Criteria

Collection system criteria, including those to protect worker health and safety, are not amenable to MAHL analyses. Collection system-based limits are discussed in Chapter 7.

7) Operational Considerations

Because of its potential to cause obstructions of the flow in the collection system, oil and grease was included as a POC.

2.3.3 Selection of POCs

Based on the pollutant screening analysis, the following 18 pollutants were identified as potential POCs and selected for further evaluation.

- Arsenic
- Cadmium
- Chromium
- Copper
- Cyanide (total)
- Cyanide (free)
- Lead
- Mercury
- Molybdenum
- Nickel
- Selenium
- Silver
- Zinc
- BOD_5
- TSS
- Ammonia
- Bis(2-ethylhexyl)phthalate
- Oil and Grease

3. Flow and Load Analysis

3.1 Introduction

This section will discuss the flow and loading evaluation to determinate the pollutant load distribution by residential, commercial, and industrial dischargers. Current wastewater flow and loading were estimated from the last two years of water consumption data and WWTP influent flow data (*2009 Wastewater Rate Study*, and 2010 to 2011NPDES monthly monitoring reports).

3.2 Flow Analyses

3.2.1 Influent Flow

Brawley WWTP influent flow has been determined from measurement of the total wastewater flow into the treatment works. The measurement of wastewater flow includes all sources: residential, commercial, and industrial. Hauled waste is not allowed into the Brawley WWTP. **Table 3.1** presents the total wastewater flow at Brawley WWTP.

Table 3.1 WWTP Influent Flow Rate

Year	Average Daily Flow (mgd)	Max Daily Flow (mgd)
2010	3.9	4.2
2011	3.5	3.8

3.2.2 Controlled Flow

The controlled flow includes industrial dischargers, hauled waste, and specific commercial users that the POTW intends to regulate with numerical local limits. As discussed earlier, hauled waste is not allowed into the WWTP and there are no commercial users discharging high-strength wastewater to the collection system except small auto shop and radiator repair shop. Therefore, the wastewater flow generated by industrial users is considered the controlled flow.

The City's current water billing system identifies customers by categories so that accounts can be classified by use class and used to identify each customer by sector and usage category. According to the City's water billing system, there is one industrial water user in Brawley. The only industrial user is a meat processing company, National Beef. National Beef discharges approximately 1.61 mgd of the meat process wastewater to the WWTP and has an agreement with the City to discharge up to 2.1 mgd. Another discharger, Pioneers Memorial Hospital, can be classified as a significant discharger due to its wastewater flow and characteristics. The estimated wastewater flow is approximated 95,000 gpd and may contain toxic organic substances. **Table 3.2** summarizes the estimated wastewater flow from the two major dischargers.

Table 3.2 Controlled Wastewater Flow (2012)

Dischargers	Estimated Wastewater Flow (gpd)
National Beef	1,614,000
Pioneers Memorial Hospital	95,000 [1]
Total	1,709,000 (= 1.71 mgd)

3.2.3 Uncontrolled Flow

Uncontrolled flow includes the flow from sources that the POTW does not control, such as residential sources, commercial sites, infiltration and inflow, storm water, and waste haulers. Although Brawley has a combined storm water and sewer pipe system, only a very small amount of storm flow is expected to flow into WWTP due to rare rainfall events. Waste haulers are not allowed to dispose waste at the Brawley WWTP.

The uncontrolled flows from residential (single family and multi-family), commercial, and other institutional/governmental sources are approximately 2.09 mgd. The estimated wastewater flow for each discharger category was calculated from total uncontrolled flow (i.e. 2.09 mgd) by multiplying percentage of discharger wastewater flow indicated in City's sewer rate study (2009). **Table 3.3** presents estimated wastewater by uncontrolled flow dischargers.

Table 3.3 Uncontrolled Wastewater Flow

Dischargers	Estimated Wastewater Flow (mgd)
Single Family	1.22
Multi Family	0.63
Commercial	0.20
Institutional/governmental	0.04
Total	2.09

3.2.4 Summary of Flow

The following table summarizes the total influent flow, comprising flow from controlled and uncontrolled sources, for Brawley WWTP.

Table 3.4 Wastewater Flow Summary

Dischargers	Wastewater Flow (mgd)
Uncontrolled Wastewater	2.09
Controlled Wastewater	1.71
Total	3.80

3.3 Load Analyses

The pollutant loadings for uncontrolled wastewater were calculated for use in determining the maximum allowable industrial loading (MAIL), which is the maximum loading that can be received at the POTW's headworks from all permitted industrial users. To estimate the MAIL, pollutant loadings from uncontrolled sources need to be subtracted from the MAHL. **Table 3.5** presents the uncontrolled source loadings for the Brawley WWTP. Residential and commercial loadings were calculated by multiplying the average residential and commercial pollutant concentrations obtained from sampling and analysis at residential and commercial sampling locations, by estimated wastewater flow (see **Table 3.3**).

The sampling for local limits was conducted to collect data required to determine POCs and to calculate local limits for these pollutants. Sampling was conducted at 7 different sampling locations. Sampling frequencies, procedures, and analytical methods followed the recommendations of the *2004 USEPA Local Limits Development Guidance*, 40 CFR Part 136 and Guidelines Establishing Test Procedures for the Analysis of Pollutants. The Local Limits Sampling Plan is presented in Appendix I.

In commercial wastewater, relatively high concentrations of toxic metals such as copper, lead, and zinc were detected. The sampling for commercial wastewater was conducted at a manhole that receives wastewater from various commercial dischargers such as restaurants, a flower shop, eye doctor offices, an auto shop, and a radiator repair shop. The high metal content in the samples may be discharged from the auto shop and/or the radiator repair shop. Therefore, it is recommended that the City investigate the wastewater discharge from the auto shop and radiator repair shop and prohibit the wastewater discharge to City's sewer system.

High BOD_5 and TSS contents were also detected in commercial wastewater. Commercial garbage grinders are suspected of being a source of high BOD_5 and TSS in restaurant dischargers. It is suggested that the City must educate the users to reduce these high BOD_5 and

TSS loadings not flowing into existing sewer system. The City may also elect to prohibit the use of commercial garbage grinders.

WWTP influent loadings are also presented in **Table 3.5**. WWTP influent loadings will be compared to the MAHL for each POC in order to determine the need for local limits. When the average influent loading of pollutants exceeds 60 percent of the MAHL or when the maximum daily influent loading of pollutants exceeds 80 percent of the MAHL, local limits are needed. The detail will be discussed in Chapter 5.

The concentrations of BOD and TSS in some of the commercial samples taken on 8/4/2012, 8/6/2012 and 8/7/2012 were unusually high. These samples skewed the TSS and BOD results for the commercial sources. In calculating the pollutant concentration and loading summary in Table 3.5 below, the BOD for commercial sources for the days 8/4/2012 and 8/7/2012 was disregarded, since the sample values were 2-3 times the average. The TSS samples for 8/4, 8/6 and 8/7/2012 were also disregarded since they were more than three times the average and are not considered typical. Upon correction of the commercial BOD and TSS concentrations and loads, the calculated headworks loads for the treatment plant based on contributions from the various sources were within 10% of the measured plant influent concentrations. The data for the residential sources was more consistent and was used directly.

Table 3.5 Pollutant Concentration and Loading Summary – Uncontrolled Sources

Pollutants	Uncontrolled Sources				WWTP Influent	
	Residential		Commercial			
	Conc. (mg/L)	Loading (lb/day)	Conc. (mg/L)	Loading (lb/day)	Conc. (mg/L)	Loading (lb/day)
Arsenic	ND	-	ND	-	ND	-
Cadmium	0.001	0.015	0.0008	0.0016	ND	-
Chromium	0.0042	0.065	0.0077	0.015	0.0047	0.15
Copper	0.09	1.4	0.29	0.57	0.065	2
Cyanide (total)	ND	-	ND	-	ND	-
Cyanide (free)	ND	-	ND	-	ND	-
Lead	0.001	0.016	0.34	0.66	0.0039	0.12
Mercury	ND	-	0.00028	0.0006	ND	-
Molybdenum	0.0056	0.087	0.011	0.021	0.02	0.63
Nickel	0.0043	0.067	0.008	0.017	0.0078	0.25
Selenium	ND	-	ND	-	ND	-
Silver	0.00055	0.0085	0.003	0.006	ND	-

Pollutants	Uncontrolled Sources				WWTP Influent	
	Residential		Commercial			
	Conc. (mg/L)	Loading (lb/day)	Conc. (mg/L)	Loading (lb/day)	Conc. (mg/L)	Loading (lb/day)
Zinc	0.14	2.2	0.29	0.6	0.2	6.4
BOD_5	236	3,637	418	822	162	5,136
TSS	163	2,508	488	958	397	12,570
Ammonia	27	414	18	36	57	1,818
Oil and Grease (Total)	22	332	30	60	10	319
Bis(2-ethylhexyl)phthalate	0.071	1.1	0.089	0.18	0.18	5.2

4. Removal Efficiencies

4.1 Introduction

The removal efficiency is the fraction or percentage of the influent pollutant loading that is removed from the waste stream across an entire wastewater treatment works or specific wastewater treatment unit within the works. To calculate MAHLs, the removal efficiency values for each POC must be determined. There are three main types of removal efficiency calculation methodologies: 1) Average Daily Removal Efficiency (ADRE), 2) Mean Removal Efficiency (MRE), and 3) Decile Method. The appropriate removal efficiency methodology depends upon data quantity and quality.

<u>Average Daily Removal Efficiency (ADRE)</u>

The ADRE is calculated by first determining the daily removal efficiency for each pair of influent and effluent values (i.e., an influent value and an effluent value from the same sampling day). These sets of daily removal efficiencies are then averaged to determine the ADRE for a pollutant. To use the ADRE method, both an influent and an effluent data point for each specific sampling day are required, and the influent value must be greater than zero.

$$R_{WWTP} = \frac{\sum(I_N - E_{WWTP,N})/I_N}{N}$$

$$R_{PRIM} = \frac{\sum(I_N - E_{PRIM,N})/I_N}{N}$$

$$R_{SEC} = \frac{\sum(I_N - E_{SEC,N})/I_N}{N}$$

Where,	R_{WWTP}	=	Plant removal efficiency from headworks to plant effluent, as a decimal
	R_{PRIM}	=	Removal efficiency from headworks to primary treatment effluent, as a decimal
	R_{SEC}	=	Removal efficiency from headworks to secondary treatment effluent, as a decimal
	I_N	=	WWTP influent pollutant concentration at the headworks, mg/L
	$E_{WWTP, N}$	=	WWTP effluent pollutant concentration, mg/L
	$E_{PRIM, N}$	=	Primary treatment effluent pollutant concentration, mg/L
	$E_{SEC, N}$	=	Secondary treatment effluent pollutant concentration, mg/L
	N	=	Paired observations, numbered 1 to N

<u>Mean Removal Efficiency (MRE)</u>

The MRE is calculated by using the same formula as for the ADRE, but instead of using individual influent and effluent values, the average of all influent values and the average of all effluent values are used in the equation. Unlike the ADRE method, the MRE method does not require paired influent and effluent values.

$$R_{WWTP} = \frac{\overline{I_r} - \overline{E_{WWTP,t}}}{\overline{I_r}}$$

$$R_{SEC} = \frac{\overline{I_r} - \overline{E_{SEC,y}}}{\overline{I_r}}$$

$$R_{PRIM} = \frac{\overline{I_r} - \overline{E_{PRIM,x}}}{\overline{I_r}}$$

Where,	R_{WWTP}	=	Plant removal efficiency from headworks to plant effluent, as a decimal
	R_{PRIM}	=	Removal efficiency from headworks to primary treatment effluent, as a decimal
	R_{SEC}	=	Removal efficiency from headworks to secondary treatment effluent, as a decimal
	I_r	=	WWTP influent pollutant concentration at headworks, mg/L
	$E_{WWTP, t}$	=	WWTP effluent pollutant concentration, mg/L
	$E_{PRIM, x}$	=	Primary treatment effluent pollutant concentration, mg/L
	$E_{SEC, y}$	=	Secondary treatment effluent pollutant concentration, mg/L
	t	=	Plant effluent samples, numbered 1 to t
	r	=	Plant influent samples, numbered 1 to r
	x	=	Primary treatment effluent samples, numbered 1 to x
	y	=	Secondary treatment effluent samples, numbered 1 to y

<u>Decile Method</u>

Unlike the above methods, the decile method considers how often the actual daily removal efficiency will be above or below a specified removal rate. The decile method requires at least nine daily removal efficiency values based on paired sets of influent and effluent data. By sorting daily removal efficiency from highest to lowest, it calculates the percentage of the daily removal efficiency. The decile method is similar to a data set median but it divides the ordered data set into 10 equal parts. 10 percent of the data set is below the first decile; 20 percent of the data is below the second decile, etc. The fifth decile is equivalent to the data set medium. The USEPA recommends using the seventh decile removal for calculating sludge quality-based AHLs and third decile removal for calculating water quality-based AHLs.

4.2 Sources of Removal Efficiency Data

Sample analysis data for influent and final effluent were utilized to calculate site-specific removal efficiencies using the mean removal efficiency (MRE) methodology. For pollutants that were detected in influent but not in the effluent, ½ of the value of the method detection level was substituted for effluent results reported as non-detected. In the absence of sufficient site-specific performance data for certain pollutants, removal efficiencies reported by USEPA (i.e. *2004 USEPA Local Limits Development Guidance, Appendix R)* were used. These literature values represent median removal efficiencies from a database of 40 wastewater treatment plants. Removal efficiency calculations for POCs are shown in Appendix V.

4.3 Selection of Representative Removal Efficiency

The removal efficiencies for each pollutant are included in the following **Table 4.1**. Because the Brawley WWTP consists of the Biolac® activated sludge process without a separate primary treatment process, the primary removal efficiency was not applied to calculate AHLs based on process inhibition (i.e. nitrification and activated sludge). The final effluent removal efficiency was applied to AHLs calculations based on NPDES permit limits and sludge quality standards.

Where possible, removal efficiencies for the POCs were calculated from site-specific data. Removal efficiencies for arsenic, cadmium, cyanide (total and free), lead, mercury, and molybdenum, which had insufficient data to calculate site-specific values, were cited from *2004 USEPA Local Limits Development Guidance*.

In addition to sample analysis data of bis(2-ethylhexyl)phthalate, 2011 - 2012 monthly WWTP effluent concentration data were reviewed for removal efficiency calculation. During local limits sampling, the WWTP effluent concentration of bis(2-ethylhexyl)phthalate showed much higher levels than the composite sample data of the 2011 - 2012 WWTP effluent monitoring data. This might be that the sample contacted plastic tubing, gloves or other PVC based material resulting in high bis(2-ethylhexyl)phthalate concentrations during sample collection. Therefore, the first five pairs of data were not used for removal efficiency calculation.

The historical bis(2-ethylhexyl)phthalate concentration in WWTP effluent is presented in Appendix II.

Table 4.1 Final Effluent Removal Efficiency Summary

POCs	Removal Efficiency	Source
Arsenic	45%	2004 USEPA Local Limits Guidance
Cadmium	67%	2004 USEPA Local Limits Guidance
Chromium	88%	Sampling Data (MRE)
Copper	82%	Sampling Data (MRE)
Cyanide (total)	69%	2004 USEPA Local Limits Guidance
Cyanide (free)	69%	2004 USEPA Local Limits Guidance
Lead	61%	2004 USEPA Local Limits Guidance
Mercury	60%	2004 USEPA Local Limits Guidance
Molybdenum	63%	2004 USEPA Local Limits Guidance
Nickel	64%	Sampling Data (MRE)
Selenium	39%	Sampling Data (MRE)
Silver	58%	Sampling Data (MRE)
Zinc	88%	Sampling Data (MRE)
BOD_5	97%	Sampling Data (MRE)
TSS	98%	Sampling Data (MRE)
Ammonia-N	99.8%	Sampling Data (MRE)
Oil and Grease	67%	Sampling Data (MRE)
Bis(2-ethylhexyl)phthalate	98%	Sampling Data (MRE)

5. MAHL Analyses

5.1 Introduction

The MAHL is an estimate of the upper limit of pollutant loading to a WWTP and is intended to prevent pass through or interference. The MAHL is the maximum pollutant load in pounds per day that the WWTP can receive without exceeding regulatory criteria or experiencing plant operation upset. The MAHL analysis for a single POC is basically calculated in following three steps:

- Determine WWTP removal efficiency for the POC (Section 4)
- Calculate the allowable headworks loading (AHL) for each environmental criterion (Section 5)
- Designate as the MAHL the most stringent AHL for the POC (Section 5)

5.2 MAHL Analysis Method

5.2.1 Select AHL Equations

An AHL is the estimated maximum loading of a pollutant that can be received at the WWTP headworks. The maximum loading of a pollutant should not cause violation of WWTP discharge limits or other environmental criteria. An AHL is calculated for each applicable criterion: water quality, sludge quality, and the various forms of interference. The AHLs for each POC are calculated based on the applicable environmental criteria, plant flow rates, and plant removal efficiencies. After calculating a series of AHLs for each POC, the lowest AHL is typically chosen as the MAHL.

AHLs were calculated based on the following applicable criteria:

- Brawley WWTP NPDES Permit (No. CA0104523, expire on May 19, 2015)
- WWTP Design Capacity (for conventional pollutants)
- California Water Quality Standards (WQS, May 2000))
- Plant Inhibition: 1) Activated Sludge Inhibition, and 2) Nitrification Inhibition
- Sludge Quality Standards

5.2.2 Calculate AHLs

Local limits development uses a mass-balance approach to determine the AHLs and calculates the amount of loading received at the POTW headworks that will still meet the environmental or treatment plant criteria that apply to each pollutant. In calculating AHLs, steady-state equations were used for conservative pollutants such as metals because the amount of pollutant loading was conserved throughout the treatment process.

1) NPDES Permit AHL

The NPDES permit limit is the most effective means of restricting the discharge of toxic substances. The AHL based on the NPDES permit limit was calculated for each POC using the following equation:

$$AHL_{NPDES} = \frac{(8.34)\,(C_{NPDES})\,(Q_{WWTP})}{(1 - R_{WWTP})}$$

Where,	AHL_{NPDES}	=	AHL based on NPDES permit limit, lb/day
	C_{NPDES}	=	NPDES permit limit, mg/L
	Q_{WWTP}	=	WWTP average flow rate, MGD
	R_{WWTP}	=	WWTP removal efficiency from headworks to plant effluent, as a decimal
	8.34	=	Conversion factor

The AHL calculations based on NPDES permit limits are presented in Appendix VI.

2) WWTP Design Capacity

For conventional pollutants, particularly BOD_5, TSS, and ammonia, USEPA recommends considering design capacity of the WWTP in formulating the AHLs. The design capacity of BOD_5 and TSS were based upon a design concentration of 175 mg/L and 190 mg/L in WWTP influent and an influent flow rate of 3.8 mgd (average monthly flow from 2010 to 2012). The design capacity of ammonia was based upon a design concentration of 37 mg/L.

The AHL based on design capacity was calculated using the following equation:

$$AHL_{DESIGN} = (8.34)\,(C_{DESIGN})\,(Q_{WWTP})$$

Where,	AHL_{DESIGN}	=	AHL based on WWTP design capacity, lb/day
	C_{DESIGN}	=	Design capacity for BOD_5 and TSS, mg/L
	Q_{WWTP}	=	WWTP average flow rate, MGD
	8.34	=	Conversion factor

The AHL calculations based on WWTP design capacity are presented in Appendix VI.

3) Water Quality Standards AHL

The Brawley NPDES permit does not have effluent discharge limits for all of the POCs established during the local limits study. For these pollutants, USEPA recommends basing the AHL on California WQS. California WQS provide allowable water quality criteria to protect the public health and particular water bodies. By using the equation below and maximum pollutant level in the California WQS, the AHL based on WQS was calculated for each POC:

$$AHL_{WQS} = \frac{(8.34)\ (C_{WQS})(Q_{WWTP})}{(1 - R_{WWTP})}$$

Where,	AHL_{WQS}	=	AHL based on water quality criteria, lb/day
	C_{WQS}	=	California WQS, mg/L
	Q_{WWTP}	=	WWTP average flow rate, MGD
	R_{WWTP}	=	WWTP removal efficiency from headworks to plant effluent, as a decimal
	8.34	=	Conversion factor

The AHL calculations based on WQS are presented in Appendix VI.

4) Plant Process Inhibition AHL

Certain pollutant levels in wastewater or sludge can cause operational problems for biological treatment processes. Disruption or inhibition by pollutants (especially metals) can interfere with a plant's ability to remove BOD_5 and other pollutants. Although the Brawley WWTP has not experienced any past inhibition problems, the determination of AHLs based on biological process inhibition criteria can prevent future loadings that may cause inhibition.

The *2004 USEPA Local Limits Development Guidance* provides literature-based inhibition data for activated sludge and nitrification. Inhibition-based AHLs were calculated for secondary treatment processes, including activated sludge and nitrification, using these values. Where ranges of values were given, the most stringent was selected. However, when influent pollutant concentrations were higher than literature-based inhibition values (e.g. copper and zinc), influent pollutant concentration was used for AHLs calculation.

The AHL calculations based on inhibition threshold values are presented in Appendix VI.

Activated Sludge Inhibition

The equation below was used to calculate AHLs based on activated sludge inhibition. The equation calculates the AHL for conservative pollutants such as metals. **Table 5.1** presents the threshold concentration of activated sludge inhibition from *2004 USEPA Local Limits Development Guidance Appendix G.* As discussed in earlier section, City operates Biolac® process without separate primary clarifiers. Therefore, removal efficiency (R_{PRIM}) through primary process is considered as zero.

$$AHL_{AS} = \frac{(8.34)\left(C_{AS\_INHIBI}\right)(Q_{WWTP})}{(1 - R_{PRIM})}$$

Where,	AHL_{AS}	=	AHL based on activated sludge inhibition, lb/day
	C_{AS_INHIBI}	=	Activated sludge inhibition criteria, mg/L
	Q_{WWTP}	=	WWTP average flow rate, MGD
	R_{PRIM}	=	Removal efficiency from headworks to primary treatment effluent, as a decimal
	8.34	=	Conversion factor

Table 5.1 Activated Sludge Inhibition Threshold Levels

Pollutants	Inhibition Threshold Level (mg/L)
Ammonia	480
Arsenic	0.1
Cadmium	1
Chromium	1
Copper	1
Cyanide (total)	0.1
Lead	1
Mercury	0.1
Nickel	1.0
Zinc	0.3

Nitrification Inhibition

The equation below was used to calculate AHLs based on nitrification inhibition. The equation calculates the AHL for conservative pollutants such as metals. **Table 5.2** presents the threshold concentration of nitrification inhibition from *2004 USEPA Local Limits Development Guidance Appendix G*. As discussed in earlier section, City operates Biolac® process without separate primary clarifiers. Therefore, removal efficiency (R_{PRIM}) through primary process is considered as zero.

$$AHL_{NITRI} = \frac{(8.34)\left(C_{NITRI\_INHIBI}\right)(Q_{WWTP})}{(1 - R_{PRIM})}$$

Where,

AHL_{NITRI}	=	AHL based on nitrification inhibition, lb/day
C_{NITRI_INHIBI}	=	Nitrification inhibition criteria, mg/L
Q_{WWTP}	=	WWTP average flow rate, MGD
R_{PRIM}	=	Removal efficiency from headworks to primary treatment effluent, as a decimal
8.34	=	Conversion factor

Table 5.2 Nitrification Inhibition Threshold Levels

Pollutants	Inhibition Threshold Level (mg/L)
Arsenic	1.5
Cadmium	5.2
Chromium	0.25
Copper	0.5 [1]
Cyanide	0.34
Lead	0.5
Nickel	0.25
Zinc	0.4 [2]

1. Cited from Skinner and Parker (1961) and Russell and et al. (1982)
2. Maximum WWTP influent zinc concentration without nitrification inhibition. Also, cited from John T. Fox and et al. (2006) and Kelly II, R. T. and et al. (2004)

5) Sludge AHL

According to 40 CFR 503, Standards for the Use or Disposal of Sewage Sludge, pollutant levels are established for three disposal alternatives: land application, surface disposal, and incineration. The current Brawley NPDES permit specifies that all sludge and/or solids generated at the treatment plant are to be disposed, treated, or applied to land in accordance with 40 CFR Part 503. Regardless of how the WWTP disposes of sludge, *2004 USEPA Local Limits Development Guidance* recommends considering use of land application "clean sludge" values from 40 CFR 503.13 in AHL calculations. Use of these criteria can improve a plant's beneficial use options for disposal of sludge. Furthermore, these standards are consistent with the objectives of the National Pretreatment Program listed at 40 CFR 403.2.

40 CFR 503 establishes limitations for nine common metals (arsenic, cadmium, copper, lead, mercury, molybdenum, nickel, selenium, and zinc). Additionally, the Brawley NPDES permit requires other constituents (TKN, ammonia, nitrate, phosphorus, potassium, total solids, fecal coliform, total petroleum hydrocarbons, cyanide, and bis(2-ethylhexyl)phthalate) to be sampled and analyzed from sludge prior to disposal.

The equation below was used to calculate the AHLs based on sludge land application:

$$AHL_{SLDG} = \frac{(8.34)\ (C_{SLGSTD})(\frac{PS}{100})\ (Q_{SLDG})(G_{SLDG})}{R_{WWTP}}$$

Where,	AHL_{SLDG}	=	AHL based on sludge, lb/day
	C_{SLGTD}	=	Sludge standard – "Clean Sludge" at 40 CFR Part 503, mg/L
	PS	=	Percent solids of sludge to disposal
	Q_{SLDG}	=	Total sludge flow rate to disposal, mgd
	R_{WWTP}	=	Removal efficiency from headworks to plant effluent, as a decimal
	G_{SLDG}	=	Specific gravity of sludge, kg/L
	8.34	=	Conversion factor

The AHL calculations based on biosolids criteria are presented in Appendix VI.

5.3 MAHL Analysis Results

Protecting water quality (NPDES permit standard and WQS), sludge quality, and plant processes typically requires selection of the lowest AHL value for each potential POC for use as the MAHL. **Table 5.3** presents the summary of the calculated AHLs that will serve as MAHLs for this evaluation.

5.4 Comparison of Influent Loadings and MAHLs for the Brawley WWTP

The summaries of influent loadings and the calculated MAHLs for the Brawley WWTP are presented in **Table 5.4**. MAHLs for all POCs were higher than WWTP influent loadings. *2004 USEPA Local Limits Development Guidance* suggests that local limits are needed when the following criteria are satisfied:

- Average influent loading of a toxic pollutant exceeds 60 percent of the MAHL
- Maximum daily influent loading of a toxic pollutant exceeds 80 percent of the MAHL any time in the 12-month period preceding the analysis
- Monthly average influent loading reaches 80 percent of average design capacity for BOD, TSS, and ammonia during any one month in the 12-month period preceding the analysis

Table 5.4 summarizes the comparison of WWTP influent loadings to MAHLs recommended by *2004 USEPA Local Limits Development Guidance.* Most of the influent pollutant loadings at the WWTP were far below the calculated MAHLs and did not meet the stated criteria for local limit implementation. However, molybdenum, BOD_5, TSS, ammonia and bis(2-ethylhexyl)phthalate satisfied the criteria for local limit implementation. The average influent loading and maximum daily influent loading of these pollutants exceeded 60 percent and 80 percent of the MAHL, respectively. Especially, BOD_5, TSS and ammonia reached 80 percent of average design capacity suggesting that local limits are needed.

Except for molybdenum, BOD_5, TSS, ammonia and bis(2-ethylhexyl)phthalate, other pollutants are unlikely to cause problems for the plant performance at current loadings. However, it is recommended that the City establish local limits for the specified set of pollutants, with the exception of silver, to prevent increases in loadings from current industrial users and/or loadings from new industrial users from reaching levels that could jeopardize plant performance. The specified set of pollutants include 1) pollutants that qualified for local limits implementation (i.e. copper, molybdenum, BOD_5, TSS, ammonia, and bis(2-ethylhexyl)phthalate), 2) other national POCs (i.e., arsenic, cadmium, chromium, cyanide (total), lead, mercury, nickel, selenium, zinc), and 3) other site specific pollutants (i.e. cyanide (free), oil and grease).

Among the pollutants, the ratio of influent silver loading to the calculated MAHL was very low (the maximum influent loading-to-MAHL ratio was 2.5%) and it does not appear that control of industrial discharges for this pollutant is required.

Table 5.3 Summary of AHLs and MAHLs

POCs	AHLs						MAHLs	Controlling Criteria
	NPDES Permit (lb/day)	Design Criteria (lb/day)	WQS (lb/day)	Activated Sludge Inhibition (lb/day)	Nitrification Inhibition (lb/day)	Sludge Quality (lb/day)	(lb/day)	
Arsenic	-	-	0.86	3.2	47	0.62	0.62	Sludge Quality
Cadmium	-	-	0.21	32	165	0.40	0.21	WQS
Chromium	-	-	-	32	7.9	-	7.9	Nitrification Inhibition
Copper	3.8	-	-	32	16	12	3.8	NPDES Permit
Cyanide (total)	-	-	-	3.2	11	-	3.2	Activated Sludge Inhibition
Cyanide (free)	0.31	-	-	-	-	-	0.31	NPDES Permit
Lead	-	-	1.5	32	16	3.3	1.5	WQS
Mercury	-	-	0.004	3.2	-	0.19	0.004	WQS
Molybdenum	-	-	-	-	-	0.81	0.81	Sludge Quality
Nickel	-	-	15	32	7.9	4.4	4.4	Sludge Quality
Selenium	0.21	-	-	-	-	1.7	0.21	NPDES Permit
Silver	-	-	3.3	-	-	-	3.3	WQS
Zinc	-	-	101	9.5	13	22	9.5	Activated Sludge Inhibition
BOD_5	-	5,539	-	-	-	-	5, 539	Design Criteria
TSS	-	6,014	-	-	-	-	6,014	Design Criteria
Ammonia-N	-	1,171	-	15,192	-	-	1,171	Design Criteria
Oil and Grease	2,384	-	-	-	-	-	2,384	NPDES Permit
Bis(2-ethylhexyl)phthalate	10	-	-	-	-	-	10	NPDES Permit

Table 5.4 Comparison of WWTP Influent Loadings to MAHLs

POCs	MAHL (lb/day)	60% of MAHL (lb/day) (A)	Average Influent Loading (lb/day) (B)	New Local Limits Required? (B) > (A)	80% of MAHL (lb/day) (C)	Maximum Influent Loading (lb/day) (D)	New Local Limits Required? (D) > (C)	80% of Design Capacity (lb/day) (E)	Monthly Average Influent Loading (lb/day) (F)	New Local Limits Required? (F) > (E)
Arsenic	0.62	0.37	-	No	0.50	-	No	-	-	-
Cadmium	0.21	0.13	-	No	0.17	-	No	-	-	-
Chromium	7.9	4.7	0.15	No	6.3	0.21	No	-	-	-
Copper	3.8	2.3	2.0	No	3.0	2.8	No	-	-	-
Cyanide (total)	3.2	1.9	-	No	2.5	-	No	-	-	-
Cyanide (free)	0.31	0.18	-	No	0.25	-	No	-	-	-
Lead	1.5	0.93	0.12	No	1.2	0.16	No	-	-	-
Mercury	0.004	0.0024	-	No	0.0032	-	No	-	-	-
Molybdenum	0.81	0.49	0.63	Yes	0.65	0.79	Yes	-	-	-
Nickel	4.4	2.7	0.25	No	3.6	0.31	No	-	-	-
Selenium	0.21	0.13	-	No	0.17	0.06	No	-	-	-
Silver	3.3	1.98	-	No	2.6	0.012	No	-	-	-
Zinc	9.5	5.7	6.4	Yes	7.6	12.3	Yes	-	-	-
BOD_5	5,539	3,323	5,136	Yes	4,431	8,862	Yes	-	-	-
TSS	6,014	3,608	12,570	Yes	4,811	17,091	Yes	4,431	5,507	Yes
Ammonia-N	1,171	703	1,818	Yes	937	2,247	Yes	4,811	6,900	Yes
Oil and Grease	2,384	1,430	319	No	1,907	475	No	937	950	Yes
Bis(2-ethylhexyl)phthalate	10	6.0	5.7	No	8.0	8.2	Yes	-	-	-

6. Designating and Implementing Local Limits

6.1 Introduction

This section describes control strategies for pollutants including Maximum Allowable Industrial Loadings (MAILs) and numeric local limits. MAILs were calculated using estimates of loadings from uncontrolled sources and hauled waste, a safety factor, and a growth allowance.

6.2 Control Strategies for Pollutants

6.2.1 MAIL Analyses

MAHLs are estimates of the maximum combined loadings that can be received at the POTW's headworks from all sources. MAILs represent the pollutant loadings the POTW can receive from controlled sources including industrial users as well as any other users that the POTW chooses to control through local limits. The MAIL was calculated from the MAHL by subtracting estimate of loadings from uncontrolled sources, loadings from hauled waste, and growth allowance. The MAHL is further adjusted with a safety factor. The estimated MAHLs for pollutants are presented in **Table 5.3**. The MAIL was calculated for each POC using the following equation:

$$MAIL = MAHL\ (1 - SF) - (L_{UNC} + HW + GA)$$

Where,	MAIL	=	Maximum allowable industrial loading, lb/day
	MAHL	=	Maximum allowable headworks loading, lb/day
	SF	=	Safety factor
	L_{UNC}	=	Loadings from uncontrolled sources, lb/day
	HW	=	Loadings from hauled waste, lb/day (No hauled waste to Brawley WWTP)
	GA	=	Growth allowance

As noted, the Brawley WWTP does not accept hauled waste, nor does it anticipate doing so in the future.

<u>Uncontrolled Source Loadings</u>

Uncontrolled sources include residential sources and commercial dischargers. As discussed in Section 3.2.3, uncontrolled flow from these sources was estimated at 2.09 mgd. The uncontrolled source loadings were calculated by multiplying the average residential and commercial pollutant concentrations obtained through sampling and analysis at residential and commercial sampling locations, by the estimated wastewater flow from each of these groups of users. The following equation was used for the uncontrolled loading calculation:

$$L_{UNC} = (C_{UNC})(Q_{UNC})(8.34)$$

Where,	L_{UNC}	=	Uncontrolled loading, lb/day
	C_{UNC}	=	Uncontrolled pollutant concentration, mg/L
	Q_{UNC}	=	Uncontrolled flow rate, mgd
	8.34	=	Unit conversion factor

Table 6.1 summarizes the uncontrolled source loadings of POCs.

Safety Factor

The magnitude of the safety factor is site-specific, depending on local conditions. *2004 USEPA Local Limits Development Guidance* recommends a minimum 10 percent safety factor in order to address data uncertainties that can affect the ability of the POTW to calculate accurate local limits. A safety factor of zero is assumed for BOD_5, TSS, and ammonia because the WWTP design incorporates max month and peak day safety factors.

Expansion/Growth Allowance

United States Census data show that the population of Brawley increased 9.7% during the period from 2000 to 2010, an annual rate of less than 0.93%. Recent data for housing starts show that few building permits have been issued in the past few years during the current downturn in the housing market. Under current economic conditions, it is assumed that City of Brawley will not have any significant amount of growth in the near future, therefore, it will not hold in any reserve a portion of its MAHLs calculated on the current plant flow for growth.

The wastewater treatment plant flow at the time of this analysis was an average of 3.8 mgd. Allowable loadings for BOD_5, TSS, ammonia and total nitrogen have been calculated based in the design influent concentration and the current flow. The treatment plant has a design flow of 5.9 mgd. Therefore, as the City grows and the influent flows increase, additional capacity for industrial flows will increase as well in proportion to the flow increases associated with them. In the event that population growth remains stagnant, the City may elect to dedicate more of its existing plant capacity to industrial users, provided that it does not exceed the design capacity. The City may evaluate future SIU's based on the proposed flows at the time of permit application. Such discretion should be incorporated into the SUO.

Table 6.1 summarizes the calculated uncontrolled source loadings and MAILs for the POCs. Except for copper, lead, zinc, and the conventional pollutants (i.e. BOD_5, TSS, and ammonia), approximately 70 to 90 percent of the MAHL can be allocated into the MAIL after accounting for uncontrolled source loadings and the safety factor. MAILs for copper, lead, zinc, BOD_5, TSS, and ammonia ranged from 20 to 61 percent of MAHLs, due to relatively high uncontrolled source loadings.

Table 6.1 Summary of Uncontrolled Source Loadings and MAILs

Pollutants	MAHL (lb/day)	L_{UNC} (lb/day)	MAIL (lb/day)	MAIL/MAHL (%)
Arsenic	0.62	-	0.56	90%
Cadmium	0.21	0.017	0.17	82%
Chromium	7.9	0.08	7.0	89%
Copper	3.8	2.0	1.4	38%
Cyanide (total)	3.2	-	2.8	90%
Cyanide (free)	0.31	-	0.28	90%
Lead	1.5	0.68	0.71	46%
Mercury	0.004	0.00056	0.0031	76%
Molybdenum	0.81	0.11	0.62	77%
Nickel	4.4	0.083	3.9	88%
Selenium	0.21	-	0.19	90%
Silver	3.3	0.015	3.0	90%
Zinc	9.5	2.7	5.8	61%
BOD_5	5,539	4,459	1,080	20%
TSS	6,014	3,467	2,547	42%
Ammonia-N	1,171	451	720	62%
Oil and Grease	2,384	392	1,754	74%
Bis(2-ethylhexyl)phthalate	10	1.3	7.7	77%

6.2.2 Numeric Limits

The uniform concentration limit (UCL) method was adopted for allocating MAILs for conservative pollutants. The UCL method generates individual pollutant limits which apply to all industrial users. It requires that the MAIL for each pollutant be divided by the total flows from all controlled dischargers. In general, this method is the most stringent allocation approach, but easiest to administer.

$$C_{LIM} = \frac{MAIL}{(Q_{CONT})(8.34)}$$

Where,	C_{LIM}	=	Uniform concentration limit, mg/L
	MAIL	=	Maximum allowable industrial loading, lb/day
	Q_{CONT}	=	Total flow rate from industrial and other controlled sources, MGD
	8.34	=	Conversion factor

The UCLs for toxic metals were implemented as daily maximum because the short-term nature of the event that the UCL is protecting against and the infrequency of IU sampling for these metals. However, UCLs for conventional pollutants (i.e. BOD_5, TSS, and Ammonia) were implemented as monthly averages because the calculated UCLs are based upon monthly average design criteria and the existing activated sludge process (i.e. Biolac®) has high stability for load variations. And, the frequent sampling by IU (i.e. National Beef) which is two or three times per week can generate a true monthly average of pollutant concentration.

Table 6.2 presents the calculated UCLs for the pollutants.

Table 6.2 Uniform Concentration Limit Analysis

Pollutants	Uniform Concentration Limit [1] (mg/L)	MAHL-Based Local Limits Required?
Arsenic	0.04	Yes
Cadmium	0.012	Yes
Chromium	0.5	Yes
Copper	0.1	Yes
Cyanide (total)	0.2	Yes
Cyanide (free)	0.02	Yes
Lead	0.05	Yes
Mercury	0.0002	Yes
Molybdenum	0.04	Yes
Nickel	0.3	Yes
Selenium	0.01	Yes
Silver	0.2	Yes
Zinc	0.4	Yes
BOD_5	76	Yes
TSS	180	Yes
Ammonia-N	50	Yes
Oil and Grease	123	Yes
Bis(2-ethylhexyl)phthalate	0.5	Yes

1. Daily Maximum Limits except BOD_5, TSS, and Ammonia.

6.2.3 Slug Discharges

Slug discharges are short term discharges which may exceed longer term average limits and have the potential to disrupt the treatment process or impact effluent quality. *2004 USEPA Local Limits Development Guidance* recommends the adoption of maximum limits for slug discharges in the event that an industrial discharger to control potential process upsets from short-term discharges which may exceed longer term average limits. This is especially important for those POCs which are near the MAHL and which may be discharged in sufficient amounts over the short term by an industrial user to exceed the MAHL and potentially create operational problems at the WWTP. BOD_5, TSS, and ammonia in discharges from the National Beef plant fit these criteria due to the large potential flow from the plant (up to 2.1 mgd, which is more than one-third of the treatment capacity) and historical experience where high concentrations of these pollutants discharged from the National Beef pretreatment facility have caused operational upsets at the treatment plant. It is possible to have a single day discharge from the National Beef facility which would cause operational problems at the WWTP and which would not result in violation of a 30-day average limit.

The current contract between the City and National Beef contains maximum limits for BOD_5 and TSS of 250 mg/l. Upsets of the National Beef pretreatment process which exceed these limits have historically resulted in operational problems at the treatment plant. Operational problems have been associated with an inability to maintain adequate oxygen concentrations in the aeration basins. High BOD_5 and TSS loadings have been associated with rapid oxygen depletion in the aeration basins. They have also resulted in extended problems with maintaining oxygen concentrations due to the demand from organic solids which overwhelm the solids wasting capability of the system, resulting in high MLVSS levels which continue to exert demand until they can be wasted from the system. To protect the treatment plant from operational problems that could result in poor effluent quality, it is recommended that the instantaneous maximum discharge concentration limit for slug loading be retained at 250 mg/l for both BOD_5 and TSS, as set by the existing Brawley SUO.

High ammonia levels in National Beef pretreatment effluent may result in rapid depletion of dissolved oxygen levels in the aeration basins because the Biolac® basins contain large populations of nitrifiers which can rapidly oxidize ammonia to nitrate. While this may help prevent pass through of ammonia under some conditions, the rapid oxidation of ammonia to nitrite and nitrate consumes significant dissolved oxygen and can result in difficulty in maintaining dissolved oxygen levels in the aeration basins, causing rapid increases in required air flow to the basins and resulting in short-term overload of the blowers and aeration equipment. The existing contract with National Beef has an instantaneous maximum limit of 30 mg/l for ammonia for discharges to the City sewer system. It is recommended that the instantaneous maximum discharge concentration limit for ammonia be increased to 50 mg/l and monthly average concentration limit for ammonia be retained as 30 mg/L, as set by the existing Brawley SUO.

Alternative measurement techniques for pollutants from National Beef which have historically caused plant upsets were investigated during the sampling phase to identify indicators of National Beef pre-treatment plant upset which would provide real time or much more rapid detection of operational problems. The intent was to determine limits of a surrogate analyte which would serve to protect the WWTP from slug loadings. Total Organic Carbon (TOC) and Chemical Oxygen Demand (COD) were both analyzed in parallel with BOD_5, TSS, and ammonia. TOC was not found to be an appropriate predictor of plant upset.

COD, may be determined rapidly with on-line analyzers and was found to be a good predictor of the potential for plant upset. COD levels were found to be roughly 3.6 times the sampled BOD_5. Influent data from 8/8/12 was considered not representative and was not used in the analysis.

High COD levels have been observed to be associated with high TSS septic discharges from National Beef, which may be associated with over pumping of basins and discharge of septic solids. These discharges have impacted the plant operation by rapidly depleting dissolved oxygen concentrations in the aeration basin, often in less than one hour. The aeration blowers then ramp up to maximum capacity, and are still unable to maintain measurable dissolved oxygen levels in the basins. Such an incident occurred on 8/5/2012, during the local limits sampling. It is proposed to add a maximum limit of 900 mg/l of COD to the National Beef discharge to further protect the treatment plant from slug load upset. This limit correlates to a BOD limit of 250 mg/l. COD results may be used to rapidly identify a slug load to the plant.

7. Collection System-Based Limits

7.1 Introduction

Collection system-based limits protect the POTW from fire and explosions, corrosion, flow obstructions, high temperature, and toxic gases, vapors, or fumes. *2004 USEPA Local Limits Development Guidance* recommends that POTWs may need to develop local limits for their collection system to meet the requirements found at 40 CFR 403.5(b), which include protecting the health and safety of workers at the POTW.

7.2 Fire and Explosions

The General Pretreatment Regulations prohibit the discharge of pollutants that will cause a fire or explosion hazard in the POTW. To protect against fires and explosions, the City's existing SUO (Section 22.15 (b) 1) prohibits discharge of pollutants with a fire or explosive hazard.

> *Brawley SUO Section 22.15 (b) 1 prohibits: Pollutants which create a fire or explosive hazard in the POTW, including, but not limited to, waste streams with a closed-cup flashpoint of less than 140 degree Fahrenheit or 60 degrees Celsius using the test methods specified in 40 CFR 261.21.*

7.3 Corrosion

The General Pretreatment Regulations prohibit discharges of pollutants that will cause corrosive structural damage to a POTW. The regulations prohibit discharges with pH lower than 5.0. Federal regulation, 40 CFR 261, 22(a)(1) specifies that the maximum discharge pH should be less than 12.5 to prevent wastewater from being considered a hazardous waste. The City's existing SUO contains a specific prohibition against discharge of wastewater with a pH less than 6.0 or more than 9.0 (Section 22.15, (b) 2).

Brawley SUO Section 22.15 (b) 2 prohibits: Wastewater having a pH less than 6.0 or more than 9.0 or otherwise causing corrosive structural damage to the POTW or equipment.

7.4 Flow Obstruction

The General Pretreatment Regulations prohibit discharge of solid or viscous pollutants that obstruct wastewater flow to WWTP. The greatest threat of obstruction comes from polar fats, oils, and grease of animal and vegetable origin. These pollutants can accumulate and congeal in the collection system, pump stations, and WWTP, obstructing influent flow, reducing pipe and pump capacities, interfering with the POTW instruments, reducing treatment capacity, and increasing operations and maintenance cost. Although the calculated AHL-based local limit of oil and grease is 126 mg/L, the existing oil and grease limit (i.e. 40 mg/L) has proven effective in preventing accumulation of oil and grease in the collection system and at the treatment plant that could create blockages and other maintenance issues. Therefore, it is recommended that 40 mg/L of limit be retained.

7.5 Temperature

The City's existing SUO contains a specific prohibition against discharges having a temperature greater than 140 degrees Fahrenheit (or 60 degrees Celsius) or which will inhibit biological activity in the WWTP resulting in interference. Any discharge that causes the temperature at the WWTP headworks to exceed 104 degree Fahrenheit (or 40 degrees Celsius) is also prohibited.

Brawley SUO Section 22.15 (b) 5 prohibits: Wastewater having a temperature greater than 140°F (60°C), or which will inhibit biological activity in the treatment plant resulting in interference, but in no case wastewater which causes the temperature at the introduction into the treatment plant to exceed 104°F (40°C).

7.6 Toxic Gases, Vapors and Fumes

The General Pretreatment Regulations prohibit the discharge of pollutants that lead to the accumulation of toxic gases, vapors, or fumes in the POTW in sufficient quantity to cause worker health and safety problems. *2004 USEPA Local Limits Development Guidance, Appendix I* lists discharge screening levels based on fume toxicity, and *Appendix J* lists exposure limits for volatile organic priority pollutants. The exposure limits for hydrogen cyanide and hydrogen sulfide are 1.15 mg/L and 0.034 mg/L for fume toxicity based on the lowest criterion for acute toxicity. The calculations for these limits are presented in Appendix VIII.

8. Conclusions and Recommendations

Eighteen pollutants were identified as POCs in developing local limits for the Brawley WWTP. MAHL and MAIL analyses were conducted for 12 inorganic compounds and metals, one volatile organic carbon (VOC), and three conventional pollutants. Local limits for oil and grease and pH were also evaluated. The proposed MAHL-based local limits for pollutants except BOD_5, TSS, and ammonia were established as daily maximum concentrations due to potential impact of events on plant performance (i.e. biological inhibition) and the infrequency of IU sampling. The proposed MAHL-based local limits for BOD_5, TSS, and ammonia were established as monthly average concentrations due to frequent IU sampling. It is recommended that the City be authorized in its Sewer Use Ordinance the option to establish mass limits in addition to or in lieu of the recommended concentration limits. The recommended local limits for pollutants are described below and apply to all industrial users. Local limits for Arsenic, Molybdenum and Nickel are based on sludge produced prior the plant upgrade; more samples will be taken and the local limits and SUO will be revised, if required. **Table 8.1** summarizes the recommended instantaneous maximum limits, daily maximum limits, and monthly average limits for the pollutants.

- **Arsenic.** The average influent loading was less than 5 percent of the MAHL. The recommended UCL for arsenic was 0.04 mg/L based on sludge quality criteria of 41 mg/kg. This limitation would be implemented as a daily maximum allowable concentration limit for all industrial dischargers.
- **Cadmium.** The recommended UCL for cadmium was 0.012 mg/L as daily maximum allowable concentration limit and was controlled by the water quality standard of 0.0022 mg/L.
- **Chromium.** The average influent loadings for chromium accounted for 2 percent of the MAHL. The recommended UCL for chromium was 0.5 mg/L as daily maximum allowable concentration limit and was controlled by nitrification inhibition threshold level of 0.25 mg/L.
- **Copper.** The average influent loading accounted for 54 percent of the MAHL. It is recommended that the UCL for copper of 0.1 mg/L be established and implemented as a daily maximum. The UCL for copper was controlled by current NPDES permit limit of 0.021 mg/L.
- **Total Cyanide and Free Cyanide.** The recommended UCL for total cyanide and free cyanide were 0.2 mg/L and 0.02 mg/L. These limitations would be implemented as a daily maximum allowable concentration limit for all industrial dischargers. Total Cyanide was highest toxic limit protective of Brawley WWTP. The UCLs for both cyanides were calculated with estimated concentration as well as literature removal efficiency in secondary process. The City will continue to monitor periodically for Cyanide (free) in domestic and commercial waste streams and may reevaluate its local limits based on those results in the future.

- **Lead.** The average influent loading for lead was less than 8 percent of the MAHL. It was recommended that the UCL for lead of 0.05 mg/L be established and implemented as a daily maximum allowable concentration. The UCL for lead was controlled by the water quality standard of 0.019 mg/L.
- **Mercury.** The recommended UCL of mercury was 0.0002 mg/L as daily maximum allowable concentration. The UCL of mercury was controlled by the water quality standard of 0.000051 mg/L.
- **Molybdenum.** The highest average influent loading to MAHL (78 percent) was detected. The recommended UCL of molybdenum was 0.04 mg/L as a daily maximum allowable concentration. The UCL of molybdenum was controlled by sludge quality criteria of 75 mg/kg.
- **Nickel.** The average influent loading for nickel accounted for 6 percent of the MAHL. It is recommended that the UCL for nickel of 0.3 mg/L be established and implemented as a daily maximum allowable concentration limit for all industrial dischargers.
- **Selenium.** The average influent loading for nickel accounted for 21 percent of the MAHL. It is recommended that the UCL for selenium of 0.01 mg/L be established and implemented as a daily maximum allowable concentration limit for all industrial dischargers. The UCL for selenium was controlled by current NPDES permit limit of 0.0041 mg/L.
- **Silver.** The recommended UCL of silver was 0.2 mg/L as daily maximum allowable concentration. The UCL of silver was controlled by the water quality standard of 0.044 mg/L.
- **Zinc.** The second highest influent loading to MAHL (67 percent) was detected. The recommended UCL of zinc was 0.4 mg/L. The UCL for zinc was controlled by activated sludge inhibition threshold level of 0.3 mg/L.
- **Bis(2-Ethylhexyl)phthalate.** The average influent loading for bis(2-ethylhexyl)phthalate accounted for 57 percent of the MAHL. It is recommended that the UCL for bis(2-ethylhexyl)phthalate of 0.5 mg/L be established and implemented as a daily maximum allowable concentration limit for all industrial dischargers. The UCL for bis(2-ethylhexyl)phthalate was controlled by current NPDES permit limit of 0.0059 mg/L. The City will continue to monitor influent and effluent Bis(2-ethylhexyl)phthalate and calculate the removal efficiency to determine NDPES permit compliance after additional sampling has been performed, since only two samples were used to set the local limits. If necessary, local limits and the Sewer Use Ordinance will be revised to assure NPDES compliance.
- **Oil and Grease.** The recommended UCL of oil and grease is 40 mg/L as a daily maximum allowable concentration. This is the current prohibition for oil and grease (as an instantaneous maximum concentration) in Brawley SUO which has proven effective in preventing accumulation in the collection system and WWTP.

Restaurants should be required in a modification to the Brawley SUO to provide and maintain grease traps as a best management practice for reducing oil and grease loadings to the sewer system.

- **pH.** It is recommended that the current prohibition of discharge pH of less than 6.0 or greater than 9.0 be maintained and established as the UCL.
- **BOD_5, TSS, and Ammonia, Monthly Average Limit.** The calculated UCLs for these pollutants were based on WWTP design criteria, i.e. 175 mg/L of BOD_5, 190 mg/L of TSS, and 37 mg/L of ammonia. The recommended UCLs for BOD_5, TSS, and ammonia are 76 mg/L, 180 mg/L, and 30 mg/L, respectively. These limitations will be implemented as a monthly average allowable concentration limit for all industrial dischargers. An instantaneous maximum limit will be implemented in lieu of a daily maximum limit for these discharges.
- **BOD_5, TSS, and Ammonia, Instantaneous Maximum Limit.** Slug loadings from National Beef have historically caused operational problems at the WWTP. Recommended instantaneous maximum limits for National Beef discharge are 250 mg/l BOD_5, 250 mg/l TSS, and 50 mg/l ammonia. An instantaneous maximum limit of 900 mg/l COD should be implemented as well. These limits will be applied to all significant industrial users. National Beef should be required to have a slug loading prevention plan to demonstrate how it will achieve and assure compliance with these limits.
- **Total Nitrogen.** With an instantaneous maximum limit for ammonia (i.e. 50 mg/L), the recommended instantaneous maximum limit of total nitrogen is 73 mg/L. This total nitrogen limit is based on the ratio of the sampled ammonia and total nitrogen concentration (i.e. 1.46). Total nitrogen is the sum of organic and ammonia nitrogen (TKN) plus nitrates and nitrites. Nitrates and nitrites were not detected in the WWTP influent, so that TKN is a reasonable measure of total nitrogen in this case. A limit on total nitrogen is necessary to account for potential nitrate and nitrate discharges from National Beef in the future when nitrification pre-treatment facilities are enabled.

Table 8.1 Summary of Local Limits

Pollutants	Recommended Local Limits		
	Instantaneous Maximum (mg/L)	Daily Maximum (mg/L)	Monthly Average (mg/L)
Inorganic Metals			
Arsenic	-	0.04	-
Cadmium	-	0.012	-
Chromium	-	0.5	-
Copper	-	0.1	-
Cyanide (Total)	-	0.2	-
Cyanide (Free)	-	0.02	-
Lead	-	0.05	-
Mercury	-	0.0002	-
Molybdenum	-	0.04	-
Nickel	-	0.3	-
Selenium	-	0.01	-
Silver	-	0.2	-
Zinc	-	0.4	-
Organic Compound and Others			
Bis(2-ethylhexyl)phthalate	-	0.5	-
Conventional Pollutants			
BOD_5	250	-	76
TSS	250	-	180
COD	900	-	-
Ammonia as Nitrogen	50	-	30
Total Nitrogen	73	-	-
Oil and Grease	-	40	-
pH	6.0 – 9.0	6.0 – 9.0	-
Temp (°F)	140	-	-

9. References

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Appendices

I. Local Limit Sampling Plan

II. WWTP Influent and Effluent, Sludge, and Priority Pollutants Analysis Data

III. Sample Analyses Data

IV. Flow and Loading Data

V. Removal Efficiency

VI. Allowable Headworks Loading Calculations

VII. MAILs and Local Limits Calculations

VIII. Fume Toxicity

Appendix I

Local Limit Sampling Plan

City of Brawley

Local Limits Sampling Plan

July 23 2012

LEE & RO, Inc.

Local Limits Sampling Plan

To develop a sampling plan for local limits, various types of pollutant information were reviewed. Most of the data provided by the City for review were readily available from monitoring data collected by the City for regulatory compliance. The following data were compiled and reviewed to identify the pollutants that should be evaluated to determine the need for local limits:

- Monthly influent and effluent concentration data for 2010 and 2011
- Quarterly sludge monitoring data for 2010 and 2011
- Yearly priority pollutants analysis data (effluent and receiving water) for 2011 and 2012
- Priority pollutants analysis data from Lift Station

The sampling plan will address: (1) the pollutants to be evaluated, (2) the sampling locations, (3) the sampling frequency and procedures, and (4) the analytical methods. All sampling for local limits will be conducted by City of Brawley (David Arvizu, Water Distribution/Sewage Collections Operations Supervisor, (760) 351 -7183, darvizu@brawley-ca.gov).

1. Pollutants to Be Evaluated

The US Environmental Protection Agency (USEPA) guidance document for local limits development (2004) has identified 15 national pollutants of concern (POCs); arsenic, cadmium, chromium, copper, cyanide, lead, mercury, molybdenum, nickel, selenium, silver, zinc, biochemical oxygen demand (BOD), total suspended solids (TSS), and ammonia. 2004 USEPA Guidance also recommends sampling for organic priority pollutants.

The data were reviewed to ensure that the influent and/or effluent priority pollutant scan contained the following pollutants:

- Toxic pollutants designated in NPDES permits and/or State Water Quality Standards that apply to WWTP effluent or stream segment (i.e. New River)
- Organic toxic pollutants and toxic metals listed in 40 CFR Part 122, Appendix D, Table II and Table III
- Any toxic pollutants and hazardous substances required to be identified by existing dischargers if expected to be present listed in 40 CFR Part 122, Appendix D, Table V
- Any pollutants that are present and may cause a potential impact to the collection system, treatment works, worker health and safety or air quality
- Any pollutants that impact the treatment performance (i.e. process inhibition criteria)
- Any pollutants in biosolids listed in 40 CFR 503 Standards for the Use or Disposal of Sewage Sludge.
- Any pollutants that are recommended by Regional Water Quality Control Board (RWQCB)

Preliminary evaluation of the influent, effluent, and sludge data identified the 15 national POCs as site-specific POCs. Chemical Oxygen Demand (COD), Bis(2-ethylhexyl)phthalate and Oil and Grease (O&G) were also identified as a site-specific POCs. **Table 1** summarizes the list of POCs along with the listing criteria.

Table 1 Pollutants of Concern (Pollutants to be sampled and evaluated)

Parameters	Selection Criteria
National POCs	
Arsenic	B, I, IU, W
Cadmium	B, I, IU, W
Chromium	B, I, IU, W
Copper	B, I, IU, W
Cyanide (Total & Free Cyanide)	B, I, W
Lead	B, I, IU, W
Mercury	B, I, W
Molybdenum	B
Nickel	B, I, IU, W
Selenium	B, IU, W
Silver	I, W
Zinc	B, I, IU, W
Biochemical Oxygen Demand (BOD)	N
Total Suspended Solids (TSS)	N, IU
Ammonia, TKN, Nitrate, and Nitrate (as N)	I, N
Other Site Specific Pollutants	
Chemical Oxygen Demand (COD)	IU
Oil and Grease	N, IU
Bis(2-ethylhexyl)phthalate	N, W

Abbreviations - B: Biosolid Criteria, I: Process Inhibition, IU: Potential Industrial User Discharge, N: NPDES Permit, T: Fume Toxicity W: Water Quality Standard

2. Sampling Locations

Sampling locations include:

- **Influent Sample (INF-001)**: Wastewater influent to the treatment facility. The sampling will be conducted upstream of any in-plant return flows (e.g. sludge digester decant and waste activated sludge).
- **Final Effluent Sample (EFF-001)**: Final effluent discharge from facility (same location as specified in NPDES permit).
- **Biosolids Sample (SLD-001):** Sampling location must be after all biosolids treatment, chemical addition, and dewatering processes. The sampling location for compliance determination is at the end of the treatment or last sludge handling process just prior to final use or disposal, which will be after the dewatered sludge is dried in the drying beds.
- **Secondary Clarifier Sludge Sample (SLD-002):** Waste activated sludge (WAS) sample before thickening process.
- **Commercial Sample (CSC-001, North 8th Street between E Street & Main):** Sampling the commercial wastewater contribution may be accomplished by isolating and sampling an area of the collection system that receives primarily commercial wastewater (Non-SIU).
- **Residential Sample (CSR-001, Richard Street between Ronald Street & Steven Street – Lift Station #2):** Sampling the residential wastewater contribution may be accomplished by isolating and sampling an area of the collection system which only receives residential wastewater (Non-Commercial and Non-SIU).
- **Industrial Sample (CSI-001, National Beef):** National Beef discharge to the collection system.

The existing WWTP of Brawley has approximately 1.82 days of hydraulic retention time for 3.8 mgd of average effluent flow rate. Therefore, the sampling of each sampling location should take into account detention time. The effluent sample should be collected 48 hours after the influent sample.

3. Sampling Frequencies and Procedures

Sampling Frequencies

2004 EPA Guidance recommends 1 to 2 days of sampling for organic priority pollutants to determine potential POCs; and 1 to 2 days of sampling for sludge/biosolids, and 7 to 14 days of National POCs and POTW-specific POCs for POTW influent, primary effluent and final effluent, and the collection system to calculate local limits. Sampling days should be consecutive days for National POCs and POTW-specific POCs and should be 24-hour composite samples unless sampling methods only allow for grab samples (e.g. pH, cyanide, and temperature).

The minimum recommended sampling days for initial local limits development for POTWs of up to 5 MGD (Brawley) capacity is at least 7 consecutive sampling days. For a local limits study, wastewater samples should be collected during dry, normal operating conditions in the collection system, influent, effluent, and biosolids. **Table 2** presents a summary of sampling days for initial local limits development.

Table 2 Sampling Location and Sampling Frequency

Location	Consecutive Sampling Days		
	National POCs	Other Priority Pollutants - Metal	Other Priority Pollutants - Organic
Influent (INF-001)	7	7	7
Final Effluent (EFF-001) [1]	7	7	7
Biosolid (SLD-001)	2	2	2
Secondary Clarifier Sludge (SLD-002)	2	2	2
Commercial (CSC-001)	7	7	7
Residential (CSR-001)	7	7	7
Industrial (CSI-001)	7	7	7

[1] Due to hydraulic retention time, second day of effluent sample will be collected 48 hours after first day of influent sample.

Sampling Procedures

Where appropriate, 24-hour composite sampling will be conducted in accordance with standard procedures for flow-proportional sampling, with discrete samples (aliquots) collected over time based on the flow of the discharge being sampled, and then combined to form a single sample for analysis.

Grab sampling will be conducted for cyanide as specified by 40 CFR Part 136, Guidelines Establishing Test Procedures for the Analysis of Pollutants. Where grab samples are necessary, a series of grab samples over the course of a 24-hour period is recommended. Four grab samples are recommended at a minimum. The interval waste stream flow will be measured between each grab sample for a flow-proportioned grab composite sample. The grab sample will be analyzed separately and the results will be averaged according to flow weight.

At the time of grab sample collection, pH, and temperature will be measured and recorded.

Biosolid samples (SLD-001) require that a composite sample be taken of the sludge mass in drying beds. Several aliquots (minimum 4 aliquots) are taken from randomly selected locations within the sludge drying beds and the aliquots are composited to form a single sample for analysis.

Sampling Equipment

Samples can be collected with a Teflon bottle, HDPE bottle, or glass bottle (minimum 1 liter). Teflon and HDPE bottles can be interchangeable but BOD and organic priority pollutants require a glass sampling bottle. The examples of other sampling devices are provided in EPA Method 1669, Sampling Ambient Water for Determination of Metals at EPA Quality Criteria Levels. The sampling bottles must be pre-cleaned at the laboratory performing the analysis and scheduled for return shipping not later than one week prior to the sampling episode. Samples must be shipped on ice (below 4 ^{o}C and dark) by overnight courier and preservation completed on site or lab, as required. Clean, non-talc, polyethylene gloves must be worn during all operations involving handling of the sampling apparatus, samples and blanks.

Table 3 presents a summary of sampling type, size, container, and preservation for pollutants for wet stream analysis.

For biosolids sampling (SLD-001), samples will be taken by dividing drying bed into quarters. For the center of each quarter, a single core sample will be collected through the entire depth of the sludge using a coring device. Samples from each quarter will be combined and thoroughly mixed and transferred to a 1 L HDPE bottle.

Table 3 Sampling Type, Size, Container, and Preservation for Pollutants: Wet Stream Sample

Parameters	Sampling Type	Minimum Sampling Size & Container	Preservation
National POCs			
Arsenic	Composite	200 ml, HDPE	HNO_3 – pH<2, 4 ^{o}C, Dark
Cadmium	Composite	200 ml, HDPE	HNO_3 – pH<2, 4 ^{o}C, Dark
Chromium (Total)	Composite	200 ml, HDPE	HNO_3 – pH<2, 4 ^{o}C, Dark

Parameters	Sampling Type	Minimum Sampling Size & Container	Preservation
Copper	Composite	200 ml, HDPE	HNO_3 – pH<2, 4 °C, Dark
Cyanide (Total & Free Cyanide)	Grab	500 ml, HDPE	NaOH – pH>12, 4 °C, Dark
Lead	Composite	200 ml, HDPE	HNO_3 – pH<2, 4 °C, Dark
Mercury	Composite	200 ml, HDPE	HNO_3 – pH<2, 4 °C, Dark
Molybdenum	Composite	200 ml, HDPE	HNO_3 – pH<2, 4 °C, Dark
Nickel	Composite	200 ml, HDPE	HNO_3 – pH<2, 4 °C, Dark
Selenium	Composite	200 ml, HDPE	HNO_3 – pH<2, 4 °C, Dark
Silver	Composite	200 ml, HDPE	HNO_3 – pH<2, 4 °C, Dark
Zinc	Composite	200 ml, HDPE	HNO_3 – pH<2, 4 °C, Dark
BOD	Composite	Glass BOD Container	4 °C, Dark
TSS [1]	Composite	100 ml, HDPE	4 °C, Dark
Ammonia (as N)	Composite	400 ml, HDPE	H_2SO_4 – pH<2, 4 °C, Dark
TKN (as N)	Composite	500 ml, HDPE	H_2SO_4 – pH<2, 4 °C, Dark
Nitrate (as N)	Composite	100 mL, HDPE	4 °C, Dark
Nitrite (as N)	Composite	100 mL, HDPE	4 °C, Dark
Other Site Specific Pollutants			
COD	Composite	200 ml, HDPE	H_2SO_4 – pH<2, 4 °C, Dark
Bis(2-ethylhexyl)phthalate [2]	Composite	200 ml, Glass	4 °C, Dark
Oil and Grease	Grab	1 L, Glass	H_2SO_4 – pH<2, 4 °C, Dark

[1] %Total Solids for Sludge and Biosolids
[2] Prevent contamination from sampling equipment and gloves containing plastic.

All sample containers will be labeled with the following information:

- Project Name
- Sampling Date and Time
- Sampling Location
- Field Measurement (Temperature & pH)

Sampling Quality Assurance/Quality Control

The sampling program will include the following quality assurance/quality control sampling:

- One set of split samples collected at the WWTP influent for each group of analytes except VOCs.
- One set of duplicate samples collected at the WWTP influent for VOCs.
- Trip blanks for one set of VOC samples collected at the WWTP influent.
- One set of equipment blanks collected at the WWTP influent for each group of analytes collected by automatic sampler.

Flow Data

Flow data will be collected as follows:

- Total POTW flow
- Sludge flow (WAS) to Dewatering Unit
- Sludge flow to disposal

4. Analytical Methods

All sampling and analysis of wastewater will be conducted in accordance with 40 CFR Part 136. All sampling and analysis of biosolids/sludge will be conducted in accordance with 40 CFR Part 503, Standards for the Use or Disposal of Sewage Sludge. To accurately detect trace levels of pollutants, an analytical method which has the most sensitive and lowest detection limit will be selected.

Table 4 summarizes the recommended maximum reporting limits and analytical methods for pollutants.

Table 4 Maximum Reporting Limits for Analytical Methods

Parameters [1]	Maximum Reporting Limit	Units	Analytical Method
National POCs			
Arsenic	0.5	µg/L	EPA 200.8
Cadmium	0.1	µg/L	EPA 200.8
Chromium (Total)	0.5	µg/L	EPA 200.8
Copper	0.5	µg/L	EPA 200.8
Cyanide (Total & Free Cyanide) [2]	3	µg/L	SM 4500-CN E
Lead	0.25	µg/L	EPA 200.8
Mercury	0.0005	µg/L	EPA 245.1

Parameters [1]	Maximum Reporting Limit	Units	Analytical Method
Molybdenum	1	µg/L	EPA 200.8
Nickel	0.5	µg/L	EPA 200.8
Selenium	1	µg/L	EPA 200.8
Silver	1	µg/L	EPA 200.8
Zinc	1	µg/L	EPA 200.8
BOD	5	mg/L	SM 5210B
TSS [3]	3	mg/L	EPA 160.2
Ammonia (as N)	0.1	mg/L	SM 4500-NH_3 C
TKN (as N)	0.25	mg/L	EPA 350.1
Nitrate (as N)	0.1	mg/L	EPA 300.0
Nitrite (as N)	0.1	mg/L	EPA 300.0
Other Site Specific Pollutants			
COD	5	mg/L	SM 5220
Bis(2-ethylhexyl)phthalate	5	µg/L	EPA 625.0
Oil and Grease [4]	5	mg/L	EPA 1664

[1] Total recoverable metal analysis
[2] Non-distillation methods for available cyanide, such as UEPA OIA-1677 or ASTM D6888-04, shall be used to measure free cyanide.
[3] % total solids for Sludge and Biosolids sample
[4] Include polar and non-polar fraction of oil and grease.

The laboratory must be a USEPA-certified and licensed by the California Department of Public Health. The laboratory will perform internal quality control analyses (analytical blanks, duplicates, and matrix spikes) according to its quality assurance plans (QAPs) and as required by California Department of Public Health Laboratory Licensure.

Appendix A

Daily Sampling Activity Schedule

Appendix A: Daily Sampling Activity Schedule

Sampling Days	Sampling Locations													
	Influent (INF-001)		Final Effluent (EFF-001)		Biosolid (SLD-001)		Secondary Clarifier Sludge (SLD-002)		Commercial (CSC-001)		Residential (CSR-001)		Industrial (CSI-001)	
	CS	GS	CS	GS	CS	GS	CS	GS	CS	GS	CS	GS	CS	GS
Day 1	√	√							√	√	√	√	√	√
Day 2	√	√							√	√	√	√	√	√
Day 3	√	√	√	√					√	√	√	√	√	√
Day 4	√	√	√	√					√	√	√	√	√	√
Day 5	√	√	√	√		√		√	√	√	√	√	√	√
Day 6	√	√	√	√		√		√	√	√	√	√	√	√
Day 7	√	√	√	√					√	√	√	√	√	√
Day 8			√	√										
Day 9			√	√										

1. Abbreviations – CS: Composite Sampling, GS: Grab Sampling.
2. Due to hydraulic retention time, first day effluent sample will be collected 48 hours after first day influent sample.
3. Influent (INF-001), Final Effluent (EFF-001), Commercial (CSC-001), Residential (CSR-001), and Industrial (CSI-001) Sampling Parameters

Composite Sampling Parameters	Grab Sampling Parameters
Arsenic, Cadmium, Chromium (total), Copper, Lead, Mercury, Molybdenum, Nickel, Selenium, Silver, Zinc, BOD, TSS, Ammonia (as N), TKN (as N), Nitrate (as N), Nitrite (as N), COD, Bis(2-ethylhexyl)phthalate,	Cyanide (Total and Free), Oil and Grease (Polar and Non-polar)

4. Biosolids (SLD-001) and Secondary Clarifier Sludge (SLD-002) Sampling Parameters

Composite Sampling Parameters	Grab Sampling Parameters
Not Required.	Arsenic, Cadmium, Chromium (total), Copper, Cyanide (Total and Free), Lead, Mercury, Molybdenum, Nickel, Selenium, Silver, Zinc, % Total Solids (TS), Ammonia (as N), TKN (as N), Nitrate (as N), Nitrite (as N), Bis(2-ethylhexyl)phthalate, Oil and Grease (Polar and Non-polar)

Appendix II

WWTP Influent and Effluent, Sludge, and Priority Pollutants Analysis Data

2010 - 2011 Brawley WWTP NPDES Monitoring Data - Influent

DATE	BOD mg/L	TSS mg/L	Total Ammonia mg/L	Oil and Grease mg/L
Jan-10	171	175	26.7	13.7
Feb-10	128	204	24.6	7.3
Mar-10	134	162	22.6	12.4
Apr-10	176	130	32.8	21.3
May-10	183	169	35.7	20.0
Jul-10	128	471	30.0	ND
Aug-10	134	181	21.7	ND
Sep-10	140	170	22.8	7.6
Oct-10	144	159	22.8	ND
Nov-10	120	197	22.0	12.4
Dec-10	129	196	34.0	17.8
Jan-11	122	717	31.4	9.0
Feb-11	150	348	37.6	19.3
Mar-11	378	366	32.0	16.0
Apr-11	241	152	43.8	15.6
May-11	259	152	37.8	9.0
Jun-11	232	101	35.0	10.7
Jul-11	204	98	27.4	ND
Aug-11	155	161	33.5	ND
Sep-11	168	217	35.4	25.7
Oct-11	149	124	21.7	25.7
Nov-11	190	163	24.2	40.8
Dec-11	185	205	26.9	21.4

2010 - 2011 Brawley WWTP NPDES Monitoring Data - Effluent

	BOD	TSS	pH	Temperature	E. Coli	Fecal Coliform	Enterococci
DATE	mg/L	mg/L	Standard Units	Deg. F	MPN/100 ml	MPN/100 ml	MPN/100 ml
Jan-10	26.4	15.81	7.9	59	56.6	56.0	12.7
Feb-10	19.3	14.11	7.9	63	10.0	11.0	8.0
Mar-10	29.2	13.97	7.9	65	9.1	36.6	17.4
Apr-10	57.6	15.74	8.0	69	14.3	32.7	10.7
May-10	36.6	17.52	8.0	73	58.3	164.3	77.6
Jul-10	34.8	20.6	8.0	86	1.1	3.0	4.2
Aug-10	37.9	20.6	7.8	85	1.6	3.5	3.8
Sep-10	35.1	25.3	7.7	81	5.2	13.6	2.3
Oct-10	36.3	13.3	7.8	75	12.0	25.6	2.6
Nov-10	30.2	16.7	7.8	65	19.7	20.4	6.5
Dec-10	23.0	22.7	7.8	61	91.2	147.9	77.6
Jan-11	28.7	26.3	7.9	59	69.3	114.2	69.3
Feb-11	28.8	27.9	7.9	60	299	281	465
Mar-11	54.8	35.6	7.7	67	362	500	1,426
Apr-11	36.6	33.3	7.9	72	1,758	1,600	1,600
May-11	56.7	34.0	7.8	73	756	882	741
Jun-11	60.8	22.3	7.9	78	2,263	1,600	1,426
Jul-11	38.3	11.6	7.9	85	1.8	7.7	4.0
Aug-11	11.1	8.7	7.7	88	4.3	18.8	9.5
Sep-11	9.6	5.5	7.4	89	3.0	6.4	2.8
Oct-11	11.3	4.7	7.5	80	7.0	24.5	7.1
Nov-11	10.3	4.6	7.7	74	5.7	10.3	4.9
Dec-11	11.0	6.6	7.3	67	12.7	28.8	15.1

2010 - 2011 Brawley WWTP NPDES Monitoring Data - Effluent (Continued)

	DO	Nitrate	Nitrite	Ammonia	TN	TP	TDS	O&G
DATE	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Jan-10	4.3	3.65	0.22	22.82	28.77	9.27	1,490	ND
Feb-10	4.3	3.95	0.15	24.22	33.84	8.90	1,576	ND
Mar-10	4.8	8.36	1.37	23.86	37.77	8.53	1,572	ND
Apr-10	4.6	18.58	0.94	29.82	56.76	9.20	1,670	ND
May-10	3.7	6.71	0.10	34.02	45.57	11.32	1,646	ND
Jul-10	3.9	5.95	0.33	35.49	45.34	9.15	1,240	ND
Aug-10	3.5	25.21	6.59	18.34	53.32	8.64	1,308	ND
Sep-10	3.5	76.30	2.27	10.78	80.32	9.44	1,284	ND
Oct-10	3.3	16.60	2.18	20.58	40.39	9.38	1,344	ND
Nov-10	4.5	22.96	1.70	23.64	52.44	9.22	1,212	ND
Dec-10	4.5	4.29	0.45	26.88	39.08	8.79	1,124	ND
Jan-11	4.1	2.48	0.15	28.32	40.44	7.90	1,408	ND
Feb-11	4.3	3.08	0.13	28.84	45.72	8.14	1,344	ND
Mar-11	2.3	0.63	0.10	37.58	47.49	7.89	1,280	ND
Apr-11	2.3	1.39	0.22	49.00	60.33	8.79	1,316	ND
May-11	3.8	1.83	0.26	41.55	50.53	11.78	1,472	ND
Jun-11	3.1	2.50	0.14	35.99	43.90	0.80	1,240	ND
Jul-11	5.7	15.05	0.58	18.48	41.12	7.99	1,084	ND
Aug-11	5.8	117	0.44	1.12	120.33	7.23	1,232	ND
Sep-11	4.6	35.05	0.47	2.24	45.73	10.22	1,232	ND
Oct-11	4.3	23.73	0.53	0.84	26.50	6.00	1,268	ND
Nov-11	4.3	17.40	ND	0.78	19.78	3.70	1,304	ND
Dec-11	3.6	18.23	ND	2.38	23.51	2.08	1,348	ND

2010 - 2011 Brawley WWTP NPDES Monitoring Data - Effluent (Continued)

	Hardness	Copper	Selenium	Cyanide	Bis(2-Ethylhexyl
DATE	mg/L	µg/L	µg/L	µg/L	µg/L
Jan-10	376	ND	ND	ND	-
Feb-10	436	ND	ND	ND	-
Mar-10	368	ND	ND	ND	-
Apr-10	420	ND	ND	ND	-
May-10	376	ND	ND	ND	-
Jul-10	380	ND	ND	ND	ND
Aug-10	376	5.09	ND	ND	ND
Sep-10	352	ND	ND	ND	ND
Oct-10	400	ND	ND	17.0	ND
Nov-10	364	10.4	ND	18.0	ND
Dec-10	400	10.7	ND	ND	ND
Jan-11	360	9.88	ND	ND	ND
Feb-11	440	14.8	ND	ND	ND
Mar-11	340	9.88	ND	ND	ND
Apr-11	388	9.88	ND	ND	ND
May-11	312	8.58	ND	ND	ND
Jun-11	320	7.15	ND	ND	ND
Jul-11	312	ND	ND	ND	ND
Aug-11	312	6.57	ND	ND	ND
Sep-11	288	12.5	ND	ND	ND
Oct-11	320	12.5	ND	ND	ND
Nov-11	296	ND	ND	0.008	7.40
Dec-11	292	ND	ND	0.0075	ND

Brawley WWTP- Sludge-
Metals, Semi-Voc,TPH

No.	Name of Constituent	Monitoring Location	Date Sample Collected	Date Sample Analyzed	USEPA Method	ML (mg/kg)	RML (μg/kg)	MDL (μg/kg)	Analytical Results (μg/kg)	Comments
	Inorganics:									
1	Arsenic	WWTP	12/28/2011	1/5/2012	EPA 6010B	1	1	1	2.1	Sludge
2	Cadmium	WWTP	12/28/2011	1/5/2012	EPA 6010B	1	1	1	ND	Sludge
3	Copper	WWTP	12/28/2011	1/5/2012	EPA 6010B	2	2	2	439	Sludge
4	Lead	WWTP	12/28/2011	1/5/2012	EPA 6010B	1	1	1	18.3	Sludge
5	Molybdenum	WWTP	12/28/2011	1/5/2012	EPA 6010B	1	1	1	15.6	Sludge
6	Nickel	WWTP	12/28/2011	1/5/2012	EPA 6010B	1	1	1	13.5	Sludge
7	Potassium	WWTP	12/28/2011	1/5/2012	EPA 6010B	10	10	10	2100	Sludge
8	Selenium	WWTP	12/28/2011	1/5/2012	EPA 6010B	2	2	2	8.3	Sludge
9	Zinc	WWTP	12/28/2011	1/5/2012	EPA 6010B	2	2	2	443	Sludge
10	Cyanide	WWTP	12/28/2011	1/3/2012	SM 4500CN E	0.3	0.3	0.3	5.28	Sludge
	Bis(2-ethylhexyl)phalate	WWTP	12/28/2011	1/3/2012	EPA 8270C	25	25	25	ND	Sludge
	Total Kjeldahl Nitrogen	WWTP	12/28/2011	1/3/2012	EPA 351.2	4000	4000	4000	28300	Sludge
	Ammonia	WWTP	12/28/2011	12/30/2011	SM 4500-NH3	25	25	25	379	Sludge
	Nitrate	WWTP	12/28/2011	12/29/2011	EPA 300.0	55	55	55	1020	Sludge
	Phosphorus	WWTP	12/28/2011	12/30/2011	EPA 365.2	100	100	100	215	Sludge
	Total Solids	WWTP	12/28/2011	12/30/2011	% moisture	0.1	0.1	0.1	89.6	Sludge
	Fecal Coliform	WWTP	12/28/2011	1/1/2012	SM 9221E	2	2	2	>1600	Sludge
	Gasoline range hydrocarbons	WWTP	12/28/2011	1/5/2012	EPA 8021B	1	1	1	ND	Sludge
	Moisture Content	WWTP	12/28/2011	12/30/2011	% moisture	0.1	0.1	0.1	10.4	Sludge

Laboratory Director, Miguel E Ortega

Brawley WWTP- Sludge- Metals, Semi-Voc,TPH

No.	Name of Constituent Lab ID- 4692	Monitoring Location	Date Sample Collected	Date Sample Analyzed	USEPA Method	ML (mg/kg)	RML (µg/kg)	MDL (µg/kg)	Analytical Results (µg/kg)	Comments
	Inorganics:									
1	Arsenic	WWTP	1/11/2012	1/19/2012	EPA 6010B	1	1	1	2.3	Sludge
2	Cadmium	WWTP	1/11/2012	1/19/2012	EPA 6010B	1	1	1	ND	Sludge
3	Copper	WWTP	1/11/2012	1/19/2012	EPA 6010B	2	2	2	488	Sludge
4	Lead	WWTP	1/11/2012	1/19/2012	EPA 6010B	1	1	1	20.9	Sludge
5	Molybdenum	WWTP	1/11/2012	1/19/2012	EPA 6010B	1	1	1	16.3	Sludge
6	Nickel	WWTP	1/11/2012	1/19/2012	EPA 6010B	1	1	1	14.5	Sludge
7	Potassium	WWTP	1/11/2012	1/19/2012	EPA 6010B	10	10	10	2240	Sludge
8	Selenium	WWTP	1/11/2012	1/19/2012	EPA 6010B	2	2	2	8.5	Sludge
9	Zinc	WWTP	1/11/2012	1/19/2012	EPA 6010B	2	2	2	524	Sludge
10	Cyanide	WWTP	1/11/2012	1/19/2012	SM 4500CN E	0.3	0.3	0.3	10.2	Sludge
11	Mercury	WWTP	1/11/2012	1/24/2012	EPA 7471A	0.3	0.3	0.3	0.804	Sludge
	Bis(2-ethylhexyl)phalate	WWTP	1/11/2012	1/16/2012	EPA 8270C	25	25	25	ND	Sludge
	Total Kjeldahl Nitrogen	WWTP	1/11/2012	1/31/2012	EPA 351.2	4000	4000	4000	29200	Sludge
	Ammonia	WWTP	1/11/2012	1/19/2012	SM 4500-NH3	25	25	25	117	Sludge
	Nitrate	WWTP	1/11/2012	1/19/2012	EPA 300.0	55	55	55	741	Sludge
	Phosphorus	WWTP	1/11/2012	1/19/2012	EPA 365.2	100	100	100	365	Sludge
	Total Solids	WWTP	1/11/2012	1/16/2012	% moisture	0.1	0.1	0.1	93	Sludge
	Fecal Coliform	WWTP	1/11/2012	1/19/2012	SM 9221E	2	2	2	>1600	Sludge
	Gasoline range hydrocarbons	WWTP	1/11/2012	1/19/2012	EPA 8021B	1	1	1	ND	Sludge
	Moisture Content	WWTP	1/11/2012	1/16/2012	% moisture	0.1	0.1	0.1	6.96	Sludge
	TPH as Diesel	WWTP	1/11/2012	1/19/2012	EPA 8015Mod	1	1	1	ND	Sludge
	TPH as Motor Oil	WWTP	1/11/2012	1/19/2012	EPA 8015Mod	1	1	1	257	Sludge
	Flash point	WWTP	1/11/2012	1/18/2012	EPA 1010				>60 celcius	Sludge

Laboratory Director, Miguel E Ortega

Brawley WWTP- Sludge- Metals, Semi-Voc,TPH

No.	Name of Constituent Lab ID- 4700	Monitoring Location	Date Sample Collected	Date Sample Analyzed	USEPA Method	ML (mg/kg)	RML (µg/kg)	MDL (µg/kg)	Analytical Results (µg/kg)	Comments
	Inorganics:									
1	Arsenic	WWTP	1/12/2012	1/20/2012	EPA 6010B	1	1	1	ND	Sludge
2	Cadmium	WWTP	1/12/2012	1/20/2012	EPA 6010B	1	1	1	ND	Sludge
3	Copper	WWTP	1/12/2012	1/20/2012	EPA 6010B	2	2	2	121	Sludge
4	Lead	WWTP	1/12/2012	1/20/2012	EPA 6010B	1	1	1	5.3	Sludge
5	Molybdenum	WWTP	1/12/2012	1/20/2012	EPA 6010B	1	1	1	4.4	Sludge
6	Nickel	WWTP	1/12/2012	1/20/2012	EPA 6010B	1	1	1	3.8	Sludge
7	Potassium	WWTP	1/12/2012	1/20/2012	EPA 6010B	10	10	10	614	Sludge
8	Selenium	WWTP	1/12/2012	1/20/2012	EPA 6010B	2	2	2	ND	Sludge
9	Zinc	WWTP	1/12/2012	1/20/2012	EPA 6010B	2	2	2	120	Sludge
10	Cyanide	WWTP	1/12/2012	1/20/2012	SM 4500CN E	0.3	0.3	0.3	ND	Sludge
11	Mercury	WWTP	1/12/2012	1/20/2012	EPA 7471A	0.3	0.3	0.3	0.165	Sludge
	Bis(2-ethylhexyl)phalate	WWTP	1/12/2012	1/20/2012	EPA 8270C	25	25	25	ND	Sludge
	Total Kjeldahl Nitrogen	WWTP	1/12/2012	1/26/2012	EPA 351.2	4000	4000	4000	8780	Sludge
	Ammonia	WWTP	1/12/2012	2/1/2012	SM 4500-NH3	25	25	25	494	Sludge
	Nitrate	WWTP	1/12/2012	1/20/2012	EPA 300.0	55	55	55	17.4	Sludge
	Phosphorus	WWTP	1/12/2012	1/25/2012	EPA 365.2	100	100	100	162	Sludge
	Total Solids	WWTP	1/12/2012	1/23/2012	% moisture	0.1	0.1	0.1	18.6	Sludge
	Fecal Coliform	WWTP	1/12/2012	1/22/2012	SM 9221E	2	2	2	>1600	Sludge
	Gasoline range hydrocarbons	WWTP	1/12/2012	1/20/2012	EPA 8021B	1	1	1	ND	Sludge
	Moisture Content	WWTP	1/12/2012	1/23/2012	% moisture	0.1	0.1	0.1	81.4	Sludge
	TPH as Diesel	WWTP	1/12/2012	1/24/2012	EPA 8015Mod	1	1	1	27.1	Sludge
	TPH as Motor Oil	WWTP	1/12/2012	1/24/2012	EPA 8015Mod	1	1	1	160	Sludge
	Flash point	WWTP	1/12/2012	1/24/2012	EPA 1010				>60 celcius	Sludge

Laboratory Director, Miguel E Ortega

Brawley WWTP- Sludge-
Metals, Semi-Voc,TPH

No.	Name of Constituent Lab ID- 4725	Monitoring Location	Date Sample Collected	Date Sample Analyzed	USEPA Method	ML (mg/kg)	RML (µg/kg)	MDL (µg/kg)	Analytical Results (µg/kg)	Comments
	Inorganics:									
1	**Arsenic**	WWTP	1/27/2012	2/13/2012	EPA 6010B	1	1	1	ND	Sludge
2	**Cadmium**	WWTP	1/27/2012	2/13/2012	EPA 6010B	1	1	1	ND	Sludge
3	**Copper**	WWTP	1/27/2012	2/13/2012	EPA 6010B	2	2	2	51.8	Sludge
4	**Lead**	WWTP	1/27/2012	2/13/2012	EPA 6010B	1	1	1	2.2	Sludge
5	**Molybdenum**	WWTP	1/27/2012	2/13/2012	EPA 6010B	1	1	1	2.1	Sludge
6	**Nickel**	WWTP	1/27/2012	2/13/2012	EPA 6010B	1	1	1	1.5	Sludge
7	**Potassium**	WWTP	1/27/2012	2/13/2012	EPA 6010B	10	10	10	236	Sludge
8	**Selenium**	WWTP	1/27/2012	2/13/2012	EPA 6010B	2	2	2	ND	Sludge
9	**Zinc**	WWTP	1/27/2012	2/13/2012	EPA 6010B	2	2	2	50.4	Sludge
10	**Cyanide**	WWTP	1/27/2012	2/13/2012	SM 4500CN E	0.3	0.3	0.3	ND	Sludge
11	**Mercury**	WWTP	1/27/2012	2/14/2012	EPA 7471A	0.3	0.3	0.3	0.46	Sludge
	Bis(2-ethylhexyl)phalate	WWTP	1/27/2012	2/14/2012	EPA 8270C	25	25	25	ND	Sludge
	Total Kjeldahl Nitrogen	WWTP	1/27/2012	2/9/2012	EPA 351.2	4000	4000	4000	9750	Sludge
	Ammonia	WWTP	1/27/2012	2/9/2012	SM 4500-NH3	25	25	25	1130	Sludge
	Nitrate	WWTP	1/27/2012	2/8/2012	EPA 300.0	55	55	55	11.8	Sludge
	Phosphorus	WWTP	1/27/2012	2/6/2012	EPA 365.2	100	100	100	98	Sludge
	Total Solids	WWTP	1/27/2012	2/8/2012	% moisture	0.1	0.1	0.1	18.4	Sludge
	Fecal Coliform	WWTP	1/27/2012	2/10/2012	SM 9221E	2	2	2	>1600	Sludge
	Gasoline range hydrocarbons	WWTP	1/27/2012	2/6/2012	EPA 8021B	1	1	1	ND	Sludge
	Moisture Content	WWTP	1/27/2012	2/8/2012	% moisture	0.1	0.1	0.1	81.6	Sludge
	TPH as Diesel	WWTP	1/27/2012	2/6/2012	EPA 8015Mod	1	1	1	24.9	Sludge
	TPH as Motor Oil	WWTP	1/27/2012	2/6/2012	EPA 8015Mod	1	1	1	129	Sludge
	Flash point	WWTP	1/27/2012	2/3/2012	EPA 1010				>60 celcius	Sludge

Laboratory Director, Miguel E Ortega

Brawley WWTP- Sludge- Metals, Semi-Voc,TPH

No.	Name of Constituent Lab ID- 4763	Monitoring Location	Date Sample Collected	Date Sample Analyzed	USEPA Method	ML (mg/kg)	RML (µg/kg)	MDL (µg/kg)	Analytical Results (µg/kg)	Comments
	Inorganics:									
1	**Arsenic**	**WWTP**	**2/8/2012**	**2/15/2012**	**EPA 6010B**	**1**	**1**	**1**	**ND**	**Sludge**
2	**Cadmium**	**WWTP**	**2/8/2012**	**2/15/2012**	**EPA 6010B**	**1**	**1**	**1**	**ND**	**Sludge**
3	**Copper**	**WWTP**	**2/8/2012**	**2/15/2012**	**EPA 6010B**	**2**	**2**	**2**	**123**	**Sludge**
4	**Lead**	**WWTP**	**2/8/2012**	**2/15/2012**	**EPA 6010B**	**1**	**1**	**1**	**5**	**Sludge**
5	**Molybdenum**	**WWTP**	**2/8/2012**	**2/15/2012**	**EPA 6010B**	**1**	**1**	**1**	**4.9**	**Sludge**
6	**Nickel**	**WWTP**	**2/8/2012**	**2/15/2012**	**EPA 6010B**	**1**	**1**	**1**	**6.4**	**Sludge**
7	**Potassium**	**WWTP**	**2/8/2012**	**2/15/2012**	**EPA 6010B**	**10**	**10**	**10**	**621**	**Sludge**
8	**Selenium**	**WWTP**	**2/8/2012**	**2/15/2012**	**EPA 6010B**	**2**	**2**	**2**	**2.1**	**Sludge**
9	**Zinc**	**WWTP**	**2/8/2012**	**2/15/2012**	**EPA 6010B**	**2**	**2**	**2**	**122**	**Sludge**
10	**Cyanide**	**WWTP**	**2/8/2012**	**2/14/2012**	**SM 4500CN E**	**0.3**	**0.3**	**0.3**	**ND**	**Sludge**
11	**Mercury**	**WWTP**	**2/8/2012**	**2/16/2012**	**EPA 7471A**	**0.3**	**0.3**	**0.3**	**0.23**	**Sludge**
	Bis(2-ethylhexyl)phalate	**WWTP**	**2/8/2012**	**2/14/2012**	**EPA 8270C**	**25**	**25**	**25**	**ND**	**Sludge**
	Total Kjeldahl Nitrogen	**WWTP**	**2/8/2012**	**2/15/2012**	**EPA 351.2**	**4000**	**4000**	**4000**	**9690**	**Sludge**
	Ammonia	**WWTP**	**2/8/2012**	**2/14/2012**	**SM 4500-NH3**	**25**	**25**	**25**	**387**	**Sludge**
	Nitrate	**WWTP**	**2/8/2012**	**2/10/2012**	**EPA 300.0**	**11**	**11**	**11**	**15.1**	**Sludge**
	Phosphorus	**WWTP**	**2/8/2012**	**2/10/2012**	**EPA 365.2**	**40**	**40**	**40**	**78**	**Sludge**
	Total Solids	**WWTP**	**2/8/2012**	**2/13/2012**	**% moisture**	**0.1**	**0.1**	**0.1**	**22.3**	**Sludge**
	Fecal Coliform	**WWTP**	**2/8/2012**	**2/12/2012**	**SM 9221E**	**2**	**2**	**2**	**>1600**	**Sludge**
	Gasoline range hydrocarbons	**WWTP**	**2/8/2012**	**2/15/2012**	**EPA 8021B**	**1**	**1**	**1**	**ND**	**Sludge**
	Moisture Content	**WWTP**	**2/8/2012**	**2/13/2012**	**% moisture**	**0.1**	**0.1**	**0.1**	**77.7**	**Sludge**
	TPH as Diesel	**WWTP**	**2/8/2012**	**2/15/2012**	**EPA 8015Mod**	**1**	**1**	**1**	**24.5**	**Sludge**
	TPH as Motor Oil	**WWTP**	**2/8/2012**	**2/15/2012**	**EPA 8015Mod**	**1**	**1**	**1**	**177**	**Sludge**
	Flash point	**WWTP**	**2/8/2012**	**2/10/2012**	**EPA 1010**				**>60 celcius**	**Sludge**

Laboratory Director, Miguel E Ortega

City of Brawley WWTP- Effluent

VOC Semi-VOC's

Discharger: City of Brawley Wastewater Treatment Facility
NPDES Number:
WDID Number:
Monitoring Period: Sampled 01-13-2010 9:48am
Measured/Metered Flow (MGD):

Name of Laboratory: IVE LABs/ Sierra Analytical
ELAP Number: IVE LAB-2524/ Sierra 2320
Laboratory Contact Name: Jorge Ortega
Laboratory Phone Number: 760-357-8764
Report Number: 3243-5 - Effluent

No.	Name of Constituent	Monitoring Location	Date Sample Collected	Date Sample Analyzed	USEPA Method	ML (µg/L)	RML (µg/L)	MDL (µg/L)	Analytical Results (µg/L)	Comments
	Volatile Substances:									
1	Acrolein	WWTP	1/13/2010	1/18/2010	EPA 624	5	5	5	ND	Effluent
2	Acrylonitrile	WWTP	1/13/2010	1/18/2010	EPA 624	2	2	2	ND	Effluent
3	Benzene	WWTP	1/13/2010	1/18/2010	EPA 624	1	1	1	ND	Effluent
4	Bromobenzene	WWTP	1/13/2010	1/18/2010	EPA 624	1	1	1	ND	Effluent
5	Bromodichloromethane	WWTP	1/13/2010	1/18/2010	EPA 624	1	1	1	ND	Effluent
6	Bromoform	WWTP	1/13/2010	1/18/2010	EPA 624	1	1	1	ND	Effluent
7	Bromomethane	WWTP	1/13/2010	1/18/2010	EPA 624	1	1	1	ND	Effluent
8	Carbon tetrachloride	WWTP	1/13/2010	1/18/2010	EPA 624	1	1	1	ND	Effluent
9	Chlorobenzene	WWTP	1/13/2010	1/18/2010	EPA 624	1	1	1	ND	Effluent
10	Chloroethane	WWTP	1/13/2010	1/18/2010	EPA 624	1	1	1	ND	Effluent
11	2-Chloroethylvinyl ether	WWTP	1/13/2010	1/18/2010	EPA 624	1	1	1	ND	Effluent
12	Chloroform	WWTP	1/13/2010	1/18/2010	EPA 624	1	1	1	ND	Effluent
13	Chloromethane	WWTP	1/13/2010	1/18/2010	EPA 624	1	1	1	ND	Effluent
14	Chlorodibromomethane	WWTP	1/13/2010	1/18/2010	EPA 624	1	1	1	ND	Effluent
15	1,2-Dichlorobenzene	WWTP	1/13/2010	1/18/2010	EPA 624	1	1	1	ND	Effluent
16	1,3-Dichlorobenzene	WWTP	1/13/2010	1/18/2010	EPA 624	1	1	1	ND	Effluent
17	1,4-Dichlorobenzene	WWTP	1/13/2010	1/18/2010	EPA 624	1	1	1	ND	Effluent
18	1,1-Dichloroethane	WWTP	1/13/2010	1/18/2010	EPA 624	1	1	1	ND	Effluent
19	1,2-Dichloroethane	WWTP	1/13/2010	1/18/2010	EPA 624	1	1	1	ND	Effluent
20	cis-1,2-Dichloroethene	WWTP	1/13/2010	1/18/2010	EPA 624	1	1	1	ND	Effluent
21	trans-1,2- Dichloroethene	WWTP	1/13/2010	1/18/2010	EPA 624	1	1	1	ND	Effluent
22	1,2-Dichloropropane	WWTP	1/13/2010	1/18/2010	EPA 624	1	1	1	ND	Effluent
23	1,1-Dichloropropene	WWTP	1/13/2010	1/18/2010	EPA 624	1	1	1	ND	Effluent
24	cis-1,3-Dichloroethene	WWTP	1/13/2010	1/18/2010	EPA 624	1	1	1	ND	Effluent
25	trans-1,3-Dichloropropene	WWTP	1/13/2010	1/18/2010	EPA 624	1	1	1	ND	Effluent
26	Ethylbenzene	WWTP	1/13/2010	1/18/2010	EPA 624	1	1	1	ND	Effluent
27	Dichloromethane	WWTP	1/13/2010	1/18/2010	EPA 624	1	1	1	ND	Effluent
28	Methylene bromide	WWTP	1/13/2010	1/18/2010	EPA 624	1	1	1	ND	Effluent
29	1,1-Dichloroethylene	WWTP	1/13/2010	1/18/2010	EPA 624	1	1	1	ND	Effluent
30	1,1,2,2-Tetrachloroethane	WWTP	1/13/2010	1/18/2010	EPA 624	1	1	1	ND	Effluent
31	Tetrachloroethene	WWTP	1/13/2010	1/18/2010	EPA 624	1	1	1	ND	Effluent
32	Toluene	WWTP	1/13/2010	1/18/2010	EPA 624	1	1	1	ND	Effluent
33	1,1,1-Trichloroethane	WWTP	1/13/2010	1/18/2010	EPA 624	1	1	1	ND	Effluent

City of Brawley WWTP- Effluent

VOC, Semi-VOC's

No.	Name of Constituent	Monitoring Location	Date Sample Collected	Date Sample Analyzed	USEPA Method	ML (µg/L)	RML (µg/L)	MDL (µg/L)	Analytical Results (µg/L)	Comments
	Volatile Substances:									
34	1,1,2-Trichloroethane	WWTP	1/13/2010	1/18/2010	EPA 624	1	1	1	ND	Effluent
35	Trichloroethene	WWTP	1/13/2010	1/18/2010	EPA 624	1	1	1	ND	Effluent
36	Trichlorofluoromethane	WWTP	1/13/2010	1/18/2010	EPA 624	1	1	1	ND	Effluent
37	Vinyl Chloride	WWTP	1/13/2010	1/18/2010	EPA 624	1	1	1	ND	Effluent
38	m,p-Xylene	WWTP	1/13/2010	1/18/2010	EPA 624	1	1	1	ND	Effluent
39	o-Xylene	WWTP	1/13/2010	1/18/2010	EPA 624	1	1	1	ND	Effluent
40	Methyl tert-butyl ether	WWTP	1/13/2010	1/18/2010	EPA 624	1	1	1	ND	Effluent
41	1,1 Dichloroethene	WWTP	1/13/2010	1/18/2010	EPA 624	1	1	1	ND	Effluent

City of Brawley WWTP- Effluent

VOC Semi-VOC's

No.	Name of Constituent	Monitoring Location	Date Sample Collected	Date Sample Analyzed	USEPA Method	ML (ug/L)	RML (ug/L)	MDL (ug/L)	Analytical Results (ug/L)	Comments
	Semi-Volatile Substances, Cont':									
41	Fluorene	WWTP	1/13/2010	1/18/2010	SM 8270C	5	5	5	ND	Effluent
42	Hexachlorobenzene	WWTP	1/13/2010	1/18/2010	SM 8270C	5	5	5	ND	Effluent
43	Hexachlorobutadiene	WWTP	1/13/2010	1/18/2010	SM 8270C	5	5	5	ND	Effluent
44	Hexachlorocyclopentadiene	WWTP	1/13/2010	1/18/2010	SM 8270C	5	5	5	ND	Effluent
45	Hexachloroethane	WWTP	1/13/2010	1/18/2010	SM 8270C	5	5	5	ND	Effluent
46	Indeno (1,2,3,cd)-pyrene	WWTP	1/13/2010	1/18/2010	SM 8270C	5	5	5	ND	Effluent
47	Isophorone	WWTP	1/13/2010	1/18/2010	SM 8270C	5	5	5	ND	Effluent
48	2-Methylnaphthalene	WWTP	1/13/2010	1/18/2010	SM 8270C	5	5	5	ND	Effluent
49	2-Methylphenol	WWTP	1/13/2010	1/18/2010	SM 8270C	5	5	5	ND	Effluent
50	4-Methylphenol	WWTP	1/13/2010	1/18/2010	SM 8270C	5	5	5	ND	Effluent
51	Naphthalene	WWTP	1/13/2010	1/18/2010	SM 8270C	5	5	5	ND	Effluent
52	2-Nitroaniline	WWTP	1/13/2010	1/18/2010	SM 8270C	5	5	5	ND	Effluent
53	3-Nitroaniline	WWTP	1/13/2010	1/18/2010	SM 8270C	5	5	5	ND	Effluent
54	4-Nitroaniline	WWTP	1/13/2010	1/18/2010	SM 8270C	5	5	5	ND	Effluent
55	Nitrobenzene	WWTP	1/13/2010	1/18/2010	SM 8270C	5	5	5	ND	Effluent
56	2-Nitrophenol	WWTP	1/13/2010	1/18/2010	SM 8270C	5	5	5	ND	Effluent
57	4-Nitrophenol	WWTP	1/13/2010	1/18/2010	SM 8270C	1	1	1	ND	Effluent
58	N-Nitrosodimiethylamine	WWTP	1/13/2010	1/18/2010	SM 8270C	5	5	5	ND	Effluent
59	N-Nitrosodi-n-propylamine	WWTP	1/13/2010	1/18/2010	SM 8270C	1	1	1	ND	Effluent
60	Pentachlorophenol	WWTP	1/13/2010	1/18/2010	SM 8270C	5	5	5	ND	Effluent
61	Phenanthrene	WWTP	1/13/2010	1/18/2010	SM 8270C	5	5	5	ND	Effluent
62	Phenol	WWTP	1/13/2010	1/18/2010	SM 8270C	1	1	1	ND	Effluent
63	Pyrene	WWTP	1/13/2010	1/18/2010	SM 8270C	5	5	5	ND	Effluent
64	1,2,4-Trichlorobenzene	WWTP	1/13/2010	1/18/2010	SM 8270C	1	1	1	ND	Effluent
65	2,4,5-Trichlorophenol	WWTP	1/13/2010	1/18/2010	SM 8270C	5	5	5	ND	Effluent
66	2,4,6-Trichlorophenol	WWTP	1/13/2010	1/18/2010	SM 8270C	5	5	5	ND	Effluent

[2] Phenol by colorimetric technique has a factor of 1

City of Brawley
WWTP- Upstream
VOC Semi-VOC's

No.	Name of Constituent	Monitoring Location	Date Sample Collected	Date Sample Analyzed	USEPA Method	ML (µg/L)	RML (µg/L)	MDL (µg/L)	Analytical Results (µg/L)	Comments
	Inorganics:									
1	Antimony	WWTP	12/1/2010	12/4/2010	EPA 200.8	6	6	6	ND	Upstream
2	**Arsenic**	**WWTP**	**12/1/2010**	**12/4/2010**	**EPA 200.8**	**2**	**2**	**2**	**5.2**	**Upstream**
3	Beryllium	WWTP	12/1/2010	12/4/2010	EPA 200.8	1	1	0.2	ND	Upstream
4	Cadmium	WWTP	12/1/2010	12/4/2010	EPA 200.8	1	1	0.4	ND	Effluent
5	Chromium III	WWTP	12/1/2010	12/4/2010	EPA 200.8	6	6	1.1	ND	Effluent
6	Chromium VI	WWTP	12/1/2010	12/2/2010	EPA 218.6	1	1	1	ND	Effluent
7	**Copper**	**WWTP**	**12/1/2010**	**12/4/2010**	**EPA 200.8**	**10**	**10**	**2.3**	**15.5**	Upstream
8	Cyanide	WWTP	12/1/2010	12/3/2010	EPA 335.2	5	5	5	ND	Upstream
9	**Lead**	**WWTP**	**12/1/2010**	**12/4/2010**	**EPA 200.8**	**4**	**4**	**4**	**8.9**	**Upstream**
10	Mercury	WWTP	12/1/2010	12/5/2010	EPA 245.1	0.73	0.73	0.73	ND	Upstream
11	Nickel	WWTP	12/1/2010	12/4/2010	EPA 200.8	9	9	1.8	ND	Upstream
12	**Selenium**	**WWTP**	**12/1/2010**	**12/4/2010**	**EPA 200.8**	**5**	**5**	**3.7**	**6.1**	**Upstream**
13	Silver	WWTP	12/1/2010	12/4/2010	EPA 200.8	4	4	0.8	ND	Upstream
14	Thallium	WWTP	12/1/2010	12/4/2010	EPA 200.8	4	4	1.5	ND	Upstream
15	Zinc	WWTP	12/1/2010	12/4/2010	EPA 200.8	13	13	2.6	ND	Upstream
	Other Constituents:	WWTP								
1	**pH**	WWTP	12/1/2010	**12/1/2010**	**SM4500HG**				**7.59**	Upstream
2	**Hardness measured as $CaCO_3$, mg/L**	WWTP	12/1/2010	**12/1/2010**	**SM2340B**				**840.0 mg/L**	Upstream
3	**Salinity measured as Total Dissolved Solids (TDS), mg/L**	WWTP	12/1/2010	**12/3/2010**	**SM2540C**				**3274.0 mg/L**	Upstream
4	**Total Suspended Solids (TSS), mg/L**	WWTP	12/1/2010	**12/3/2010**	**SM2540D**				**148.5 mg/L**	Upstream

[2] Phenol by colorimetric technique has a factor of 1

Note: Items identified as upstream in the comments column are plant influent samples.

City of Brawley
WWTP- Upstream
VOC Semi-VOC's

Discharger:	City of Brawley Wastewater Treatment Facility	Name of Laboratory:	IVE LABs/ Positive Labs
NPDES Number:		ELAP Number:	IVE LAB-2524/ Positive Lab 1131
WDID Number:		Laboratory Contact Name:	Jorge Ortega
Monitoring Period:	Sampled 12-01-2010 10:00am	Laboratory Phone Number:	760-357-8764
Measured/Metered Flow (MGD):		Report Number:	3933 - 2 Upstream

No.	Name of Constituent	Monitoring Location	Date Sample Collected	Date Sample Analyzed	USEPA Method	ML (µg/L)	RML (µg/L)	MDL (µg/L)	Analytical Results (µg/L)	Comments
	Volatile Substances:									
1	Dichlorodifluoromethane (FC-12)	WWTP	12/1/2010	12/3/2010	SM 8260B	1	1	1	ND	Upstream
2	Chloromethane	WWTP	12/1/2010	12/3/2010	SM 8260B	1	1	1	ND	Upstream
3	Vinyl chloride (chloroethylene)	WWTP	12/1/2010	12/3/2010	SM 8260B	0.5	0.5	0.5	ND	Upstream
4	Bromomethane	WWTP	12/1/2010	12/3/2010	SM 8260B	1	1	1	ND	Upstream
5	Chloroethane	WWTP	12/1/2010	12/3/2010	SM 8260B	1	1	1	ND	Upstream
6	Trichlorofluoromethane (FC-11)	WWTP	12/1/2010	12/3/2010	SM 8260B	1	1	1	ND	Upstream
7	Acetone	WWTP	12/1/2010	12/3/2010	SM 8260B	2	2	10	ND	Upstream
8	Carbon Disulfide	WWTP	12/1/2010	12/3/2010	SM 8260B	1	1	5	ND	Upstream
9	1,1-Dichloroethene	WWTP	12/1/2010	12/3/2010	SM 8260B	1	1	1	ND	Upstream
10	Methylene Chloride (dichloromethane)	WWTP	12/1/2010	12/3/2010	SM 8260B	1	1	2.5	ND	Upstream
11	trans-1,2- Dichloroethene	WWTP	12/1/2010	12/3/2010	SM 8260B	1	1	1	ND	Upstream
12	1,1-Dichloroethane	WWTP	12/1/2010	12/3/2010	SM 8260B	1	1	1	ND	Upstream
13	Vinyl Acetate	WWTP	12/1/2010	12/3/2010	SM 8260B	1	1	5	ND	Upstream
14	2,2-Dichloropropane	WWTP	12/1/2010	12/3/2010	SM 8260B	1	1	1	ND	Upstream
15	cis-1,2-Dichloroethene	WWTP	12/1/2010	12/3/2010	SM 8260B	1	1	1	ND	Upstream
16	2-Butanone (MEK)	WWTP	12/1/2010	12/3/2010	SM 8260B	1	1	5	ND	Upstream
17	Bromochloromethane	WWTP	12/1/2010	12/3/2010	SM 8260B	1	1	1	ND	Upstream
18	Chloroform	WWTP	12/1/2010	12/3/2010	SM 8260B	1	1	1	ND	Upstream
19	1,1,1-Trichloroethane	WWTP	12/1/2010	12/3/2010	SM 8260B	1	1	1	ND	Upstream
20	Carbon Tetrachloride	WWTP	12/1/2010	12/3/2010	SM 8260B	0.5	0.5	0.5	ND	Upstream
21	1,1-Dichloropropene	WWTP	12/1/2010	12/3/2010	SM 8260B	1	1	1	ND	Upstream
22	Benzene	WWTP	12/1/2010	12/3/2010	SM 8260B	1	1	1	ND	Upstream
23	1,2-Dichloroethane	WWTP	12/1/2010	12/3/2010	SM 8260B	0.5	0.5	0.5	ND	Upstream
24	Trichloroethene (TCE)	WWTP	12/1/2010	12/3/2010	SM 8260B	1	1	1	ND	Upstream
25	1,2-Dichloropropane	WWTP	12/1/2010	12/3/2010	SM 8260B	1	1	1	ND	Upstream
26	Dibromomethane	WWTP	12/1/2010	12/3/2010	SM 8260B	1	1	1	ND	Upstream
27	Bromodichloromethane	WWTP	12/1/2010	12/3/2010	SM 8260B	1	1	1	ND	Upstream
28	2-Chloroethyl vinyl ether	WWTP	12/1/2010	12/3/2010	SM 8260B	1	1	1	ND	Upstream
29	cis-1,3-Dichloropropene	WWTP	12/1/2010	12/3/2010	SM 8260B	1	1	5	ND	Upstream
30	4-Methyl-2-pentanone (MIBK)	WWTP	12/1/2010	12/3/2010	SM 8260B	1	1	1	ND	Upstream
31	Toluene	WWTP	12/1/2010	12/3/2010	SM 8260B	1	1	5	ND	Upstream
32	trans-1,3-Dichloropropene	WWTP	12/1/2010	12/3/2010	SM 8260B	1	1	1	ND	Upstream
33	1,1,2-Trichloroethane	WWTP	12/1/2010	12/3/2010	SM 8260B	1	1	1	ND	Upstream

Note: Items identified as upstream in the comments column are plant influent samples.

City of Brawley
WWTP- Upstream
VOC Semi-VOC's

No.	Name of Constituent	Monitoring Location	Date Sample Collected	Date Sample Analyzed	USEPA Method	ML (µg/L)	RML (µg/L)	MDL (µg/L)	Analytical Results (µg/L)	Comments
	Volatile Substances:									
34	Tetrachloroethylene	WWTP	12/1/2010	12/3/2010	SM 8260B	1	1	1	ND	Upstream
35	1,3-Dichloropropane	WWTP	12/1/2010	12/3/2010	SM 8260B	1	1	1	ND	Upstream
36	2-Hexanone (MBK)	WWTP	12/1/2010	12/3/2010	SM 8260B	1	1	5	ND	Upstream
37	Chlorodibromomethane	WWTP	12/1/2010	12/3/2010	SM 8260B	1	1	1	ND	Upstream
38	1,2-Dibromoethane (EDB)	WWTP	12/1/2010	12/3/2010	SM 8260B	1	1	1	ND	Upstream
39	Chlorobenzene	WWTP	12/1/2010	12/3/2010	SM 8260B	1	1	1	ND	Upstream
40	1,1,1,2-Tetrachloroethane	WWTP	12/1/2010	12/3/2010	SM 8260B	1	1	1	ND	Upstream
41	Ethylbenzene	WWTP	12/1/2010	12/3/2010	SM 8260B	1	1	1	ND	Upstream
42	m,p-Xylene	WWTP	12/1/2010	12/3/2010	SM 8260B	1	1	1	ND	Upstream
43	o-Xylene	WWTP	12/1/2010	12/3/2010	SM 8260B	1	1	1	ND	Upstream
44	Styrene	WWTP	12/1/2010	12/3/2010	SM 8260B	1	1	1	ND	Upstream
45	Bromoform (Tribromomethane)	WWTP	12/1/2010	12/3/2010	SM 8260B	1	1	1	ND	Upstream
46	Isopropylbenzene	WWTP	12/1/2010	12/3/2010	SM 8260B	1	1	1	ND	Upstream
47	Bromobenzene	WWTP	12/1/2010	12/3/2010	SM 8260B	1	1	1	ND	Upstream
48	1,1,2,2-Tetrachloroethane	WWTP	12/1/2010	12/3/2010	SM 8260B	1	1	1	ND	Upstream
49	1,2,3-Trichloropropane	WWTP	12/1/2010	12/3/2010	SM 8260B	1	1	1	ND	Upstream
50	n-Propylbenzene	WWTP	12/1/2010	12/3/2010	SM 8260B	1	1	1	ND	Upstream
51	2-Chlorotoluene	WWTP	12/1/2010	12/3/2010	SM 8260B	1	1	1	ND	Upstream
52	4-Chlorotoluene	WWTP	12/1/2010	12/3/2010	SM 8260B	1	1	1	ND	Upstream
53	1,3,5-Trimethylbenzene	WWTP	12/1/2010	12/3/2010	SM 8260B	1	1	1	ND	Upstream
54	tert-Butylbenzene	WWTP	12/1/2010	12/3/2010	SM 8260B	1	1	1	ND	Upstream
55	1,2,4-Trimethylbenzene	WWTP	12/1/2010	12/3/2010	SM 8260B	1	1	1	ND	Upstream
56	sec-Butylbenzene	WWTP	12/1/2010	12/3/2010	SM 8260B	1	1	1	ND	Upstream
57	1,3-Dichlorobenzene	WWTP	12/1/2010	12/3/2010	SM 8260B	1	1	1	ND	Upstream
58	4-Isopropyltoluene	WWTP	12/1/2010	12/3/2010	SM 8260B	1	1	1	ND	Upstream
59	1,4-Dichlorobenzene	WWTP	12/1/2010	12/3/2010	SM 8260B	1	1	1	ND	Upstream
60	1,2-Dichlorobenzene	WWTP	12/1/2010	12/3/2010	SM 8260B	1	1	1	ND	Upstream
61	n-Butylbenzene	WWTP	12/1/2010	12/3/2010	SM 8260B	1	1	1	ND	Upstream
62	1,2-Dibromo-3-chloropropane (DBCP)	WWTP	12/1/2010	12/3/2010	SM 8260B	1	1	1	ND	Upstream
63	1,2,4-Trichlorobenzene	WWTP	12/1/2010	12/3/2010	SM 8260B	1	1	1	ND	Upstream
64	Hexachlorobutadiene	WWTP	12/1/2010	12/3/2010	SM 8260B	1	1	1	ND	Upstream
65	Naphthalene	WWTP	12/1/2010	12/3/2010	SM 8260B	1	1	1	ND	Upstream
66	1,2,3-Trichlorobenzene	WWTP	12/1/2010	12/3/2010	SM 8260B	1	1	1	ND	Upstream
67	Methyl tert-butyl ether (MTBE)	WWTP	12/1/2010	12/3/2010	SM 8260B	1	1	1	ND	Upstream
68	1,4-Dioxane	WWTP	12/1/2010	12/3/2010	SM 8260B	5	1	20	ND	Upstream
69	Tert-butyl alcohol	WWTP	12/1/2010	12/3/2010	SM 8260B	1	1	5	ND	Upstream
70	Di-isopropyl ether	WWTP	12/1/2010	12/3/2010	SM 8260B	1	1	1	ND	Upstream
71	Ethyl tert-butyl ether	WWTP	12/1/2010	12/3/2010	SM 8260B	1	1	1	ND	Upstream
72	Tert-amyl methyl ether	WWTP	12/1/2010	12/3/2010	SM 8260B	1	1	1	ND	Upstream
73	Acrolein	WWTP	12/1/2010	12/3/2010	SM 8260B	1	1	1	ND	Upstream
74	Acrylonitrile	WWTP	12/1/2010	12/3/2010	SM 8260B	1	1	1	ND	Upstream

Note: Items identified as upstream in the comments column are plant influent samples.

City of Brawley
WWTP- Upstream
VOC Semi-VOC's

No.	Name of Constituent	Monitoring Location	Date Sample Collected	Date Sample Analvzed	USEPA Method	ML (µg/L)	RML (µg/L)	MDL (µg/L)	Analytical Results (µg/L)	Comments
	Semi-Volatile Substances:									
1	N-Nitrosodimethylamine	WWTP	12/1/2010	12/7/2010	SM 8270C	5	5	5	ND	Upstream
2	Pyridine	WWTP	12/1/2010	12/7/2010	SM 8270C	5	5	5	ND	Upstream
3	Aniline	WWTP	12/1/2010	12/7/2010	SM 8270C	5	5	5	ND	Upstream
4	Bis(2-chorotheyl) ether	WWTP	12/1/2010	12/7/2010	SM 8270C	5	5	5	ND	Upstream
5	Phenol	WWTP	12/1/2010	12/7/2010	SM 8270C	5	5	5	ND	Upstream
6	2-Chlorophenol	WWTP	12/1/2010	12/7/2010	SM 8270C	5	5	5	ND	Upstream
7	1,3-Dichlorobezene	WWTP	12/1/2010	12/7/2010	SM 8270C	1	1	5	ND	Upstream
8	1,4-Dichlorobenzene	WWTP	12/1/2010	12/7/2010	SM 8270C	1	1	5	ND	Upstream
9	1,2-Dichlorobenzene	WWTP	12/1/2010	12/7/2010	SM 8270C	1	1	5	ND	Upstream
10	Benzyl alcohol	WWTP	12/1/2010	12/7/2010	SM 8270C	1	1	5	ND	Upstream
11	Bis(2-chloroisopropyl) ether	WWTP	12/1/2010	12/7/2010	SM 8270C	5	5	5	ND	Upstream
12	2-Methylphenol	WWTP	12/1/2010	12/7/2010	SM 8270C	1	1	5	ND	Upstream
13	Hexachloroethane	WWTP	12/1/2010	12/7/2010	SM 8270C	5	5	5	ND	Upstream
14	N-Nitrosodi-n-propylamine	WWTP	12/1/2010	12/7/2010	SM 8270C	1	1	5	ND	Upstream
15	4-Methylphenol	WWTP	12/1/2010	12/7/2010	SM 8270C	5	5	5	ND	Upstream
16	Nitrobenzene	WWTP	12/1/2010	12/7/2010	SM 8270C	5	5	5	ND	Upstream
17	Isophorone	WWTP	12/1/2010	12/7/2010	SM 8270C	5	5	5	ND	Upstream
18	2-Nitrophenol	WWTP	12/1/2010	12/7/2010	SM 8270C	1	1	5	ND	Upstream
19	2,4-Dimethylphenol	WWTP	12/1/2010	12/7/2010	SM 8270C	5	5	5	ND	Upstream
20	Bis(2-chloroethoxy) methane	WWTP	12/1/2010	12/7/2010	SM 8270C	5	5	5	ND	Upstream
21	Benzoic Acid	WWTP	12/1/2010	12/7/2010	SM 8270C	4	4	20	ND	Upstream
22	2,4-Dichlorophenol	WWTP	12/1/2010	12/7/2010	SM 8270C	5	5	5	ND	Upstream
23	1,2,4-Trichlorobenzene	WWTP	12/1/2010	12/7/2010	SM 8270C	5	5	5	ND	Upstream
24	Naphthalene	WWTP	12/1/2010	12/7/2010	SM 8270C	5	5	5	ND	Upstream
25	4-Chloroaniline	WWTP	12/1/2010	12/7/2010	SM 8270C	5	5	5	ND	Upstream
26	Hexachlorobutadiene	WWTP	12/1/2010	12/7/2010	SM 8270C	5	5	5	ND	Upstream
27	3-Methyl-4-Cholrophenol	WWTP	12/1/2010	12/7/2010	SM 8270C	5	5	5	ND	Upstream
28	2-Methylnaphthalene	WWTP	12/1/2010	12/7/2010	SM 8270C	5	5	5	ND	Upstream
29	Hexachlorocyclopentadiene	WWTP	12/1/2010	12/7/2010	SM 8270C	1	1	5	ND	Upstream
30	2,4,6-Trichlorophenol	WWTP	12/1/2010	12/7/2010	SM 8270C	5	5	5	ND	Upstream
31	2,4,5-Trichlorophenol	WWTP	12/1/2010	12/7/2010	SM 8270C	1	1	5	ND	Upstream
32	2-Chloronaphthalene	WWTP	12/1/2010	12/7/2010	SM 8270C	5	5	5	ND	Upstream
33	2-Nitroaniline	WWTP	12/1/2010	12/7/2010	SM 8270C	5	5	5	ND	Upstream
34	Acenaphthylene	WWTP	12/1/2010	12/7/2010	SM 8270C	1	1	5	ND	Upstream
35	Dimethyl phthalate	WWTP	12/1/2010	12/7/2010	SM 8270C	5	5	5	ND	Upstream
36	2,6-Dinitrotoluene	WWTP	12/1/2010	12/7/2010	SM 8270C	5	5	5	ND	Upstream
37	Acenaphthene	WWTP	12/1/2010	12/7/2010	SM 8270C	5	5	5	ND	Upstream
38	3-Nitroaniline	WWTP	12/1/2010	12/7/2010	SM 8270C	5	5	5	ND	Upstream
39	2,4-Dinitrophenol	WWTP	12/1/2010	12/7/2010	SM 8270C	5	5	5	ND	Upstream
40	Dibenzofuran	WWTP	12/1/2010	12/7/2010	SM 8270C	5	5	5	ND	Upstream

Note: Items identified as upstream in the comments column are plant influent samples.

City of Brawley
WWTP- Upstream
VOC Semi-VOC's

No.	Name of Constituent	Monitoring Location	Date Sample Collected	Date Sample Analyzed	USEPA Method	ML (ug/L)	RML (ug/L)	MDL (ug/L)	Analytical Results (ug/L)	Comments
	Semi-Volatile Substances, Cont':									
41	2,4-Dinitrotoluene	WWTP	12/1/2010	12/7/2010	SM 8270C	5	5	5	ND	Upstream
42	4-Nitrophenol	WWTP	12/1/2010	12/7/2010	SM 8270C	5	5	5	ND	Upstream
43	Fluorene	WWTP	12/1/2010	12/7/2010	SM 8270C	5	5	5	ND	Upstream
44	4-Chlorophenyl phenyl ether	WWTP	12/1/2010	12/7/2010	SM 8270C	5	5	5	ND	Upstream
45	Diethyl phthalate	WWTP	12/1/2010	12/7/2010	SM 8270C	5	5	5	ND	Upstream
46	4-Nitroaniline	WWTP	12/1/2010	12/7/2010	SM 8270C	5	5	5	ND	Upstream
47	2-Methyl-4,6-Dinitrophenol	WWTP	12/1/2010	12/7/2010	SM 8270C	5	5	5	ND	Upstream
48	N-Nitrosodiphenylamine	WWTP	12/1/2010	12/7/2010	SM 8270C	5	5	5	ND	Upstream
49	Azobenzene	WWTP	12/1/2010	12/7/2010	SM 8270C	5	5	5	ND	Upstream
50	1,2-Diphenylhydrazine	WWTP	12/1/2010	12/7/2010	SM 8270C	5	5	5	ND	Upstream
51	4-Bromophenyl phenyl ether	WWTP	12/1/2010	12/7/2010	SM 8270C	5	5	5	ND	Upstream
52	Hexachlorobenzene	WWTP	12/1/2010	12/7/2010	SM 8270C	5	5	5	ND	Upstream
53	Pentachlorophenol	WWTP	12/1/2010	12/7/2010	SM 8270C	5	5	5	ND	Upstream
54	Phenanthrene	WWTP	12/1/2010	12/7/2010	SM 8270C	5	5	5	ND	Upstream
55	Carbazole	WWTP	12/1/2010	12/7/2010	SM 8270C	5	5	5	ND	Upstream
56	Anthracene	WWTP	12/1/2010	12/7/2010	SM 8270C	5	5	5	ND	Upstream
57	Di-n-butyl phthalate	WWTP	12/1/2010	12/7/2010	SM 8270C	5	5	5	ND	Upstream
58	Fluoranthene	WWTP	12/1/2010	12/7/2010	SM 8270C	5	5	5	ND	Upstream
59	Benzidine	WWTP	12/1/2010	12/7/2010	SM 8270C	5	5	5	ND	Upstream
60	Pyrene	WWTP	12/1/2010	12/7/2010	SM 8270C	8	8	40	ND	Upstream
61	Butylbenzyl phthalate	WWTP	12/1/2010	12/7/2010	SM 8270C	5	5	5	ND	Upstream
62	3,3-Dichlorobenzidine	WWTP	12/1/2010	12/7/2010	SM 8270C	5	5	5	ND	Upstream
63	Benzo(a)antharacene	WWTP	12/1/2010	12/7/2010	SM 8270C	5	5	5	ND	Upstream
64	Chrysene	WWTP	12/1/2010	12/7/2010	SM 8270C	5	5	5	ND	Upstream
65	Bis (2-ethylhexyl) phthalate	WWTP	12/1/2010	12/7/2010	SM 8270C	5	5	5	ND	Upstream
66	Di-n-octyl phthalate	WWTP	12/1/2010	12/7/2010	SM 8270C	5	5	5	ND	Upstream
67	Benzo(b)fluoranthene	WWTP	12/1/2010	12/7/2010	SM 8270C	5	5	5	ND	Upstream
68	Benzo(k)fluoranthene	WWTP	12/1/2010	12/7/2010	SM 8270C	5	5	5	ND	Upstream
69	Benzo(a)pyrene	WWTP	12/1/2010	12/7/2010	SM 8270C	5	5	5	ND	Upstream
70	Indeno(1,2,3-cd) pyrene	WWTP	12/1/2010	12/7/2010	SM 8270C	5	5	5	ND	Upstream
71	Dibenzo(a,h)anthracene	WWTP	12/1/2010	12/7/2010	SM 8270C	5	5	5	ND	Upstream
72	Benzo(g,h,i)perylene	WWTP	12/1/2010	12/7/2010	SM 8270C	5	5	5	ND	Upstream
73	m,p- Cresols	WWTP	12/1/2010	12/7/2010	SM 8270C	5	5	5	ND	Upstream
74	Acenapththene	WWTP	12/1/2010	12/7/2010	SM 8270C	5	5	5	ND	Upstream
75	Diethyl phthalate	WWTP	12/1/2010	12/7/2010	SM 8270C	5	5	5	ND	Upstream
76	2,6-Dinitrotoluene	WWTP	12/1/2010	12/7/2010	SM 8270C	5	5	5	ND	Upstream

Note: Items identified as upstream in the comments column are plant influent samples.

City of Brawley
WWTP- Upstream
VOC Semi-VOC's

	Pesticides - PCBs:									
1	Aldrin	WWTP	12/1/2010	12/3/2010	608	0.01	0.01	0.01	ND	Upstream
2	HCH-alpha	WWTP	12/1/2010	12/3/2010	608	0.01	0.01	0.01	ND	Upstream
3	HCH-beta	WWTP	12/1/2010	12/3/2010	608	0.01	0.01	0.01	ND	Upstream
4	HCH-delta	WWTP	12/1/2010	12/3/2010	608	0.02	0.02	0.02	ND	Upstream
5	HCH-gamma (Lindane)	WWTP	12/1/2010	12/3/2010	608	0.01	0.01	0.01	ND	Upstream
6	Chlordane	WWTP	12/1/2010	12/3/2010	608	0.075	0.075	0.075	ND	Upstream
7	4,4-DDD	WWTP	12/1/2010	12/3/2010	608	0.05	0.05	0.05	ND	Upstream
8	4,4,-DDE	WWTP	12/1/2010	12/3/2010	608	0.05	0.05	0.05	ND	Upstream
9	4,4-DDT	WWTP	12/1/2010	12/3/2010	608	0.05	0.05	0.05	ND	Upstream
10	Dieldrin	WWTP	12/1/2010	12/3/2010	608	0.1	0.1	0.1	ND	Upstream
11	alpha Endosulfan	WWTP	12/1/2010	12/3/2010	608	0.02	0.02	0.02	ND	Upstream
12	beta Endosulfan	WWTP	12/1/2010	12/3/2010	608	0.05	0.05	0.05	ND	Upstream
13	Endosulfan sulfate	WWTP	12/1/2010	12/3/2010	608	0.1	0.1	0.1	ND	Upstream
14	Endrin	WWTP	12/1/2010	12/3/2010	608	0.05	0.05	0.05	ND	Upstream
15	Endrin aldehyde	WWTP	12/1/2010	12/3/2010	608	0.01	0.01	0.01	ND	Upstream
16	Heptachlor	WWTP	12/1/2010	12/3/2010	608	0.01	0.01	0.01	ND	Upstream
17	Heptachlor epoxide	WWTP	12/1/2010	12/3/2010	608	0.2	0.2	0.2	ND	Upstream
18	Toxaphene	WWTP	12/1/2010	12/3/2010	608	0.5	0.5	0.5	ND	Upstream
19	PCB-1061	WWTP	12/1/2010	12/3/2010	608	0.5	0.5	0.4	ND	Upstream
20	PCB 1221	WWTP	12/1/2010	12/3/2010	608	0.5	0.5	0.4	ND	Upstream
21	PCB 1232	WWTP	12/1/2010	12/3/2010	608	0.5	0.5	0.4	ND	Upstream
22	PCB 1242	WWTP	12/1/2010	12/3/2010	608	0.5	0.5	0.4	ND	Upstream
23	PCB 1248	WWTP	12/1/2010	12/3/2010	608	0.5	0.5	0.4	ND	Upstream
24	PCB 1254	WWTP	12/1/2010	12/3/2010	608	0.5	0.5	0.4	ND	Upstream
25	PCB 1260	WWTP	12/1/2010	12/3/2010	608	0.5	0.5	0.4	ND	Upstream

Note: Items identified as upstream in the comments column are plant influent samples.

City of Brawley WWTP- Effluent-
Priority Pollutants

No.	Name of Constituent	Monitoring Location	Date Sample Collected	Date Sample Analyzed	USEPA Method	ML (µg/L)	RML (µg/L)	MDL (µg/L)	Analytical Results (µg/L)	Comments
	Semi-Volatile Substances:									
1	N-Nitrosodimethylamine	WWTP	12/6/2011	12/14/2011	EPA 625	2	2	2	ND	Effluent
2	Aniline	WWTP	12/6/2011	12/14/2011	EPA 625	2	2	2	ND	Effluent
3	Bis (2-chloroethyl) ether	WWTP	12/6/2011	12/14/2011	EPA 625	2	2	2	ND	Effluent
4	Phenol	WWTP	12/6/2011	12/14/2011	EPA 625	2	2	2	ND	Effluent
5	2-Chlorophenol	WWTP	12/6/2011	12/14/2011	EPA 625	2	2	2	ND	Effluent
6	1,4-Dichlorobenzene	WWTP	12/6/2011	12/14/2011	EPA 625	2	2	2	ND	Effluent
7	Benzyl alcohol	WWTP	12/6/2011	12/14/2011	EPA 625	2	2	2	ND	Effluent
8	Bis(2-chloroisopropyl) ether	WWTP	12/6/2011	12/14/2011	EPA 625	2	2	2	ND	Effluent
9	2-Methylphenol	WWTP	12/6/2011	12/14/2011	EPA 625	2	2	2	ND	Effluent
10	Nitrobenzene	WWTP	12/6/2011	12/14/2011	EPA 625	2	2	2	ND	Effluent
11	Isophorone	WWTP	12/6/2011	12/14/2011	EPA 625	2	2	2	ND	Effluent
12	2-Nitrophenol	WWTP	12/6/2011	12/14/2011	EPA 625	2	2	2	ND	Effluent
13	2,4-Dimethylphenol	WWTP	12/6/2011	12/14/2011	EPA 625	2	2	2	ND	Effluent
14	Bis(2-chloroethoxy)methane	WWTP	12/6/2011	12/14/2011	EPA 625	2	2	2	ND	Effluent
15	Benzoic acid	WWTP	12/6/2011	12/14/2011	EPA 625	10	10	10	ND	Effluent
16	2,4-Dichlorophenol	WWTP	12/6/2011	12/14/2011	EPA 625	2	2	2	ND	Effluent
17	1,2,4-Trichlorobenzene	WWTP	12/6/2011	12/14/2011	EPA 625	2	2	2	ND	Effluent
18	Naphthalene	WWTP	12/6/2011	12/14/2011	EPA 625	2	2	2	ND	Effluent
19	4-Chloroaniline	WWTP	12/6/2011	12/14/2011	EPA 625	2	2	2	ND	Effluent
20	Hexachlorobutadiene	WWTP	12/6/2011	12/14/2011	EPA 625	2	2	2	ND	Effluent
21	4-Chloro-3-methylphenol	WWTP	12/6/2011	12/14/2011	EPA 625	2	2	2	ND	Effluent
22	2-Methylnaphthalene	WWTP	12/6/2011	12/14/2011	EPA 625	2	2	2	ND	Effluent
23	Hexachlorocyclopentadiene	WWTP	12/6/2011	12/14/2011	EPA 625	2	2	2	ND	Effluent
24	2,4,6-Trichlorophenol	WWTP	12/6/2011	12/14/2011	EPA 625	2	2	2	ND	Effluent
25	2,4,5-Trichlorophenol	WWTP	12/6/2011	12/14/2011	EPA 625	2	2	2	ND	Effluent
26	2-Chloronapthalene	WWTP	12/6/2011	12/14/2011	EPA 625	2	2	2	ND	Effluent
27	2-Nitroaniline	WWTP	12/6/2011	12/14/2011	EPA 625	2	2	2	ND	Effluent
28	Acenapthylene	WWTP	12/6/2011	12/14/2011	EPA 625	2	2	2	ND	Effluent
29	Dimethyl phthalate	WWTP	12/6/2011	12/14/2011	EPA 625	2	2	2	ND	Effluent
30	2,6-Dinitrotoluene	WWTP	12/6/2011	12/14/2011	EPA 625	2	2	2	ND	Effluent
31	Acenapthene	WWTP	12/6/2011	12/14/2011	EPA 625	2	2	2	ND	Effluent
32	3-Nitroaniline	WWTP	12/6/2011	12/14/2011	EPA 625	2	2	2	ND	Effluent
33	2,4-Dinitrophenol	WWTP	12/6/2011	12/14/2011	EPA 625	2	2	2	ND	Effluent
34	2,4-Dinitrotoluene	WWTP	12/6/2011	12/14/2011	EPA 625	2	2	2	ND	Effluent
35	Dibenzofuran	WWTP	12/6/2011	12/14/2011	EPA 625	2	2	2	ND	Effluent
36	4-Nitrophenol	WWTP	12/6/2011	12/14/2011	EPA 625	2	2	2	ND	Effluent
37	Fluorene	WWTP	12/6/2011	12/14/2011	EPA 625	2	2	2	ND	Effluent
38	4-Chlorophenyl phenyl ether	WWTP	12/6/2011	12/14/2011	EPA 625	2	2	2	ND	Effluent
39	Diethyl phalate	WWTP	12/6/2011	12/14/2011	EPA 625	2	2	2	ND	Effluent
40	4-Nitroaniline	WWTP	12/6/2011	12/14/2011	EPA 625	2	2	2	ND	Effluent

City of Brawley WWTP- Effluent- Priority Pollutants

No.	Name of Constituent	Monitoring Location	Date Sample Collected	Date Sample Analyzed	USEPA Method	ML (ug/L)	RML (ug/L)	MDL (ug/L)	Analytical Results (ug/L)	Comments
	Semi-Volatile Substances, Cont':									
41	Azobenzene	WWTP	12/6/2011	12/14/2011	EPA 625	2	2	2	ND	Effluent
42	4,6-Dinitro-2-methylphenol	WWTP	12/6/2011	12/14/2011	EPA 625	2	2	2	ND	Effluent
43	N-Nitrosodiphenylamine	WWTP	12/6/2011	12/14/2011	EPA 625	2	2	2	ND	Effluent
44	4-Bromophenyl phenly ether	WWTP	12/6/2011	12/14/2011	EPA 625	2	2	2	ND	Effluent
45	Hexachlorobenzene	WWTP	12/6/2011	12/14/2011	EPA 625	2	2	2	ND	Effluent
46	Pentachlorophenol	WWTP	12/6/2011	12/14/2011	EPA 625	2	2	2	ND	Effluent
47	Phenanthrene	WWTP	12/6/2011	12/14/2011	EPA 625	2	2	2	ND	Effluent
48	Anthracene	WWTP	12/6/2011	12/14/2011	EPA 625	2	2	2	ND	Effluent
49	Carbazole	WWTP	12/6/2011	12/14/2011	EPA 625	2	2	2	ND	Effluent
50	**Di-n-butyl phthalate**	**WWTP**	**12/6/2011**	**12/14/2011**	**EPA 625**	**4**	**4**	**4**	**4.4**	**Effluent**
51	Fluoranthene	WWTP	12/6/2011	12/14/2011	EPA 625	2	2	2	ND	Effluent
52	Benzidine	WWTP	12/6/2011	12/14/2011	EPA 625	2	2	2	ND	Effluent
53	Pyrene	WWTP	12/6/2011	12/14/2011	EPA 625	2	2	2	ND	Effluent
54	Butyl benzyl phthalate	WWTP	12/6/2011	12/14/2011	EPA 625	2	2	2	ND	Effluent
55	3,3-Dichlorobenzidine	WWTP	12/6/2011	12/14/2011	EPA 625	2	2	2	ND	Effluent
56	Benzo(a) anthracene	WWTP	12/6/2011	12/14/2011	EPA 625	2	2	2	ND	Effluent
57	Chrysene	WWTP	12/6/2011	12/14/2011	EPA 625	2	2	2	ND	Effluent
58	Bis(2-ethylhexyl)phthalate	WWTP	12/6/2011	12/14/2011	EPA 625	2	2	2	ND	Effluent
59	Di-n-octyl phthalate	WWTP	12/6/2011	12/14/2011	EPA 625	2	2	2	ND	Effluent
60	Benzo(b)fluoranthene	WWTP	12/6/2011	12/14/2011	EPA 625	2	2	2	ND	Effluent
61	Benzo(k)fluoranthene	WWTP	12/6/2011	12/14/2011	EPA 625	2	2	2	ND	Effluent
62	Benzo(a) pyrene	WWTP	12/6/2011	12/14/2011	EPA 625	2	2	2	ND	Effluent
63	Indeno (1,2,3-cd)pyrene	WWTP	12/6/2011	12/14/2011	EPA 625	2	2	2	ND	Effluent
64	Dibenz(a,h)anthracene	WWTP	12/6/2011	12/14/2011	EPA 625	2	2	2	ND	Effluent
65	Benzo(g,h,i)perylene	WWTP	12/6/2011	12/14/2011	EPA 625	2	2	2	ND	Effluent
	Other Constituents:									
1	**pH**	**WWTP**	12/6/2011	12/6/2011	**SM4500HG**				**7.57**	Effluent
2	**Hardness measured as $CaCO_3$, mg/L**	**WWTP**	12/6/2011	12/6/2011	**SM2340B**	**4**	**4**	**4**	**308.0 mg/L**	Effluent
3	**Salinity measured as Total Dissolved Solids (TDS), mg/L**	**WWTP**	12/6/2011	12/9/2011	**SM2540C**	**1**	**1**	**1**	**1368.0 mg/L**	Effluent
4	**Total Suspended Solids (TSS), mg/L**	**WWTP**	12/6/2011	12/9/2011	**SM2540D**	**1**	**1**	**1**	**8.80 mg/L**	Effluent

[2] Phenol by colorimetric technique has a factor of 1

City of Brawley WWTP- Effluent- Priority Pollutants

No.	Name of Constituent	Monitoring Location	Date Sample Collected	Date Sample Analyzed	USEPA Method	ML (µg/L)	RML (µg/L)	MDL (µg/L)	Analytical Results (µg/L)	Comments
	Inorganics:									
1	Antimony	WWTP	12/6/2011	12/12/2011	EPA 200.7	10	10	10	ND	Effluent
2	Arsenic	WWTP	12/6/2011	12/12/2011	EPA 200.7	10	10	10	ND	Effluent
3	Beryllium	WWTP	12/6/2011	12/12/2011	EPA 200.7	5	5	5	ND	Effluent
4	Cadmium	WWTP	12/6/2011	12/12/2011	EPA 200.7	5	5	5	ND	Effluent
5	Chromium III	WWTP	12/6/2011	12/12/2011	EPA 200.7	5	5	5	ND	Effluent
6	**Copper**	**WWTP**	**12/6/2011**	**12/12/2011**	**EPA 200.7**	**10**	**10**	**10**	**11.7**	**Effluent**
7	Lead	WWTP	12/6/2011	12/12/2011	EPA 200.7	7	7	7	ND	Effluent
8	Mercury	WWTP	12/6/2011	12/13/2011	EPA 7470A	0.2	0.2	0.2	ND	Effluent
9	Nickel	WWTP	12/6/2011	12/12/2011	EPA 200.7	5	5	5	ND	Effluent
10	Selenium	WWTP	12/6/2011	12/12/2011	EPA 200.7	20	20	20	ND	Effluent
11	Silver	WWTP	12/6/2011	12/12/2011	EPA 200.7	10	10	10	ND	Effluent
12	Thallium	WWTP	12/6/2011	12/12/2011	EPA 200.7	20	20	20	ND	Effluent
13	**Zinc**	**WWTP**	**12/6/2011**	**12/12/2011**	**EPA 200.7**	**10**	**10**	**10**	**32**	**Effluent**
14	**Cyanide**	**WWTP**	**12/6/2011**	**12/14/2011**	**SM 4500CN E**	**5**	**5**	**5**	**7**	**Effluent**
15	Chromium VI	WWTP	12/6/2011	12/8/2011	EPA 7199	1	1	1	ND	Effluent

City of Brawley WWTP- Effluent-
Priority Pollutants

	Pesticides - PCBs:									
1	Heptachlor	WWTP	12/6/2011	12/14/2011	608	0.1	1	1	ND	Effluent
2	alpha-BHC	WWTP	12/6/2011	12/14/2011	608	0.1	1	1	ND	Effluent
3	beta-BHC	WWTP	12/6/2011	12/14/2011	608	0.1	1	1	ND	Effluent
4	gamma-BHC (Lindane)	WWTP	12/6/2011	12/14/2011	608	0.1	1	1	ND	Effluent
5	delta-BHC	WWTP	12/6/2011	12/14/2011	608	0.1	1	1	ND	Effluent
6	Aldrin	WWTP	12/6/2011	12/14/2011	608	0.1	1	1	ND	Effluent
7	Heptachloro epoxide	WWTP	12/6/2011	12/14/2011	608	0.1	1	1	ND	Effluent
8	gamma-Chlordane	WWTP	12/6/2011	12/14/2011	608	0.1	1	1	ND	Effluent
9	Endosulfan I	WWTP	12/6/2011	12/14/2011	608	0.1	1	1	ND	Effluent
10	alpha-Chlordane	WWTP	12/6/2011	12/14/2011	608	0.1	1	1	ND	Effluent
11	4,4-DDE	WWTP	12/6/2011	12/14/2011	608	0.1	1	1	ND	Effluent
12	Dieldrin	WWTP	12/6/2011	12/14/2011	608	0.1	1	1	ND	Effluent
13	Endrin	WWTP	12/6/2011	12/14/2011	608	0.1	1	1	ND	Effluent
14	Endosulfan II	WWTP	12/6/2011	12/14/2011	608	0.1	1	1	ND	Effluent
15	4,4-DDD	WWTP	12/6/2011	12/14/2011	608	0.1	1	1	ND	Effluent
16	Endrin Ketone	WWTP	12/6/2011	12/14/2011	608	0.1	1	1	ND	Effluent
17	Methoxychlor	WWTP	12/6/2011	12/14/2011	608	0.1	1	1	ND	Effluent
18	Arochlor 1016	WWTP	12/6/2011	12/14/2011	608	10	10	10	ND	Effluent
19	Arochlor 1221	WWTP	12/6/2011	12/14/2011	608	10	10	10	ND	Effluent
20	Arochlor 1232	WWTP	12/6/2011	12/14/2011	608	10	10	10	ND	Effluent
21	Arochlor 1242	WWTP	12/6/2011	12/14/2011	608	10	10	10	ND	Effluent
22	Arochlor 1248	WWTP	12/6/2011	12/14/2011	608	10	10	10	ND	Effluent
23	Arochlor 1254	WWTP	12/6/2011	12/14/2011	608	10	10	10	ND	Effluent
24	Arochlor 1260	WWTP	12/6/2011	12/14/2011	608	10	10	10	ND	Effluent

City of Brawley WWTP- Effluent- Priority Pollutants

No.	Name of Constituent	Monitoring Location	Date Sample Collected	Date Sample Analyzed	USEPA Method	ML (μg/L)	RML (μg/L)	MDL (μg/L)	Analytical Results (μg/L)	Comments
	Volatile Substances:									
34	Tetrachloroethene	WWTP	12/6/2011	12/12/2011	EPA 624	0.5	0.5	0.5	ND	Effluent
35	Dibromochloromethane	WWTP	12/6/2011	12/12/2011	EPA 624	0.5	0.5	0.5	ND	Effluent
36	1,2-Dibromoethane (EDB)	WWTP	12/6/2011	12/12/2011	EPA 624	0.5	0.5	0.5	ND	Effluent
37	Chlorobenzene	WWTP	12/6/2011	12/12/2011	EPA 624	0.5	0.5	0.5	ND	Effluent
38	1,1,2,2-Tetrachloroethane	WWTP	12/6/2011	12/12/2011	EPA 624	0.5	0.5	0.5	ND	Effluent
39	Ethylbenzene	WWTP	12/6/2011	12/12/2011	EPA 624	0.5	0.5	0.5	ND	Effluent
40	Xylenes, total	WWTP	12/6/2011	12/12/2011	EPA 624	1	1	1	ND	Effluent
41	m,p-Xylene	WWTP	12/6/2011	12/12/2011	EPA 624	0.5	0.5	0.5	ND	Effluent
42	o-Xylene	WWTP	12/6/2011	12/12/2011	EPA 624	0.5	0.5	0.5	ND	Effluent
43	Styrene	WWTP	12/6/2011	12/12/2011	EPA 624	0.5	0.5	0.5	ND	Effluent
44	Bromoform (Tribromomethane)	WWTP	12/6/2011	12/12/2011	EPA 624	0.5	0.5	0.5	ND	Effluent
45	1,3-Dichlorobenzene	WWTP	12/6/2011	12/12/2011	EPA 624	0.5	0.5	0.5	ND	Effluent
46	1,4-Dichlorobenzene	WWTP	12/6/2011	12/12/2011	EPA 624	0.5	0.5	0.5	ND	Effluent
47	1,2-Dichlorobenzene	WWTP	12/6/2011	12/12/2011	EPA 624	0.5	0.5	0.5	ND	Effluent
48	1,2,4-Trichlorobenzene	WWTP	12/6/2011	12/12/2011	EPA 624	0.5	0.5	0.5	ND	Effluent

City of Brawley WWTP- Upstream- Priority Pollutants

No.	Name of Constituent	Monitoring Location	Date Sample Collected	Date Sample Analvzed	USEPA Method	ML (µg/L)	RML (µg/L)	MDL (µg/L)	Analytical Results (µg/L)	Comments
	Semi-Volatile Substances:									
1	N-Nitrosodimethylamine	WWTP	12/6/2011	12/14/2011	EPA 625	2	2	2	ND	Upstream
2	Aniline	WWTP	12/6/2011	12/14/2011	EPA 625	2	2	2	ND	Upstream
3	Bis (2-chloroethyl) ether	WWTP	12/6/2011	12/14/2011	EPA 625	2	2	2	ND	Upstream
4	Phenol	WWTP	12/6/2011	12/14/2011	EPA 625	2	2	2	ND	Upstream
5	2-Chlorophenol	WWTP	12/6/2011	12/14/2011	EPA 625	2	2	2	ND	Upstream
6	1,4-Dichlorobenzene	WWTP	12/6/2011	12/14/2011	EPA 625	2	2	2	ND	Upstream
7	Benzyl alcohol	WWTP	12/6/2011	12/14/2011	EPA 625	2	2	2	ND	Upstream
8	Bis(2-chloroisopropyl) ether	WWTP	12/6/2011	12/14/2011	EPA 625	2	2	2	ND	Upstream
9	2-Methylphenol	WWTP	12/6/2011	12/14/2011	EPA 625	2	2	2	ND	Upstream
10	Nitrobenzene	WWTP	12/6/2011	12/14/2011	EPA 625	2	2	2	ND	Upstream
11	Isophorone	WWTP	12/6/2011	12/14/2011	EPA 625	2	2	2	ND	Upstream
12	2-Nitrophenol	WWTP	12/6/2011	12/14/2011	EPA 625	2	2	2	ND	Upstream
13	2,4-Dimethylphenol	WWTP	12/6/2011	12/14/2011	EPA 625	2	2	2	ND	Upstream
14	Bis(2-chloroethoxy)methane	WWTP	12/6/2011	12/14/2011	EPA 625	2	2	2	ND	Upstream
15	Benzoic acid	WWTP	12/6/2011	12/14/2011	EPA 625	10	10	10	ND	Upstream
16	2,4-Dichlorophenol	WWTP	12/6/2011	12/14/2011	EPA 625	2	2	2	ND	Upstream
17	1,2,4-Trichlorobenzene	WWTP	12/6/2011	12/14/2011	EPA 625	2	2	2	ND	Upstream
18	Naphthalene	WWTP	12/6/2011	12/14/2011	EPA 625	2	2	2	ND	Upstream
19	4-Chloroaniline	WWTP	12/6/2011	12/14/2011	EPA 625	2	2	2	ND	Upstream
20	Hexachlorobutadiene	WWTP	12/6/2011	12/14/2011	EPA 625	2	2	2	ND	Upstream
21	4-Chloro-3-methylphenol	WWTP	12/6/2011	12/14/2011	EPA 625	2	2	2	ND	Upstream
22	2-Methylnaphthalene	WWTP	12/6/2011	12/14/2011	EPA 625	2	2	2	ND	Upstream
23	Hexachlorocyclopentadiene	WWTP	12/6/2011	12/14/2011	EPA 625	2	2	2	ND	Upstream
24	2,4,6-Trichlorophenol	WWTP	12/6/2011	12/14/2011	EPA 625	2	2	2	ND	Upstream
25	2,4,5-Trichlorophenol	WWTP	12/6/2011	12/14/2011	EPA 625	2	2	2	ND	Upstream
26	2-Chloronapthalene	WWTP	12/6/2011	12/14/2011	EPA 625	2	2	2	ND	Upstream
27	2-Nitroaniline	WWTP	12/6/2011	12/14/2011	EPA 625	2	2	2	ND	Upstream
28	Acenapthylene	WWTP	12/6/2011	12/14/2011	EPA 625	2	2	2	ND	Upstream
29	Dimethyl phthalate	WWTP	12/6/2011	12/14/2011	EPA 625	2	2	2	ND	Upstream
30	2,6-Dinitrotoluene	WWTP	12/6/2011	12/14/2011	EPA 625	2	2	2	ND	Upstream
31	Acenapthene	WWTP	12/6/2011	12/14/2011	EPA 625	2	2	2	ND	Upstream
32	3-Nitroaniline	WWTP	12/6/2011	12/14/2011	EPA 625	2	2	2	ND	Upstream
33	2,4-Dinitrophenol	WWTP	12/6/2011	12/14/2011	EPA 625	2	2	2	ND	Upstream
34	2,4-Dinitrotoluene	WWTP	12/6/2011	12/14/2011	EPA 625	2	2	2	ND	Upstream
35	Dibenzofuran	WWTP	12/6/2011	12/14/2011	EPA 625	2	2	2	ND	Upstream
36	4-Nitrophenol	WWTP	12/6/2011	12/14/2011	EPA 625	2	2	2	ND	Upstream
37	Fluorene	WWTP	12/6/2011	12/14/2011	EPA 625	2	2	2	ND	Upstream
38	4-Chlorophenyl phenyl ether	WWTP	12/6/2011	12/14/2011	EPA 625	2	2	2	ND	Upstream
39	Diethyl phalate	WWTP	12/6/2011	12/14/2011	EPA 625	2	2	2	ND	Upstream
40	4-Nitroaniline	WWTP	12/6/2011	12/14/2011	EPA 625	2	2	2	ND	Upstream

Note: Items identified as upstream in the comments column are plant influent samples.

City of Brawley WWTP- Upstream- Priority Pollutants

No.	Name of Constituent	Monitoring Location	Date Sample Collected	Date Sample Analyzed	USEPA Method	ML (ug/L)	RML (ug/L)	MDL (ug/L)	Analytical Results (ug/L)	Comments
	Semi-Volatile Substances, Cont':									
41	Azobenzene	WWTP	12/6/2011	12/14/2011	EPA 625	2	2	2	ND	Upstream
42	4,6-Dinitro-2-methylphenol	WWTP	12/6/2011	12/14/2011	EPA 625	2	2	2	ND	Upstream
43	N-Nitrosodiphenylamine	WWTP	12/6/2011	12/14/2011	EPA 625	2	2	2	ND	Upstream
44	4-Bromophenyl phenly ether	WWTP	12/6/2011	12/14/2011	EPA 625	2	2	2	ND	Upstream
45	Hexachlorobenzene	WWTP	12/6/2011	12/14/2011	EPA 625	2	2	2	ND	Upstream
46	Pentachlorophenol	WWTP	12/6/2011	12/14/2011	EPA 625	2	2	2	ND	Upstream
47	Phenanthrene	WWTP	12/6/2011	12/14/2011	EPA 625	2	2	2	ND	Upstream
48	Anthracene	WWTP	12/6/2011	12/14/2011	EPA 625	2	2	2	ND	Upstream
49	Carbazole	WWTP	12/6/2011	12/14/2011	EPA 625	2	2	2	ND	Upstream
50	**Di-n-butyl phthalate**	**WWTP**	**12/6/2011**	**12/14/2011**	**EPA 625**	**4**	**4**	**4**	**4**	**Upstream**
51	Fluoranthene	WWTP	12/6/2011	12/14/2011	EPA 625	2	2	2	ND	Upstream
52	Benzidine	WWTP	12/6/2011	12/14/2011	EPA 625	2	2	2	ND	Upstream
53	Pyrene	WWTP	12/6/2011	12/14/2011	EPA 625	2	2	2	ND	Upstream
54	Butyl benzyl phthalate	WWTP	12/6/2011	12/14/2011	EPA 625	2	2	2	ND	Upstream
55	3,3-Dichlorobenzidine	WWTP	12/6/2011	12/14/2011	EPA 625	2	2	2	ND	Upstream
56	Benzo(a) anthracene	WWTP	12/6/2011	12/14/2011	EPA 625	2	2	2	ND	Upstream
57	Chrysene	WWTP	12/6/2011	12/14/2011	EPA 625	2	2	2	ND	Upstream
58	Bis(2-ethylhexyl)phthalate	WWTP	12/6/2011	12/14/2011	EPA 625	2	2	2	ND	Upstream
59	Di-n-octyl phthalate	WWTP	12/6/2011	12/14/2011	EPA 625	2	2	2	ND	Upstream
60	Benzo(b)fluoranthene	WWTP	12/6/2011	12/14/2011	EPA 625	2	2	2	ND	Upstream
61	Benzo(k)fluoranthene	WWTP	12/6/2011	12/14/2011	EPA 625	2	2	2	ND	Upstream
62	Benzo(a) pyrene	WWTP	12/6/2011	12/14/2011	EPA 625	2	2	2	ND	Upstream
63	Indeno (1,2,3-cd)pyrene	WWTP	12/6/2011	12/14/2011	EPA 625	2	2	2	ND	Upstream
64	Dibenz(a,h)anthracene	WWTP	12/6/2011	12/14/2011	EPA 625	2	2	2	ND	Upstream
65	Benzo(g,h,i)perylene	WWTP	12/6/2011	12/14/2011	EPA 625	2	2	2	ND	Upstream
	Other Constituents:									
1	**pH**	**WWTP**	12/6/2011	12/6/2011	**SM4500HG**				**7.3**	Upstream
2	**Hardness measured as $CaCO_3$, mg/L**	**WWTP**	12/6/2011	12/6/2011	**SM2340B**	**4**	**4**	**4**	**848.0 mg/L**	Upstream
3	**Salinity measured as Total Dissolved Solids (TDS), mg/L**	**WWTP**	12/6/2011	12/9/2011	**SM2540C**	**1**	**1**	**1**	**3124.0 mg/L**	Upstream
4	**Total Suspended Solids (TSS), mg/L**	**WWTP**	12/6/2011	12/9/2011	**SM2540D**	**1**	**1**	**1**	**119.6 mg/L**	Upstream

Note: Items identified as upstream in the comments column are plant influent samples.

[2] Phenol by colorimetric technique has a factor of 1

City of Brawley WWTP- Upstream- Priority Pollutants

No.	Name of Constituent	Monitoring Location	Date Sample Collected	Date Sample Analvzed	USEPA Method	ML (µg/L)	RML (µg/L)	MDL (µg/L)	Analytical Results (µg/L)	Comments
	Semi-Volatile Substances:									
1	N-Nitrosodimethylamine	WWTP	12/6/2011	12/14/2011	EPA 625	2	2	2	ND	Upstream
2	Aniline	WWTP	12/6/2011	12/14/2011	EPA 625	2	2	2	ND	Upstream
3	Bis (2-chloroethyl) ether	WWTP	12/6/2011	12/14/2011	EPA 625	2	2	2	ND	Upstream
4	Phenol	WWTP	12/6/2011	12/14/2011	EPA 625	2	2	2	ND	Upstream
5	2-Chlorophenol	WWTP	12/6/2011	12/14/2011	EPA 625	2	2	2	ND	Upstream
6	1,4-Dichlorobenzene	WWTP	12/6/2011	12/14/2011	EPA 625	2	2	2	ND	Upstream
7	Benzyl alcohol	WWTP	12/6/2011	12/14/2011	EPA 625	2	2	2	ND	Upstream
8	Bis(2-chloroisopropyl) ether	WWTP	12/6/2011	12/14/2011	EPA 625	2	2	2	ND	Upstream
9	2-Methylphenol	WWTP	12/6/2011	12/14/2011	EPA 625	2	2	2	ND	Upstream
10	Nitrobenzene	WWTP	12/6/2011	12/14/2011	EPA 625	2	2	2	ND	Upstream
11	Isophorone	WWTP	12/6/2011	12/14/2011	EPA 625	2	2	2	ND	Upstream
12	2-Nitrophenol	WWTP	12/6/2011	12/14/2011	EPA 625	2	2	2	ND	Upstream
13	2,4-Dimethylphenol	WWTP	12/6/2011	12/14/2011	EPA 625	2	2	2	ND	Upstream
14	Bis(2-chloroethoxy)methane	WWTP	12/6/2011	12/14/2011	EPA 625	2	2	2	ND	Upstream
15	Benzoic acid	WWTP	12/6/2011	12/14/2011	EPA 625	10	10	10	ND	Upstream
16	2,4-Dichlorophenol	WWTP	12/6/2011	12/14/2011	EPA 625	2	2	2	ND	Upstream
17	1,2,4-Trichlorobenzene	WWTP	12/6/2011	12/14/2011	EPA 625	2	2	2	ND	Upstream
18	Naphthalene	WWTP	12/6/2011	12/14/2011	EPA 625	2	2	2	ND	Upstream
19	4-Chloroaniline	WWTP	12/6/2011	12/14/2011	EPA 625	2	2	2	ND	Upstream
20	Hexachlorobutadiene	WWTP	12/6/2011	12/14/2011	EPA 625	2	2	2	ND	Upstream
21	4-Chloro-3-methylphenol	WWTP	12/6/2011	12/14/2011	EPA 625	2	2	2	ND	Upstream
22	2-Methylnaphthalene	WWTP	12/6/2011	12/14/2011	EPA 625	2	2	2	ND	Upstream
23	Hexachlorocyclopentadiene	WWTP	12/6/2011	12/14/2011	EPA 625	2	2	2	ND	Upstream
24	2,4,6-Trichlorophenol	WWTP	12/6/2011	12/14/2011	EPA 625	2	2	2	ND	Upstream
25	2,4,5-Trichlorophenol	WWTP	12/6/2011	12/14/2011	EPA 625	2	2	2	ND	Upstream
26	2-Chloronapthalene	WWTP	12/6/2011	12/14/2011	EPA 625	2	2	2	ND	Upstream
27	2-Nitroaniline	WWTP	12/6/2011	12/14/2011	EPA 625	2	2	2	ND	Upstream
28	Acenapthylene	WWTP	12/6/2011	12/14/2011	EPA 625	2	2	2	ND	Upstream
29	Dimethyl phthalate	WWTP	12/6/2011	12/14/2011	EPA 625	2	2	2	ND	Upstream
30	2,6-Dinitrotoluene	WWTP	12/6/2011	12/14/2011	EPA 625	2	2	2	ND	Upstream
31	Acenapthene	WWTP	12/6/2011	12/14/2011	EPA 625	2	2	2	ND	Upstream
32	3-Nitroaniline	WWTP	12/6/2011	12/14/2011	EPA 625	2	2	2	ND	Upstream
33	2,4-Dinitrophenol	WWTP	12/6/2011	12/14/2011	EPA 625	2	2	2	ND	Upstream
34	2,4-Dinitrotoluene	WWTP	12/6/2011	12/14/2011	EPA 625	2	2	2	ND	Upstream
35	Dibenzofuran	WWTP	12/6/2011	12/14/2011	EPA 625	2	2	2	ND	Upstream
36	4-Nitrophenol	WWTP	12/6/2011	12/14/2011	EPA 625	2	2	2	ND	Upstream
37	Fluorene	WWTP	12/6/2011	12/14/2011	EPA 625	2	2	2	ND	Upstream
38	4-Chlorophenyl phenyl ether	WWTP	12/6/2011	12/14/2011	EPA 625	2	2	2	ND	Upstream
39	Diethyl phalate	WWTP	12/6/2011	12/14/2011	EPA 625	2	2	2	ND	Upstream
40	4-Nitroaniline	WWTP	12/6/2011	12/14/2011	EPA 625	2	2	2	ND	Upstream

Note: Items identified as upstream in the comments column are plant influent samples.

City of Brawley WWTP- Upstream- Priority Pollutants

Discharger: City of Brawley Wastewater Treatment Facility
NPDES Number:
Temperature: 8 Celcius
Monitoring Period: Sampled 12-7-2011 09:44am
Measured/Metered Flow (MGD):

Name of Laboratory: IVE LABs/ Excel Chem Labs
ELAP Number: IVE LAB-2524/ Excel Chem Lab 2119
Laboratory Contact Name: Jorge Ortega
Laboratory Phone Number: 760-357-8764
Report Number: 4629 -2 Upstream

No.	Name of Constituent	Monitoring Location	Date Sample Collected	Date Sample Analyzed	USEPA Method	ML (µg/L)	RML (µg/L)	MDL (µg/L)	Analytical Results (µg/L)	Comments
	Volatile Substances:									
1	Methyl tert-Butyl Ether	WWTP	12/6/2011	12/12/2011	EPA 624	0.5	0.5	0.5	ND	Upstream
2	TBA	WWTP	12/6/2011	12/12/2011	EPA 624	5	5	5	ND	Upstream
3	Di-isopropyl ether	WWTP	12/6/2011	12/12/2011	EPA 624	0.5	0.5	0.5	ND	Upstream
4	Ethyl tert-Butyl Ether	WWTP	12/6/2011	12/12/2011	EPA 624	0.5	0.5	0.5	ND	Upstream
5	Tert- Amyl Methyl Ether	WWTP	12/6/2011	12/12/2011	EPA 624	0.5	0.5	0.5	ND	Upstream
6	Dichlorodifluoromethane	WWTP	12/6/2011	12/12/2011	EPA 624	0.5	0.5	0.5	ND	Upstream
7	Chloromethane	WWTP	12/6/2011	12/12/2011	EPA 624	0.5	0.5	0.5	ND	Upstream
8	Vinyl Chloride	WWTP	12/6/2011	12/12/2011	EPA 624	0.5	0.5	0.5	ND	Upstream
9	Bromomethane	WWTP	12/6/2011	12/12/2011	EPA 624	0.5	0.5	0.5	ND	Upstream
10	Chloroethane	WWTP	12/6/2011	12/12/2011	EPA 624	0.5	0.5	0.5	ND	Upstream
11	Trichlorofluoromethane	WWTP	12/6/2011	12/12/2011	EPA 624	0.5	0.5	0.5	ND	Upstream
12	Acrolein	WWTP	12/6/2011	12/12/2011	EPA 624	0.5	0.5	0.5	ND	Upstream
13	Trichlorotrifluoroethane	WWTP	12/6/2011	12/12/2011	EPA 624	15	15	15	ND	Upstream
14	1,1-Dichloroethene	WWTP	12/6/2011	12/12/2011	EPA 624	1	1	1	ND	Upstream
15	Acrylonitrile	WWTP	12/6/2011	12/12/2011	EPA 624	0.5	0.5	0.5	ND	Upstream
16	Methylene Chloride	WWTP	12/6/2011	12/12/2011	EPA 624	1.5	1.5	1.5	ND	Upstream
17	trans-1,2-Dichloroethene	WWTP	12/6/2011	12/12/2011	EPA 624	5	5	5	ND	Upstream
18	1,1-Dichloroethane	WWTP	12/6/2011	12/12/2011	EPA 624	0.5	0.5	0.5	ND	Upstream
19	cis-1,2-Dichloroethene	WWTP	12/6/2011	12/12/2011	EPA 624	0.5	0.5	0.5	ND	Upstream
20	Bromochloromethane	WWTP	12/6/2011	12/12/2011	EPA 624	0.5	0.5	0.5	ND	Upstream
21	Chloroform	WWTP	12/6/2011	12/12/2011	EPA 624	0.5	0.5	0.5	ND	Upstream
22	1,1,1-Trichloroethane	WWTP	12/6/2011	12/12/2011	EPA 624	0.5	0.5	0.5	ND	Upstream
23	Carbon Tetrachloride	WWTP	12/6/2011	12/12/2011	EPA 624	0.5	0.5	0.5	ND	Upstream
24	Benzene	WWTP	12/6/2011	12/12/2011	EPA 624	0.5	0.5	0.5	ND	Upstream
25	1,2-dichloropropane	WWTP	12/6/2011	12/12/2011	EPA 624	0.5	0.5	0.5	ND	Upstream
26	Trichloroethene	WWTP	12/6/2011	12/12/2011	EPA 624	0.5	0.5	0.5	ND	Upstream
27	1,2-dichloropropane	WWTP	12/6/2011	12/12/2011	EPA 624	0.5	0.5	0.5	ND	Upstream
28	Dibromomethane	WWTP	12/6/2011	12/12/2011	EPA 624	0.5	0.5	0.5	ND	Upstream
29	Bromodichloromethane	WWTP	12/6/2011	12/12/2011	EPA 624	0.5	0.5	0.5	ND	Upstream
30	cis-1,3-Dichloropropene	WWTP	12/6/2011	12/12/2011	EPA 624	0.5	0.5	0.5	ND	Upstream
31	Toluene	WWTP	12/6/2011	12/12/2011	EPA 624	0.5	0.5	0.5	ND	Upstream
32	trans-1,3-Dichloropropene	WWTP	12/6/2011	12/12/2011	EPA 624	0.5	0.5	0.5	ND	Upstream
33	1,1,2-Trichloroethane	WWTP	12/6/2011	12/12/2011	EPA 624	0.5	0.5	0.5	ND	Upstream

Note: Items identified as upstream in the comments column are plant influent samples.

City of Brawley WWTP- Upstream-
Priority Pollutants

No.	Name of Constituent	Monitoring Location	Date Sample Collected	Date Sample Analyzed	USEPA Method	ML (µg/L)	RML (µg/L)	MDL (µg/L)	Analytical Results (µg/L)	Comments
	Volatile Substances:									
34	Tetrachloroethene	WWTP	12/6/2011	12/12/2011	EPA 624	0.5	0.5	0.5	ND	Upstream
35	Dibromochloromethane	WWTP	12/6/2011	12/12/2011	EPA 624	0.5	0.5	0.5	ND	Upstream
36	1,2-Dibromoethane (EDB)	WWTP	12/6/2011	12/12/2011	EPA 624	0.5	0.5	0.5	ND	Upstream
37	Chlorobenzene	WWTP	12/6/2011	12/12/2011	EPA 624	0.5	0.5	0.5	ND	Upstream
38	1,1,2,2-Tetrachloroethane	WWTP	12/6/2011	12/12/2011	EPA 624	0.5	0.5	0.5	ND	Upstream
39	Ethylbenzene	WWTP	12/6/2011	12/12/2011	EPA 624	0.5	0.5	0.5	ND	Upstream
40	Xylenes, total	WWTP	12/6/2011	12/12/2011	EPA 624	1	1	1	ND	Upstream
41	m,p-Xylene	WWTP	12/6/2011	12/12/2011	EPA 624	0.5	0.5	0.5	ND	Upstream
42	o-Xylene	WWTP	12/6/2011	12/12/2011	EPA 624	0.5	0.5	0.5	ND	Upstream
43	Styrene	WWTP	12/6/2011	12/12/2011	EPA 624	0.5	0.5	0.5	ND	Upstream
44	Bromoform (Tribromomethane)	WWTP	12/6/2011	12/12/2011	EPA 624	0.5	0.5	0.5	ND	Upstream
45	1,3-Dichlorobenzene	WWTP	12/6/2011	12/12/2011	EPA 624	0.5	0.5	0.5	ND	Upstream
46	1,4-Dichlorobenzene	WWTP	12/6/2011	12/12/2011	EPA 624	0.5	0.5	0.5	ND	Upstream
47	1,2-Dichlorobenzene	WWTP	12/6/2011	12/12/2011	EPA 624	0.5	0.5	0.5	ND	Upstream
48	1,2,4-Trichlorobenzene	WWTP	12/6/2011	12/12/2011	EPA 624	0.5	0.5	0.5	ND	Upstream

Note: Items identified as upstream in the comments column are plant influent samples.

City of Brawley WWTP- Upstream- Priority Pollutants

No.	Name of Constituent	Monitoring Location	Date Sample Collected	Date Sample Analyzed	USEPA Method	ML (µg/L)	RML (µg/L)	MDL (µg/L)	Analytical Results (µg/L)	Comments
	Inorganics:									
1	Antimony	WWTP	12/6/2011	12/12/2011	EPA 200.7	10	10	10	ND	Upstream
2	Arsenic	WWTP	12/6/2011	12/12/2011	EPA 200.7	10	10	10	ND	Upstream
3	Beryllium	WWTP	12/6/2011	12/12/2011	EPA 200.7	5	5	5	ND	Upstream
4	Cadmium	WWTP	12/6/2011	12/12/2011	EPA 200.7	5	5	5	ND	Upstream
5	Chromium III	WWTP	12/6/2011	12/12/2011	EPA 200.7	5	5	5	ND	Upstream
6	Copper	WWTP	12/6/2011	12/12/2011	EPA 200.7	10	10	10	ND	Upstream
7	Lead	WWTP	12/6/2011	12/12/2011	EPA 200.7	7	7	7	ND	Upstream
8	Mercury	WWTP	12/6/2011	12/13/2011	EPA 7470A	0.2	0.2	0.2	ND	Upstream
9	Nickel	WWTP	12/6/2011	12/12/2011	EPA 200.7	5	5	5	ND	Upstream
10	Selenium	WWTP	12/6/2011	12/12/2011	EPA 200.7	20	20	20	ND	Upstream
11	Silver	WWTP	12/6/2011	12/12/2011	EPA 200.7	10	10	10	ND	Upstream
12	Thallium	WWTP	12/6/2011	12/12/2011	EPA 200.7	20	20	20	ND	Upstream
13	Zinc	WWTP	12/6/2011	12/12/2011	EPA 200.7	10	10	10	ND	Upstream
14	Cyanide	WWTP	12/6/2011	12/14/2011	SM 4500CN E	5	5	5	ND	Upstream
15	Chromium VI	WWTP	12/6/2011	12/8/2011	EPA 7199	1	1	1	ND	Upstream

Note: Items identified as upstream in the comments column are plant influent samples.

City of Brawley WWTP- Upstream- Priority Pollutants

	Pesticides - PCBs:									
1	Heptachlor	WWTP	12/6/2011	12/14/2011	608	0.1	1	1	ND	Effluent
2	alpha-BHC	WWTP	12/6/2011	12/14/2011	608	0.1	1	1	ND	Effluent
3	beta-BHC	WWTP	12/6/2011	12/14/2011	608	0.1	1	1	ND	Effluent
4	gamma-BHC (Lindane)	WWTP	12/6/2011	12/14/2011	608	0.1	1	1	ND	Effluent
5	delta-BHC	WWTP	12/6/2011	12/14/2011	608	0.1	1	1	ND	Effluent
6	Aldrin	WWTP	12/6/2011	12/14/2011	608	0.1	1	1	ND	Effluent
7	Heptachloro epoxide	WWTP	12/6/2011	12/14/2011	608	0.1	1	1	ND	Effluent
8	gamma-Chlordane	WWTP	12/6/2011	12/14/2011	608	0.1	1	1	ND	Effluent
9	Endosulfan I	WWTP	12/6/2011	12/14/2011	608	0.1	1	1	ND	Effluent
10	alpha-Chlordane	WWTP	12/6/2011	12/14/2011	608	0.1	1	1	ND	Effluent
11	4,4-DDE	WWTP	12/6/2011	12/14/2011	608	0.1	1	1	ND	Effluent
12	Dieldrin	WWTP	12/6/2011	12/14/2011	608	0.1	1	1	ND	Effluent
13	Endrin	WWTP	12/6/2011	12/14/2011	608	0.1	1	1	ND	Effluent
14	Endosulfan II	WWTP	12/6/2011	12/14/2011	608	0.1	1	1	ND	Effluent
15	4,4-DDD	WWTP	12/6/2011	12/14/2011	608	0.1	1	1	ND	Effluent
16	Endrin Ketone	WWTP	12/6/2011	12/14/2011	608	0.1	1	1	ND	Effluent
17	Methoxychlor	WWTP	12/6/2011	12/14/2011	608	0.1	1	1	ND	Effluent
18	Arochlor 1016	WWTP	12/6/2011	12/14/2011	608	10	10	10	ND	Effluent
19	Arochlor 1221	WWTP	12/6/2011	12/14/2011	608	10	10	10	ND	Effluent
20	Arochlor 1232	WWTP	12/6/2011	12/14/2011	608	10	10	10	ND	Effluent
21	Arochlor 1242	WWTP	12/6/2011	12/14/2011	608	10	10	10	ND	Effluent
22	Arochlor 1248	WWTP	12/6/2011	12/14/2011	608	10	10	10	ND	Effluent
23	Arochlor 1254	WWTP	12/6/2011	12/14/2011	608	10	10	10	ND	Effluent
24	Arochlor 1260	WWTP	12/6/2011	12/14/2011	608	10	10	10	ND	Effluent

Note: Items identified as upstream in the comments column are plant influent samples.

Appendix III

Sample Analyses Data

City of Brawley - Local Limits Study

Day 1 Sample Analysis **(8/2/2012)**

Parameters	Sampling Locations													
	Influent INF-001 (mg/L)		Final Effluent EFF-001 (mg/L)		Biosolids SLD-001 (mg/Kg)		Sec. Clarifier Sludge, SLD-002 (mg/Kg)		Commercial CSC-001 (mg/L)		Residential CSR-001 (mg/L)		Industrial CSI-001 (mg/L)	
Arsenic	ND		0.0011						ND		ND		0.0014	J
Cadmium	ND		0.00006	J					ND		0.0011	J	ND	
Chromium	ND		0.0007						ND		ND		ND	
Copper	0.06		0.01						0.15		0.093		0.011	
Cyanide (Total)	ND		ND						ND		ND		ND	
Cyanide (Free)	ND		ND						ND		ND		ND	
Lead	0.0042	J	0.0002	J					0.86		0.0011	J	0.00034	J
Mercury	ND		ND						ND		ND		ND	
Molybdenum	0.018		0.015						0.01		0.0055	J	0.031	
Nickel	0.008	J	0.0027		**No Sludge**		**No Sludge**		0.01	J	0.0064	J	0.008	J
Selenium	0.0019	J	0.0012		**Data**		**Data**		ND		0.0019	J	0.0015	J
Silver	0.00038	J	ND		**on Day 1**		**on Day 1**		0.0073	J	0.0003	J	ND	
Zinc	0.091		0.024						0.15		0.13		0.018	
BOD_5	130		ND						360		260		54	
COD	490		42						550		640		190	
TOC	39		9.3						140		59		27	
TSS	340		ND						180		210		85	
Ammonia-N	60		ND						19		25		99	
TKN	76		0.25						34		52		100	
Nitrite-N	ND		0.02						ND		ND		ND	
Nitrate-N	ND		35						ND		0.03	J	ND	
Oil and Grease (Total)	4.1	J	1.8						15		15		ND	
Oil and Grease (Polar)	2.6	J	ND						13		13		ND	
Bis(2-ethylhexyl)phthalate	0.26		0.09						0.096		0.064		0.11	

ND: Not Detected or above the Maximum Detection Limit
J: Estimated (less than the RL, but greater than or equal to the lab MDL)
EFF sample: 48 hrs delayed due to WWTP HRT
Industrial sample (CSI-001): from National Beef discharge

Day 2 Sample Analysis (8/3/2012)

Parameters	Sampling Locations													
	Influent INF-001 (mg/L)		Final Effluent EFF-001 (mg/L)		Biosolids SLD-001 (mg/Kg)		Sec. Clarifier Sludge, SLD-002 (mg/Kg)		Commercial CSC-001 (mg/L)		Residential CSR-001 (mg/L)		Industrial CSI-001 (mg/L)	
Arsenic	ND		0.0011						ND		ND		ND	
Cadmium	ND		0.00006	J					0.00067	J	ND		ND	
Chromium	0.0038	J	0.0006						0.0052	J	ND		ND	
Copper	0.047		0.01						0.2		0.077		0.019	
Cyanide (Total)	ND		ND						ND		ND		ND	
Cyanide (Free)	ND		ND						ND		ND		ND	
Lead	0.0039	J	0.0001	J					0.21		0.0007	J	0.0012	J
Mercury	ND		ND						ND		ND		ND	
Molybdenum	0.019		0.017						0.0075	J	0.0051	J	0.03	
Nickel	0.0078	J	0.0028		**No Sludge**		**No Sludge**		0.0057	J	0.0026	J	0.0071	J
Selenium	ND		0.0011		**Data**		**Data**		ND		ND		ND	
Silver	ND		ND		**on Day 2**		**on Day 2**		0.0011		ND		ND	
Zinc	0.2		0.024						0.22		0.11		0.082	
BOD_5	200		3						540		260		260	
COD	530		39						700		500		330	
TOC	48		9.4						80		84		27	
TSS	410		4						980		98		790	
Ammonia-N	71		ND						8.8		23		96	
TKN	87		ND						20		34		100	
Nitrite-N	ND		ND						ND		ND		0.11	
Nitrate-N	ND		38						ND		ND		ND	
Oil and Grease (Total)	15		2						25		61		14	
Oil and Grease (Polar)	12		ND						21		54		9.5	
Bis(2-ethylhexyl)phthalate	0.13		0.021						0.059		0.075		0.037	

ND: Not Detected or above the Maximum Detection Limit
J: Estimated (less than the RL, but greater than or equal to the lab MDL)
EFF sample: 48 hrs delayed due to WWTP HRT
Industrial sample (CSI-001): from National Beef discharge

City of Brawley - Local Limits Study

Day 3 Sample Analysis (8/4/2012)

Parameters	Sampling Locations													
	Influent INF-001 (mg/L)		Final Effluent EFF-001 (mg/L)		Biosolids SLD-001 (mg/Kg)		Sec. Clarifier Sludge, SLD-002 (mg/Kg)		Commercial CSC-001 (mg/L)		Residential CSR-001 (mg/L)		Industrial CSI-001 (mg/L)	
Arsenic	ND		0.0011						ND		ND		0.0031	J
Cadmium	ND		0.00007	J					0.00088	J	ND		0.00065	J
Chromium	0.0039	J	0.0006						0.0066	J	ND		0.0067	J
Copper	0.056		0.01						0.17		0.077		0.054	
Cyanide (Total)	ND		ND						ND		ND		ND	
Cyanide (Free)	ND		ND						ND		ND		ND	
Lead	0.0033	J	0.0001	J					0.15		0.0012	J	0.0055	J
Mercury	ND		ND						ND		ND		ND	
Molybdenum	0.019		0.018						0.0067	J	0.0051	J	0.033	
Nickel	0.0084	J	0.0029		**No Sludge**		**No Sludge**		0.0067	J	0.0083	J	0.014	J
Selenium	ND		0.0012		**Data**		**Data**		ND		ND		0.0034	J
Silver	ND		ND		**on Day 3**		**on Day 3**		ND		ND		ND	
Zinc	0.21		0.025						0.32		0.15		0.41	
BOD_5	140		ND						990		180		260	
COD	680		39						1600		510		990	
TOC	63		9.3						270		65		53	
TSS	390		7						1500		160		700	
Ammonia-N	69		0.076	J					22		26		110	
TKN	100		ND						81		43		170	
Nitrite-N	ND		0.07						ND		ND		ND	
Nitrate-N	ND		38	J					ND		ND		ND	
Oil and Grease (Total)	10		4.4						89		22		15	
Oil and Grease (Polar)	8.2		ND						84		19		13	
Bis(2-ethylhexyl)phthalate	0.18		0.026						0.14		0.087		0.046	

ND: Not Detected or above the Maximum Detection Limit
J: Estimated (less than the RL, but greater than or equal to the lab MDL)
EFF sample: 48 hrs delayed due to WWTP HRT
Industrial sample (CSI-001): from National Beef discharge

Day 4 Sample Analysis **(8/5/2012)**

Parameters	Influent INF-001 (mg/L)		Final Effluent EFF-001 (mg/L)		Biosolids SLD-001 (mg/Kg)		Sec. Clarifier Sludge, SLD-002 (mg/Kg)		Commercial CSC-001 (mg/L)		Residential CSR-001 (mg/L)		Industrial CSI-001 (mg/L)	
Arsenic	ND		0.0011						ND		ND		0.0026	J
Cadmium	ND		0.0001	J					0.00064	J	0.00068	J	0.00086	J
Chromium	0.0065	J	0.0004	J					0.0065	J	ND		0.0071	J
Copper	0.082		0.012						0.17		0.1		0.07	
Cyanide (Total)	ND		ND						ND		ND		ND	
Cyanide (Free)	ND		ND						ND		ND		ND	
Lead	0.0052	J	0.0001	J					0.2		0.0012	J	0.0068	J
Mercury	ND		ND						ND		ND		ND	
Molybdenum	0.025		0.02						0.0059	J	0.0057	J	0.042	
Nickel	0.0099	J	0.0027		No Sludge		No Sludge		0.0068	J	0.0033	J	0.014	J
Selenium	ND		0.0011		Data		Data		ND		ND		0.0032	J
Silver	ND		0.00016	J	on Day 4		on Day 4		ND		ND		ND	
Zinc	0.39		0.024						0.2		0.17		0.57	
BOD_5	280		ND						210		250		300	
COD	1100		35						750		610		1200	
TOC	68		8.9						81		67		43	
TSS	540		ND						250		160		880	
Ammonia-N	63		0.22						8.1		27		100	
TKN	110		ND						29		44		260	
Nitrite-N	ND		0.1						ND		ND		0.21	
Nitrate-N	ND		36						ND		ND		ND	
Oil and Grease (Total)	9.4		2.8						4.6		38		15	
Oil and Grease (Polar)	2.4		ND						ND		34		10	
Bis(2-ethylhexyl)phthalate	0.19		0.046						0.03		0.074		0.038	

ND: Not Detected or above the Maximum Detection Limit
J: Estimated (less than the RL, but greater than or equal to the lab MDL)
EFF sample: 48 hrs delayed due to WWTP HRT
Industrial sample (CSI-001): from National Beef discharge

City of Brawley - Local Limits Study

Day 5 Sample Analysis (8/6/2012)

Parameters	Sampling Locations													
	Influent INF-001 (mg/L)		Final Effluent EFF-001 (mg/L)		Biosolids SLD-001 (mg/Kg)		Sec. Clarifier Sludge, SLD-002 (mg/L)		Commercial CSC-001 (mg/L)		Residential CSR-001 (mg/L)		Industrial CSI-001 (mg/L)	
Arsenic	ND		0.0011		5.1		0.012		ND		ND		0.0025	J
Cadmium	ND		0.00006	J	0.99	J	0.0046		0.00059	J	0.00073	J	0.0011	J
Chromium	ND		0.0005		2.8		0.058		0.0044	J	ND		ND	
Copper	0.051		0.014		510		1.9		0.28		0.099		0.019	
Cyanide (Total)	ND		ND		1.7		0.015		ND		ND		ND	
Cyanide (Free)	ND		ND		1.3		0.015		ND		ND		ND	
Lead	0.0028	J	0.0002	J	27		0.12		0.22		0.0011	J	0.0013	J
Mercury	ND		ND		0.17	J	0.0021		0.0002		ND		ND	
Molybdenum	0.017		0.02		21		0.061		0.011		0.0062	J	0.041	
Nickel	0.0053	J	0.0029		24		0.084		0.0074	J	0.0034	J	0.0065	J
Selenium	ND		0.0013		11		0.028		ND		ND		ND	
Silver	ND		ND		1.4		0.006	J	0.0018	J	ND		ND	
Zinc	0.13		0.026		610		3.1		0.23		0.14		0.11	
BOD_5	130		6						620		280		74	
COD	470		42						1300		540		310	
TOC	44		8.4						130		89		26	
TSS	190		9		83	%	8300		2300		160		170	
Ammonia-N	47		0.2		3400		0.41		20		24		84	
TKN	76		0.14		48000		390		51		39		200	
Nitrite-N	ND		0.04	J	ND		2.6		ND		ND		ND	
Nitrate-N	ND		34		7.3		23		ND		ND		0.88	
Oil and Grease (Total)	11		3	J	ND	%	12		230		22		4.3	
Oil and Grease (Polar)	8		ND		ND	%	4	J	220		19		2.7	
Bis(2-ethylhexyl)phthalate	0.18		0.024		ND		0.023		0.13		0.058		0.036	

ND: Not Detected or above the Maximum Detection Limit

J: Estimated (less than the RL, but greater than or equal to the lab MDL)

EFF sample: 48 hrs delayed due to WWTP HRT

Industrial sample (CSI-001): from National Beef discharge

Day 6 Sample Analysis (8/7/2012)

Parameters	Influent INF-001 (mg/L)		Final Effluent EFF-001 (mg/L)		Biosolids SLD-001 (mg/Kg)		Sec. Clarifier Sludge, SLD-002 (mg/Kg)		Commercial CSC-001 (mg/L)		Residential CSR-001 (mg/L)		Industrial CSI-001 (mg/L)	
Arsenic	ND		0.001		4.2	J	0.021		ND		ND		ND	
Cadmium	ND		0.00005	J	1.2		0.0058		0.0014	J	0.0014	J	ND	
Chromium	ND		0.0005		28		0.084		0.014	J	ND		ND	
Copper	0.089		0.013		540		2.5		0.66		0.098		0.031	
Cyanide (Total)	ND		ND		1.5		ND		ND		ND		ND	J
Cyanide (Free)	ND		ND		1.6		ND		ND		ND		ND	
Lead	0.0039	J	0.0002	J	29		0.15		0.45		0.0011	J	0.0025	J
Mercury	ND		ND		0.16	J	0.0036		0.00035		ND		ND	
Molybdenum	0.021		0.02		22		0.11		0.02		0.0061	J	0.032	
Nickel	0.0071	J	0.003		22		0.1		0.014	J	0.0033	J	0.0092	J
Selenium	ND		0.0012		11		0.038		ND		ND		ND	
Silver	ND		ND		2.8		0.0098		0.0037	J	ND		ND	
Zinc	0.15		0.025		610		3.5		0.57		0.17		0.22	
BOD_5	170		ND						1500		250		110	
COD	530		31						1500		680		350	
TOC	46		8.5						180		73		26	
TSS	420		6		85	%	6700		2200		220		280	
Ammonia-N	42		0.067	J	2900		0.52		25		30		66	
TKN	56		ND		49000		300		50		30		93	
Nitrite-N	ND		0.08	J	ND		0.94		ND		ND		0.02	J
Nitrate-N	ND		33		ND		25		ND		ND		ND	
Oil and Grease (Total)	9		3.2		0.19	%	3.6		23		16		4.6	
Oil and Grease (Polar)	5.4		ND		0.16	%	ND		20		13		ND	
Bis(2-ethylhexyl)phthalate	0.18		0.0033		0.69	J	0.02		0.094		0.072		0.034	

ND: Not Detected or above the Maximum Detection Limit

J: Estimated (less than the RL, but greater than or equal to the lab MDL)

EFF sample: 48 hrs delayed due to WWTP HRT

Industrial sample (CSI-001): from National Beef discharge

Day 7 Sample Analysis (8/8/2012)

Parameters	Sampling Locations													
	Influent INF-001 (mg/L)		Final Effluent EFF-001 (mg/L)		Biosolids SLD-001 (mg/Kg)		Sec. Clarifier Sludge, SLD-002 (mg/Kg)		Commercial CSC-001 (mg/L)		Residential CSR-001 (mg/L)		Industrial CSI-001 (mg/L)	
Arsenic	ND		0.001						ND		ND		ND	
Cadmium	ND		0.00005	J					0.00082	J	ND		ND	
Chromium	ND		ND						0.0096	J	0.0042	J	ND	
Copper	0.067		0.011						0.39		0.086		0.069	
Cyanide (Total)	ND		ND						ND		ND		ND	
Cyanide (Free)	ND		ND						ND		ND		ND	
Lead	0.0038	J	0.0001	J					0.27		0.00087	J	0.0061	J
Mercury	ND		ND						0.0003		ND		ND	
Molybdenum	0.02		0.018						0.013		0.0058	J	0.048	
Nickel	0.0084		0.0024		**No Sludge**		**No Sludge**		0.0087	J	0.003	J	0.017	J
Selenium	ND		0.001		**Data**		**Data**		ND		ND		0.0029	J
Silver	ND		ND		**on Day 7**		**on Day 7**		0.0014	J	0.0008	J	ND	
Zinc	0.24		0.024						0.32		0.11		0.49	
BOD_5	86		ND	*					360		170		56	
COD	680		37						1100		510		710	
TOC	54		8.7						150		77		31	
TSS	490		5						540		130		210	
Ammonia-N	50		ND						26		33		75	
TKN	77		ND						44		55		130	
Nitrite-N	ND		0.08	J					ND		ND		2	
Nitrate-N	ND		40						ND		ND		ND	
Oil and Grease (Total)	12		6.2						26		16		2.8	J
Oil and Grease (Polar)	ND		3.4	J					21		7.6		ND	
Bis(2-ethylhexyl)phthalate	0.14		0.0027	J					0.075		0.064		0.05	

ND: Not Detected or above the Maximum Detection Limit
J: Estimated (less than the RL, but greater than or equal to the lab MDL)
EFF sample: 48 hrs delayed due to WWTP HRT
Industrial sample (CSI-001): from National Beef discharge
* Failed to analyze BOD_5. Estimated as ND

Appendix IV

Flow and Loading Data

City of Brawley - Local Limits Study

Brawley WWTP

Date	WWTP Flow (mgd)
January-10	4.5
February-10	4.5
March-10	4.5
April-10	3.8
May-10	3.8
June-10	
July-10	3.6
August-10	3.6
September-10	3.6
October-10	3.8
November-10	3.6
December-10	3.8
January-11	3.7
February-11	3.9
March-11	3.5
April-11	3.6
May-11	3.5
June-11	3.6
July-11	3.4
August-11	3.6
September-11	3.8
October-11	3.7
November-11	3.9
December-11	4.1
Average	3.80
Max	4.54
Average 2010	3.91
Average 2011	3.69

Controlled Flow (Industrial Wastewater Flow)

Dischargers	Wastewater Flow (mgd)
National Beef	1.614
Pioneers Memorial Hospital	0.095
Total	1.71

WWTP Flow	3.80	mgd
Controlled Flow	1.71	mgd
Uncontrolled Flow	2.09	mgd

Wastewater Flow from Residential Dischargers
1.85 mgd

Wastewater Flow from Commercial dischargers
0.24 mgd

Portion of Wastewater

88.7% Residential
11.3% Commercial

Reference: 2009 Wastewater Rate Study - Brawley

City of Brawley - Local Limits Study

National Beef

Date	Water Use (gallon/month)	Water Use (gpd)	Water Use (mgd)	Wastewater Flow (mgd)
Jul-11	52910000	1763667	1.76	
Aug-11	54360000	1812000	1.81	
Sep-11	52840000	1761333	1.76	
Oct-11	52950000	1765000	1.77	
Nov-11	60180000	2006000	2.01	
Dec-11	62770000	2092333	2.09	
Jan-12	51150000	1705000	1.71	1.68
Feb-12	55780000	1859333	1.86	1.55
Mar-12	51460000	1715333	1.72	1.52
Apr-12	68230000	2274333	2.27	1.66
May-12	58720000	1957333	1.96	1.63
Jun-12	58380000	1946000	1.95	1.63
Jul-12	63550000	2118333	2.12	1.63
Aug-12	57760000	1925333	1.93	
Average		**1907238**	**1.91**	**1.61**

City of Brawley - Local Limits Study

Loading Summary

Parameters	Average Influent Concentration (mg/L)	WWTP Influent Loading (lbs/day)	Residential Loading (lbs/day)	Commercial Loading (lbs/day)	Uncontrolled Loading (lbs/day)	Controlled Loading (lbs/day)
Arsenic	-	-	-	-	-	0.032
Cadmium	-	-	0.015	0.0016	0.017	0.012
Chromium	0.0047	0.15	0.065	0.015	0.080	0.093
Copper	0.065	2.0	1.4	0.6	1.956	0.53
Cyanide (Total)	-	-	-	-	-	-
Cyanide (Free)	-	-	-	-	-	-
Lead	0.0039	0.12	0.016	0.7	0.68	0.046
Mercury	-	-	-	0.0006	0.0006	-
Molybdenum	0.020	0.63	0.087	0.021	0.11	0.49
Nickel	0.0078	0.25	0.067	0.017	0.08	0.15
Selenium	-	-	-	-	-	0.037
Silver	-	-	0.008	0.006	0.015	-
Zinc	0.20	6.4	2.2	0.6	2.7	3.7
BOD_5	162	5,136	3,637	822	4,459	2143
COD	640	20,256	8,795	2,106	10,901	7847
TOC	52	1,637	1,133	290	1,422	448
TSS	397	12,570	2,508	958	3,467	5991
Ammonia-N	57	1,818	414	36	451	1212
TKN	83	2,632	655	87	741	2025
Nitrite-N	-	-	-	-	-	7.9
Nitrate-N	-	-	-	-	-	12
Oil and Grease (Total)	10	319	332	60	392	125
Oil and Grease (Polar)	6.4	204	272	63	334	118
Bis(2-ethylhexyl)phthalate	0.18	5.7	1.1	0.18	1.3	0.7

Appendix V

Removal Efficiency

Removal Efficiency Calculation

Mean Removal Efficiency (MRE)

$$R_{WWTP} = \frac{\overline{I_r} - \overline{E_{WWTP,t}}}{\overline{I_r}}$$

$$R_{SEC} = \frac{\overline{I_r} - \overline{E_{SEC,y}}}{\overline{I_r}}$$

Where,	R_{WWTP}	=	Plant removal efficiency from headworks to plant effluent, as decimal
	R_{PRIM}	=	Removal efficiency from headworks to primary treatment effluent, as decimal
	R_{SEC}	=	Removal efficiency from headworks to secondary treatment effluent, as decimal
	I_r	=	WWTP influent pollutant concentration at headworks, mg/L
	$E_{WWTP,\ t}$	=	WWTP effluent pollutant concentration, mg/L
	$E_{PRIM,\ x}$	=	Primary treatment effluent pollutant concentration, mg/L
	$E_{SEC,\ y}$	=	Secondary treatment effluent pollutant concentration, mg/L
	t	=	Plant effluent samples, numbered 1 to t
	r	=	Plant effluent samples, numbered 1 to r
	x	=	Primary treatment effluent samples, numbered 1 to x
	y	=	Secondary treatment effluent samples, numbered 1 to y

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Pollutant Concentation and MRE (WWTP Influent and Effluent)

Sample Day	Arsenic Influent (mg/L)	Arsenic Final Eff (mg/L)	Cadmium Influent (mg/L)	Cadmium Final Eff (mg/L)	Chromium Influent (mg/L)	Chromium Final Eff (mg/L)
1	ND	0.0011	ND	0.00006	ND	0.0007
2	ND	0.0011	ND	0.00006	0.0038	0.0006
3	ND	0.0011	ND	0.00007	0.0039	0.0006
4	ND	0.0011	ND	0.00010	0.0065	0.0004
5	ND	0.0011	ND	0.00006	ND	0.0005
6	ND	0.001	ND	0.00005	ND	0.0005
7	ND	0.001	ND	0.00005	ND	ND
Average	-	0.00107	-	0.00006	0.00473	0.00055

	Arsenic	Cadmium	Chromium
Removal Efficiency	45% [1]	67% [1]	88%

Sample Day	Copper Influent (mg/L)	Copper Final Eff (mg/L)	Cyanide (Total) Influent (mg/L)	Cyanide (Total) Final Eff (mg/L)	Cyanide (Free) Influent (mg/L)	Cyanide (Free) Final Eff (mg/L)
1	0.06	0.01	ND	ND	ND	ND
2	0.047	0.01	ND	ND	ND	ND
3	0.056	0.01	ND	ND	ND	ND
4	0.082	0.012	ND	ND	ND	ND
5	0.051	0.014	ND	ND	ND	ND
6	0.089	0.013	ND	ND	ND	ND
7	0.067	0.011	ND	ND	ND	ND
Average	0.06457	0.01143	-	-	-	-

	Copper	Cyanide (Total)	Cyanide (Free)
Removal Efficiency	82%	69% [1]	69% [2]

Sample Day	Lead Influent (mg/L)	Lead Final Eff (mg/L)	Mercury Influent (mg/L)	Mercury Final Eff (mg/L)	Molybdenum Influent (mg/L)	Molybdenum Final Eff (mg/L)
1	0.0042	0.0002	ND	ND	0.018	0.015
2	0.0039	0.0001	ND	ND	0.019	0.017
3	0.0033	0.0001	ND	ND	0.019	0.018
4	0.0052	0.0001	ND	ND	0.025	0.02
5	0.0028	0.0002	ND	ND	0.017	0.02
6	0.0039	0.0002	ND	ND	0.021	0.02
7	0.0038	0.0001	ND	ND	0.0084	0.018
Average	0.00387	0.00014	-	-	0.0182	0.0183

	Lead	Mercury	Molybdenum
Removal Efficiency	61% [1]	60% [1]	63% [1]

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Sample Day	Nickel Influent (mg/L)	Nickel Final Eff (mg/L)
1	0.008	0.0027
2	0.0078	0.0028
3	0.0084	0.0029
4	0.0099	0.0027
5	0.0053	0.0029
6	0.0071	0.003
7	ND	0.0024
Average	0.0078	0.0028

Removal Efficiency 64%

Selenium Influent (mg/L)	Selenium Final Eff (mg/L)
0.0019	0.0012
ND	0.0011
ND	0.0012
ND	0.0011
ND	0.0013
ND	0.0012
ND	0.001
0.0019	0.0012

39%

Silver Influent (mg/L)	Silver Final Eff (mg/L)
0.00038	ND
ND	ND
ND	ND
ND	0.00016
ND	ND
ND	ND
ND	ND
0.00038	0.00016

58%

Sample Day	Zinc Influent (mg/L)	Zinc Final Eff (mg/L)
1	0.091	0.024
2	0.2	0.024
3	0.21	0.025
4	0.39	0.024
5	0.13	0.026
6	0.15	0.025
7	0.24	0.024
Average	0.20	0.025

Removal Efficiency 88%

BOD_5 Influent (mg/L)	BOD_5 Final Eff (mg/L)
130	ND
200	3
140	ND
280	ND
130	6
170	ND
86	ND
162	4.5

97%

COD Influent (mg/L)	COD Final Eff (mg/L)
490	42
530	39
680	39
1100	35
470	42
530	31
680	37
640	38

94% [3]

Sample Day	TOC Influent (mg/L)	TOC Final Eff (mg/L)
1	39	9.3
2	48	9.4
3	63	9.3
4	68	8.9
5	44	8.4
6	46	8.5
7	54	8.7
Average	52	9

Removal Efficiency 83% [3]

TSS Influent (mg/L)	TSS Final Eff (mg/L)
340	ND
410	4
390	7
540	ND
190	9
420	6
490	5
397	6

98%

Ammonia-N Influent (mg/L)	Ammonia-N Final Eff (mg/L)
60	ND
71	ND
69	0.076
63	0.22
47	0.2
42	0.067
50	ND
57	0.14

99.8%

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	TKN		Nitrite-N		Nitrate-N	
Sample Day	Influent (mg/L)	Final Eff (mg/L)	Influent (mg/L)	Final Eff (mg/L)	Influent (mg/L)	Final Eff (mg/L)
1	76	0.25	ND	0.02	ND	35
2	87	ND	ND	ND	ND	38
3	100	ND	ND	0.07	ND	38
4	110	ND	ND	0.1	ND	36
5	76	0.14	ND	0.04	ND	34
6	56	ND	ND	0.08	ND	33
7	77	ND	ND	0.08	ND	40
Average	83	0.20	-	0.1	-	36.3

Removal Efficiency: TKN 100% [3]; Nitrite-N - [3]; Nitrate-N - [3]

	Oil & Grease (Total)		Oil & Grease (Polar)		Bisphthalate	
Sample Day	Influent (mg/L)	Final Eff (mg/L)	Influent (mg/L)	Final Eff (mg/L)	Influent (mg/L)	Final Eff (mg/L)
1	4.1	1.8	2.6	ND	0.26	0.09
2	15	2	12	ND	0.13	0.021
3	10	4.4	8.2	ND	0.18	0.026
4	9.4	2.8	2.4	ND	0.19	0.046
5	11	3	8	ND	0.18	0.024
6	9	3.2	5.4	ND	0.18	0.0033
7	12	6.2	ND	3.4	0.14	0.0027
Average	10.1	3.3	6.4	3.4	0.16	0.003

Removal Efficiency: Oil & Grease (Total) 67%; Oil & Grease (Polar) 47% [3]; Bisphthalate 98% [4]

[1] Cited from 2004 USEPA Local Limits Guidance

[2] Assumed that free cyanide and total cyanide have same removal efficiency

[3] Not Required for Local Limit Calculation

[4] Not used data pair from Day 1 to Day 5 due to high effluent bis(2-ethylhexy)phthalate concentration compared with last two year max effluent value (i.e. 0.0074 mg/L). Note that bis(2-ethylhexy)phthalate had detected one time for last two years. See Appendix II, Brawley NPDES Monitoring Data - Effluent

Appendix VI

Allowable Headworks Loading Calculations

AHL based on WQBELs (Water Quality Standard)

Annual Average Flow 3.80 mgd (from 2010 to 2011)

$$AHL_{WQS} = \frac{(8.34)\ (C_{WQS})(Q_{WWTP})}{(1 - R_{WWTP})}$$

where, AHL_{WQS} = AHL based on water quality criteria, lb/day
C_{WQS} = California WQS, mg/L
R_{WWTP} = WWTP removal efficiency from headworks to plant effluent, as decimal
8.34 = Conversion factor

WQBELs Limits & Removal Efficiency

Pollutants	C_{WQS}		R_{WWTP}
Arsenic	0.015	mg/L	45%
Cadmium	0.0022	mg/L	67%
Lead	0.019	mg/L	61%
Mercury	0.000051	mg/L	60%
Nickel	0.169	mg/L	64%
Silver	0.044	mg/L	58%
Zinc	0.388	mg/L	88%

C_{WQS}: referenced from NPDES Permit

Allowable Headworks Loading (AHL_{WQS}) based on WQBELs Limits

Pollutants	AHL (lbs/day)
Arsenic	0.86
Cadmium	0.21
Lead	1.5
Mercury	0.004
Nickel	15
Silver	3.3
Zinc	101

AHL based on NPDES Permit Limits

Annual Average Flow 3.80 mgd (from 2010 to 2011)

$$AHL_{NPDES} = \frac{(8.34)\,(C_{NPDES})\,(Q_{WWTP})}{(1 - R_{WWTP})}$$

where, AHL_{NPDES} = AHL based on NPDES permit limit, lb/day
C_{NPDES} = NPDES permit limit, mg/L
Q_{WWTP} = WWTP average flow rate, MGD
R_{WWTP} = WWTP removal efficiency from headworks to plant effluent, as decimal
8.34 = Conversion factor

NPDES Limits & Removal Efficiency

Pollutants	C_{NPDES}		R_{WWTP}	
BOD_5	30	mg/L	97%	(not applicable)
TSS	30	mg/L	98%	(not applicable)
Oil & Grease	25	mg/L	67%	
Total Ammonia-N	2.1	mg/L	100%	(not applicable)
Copper	0.021	mg/L	82%	
Selenium	0.0041	mg/L	39%	
Cyanide (free)	0.003	mg/L	69%	
Bis(2-ethylhexyl)phthalate	0.0059	mg/L	98%	

Allowable Headworks Loading (AHL_{NPDES}) based on NPDES Permit

Pollutants	AHL (lbs/day)	
BOD_5	34,243	(not applicable)
TSS	60,821	(not applicable)
Oil & Grease	2,384	
Total Ammonia-N	27,119	(not applicable)
Copper	3.8	
Selenium	0.21	
Cyanide (free)	0.31	
Bis(2-ethylhexyl)phthalate	10	

AHL based on Design Capacity

Average Wastewater Flow 3.80 mgd (from 2010 to 2011)

$$AHL_{DESIGN} = (8.34)\ (C_{DESIGN})\ (Q_{WWTP})$$

where,	AHL_{DESIGN}	=	AHL based on WWTP design capacity, lb/day
	C_{DESIGN}	=	Design capacity for BOD_5, TSS, and ammonia, mg/L
	Q_{WWTP}	=	WWTP average flow rate, MGD
	8.34	=	Conversion factor

Design Capacity

Pollutants	C_{NPDES}	
BOD_5	175	mg/L
TSS	190	mg/L
Ammonia	37	mg/L

Allowable Headworks Loading (AHL_{NPDES}) based on Design Capacity

Pollutants	AHL (lbs/day)
BOD_5	5,539
TSS	6,014
Ammonia	1,171

AHL based on Activated Sludge Inhibition

Annual Average Flow 3.80 mgd (from 2010 to 2011)

$$AHL_{AS} = \frac{(8.34)\ (C_{AS\_INHIBI})\ (Q_{WWTP})}{(1 - R_{PRIM})}$$

where, AHL_{AS} = AHL based on activated sludge inhibition, lb/day
C_{AS_INHIBI} = Activated sludge inhibition criteria, mg/L
Q_{WWTP} = WWTP average flow rate, MGD
R_{PRIM} = Removal efficiency from headworks to primary treatment effluent, as decimal
8.34 = Conversion factor

Activated Sludge Inhibition Criterion

Pollutants	C_{AS_INHIBI}	R_{PRIM}
Arsenic	0.1 mg/L	0% (No Primary Process)
Cadmium	1 mg/L	0% (No Primary Process)
Chromium	1 mg/L	0% (No Primary Process)
Copper	1 mg/L	0% (No Primary Process)
Cyanide (total)	0.1 mg/L	0% (No Primary Process)
Lead	1 mg/L	0% (No Primary Process)
Mercury	0.1 mg/L	0% (No Primary Process)
Nickel	1 mg/L	0% (No Primary Process)
Zinc	0.3 mg/L	0% (No Primary Process)
Ammonia	480 mg/L	0% (No Primary Process)

C_{AS_INHIBI}: Referenced from EPA 2004 Local Limits Development Guidance

Allowable Headworks Loading (AHL_{AS}) based on Activated Sludge Inhibition

Pollutants	AHL (lbs/day)
Arsenic	3.2
Cadmium	32
Chromium	32
Copper	32
Cyanide (total)	3.2
Lead	32
Mercury	3.2
Nickel	32
Zinc	9.5
Ammonia	15,192

AHL based on Nitrification Inhibition

Annual Average Flow 3.80 mgd (from 2010 to 2011)

$$AHL_{NITRI} = \frac{(8.34)\,(C_{NITRI\_INHIBI})\,(Q_{WWTP})}{(1 - R_{PRIM})}$$

where,

AHL_{NITRI}	=	AHL based on nitrification inhibition, lb/day
C_{NITRI_INHIBI}	=	Nitrification inhibition criteria, mg/L
Q_{WWTP}	=	WWTP average flow rate, MGD
R_{PRIM}	=	Removal efficiency from headworks to primary treatment effluent, as decimal
8.34	=	Conversion factor

Nitrification Inhibition Criterion

Pollutants	C_{NITRI_INHIBI}	R_{PRIM}
Arsenic	1.5 mg/L	0% (No Primary Process)
Cadmium	5.2 mg/L	0% (No Primary Process)
Chromium	0.25 mg/L	0% (No Primary Process)
Copper *	0.5 mg/L	0% (No Primary Process)
Cyanide (total)	0.34 mg/L	0% (No Primary Process)
Lead	0.5 mg/L	0% (No Primary Process)
Nickel	0.25 mg/L	0% (No Primary Process)
Zinc**	0.4 mg/L	0% (No Primary Process)

C_{NITRI_INHIBI}: Referenced from EPA 2004 Local Limits Development Guidance

* Referenced from Skinner and Walker (1961) and Reid and et al. (1968)

** Maximum concentration that did not cause interference in Brawley WWTP and Referenced from John T. Fox and et al. (2006)

Allowable Headworks Loading (AHL_{NITRI}) based on Nitrification Inhibition

Pollutants	AHL (lbs/day)
Arsenic	47
Cadmium	165
Chromium	7.9
Copper	15.8
Cyanide (total)	11
Lead	16
Nickel	7.9
Zinc	12.7

Copper Inhibition to Nitrification (Reference)

1. Skinner and Walker (1961), Growth of Nitrosomonas Europaea in Water and Continuous Culture, Archs. Microbial. 38, 339-349.
   : 0.5 ppm of Copper inhibit growth of Nitrosomonas
2. Reid, G. N., R. Y. Nelson, C. Hall, U. Bonilla and R. Reid "Effects of Metallic Ions on Biological Waste Treatment" Water Sew. Works, July 1968
   : 0.5 mg/L Copper threshold concentration on Nitrification

Zinc Inhibition to Nitrification (Reference)

1. John T. Fox, Christopher J. Brandriff, and Charles B. Bott (2006), Assessing the Potential for Nitrification Inhibition at Wastewater Treatment Facilities as a Result of Zinc Orthophosphate Addition to Potable Water Distribution System, WEFTEC06, Water Environment Foundation, 6593-6622
   : No significant inhibition at 0.5 mg/L Zinc, slight inhibition at 1.0 mg/L Zinc, significant inhibition at 10 mg/L of Zinc.
2. Kelly II, R. T., Henriques, I. D. S, and Love, N. G. (2004a), Chemical Inhibition of Nitrification in Activated Sludge, Biotechnology and Bioengineering, 85 (6), 638-694
   : No significant reactor performance or effluent quality at 2.5 mg/L of Zinc.

AHL based on Sludge Quality (Clean Sludge Criteria - Table 3 of 40 CFR Part 503.13)

(Recommended by EPA 2004 Local Limits Development Guidance)

Total Sludge Flow Rate to Disposal (i.e. to Centrifuge)	0.024 mgd
Percent Solids of Sludge to Disposal (i.e. to Centrifuge)	3.4 %
Assumed Specific Gravity of Sludge	1 kg/L

$$AHL_{SLDG} = \frac{(8.34)\,(C_{SLGSTD})(\frac{PS}{100})\,(Q_{SLDG})(G_{SLDG})}{R_{WWTP}}$$

where,

AHL_{SLDG}	=	AHL based on sludge, lb/day
C_{SLGTD}	=	Sludge standard – “Clean Sludge” at 40 CFR Part 503, mg/L
PS	=	Percent solids of sludge to disposal
Q_{SLDG}	=	Total sludge flow rate to disposal, mgd
R_{WWTP}	=	Removal efficiency from headworks to plant effluent, as decimal
G_{SLDG}	=	Specific gravity of sludge, kg/L
8.34	=	Conversion factor

Clean Sludge Criteria (Table 3, 40 CFR 503.13) & Removal Efficiency

Pollutants	C_{SLGTD}		R_{WWTP}
Arsenic	41	mg/Kg dry sludge	45%
Cadmium	39	mg/Kg dry sludge	67%
Copper	1500	mg/Kg dry sludge	82%
Lead	300	mg/Kg dry sludge	61%
Mercury	17	mg/Kg dry sludge	60%
Molybdenum *	75	mg/Kg dry sludge	63%
Nickel	420	mg/Kg dry sludge	64%
Selenium	100	mg/Kg dry sludge	39%
Zinc	2800	mg/Kg dry sludge	88%

C_{SLGTD}: Referenced from EPA 2004 Local Limits Development Guidance

* Ceiling Concentration in Table 1, 40 CFR 503.13

Allowable Headworks Loading (AHL_{SLDG}) based on Sludge Quality

Pollutants	AHL (lbs/day)
Arsenic	0.62
Cadmium	0.40
Copper	12
Lead	3.3
Mercury	0.19
Molybdenum	0.81
Nickel	4.4

Selenium	1.7
Zinc	22

Appendix VII

MAILs and Local Limits Calculations

Maximum Allowable Industrial Loading (MAIL) and Local Limits

Pollutants	MAHL (lbs/day)	L_{UNC} (lbs/day)	MAIL (lbs/day)	Local Limits (mg/L)	Local Limits Required?
Arsenic	0.62	-	0.56	0.04	Yes
Cadmium	0.21	0.017	0.17	0.012	Yes
Chromium	7.9	0.080	7.0	0.5	Yes
Copper	3.8	2.0	1.4	0.1	Yes
Cyanide (total)	3.2	-	2.8	0.2	Yes
Cyanide (free)	0.31	-	0.28	0.02	Yes
Lead	1.5	0.68	0.71	0.05	Yes
Mercury	0.004	0.0006	0.0031	0.0002	Yes
Molybdenum	0.81	0.11	0.62	0.04	Yes
Nickel	4.4	0.083	3.9	0.3	Yes
Selenium	0.21	-	0.19	0.01	Yes
Silver	3.3	0.015	3.0	0.2	Yes
Zinc	9.5	2.7	5.8	0.4	Yes
BOD_5	5,539	4,459	1080	76	Yes
TSS	6,014	3,467	2,547	180	Yes
Ammonia-N	1,171	451	720	50	Yes
Oil and Grease	2,384	392	1,754	123	Yes
Bis(2-ethylhexyl)phthalate	10	1.3	7.70	0.5	Yes

$$MAIL = MAHL\,(1 - SF) - (L_{UNC} + HW + GA)$$

MAIL	=	Maximum allowable industrial loading, lbs/day	
MAHL	=	Maximum allowable headworks loading, lbs/day	
SF	=	Safety factor	10%
L_{UNC}	=	Loadings from uncontrolled sources, lbs/day	
HW	=	Loadings from hauled waste (No hauled waste in Brawley)	
GA	=	Growth allowance	

Appendix VIII

Fume Toxicity

Discharge Screening Level for Hydrogen Cyanide

Pollutant	Hydrogen Cyanide		
Exposure Limits			
OSHA Permissible Exposure Limit	10	ppm	(TWA)
ACGIH Threshold Limit	4.7	ppm	(STEL)
NOISH Recommended Exposure Limits	4.7	ppm	(STEL)
Conversion Factor	1.1	$(mg/m^3)/(ppm)$	
OSHA Permissible Exposure Limit	11	mg/m^3	(TWA)
ACGIH Threshold Limit	5	mg/m^3	(STEL)
NOISH Recommended Exposure Limits	5	mg/m^3	(STEL)

Discharge Screening Level

= Exposure Limit / Henry's Law Constant

Henry's Law Constant	4.5	$(mg/m^3)/(mg/L)$
Lowest Acute Toxicity Data	5	mg/m^3
Discharge Screening Level for Hydrogen Cyanide	**1.15**	**mg/L**

Discharge Screening Level for Hydrogen Sulfide

Pollutant	Hydrogen Sulfide		
Exposure Limits			
OSHA Permissible Exposure Limit	20	ppm	(STEL)
ACGIH Threshold Limit	10	ppm	(TWA)
	15	ppm	(STEL)
NOISH Recommended Exposure Limits	10	ppm	(STEL)
Conversion Factor	1.4	$(mg/m^3)/(ppm)$	
OSHA Permissible Exposure Limit	28	mg/m^3	(STEL)
ACGIH Threshold Limit	14	mg/m^3	(TWA)
	21	mg/m^3	(STEL)
NOISH Recommended Exposure Limits	14	mg/m^3	(STEL)

Discharge Screening Level

= Exposure Limit / Henry's Law Constant

Henry's Law Constant	414.4	$(mg/m^3)/(mg/L)$
Lowest Acute Toxicity Data	14	mg/m^3
Discharge Screening Level for Hydrogen Sulfide		
	0.034	**mg/L**