SALT LAKE CITY CORPORATION

Wastewater Reclamation Facility
Local Limits Evaluation

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Acronyms used in Report

ADRE – Average Daily Removal Efficiency
AHL – Allowable Headworks Loading
AIL – Allowable Industrial Loading
BOD_5 – Biochemical Oxygen Demand
BTEX – Sum of Benzene, Toluene, Ethylbenzene, and Xylene
COD – Chemical Oxygen Demand
CFR – Code of Federal Regulations
DWQ – Utah Department of Environmental Quality Division of Water Quality
EFF – Effluent
GW – Growth Factor
HB – Hardness Based – Based on Hardness as $CaCO_3$
HEM – Hexane Extractable Materials
IU – Industrial User
INF – Influent
Kg/L – Kilograms per Liter
lbs – Pounds
lbs/day – Pounds per Day
MAHL – Maximum Allowable Headworks Loading
MAIL – Maximum Allowable Industrial Loading
MDL – Method Detection Limit
mg/L – Milligrams per Liter
MGD – Million Gallons per Day
MRE – Mean Removal Efficiency
NPDES – National Pollutant Discharge Elimination System
NA – Not Applicable
POC – Pollutant of Concern
RL – Reporting Limit
SF – Safety Factor
TBLL – Technically Based Local Limit
TRPH – Total Recoverable Petroleum Hydrocarbons – also known as SGT-HEM
TSS – Total Suspended Solids
UAC – Utah Administrative Code
UPDES – Utah Pollutant Discharge Elimination System
USEPA – United States Environmental Protection Agency
WRF –Water Reclamation Facility

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EVALUATION OF LOCAL LIMITS

SALT LAKE CITY CORPORATION WRF

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EXECUTIVE SUMMARY

Pretreatment Solutions, Inc. was contracted by the Salt Lake City Corporation (City) to evaluate the Local Limits for the City's Water Reclamation Facility (WRF). Local Limits are established to protect the WRF from discharges from Industrial Users (IU). This report provides the technical evaluation of the Local Limits for the WRF. The limits for the WRF are recommended for inclusion into the Salt Lake City Corporation Sewer Use Ordinance by reference as described in the pending Ordinance Section 17.36.090.

The development of the Local Limits included the following steps:

- Review of the WRF characteristics
- Determination of industrial and WRF flows
- Determination of pollutants of concern
- Collection of plant monitoring data
- Calculation of Maximum Allowable Headwork Loadings (MAHLs)/Allowable Industrial Loadings (AIL)
- Designating and implementing Local Limits

In accordance with Section 6.4 of the United States Environmental Protection Agency (USEPA) Local Limits Guidance Document (EPA 833-R-04-002A), the City chose to use the AIL, in pounds per day, to allocate the permitted pollutant limits for individual dischargers as long as the MAHL is not exceeded for the WRF. The conventional pollutants are allocated using Uniform Concentration Allocation with an allowance for those IUs discharging below 3 times the commercial and domestic average. The metals pollutants are allocated using a 30/70 Uniform Contributory Flow Allocation. This method reserves 30% of the technically based AIL for a safety and growth allowance. The remaining 70% of the AIL is uniformly allocated to the industrial users determined to have the potential to discharge the pollutant based on past sample results. Those users that do not exhibit the potential to discharge a metal will not have that metal in their discharge permit. Those users that exhibited the potential to discharge a pollutant will have the uniform contributory flow limit included in their discharge permit. Industrial users were determined to have the potential to discharge if any sample results were above the method reporting limit.

The following table lists the proposed Local Limits and the AIL for the WRF. The proposed Local Limits would apply to Industrial Users discharging to the Salt Lake City Corporation collection system.

Table 1: Salt Lake City Proposed Local Limits

	Pollutant	Local Limit (mg/L)	AIL (lbs/day)
1	Arsenic, Total	0.2	7.62
2	Biochemical Oxygen Demand (BOD_5)	11,000	77,595
3	Cadmium, Total	0.2	1.77
4	Chromium, Total	5.0	816
5	Copper, Total	6.2	69.8
6	HEM (Polar) (Animal and Vegetable)	500	16,000
7	HEM (Non-Polar) (Petroleum)	100	3,240
8	Lead, Total	1.5	14.6
9	Mercury, Total	0.2	1.19
10	Molybdenum, Total	0.8	8.40
11	Nickel, Total	1.4	14.3
12	Selenium, Total	1.0	3.08
13	Total Suspended Solids (TSS)	7,200	59,464
14	Zinc, Total	12.0	127

1.0 INTRODUCTION

The WRF is located at 1365 West 2300 North, Salt Lake City, Utah 84116. The facility operates under Utah Pollutant Discharge Elimination System (UPDES) permit number UT0021725 and UPDES Biosolids permit number UTL-0021725 (WRF Permit). The effective date of the current Utah Division of Water Quality permits is December 1, 2014 and the expiration date is November 30, 2019.

The UPDES Permit (Part II, H.2.) requires the City to "determine if there is a need to develop or revise its local limits in order to implement the general and specific prohibitions of 40 CFR, Part 403.5(a) and Part 403.5(b)." In a letter dated December 30, 2009, the City identified that development of technically based Local Limits was required based on several factors. The letter indicated that the technically based Local Limits evaluation would be sent to the State in 2010. As part of any Local Limits evaluation, the permit requires monitoring of the influent and effluent for metals and toxic organics (R317-8-7.5) and monitoring of the biosolids for potential pollutants listed in 40 CFR Part 503.

The Utah Division of Water Quality (State) conducted its annual audit of the Salt Lake City Pretreatment Program between August 10 and August 13, 2009. The 2009 annual audit report (Section 10) requires the City to develop and submit technically based Local Limits to the State by December 31, 2010. The audit report further states that the documentation for the Local Limits currently being used is limited and future submittals should include information on how the Local Limits are derived and who the Local Limits will affect. The audit report references the USEPA's "Local Limits Development Guidance" document dated July 2004 for information regarding the development of technically based Local Limits.

As part of the development of the Local Limits a "Plan of Study" was developed to aid in identifying pollutants of concern, establish analytical and sampling requirements to provide technically defensible limits, and to eliminate unnecessary sampling and testing. The Plan of Study was submitted to the Utah Department of Water Quality on August 5, 2010. The USEPA Region 8 document "Technically Based Local Limits Development Strategy" dated April 11, 2003, includes provisions for identifying Pollutants of Concern (POCs) and developing a sampling plan. The USEPA guidance document referenced above includes similar provisions for developing technically based Local Limits. The USEPA guidance document was published after the Region 8 guidance document and includes some more stringent requirements. For the Plan of Study, the more stringent requirements of the USEPA guidance document dated July 2004 were used.

Local Limits are established to protect individual wastewater treatment plants from industrial discharges that may cause pass-through, interference, or diminish the use of wastewater residuals. Utah Administrative Code (UAC) Rule R317-8-8.5(4) outlines requirements for industrial wastewater pretreatment programs for WRFs with total design flows greater than 5 Million Gallons per Day (MGD). These pretreatment programs are reviewed and regulated by the Utah Department of Environmental Quality

Division of Water Quality (DWQ). The goals of the pretreatment programs are as follows:

- To prevent the introduction of pollutants into the municipal wastewater system that will interfere with the operation of the WRF, including interference with its use or disposal of domestic wastewater residuals
- To prevent discharges to the WRF which will pass through or otherwise be incompatible with the WRF
- To improve opportunities to beneficially use domestic wastewater residuals.
- To protect the City's WRF operations personnel
- To maintain compliance with discharge permits, receiving water and reuse criteria, and residuals disposal quality standards
- To assure compliance with applicable federal, state, and local regulations

To accomplish these objectives, industrial pretreatment programs rely on three elements:

- National Categorical Standards (industry-specific effluent limits)
- Prohibited Discharge Standards (general and specific prohibitions)
- Enforceable Technically Based Local Limits (TBLLs)

TBLLs are site-specific requirements that are developed and enforced on pollutants of concern by the City's Pretreatment Program.

At the beginning of this evaluation, the City's current Local Limits were over five (5) years old and were based on the plant conditions prior to facility upgrades that were completed in 2008. The changed conditions of the facility require a new evaluation to determine Local Limits that reflect the treatment capacity of the upgraded WRF.

The adoption of TBLLs will help ensure an effective pretreatment program for the City. Once the pollutants of concern and the sources discharging them have been identified, the most effective technical approach for TBLL development can be selected. Regardless of the approach selected, the development of Local Limits requires:

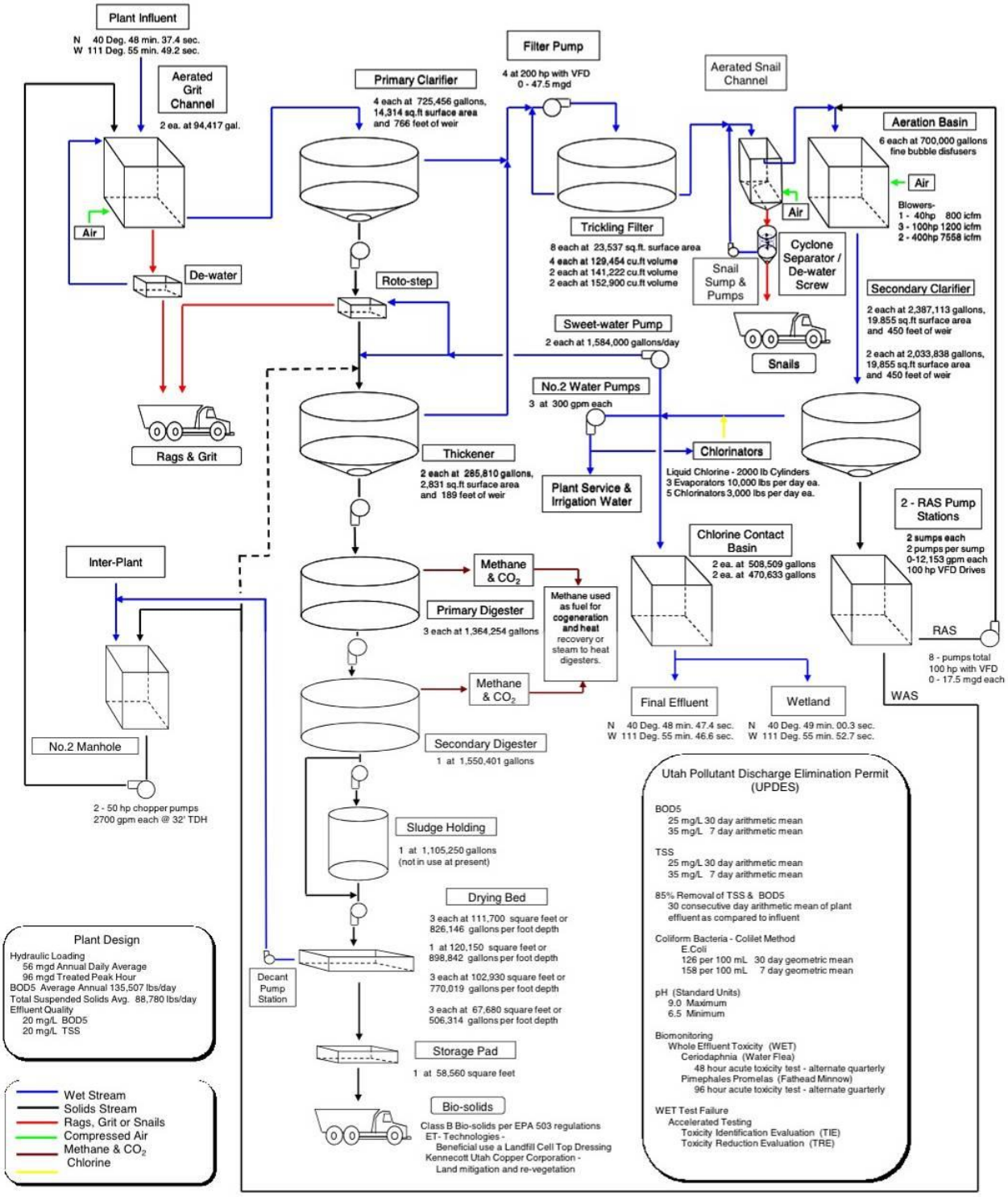
- Review of the WRF characteristics
- Determination of industrial and plant flows
- Determination of pollutants of concern
- Collection of plant monitoring data
- Calculation of MAHLs/Allowable Industrial Loadings (AILs)
- Designation and implementation of Local Limits

This Local Limit Evaluation documents the development of TBLLs for the WRF. Implementation of the Local Limits will occur after approval from the State.

2.0 Facility

2.1 Plant Schematic

The following schematic provides a diagram of the WRF processes.


Plant Influent
N 40 Deg. 48 min. 37.4 sec.
W 111 Deg. 55 min. 49.2 sec.
Aerated Grit Channel
2 ea. at 94,417 gal.
Air
De-water
Rags & Grit
Primary Clarifier
4 each at 725,456 gallons, 14,314 sq.ft surface area and 766 feet of weir
Roto-step
Thickener
2 each at 285,810 gallons, 2,831 sq.ft surface area and 189 feet of weir
Filter Pump
4 at 200 hp with VFD
0 - 47.5 mgd
Trickling Filter
8 each at 23,537 sq.ft. surface area
4 each at 129,454 cu.ft volume
2 each at 141,222 cu.ft volume
2 each at 152,900 cu.ft volume
Sweet-water Pump
2 each at 1,584,000 gallons/day
No.2 Water Pumps
3 at 300 gpm each
Plant Service & Irrigation Water
Chlorinators
Liquid Chlorine - 2000 lb Cylinders
3 Evaporators 10,000 lbs per day ea.
5 Chlorinators 3,000 lbs per day ea.
Aerated Snail Channel
Snail Sump & Pumps
Cyclone Separator / De-water Screw
Snails
Aeration Basin
6 each at 700,000 gallons fine bubble disfusers
Air
Blowers-
1 - 40hp 800 icfm
3 - 100hp 1200 icfm
2 - 400hp 7558 icfm
Secondary Clarifier
2 each at 2,387,113 gallons, 19.855 sq.ft surface area and 450 feet of weir
2 each at 2,033,838 gallons, 19,855 sq.ft surface area and 450 feet of weir
2 - RAS Pump Stations
2 sumps each
2 pumps per sump
0-12,153 gpm each
100 hp VFD Drives
RAS
8 - pumps total
100 hp with VFD
0 - 17.5 mgd each
WAS
Chlorine Contact Basin
2 ea. at 508,509 gallons
2 ea. at 470,633 gallons
Final Effluent
N 40 Deg. 48 min. 47.4 sec.
W 111 Deg. 55 min. 46.6 sec.
Wetland
N 40 Deg. 49 min. 00.3 sec.
W 111 Deg. 55 min. 52.7 sec.
Inter-Plant
No.2 Manhole
2 - 50 hp chopper pumps
2700 gpm each @ 32' TDH
Methane & CO_2
Primary Digester
3 each at 1,364,254 gallons
Methane used as fuel for cogeneration and heat recovery or steam to heat digesters.
Methane & CO_2
Secondary Digester
1 at 1,550,401 gallons
Sludge Holding
1 at 1,105,250 gallons
(not in use at present)
Drying Bed
3 each at 111,700 square feet or 826,146 gallons per foot depth
1 at 120,150 square feet or 898,842 gallons per foot depth
3 each at 102,930 square feet or 770,019 gallons per foot depth
3 each at 67,680 square feet or 506,314 gallons per foot depth
Decant Pump Station
Storage Pad
1 at 58,560 square feet
Bio-solids
Class B Bio-solids per EPA 503 regulations
ET- Technologies -
Beneficial use a Landfill Cell Top Dressing
Kennecott Utah Copper Corporation -
Land mitigation and re-vegetation
Plant Design
Hydraulic Loading
56 mgd Annual Daily Average
96 mgd Treated Peak Hour
BOD5 Average Annual 135,507 lbs/day
Total Suspended Solids Avg. 88,780 lbs/day
Effluent Quality
20 mg/L BOD5
20 mg/L TSS
Wet Stream
Solids Stream
Rags, Grit or Snails
Compressed Air
Methane & CO_2
Chlorine
Utah Pollutant Discharge Elimination Permit (UPDES)
BOD5
25 mg/L 30 day arithmetic mean
35 mg/L 7 day arithmetic mean
TSS
25 mg/L 30 day arithmetic mean
35 mg/L 7 day arithmetic mean
85% Removal of TSS & BOD5
30 consecutive day arithmetic mean of plant effluent as compared to influent
Coliform Bacteria - Colilet Method
E.Coli
126 per 100 mL 30 day geometric mean
158 per 100 mL 7 day geometric mean
pH (Standard Units)
9.0 Maximum
6.5 Minimum
Biomonitoring
Whole Effluent Toxicity (WET)
Ceriodaphnia (Water Flea)
48 hour acute toxicity test - alternate quarterly
Pimephales Promelas (Fathead Minnow)
96 hour acute toxicity test - alternate quarterly
WET Test Failure
Accelerated Testing
Toxicity Identification Evaluation (TIE)
Toxicity Reduction Evaluation (TRE)

2.2 Process Description

The WRF currently has a plant design flow of 56 MGD, with a treated peak hour flow of 96 MGD, and a total peak hour flow of 140 MGD with 44 MGD bypassing secondary treatment to disinfection. The facility serves a population of approximately 180,000 people in the northern part of Salt Lake County. The most recent plant expansion was completed in 2008. The 2009 annual average influent flow was 32.7 MGD.

Raw wastewater from the collection system enters the facility's Pump Plant through three gravity flow interceptors. These interceptors are reinforced concrete pipe 48, 66, and 78 inches in diameter. The Pump Plant incorporates screening and gravity grit removal. The wastewater is then pumped through two of three 48-inch force mains to the Main Plant influent structure approximately one mile north of the Pump Plant. At the Main Plant, the influent flow receives additional grit removal and then is split to four primary clarifiers. After primary treatment, the flow is directed through eight trickling filters. Flow then travels through an aerated snail removal channel, six aeration basins, four secondary clarifiers, and four chlorine contact basins. Flow is then directed to one of two discharge points.

2.3 Surface Water Discharge

2.3.1 Enhanced Wetlands Discharge – Outfall 001

The facility is permitted to discharge a maximum of 5 MGD of effluent through a 30-acre wetland constructed by the City on the WRF property. The wetlands provide a year round habitat for waterfowl and other wildlife. After passing through the wetlands, the water is discharged to the Oil Drain Canal through Outfall 001. Discharge from the enhanced wetlands is hydraulically limited and is typically around 3 MGD.

Enhanced Wetlands Discharge Point

Enhanced Wetlands Influent Cell

2.3.2 Oil Drain Canal Discharge – Outfall 003

The majority of the effluent is discharged directly through Outfall 003 to the Oil Drain Canal and constitutes the majority of the canal flow. The Oil Drain Canal travels north/northwest to Farmington Bay and the Great Salt Lake.

Oil Drain Canal Discharge Point

Oil Drain Canal

2.4 Receiving Waters and Stream Classification

The final discharge for both outfalls is the Oil Drain Canal. The Oil Drain Canal then discharges into Farmington Bay of the Great Salt Lake. According to UAC R317-2-3, the Oil Drain Canal is classified as Class 3E Surface Water.

2.4.1 Class 3E Surface Water

UAC Section R317-2-6.3e defines Class 3E surface water as "Severely habitat limited water: Narrative standards will be applied to protect these waters for aquatic wildlife." The narrative standard stated in Section IB of the UPDES Permit is as follows:

> "It shall be unlawful, and a violation of this permit, for the permittee to discharge of place any waste or other substance in such a way as will be or may become offensive such as unnatural deposits, floating debris, oil, scum, of other nuisances such as color, odor or taste, or cause conditions that produce undesirable aquatic life of which produce objectionable tastes in aquatic organisms; or result in concentrations or combinations of substances which produce undesirable physiological responses in desirable resident fish, of other aquatic life, or undesirable human health effects, as determined by a bioassay or other tests performed in accordance with standard procedures."

3.0 DETERMINATION OF WRF AND INDUSTRIAL USER FLOWS

3.1 Wastewater Reclamation Facility:

3.1.1 Average Daily Flows

The Average Daily Flows for industrial facilities discharging to the WRF and the flows associated with the WRF are summarized in Table 2. The WRF flows came from Excel spreadsheets provided by the WRF staff. The flows were revised in 2013 to reflect current flows in the August 2013 revision to this document. The industrial user flows are derived from flow data provided by the Public Utilities Department and include permitted facilities and facilities that are in the permitting process. The average daily flows were calculated from potable water use for the months from October to March to eliminate flows associated with irrigation during the other months of the year. The residential flows were calculated using Census Bureau data of residential units within the City and then multiplying each unit by 200 gallons per day. That flow was then compared with flow estimates in the City's Sewer Master Plan. The Residential estimates agreed within 1%. The Commercial flow estimate is the difference between the WRF influent and the residential flow estimate. The Annual Average Flows were used in the Local Limits Calculations to determine Local Limits. Appendix 1 includes the details with respect to the flow used in the Local Limits Evaluation.

Table 2: Industrial User Flows

	Permittee	Daily Average Process Flow MGD
1	All Weather Products, LLC	0.001000
2	ALSCO	0.082000
3	Ameritech Coatings, Inc.	0.000100
4	Anodizing & Metal Coatings, Inc.	0.012000
5	Arms Technology, Inc.	0.000075
6	Beck's Sanitation	0.030000
7	Beehive Clothing	0.019000
8	Blanchard Metals Processing	0.125000
9	Blue Beacon Truck Wash of Salt Lake	0.015000
10	Boise Packaging and Newsprint, LLC	0.037500
11	Brenntag Pacific, Inc.	0.005500
12	Cintas Corporation #180	0.076500
13	Circuit Graphics, Inc.	0.004500
14	Cookietree, Inc.	0.010000
15	CP Industries	0.000225
16	Crown Plating Company, Inc.	0.002200
17	Dairy Farmers of America	0.022000
18	Deseret Dairy	0.065000
19	Easton Technical Products, Inc.	0.020000

Table 2: Industrial User Flows		
	Permittee	Daily Average Process Flow MGD
20	EDO Corporation-Exelis, Inc.	0.000240
21	Epic Brewing	0.005000
22	Farmland Foods	0.018000
23	G & K Services, Inc.	0.095000
24	Horizon Snack Foods	0.010000
25	L3-Communications, CS-W	0.008000
26	LSG/Sky Chefs	0.002500
27	Meadow Gold	0.135000
28	Nestle Dryer's Ice Cream	0.020000
29	Northrop Grumman Systems Corp.	0.001450
30	Nelson Refining System	0.001500
31	O.C. Tanner Manufacturing Company (Production)	0.003700
32	O.C. Tanner Manufacturing Company (Refinery)	0.000700
33	Packaging Corporation of America	0.009000
34	Pilkington Metal Finishing	0.030000
35	Power Engineering Company	0.000100
36	Pro-Elite Strength Systems	0.002000
37	Qualawash Holdings, LLC	0.012000
38	Quality Plating Company, Inc.	0.016200
39	Quick Turn Circuits	0.000450
40	Reckitt Benckiser	0.010700
41	Red Rock Brewing	0.003000
42	Renegade Oil, Inc.	0.043300
43	Reser's Fine Foods	0.046200
44	Rocky Mountain Machine Shop	0.007000
45	Salt Lake Chrome Plating & Collision Products	0.000900
46	Salt Lake Truck Wash	0.006000
47	Schovaers Electronics	0.000850
48	SRI Surgical	0.012700
49	Sump & Trap Cleaning, LLC	0.002050
50	Sun Products Corporation	0.015000
51	Sweet Candy Company	0.025000
52	Synchronicity Mastering Services	0.000750
53	Tesoro Refining & Marketing Company, LLC	1.000000
54	Textile Care Services	0.060000
55	Thatcher Company	0.072350
56	The Boeing Company (SLC-0002)	0.004500
57	The Boeing Company (SLC-0061)	0.002000
58	Tosca, Ltd.	0.018000
59	Uinta Brewing	0.026500
60	UniFirst	0.085000
61	Univar USA, Inc.	0.002000
62	Univar USA, Inc. (groundwater)	0.000100

Table 2: Industrial User Flows		
	Permittee	Daily Average Process Flow MGD
63	Utah Brewers Cooperative	0.001200
64	Utah Quality Services	0.013500
65	Utah Transit Authority	0.016400
66	Varian Medical Systems X-Ray Products	0.015350
67	Varian Medical Systems X-Ray Products (groundwater)	0.009000
68	Water & Power Technologies, Inc.	0.013000
69	Welfare Square	0.001000
	TOTAL	2.14

Table2: ANNUAL AVERAGE WRF FLOWS (MGD)		
Permitted Capacity		56
Annual Average WRF Influent		30.8
	Permitted IU Flow	2.14
	Residential	15.43
	Commercial	13.24
Annual Average Reuse Flow		-
Annual Average Surface Water Discharge		30.8
Annual Average Daily Flow to Digesters		0.0867
Annual Average % Solids to Digesters		3.9
Annual Average Daily Flow for Sludge Disposal		0.0867
Annual Average Sludge % Solids to Disposal		2.5

4.0 POLLUTANTS OF CONCERN (POC)

4.1 Plan of Study Pollutants of Concern

The following table lists the POCs that were identified in the Plan of Study. The POCs include the 15 USEPA identified POCs and additional pollutants listed in the City's current Local Limits or identified in review of the WRF historical data.

Table 3: Plan of Study POCs	
1	Ammonia
2	Arsenic, Total
3	BOD_5
4	Cadmium, Total
5	Chemical Oxygen Demand
6	Chlorides
7	Chromium, Total
8	Copper, Total
9	Cyanide
10	HEM and SGT-HEM
11	Lead, Total
12	Mercury, Total
13	Molybdenum, Total
14	Nickel, Total
15	Nitrogen, Total
16	Selenium, Total
17	Silver, Total
18	Total Dissolved Solids
19	Total Suspended Solids
20	Zinc, Total

4.2 Hardness Based Limits for Select Metals

The WRF does not discharge to surface water subject to the acute and chronic surface water quality standards. However, the acute and chronic limits can be useful when no other basis for establishing a limit is available. Some surface water standards for metals are calculated based on the hardness of the discharge from the WRF. The hardness based limit equation and constant values are found in the UAC Rule R317-2, Table 2.14.3.a, and Table 2.14.3.b. Table 4 below calculates the hardness based limits used in calculating the Local Limits based on the surface water discharge limits.

Table 4: Hardness Based Metals Limits			
Average Hardness	400		
Chronic			
Parameter	X	Y	Limit (mg/L)
Cadmium, Total	0.7409	-4.719	0.000756
Chromium (trivalent)	0.819	0.6848	0.268
Copper, Total	0.8545	-1.702	0.0305
Lead, Total	1.273	-4.705	0.0186
Nickel, Total	0.846	0.0584	0.169
Zinc, Total	0.8473	0.884	0.388
Acute			
Parameter	X	Y	Limit (mg/L)
Cadmium, Total	1.0166	-3.924	0.00873
Chromium (trivalent)l	0.819	3.7256	5.61
Copper, Total	0.9422	-1.17	0.0878
Lead, Total	1.273	-1.46	0.477
Nickel, Total	0.846	2.255	1.52
Silver, Total	1.72	-6.59	0.0411
Zinc, Total	0.8473	0.884	0.388
HB Limit Formula	$e^{(X(\ln H)+Y)}$		
Source: UAC Rule R317-2, Table 2.14.3.a and Table 2.14.3.b			

4.3 Results of Sampling Summary

The sampling described in Section 5.1 included additional analytes beyond the POCs identified in the Plan of Study. A review/comparison of the influent and effluent sampling results (positive result), the associated Method Detection Limits (MDLs) and Reporting Limits (RLs), and various limits associated with the influent and effluent (e.g., inhibition, reclaimed water) allows for potential identification of additional POCs.

Table 5 and Table 6 , list the parameters that were analyzed, analytical method, the MDL and RL for each parameter, any applicable limit criteria, whether the reporting limit is less than the lowest criteria, and whether the parameter had a positive result and/or is a POC. The values in the MDL and RL columns are **bolded** for the value that was reported by the laboratory as the "<" value for results below the applicable limit. The "<" value is identified as the "Reported Value" in the subsequent evaluation.

Table 5: Influent Analytical Methods/MDL/RL/WRF Limits/Review									
Pollutant		Method	MDL (mg/L)	RL (mg/L)	Design Capacity (mg/L)	Activated Sludge Inhibition (mg/L) USEPA Guidance	Trickling Filter Inhibition (mg/L) USEPA Guidance	RL < Discharge Limit	POC or Positive Result?
1	1,1,1,2-Tetrachloroethane	EPA 624	0.0005	**0.005**	NA	NA	NA	NA	NO
2	1,1,1-Trichloroethane	EPA 624	0.0002	**0.005**	NA	NA	NA	NA	NO
3	1,1,2,2-Tetrachloroethane	EPA 624	0.001	**0.005**	NA	NA	NA	NA	NO
4	1,1,2-Trichloroethane	EPA 624	0.0006	**0.005**	NA	NA	NA	NA	NO
5	1,1-Dichloroethane	EPA 624	0.0002	**0.005**	NA	NA	NA	NA	NO
6	1,1-Dichloroethene	EPA 624	0.0005	**0.005**	NA	NA	NA	NA	NO
7	1,1-Dichloropropene	EPA 624	0.001	**0.005**	NA	NA	NA	NA	NO
8	1,2,3-Trichlorobenzene	EPA 624	0.001	**0.01**	NA	NA	NA	NA	NO
9	1,2,3-Trichloropropane	EPA 624	0.002	**0.01**	NA	NA	NA	NA	NO
10	1,2,4-Trichlorobenzene	EPA 624	0.001	**0.01**	NA	NA	NA	NA	NO
11	1,2,4-Trichlorobenzene	EPA 625	**0.002**	0.02	NA	NA	NA	NA	NO
12	1,2,4-Trimethylbenzene	EPA 624	0.001	**0.01**	NA	NA	NA	NA	POSITIVE
13	1,2-Dibromo-3-chloropropane	EPA 624	0.003	**0.005**	NA	NA	NA	NA	NO
14	1,2-Dibromoethane (EDB)	EPA 624	0.001	**0.005**	NA	NA	NA	NA	NO
15	1,2-Dichlorobenzene	EPA 624	0.0003	**0.005**	NA	5	NA	YES	NO
16	1,2-Dichlorobenzene	EPA 625	**0.001**	0.02	NA	5	NA	YES	NO
17	1,2-Dichloroethane	EPA 624	0.0004	**0.005**	NA	NA	NA	NA	NO
18	1,2-Dichloropropane	EPA 624	0.0008	**0.005**	NA	NA	NA	NA	NO
19	1,3,5-Trimethylbenzene	EPA 624	0.001	**0.01**	NA	NA	NA	NA	NO
20	1,3-Dichlorobenzene	EPA 624	0.0001	**0.005**	NA	5	NA	YES	NO
21	1,3-Dichlorobenzene	EPA 625	**0.001**	0.02	NA	5	NA	YES	NO
22	1,3-Dichloropropane	EPA 624	0.002	**0.01**	NA	NA	NA	NA	NO
23	1,4-Dichlorobenzene	EPA 624	0.0003	**0.005**	NA	NA	NA	NA	NO
24	1,4-Dichlorobenzene	EPA 625	**0.001**	0.02	NA	NA	NA	NA	NO

Table 5: Influent Analytical Methods/MDL/RL/WRF Limits/Review									
Pollutant		Method	MDL (mg/L)	RL (mg/L)	Design Capacity (mg/L)	Activated Sludge Inhibition (mg/L) USEPA Guidance	Trickling Filter Inhibition (mg/L) USEPA Guidance	RL < Discharge Limit	POC or Positive Result?
25	2,2-Dichloropropane	EPA 624	0.001	**0.01**	NA	NA	NA	NA	NO
26	2,4,6-Trichlorophenol	EPA 625	**0.0003**	0.02	NA	50	NA	YES	NO
27	2,4-Dichlorophenol	EPA 625	**0.0007**	0.02	NA	64	NA	YES	NO
28	2,4-Dimethylphenol	EPA 625	**0.0007**	0.02	NA	40	NA	YES	NO
29	2,4-Dinitrophenol	EPA 625	**0.0003**	0.2	NA	NA	NA	NA	NO
30	2,4-Dinitrotoluene	EPA 625	**0.0005**	0.02	NA	5	NA	YES	NO
31	2,6-Dinitrotoluene	EPA 625	**0.001**	0.02	NA	NA	NA	NA	NO
32	2-Chloroethyl vinyl ether	EPA 624	0.002	**0.01**	NA	NA	NA	NA	NO
33	2-Chloronaphthalene	EPA 625	**0.0009**	0.02	NA	NA	NA	NA	NO
34	2-Chlorophenol	EPA 625	**0.0006**	0.02	NA	5	NA	YES	NO
35	2-Chlorotoluene	EPA 624	0.001	**0.01**	NA	NA	NA	NA	NO
36	2-Nitrophenol	EPA 625	**0.0005**	0.08	NA	NA	NA	NA	NO
37	3,3´-Dichlorobenzidine	EPA 625	**0.002**	0.08	NA	NA	NA	NA	NO
38	4,6-Dinitro-2-methylphenol	EPA 625	**0.0006**	0.08	NA	NA	NA	NA	NO
39	4-Bromophenyl phenyl ether	EPA 625	**0.003**	0.02	NA	NA	NA	NA	NO
40	4-Chloro-3-methylphenol	EPA 625	**0.0007**	0.02	NA	NA	NA	NA	NO
41	4-Chlorophenyl Phenyl Ether	EPA 625	**0.0005**	0.02	NA	NA	NA	NA	NO
42	4-Chlorotoluene	EPA 624	0.001	**0.01**	NA	NA	NA	NA	NO
43	4-Isopropyltoluene	EPA 624	0.001	**0.01**	NA	NA	NA	NA	NO
44	4-Nitrophenol	EPA 625	**0.0007**	0.2	NA	NA	NA	NA	NO
45	Acenaphthene	EPA 625	**0.0006**	0.02	NA	NA	NA	NA	NO
46	Acenaphthylene	EPA 625	**0.0005**	0.02	NA	NA	NA	NA	NO
47	Acetone	EPA 624	0.033	**0.05**	NA	NA	NA	NA	POSITIVE
48	Acrolein	EPA 624	0.066	**0.1**	NA	NA	NA	NA	NO
49	Acrylonitrile	EPA 624	0.023	**0.05**	NA	NA	NA	NA	NO

Table 5: Influent Analytical Methods/MDL/RL/WRF Limits/Review									
	Pollutant	Method	MDL (mg/L)	RL (mg/L)	Design Capacity (mg/L)	Activated Sludge Inhibition (mg/L) USEPA Guidance	Trickling Filter Inhibition (mg/L) USEPA Guidance	RL < Discharge Limit	POC or Positive Result?
50	Ammonia as N	SM 4500 NH3-D	0.02	**0.4**	18	480	NA	YES	POSITIVE/POC
51	Anthracene	EPA 625	**0.0004**	0.02	NA	500	NA	YES	NO
52	Arsenic, Total	EPA 200.8	0.00008	**0.0005**	NA	0.1	NA	YES	POSITIVE/POC
53	Azobenzene	EPA 625	**0.002**	0.02	NA	NA	NA	NA	NO
54	Benzene	EPA 624	0.0001	**0.002**	NA	100	NA	YES	POSITIVE
55	Benzidine	EPA 625	**0.001**	0.2	NA	NA	NA	NA	NO
56	Benzo (a) anthracene	EPA 625	**0.0005**	0.02	NA	NA	NA	NA	NO
57	Benzo (a) pyrene	EPA 625	**0.0006**	0.02	NA	NA	NA	NA	NO
58	Benzo (b) fluoranthene	EPA 625	**0.0007**	0.02	NA	NA	NA	NA	NO
59	Benzo (g,h,i) perylene	EPA 625	**0.002**	0.02	NA	NA	NA	NA	NO
60	Benzo (k) fluoranthene	EPA 625	**0.001**	0.02	NA	NA	NA	NA	NO
61	Biochemical Oxygen Demand	SM 5210 B	2	**5**	290	NA	NA	YES	POSITIVE/POC
62	Bis (2-chloroethoxy) Methane	EPA 625	**0.0004**	0.02	NA	NA	NA	NA	NO
63	Bis (2-chloroethyl) Ether	EPA 625	**0.0004**	0.02	NA	NA	NA	NA	NO
64	Bis (2-chloroisopropyl) Ether	EPA 625	**0.0006**	0.02	NA	NA	NA	NA	NO
65	Bis (2-ethylhexyl) Phthalate	EPA 625	**0.0008**	0.2	NA	NA	NA	NA	NO
66	Bis(Chloromethyl)ether	EPA 624	0.002	**0.01**	NA	NA	NA	NA	NO
67	Bromobenzene	EPA 624	0.001	**0.005**	NA	NA	NA	NA	NO
68	Bromochloromethane	EPA 624	0.001	**0.005**	NA	NA	NA	NA	NO
69	Bromodichloromethane	EPA 624	0.00008	**0.005**	NA	NA	NA	NA	NO
70	Bromoform	EPA 624	0.0009	**0.005**	NA	NA	NA	NA	NO
71	Bromomethane	EPA 624	0.001	**0.005**	NA	NA	NA	NA	NO
72	Butylbenzyl Phthalate	EPA 625	**0.0009**	0.02	NA	NA	NA	NA	NO
73	Cadmium, Total	EPA 200.8	0.00002	**0.0005**	NA	1	NA	YES	POSITIVE/POC
74	Carbon Disulfide	EPA 624	0.001	**0.005**	NA	NA	NA	NA	NO

Table 5: Influent Analytical Methods/MDL/RL/WRF Limits/Review									
Pollutant		Method	MDL (mg/L)	RL (mg/L)	Design Capacity (mg/L)	Activated Sludge Inhibition (mg/L) USEPA Guidance	Trickling Filter Inhibition (mg/L) USEPA Guidance	RL < Discharge Limit	POC or Positive Result?
75	Carbon Tetrachloride	EPA 624	0.004	**0.005**	NA	NA	NA	NA	NO
76	Chemical Oxygen Demand	Hach 8000	5	**10**	NA	NA	NA	NA	POSITIVE/POC
77	Chloride	EPA 300.0	0.7	**10**	NA	NA	NA	NA	POSITIVE/POC
78	Chlorobenzene	EPA 624	0.0002	**0.005**	NA	NA	NA	NA	NO
79	Chloroethane	EPA 624	0.0009	**0.005**	NA	NA	NA	NA	NO
80	Chloroform	EPA 624	0.0004	**0.005**	NA	NA	NA	NA	NO
81	Chloromethane	EPA 624	0.0009	**0.005**	NA	NA	NA	NA	NO
82	Chromium, Total	EPA 200.8	0.00008	**0.001**	NA	1	3.5	YES	POSITIVE/POC
83	Chrysene	EPA 625	**0.0005**	0.02	NA	NA	NA	NA	NO
84	cis-1,2-Dichloroethene	EPA 624	0.001	**0.005**	NA	NA	NA	NA	NO
85	cis-1,3-Dichloropropene	EPA 624	0.0003	**0.005**	NA	NA	NA	NA	NO
86	Copper, Total	EPA 200.8	0.00003	**0.001**	NA	1	NA	YES	POSITIVE/POC
87	Cyanide, Total	SM 4500 CN-E	0.0005	**0.002**	NA	0.1	30	YES	POSITIVE/POC
88	Dibenzo (a,h) anthracene	EPA 625	**0.0009**	0.02	NA	NA	NA	NA	NO
89	Dibromochloromethane	EPA 624	0.0003	**0.005**	NA	NA	NA	NA	NO
90	Dibromomethane	EPA 624	0.001	**0.005**	NA	NA	NA	NA	NO
91	Dichlorodifluoromethane	EPA 624	0.003	**0.005**	NA	NA	NA	NA	NO
92	Diethyl phthalate	EPA 625	**0.0008**	0.02	NA	NA	NA	NA	NO
93	Dimethyl phthalate	EPA 625	**0.0004**	0.02	NA	NA	NA	NA	POSITIVE
94	Di-n-butyl phthalate	EPA 625	**0.0007**	0.02	NA	NA	NA	NA	NO
95	Di-n-octyl phthalate	EPA 625	**0.0006**	0.02	NA	NA	NA	NA	NO
96	Ethyl Acetate	EPA 624	0.024	**0.05**	NA	NA	NA	NA	NO
97	Ethylbenzene	EPA 624	0.0002	**0.005**	NA	200	NA	YES	POC
98	Fluoranthene	EPA 625	**0.0008**	0.02	NA	NA	NA	NA	NO
99	Fluorene	EPA 625	**0.0005**	0.02	NA	NA	NA	NA	NO

Table 5: Influent Analytical Methods/MDL/RL/WRF Limits/Review									
Pollutant		Method	MDL (mg/L)	RL (mg/L)	Design Capacity (mg/L)	Activated Sludge Inhibition (mg/L) USEPA Guidance	Trickling Filter Inhibition (mg/L) USEPA Guidance	RL < Discharge Limit	POC or Positive Result?
100	Hexachlorobenzene	EPA 625	**0.0003**	0.02	NA	5	NA	YES	NO
101	Hexachlorobutadiene	EPA 624	0.001	**0.01**	NA	NA	NA	NA	NO
102	Hexachlorobutadiene	EPA 625	**0.002**	0.02	NA	NA	NA	NA	NO
103	Hexachlorocyclopentadiene	EPA 625	**0.001**	0.08	NA	NA	NA	NA	NO
104	Hexachloroethane	EPA 625	**0.002**	0.02	NA	NA	NA	NA	NO
105	Indeno (1,2,3-cd) pyrene	EPA 625	**0.003**	0.02	NA	NA	NA	NA	NO
106	Isophorone	EPA 625	**0.0005**	0.02	NA	NA	NA	NA	NO
107	Isopropylbenzene	EPA 624	0.001	**0.01**	NA	NA	NA	NA	NO
108	Lead, Total	EPA 200.8	0.00004	**0.0005**	NA	1	NA	YES	POSITIVE/POC
109	Mercury, Total	EPA 245.1	0.0001	**0.0002**	NA	0.1	NA	YES	POC
110	Methyl Ethyl Ketone	EPA 624	0.03	**0.05**	NA	NA	NA	NA	NO
111	Methyl Isobutyl Ketone	EPA 624	0.017	**0.05**	NA	NA	NA	NA	NO
112	Methylene Chloride	EPA 624	0.0004	**0.01**	NA	NA	NA	NA	NO
113	Methyl-tert-butyl ether (MTBE)	EPA 624	0.001	**0.005**	NA	NA	NA	NA	NO
114	Molybdenum, Total	EPA 200.8	0.00003	**0.0005**	NA	NA	NA	NA	POSITIVE/POC
115	Naphthalene	EPA 624	0.001	**0.01**	NA	500	NA	YES	NO
116	Naphthalene	EPA 625	**0.0007**	0.02	NA	NA	NA	NA	NO
117	n-Butylbenzene	EPA 624	0.001	**0.01**	NA	NA	NA	NA	NO
118	Nickel, Total	EPA 200.8	0.00007	**0.0005**	NA	1	NA	YES	POSITIVE/POC
119	Nitrate as N	EPA 300.0	0.02	**0.1**	NA	NA	NA	NA	NO
120	Nitrite as N	EPA 300.0	0.005	**0.1**	NA	NA	NA	NA	NO
121	Nitrobenzene	EPA 625	**0.0004**	0.02	NA	30	NA	YES	NO
122	N-Nitrosodimethylamine	EPA 625	**0.0008**	0.08	NA	NA	NA	NA	NO
123	N-Nitrosodi-n-propylamine	EPA 625	**0.002**	0.02	NA	NA	NA	NA	NO
124	N-Nitrosodiphenylamine	EPA 625	**0.0008**	0.02	NA	NA	NA	NA	NO

Table 5: Influent Analytical Methods/MDL/RL/WRF Limits/Review									
Pollutant		Method	MDL (mg/L)	RL (mg/L)	Design Capacity (mg/L)	Activated Sludge Inhibition (mg/L) USEPA Guidance	Trickling Filter Inhibition (mg/L) USEPA Guidance	RL < Discharge Limit	POC or Positive Result?
125	n-Propyl Benzene	EPA 624	0.001	**0.01**	NA	NA	NA	NA	NO
126	HEM (Polar) (Animal and Vegetable)	EPA 1664A	2	**5**	NA	NA	NA	NA	POSITIVE/POC
127	Pentachlorophenol	EPA 625	**0.004**	0.02	NA	0.95	NA	YES	NO
128	Phenanthrene	EPA 625	**0.002**	0.02	NA	500	NA	YES	NO
129	Phenol	EPA 625	**0.002**	0.02	NA	50	NA	YES	POSITIVE
130	Pyrene	EPA 625	**0.002**	0.02	NA	NA	NA	NA	NO
131	sec-Butyl Benzene	EPA 624	0.001	**0.01**	NA	NA	NA	NA	NO
132	Selenium, Total	EPA 200.8	0.00001	**0.0005**	NA	NA	NA	NA	POSITIVE/POC
133	Silver, Total	EPA 200.8	0.0005	**0.0005**	NA	NA	NA	NA	POSITIVE/POC
134	Styrene	EPA 624	0.001	**0.005**	NA	NA	NA	NA	NO
135	tert-Butylbenzene	EPA 624	0.001	**0.01**	NA	NA	NA	NA	NO
136	Tetrachloroethene	EPA 624	0.0003	**0.005**	NA	NA	NA	NA	NO
137	Toluene	EPA 624	0.0002	**0.005**	NA	200	NA	YES	POSITIVE/POC
138	Total Dissolved Solids (TDS)	SM 2540 C	10	**10**	NA	NA	NA	NA	POSITIVE/POC
139	Total Kjeldahl Nitrogen	SM 4500 NH3-D	0.6	**1**	28.8	NA	NA	YES	POSITIVE
140	Total Nitrogen	Calculation	0.5	**1**	NA	NA	NA	NA	POSITIVE/POC
141	Total Suspended Solids (TSS)	SM 2540 D	8	**10**	210	NA	NA	YES	POSITIVE/POC
142	trans-1,2-Dichloroethene	EPA 624	0.0002	**0.005**	NA	NA	NA	NA	NO
143	trans-1,3-Dichloropropene	EPA 624	0.0002	**0.005**	NA	NA	NA	NA	NO
144	Trichloroethene	EPA 624	0.0003	**0.005**	NA	NA	NA	NA	NO
145	Trichlorofluoromethane	EPA 624	0.003	**0.005**	NA	NA	NA	NA	NO
146	HEM (Non-Polar) (Petroleum)	EPA 1664A	4	**5**	NA	NA	NA	NA	POSITIVE/POC
147	Vinyl Chloride	EPA 624	0.002	**0.005**	NA	NA	NA	NA	NO
148	Xylenes, Total	EPA 624	0.001	**0.005**	NA	NA	NA	NA	POSITIVE/POC
149	Zinc, Total	EPA 200.7	0.001	**0.01**	NA	0.3	NA	YES	POSITIVE/POC

Table 6: Effluent Analytical Methods/MDL/RL/WRF Limits/Review										
	Pollutant	Method	MDL (mg/L)	RL (mg/L)	Utah Chronic Limit (mg/L)	Utah Acute Limit (mg/L)	Reclaimed Water Limit (mg/L) R317-3-11	Permit Limit (mg/L) Weekly Max	RL < Limit	POC or Positive Result?
1	1,1,1,2-Tetrachloroethane	EPA 624	0.0005	**0.005**	NA	NA	NA	NA	NA	NO
2	1,1,1-Trichloroethane	EPA 624	0.0002	**0.005**	NA	NA	NA	NA	NA	NO
3	1,1,2,2-Tetrachloroethane	EPA 624	0.001	**0.005**	NA	NA	NA	NA	NA	NO
4	1,1,2-Trichloroethane	EPA 624	0.0006	**0.005**	NA	NA	NA	NA	NA	NO
5	1,1-Dichloroethane	EPA 624	0.0002	**0.005**	NA	NA	NA	NA	NA	NO
6	1,1-Dichloroethene	EPA 624	0.0005	**0.005**	NA	NA	NA	NA	NA	NO
7	1,1-Dichloropropene	EPA 624	0.001	**0.005**	NA	NA	NA	NA	NA	NO
8	1,2,3-Trichlorobenzene	EPA 624	0.001	**0.01**	NA	NA	NA	NA	NA	NO
9	1,2,3-Trichloropropane	EPA 624	0.002	**0.01**	NA	NA	NA	NA	NA	NO
10	1,2,4-Trichlorobenzene	EPA 624	0.001	**0.01**	NA	NA	NA	NA	NA	NO
11	1,2,4-Trichlorobenzene	EPA 625	**0.002**	0.02	NA	NA	NA	NA	NA	NO
12	1,2,4-Trimethylbenzene	EPA 624	0.001	**0.01**	NA	NA	NA	NA	NA	NO
13	1,2-Dibromo-3-chloropropane	EPA 624	0.003	**0.005**	NA	NA	NA	NA	NA	NO
14	1,2-Dibromoethane (EDB)	EPA 624	0.001	**0.005**	NA	NA	NA	NA	NA	NO
15	1,2-Dichlorobenzene	EPA 624	0.0003	**0.005**	NA	NA	NA	NA	NA	NO
16	1,2-Dichlorobenzene	EPA 625	**0.001**	0.02	NA	NA	NA	NA	NA	NO
17	1,2-Dichloroethane	EPA 624	0.0004	**0.005**	NA	NA	NA	NA	NA	NO
18	1,2-Dichloropropane	EPA 624	0.0008	**0.005**	NA	NA	NA	NA	NA	NO
19	1,3,5-Trimethylbenzene	EPA 624	0.001	**0.01**	NA	NA	NA	NA	NA	NO
20	1,3-Dichlorobenzene	EPA 624	0.0001	**0.005**	NA	NA	NA	NA	NA	NO
21	1,3-Dichlorobenzene	EPA 625	**0.001**	0.02	NA	NA	NA	NA	NA	NO
22	1,3-Dichloropropane	EPA 624	0.002	**0.01**	NA	NA	NA	NA	NA	NO
23	1,4-Dichlorobenzene	EPA 624	0.0003	**0.005**	NA	NA	NA	NA	NA	NO
24	1,4-Dichlorobenzene	EPA 625	**0.001**	0.02	NA	NA	NA	NA	NA	NO
25	2,2-Dichloropropane	EPA 624	0.001	**0.01**	NA	NA	NA	NA	NA	NO
26	2,4,6-Trichlorophenol	EPA 625	**0.0003**	0.02	NA	NA	NA	NA	NA	NO
27	2,4-Dichlorophenol	EPA 625	**0.0007**	0.02	NA	NA	NA	NA	NA	NO

Table 6: Effluent Analytical Methods/MDL/RL/WRF Limits/Review										
	Pollutant	Method	MDL (mg/L)	RL (mg/L)	Utah Chronic Limit (mg/L)	Utah Acute Limit (mg/L)	Reclaimed Water Limit (mg/L) R317-3-11	Permit Limit (mg/L) Weekly Max	RL < Limit	POC or Positive Result?
28	2,4-Dimethylphenol	EPA 625	**0.0007**	0.02	NA	NA	NA	NA	NA	NO
29	2,4-Dinitrophenol	EPA 625	**0.0003**	0.2	NA	NA	NA	NA	NA	NO
30	2,4-Dinitrotoluene	EPA 625	**0.0005**	0.02	NA	NA	NA	NA	NA	NO
31	2,6-Dinitrotoluene	EPA 625	**0.001**	0.02	NA	NA	NA	NA	NA	NO
32	2-Chloroethyl vinyl ether	EPA 624	0.002	**0.01**	NA	NA	NA	NA	NA	NO
33	2-Chloronaphthalene	EPA 625	**0.0009**	0.02	NA	NA	NA	NA	NA	NO
34	2-Chlorophenol	EPA 625	**0.0006**	0.02	NA	NA	NA	NA	NA	NO
35	2-Chlorotoluene	EPA 624	0.001	**0.01**	NA	NA	NA	NA	NA	NO
36	2-Nitrophenol	EPA 625	**0.0005**	0.08	NA	NA	NA	NA	NA	NO
37	3,3´-Dichlorobenzidine	EPA 625	**0.002**	0.08	NA	NA	NA	NA	NA	NO
38	4,6-Dinitro-2-methylphenol	EPA 625	**0.0006**	0.08	NA	NA	NA	NA	NA	NO
39	4-Bromophenyl phenyl ether	EPA 625	**0.003**	0.02	NA	NA	NA	NA	NA	NO
40	4-Chloro-3-methylphenol	EPA 625	**0.0007**	0.02	NA	NA	NA	NA	NA	NO
41	4-Chlorophenyl Phenyl Ether	EPA 625	**0.0005**	0.02	NA	NA	NA	NA	NA	NO
42	4-Chlorotoluene	EPA 624	0.001	**0.01**	NA	NA	NA	NA	NA	NO
43	4-Isopropyltoluene	EPA 624	0.001	**0.01**	NA	NA	NA	NA	NA	NO
44	4-Nitrophenol	EPA 625	**0.0007**	0.2	NA	NA	NA	NA	NA	NO
45	Acenaphthene	EPA 625	**0.0006**	0.02	NA	NA	NA	NA	NA	NO
46	Acenaphthylene	EPA 625	**0.0005**	0.02	NA	NA	NA	NA	NA	NO
47	Acetone	EPA 624	0.033	**0.05**	NA	NA	NA	NA	NA	NO
48	Acrolein	EPA 624	0.066	**0.1**	NA	NA	NA	NA	NA	NO
49	Acrylonitrile	EPA 624	0.023	**0.05**	NA	NA	NA	NA	NA	NO
50	Ammonia as N	SM 4500 NH3-D	0.02	**0.4**	NA	NA	NA	NA	NA	POSITIVE/ POC
51	Anthracene	EPA 625	**0.0004**	0.02	NA	NA	NA	NA	NA	NO
52	Arsenic, Total	EPA 200.8	0.00008	**0.0005**	NA	NA	NA	NA	NA	POSITIVE/ POC
53	Azobenzene	EPA 625	**0.002**	0.02	NA	NA	NA	NA	NA	NO
54	Benzene	EPA 624	0.0001	**0.002**	NA	NA	NA	NA	NA	POC
55	Benzidine	EPA 625	**0.001**	0.2	NA	NA	NA	NA	NA	NO
56	Benzo (a) anthracene	EPA 625	**0.0005**	0.02	NA	NA	NA	NA	NA	NO

Table 6: Effluent Analytical Methods/MDL/RL/WRF Limits/Review										
Pollutant		Method	MDL (mg/L)	RL (mg/L)	Utah Chronic Limit (mg/L)	Utah Acute Limit (mg/L)	Reclaimed Water Limit (mg/L) R317-3-11	Permit Limit (mg/L) Weekly Max	RL < Limit	POC or Positive Result?
57	Benzo (a) pyrene	EPA 625	**0.0006**	0.02	NA	NA	NA	NA	NA	NO
58	Benzo (b) fluoranthene	EPA 625	**0.0007**	0.02	NA	NA	NA	NA	NA	NO
59	Benzo (g,h,i) perylene	EPA 625	**0.002**	0.02	NA	NA	NA	NA	NA	NO
60	Benzo (k) fluoranthene	EPA 625	**0.001**	0.02	NA	NA	NA	NA	NA	NO
61	Biochemical Oxygen Demand	SM 5210 B	2	**5**	NA	NA	10	35	YES	POSITIVE/ POC
62	Bis (2-chloroethoxy) Methane	EPA 625	**0.0004**	0.02	NA	NA	NA	NA	NA	NO
63	Bis (2-chloroethyl) Ether	EPA 625	**0.0004**	0.02	NA	NA	NA	NA	NA	NO
64	Bis (2-chloroisopropyl) Ether	EPA 625	**0.0006**	0.02	NA	NA	NA	NA	NA	NO
65	Bis (2-ethylhexyl) Phthalate	EPA 625	**0.0008**	0.2	NA	NA	NA	NA	NA	NO
66	Bis(Chloromethyl)ether	EPA 624	0.002	**0.01**	NA	NA	NA	NA	NA	NO
67	Bromobenzene	EPA 624	0.001	**0.005**	NA	NA	NA	NA	NA	NO
68	Bromochloromethane	EPA 624	0.001	**0.005**	NA	NA	NA	NA	NA	NO
69	Bromodichloromethane	EPA 624	0.00008	**0.005**	NA	NA	NA	NA	NA	NO
70	Bromoform	EPA 624	0.0009	**0.005**	NA	NA	NA	NA	NA	NO
71	Bromomethane	EPA 624	0.001	**0.005**	NA	NA	NA	NA	NA	NO
72	Butylbenzyl Phthalate	EPA 625	**0.0009**	0.02	NA	NA	NA	NA	NA	NO
72	Carbon Tetrachloride	EPA 624	0.004	**0.005**	NA	NA	NA	NA	NA	NO
73	Cadmium, Total	EPA 200.8	0.00002	**0.0005**	0.000759	0.00873	NA	NA	YES	POC
73	Chemical Oxygen Demand	Hach 8000	5	**10**	NA	NA	NA	NA	NA	POSITIVE/ POC
74	Carbon Disulfide	EPA 624	0.001	**0.005**	NA	NA	NA	NA	NA	NO
74	Chloride	EPA 300.0	0.7	**10**	NA	NA	250	NA	YES	POSITIVE/ POC
78	Chlorobenzene	EPA 624	0.0002	**0.005**	NA	NA	NA	NA	NA	NO
79	Chloroethane	EPA 624	0.0009	**0.005**	NA	NA	NA	NA	NA	NO
80	Chloroform	EPA 624	0.0004	**0.005**	NA	NA	NA	NA	NA	NO
81	Chloromethane	EPA 624	0.0009	**0.005**	NA	NA	NA	NA	NA	NO
82	Chromium, Total	EPA 200.8	0.00008	**0.001**	0.268	5.61	NA	NA	YES	POSITIVE/ POC
83	Chrysene	EPA 625	**0.0005**	0.02	NA	NA	NA	NA	NA	NO
84	cis-1,2-Dichloroethene	EPA 624	0.001	**0.005**	NA	NA	NA	NA	NA	NO
85	cis-1,3-Dichloropropene	EPA 624	0.0003	**0.005**	NA	NA	NA	NA	NA	NO

Table 6: Effluent Analytical Methods/MDL/RL/WRF Limits/Review										
Pollutant		Method	MDL (mg/L)	RL (mg/L)	Utah Chronic Limit (mg/L)	Utah Acute Limit (mg/L)	Reclaimed Water Limit (mg/L) R317-3-11	Permit Limit (mg/L) Weekly Max	RL < Limit	POC or Positive Result?
86	Copper, Total	EPA 200.8	0.00003	**0.001**	0.0305	0.0878	NA	NA	YES	POSITIVE/ POC
87	Cyanide, Total	SM 4500 CN-E	0.0005	**0.002**	NA	NA	NA	NA	NA	POSITIVE/ POC
88	Dibenzo (a,h) anthracene	EPA 625	**0.0009**	0.02	NA	NA	NA	NA	NA	NO
89	Dibromochloromethane	EPA 624	0.0003	**0.005**	NA	NA	NA	NA	NA	NO
90	Dibromomethane	EPA 624	0.001	**0.005**	NA	NA	NA	NA	NA	NO
91	Dichlorodifluoromethane	EPA 624	0.003	**0.005**	NA	NA	NA	NA	NA	NO
92	Diethyl phthalate	EPA 625	**0.0008**	0.02	NA	NA	NA	NA	NA	NO
93	Dimethyl phthalate	EPA 625	**0.0004**	0.02	NA	NA	NA	NA	NA	POSITIVE
94	Di-n-butyl phthalate	EPA 625	**0.0007**	0.02	NA	NA	NA	NA	NA	NO
95	Di-n-octyl phthalate	EPA 625	**0.0006**	0.02	NA	NA	NA	NA	NA	NO
96	Ethyl Acetate	EPA 624	0.024	**0.05**	NA	NA	NA	NA	NA	NO
97	Ethylbenzene	EPA 624	0.0002	**0.005**	NA	NA	NA	NA	NA	POC
98	Fluoranthene	EPA 625	**0.0008**	0.02	NA	NA	NA	NA	NA	NO
99	Fluorene	EPA 625	**0.0005**	0.02	NA	NA	NA	NA	NA	NO
100	Hexachlorobenzene	EPA 625	**0.0003**	0.02	NA	NA	NA	NA	NA	NO
101	Hexachlorobutadiene	EPA 624	0.001	**0.01**	NA	NA	NA	NA	NA	NO
102	Hexachlorobutadiene	EPA 625	**0.002**	0.02	NA	NA	NA	NA	NA	NO
103	Hexachlorocyclopentadiene	EPA 625	**0.001**	0.08	NA	NA	NA	NA	NA	NO
104	Hexachloroethane	EPA 625	**0.002**	0.02	NA	NA	NA	NA	NA	NO
105	Indeno (1,2,3-cd) pyrene	EPA 625	**0.003**	0.02	NA	NA	NA	NA	NA	NO
106	Isophorone	EPA 625	**0.0005**	0.02	NA	NA	NA	NA	NA	NO
107	Isopropylbenzene	EPA 624	0.001	**0.01**	NA	NA	NA	NA	NA	NO
108	Lead, Total	EPA 200.8	0.00004	**0.0005**	0.0186	0.477	NA	NA	YES	POSITIVE/ POC
109	Mercury, Total	EPA 245.1	0.0001	**0.0002**	NA	NA	NA	NA	NA	POC
110	Methyl Ethyl Ketone	EPA 624	0.03	**0.05**	NA	NA	NA	NA	NA	NO
111	Methyl Isobutyl Ketone	EPA 624	0.017	**0.05**	NA	NA	NA	NA	NA	NO
112	Methylene Chloride	EPA 624	0.0004	**0.01**	NA	NA	NA	NA	NA	NO
114	Methyl-tert-butyl ether (MTBE)	EPA 624	0.001	**0.005**	NA	NA	NA	NA	NA	NO
115	Molybdenum, Total	EPA 200.8	0.00003	**0.0005**	NA	NA	NA	NA	NA	POSITIVE/ POC

Table 6: Effluent Analytical Methods/MDL/RL/WRF Limits/Review										
	Pollutant	Method	MDL (mg/L)	RL (mg/L)	Utah Chronic Limit (mg/L)	Utah Acute Limit (mg/L)	Reclaimed Water Limit (mg/L) R317-3-11	Permit Limit (mg/L) Weekly Max	RL < Limit	POC or Positive Result?
116	Naphthalene	EPA 624	0.001	**0.01**	NA	NA	NA	NA	NA	NO
117	Naphthalene	EPA 625	**0.0007**	0.02	NA	NA	NA	NA	NA	NO
118	n-Butylbenzene	EPA 624	0.001	**0.01**	NA	NA	NA	NA	NA	NO
119	Nickel, Total	EPA 200.8	0.00007	**0.0005**	NA	NA	NA	NA	NA	POSITIVE/ POC
120	Nitrate as N	EPA 300.0	0.02	**0.1**	NA	NA	NA	NA	NA	POSITIVE
121	Nitrite as N	EPA 300.0	0.005	**0.1**	NA	NA	NA	NA	NA	POSITIVE
122	Nitrobenzene	EPA 625	**0.0004**	0.02	NA	NA	NA	NA	NA	NO
123	N-Nitrosodimethylamine	EPA 625	**0.0008**	0.08	NA	NA	NA	NA	NA	NO
124	N-Nitrosodi-n-propylamine	EPA 625	**0.002**	0.02	NA	NA	NA	NA	NA	NO
125	N-Nitrosodiphenylamine	EPA 625	**0.0008**	0.02	NA	NA	NA	NA	NA	NO
126	n-Propyl Benzene	EPA 624	0.001	**0.01**	NA	NA	NA	NA	NA	NO
127	HEM (Polar) (Animal and Vegetable)	EPA 1664A	2	**5**	NA	NA	NA	NA	NA	POSITIVE/ POC
128	Pentachlorophenol	EPA 625	**0.004**	0.02	NA	NA	NA	NA	NA	NO
129	Phenanthrene	EPA 625	**0.002**	0.02	NA	NA	NA	NA	NA	NO
130	Phenol	EPA 625	**0.002**	0.02	NA	NA	NA	NA	NA	NO
131	Pyrene	EPA 625	**0.002**	0.02	NA	NA	NA	NA	NA	NO
132	sec-Butyl Benzene	EPA 624	0.001	**0.01**	NA	NA	NA	NA	NA	NO
133	Selenium, Total	EPA 200.8	0.00001	**0.0005**	NA	NA	NA	NA	NA	POSITIVE/ POC
134	Silver, Total	EPA 200.8	0.0005	**0.0005**	NA	0.0411	NA	NA	YES	POC
135	Styrene	EPA 624	0.001	**0.005**	NA	NA	NA	NA	NA	NO
136	tert-Butylbenzene	EPA 624	0.001	**0.01**	NA	NA	NA	NA	NA	NO
137	Tetrachloroethene	EPA 624	0.0003	**0.005**	NA	NA	NA	NA	NA	NO
138	Toluene	EPA 624	0.0002	**0.005**	NA	NA	NA	NA	NA	POC
139	Total Dissolved Solids (TDS)	SM 2540 C	10	**10**	NA	NA	500	NA	YES	POSITIVE/ POC
140	Total Kjeldahl Nitrogen	SM 4500 NH3-D	0.6	**1**	NA	NA	NA	NA	NA	POSITIVE
141	Total Nitrogen	Calculation	0.5	**1**	NA	NA	NA	NA	NA	POSITIVE/ POC
142	Total Suspended Solids (TSS)	SM 2540 D	3	**4**	NA	NA	NA	25	YES	POSITIVE/ POC
143	trans-1,2-Dichloroethene	EPA 624	0.0002	**0.005**	NA	NA	NA	NA	NA	NO
144	trans-1,3-Dichloropropene	EPA 624	0.0002	**0.005**	NA	NA	NA	NA	NA	NO

Table 6: Effluent Analytical Methods/MDL/RL/WRF Limits/Review										
Pollutant		Method	MDL (mg/L)	RL (mg/L)	Utah Chronic Limit (mg/L)	Utah Acute Limit (mg/L)	Reclaimed Water Limit (mg/L) R317-3-11	Permit Limit (mg/L) Weekly Max	RL < Limit	POC or Positive Result?
145	Trichloroethene	EPA 624	0.0003	**0.005**	NA	NA	NA	NA	NA	NO
146	Trichlorofluoromethane	EPA 624	0.003	**0.005**	NA	NA	NA	NA	NA	NO
147	HEM (Non-Polar) (Petroleum)	EPA 1664A	4	**5**	NA	NA	NA	NA	NA	POC
148	Vinyl Chloride	EPA 624	0.002	**0.005**	NA	NA	NA	NA	NA	NO
149	Xylenes, Total	EPA 624	0.001	**0.005**	NA	NA	NA	NA	NA	POC
150	Zinc, Total	EPA 200.7	0.001	**0.01**	0.388	0.388	NA	NA	YES	POSITIVE/ POC

Table 7 below lists all parameters that were identified as either a POC or had positive results. The comments in Table 7 explain why some parameters were removed from further Local Limits evaluation. "No Basis" means that there is no criterion applicable for the WRF. Where acute and/or chronic water quality criteria were the only criteria for evaluation, the pollutant was removed for having no basis.

Table 7: Parameters Identified as POCs or with Positive Influent or Effluent Results

	Pollutant	INFLUENT USEPA POC or Positive Result?	EFFLUENT USEPA POC or Positive Result?	COMMENTS
1	1,2,4-Trimethylbenzene	POSITIVE	NO	Remove - No Basis for Limit
2	Acetone	POSITIVE	NO	Remove - No Basis for Limit
3	Ammonia as N	POSITIVE/POC	POSITIVE/POC	Include in Study - POC
4	Arsenic, Total	POSITIVE/POC	POSITIVE/POC	Include in Study - Inhibition/Sludge
5	Benzene	POSITIVE/POC	POC	Include in Study - Inhibition / BTEX
7	Biochemical Oxygen Demand	POSITIVE/POC	POSITIVE/POC	Include in Study - Permit Limit
6	BTEX	POC	POC	Include in Study - POC
8	Cadmium, Total	POSITIVE/POC	POC	Include in Study - Inhibition/Sludge
9	Chemical Oxygen Demand	POSITIVE/POC	POSITIVE/POC	Include in Study - POC
10	Chloride	POSITIVE/POC	POSITIVE/POC	Include in Study - POC
11	Chromium, Total	POSITIVE/POC	POSITIVE/POC	Include in Study - Inhibition
12	Copper, Total	POSITIVE/POC	POSITIVE/POC	Include in Study - Inhibition/Sludge
13	Cyanide, Total	POSITIVE/POC	POSITIVE/POC	Include in Study - Inhibition
14	Dimethyl phthalate	POSITIVE	POSITIVE	Remove - No Basis for Limit
15	Ethylbenzene	POC	POC	Include in Study - Inhibition / BTEX
31	HEM (Non-Polar) (Petroleum)	POSITIVE/POC	POC	Include in Study - POC
22	HEM (Polar) (Animal/Vegetable)	POSITIVE/POC	POSITIVE/POC	Include in Study - POC
16	Lead, Total	POSITIVE/POC	POSITIVE/POC	Include in Study - Inhibition/Sludge
17	Mercury, Total	POC	POC	Include in Study - Inhibition/Sludge
18	Molybdenum, Total	POSITIVE/POC	POSITIVE/POC	Include in Study - Sludge
19	Nickel, Total	POSITIVE/POC	POSITIVE/POC	Include in Study - Inhibition/Sludge
20	Nitrate as N	NO	POSITIVE	Remove-Included in Total Nitrogen
21	Nitrite as N	NO	POSITIVE	Remove-Included in Total Nitrogen
23	Phenol	POSITIVE	NO	Include in Study - Inhibition
24	Selenium, Total	POSITIVE/POC	POSITIVE/POC	Include in Study - Inhibition/Sludge
25	Silver, Total	POSITIVE/POC	POC	Remove - No Basis for Limit
26	Toluene	POSITIVE/POC	POC	Include in Study - Inhibition / BTEX
27	Total Dissolved Solids (TDS)	POSITIVE/POC	POSITIVE/POC	Include in Study - POC
28	Total Kjeldahl Nitrogen	POSITIVE	POSITIVE	Remove-Included in Total Nitrogen
29	Total Nitrogen	POSITIVE/POC	POSITIVE/POC	Include in Study - POC
30	Total Suspended Solids (TSS)	POSITIVE/POC	POSITIVE/POC	Include in Study - Permit Limit
32	Xylenes, Total	POSITIVE/POC	POC	Include in Study - BTEX - POC
33	Zinc, Total	POSITIVE/POC	POSITIVE/POC	Include in Study - Inhibition/Sludge

4.4 Pollutants Identified for Evaluation

Table 8 lists the parameters identified for full evaluation to develop Local Limits. The list includes the POCs identified in the Plan of Study and those parameters that had positive analytical results and have a basis for developing a Local Limit.

Table 8: Parameters for Evaluation

Pollutant		INFLUENT	EFFLUENT	BASIS
		USEPA POC or Positive Result?	USEPA POC or Positive Result?	
1	Ammonia as N	POSITIVE/POC	POSITIVE/POC	POC
2	Arsenic, Total	POSITIVE/POC	POSITIVE/POC	Inhibition/Sludge
3	Benzene	POSITIVE/POC	POC	Inhibition / BTEX
4	Biochemical Oxygen Demand	POSITIVE/POC	POSITIVE/POC	Permit Limit
5	BTEX	POC	POC	POC
6	Cadmium, Total	POSITIVE/POC	POC	Inhibition/Sludge
7	Chemical Oxygen Demand	POSITIVE/POC	POSITIVE/POC	POC
8	Chloride	POSITIVE/POC	POSITIVE/POC	POC
9	Chromium, Total	POSITIVE/POC	POSITIVE/POC	Inhibition
10	Copper, Total	POSITIVE/POC	POSITIVE/POC	Inhibition/Sludge
11	Cyanide, Total	POSITIVE/POC	POSITIVE/POC	Inhibition
12	Ethylbenzene	POC	POC	Inhibition / BTEX
13	HEM (Non-Polar) (Petroleum)	POSITIVE/POC	POC	POC
14	HEM (Polar) (Animal/Vegetable)	POSITIVE/POC	POSITIVE/POC	POC
15	Lead, Total	POSITIVE/POC	POSITIVE/POC	Inhibition/Sludge
16	Mercury, Total	POC	POC	Inhibition/Sludge
17	Molybdenum, Total	POSITIVE/POC	POSITIVE/POC	Sludge
18	Nickel, Total	POSITIVE/POC	POSITIVE/POC	Inhibition/Sludge
19	Phenol	POSITIVE	NO	Inhibition
20	Selenium, Total	POSITIVE/POC	POSITIVE/POC	Inhibition/Sludge
21	Toluene	POSITIVE/POC	POC	Inhibition / BTEX
22	Total Dissolved Solids (TDS)	POSITIVE/POC	POSITIVE/POC	POC
23	Total Nitrogen	POSITIVE/POC	POSITIVE/POC	POC
24	Total Suspended Solids (TSS)	POSITIVE/POC	POSITIVE/POC	Permit Limit
25	Xylenes, Total	POSITIVE/POC	POC	BTEX - POC
26	Zinc, Total	POSITIVE/POC	POSITIVE/POC	Inhibition/Sludge

5.0 PLANT MONITORING DATA

5.1 Sampling and Analysis for POCs:

Table 9 below lists the sample collection dates for the Influent, Effluent, Residential, and Commercial sample sites. The sample dates included an entire week to get flows representative of weekday and weekend day flows. The effluent sample locations were at the end of the treatment train immediately prior to discharge. A 24-hour difference between the collection times of the influent and effluent samples represents the approximate hydraulic residence time across the WRF. The residential and commercial sample locations were chosen as representative of discharges from uncontrollable residential and commercial discharges.

All wastewater samples were 24-hour composites collected by automatic samplers except for cyanide, oil and grease (HEM), and volatile organics where grab samples were collected on each sample date. All handling and preservation of collected samples and laboratory analyses of samples were performed in accordance with 40 CFR Part 136.

Grab samples of residuals were collected and analyzed for the applicable POCs identified above on August 29, 2010 and September 3, 2010.

The methodologies, MDLs and RLs for the Influent and Effluent samples are included in Tables 3 and 4 associated with Section 4.3. The methodologies, MDLs and RLs for the Residential and Commercial samples are the same as those in Tables 3 and 4. The biosolids were analyzed using Method 8270. Appendix 2 is a compilation of all the analytical test results. Appendix 2 reviews hold times, quality control and equipment blanks. The laboratory reports associated with all the sampling are included in Appendix 3.

5.1.1 Certified Laboratory

All analyses were performed by Chemtech-Ford Laboratories. Chemtech-Ford is certified by the Utah Department of Health for Non-portable Water (CWA) under Certificate Number UT00027.

5.1.2 Comments on Sampling Event

Initially only three samples were collected for Volatile Organic Pollutants (EPA 624). Additional samples were collected from October 3, 2010 to October 7, 2010 to increase the data points for the BTEX parameters.

The laboratory failed to complete the silica gel treated portion (SGT-HEM) of the EPA Method 1664A Hexane Extractable Materials (HEM) analysis. The SGT (Non-Polar HEM) portion of the HEM analysis replaces the Total Recoverable Petroleum Hydrocarbon (TRPH) analysis and is a useful tool in screening samples for petroleum discharges. The Plan of Study called for the separate reporting of HEM (Polar or Animal/Vegetable Oil and

Grease) and SGT (Non-Polar) HEM. Additional HEM samples were collected in October with the additional EPA 624 samples to collect data for HEM and HEM-SGT parameters. The laboratory results associated with the additional analysis are included in Appendix 3. For the animal/vegetable, or polar, portion of the HEM, the results used in the evaluation were from the original sample collection dates plus one from the samples collected in October.

On Day 2 at the commercial sample site, the sampler was dislodged from the suspension wires and the composite sample was lost. The sampling event for the commercial site was extended for one day. The residential and commercial samples are not required to be paired by date and are not part of the removal efficiency calculations.

Table 9: Sample Collection Dates and Pairing										
	Influent					Effluent				
	Inorganics	EPA 624	TRPH	Oil and Grease	EPA 625	Inorganics	EPA 624	TRPH	Oil and Grease	EPA 625
Day 1	8/27/2010	8/28/2010	10/3/2010	8/28/2010	8/28/2010	8/28/2010	8/29/2010	10/4/2010	8/29/2010	8/29/2010
Day 2	8/28/2010	8/30/2010	10/4/2010	8/29/2010	8/30/2010	8/29/2010	8/31/2010	10/5/2010	8/30/2010	8/31/2010
Day 3	8/29/2010	9/1/2010	10/5/2010	8/30/2010	9/1/2010	8/30/2010	9/2/2010	10/6/2010	8/31/2010	9/2/2010
Day 4	8/30/2010	10/3/2010	10/6/2010	8/31/2010	NA	8/31/2010	10/4/2010	10/7/2010	9/1/2010	NA
Day 5	8/31/2010	10/5/2010	10/7/2010	9/1/2010	NA	9/1/2010	10/6/2010	10/8/2010	9/2/2010	NA
Day 6	9/1/2010	10/7/2010	10/8/2010	9/2/2010	NA	9/2/2010	10/8/2010	10/9/2010	9/3/2010	NA
Day 7	9/2/2010	10/9/2010	10/9/2010	10/3/2010	NA	9/3/2010	10/10/2010	10/10/2010	10/4/2010	NA
	Residential					Commercial				
	Inorganics	EPA 624	TRPH	Oil and Grease	EPA 625	Inorganics	EPA 624	TRPH	Oil and Grease	EPA 625
Day 1	8/27/2010	8/28/2010	10/3/2010	8/27/2010	8/28/2010	8/27/2010	8/28/2010	10/3/2010	8/27/2010	8/30/2010
Day 2	8/28/2010	8/30/2010	10/4/2010	8/28/2010	8/30/2010	8/29/2010	8/30/2010	10/4/2010	8/28/2010	9/1/2010
Day 3	8/29/2010	9/1/2010	10/5/2010	8/29/2010	9/1/2010	8/30/2010	9/1/2010	10/5/2010	8/29/2010	NA
Day 4	8/30/2010	10/3/2010	10/6/2010	8/30/2010	NA	8/31/2010	10/3/2010	10/6/2010	8/30/2010	NA
Day 5	8/31/2010	10/5/2010	10/7/2010	8/31/2010	NA	9/1/2010	10/5/2010	10/7/2010	8/31/2010	NA
Day 6	9/1/2010	10/7/2010	10/8/2010	9/1/2010	NA	9/2/2010	10/7/2010	10/8/2010	9/1/2010	NA
Day 7	9/2/2010	10/9/2010	10/9/2010	9/2/2010	NA	9/3/2010	10/9/2010	10/9/2010	9/2/2010	NA
NA = Not Determined - No Data Available.										

5.2 Results

5.2.1 WRF Influent and Effluent

Table 10 and Table 11 respectively list the influent and effluent analytical results. Results that are **bolded** were above the reporting limit for the parameter. Effluent samples results that were below the reported limit in the laboratory reports are listed as one-half the reported limit. The USEPA Guidance Manual allows the use of ½ the reported limit for effluent samples.

TABLE 10: Influent Results								
POLLUTANT		DAY 1	DAY 2	DAY 3	DAY 4	DAY 5	DAY 6	DAY 7
		mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
1	Ammonia as N	**16.8**	**17.8**	**16.1**	**15.9**	**16.9**	**18.1**	**16.9**
2	Arsenic, Total	**0.0077**	**0.0068**	**0.0068**	**0.007**	**0.0077**	**0.008**	**0.0088**
3	Benzene	**0.021**	**0.019**	**0.023**	**0.01**	**0.013**	**0.014**	0.017
4	Biochemical Oxygen Demand	**213**	**186**	**156**	**160**	**216**	**174**	**198**
5	BTEX	**0.087**	**0.072**	**0.086**	**0.039**	**0.045**	**0.050**	**0.072**
6	Cadmium, Total	**0.001**	**0.0006**	**0.0016**	0.0005	**0.0014**	**0.0006**	**0.0007**
7	Chemical Oxygen Demand	**498**	**494**	**418**	**399**	**600**	**470**	**472**
8	Chloride	**550**	**520**	**470**	**450**	**490**	**500**	**450**
9	Chromium, Total	**0.02**	**0.016**	**0.03**	**0.007**	**0.029**	**0.022**	**0.025**
10	Copper, Total	**0.0897**	**0.0809**	**0.0548**	**0.0567**	**0.0851**	**0.0699**	**0.0737**
11	Cyanide, Total	0.002	**0.005**	**0.007**	**0.005**	**0.006**	**0.007**	**0.005**
12	Ethylbenzene	0.005	0.005	0.005	0.005	0.005	0.005	0.005
13	HEM (Non-Polar) (Petroleum)	5	**7**	**5**	5	5	**5**	**11**
14	HEM (Polar) (Animal/Vegetable)	**17**	**14**	**15**	**20**	**26**	**59**	**29**
15	Lead, Total	**0.0048**	**0.0044**	**0.0021**	**0.002**	**0.005**	**0.0046**	**0.004**
16	Mercury, Total	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002
17	Molybdenum, Total	**0.0283**	**0.027**	**0.024**	**0.0229**	**0.0236**	**0.0246**	**0.0255**
18	Nickel, Total	**0.0224**	**0.0166**	**0.0133**	**0.0072**	**0.0244**	**0.0455**	**0.0263**
19	Phenol	**0.093**	**0.213**	**0.021**	NA	NA	NA	NA
20	Selenium, Total	**0.0021**	**0.0014**	**0.0012**	**0.0013**	**0.001**	**0.0023**	**0.0025**
21	Toluene	**0.034**	**0.026**	**0.033**	**0.012**	**0.015**	**0.016**	**0.028**
22	Total Dissolved Solids (TDS)	**1500**	**1510**	**1480**	**1390**	**1430**	**1450**	**1400**
23	Total Nitrogen	**27**	**27**	**24**	**22**	**27**	**31**	**30**
24	Total Suspended Solids (TSS)	**157**	**188**	**182**	**167**	**209**	**219**	**191**
25	Xylenes, Total	**0.027**	**0.022**	**0.025**	**0.012**	**0.012**	**0.015**	**0.022**
26	Zinc, Total	**0.12**	**0.14**	**0.11**	**0.08**	**0.15**	**0.14**	**0.15**
Bolded values indicate the pollutant concentration is above the reported limit.								
NA = No Data Available								

TABLE 11: Effluent Results								
POLLUTANT		DAY 1	DAY 2	DAY 3	DAY 4	DAY 5	DAY 6	DAY 7
		mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
1	Ammonia as N	**14.1**	**14.1**	**14.7**	**14.6**	**15.5**	**15.3**	**14.4**
2	Arsenic, Total	**0.0056**	**0.0052**	**0.0062**	**0.0068**	**0.0066**	**0.0068**	**0.0072**
3	Benzene	0.001	0.001	0.001	0.001	0.001	0.001	0.001
4	Biochemical Oxygen Demand	2.5	2.5	**12**	**12**	2.5	2.5	**9**
5	BTEX	0.0085	0.0085	0.0085	0.0085	0.0085	0.0085	0.0085
6	Cadmium, Total	0.00025	0.00025	0.00025	0.00025	0.00025	0.00025	0.00025
7	Chemical Oxygen Demand	**53**	**52**	**45**	**29**	**46**	**42**	**39**
8	Chloride	**530**	**530**	**480**	**480**	**500**	**490**	**429**
9	Chromium, Total	**0.012**	**0.007**	**0.005**	**0.006**	**0.006**	**0.008**	**0.006**
10	Copper, Total	**0.0131**	**0.0116**	**0.0103**	**0.0121**	**0.0116**	**0.013**	**0.0121**
11	Cyanide, Total	**0.007**	**0.018**	**0.015**	**0.018**	**0.029**	**0.022**	0.001
12	Ethylbenzene	0.0025	0.0025	0.0025	0.0025	0.0025	0.0025	0.0025
13	HEM (Non-Polar) (Petroleum)	2.5	2.5	2.5	2.5	2.5	2.5	3
14	HEM (Polar) (Animal/Vegetable)	2.5	2.5	2.5	**9**	3	2.5	3
15	Lead, Total	**0.00025**	**0.00025**	**0.00025**	**0.00025**	**0.00025**	0.0005	0.0006
16	Mercury, Total	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001
17	Molybdenum, Total	**0.0208**	**0.0217**	**0.0217**	**0.0222**	**0.0186**	**0.0192**	**0.02**
18	Nickel, Total	**0.0126**	**0.0103**	**0.0073**	**0.0114**	**0.0142**	**0.0173**	**0.0131**
19	Phenol	0.001	0.001	0.001	NA	NA	NA	NA
20	Selenium, Total	**0.0012**	**0.0009**	**0.0011**	**0.0024**	**0.0022**	**0.0023**	**0.0031**
21	Toluene	0.0025	0.0025	0.0025	0.0025	0.0025	0.0025	0.0025
22	Total Dissolved Solids (TDS)	**1450**	**1450**	**1360**	**1370**	**1430**	**1460**	**1380**
23	Total Nitrogen	**27**	**15**	**15.4**	**15**	**19**	**18**	**17**
24	Total Suspended Solids (TSS)	**12**	**10**	**8**	**10**	**9**	**8**	**9**
25	Xylenes, Total	0.0025	0.0025	0.0025	0.0025	0.0025	0.0025	0.0025
26	Zinc, Total	**0.02**	**0.02**	**0.02**	**0.03**	**0.02**	**0.03**	**0.03**
Bold values indicate the pollutant concentration is above the reported limit. Effluent results below the RL are reported as 1/2 the RL.								
NA = No Data Available								

5.3 Residential and Commercial Sources

Table 12 is a summary of the analytical results and the average concentration obtained from the sampling at the Residential only site. Where the results of the analyses were above the reporting limit, the result is **bolded.** The residential table also includes USEPA Average Residential Discharge Concentrations from the USEPA Local Limits Guidance Document Appendix V. The USEPA Average Residential Discharge Concentrations are included as a point of comparison with the analytical results from the City's sample points. The USEPA values are a limited national average and not necessarily representative of the discharges within the City's sanitary sewer system. Table 13 is a summary of the analytical results and the average concentration obtained from the sampling at the commercial only sample site. Where the results of the analyses were above the reporting limit, the result is **bolded.**

TABLE 12: Uncontrollable Residential Results - 1805 Independence										
SAMPLE DATE		Day 1	Day 2	Day 3	Day 4	Day 5	Day 6	Day 7	AVERAGE	USEPA AVERAGE[1]
POLLUTANT		mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
1	Ammonia as N	**32.6**	**25.7**	**29.2**	**34.7**	**29**	**30.8**	**33.5**	**30.8**	NA
2	Arsenic, Total	**0.0005**	**0.0008**	**0.0011**	**0.0007**	**0.0011**	**0.001**	**0.0012**	**0.000914**	0.007
3	Benzene	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.00200	NA
4	Biochemical Oxygen Demand	**521**	**216**	**220**	**198**	**172**	**180**	**213**	**246**	NA
5	BTEX	0.017	0.017	0.017	0.017	0.017	0.017	0.017	0.0170	NA
6	Cadmium, Total	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	**0.000500**	0.008
7	COD	**560**	**487**	**481**	**419**	**369**	**370**	**405**	**442**	NA
8	Chloride	**118**	**96**	**150**	**130**	**110**	**110**	**205**	**131**	NA
9	Chromium, Total	**0.003**	**0.004**	**0.003**	**0.003**	**0.002**	**0.001**	**0.002**	**0.00257**	0.034
10	Copper, Total	**0.0649**	**0.0547**	**0.053**	**0.0526**	**0.0445**	**0.0433**	**0.0500**	**0.0519**	0.14
11	Cyanide, Total	0.002	0.002	**0.008**	0.002	**0.009**	**0.009**	0.002	**0.00486**	0.082
12	Ethylbenzene	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	NA
13	HEM (Non-Polar) (Petroleum)	**5**	**5**	**5**	**5**	**6**	5	5	**5.1**	NA
14	HEM (Polar) (Animal/Vegetable)	**59**	**52**	**25**	**18**	**16**	**19**	**43**	**33.1**	NA
15	Lead, Total	**0.0011**	**0.001**	**0.0012**	**0.0009**	**0.0006**	**0.0008**	**0.001**	**0.000943**	0.058
16	Mercury, Total	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.000200	0.002
17	Molybdenum, Total	**0.0029**	**0.0024**	**0.0023**	**0.0026**	**0.0024**	**0.0026**	**0.0028**	**0.00257**	NA
18	Nickel, Total	**0.0033**	**0.0027**	**0.0029**	**0.0033**	**0.0028**	**0.0044**	**0.0048**	**0.00346**	0.047
19	Phenol	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.00200	NA
20	Selenium, Total	0.0005	0.0005	0.0005	0.0005	0.0005	**0.0009**	**0.0011**	**0.000643**	NA
21	Toluene	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.00500	NA
22	Total Dissolved Solids (TDS)	**584**	**576**	**620**	**594**	**602**	**574**	**614**	**595**	NA
23	Total Nitrogen	**59**	**44.2**	**38**	**49**	**38**	**43**	**45**	**45.2**	NA
24	Total Suspended Solids (TSS)	**574**	**146**	**162**	**53**	**56**	**40**	**46**	**154**	NA
25	Xylenes, Total	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.00500	NA
26	Zinc, Total	**0.14**	**0.1**	**0.11**	**0.07**	**0.07**	**0.09**	**0.08**	**0.0943**	0.231
Bold values indicate the pollutant concentration is above the Reporting Limit.										
[1]USEPA values are from USEPA Local Limits Guidance Appendices - Appendix V - Domestic Pollutant Loadings										
NA = No Data Available.										

TABLE 13: Uncontrollable Commercial Results - 450 S. 300 E.									
SAMPLE DATE		Day 1	Day 2	Day 3	Day 4	Day 5	Day 6	Day 7	AVERAGE
POLLUTANT		mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
1	Ammonia as N	**19.7**	**20.2**	**18.9**	**20.5**	**20.1**	**22.2**	**21.6**	20.5
2	Arsenic, Total	0.0005	0.0005	0.0005	0.0005	**0.0006**	**0.0011**	**0.0009**	**0.000657**
3	Benzene	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.00200
4	Biochemical Oxygen Demand	**164**	**114**	**103**	**79**	**76**	**174**	**94**	**115**
5	BTEX	0.017	0.017	0.017	0.017	0.017	0.017	0.017	0.017
6	Cadmium, Total	0.0005	0.0005	0.0005	**0.0016**	0.0005	0.0005	**0.0007**	**0.000686**
7	Chemical Oxygen Demand	**282**	**297**	**233**	**402**	**205**	**350**	**391**	**309**
8	Chloride	**148**	**180**	**170**	**300**	**180**	**129**	**143**	**179**
9	Chromium, Total	**0.003**	**0.003**	**0.003**	**0.004**	**0.002**	**0.002**	**0.003**	**0.00286**
10	Copper, Total	**0.0552**	**0.0598**	**0.0754**	**0.0833**	**0.0440**	**0.0712**	**0.106**	**0.0707**
11	Cyanide, Total	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.00200
12	Ethylbenzene	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.00500
13	HEM (Non-Polar) (Petroleum)	5	5	5	5	6	5	5	5.14
14	HEM (Polar) (Animal/Vegetable)	**29.0**	**40.0**	**39.0**	**19.0**	**14.0**	**14.0**	**30.0**	**26.4**
15	Lead, Total	**0.0019**	**0.0028**	**0.0030**	**0.0032**	**0.0011**	**0.0026**	**0.0042**	**0.00269**
16	Mercury, Total	0.0002	0.0002	0.0002	**0.0012**	0.0002	**0.0010**	**0.0373**	**0.00576**
17	Molybdenum, Total	**0.0063**	**0.0023**	**0.0159**	**0.0067**	**0.0053**	**0.003**	**0.01**	**0.00707**
18	Nickel, Total	**0.00360**	**0.00430**	**0.00400**	**0.00510**	**0.00560**	**0.00720**	**0.00730**	**0.00530**
19	Phenol	0.002	**0.125**	NA	NA	NA	NA	NA	**0.0635**
20	Selenium, Total	0.0005	0.0005	0.0005	**0.0007**	**0.0008**	**0.0011**	**0.0016**	**0.000814**
21	Toluene	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.00500
22	Total Dissolved Solids (TDS)	**548**	**630**	**630**	**842**	**632**	**552**	**540**	**625**
23	Total Nitrogen	**28**	**27**	**23**	**29**	**29**	**31**	**34**	**28.7**
24	Total Suspended Solids (TSS)	**95**	**90**	**71**	**46**	**39**	**151**	**79**	**81.6**
25	Xylenes, Total	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.00500
26	Zinc, Total	**0.07**	**0.08**	**0.08**	**0.12**	**0.06**	**0.100**	**0.18**	**0.0986**
Bold values indicate the pollutant concentration is above the Reporting Limit.									
NA = Not Determined (No Data Available).									

6.0 CALCULATION OF THE WRF REMOVAL EFFICIENCIES

Removal efficiency is the fraction or percent of the influent pollutant loading that is removed from the waste stream across an entire wastewater treatment works, or specific waste water treatment unit within the works. Removal efficiency values for each POC are fundamental inputs to MAHL calculations. There are several calculation methods for deriving removal efficiency depending on the sets of data. In the study, the following calculations were performed using site-specific data.

6.1 Average Daily Removal Efficiency (ADRE)

This method uses paired (lagged) influent and effluent data to derive the removal efficiency. The effluent results less than the reported limit were inputted as ½ the reported limit in Table 11. The influent results less than the reported limit were inputted as the reported limit. In the calculations below, if the effluent and influent results were both below the reported limit the resulting removal efficiency is calculated as 50%.

The ADRE calculation relies on the premise that an influent sample paired with a lagged effluent sample accurately reflects removal efficiency. The 7-day lagged (paired) samples for influent and effluent collected at the WRF were used to calculate the ADRE removal percentages which are included in Table 14. The formula below was used in the Table 14 spreadsheet to calculate the ADREs

$$R_{WRF} = \frac{\sum_{n=1}^{N} [\ (I_n - E_n) / I_n\ ]}{N} \text{ X } 100$$

Where: R_{WRF} is the % removal efficiency across the WRF
I_n is the WRF influent concentration at the headworks
E_n is the WRF effluent concentration
n is the paired observations numbered 1 to N

6.2 Mean Removal Efficiency (MRE)

This method uses the mean values of influent and effluent data to calculate removal efficiencies.

The MRE calculation, first averages all plant influent values and all plant effluent values separately and then calculates the removal efficiency across the entire wastewater treatment plant. Lagged influent and effluent samples are not necessary for this calculation, as the samples are not considered in pairs. Table 14 includes calculations of the MRE for all pollutant parameters included in this evaluation which had concentrations above the method detection limit. The formula below was used in the Table 14 spreadsheet to calculate the MREs.

$$R_{WRF} = \frac{(I_{(AVG)} - E_{(AVG)})}{I_{(AVG)}} \times 100$$

Where: R_{WRF} is the % removal efficiency across the WRF
$I_{(AVG)}$ is the average of all influent sample results
$E_{(AVG)}$ in the average of all effluent sample results

TABLE 14: Influent and Effluent Averages ADRE, and MRE Calculations						
POLLUTANT		INF. AVG	EFF.AVG.	ADRE	MRE	COMMENT
		mg/L	mg/L	%	%	
1	Ammonia as N	17.0	14.7	13.2	13.4	
2	Arsenic, Total	0.00752	0.00634	15.7	15.6	
3	Benzene	0.0160	0.00100	93.6	93.8	All effluent results were below Reporting Limit
4	Biochemical Oxygen Demand	182	6.14	96.5	96.6	
5	BTEX	0.0607	0.00850	85.6	86.0	Sum of Benzene, Toluene, Ethylbenzene, and Xylene
6	Cadmium, Total	0.0009	0.000250	70.0	72.2	All effluent results were below Reporting Limit
7	Chemical Oxygen Demand	476	43.7	90.6	90.8	
8	Chloride	480	491	-1.8	-2.4	
9	Chromium, Total	0.0215	0.00714	54.6	66.8	
10	Copper, Total	0.0702	0.0120	83.5	82.9	
11	Cyanide, Total	0.00583	0.0157	-253.5	-169.4	
12	Ethylbenzene	0.00500	0.00250	50.0	50.0	All effluent and influent results were below Reporting Limit
13	HEM (Non-Polar) (Petroleum)	6.3	2.57	55.3	59.4	
14	HEM (Polar) (Animal/Vegetable)	27.2	3.57	82.8	86.9	
15	Lead, Total	0.00368	0.000336	90.5	90.9	
16	Mercury, Total	0.000200	0.000100	50.0	50.0	All effluent and influent results were below Reporting Limit
17	Molybdenum, Total	0.0246	0.0206	17.6	16.3	
18	Nickel, Total	0.0222	0.0123	31.8	44.6	
19	Phenol	0.117	0.00100	230.2	99.1	All effluent results were below Reporting Limit
20	Selenium, Total	0.00162	0.00189	-20.2	-16.6	
21	Toluene	0.0217	0.0025	87.6	88.5	All effluent results were below Reporting Limit
22	Total Dissolved Solids (TDS)	1443	1414	2.5	2.0	
23	Total Nitrogen	26.8	18.1	32.4	32.7	
24	Total Suspended Solids (TSS)	193	9.4	94.9	95.1	
25	Xylenes, Total	0.0172	0.0025	85.7	86.1	All effluent results were below Reporting Limit
26	Zinc, Total	0.128	0.0243	79.8	81.1	

6.3 Decile Method

This method divides the daily removal efficiencies into 10 equal parts.

ADRE and MRE methods do not indicate how often the derived removal efficiency was achieved. The Decile method ideally requires at least nine daily removal efficiency values based on paired sets of influent and effluent data. However, instead of averaging the daily removal efficiency values, the Decile method sorts daily removal efficiency data from highest to lowest and calculates the percentage of the daily removal efficiency above, or below, the calculated removal efficiency. The Decile method divides the ordered data set into 10 equal parts. Therefore, 10 percent of the data set is below the first Decile, 20 percent of the data set is below the second Decile, etc. The fifth Decile is equivalent to the data set median. The deciles for all POCs which had sufficient data points and concentrations above the method detection limit are calculated in Table 15, Table 16, Table 17, and are summarized in Table 18.

TABLE 15: Calculated Daily Decimal Removal Efficiencies									
POLLUTANT		DAY 1	DAY 2	DAY 3	DAY 4	DAY 5	DAY 6	DAY 7	AVG
1	Ammonia as N	0.161	0.208	0.087	0.082	0.083	0.155	0.148	0.132
2	Arsenic, Total	0.273	0.235	0.088	0.029	0.143	0.150	0.182	0.157
3	Benzene	0.952	0.947	0.957	0.900	0.923	0.929	0.941	0.936
4	Biochemical Oxygen Demand	0.988	0.987	0.923	0.925	0.988	0.986	0.955	0.965
5	BTEX	0.902	0.882	0.901	0.782	0.811	0.830	0.882	0.856
6	Cadmium, Total	0.750	0.583	0.844	0.500	0.821	0.583	0.643	0.675
7	Chemical Oxygen Demand	0.894	0.895	0.892	0.927	0.923	0.911	0.917	0.908
8	Chloride	0.036	-0.019	-0.021	-0.067	-0.020	0.020	0.047	-0.004
9	Chromium, Total	0.400	0.563	0.833	0.143	0.793	0.636	0.760	0.590
10	Copper, Total	0.854	0.857	0.812	0.787	0.864	0.814	0.836	0.832
11	Cyanide, Total	-2.500	-2.600	-1.143	-2.600	-3.833	-2.143	0.800	-2.003
12	Ethylbenzene	0.500	0.500	0.500	0.500	0.500	0.500	0.500	0.500
13	HEM (Non-Polar) (Petroleum)	0.500	0.643	0.500	0.500	0.500	0.500	0.727	0.553
14	HEM (Polar) (Animal/Vegetable)	0.853	0.821	0.833	0.550	0.885	0.958	0.914	0.831
15	Lead, Total	0.948	0.943	0.881	0.875	0.950	0.891	0.850	0.905
16	Mercury, Total	0.500	0.500	0.500	0.500	0.500	0.500	0.500	0.500
17	Molybdenum, Total	0.265	0.196	0.096	0.031	0.212	0.220	0.216	0.176
18	Nickel, Total	0.438	0.380	0.451	-0.583	0.418	0.620	0.502	0.318
19	Phenol	0.989	0.995	0.952	NA	NA	NA	NA	0.979
20	Selenium, Total	0.429	0.357	0.083	-0.846	-1.200	0.000	-0.240	-0.202
21	Toluene	0.926	0.904	0.924	0.792	0.833	0.844	0.911	0.876
22	Total Dissolved Solids (TDS)	0.033	0.040	0.081	0.014	0.000	-0.007	0.014	0.025
23	Total Nitrogen	0.000	0.444	0.358	0.318	0.296	0.419	0.433	0.324
24	Total Suspended Solids (TSS)	0.924	0.947	0.956	0.940	0.957	0.963	0.953	0.949
25	Xylenes, Total	0.907	0.886	0.900	0.792	0.792	0.833	0.886	0.857
26	Zinc, Total	0.833	0.857	0.818	0.625	0.867	0.786	0.800	0.798
NA = Not Determined - No Data Available.									

Table 16: Sorted Daily Removal Efficiencies (Influent to Effluent)									
	POLLUTANT	1	2	3	4	5	6	7	NOTE
1	**Ammonia as N**	0.082	0.083	0.087	0.148	0.155	0.161	0.208	Analyze Using Decile Method
2	**Arsenic, Total**	0.029	0.088	0.143	0.150	0.182	0.235	0.273	Analyze Using Decile Method
3	**Benzene**	0.900	0.923	0.929	0.941	0.947	0.952	0.957	Analyze Using Decile Method
4	**Biochemical Oxygen Demand**	0.923	0.925	0.955	0.986	0.987	0.988	0.988	Analyze Using Decile Method
5	**BTEX**	0.782	0.811	0.830	0.882	0.882	0.901	0.902	Analyze Using Decile Method
6	**Cadmium, Total**	0.500	0.583	0.583	0.643	0.750	0.821	0.844	Analyze Using Decile Method
7	**Chemical Oxygen Demand**	0.892	0.894	0.895	0.911	0.917	0.923	0.927	Analyze Using Decile Method
8	**Chloride**	-0.067	-0.021	-0.020	-0.019	0.020	0.036	0.047	Analyze Using Decile Method
9	**Chromium, Total**	0.143	0.400	0.563	0.636	0.760	0.793	0.833	Analyze Using Decile Method
10	**Copper, Total**	0.787	0.812	0.814	0.836	0.854	0.857	0.864	Analyze Using Decile Method
11	**Cyanide, Total**	-3.833	-2.600	-2.600	-2.500	-2.143	-1.143	0.800	Analyze Using Decile Method
12	Ethylbenzene	0.500	0.500	0.500	0.500	0.500	0.500	0.500	All Results Below RL
13	**HEM (Non-Polar) (Petroleum)**	0.500	0.500	0.500	0.500	0.500	0.643	0.727	Analyze Using Decile Method
14	**HEM (Polar) (Animal/Vegetable)**	0.550	0.821	0.833	0.853	0.885	0.897	0.958	Analyze Using Decile Method
15	**Lead, Total**	0.850	0.875	0.881	0.891	0.943	0.948	0.950	Analyze Using Decile Method
16	Mercury, Total	0.500	0.500	0.500	0.500	0.500	0.500	0.500	All Results Below RL
17	**Molybdenum, Total**	0.031	0.096	0.196	0.212	0.216	0.220	0.265	Analyze Using Decile Method
18	**Nickel, Total**	-0.583	0.380	0.418	0.438	0.451	0.502	0.620	Analyze Using Decile Method
19	Phenol	0.952	0.989	0.995	NA	NA	NA	NA	Insufficient Data
20	**Selenium, Total**	-1.200	-0.846	-0.240	0.000	0.083	0.357	0.429	Analyze Using Decile Method
21	**Toluene**	0.792	0.833	0.844	0.904	0.911	0.924	0.926	Analyze Using Decile Method
22	**Total Dissolved Solids (TDS)**	-0.007	0.000	0.014	0.014	0.033	0.040	0.081	Analyze Using Decile Method
23	**Total Nitrogen**	0.000	0.296	0.318	0.358	0.419	0.433	0.444	Analyze Using Decile Method
24	**Total Suspended Solids (TSS)**	0.924	0.940	0.947	0.953	0.956	0.957	0.963	Analyze Using Decile Method
25	**Xylenes, Total**	0.792	0.792	0.833	0.886	0.886	0.900	0.907	Analyze Using Decile Method
26	**Zinc, Total**	0.625	0.786	0.800	0.818	0.833	0.857	0.867	Analyze Using Decile Method
Parameters in BOLD will be analyzed by the Decile Method.									
NA = Not Determined - No Data Available.									

Table 17: Calculated Deciles									
Ammonia as N									
DECILE	1.000	2.000	3.000	4.000	5.000	6.000	7.000	8.000	9.000
COLUMN 1	0.800	1.600	2.400	3.200	4.000	4.800	5.600	6.400	7.200
COLUMN 2	0.000	1.000	2.000	3.000	4.000	4.000	5.000	6.000	7.000
COLUMN 3	0.081	0.082	0.083	0.087	0.148	0.148	0.155	0.161	0.208
COLUMN 4	0.082	0.083	0.087	0.148	0.155	0.155	0.161	0.208	0.255
COLUMN 5	0.001	0.001	0.004	0.061	0.007	0.007	0.006	0.047	0.047
COLUMN 6	0.800	0.600	0.400	0.200	0.000	0.800	0.600	0.400	0.200
COLUMN 7	0.001	0.001	0.002	0.012	0.000	0.005	0.004	0.019	0.009
Removal Efficiency	0.082	0.082	0.084	0.099	0.148	0.153	0.158	0.180	0.217
Arsenic, Total									
DECILE	1.000	2.000	3.000	4.000	5.000	6.000	7.000	8.000	9.000
COLUMN 1	0.800	1.600	2.400	3.200	4.000	4.800	5.600	6.400	7.200
COLUMN 2	0.000	1.000	2.000	3.000	4.000	4.000	5.000	6.000	7.000
COLUMN 3	-0.031	0.029	0.088	0.143	0.150	0.150	0.182	0.235	0.273
COLUMN 4	0.029	0.088	0.143	0.150	0.182	0.182	0.235	0.273	0.310
COLUMN 5	0.060	0.060	0.055	0.007	0.032	0.032	0.053	0.037	0.037
COLUMN 6	0.800	0.600	0.400	0.200	0.000	0.800	0.600	0.400	0.200
COLUMN 7	0.048	0.036	0.022	0.001	0.000	0.025	0.032	0.015	0.007
Removal Efficiency	0.017	0.064	0.110	0.144	0.150	0.175	0.214	0.250	0.280
Benzene									
DECILE	1.000	2.000	3.000	4.000	5.000	6.000	7.000	8.000	9.000
COLUMN 1	0.800	1.600	2.400	3.200	4.000	4.800	5.600	6.400	7.200
COLUMN 2	0.000	1.000	2.000	3.000	4.000	4.000	5.000	6.000	7.000
COLUMN 3	0.877	0.900	0.923	0.929	0.941	0.941	0.947	0.952	0.957
COLUMN 4	0.900	0.923	0.929	0.941	0.947	0.947	0.952	0.957	0.961
COLUMN 5	0.023	0.023	0.005	0.013	0.006	0.006	0.005	0.004	0.004
COLUMN 6	0.800	0.600	0.400	0.200	0.000	0.800	0.600	0.400	0.200
COLUMN 7	0.018	0.014	0.002	0.003	0.000	0.005	0.003	0.002	0.001
Removal Efficiency	0.895	0.914	0.925	0.931	0.941	0.946	0.950	0.954	0.957

Table 17: Calculated Deciles									
Biochemical Oxygen Demand									
DECILE	1.000	2.000	3.000	4.000	5.000	6.000	7.000	8.000	9.000
COLUMN 1	0.800	1.600	2.400	3.200	4.000	4.800	5.600	6.400	7.200
COLUMN 2	0.000	1.000	2.000	3.000	4.000	4.000	5.000	6.000	7.000
COLUMN 3	0.921	0.923	0.925	0.955	0.986	0.986	0.987	0.988	0.988
COLUMN 4	0.923	0.925	0.955	0.986	0.987	0.987	0.988	0.988	0.989
COLUMN 5	0.002	0.002	0.030	0.031	0.001	0.001	0.002	0.000	0.000
COLUMN 6	0.800	0.600	0.400	0.200	0.000	0.800	0.600	0.400	0.200
COLUMN 7	0.002	0.001	0.012	0.006	0.000	0.001	0.001	0.000	0.000
Removal Efficiency	0.923	0.924	0.937	0.961	0.986	0.986	0.988	0.988	0.988
BTEX									
DECILE	1.000	2.000	3.000	4.000	5.000	6.000	7.000	8.000	9.000
COLUMN 1	0.800	1.600	2.400	3.200	4.000	4.800	5.600	6.400	7.200
COLUMN 2	0.000	1.000	2.000	3.000	4.000	4.000	5.000	6.000	7.000
COLUMN 3	0.753	0.782	0.811	0.830	0.882	0.882	0.882	0.901	0.902
COLUMN 4	0.782	0.811	0.830	0.882	0.882	0.882	0.901	0.902	0.903
COLUMN 5	0.029	0.029	0.019	0.052	0.000	0.000	0.019	0.001	0.001
COLUMN 6	0.800	0.600	0.400	0.200	0.000	0.800	0.600	0.400	0.200
COLUMN 7	0.023	0.017	0.008	0.010	0.000	0.000	0.012	0.000	0.000
Removal Efficiency	0.776	0.799	0.819	0.840	0.882	0.882	0.893	0.902	0.903
Cadmium, Total									
DECILE	1.000	2.000	3.000	4.000	5.000	6.000	7.000	8.000	9.000
COLUMN 1	0.800	1.600	2.400	3.200	4.000	4.800	5.600	6.400	7.200
COLUMN 2	0.000	1.000	2.000	3.000	4.000	4.000	5.000	6.000	7.000
COLUMN 3	0.417	0.500	0.583	0.583	0.643	0.643	0.750	0.821	0.844
COLUMN 4	0.500	0.583	0.583	0.643	0.643	0.643	0.821	0.844	0.866
COLUMN 5	0.083	0.083	0.000	0.060	0.000	0.000	0.071	0.022	0.022
COLUMN 6	0.800	0.600	0.400	0.200	0.000	0.800	0.600	0.400	0.200
COLUMN 7	0.067	0.050	0.000	0.012	0.000	0.000	0.043	0.009	0.004
Removal Efficiency	0.483	0.550	0.583	0.595	0.643	0.643	0.793	0.830	0.848
Chemical Oxygen Demand									
DECILE	1.000	2.000	3.000	4.000	5.000	6.000	7.000	8.000	9.000
COLUMN 1	0.800	1.600	2.400	3.200	4.000	4.800	5.600	6.400	7.200
COLUMN 2	0.000	1.000	2.000	3.000	4.000	4.000	5.000	6.000	7.000
COLUMN 3	0.891	0.892	0.894	0.895	0.911	0.911	0.917	0.923	0.927
COLUMN 4	0.892	0.894	0.895	0.911	0.917	0.917	0.923	0.927	0.931
COLUMN 5	0.001	0.001	0.001	0.016	0.007	0.007	0.006	0.004	0.004
COLUMN 6	0.800	0.600	0.400	0.200	0.000	0.800	0.600	0.400	0.200
COLUMN 7	0.001	0.001	0.000	0.003	0.000	0.005	0.004	0.002	0.001
Removal Efficiency	0.892	0.893	0.894	0.898	0.911	0.916	0.921	0.925	0.928

Table 17: Calculated Deciles									
Chloride									
DECILE	1.000	2.000	3.000	4.000	5.000	6.000	7.000	8.000	9.000
COLUMN 1	0.800	1.600	2.400	3.200	4.000	4.800	5.600	6.400	7.200
COLUMN 2	0.000	1.000	2.000	3.000	4.000	4.000	5.000	6.000	7.000
COLUMN 3	-0.112	-0.067	-0.021	-0.020	-0.019	-0.019	0.020	0.036	0.047
COLUMN 4	-0.067	-0.021	-0.020	-0.019	-0.019	0.020	0.036	0.047	0.057
COLUMN 5	0.045	0.045	0.001	0.001	0.000	0.039	0.016	0.010	0.010
COLUMN 6	0.800	0.600	0.400	0.200	0.000	0.800	0.600	0.400	0.200
COLUMN 7	0.036	0.027	0.000	0.000	0.000	0.031	0.010	0.004	0.002
Removal Efficiency	-0.076	-0.039	-0.021	-0.020	-0.019	0.012	0.030	0.040	0.049
Chromium, Total									
DECILE	1.000	2.000	3.000	4.000	5.000	6.000	7.000	8.000	9.000
COLUMN 1	0.800	1.600	2.400	3.200	4.000	4.800	5.600	6.400	7.200
COLUMN 2	0.000	1.000	2.000	3.000	4.000	4.000	5.000	6.000	7.000
COLUMN 3	-0.114	0.143	0.400	0.563	0.636	0.636	0.760	0.793	0.833
COLUMN 4	0.143	0.400	0.563	0.636	0.760	0.760	0.793	0.833	0.874
COLUMN 5	0.257	0.257	0.163	0.074	0.124	0.124	0.033	0.040	0.040
COLUMN 6	0.800	0.600	0.400	0.200	0.000	0.800	0.600	0.400	0.200
COLUMN 7	0.206	0.154	0.065	0.015	0.000	0.099	0.020	0.016	0.008
Removal Efficiency	0.091	0.297	0.465	0.577	0.636	0.735	0.780	0.809	0.841
Copper, Total									
DECILE	1.000	2.000	3.000	4.000	5.000	6.000	7.000	8.000	9.000
COLUMN 1	0.800	1.600	2.400	3.200	4.000	4.800	5.600	6.400	7.200
COLUMN 2	0.000	1.000	2.000	3.000	4.000	4.000	5.000	6.000	7.000
COLUMN 3	0.761	0.787	0.812	0.814	0.836	0.836	0.854	0.857	0.864
COLUMN 4	0.787	0.812	0.814	0.836	0.854	0.854	0.857	0.864	0.871
COLUMN 5	0.025	0.025	0.002	0.022	0.018	0.018	0.003	0.007	0.007
COLUMN 6	0.800	0.600	0.400	0.200	0.000	0.800	0.600	0.400	0.200
COLUMN 7	0.020	0.015	0.001	0.004	0.000	0.015	0.002	0.003	0.001
Removal Efficiency	0.782	0.802	0.813	0.818	0.836	0.850	0.856	0.859	0.865

Table 17: Calculated Deciles									
Cyanide, Total									
DECILE	1.000	2.000	3.000	4.000	5.000	6.000	7.000	8.000	9.000
COLUMN 1	0.800	1.600	2.400	3.200	4.000	4.800	5.600	6.400	7.200
COLUMN 2	0.000	1.000	2.000	3.000	4.000	4.000	5.000	6.000	7.000
COLUMN 3	-5.067	-3.833	-2.600	-2.600	-2.500	-2.500	-2.143	-1.143	0.800
COLUMN 4	-3.833	-2.600	-2.600	-2.500	-2.143	-2.143	-1.143	0.800	2.743
COLUMN 5	1.233	1.233	0.000	0.100	0.357	0.357	1.000	1.943	1.943
COLUMN 6	0.800	0.600	0.400	0.200	0.000	0.800	0.600	0.400	0.200
COLUMN 7	0.987	0.740	0.000	0.020	0.000	0.286	0.600	0.777	0.389
Removal Efficiency	-4.080	-3.093	-2.600	-2.580	-2.500	-2.214	-1.543	-0.366	1.189
HEM (Non-Polar) (Petroleum)									
DECILE	1.000	2.000	3.000	4.000	5.000	6.000	7.000	8.000	9.000
COLUMN 1	0.800	1.600	2.400	3.200	4.000	4.800	5.600	6.400	7.200
COLUMN 2	0.000	1.000	2.000	3.000	4.000	4.000	5.000	6.000	7.000
COLUMN 3	0.500	0.500	0.500	0.500	0.500	0.500	0.500	0.643	0.727
COLUMN 4	0.500	0.500	0.500	0.500	0.500	0.500	0.643	0.727	0.812
COLUMN 5	0.000	0.000	0.000	0.000	0.000	0.000	0.143	0.084	0.084
COLUMN 6	0.800	0.600	0.400	0.200	0.000	0.800	0.600	0.400	0.200
COLUMN 7	0.000	0.000	0.000	0.000	0.000	0.000	0.086	0.034	0.017
Removal Efficiency	0.500	0.500	0.500	0.500	0.500	0.500	0.586	0.677	0.744
HEM (Polar) (Animal/Vegetable)									
DECILE	1.000	2.000	3.000	4.000	5.000	6.000	7.000	8.000	9.000
COLUMN 1	0.800	1.600	2.400	3.200	4.000	4.800	5.600	6.400	7.200
COLUMN 2	0.000	1.000	2.000	3.000	4.000	4.000	5.000	6.000	7.000
COLUMN 3	0.550	0.550	0.500	0.833	0.853	0.853	0.885	0.897	0.958
COLUMN 4	0.550	0.500	0.833	0.853	0.885	0.885	0.897	0.958	1.019
COLUMN 5	0.000	-0.050	0.333	0.020	0.032	0.032	0.012	0.061	0.061
COLUMN 6	0.800	0.600	0.400	0.200	0.000	0.800	0.600	0.400	0.200
COLUMN 7	0.000	-0.030	0.133	0.004	0.000	0.025	0.007	0.024	0.012
Removal Efficiency	0.550	0.520	0.633	0.837	0.853	0.878	0.892	0.921	0.970

Table 17: Calculated Deciles									
Lead, Total									
DECILE	1.000	2.000	3.000	4.000	5.000	6.000	7.000	8.000	9.000
COLUMN 1	0.800	1.600	2.400	3.200	4.000	4.800	5.600	6.400	7.200
COLUMN 2	0.000	1.000	2.000	3.000	4.000	4.000	5.000	6.000	7.000
COLUMN 3	0.825	0.850	0.875	0.881	0.891	0.891	0.943	0.948	0.950
COLUMN 4	0.850	0.875	0.881	0.891	0.943	0.943	0.948	0.950	0.952
COLUMN 5	0.025	0.025	0.006	0.010	0.052	0.052	0.005	0.002	0.002
COLUMN 6	0.800	0.600	0.400	0.200	0.000	0.800	0.600	0.400	0.200
COLUMN 7	0.020	0.015	0.002	0.002	0.000	0.042	0.003	0.001	0.000
Removal Efficiency	0.845	0.865	0.877	0.883	0.891	0.933	0.946	0.949	0.950
Molybdenum, Total									
DECILE	1.000	2.000	3.000	4.000	5.000	6.000	7.000	8.000	9.000
COLUMN 1	0.800	1.600	2.400	3.200	4.000	4.800	5.600	6.400	7.200
COLUMN 2	0.000	1.000	2.000	3.000	4.000	4.000	5.000	6.000	7.000
COLUMN 3	-0.035	0.031	0.096	0.196	0.212	0.212	0.216	0.220	0.265
COLUMN 4	0.031	0.096	0.196	0.212	0.216	0.216	0.220	0.265	0.311
COLUMN 5	0.065	0.065	0.100	0.016	0.004	0.004	0.004	0.046	0.046
COLUMN 6	0.800	0.600	0.400	0.200	0.000	0.800	0.600	0.400	0.200
COLUMN 7	0.052	0.039	0.040	0.003	0.000	0.003	0.002	0.018	0.009
Removal Efficiency	0.018	0.070	0.136	0.199	0.212	0.215	0.218	0.238	0.274
Nickel, Total									
DECILE	1.000	2.000	3.000	4.000	5.000	6.000	7.000	8.000	9.000
COLUMN 1	0.800	1.600	2.400	3.200	4.000	4.800	5.600	6.400	7.200
COLUMN 2	0.000	1.000	2.000	3.000	4.000	4.000	5.000	6.000	7.000
COLUMN 3	-1.546	-0.583	0.380	0.418	0.438	0.438	0.451	0.502	0.620
COLUMN 4	-0.583	0.380	0.418	0.438	0.451	0.451	0.502	0.620	0.738
COLUMN 5	0.963	0.963	0.039	0.019	0.014	0.014	0.051	0.118	0.118
COLUMN 6	0.800	0.600	0.400	0.200	0.000	0.800	0.600	0.400	0.200
COLUMN 7	0.770	0.578	0.015	0.004	0.000	0.011	0.030	0.047	0.024
Removal Efficiency	-0.776	-0.006	0.395	0.422	0.438	0.448	0.482	0.549	0.643

Table 17: Calculated Deciles									
Selenium, Total									
DECILE	1.000	2.000	3.000	4.000	5.000	6.000	7.000	8.000	9.000
COLUMN 1	0.800	1.600	2.400	3.200	4.000	4.800	5.600	6.400	7.200
COLUMN 2	0.000	1.000	2.000	3.000	4.000	4.000	5.000	6.000	7.000
COLUMN 3	-1.554	-1.200	-0.846	-0.240	0.000	0.000	0.083	0.357	0.429
COLUMN 4	-1.200	-0.846	-0.240	0.000	0.083	0.083	0.357	0.429	0.500
COLUMN 5	0.354	0.354	0.606	0.240	0.083	0.083	0.274	0.071	0.071
COLUMN 6	0.800	0.600	0.400	0.200	0.000	0.800	0.600	0.400	0.200
COLUMN 7	0.283	0.212	0.242	0.048	0.000	0.067	0.164	0.029	0.014
Removal Efficiency	-1.271	-0.988	-0.604	-0.192	0.000	0.067	0.248	0.386	0.443
Toluene									
DECILE	1.000	2.000	3.000	4.000	5.000	6.000	7.000	8.000	9.000
COLUMN 1	0.800	1.600	2.400	3.200	4.000	4.800	5.600	6.400	7.200
COLUMN 2	0.000	1.000	2.000	3.000	4.000	4.000	5.000	6.000	7.000
COLUMN 3	0.750	0.792	0.833	0.844	0.904	0.904	0.911	0.924	0.926
COLUMN 4	0.792	0.833	0.844	0.904	0.911	0.911	0.924	0.926	0.929
COLUMN 5	0.042	0.042	0.010	0.060	0.007	0.007	0.014	0.002	0.002
COLUMN 6	0.800	0.600	0.400	0.200	0.000	0.800	0.600	0.400	0.200
COLUMN 7	0.033	0.025	0.004	0.012	0.000	0.005	0.008	0.001	0.000
Removal Efficiency	0.783	0.817	0.838	0.856	0.904	0.909	0.919	0.925	0.927
Total Dissolved Solids (TDS)									
DECILE	1.000	2.000	3.000	4.000	5.000	6.000	7.000	8.000	9.000
COLUMN 1	0.800	1.600	2.400	3.200	4.000	4.800	5.600	6.400	7.200
COLUMN 2	0.000	1.000	2.000	3.000	4.000	4.000	5.000	6.000	7.000
COLUMN 3	-0.014	-0.007	0.000	0.014	0.014	0.014	0.033	0.040	0.081
COLUMN 4	-0.007	0.000	0.014	0.014	0.033	0.033	0.040	0.081	0.122
COLUMN 5	0.007	0.007	0.014	0.000	0.019	0.019	0.006	0.041	0.041
COLUMN 6	0.800	0.600	0.400	0.200	0.000	0.800	0.600	0.400	0.200
COLUMN 7	0.006	0.004	0.006	0.000	0.000	0.015	0.004	0.017	0.008
Removal Efficiency	-0.008	-0.003	0.006	0.014	0.014	0.030	0.037	0.056	0.089

Table 17: Calculated Deciles									
Total Nitrogen									
DECILE	1.000	2.000	3.000	4.000	5.000	6.000	7.000	8.000	9.000
COLUMN 1	0.800	1.600	2.400	3.200	4.000	4.800	5.600	6.400	7.200
COLUMN 2	0.000	1.000	2.000	3.000	4.000	4.000	5.000	6.000	7.000
COLUMN 3	-0.296	0.000	0.296	0.318	0.358	0.358	0.419	0.433	0.444
COLUMN 4	0.000	0.296	0.318	0.358	0.419	0.419	0.433	0.444	0.456
COLUMN 5	0.296	0.296	0.022	0.040	0.061	0.061	0.014	0.011	0.011
COLUMN 6	0.800	0.600	0.400	0.200	0.000	0.800	0.600	0.400	0.200
COLUMN 7	0.237	0.178	0.009	0.008	0.000	0.049	0.008	0.004	0.002
Removal Efficiency	-0.059	0.178	0.305	0.326	0.358	0.407	0.428	0.438	0.447
Total Suspended Solids (TSS)									
DECILE	1.000	2.000	3.000	4.000	5.000	6.000	7.000	8.000	9.000
COLUMN 1	0.800	1.600	2.400	3.200	4.000	4.800	5.600	6.400	7.200
COLUMN 2	0.000	1.000	2.000	3.000	4.000	4.000	5.000	6.000	7.000
COLUMN 3	0.907	0.924	0.940	0.947	0.953	0.953	0.956	0.957	0.963
COLUMN 4	0.924	0.940	0.947	0.953	0.956	0.956	0.957	0.963	0.970
COLUMN 5	0.017	0.017	0.007	0.006	0.003	0.003	0.001	0.007	0.007
COLUMN 6	0.800	0.600	0.400	0.200	0.000	0.800	0.600	0.400	0.200
COLUMN 7	0.013	0.010	0.003	0.001	0.000	0.003	0.001	0.003	0.001
Removal Efficiency	0.920	0.933	0.943	0.948	0.953	0.955	0.957	0.960	0.965
Xylenes, Total									
DECILE	1.000	2.000	3.000	4.000	5.000	6.000	7.000	8.000	9.000
COLUMN 1	0.800	1.600	2.400	3.200	4.000	4.800	5.600	6.400	7.200
COLUMN 2	0.000	1.000	2.000	3.000	4.000	4.000	5.000	6.000	7.000
COLUMN 3	0.792	0.792	0.792	0.833	0.886	0.886	0.886	0.900	0.907
COLUMN 4	0.792	0.792	0.833	0.886	0.886	0.886	0.900	0.907	0.915
COLUMN 5	0.000	0.000	0.042	0.053	0.000	0.000	0.014	0.007	0.007
COLUMN 6	0.800	0.600	0.400	0.200	0.000	0.800	0.600	0.400	0.200
COLUMN 7	0.000	0.000	0.017	0.011	0.000	0.000	0.008	0.003	0.001
Removal Efficiency	0.792	0.792	0.808	0.844	0.886	0.886	0.895	0.903	0.909

Table 17: Calculated Deciles									
Zinc, Total									
DECILE	1.000	2.000	3.000	4.000	5.000	6.000	7.000	8.000	9.000
COLUMN 1	0.800	1.600	2.400	3.200	4.000	4.800	5.600	6.400	7.200
COLUMN 2	0.000	1.000	2.000	3.000	4.000	4.000	5.000	6.000	7.000
COLUMN 3	0.464	0.625	0.786	0.800	0.818	0.818	0.833	0.857	0.867
COLUMN 4	0.625	0.786	0.800	0.818	0.833	0.833	0.857	0.867	0.876
COLUMN 5	0.161	0.161	0.014	0.018	0.015	0.015	0.024	0.010	0.010
COLUMN 6	0.800	0.600	0.400	0.200	0.000	0.800	0.600	0.400	0.200
COLUMN 7	0.129	0.096	0.006	0.004	0.000	0.012	0.014	0.004	0.002
Removal Efficiency	0.593	0.721	0.791	0.804	0.818	0.830	0.848	0.861	0.869

Table 18: Calculated Decile Summary										
Parameter		Percent Removal Decile								
		1	2	3	4	5	6	7	8	9
1	Ammonia as N	8.2	8.2	8.4	9.9	14.8	15.3	15.8	18.0	21.7
2	Arsenic, Total	1.7	6.4	11.0	14.4	15.0	17.5	21.4	25.0	28.0
3	Benzene	89.5	91.4	92.5	93.1	94.1	94.6	95.0	95.4	95.7
4	Biochemical Oxygen Demand	92.3	92.4	93.7	96.1	98.6	98.6	98.8	98.8	98.8
5	BTEX	77.6	79.9	81.9	84.0	88.2	88.2	89.3	90.2	90.3
6	Cadmium, Total	48.3	55.0	58.3	59.5	64.3	64.3	79.3	83.0	84.8
7	Chemical Oxygen Demand	89.2	89.3	89.4	89.8	91.1	91.6	92.1	92.5	92.8
8	Chloride	-7.6	-3.9	-2.1	-2.0	-1.9	1.2	3.0	4.0	4.9
9	Chromium, Total	9.1	29.7	46.5	57.7	63.6	73.5	78.0	80.9	84.1
10	Copper, Total	78.2	80.2	81.3	81.8	83.6	85.0	85.6	85.9	86.5
11	Cyanide, Total	-408.0	-309.3	-260.0	-258.0	-250.0	-221.4	-154.3	-36.6	118.9
12	HEM (Non-Polar) (Petroleum)	50.0	50.0	50.0	50.0	50.0	50.0	58.6	67.7	74.4
13	HEM (Polar) (Animal/Vegetable)	55.0	52.0	63.3	83.7	85.3	87.8	89.2	92.1	97.0
14	Lead, Total	84.5	86.5	87.7	88.3	89.1	93.3	94.6	94.9	95.0
15	Molybdenum, Total	1.8	7.0	13.6	19.9	21.2	21.5	21.8	23.8	27.4
16	Nickel, Total	-77.6	-0.6	39.5	42.2	43.8	44.8	48.2	54.9	64.3
17	Selenium, Total	-127.1	-98.8	-60.4	-19.2	0.0	6.7	24.8	38.6	44.3
18	Toluene	78.3	81.7	83.8	85.6	90.4	90.9	91.9	92.5	92.7
19	Total Dissolved Solids (TDS)	-0.8	-0.3	0.6	1.4	1.4	3.0	3.7	5.6	8.9
20	Total Nitrogen	-5.9	17.8	30.5	32.6	35.8	40.7	42.8	43.8	44.7
21	Total Suspended Solids (TSS)	92.0	93.3	94.3	94.8	95.3	95.5	95.7	96.0	96.5
22	Xylenes, Total	79.2	79.2	80.8	84.4	88.6	88.6	89.5	90.3	90.9
23	Zinc, Total	59.3	72.1	79.1	80.4	81.8	83.0	84.8	86.1	86.9

6.4 Residuals and Influent Data MRE

This method uses the mean values of residuals and influent data to determine a MRE.

Both ADRE and MRE methods can also be used for residuals data to estimate removal efficiency across the entire plant. Residuals data can be used in place of effluent data when there is inadequate effluent data above the detection level, or residuals data can be demonstrated to provide more representative removal efficiencies. The ADRE method would require the influent pollutant concentrations to be monthly averages in order to be compared with residuals concentrations for pollutants that had accumulated for 20 to 30 days; it was not used here. The MRE method could be used however to calculate removal efficiencies across the entire plant, R_{WRF}, by comparing the residuals and influent pollutant loading. Table 19 includes the calculated removal efficiencies for POCs for which residuals data existed. The following formula was applied in Table 19 for all POCs with residuals data.

$$R_{WRF} = \frac{S_{(AVG)} * 8.34 * (PS/100) * Q_{sldg} * G_{sldg}}{I_{(AVG)} * 8.34 * Q_{WRF}} \text{ X } 100$$

Where:
- R_{WRF} is the % removal efficiency across the WRF
- $I_{(AVG)}$ is the average of all influent sample results
- $S_{(AVG)}$ in the average of all sludge sample results
- Q_{sldg} is the total residual flow to disposal
- G_{sldg} is the specific gravity of the sludge – assumed to be 1
- Q_{WRF} is the influent flow to the WRF
- 8.34 is the pounds conversion factor

TABLE 19: Calculated Removal Efficiency Percentages Using Residuals and Influent Results								
POLLUTANT		SAMPLE DATE		Residuals Average (mg/kg)	Residuals Decimal % Solids	Residuals to Disposal (MGD)	Influent Average (mg/L)	% Removal Efficiency
		8/29/2010	9/2/2010					
		Residual (mg/kg)						
1	Ammonia as N	NA	NA	NA	2.500	0.086686	**17.0**	NA
2	Arsenic, Total	**31.4**	**30.5**	**31.0**	2.500	0.086686	**0.00752**	**28.70**
3	Benzene	NA	NA	NA	2.500	0.086686	**0.0160**	**NA**
4	Biochemical Oxygen Demand	NA	NA	NA	2.500	0.086686	**182**	**NA**
5	BTEX	NA	NA	NA	2.500	0.086686	**0.0607**	**NA**
6	Cadmium, Total	**12.3**	**11.5**	**11.9**	2.500	0.086686	**0.000900**	**92.15**
7	Chemical Oxygen Demand	NA	NA	NA	2.500	0.086686	**476**	**NA**
8	Chloride	NA	NA	NA	2.500	0.086686	**480**	**NA**
9	Chromium, Total	**201**	**202**	**202**	2.500	0.086686	**0.0215**	**65.32**
10	Copper, Total	**886**	**902**	**894**	2.500	0.086686	**0.0702**	**88.78**
11	Cyanide, Total	NA	NA	NA	2.500	0.086686	**0.00583**	**NA**
12	Ethylbenzene	NA	NA	NA	2.500	0.086686	0.00500	**NA**
13	HEM (Non-Polar) (Petroleum)	NA	NA	NA	2.500	0.086686	**6.3**	**NA**
14	HEM (Polar) (Animal/Vegetable)	NA	NA	NA	2.500	0.086686	**27.17**	**NA**
15	Lead, Total	**55.9**	**52.5**	**54.2**	2.500	0.086686	**0.00368**	**102.56**
16	Mercury, Total	**1.99**	**1.60**	**1.8**	2.500	0.086686	0.0002	**62.55**
17	Molybdenum, Total	**45.6**	**45**	**45.3**	2.500	0.086686	**0.0246**	**12.83**
18	Nickel, Total	**48.80**	**50.20**	**49.5**	2.500	0.086686	**0.0222**	**15.53**
19	Phenol	0.500	0.500	0.500	2.500	0.086686	**0.117**	**0.03**
20	Selenium, Total	**10.30**	**7.93**	**9.12**	2.500	0.086686	**0.00217**	**39.29**
21	Toluene	NA	NA	NA	2.500	0.086686	**0.0204**	**NA**
22	Total Dissolved Solids (TDS)	NA	NA	NA	2.500	0.086686	**1443**	**NA**
23	Total Nitrogen	NA	NA	NA	2.500	0.086686	**26.8**	**NA**
24	Total Suspended Solids (TSS)	NA	NA	NA	2.500	0.086686	**193**	**NA**
25	Xylenes, Total	NA	NA	NA	2.500	0.086686	**0.0180**	**NA**
26	Zinc, Total	**1180**	**1140**	**1160**	2.500	0.086686	**0.128**	**63.00**
	Percent Solids	**2.40**	**2.30**	**2.35**				

Bolded values indicate the pollutant concentration is above the reported limit.
NA = Not Determined - No Data Available.

6.5 Residuals and Effluent Data MRE

This method uses the mean values of residuals and effluent data to determine a MRE.

Removal efficiency can be calculated based upon the assumption that, over time, the conservative pollutants (metals) influent loading is equal to the sum of the WRF's effluent and residuals pollutant loadings. This method was used to calculate removal efficiencies for hypothetical WRF data in Appendix I (page I-2) of the 1987 USEPA's *"Guidance Manual on the Development and Implementation of Local Discharge Limitations under the Pretreatment Program."* The formula below was used to calculate the removal efficiency values included in Table 20.

$$R_{WRF} = \frac{S_{(AVG)} * (PS/100) * Q_{sldg} * 100}{[S_{(AVG)} * (PS/100) * Q_{sldg}] + [E_{WRF} * Q_{WRF}]} \text{ X } 100$$

Where:
R_{WRF} is the % removal efficiency across the WRF
$E_{(AVG)}$ is the average of all influent sample results in mg/L
$S_{(AVG)}$ in the average of all sludge sample results in mg/Kg
Q_{sldg} is the total residual flow to disposal
Q_{WRF} is the influent flow to the WRF
PS is the percent solids of the sludge

TABLE 20: Calculated Removal Efficiency Percentages Using Residuals and Effluent Results

	POLLUTANT	SAMPLE DATE 8/29/2010 Residual (mg/kg)	SAMPLE DATE 9/2/2010 Residual (mg/kg)	Residuals Average (mg/kg)	Residuals % solids	Residuals to Disposal (MGD)	Effluent Average (mg/L)	% Removal Efficiency
1	Ammonia as N	NA	NA	NA	2.500	0.0867	**14.7**	NA
2	Arsenic, Total	**31.4**	**30.5**	**30.95**	2.500	0.0867	**0.00634**	**25.38**
3	Benzene	NA	NA	NA	2.500	0.0867	0.0010	NA
4	Biochemical Oxygen Demand	NA	NA	NA	2.500	0.0867	**6.14**	NA
5	BTEX	NA	NA	NA	2.500	0.0867	0.00850	NA
6	Cadmium, Total	**12.3**	**11.5**	**11.9**	2.500	0.0867	0.00025	**76.84**
7	Chemical Oxygen Demand	NA	NA	NA	2.500	0.0867	**43.7**	NA
8	Chloride	NA	NA	NA	2.500	0.0867	**491**	NA
9	Chromium, Total	**201**	**202**	**202**	2.500	0.0867	**0.00714**	**66.29**
10	Copper, Total	**886**	**902**	**894**	2.500	0.0867	**0.0120**	**83.88**
11	Cyanide, Total	NA	NA	NA	2.500	0.0867	**0.0157**	NA
12	Ethylbenzene	NA	NA	NA	2.500	0.0867	0.00250	NA
13	HEM (Non-Polar) (Petroleum)	NA	NA	NA	2.500	0.0867	2.57	NA
14	HEM (Polar) (Animal/Vegetable)	NA	NA	NA	2.500	0.0867	**3.50**	NA
15	Lead, Total	**55.9**	**52.5**	**54**	2.500	0.0867	**0.0003**	**91.84**
16	Mercury, Total	**1.99**	**1.6**	**1.8**	2.500	0.0867	0.0001	**55.58**
17	Molybdenum, Total	**45.6**	**45**	**45**	2.500	0.0867	**0.0206**	**13.29**
18	Nickel, Total	**48.8**	**50.2**	**49.5**	2.500	0.0867	**0.0123**	**21.88**
19	Phenol	0.500	0.500	0.500	2.500	0.0867	0.00100	**3.37**
20	Selenium, Total	**10.3**	**7.93**	**9.12**	2.500	0.0867	0.0019	39.3
21	Toluene	NA	NA	NA	2.500	0.0867	0.00250	NA
22	Total Dissolved Solids (TDS)	NA	NA	NA	2.500	0.0867	**1414**	NA
23	Total Nitrogen	NA	NA	NA	2.500	0.0867	**18.06**	NA
24	Total Suspended Solids (TSS)	NA	NA	NA	2.500	0.0867	**9.43**	NA
25	Xylenes, Total	NA	NA	NA	2.500	0.0867	0.00250	NA
26	Zinc, Total	**1180**	**1140**	**1160**	2.500	0.0867	**0.0243**	**76.90**
	Percent Solids	**2.4**	**2.3**	**2.35**				

Bolded values indicate the pollutant concentration is above the reported limit.
NA = Not Determined - No Data Available.

6.6 Selection of a Representative Removal Efficiency for each POC

Table 21 lists the site-specific removal efficiencies derived from the different methods listed above. The chosen efficiencies are summarized in Table 22.

Removal efficiencies are based largely on site-specific conditions such as climate, WRF operation and maintenance, plant conditions, and sewage characteristics. Therefore, USEPA recommends that site-specific data be used to calculate all removal efficiencies. Thus, the selection of representative removal rates was based, as much as possible, on the available site-specific data.

6.6.1 Negative Removal Efficiencies

The only parameter with only negative removal efficiencies was chloride. Chloride is not readily removed in the WRF. The negative removal efficiency for chloride was substituted with 0.01% to facilitate the calculation of an MAHL.

6.6.2 USEPA Literature Selection

Where no positive site-specific removal efficiencies were calculated, the USEPA median removal efficiency was chosen. The USEPA median efficiency was selected for Cyanide and Selenium.

TABLE 21: Removal Efficiencies Comparison and Selection													
POLLUTANT		Influent/Effluent		USEPA Guidance Appendix R Deciles			Calculated Deciles			Residuals Methods		Selected % R	BASIS
		ADRE	MRE	Second Decile %	Median Decile %	Eighth Decile %	Second Decile %	Median Decile %	Eighth Decile %	Residual / Influent	Residual / Effluent		
1	Ammonia as N	13.2	13.4	NA	NA	NA	8.2	14.8	18.0	NA	NA	13.4	MRE
2	Arsenic, Total	15.7	15.6	31.0	45.0	53.0	6.4	15.0	25.0	28.7	25.4	15.6	MRE
3	Benzene	93.6	93.8	50.0	80.0	96.0	91.4	94.1	95.4	NA	NA	93.8	MRE
4	Biochemical Oxygen Demand	96.5	96.6	NA	NA	NA	92.4	98.6	98.8	NA	NA	96.6	MRE
5	BTEX	85.6	86.0	NA	NA	NA	79.9	88.2	90.2	NA	NA	86.0	MRE
6	Cadmium, Total	70.0	72.2	33.0	67.0	91.0	55.0	64.3	83.0	92.2	76.8	72.2	MRE
7	Chemical Oxygen Demand	90.6	90.8	NA	NA	NA	89.3	91.1	92.5	NA	NA	90.8	MRE
8	Chloride	-1.8	-2.4	NA	NA	NA	-3.9	-1.9	4.0	NA	NA	0.01	MRE
9	Chromium, Total	54.6	66.8	68.0	82.0	91.0	29.7	63.6	80.9	65.3	66.3	66.8	MRE
10	Copper, Total	83.5	82.9	67.0	86.0	95.0	80.2	83.6	85.9	88.8	83.9	82.9	MRE
11	Cyanide, Total	-253.5	-169.4	41.0	69.0	84.0	-309.3	-250.0	-36.6	NA	NA	69.0	EPA MEDIAN
12	Ethylbenzene	50.0	50.0	67.0	86.0	97.0	NA	NA	NA	NA	NA	50.0	MRE
13	HEM (Non-Polar) (Petroleum)	55.3	59.4	NA	NA	NA	50.0	50.0	67.7	NA	NA	59.4	MRE
14	HEM (Polar) Animal/Vegetable	82.8	86.9	NA	NA	NA	52.0	85.3	92.1	NA	NA	86.9	MRE
15	Lead, Total	90.5	90.9	NA	NA	NA	86.5	89.1	94.9	102.6	91.8	90.9	MRE
16	Mercury, Total	50.0	50.0	50.0	60.0	79.0	NA	NA	NA	62.6	55.6	50.0	MRE
17	Molybdenum, Total	17.6	16.3	NA	NA	NA	7.0	21.2	23.8	12.8	13.3	12.8	INF SLUDGE
18	Nickel, Total	31.8	44.6	25.0	42.0	72.0	-0.6	43.8	54.9	15.5	21.9	44.6	MRE
19	Phenol	230.2	99.1	75.0	90.0	98.0	NA	NA	NA	0.0	3.4	99.1	MRE
20	Selenium, Total	-20.2	-16.6	33.0	50.0	67.0	-98.8	0.0	38.6	39.3	39.3	50.0	USEPA MEDIAN
21	Toluene	87.6	88.5	NA	NA	NA	81.7	90.4	92.5	NA	NA	88.5	MRE
22	Total Dissolved Solids (TDS)	2.5	2.0	NA	NA	NA	-0.3	1.4	5.6	NA	NA	2.0	MRE
23	Total Nitrogen	32.4	32.7	NA	NA	NA	17.8	35.8	43.8	NA	NA	32.7	MRE
24	Total Suspended Solids (TSS)	94.9	95.1	NA	NA	NA	93.3	95.3	96.0	NA	NA	95.1	MRE
25	Xylenes, Total	85.7	86.1	NA	NA	NA	79.2	88.6	90.3	NA	NA	86.1	MRE
26	Zinc, Total	79.8	81.1	64.0	79.0	88.0	72.1	81.8	86.1	63.0	76.9	81.1	MRE
[1]Value based on USEPA Average POTW Removal Efficiencies in Appendix R- Activated Sludge Treatment Median from the USEPA Local Limits Guidance Manual													
NA = Not Determined - No Data Available.													

Table 22: Selected % Removal Efficiency Summary			
	POLLUTANT	% EFFICIENCY	BASIS
1	Ammonia as N	13.4	MRE
2	Arsenic, Total	15.6	MRE
3	Benzene	93.8	MRE
4	Biochemical Oxygen Demand	96.6	MRE
5	BTEX	86.0	MRE
6	Cadmium, Total	72.2	MRE
7	Chemical Oxygen Demand	90.8	MRE
8	Chloride	0.01	MRE
9	Chromium, Total	66.8	MRE
10	Copper, Total	82.9	MRE
11	Cyanide, Total	69.0	USEPA MEDIAN
12	Ethylbenzene	50.0	MRE
13	HEM (Non-Polar) (Petroleum)	59.4	MRE
14	HEM (Polar) (Animal/Vegetable)	86.9	MRE
15	Lead, Total	90.9	MRE
16	Mercury, Total	50.0	MRE
17	Molybdenum, Total	12.8	INF SLUDGE
18	Nickel, Total	44.6	MRE
19	Phenol	99.1	MRE
20	Selenium, Total	50.0	USEPA MEDIAN
21	Toluene	88.5	MRE
22	Total Dissolved Solids (TDS)	2.01	MRE
23	Total Nitrogen	32.7	MRE
24	Total Suspended Solids (TSS)	95.1	MRE
25	Xylenes, Total	86.1	MRE
26	Zinc, Total	81.1	MRE

7.0 LOCAL LIMIT CALCULATIONS

Three methods for calculating Local Limits were utilized. Each method was then compared before determining the most appropriate limits.

The method used to determine Local Limits is based on the MAHL method for each specific POC. A MAHL is the upper limit of pollutant loading at which a WRF will not violate any treatment plant or environmental criteria developed to prevent process

inhibition or interference, or violation of effluent, sludge, or air quality standards. These loadings are calculated on a pollutant by pollutant basis for each plant process and environmental objective relevant to the plant. Calculations are carried out to establish maximum loads based on pollutant pass-through, interference with plant processes and residuals protection. The lowest value (mass loading) of these calculations is identified for each pollutant and serves as the basis for identifying the need for and calculation of a local limit.

While the MAHL provides the maximum allowable headworks loading, typically the Local Limits are calculated with the Allowable Headworks Loading (AHL). To calculate the AHL, the MAHL is multiplied by a safety factor (SF). The SF is a method for holding a certain percentage of the MAHL in reserve. This SF is designed to account for and accommodate the variability and measurement error associated with plant design/performance parameters, and the quality and quantity of data. A safety factor of 10% was assigned for all pollutants.

The following data was used to calculate the Local Limits.

7.1.1 WRF Flow Data

Table 2 lists the WRF Average Daily Flows and Industrial User information.

7.1.2 General Information

Table 23 below summarizes the safety factor, selected removal efficiency, and concentrations of pollutants present in the non-industrial (commercial and residential) and influent streams. In Table 20, the average residential concentration is identified as $C_{ni\text{-}r}$, the average commercial concentration is identified as $C_{ni\text{-}c}$, the combined average non-industrial (residential and commercial) pollutant concentration is identified as C_{ni}, and the average headwork pollutant concentration is identified as C_{hw}. The combined average non-industrial pollutant concentration was calculated by the following formula.

$$C_{ni} = \frac{((C_{ni\text{-}r}) * (Q_{ni\text{-}r}) * 8.34) + ((C_{ni\text{-}c}) * (Q_{ni\text{-}c}) * 8.34)}{(Q_{ni}) * 8.34}$$

Where:
C_{ni} is the average non-industrial pollutant concentration in mg/L
$C_{ni\text{-}r}$ is the average residential pollutant concentration in mg/L
$Q_{ni\text{-}r}$ is the residential flow in MGD
$C_{ni\text{-}c}$ is the average commercial pollutant concentration in mg/L
$Q_{ni\text{-}c}$ is the commercial flow in MGD
Q_{ni} in the combined non-industrial pollutant concentration in mg/L
8.34 is the pounds conversion factor

Table 23: Local Limits Information Summary								
	Pollutant	Safety Factor	WWF Removal	Non-industrial Residential C_{ni-r}	Non-industrial Commercial C_{ni-c}	Non-industrial Combined Weighted C_{ni}	Influent C_{hw}	Effluent C_{eff}
1	Ammonia as N	10	13.4	30.8	20.5	26.0	17.0	14.7
2	Arsenic, Total	10	15.6	0.000914	0.000657	0.000796	0.00752	0.00634
3	Benzene	10	93.8	0.00200	0.00200	0.00200	0.0160	0.00100
4	Biochemical Oxygen Demand	10	96.6	246	115	185	182	6.14
5	BTEX	10	86.0	0.0170	0.0170	0.0170	0.0607	0.00850
6	Cadmium, Total	10	72.2	0.000500	0.000686	0.000586	0.000900	0.000250
7	Chemical Oxygen Demand	10	90.8	442	309	380	476	43.7
8	Chloride	10	0.0	131	179	153	480	491
9	Chromium, Total	10	66.8	0.00257	0.00286	0.00270	0.0215	0.00714
10	Copper, Total	10	82.9	0.0519	0.0707	0.0606	0.0702	0.0120
11	Cyanide, Total	10	69.0	0.00486	0.00200	0.00354	0.00583	0.0157
12	Ethylbenzene	10	50.0	0.00500	0.00500	0.00500	0.00500	0.00250
13	HEM (Non-Polar) (Petroleum)	10	59.4	5.14	5.14	5.14	6.33	2.57
14	HEM (Polar) (Animal/Vegetable)	10	86.9	33.1	26.4	30.0	27.2	3.57
15	Lead, Total	10	90.9	0.000943	0.00269	0.00175	0.00368	0.000336
16	Mercury, Total	10	50.0	0.000200	0.00576	0.00277	0.000200	0.000100
17	Molybdenum, Total	10	12.8	0.00257	0.00707	0.00465	0.0246	0.0206
18	Nickel, Total	10	44.6	0.00346	0.00530	0.00431	0.0222	0.0123
19	Phenol	10	99.1	0.00200	0.0635	0.0304	0.117	0.00100
20	Selenium, Total	10	50.0	0.000643	0.000814	0.000722	0.00162	0.00189
21	Toluene	10	88.5	0.00500	0.00500	0.00500	0.0217	0.00250
22	Total Dissolved Solids (TDS)	10	2.0	595	625	609	1443	1414
23	Total Nitrogen	10	32.7	45.2	28.7	37.6	26.8	18.1
24	Total Suspended Solids (TSS)	10	95.1	154	81.6	120	193	9.43
25	Xylenes, Total	10	86.1	0.00500	0.00500	0.00500	0.0180	0.00250
26	Zinc, Total	10	81.1	0.0943	0.0986	0.0963	0.128	0.0243

Table 24 below summarizes the pollutant loading for residential, commercial, influent, and effluent streams based on the pounds formula.

$$\text{Lbs/Day} = C * Q * 8.34$$

Where: C is the concentration (mg/L) for the pollutant
Q is the flow to the WRF
8.34 is the pounds conversion factor

Table 24: Pollutant Loading						
	Pollutant	Residential lbs/day	Commercial lbs/day	Combined Non-Industrial lbs/day	Influent lbs/day	Effluent lbs/day
1	Ammonia as N	3,962	2,259	6,221	4,396	4,062
2	Arsenic, Total	0.118	0.0726	0.190	1.95	1.76
3	Benzene	0.257	0.221	0.478	4.15	0.277
4	Biochemical Oxygen Demand	31,620	12,683	44,303	47,120	1,701
5	BTEX	2.19	1.88	4.06	15.7	2.35
6	Cadmium, Total	0.0643	0.0757	0.140	0.233	0.0692
7	Chemical Oxygen Demand	56,824	34,073	0,897	123,332	12,104
8	Chloride	16,895	19,718	36,613	124,500	136,031
9	Chromium, Total	0.331	0.315	0.646	5.58	1.98
10	Copper, Total	6.67	7.81	14.48	18.2	3.31
11	Cyanide, Total	0.63	0.221	0.85	1.51	4.35
12	Ethylbenzene	0.643	0.552	1.196	1.30	0.692
13	HEM (Non-Polar) (Petroleum)	662	568	1230	1643	712
14	HEM (Polar) (Animal/Vegetable)	4265	2918	7183	7046	989
15	Lead, Total	0.121	0.297	0.418	0.955	0.0930
16	Mercury, Total	0.0257	0.636	0.661	0.0519	0.0277
17	Molybdenum, Total	0.33	0.781	1.11	6.38	5.70
18	Nickel, Total	0.44	0.585	1.03	5.76	3.41
19	Phenol	0.257	7.01	7.27	30.3	0.277
20	Selenium, Total	0.083	0.0899	0.173	0.419	0.522
21	Toluene	0.643	0.552	1.196	5.62	0.692
22	Total Dissolved Solids (TDS)	76,550	68,998	145,548	374,363	391,599
23	Total Nitrogen	5,813	3,171	8,984	6,960	5,000
24	Total Suspended Solids (TSS)	19,799	9,007	28,807	49,973	2,611
25	Xylenes, Total	0.643	0.552	1.196	4.67	0.692
26	Zinc, Total	12.13	10.9	23.0	33.3	6.72

7.2 POCs Removed From Local Limit Calculation

Several potential POCs were removed from the evaluation at this time. Below is a discussion with respect to the basis for removal of the POCs from further numerical evaluation.

7.2.1 Conventional Pollutants

Conventional Pollutants are those pollutants that the WRF is designed to treat. The WRF has demonstrated continuous compliance with the effluent discharge limitations for these pollutants and has not experienced upset or interference in the WRF processes related to these pollutants. This empirically shows that the existing Local Limits are effective. The conventional pollutants were removed in favor of retaining the existing Local Limits, where applicable. The following is a list of the conventional pollutants removed from further evaluation.

1. **Ammonia** – There is an ammonia design criterion for the facility, but no corresponding WRF discharge permit effluent limit. The plant is not experiencing upset of interference due to nitrogen-containing conventional pollutants. The only other applicable criterion for ammonia is the USEPA Guidance Document Appendices inhibition value of 480 mg/L. Using the inhibition value results in an extremely high calculated local limit of 3,350 mg/L. Based on the lack of demonstrated inhibition, a Local Limit for this parameter is not proposed.

2. **Chemical Oxygen Demand** – This pollutant is similar to BOD_5, except no discharge or design criteria limit exists. Since no criteria exist to develop or revise the existing local limit for COD, the City proposes to remove the existing local limit. The City will to continue to monitor COD as a component of the City's pollutant strength rate program. The pollutant strength rate program encourages reductions in COD at the WRF by imposing a cost on users for discharging wastes with high COD. This approach is similar to other utilities in USEPA Region 8 with a sewer strength rate charge program, including Metro Denver. A Local Limit for this parameter is not proposed at this time.

3. **Chlorides** – The WRF permit does not include a discharge limit for this parameter. Chlorides are a POC for facilities that have reclaimed water systems. The WRF does not currently have a reclaimed water discharge and does not have a basis for establishing a Chloride limit. A Local Limit for this parameter is not proposed.

4. **Oil and Grease and TRPH** – HEM replaces the Oil and Grease and TRPH analyses. In the HEM analysis both animal and vegetable oil, and grease and petroleum pollutants are analyzed. The Polar HEM fraction is primarily the animal and vegetable oils and greases. The Non-Polar HEM is primarily petroleum pollutants. The existing Local Limits for Oil and Grease will be applied to the HEM-

Polar analysis and the existing Local Limit for TRPH will be applied to the HEM-Non-Polar analysis.

The WRF has not had an impact from HEM at the existing local limits. Over the past nine years, the WRF's collection system has experienced an average of 4.5 grease related sanitary sewer overflow event per year. The City determines that this indicates a more stringent limit is not necessary based on the relatively low incidence of grease related overflows.

5. **Total Dissolved Solids** - The WRF permit does not include a discharge limit for this parameter. TDS is a POC for facilities that have reclaimed water systems. The WRF does not currently have a reclaimed water discharge and does not have a basis for establishing a TDS limit. A Local Limit for this parameter is not proposed at this time. The City does contemplate reuse of effluent in the future, with feasibility studies indicating that significant TDS loading is due to groundwater infiltration and other non-industrial sources. The City will review the efficacy and need for TDS local limits as the prospect for reuse water development becomes imminent.

6. **Total Nitrogen** – There is a total nitrogen design criterion for the facility but no corresponding WRF discharge permit effluent limit. The plant is not experiencing upset of interference due to nitrogen containing conventional pollutants. A Local Limit for this parameter is not proposed.

7.2.2 Other Pollutants for Removal

1. **BTEX** – BTEX was included as a POC, however, there is no basis for establishing a Local Limit for this parameter. BTEX is the sum of the Benzene, Ethyl Benzene, Toluene, and Xylene parameters. Inhibition criteria exist for Benzene, Ethylbenzene, and Toluene and the MAHL calculations will be carried out for these parameters. BTEX is also part of the HEM non-polar results and will be included in the existing limit for that analysis. The USEPA Region 8 Local Limit Strategy does include a discussion of establishing a limit for BTEX that is related to groundwater remediation discharges to the WRF. This does not apply to Industrial Users and is technically based on groundwater remediation. The City can consider the USEPA guidance in permitting groundwater remediation discharges as a separate issue from the establishment of Local Limits for Industrial Users. A Local Limit for this parameter is not proposed.

2. **Silver** – Silver is an USEPA POC. However, there is no applicable design criterion, inhibition criterion, effluent discharge limit, or sludge disposal criterion to develop a local limit. A local limit for this parameter is not proposed.

3. **Xylenes** – This pollutant is included in the BTEX parameter. Unlike the other components of BTEX, no inhibition criterion or other basis is available for this pollutant. A local limit for this parameter is not proposed.

7.3 Final List of Pollutants for Local Limit Calculation

Table 25 lists the final pollutants for further evaluation.

Table 25: Final List of POCs for MAHL Calculation								
	Pollutant	Safety Factor	WWF Removal	Non-industrial Residential C_{ni-r}	Non-industrial Commercial C_{ni-c}	Non-industrial Combined Weighted C_{ni}	Influent C_{hw}	Effluent C_{eff}
1	Arsenic, Total	10	15.6	0.000914	0.000657	0.000796	0.00752	0.00634
2	Benzene	10	93.8	0.00200	0.00200	0.00200	0.01600	0.00100
3	Biochemical Oxygen Demand	10	96.6	246	115	185	182	6.14
4	Cadmium, Total	10	72.2	0.000500	0.000686	0.000586	0.000900	0.000250
5	Chromium, Total	10	66.8	0.00257	0.00286	0.00270	0.0215	0.00714
6	Copper, Total	10	82.9	0.0519	0.0707	0.0606	0.0702	0.0120
7	Cyanide, Total	10	69.0	0.00486	0.00200	0.00354	0.00583	0.01571
8	Ethylbenzene	10	50.0	0.00500	0.00500	0.00500	0.00500	0.00250
9	Lead, Total	10	90.9	0.000943	0.00269	0.00175	0.00368	0.000336
10	Mercury, Total	10	50.0	0.000200	0.00576	0.00277	0.000200	0.000100
11	Molybdenum, Total	10	12.8	0.00257	0.00707	0.00465	0.0246	0.0206
12	Nickel, Total	10	44.6	0.00346	0.00530	0.00431	0.0222	0.0123
13	Phenol	10	99.1	0.0020	0.0635	0.0304	0.117	0.00100
14	Selenium, Total	10	50.0	0.000643	0.000814	0.000722	0.00162	0.00189
15	Toluene	10	88.5	0.00500	0.00500	0.00500	0.0217	0.00250
16	Total Suspended Solids (TSS)	10	95.1	154	82	120	193	9.43
17	Zinc, Total	10	81.1	0.0943	0.0986	0.0963	0.128	0.0243

7.4 USEPA Local Limits Guidance Calculations

Section 5 of the USEPA Local Limits Guidance Document (EPA 833-R-04-002A, 2004) provides guidance on calculating Maximum Allowable Headwork Loadings and Local Limits. The following sections detail the calculations and results utilizing the USEPA methodology.

7.4.1 Calculation of MAHLs

The MAHL is the estimated loading of a pollutant that can be received at a WRF's headworks that should not cause the WRF to violate a particular limit. The MAHL is developed to prevent interference or pass-through and to allow the disposal of the WRF residuals or Biosolids. The MAHL is expressed in pounds per day (lbs/day). The MAHLs are calculated for each type of criteria. The following tables calculate the MAHLs for the WRF.

Table 26 below calculates the MAHLs based on interference of the treatment processes. The table lists each criteria and the calculated MAHL for the criteria. The most stringent MAHL is then carried forward for calculating the Local Limit. In Table 26 the MAHL is calculated with the following equation.

$$MAHL = \frac{8.34 * (C_{crt}) * (Q_{WRF})}{(1 - R_{prcs})}$$

Where: MAHL is calculated for the particular pollutant and criteria
C_{crt} is the concentration criteria (mg/L) for the pollutant
Q_{WRF} is the influent flow to the WRF
R_{prcs} is the removal efficiency prior to the process
8.34 is the pounds conversion factor

Sampling was not conducted between processes in the WRF so the R_{prcs} is zero (0).

Table 26: Influent Based MAHLs

	Pollutant	Safety Factor	WWF Removal	Activated Sludge Inhibition Criteria USEPA LL Guidance Document (mg/L)	Activated Sludge Inhibition Criteria MAHL (lbs/day)	Trickling Filter Inhibition Criteria USEPA LL Guidance Document MAHL (mg/L)	Trickling Filter Inhibition Criteria MAHL (lbs/day)	Design Criteria 2003 Plant Expansion MAHL (mg/L)	Design Criteria 2003 Plant Expansion MAHL (lbs/day)	Most Stringent influent MAHL (lbs/day)
1	Arsenic, Total	10	15.6	0.10	25.9	NA	NA	NA	NA	25.9
2	Benzene	10	93.8	100	25,937	NA	NA	NA	NA	25,937
3	Biochemical Oxygen Demand	10	96.6	NA	NA	NA	NA	290	135,442	135,442
4	Cadmium, Total	10	72.2	5	1,297	NA	NA	NA	NA	1,297
5	Chromium, Total	10	66.8	10	2,594	3.50	908	NA	NA	908
6	Copper, Total	10	82.9	1.0	259	NA	NA	NA	NA	259
7	Cyanide, Total	10	69.0	2.5	648	30.00	7,781	NA	NA	648
8	Ethylbenzene	10	50.0	200	51,875	NA	NA	NA	NA	51,875
9	Lead, Total	10	90.9	2.5	648	NA	NA	NA	NA	648
10	Mercury, Total	10	50.0	0.5	130	NA	NA	NA	NA	130
11	Molybdenum, Total	10	12.8	NA	NA	NA	NA	NA	NA	NA
12	Nickel, Total	10	44.6	1.5	389	NA	NA	NA	NA	389
13	Phenol	10	99.1	50	12,969	NA	NA	NA	NA	12,969
14	Selenium, Total	10	50.00	NA	NA	NA	NA	NA	NA	NA
15	Toluene	10	88.5	200	51,875	NA	NA	NA	NA	51,875
16	Total Suspended Solids (TSS)	10	95.1	NA	NA	NA	NA	210	98,078	98,078
17	Zinc, Total	10	81.1	2.50	648	NA	NA	NA	NA	648

NA = Not Determined - No Data Available.

Table 27 below calculates the MAHLs based on effluent criteria. The effluent criteria include the UPDES permit limits discharge criteria. The WRF does not discharge to a water body that is regulated by the acute and chronic criteria. The WRF discharge makes up the bulk of the flow in the Oil Drain Canal so receiving stream background concentrations and flows were not included in the calculation of MAHLs for those criteria. The table lists each criteria and the calculated MAHL for the criteria. The most stringent MAHL is then carried on for calculating the local limit. In Table 27 the MAHL is calculated with the following equation.

$$MAHL = \frac{8.34 * (C_{limit}) * (Q_{WRF})}{(1 - R_{WRF})}$$

Where: MAHL is the calculated MAHL for the particular pollutant and criteria
C_{limit} is the concentration criteria (mg/L) for the pollutant
Q_{WRF} is the influent flow to the WRF
R_{WRF} is the % removal efficiency across the WRF
8.34 is the pounds conversion factor

Table 27: Effluent Based MAHLs										
	Pollutant	Safety Factor	WWF Removal	Utah Chronic Limit mg/L	Utah Chronic Limit MAHL lbs/day	Utah Acute Limit mg/L	Utah Acute Limit MAHL lbs/day	Permit Limit Weekly Max mg/L	Permit Limit Weekly Max MAHL lbs/day	Most Stringent MAHL lbs/day
1	Arsenic, Total	10	15.6	NA	NA	NA	NA	NA	NA	NA
2	Benzene	10	93.8	NA	NA	NA	NA	NA	NA	NA
3	Biochemical Oxygen Demand	10	96.6	NA	NA	NA	NA	35	268,472	268,472
4	Cadmium, Total	10	72.2	NA	NA	NA	NA	NA	NA	NA
5	Chromium, Total	10	66.8	NA	NA	NA	NA	NA	NA	NA
6	Copper, Total	10	82.9	NA	NA	NA	NA	NA	NA	NA
7	Cyanide, Total	10	69.0	NA	NA	NA	NA	NA	NA	NA
8	Ethylbenzene	10	50.0	NA	NA	NA	NA	NA	NA	NA
9	Lead, Total	10	90.9	NA	NA	NA	NA	NA	NA	NA
10	Mercury, Total	10	50.0	NA	NA	NA	NA	NA	NA	NA
11	Molybdenum, Total	10	16.3	NA	NA	NA	NA	NA	NA	NA
12	Nickel, Total	10	44.6	NA	NA	NA	NA	NA	NA	NA
13	Phenol	10	99.1	NA	NA	NA	NA	NA	NA	NA
14	Selenium, Total	10	50.0	NA	NA	NA	NA	NA	NA	NA
15	Toluene	10	88.5	NA	NA	NA	NA	NA	NA	NA
16	Total Suspended Solids (TSS)	10	95.1	NA	NA	NA	NA	35	185,505	185,505
17	Zinc, Total	10	81.1	NA	NA	NA	NA	NA	NA	NA
NA = Not Determined - No Data Available.										

Table 28 below calculates the MAHLs based on residuals criteria. The residuals criteria are the heavy metals listed in 40 CFR Part 503 Tables 1 and 3. The residuals assessment only considers Table 1 limits because the WRF's current UPDES permit residual disposal methods do not require generation of Class A (i.e., EQ) residuals.

The table lists each criteria and the calculated MAHL, which is then carried on for calculating the local limit. In Table 28 the MAHL is calculated with the following equation.

$$MAHL = \frac{8.34 * (C_{limit})\ (PS/100)\ (Q_{sldg})(G_{sldg})}{R_{WRF}}$$

Where: R_{WRF} is the % removal efficiency across the WRF
C_{limit} is the sludge criteria in mg/Kg
$S_{(AVG)}$ in the average of all sludge sample results in mg/Kg
Q_{sldg} is the total residual flow to disposal
PS is the percent solids of the sludge
8.34 is the pounds conversion factor

Table 28: Residuals Based MAHLs						
	Pollutant	Safety Factor	WWF Removal	40 CFR Part 503 Table 1 (mg/kg)	40 CFR Part 503 Table 1 MAHL (mg/L)	Most Stringent MAHL (lbs/day)
1	Arsenic, Total	10	15.6	75	8.68	8.68
2	Benzene	10	93.8	NA	NA	NA
3	Biochemical Oxygen Demand	10	96.6	NA	NA	NA
4	Cadmium, Total	10	72.2	85	2.13	2.13
5	Chromium, Total	10	66.8	NA	NA	NA
6	Copper, Total	10	82.9	4300	93.7	93.7
7	Cyanide, Total	10	69.0	NA	NA	NA
8	Ethylbenzene	10	50.0	NA	NA	NA
9	Lead, Total	10	90.9	840	16.71	16.71
10	Mercury, Total	10	50.0	57	2.1	2.1
11	Molybdenum, Total	10	12.8	75	10.56	10.6
12	Nickel, Total	10	44.6	420	17.03	17.0
13	Phenol	10	99.1	NA	NA	NA
14	Selenium, Total	10	50.0	100	3.62	3.62
15	Toluene	10	88.5	NA	NA	NA
16	Total Suspended Solids (TSS)	10	95.1	NA	NA	NA
17	Zinc, Total	10	81.1	7500	167	167
NA = Not Determined - No Data Available.						

Table 29 summarizes the MAHLs from the various methods and lists the most stringent MAHL for each parameter and location. The MAHL used for the Local Limits calculations is selected in the last column. The most stringent criteria were not chosen for cadmium and copper since the acute effluent criteria does not actually apply. The appropriate MAHL is listed and a statement of basis is provided.

Table 29: MAHL Summary									
	Pollutant	Safety Factor %	Removal Efficiency %	Influent MAHL (lbs/day)	Effluent MAHL (lbs/day)	Residuals MAHL (lbs/day)	Most Stringent MAHL (lbs/day)	MAHL for Local Limit Calculations (lbs/day)	Basis
1	Arsenic, Total	10	15.6	25.9	NA	8.68	8.68	8.68	Residuals
2	Benzene	10	93.8	25,937	NA	NA	25,937	25,937	Inhibition
3	Biochemical Oxygen Demand	10	96.6	135,442	268,472	NA	135,442	135,442	Influent
4	Cadmium, Total	10	72.2	1,297	NA	2.13	2.13	2.13	Residuals
5	Chromium, Total	10	66.8	908	NA	NA	908	908	Inhibition
6	Copper, Total	10	82.9	259	NA	93.7	93.7	93.7	Residuals
7	Cyanide, Total	10	69.0	648	NA	NA	648	648	Inhibition
8	Ethylbenzene	10	50.0	51,875	NA	NA	51,875	51,875	Inhibition
9	Lead, Total	10	90.9	648	NA	16.7	16.7	16.7	Residuals
10	Mercury, Total	10	50.0	130	NA	2.06	2.06	2.06	Residuals
11	Molybdenum, Total	10	12.8	NA	NA	10.56	10.56	10.56	Residuals
12	Nickel, Total	10	44.6	389	NA	17.0	17.0	17.0	Residuals
13	Phenol	10	99.1	12,969	NA	NA	12,969	12,969	Inhibition
14	Selenium, Total	10	50.0	NA	NA	3.62	3.62	3.62	Residuals
15	Toluene	10	88.5	51,875	NA	NA	51,875	51,875	Residuals
16	Total Suspended Solids (TSS)	10	95.1	98,078	185,505	NA	98,078	98,078	Influent
17	Zinc, Total	10	81.1	648	NA	167	167	167	Residuals
NA = Not Determined - No Data Available.									

7.4.2 Parameter Specific Flows for BOD_5 and TSS

The initial local limits evaluation submittals recommended retaining and then removing the local limits for BOD_5 and TSS. While there is no immediate need to revise current BOD_5 and TSS local limits, the City conducted a detailed evaluation of the data and assumptions on which local limits are based for the purpose of setting new technically-based BOD_5 and TSS local limits. In the evaluation, all permitted IUs with BOD_5 and TSS concentrations less than 3X the average domestic concentrations were included in non-IU versus IU loading. Non-IU loading represents domestic and commercial sources, and IU sources not expected to receive an allocation. Utilizing this method, the resulting BOD_5 and TSS uniform concentration limits would be 11,163 mg/L and 7,241 mg/L, respectively. These limits would not result in undue burden to existing permitted IUs, while protecting the POTW and allowing for future growth. Further elaboration and justification for the use of the parameter specific flows are in Section 8.1.2.

7.4.3 Calculation of Local Limits

Table 30 below lists the calculated Local Limits for the WRF using the USEPA Local Limits Guidance.

The local AIL is the mass of the pollutant that is allocated to the industrial users. The AIL can be used to allocate loadings to IUs on an as-needed basis as long as the WRFs MAHL is not exceeded. The AIL is calculated by the following formula.

$$AIL = (MAHL^* (1- SF)) – (L_{UNC})$$

Where: AIL is the calculated AIL for the pollutant
SF is the Safety Factor from Table 23
L_{UNC} is the loading from commercial and residential sources

The Local Limit is calculated by the following formula.

$$\text{Local Limit} = AIL / (Q_{WRF} * 8.34)$$

Where: Local Limit is the concentration limit in mg/L
Q_{WRF} is the influent flow to the WRF
(For BOD_5 and TSS: Q is the parameter specific flow)
8.34 is the pounds conversion factor

The current Loading % of MAHL is the percentage of the allowable headworks loading represented by the current headworks loading. If the headwork loading is a large percentage of the allowable headworks loading a Local Limit is needed and other control measures may be needed. The current loading % of MAHL is calculated as follows.

$$\% \text{ of MAHL} = \frac{CL}{MAHL} * 100$$

Where: CL is the current headwork loading
MAHL is the maximum allowable headwork loading

Table 30: Local Limit Calculations

	Pollutant	MAHL (lbs/day)	Allowable Headworks Loading MAHL-SF	Non-industrial Load (lbs/day)	Allowable Industrial Load (AIL) (lbs/day)	Local Limit Concentration Limit (mg/L)	Current WRF Loading	Current Loading % of MAHL	Basis	Parameter Specific Flow (MGD)
1	Arsenic, Total	8.68	7.81	0.19	7.62	**0.376**	1.95	22	Residuals	NA
2	Benzene	25,937	23,344	0.48	23,343	**1,152**	4.15	0.016	Inhibition	NA
2	Biochemical Oxygen Demand	135,442	121,897	44,303	77,595	**11,237**	47,120	34.8	Influent	0.828
3	Cadmium, Total	2.13	1.91	0.14	1.77	**0.0876**	0.23	11	Residuals	NA
4	Chromium, Total	908	817	0.65	816	**40.3**	5.58	0.61	Inhibition	NA
5	Copper, Total	93.7	84.3	14.48	69.8	**3.45**	18.2	19	Residuals	NA
6	Cyanide, Total	648.4	584	0.85	583	**28.8**	1.51	0.23	Inhibition	NA
7	Ethylbenzene	51,875	46,687	1.20	46,686	**2,304**	1.30	0.0025	Inhibition	NA
8	Lead, Total	16.7	15.0	0.42	14.6	**0.721**	0.955	5.7	Residuals	NA
9	Mercury, Total	2.06	1.85	0.66	1.19	**0.0589**	0.0519	2.5	Residuals	NA
10	Molybdenum, Total	10.56	9.51	1.11	8.40	**0.414**	6.38	60.4	Residuals	NA
11	Nickel, Total	17.0	15.3	1.03	14.3	**0.706**	5.76	34	Residuals	NA
12	Phenol	12,969	11,672	7.27	11665	**576**	30.3	0.23	Inhibition	NA
13	Selenium, Total	3.62	3.25	0.173	3.08	**0.152**	0.419	12	Residuals	NA
14	Toluene	51,875	46,687	1.20	46,686	**2,304**	5.62	0.011	Residuals	NA
2	Total Suspended Solids (TSS)	98,078	88,271	28,807	59,464	**7,529**	49,973	51.0	Influent	0.947
15	Zinc, Total	167	150	23.02	127	**6.29**	33.29	19.9	Residuals	NA

NA = Not Determined - No Data Available.

7.5 Local Limits Calculations Using USEPA Region 8 Strategy (4-11-03)

The USEPA Region 8 Industrial Pretreatment Program developed a local limit guidance and spreadsheet for submitting local limit evaluations. The spreadsheet and guidance document can be found at:

http://www.epa.gov/region8/water/pretreatment/download.html.

The following tables are from the Region 8 Spreadsheet with the Local Limits listed on Table 40. The tables were formatted to fit in the report; no other changes to the text have been made. It should be noted that the Region 8 Strategy only develops limits for metals. For the conventional pollutants the design limits were added to the tables to calculate limits. Inhibition limits were also added to calculate inhibition limits for the activated sludge and trickling filter processes.

Table 31 (R8 Table 1): General Data Entry:

This table is used to enter in general information that is not necessarily pollutant specific.

POTW NAME: Enter in the name of your POTW(s) in this area.
POTW Highest Monthly Average Flow: From the data over at least the last 12-18 months, the highest monthly average flow should be entered. This data is in MGD.
Domestic Flow: The POTW must enter the Domestic Flow that enters its POTW. This may require some estimation of flows by the POTW and may be easier to determine after entering in the subsequent flows. Entered in as MGD.
SIU Flow: Enter in the permitted flow (allowed flow) from the SIUs in the POTWs Pretreatment Program. Enter as MGD.
Commercial Flow: Enter in the Commercial Flow (Total Flow - Domestic - SIU flow) in this space. The Commercial flow may be estimated. Enter as MGD.
Trucked and Hauled Waste Flow: Enter in the daily flow (in MGD) that the POTW accepts from these sources. It is best to estimate this flow from the highest daily flow that it accepts (worst case) because of the concentrated nature of these pollutants and wastestreams.
Data Analysis: Table 28 (R8 Region Table 1) lists several items that are used for data analysis and provides information on pollutant loading and relative contributions.

COMMERCIAL FLOW AS A % OF ALL NON-DOMESTIC: This calculates the relative contribution of commercial flows as a percentage of all non-domestic flows. This will be used when the POTW is considering how to allocate pollutants.
TOTAL COMMERCIAL FLOW AS A % OF TOTAL POTW FLOW: This provides information on the relative contribution of the commercial flow as it relates to the total POTW flow.
TOTAL NON-DOMESTIC FLOW AS A % OF TOTAL POTW FLOW: This is the percentage of all non-domestic flow as a percentage of the total POTW flow.

Specific Gravity of Sludge to disposal:
Sludge Flow to Disposal: This number is in MGD.
% Solids to Disposal: The percent solids in the sludge as it is taken to disposal.
Biosolids Table: Enter in Table 1 or 3 here if you are using either of these sludge criteria for the sludge criteria. **DO NOT** Enter Table 2 here. If you are using Table 2, enter O for other in this space.
Are you using Table 2? Enter **Y** for yes and **N** for no (default).
Site Area: If you are using Table 2, enter in the site area of your active disposal site (in acres).
Site Life: If you are using Table 2, enter in the site life of your active disposal area (in years).
Chronic Receiving Water Flow: This is the flow that is used for determining compliance with chronic WQS protection. See the Rationale for your NPDES permit.
Acute Receiving Water Flow: This is the flow that is used for determining compliance with acute WQS protection. See the Rationale for your NPDES permit.
Hardness for Metals Calculations: Enter in the 90^{th} percentile value for hardness (minimum 90^{th} percentile). This will be supplied by your permit issuing authority and will usually be found in your Fact Sheet or Statement of Basis for the NPDES permit issued to your POTW.
Is your receiving water a drinking water supply? Enter **Y** for yes or **N** for no. You can get this information from the Statement of Basis for your NPDES permit or from the permit issuing authority.
Applicable Standards (Acute, Chronic, Both): This is what applies to your receiving water. It is usually both standards. There is mixing zone policies that each state is adopting. The POTW must consider these. They will be incorporated into this spreadsheet as they are approved and provided by the states. Enter **A** for Acute, **C** for Chronic and **B** for Both. **B is the default**.

TABLE 31 - GENERAL DATA ENTRY	
A	**B**
POTW NAME:	Salt Lake City Corporation
POTW HIGHEST MONTHLY AVERAGE FLOW **(MGD)**:	30.8
DOMESTIC FLOW (**MGD**):	15.43
SIU FLOW **(MGD)**:	2.14
COMMERCIAL FLOW **(MGD)**:	13.24
TRUCKED AND HAULED WASTE FLOW **(MGD)**:	0
COMMERCIAL FLOW AS A % OF ALL NON-DOMESTIC	84
TOTAL **COMMERCIAL** FLOW AS A % OF TOTAL POTW FLOW	43
TOTAL NON-DOMESTIC FLOW AS A % OF TOTAL POTW FLOW	50
SPECIFIC GRAVITY OF SLUDGE TO DISPOSAL (kg/L)	1
SLUDGE FLOW TO DISPOSAL **(MGD)**:	0.086686
% SOLIDS TO DISPOSAL **(%)**	2.5
BIOSOLIDS TABLE (**1,3 OR "O"THER**) BASED ON DISPOSAL OPTION:	1
ARE YOU USING TABLE 2 FOR BIOSOLIDS **(Y/N)**?	N
SITE AREA **(ACRES)**:	NA
SITE LIFE **(YEARS)**:	NA
CHRONIC RECEIVING WATER FLOW **(MGD)**:	0
ACUTE RECEIVING WATER FLOW **(MGD)**:	0
HARDNESS FOR METALS CALCULATIONS **(mg/L)**:	400
IS YOUR RECEIVING WATER A DRINKING WATER SUPPLY **(Y/N)**?	N
APPLICABLE STANDARDS (ACUTE, CHRONIC, BOTH):	NA

Table 32 (R8 Table 2) – Daily Criteria and Standards

Column A, Pollutant: This is a listing of the basic pollutants.
Column B, Daily Max Permit Limits/7 Day Permit Limits: From your NPDES permit. Enter as mg/l.
Column C, State Acute Water Quality Standards: From your Statement of Basis or permit issuing authority. Enter as mg/l.
Column D, USEPA Acute Water Quality Criteria: This number will be used except where you have entered in a State Water Quality Standard. For additional pollutants, the program allows you to enter acute criteria data. Enter as mg/L.
Column E, Final Acute Criteria: This column shows the applicable final acute criteria.
Column F, MCLs: If you entered a Y in Table 28 (R8 Table 1), indicating that your receiving water is a drinking water supply, then these values will show up automatically.
Column G, Other Criteria: Allows the User to enter a criterion that is not otherwise listed.
Column H, Other Criteria Basis: Added column that lists the basis for the other criteria listed.

TABLE 32: DAILY CRITERIA AND STANDARDS

A	B	C	D	E	F	G	H
POLLUTANT	Daily Max/7 Day NPDES PERMIT LIMITS mg/L	STATE ACUTE WQ STDS mg/L	USEPA ACUTE H2O QUAL CRITERIA mg/L	FINAL ACUTE CRITERIA mg/L	MCLs mg/L	Other Criteria	Other Criteria Basis
Arsenic, Total	NA	NA	NA	NA	NA	0.1	Inhibition
Benzene	NA	NA	NA	NA	NA	100	Inhibition
Biochemical Oxygen Demand	NA	NA	NA	NA	NA	290	Design Criteria
Cadmium, Total	NA	NA	NA	NA	NA	5	Inhibition
Chromium, Total	NA	NA	NA	NA	NA	3.5	Inhibition
Copper, Total	NA	NA	NA	NA	NA	1.0	Inhibition
Cyanide, Total	NA	NA	NA	NA	NA	2.5	Inhibition
Ethylbenzene	NA	NA	NA	NA	NA	200	Inhibition
Lead, Total	NA	NA	NA	NA	NA	2.5	Inhibition
Mercury, Total	NA	NA	NA	NA	NA	0.5	Inhibition
Molybdenum, Total	NA	NA	NA	NA	NA	NA	Inhibition
Nickel, Total	NA	NA	NA	NA	NA	1.5	Inhibition
Phenol	NA	NA	NA	NA	NA	50	Inhibition
Selenium, Total	NA	NA	NA	NA	NA	NA	Inhibition
Toluene	NA	NA	NA	NA	NA	200	Inhibition
Total Suspended Solids	NA	NA	NA	NA	NA	210	Design Criteria
Zinc, Total	NA	NA	NA	NA	NA	2.5	Inhibition

Table 33 (R8 Table 3) – Monthly Criteria and Standards

Column A, Pollutant: This is a listing of the basic pollutants.
Column B, Monthly NPDES Permit Limits: From your NPDES permit. Enter as mg/l.
Column C, State Chronic Water Quality Standards: From your Statement of Basis or permit issuing authority. Enter as mg/L.
Column D, USEPA Chronic Water Quality Criteria: This number will be used except where you have entered in a State Water Quality Standard. For additional pollutants, the program allow you to enter chronic criteria data. Enter as mg/L.
Column E, Final Chronic Criteria: This column shows the applicable final chronic criteria
Column F, State Human Health Criteria: Enter in the number from the water quality standards for human health. It may be listed as Water Consumption or Water and Fish Consumption. Enter as mg/L.
Column G, USEPA Human Health Criteria: Enter Water and Fish Consumption numbers for pollutants you have added.
Column H, Final Human Health Criteria: Determines the final Human Health Criteria number to use, giving preference to the state's criteria.
Column I, Other Criteria: Allows the User to enter a criterion that is not otherwise listed.

TABLE 33: MONTHLY CRITERIA AND STANDARDS								
A	B	C	D	E	F	G	H	I
POLLUTANT	Monthly NPDES PERMIT LIMITS mg/L	**STATE** CHRONIC WQ STDS mg/L	**USEPA CHRONIC** H2O QUAL CRITERIA mg/L	**FINAL** CHRONIC CRITERIA mg/L	**STATE** HUMAN HEALTH CRITERIA mg/L	**USEPA** HUMAN HEALTH CRITERIA mg/L	**Final** HUMAN HEALTH CRITERIA mg/L	State Chronic Agriculture mg/L
Arsenic, Total	NA	NA	NA	NA	NA	NA	NA	NA
Benzene	NA	NA	NA	NA	NA	NA	NA	NA
Biochemical Oxygen Demand	NA	NA	NA	NA	NA	NA	NA	NA
Cadmium, Total	NA	NA	NA	NA	NA	NA	NA	NA
Chromium, Total	NA	NA	NA	NA	NA	NA	NA	NA
Copper, Total	NA	NA	NA	NA	NA	NA	NA	NA
Cyanide, Total	NA	NA	NA	NA	NA	NA	NA	NA
Ethylbenzene	NA	NA	NA	NA	NA	NA	NA	NA
Lead, Total	NA	NA	NA	NA	NA	NA	NA	NA
Mercury, Total	NA	NA	NA	NA	NA	NA	NA	NA
Molybdenum, Total	NA	NA	NA	NA	NA	NA	NA	NA
Nickel, Total	NA	NA	NA	NA	NA	NA	NA	NA
Phenol	NA	NA	NA	NA	NA	NA	NA	NA
Selenium, Total	NA	NA	NA	NA	NA	NA	NA	NA
Toluene	NA	NA	NA	NA	NA	NA	NA	NA
Total Suspended Solids (TSS)	NA	NA	NA	NA	NA	NA	NA	NA
Zinc, Total	NA	NA	NA	NA	NA	NA	NA	NA

Table 34 **(R8 Table 4): Influent and Effluent Data**

Column A, Pollutant: A listing of the pollutants.
Column B, Average Influent Concentration in mg/L
Column C, POTW flow in MGD
Column D, Comments and notes: Document assumptions here
Column E, Calculated lbs/day for influent loading
Column F, Average Effluent Concentration in mg/L
Column G, POTW flow in MGD
Column G, Comments and notes: Document assumptions here
Column H, Calculated lbs/day for Effluent loading

TABLE 34: INFLUENT AND EFFLUENT DATA								
A	B	C	D	E	F	G	H	I
POLLUTANT	AVERAGE POTW INFLUENT mg/L	POTW FLOW MGD	COMMENT AND NOTES	POTW INFLUENT lbs/day	AVERAGE POTW EFFLUENT mg/L	POTW FLOW MGD	COMMENT AND NOTES	POTW EFFLUENT lbs/day
Arsenic, Total	0.00752	30.8	NA	1.95	0.00634	30.8	NA	1.65
Benzene	0.0160	30.8	NA	4.15	0.00100	30.8	NA	0.259
Biochemical Oxygen Demand	182	30.8	NA	47,120	6.14	30.8	NA	1,593
Cadmium, Total	0.00090	30.8	NA	0.233	0.00025	30.8	NA	0.0648
Chromium, Total	0.0215	30.8	NA	5.58	0.00714	30.8	NA	1.85
Copper, Total	0.0702	30.8	NA	18.2	0.0120	30.8	NA	3.11
Cyanide, Total	0.00583	30.8	NA	1.51	0.0157	30.8	NA	4.08
Ethylbenzene	0.00500	30.8	NA	1.30	0.00250	30.8	NA	0.648
Lead, Total	0.00368	30.8	NA	0.955	0.000336	30.8	NA	0.0871
Mercury, Total	0.00020	30.8	NA	0.0519	0.000100	30.8	NA	0.0259
Molybdenum, Total	0.0246	30.8	NA	6.38	0.0206	30.8	NA	5.34
Nickel, Total	0.0222	30.8	NA	5.76	0.0123	30.8	NA	3.19
Phenol	0.117	30.8	NA	30.3	0.00100	30.8	NA	0.259
Selenium, Total	0.00162	30.8	NA	0.419	0.00189	30.8	NA	0.489
Toluene	0.0217	30.8	NA	5.62	0.00250	30.8	NA	0.648
Total Suspended Solids (TSS)	193	30.8	NA	49,973	9.43	30.8	NA	2,446
Zinc, Total	0.128	30.8	NA	33.3	0.0243	30.8	NA	6.30

Table 35 (R8 Table 5): Sewerage System and Receiving Water

Column A, Pollutant: A listing of the pollutants.
Column B, SIU Loading to POTW: User entered data. From the POTW records (lbs/day).
Column C, Domestic Contribution: User entered data. From sampling data (mg/L). Can enter this column or Column F if you have lbs/day.
Column D, Domestic Loading: User entered data (lbs/day). Optional if you entered Column E.
Column E, Calculated Domestic Loading: This is the final number used from columns E and F. It calculates the lbs/day if you entered data in column D.
Column F, Commercial Contribution: User entered data. From sampling data (mg/L). Can enter this column or Column L if you have lbs/day.
Column G, Commercial Loading: User entered data (lbs/day). Optional if you entered Column K.
Column H, Calculated Commercial Loading: This is the final number used from columns K and L. It calculates the lbs/day if you entered data in column K.
Column I, Total Domestic plus Commercial Loading: Calculated total for use in spreadsheet.

TABLE 35: POLLUTANT LOADING AND RECEIVING WATER								
A	B	C	D	E	F	G	H	I
	TOTAL CURRENT SIU LOADING TO POTW lbs/day	DOMESTIC CONTRIBUTION TO POTW mg/L	USER ENTERED DOMESTIC LOADING TO POTW lbs/day	FINAL CALCULATED DOMESTIC CONTRIBUTION lbs/day	COMMERCIAL USER DISCHARGE TO POTW mg/L	USER ENTERED COMMERCIAL LOADING TO POTW lbs/day	CALCULATED COMMERCIAL CONTRIBUTION lbs/day	TOTAL DOMESTIC PLUS COMMERCIAL LOADING lbs/day
Arsenic, Total	NA	0.000796	0.118	0.118	0.000657	0.0726	0.0726	0.190
Benzene	NA	0.00200	0.257	0.257	0.00200	0.221	0.221	0.478
Biochemical Oxygen Demand	NA	185	31,620	31,620	115	12,683	12,683	44,303
Cadmium, Total	NA	0.000586	0.0643	0.0643	0.000686	0.0757	0.0757	0.140
Chromium, Total	NA	0.00270	0.331	0.331	0.00286	0.315	0.315	0.646
Copper, Total	NA	0.0606	6.67	6.67	0.0707	7.81	7.81	14.5
Cyanide, Total	NA	0.00354	0.625	0.625	0.00200	0.221	0.221	0.846
Ethylbenzene	NA	0.00500	0.643	0.643	0.00500	0.552	0.552	1.20
Lead, Total	NA	0.00175	0.121	0.121	0.00269	0.297	0.297	0.418
Mercury, Total	NA	0.00277	0.026	0.0257	0.00576	0.636	0.636	0.661
Molybdenum, Total	NA	0.00465	0.331	0.331	0.00707	0.781	0.781	1.11
Nickel, Total	NA	0.00431	0.445	0.445	0.00530	0.585	0.585	1.03
Phenol	NA	0.0304	0.257	0.257	0.0635	7.01	7.01	7.27
Selenium, Total	NA	0.000722	0.0827	0.0827	0.000814	0.0899	0.0899	0.173
Toluene	NA	0.00500	0.643	0.643	0.00500	0.552	0.552	1.20
Total Suspended Solids	NA	120	19,799	19,799	81.6	9,007	9,007	28,807
Zinc, Total	NA	0.0963	12.1	12.1	0.0986	10.9	10.9	23.0

TABLE 35: POLLUTANT LOADING AND RECEIVING WATER												
A	B	C	D	E	F	G	H	I	J	K	L	M
	TOTAL CURRENT SIU LOADING TO POTW lbs/day		DOMESTIC CONTRIB. TO POTW mg/L	USER ENTERED DOMESTIC LOADING TO POTW lbs/day		FINAL CALC'D DOMESTIC CONTRIB. lbs/day		COMM. USER DISCHARGE TO POTW mg/L	USER ENTERED COMM. LOADING TO POTW lbs/day		CALC'D COMM. CONTRIB. lbs/day	TOTAL DOMESTIC PLUS COMM. LOADING lbs/day
Arsenic, Total	NA		0.000796	0.118		0.118		0.000657	0.0726		0.0726	0.190
Benzene	NA		0.00200	0.257		0.257		0.00200	0.221		0.221	0.478
Biochemical Oxygen Demand	NA		185	31,620		31,620		115	12,683		12,683	44,303
Cadmium, Total	NA		0.000586	0.0643		0.0643		0.000686	0.0757		0.0757	0.140
Chromium, Total	NA		0.00270	0.331		0.331		0.00286	0.315		0.315	0.646
Copper, Total	NA		0.0606	6.67		6.67		0.0707	7.81		7.81	14.5
Cyanide, Total	NA		0.00354	0.625		0.625		0.00200	0.221		0.221	0.846
Ethylbenzene	NA		0.00500	0.643		0.643		0.00500	0.552		0.552	1.20
Lead, Total	NA		0.00175	0.121		0.121		0.00269	0.297		0.297	0.418
Mercury, Total	NA		0.00277	0.026		0.0257		0.00576	0.636		0.636	0.661
Molybdenum, Total	NA		0.00465	0.331		0.331		0.00707	0.781		0.781	1.11
Nickel, Total	NA		0.00431	0.445		0.445		0.00530	0.585		0.585	1.03
Phenol	NA		0.0304	0.257		0.257		0.0635	7.01		7.01	7.27
Selenium, Total	NA		0.000722	0.0827		0.0827		0.000814	0.0899		0.0899	0.173
Toluene	NA		0.00500	0.643		0.643		0.00500	0.552		0.552	1.20
Total Suspended Solids (TSS)	NA		120	19,799		19,799		81.6	9,007		9,007	28,807
Zinc, Total	NA		0.0963	12.1		12.1		0.0986	10.9		10.9	23.0

Table 36 (R8 Table 6): Biosolids

Column A, Pollutant: A listing of the pollutants.
Column B, POTW Biosolids to Disposal: User entered data. This is entered as mg/kg, dry weight.
Column C, Table 1: If you entered 1 in Table 1 for biosolids, numbers will show up here.
Column D, Table 3: If you entered 3 in Table 1 for biosolids, numbers will show up here.
Column E, Table 2: If you entered Y in Table 1 for using Table 2 biosolids, numbers will show up here, otherwise N/A.
Column F, Table 2, Calculated Biosolids Criteria: If you entered information in Table 1 for using Biosolids Table 2, the calculated numbers will show here, otherwise N/A.
Column G, Default Biosolids Criteria: There are times when the POTW may want to use existing sludge quality (more protective) than one of the tables. That number may be entered here. Document this in the submittal.
Column H, Final Sludge Criteria: Automatically lists the final Criteria to be used for biosolids calculations.

Notes on Sludge Quality

Applicable sludge criteria will vary depending on facilities sludge disposal practices. However, Region 8 encourages all facilities to use the values in Table 3 (the Clean Sludge Numbers) of 40 CFR Part 503.13 for the development of local limits. These criteria most meet the Objectives of the Pretreatment Regulations at 40 CFR Section 403.2. One of the objectives of the Pretreatment Regulations is to improve opportunities to recycle and reclaim municipal sludges. The use of Table 3 values will promote this objective. If other sludge criteria are chosen for the basis of local limits, it is important to evaluate the basis of the limit to determine how the resulting local limit will be applied to industries.

TABLE 36: BIOSOLIDS							
A	B	C	D	E	F	G	H
TABLE 6: BIOSOLIDS	POTW BIOSOLIDS TO DISPOSAL MG/KG DRY WT.	TABLE 1 MAXIMUM LAND APP SLUDGE CRITERIA	TABLE 3 "CLEAN" LAND APP SLUDGE CRITERIA	TABLE 2 (CAR) CUMULATIVE APPLICATION RATE	TABLE 2 CALC. SLUDGE DISPOSAL CRITERIA	ENTER DEFAULT BIOSOLIDS DISPOSAL CRITERIA	FINAL SLUDGE CRITERIA
POLLUTANT	mg/kg	mg/kg	mg/kg	lbs/acre	mg/kg	mg/kg	mg/kg
Arsenic, Total	31.0	75	NA	NA	NA	NA	75
Benzene	NA	NA	NA	NA	NA	NA	NA
Biochemical Oxygen Demand	NA	NA	NA	NA	NA	NA	NA
Cadmium, Total	11.9	85	NA	NA	NA	NA	85
Chromium, Total	202	NA	NA	NA	NA	NA	NA
Copper, Total	894	4300	NA	NA	NA	NA	4300
Cyanide, Total	NA	NA	NA	NA	NA	NA	NA
Ethylbenzene	NA	NA	NA	NA	NA	NA	NA
Lead, Total	54.2	840	NA	NA	NA	NA	840
Mercury, Total	1.80	57	NA	NA	NA	NA	57
Molybdenum, Total	45.3	75	NA	NA	NA	NA	75
Nickel, Total	49.5	420	NA	NA	NA	NA	420
Phenol	0.5	NA	NA	NA	NA	NA	NA
Selenium, Total	9.1	100	NA	NA	NA	NA	100
Toluene	NA	NA	NA	NA	NA	NA	NA
Total Suspended Solids (TSS)	NA	NA	NA	NA	NA	NA	NA
Zinc, Total	1160	7500	NA	NA	NA	NA	7500

Table 37 (R8 Table 7): Removal Efficiency

Column A, Pollutant: A listing of the pollutants
Column B, Influent – Effluent Method for Removal Efficiency: This is automatically calculated from the influent and effluent data entered in Table 4.
Column C, ADRE Method, Removal Efficiency: User entered data.
Column D, MRE Method Removal Efficiency: User Entered Data.
Column E, Decile Method: User entered data.
Column F, Literature Removal Efficiency: User Entered Data.
Column G, Source of Default Data: A descriptive word for where the default data was obtained and must be further documented in the local limits submittal.
Column H, Enter Removal Efficiency to be Used (INFEFF, ADRE, MRE, Decile, or Lit): Removal Efficiency based upon the influent and effluent data that is entered.
Column I, User Entered Sludge Removal Efficiency: Calculated from the data. Usually this number is not real good due to a lack of data.
Column J, Use Sludge Removal Efficiency? If the POTW is going to use the sludge removal efficiency, Y must be entered for each pollutant where this will be used. Further documentation will be required in the local limits submittal.
Column K, Final POTW Removal: This is the calculated removal efficiency that will be used throughout the calculations.

TABLE 37: REMOVAL EFFICIENCY CALCULATIONS

A	B	C	D	E	F	G	H	I	J	K
POLLUTANT	**INFEFF Influent/Effluent Method** Removal Efficiency %	**ADRE ADRE METHOD** REMOVAL EFFICIENCY %	**MRE MRE METHOD** REMOVAL EFFICIENCY %	**DECILE DECILE METHOD** MEAN REMOVAL EFFICIENCY %	**LIT LITERATURE** MEAN REMOVAL EFFICIENCY %	SOURCE OF LITERATURE REMOVAL EFFICIENCY DATA	ENTER THE NAME OF THE REMOVAL EFFICIENCY TO BE USED: **INFEFF, ADRE, MRE, DECILE**, OR **LIT**	USER ENTERED SLUDGE REMOVAL EFFICIENCY %	USE SLUDGE REMOVAL EFFICIENCY? Y/N	FINAL POTW REMOVAL %
Arsenic, Total	15.6	15.7	15.6	15.0	45	USEPA LL GUIDANCE	MRE	15.6	N	15.6
Benzene	93.8	93.6	93.8	94.1	80	USEPA LL GUIDANCE	MRE	93.8	N	93.8
Biochemical Oxygen Demand	96.6	96.5	96.6	98.6	NA	NA	MRE	96.6	N	96.6
Cadmium, Total	72.2	70.0	72.2	64.3	67	USEPA LL GUIDANCE	MRE	72.2	N	72.2
Chromium, Total	66.8	54.6	66.8	63.6	82	USEPA LL GUIDANCE	MRE	66.8	N	66.8
Copper, Total	82.9	83.5	82.9	83.6	86	USEPA LL GUIDANCE	MRE	82.9	N	82.9
Cyanide, Total	-169.4	-253.5	-169.4	-250.0	69	USEPA LL GUIDANCE	LIT	69.0	N	69.0
Ethylbenzene	50.0	50.0	50.0	NA	86	USEPA LL GUIDANCE	MRE	50.0	N	50.0
Lead, Total	90.9	90.5	90.9	89.1	NA	NA	MRE	90.9	N	90.9
Mercury, Total	50.0	50.0	50.0	NA	60	USEPA LL GUIDANCE	MRE	50.0	N	50.0
Molybdenum, Total	16.3	17.6	16.3	21.2	NA	NA	NA	12.8	Y	12.8
Nickel, Total	44.6	31.8	44.6	43.8	42	USEPA LL GUIDANCE	MRE	44.6	N	44.6
Phenol	99.1	230.2	99.1	NA	90	USEPA LL GUIDANCE	MRE	99.1	N	99.1
Selenium, Total	-16.6	-20.2	-16.6	0.0	50	USEPA LL GUIDANCE	LIT	50.0	N	50.0
Toluene	88.5	87.6	88.5	90.4	NA	NA	MRE	88.5	N	88.5
Total Suspended Solids	95.1	94.9	95.1	95.3	NA	NA	MRE	95.1	N	95.1
Zinc, Total	81.1	79.8	81.1	81.8	79	USEPA LL GUIDANCE	MRE	81.1	N	81.1

Table 38 (R8 Table 8): Daily MAHL Calculations

No data entry in this Table.
Column A, Pollutant: A listing of the pollutants
Column B, NPDES Loading: MAHL calculations.
Column C, Acute Water Quality Criteria Loading: MAHL calculations.
Column D, MCL (Drinking Water) Loading: MAHL calculations.
Column E, Other Criteria from Table 2, Column H: MAHL calculations
Column F, Most Stringent Criteria: Calculates which criterion is most stringent.
Column G, Name of MAHL for Daily Max Limits

Note: Where a criteria is not calculated or available, the program inserts a default value of 999999.

TABLE 38: DAILY MAHL CALCULATIONS						
A	B	C	D	E	F	G
POLLUTANT	Daily/7 day NPDES LOADING lbs/day	ACUTE LOADING lbs/day	LOADING FOR MCL lbs/day	OTHER CRITERIA FROM Daily Criteria & Standards COLUMN H lbs/day	MOST STRINGENT CRITERIA lbs/day	NAME OF MAHL FOR DAILY MAX LIMITS
Arsenic, Total	999999	999999	999999	25.9	25.9	Inhibition
Benzene	999999	999999	999999	25937	25,937	Inhibition
Biochemical Oxygen Demand	999999	999999	999999	135,442	135,442	Design
Cadmium, Total	999999	999999	999999	1297	1,297	Inhibition
Chromium, Total	999999	999999	999999	908	908	Inhibition
Copper, Total	999999	999999	999999	259	259	Inhibition
Cyanide, Total	999999	999999	999999	648	648	Inhibition
Ethylbenzene	999999	999999	999999	51875	51,875	Inhibition
Lead, Total	999999	999999	999999	648	648	Inhibition
Mercury, Total	999999	999999	999999	130	130	Inhibition
Molybdenum, Total	999999	999999	999999	999999	No Criteria	No Criteria
Nickel, Total	999999	999999	999999	389	389	Inhibition
Phenol	999999	999999	999999	12969	12,969	Inhibition
Selenium, Total	999999	999999	999999	999999	No Criteria	No Criteria
Toluene	999999	999999	999999	51875	51,875	Inhibition
Total Suspended Solids (TSS)	999999	999999	999999	98,078	98,078	Design
Zinc, Total	999999	999999	999999	648	648	Inhibition

Table 39 (R8 Table 9): Monthly MAHL Calculations

No data entry in this Table.
Column A, Pollutant: A listing of the pollutants
Column B, NPDES Loading: MAHL calculations.
Column C, Chronic Water Quality Criteria Loading: MAHL calculations.
Column D, Human Health Loading: MAHL calculations.
Column E, Other Criteria from Table 2, Column J: MAHL calculations
Column F, Sludge Loading Criteria for Monthly limit: Takes the final sludge criteria from Table 6 to get MAHL for monthly local limit.
Column G, Most Stringent Criteria: Calculates which criterion is most stringent.
Column H, Name of Most Stringent MAHL: This lists the name of the most stringent criteria.

Note: Where a criterion is not calculated or available, the program inserts a default value of 999999.

TABLE 39: MONTHLY MAHL CALCULATIONS							
A	B	C	D	E	F	G	H
POLLUTANT	Monthly NPDES LOADING lbs/day	CHRONIC Toxicity Loading lbs/day	LOADING FOR HUMAN HEALTH lbs/day	OTHER CRITIERIA FROM Mo Criteria & Stds Column K State Chronic Agriculture mg/L	TABLE 1, 2, 3 OR OTHER SLUDGE LOADING lbs/day	MOST STRINGENT CRITERIA lbs/day	NAME OF MAHL For Monthly Limits
Arsenic, Total	999999	999999	999999	999999	8.68	8.68	Biosolids
Benzene	999999	999999	999999	999999	999999	No Criteria	No Criteria
Biochemical Oxygen Demand	999999	999999	999999	999999	999999	No Criteria	No Criteria
Cadmium, Total	999999	999999	999999	999999	2.13	2.13	Biosolids
Chromium, Total	999999	999999	999999	999999	999999	No Criteria	No Criteria
Copper, Total	999999	999999	999999	999999	93.7	93.70	Biosolids
Cyanide, Total	999999	999999	999999	999999	999999	No Criteria	No Criteria
Ethylbenzene	999999	999999	999999	999999	999999	No Criteria	No Criteria
Lead, Total	999999	999999	999999	999999	16.7	16.70	Biosolids
Mercury, Total	999999	999999	999999	999999	2.06	2.06	Biosolids
Molybdenum, Total	999999	999999	999999	999999	10.6	10.56	Biosolids
Nickel, Total	999999	999999	999999	999999	17.0	17.03	Biosolids
Phenol	999999	999999	999999	999999	999999	No Criteria	No Criteria
Selenium, Total	999999	999999	999999	999999	3.61	3.61	Biosolids
Toluene	999999	999999	999999	999999	999999	No Criteria	No Criteria
Total Suspended Solids (TSS)	999999	999999	999999	999999	999999	No Criteria	No Criteria
Zinc, Total	999999	999999	999999	999999	167	167.20	Biosolids

Table 40 (R8 Table 10) Daily Local Limits (ADOPTING ONLY DAILY MAX LIMITS)

This Table is N/A if you are only adopting Daily Maximum Limits
Column A, Pollutant: A listing of the pollutants
Column B, Most Stringent MAHL for Daily Limits: Calculates the most stringent criteria from Tables 8 and 9.
Column C, Final MAHL for Daily Limits: Repeats previous column, but evaluates data type.
Column D, Name of Most Stringent Criteria: Carried down from Tables 8 or 9, depending on what criterion was the most stringent.
Column E, Safety/Expansion Factor: User entered data. Notes on Safety and Expansion Factors
Maximum allowable industrial loadings are calculated by applying a safety/growth factor to the maximum allowable headworks loading and subtracting the domestic/commercial contributions to the headworks. Region 8 requires a safety + growth factor of at least ten (10) percent. Further, where communities are still experiencing growth or are underdeveloped, it may be necessary to increase the growth component. The safety/growth factors provided above are minimum values. These values may be increased at the POTWs option should the POTW desire to reserve future pollutant loadings for new industrial users and/or growth.
Column F, MAHL after Safety/Expansion Factor: The MAHL after subtracting out the Safety/Expansion Factor.
Column G: This column specifies whether you are adopting a MACL AND MAIL for each pollutant. If you are developing a MACL and MAIL for each pollutant, enter a “Y”, otherwise enter an “N”.
Column H, MAHL minus Domestic or Domestic Comm Loading: This is the MAHL after the domestic loading from Table 3, Column F.
Column I, Maximum Allowable Loading (MAL) for all Non-Domestic Users: This is the Allowable loading for all non-domestic users (SIUs, Commercial, Industrial, and Hauled Waste).
Column J, Mass for Trucked Waste: If you are regulating trucked and hauled waste separately from SIUs and Commercial Users and want to reserve pollutant loading, enter that loading here.
Column K, Max Allowable Loading (MAL) for Commercial and SIUs (minus Hauled Waste): If you entered in a mass for trucked and hauled waste, this is the resulting amount left over.
Column L, Pollutant: A listing of the pollutants
Column M, Percentage of SIU Loading: This allows the user to enter a percentage that will be used to calculate how much of the MAL to give to the SIUs.
Column N, % of MAL for Commercial: Based on your data entry in Column M, this is the % of the MAL to allocate for the commercial (non-SIU) dischargers.
Column O, MAIL - Allocation for Commercial Users

Column P, MAIL - Allocation for SIUs
Column Q, Parameter Specific Flow: For metals the flow is the current industrial user flow, for the conventional pollutants the flow is the total flow for users with discharges greater than 3 times the domestic average.
Column R, Calculated Uniform Limits: This is the uniform concentration limits for SIUs.

TABLE 40: DAILY LOCAL LIMITS

A	B	C	D	E	F	G	H	I	J	K
POLLUTANT	Most Stringent MAHL	FINAL MAHL FOR Daily LOCAL LIMITS	Name FOR MAHL	SAFETY/ EXPANSION FACTOR % FOR DAILY MAX LIMITS	MAHL WITH SAFETY - EXPANSION FACTOR LBS/DAY	ENTER "Y" FOR for a SIU and a Commercial Limit ENTER A "N" FOR SIU Limit Only	MAHL minus DOM + COM LOADING lbs/day	Maximum Allowable Load MAL lbs/day	MASS RESERVED FOR HAULED WASTE lbs/day	MAL MINUS THE HAULED WASTE lbs/day
Arsenic, Total	8.68	8.68	Biosolids	10	7.81	N	7.62	7.62	0	7.62
Benzene	25937.40	25937.40	Inhibition	10	23344	N	23343	23343	0	23343
Biochemical Oxygen Demand	135441.60	135441.60	Design	10	121897	N	77595	77595	0	77595
Cadmium, Total	2.13	2.13	Biosolids	10	1.91	N	1.77	1.77	0	1.77
Chromium, Total	907.81	907.81	Inhibition	10	817	N	816	816	0	816
Copper, Total	93.70	93.70	Biosolids	10	84.3	N	69.9	69.9	0	69.9
Cyanide, Total	648.44	648.44	Inhibition	10	584	N	583	583	0	583
Ethylbenzene	51874.80	51874.80	Inhibition	10	46687	N	46686	46686	0	46686
Lead, Total	16.70	16.70	Biosolids	10	15.0	N	14.6	14.6	0	14.6
Mercury, Total	2.06	2.06	Biosolids	10	1.85	N	1.19	1.19	0	1.19
Molybdenum, Total	10.56	10.56	Biosolids	10	9.51	N	8.39	8.39	0	8.39
Nickel, Total	17.03	17.03	Biosolids	10	15.3	N	14.3	14.3	0	14.3
Phenol	12968.70	12968.70	Inhibition	10	11672	N	11665	11665	0	11665
Selenium, Total	3.61	3.61	Biosolids	10	3.25	N	3.08	3.08	0	3.08
Toluene	51874.80	51874.80	Inhibition	10	46687	N	46686	46686	0	46686
Total Suspended Solids (TSS)	98078.40	98078.40	Design	10	88271	N	59464	59464	0	59464
Zinc, Total	167.20	167.20	Biosolids	10	150	N	127	127	0	127

TABLE 40: DAILY LOCAL LIMITS						
L	**M**	**N**	**O**	**P**	**Q**	**R**
POLLUTANT	SIU and Commercial limits Enter % of MAL to allocate to SIUs Enter 100% if no Commercial Limit %	% of MAL that will be allocated to Commercial Users %	Calculated ALLOCATION FOR COMMERCIAL lbs/day	Calculated ALLOCATION FOR SIUs lbs/day	Parameter Specific Flow MGD	CALCULATED UNIFORM LOCAL LIMITS FOR SIUs mg/L
Arsenic, Total	100	n/a	N/A	7.62	2.43	0.38
Benzene	100	n/a	N/A	23343	2.43	1151.83
Biochemical Oxygen Demand	100	n/a	N/A	77595	0.828	11236.62
Cadmium, Total	100	n/a	N/A	1.77	2.43	0.09
Chromium, Total	100	n/a	N/A	816	2.43	40.28
Copper, Total	100	n/a	N/A	69.9	2.43	3.45
Cyanide, Total	100	n/a	N/A	583	2.43	28.75
Ethylbenzene	100	n/a	N/A	46686	2.43	2303.64
Lead, Total	100	n/a	N/A	14.6	2.43	0.72
Mercury, Total	100	n/a	N/A	1.19	2.43	0.06
Molybdenum, Total	100	n/a	N/A	8.39	2.43	0.41
Nickel, Total	100	n/a	N/A	14.3	2.43	0.71
Phenol	100	n/a	N/A	11665	2.43	575.57
Selenium, Total	100	n/a	N/A	3.08	2.43	0.15
Toluene	100	n/a	N/A	46686	2.43	2303.64
Total Suspended Solids (TSS)	100	n/a	N/A	59464	0.947	7529.02
Zinc, Total	100	n/a	N/A	127	2.43	6.29

7.6 DWQ Pretreatment Program Spreadsheet

The DWQ Pretreatment Program developed a spreadsheet, similar to the USEPA Region 8, to calculate Local Limits. A copy of the spreadsheet with notes was obtained from the staff at the Central Valley WRF Pretreatment Program. An inhibition limit was added to the spreadsheet.

The DWQ spreadsheet does mention limits from the Statement of Basis in the Waste-Load Analysis for the WRF. The WRF discharges to a Class 3E Surface Water with narrative standards in place of numerical limits. A Waste-Load Analysis is not included in the UPDES permit documentation for the WRF. Inhibition limits were added in the spreadsheet to allow for the protection of the WRF processes.

The following tables are from the DWQ Spreadsheet with the Local Limits using this methodology listed on Table 42.

Table 41: WORKSHEET FOR CALCULATION OF MAHL

Present Flow	30.8	MGD
Sludge Flow (dry)	18,074	lbs/day

Pollutant	Removal Efficiency %	MAHL Water Quality lbs/day	INHIBITION USEPA Guidance Appendix G mg/L	MAHL Inhibition lbs/day	Chapter 503 Table 1 Concentration PPM	Biosolids Allowable MAHL lbs/day	Governing MAHL lbs/day	Type of Limit
Arsenic, Total	15.6	NA	0.1	25.94	75	8.68	8.68	Biosolids
Benzene	93.8	NA	100	25,937	NA	NA	25,937	Inhibition
Biochemical Oxygen Demand	96.6	135,442	NA	NA	NA	NA	135,442	Design
Cadmium, Total	72.2	NA	5	1297	85	2.13	2.13	Biosolids
Chromium, Total	66.8	NA	3.50	908	NA	NA	908	Inhibition
Copper, Total	82.9	NA	1	259.4	4300	93.70	93.7	Biosolids
Cyanide, Total	69.0	NA	2.5	648.4	NA	NA	648	Inhibition
Ethylbenzene	50.0	NA	200	51,875	NA	NA	51,875	Inhibition
Lead, Total	90.9	NA	2.5	648.4	840	16.70	16.7	Biosolids
Mercury, Total	50.0	NA	0.5	129.7	57	2.06	2.06	Biosolids
Molybdenum, Total	12.8	NA	NA	NA	75	10.56	10.56	Biosolids
Nickel, Total	44.6	NA	1.5	389.1	420	17.03	17.0	Biosolids
Phenol	99.1	NA	50	12,969	NA	NA	12,969	Inhibition
Selenium, Total	50.0	NA	NA	NA	100	3.61	3.61	Biosolids
Toluene	88.5	NA	200	51,875	NA	NA	51,875	Inhibition
Total Suspended Solids (TSS)	95.1	98,078	NA	NA	NA	NA	98,078	Design
Zinc, Total	81.1	NA	2.5	648.4	7500	167.19	167	Biosolids

Note 1: No Waste Load Analysis is required at the WRF so no effluent criteria are listed.

Note 2: The current average biosolids flow has been used in determining the biosolids allowable MAHL.

* Used literature value for removal efficiency

Table 42: ALLOCATION OF MAXIMUM ALLOWABLE INDUSTRIAL LOAD (MAIL)							
PRESENT FLOW	30.8	MGD					
INDUSTRIAL FLOW	2.14	MGD					
SAFETY FACTOR	5	%					
GROWTH FACTOR	5	%					
MAHL	MAHL lbs/day	DOMESTIC LOAD mg/L	NET ALLOCATABLE lbs/day	NON-INDUSTRIAL MASS LOAD lbs/day	MAIL lbs/day	LOCAL LIMIT CONCENTRATION LIMIT mg/L	Parameter Specific Ind. Flow
Arsenic, Total	8.68	6221	7.81	0.190	7.62	0.38	2.43
Benzene	25937	0.190	23344	0.478	23343	1152	2.43
Biochemical Oxygen Demand	135442	0.478	121898	44303	77595	11237	0.828
Cadmium, Total	2.13	44303	1.91	0.140	1.77	0.088	2.43
Chromium, Total	908	4.06	817	0.646	816	40.3	2.43
Copper, Total	93.7	0.140	84.3	14.5	69.9	3.4	2.43
Cyanide, Total	648	90897	584	0.846	583	29	2.43
Ethylbenzene	51875	36613	46687	1.20	46686	2304	2.43
Lead, Total	16.7	0.646	15.0	0.418	14.6	0.72	2.43
Mercury, Total	2.06	14.5	1.85	0.661	1.19	0.059	2.43
Molybdenum, Total	10.6	0.846	9.51	1.11	8.39	0.41	2.43
Nickel, Total	17.0	1.20	15.3	1.03	14.3	0.71	2.43
Phenol	12969	1230	11672	7.27	11665	576	2.43
Selenium, Total	3.61	7183	3.25	0.173	3.08	0.15	2.43
Toluene	51875	0.418	46687	1.20	46686	2304	2.43
Total Suspended Solids (TSS)	98078	0.661	88270	28807	59464	7529	0.947
Zinc, Total	167	1.11	150	23.0	127	6.29	2.43

7.7 Comparison of Calculated Uniform Local Limits

Table 43 compares the Local Limits developed by the USEPA Local Limits Guidelines, USEPA Region 8 Local Limits Strategy, and the DWQ methodologies detailed above and lists the existing local limit for the WRF. The limit selected as the most appropriate is **bolded**.

Table 43: Comparison of Local Limits								
	Pollutant	USEPA LL Guidance Calculated (mg/L)	Basis	USEPA Region 8 Calculated (mg/L)	Basis	DWQ Calculated (mg/L)	Basis	Existing WRF Limit (mg/L)
1	Arsenic, Total	0.38	Biosolids	0.38	Biosolids	0.38	Biosolids	**0.2**
2	Benzene	**1,152**	Inhibition	1,152	Inhibition	1,152	Inhibition	No Limit
3	Biochemical Oxygen Demand	**11,163**	Design	11,163	Design	11,163	Design	10,000
4	Cadmium, Total	**0.088**	Biosolids	0.088	Biosolids	0.088	Biosolids	0.7
5	Chromium, Total	**40**	Inhibition	40	Inhibition	40	Toxicity	**5.0**
6	Copper, Total	**3.4**	Biosolids	3.4	Biosolids	3.4	Biosolids	13.6
7	Cyanide, Total	**29**	Inhibition	29	Inhibition	29	Inhibition	No Limit
8	Ethylbenzene	**2,304**	Inhibition	2,304	Inhibition	2,304	Inhibition	No Limit
9	Lead, Total	**0.72**	Biosolids	0.72	Biosolids	0.72	Biosolids	2.9
10	Mercury, Total	**0.059**	Biosolids	0.059	Biosolids	0.059	Biosolids	0.2
11	Molybdenum, Total	**0.41**	Biosolids	0.41	Biosolids	0.41	Biosolids	16.1 Pounds
12	Nickel, Total	**0.71**	Biosolids	0.71	Biosolids	0.71	Biosolids	1.9
13	Phenol	**576**	Inhibition	576	Inhibition	576	Inhibition	No Limit
14	Selenium, Total	0.15	Biosolids	0.15	Biosolids	0.15	Toxicity	**1.0**
15	Toluene	**2,304**	Biosolids	2304	Inhibition	2304	Inhibition	No Limit
16	Total Suspended Solids (TSS)	**7,241**	Design	7,241	Design	7,241	Design	3,000
17	Zinc, Total	**6.3**	Biosolids	6.3	Biosolids	6.3	Biosolids	39.9
18	HEM (Polar) Animal Vegetable	NA	NA	NA	NA	NA	NA	**500**
19	HEM-SGT (Non-Polar) Petroleum	NA	NA	NA	NA	NA	NA	**100**
20	Chemical Oxygen Demand	NA	NA	NA	NA	NA	NA	20,000
Bolded values are selected as most appropriate local limit								

7.8 Selection and Removal of Calculated and Existing Limits

Table 44 lists the selected Local Limit and comments on the source of the calculated limit. Local Limits that are to be removed from the final list of Local Limits are also noted and the reason for removal is provided.

All results calculated with the three different methods were within normal tolerances of rounding and truncation in data entry.

The calculated limits for the components of BTEX (Benzene, Ethylbenzene, Toluene, and Xylene) and Phenol were all very high and no limit is proposed for those parameters.

The calculated limit for Cyanide was well above the Categorical Limit and no limit is proposed for Cyanide.

The limit for Chromium was reduced from the calculated high limit of 40 mg/L to 5 mg/L, which is based on the toxicity limit (40 CFR 261.24). This limit is identical to the existing limit and results in no potential violations.

The limit for Selenium was reduced from the calculated limit of 1.5 mg/L to 1.0 mg/L, which is based on the toxicity limit (40 CFR 261.24). This limit is identical to the existing limit and results in no potential violations.

There is no design criteria or other basis for a Chemical Oxygen Demand so that limit is recommended for removal.

Table 44: Selection and Removal of Calculated Limits					
	Pollutant	Uniform Concentration Limit (mg/L)	Allowable Industrial Load (lbs)	Basis	Existing WRF Limit (mg/L)
1	Arsenic, Total	0.38	7.62	Biosolids	0.2
~~2~~	~~Benzene~~	~~1152~~	~~23343~~	Extremely High Limit - Remove From List	No Limit
3	Biochemical Oxygen Demand	11,163	77,595	Design	10000
4	Cadmium, Total	0.088	1.77	Biosolids	0.7
5	Chromium, Total	5.0	816	Inhibition	5.0
6	Copper, Total	3.4	69.8	Biosolids	13.6
7	~~Cyanide, Total~~	~~29~~	~~583~~	Extremely High Limit - Remove From List	No Limit
~~8~~	~~Ethylbenzene~~	~~2304~~	~~46686~~	Extremely High Limit - Remove From List	No Limit
9	Lead, Total	0.72	14.6	Biosolids	2.9
10	Mercury, Total	0.059	1.19	Biosolids	0.2
11	Molybdenum, Total	0.41	8.40	Biosolids	16.1 Pounds
12	Nickel, Total	0.71	14.3	Biosolids	1.9
13	~~Phenol~~	~~576~~	~~11,665~~	Extremely High Limit - Remove From List	No Limit
14	Selenium, Total	0.15	3.08	Biosolids	1.0
15	~~Toluene~~	~~2304~~	~~46,686~~	Extremely High Limit - Remove From List	No Limit
16	Total Suspended Solids (TSS)	7,241	59,464	Design	3000
17	Zinc, Total	6.3	127	Biosolids	39.9
18	HEM (Polar) Animal Vegetable	NA	NA	Retain Existing Limit to Protect Collection System	500
19	HEM-SGT (Non-Polar) Petroleum	NA	NA	Retain Existing Limit to Prevent Inhibition	100
~~20~~	~~Chemical Oxygen Demand~~	~~NA~~	~~NA~~	No Basis for Limit	20000
Bolded values are selected as most appropriate local limit					

8.0 RECOMMENDED TECHNICALLY BASED LOCAL LIMITS

The following sections provide a discussion relative to the recommended Technically Based Local Limits.

8.1 Uniform Concentration Local Limits

Uniform Concentration Local Limit Allocation distributes the AIL to all the Industrial Users at a uniform concentration. This allocation method is very conservative. Table 45 lists the Uniform Concentration Based Local Limits.

Table 45: Uniform Concentration Local Limits

	Pollutant	Uniform Concentration Limit (mg/L)	Allowable Industrial Load (lbs)
1	Arsenic, Total	0.38	7.62
2	Biochemical Oxygen Demand	11,163	77,595
3	Cadmium, Total	0.088	1.77
4	Chromium, Total	5	816
5	Copper, Total	3.4	69.8
6	HEM (Polar) Animal Vegetable	500	NA
7	HEM-SGT (Non-Polar) Petroleum	100	NA
8	Lead, Total	0.72	14.6
9	Mercury, Total	0.059	1.19
10	Molybdenum, Total	0.41	8.40
11	Nickel, Total	0.71	14.3
12	Selenium, Total	0.15	3.08
13	Total Suspended Solids (TSS)	7,241	59,464
14	Zinc, Total	6.3	127

8.1.1 IUs Impacted by Calculated Uniform Concentration Metals Limits

Many of the calculated uniform concentration Local Limits are significantly lower than the existing Local Limits. A review of the past self-monitoring and Control Authority monitoring of the permitted Industrial Users identified several metal parameters that would result in violations of the Uniform Concentration Based Local Limits listed in Table 45. Table 46 below summarizes the number of IUs subject to potential violations at the proposed uniform concentration limit based on a review of IU monitoring results from 2008 through 2015.

Table 46: Potential Violations of Uniform Concentration Limits					
	Pollutant	Proposed AIL (lbs/day)	Proposed Uniform Concentration Limit mg/L	Potentially Impacted IUs	Existing Limit mg/L
1	Arsenic, Total	7.62	0.38	0	0.2
2	Cadmium, Total	1.77	0.088	4	0.7
3	Chromium, Total	816	5	0	5
4	Copper, Total	69.8	3.4	6	13.6
5	Lead, Total	14.6	0.72	1	2.9
6	Mercury, Total	1.19	0.059	0	0.2
7	Molybdenum, Total	8.4	0.41	2	N/A
8	Nickel, Total	14.3	0.71	10	1.9
9	Selenium, Total	3.08	0.15	1	1
10	Zinc, Total	127	6.3	2	39.9
			Total	26	

8.1.2 Impact of Recommended BOD_5 and TSS Limits

The recommended limits for BOD_5 and TSS are both higher than the existing limits of 10,000 mg/L and 3,000 mg/L, respectively. That means there is no negative impact on the IUs. The limits were calculated using parameter specific flows that removed the flows for all users that had maximum discharge concentrations that were less than three (3) times the domestic and commercial user average. Table 47 lists the max loading for IU BOD_5 and TSS.

Table 47: BOD_5 and TSS Flows and % AIL					
	Parameter	BOD_5		TSS	
Permittee	Daily Ave (process) GPD	Max Conc. mg/L	Max Load lbs/day	Max Conc. mg/L	Max Load lbs/day
All Weather Products, LLC	1,000				
ALSCO	82,000	2,620	1,792	423	289
Ameritech Coatings, Inc.	100				
Anodizing & Metal Coatings, Inc.	12,000				
Arms Technology, Inc.	75				
Beck's Sanitation	30,000	7,625	1,908	282	71
Beehive Clothing	19,000	1,272	202	155	25
Blanchard Metals Processing	125,000				
Blue Beacon Truck Wash of Salt Lake	15,000	149	19	930	116
Boise Packaging and Newsprint, LLC	37,500	701	219	784	245
Brenntag Pacific, Inc.	5,500	6,380	293	385	18
Cintas Corporation #180	76,500	1,159	739	1,105	705

Table 47: BOD_5 and TSS Flows and % AIL					
	Parameter	BOD_5		TSS	
Permittee	Daily Ave (process) GPD	Max Conc. mg/L	Max Load lbs/day	Max Conc. mg/L	Max Load lbs/day
Circuit Graphics, Inc.	4,500				
Cookietree, Inc.	10,000	4,290	358	550	46
CP Industries	225	14,400	27	447	1
Crown Plating Company, Inc.	2,200				
Dairy Farmers of America	22,000	4,773	876	4,985	915
Deseret Dairy	65,000	3,120	1,691	1,080	585
Easton Technical Products, Inc.	20,000				
EDO Corporation-Exelis, Inc.	240				
Epic Brewing	5,000	13,000	542	2,710	113
Farmland Foods	18,000	6,820	1,024	1,320	198
G & K Services, Inc.	95,000	515	408	160	127
Horizon Snack Foods	10,000	18,300	1,526	3,625	302
L3-Communications, CS-W	8,000				
LSG/Sky Chefs	2,500	4,120	86	710	15
Meadow Gold	135,000	3,075	3,462	745	839
Nestle Dryer's Ice Cream	20,000	8,550	1,426	1,140	190
Northrop Grumman Systems Corp.	1,450				
Nelson Refining System	1,500				
O.C. Tanner Manufacturing Company (Production)	3,700				
O.C. Tanner Manufacturing Company (Refinery)	700				
Packaging Corporation of America	9,000	1,365	102	1,920	144
Pilkington Metal Finishing	30,000				
Power Engineering Company	100	7,200	6	422	0.4
Pro-Elite Strength Systems	2,000				
Qualawash Holdings, LLC	12,000	5,300	530	580	58
Quality Plating Company, Inc.	16,200				
Quick Turn Circuits	450				
Reckitt Benckiser	10,700	5,500	491	3,380	302
Red Rock Brewing	3,000	13,500	338	1,910	48
Renegade Oil, Inc.	43,300	10,600	3,828	144	52
Reser's Fine Foods	46,200	1,840	709	1,010	389
Rocky Mountain Machine Shop	7,000	232	14	380	22
Salt Lake Chrome Plating & Collision Products	900				
Salt Lake Truck Wash	6,000	825	41	998	50
Schovaers Electronics	850				
SRI Surgical	12,700	132	14	15	2
Sump & Trap Cleaning, LLC	2,050	3,710	63	33	1

Table 47: BOD_5 and TSS Flows and % AIL					
	Parameter	BOD_5		TSS	
Permittee	Daily Ave (process) GPD	Max Conc. mg/L	Max Load lbs/day	Max Conc. mg/L	Max Load lbs/day
Sun Products Corporation	15,000	10,600	1,326	1,360	170
Sweet Candy Company	25,000	5,995	1,250	698	146
Synchronicity Mastering Services	750				
Tesoro Refining & Marketing Company, LLC	1,000,000	185	1,543	33	275
Textile Care Services	60,000	508	254	114	57
Thatcher Company	72,350	1,440	869	1,370	827
The Boeing Company (SLC-0002)	4,500				
The Boeing Company (SLC-0061)	2,000				
Tosca, Ltd.	18,000	8	1	46	7
Uinta Brewing	26,500	17,800	3,934	2,260	499
UniFirst	85,000	1,776	1,259	798	566
Univar USA, Inc.	2,000	568	9	910	15
Univar USA, Inc. (groundwater)	100				
Utah Brewers Cooperative	1,200	14,700	147	1,300	13
Utah Quality Services	13,500	510	57	240	27
Utah Transit Authority	16,400	4,867	666	606	83
Varian Medical Systems X-Ray Products	15,350				
Varian Medical Systems X-Ray Products (groundwater)	9,000				
Water & Power Technologies, Inc.	13,000				
Welfare Square	1,000	11,900	99	550	5
TOTAL	**2,413,590**	N/A	**28,244**	N/A	**12,104**
AVERAGE	**34,480**	**4,029**	**657**	**1,016**	**281**
Allowable Industrial Loading (AIL) (lbs/day)	N/A	N/A	77,595	N/A	59,464
Count of Users	70	43	43	43	43

BOD_5 SUMMARY		
Flow of IUs with BOD_5 in Permit	2,136,225	Gallons
Flow if > 555 mg/L (3 X Domestic Average Concentration)	915,025	Gallons
Allowance Loading [Total IU Flow (MG) x 8.34 x 555 (mg/L)]	11,163	Pounds
Maximum Load for all IUs with BOD_5 in Permit	34,149	Pounds
Allowance + Maximum Load	45,313	Pounds
AIL	77,595	Pounds
% AIL [(Allowance + Maximum Load) / AIL]	58	%
Remaining AIL	32,282	Pounds

Table 47: BOD_5 and TSS Flows and % AIL		
TSS SUMMARY		
Flow of IUs with TSS in Permit	2,136,225	Gallons
Flow if > 360 mg/L (3 X Domestic Average Concentration)	842,675	Gallons
Allowance Loading [Total IU Flow (MG) x 8.34 x 360 (mg/L)]	7,241	Pounds
Maximum Load for all IUs with BOD_5 in Permit	8,556	Pounds
Allowance + Maximum Load	15,797	Pounds
AIL	59,464	Pounds
% AIL [(Allowance + Maximum Load) / AIL]	27	%
Remaining AIL	43,667	Pounds

Table 47 demonstrates that the allowance of 3 times the domestic and commercial average BOD_5 and TSS results in only 58% of the BOD_5 AIL and 27% of the TSS AIL used. This is a conservative allotment that allows the City to control BOD_5 and TSS for existing and any new IUs without undue burden. This City will continue to monitor the loadings to the treatment facility to be sure that the design loading is not exceeded. Current loadings average 36.1% for BOD_5 and 43.2% for TSS. The recommended limits for BOD_5 and TSS will be rounded to 11,000 mg/L and 7,200 mg/L, respectively.

8.2 Uniform Contributory Flow Allocation for Metals Parameters

The City reserves the right to use alternative allocation methods. Several methods of allocating the AIL to Industrial Users are available. The most protective of the WRF is the Uniform Concentration Method as described in the proceeding section. Uniform concentration limits applied to all IUs is overly burdensome to those IUs that discharge pollutants. The AIL is divided among all discharges regardless of the characteristics of each IUs discharge. The burden is further exasperated by the WRFs consistent compliance with all discharge limits.

The City may use alternative allocation methods as long as the AIL is not exceeded. The Contributory Flow Local Limit Allocation method distributes the AIL to those users that discharge the particular pollutant of concern. This method uses the flow from the Industrial Users that discharge a particular pollutant, applies a growth and safety factor, and then divides the AIL by that flow. The resultant limit is a concentration limit that would only be included in the individual permits for those IUs discharging that pollutant. IUs that do not exhibit the potential to discharge a particular pollutant will not have that pollutant limit in their discharge permit.

8.2.1 IU Contributory Flows

To calculate uniform contributory flow allocation local limits, the IUs that discharge, or can reasonably be expected to discharge, each pollutant of concern must be identified. The

sampling results of each metal were reviewed to identify the IU and flow for calculating the uniform contributory flow local limits. IUs that have pollutant sampling results above the reporting limit are included in the contributory allocation. IUs that are suspected of having a particular pollutant present in their wastestream are also included in the contributory allocation. All suspected IUs were further evaluated against their background information, approved pollutant waivers, process chemical inventory, etc. Suspected IUs were only removed from the contributory allocation based on sound justification that a particular pollutant is not present in their wastestream. If conditions change and the omitted IUs are identified as contributors, the local limits will be reevaluated. Updates to the local limits will be provided to the State. The following IUs were removed from contributory allocations:

- All Weather Products, LLC is omitted as a potential contributor of Cd, Hg, Pb, and Se. Justification is based on results lower than the analytical reporting limits, and the processes employed at the facility. All Weather Products, LLC's process involves conversion coating of stainless steel doors; Cd, Hg, Pb, and Se are not expected to be present in stainless steel. In addition, Cd, Hg, Pb, and Se are not contained in All Weather Products, LLC's process chemicals.

- Ameritech Coatings, Inc. is omitted as a potential contributor of Cd and Hg. Justification is based on results lower than the analytical reporting limits; Ameritech Coatings, Inc. does not perform Cd plating; and Cd and Hg are not present in the metal parts that Ameritech Coatings, Inc. plates.

- Anodizing & Metal Coatings, Inc. is omitted as a potential contributor of Cd, and Pb. Justification is based on results lower than the analytical reporting limits; Anodizing & Metal Coatings, Inc. does not perform Cd plating; and Cd and Pb are not present in the metal parts that Anodizing & Metal Coatings, Inc. plates.

- Arms Technology, Inc. is omitted as a potential contributor of As, Hg, and Se. Justification is based on results lower than the analytical reporting limits; and As, Hg, and Se are not present in the metal parts that Arms Technology, Inc. plates.

- Pharmaceutical manufacturers, Actavis Laboratories UT, Inc. and Anesta, LLC are omitted as potential contributors for all POCs. Justification is based on their chemical inventories and product lines.

- Beehive Clothing is omitted as a potential contributor of As, Cd, Cr, Cu, Pb, Mo, and Ni. Justification is based on results lower than the analytical reporting limits, and Beehive Clothing washes material for undergarment production. Furthermore, Beehive Clothing's process chemicals do not contain the metals in question.

- Blanchard Metals Processing is omitted as a potential contributor of As, Hg, and Se. Justification is based on results lower than the analytical reporting limits; and

As, Hg, and Se are not present in the metal parts that Blanchard Metals Processing plates.

- The Boeing Company (both facilities) is omitted as a potential contributor of As, Hg, and Se. Justification is based on results lower than the analytical reporting limits; and As, Hg, and Se are not present in the metal parts that The Boeing Company plates.

- Brenntag Pacific, Inc. is omitted as a potential contributor of As and Cd. Justification is based on results lower than the analytical reporting limits, and As and Cd are not contained in the chemicals handled by Brenntag Pacific, Inc.

- Circuit Graphics, Inc. is omitted as a potential contributor of As, Cd, and Se. Justification is based on results lower than the analytical reporting limits; Circuit Graphics, Inc. does not use As, Cd, and Se in their circuit board manufacturing process; and As, Cd, and Se are not present in the process chemicals used by Circuit Graphics, Inc.

- Crown Plating Company, Inc. is omitted as a potential contributor of As, Hg, and Mo. Justification is based on results lower than the analytical reporting limits; and As, Hg, and Mo are not present in the metal parts that Crown Plating Company, Inc. plates.

- Easton Technical Products is omitted as a potential contributor of Hg and Se. Justification is based on results lower than the analytical reporting limits; and Hg and Se are not present in the process chemicals used by Easton Technical Products.

- EDO Corp-Exelis, Inc. is omitted as a potential contributor of As, Hg, and Se. Justification is based on results lower than the analytical reporting limits; and As, Hg, and Se are not present in the process chemicals used by EDO Corp-Exelis, Inc.

- L-3 Communications is omitted as a potential contributor of As, Hg, and Se. Justification is based on results lower than the analytical reporting limits; and As, Hg, and Se are not present in the process chemicals used by L-3 Communications.

- O.C. Tanner is omitted as a potential contributor of As and Hg. Justification is based on results lower than the analytical reporting limits; and As and Hg are not present in the process chemicals used by O.C. Tanner.

- Pilkington Metal Finishing is omitted as a potential contributor of Hg and Se. Justification is based on results lower than the analytical reporting limits; and Hg

and Se are not present in the process chemicals used by Pilkington Metal Finishing.

- Quality Plating Co., Inc. is omitted as a potential contributor of As and Hg. Justification is based on results lower than the analytical reporting limits; and As and Hg are not present in the process chemicals used by Quality Plating Co., Inc.

- Quick Turn Circuits is omitted as a potential contributor of As, Cd, Cr, Hg, and Se. Justification is based on results lower than the analytical reporting limits; Quick Turn Circuits does not use As, Cd, Cr, Hg, and Se in their circuit board manufacturing process; and As, Cd, Cr, Hg, and Se are not present in the process chemicals used by Quick Turns Circuits.

- Rocky Mountain Machine Shop is omitted as a potential contributor of Hg and Se. Justification is based on results lower than the analytical reporting limits; and Hg and Se are not present in the metal parts that Rocky Mountain Machine Shop plates.

- Salt Lake Chrome Plating & Collision Products is omitted as a potential contributor of As, Cd, Hg, and Se. Justification is based on a Pollutant Waiver issued on 12/15/14 for Cd; and As, Hg, and Se are not present in the metal parts that Salt Lake Chrome Plating & Collision Products plates.

- Schovaers Electronics is omitted as a potential contributor of As, Cd, Cr, Hg, Mo, Se, and Zn Justification is based on results lower than the analytical reporting limits; and As, Cd, Cr, Hg, Mo, Se, and Zn are not present in the process chemicals used by Schovaers Electronics.

- SRI Surgical is omitted as a potential contributor of As, Cd, Pb, Mo, Ni, and Zn. Justification is based on results lower than the analytical reporting limits, and SRI Surgical's surgical instrument sterilization process does not utilize or produce any of these metals.

- Sun Products Corporation is omitted as a potential contributor of As, Cd, Cr, Pb, and Ni. Justification is based on results lower than the analytical reporting limits, and the metals in question are not present in the chemicals used to manufacture detergents.

- Synchronicity Mastering Services is omitted as a potential contributor of As, Hg, Pb, and Se. Justification is based on results lower than the analytical reporting limits; and As, Hg, Pb, and Se are not present in the process chemicals used by Synchronicity Mastering Services.

- Industrial launderer, Textile Care Services, is omitted as a potential contributor for all POCs. Justification is based on their clientele; Textile Care Services only launders hospital and healthcare provider linens.

- TOSCA, Ltd. is omitted as a potential contributor of Cd, Pb, Mo, and Ni. Justification is based on results lower than the analytical reporting limits. Furthermore, TOSCA, Ltd. cleans cheese and meat trays; these metals would not be expected to be present.

- Univar USA, Inc. is omitted as a potential contributor of Cd. Justification is based on results lower than the analytical reporting limits. Furthermore, Cd is not present in the process chemicals handled by Univar USA, Inc.

- Water & Power Technologies, Inc. is omitted as a potential contributor of Cd. Justification is based on results lower than the analytical reporting limits. Furthermore, Water & Power Technologies, Inc.'s passivation and regeneration processes do not generate Cd, nor is Cd present in the process chemicals used by Water & Power Technologies, Inc.

- Varian Medical Systems is omitted as a potential contributor of As, Hg, and Se. Justification is based on results lower than the analytical reporting limits; and As, Hg, and Se are not present in the process chemicals used by Varian Medical Systems.

Table 48 below identifies the flows for calculating the contributory flow local limit for each metal. For those IUs suspected of having a specific pollutant present in their wastestream and are included in the contributory allocation, an "s" is provided in the Total Results column.

Table 48: IU Contributory Flows

Arsenic

Permit No	Permittee	Average Flow (GPD)	Total Results	Results > RL
SLC-0060	All Weather Products, LLC	1,000	1	1
SLC-0039	ALSCO	82,000		
SLC-0088	Ameritech Coatings, Inc.	100	1	1
SLC-0030	Beck's Sanitation	30,000	19	6
SLC-0064	Blue Beacon Truck Wash of Salt Lake	15,000		
SLC-0033	Boise Packaging and Newsprint, LLC	37,500	3	2
SLC-0040	Cintas Corporation #180	76,500		
SLC-0055	Easton Technical Products, Inc.	20,000	1	1
SLC-0042	G & K Services, Inc.	95,000		

SLC-0062	Pilkington Metal Finishing	30,000	1	1
SLC-0007	Packaging Corporation of America	1,100		
SLC-0083	Pro-Elite Strength Systems	2,000	1	1
SLC-0009	Qualawash Holdings, LLC	12,000		
SLC-0038	Renegade Oil, Inc.	43,300		
SLC-0066	Rocky Mountain Machine Shop	7,000	1	1
SLC-0048	Salt Lake Truck Wash	6,000		
SLC-0021	Sump & Trap Cleaning, LLC	2,050		
SLC-0024	Tesoro Refining & Marketing Company LLC	1,000,000	25	16
SLC-0001	Thatcher Company	72,350	7	6
SLC-0002	The Boeing Company	4,500	5	3
SLC-0061	The Boeing Company	2,000		
SLC-0069	UniFirst	85,000		
SLC-0006	Univar USA, Inc.	2,000		
G-01-2006	Univar USA (Groundwater)	100	3	3
SR-005	Utah Quality Services	13,500		
SLC-0087	Utah Transit Authority	16,400		
G-030	Varian Medical Systems X-Ray Products (Groundwater)	9,000	46	46
	Total Flow	2,038,765	As Flow	1,605,300

Cadmium

Permit No	Permittee	Average Flow (GPD)	Total Results	Results > RL
SLC-0039	ALSCO	82,000	s	-
SLC-0082	Arms Technology, Inc.	75	17	3
SLC-0030	Beck's Sanitation, Inc.	30,000	19	2
SLC-0015	Blanchard Metals Processing	125,000	17	17
SLC-0064	Blue Beacon Truck Wash of Salt Lake	15,000	1	1
SLC-0040	Cintas Corporation #180	76,500	s	-
SLC-0047	Crown Plating Company, Inc.	2,200	26	8
SLC-0055	Easton Technical Products, Inc.	20,000	23	1
SLC-0042	G & K Services	95,000	3	3
SLC-0057	L3-Communications, CS-W	8,000	47	7
SLC-0050	Northrop Grumman Systems Corp.	1,450	9	2
SLC-0034	O. C. Tanner Manufacturing Company (Production)	3,700	52	1
SLC-0026	O. C. Tanner Manufacturing Company (Refinery)	700	s	-
SLC-0062	Pilkington Metal Finishing	30,000	18	2
SLC-0083	Pro-Elite Strength Systems	2,000	16	4
SLC-0009	Qualawash Holdings, LLC	12,000	s	-
SLC-0010	Quality Plating Company, Inc.	16,200	8	8
SLC-0038	Renegade Oil, Inc.	43,300	s	-
SLC-0066	Rocky Mountain Machine Shop	7,000	7	4

SLC-0048	Salt Lake Truck Wash	6,000	1	1
SLC-0021	Sump & Trap Cleaning, LLC	2,050	s	-
SLC-0078	Synchronicity Mastering Services	750	12	1
SLC-0001	Thatcher Company	72,350	14	5
SLC-0002	The Boeing Company	4,500	7	3
SLC-0061	The Boeing Company	2,000	9	4
SLC-0069	UniFirst	85,000	s	-
SR-005	Utah Quality Services	13,500	s	
SLC-0087	Utah Transit Authority	16,400	6	1
SLC-0058	Varian Medical Systems X-Ray Products	15,350	24	1
	Total Flow	2,038,765	Cd Flow	788,025
Chromium				
Permit No	Permittee	Average Flow (GPD)	Total Results	Results > RL
SLC-0060	All Weather Products, LLC	1,000	8	6
SLC-0039	ALSCO	82,000	5	2
SLC-0088	Ameritech Coatings, Inc.	100	10	10
SLC-0044	Anodizing & Metal Coatings, Inc.	12,000	60	59
SLC-0082	Arms Technology, Inc.	75	10	10
SLC-0030	Beck's Sanitation, Inc.	30,000	14	9
SLC-0015	Blanchard Metals Processing	125,000	17	17
SLC-0064	Blue Beacon Truck Wash of Salt Lake	15,000	s	-
SLC-0017	Brenntag Pacific, Inc.	5,500	12	12
SLC-0040	Cintas Corporation #180	76,500	3	1
SLC-0045	Circuit Graphics, Inc.	4,500	8	5
SLC-0047	Crown Plating Company, Inc.	2,200	18	17
SLC-0055	Easton Technical Products, Inc.	20,000	16	14
SLC-0089	EDO Corporation-Exelis Inc.	240	6	6
SLC-0042	G & K Services, Inc.	95,000	6	5
SLC-0057	L3-Communications, CS-W	8,000	27	13
SLC-0050	Northrop Grumman Systems Corp.	1,450	9	9
SLC-0034	O. C. Tanner Manufacturing Company (Production)	3,700	17	4
SLC-0026	O. C. Tanner Manufacturing Company (Refinery)	700	s	-
SLC-0062	Pilkington Metal Finishing	30,000	20	20
SLC-0083	Pro-Elite Strength Systems	2,000	9	9
SLC-0009	Qualawash Holdings, LLC	12,000	7	6
SLC-0010	Quality Plating Company, Inc.	16,200	16	16
SLC-0070	Reckitt Benckiser	10,700	16	8
SLC-0038	Renegade Oil, Inc.	43,300	25	4
SLC-0066	Rocky Mountain Machine Shop	7,000	9	9
SLC-0022	Salt Lake Chrome Plating & Collision Products	900	17	17

SLC-0048	Salt Lake Truck Wash	6,000	s	-
SLC-0021	Sump & Trap Cleaning, LLC	2,050	13	6
SLC-0078	Synchronicity Mastering Services	750	10	10
SLC-0001	Thatcher Company	72,350	21	18
SLC-0002	The Boeing Company	4,500	8	5
SLC-0061	The Boeing Company	2,000	9	9
SLC-0086	Tosca, Ltd.	18,000	7	5
SLC-0069	UniFirst	85,000	8	8
SLC-0006	Univar USA, Inc.	2,000	13	10
SR-005	Utah Quality Services	13,500	s	-
SLC-0087	Utah Transit Authority	16,400	4	2
SLC-0058	Varian Medical Systems X-Ray Products	15,350	25	2
SLC-0031	Water & Power Technologies, Inc.	13,000	13	8
	Total Flow	2,038,765	Cr Flow	855,965

Copper

Permit No	Permittee	Average Flow (GPD)	Total Results	Results > RL
SLC-0060	All Weather Products, LLC	1,000	8	3
SLC-0039	ALSCO	82,000	5	5
SLC-0088	Ameritech Coatings, Inc.	100	10	3
SLC-0044	Anodizing & Metal Coatings, Inc.	12,000	60	50
SLC-0082	Arms Technology, Inc.	75	10	7
SLC-0030	Beck's Sanitation, Inc.	30,000	16	6
SR-001	Beehive Clothing	19,000	5	5
SLC-0015	Blanchard Metals Processing	125,000	17	17
SLC-0064	Blue Beacon Truck Wash of Salt Lake	15,000	s	-
SLC-0033	Boise Packaging and Newsprint, LLC	37,500	12	12
SLC-0017	Brenntag Pacific, Inc.	5,500	11	11
SLC-0040	Cintas Corporation #180	76,500	2	2
SLC-0045	Circuit Graphics, Inc.	4,500	18	18
SLC-0047	Crown Plating Company, Inc.	2,200	17	15
SLC-0055	Easton Technical Products, Inc.	20,000	16	16
SLC-0089	EDO Corporation-Exelis, Inc.	240	10	9
SLC-0042	G & K Services, Inc.	95,000	6	6
SLC-0057	L3-Communications, CS-W	8,000	27	15
SLC-0050	Northrop Grumman Systems Corp.	1,450	9	2
SLC-0034	O. C. Tanner Manufacturing Company (Production)	3,700	19	15
SLC-0026	O. C. Tanner Manufacturing Company (Refinery)	700	14	12
SLC-0007	Packaging Corporation of America	1,100	5	5
SLC-0062	Pilkington Metal Finishing	30,000	12	12
SLC-0083	Pro-Elite Strength Systems	2,000	9	9

SLC-0009	Qualawash Holdings, LLC	12,000	13	6
SLC-0010	Quality Plating Company, Inc.	16,200	7	7
SLC-0046	Quick Turn Circuits	450	21	17
SLC-0070	Reckitt Benckiser	10,700	17	17
SLC-0038	Renegade Oil, Inc.	43,300	25	1
SLC-0066	Rocky Mountain Machine Shop	7,000	7	7
SLC-0022	Salt Lake Chrome Plating & Collision Products	900	12	11
SLC-0048	Salt Lake Truck Wash	6,000	1	1
SLC-0049	Schovaers Electronics	850	19	18
SLC-0008	SRI Surgical	12,700	5	5
SLC-0021	Sump & Trap Cleaning, LLC	2,050	13	2
SLC-0023	Sun Products	15,000	s	-
SLC-0078	Synchronicity Mastering Services	750	10	9
SLC-0001	Thatcher Company	72,350	15	15
SLC-0002	The Boeing Company	4,500	13	13
SLC-0061	The Boeing Company	2,000	5	5
SLC-0086	Tosca, Ltd.	18,000	7	7
SLC-0069	UniFirst	85,000	7	7
SLC-0006	Univar USA, Inc.	2,000	13	12
SR-005	Utah Quality Services	13,500	5	5
SLC-0087	Utah Transit Authority	16,400	4	4
SLC-0058	Varian Medical Systems X-Ray Products	15,350	56	51
SLC-0031	Water & Power Technologies, Inc.	13,000	13	12
	Total Flow	2,038,765	Cu Flow	942,565

Lead

Permit No	Permittee	Average Flow (GPD)	Total Results	Results > RL
SLC-0039	ALSCO	82,000	s	-
SLC-0088	Ameritech Coatings, Inc.	100	s	-
SLC-0082	Arms Technology, Inc.	75	10	2
SLC-0030	Beck's Sanitation, Inc.	30,000	22	3
SLC-0015	Blanchard Metals Processing	125,000	17	2
SLC-0064	Blue Beacon Truck Wash of Salt Lake	15,000	8	7
SLC-0017	Brenntag Pacific, Inc.	5,500	11	4
SLC-0040	Cintas Corporation #180	76,500	2	1
SLC-0045	Circuit Graphics, Inc.	4,500	19	10
SLC-0047	Crown Plating Company, Inc.	2,200	26	10
SLC-0055	Easton Technical Products, Inc.	20,000	24	2
SLC-0089	EDO Corporation-Exelis, Inc.	240	10	3
SLC-0042	G & K Services, Inc.	95,000	6	5
SLC-0057	L3-Communications, CS-W	8,000	27	2

SLC-0050	Northrop Grumman Systems Corp.	1,450	23	4
SLC-0034	O. C. Tanner Manufacturing Company (Production)	3,700	52	3
SLC-0026	O. C. Tanner Manufacturing Company (Refinery)	700	s	-
SLC-0062	Pilkington Metal Finishing	30,000	10	1
SLC-0083	Pro-Elite Strength Systems	2,000	16	14
SLC-0009	Qualawash Holdings, LLC	12,000	16	8
SLC-0010	Quality Plating Company, Inc.	16,200	15	2
SLC-0046	Quick Turn Circuits	450	21	2
SLC-0070	Reckitt Benckiser	10,700	16	2
SLC-0038	Renegade Oil, Inc.	43,300	38	2
SLC-0066	Rocky Mountain Machine Shop	7,000	7	6
SLC-0048	Salt Lake Truck Wash	6,000	5	5
SLC-0049	Schovaers Electronics	850	21	19
SLC-0021	Sump & Trap Cleaning, LLC	2,050	13	3
SLC-0001	Thatcher Company	72,350	15	3
SLC-0002	The Boeing Company	4,500	8	5
SLC-0061	The Boeing Company	2,000	9	4
SLC-0069	UniFirst	85,000	7	2
SLC-0006	Univar USA, Inc.	2,000	13	5
SR-005	Utah Quality Services	13,500	5	2
SLC-0087	Utah Transit Authority	16,400	6	2
SLC-0058	Varian Medical Systems X-Ray Products	15,350	35	1
SLC-0031	Water & Power Technologies, Inc.	13,000	24	2
	Total Flow	2,038,765	Pb Flow	825,515
Mercury				
Permit No	Permittee	Average Flow (GPD)	Total Results	Results > RL
SLC-0039	ALSCO	82,000	5	3
SLC-0030	Beck's Sanitation, Inc.	30,000	19	0
SLC-0040	Cintas Corporation #180	76,500	1	1
SLC-0045	Circuit Graphics, Inc.	4,500	1	1
SLC-0042	G & K Services, Inc.	95,000		
SLC-0083	Pro-Elite Strength Systems	2,000	1	1
SLC-0009	Qualawash Holdings, LLC	12,000	10	2
SLC-0038	Renegade Oil, Inc.	43,300		
SLC-0001	Thatcher Company	72,350	6	4
SLC-0069	UniFirst	85,000		
SR-005	Utah Quality Services	13,500	5	4
SLC-0087	Utah Transit Authority	16,400	4	2
SLC-0031	Water & Power Technologies, Inc.	13,000	4	2
	Total Flow	2,038,765	Hg Flow	539,050

Molybdenum				
Permit No	Permittee	Average Flow (GPD)	Total Results	Results > RL
SLC-0060	All Weather Products, LLC	1,000	s	-
SLC-0039	ALSCO	82,000	s	-
SLC-0088	Ameritech Coatings, Inc.	100	s	-
SLC-0044	Anodizing & Metal Coatings, Inc.	12,000	s	-
SLC-0082	Arms Technology, Inc.	75	5	5
SLC-0030	Beck's Sanitation, Inc.	30,000	13	6
SLC-0015	Blanchard Metals Processing	125,000	s	
SLC-0064	Blue Beacon Truck Wash of Salt Lake	15,000	8	8
SLC-0033	Boise Packaging and Newsprint, LLC	37,500	3	2
SLC-0017	Brenntag Pacific, Inc.	5,500	1	1
SLC-0040	Cintas Corporation #180	76,500	3	2
SLC-0045	Circuit Graphics, Inc.	4,500	s	-
SLC-0055	Easton Technical Products, Inc.	20,000	s	-
SLC-0089	EDO Corporation-Exelis, Inc.	240	s	-
SLC-0042	G & K Services, Inc.	95,000	14	8
SLC-0057	L3-Communications, CS-W	8,000	s	-
SLC-0050	Northrop Grumman Systems Corp.	1,450	s	-
SLC-0034	O. C. Tanner Manufacturing Company (Production)	3,700	s	-
SLC-0026	O. C. Tanner Manufacturing Company (Refinery)	700	s	-
SLC-0007	Packaging Corporation of America	1,100	1	1
SLC-0062	Pilkington Metal Finishing	30,000	14	11
SLC-0068	Power Engineering Company	100	s	-
SLC-0083	Pro-Elite Strength Systems	2,000	s	-
SLC-0009	Qualawash Holdings, LLC	12,000	s	-
SLC-0010	Quality Plating Company, Inc.	16,200	1	1
SLC-0046	Quick Turn Circuits	450	s	-
SLC-0038	Renegade Oil, Inc.	43,300	12	10
SLC-0066	Rocky Mountain Machine Shop	7,000	7	7
SLC-0022	Salt Lake Chrome Plating & Collision Products	900	3	0
SLC-0048	Salt Lake Truck Wash	6,000	5	4
SLC-0021	Sump & Trap Cleaning, LLC	2,050	9	5
SLC-0078	Synchronicity Mastering Services	750	8	4
SLC-0001	Thatcher Company	72,350	19	3
SLC-0002	The Boeing Company	4,500	5	4
SLC-0061	The Boeing Company	2,000	s	-
SLC-0086	TOSCA LTD.	18,000	8	1
SLC-0069	UniFirst	85,000	13	8
SLC-0006	Univar USA, Inc.	2,000	s	-

SR-005	Utah Quality Services	13,500	s	-
SLC-0087	Utah Transit Authority	16,400	6	1
SLC-0058	Varian Medical Systems X-Ray Products	15,350	7	5
SLC-0031	Water & Power Technologies, Inc.	13,000	s	-
	Total Flow	2,038,765	Mo Flow	882,215
Nickel				
Permit No	Permittee	Average Flow (GPD)	Total Results	Results > RL
SLC-0060	All Weather Products, LLC	1,000	16	3
SLC-0039	ALSCO	82,000	s	-
SLC-0088	Ameritech Coatings, Inc.	100	9	3
SLC-0044	Anodizing & Metal Coatings, Inc.	12,000	8	3
SLC-0082	Arms Technology, Inc.	75	10	4
SLC-0030	Beck's Sanitation, Inc.	30,000	12	10
SLC-0015	Blanchard Metals Processing	125,000	17	17
SLC-0064	Blue Beacon Truck Wash of Salt Lake	15,000	s	-
SLC-0017	Brenntag Pacific, Inc.	5,500	13	13
SLC-0040	Cintas Corporation #180	76,500	s	-
SLC-0045	Circuit Graphics, Inc.	4,500	11	8
SLC-0047	Crown Plating Company, Inc.	2,200	18	16
SLC-0055	Easton Technical Products, Inc.	20,000	17	15
SLC-0089	EDO Corporation-Exelis, Inc.	240	6	6
SLC-0042	G & K Services, Inc.	95,000	s	-
SLC-0057	L3-Communications, CS-W	8,000	27	9
SLC-0050	Northrop Grumman Systems Corp.	1,450	23	4
SLC-0034	O. C. Tanner Manufacturing Company (Production)	3,700	52	6
SLC-0026	O. C. Tanner Manufacturing Company (Refinery)	700	s	-
SLC-0062	Pilkington Metal Finishing	30,000	11	10
SLC-0083	Pro-Elite Strength Systems	2,000	16	4
SLC-0009	Qualawash Holdings, LLC	12,000	15	12
SLC-0010	Quality Plating Company, Inc.	16,200	18	18
SLC-0046	Quick Turn Circuits	450	s	-
SLC-0070	Reckitt Benckiser	10,700	22	3
SLC-0038	Renegade Oil, Inc.	43,300	1	1
SLC-0066	Rocky Mountain Machine Shop	7,000	7	7
SLC-0022	Salt Lake Chrome Plating & Collision Products	900	17	17
SLC-0048	Salt Lake Truck Wash	6,000	1	1
SLC-0049	Schovaers Electronics	850	12	8
SLC-0021	Sump & Trap Cleaning, LLC	2,050	s	-
SLC-0078	Synchronicity Mastering Services	750	14	14
SLC-0001	Thatcher Company	72,350	14	13

SLC-0002	The Boeing Company	4,500	8	8
SLC-0061	The Boeing Company	2,000	9	3
SLC-0069	UniFirst	85,000	9	2
SLC-0006	Univar USA, Inc.	2,000	15	10
SR-005	Utah Quality Services	13,500	s	-
SLC-0087	Utah Transit Authority	16,400	6	1
SLC-0058	Varian Medical Systems X-Ray Products	15,350	105	104
SLC-0031	Water & Power Technologies, Inc.	13,000	24	10
	Total Flow	2,038,765	Ni Flow	839,265
Selenium				
Permit No	Permittee	Average Flow (GPD)	Total Results	Results > RL
SLC-0088	Ameritech Coatings, Inc.	100	1	1
SLC-0030	Beck's Sanitation, Inc.	30,000	2	1
SLC-0064	Blue Beacon Truck Wash of Salt Lake	15,000		
SLC-0047	Crown Plating Company, Inc.	2,200	1	1
SLC-0034	O. C. Tanner Manufacturing Company (Production)	3,700	1	1
SLC-0083	Pro-Elite Strength Systems	2,000	1	1
SLC-0009	Qualawash Holdings, LLC	12,000		
SLC-0010	Quality Plating Company, Inc.	16,200	1	1
SLC-0070	Reckitt Benckiser	10,700	16	2
SLC-0038	Renegade Oil, Inc.	43,300		
SLC-0048	Salt Lake Truck Wash	6,000	1	1
SLC-0021	Sump & Trap Cleaning, LLC	2,050		
SLC-0001	Thatcher Company	72,350	2	2
	Total Flow	2,038,765	Se Flow	191,400
Zinc				
Permit No	Permittee	Average Flow (GPD)	Total Results	Results > RL
SLC-0060	All Weather Products, LLC	1,000	17	17
SLC-0039	ALSCO	82,000	3	3
SLC-0088	Ameritech Coatings, Inc.	100	14	4
SLC-0044	Anodizing & Metal Coatings, Inc.	12,000	62	51
SLC-0082	Arms Technology, Inc.	75	20	19
SLC-0030	Beck's Sanitation, Inc.	30,000	16	11
SR-001	Beehive Clothing	19,000	1	1
SLC-0015	Blanchard Metals Processing	125,000	17	16
SLC-0064	Blue Beacon Truck Wash of Salt Lake	15,000	8	8
SLC-0017	Brenntag Pacific, Inc.	5,500	11	11
SLC-0040	Cintas Corporation #180	76,500	1	1
SLC-0045	Circuit Graphics, Inc.	4,500	11	7

SLC-0047	Crown Plating Company, Inc.	2,200	5	3
SLC-0055	Easton Technical Products, Inc.	20,000	16	6
SLC-0089	EDO Corporation-Exelis, Inc.	240	7	7
SLC-0042	G & K Services, Inc.	95,000	6	6
SLC-0057	L3-Communications, CS-W	8,000	28	14
SLC-0050	Northrop Grumman Systems Corp.	1,450	9	1
SLC-0034	O. C. Tanner Manufacturing Company (Production)	3,700	18	15
SLC-0026	O. C. Tanner Manufacturing Company (Refinery)	700	14	9
SLC-0007	Packaging Corporation of America	1,100	1	1
SLC-0062	Pilkington Metal Finishing	30,000	11	11
SLC-0083	Pro-Elite Strength Systems	2,000	9	8
SLC-0009	Qualawash Holdings, LLC	12,000	7	5
SLC-0010	Quality Plating Company, Inc.	16,200	17	10
SLC-0046	Quick Turn Circuits	450	14	1
SLC-0070	Reckitt Benckiser	10,700	17	15
SLC-0038	Renegade Oil, Inc.	43,300	25	11
SLC-0066	Rocky Mountain Machine Shop	7,000	7	7
SLC-0022	Salt Lake Chrome Plating & Collision Products	900	5	1
SLC-0048	Salt Lake Truck Wash	6,000	5	5
SLC-0021	Sump & Trap Cleaning, LLC	2,050	13	9
SLC-0023	Sun Products	15,000	s	-
SLC-0078	Synchronicity Mastering Services	750	10	2
SLC-0001	Thatcher Company	72,350	15	15
SLC-0002	The Boeing Company	4,500	13	13
SLC-0061	The Boeing Company	2,000	5	4
SLC-0086	Tosca, Ltd.	18,000	7	6
SLC-0069	UniFirst	85,000	7	7
SLC-0006	Univar USA, Inc.	2,000	13	11
SR-005	Utah Quality Services	13,500	5	5
SLC-0087	Utah Transit Authority	16,400	4	4
SLC-0058	Varian Medical Systems X-Ray Products	15,350	18	7
SLC-0031	Water & Power Technologies, Inc.	13,000	13	7
	Total Flow	2,038,765	Zn Flow	891,515
s = pollutant suspected present in wastestream				

8.2.2 Calculation of Uniform Contributory Flow Local Limits

Using the flows identified in Table 48 above, the uniform contributory flow local limits are calculated by dividing the AIL by the contributory flow times the conversion factor of 8.34 to derive a concentration limit in mg/L. To make the calculated limit more conservative and allow for growth, only 70% of the AIL is used in calculating the uniform contributory flow local limit. The remaining 30% of the AIL is reserved for safety and growth.

The limit for Arsenic was developed using a different combined safety and growth factor. The City has chosen to use a 10% safety factor and 50% growth factor which is justified based on reserving that additional capacity for growth. The resulting Local Limit for Arsenic is 0.2 mg/L.

The Salt Lake City Corporation Sewer Use Ordinance, Section 17.36.060 B 6(a) specifies that no user shall introduce toxic pollutants into the POTW. Therefore, the resulting contributory flow limits were evaluated against individual pollutant toxicities, as outlined in 40 CFR 261.24. The more stringent of the two values was selected for the recommended limits, as summarized in Table 49.

Table 49: Contributory Flow Limit Calculations

Pollutant	Arsenic	Cadmium	Chromium	Copper	Lead	Mercury	Molybdenum	Nickel	Selenium	Zinc
Flow	1,664,400	788,025	855,965	942,565	825,515	545,550	882,215	839,265	215,500	891,515
AIL	7.62	1.77	816	69.8	14.6	1.19	8.4	14.3	3.08	127
70% AIL	4.57 (b)	1.24	571	48.9	10.2	0.83	5.9	10.0	2.16	88.9
Limit mg/L	**0.2(b)**	**0.2**	**5.0 (a)**	**6.2**	**1.5**	**0.2**	**0.8**	**1.4**	**1.0 (a)**	**12.0**

AIL= AIL Calculated in LL Study

*70 % AIL = AIL * 0.7 (30% remains in reserve for growth and safety)*

*Limit = 70% AIL / (Contributory Flow * 8.34)*

Flow for each metal is the sum of flows for those IUs that had metals results above the Reporting Limit

(a) – Limit is based on pollutant toxicity (40 CFR 261.24)

(b) - Arsenic (As) is the only POC which has a different combined safety and growth factor. A 10% safety factor and 50% growth factor are used. The resulting Local Limit for As is 0.2 mg/L

8.2.3 IUs Impacted by Proposed Uniform Contributory Flow Local Limits

Table 50 below is a summary of the calculated uniform contributory flow local limits. A review of the IU data identified a much lower number of potential violations using the contributory flow method instead of the more burdensome uniform concentration allocation method.

Table 50: Contributory Flow Local Limits Summary

Pollutant	AIL (Pounds)	Uniform Contributory Flow Limit (mg/L)	Reserve AIL (Pounds)	Potentially Impacted IUs	Existing Limit (mg/L)	Comment
Arsenic, Total	7.62	0.2	4.6	0	0.2	Proposed limit is based on a 60% combined safety and growth factor.
Cadmium, Total	1.77	0.2	0.53	1	0.7	Proposed limit is more stringent than existing limit
Chromium, Total	816	5.0	N/A	0	5.0	Calculated limit is 81.3 mg/L. Proposed limit is based on toxicity value (40 CFR 261.24).
Copper, Total	69.8	6.2	20.9	0	13.6	Proposed limit is more stringent than existing limit
Lead, Total	14.6	1.5	4.4	0	2.9	Proposed limit is more stringent than existing limit
Mercury, Total	1.19	0.2	0.36	0	0.2	Proposed limit is more stringent than existing limit

Molybdenum, Total	8.4	0.8	2.5	0	N/A	Existing limit is an AIL (Pounds) limit only
Nickel, Total	14.3	1.4	4.3	1	1.9	Proposed limit is more stringent than existing limit
Selenium, Total	3.08	1.0	0.92	0	1.0	Calculated limit is 1.35 mg/L. Proposed limit is based on toxicity value (40 CFR 261.24).
Zinc, Total	127	12.0	38.1	0	39.9	Proposed limit is more stringent than existing limit
			Total	2		

Under the proposed limits and based on an evaluation of historical analytical, only two permitted IUs (Blanchard Metals Processing and Crown Plating, Inc.) would be subject to enforcement. Both IUs were contacted regarding the proposed limits and will be able to achieve compliance based on minor pretreatment system modifications.

8.3 Final Recommended Local Limits

Table 51: Recommended Local Limits

	Pollutant	Uniform Contributory Flow Limit (mg/L)	Allowable Industrial Load (Pounds)
1	Arsenic, Total	0.2	7.62
2	Biochemical Oxygen Demand	11,000	77,595
3	Cadmium, Total	0.2	1.77
4	Chromium, Total	5.0	816
5	Copper, Total	6.2	69.8
6	HEM (Polar) Animal Vegetable	500	NA
7	HEM-SGT (Non-Polar) Petroleum	100	NA
8	Lead, Total	1.5	14.6
9	Mercury, Total	0.2	1.19
10	Molybdenum, Total	0.8	8.4
11	Nickel, Total	1.4	14.3
12	Selenium, Total	1.0	3.08
13	Total Suspended Solids (TSS)	7,200	59,464
14	Zinc, Total	12.0	127