

LOCAL LIMITS SUBMITTAL REPORT

City of Henderson

July 19, 2021

City of Henderson

Industrial Pretreatment Program Local Limits Revision

A. Purpose

The General Pretreatment Regulations (40 CFR Part 403) require that each Publicly Owned Treatment Works (POTW) with a pretreatment program develop and enforce Technically Based Local Limits (TBLLs) which will establish the maximum loading of pollutants that can be accepted from industrial users without causing a violation of applicable environmental standards. Local limits are developed and enforced to prevent Pass Through, Interference, protect sludge disposal practices and prevent impacts to the health and safety of workers (40 CFR sections 403.2 and 403.5(c)(1)). The City of Henderson (City) used the EPA July 2004 Local Limits Development Guidance (EPA 833-R-04-002A) as a framework for establishing limits to protect the POTW and environment (40 CFR 403.8(f)(4)). The City has an on-going pollutant monitoring program and permit required sampling as specified in its Nevada Pollutant Discharge Elimination System (NPDES) Permit (NV0022098) and the Groundwater Discharge Permit (NEV800003) issued to the Kurt R Segler Water Reclamation Facility and the Southwest Water Reclamation Facility. The State of Nevada has not been authorized to implement and enforce the Industrial Pretreatment Program under 40 CFR Part 403. EPA is the Approval Authority for the Pretreatment Program.

B. Municipal Organization

The City serves a population of approximately 279,200. The City has a Mayor and City Council form of government with a City Manager that oversees City operations. The Mayor and City Council oversee the City Manager. An Assistant City Manager oversees the Utilities Services Department. The Pretreatment Program is part of the Utility Services Wastewater Operations Section. The Wastewater Operations Manager manages personnel, actions, and direction of the Pretreatment Program.

Change to the pretreatment legal authority for the City is initiated by the Wastewater Operations Manager and Pretreatment Program staff. Review of draft changes are done within the Utilities Services Department and the final draft sent to the City Attorney for review. The Utility Services Department briefs the Economic Development and Community Development departments on changes to the Pretreatment Program legal authority that may impact businesses. The City also coordinates with EPA to resolve any issues that would interfere with processing the changes as a minor modification to the City's NPDES Permit. The City conducts a first reading (work session), second reading and final approval of Ordinance changes. These three steps are at least 30 days to allow for public participation. EPA public notices the proposed changes for at least 30 days in a newspaper serving the City. The Mayor signs the final Ordinance.

C. Description of POTW(s)

The Kurt R Segler Water Reclamation Facility (KRSWRF) is located at 450 East Galleria, Henderson, NV 89011, and the Southwest Water Reclamation Facility (SWRF) is located at 2610 St. Rose Parkway, Henderson, NV 89074. The KRSWRF SWRF treats all wastewater to standards set for Outfall 001 (Las Vegas Wash), Outfall 002 (Pitman Wash), and reclaimed waste customers. The discharge is to the Las Vegas Wash under NPDES Permit NV0022098 and to reclaimed water customers under the groundwater discharge permit NS80003.

The KRSWRF has a hydraulic design capacity of 32 million gallons per day (mgd) and is divided into two process trains. The headworks, which is used for both treatment trains, includes flow measurement, screenings, aerated grit removal, flow equalization basins, air treatment, and pump station.

The KRSWRF includes two parallel biological process trains. The East Train utilizes a Biological Nutrient Removal (BNR) process. The East Train also consists of anoxic-anaerobic-aerobic treatment cells (also known as a modified Johannesburg Process for BNR), followed by two secondary clarifiers, a return activated sludge (RAS) and waste activated sludge (WAS) pumping station, supplementary phosphorus removal with alum addition and includes continuous backwash filters.

The West Train consists of two anaerobic-anoxic selector cells, two plug flow ditches, four secondary clarifiers, RAS /WAS pumping station, supplementary phosphorus removal with alum and polymer and rapid sand filtration.

Treated effluent by the East and West Trains are combined prior to ultraviolet disinfection and then discharged to the Las Vegas Wash or distributed by the reclaimed water systems to reclaimed water customers.

The SWRF is primarily used to provide reclaimed water to several reuse sites or discharged and discharged to the KRSWRF UV disinfection or to the Pittman Wash. The Southwest Water Reclamation Facility (SWRF) has a hydraulic design capacity of 8 mgd. Wastewater processes at the SWRF consists of coarse bar screens, a pumping station, grit removal, activated sludge with BNR membrane bioreactors, and ultraviolet light for disinfection. Odor control is also used throughout the plant. Waste activated sludge, screenings, and grit from the SWRF is returned to the sanitary sewers and treated at KRSWRF.

Waste activated sludge and waste chemical sludge removed from the activated sludge and supplemental phosphorus removal process is stored in aerated sludge holding basins and dewatered with belt filter presses for final disposal in a landfill.

The SWRF and the KRSWRF are approved, under groundwater discharge permit NS0080003, to provide Category B (NAC 445A.276) reclaimed wastewater to various facilities for reuse purposes. A secondary stream of reclaimed wastewater from the

KRSWRF is treated to meet 5-day biochemical oxygen demand (BOD₅) and total suspended solid (TSS) limits; however, there is no disinfection requirement for this secondary stream which is discharged to the City of Henderson's Bird Viewing Preserve as Category E (NAC 445A.276) reclaimed wastewater. The discharge from KRSWRF and SWRF meet applicable water quality standards for reuse.

The City currently is discharging under an administratively extended NPDES permit (expired March 31, 2020). As of the date of the local limits project, the City had received a copy of the new draft permit for review and is negotiating conditions with the State. However, the WQS that apply to this waterbody have not changed. The new draft permit will not affect the basis for the local limits.

The current design loadings for the KRSWRF are:

Parameter	Daily Maximum
Flow mgd	32 East complex: 8 mgd West complex: 24 mgd
BOD ₅ (lbs/day)	70,723
TSS (lbs/day)	72,858
Phosphorus (lbs/day)	200.1
TKN (lbs/day)	11,209

Effluent limitations that are applicable to the development of local limits for the KRSWRF in the NPDES permit are:

Parameter	7 Day Average	30 Day Average	Loading lbs/day
Total Organic Carbon (mg/L) – used in lieu of BOD ₅	≤45	≤30	10,008
TSS (mg/L)	≤45	≤30	10,008
Ammonia (mg/L)	Report	lbs/day based on WLA	lbs/day based on WLA
TDS (mg/L)	Report	Report	Report
Total Phosphorus (mg/L)	Report	lbs/day based on WLA	lbs/day based on WLA
Total Inorganic Nitrogen (mg/L)	Report	Report	Report
Total Kjeldahl Nitrogen (mg/L)	Report	Report	Report
Nitrite+Nitrate (mg/L)	Report	Report	Report

Wasteload Allocation for current, expired NPDES Permit:

Pollutant	TMDL Daily Load Allowed lbs/day	Months TMDL Apply	City of Henderson WLA lbs/day
Total Phosphorus	334	March 1 – October 31	43
Total Ammonia-as N	970	April 1 – September 30	126

Wasteload Allocation in draft NPDES Permit:

Pollutant	TMDL Daily Load Allowed lbs/day	Months TMDL Apply	City of Henderson WLA lbs/day
Total Phosphorus	334	March 1 – October 31	43
Total Ammonia-as N	970	April 1 – September 30	126

Receiving Water/Groundwater:

The POTW discharges to the Las Vegas Wash and has specific Standards established by the State (NAC 445A.198 and 445A.199). Wastewater is also discharged to five authorized discharge points (14 reclaimed water customers) as specified in the Groundwater Discharge Permit NS800003. The reclaimed wastewater is primarily for irrigation and maintaining wetlands. Protected uses include non-contact recreation, irrigation, livestock, aquatic life, and freshwater marsh, wildlife, and non-fish propagation. State Standards for Toxics are listed in NAC 445A.1236.

D. Other Municipal Contributors

The City provides sewer service to Basic Management Incorporated (BMI) that provides domestic wastewater sewer service to the industrial customers within the BMI facility. The BMI facility is located within the Clark County pretreatment program jurisdiction. The City has issued an Administrative Order to BMI that places controls and reporting requirements on the BMI discharge and requires that domestic only wastewater be discharged to the City of Henderson sewerage system.

E. Significant Industrial Users

The City currently permits 22 Industrial Users (IUs):

Type of Permitted IU	# of IUs
Casino Property	6
Permitted Zero Discharging IUs (IUs would be Categorical if they had potential to discharge)	3
Categorical IU (SIU)	1
Non-Categorical SIUs	9
Permitted Non-SIUs (includes BMI)	3

The Daily Maximum Flow (mgd) that is applied as a limit in the permits is 2.435 mgd. The measured maximum daily flow in monitoring reports since 2018 is 1.6815 mgd. The average flow from permitted IUs is 0.3961 mgd. These flows do not include casinos and zero discharging IUs.

F. Definitions and Acronyms

All terms used in this local limit's evaluation may be found in Chapter 14.09 of the City Code.

BOD ₅	Biochemical Oxygen Demand
CFR	Code of Federal Regulations
EPA	Environmental Protection Agency
IU	Industrial User
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
NPDES	Nevada Pollutant Discharge Elimination System
POC	Pollutant of Concern
POTW	Publicly Owned Treatment Works
QA/QC	Quality Assurance/Quality Control
SIU	Significant Industrial User
TBLL	Technically Based Local Limits
TSS	Total Suspended Solids
WQS	Water Quality Standards
WRF	Water Reclamation Facility

G. Local Limits Process

Local limits are those concentrations or loadings of pollutants that a POTW can accept and prevent Pass Through, Interference, adverse health effects, or a violation of the General and Specific Prohibitions. These limits are adopted by the City into their legal authority and apply at the point of discharge from the industrial user into the sewerage system. A Local limit is a Pretreatment Standard and based on the Maximum Allowable Industrial Loading (MAIL).

The applicable standards for KRSWRF discharge are as stringent or more stringent than those for the SWRF. Therefore, to protect the KRSWRF discharge, the most stringent standards were used.

The first step of the process is to review and compile data, supplementing data with additional monitoring where necessary. The POTW develops a list of Pollutants of Concern to further evaluate. Removal efficiency was determined based upon influent and effluent concentrations. Default removal efficiencies were used where all or most of the measurements for POTW influent and/or effluent were below method quantitation limits. When the final Pollutants of Concern were identified, the City calculates all applicable Allowable Headworks Loadings (AHLs). The POTW then used the most stringent AHL for each pollutant to obtain the Maximum Allowable Headworks Loading (MAHL).

To calculate the MAIL (or local limit), the POTW typically subtracts out an EPA recommended Safety Factor from the MAHL. The POTW then subtracts out domestic+commercial loadings to obtain the Maximum Allowable Industrial Load (MAIL). The MAIL is the regulatory number that EPA approves pursuant to 40 CFR Section 403.18(b). If the City is adopting uniform concentration-based local limits, the City may set aside some of the MAIL for expansion of existing industrial users or new industrial users. This “set aside” or expansion factor is at the full discretion of the City and may be implemented without further notice to EPA as long as the approved MAIL does not change (see 40 CFR Section 403.18 and the 2004 EPA Local Limits guidance manual). The City may adopt uniform concentration limits or the MAIL or a combination of these.

The City is adopting the calculated concentration-based limits for the metals and the MAIL for nutrients. The City will allocate the MAIL loading for nutrients on a case-by-case basis, as appropriate. All applicable data input for calculations are shown in this Report. An example local limits calculation is shown in Attachment A.

H. Legal Authority Language

The City is adopting these local limits through the City Council approval process.

Section 14.09.030 – Wastewater discharge prohibitions and limitations.

C. Specific discharge limitations

It shall be unlawful for any Significant Industrial User or other City-designated permitted industrial user to discharge or cause to be discharged wastewater that exceeds the following concentration-based limits. In the case of mass-based pollutant limits, it shall be unlawful to exceed the allocated mass specified in the Industrial Wastewater Discharge Permit.

Pollutant ^(a)	Daily Maximum Discharge Limit (mg/L)	Maximum Allowable Industrial Load lbs/day ^(b)
Arsenic	0.71	58.7833
Cadmium	0.02	0.4269
Chromium	1.48	121.6810
Copper	1.93	132.5107
Lead	0.65	13.4102
Mercury	0.015	0.3086
Nickel	3.84	78.9089
Selenium	0.05	2.0897
Silver	1.15	23.6735
Zinc	4.58	470.0157
5-Day Biochemical Oxygen Demand (BOD ₅) ^(c)	N/A	13,611
Total Suspended Solids (TSS) ^(c)	N/A	20,577
Ammonia	N/A	2,084.1
Phosphorus	N/A	701

^(a) All pollutants as total and in mg/L unless otherwise specified.

^(b) These limits are the total mass of a pollutant in lbs/day that may be allocated to the sum of all flows from Significant Industrial Users and other specific City-designated non-SIUs. Allocations are at the sole discretion of the City.

- (c) Discharges containing BOD₅ or TSS concentrations over that of normal domestic strength wastewater shall be surcharged.

I. Pollutants of Concern (POC) Evaluation Criteria

Local limits are based on the Maximum Allowable Headworks Loading (MAHL). The first step was to identify the pollutants that should be evaluated to allow the City to determine whether a pollutant should be evaluated further. This process was completed consistent with the 2004 EPA Local Limits Guidance.

Pollutant	Final Pollutant of Concern?	Comments
Flow	No	The State has not identified flow as an issue. As shown in Section K of this document: 2019-2020: Average daily influent flow was 25.573 mgd and the highest monthly maximum influent flow was 29.218 mgd. Average daily effluent flow is 23.167 mgd and the highest monthly maximum effluent flow was 23.989 mgd. 2018-2020: Average daily influent flow was 25.745 mgd and the highest monthly maximum influent flow was 29.218 mgd. Average daily effluent flow is 23.019 mgd and the highest monthly maximum effluent flow was 24.443 mgd. The difference between the influent and effluent flows represents wastewater that sent for reuse. The final local limits are calculated using the highest monthly maximum flow. The daily and monthly NPDES permitted effluent flow is 40 mgd.
BOD ₅	Yes	The NPDES permit limits for BOD₅ are 45 mg/L for the 7-day limit and 30 mg/L for the monthly average limit. The 2019-2020 average monthly BOD₅ effluent concentration was 1.0 mg/L (n=658, 648<RL) or 3% of the NPDES monthly average limit. The maximum monthly average concentration was 1.1 mg/L (n=21) or 4% of the NPDES monthly average limit. The average monthly influent BOD₅ for 2019-2020 was 59,327 lbs/day and the maximum monthly influent loading was 67,711 lbs/day. The WRF design for BOD₅ maximum month is 70,723 lbs/day. Based upon treatment efficiency and effluent measurements, the City believes that the design is higher than 70,723 lbs/day. The City is currently in the process to expand the treatment plant. The WRF never reported an effluent BOD₅ over 1 mg/L during that month. It is common for the design to underestimate the actual capabilities of the treatment plant.

Pollutant	Final Pollutant of Concern?	Comments
Total Suspended Solids (TSS)	Yes	The NPDES permit limits are 45 mg/L for the 7-day limit and 30 mg/L for the monthly average limit. The 2019-2020 average monthly TSS effluent concentration was 3 mg/L (n=653, 230<RL) or 10% of the NPDES monthly average limit. The maximum monthly average concentration was 5.2 mg/L (n=21) or 17% of the NPDES monthly average limit. The average monthly influent TSS for 2019-2020 was 58,541 lbs/day or 80% of the design and the maximum monthly influent loading was 66,897 lbs/day or 92% of the design. The WRF design for TSS maximum month is 72,858 lbs/day. Based upon treatment efficiency and effluent measurements, the City believes that the design is much higher than 72,858 lbs/day. The City is currently in the process to expand the treatment plant. The WRF monthly average measurement for that month was 3.4 mg/L or 11% of the NPDES monthly limit. It is common for the design to underestimate the actual capabilities of the treatment plant.
Ammonia	Yes	The NPDES Permit (current, expired) has a Wasteload Allocation for WRF effluent Ammonia that is a cumulative total lbs/day of 970 lbs/day for 4 dischargers to the LV Wash. The Segler WRF allocation is 126 lbs/day and this WLA applies April 1 to September 30 each year. The 2019-2020 (April 1-September 30) WRF effluent had an average daily Ammonia loading of 21.823 lbs/day (n=366, 289<RL).
Total Kjeldahl Nitrogen (TKN)	No	The WRF has a report only requirement. The 2019-2020 WRF effluent had an average TKN concentration of 1.42 mg/L (n=96, 8<RL). The WRF design is 11,209 lbs/day. The average influent loading was 9,353.7 lbs/day or 84% of the design.
Nitrite+Nitrate	No	The WRF has a report only requirement. The 2019-2020 WRF effluent had an average Nitrite+Nitrate concentration of 12.38 mg/L (n=93, 0<RL). The Stream Segment at NAC 445A.2156 Las Vegas Wash at Telephone Line Road establishes segment specific limits. For Nitrate, all measurements must be ≤100 mg/L and all Nitrite measurements must be ≤10 mg/L. The WRF is in full compliance with these Stream Segment specific standards.
Orthophosphate	No	The WRF has a report only requirement. The 2019-2020 WRF effluent had an average Orthophosphate concentration of 0.087 mg/L (n=649, 175<RL).
Phosphorus	Yes	The WRF has a NPDES WLA for Phosphorus that applies March 1 to October 31 each year. The total WLA loading for Phosphorus in the NPDES Permit is split among four dischargers with Segler WRF allocation set at 43 lbs/day. The 2019-2020 WRF effluent had an average daily Phosphorus concentration of 0.128 mg/L (n=473, 0<RL) and an average daily loading of 24.693 lbs/day. The WRF design is 2001.6 lbs/day. The average influent loading for 2019-2020 was 1,191.8 lbs/day or 60% of the design.

Pollutant	Final Pollutant of Concern?	Comments
Chloride	No	The WRF has monitored the influent for Chloride. There is no applicable WQS. The 2019-2020 WRF influent had an average Chloride concentration of 275 mg/L (n=94, 0<RL).
Sulfate	No	The WRF has monitored the influent for Sulfate. There is no applicable WQS. The 2019-2020 WRF influent had an average Sulfate concentration of 302 mg/L (n=94, 0<RL).
Total Dissolved Solids (TDS)	No	The average 2019-2020 WRF effluent concentration was 1103 mg/L (n=94, 0<RL). No State Standards in NAC 445A.1236. The Stream Segment at NAC 445A.2156 Las Vegas Wash at Telephone Line Road establishes segment specific limits. For TDS, 95% of measurements must be ≤ 1900 mg/L and no single value shall be greater than 3000 mg/L. The WRF is in full compliance with these Stream Segment specific standards.
Total Inorganic Nitrogen	No	The average 2019-2020 WRF effluent concentration was 2.01 mg/L (n=654). No State Standards in NAC 445A.1236. The Stream Segment at NAC 445A.2156 Las Vegas Wash at Telephone Line Road establishes a segment specific limit. For Total Inorganic Nitrogen, 95% of measurements must be ≤ 17 mg/L. The WRF is in full compliance with this Stream Segment specific standard.
Arsenic	Yes	EPA Recommended
Cadmium	Yes	EPA Recommended
Chromium	Yes	EPA Recommended
Copper	Yes	EPA Recommended
Lead	Yes	EPA Recommended
Mercury	Yes	EPA Recommended
Molybdenum	No	Average WRF effluent concentration was 0.0065 mg/L (n=11, 0<RL). The most stringent State Standard is a WQS for Chronic Aquatic Life of 1.65 mg/L. The WRF effluent is <1% of the State WQS. Sludge was evaluated. However, the City landfills sludge and no Standards under 40 CFR Part 503 apply.
Nickel	Yes	EPA Recommended
Selenium	Yes	EPA Recommended
Silver	Yes	EPA Recommended
Zinc	Yes	EPA Recommended
Cyanide	Yes	EPA Recommended
Endosulfan I	No	Average WRF effluent concentration was 0.00004 mg/L (n=3, 2<RL). Average WRF influent concentration was 0.0002 mg/L and all measurements were <RL (n=11, 11<RL, 2 J-flagged). The one WRF effluent measurement that was above reporting limits was 0.000063 mg/L. The State WQS are: Acute Aquatic Life: 0.00022 mg/L and Chronic Aquatic Life: 0.000056 mg/L. The EPA Human Health WQS for Organism only is 0.002 mg/L. The

Pollutant	Final Pollutant of Concern?	Comments
		one WRF effluent sample exceed the State Chronic Standard. However, there is no indication that this pollutant is present in the influent or consistently in the effluent. The City will continue to monitor the influent and effluent and follow-up with the laboratory if any sample is reported >RL. No SIU has been identified as using this pollutant in any manufacturing process and this is not a pollutant associated with SIU discharges. Endosulfan is a ubiquitous environmental contaminant. Endosulfan is used on food crops such as grains, tea, fruits, and vegetables, and on non-food crops such as tobacco and cotton. It is also used as a wood preservative. The pesticide registration was revoked in 2010 and all used banned as of 2016. China still uses this pesticide.
Aluminum	No	Average WRF effluent concentration was 0.512 mg/L. No applicable standards.
Antimony	No	All Segler Effluent measurements <RL (n=10, 10<RL)
Barium	No	Average WRF effluent concentration was 0.083 mg/L. No applicable standards.
Boron	No	Average WRF effluent concentration was 0.371 mg/L (n=10, 0<RL). The State has a WQS for Irrigation waters of 0.75 mg/L and a Livestock WQS of 5 mg/L. The WRF effluent is 49% of the Irrigation WQS and 7% of the Livestock WQS.
Iron	No	All Segler Effluent measurements <RL (n=10, 10<RL)
Manganese	No	Average WRF effluent concentration was 0.016 mg/L (n=10, 0<RL). The State has a WQS to protect Irrigation waste of 0.200 mg/L. The WRF effluent is 8% of the WQS.
1,4-Dichlorobenzene	No	All Segler Effluent measurements <RL (n=10, 10<RL)
Bromodichloromethane	No	Average WRF effluent concentration was 0.0014 mg/L (n=11, 6<RL). No State Standards in NAC 445A.1236. EPA has promulgated WQS for Human Health - Organism Only of 0.022 mg/L. The WRF effluent was 6% of the WQS.
Chloroform	No	Average WRF effluent concentration was 0.0033 mg/L (n=11, 2<RL). No State Standards in NAC 445A.1236. EPA has promulgated WQS for Human Health - Organism Only of 0.47 mg/L. The WRF effluent was <1% of the WQS. The WRF average influent concentration was 0.0061 mg/L. EPA's Fume Toxicity criteria is 0.06 mg/L. The WRF influent is 10% of the criteria.
Dibromochloromethane	No	Average WRF effluent concentration was 0.0008 mg/L (n=11, 7<RL). No State Standards in NAC 445A.1236. EPA has promulgated WQS for Human Health - Organism Only of 0.034 mg/L (see 40 CFR Section 131.36). The WRF effluent was 2% of the WQS.
Tetrachloroethene	No	All Segler Effluent measurements <RL (n=10, 10<RL)
Toluene	No	All Segler Effluent measurements <RL (n=10, 10<RL)

Pollutant	Final Pollutant of Concern?	Comments
Bis(2-Ethylhexyl) phthalate	No	Average WRF effluent concentration was 0.0061 mg/L (n=11, 10<RL). The one measurement that was above reporting limits was 0.013 mg/L. All WRF influent samples were <RL (n=11, 11<RL). The RL that the laboratory reported for influent and effluent samples was higher than expected making the 1/2 RL default values elevated. No State Standards in NAC 445A.1236. EPA has promulgated WQS for Human Health - Organism Only of 0.0059 mg/L (see 40 CFR Section 131.36). The WRF effluent was 100% of the WQS. However, there is no indication that this pollutant is present in the influent or consistently in the effluent. The City will continue to monitor. No SIU has been identified as using this pollutant in any manufacturing process.
Acronyms: BOD5: 5-Day Biochemical Oxygen Demand CFR: Code of Federal Regulations EPA: Environmental Protection Agency mg/L: milligram per Liter NAC: Nevada Administrative Code NPDES: Nevada Pollutant Discharge Elimination System POC: Pollutant of Concern RL: Reporting Limit WLA: Waste Load Allocation WRF: Water Reclamation Facility WQS: Water Quality Standard		

Important note: The City intends to adopt local limits for the EPA recommended metals whether specifically required to do so under 40 CFR Section 403.8(f)(4).

The following criteria/data considerations were used to evaluate an initial POC list:

1. Pollutants of Concern established by EPA, including Arsenic, Cadmium, Chromium, Copper, Cyanide, Lead, Mercury, Molybdenum, Nickel, Selenium, Silver, Zinc, BOD₅, Total Suspended Solids, Phosphorus and Ammonia.
2. Historical data included a review of POTW influent, effluent, and sludge data (organics, metals and conventional pollutants). The local limits calculations used the data from 2018-2020 for nutrients to provide a longer-term evaluation. Data from 2019-2020 was used for metals to provide the best estimate of current conditions for toxic metals. The flows used for the different sampling periods is reflected in the local limits calculations for POTW influent and effluent.

3. POTW Priority Pollutant analyses, as required by the NPDES permit and Groundwater Discharge Permit, were reviewed.
4. The influent to the Southwest WRF was used as the domestic+commercial wastewater for the calculation of local limits. The only permitted IU that discharges to the SWRF is a food processor. The wastewater quantity and pollutant loading for this IU was subtracted from the SWRF influent. This influent appears to be more representative (more domestic+commercial flows) and was used in the previous local limit's evaluation.
5. Water Quality Standards applicable to the permitted outfalls.
6. Inhibition was evaluated. However, no inhibition has been experienced for at least the past ten years. Consistent with the 2004 EPA Local Limits guidance, site-specific inhibition data has not been evaluated further.
7. Sludge was evaluated. However, the City landfills sludge and no Standards under 40 CFR Part 503 apply. The sludge meets all applicable disposal Standards (e.g., paint filter test, TCLP).
8. Pollutants that may cause adverse worker health and safety effects were evaluated. No pollutants were identified in sampling results that were an acute threat to worker health and safety.
9. Trucked and Hauled Waste. The City does not accept trucked and hauled waste.

J. Wastewater Treatment Facility

GENERAL DATA ENTRY		
Henderson	Comments	
POTW Influent Daily Average Flow(mgd):	25.573	2019-2020
POTW Influent Daily Average Flow (mgd):	25.745	2018-2020
POTW Highest Monthly Average Flow (mgd):	29.281	This is the flow for Local Limits final calculations. The highest monthly average flow is the same for 2019-2020 and 2018-2020 data.
Average SIU Flow (mgd):	0.3961	
Measured SIU Maximum Flow (mgd):	1.6815	
Permitted SIU Flow for Local Limits (mgd):	2.435	
Flow for Permitted Non-SIU Industrial Users (mgd)	0.025	Set aside for applying local limits to non-SIUs
Total SIU + Other Non-SIU Flows for Local Limits:	2.46	
Calculated Combined plus Domestic + Commercial Flow (mgd) based on Average Daily Flow:	25.1769	
Sludge Disposal Option:		Landfills Sludge
End-of-Pipe Flow (mgd):	0.00	
Acute (mgd):	0.00	
Chronic (mgd):	0.00	
Agriculture Flow (mgd):	0.00	
Irrigation Flow (mgd):	0.00	
Hardness for Metals Calculations (mg/L):	400	From WLA

Applicable Standards Pollutant	Chronic NPDES mg/L	POTW Design lbs/day	State Acute WQS Total mg/L	State Chronic WQS Total mg/L	Irrigation mg/L	Livestock mg/L	EPA Promulgated Human Health 40 CFR 131.26 Organism mg/L
Arsenic			0.34	0.15	0.1	0.2	
Cadmium			0.0087	0.0008	0.01	0.05	
Chromium			5.6117	0.2682	0.10	1	
Copper			0.0517	0.0305	0.2	0.5	
Lead			0.4768	0.0186	5.0	0.1	
Mercury			0.0014	0.000770		0.01	0.00015
Nickel			1.5159	0.1685	0.200		4.6
Selenium			0.02	0.005	0.02	0.05	
Silver			0.0411				
Zinc			0.3878	0.388	2.000	25	
BOD5	30	70723					
TSS	30	72858					
Ammonia ^(a)	0.517 ^(b)	9074					
Phosphorus	0.176 ^(b)	2001.6					

^(a) Ammonia reflects the design for TKN influent that is primarily Ammonia as demonstrated by monitoring results.

^(b) Ammonia and Phosphorus NPDES permit limits are calculated from the local limits flow and the wasteload allocation adopted by the City.

Influent Monitoring Data Pollutant	Average POTW Influent mg/L	# obs and Notes	RL Handling	Nutrients: 2019-2020 Metals: 2018-2020 Average POTW Influent Flow mgd	POTW Influent lbs/day
Arsenic	0.00490	n=11, 0<RL	N/A	25.573	1.04570
Cadmium	0.0005	n=11, 11<RL	N/A	25.573	0.1067
Chromium	0.0012	n=11, 9<RL	N/A	25.573	0.2561
Copper	0.1486	n=11, 0<RL	N/A	25.573	31.7122
Lead	0.0015	n=11, 0<RL	N/A	25.573	0.3201
Mercury	0.0001	n=11, 11<RL	1/2 RL	25.573	0.021341
Nickel	0.0037	n=11, 0<RL	N/A	25.573	0.7896
Selenium	0.003	n=11, 0<RL	N/A	25.573	0.6402
Silver	0.0005	n=11, 7<RL	1/2 RL	25.573	0.1067
Zinc	0.2612	n=11, 0<RL	N/A	25.573	55.7418
BOD5	281.4	n=649, 0<RL	N/A	25.745	60457
TSS	283.9	n=658, 0<RL	N/A	25.745	60994
Ammonia	26.97	n=281, 0<RL	N/A	25.745	5794.3
Phosphorus	5.728	n=280, 0<RL	N/A	25.745	1230.6

Effluent Monitoring Data Pollutant	Average POTW Effluent mg/L	Comment and Notes	RL Handling	Nutrients: 2019-2020 Metals: 2018-2020 Average POTW Effluent Flow mgd	POTW Effluent lbs/day
Arsenic	0.0020	n=11, 0<RL	N/A	23.167	0.3867
Cadmium	0.0005	n=11, 11<RL	1/2 RL	23.167	0.0967
Chromium	0.0010	n=11, 11<RL	1/2 RL	23.167	0.1933
Copper	0.0072	n=11, 0<RL	N/A	23.167	1.3920
Lead	0.0005	n=11, 11<RL	1/2 RL	23.167	0.0967
Mercury	0.0001	n=11, 11<RL	1/2 RL	23.167	0.0193
Nickel	0.0019	n=11, 0<RL	N/A	23.167	0.3673
Selenium	0.0014	n=11, 0<RL	N/A	23.167	0.2707
Silver	0.0003	n=11, 11<RL	1/2 RL	23.167	0.0580
Zinc	0.0477	n=11, 0<RL	1/2 RL	23.167	9.2218
BOD5	1.02	n=658, 648<RL	N/A	23.019	195.94
TSS	2.97	n=653, 230<RL	N/A	23.019	570.52
Ammonia	0.245	n=654, 492<RL	N/A	23.019	47.06
Phosphorus	0.148	n=653, 0<RL	N/A	23.019	28.43

Domestic+Commercial Contribution Pollutant	From Southwest WRF Influent Average Contribution mg/L	Comment and Notes	RL Handling	Domestic plus Commercial Average Flow mgd	Calculated Domestic+Commercial Contribution lbs/Day
Arsenic	0.0025	n=6, <RL	N/A	25.1769	0.52530
Cadmium	0.0005	n=6, 6<RL	1/2 RL	25.1769	0.1051
Chromium	0.0011	n=6, 6<RL	N/A	25.1769	0.2311
Copper	0.0933	n=6, 0<RL	N/A	25.1769	19.6024
Lead	0.0005	n=6, 6<RL	N/A	25.1769	0.1051
Mercury	0.00013	n=6, 5<RL	1/2 RL	25.1769	0.0273
Nickel	0.0029	n=6, 0<RL	N/A	25.1769	0.6093
Selenium	0.0024	n=6, 1<RL	N/A	25.1769	0.5042
Silver	0.00029	n=6, 6<RL	1/2 RL	25.1769	0.0609
Zinc	0.2177	n=6, 0<RL	1/2 RL	25.1769	45.7390
BOD5	255	n=145, 0<RL	N/A	25.1769	53576
TSS	231.5	n=146, 0<RL	N/A	25.1769	48638
Ammonia	31.11	n=146, 0<RL	N/A	25.1769	6536.2
Phosphorus	5.1	n=145, 0<RL	N/A	25.1769	1071.5

The City has defaulted to using the Southwest WRF influent as it provides a better representation of the Domestic+Commercial sectors than default data. See table in Section K.

Removal Efficiency Calculations POLLUTANT	MRE Mean Removal Efficiency %	LIT Literature Removal Efficiency %	Source of Literature Removal Efficiency Data	Enter the Name of the Removal Efficiency to be Used: MRE or LIT	Final POTW Removal %
Arsenic	63.0			MRE	63.0
Cadmium	9.4	67	EPA-Median Activated Sludge	LIT	67.0
Chromium	24.5	82	EPA-Median Activated Sludge	LIT	82.0
Copper	95.6			MRE	95.6
Lead	69.8			MRE	69.8
Mercury	9.6	90.2	EPA-Dental Reg	LIT	90.2
Nickel	53.5			MRE	53.5
Selenium	57.7			MRE	57.7
Silver	45.6	62	EPA Activated Sludge	LIT	62.0
Zinc	83.5			MRE	83.5
BOD5	99.7			MRE	99.7
TSS	99.1			MRE	99.1
Ammonia	99.2			MRE	99.2
Phosphorus	97.7			MRE	97.7

AHL Calculations from Loading Pollutant	Chronic NPDES lbs/day	POTW Design lbs/day	State Acute WQS Total lbs/day	State Chronic WQS Total lbs/day	Irrigation lbs/day	Livestock lbs/day	EPA 40 CFR Part 131.26 Human Health Organism Only mg/L	Most Stringent AHL for Common Stds lbs/day	Name of Most Stringent AHL
Arsenic			224.0547	98.8477	65.8984	131.7969		65.8984	Irrigation
Cadmium			6.4281	0.5911	7.3886	36.9431		0.5911	State Chronic WQS
Chromium			7601.4907	363.2981	135.4579	1354.5789		135.4579	Irrigation
Copper			286.4934	169.0145	1108.2919	2770.7297		169.0145	State Chronic WQS
Lead			384.9516	15.0170	4036.8247	80.7365		15.0170	State Chronic WQS
Mercury			3.4832	1.9158		24.8800	0.3732	0.3732	Organism
Nickel			794.8669	88.3535	104.8706		2412.0244	88.3535	State Chronic WQS
Selenium			11.5283	2.8821	11.5283	28.8208		2.8821	State Chronic WQS
Silver			26.3715					26.3715	State Acute WQS
Zinc			573.0608	573.0608	2955.4450	36943.0621		573.0608	State Acute WQS
BOD5	2438242.1	70723						70723	POTW Design
TSS	812747.4	72858						72858	POTW Design
Ammonia	15757.1	9074						9074	POTW Design
Phosphorus	1865.8	2001.6						1865.7853	Chronic NPDES

MAIL Calculation					Subtract out	MAIL
Pollutant	MAHL	Controlling Criteria or Standard for MAHL	Safety Factor	MAHL minus Safety Factor	Domestic+Commercial	Maximum
	lbs/day		%	lbs/day	Loadings	Available
					lbs/day	Industrial
						Loading
						lbs/day
Arsenic	65.8984	Irrigation	10	58.7833	58.7833	58.7833
Cadmium	0.5911	State Chronic WQS	10	0.4269	0.4269	0.4269
Chromium	135.4579	Irrigation	10	121.6810	121.6810	121.6810
Copper	169.0145	State Chronic WQS	10	132.5107	132.5107	132.5107
Lead	15.0170	State Chronic WQS	10	13.4102	13.4102	13.4102
Mercury	0.3732	Human Health-Organism	10	0.3086	0.3086	0.3086
Nickel	88.3535	State Chronic WQS	10	78.9089	78.9089	78.9089
Selenium	2.8821	State Chronic WQS	10	2.0897	2.0897	2.0897
Silver	26.3715	State Acute WQS	10	23.6735	23.6735	23.6735
Zinc	573.0608	State Acute WQS	10	470.0157	470.0157	470.0157
BOD ₅	70723	POTW Design	5	13611	13611	13611
TSS	72858	POTW Design	5	20577	20577	20577
Ammonia	9074	POTW Design	5	2084.1	2084.1	2084.1
Phosphorus	1865.8	Chronic NPDES	5	701.0	701.0	701.0

Local Limits Pollutant	MAHL lbs/day	MAIL lbs/day	Expansion Factor % ^(a)	Adjusted POTW Controlled Loading w/ expansion factor lbs/day	Local Limits to be Adopted as (U)niform or (M)ass	Calculated SIU Limits	Units	Existing Local Limits Existing Pollutant Name	Existing Local Limits Existing Local Limits mg/L	Existing Local Limits Existing MAIL lbs/day
Arsenic	65.8984	58.7833	75	14.6958	U	0.71	mg/L	Arsenic	0.96	39.85
Cadmium	0.5911	0.4269	0	0.4269	U	0.02	mg/L	Cadmium	0.027	0.44
Chromium	135.4579	121.6810	75	30.4203	U	1.48	mg/L	Chromium	1.49	165.76
Copper	169.0145	132.5107	70	39.7532	U	1.93	mg/L	Copper	2.19	91.38
Lead	15.0170	13.4102	0	13.4102	U	0.65	mg/L	Lead	1.13	37.84
Mercury	0.3732	0.3086	0	0.3086	U	0.015	mg/L	Mercury	0.0460	1.39
Nickel	88.3535	78.9089	0	78.9089	U	3.84	mg/L	Nickel	3.72	155.13
Selenium	2.8821	2.0897	50	1.0449	U	0.05	mg/L	Selenium	0.48	19.86
Silver	26.3715	23.6735	0	23.6735	U	1.15	mg/L	Silver	1.50	41.61
Zinc	573.0608	470.0157	80	94.0031	U	4.58	mg/L	Zinc	7.17	299.28
BOD5	70723	13611		13611	M	13611	lbs/day	BOD5	13953	13953
TSS	72858	20577		20577	M	20577	lbs/day	TSS	14463	14463
Ammonia	9074	2084.1		2084.1	M	2084.1	lbs/day	Ammonia		
Phosphorus	1865.7853	701.0		701.0	M	701	lbs/day	Phosphorus	441.00	441.00

^(a) The Expansion Factor reflects the % of the MAIL that the City is setting aside for future loading by industrial users. This Expansion Factor is at the full discretion of the City and does not affect the MAIL that is calculated and approved. The Expansion Factor does not apply to mass-based local limits.

K. Summary Pollutant Data

Reported as total and in mg/L. All pollutants not shown were <MDL in all samples.

POTW Influent							
2019-2020 for these Pollutants		Average	Maximum	Minimum	Count	#<RL	J-Flag
Average Influent Flow 2019 -2020	mgd	25.573	30.862	21.764	658	0	0
Average Influent Monthly Flow 2019-2020	mgd	25.591	29.218	23.856	21	0	0
BOD ₅	mg/L	278.9	422.0	153.0	649	0	0
BOD ₅ Monthly Avg	mg/L	278.8	314.1	239.6	21	0	0
BOD ₅ Monthly Loading	lbs/day	59327.4	67710.8	53633.3	21	0	0
TSS	mg/L	274.5	440.0	190.0	658	0	0
TSS Monthly Avg	mg/L	274.7	311.7	249.6	21	0	0
TSS Monthly Avg	mg/L	58541.1	66897.3	53820.6	21	0	0
Ammonia	mg/L	27.292	39.920	20.240	281	0	0
Ammonia Daily Load	mg/L	5788.219	8167.810	4698.777	281	0	0
Ammonia Monthly Avg	mg/L	27.309	29.732	24.630	21	0	0
Ammonia Monthly Avg Loading	lbs/day	5817.586	6345.248	5244.404	21	0	0
Phosphorus	mg/L	5.585	7.759	3.286	280	0	0
Phosphorus Daily Loading	lbs/day	1186.259	1644.676	693.040	280	0	0
Phosphorus Monthly Avg	mg/L	5.587	5.893	5.231	21	0	0
Phosphorus Monthly Avg Loading	lbs/day	1191.8	1342.4	1094.6	21	0	0
TKN	mg/L	43.959	58.330	27.430	280	0	0
TKN Monthly Avg	mg/L	43.986	48.265	35.458	21	0	0
TKN Monthly Avg Loading	lbs/day	9353.680	10080.866	8453.883	21	0	0
Nitrite+Nitrate	mg/L	0.343	1.350	0.150	93	73	0
Nitrite+Nitrate Monthly Avg	mg/L	0.350	0.835	0.230	21	0	0
Nitrite+Nitrate Monthly Avg Loading	lbs/day	76.148	199.083	48.020	21	0	0
Total Inorganic Nitrogen	mg/L	27.406	39.920	20.240	281	0	0
Orthophosphate	mg/L	#DIV/0!	0.000	0.000	0	0	0
Chloride	mg/L	275	305	244	94	0	0
Sulfate	mg/L	302	328	281	94	0	0
TDS	mg/L	1159	1400	1080	94	0	0

POTW Influent							
2018-2020 for these Pollutants		Average	Maximum	Minimum	Count	#<RL	J-Flag
Average Influent Flow 2018 -2020	mgd	25.745	32.885	21.764	1023	0	0
Average Influent Monthly Flow 2018-2020	mgd	25.763	29.218	23.856	33	0	0
Arsenic	mg/L	0.0049	0.0061	0.0043	11	0	0
Cadmium	mg/L	0.0005	0.0005	0.0005	11	11	0
Chromium	mg/L	0.0012	0.0022	0.0010	11	9	0
Copper	mg/L	0.1486	0.1750	0.1200	11	0	0
Lead	mg/L	0.0015	0.0033	0.0010	11	0	0
Mercury	mg/L	0.0001	0.0001	0.0001	11	11	0
Molybdenum	mg/L	0.0106	0.0236	0.0072	11	0	0
Nickel	mg/L	0.0037	0.0044	0.0030	11	0	0
Selenium	mg/L	0.0030	0.0033	0.0025	11	0	0
Silver	mg/L	0.0005	0.0012	0.0003	11	7	0
Zinc	mg/L	0.2612	0.3080	0.2350	11	0	0
Cyanide	mg/L	0.0052	0.0070	0.0050	11	11	0
Endosulfan I	mg/L	0.0002	0.0003	0.0001	11	11	2
Aluminum	mg/L	0.3464	0.4800	0.2600	11	0	0
Antimony	mg/L	0.0005	0.0010	0.0005	11	10	0
Barium	mg/L	0.1485	0.1720	0.1340	11	0	0
Boron	mg/L	0.3663	0.4200	0.3260	11	0	0
Iron	mg/L	1.1227	1.4000	0.8300	11	0	0
Manganese	mg/L	0.0273	0.0312	0.0227	11	0	0
1,4-Dichlorobenzene	mg/L	0.0010	0.0050	0.0005	11	10	0
Bromodichloromethane	mg/L	0.0012	0.0050	0.0005	11	8	0
Chloroform	mg/L	0.0061	0.0120	0.0027	11	1	0
Dibromochloromethane	mg/L	0.0010	0.0050	0.0005	11	10	0
Tetrachloroethene	mg/L	0.0164	0.1700	0.0005	11	7	0
Toluene	mg/L	0.0010	0.0050	0.0005	11	10	0
Bis(2-Ethylhexyl) phthalate	mg/L	0.0288	0.0550	0.0001	11	11	0

POTW Effluent							
2019-2020 for these Pollutants		Average	Maximum	Minimum	Count	#<RL	J-Flag
Average Influent Flow 2019 - 2020	mgd	23.167	57.977	18.757	658	0	0
Average Influent Monthly Flow 2019-2020	mgd	23.138	23.989	22.404	21	0	0
BOD5	mg/L	1.018	2.360	1.000	658	648	0
BOD5 Monthly Avg	mg/L	1.018	1.146	1.000	21	0	0
BOD5 Monthly Loading	lbs/day	196.490	221.636	186.850	21	0	0
TSS	mg/L	2.970	7.600	1.250	653	230	0
TSS Monthly Avg	mg/L	3.016	5.209	1.347	21	0	0
TSS Monthly Loading	mg/L	580.315	1007.770	257.903	21	0	0
Ammonia	mg/L	0.245	8.590	0.050	654	492	0
Ammonia Daily Loading	lbs/day	45.934	1484.070	8.230	654	0	0
Ammonia Monthly Avg	mg/L	0.251	1.774	0.050	21	0	0
Ammonia Monthly Avg Loading	lbs/day	48.220	343.487	10.003	21	0	0
Phosphorus	mg/L	0.148	1.134	0.062	653	0	0
Phosphorus Daily Load	lbs/day	28.582	205.440	11.030	653	0	0
Phosphorus Monthly Avg	mg/L	0.149	0.264	0.071	21	0	0
Phosphorus Monthly Avg Loading	lbs/day	28.761	51.340	14.120	21	0	0
TKN	mg/L	1.420	8.300	0.500	96	8	0
TKN Monthly Avg	mg/L	1.443	4.660	0.846	21	0	0
TKN Monthly Avg Loading	lbs/day	278.284	902.452	164.999	21	0	0
Nitrite+Nitrate	mg/L	12.383	18.990	3.710	93	0	0
Nitrite+Nitrate Monthly Avg	mg/L	12.390	17.928	6.815	21	0	0
Nitrite+Nitrate Monthly Avg Loading	lbs/day	2386.147	3579.923	1319.788	21	0	0
Total Inorganic Nitrogen	mg/L	2.01	19.13	0.05	654	0	0
Orthophosphate	mg/L	0.087	1.040	0.023	649	175	0
Chloride	mg/L	#DIV/0!	0.000	0.000	0	0	0
Sulfate	mg/L	#DIV/0!	0.000	0.000	0	0	0
TDS	mg/L	1102.660	1160.000	1050.000	94	0	0

POTW Effluent							
2018-2020 for these Pollutants		Average	Maximum	Minimum	Count	#<RL	J-Flag
Average Influent Flow 2018 -2020	mgd	23.019	57.977	17.514	1023	0	0
Average Influent Monthly Flow 2018-2020	mgd	22.999	24.443	21.464	33	0	0
Arsenic	mg/L	0.0020	0.002	0.001	11	0	0
Cadmium	mg/L	0.0005	0.001	0.001	11	11	0
Chromium	mg/L	0.0010	0.001	0.001	11	11	0
Copper	mg/L	0.0072	0.012	0.005	11	0	0
Lead	mg/L	0.0005	0.001	0.001	11	11	0
Mercury	mg/L	0.00010	0.000	0.000	11	11	0
Molybdenum	mg/L	0.0065	0.011	0.005	11	0	0
Nickel	mg/L	0.0019	0.003	0.002	11	0	0
Selenium	mg/L	0.0014	0.002	0.001	11	0	0
Silver	mg/L	0.0003	0.000	0.000	11	11	0
Zinc	mg/L	0.0477	0.060	0.036	11	0	0
Cyanide	mg/L	0.0110	0.035	0.005	5	4	0
Endosulfan I	mg/L	0.000040	0.000	0.000	3	2	0
Aluminum	mg/L	0.5120	0.770	0.260	10	0	0
Antimony	mg/L	0.0005	0.001	0.001	10	10	0
Barium	mg/L	0.0832	0.097	0.068	10	0	0
Boron	mg/L	0.3705	0.422	0.300	10	0	0
Iron	mg/L	0.0500	0.050	0.050	10	10	0
Manganese	mg/L	0.0164	0.051	0.007	10	0	0
1,4-Dichlorobenzene	mg/L	0.0005	0.001	0.001	11	11	0
Bromodichloromethane	mg/L	0.0014	0.003	0.001	11	6	0
Chloroform	mg/L	0.0033	0.006	0.001	11	2	0
Dibromochloromethane	mg/L	0.0008	0.002	0.001	11	7	0
Tetrachloroethene	mg/L	0.0005	0.001	0.001	11	11	0
Toluene	mg/L	0.0005	0.001	0.001	11	11	0
Bis(2-Ethylhexyl) phthalate	mg/L	0.0061	0.013	0.005	11	10	0

Domestic+Commercial Effluent from SW WRF/Influent to Segler WRF mg/L	Average	Max	Min	Count	#<RL	J-Flag	Average Adjusted SWWRF Influent for Decimal Places mg/L or mgd	Average Loading Total to SWWRF lbs/day	Average mgd from Turano; 0.0102 Average Discharge from Turano mg/L	Loading to SWWRF from Turano Average lbs/day	Net lbs/day Discharged to SWWRF minus Turano Domestic + Commercial	Dom+Com mg/L
Influent Flow (mgd)	4.664	5.222	4	1024	0	0	4.664					
BOD5	255.0	415.0	121.0	145	0	0	255.0	9918.9	1604.0	136.5	9782.4	252.0
TSS	231.5	380.0	130.0	146	0	0	231.5	9004.8	876.0	74.5	8930.3	230.1
Ammonia	31.11	44.82	25.99	146	0	0	31.11	1210.1			1210.1	31.2
Total Nitrogen	45.46	55.99	34.58	126	0	0	45.46	1768.3			1768.3	45.6
TKN	45.05	55.99	34.58	146	0	0	45.05	1752.3			1752.3	45.1
Nitrite+Nitrate	0.15	0.81	0.06	124	112	0	0.15	5.8			5.8	0.2
Phosphorus	5.10	6.49	4.01	145	0	0	5.101	198.4	10.7	0.9	197.5	5.1
TDS (From Effluent)	1104	1170	1050	146	0	0	1104.0	42943.1	1529	130.1	42813.0	1103.1
Arsenic	0.0025	0.0027	0.0024	6	1	0	0.0025	0.0972	0.02575	0.0022	0.09505	0.0024
Cadmium	0.0005	0.0005	0.0005	6	6	0	0.0005	0.0194	0.0005	0.000043	0.01941	0.0005
Chromium	0.0011	0.0015	0.0010	6	6	0	0.0011	0.0428	0.0792	0.0067	0.03605	0.0009
Copper	0.0933	0.0990	0.0889	6	0	0	0.0933	3.6292	0.1568	0.0133	3.61582	0.0932
Lead	0.0005	0.0005	0.0005	6	6	0	0.0005	0.0194	0.00712	0.0006	0.01884	0.0005
Mercury	0.00013	0.0003	0.0001	6	5	0	0.0001	0.0039	0.00012	0.000010	0.00388	0.0001
Molybdenum	0.0060	0.0081	0.0040	6	0	0	0.0060	0.2334			0.23339	0.0060
Nickel	0.0029	0.0034	0.0027	6	0	0	0.0029	0.1128	0.01125	0.00096	0.11185	0.0029
Selenium	0.0024	0.0033	0.0021	6	1	0	0.0024	0.0934	0.0005	0.00004	0.09331	0.0024
Silver	0.00029	0.00050	0.00025	6	6	0	0.00029	0.01128	0.00025	0.00002	0.01126	0.0003
Zinc	0.2177	0.2350	0.1910	6	0	0	0.2177	8.4680	0.2325	0.01979	8.44826	0.2177

L. Analytical and Sampling Methods

1. Analytical Methods and Sample Preservation

All wastewater samples were collected, preserved, and analyzed using methods approved pursuant to 40 CFR Part 136 and 40 CFR Part 403, Appendix E and were of such quality as to be legally defensible. The City uses a mix of in-house and external support for analytical work performed under its pretreatment program.

2. Sample Types

WRF influent and effluent samples were collected as required by the NPDES Permit. If sampling for oil and grease, cyanide, pH, sulfides, phenols or volatile organic compounds, the City would use grab samples.

3. Example Liquid Matrix Sampling Criteria

Pollutant	Sample Type	Sample Hold Time	Sample Preservation
Arsenic	24 hr Composite	6 Months	HNO ₃ to pH <2
Biochemical Oxygen Demand (BOD5)	24 hr Composite	48 Hours	Cool to 6°C
Cadmium	24 hr Composite	6 Months	HNO ₃ to pH <2
Chromium (total)	24 hr Composite	6 Months	HNO ₃ to pH <2
Copper	24 hr Composite	6 Months	HNO ₃ to pH <2
Cyanide	Grab	14 Days	Cool to 6°C, 1:1 NaOH to pH >12
Lead	24 hr Composite	6 Months	HNO ₃ to pH <2
Mercury	Grab	28 Days	HNO ₃ to pH <2
		90 Days	5 mL/L 12N HCl or 5 mL/L BrCl
Molybdenum	24 hr Composite	6 Months	HNO ₃ to pH <2
Nickel	24 hr Composite	6 Months	HNO ₃ to pH <2
Phosphorus	Grab	28 days	Cool to 6°C, 1:1 H ₂ SO ₄ to pH <2
Selenium	24 hr Composite	6 Months	Cool to 6°C, 1:1 HNO ₃ to pH <2
Silver	24 hr Composite	6 Months	HNO ₃ to pH <2
Total Suspended Solids (TSS)	24 hr Composite	7 Days	Cool to 6°C
Zinc	24 hr Composite	6 Months	HNO ₃ to pH <2

4. Chain of Custody (COC)

All samples included a COC for sample identification (sample location) and tracking. COC information and records are maintained at the Wastewater Reclamation Facility. Quality Assurance/Quality Control for sampling is provided with each sample report by the contract laboratory.

M. Recordkeeping

All records that are the basis for the local limits developed shall be maintained for at least three years beyond when the local limits are no longer implemented and enforced. The records will be kept at the City Pretreatment Program offices as a hardcopy and/or in electronic (.pdf) format.

ATTACHMENT A

EXAMPLE CALCULATION AND FORMULAS FOR ARSENIC

Process and Formulas used in Calculating Allowable Headworks Loadings (from 2004 EPA Guidance) – Arsenic Example

1. Applicable Allowable Headworks Loadings (AHLs)

$$\text{Water Quality: } (8.345 * (\text{WQS} * (\text{Q}_{\text{recH}_2\text{O}} + \text{Q}_{\text{POTW}}) - (\text{Q}_{\text{recH}_2\text{O}} * \text{C}_{\text{stream}}))) / (1 - (\text{R}_{\text{POTW}}/100))$$

WQS: Applicable Water Quality Standard (mg/L): Acute or Chronic as appropriate (see Page 17)

$\text{Q}_{\text{recH}_2\text{O}}$: Receiving Water Low Flow (mgd): Acute or Chronic as appropriate. 0 mgd for Henderson.

Q_{POTW} : POTW flow for local limits (mgd). *Flow used in this example incorporates permitted SIU flows and is used for example only.*

C_{stream} : Upstream Receiving Water Concentration (mg/L) if specified by State. 0 mgd for Henderson.

R_{POTW} : Removal Efficiency for POTW (%). Typically, the Mean Removal Efficiency is used.

$$\begin{aligned} \text{Arsenic Water Quality Acute} &= (8.345 * 0.34 \text{ mg/L} * 29.218 \text{ mgd}) / (1 - (63/100)) \\ &= 305.32 \text{ lbs/day (slight difference due to rounding)} \end{aligned}$$

$$\begin{aligned} \text{Arsenic Water Quality Chronic} &= (8.345 * 0.15 \text{ mg/L} * 29.218 \text{ mgd}) / (1 - (63/100)) \\ &= 134.70 \text{ lbs/day (slight difference due to rounding)} \end{aligned}$$

$$\begin{aligned} \text{Livestock WQS} &= (8.345 * 0.05 \text{ mg/L} * 29.218 \text{ mgd}) / (1 - (63/100)) \\ &= 131.7969 \text{ lbs/day (slight difference due to rounding)} \end{aligned}$$

$$\begin{aligned} \text{Irrigation WQS} &= (8.345 * 0.1 \text{ mg/L} * 29.218 \text{ mgd}) / (1 - (63/100)) \\ &= 65.8984 \text{ lbs/day (slight difference due to rounding)} \end{aligned}$$

2. Determine the Maximum Allowable Industrial Loading (MAIL)

$$\text{MAIL} = \text{MAHL} * 1 - \text{SF}/100 - \text{Domestic} + \text{Commercial Loading}$$

$$\text{MAHL: Irrigation AHL} = 65.8984 \text{ lbs/day}$$

$$\text{Safety/Growth Factor (SF)} = 10\%$$

$$\text{MAIL} = 65.8984 * 0.9 - 0.588 = 58.7206 \text{ lbs/day}$$

$$3. \quad \text{Subtract out the expansion (set aside): } 58.7206 * (1 - (75/100)) = 14.6802 \text{ lbs/day}$$

3. Calculate the Uniform Concentration Local Limit (mg/L)

$$(\text{MAIL} / (\text{SIU} + \text{Permitted non-SIU Flow (mgd)} * 8.345))$$

$$14.6802 \text{ lbs/day} / (2.46 * 8.345) = 0.715 \text{ mg/L}$$