



Cedar City Regional Wastewater Reclamation Facility

Report

Local Limits Development

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Acronyms Used in this Report

SIU	Significant Industrial User
POTW	Publically Owned Treatment Works
UPDES	Utah Pollution Discharge Elimination System
USEPA	United States Environmental Agency
CCRWTF	Cedar City Regional Wastewater Treatment Facility
DAF	Dissolved Air Flotation
DWQ	Department of Water Quality
DEQ	Department of Environmental Quality
EPA	Environmental Protection Agency
UAC	Utah Annotated Code
CFR	Code of Federal Regulations
BOD	Biochemical Oxygen Demand
TSS	Total Suspended Solids
MAHL	Maximum Allowable Headwork's Limit
MAIL	Maximum Allowable Industrial Loading
MGD	Million Gallons Per Day
TTM	Trailing Twelve Months
Mg/l	Milligrams Per/Liter
Lbs./Day	Pounds Per/Day
TTO	Total Toxic Organics
SVO	Semi-Volatile Organics
VOC	Volatile Organic Compounds
O&G	Oil, and Grease
pH	Potential of Hydrogen
DAF	Dissolved Air Flotation
WQF	Western Quality Foods
ICP	Inductively Coupled Plasma
ICP-MS	Inductively Coupled Plasma Mass Spectrometry
ASTM	American Standard Test Method

Local Limit Development

Introduction:

The Cedar City Regional Wastewater Treatment Facility (CCRWTF) is required to develop priority pollutant effluent limitations pursuant to the United States Code of Federal Regulations 40 CFR 403 and the CCRWTF Pretreatment Ordinance 30a. This report describes the methods used to develop technically based local limits. Cedar City originally developed technically based local limits in April 1999, and again in December 2002. This document supersedes the previous Local Limit Development completed in December 2002. The objectives of the CCRWTF local limits are to prevent overload, process interference, sludge disposal interference, and treatment pass-through that would threaten receiving ground water quality, or crops irrigated with the treatment facility effluent.

Industrial Users:

There are currently three Significant Industrial Users, (SIU) that can significantly impact the treatment facility---Western Quality Food Products, (a dairy processing plant), White Wave Foods, (a soy processing plant), and Longview Fibre Company (a paper manufacturing plant). All three facilities perform varying amounts of pretreatment before discharging to the Publicly Owned Treatment Works (POTW). The POTW also receives discharges from four categorical industrial users---Metal Craft Technologies, Cerro Copper, Lozier Inc, and Xeco Inc.

Background:

The statement of basis for Cedar City Regional Wastewater Treatment Facility UPDES discharge permit, effective September 1st 2007, states under the Description of Discharge that:

“The CCRWTF does not discharge to waters of the state. The CCRWTF discharges to a permitted land-application site partially owned by Cedar City and by private individuals with whom there is an agreement to discharge onto their property. Ground water quality associated with the effluent land application is regulated by a ground water permit issued by the Division of Environmental Quality (DEQ).”

Metals:

Because the facility discharges to agricultural land and not to the waters of the United States, the statement of basis was modified for this Local Limit Study to represent the lowest possible standard. In order to protect the CCRWTF beneficial use of biosolids, and groundwater quality, the CCRWTF shall enable the most stringent Local Limit numeric. Local Limits shall be based on a combination of 40 CFR 503.13 Table 4 conversion, UAC R317-6-2, and applicable data entered within United States Environmental Protection Agency, (USEPA) Local Limit spreadsheets.

Maximum Allowable Headwork Development:

The two ways to calculate the Maximum Allowable Headwork's Limit, (MAHL) for the treatment facility is to use the design of the facility or to use the facility's actual operating data. The latter will tend to allow a larger amount of loading until the facility approaches flow and pollutant capacity.

Safety and Growth Factor:

The recommended combined safety factor for allocation of the headwork load is 25 percent. This includes a 15 percent safety factor and a 10 percent growth factor. The combined safety and growth factor allows for fluctuations in flow, BOD, TSS, and treatment facility efficiency.

Design MAHL Development:

Compatible pollutant load maximums are based on the design criteria of the treatment facility. The plant is currently operating at approximately 2.5 million gallons per day (MGD) with a design capacity of 4.4 MGD. Currently, the flow to the facility is 57 percent of design. The facility design criterion for BOD and TSS is 9,616 lbs. per day and 9,284 lbs. per day respectively. The average BOD loading is 57.5 percent of design capacity and the average TSS loading is 72.3 percent of design capacity.

Western Quality Food Products and White Wave Foods are the largest two contributors to the treatment facility. Western Quality Food Products, White Wave Foods, and Xeco are permitted based on lbs. per day loading while Longview Fibre, Cerro Copper, Lozier, and Metalcraft are presently being permitted using mg/L limitations. The data for the latter four industries have been converted from mg/L to lbs. per day using site-specific flow.

The flow, BOD, and TSS data was obtained from samples taken over a period of one year (January 1, 2007 through December 31, 2007). The samples collected during the one-year period will be defined as regulatory pursuant to the NPDES permit and the individual industrial wastewater discharge permits. In addition, all compliance sampling was included in the data. The data was not collected concurrently for all contributors and thus some assumptions had to be made to be able to distribute the BOD and TSS loads.

Domestic and commercial discharges were combined due to the complexity of the sewer system and the close proximity of domestic and commercial discharges. The domestic and commercial loadings were obtained by subtracting the industrial flows from the totals recorded at the plant.

Table 1: BOD and TSS Loading:

Monthly AVG (ttm)	Flow (MGD)	BOD (mg/L)	BOD (lbs/day)	TSS (mg/L)	TSS (lbs./day)
Plant influent	2.498	285	5,940	324	6,738
Western Quality Food	0.107173	290	259	10	9
White Wave Foods	0.020613	820	141	72	12
Longview Fibre	0.001615	42.3	0.57	4.15	0.05
Metalcraft Technologies	0.00136	6.6	0.07	6.0	0.07
Xeco Inc.	0.0007	355	1.99	26.3	0.14
Cerro Copper	0.004814	100.4	4.14	28.0	0.89
Lozier Corporation	0.0055	100	4.51	36.0	1.46
Domestic & Commercial	2.36	281	5,528	341	6,714

Table 2: Industry Allocation (BOD)

	Flow (MGD)	BOD (mg/L)	BOD (lbs./day)	BOD Loading (lbs./day)	lbs./day Allocation
Western Quality Food	0.107173		600	536.29	600
White Wave Foods	0.020613		200	34.38	200
Longview Fibre	0.001615	30		0.40	0.40
Metalcraft Technologies	0.00136	300		3.40	3.40
Xeco Inc.	0.0007		20	0.116	20
Cerro Copper	0.004814	300		12.04	12.04
Lozier Corporation	0.0055	300		13.76	13.76
Allocated to Industry					850

Table 3: Industry Allocation (TSS)

	Flow (MGD)	TSS (mg/L)	TSS (lbs./day)	TSS Loading (lbs./day)	lbs./day Allocation
Western Quality Food	0.107173		400	69	400
White Wave Foods	0.020613		150	26	150
Longview Fibre	0.001615	10		0.13	0.13
Metalcraft Technologies	0.00136	300		3.40	3.40
Xeco Inc.	0.0007		20	0.116	20
Cerro Copper	0.004814	300		12.04	12.04
Lozier Corporation	0.0055	300		13.76	13.76
Allocated to Industry					599

Priority Pollutant Analysis:

The local limit study evaluated the following pollutants:

Non-Metals: BOD, TSS, Oil and Grease

Metals: Arsenic, Cadmium, Chromium, Copper, Lead, Mercury, Nickel, Selenium, Silver, and Zinc.

Total Toxic Organics:

The division reviews Total Toxic Organic (TTO) data to determine potential effects on the CCRWTF and to assess regulatory compliance with categorical TTO limitations. CCRWTF influent waste stream TTO concentrations, which include Semi-Volatile Organics (SVO) and Volatile Organic Compounds (VOC), are reviewed to determine potential impact to the Publicly Owned Treatment Works (POTW). Through annual CCRWTF regulatory NPDES influent and effluent sampling and analysis, the CCRWTF at present has not identified any potential TTO issues. Since the TTO is not technically based and cannot be approved, at the request of DEQ, it has been removed from the local limits. A TTO limit shall only be applicable to Categorical Standards per the Federal Code of Regulations. Through continued regulatory CCRWTF influent and effluent TTO analysis, future site specific TTO Local limitations and parameters of interest may be developed. If there is an organic pollutant that is or could be causing problems at the CCRWTF, then the development of the Local Limit shall be evaluated per USEPA Local Limit Development Guidance document from July 2004 or guidance from the DEQ personnel.

Non-Petroleum Oil and Grease Limitation:

Petroleum based Oil and Grease are prohibited in accordance with 40 CFR 403.5(b)(6). The typical treatment facility treating most domestic wastewater will reliably remove at least 90 percent of all oil and grease entering the system. Using the 90 percent removal criteria, the influent local limit of 100 mg/l will be maintained by the CCRWTF. The following chart indicates analytical results for Oil and Grease conducted at the influent of the CCRWTF.

Table 4: Oil, and Grease:

Sample Date	1/1/2002	1/1/2003	1/1/2004	1/1/2005	1/1/2006	1/1/2007	Detection Limit
O & G	14.5	26	18.5	11.8	18	13	5.0

Limitations on pH discharges:

As of the completion date of this Local Limit Report, the CCRWTF and integrated collection system have not conducted a pH specific study to determine the net effect to the POTW or collection system from high or low pH discharges. Additionally, the city has no empirical data to support a deviation from the low or high pH limits outlined in 40 CFR 403.5 (b)(2) and 40 CFR 261.22 (a)(1). The city shall hereby incorporate both 40 CFR 403.5 (b)(2), and 40 CFR 261.22 (a)(1) as the local limitation for pH. The city shall not allow pH discharges less than 5.0 or greater than or equal to 12.5.

Plant Design Analysis:

The plant was designed to treat 9,616 lbs. per day of BOD. Table 1 shows the current BOD loading from domestic and commercial users to be 5,528 lbs. per day. By subtracting both the domestic and commercial load of 5,528 lbs. per day, and the allocated industrial user BOD load of 850 lbs. per day from the design load, you find a total remaining BOD result of 3,238 lbs. per day. A safety and growth factor of 25 percent reduces this amount by 810 lbs. per day leaving an available usable load of 2,428 lbs. per day.

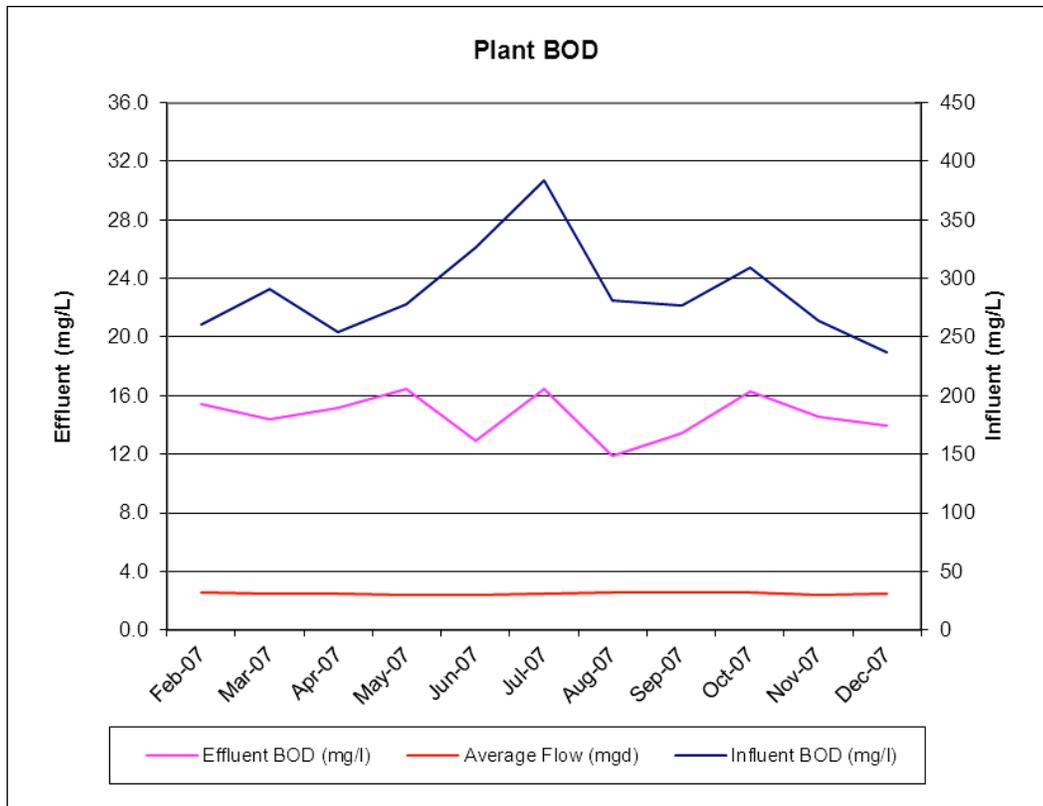
BOD Design Analysis

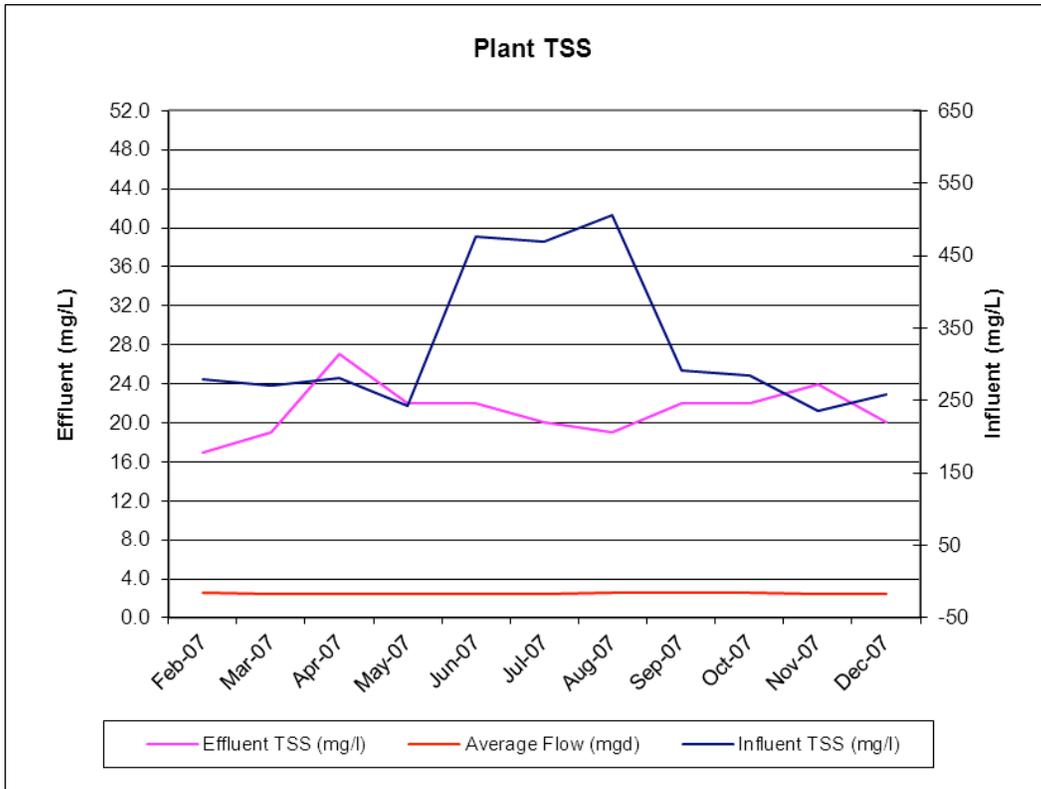
Total load by design	9,616 lbs. /day
Current Domestic and Commercial Load	5,528 lbs. /day
Load Allocated to Industrial Users	850 lbs. /day
Remaining BOD Load	3,238 lbs. /day
Safety and Growth Factor	810 lbs. /day
Total available for Allocation	2,428 lbs. /day
Available Usable Load	2,428 lbs. /day

The plant was designed to treat 9,284 lbs. per day of TSS. Table 1 shows the current TSS loading from domestic and commercial users to be 6,714 lbs. per day. By subtracting both the domestic and commercial load of 6,714 lbs. per day, and the allocated industrial user TSS load of 599 lbs. per day from the design load, you find a remaining TSS result of 1,971 lbs. per day. A safety and growth factor of 25 percent reduces this amount by 493 lbs. per day leaving an available usable load of 1,478 lbs. per day.

TSS Design Analysis

Total load by design	9,284 lbs. /day
Current Domestic and Commercial Load	6,714 lbs. /day
Load Allocated to Industrial Users	599 lbs. /day
Remaining BOD Load	1,971 lbs. /day
Safety and Growth Factor	493 lbs. /day
Total available for Allocation	1,478 lbs. /day
Available Usable Load	1,478 lbs. /day





BOD and TSS Determination:

Technically based local limits for BOD and TSS were developed for CCRWTF based on the available data. The city has conducted sampling for industrial contributors and for domestic flows in various parts of the collection system. Sampling was performed to determine the strength of the wastewater from domestic use only.

Table 5: Domestic Sampling:

	Date	BOD	TSS	Oil & Grease
Enoch Line	10/24/07	320	190	44
Cove Line	11/14/07	210	150	44
Cedar Meadows	11/27/07	250	240	61
College Way	12/12/07	260	200	32
Northfield	1/03/08	170	140	68
400 N. 1500 W.	1/29/08	180	72	68
1725 N. Main Street	2/14/08	270	160	210
Average		237	165	75

Although there has not been a significant increase of allocated BOD and TSS lbs. per day to industry, Cedar City's domestic and commercial growth has increased significantly over the past years. The domestic and commercial loadings were obtained by subtracting the industrial loadings from the total loading recorded at the plant influent. As such, assumptions will need to be made for domestic and commercial BOD and TSS load at the CCRWTF.

LOCAL LIMIT ALLOCATIONS FOR BOD AND TSS:

There has been a noticeable increase in TSS loading at the treatment facility over the past two years. Most of which can be contributed to the larger than normal growth rate. During the abnormal growth rate in 2007, the average removal efficiency for BOD was still 95 percent and the removal efficiency for TSS during the same period was 93.2 percent.

In the past, Western Quality Food Products (WQF) was a large contributor of BOD to the treatment facility. At the request of Cedar City, WQF installed a pretreatment system. The system primarily consists of an aeration tank and a Dissolved Air Flootation (DAF) tank. After the installation of their pretreatment system, the loading contributed by WQF was significantly reduced. As seen in table 3, WQF is consistently below their allocated BOD and TSS permitted limits.

White Wave Foods (WWF) has been consistently below their TSS allocation; thus, the CCRWTF will reevaluate both WQF, and WWF allocation limit during the next permit renewal. Between WQF and WWF, the anticipated reduction in allocated TSS will be 300 lbs. per day. For industry WQF the anticipated reduction in allocated BOD will be 200 lbs. per day.

Table 6: Proposed Allocation Adjustment:

	BOD Allocation (lbs./day)			TSS Allocation (lbs./day)		
	Current	Proposed	Change	Current	Proposed	Change
Western Quality Foods	600	400	-200	400	150	-250
White Wave Foods	200	200	0	150	100	-50
Allocation Savings	800	600	-200	550	250	-300

The Maximum Allowable Industrial Loading (MAIL) will not be uniformly distributed. It will be distributed among the industrial users with the remaining portion being available (unallocated) for future industrial and commercial growth. As detailed within the BOD and TSS Plant Design Analysis section of this report, the available usable BOD load to be 2,428 lbs. per day. The available usable TSS load is 1,478 lbs. per day. Future allocations of BOD and TSS to non-domestic sources will be distributed on a case-by-case basis.

Local Limit Determination for Metals:

The treatment facility discharges to a land application site and does not discharge to a body of water. Through guidance from the State of Utah DEQ the CCRWTF shall use the most stringent local limit numeric. In order to protect the CCRWTF beneficial use of biosolids and groundwater quality, the local limits shall be based on a combination of 40 CFR 503.13 Table 4 conversion, UAC R317-6-2 and applicable data entered within USEPA Local Limit spreadsheets titled, Local Limits Determination Based on NPDES Daily Effluent Limits, and Local Limits Determination Based on USEPA 503 Sludge Regulations. As applicable to the 40 CFR 503.13 Table 4 currently, there are 2,400 acres permitted in the land application site. Due to the open ditch irrigation of the land application site, the acreage used for calculating the limit was decreased from 2,400 acres to 1,200 acres to ensure protection of the groundwater around the feeder ditches. The influent flow used is 2.498 million gallons per day. The following formula was used to calculate an mg/L limit from the 40 CFR 503.

$$\text{Metal limit} = (N * 2.2046223 * A) / (2.47105 * 365 * 8.34 * F)$$

Where: N = Pollutant limit per 40 CFR 503
 A = Number of acres in the land application site
 F = Treatment facility influent flow

Table 7: Metal Limitation Comparison:

	40 CFR 503.13 Table 4 (lbs./day)	40 CFR 503.13 Conversion (mg/L)	UAC R317-6-2 (mg/L)	NPDES Daily Eff. Table 12	503 Sludge Reg. Table 13
Arsenic	2.0	0.2815	0.05	0.9064	0.4888
Cadmium	1.9	0.2675	0.005	0.2095	0.2291
Chromium	No Limit	No Limit	0.1	2.9724	No Limit
Copper	75	10.56	1.3	30.5257	13.4534
Cyanide	No Limit	No Limit	0.2	6.5232	No Limit
Lead	15	2.11	0.015	0.4166	2.1678

Mercury	0.85	0.12	0.002	0.5424	0.0717
Molybdenum	No Limit				
Nickel	21	2.96	No Limit	No Limit	5.7436
Selenium	5.0	0.704	0.05	1.4942	0.7203
Silver	No Limit	No Limit	0.1	3.9821	No Limit
Zinc	140	19.71	5	150.9488	18.2818

Metals Removal Efficiency:

The calculated removal efficiency for priority pollutant metals are obtained from samples taken over a period of six years (2002 through 2007). When the analysis was at or below the detection limit, the data is recorded at one-half the detection limit.

Table 8: Influent Sampling Results:

Sample Date	1/1/2002	1/1/2003	1/21/2004	1/11/2005	1/1/2006	1/10/2007	Detect ion Limit
	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Arsenic	0.05	0.05	0.05	0.0025	0.0025	0.0025	0.005
Cadmium	0.0025	0.0025	0.0025	0.002	0.002	0.002	0.004
Chromium	0.0025	0.0025	0.0025	0.005	0.005	0.005	0.01
Copper	0.04	0.04	0.04	0.045	0.049	0.052	0.004
Lead	0.035	0.035	0.035	0.0025	0.0089	0.0025	0.005
Mercury	0.0002	0.0002	0.0001	0.0001	0.00039	0.0001	0.0002
Molybdenum	0.01	0.03	0.01	0.02	0.02	0.02	0.04
Nickel	0.005	0.005	0.005	0.0025	0.0025	0.0075	0.005
Selenium	0.05	0.05	0.05	0.0025	0.0025	0.0025	0.005
Silver	0.0025	0.0025	0.0025	0.0025	0.0025	0.0025	0.005
Zinc	0.13	0.08	0.1	0.12	0.18	0.091	0.01
Cyanide	0.001	0.001	0.001	0.0025	0.007	0.0025	0.005
Oil & Grease	14.5	26	18.5	11.8	18	13	5.0

Table 9: Effluent Sampling Results:

Sample Date	1/1/2002	1/1/2003	1/1/2004	1/1/2005	1/1/2006	1/1/2007	Detection Limit
	mg/L						
Arsenic	0.05	0.0025	0.05	0.0025	0.0025	0.0025	0.005
Cadmium	0.001	0.0021	0.0025	0.002	0.002	0.002	0.004
Chromium	0.0035	0.0035	0.0025	0.005	0.005	0.005	0.01
Copper	0.025	0.025	0.05	0.021	0.015	0.015	0.004
Lead	0.0025	0.0025	0.035	0.0055	0.0025	0.0025	0.005
Mercury	0.0002	0.0002	0.0001	0.0001	0.0001	0.0001	0.0002
Molybdenum			0.03	0.02	0.02	0.02	0.04
Nickel			0.005	0.013	0.0025	0.0057	0.005
Selenium	0.001	0.0128	0.05	0.0025	0.0025	0.0025	0.005
Silver	0.005	0.002	0.0025	0.0025	0.0025	0.0025	0.005
Zinc	0.01	0.067	0.04	0.1	0.089	0.005	0.01
Ammonia	1.08	2.04	4.6	3.68	3.69	7.6	0.1

Since a majority of the metal analysis for the influent and effluent are at or below detectable limits, they will not be considered accurate in terms of analytical data to determine accurate metals removal efficiency. Therefore, the percentage removal efficiency for metals was adjusted on the following parameters, Cadmium, Chromium, Lead, Mercury, Nickel, and Silver. The adjusted metal removal efficiencies were taken as a median from the USEPA Local Limits Development Guidance Appendices Appendix R for trickling filter treatment facilities and are based on case studies among various treatment facilities throughout the state of Utah and USEPA region 8. Using various case studies on mercury in Utah and USEPA region 8, the removal efficiency for mercury was set at 95%. Arsenic, copper, selenium, and zinc were derived through actual plant data and are within the parameters of realistic removal percentage. The resulting removal efficiencies for metals are shown within table 10.

Table 10: Calculated Removal Efficiencies:

Parameter	MEAN Average Influent	Average Effluent	MRE PERCENT REMOVAL %	ADRE PERCENT REMOVAL %
ARSENIC	0.02625	0.01833	30.158	15.833
CADMIUM	0.00225	0.00193	68.000	12.666
CHROMIUM	0.00375	0.00408	55.000	-13.333
COPPER	0.04433	0.02516	43.233	40.645
LEAD	0.01981	0.00841	55.000	22.937
MERCURY	0.00018	0.00013	95.000	12.393
NICKEL	0.00458	0.00655	29.000	-32.666
SELENIUM	0.02625	0.01188	54.730	28.733
SILVER	0.00250	0.00283	66.000	-13.333
ZINC	0.11683	0.05183	55.634	55.047
CYANIDE	0.00250		59.000	55.047

LOCAL LIMIT DETERMINATION FOR METALS:

Sampling was performed to determine the strength of wastewater from domestic sources. During the first three quarters of 2007, all priority metals were analyzed using method 200.7 (ICP). In all other quarters, all priority metals, except mercury and cyanide, were analyzed using method 200.8 (ICP-MS). For the purpose of this local limit evaluation EPA method 1631 was used for analysis of mercury and method ASTM D2036 was used for analysis of cyanide. The locations for the sampling were chosen to best represent domestic and commercial loadings. Because of the placement of most non-permitted industries and restaurants, it was difficult to completely isolate domestic and commercial wastes.

Table 11: Background Domestic Wastewater Sampling:

Date of Sample	10/24/07	11/14/07	11/27/07	12/12/07	1/3/08	1/29/08	1/2/08
Location	Enoch Line	Cove Line	Cedar Meadows	Collage Way	Northfield	400 W. 1500 N.	1725 N. Main
	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Aluminum	1.1	0.59	0.93	1.1	0.91	0.42	0.87
Antimony	0.0003	0.0005	0.0005	0.0005	0.0006	0.001	0.001
Arsenic	0.005	0.0043	0.0037	0.0033	0.0033	0.0033	0.0033
Cadmium	0.0001	0.0001	0.00024	0.0001	0.0002	0.00009	0.0002
Chromium	0.003	0.0031	0.0024	0.0014	0.0026	0.002	0.004
Copper	0.033	0.036	0.024	0.039	0.041	0.027	0.029
Lead	0.002	0.00099	0.0011	0.0016	0.0018	0.0046	0.0027
Mercury	0.000026	0.000017	0.0000232	0.0000828	0.0000537	0.0000127	0.0000295
Molybdenum	0.001	0.0012	0.0017	0.001	0.0009	0.0012	0.0009
Nickel	0.005	0.006	0.0091	0.0047	0.0049	0.0062	0.008
Selenium	0.002	0.001	0.001	0.0003	0.0003	0.0008	0.0004
Silver	0.0001	0.0002	0.0004	0.002	0.001	0.0004	0.0003
Zinc	0.11	0.1	0.13	0.13	0.11	0.078	0.12
Cyanide	0.0025	0.0025	0.0025	N/D	0.003	0.01	0.014

With guidance from the State of Utah DEQ, the CCRWTF shall exclude the 40 CFR 503.13 Table 4 limitations and corresponding mg/l conversion from this local limit evaluation report. The CCRWTF felt the 503.13 conversion imposed accurate local limitations as a means to protect the groundwater quality at the land application site but the lack of applicable POTW data justifies said exclusion. Additionally, the CCRWTF shall exclude the UAC R317-6-2 Groundwater Quality Standards as a local limitation standard from this report. This, as well, is rationalized through lack of all applicable POTW data.

However, the UAC R317-6-2 Groundwater Quality Standards shall stand as the incorporated NPDES daily mg/L limits and are included in the USEPA local limit spreadsheet here titled, Table 12. After consulting with DEQ, the CCRWTF shall use spreadsheet named and titled Local Limits Determination Based on USEPA 503 Sludge Regulations Table-13. Table-13 incorporates applicable CCRWTF data as a means to protect the beneficial disposal use of the CCRWTF biosolids.

Table 12: Local Limits Determination Based on NPDES Daily Effluent Limits:

IU-Pol. Flow (MGD)	POTW Flow (MGD)	Removal Efficiency (%)	NPDES Daily Limit (mg/l)	Domestic-Conc. (mg/l)	Com. Flow (MGD)	Allowable HWK's (lbs./day)	Dom./Com. (lbs./day)	Allowable Loading (lbs./day)	Local Limit (mg/l)	Safety Factor SF%	Pollutant
0.138	2.498	30	0.05	0.0037	2.36	1.488094	0.072824	1.04324	0.90644	25	Arsenic
0.138	2.498	68	0.005	0.00015	2.36	0.325520	0.002952	0.24118	0.20956	25	Cadmium
0.138	2.498	55	0.1	0.0026	2.36	4.629626	0.051174	3.42104	2.97244	25	Chromium
0.138	2.498				2.36	-	0	-	-	25	Hex.Chr.
0.138	2.498	43.233	1.3	0.033	2.36	47.70961	0.649519	35.13269	30.52574	25	Copper
0.138	2.498	59	0.2	0.0058	2.36	10.16259	0.114157	7.50778	6.52329	25	Cyanide
0.138	2.498	0			2.36	-	0	-	-	25	Iron
0.138	2.498	55	0.015	0.0021	2.36	0.694444	0.041333	0.47949	0.41662	25	Lead
0.138	2.498	95	0.002	0.000035	2.36	0.833332	0.000688	0.62431	0.54244	25	Mercury
0.138	2.498	0		0.0011	2.36	-	0.021650	-	-	25	Moly.
0.138	2.498	29		0.0063	2.36	-	0.123999	-	-	25	Nickel
0.138	2.498	55	0.05	0.00083	2.36	2.314813	0.016336	1.71977	1.49425	25	Selenium
0.138	2.498	66	0.1	0.00063	2.36	6.127447	0.012399	4.58318	3.98219	25	Silver
0.138	2.498	55.634	5	0.12	2.36	234.7892	2.361888	173.730	150.94885	25	Zinc

Table 13: Local Limits Determination Based on USEPA 503 Sludge Regulations

IU Poll. Flow (MGD)	POTW Flow (MGD)	Sludge Flow (MGD)	Percent Solids (%) PS	Removal Effic. (%)	503 Sludge Criteria (mg/kg)	Dom. Conc. (mg/l)	Com. Flow (MGD)	Allowable HWK (lbs./day)	Dom./Com. (lbs./day)	Allowable Loading (lbs./day) (Lind)	Local Limit (mg/l) (Cind)	Safety Factor SF %	Pollutant
0.138	2.498	0.018	4.13	30	41	0.0037	2.36	0.84732	0.07282	0.56267	0.48888	25	Arsenic
0.138	2.498	0.018	4.13	68	39	0.00015	2.36	0.35558	0.00295	0.26373	0.22915	25	Cadm.
0.138	2.498	0.018	4.13	55		0.0026	2.36	-	0.05117	-	-	25	Chrom.
0.138	2.498	0.018	4.13	0		0	2.36	-	0	-	-	25	Hex. Chr.
0.138	2.498	0.018	4.13	43.233	1500	0.033	2.36	21.51119	0.64951	15.48387	13.45347	25	Copper
0.138	2.498	0.018	4.13	59		0.0058	2.36	-	0.11415	-	-	25	Cyanide
0.138	2.498	0.018	4.13	0		0	2.36	-	0	-	-	25	Iron
0.138	2.498	0.018	4.13	55	300	0.0021	2.36	3.38179	0.04133	2.49501	2.16784	25	Lead
0.138	2.498	0.018	4.13	95	17	0.000035	2.36	0.11094	0.00068	0.08252	0.07170	25	Mercury
0.138	2.498	0.018	4.13	0		0.0011	2.36	-	0.02165	-	-	25	Moly.
0.138	2.498	0.018	4.13	29	420	0.0063	2.36	8.97924	0.12399	6.61043	5.74361	25	Nickel
0.138	2.498	0.018	4.13	55	100	0.00083	2.36	1.12726	0.01633	0.82911	0.72039	25	Selenium
0.138	2.498	0.018	4.13	66		0.00063	2.36	-	0.01239	-	-	25	Silver
0.138	2.498	0.018	4.13	55.634	2800	0.12	2.36	31.20371	2.36188	21.04090	18.28181	25	Zinc

Local Limits Determination shall be based on applicable data entered into both Table-12, and Table-13 respectfully. The CCRWTF shall incorporate Local Limit numerical standards for the following heavy metals; Arsenic, Cadmium, Chromium, Copper, Lead, Mercury, Nickel, Selenium, Silver, and Zinc. The Local Limits are based on pounds per day not pounds per month. As such, it was determined that it was not necessary to have a monthly average local limitation basis, and implementation of a maximum for any one day local limitation basis was recommended by DEQ. As detailed in table 14, the maximum for any one day limitation for cadmium, chromium, lead, and silver were taken from table 12. Additionally, the maximum for any one day limitation for arsenic, copper, mercury, nickel, selenium, and zinc were taken from Table 13. Since there are no limits within 40 CFR 503.13 Table 4, UAC R317-6-2, and 40 CFR 503 for parameter molybdenum a local limit cannot be determined. As such, the CCRWTF shall not enable a local limitation for parameter molybdenum.

The CCRWTF reviews Cyanide data to determine potential effects on the CCRWTF, and to assess regulatory compliance with categorical limitations. Through quarterly CCRWTF regulatory NPDES influent and effluent sampling and analysis, the CCRWTF has not identified any potential Cyanide issues. After consulting with DEQ, Cyanide shall be removed as a local limit. A Cyanide limit shall only be applicable to Categorical Standards per the Federal Code of Regulations. Through continued regulatory CCRWTF influent, and effluent Cyanide analysis, future site specific Cyanide Local limitations may be developed.

Table 14: Local Limitation Source:

	NPDES Daily Eff. Table 12	503 Sludge Reg. Table13	Daily Max Local Limit from Table 12	Daily Max Local Limit from Table 13
Arsenic	0.9064	0.4888	--	0.49
Cadmium	0.2095	0.2291	0.21	--
Chromium	2.9724	No Limit	2.98	--
Copper	30.5257	13.4534	--	13.45
Cyanide	6.5232	No Limit	6.52	--
Lead	0.4166	2.1678	0.42	--
Mercury	0.5424	0.0717	--	0.07
Molybdenum	No Limit	No Limit	--	--
Nickel	No Limit	5.7436	--	5.74
Selenium	1.4942	0.7203	--	0.72
Silver	3.9821	No Limit	3.99	--
Zinc	150.9488	18.2818	--	18.28

Table 15: Metal Local Limits:

	Maximum for any one day (mg/L)
Arsenic	0.49
Cadmium	0.21
Chromium	2.98
Copper	13.45
Cyanide	--
Lead	0.42
Mercury	0.07
Molybdenum	--
Nickel	5.74
Selenium	0.72
Silver	3.99
Zinc	18.28