



City of Prescott
Pretreatment Program

Chapter 3: Local Limits

June 2013



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Acronyms

CFR	Code of Federal Regulations
City	City of Prescott
CWA	Clean Water Act
POTW	Publicly Owned Treatment Works



3. Local Limits

3.1 Background

The National Pretreatment Program as implemented under the Clean Water Act (CWA) and General Pretreatment Regulations, 40 Code of Federal Regulations (CFR) Part 403, and as delegated to the State of Arizona, are designed to control the discharge of non-domestic wastewater to Publicly Owned Treatment Works (POTWs). The objectives of the program are to prevent pass-through and interference, to protect the receiving waters, and to improve opportunities for the reuse and reclamation of municipal and industrial wastewaters and sludges. Pass-through occurs when pollutant concentrations or loadings in the POTW effluent exceed water quality criteria for re-use or disposal. Interference occurs when pollutants in the influent disrupt treatment operations or performance or compromise biosolids quality.

Local limits discharge standards apply to Industrial User discharges and are required to be developed in accordance with the requirements listed in 40 CFR 403.5(c) and 403.8(f)(4). Unlike federal categorical standards and general discharge prohibitions, local limits are site-specific and take into account the quality and quantity of industrial discharges.

The City of Prescott (City) performed a local limits assessment during 2010 and 2011, which was reported in the *Technically Based Local Limits Study* (Black & Vetch, 2011). Additional wastewater samples were collected throughout the collection system during October 2012. These additional data, combined with flow data from 2012, were used to re-evaluate the local limits as reported in the *Local Limits Update* (ARCADIS, 2013) and included in Appendix A. The limits described in the Local Limits Update are included in the City Code, Title II, Chapter 2-1-44.

Appendix A

Local Limits Update



City of Prescott – Public Works Department

Local Limits Update

May 2013





Local Limits Update

Prepared for:
City of Prescott-
Public Works Department

Prepared by:
ARCADIS U.S., Inc.
410 N 44th Street
Suite 1000
Phoenix
Arizona 85008-6945
Tel 602 241 1770
Fax 602 231 0131

Our Ref.:
05133016.0000

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Abbreviations

AIL	Allowable Industrial Loading
C_{eff}	Effluent criteria; APP effluent discharge limit
C_{inhib}	Inhibition criteria
Conc	Concentration
C_{slgstd}	Sludge standard
G_{sldg}	Specific gravity of sludge
MRE	Mean Removal Efficiency
NC	Not calculated
NL	No limit
PS	Percent Solids
Q_{SIU}	Flow from Industrial Users
Q_{sldg}	Sludge flow rate
Q_{WRF}	Influent flow rate
RE	Removal Efficiency
RE_{PRIM}	Removal efficiency from headworks to primary treatment
RE_{WRF}	Removal efficiency from headworks to effluent
SA	Safety Allowance
TCLP	Toxicity Characteristic Leaching Procedure
UCL	Uniform Concentration Limit
USEPA	U.S. Environmental Protection Agency



1. Introduction

Pretreatment programs are designed to control the discharge of non-domestic wastewater to Publicly Owned Treatment Works (POTWs). The objectives of a pretreatment program are to prevent pass-through (i.e., effluent concentrations exceeding permit limits) and operational interference at the POTW, to protect the receiving waters, and to improve the opportunities for the reuse and reclamation of wastewater and sludge.

Development of site-specific wastewater discharge limits (or local limits) is an integral part of the pretreatment program. Local limits apply to industrial user discharges and are required to be developed in accordance with the requirements listed in 40 CFR 403.5(c) and 403.8(f)(4). Unlike federal categorical standards and general discharge prohibitions, local limits are site-specific and take into account the quality and quantity of industrial discharges.

The City of Prescott (City) currently has local limits in place, as documented in Section 2-1-44 of the City Code and summarized in Table 1. The City has been experiencing effluent exceedances of fluoride at the Airport Water Reclamation Facility (WRF); however, fluoride is not included in the limits listed in Section 2-1-44 of the City Code.

Parameter	Limits (mg/L)	Parameter	Limits (mg/L)
Arsenic	0.1	Total Chromium	4.0
Cadmium	1.2	Zinc	2.6
Copper	2.7	Total identifiable chlorinated hydrocarbons	3.5
Cyanide	1.0		
Lead	0.4		
Mercury	0.001	Phenolic compounds	3.5
Nickel	2.6		
Silver	0.7	Total Metals	0.5

Notes: mg/L = milligrams per liter

The City performed an assessment of the local limits during 2010 through 2011. Results of the local limits evaluation were reported in the *Technically Based Local Limits Study* (Black & Veatch, 2011) (2011 Study). Due to changes in the City's POTW influent flow rates since the 2011 Study, the local limits reported in the 2011 Study were re-evaluated in order to ensure that the City's POTWs are protected and can consistently meet effluent discharge limits. This report is intended as an update to the 2011 Study and includes the following elements:



- Background: Description of the City's treatment facilities and industrial users
- Sampling Events: Description of the 2010 sampling event conducted in support of the 2011 Study and 2012 verification samples
- Pollutants of Concern (POCs): Identification of pollutants most likely to cause pass-through or interference at the treatment facilities
- Flows and Loadings: Evaluation of pollutant mass loading to the influent of treatment facilities, as calculated by concentration and flow data
- Allowable Headwork Loadings (AHLs): Assessment of maximum mass loading that can be received at plant influent without causing pass-through or interference
- Control Strategies: Assessment of most appropriate way to control industrial discharges without causing pass-through or interference

2. Background

The City owns three treatment facilities: the Airport WRF, the Sundog Wastewater Treatment Plant (WWTP), and the Hassayampa Village WRF. The Airport WRF treatment process begins with preliminary treatment (grit removal, bar screen, flow monitoring) and continues through anoxic basins, oxidation ditches, secondary clarification, sand filter, and chlorine disinfection. Waste activated sludge is conditioned with polymer, dewatered by centrifuge, and hauled to landfill for disposal. The Sundog WWTP includes preliminary treatment, primary clarification, oxidation ditches, secondary clarification, sand filtration, and chlorine disinfection. Solids are processed by anaerobic sludge digestion, polymer sludge conditioning, belt press dewatering, and land application for disposal. The Hassayampa Village WRF is a scalping plant located within the Sundog WWTP receiving area. Flow is diverted from the Sundog WWTP collection system, treated to reuse standards and used for golf course irrigation. Influent flows to the Hassayampa Village WRF are adjusted to meet irrigation needs. The Hassayampa WRF discharges waste activated sludge along with unused effluent back into the Sundog WWTP collection system. General information for the three treatment facilities is presented in Table 2.

Treatment Facility	Permitted Flow (mgd)	Permits
Airport WRF	2.2	APP #P-101733
Sundog WWTP	6.0	APP #P-100353
Hassayampa Village WRF	0.75	APP #P-103159; Reclaimed Water General Permit #R105688

Notes: mgd = million gallons per day; permitted flows listed as monthly averages; APP = Aquifer Protection Permit



The majority of the City's wastewater dischargers are commercial (e.g., restaurants) and domestic users. Industrial users that may be regulated by local limits are listed in Table 3.

Industrial User	Receiving Facility	8/2011 – 8/2012 Flow (mgd)
Pure Wafer	Airport WRF	0.160
Sturm, Ruger & Company, Inc	Airport WRF	0.0199
Ester-C	Airport WRF	0.0054
Sun Fashion Design	Airport WRF	0.0010
Fortner & Gifford – Fortner Aerospace	Sundog WWTP	0.0020

Notes: mgd = million gallons per day; Industrial users' wastewater flow rates were based on 90 percent of 8/20/2011 to 8/19/2012 water usage data

3. Sampling Events

During April 2010, sampling was performed in support of the 2011 Study. The sampling locations included influent, effluent, and internal wastewater and sludge streams at the Airport WRF and Sundog WWTP, as well as four locations in the collection system representative of domestic wastewater sources. Pollutants analyzed included metals, general chemistry parameters, volatile organic compounds (VOCs), semivolatile organic compounds (SVOCs), pesticides, and polychlorinated biphenyls (PCBs).

Verification sampling was performed in October 2012 to assess the current pollutant concentrations within the collection system and at the Airport WRF and Sundog WWTP. Sample locations included influent and effluent at the Airport WRF and Sundog WWTP, four domestic locations in the collection system, and manholes downgradient of four industrial users. Pollutants analyzed during the verification sampling event included metals and general chemistry parameters.

Results summary and location information for the 2010 and 2012 sampling events are presented in Appendix A. Tables 4 and 5 summarize the number of samples and parameters analyzed during the 2010 and 2012 sampling events, respectively.



Sample Location	# of Samples	Parameters
Airport WRF Influent (AP-1)	7	Metals, General Chemistry Parameters, VOCs, SVOCs, Pests
Airport WRF Effluent (AP-3)	7	Metals, General Chemistry Parameters, VOCs, SVOCs, Pests
Airport WRF Domestic (AP-7)	7	Metals, General Chemistry Parameters, VOCs, SVOCs, Pests
Airport WRF Domestic (AP-8)	7	Metals, General Chemistry Parameters, VOCs, SVOCs, Pests
Airport WRF WAS (AP-4)	3	Metals, General Chemistry Parameters, VOCs
Airport WRF WAS Cake (AP-6)	3	Metals, General Chemistry Parameters, VOCs, SVOCs, Pests, PCBs
Sundog WWTP Influent (SD-1)	7	Metals, General Chemistry Parameters, VOCs, SVOCs, Pests
Sundog Primary Clarifier Effluent (SD-2)	7	Metals, General Chemistry Parameters, VOCs, SVOCs, Pests
Sundog Effluent (SD-3)	7	Metals, General Chemistry Parameters, VOCs, SVOCs, Pests
Sundog WWTP Domestic (SD-7)	7	Metals, General Chemistry Parameters, VOCs, SVOCs, Pests
Sundog WWTP Domestic (SD-8)	7	Metals, General Chemistry Parameters, VOCs, SVOCs, Pests
Sundog WWTP WAS (SD-4)	3	Metals, General Chemistry Parameters, VOCs
Sundog WWTP Primary Sludge (SD-5)	3	Metals, General Chemistry Parameters, VOCs
Sundog WWTP Digester Cake (SD-6)	3	Metals, General Chemistry Parameters, VOCs, SVOCs, Pests, PCBs

Notes: VOCs = volatile organic compounds; SVOCs = semivolatile organic compounds; Pests = pesticides; PCBs = polychlorinated biphenyls

Sample Location	# of Samples	Parameters
Airport WRF Influent (AP-1)	5	Metals, General Chemistry Parameter
Airport WRF Effluent (AP-3)	5	Metals, General Chemistry Parameter
Airport WRF Domestic (AP-7)	3	Metals, General Chemistry Parameter
Airport WRF Domestic (AP-8)	3	Metals, General Chemistry Parameter
15130NW-MH100 (PureWafer)	3	Metals, General Chemistry Parameter
15130NW-MW104 (Ester C)	3	Metals, General Chemistry Parameter
15225NW-MH100 (Sturm Ruger)	3	Metals, General Chemistry Parameter
Sundog WWTP Influent (SD-1)	5	Metals, General Chemistry Parameter
Sundog WWTP Effluent (SD-3)	5	Metals, General Chemistry Parameter
Sundog WWTP Domestic (SD-7)	3	Metals, General Chemistry Parameter
Sundog WWTP Domestic (SD-8)	3	Metals, General Chemistry Parameter
1423SW-MW104 (Fortner)	3	Metals, General Chemistry Parameter



Tables 6 and 7 present the average influent and domestic concentrations from the 2012 verification sampling compared to the 2010 sampling event. The 2012 verification sampling results appear to be very similar to the 2010 sampling results.

Parameter	Airport WRF		Sundog WWTP	
	2010 Avg Conc (mg/L)	2012 Avg Conc (mg/L)	2010 Avg Conc (mg/L)	2012 Avg Conc (mg/L)
Metals and Inorganics				
Arsenic	0.0067	0.0068	0.0081	0.0095
Cadmium	0.00029	0.0002	0.00024	0.0003
Chromium	0.0070	0.0070	0.0077	0.0098
Copper	0.035	0.037	0.066	0.0718
Fluoride	3.3	5.5	0.33	0.382
Lead	0.0017	0.0021	0.0034	0.0026
Mercury	0.00035	0.0001	0.00011	0.0001
Nickel	0.0061	0.0033	0.0047	0.0048
Selenium	0.0012	0.0011	0.0017	0.0013
Silver	0.0009	0.0007	0.0014	0.0007
Zinc	0.105	0.110	0.1371	0.198
Conventional and Other Pollutants				
Ammonia	25.8	29	33.4	28.4
BOD ₅	217	200	294	310
NO ₂ /NO ₃	0.571	0.2	0.599	0.2
TKN	36.2	38	37.0	43.6
Total Nitrogen	36.8	38	37.7	43.6
TSS	274	282	332	330

Notes: Avg = average; Conc = concentration; mg/L = milligrams per liter; BOD₅ = biochemical oxygen demand; NO₂/NO₃ = nitrite plus nitrate; TKN = total Kjeldahl nitrogen; TSS = total suspended solids



Parameter	AP-7/AP-8		SD-7/SD-8	
	2010 Avg Conc (mg/L)	2012 Avg Conc (mg/L)	2010 Avg Conc (mg/L)	2012 Avg Conc (mg/L)
Metals and Inorganics				
Arsenic	0.0081	0.0080	0.0063	0.0079
Cadmium	0.0004	0.00029	0.0003	0.0004
Chromium	0.0087	0.0079	0.0045	0.0083
Copper	0.046	0.038	0.0393	0.060
Fluoride	0.35	0.31	0.35	0.358
Lead	0.0015	0.0014	0.0010	0.0022
Mercury	0.00012	0.0001	0.00011	0.0001
Nickel	0.0066	0.0023	0.0035	0.0024
Selenium	0.0013	0.0015	0.0011	0.0014
Silver	0.00021	0.0004	0.00039	0.0006
Zinc	0.16	0.145	0.0844	0.145
Conventional and Other Pollutants				
Ammonia	51.2	40.7	20.0	33.2
BOD ₅	360	262	179	232
NO ₂ /NO ₃	0.6011	0.2	0.6624	0.2
TKN	57.2	60.2	21.7	43.2
Total Nitrogen	57.8	60.2	22.4	43.2
TSS	347	227	165	290

Notes: Avg = average; Conc = concentration; mg/L = milligrams per liter; BOD₅ = biochemical oxygen demand; NO₂/NO₃ = nitrite plus nitrate; TKN = total Kjeldahl nitrogen; TSS = total suspended solids

4. Pollutants of Concern

A POC is any pollutant that might reasonably be expected to be discharged to the treatment facility in amounts that would cause pass-through, interfere with treatment processes, or pose a risk to the health and safety of POTW workers and the environment. The 2011 Study identified 22 POCs, including:

- National POCs: arsenic, cadmium, chromium, copper, cyanide, lead, mercury, molybdenum, nickel, selenium, silver, zinc, five-day biochemical oxygen demand (BOD₅), total suspended solids (TSS), and ammonia
- Site-specific inorganic POCs: chloride, fluoride, sulfide, sulfate, total Kjeldahl nitrogen (TKN), nitrate
- Other site-specific POCs and parameters: fats, oils and grease (FOG); total phenols; total dissolved solids (TDS); total toxic organics (TTO)



A constituent can also be identified as a POC if it has been detected in the influent, effluent, or sludge in concentrations that exceed the screening criteria described in the *1987 USEPA Guidance Manual on the Development and Implementation of Local Discharge Limitations Under the Pretreatment Program* (1987 USEPA Guidance). The POC screening process uses the following criteria:

- Maximum effluent concentration exceeds $\frac{1}{2}$ effluent criteria
- Maximum influent concentration exceeds the effluent criteria
- Maximum influent concentration exceeds $\frac{1}{2}$ the inhibition level
- Maximum influent concentration exceeds the health and safety screening levels
- Maximum sludge concentration exceeds $\frac{1}{2}$ the sludge criteria
- Maximum influent concentration exceeds $\frac{1}{500}$ the sludge criteria.

Tables in Appendix B present the screening criteria and the POCs identified during the screening process. Because the local limits are intended to be protective of both the Airport WRF and the Sundog WWTP, the maximum influent, effluent, and sludge concentrations listed in Table B-3 (Appendix B) represent both plants. Based on the 1987 screening criteria, the following pollutants were identified as POCs:

- Metals and Inorganics: copper, fluoride, lead, mercury, and zinc
- Conventional and Other Pollutants: nitrate plus nitrite (NO_2/NO_3), TKN, and total nitrogen

For the purposes of this Local Limits Update, the following pollutants were evaluated as POCs:

- Metals and Inorganics: arsenic, cadmium, chromium, copper, cyanide, fluoride, lead, mercury, nickel, silver, and zinc
- Conventional and Other Pollutants: ammonia, BOD_5 , NO_2/NO_3 , phenols, TKN, and total nitrogen



5. Flows and Loadings

The objective of the flows and loads evaluation was to determine pollutants contributions from industrial and domestic/commercial (or background) sources. The domestic/commercial sources are representative of sources that are not regulated as Significant Industrial Users (SIUs) and could potentially reduce the pollutant loads that can be allocated to industrial users.

Table 8 presents the annual average influent flows for Airport WRF and Sundog WWTP during 2010 and 2012. The influent flows were based on daily operational flow data from August 20, 2009 through August 19, 2010 and August 20, 2011 through August 19, 2012.

Facility	2010 Influent Flows (mgd)	2012 Influent Flows (mgd)
Airport WRF	1.17	1.04
Sundog WWTP	2.57	2.07

Notes: mgd = million gallons per day; Flows = average annual flows over 8/19/2009 to 8/20/2010 and 8/19/2011 to 8/20/2012

Background flow from domestic (e.g., residential users) and commercial sources (e.g., restaurants) was calculated by subtracting the estimated industrial flow from the 2012 annual average influent flow. Industrial flows were based on 90 percent of the water usage from 8/2011 through 8/2012. Hauled waste, such as septage, is also considered part of the background, but is only accepted at the Sundog WWTP. The volume of waste hauler septage at Sundog WWTP from 8/2011 to 8/2012 was 0.0044 mgd. Table 9 presents the influent, industrial, and background flows for the Airport WRF and Sundog WWTP.



Source	Airport WRF Flows (mgd)	Sundog WWTP Flows (mgd)
Influent	1.04	2.07
Pure Wafer	0.160	--
Sturm, Ruger & Company	0.0199	--
Ester-C	0.0054	--
Sun Fashion Design	0.0010	--
Fortner & Gifford	--	0.0020
Total Industrial	0.1863	0.0020
Waste Haulers	--	0.0044
Domestic/Commercial	0.8537	2.06

Notes: mgd = million gallons per day; Influent Flows = Annual average flows from 8/2011 to 8/2012; Industrial Flows = 90 percent of 8/2011 to 8/2012 water usage data; Domestic/Commercial Flows = Industrial flows subtracted from influent flows ; "--" = No applicable flows; Waste hauler septage not accepted at Airport WRF

Based on the flows listed in Table 9, industrial flows make up approximately 18 percent of the Airport WRF influent and approximately 0.10 percent of the Sundog WWTP influent.

Pollutant loadings were calculated by multiplying concentrations by the flow and a unit conversion factor to yield loadings reported in pounds per day (lb/day). Concentration data from 2010 was used with flow data from 2012 in order to assess loadings that could be reasonably expected to be observed in 2012. In the case where a pollutant was not detected during the 2010 sampling event, the pollutant loading was not calculated. If a pollutant had both detected and non-detected results during the sampling event, then ½ the reporting limit was substituted for the non-detected values in the loading calculation. This substitution technique is discussed in Appendix Q of *Local Limits Development Guidance* (USEPA, 2004) (2004 USEPA Guidance). Table 10 summarizes influent average concentrations from 2010 and average loadings using 2012 flow data.



Parameter	Airport WRF		Sundog WWTP	
	Avg Conc (mg/L)	Avg Loading (lb/day)	Avg Conc (mg/L)	Avg Loading (lb/day)
Metals and Inorganics				
Arsenic	0.0067	0.058	0.0081	0.1403
Cadmium	0.00029	0.0025	0.00024	0.0041
Chromium	0.0070	0.0611	0.0077	0.1322
Copper	0.035	0.3023	0.066	1.13
Cyanide	0.0025	0.0214	0.0023	0.0404
Fluoride	3.3	28.6	0.33	5.75
Lead	0.0017	0.0145	0.0034	0.0584
Mercury	0.00035	0.0030	0.00011	0.0019
Molybdenum	0.0017	0.0146	0.0067	0.1157
Nickel	0.0061	0.0533	0.0047	0.0814
Selenium	0.0012	0.0104	0.0017	0.0301
Silver	0.0009	0.0078	0.0014	0.0249
Zinc	0.105	0.9144	0.1371	2.37
Conventional and Other Pollutants				
Ammonia	25.8	223	33.4	577
BOD ₅	217	1878	294	5080
NO ₂ /NO ₃	0.571	4.95	0.599	10.3
Phenols	0.0541	0.4696	0.041	0.7103
Sulfide	252	2189	290	5181
TKN	36.2	314	37.0	660
Total Nitrogen	36.8	319	37.7	651
TSS	274	2374	332	5011

Notes: Avg = average; Conc = concentration; mg/L = milligrams per liter; lb/day = pounds per day; TKN = total Kjeldahl Nitrogen; NO₂/NO₃ = Nitrate + Nitrite; BOD₅ = Biochemical Oxygen Demand

Tables 11 and 12 summarize the average 2010 concentrations and 2012 loadings from the four domestic sampling locations (i.e., background concentrations and loadings). Two of the locations (AP7 and AP-8) were within the Airport WRF receiving area, while SD-7 and SD-8 were within the Sundog WWTP receiving area.



Table 11				
Airport WRF Background Concentrations and Loadings				
Parameter	AP-7 (mg/L)	AP-8 (mg/L)	Avg Conc (mg/L)	Avg Loading (lb/day)
Metals and Inorganics				
Arsenic	0.0080	0.0081	0.0081	0.0573
Cadmium	0.0005	0.0003	0.0004	0.0028
Chromium	0.0094	0.0080	0.0087	0.0618
Copper	0.042	0.050	0.046	0.3260
Cyanide	0.0025	0.0025	0.0025	0.0178
Fluoride	0.36	0.34	0.35	2.49
Lead	0.0016	0.0014	0.0015	0.0105
Mercury	0.00011	0.00012	0.00012	0.0008
Molybdenum	0.0018	0.0016	0.0017	0.0121
Nickel	0.0049	0.0009	0.0066	0.0470
Selenium	0.0013	0.0012	0.0013	0.0090
Silver	0.00023	0.00019	0.00021	0.0015
Zinc	0.16	0.15	0.16	1.12
Conventional and Other Pollutants				
Ammonia	58.0	44.3	51.2	364
BOD ₅	366	354	360	2562
NO ₂ /NO ₃	0.6248	0.5774	0.6011	4.28
Phenols	0.0844	0.071	0.0777	0.5533
Sulfide	380	346	363	2583
TKN	64.9	49.5	57.2	407
Total Nitrogen	65.6	50.1	57.8	412
TSS	347	347	347	2472

Notes: Avg = average; mg/L = milligrams per liter; lb/day = pounds per day; NO₂/NO₃ = nitrate+nitrite; TKN = total Kjeldahl nitrogen; BOD₅ = biochemical oxygen demand; TSS = total suspended solids



Parameter	SD-7 (mg/L)	SD-8 (mg/L)	Avg Conc (mg/L)	Avg Loading (lb/day)
Metals and Inorganics				
Arsenic	0.0055	0.0071	0.0063	0.1085
Cadmium	0.0004	0.0002	0.0003	0.0056
Chromium	0.0037	0.0053	0.0045	0.0779
Copper	0.022	0.057	0.0393	0.6749
Cyanide	0.0025	0.0024	0.0024	0.0418
Fluoride	0.36	0.34	0.35	6.07
Lead	0.0007	0.0014	0.0010	0.0178
Mercury	0.00011	0.00011	0.00011	0.0019
Molybdenum	0.0015	0.0020	0.0017	0.0295
Nickel	0.0039	0.0031	0.0035	0.0600
Selenium	0.0012	0.001	0.0011	0.0188
Silver	0.00040	0.00039	0.00039	0.0067
Zinc	0.069	0.10	0.0844	1.45
Conventional and Other Pollutants				
Ammonia	20.3	19.7	20.0	344
BOD ₅	144	214	179	3079
NO ₂ /NO ₃	0.5994	0.7253	0.6624	11.4
Phenols	0.0436	0.055	0.0493	0.8467
Sulfide	216	277	246	4231
TKN	19.6	23.8	21.7	373
Total Nitrogen	20.3	24.5	22.4	385
TSS	134	195	165	2827

Notes: Avg = average; mg/L = milligrams per liter; lb/day = pounds per day; NO₂/NO₃ = nitrate+nitrite; TKN = total Kjeldahl nitrogen; BOD₅ = biochemical oxygen demand; TSS = total suspended solids

Mass balances were calculated for the Airport WRF and Sundog WWTP influents as a check to assess if there are unaccounted wastewater contributions. The 2004 USEPA Guidance states that the mass balance results should fall between 80 to 120 percent if all sources are accounted for. For each facility, concentration data from the 2012 sampling event and an estimate of total industrial flow, based on 90 percent of the water used by all SIUs, were used to calculate the "Total Industrial Loading". Pollutant concentration data from the 2010 sampling event and an estimate of background flow (based on total influent flow less total industrial flow) were used to calculate "Avg Background Loadings". The "Total Industrial Loadings" were added to the "Avg Background Loadings" to yield "Calculated Influent Loadings". Mass balances were calculated by dividing the "Calculated Influent Loading" by the "Observed Avg Influent Loading".



It should be noted that information concerning wastewater hauler loadings received at Sundog WWTP were not calculated as part of background loading values since concentration data were not available.

Tables 13 and 14 present the mass balance assessments for the Airport WRF and Sundog WWTP.

Table 13						
Airport WRF Mass Balance						
Parameter	Observed Avg Influent Loading (lb/day)	Avg Background Loading (lb/day)	% Background/ Influent Loadings	2012 Industrial Loadings (lb/day)	Calculated Influent Loading (lb/day)	Mass Balance (%)
Metals and Inorganics						
Arsenic	0.058	0.0573	98.8	0.0022	0.0595	102
Cadmium	0.0025	0.0028	112	0.0002	0.003	120
Chromium	0.0611	0.0618	101	0.0033	0.0651	106
Copper	0.3023	0.3260	108	0.0174	0.3434	114
Cyanide	0.0214	0.0178	83.2	--	--	--
Fluoride	28.6	2.49	8.71	17.7	20.19	70.6
Lead	0.0145	0.0105	72.4	0.0018	0.0123	84.8
Mercury	0.0030	0.0008	26.7	0.00005	0.00085	28.3
Molybdenum	0.0146	0.0121	82.9	--	--	--
Nickel	0.0533	0.0470	88.2	0.0019	0.0489	91.7
Selenium	0.0104	0.0090	86.5	0.0006	0.0096	92.3
Silver	0.0078	0.0015	21.4	0.0002	0.0017	21.8
Zinc	0.9144	1.12	122	0.0174	1.14	125
Conventional and Other Pollutants						
Ammonia	223	364	163	4.95	369	165
BOD ₅	1878	2562	136	53.7	2616	139
NO ₂ /NO ₃	4.95	4.28	86.5	2.36	6.64	134
Phenols	0.4696	0.5533	118	--	--	--
Sulfide	2189	2583	118	--	--	--
TKN	314	407	130	16.7	424	135
Total Nitrogen	319	412	129	19.1	431	135
TSS	2374	2472	104	43.4	2515	106

Notes: Avg = average; lb/day = pounds per day; 2012 Industrial Loadings were based on concentration data from the 2012 sampling event and 90 percent of the water usage data from 8/2011 to 8/2012 for Pure Wafer, Sturm Ruger, and Ester C; Calculated Influent Loading = Avg Background Loading + 2012 Industrial Loading



The background loading at the Airport WRF comprised:

- Greater than 95 percent of the influent loading for arsenic, cadmium, chromium, copper, zinc, most nitrogen compounds (total nitrogen, TKN, ammonia), BOD₅, phenols, sulfide, and TSS
- Between 70 and 95 percent of the influent loading of cyanide, lead, molybdenum, nickel, selenium, and nitrite/nitrate
- Less than 30 percent of the influent loading of fluoride (9 percent), mercury (27 percent), and silver (21 percent)

The Airport WRF mass balance results for a number of pollutants (ammonia, BOD₅, NO₂/NO₃, TKN, Total Nitrogen, TSS, and zinc) were greater than 120 percent. These results suggest that, although potential sources of these pollutants are accounted for, the assumptions that industrial wastewater flow is 90 percent of the water usage may overestimate wastewater generation rates for some SIUs. This assumption may also account for the mass balance result for fluoride (70.6 percent), if SIUs with lower concentrations of fluoride generate wastewater at a lower rate than assumed.

The Airport WRF mass balances for mercury and silver were less than 80 percent. In these cases, the mass balance calculations may be biased by the number of non-detected values or trace detections (between the reporting limit and the method detection limit).



Parameter	Observed Avg Influent Loading (lb/day)	Avg Background Loading (lb/day)	% Background/ Influent Loadings	2012 Industrial Loadings (lb/day)	Calculated Influent Loading (lb/day)	Mass Balance (%)
Metals and Inorganics						
Arsenic	0.1403	0.1085	77.3	0.0001	0.1086	77.4
Cadmium	0.0041	0.0056	136	0.000003	0.0056	136
Chromium	0.1322	0.0779	58.9	0.0001	0.078	59
Copper	1.13	0.6949	61.5	0.0004	0.6953	61.5
Cyanide	0.0404	0.0418	103	--	--	--
Fluoride	5.75	6.07	106	0.0059	6.08	106
Lead	0.0584	0.0178	30.5	0.00005	0.0178	30.5
Mercury	0.0019	0.0019	100	0.000002	0.0019	100
Molybdenum	0.1157	0.0295	25.5	--	--	--
Nickel	0.0814	0.0600	73.7	0.00003	0.0600	73.7
Selenium	0.0301	0.0188	62.4	0.00002	0.0188	62.4
Silver	0.0249	0.0067	26.9	0.000008	0.0067	26.9
Zinc	2.37	1.45	61.2	0.0016	1.45	61.2
Conventional and Other Pollutants						
Ammonia	577	344	59.6	0.3781	334	57.9
BOD ₅	5080	3079	60.6	3.00	3082	60.7
NO ₂ /NO ₃	10.3	11.4	111	0.0064	11.4	111
Phenols	0.7103	0.8467	119	--	--	--
Sulfide	5181	4231	81.7	--	--	--
TKN	660	373	56.5	0.8396	374	56.7
Total Nitrogen	651	385	59.1	0.8396	386	59.3
TSS	5011	2827	56.4	2.16	2829	56.4

Notes: Avg = average; lb/day = pounds per day; 2012 Industrial Loadings were based on concentration data from the 2012 sampling event and 90 percent of the water usage data from 8/2011 to 8/2012 for Fortner & Gifford; Calculated Influent Loading = Avg Background Loading + 2012 Industrial Loading

The background loading at the Sundog WWTP comprised:

- Greater than 95 percent of the influent loading for cadmium, fluoride, mercury, nitrite/nitrate, and phenols
- Between 70 and 95 percent of the influent loading of arsenic, nickel and sulfide
- Between 50 and 70 percent of the influent loading of BOD₅, chromium, copper, selenium, zinc, nitrogen compounds (total nitrogen, TKN, ammonia), and TSS



- Between 25 and 35 percent or less of the influent loading of lead (31 percent), molybdenum (26 percent), and silver (27 percent)

The Sundog WWTP mass balance results for a number of pollutants were less than 120 percent. For lead, selenium, and silver, the mass balance calculations may be biased by the number of non-detected data or trace detections. For ammonia, arsenic, BOD₅, chromium, copper, nickel, TKN, total nitrogen, TSS, and zinc, waste hauling loadings may account for some or all of the discrepancies.

The Sundog WWTP mass balance result for cadmium exceeded 120 percent. In this case, the mass balance calculations may be biased by the number of non-detected data or trace detections

6. Development of Allowable Headworks Loadings for Inorganics

The AHL is defined as the maximum POC loading that can be received at the headworks that would not cause pass-through or interference. The maximum allowable headworks loading (MAHL) is the lowest, or most protective and conservative, of the AHLs calculated for a POC. Site-specific removal efficiencies (REs) were calculated for each inorganic POC to determine percentages of influent loading removed by the treatment process. The AHL analyses were conducted using selected REs, effluent criteria and biological process inhibition levels for the POCs.

6.1 Removal Efficiencies

Paired influent and effluent data (i.e., collected on the same day) sampled during April 2010 were used to generate site-specific REs. The 2004 USEPA Guidance describes several different methods for calculating overall site-specific REs. The Mean Removal Efficiency (MRE) method was used to calculate the REs :

$$\text{MRE}_{\text{WRF}} = \frac{\text{average influent concentration} - \text{average effluent concentration}}{\text{average influent concentration}}$$

If the pollutant was not detected in the influent or effluent, ½ the reporting limit was substituted for the non-detected result in the MRE calculation. Using site-specific data to determine MREs is preferable; however, in cases where the majority of the results were non-detected or were close to the reporting limits, literature values from the 2004 USEPA Guidance, Appendix R were used. Table 15 summarizes selected REs and source (site-specific data or literature values) for the inorganic POCs. Appendix C



summarizes the April 2010 data used in the RE calculations and highlights where non-detected results may bias MRE results.

Parameter	2010 MREs (%)		Literature REs (2 nd decile/median)	Selected REs (%)		Source
	Airport WRF	Sundog WWTP		Airport WRF	Sundog WWTP	
Metals and Inorganics						
Arsenic	10.5	13.2	31 / 45	10.5	13.2	Site-specific
Cadmium	NC	NC	33 / 67	33.0	33.0	Literature value, 2nd decile
Chromium	81.8	84.3	68 / 82	81.8	84.3	Site-specific
Copper	90.3	87.6	67 / 86	90.3	87.6	Site-specific
Cyanide	44.4	NC	41 / 69	44.4	41.0	Site-specific; Literature value, 2 nd decile
Fluoride	1.3	NC	--	0	0	Conservative assumption
Lead	47.7	88.2	39 / 61	47.7	88.2	Site-specific
Mercury	NC	NC	50 / 60	50.0	50.0	Literature value, 2nd decile
Nickel	53.0	35.5	25 / 42	53.0	35.5	Site-specific
Silver	44.4	65.3	50 / 75	44.4	65.3	Site-specific
Zinc	53.5	64.6	64 / 79	53.5	64.6	Site-specific

Notes: MRE = mean removal efficiency; Site-specific MREs were based on April 2010 data; REs = Removal efficiencies; Literature Values = removal efficiencies from 2004 USEPA Guidance, Appendix R; Conservative assumptions for fluoride MRE was due to negligible calculated MRE; NC = Not calculated; "--" = No literature value available



6.2 Allowable Headworks Loadings

The following sections present the AHL calculations that were performed for inorganic POCs under each applicable criterion identified in Appendix A.

AHLs Based on Effluent Criteria

The effluent criteria AHLs were calculated based on the APP discharge limits using the following formula:

$$\text{AHL} = (8.34 * C_{\text{eff}} * Q_{\text{WRF}}) / (1 - \text{RE}_{\text{WRF}})$$

Where:

- AHL = Allowable headworks loading in lb/day
- 8.34 = Unit conversion factor
- C_{eff} = APP effluent discharge limit, in mg/L
- Q_{WRF} = Average influent flow rate, in mgd
- RE_{WRF} = Removal efficiency from headworks to effluent

AHLs based on effluent criteria were calculated based on both the Airport WRF and Sundog WWTP average influent flow rates and are presented in Table 16.



Table 16 Effluent Criteria AHLs					
Parameter	C _{eff} (mg/L)	1-RE _{WRF} (decimal)		Effluent Criteria AHL (lb/day)	
		Airport WRF	Sundog WWTP	Airport WRF	Sundog WWTP
Metals and Inorganics					
Arsenic	0.05	0.895	0.868	0.485	0.994
Cadmium	0.005	0.670	0.670	0.065	0.129
Chromium	0.1	0.182	0.157	4.77	11.0
Copper	NL	--	--	--	--
Cyanide	0.2	0.556	0.590	3.12	5.85
Fluoride	4.0	1.00	1.00	34.7	69.1
Lead	0.05	0.523	0.118	0.829	7.32
Mercury	0.002	0.500	0.500	0.035	0.069
Nickel	0.1	0.470	0.645	1.85	2.68
Silver	NL	--	--	--	--
Zinc	NL	--	--	--	--

Notes: mg/L = milligrams per liter; lb/day = pounds per day; Q_{WRF} for Airport WRF = 1.04 mgd and for Sundog WWTP = 2.07 mgd; Highlighted values are most stringent AHLs; NL = No limit; "--" = Not applicable; C_{eff} for cyanide was based on free cyanide

AHLs Based on Inhibition Criteria

The inhibition AHL calculations vary depending on the biological process. For activated sludge and nitrification processes, the following formula is used to determine the AHL:

$$\text{AHL} = (8.34 * C_{\text{inhib}} * Q_{\text{WRF}}) / (1 - \text{RE}_{\text{PRIM}})$$

Where: AHL = Allowable headworks loading in lb/day

8.34 = Unit conversion factor

C_{inhib} = Inhibition criteria, in mg/L

Q_{WRF} = Average influent flow rate, in mgd

RE_{PRIM} = Removal efficiency from headworks to primary treatment effluent; used literature values from Appendix R in 2004 USEPA Guidance for Sundog WWTP and assumed zero percent for Airport WRF, which has no primary treatment

AHLs based on inhibition criteria were calculated based on both the Airport WRF and Sundog WWTP average influent flow rates and are presented in Table 17.



Table 17 Inhibition Criteria AHLs					
Parameter	C _{inhib} (mg/L)	1-RE _{PRIM} (decimal)		Inhibition Criteria AHL (lb/day)	
		Airport WRF	Sundog WWTP	Airport WRF	Sundog WWTP
Metals and Inorganics					
Arsenic	0.1	1.00	1.00	0.867	1.76
Cadmium	1.0	1.00	0.850	8.67	20.3
Chromium	0.25	1.00	0.730	2.17	5.91
Copper	0.05	1.00	0.780	0.434	1.11
Cyanide	0.1	1.00	0.730	0.867	2.36
Fluoride	NL	--	--	--	--
Lead	0.5	1.00	0.430	4.34	20.1
Mercury	0.1	1.00	0.900	0.867	1.92
Nickel	0.25	1.00	0.860	2.17	5.02
Silver	13	1.00	0.800	113	280
Zinc	0.08	1.00	0.730	0.694	1.89

Notes: mg/L = milligrams per liter; lb/day = pounds per day; QWRF for Airport WRF = 1.04 mgd and for Sundog WWTP = 2.07 mgd; Highlighted values are the most stringent AHLs; NL = No limit; “—” = Not applicable; RE_{PRIM} for Airport WRF was zero since the plant does not have primary treatment

AHLs Based on Biosolids Criteria

Sludge generated at the Airport WRF is disposed of via landfill. The Airport WRF sludge is analyzed for Toxicity Characteristic Leaching Procedure (TCLP) metals on an annual basis to verify that the sludge does not constitute a hazardous waste. The sludge generated at the Sundog WWTP is disposed of via land application. Part 503 Biosolids regulations have established pollutant limits based on the biosolids end use. For the purposes of the AHL calculations, the limits were based on 40 CFR Part 503, Table 3, Monthly Average Pollutant Concentrations (also found in Appendix E of the 2004 USEPA Guidance). The following formula is used to determine the biosolids AHL for land application:

$$\text{AHL} = (8.34 * C_{\text{slgstd}} * \text{PS}/100 * Q_{\text{slgd}} * G_{\text{slgd}}) / (\text{RE}_{\text{WRF}})$$

Where: AHL = Allowable headworks loading in lb/day

8.34 = Unit conversion factor

C_{slgstd} = Sludge standard, in mg/kg dry weight

PS = Percent solids of sludge (average percent solids for 8/2011 through 8/2012 was 14.61 percent)



G_{slgd} = Specific gravity of sludge, in kg/L (assumed to be 1 kg/L)

Q_{slgd} = Average sludge flow rate, in mgd (average percent solids for 8/2011 through 8/2012 was 14.61 percent)

RE_{WRF} = Removal efficiency from headworks to effluent

AHLs based on biosolids criteria were calculated for the Sundog WWTP and are presented in Table 18.

Table 18		
Biosolids Criteria AHLs		
Parameter	C_{slgstd} (mg/kg)	Biosolids AHL (lb/day)
Metals and Inorganic Pollutants		
Arsenic	41	0.0079
Cadmium	39	0.0030
Chromium	NL	--
Copper	1500	0.0438
Cyanide	NL	--
Fluoride	NL	--
Lead	300	0.0087
Mercury	17	0.00087
Nickel	420	0.0303
Silver	NL	--
Zinc	2800	0.1109

Notes: mg/kg = milligram per kilogram; lb/day = pounds per day; C_{slgstd} = sludge standard from 2004 USEPA Guidance, Appendix E; NL = No limit

Tables 19 and 20 present the MAHLs from the effluent and inhibition criteria AHLs for both the Airport WRF and Sundog WWTP.



POC	Effluent AHL (lb/day)	Inhibition AHL (lb/day)	Airport WRF MAHL (lb/day)
Metals and Inorganics			
Arsenic	0.485	0.867	0.485
Cadmium	0.065	8.67	0.065
Chromium	4.77	2.17	2.17
Copper	--	0.434	0.434
Cyanide	3.12	0.867	0.867
Fluoride	34.7	--	34.7
Lead	0.829	4.34	0.829
Mercury	0.035	0.867	0.035
Nickel	1.84	2.17	1.84
Silver	--	113	113
Zinc	--	0.694	0.694

Notes: lb/day = pounds per day; Highlighted values are the most stringent (i.e., lowest) AHLs

POC	Effluent AHL (lb/day)	Inhibition AHL (lb/day)	Biosolids AHL (lb/day)	Sundog WWTP MAHL (lb/day)
Metals and Inorganics				
Arsenic	0.994	1.73	0.7948	0.7948
Cadmium	0.129	20.3	0.3024	0.129
Chromium	11.4	5.91	--	5.91
Copper	--	1.11	4.38	1.11
Cyanide	5.85	2.36	--	2.36
Fluoride	69.0	--	--	69.0
Lead	7.32	20.1	0.8703	0.8703
Mercury	0.069	1.92	0.0870	0.069
Nickel	2.68	5.02	3.03	2.68
Silver	--	280	--	280
Zinc	--	1.89	11.1	1.89

Notes: lb/day = pounds per day; Highlighted values are the most stringent (i.e., lowest) AHLs

The 2004 USEPA Guidance recommends applying local limits when the average influent loading of a toxic pollutant exceeds 60 percent of the MAHL; however, the POTW may choose to establish limits for other POCs to protect its POTW against future increases in pollutant loadings from new or existing industrial users. Table 21 presents a comparison of the influent loadings and MAHLs from the current reevaluation, for the POCs for which MAHL-based limits were established by the 2011 Study.



Parameter	Influent Loading (lb/day)		MAHL (lb/day)		Influent / MAHL Ratio (%)	
	Airport WRF	Sundog WWTP	Airport WRF	Sundog WWTP	Airport WRF	Sundog WWTP
Metals and Inorganics						
Arsenic	0.058	0.1403	0.485	0.7948	12.0	17.6
Cadmium	0.0025	0.0041	0.065	0.129	3.85	3.18
Chromium	0.0611	0.1322	2.17	5.91	2.82	1.03
Copper	0.3023	1.13	0.434	1.11	69.6	102
Cyanide	0.0214	0.0404	0.867	2.36	2.47	1.71
Fluoride	28.6	5.75	34.7	69.0	82.4	16.6
Lead	0.0145	0.0584	0.829	0.8703	1.75	6.71
Mercury	0.0030	0.0019	0.035	0.069	8.57	0.028
Nickel	0.0533	0.0814	1.84	2.68	2.90	3.04
Silver	0.0078	0.0249	113	280	0.0069	0.0089
Zinc	0.9144	2.37	0.694	1.89	132	125

Notes: lb/day = pounds per day; MAHL = maximum allowable headworks loading; Shaded cell = Influent/MAHL exceeds 60 percent; local limit recommended

7. Control Strategies for Inorganic POCs

The allowable industrial loading (AIL) is the fraction of the MAHL that can be allocated to industrial users after accounting for a safety allowance (SA) and contributions from background sources. The AIL is calculated as follows:

$$\text{AIL} = \text{MAHL} - \text{Background} - \text{SA}$$

Where: AIL = Allowable industrial loading in lb/day

MAHL = Maximum allowable headworks loading in lb/day

Background = Loadings from uncontrolled sources in lb/day

SA = Safety allowance in lb/day, safety factor * MAHL

The safety factor in the AIL calculation protects the treatment facility by accounting for data variability and slug loads. The USEPA generally recommends a 10 percent safety factor, at a minimum. The representativeness of removal efficiencies based upon a number of not detected data or results around the reporting limit, or pollutants with large fluctuations in influent concentrations and loadings, is less certain. In these cases, use of a larger safety factor is warranted.



Safety factors used in the Local Limits Update are summarized in Table 22.

Parameter	Proposed Safety Factor	Reasoning
Metals and Inorganics		
Arsenic	10	Limited data
Cadmium	20	Limited data; majority of results not detected or at reporting limit
Chromium	10	Limited data
Copper	20	Limited data; wide range of results
Cyanide	20	Limited data; majority of results not detected or at reporting limit
Fluoride	20	Limited data; concentration fluctuations
Lead	20	Limited data; majority of results near reporting limit
Mercury	20	Limited data; majority of results not detected
Nickel	10	Limited data
Silver	20	Limited data; majority of results near reporting limit
Zinc	10	Limited data

Tables 23 and 24 present the AILs for the Airport WRF and Sundog WWTP.

Parameter	MAHL (lb/day)	Background Loading (lb/day)	Safety Allowance (lb/day)	AIL (lb/day)
Metals and Inorganics				
Arsenic	0.485	0.0573	0.0485	0.3792
Cadmium	0.065	0.0028	0.013	0.0492
Chromium	2.17	0.0618	0.217	1.89
Copper	0.434	0.3260	0.0868	0.0212
Cyanide	0.867	0.0178	0.1734	0.6758
Fluoride	34.7	2.49	6.94	25.27
Lead	0.829	0.0105	0.1658	0.6527
Mercury	0.035	0.0008	0.0007	0.0272
Nickel	1.84	0.0470	0.1840	1.61
Silver	113	0.0015	22.6	90.4
Zinc	0.694	1.12	0.0694	<0

Notes: lb/day = pounds per day; MAHL = maximum allowable headworks loading; AIL = allowable industrial loading; Safety allowance = MAHL * safety factor



Parameter	MAHL (lb/day)	Background Loading (lb/day)	Safety Allowance (lb/day)	AIL (lb/day)
Metals and Inorganics				
Arsenic	0.7948	0.1085	0.07948	0.6068
Cadmium	0.129	0.0056	0.0258	0.0976
Chromium	5.91	0.0779	0.591	5.24
Copper	1.11	0.6749	0.222	0.1931
Cyanide	2.36	0.0418	0.4720	1.85
Fluoride	69.0	6.07	49.1	49.1
Lead	0.8703	0.0178	0.1706	0.6784
Mercury	0.069	0.0019	0.0138	0.0533
Nickel	2.68	0.0295	0.268	2.35
Silver	280	0.0067	56.0	223
Zinc	1.89	1.45	0.1890	0.251

Notes: lb/day = pounds per day; MAHL = maximum allowable headworks loading; AIL = allowable industrial loading; Safety allowance = MAHL * safety factor

There are several accepted methods for allocating the AIL for each POC among controlled sources. The uniform control limit (UCL) method requires that the AIL for each POC be divided by the total flow rates from all controlled dischargers. The UCL is calculated as follows:

$$UCL = AIL / (Q_{SIU} * 8.34)$$

Where: UCL = Uniform concentration limit in mg/L

AIL = Allowable industrial loading in lb/day

Q_{SIU} = Flow from industrial users in mgd, Q_{SIU} for the Airport WRF = 0.1863 mgd and for Sundog WWTP = 0.0020 mgd

8.34 = Conversion factor

Table 25 presents the UCLs for the Airport WRF and Sundog WWTP facilities.



Parameter	AIL (lb/day)		UCLs (mg/L)		Current Local Limits (mg/L)
	Airport WRF	Sundog WWTP	Airport WRF	Sundog WWTP	
Metals and Inorganics					
Arsenic	0.3792	0.6068	0.2440	36.4	0.1
Cadmium	0.0492	0.0976	0.0317	5.85	1.2
Chromium	1.89	5.24	1.22	314	4.0
Copper	0.0212	0.1931	0.0136	11.6	2.7
Cyanide	0.6758	1.85	0.4350	111	1.0
Fluoride	25.27	49.1	16.3	2945	--
Lead	0.6527	0.6784	0.4201	40.7	0.4
Mercury	0.0272	0.0533	0.0175	3.20	0.001
Nickel	1.61	2.35	1.04	141	2.6
Silver	90.4	223	58.2	13,428	0.7
Zinc	<0	0.251	<0	15.0	2.6

Notes: mg/L = milligrams per liter; AIL = allowable industrial loading; UCL = uniform concentration limit; Current local limits from City Code Section 2-1-44; “—” = No limit; Highlighted values are most stringent and conservative UCLs

The UCLs take into account industrial and background loadings specific to each treatment plant. For the Sundog WWTP, the influent flows are approximately twice the influent flows observed at Airport WRF, and the industrial flow volume is approximately one percent of the industrial flow volume received at the Airport WRF. These factors explain why, even though based on the same effluent and inhibition criteria, the Sundog WWTP UCLs are consistently higher than the Airport WRF UCLs.

8. Control Strategies for Conventional POCs

Conventional pollutants, such as nitrogen species, BOD₅, and TSS, were evaluated by comparing influent loads to the facility design loads. According to the 2004 USEPA Guidance:

- The POTW's rated average design capacity should be used as a “monthly average”-based MAHL. The treatment works is designed to have the capacity to consistently treat a specified amount of conventional pollutants to acceptable levels for discharge.



- The POTW's peak loading capacity should be used as the "daily maximum"-based MAHL. Based on peaking factor, peak loading capacity reflects the plant's ability to handle diurnal, wet weather, and seasonal peaks.

Based on the 2004 USEPA Guidance, increased monitoring or establishment of local limit is recommended if the influent loading exceeds 80 percent of the established threshold value for conventional pollutants.

Conventional pollutants monitored at the Airport WRF and Sundog WWTP influents during the April 2010 sampling event included BOD₅, ammonia, TKN, nitrate/nitrite, total nitrogen, and TSS. Table 26 presents the annual average influent loadings and the design capacities for the conventional POCs.

Parameter	2012 Avg Influent Loading (lb/day)	Avg Design Capacity (lb/day)	Max Month Design Capacity (lb/day)	Influent Loading/Avg Design Capacity (%)	Influent Loading / Max Month Design Capacity (%)
Airport WRF					
BOD ₅	1878	2,340	3,750	80.2	50.1
TKN	314	697	871	45.0	36.0
TSS	2374	3,190	5,103	74.4	46.5
Sundog WWTP					
Ammonia	577	1,200	1,626	48.1	35.5
BOD ₅	5080	7,606	8,999	66.8	56.4
TSS	5011	8,557	8,945	58.6	56.0

Notes: lb/day = pound per day; Avg = average; TKN = Total Kjeldahl Nitrogen; NO₂/NO₃ = Nitrite + nitrate; BOD₅ = Biochemical Oxygen Demand (5-day); TSS = total suspended solids; Airport WRF and Sundog WWTP design capacity values from Technical Memoranda No. 3A and 3S, Capacity and Technology Master Plan (Black & Veatch, March 2011)

9. Conclusions and Recommendations

Local limits based on the UCLs as presented in this Local Limits Update will allow the Airport WRF and Sundog WWTP to operate without interference or pass-through. The methodology used in this local limits evaluation is technically enforceable and is based on the most current USEPA guidance. Table 27 summarizes each of the POCs assessed during this Local Limits Update. Table 28 presents a comparison of the current, 2011 Study, and the updated local limits.



Table 27 Breakdown of Local Limits Update				
Parameter	UCL compared to Local Limits	Most Stringent AHL	Comments	Recommendations
Metals and Inorganics				
Arsenic	Greater than	Effluent	Not triggered as POC through screening	Keep local limit and continue to monitor
Cadmium	Less than	Effluent	Influent concentrations nondetect or trace detects, possible bias	Keep local limit and continue to monitor
Chromium	Less than	Inhibition	Influent concentrations nondetect or trace detects, possible bias	Keep local limit and continue to monitor
Copper	Less than	Inhibition	Inhibition of biological processes not observed at plants	Keep local limit and continue to monitor
Cyanide	Less than	Inhibition	Inhibition of biological processes not observed at plants	Keep local limit and continue to monitor
Fluoride	NA	Effluent	Data set supports establishing local limit	Set local limit at 16.3 mg/L
Lead	Approx equal	Effluent	UCL supports local limit value	Keep local limit and continue to monitor
Mercury	Greater than	Effluent	POC triggered by biosolids criteria	Run sludge for TCLP to verify not hazardous waste; keep local limit and continue to monitor
Nickel	Less than	Effluent	Data set supports modifying local limit	Modify local limit to 1.04 mg/L and continue to monitor
Silver	Greater than	Inhibition	Inhibition of biological processes not observed at plants	Keep local limit and continue to monitor
Zinc	Less than	Inhibition	Inhibition of biological processes not observed at plants	Keep local limit and continue to monitor
Conventional and Other Pollutants				
Ammonia/ TKN	--	--	Influent loading of nitrogen species is below 80% of design capacity	Continue to monitor effluent
BOD ₅	--	--	Influent loading approx 80% of design capacity	Continue to monitor influent and effluent
TSS	--	--	Influent loading below 80% design capacity	Continue to monitor effluent



Table 28 Recommended Limits				
Parameter	Current Local Limits (mg/L)	2011 Study (mg/L)	2012 Update (mg/L)	Recommended Limits (mg/L)
Metals and Inorganics				
Arsenic	0.1	0.10	0.2440	0.1
Cadmium	1.2	0.05	0.0317	1.2
Chromium	4.0	1.83	1.22	4.0
Copper	2.7	2.7	0.0136	2.7
Cyanide	1.0	1.0	0.4350	1.0
Fluoride	NL	6.31	16.3	16.3
Lead	0.4	0.32	0.4201	0.4
Mercury	0.001	0.001	0.0175	0.001
Molybdenum	NL	NL	--	NL
Nickel	2.6	0.70	1.04	1.04
Selenium	NL	0.33	--	NL
Silver	0.7	0.70	58.2	0.7
Zinc	2.6	2.28	<0	2.6
Total Metals	0.5	NL	--	NL
Conventional and Other Pollutants				
BOD ₅	300*	300	--	NL
FOG	50*	50	--	NL
Phenols Compounds	3.5	NL	--	NL
Sulfide	NL	0.05	--	NL
Total Identifiable Chlorinated Hydrocarbons	3.5	NL	--	NL
TSS	350*	350	--	NL

Notes: mg/L = milligrams per liter; BOD₅ = Biochemical oxygen demand; TSS = Total suspended solids; FOG = Fats, oils, and grease; NL = No limit; Current local limits are from City Code Section 2-1-44; Limits listed for BOD₅, TSS, and FOG are from City Code Section 2-1-39 (Prohibited Substances); Highlighted cells = Change to current local limits



10. References

Black & Veatch, 2010 *Technically Based Local Limits Study*, June 2011.

Black & Veatch, 2011 *Prescott Sundog WWTP and Airport WRF Capacity and Technology Master Plan, Technical Memoranda No. 3A and 3S*, March 16, 2011.

USEPA, 1987. *Guidance Manual on the Development and Implementation of Local Discharge Limitations*. EPA 833-B-87-202, November 1987.

USEPA, 2004. *Local Limits Development Guidance*, EPA 833-R-04-002A, July 2004.

Appendix A

2011 and 2012 Sampling Results

**Table A-1
Local Limits Update
2010 Local Limits Sampling Results**

Parameters	Airport WRF Influent (AP-1)							Average
	4/21/2010	4/22/2010	4/23/2010	4/24/2010	4/26/2010	4/27/2010	4/28/2010	
Metals and Inorganics (mg/L)								
Arsenic	0.0065	0.0069	0.0066	0.0066	0.0066	0.0071	0.0065	0.0067
Cadmium	0.0001 J	0.0002 J	0.00011 J	<0.00009	<0.00009	<0.00009	0.00009 J	0.00029
Chromium	0.0066	0.0069	0.007	0.0091	0.0067	0.0064	0.0066	0.0070
Chromium VI	0.006 J	<0.0012	<0.0012	<0.0012	0.002 J	<0.0012	<0.0012	0.0047
Copper	0.018	0.037	0.037	0.032	0.028	0.053	0.039	0.035
Cyanide	<0.0013	<0.0013	0.0034 J	<0.0013	0.0014 J	<0.0013	<0.0013	0.0025
Fluoride	4	2.8	4.1	4	1.8	3.2	3.2	3.3
Lead	0.0011	0.0015	0.0014	0.0025	0.0013	0.002	0.0019	0.0017
Mercury	<0.000089	0.00015 J	<0.000089	0.0018	<0.000089	<0.000089	<0.000089	0.0004
Nickel	0.0038	0.0051	0.0048	0.013	0.0036	0.0053	0.0074	0.0061
Selenium	0.0024	<0.0012	<0.0012	<0.0012	<0.0012	<0.0012	<0.0012	0.0012
Silver	0.00017 J	0.00042 J	0.00059 J	0.00038 J	0.00026 J	0.00025 J	0.0042	0.0042
Zinc	0.12	0.12	0.1	0.093	0.085	0.11	0.11	0.11
Conventional and Other Pollutants (mg/L)								
Ammonia	29.1	26.5	27.4	22.4	24.4	24.5	26	25.8
BOD ₅	198	251	200	210	205	263	189	217
NO ₂ /NO ₃	0.456	0.384	0.39	0.338	0.337	1.19	0.899	0.571
TKN	42.6	28.4	33.4	33.8	35.8	36.7	43	36.2
Total Nitrogen	43.1	28.8	33.8	34.2	36.1	37.9	43.9	36.8
Phenols	<0.025	<0.025	0.045 J	<0.025	0.081 J	<0.025	0.053 J	0.054
TSS	366	328	214	224	238	308	238	274

Parameters	Airport WRF Effluent (AP-3)								Average
	4/21/2010	4/22/2010	4/23/2010	4/24/2010	4/26/2010	4/27/2010	4/28/2010	5/3/2010	
Metals and Inorganics (mg/L)									
Arsenic	0.0064	0.006	0.006	0.0058	0.0058	0.0059	0.006	--	0.0060
Cadmium	<0.00009	<0.00009	<0.00009	<0.00009	<0.00009	<0.00009	<0.00009	--	0.0005
Chromium	0.0016	0.0014	0.0012	0.0012	0.0015	0.0011	0.00097	--	0.0013
Chromium VI	0.004 J	<0.0012	<0.0012	<0.0012	<0.0012	<0.0012	<0.0012	0.005 J	0.0049
Copper	0.0028	0.0044	0.0026	0.0027	0.0042	0.0034	0.0035	--	0.0034
Cyanide	0.009	0.0025 J	<0.0013	0.0065	0.0048 J	<0.0013	0.0066	--	0.0049
Fluoride	3.2	3.5	3.4	3.7	3.1	3.1	2.8	--	3.3
Lead	0.00086 J	0.00087 J	0.0008 J	0.0007 J	0.001	0.001	0.00089 J	--	0.0009
Mercury	<0.000089	0.00022	<0.000089	<0.000089	0.00009 J	<0.000089	<0.000089	--	0.00012
Nickel	0.0026	0.0036	0.0024	0.0029	0.0031	0.0027	0.0029	--	0.0029
Selenium	0.0022	<0.0012	<0.0012	<0.0012	<0.0012	<0.0012	<0.0012	--	0.0012
Silver	<0.00009	<0.00009	<0.00009	<0.00009	<0.00009	<0.00009	<0.00009	--	0.0005
Zinc	0.045	0.059	0.046	0.043	0.049	0.05	0.051	--	0.049
Conventional and Other Pollutants (mg/L)									
Ammonia	0.64	0.581	0.37	0.2	1.72	0.8	0.419	--	0.676
BOD ₅	2	2	2	3	2	2	2	--	2
NO ₂ /NO ₃	1.45	1.55	2.18	2.24	0.701	1.98	1.25	--	1.62
TKN	1.69	2.01	1.65	0.652	2.39	2.03	1.65	--	1.72
Total Nitrogen	3.14	3.55	3.83	2.9	3.09	4.01	2.9	--	3.346
Phenols	<0.025	<0.025	<0.025	<0.025	0.041 J	<0.025	<0.025	--	0.049
TSS	3.3	2.3	2.3	2.2	2.3	1.6	1.3	--	2.2

**Table A-1
Local Limits Update
2010 Local Limits Sampling Results**

Parameters	Airport WRF Domestic (AP-7)							Average
	4/21/2010	4/22/2010	4/23/2010	4/24/2010	4/26/2010	4/27/2010	4/28/2010	
Metals and Inorganics (mg/L)								
Arsenic	0.0086	0.008	0.0078	0.0079	0.0084	0.0083	0.007	0.008
Cadmium	0.00017 J	0.00014 J	0.0025	0.00016 J	0.00024 J	0.00012 J	0.00016 J	0.0005
Chromium	0.0081	0.0093	0.0093	0.0092	0.011	0.0092	0.0096	0.0094
Chromium VI	<0.0012	<0.0012	<0.0012	<0.0012	0.009 J	<0.0012	<0.0012	0.0056
Copper	0.042	0.043	0.036	0.035	0.048	0.044	0.046	0.042
Cyanide	<0.0013	<0.0013	<0.0013	<0.0013	<0.0013	<0.0013	<0.0013	0.0025
Fluoride	0.36 J	0.32 J	0.33 J	0.32 J	0.34 J	0.35 J	0.52	0.36
Lead	0.00075 J	0.0015	0.0023	0.0022	0.0016	0.0013	0.0015	0.0016
Mercury	<0.000089	0.0002	<0.000089	<0.000089	<0.000089	<0.000089	<0.000089	0.0001
Nickel	0.0031	0.015	0.0037	0.0027	0.0034	0.0032	0.0031	0.0049
Selenium	0.003	<0.0012	<0.0012	<0.0012	<0.0012	<0.0012	<0.0012	0.0013
Silver	0.0001 J	0.00018 J	0.00017 J	0.00031 J	0.00038 J	0.00023 J	0.00022 J	0.0002
Zinc	0.14	0.15	0.13	0.14	0.18	0.2	0.19	0.16
Conventional and Other Pollutants (mg/L)								
Ammonia	69.2	64.7	42.4	64.7	55.1	56.1	53.8	58.0
BOD ₅	327	339	292	327	427	425	423	366
NO ₂ /NO ₃	0.682	0.49	0.555	0.582	0.728	0.71	0.627	0.625
TKN	81.8	77	44.4	68	57.4	63.4	62.5	64.9
Total Nitrogen	82.4	77.6	45	68.6	58.1	64.2	63.1	65.6
Phenols	0.045 J	0.067 J	0.079 J	0.067 J	0.16	0.094 J	0.079 J	0.084
TSS	272	402	246	254	440	406	408	347

Parameters	Airport WRF Domestic (AP-8)								Average
	4/21/2010	4/22/2010	4/23/2010	4/24/2010	4/26/2010	4/27/2010	4/28/2010	5/3/2010	
Metals and Inorganics (mg/L)									
Arsenic	0.0088	0.0081	0.0076	0.0083	0.008	0.0081	0.0078	--	0.0081
Cadmium	0.00022 J	0.00012 J	0.00012 J	<0.00009	<0.00009	<0.00009	0.00012 J	--	0.0003
Chromium	0.008	0.0081	0.0094	0.0089	0.0072	0.0069	0.0074	--	0.0080
Chromium VI	<0.0012	<0.0012	<0.0012	<0.0012	<0.0012	<0.0012	<0.0012	0.009 J	0.0055
Copper	0.031	0.055	0.071	0.043	0.033	0.073	0.041	--	0.050
Cyanide	<0.0013	<0.0013	<0.0013	<0.0013	<0.0013	<0.0013	<0.0013	--	0.0025
Fluoride	0.32 J	0.32 J	0.34 J	0.32 J	0.35 J	0.33 J	0.38 J	--	0.34
Lead	0.0013	0.0019	0.0015	0.0012	0.0012	0.001	0.0014	--	0.0014
Mercury	<0.000089	0.00024	<0.000089	<0.000089	<0.000089	<0.000089	<0.000089	--	0.0001
Nickel	0.0036	0.014	0.0053	0.0035	0.026	0.003	0.0029	--	0.0083
Selenium	0.0027	<0.0012	<0.0012	<0.0012	<0.0012	<0.0012	<0.0012	--	0.0008
Silver	0.00021 J	0.00027 J	0.00023 J	0.00025 J	0.00019 J	0.00009 J	0.00012 J	--	0.0002
Zinc	0.19	0.14	0.17	0.14	0.14	0.15	0.15	--	0.15
Conventional and Other Pollutants (mg/L)									
Ammonia	42.5	41.4	38	53.8	40.3	39.9	54.3	--	44.3
BOD ₅	444	358	381	341	230	371	352	--	354
NO ₂ /NO ₃	0.59	0.523	1.04	0.638	0.35	0.413	0.488	--	0.577
TKN	54.9	37.6	47.4	59.4	46.6	45	55.7	--	49.5
Total Nitrogen	55.5	38.2	48.4	60	46.9	45.4	56.1	--	50.1
Phenols	0.04 J	0.058 J	0.09 J	0.074 J	0.086 J	0.064 J	0.085 J	--	0.071
TSS	564	352	446	154	184	410	320	--	347

**Table A-1
Local Limits Update
2010 Local Limits Sampling Results**

Parameters	Sundog WWTP Influent (SD-1)							Average
	4/21/2010	4/22/2010	4/23/2010	4/24/2010	4/26/2010	4/27/2010	4/28/2010	
Metals and Inorganics (mg/L)								
Arsenic	0.0076	0.0088	0.0078	0.0079	0.008	0.0088	0.008	0.0081
Cadmium	0.00011 J	0.00033 J	0.00013 J	0.00033 J	0.00041 J	0.00019 J	0.00016 J	0.0002
Chromium	0.0057	0.0093	0.007	0.0076	0.008	0.0081	0.0079	0.0077
Chromium VI	0.005 J	<0.0012	<0.0012	<0.0012	0.003 J	<0.0012	<0.0012	0.0047
Copper	0.047	0.12	0.039	0.061	0.048	0.088	0.056	0.066
Cyanide	<0.0013	<0.0013	<0.0013	<0.0013	<0.0013	<0.0013	0.0014 J	0.0023
Fluoride	0.27 J	0.32 J	0.35 J	0.32 J	0.31 J	0.33 J	0.43	0.33
Lead	0.0095	0.0039	0.002	0.0019	0.0018	0.0023	0.0023	0.0034
Mercury	<0.000089	0.00016 J	<0.000089	<0.000089	<0.000089	<0.000089	<0.000089	0.0001
Nickel	0.0054	0.0065	0.004	0.0043	0.0041	0.0044	0.0043	0.0047
Selenium	0.0021	0.0051	<0.0012	<0.0012	<0.0012	<0.0012	<0.0012	0.0036
Silver	0.0011	0.0016	0.0014	0.0012	0.0011	0.002	0.0017	0.0014
Zinc	0.15	0.16	0.1	0.12	0.12	0.16	0.15	0.14
Conventional and Other Pollutants (mg/L)								
Ammonia	33.3	72.9	22.5	28.1	21.6	23.7	32	33.4
BOD ₅	294	309	312	257	285	251	352	294
NO ₂ /NO ₃	0.495	1.23	0.692	0.464	0.294	0.431	0.589	0.599
TKN	43.5	39.2	28.7	35	34.6	33.4	44.4	37.0
Total Nitrogen	44	40.6	29.4	35.6	34.9	33.9	45.6	37.7
Phenols	0.038 J	<0.025	0.038 J	0.037 J	0.039 J	0.038 J	0.048 J	0.040
TSS	346	320	402	236	280	384	360	333

Parameters	Sundog Primary Clarifier Effluent (SD-2)							Average
	4/21/2010	4/22/2010	4/23/2010	4/24/2010	4/26/2010	4/27/2010	4/28/2010	
Metals and Inorganics (mg/L)								
Arsenic	0.0079	0.0076	0.0073	0.0072	0.0071	0.0076	0.0072	0.0074
Cadmium	0.00012 J	0.00014 J	<0.00009	<0.00009	<0.00009	<0.00009	<0.00009	0.0004
Chromium	0.0055	0.0048	0.0043	0.0048	0.0049	0.0043	0.0043	0.0047
Chromium VI	0.005 J	<0.0012	0.002 J	<0.0012	0.004 J	<0.0012	<0.0012	0.0044
Copper	0.047	0.068	0.041	0.043	0.033	0.051	0.037	0.046
Cyanide	<0.0013	<0.0013	0.0016 J	<0.0013	<0.0013	0.0014 J	0.0014 J	0.0035
Fluoride	0.28 J	0.33 J	0.35 J	0.32 J	0.35 J	0.33 J	0.4	0.34
Lead	0.012	0.0031	0.0012	0.001	0.00074	0.00081	0.00084	0.0028
Mercury	<0.000089	0.00014 J	<0.000089	<0.000089	<0.000089	<0.000089	<0.000089	0.0001
Nickel	0.0047	0.0046	0.0033	0.0032	0.003	0.0031	0.0031	0.0036
Selenium	0.0023	0.0019 J	<0.0012	<0.0012	<0.0012	<0.0012	<0.0012	0.0013
Silver	0.00089 J	0.001	0.00055 J	0.00062 J	0.00047 J	0.0014	0.0011	0.0009
Zinc	0.11	0.087	0.068	0.074	0.07	0.078	0.076	0.080
Conventional and Other Pollutants (mg/L)								
Ammonia	34.2	31.6	24.9	27.3	25.5	25.7	29.9	28.4
BOD ₅	176	166	258	155	161	152	146	173
NO ₂ /NO ₃	0.426	0.74	--	0.316	0.271	0.322	0.358	0.406
TKN	38	27.8	--	28	29.5	28.5	17	28.1
Total Nitrogen	38.4	28.6	--	28.2	29.8	28.9	17.3	28.5
Phenols	0.049 J	0.043 J	0.038 J	<0.025	<0.025	0.049 J	0.061 J	0.048
TSS	46	30	49	47	45	51	52	46

**Table A-1
Local Limits Update
2010 Local Limits Sampling Results**

Parameters	Sundog WWTP Effluent (SD-3)							Average
	4/21/2010	4/22/2010	4/23/2010	4/24/2010	4/26/2010	4/27/2010	4/28/2010	
Metals and Inorganics (mg/L)								
Arsenic	0.0072	0.0069	0.0071	0.0069	0.007	0.0073	0.007	0.0071
Cadmium	<0.00009	<0.00009	<0.00009	<0.00009	<0.00009	<0.00009	<0.00009	0.0005
Chromium	0.0014	0.0013	0.0012	0.0011	0.0014	0.00094 J	0.00088 J	0.0012
Chromium VI	<0.0012	<0.0012	<0.0012	<0.0012	<0.0012	<0.0012	<0.0012	0.0050
Copper	0.0064	0.019	0.0058	0.0062	0.0068	0.0062	0.0066	0.0081
Cyanide	0.0028 J	0.006	0.002 J	0.0072	0.008	0.0083	0.012	0.0066
Fluoride	0.3 J	0.35 J	0.35 J	0.36 J	0.36 J	0.36 J	0.37 J	0.35
Lead	0.00034 J	0.00056 J	0.00044 J	0.00032 J	0.00074 J	0.00031 J	0.00026 J	0.0004
Mercury	<0.000089	0.00014 J	<0.000089	<0.000089	<0.000089	<0.000089	<0.000089	0.0001
Nickel	0.0032	0.0048	0.003	0.0026	0.0028	0.0025	0.0024	0.0030
Selenium	0.0018 J	<0.0012	<0.0012	<0.0012	<0.0012	<0.0012	<0.0012	0.0011
Silver	<0.00009	<0.00009	<0.00009	<0.00009	<0.00009	<0.00009	<0.00009	0.0005
Zinc	0.047	0.05	0.048	0.046	0.049	0.05	0.05	0.049
Conventional and Other Pollutants (mg/L)								
Ammonia	1.19	1.09	1.36	0.916	0.903	0.83	0.383	0.953
BOD ₅	5	4	8	4	3	3	2	4
NO ₂ /NO ₃	4.97	0.614	5.99	7.2	4.85	5.39	8.04	5.29
TKN	2.96	--	3.37	2.14	2.26	1.61	--	2.47
Total Nitrogen	7.94	2.45	9.36	9.34	7.12	7	4.39	6.80
Phenols	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	0.050
TSS	2.1	2.7	3.9	1.2	1.5	1.4	0.9	2.0

Parameters	Sundog WWTP Domestic (SD-7)							Average
	4/21/2010	4/22/2010	4/23/2010	4/24/2010	4/26/2010	4/27/2010	4/28/2010	
Metals and Inorganics (mg/L)								
Arsenic	0.0056	0.0051	0.0053	0.005	0.0065	0.0055	0.0054	0.0055
Cadmium	0.00012 J	0.00071 J	<0.00009	0.00021 J	<0.00009	<0.00009	<0.00009	0.0004
Chromium	0.004	0.0027	0.0034	0.0029	0.0067	0.0034	0.0031	0.0037
Chromium VI	<0.0012	<0.0012	<0.0012	<0.0012	0.003 J	<0.0012	<0.0012	0.0047
Copper	0.018	0.03	0.018	0.017	0.031	0.019	0.019	0.022
Cyanide	<0.0013	<0.0013	<0.0013	<0.0013	<0.0013	<0.0013	<0.0013	0.0025
Fluoride	0.29 J	0.37 J	0.37 J	0.36 J	0.37 J	0.38 J	0.41	0.36
Lead	0.0007 J	0.00072 J	0.00062 J	0.00058 J	0.00091 J	0.00064 J	0.00066 J	0.0007
Mercury	<0.000089	0.00018 J	<0.000089	<0.000089	0.00009 J	<0.000089	<0.000089	0.0001
Nickel	0.0043	0.0061	0.0037	0.0035	0.0036	0.0031	0.003	0.004
Selenium	0.0023	<0.0012	<0.0012	<0.0012	<0.0012	<0.0012	<0.0012	0.0012
Silver	<0.00009	<0.00009	<0.00009	<0.00009	0.00016 J	<0.00009	0.00011 J	0.0004
Zinc	0.093	0.05	0.053	0.048	0.12	0.068	0.051	0.069
Conventional and Other Pollutants (mg/L)								
Ammonia	44.1	9.68	12.6	14.4	27.4	18.3	15.9	20.3
BOD ₅	148	137	106	107	229	165	118	144
NO ₂ /NO ₃	0.572	1.03	0.75	0.594	0.486	0.378	0.386	0.599
TKN	20.7	7.28	15.8	17.22	32.1	26	18.4	19.6
Total Nitrogen	21.4	8.32	16.6	17.8	32.6	26.4	18.8	20.3
Phenols	<0.025	<0.025	<0.025	<0.025	0.046 J	0.034 J	0.025 J	0.044
TSS	140	142	104	114	190	142	104	134

**Table A-1
Local Limits Update
2010 Local Limits Sampling Results**

Parameters	Sundog WWTP Domestic (SD-8)								Average
	4/21/2010	4/22/2010	4/23/2010	4/24/2010	4/26/2010	4/27/2010	4/28/2010	5/3/2010	
Metals and Inorganics (mg/L)									
Arsenic	0.0074	0.0079	0.0056	0.0075	0.0066	0.0069	0.0081	--	0.0071
Cadmium	0.00013	0.00022	0.00014	0.00018	0.0002	<0.00009	0.00012	--	0.0002
Chromium	0.0052	0.0074	0.0025	0.0061	0.0054	0.0042	0.0065	--	0.0053
Chromium VI	<0.0012	<0.0012	0.002	<0.0012	<0.0012	<0.0012	<0.0012	0.006	0.0048
Copper	0.022	0.041	0.017	0.038	0.13	0.092	0.058	--	0.057
Cyanide	<0.0013	<0.0013	<0.0013	<0.0013	<0.0013	<0.0013	0.0016	--	0.0024
Fluoride	0.31	0.36	0.33	0.33	0.34	0.34	0.39	--	0.34
Lead	0.00074	0.0016	0.0016	0.0021	0.0012	0.00084	0.0016	--	0.0014
Mercury	<0.000089	0.00016	<0.000089	<0.000089	<0.000089	<0.000089	<0.000089	--	0.0001
Nickel	0.0034	0.0043	0.0026	0.0028	0.0031	0.0024	0.003	--	0.0031
Selenium	<0.0012	<0.0012	<0.0012	<0.0012	<0.0012	<0.0012	<0.0012	--	0.0010
Silver	0.00017	0.0005	<0.00009	0.0008	0.00015	0.00016	0.00043	--	0.0004
Zinc	0.086	0.15	0.043	0.097	0.087	0.076	0.16	--	0.100
Conventional and Other Pollutants (mg/L)									
Ammonia	22.6	22.2	10.2	21.5	18.1	19.3	24.1	--	19.7
BOD ₅	238	297	99	211	193	182	279	--	214
NO ₂ /NO ₃	0.607	1.28	0.491	0.932	0.376	0.554	0.837	--	0.725
TKN	27.7	13.3	16.1	24.8	24.7	27.1	33.1	--	23.8
Total Nitrogen	28.3	14.56	16.6	25.6	25.1	27.6	33.9	--	24.5
Phenols	<0.025	<0.025	0.045	0.049	0.11	0.033	0.048	--	0.055
TSS	240	276	64	160	210	158	260	--	195

Notes:

mg/L = milligrams per kilogram; BOD₅ = biochemical oxygen demand; TKN = Total Kjeldahl Nitrogen;

NO₂/NO₃ = nitrate + nitrite; TSS = total suspended solids

"--" = Not sampled; "<" = Analyte not detected above listed method detection limit;

Trace results, reported between the reporting limit and method detection limit, were qualified "J" to indicate the result is an estimated value; For calculating averages, 1/2 the reporting limit was used for non-detected results

**Table A-2
Local Limits Update
2010 Local Limits Sludge Results**

Parameter	Airport WAS			Average
	4/21/2010	4/27/2010	4/28/2010	
Metals and Inorganics (mg/kg)				
Arsenic	<890	<890	<890	3100
Cadmium	<50	<50	<50	310
Chromium	42 J	<37	<37	54
Chromium VI	<49	<49	<49	60
Copper	5600 J	<250	<250	3933
Cyanide	<3.8	<3.8	<3.8	5.0
Fluoride	460 J	460 J	410 J	443
Lead	430 J	<370	<370	2210
Mercury	3.7 J	<0.65	5.9 J	5.2
Molybdenum	<120	<120	<120	1250
Nickel	210 J	<81	<81	903
Selenium	<2300	<2300	<2300	3100
Silver	<240	<240	<240	1550
Zinc	7500 J	<1600	<1600	6500
Conventional and Other Pollutants (mg/kg)				
Ammonia	<39	450	59000	19858
NO ₂	78 J	100 J	<27	101
NO ₃	290	360	200 J	283
Phenols	--	--	--	NC
TKN	33000	70000	57000	53333

Parameter	Airport WAS Cake			Average
	4/21/2010	4/26/2010	4/28/2010	
Metals (mg/kg)				
Arsenic	4.2 J	7.4 J	6.8 J	6.1
Cadmium	0.43 J	0.72 J	0.71 J	0.62
Chromium	37	35	8.5	26.8
Chromium VI	<1.8	<1.8	<1.8	2.3
Copper	180	260	300	247
Cyanide	<0.71	<0.71	<0.71	0.90
Fluoride	59	64	57	60
Lead	14 J	22 J	19 J	18
Mercury	0.87	2.4	3.5	2.3
Molybdenum	3.2 J	4.7 J	4.4 J	4.1
Nickel	8 J	12	14	11
Selenium	<8.5	8.2 J	<8.5	9.9
Silver	3.1 J	4.4 J	4.6 J	4.0
Zinc	250	350	390	330
Gen Chem (mg/kg)				
Ammonia	1400	1800	2200	1800
NO ₂	7.3 J	5.9 J	11	8
NO ₃	3 J	13	100	39
Phenols	<2.9	--	--	4.6
TKN	68000	17000	23000	36000

**Table A-2
Local Limits Update
2010 Local Limits Sludge Results**

Parameter	Sundog WAS			Average
	4/21/2010	4/27/2010	4/28/2010	
Metals and Inorganics (mg/kg)				
Arsenic	<110	<110	<110	370
Cadmium	<5.9	<5.9	<5.9	37
Chromium	130 J	<44	<44	93
Chromium VI	<60	<60	<60	75
Copper	420 J	<30	<30	387
Cyanide	<4.5	<4.5	<4.5	6.0
Fluoride	73 J	110 J	99 J	94
Lead	<45	<45	<45	370
Mercury	3.9 J	<0.78	4.2 J	5.2
Molybdenum	<14	<14	<14	150
Nickel	<9.7	<9.7	<9.7	150
Selenium	<270	<270	<270	370
Silver	<28	<28	<28	185
Zinc	520 J	<200	310 J	527
Conventional and Other Pollutants (mg/kg)				
Ammonia	1100	1100	590	930
NO ₂	110 J	140 J	<32	133
NO ₃	640	1200	460	767
Phenols	--	--	--	NC
TKN	65000	85000	61000	70333

Parameter	Sundog Primary Sludge			Average
	4/21/2010	4/27/2010	4/28/2010	
Metals and Inorganics (mg/kg)				
Arsenic	<30	<30	<30	105
Cadmium	<1.7	<1.7	<1.7	10.5
Chromium	72	<12	<12	38
Chromium VI	<17	<17	<17	21
Copper	160 J	<8.4	<8.4	123
Cyanide	1.3 J	<1.3	<1.3	1.5
Fluoride	20 J	17 J	25 J	21
Lead	24 J	<13	<13	78
Mercury	1.5 J	<0.22	3.4 J	2.3
Molybdenum	4.6 J	<4	<4	4.6
Nickel	5.7 J	<2.7	<2.7	30
Selenium	<77	<77	<77	105
Silver	<7.9	<7.9	<7.9	50
Zinc	520	<56	220 J	317
Conventional and Other Pollutants (mg/kg)				
Ammonia	2200	2500	2900	2533
NO ₂	<9.1	<9.1	<9.1	42
NO ₃	<20	<20	<20	42
Phenols	--	--	--	NC
TKN	37000	36000	37000	36667

**Table A-2
Local Limits Update
2010 Local Limits Sludge Results**

Parameter	Sundog Digested Sludge Cake			Average
	4/21/2010	4/26/2010	4/28/2010	
Metals and Inorganics (mg/kg)				
Arsenic	8.3 J	12 J	13 J	11.1
Cadmium	0.9 J	1.4 J	1.6 J	1.3
Chromium	61	59	7.9	43
Chromium VI	<2.7	<2.7	<2.7	3.4
Copper	330	470	570	457
Cyanide	<1	<1	<1	1.4
Fluoride	6.7 J	6.4 J	7.3 J	6.8
Lead	12 J	36	23 J	24
Mercury	5.8	1.4	3.5	3.6
Molybdenum	7 J	10 J	10 J	9.0
Nickel	13	18	20	17
Selenium	<12	<12	<12	16.5
Silver	8.8 J	12 J	13 J	11.3
Zinc	630	810	940	793
Conventional and Other Pollutants (mg/kg)				
Ammonia	7400	5900	6800	6700
NO ₂	5.3 J	9.2 J	7.2 J	7.2
NO ₃	<3.3	<3.3	<3.3	6.5
Phenols	<2.1	--	--	3.3
TKN	59000	28000	31000	39333

Notes:

mg/kg = milligrams per kilogram; TKN = Total Kjeldahl Nitrogen;

NO₂ = nitrite; NO₃ = nitrate

"--" = Not sampled; "<" = Analyte not detected above listed method detection limit; NC = Not calculated

Trace results, reported between the reporting limit and method detection limit, were qualified "J" to indicate the result is an estimated value; For calculating averages, 1/2 the reporting limit was used for non-detected results

**Table A-3
Local Limits Update
2012 Local Limits Sampling Results**

Parameters	Airport WRF Influent (AP-1)					Average
	10/18/2012	10/19/2012	10/20/2012	10/21/2012	10/22/2012	
Metals and Inorganics (mg/L)						
Antimony	<0.003	0.00051	0.00045	<0.003	0.00033	0.0009
Arsenic	0.0067	0.0071	0.0069	0.0064	0.0069	0.0068
Barium	0.027	0.035	0.047	0.026	0.068	0.0406
Beryllium	0.00041	0.00027	0.00042	<0.001	<0.001	0.0004
Cadmium	0.0002	0.00024	0.00024	0.00016	0.00023	0.0002
Chromium	0.0059	0.0082	0.0074	0.0061	0.0072	0.0070
Copper	0.029	0.044	0.035	0.023	0.052	0.037
Fluoride	6.3	7.7	4.9	4	4.4	5.5
Lead	0.0021	0.0032	0.0024	0.0015	0.0014	0.0021
Mercury	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	0.0001
Nickel	0.0033	0.004	0.0032	0.0028	0.0033	0.0033
Selenium	0.0012	<0.002	0.0012	<0.002	<0.002	0.0011
Silver	0.00018	0.00036	0.0022	0.00034	0.0003	0.0007
Thallium	<0.001	<0.001	<0.001	<0.001	<0.001	0.0005
Zinc	0.089	0.13	0.11	0.11	0.11	0.110
Conventional and Other Pollutants (mg/L)						
Ammonia	24	30	32	28	30	29
BOD ₅	160	190	220	200	230	200
NO ₃	0.03	<0.2	<0.2	<0.2	<0.2	0.09
NO ₂	0.075	<0.2	<0.2	<0.2	<0.2	0.095
NO ₂ /NO ₃	<0.4	<0.4	<0.4	<0.4	<0.4	0.2
TKN	40	45	47	52	5.6	38
Total N	40	45	47	52	5.6	38
TSS	130	230	330	310	410	282

Parameters	Airport WRF Effluent (AP-3)					Average
	4/21/2010	4/22/2010	4/23/2010	4/24/2010	4/26/2010	
Metals and Inorganics (mg/L)						
Antimony	<0.003	0.00032	0.00029	0.00045	0.00026	0.0006
Arsenic	0.006	0.0056	0.0057	0.006	0.006	0.0059
Barium	0.018	0.015	0.014	0.013	0.013	0.0146
Beryllium	0.00055	0.0028	0.00047	<0.001	<0.001	0.0010
Cadmium	<0.001	<0.001	<0.001	<0.001	<0.001	0.0005
Chromium	0.0013	0.0013	0.0011	0.0013	0.0014	0.0013
Copper	0.0026	0.0023	0.0032	0.0021	0.0025	0.003
Fluoride	5.4	5.8	5.7	5.4	4.6	5.4
Lead	0.004	0.0023	0.0017	0.0013	0.001	0.0021
Mercury	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	0.0001
Nickel	0.0033	0.003	0.0024	0.0024	0.0022	0.0027
Selenium	<0.002	<0.002	<0.002	<0.002	<0.002	0.001
Silver	<0.001	<0.001	<0.001	<0.001	<0.001	0.0005
Thallium	<0.001	<0.001	<0.001	<0.001	<0.001	0.0005
Zinc	0.062	0.057	0.057	0.059	0.058	0.059
Conventional and Other Pollutants (mg/L)						
Ammonia	1.1	0.5	0.52	0.56	0.64	0.66
BOD ₅	<5.0	<5.0	<5.0	<5.0	<5.0	2.5
NO ₃	0.52	0.62	0.66	0.7	0.7	0.64
NO ₂	0.22	0.15	0.1	0.1	0.11	0.14
NO ₂ /NO ₃	0.74	0.78	0.76	0.8	0.81	0.78
TKN	1.9	1.7	1.4	1.6	1.6	1.6
Total N	2.6	2.3	2.1	2.3	2.3	2.3
TSS	1.5	1.0	1	2.5	2	1.6

**Table A-3
Local Limits Update
2012 Local Limits Sampling Results**

Parameters	Airport WRF Domestic (AP-7)			Average
	10/18/2012	10/19/2012	10/20/2012	
Metals and Inorganics (mg/L)				
Antimony	<0.003	<0.003	<0.003	0.0015
Arsenic	0.0085	0.0067	0.0082	0.0078
Barium	0.023	0.0096	0.017	0.0165
Beryllium	0.00032	<0.001	0.00043	0.0004
Cadmium	0.00023	0.00018	0.00025	0.0002
Chromium	0.0088	0.0053	0.0094	0.0078
Copper	0.044	0.025	0.039	0.036
Fluoride	0.29	0.38	0.25	0.31
Lead	0.0015	0.0011	0.0021	0.0016
Mercury	<0.0002	<0.0002	<0.0002	0.0001
Nickel	0.0025	0.0017	0.0023	0.0022
Selenium	0.0018	0.0012	0.0016	0.0015
Silver	0.00013	0.00014	0.00017	0.0001
Thallium	<0.001	<0.001	<0.001	0.0005
Zinc	0.17	0.13	0.16	0.15
Conventional and Other Pollutants (mg/L)				
Ammonia	41	49	45	45
BOD ₅	280	170	350	267
NO ₃	0.03	<0.2	<0.2	0.08
NO ₂	0.041	<0.2	<0.2	0.080
NO ₂ /NO ₃	<0.4	<0.4	<0.4	0.2
TKN	72	64	63	66
Total N	72	64	63	66
TSS	280	110	240	210

Parameters	Airport WRF Domestic (AP-8)			Average
	4/21/2010	4/22/2010	4/23/2010	
Metals and Inorganics (mg/L)				
Antimony	<0.003	<0.003	<0.003	0.0015
Arsenic	0.0084	0.008	0.0083	0.0082
Barium	0.026	0.018	0.019	0.021
Beryllium	0.00028	0.00033	0.00054	0.0004
Cadmium	0.00018	0.00022	0.00068	0.0004
Chromium	0.0084	0.0077	0.0076	0.0079
Copper	0.037	0.039	0.041	0.039
Fluoride	0.31	0.4	0.25	0.32
Lead	0.00094	0.0013	0.0015	0.0012
Mercury	<0.0002	<0.0002	<0.0002	0.0001
Nickel	0.0025	0.0023	0.0025	0.0024
Selenium	0.0016	0.0013	0.0016	0.0015
Silver	0.00034	0.0015	0.00025	0.0007
Thallium	<0.001	<0.001	<0.001	0.0005
Zinc	0.14	0.12	0.15	0.14
Conventional and Other Pollutants (mg/L)				
Ammonia	32	38	39	36
BOD ₅	240	220	310	257
NO ₃	0.032	<0.2	<0.2	0.08
NO ₂	0.1	<0.2	<0.2	0.1
NO ₂ /NO ₃	<0.4	<0.4	<0.4	0.2
TKN	54	51	57	54
Total N	54	51	57	54
TSS	250	200	280	243

**Table A-3
Local Limits Update
2012 Local Limits Sampling Results**

Parameters	15130NW-MH100 (PureWafer)			Average
	10/18/2012	10/19/2012	10/20/2012	
Metals and Inorganics (mg/L)				
Antimony	0.0015	0.0015	0.0012	0.0014
Arsenic	0.0042	0.004	0.0044	0.0042
Barium	0.003	0.0013	0.014	0.0061
Beryllium	0.00036	<0.001	0.00048	0.0005
Cadmium	<0.001	0.0001	<0.001	0.0004
Chromium	0.0042	0.0044	0.0076	0.0054
Copper	0.021	0.045	0.015	0.0270
Fluoride	41	49	29	40
Lead	0.0003	0.00026	0.00059	0.0004
Mercury	<0.0002	<0.0002	<0.0002	0.0001
Nickel	0.0006	0.00093	0.0022	0.0012
Selenium	<0.002	<0.002	<0.002	0.0010
Silver	<0.001	0.00022	<0.001	0.0004
Thallium	<0.001	<0.001	<0.001	0.0005
Zinc	0.011	0.0046	0.02	0.0119
Conventional and Other Pollutants (mg/L)				
Ammonia	5.9	5.5	7.3	6.2
BOD ₅	33	30	110	58
NO ₃	2.4	4.7	1.5	2.9
NO ₂	0.047	0.038	0.04	0.042
NO ₂ /NO ₃	2.5	4.7	1.5	2.9
TKN	14	14	22	17
Total N	16	19	24	20
TSS	38	26	79	48

Parameters	15130NW-MW104 (Ester C)			Average
	4/21/2010	4/22/2010	4/23/2010	
Metals and Inorganics (mg/L)				
Antimony	<0.003	<0.003	0.0007	0.0012
Arsenic	0.008	0.0046	0.0061	0.0062
Barium	0.24	0.14	0.091	0.1570
Beryllium	0.00077	0.00048	0.0006	0.0006
Cadmium	0.0048	0.0023	0.00051	0.0025
Chromium	0.029	0.014	0.013	0.0187
Copper	0.41	0.19	0.17	0.257
Fluoride	0.43	0.57	1.1	0.70
Lead	0.027	0.013	0.005	0.0150
Mercury	<0.0002	<0.0002	<0.0002	0.0001
Nickel	0.032	0.015	0.0095	0.0188
Selenium	0.0035	0.0012	0.0014	0.0020
Silver	0.00031	0.00013	<0.001	0.0003
Thallium	<0.001	<0.001	<0.001	0.0005
Zinc	0.8	0.31	0.29	0.47
Conventional and Other Pollutants (mg/L)				
Ammonia	97	48	22	56
BOD ₅	1500	690	1500	1230
NO ₃	<0.2	<0.2	0.46	0.22
NO ₂	<0.2	<0.2	0.21	0.14
NO ₂ /NO ₃	<0.4	<0.4	0.67	0.36
TKN	220	1100	130	483
Total N	220	1100	130	483
TSS	1100	580	660	780

**Table A-3
Local Limits Update
2012 Local Limits Sampling Results**

Parameters	15225NW-MH100 (Sturm Ruger)			Average
	10/18/2012	10/19/2012	10/20/2012	
Metals and Inorganics (mg/L)				
Antimony	0.0016	0.0014	0.00087	0.0013
Arsenic	0.0054	0.0039	0.0049	0.0047
Barium	0.03	0.026	0.025	0.027
Beryllium	0.00085	0.00036	0.00058	0.0006
Cadmium	0.00083	0.0012	0.00071	0.0009
Chromium	0.011	0.013	0.0077	0.0106
Copper	0.03	0.028	0.025	0.0277
Fluoride	0.63	0.69	0.56	0.63
Lead	0.035	0.031	0.012	0.0260
Mercury	<0.0002	<0.0002	<0.0002	0.0001
Nickel	0.02	0.022	0.014	0.019
Selenium	0.0016	0.0013	0.0012	0.0014
Silver	<0.001	<0.001	<0.001	0.0005
Thallium	<0.001	<0.001	<0.001	0.0005
Zinc	0.11	0.085	0.082	0.092
Conventional and Other Pollutants (mg/L)				
Ammonia	25	25	23	24
BOD ₅	180	150	190	173
NO ₃	8.2	14	5.9	9.4
NO ₂	9.4	11	8.8	9.7
NO ₂ /NO ₃	18	25	15	19
TKN	43	35	34	37
Total N	61	60	49	57
TSS	200	220	150	190

**Table A-3
Local Limits Update
2012 Local Limits Sampling Results**

Parameters	Sundog WWTP Influent (SD-1)					Average
	10/25/2012	10/26/2012	10/27/2012	10/28/2012	10/29/2012	
Metals and Inorganics (mg/L)						
Antimony	<0.003	0.002	0.0006	<0.003	<0.003	0.0014
Arsenic	0.009	0.013	0.0091	0.0077	0.0086	0.0095
Barium	0.054	0.063	0.063	0.041	0.041	0.0524
Beryllium	<0.001	0.00041	0.00037	0.00035	0.0003	0.0004
Cadmium	0.00028	0.00047	0.00023	0.00016	0.00022	0.0003
Chromium	0.0089	0.014	0.0083	0.0079	0.01	0.0098
Copper	0.05	0.15	0.051	0.051	0.057	0.072
Fluoride	0.42	0.41	0.4	0.33	0.35	0.38
Lead	0.0036	0.004	0.0023	0.0016	0.0016	0.0026
Mercury	<0.0002	<0.0002	0.000074	<0.0002	<0.0002	0.0001
Nickel	0.0052	0.0059	0.0041	0.0042	0.0046	0.0048
Selenium	0.0012	0.0017	0.0014	<0.002	0.0014	0.0013
Silver	0.00056	0.0012	<0.001	0.00054	<0.001	0.0007
Thallium	<0.001	<0.001	<0.001	<0.001	<0.001	0.0005
Zinc	0.17	0.35	0.17	0.15	0.15	0.20
Conventional and Other Pollutants (mg/L)						
Ammonia	30	32	28	27	25	28
BOD ₅	270	370	290	310	310	310
NO ₃	<0.2	<0.2	<0.2	<0.2	<0.2	0.1
NO ₂	<0.2	<0.2	<0.2	<0.2	<0.2	0.1
NO ₂ /NO ₃	<0.4	<0.4	<0.4	<0.4	<0.4	0.2
TKN	40	55	42	41	40	44
Total N	40	55	42	41	40	44
TSS	330	440	290	310	280	330

Parameters	Sundog WWTP Effluent (SD-3)					Average
	10/25/2012	10/26/2012	10/27/2012	10/28/2012	10/29/2012	
Metals and Inorganics (mg/L)						
Antimony	<0.003	<0.003	<0.003	<0.003	<0.003	0.0015
Arsenic	0.0074	0.0074	0.0071	0.0064	0.0061	0.0069
Barium	0.0098	0.0099	0.0098	0.0096	0.0098	0.0098
Beryllium	<0.001	0.00039	0.00032	0.00029	0.00037	0.0004
Cadmium	<0.001	<0.001	<0.001	<0.001	<0.001	0.0005
Chromium	0.0017	0.0017	0.0017	0.0017	0.0016	0.0017
Copper	0.0031	0.0027	0.003	0.003	0.0029	0.0029
Fluoride	0.34	0.39	0.4	0.35	0.35	0.37
Lead	0.00024	0.00027	0.0003	0.00022	0.00018	0.0002
Mercury	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	0.0001
Nickel	0.002	0.0021	0.002	0.0022	0.0021	0.0021
Selenium	<0.002	<0.002	<0.002	<0.002	<0.002	0.0010
Silver	<0.001	<0.001	<0.001	<0.001	<0.001	0.0005
Thallium	<0.001	<0.001	<0.001	<0.001	<0.001	0.0005
Zinc	0.038	0.042	0.041	0.037	0.035	0.039
Conventional and Other Pollutants (mg/L)						
Ammonia	--	1.2	1.4	1.5	0.64	1.19
BOD ₅	<5.0	<5.0	<5.0	<5.0	<5.0	2.5
NO ₃	--	3.6	2.2	3.3	5	3.5
NO ₂	--	0.87	1	0.89	0.65	0.85
NO ₂ /NO ₃	--	4.5	3.2	4.2	5.7	4.4
TKN	--	3.3	3.7	3.3	2.4	3.2
Total N	--	7.8	6.9	7.5	8.1	7.6
TSS	2	1.5	1.5	1.5	2	1.7

**Table A-3
Local Limits Update
2012 Local Limits Sampling Results**

Parameters	Sundog WWTP Domestic (SD-7)			Average
	10/25/2012	10/26/2012	10/27/2012	
Metals and Inorganics (mg/L)				
Antimony	0.00057	<0.003	<0.003	0.0012
Arsenic	0.007	0.0079	0.0071	0.0073
Barium	0.038	0.049	0.037	0.0413
Beryllium	<0.001	0.00033	0.00043	0.0004
Cadmium	0.00028	0.0003	0.00017	0.0003
Chromium	0.0075	0.0083	0.0074	0.0077
Copper	0.043	0.044	0.039	0.042
Fluoride	0.34	0.41	0.34	0.36
Lead	0.0045	0.0021	0.0017	0.0028
Mercury	<0.0002	<0.0002	<0.0002	0.0001
Nickel	0.0028	0.0026	0.0024	0.0026
Selenium	<0.002	0.0016	0.0014	0.0013
Silver	0.00018	<0.001	<0.001	0.0004
Thallium	<0.001	<0.001	<0.001	0.0005
Zinc	0.14	0.17	0.14	0.15
Conventional and Other Pollutants (mg/L)				
Ammonia	37	33	29	33
BOD ₅	240	250	210	233
NO ₃	0.17	<0.2	0.056	0.1087
NO ₂	0.089	<0.2	0.076	0.0883
NO ₂ /NO ₃	<0.4	<0.4	<0.4	0.2
TKN	55	34	43	44
Total N	55	34	43	44
TSS	290	300	240	277

Parameters	Sundog WWTP Domestic (SD-8)			Average
	10/25/2012	10/26/2012	10/27/2012	
Metals and Inorganics (mg/L)				
Antimony	<0.003	<0.003	<0.003	0.0015
Arsenic	0.0084	0.0086	0.0084	0.0085
Barium	0.07	0.052	0.056	0.0593
Beryllium	<0.001	0.00035	0.00042	0.0004
Cadmium	0.00065	0.00054	0.0008	0.0007
Chromium	0.0099	0.0087	0.008	0.0089
Copper	0.055	0.04	0.14	0.08
Fluoride	0.42	0.31	0.33	0.35
Lead	0.0018	0.0013	0.0016	0.0016
Mercury	<0.0002	<0.0002	<0.0002	0.0001
Nickel	0.0024	0.0023	0.0021	0.0023
Selenium	0.0015	0.0015	0.0012	0.0014
Silver	0.0012	<0.001	<0.001	0.0007
Thallium	<0.001	<0.001	<0.001	0.0005
Zinc	0.16	0.13	0.13	0.14
Conventional and Other Pollutants (mg/L)				
Ammonia	33	37	30	33
BOD ₅	290	260	140	230
NO ₃	<0.2	<0.2	<0.2	0.1
NO ₂	<0.2	<0.2	<0.2	0.1
NO ₂ /NO ₃	<0.4	<0.4	<0.4	0.2
TKN	52	33	42	42
Total N	52	33	42	42
TSS	340	300	270	303

**Table A-3
Local Limits Update
2012 Local Limits Sampling Results**

Parameters	14234SW-MW104 (Fortner)			Average
	10/25/2012	10/26/2012	10/27/2012	
Metals and Inorganics (mg/L)				
Antimony	<0.003	<0.003	<0.003	0.0015
Arsenic	0.008	0.008	0.0081	0.0080
Barium	0.013	0.011	0.0098	0.0113
Beryllium	<0.001	0.00024	0.00028	0.0003
Cadmium	0.00011	0.00026	0.00012	0.0002
Chromium	0.0097	0.0067	0.0073	0.0079
Copper	0.029	0.021	0.022	0.024
Fluoride	0.45	0.32	0.3	0.36
Lead	0.0019	0.0053	0.0021	0.0031
Mercury	<0.0002	<0.0002	<0.0002	0.0001
Nickel	0.0022	0.0021	0.0016	0.0020
Selenium	0.0012	<0.002	<0.002	0.0011
Silver	<0.001	<0.001	<0.001	0.0005
Thallium	<0.001	<0.001	<0.001	0.0005
Zinc	0.11	0.098	0.075	0.094
Conventional and Other Pollutants (mg/L)				
Ammonia	33	18	17	23
BOD ₅	320	99	120	180
NO ₃	0.42	0.38	0.22	0.34
NO ₂	0.094	0.067	0.053	0.071
NO ₂ /NO ₃	0.52	0.44	<0.4	0.39
TKN	84	40	27	50
Total N	84	40	27	50
TSS	200	89	100	130

NO₂/NO₃ = nitrate + nitrite; BOD₅ = biochemical oxygen demand; TSS = total suspended solids

TKN = total Kjeldahl nitrogen; NO₂ = nitrite; NO₃ = nitrate

"-" = Not sampled; "<" = Analyte not detected above listed method detection limit;

Trace results, reported between the reporting limit and method detection limit, were qualified "J" to indicate the result is an estimated value; For calculating averages, 1/2 the reporting limit was used for non-detected results

Appendix B

Pollutants of Concern

**Table B-1
Local Limits Update
Most Stringent Effluent Criteria**

Potential Pollutants of Concern	Most Stringent Effluent Criteria	Airport WRF APP	Sundog WWTP APP	Hassayampa WRF APP
Inorganics (mg/L)				
Antimony	0.006	0.006	0.006	0.006
Arsenic	0.05	0.05	0.05	0.05
Barium	2.0	2.0	2.0	2.0
Beryllium	0.004	0.004	0.004	0.004
Cadmium	0.005	0.005	0.005	0.005
Chromium	0.1	0.1	0.1	0.1
Lead	0.05	0.05	0.05	0.05
Mercury	0.002	0.002	0.002	0.002
Nickel	0.1	0.1	0.1	0.1
Selenium	0.05	0.05	0.05	0.05
Thallium	0.002	0.002	0.002	0.002
Volatile Organics (mg/L)				
1,1-Dichloroethene	0.007	0.007	0.007	0.007
1,2-Dichloroethane	0.005	0.005	0.005	0.005
1,2-Dichlorobenzene	0.6	0.6	0.6	0.6
1,2-Dichloropropane	0.005	0.005	0.005	0.005
1,4-Dichlorobenzene	0.075	0.075	0.075	0.075
1,1,1-Trichloroethane	0.2	0.2	0.2	0.2
1,1,2-Trichloroethane	0.005	0.005	0.005	--
Benzene	0.005	0.005	0.005	0.005
Carbon tetrachloride	0.005	0.005	0.005	0.005
Chlorobenzene	0.1	0.1	0.1	0.1
cis-1,2-Dichloroethene	0.07	0.07	0.07	0.07
Ethylbenzene	0.7	0.7	0.7	0.7
Methylene chloride	0.005	0.005	0.005	--
Styrene	0.1	0.1	0.1	0.1
Tetrachloroethene	0.005	0.005	0.005	0.005
Toluene	1.0	1.0	1.0	1.0
trans-1,2-Dichloroethene	0.1	0.1	0.1	0.1
Trichloroethene	0.005	0.005	0.005	0.005
Trihalomethanes	0.1	0.1	0.1	0.1
Vinyl chloride	0.002	0.002	0.002	0.002
Xylenes (total)	10	10	10	10
Semivolatile Organics (mg/L)				
1,2,4-Trichlorobenzene	0.07	0.07	0.07	--
Hexachlorobenzene	0.001	0.001	--	0.001
Hexachlorocyclopentadiene	0.05	0.05	--	0.05
General Chemistry Parameters (mg/L)				
Cyanide, Free	0.2	0.2	0.2	--
Fluoride	4.0	4.0	4.0	--
Total Kjeldahl Nitrogen	10.0	10.0	--	--
Nitrate - Nitrite	10	10	--	--
Nitrogen, Total (NO ₂ + NO ₃ + TKN)	10	10	10	10
Microbiological Parameters (CFU/100 ml)				
Fecal Coliform single sample max	800	800	800	800
Fecal Coliform four of last seven samples	200	200	200	200

**Table B-1
Local Limits Update
Most Stringent Effluent Criteria**

Potential Pollutants of Concern	Most Stringent Effluent Criteria	Airport WRF APP	Sundog WWTP APP	Hassayampa WRF APP
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Notes:

APP = Aquifer Protection Permit; discharge limits (DL) are listed as effluent limits

Airport WRF APP = APP No. P-101733

Sundog WWTP APP = APP No. P-100353

Hassayampa WRF APP = APP No. P-103159

Trihalomethanes = Sum of bromoform, chloroform, bromodichloromethane, and dibromochloromethane

mg/L = milligram per liter

CFU/100 ml = Colony Forming Units per 100 milliliters

**Table B-2
Local Limits Update
Operational and Sludge Criteria**

Potential Pollutants of Concern	Effluent Criteria	Inhibition Level	H&S Level	Biosolids Criteria (mg/kg)
Inorganics (mg/L)				
Antimony	0.006	--	--	--
Arsenic	0.05	0.1	--	41
Barium	2.0	--	--	--
Beryllium	0.004	--	--	--
Cadmium	0.005	1.0	--	39
Chromium (Total)	0.1	0.25	--	--
Chromium VI	--	1.0	--	--
Copper	--	0.05	--	1,500
Lead	0.05	0.5	--	300
Mercury	0.002	0.1	--	17
Nickel	0.1	0.25	--	420
Selenium	0.05	--	--	100
Silver	--	13	--	--
Thallium	0.002	--	--	--
Zinc	--	0.08	--	2,800
Volatile Organics (mg/L)				
1,1-Dichloroethane	--	--	1.685	--
1,1-Dichloroethene	0.007	--	0.016	--
1,2-Dichloroethane	0.005	--	0.168	--
1,2-Dichlorobenzene	0.6	0.23	--	--
1,2-Dichloropropane	0.005	--	4.289	--
1,3-Dichlorobenzene	--	5.0	--	--
1,4-Dichlorobenzene	0.075	1.4	--	--
1,1,1-Trichloroethane	0.2	--	2.759	--
1,1,2-Trichloroethane	0.005	--	1.601	--
1,1,2,2-Tetrachloroethane	--	--	1.847	--
2-Butanone	--	--	--	--
Acrolein	--	--	0.047	--
Acrylonitrile	--	5.0	4.822	--
Benzene	0.005	100	0.014	--
Bromomethane	--	--	0.305	--
Bromoform	--	--	0.227	--
Carbon tetrachloride	0.005	2.9	0.011	--
Chlorobenzene	0.1	0.96	2.29	--
Chloroethane	--	--	5.88	--
Chloroform	--	1.0	0.06	--
Chloromethane	--	3.3	0.557	--
cis-1,2-Dichloroethene	0.07	--	--	--
Ethylbenzene	0.7	200	1.659	--
Methylene chloride	0.005	--	4.139	--
Styrene	0.1	--	--	--
Tetrachloroethene	0.005	20	0.945	--
Toluene	1.0	200	2.075	--
trans-1,2-Dichloroethene	0.1	--	2.040	--
Trichloroethene	0.005	1.0	0.026	--

**Table B-2
Local Limits Update
Operational and Sludge Criteria**

Potential Pollutants of Concern	Effluent Criteria	Inhibition Level	H&S Level	Biosolids Criteria (mg/kg)
Trihalomethanes	0.1	--	--	--
Vinyl chloride	0.002	--	0.012	--
Xylenes (total)	10	--	--	--
Semivolatile Organics (mg/L)				
1,2,4-Trichlorobenzene	0.07	--	--	--
1,2-Diphenylhydrazine	--	5.0	--	--
2-Chlorophenol	--	5.0	--	--
2,4-Dichlorophenol	--	64	--	--
2,4-Dimethylphenol	--	40	--	--
2,4-Dinitrophenol	--	150	--	--
2,4-Dinitrotoluene	--	5.0	--	--
2,4,6-Trichlorophenol	--	50	--	--
Anthracene	--	500	--	--
Hexachlorobenzene	0.001	5.0	--	--
Hexachlorocyclopentadiene	0.05	--	--	--
Naphthalene	--	500	--	--
Nitrobenzene	--	30	--	--
Pentachlorophenol	--	0.2	--	--
Phenanthrene	--	500	--	--
Phenol	--	4.0	--	--
General Chemistry Parameters (mg/L)				
Ammonia	--	480	--	--
Cyanide	--	0.1	--	--
Cyanide, Free	0.2	--	--	--
Fluoride	4.0	--	--	--
Nitrate - Nitrite	10	--	--	--
Nitrogen, Total (NO ₂ + NO ₃ + TKN)	10	--	--	--
Total Kjeldahl Nitrogen	10	--	--	--
Sulfide (total)	--	25	--	--
Microbiological Parameters (CFU/100 ml)				
Fecal Coliform single sample max	800	--	--	--
Fecal Coliform four of last seven samples	200	--	--	--

Notes:

Effluent Criteria = Most stringent criteria from the APP permits

Inhibition Level = Most stringent inhibition level for activated sludge, nitrification, and anaerobic digestion processes listed in 2004 USEPA Guidance, Appendix G

H & S Level = Most stringent criteria between explosivity and fume toxicity levels listed in 2004 USEPA Guidance, Appendix I

Biosolids Criteria = Monthly average pollutant concentration listed in Appendix E of 2004 USEPA Guidance

Trihalomethanes = Sum of bromoform, chloroform, bromodichloromethane, and dibromochloromethane

-- = No applicable criteria

mg/L = milligram per liter

Units for microbiological parameters are CFU/100 ml (colony forming uniter per 100 millileters)

**Table B-3
Local Limits Report Addendum
Pollutants of Concern**

Potential Pollutants of Concern	Max Influent Conc. (mg/L)	Max Effluent Conc. (mg/L)	Max Sludge Conc. (mg/kg)	Criteria				Pollutants of Concern Screening						Pollutants of Concern	
				Effluent Criteria (mg/L)	Inhibition Level (mg/L)	H&S Level (mg/L)	Biosolids Criteria (mg/kg)	Effluent > 1/2 Effluent Criteria	Influent > Effluent Criteria	Influent > 1/4 Inhibition Level	Influent > H & S Level	Influent >1/500th Biosolids Criteria	Sludge > Biosolids Criteria		
Inorganics															
Antimony	NA	NA	NA	0.006	--	--	--	--	--	--	--	--	--	--	--
Arsenic	0.0088	0.0073	13	0.05	0.1	--	100	N	N	N	--	N	N	N	
Barium	NA	NA	NA	2.0	--	--	2,000	--	--	--	--	--	--	--	
Beryllium	NA	NA	NA	0.004	--	--	--	--	--	--	--	--	--	--	
Cadmium	0.00041	ND	1.6	0.005	1.0	--	20	N	N	N	--	N	N	N	
Chromium	0.0093	0.0016	130	0.1	0.25	--	100	N	N	N	--	N	N	N	
Chromium VI	0.006	0.005	ND	--	1.0	--	--	--	--	N	--	--	--	N	
Copper	0.12	0.0068	5600	--	0.05	--	--	--	--	Y	--	--	--	Y	
Lead	0.0095	0.001	430	0.05	0.5	--	100	N	N	N	--	N	Y	Y	
Mercury	0.0018	0.00022	5.9	0.002	0.1	--	4.0	N	N	N	--	N	Y	Y	
Nickel	0.0074	0.0048	210	0.1	0.25	--	--	N	N	N	--	--	--	N	
Selenium	0.0051	0.0022	8.2	0.05	--	--	20	N	N	--	--	N	N	N	
Silver	0.0042	ND	13	--	13	--	100	--	--	N	--	--	N	N	
Thallium	NA	NA	NA	0.002	--	--	--	--	--	--	--	--	--	--	
Zinc	0.16	0.059	7500	--	0.08	--	--	--	--	Y	--	--	--	Y	
Volatile Organics															
1,1,1-Trichloroethane	ND	ND	ND	0.2	--	2.759	--	N	N	--	N	--	--	N	
1,1,2,2-Tetrachloroethane	NA	NA	ND	--	--	1.847	--	--	--	--	--	--	--	--	
1,1,2-Trichloroethane	NA	NA	44	0.005	--	1.601	--	--	--	--	--	--	--	--	
1,1-Dichloroethane	NA	NA	ND	--	--	1.685	--	--	--	--	--	--	--	--	
1,1-Dichloroethene	NA	NA	ND	0.007	--	0.016	14	--	--	--	--	--	N	N	
1,2-Dichlorobenzene	NA	NA	ND	0.6	0.23	--	--	--	--	--	--	--	--	--	
1,2-Dichloroethane	NA	NA	ND	0.005	--	0.168	10	--	--	--	--	--	N	N	
1,2-Dichloropropane	NA	NA	ND	0.005	--	4.289	--	--	--	--	--	--	--	--	
1,3-Dichlorobenzene	NA	NA	0.44	--	5.0	--	--	--	--	--	--	--	--	--	
1,4-Dichlorobenzene	0.00022	ND	0.46	0.075	1.4	--	150	N	N	N	--	N	N	N	
2-Butanone	NA	NA	ND	--	--	--	4,000	--	--	--	--	--	N	N	
Acrolein	NA	NA	NA	--	--	0.047	--	--	--	--	--	--	--	--	
Acrylonitrile	NA	NA	NA	--	5.0	4.822	--	--	--	--	--	--	--	--	
Benzene	ND	ND	ND	0.005	100	0.014	10	N	N	N	N	N	N	N	
Bromodichloromethane	ND	0.0005	ND	--	--	--	--	--	--	--	--	--	--	N	
Bromoform	ND	ND	ND	--	--	0.227	--	--	--	--	N	--	--	N	
Bromomethane	NA	NA	20	--	--	0.305	--	--	--	--	--	--	--	--	
Carbon tetrachloride	ND	ND	ND	0.005	2.9	0.011	10	N	N	N	N	N	N	N	
Chlorobenzene	NA	NA	ND	0.1	0.96	2.29	2,000	--	--	--	--	--	N	N	
Chloroethane	NA	NA	ND	--	--	5.88	--	--	--	--	--	--	--	--	
Chloroform	0.00039	0.0012	ND	--	1.0	0.06	120	--	--	N	N	N	N	N	
Chloromethane	NA	NA	ND	--	3.3	0.557	--	--	--	--	--	--	--	--	
cis-1,2-Dichloroethene	NA	NA	4.8	0.07	--	--	--	--	--	--	--	--	--	--	
Dibromochloromethane	0.0004	0.00042	ND	--	--	--	--	--	--	--	--	--	--	--	
Ethylbenzene	ND	ND	ND	0.7	200	1.659	--	N	N	N	N	--	--	N	
Methylene Chloride	0.0015	ND	ND	0.005	--	4.139	--	N	N	--	N	--	--	N	
Styrene	NA	NA	ND	0.1	--	--	--	--	--	--	--	--	--	--	
Tetrachloroethene	ND	ND	ND	0.005	20	0.945	14	N	N	N	N	N	N	N	
Toluene	0.0011	0.0014	6.6	1.0	200	2.075	--	N	N	N	N	--	--	N	

**Table B-3
Local Limits Report Addendum
Pollutants of Concern**

Potential Pollutants of Concern	Max Influent Conc. (mg/L)	Max Effluent Conc. (mg/L)	Max Sludge Conc. (mg/kg)	Criteria				Pollutants of Concern Screening						Pollutants of Concern
				Effluent Criteria (mg/L)	Inhibition Level (mg/L)	H&S Level (mg/L)	Biosolids Criteria (mg/kg)	Effluent > 1/2 Effluent Criteria	Influent > Effluent Criteria	Influent > 1/4 Inhibition Level	Influent > H & S Level	Influent >1/500th Biosolids Criteria	Sludge > Biosolids Criteria	
Total THMs	0.00079	0.00212	ND	0.1	--	--	--	N	N	--	--	--	--	N
trans-1,2-Dichloroethene	NA	NA	ND	0.1	--	2.04	--	--	--	--	--	--	--	--
Trichloroethene	ND	ND	ND	0.005	1.0	0.026	10	N	N	N	N	N	N	N
Vinyl chloride	ND	ND	ND	0.002	--	0.012	4.0	N	N	--	N	N	N	N
Xylenes (total)	ND	ND	ND	10	--	--	--	N	N	--	--	--	--	N
Semivolatile Organics														
1,2,4-Trichlorobenzene	NA	NA	ND	0.07	--	--	--	--	--	--	--	--	--	--
1,2-Diphenylhydrazine	NA	NA	ND	--	5.0	--	--	--	--	--	--	--	--	--
2,4,5-Trichlorophenol	NA	NA	ND	--	--	--	8,000	--	--	--	--	--	N	N
2,4,6-Trichlorophenol	NA	NA	ND	--	50	--	40	--	--	--	--	--	N	N
2,4-Dichlorophenol	NA	NA	ND	--	64	--	--	--	--	--	--	--	--	--
2,4-Dimethylphenol	NA	NA	ND	--	40	--	--	--	--	--	--	--	--	--
2,4-Dinitrophenol	NA	NA	ND	--	150	--	--	--	--	--	--	--	--	--
2,4-Dinitrotoluene	NA	NA	ND	--	5.0	--	2.6	--	--	--	--	--	N	N
2-Chlorophenol	NA	NA	ND	--	5.0	--	--	--	--	--	--	--	--	--
2-Methylphenol	NA	NA	ND	--	--	--	4,000	--	--	--	--	--	N	N
3-Methylphenol	NA	NA	ND	--	--	--	4,000	--	--	--	--	--	N	N
4-Methylphenol	NA	NA	ND	--	--	--	4,000	--	--	--	--	--	N	N
Anthracene	NA	NA	ND	--	500	--	--	--	--	--	--	--	--	--
Benzo(a)pyrene	NA	NA	ND	0.0002	--	--	--	--	--	--	--	--	--	--
Di(2-ethylhexyl)adipate	NA	NA	NA	0.4	--	--	--	--	--	--	--	--	--	--
Di(2-ethylhexyl)phthalate	0.019	ND	ND	0.4	--	--	--	N	N	--	--	--	--	N
Di-n-butyl phthalate	NA	NA	ND	0.006	--	--	--	N	N	--	--	--	--	N
Hexachlorobenzene	ND	ND	ND	0.001	5.0	--	2.6	N	N	N	--	N	N	N
Hexachlorobutadiene	NA	NA	ND	--	--	--	10	--	--	--	--	--	N	N
Hexachlorocyclopentadiene	NA	NA	ND	0.05	--	--	--	--	--	--	--	--	--	--
Hexachloroethane	NA	NA	ND	--	--	--	60	--	--	--	--	--	N	N
Naphthalene	ND	ND	12	--	500	--	--	--	--	N	--	--	--	N
Nitrobenzene	NA	NA	ND	--	30	--	40	--	--	--	--	--	N	N
Pentachlorophenol	ND	ND	ND	--	0.2	--	2,000	--	--	N	--	N	N	N
Phenanthrene	ND	ND	ND	--	500	--	--	--	--	N	--	--	--	N
Pyridine	NA	NA	ND	--	--	--	100	--	--	--	--	--	N	N
Pesticides/PCBs														
Chlordane	ND	ND	ND	--	--	--	0.6	--	--	--	--	N	N	N
Endrin	ND	ND	0.018	--	--	--	0.4	--	--	--	--	N	N	N
gamma-BHC (Lindane)	ND	ND	ND	--	--	--	8.0	--	--	--	--	N	N	N
Heptachlor	ND	ND	ND	--	--	--	0.16	--	--	--	--	N	N	N
Methoxychlor	NA	NA	ND	--	--	--	200	--	--	--	--	N	N	N
Toxaphene	ND	ND	ND	--	--	--	10	--	--	--	--	N	N	N
Herbicides														
2,4,5-TP (Silvex)	NA	NA	NA	--	--	--	20	--	--	--	--	--	--	--
2,4-D	NA	NA	NA	--	--	--	200	--	--	--	--	--	--	--
General Chemistry Parameters														
Ammonia as N	72.9	1.72	59000	--	480	--	--	--	--	N	--	--	--	N
Cyanide, Total	0.0034	0.009	1.3	0.2*	0.1	--	--	N	N	N	--	--	--	N
Fluoride	4.1	3.7	460	4.0	--	--	--	Y	Y	--	--	--	--	Y

**Table B-3
Local Limits Report Addendum
Pollutants of Concern**

Potential Pollutants of Concern	Max Influent Conc. (mg/L)	Max Effluent Conc. (mg/L)	Max Sludge Conc. (mg/kg)	Criteria				Pollutants of Concern Screening					Pollutants of Concern	
				Effluent Criteria (mg/L)	Inhibition Level (mg/L)	H&S Level (mg/L)	Biosolids Criteria (mg/kg)	Effluent > 1/2 Effluent Criteria	Influent > Effluent Criteria	Influent > 1/4 Inhibition Level	Influent > H & S Level	Influent >1/500th Biosolids Criteria		Sludge > Biosolids Criteria
Nitrate + Nitrite as N	1.23	8.04	1340**	10	--	--	--	Y	N	--	--	--	--	Y
Total Nitrogen	45.6	9.4	NA	10	--	--	--	Y	Y	--	--	--	--	Y
Total Kjeldahl Nitrogen	43.0	3.4	59000	10	--	--	--	N	Y	--	--	--	--	Y
Phenols	0.081	0.041	NA	--	4.0	--	--	--	--	N	--	--	--	N
Sulfide	350	9.0	140	--	25	--	--	--	--	N	--	--	--	N

Notes:

POC screening was performed only for those pollutants with at least two samples collected

Trihalomethanes = Sum of bromoform, chloroform, bromodichloromethane, and dibromochloromethane

ND - Not detected above the reporting limit

NA = Not analyzed for

-- = No applicable criteria

*Effluent criteria for cyanide is listed as free cyanide

** Sludge Nitrate+Nitrite is sum of individual nitrate and nitrite concentration:

N = Not a POC based on screening criteria

Y = Determined to be a POC based on screening criteria (highlighted cells)

Appendix C

Removal Efficiencies

**Table C-1
Local Limits Update
Airport WRF Removal Efficiencies**

Arsenic			
Date Collected	Influent (mg/L)	Effluent (mg/L)	RE (%)
4/21/2010	0.0065	0.0064	1.5
4/22/2010	0.0069	0.006	13.0
4/23/2010	0.0066	0.006	9.1
4/24/2010	0.0066	0.0058	12.1
4/26/2010	0.0066	0.0058	12.1
4/27/2010	0.0071	0.0059	16.9
4/28/2010	0.0065	0.006	7.7
MRE:	0.0067	0.0060	10.5

Cadmium			
Date Collected	Influent (mg/L)	Effluent (mg/L)	RE (%)
4/21/2010	0.0001 J	0.005	NC
4/22/2010	0.0002 J	0.005	NC
4/23/2010	0.00011 J	0.005	NC
4/24/2010	0.005	0.005	NC
4/26/2010	0.005	0.005	NC
4/27/2010	0.005	0.005	NC
4/28/2010	0.00009 J	0.005	NC
MRE:	0.00220	0.00500	NC

Chromium			
Date Collected	Influent (mg/L)	Effluent (mg/L)	RE (%)
4/21/2010	0.0066	0.0016	75.8
4/22/2010	0.0069	0.0014	79.7
4/23/2010	0.007	0.0012	82.9
4/24/2010	0.0091	0.0012	86.8
4/26/2010	0.0067	0.0015	77.6
4/27/2010	0.0064	0.0011	82.8
4/28/2010	0.0066	0.00097	85.3
MRE:	0.0070	0.0013	81.8

Chromium VI			
Date Collected	Influent (mg/L)	Effluent (mg/L)	RE (%)
4/21/2010	0.006 J	0.004 J	NC
4/22/2010	0.005	0.005	NC
4/23/2010	0.005	0.005	NC
4/24/2010	0.005	0.005	NC
4/26/2010	0.002 J	0.005	NC
4/27/2010	0.005	0.005	NC
4/28/2010	0.005	0.005	NC
MRE:	0.0047	0.0049	NC

Copper			
Date Collected	Influent (mg/L)	Effluent (mg/L)	RE (%)
4/21/2010	0.018	0.0028	84.4
4/22/2010	0.037	0.0044	88.1
4/23/2010	0.037	0.0026	93.0
4/24/2010	0.032	0.0027	91.6
4/26/2010	0.028	0.0042	85.0
4/27/2010	0.053	0.0034	93.6
4/28/2010	0.039	0.0035	91.0
MRE:	0.035	0.003	90.3

Lead			
Date Collected	Influent (mg/L)	Effluent (mg/L)	RE (%)
4/21/2010	0.0011	0.00086 J	21.8
4/22/2010	0.0015	0.00087 J	42.0
4/23/2010	0.0014	0.0008 J	42.9
4/24/2010	0.0025	0.0007 J	72.0
4/26/2010	0.0013	0.001	23.1
4/27/2010	0.002	0.001	50.0
4/28/2010	0.0019	0.00089 J	53.2
MRE:	0.0017	0.0009	47.7

Mercury			
Date Collected	Influent (mg/L)	Effluent (mg/L)	RE (%)
4/21/2010	0.0001	0.0001	NC
4/22/2010	0.00015 J	0.00022	NC
4/23/2010	0.0001	0.0001	NC
4/24/2010	0.0018 J	0.0001	NC
4/26/2010	0.0001	0.00009 J	NC
4/27/2010	0.0001	0.0001	NC
4/28/2010	0.0001	0.0001	NC
MRE:	0.00035	0.00012	NC

Molybdenum			
Date Collected	Influent (mg/L)	Effluent (mg/L)	RE (%)
4/21/2010	0.0014	0.0014	0.0
4/22/2010	0.002	0.0013	35.0
4/23/2010	0.0019	0.0012	36.8
4/24/2010	0.0018	0.0011	38.9
4/26/2010	0.0017	0.0012	29.4
4/27/2010	0.0012	0.001	16.7
4/28/2010	0.0018	0.00099 J	45.0
MRE:	0.0017	0.0012	28.8

**Table C-1
Local Limits Update
Airport WRF Removal Efficiencies**

Nickel			
Date Collected	Influent (mg/L)	Effluent (mg/L)	RE (%)
4/21/2010	0.0038	0.0026	31.6
4/22/2010	0.0051	0.0036	29.4
4/23/2010	0.0048	0.0024	50.0
4/24/2010	0.013	0.0029	77.7
4/26/2010	0.0036	0.0031	13.9
4/27/2010	0.0053	0.0027	49.1
4/28/2010	0.0074	0.0029	60.8
MRE:	0.0061	0.0029	53.0

Selenium			
Date Collected	Influent (mg/L)	Effluent (mg/L)	RE (%)
4/21/2010	0.0024	0.0022	8.3
4/22/2010	0.001	0.001	NC
4/23/2010	0.001	0.001	NC
4/24/2010	0.001	0.001	NC
4/26/2010	0.001	0.001	NC
4/27/2010	0.001	0.001	NC
4/28/2010	0.001	0.001	NC
MRE:	0.0012	0.0012	2.4

Silver			
Date Collected	Influent (mg/L)	Effluent (mg/L)	RE (%)
4/21/2010	0.00017 J	0.0005	NC
4/22/2010	0.00042 J	0.0005	NC
4/23/2010	0.00059 J	0.0005	NC
4/24/2010	0.00038 J	0.0005	NC
4/26/2010	0.00026 J	0.0005	NC
4/27/2010	0.00025 J	0.0005	NC
4/28/2010	0.0042	0.0005	88.1
MRE:	0.0009	0.0005	44.4

Zinc			
Date Collected	Influent (mg/L)	Effluent (mg/L)	RE (%)
4/21/2010	0.12	0.045	62.5
4/22/2010	0.12	0.059	50.8
4/23/2010	0.1	0.046	54.0
4/24/2010	0.093	0.043	53.8
4/26/2010	0.085	0.049	42.4
4/27/2010	0.11	0.05	54.5
4/28/2010	0.11	0.051	53.6
MRE:	0.105	0.049	53.5

Fluoride			
Date Collected	Influent (mg/L)	Effluent (mg/L)	RE (%)
4/21/2010	4	3.2	20.0
4/22/2010	2.8	3.5	-25.0
4/23/2010	4.1	3.4	17.1
4/24/2010	4	3.7	7.5
4/26/2010	1.8	3.1	-72.2
4/27/2010	3.2	3.1	3.1
4/28/2010	3.2	2.8	12.5
MRE:	3.3	3.3	1.3

Cyanide			
Date Collected	Influent (mg/L)	Effluent (mg/L)	RE (%)
4/21/2010	0.00017 J	0.0005	NC
4/22/2010	0.00042 J	0.0005	NC
4/23/2010	0.00059 J	0.0005	NC
4/24/2010	0.00038 J	0.0005	NC
4/26/2010	0.00026 J	0.0005	NC
4/27/2010	0.00025 J	0.0005	NC
4/28/2010	0.0042	0.0005	88.1
MRE:	0.0009	0.0005	44.4

Phenols			
Date Collected	Influent (mg/L)	Effluent (mg/L)	RE (%)
4/21/2010	0.05	0.05	NC
4/22/2010	0.05	0.05	NC
4/23/2010	0.045 J	0.05	NC
4/24/2010	0.05	0.05	NC
4/26/2010	0.081 J	0.041 J	NC
4/27/2010	0.05	0.05	NC
4/28/2010	0.053 J	0.05	NC
MRE:	0.054	0.049	9.3

Notes: mg/L = milligrams per liter; MRE = Mean Removal Efficiency; NC = Not calculated
RE = Plant removal efficiency from headworks to effluent; Highlighted cells represent non-detected results that were substituted with 1/2 the reporting limit

**Table C-2
Local Limits Update
Sundog WWTP Removal Efficiencies**

Arsenic			
Date Collected	Influent (mg/L)	Effluent (mg/L)	RE (%)
4/21/2010	0.0076	0.0072	5.3
4/22/2010	0.0088	0.0069	21.6
4/23/2010	0.0078	0.0071	9.0
4/24/2010	0.0079	0.0069	12.7
4/26/2010	0.008	0.007	12.5
4/27/2010	0.0088	0.0073	17.0
4/28/2010	0.008	0.007	12.5
MRE:	0.0081	0.0071	13.2

Cadmium			
Date Collected	Influent (mg/L)	Effluent (mg/L)	RE (%)
4/21/2010	0.00011 J	0.0005	NC
4/22/2010	0.00033 J	0.0005	NC
4/23/2010	0.00013 J	0.0005	NC
4/24/2010	0.00033 J	0.0005	NC
4/26/2010	0.00041 J	0.0005	NC
4/27/2010	0.00019 J	0.0005	NC
4/28/2010	0.00016 J	0.0005	NC
MRE:	0.00023	0.00050	NC

Chromium			
Date Collected	Influent (mg/L)	Effluent (mg/L)	RE (%)
4/21/2010	0.0057	0.0014	75.4
4/22/2010	0.0093	0.0013	86.0
4/23/2010	0.007	0.0012	82.9
4/24/2010	0.0076	0.0011	85.5
4/26/2010	0.008	0.0014	82.5
4/27/2010	0.0081	0.00094 J	88.4
4/28/2010	0.0079	0.00088 J	88.9
MRE:	0.0077	0.0012	84.3

Chromium VI			
Date Collected	Influent (mg/L)	Effluent (mg/L)	RE (%)
4/21/2010	0.005 J	0.005	NC
4/22/2010	0.005	0.005	NC
4/23/2010	0.005	0.005	NC
4/24/2010	0.005	0.005	NC
4/26/2010	0.003 J	0.005	NC
4/27/2010	0.005	0.005	NC
4/28/2010	0.005	0.005	NC
MRE:	0.0047	0.0049	NC

Copper			
Date Collected	Influent (mg/L)	Effluent (mg/L)	RE (%)
4/21/2010	0.047	0.0064	86.4
4/22/2010	0.12	0.019	84.2
4/23/2010	0.039	0.0058	85.1
4/24/2010	0.061	0.0062	89.8
4/26/2010	0.048	0.0068	85.8
4/27/2010	0.088	0.0062	93.0
4/28/2010	0.056	0.0066	88.2
MRE:	0.066	0.008	87.6

Lead			
Date Collected	Influent (mg/L)	Effluent (mg/L)	RE (%)
4/21/2010	0.0095	0.00034 J	96.4
4/22/2010	0.0039	0.00056 J	85.6
4/23/2010	0.002	0.00044 J	78.0
4/24/2010	0.0019	0.00032 J	83.2
4/26/2010	0.0018	0.00074 J	58.9
4/27/2010	0.0023	0.00031 J	86.5
4/28/2010	0.0023	0.00026 J	88.7
MRE:	0.0034	0.0004	88.2

Mercury			
Date Collected	Influent (mg/L)	Effluent (mg/L)	RE (%)
4/21/2010	0.0001	0.0001	NC
4/22/2010	0.00016 J	0.00014 J	NC
4/23/2010	0.0001	0.0001	NC
4/24/2010	0.0001	0.0001	NC
4/26/2010	0.0001	0.0001	NC
4/27/2010	0.0001	0.0001	NC
4/28/2010	0.0001	0.0001	NC
MRE:	0.00011	0.00011	NC

Molybdenum			
Date Collected	Influent (mg/L)	Effluent (mg/L)	RE (%)
4/21/2010	0.0035	0.0046	-31.4
4/22/2010	0.01	0.0061	39.0
4/23/2010	0.012	0.0074	38.3
4/24/2010	0.0077	0.0074	3.9
4/26/2010	0.0026	0.0051	-96.2
4/27/2010	0.0055	0.0038	30.9
4/28/2010	0.0056	0.0045	45.0
MRE:	0.0067	0.0056	17.1

**Table C-2
Local Limits Update
Sundog WWTP Removal Efficiencies**

Nickel			
Date Collected	Influent (mg/L)	Effluent (mg/L)	RE (%)
4/21/2010	0.0054	0.0032	40.7
4/22/2010	0.0065	0.0048	26.2
4/23/2010	0.004	0.003	25.0
4/24/2010	0.0043	0.0026	39.5
4/26/2010	0.0041	0.0028	31.7
4/27/2010	0.0044	0.0025	43.2
4/28/2010	0.0043	0.0024	44.2
MRE:	0.0047	0.0030	35.5

Selenium			
Date Collected	Influent (mg/L)	Effluent (mg/L)	RE (%)
4/21/2010	0.0021	0.001	52.4
4/22/2010	0.0051	0.001	80.4
4/23/2010	0.001	0.001	NC
4/24/2010	0.001	0.001	NC
4/26/2010	0.001	0.001	NC
4/27/2010	0.001	0.001	NC
4/28/2010	0.001	0.001	NC
MRE:	0.0017	0.0010	42.6

Silver			
Date Collected	Influent (mg/L)	Effluent (mg/L)	RE (%)
4/21/2010	0.0011	0.0005	54.5
4/22/2010	0.0016	0.0005	68.8
4/23/2010	0.0014	0.0005	64.3
4/24/2010	0.0012	0.0005	58.3
4/26/2010	0.0011	0.0005	54.5
4/27/2010	0.002	0.0005	75.0
4/28/2010	0.0017	0.0005	70.6
MRE:	0.0014	0.0005	65.3

Zinc			
Date Collected	Influent (mg/L)	Effluent (mg/L)	RE (%)
4/21/2010	0.15	0.047	68.7
4/22/2010	0.16	0.05	68.8
4/23/2010	0.1	0.048	52.0
4/24/2010	0.12	0.046	61.7
4/26/2010	0.12	0.049	59.2
4/27/2010	0.16	0.05	68.8
4/28/2010	0.15	0.05	66.7
MRE:	0.137	0.049	64.6

Fluoride			
Date Collected	Influent (mg/L)	Effluent (mg/L)	RE (%)
4/21/2010	0.27 J	0.3 J	NC
4/22/2010	0.32 J	0.35 J	NC
4/23/2010	0.35 J	0.35 J	NC
4/24/2010	0.32 J	0.36 J	NC
4/26/2010	0.31 J	0.36 J	NC
4/27/2010	0.33 J	0.36 J	NC
4/28/2010	0.43	0.37 J	14.0
MRE:	0.33	0.35	NC

Cyanide			
Date Collected	Influent (mg/L)	Effluent (mg/L)	RE (%)
4/21/2010	0.0025	0.0028 J	NC
4/22/2010	0.0025	0.006	NC
4/23/2010	0.0025	0.002 J	NC
4/24/2010	0.0025	0.0072	NC
4/26/2010	0.0025	0.008	NC
4/27/2010	0.0025	0.0083	NC
4/28/2010	0.0014 J	0.012	NC
MRE:	0.0023	0.0066	NC

Phenols			
Date Collected	Influent (mg/L)	Effluent (mg/L)	RE (%)
4/21/2010	0.038 J	0.05	NC
4/22/2010	0.05	0.05	NC
4/23/2010	0.038 J	0.05	NC
4/24/2010	0.037 J	0.05	NC
4/26/2010	0.039 J	0.05	NC
4/27/2010	0.038 J	0.05	NC
4/28/2010	0.048 J	0.05	NC
MRE:	0.036	0.050	NC

Notes: mg/L = milligrams per liter; MRE = Mean Removal Efficiency; NC = Not calculated
RE = Plant removal efficiency from headworks to effluent; Highlighted cells represent non-detected results that were substituted with 1/2 the reporting limit