Utah Division of Water Quality
Statement of Basis
ADDENDUM
Wasteload Analysis and Antidegradation Level I Review - FINAL

Date: **December 21, 2020**

Facility: **Orem City Water Reclamation Facility**
Orem, UT
UPDES No. UT0020915

Receiving water: **Powell Slough (2B, 3C, 3D)**

This addendum summarizes the wasteload analysis that was performed to determine water quality based effluent limits (WQBEL) for this discharge. Wasteload analyses are performed to determine point source effluent limitations necessary to maintain designated beneficial uses by evaluating projected effects of discharge concentrations on in-stream water quality. The wasteload analysis also takes into account downstream designated uses (UAC R317-2-8). Projected concentrations are compared to numeric water quality standards to determine acceptability. The numeric criteria in this wasteload analysis may be modified by narrative criteria and other conditions determined by staff of the Division of Water Quality.

Discharge
Outfall 001: Powell Slough → Utah Lake → Jordan River → Great Salt Lake

The maximum daily discharge is not projected to exceed 13.5 MGD during this permit cycle and the maximum monthly design discharge for the facility is 13.5 MGD. The Orem City Water Reclamation Facility plans to install a 5.00 MGD reuse facility that will be operational by early 2023. At that time, an additional wasteload analysis will need to be performed with the updated information.

Receiving Water
The receiving water for Outfall 001 is Powell Slough Waterfowl Management Area, which is a tributary to Utah Lake.

Per UAC R317-2-13.11, the designated beneficial uses for Powell Slough Waterfowl Management Area are 2B, 3C, and 3D.

- *Class 2B - Protected for infrequent primary contact recreation. Also protected for secondary contact recreation where there is a low likelihood of ingestion of water or a low degree of bodily contact with the water. Examples include, but are not limited to, wading, hunting, and fishing.*

- *Class 3C - Protected for nongame fish and other aquatic life, including the necessary aquatic organisms in their food chain*

- *Class 3D - Protected for waterfowl, shore birds and other water-oriented wildlife not included in Classes 3A, 3B, or 3C, including the necessary aquatic organisms in their food chain.*

Typically, the critical flow for the wasteload analysis is considered the lowest stream flow for seven consecutive days with a ten year return frequency (7Q10). Due to a lack of flow records for Powell Slough, the 20th percentile of flow measurements was calculated to estimate annual critical flow. Previously, the critical flow was calculated from sampling station 4995260 Powell Slough above Orem WWTP at Golden Pond Outfall. However, measurements have not been collected since 2013 and therefore, Clegg's Pond Outfall sampling station 499252 was used (Table 1). In addition, Orem WRF collected flow measurements in September 2014 of the groundwater outfall for the plant's underdrain system, which were used in this analysis.

Table 1: Seasonal critical low flow

Season	Flow (cfs)		
	Clegg's Pond Outfall	**GW Outfall**	**Combined**
Summer	2.24	0.8	3.04
Fall	2.60	0.8	3.40
Winter	1.05	0.8	1.85
Spring	3.84	0.8	4.64
Annual Average	**3.38**		

Total Maximum Daily Load (TMDL)

According to the Utah's 2016 303(d) Water Quality Assessment Report dated December 7, 2016, the receiving water for the discharge, Powell Slough (UT16020201-010_00) was listed as "Not Supporting" for dissolved oxygen in beneficial use 3D. The Provo Bay portion of Utah Lake (UT-L-16020201-004_02) is "Not Supporting" for PCB in Fish Tissue, pH, Total Ammonia, and Total Phosphorous. The Utah Lake other than Provo Bay portion (UT-L-16020201-004_01) is "Not Supporting" for Harmful Algal Blooms, PCB in Fish Tissue, Total Dissolved Solids, and Total Phosphorous.

Mixing Zone

The maximum allowable mixing zone is 15 minutes of travel time for acute conditions, not to exceed 50% of stream width, and 2,500 feet for chronic conditions, per UAC R317-2-5. Water quality standards must be met at the end of the mixing zone.

Since the receiving water low flow is equal to or less than twice the flow of a point source discharge, the combined flows are considered to be totally mixed. Acute limits were calculated using 100% of the seasonal critical low flow. Therefore, no mixing zone is allowed per UAC R317-2-5.

Parameters of Concern

The potential parameters of concern identified for the discharge/receiving water were total suspended solids (TSS), dissolved oxygen (DO), BOD_5, total phosphorus (TP), total nitrogen (TN), total ammonia (TAN), E. coli, and pH as determined in consultation with the UPDES Permit Writer.

Water Quality Modeling

A QUAL2Kw model of the receiving water was built and calibrated to synoptic survey data collected in September of 2014 by DWQ staff using standard operating procedures (DWQ 2012). The model of Powell Slough extends 2.1 kilometers downstream from the treatment facility outfall to the outlet at Utah Lake. Calibration of the model parameters and rates is described in detail in the updated 2020 Calibration Report.

Receiving water quality data were obtained from monitoring site 4995252 Clegg's Pond Outfall. Previous wasteload analysis calculated the average seasonal value for each constituent with available data in the receiving water from monitoring sites 4995260 Powell Slough above Orem WWTP and 4995251 Orem WRF GW Outfall. However, monitoring sites 4995260 and 4995251 did not have any data collected after 2013. Effluent parameters were characterized using data from monitoring site 4995250 Orem WWTP.

The QUAL2Kw model was used for determining the WQBELs for parameters related to eutrophication and in-stream DO criteria, as well as ammonia toxicity. Effluent concentrations were adjusted so that water quality standards were not exceeded in the receiving water. Where WQBELs exceeded secondary standards or technology based effluent limits (TBEL), the concentration in the model was set at the secondary standard or TBEL.

The QUAL2Kw model was also used to determine the limits for ammonia. The water quality standard for chronic ammonia toxicity is dependent on temperature and pH, and the water quality standard for acute ammonia toxicity is dependent on pH.

A mass balance mixing analysis was conducted for conservative constituents such as dissolved metals.

QUAL2Kw rates, input and output for DO and eutrophication related constituents are summarized in Appendix A. The WQBELs for conservative constituents are summarized in Appendix B.

The calibration and wasteload models are available for review by request.

Whole Effluent Toxicity (WET) Limits

The percent of effluent in the receiving water in a fully mixed condition, and acute and chronic dilution in a not fully mixed condition are calculated in the WLA in order to generate WET limits. The LC_{50} (lethal concentration, 50%) percent effluent for acute toxicity and the IC_{25} (inhibition concentration, 25%) percent effluent for chronic toxicity, as determined by the WET test, needs to be below the WET limits, as determined by the WLA. The WET limit for LC_{50} is typically 100% effluent and does not need to be determined by the WLA.

Table 2: WET Limits for IC_{25}

Season	Percent Effluent
Summer	87%
Fall	86%
Winter	92%
Spring	82%

Effluent Limits

The effect of the effluent on the DO in the receiving water was evaluated using the QUAL2Kw model. A DO sag downstream resulting from the plant discharge was predicted by the model in Powell Slough. However, the DO remained above the minimum criteria and limits more stringent than secondary standards are not required for BOD_5 (Table 3).

Table 3: Water Quality Based Effluent Limits Summary

Effluent Constituent	Acute			Chronic		
	Standard	Limit	Averaging Period	Standard	Limit	Averaging Period
Flow (MGD)	N/A	13.5	1 day	N/A	13.5	30 days
Ammonia (mg/L)	Varies		1 hour	Varies		30 days
Summer (Jul-Sep)		11.0			3.0	
Fall (Oct-Dec)		15.0			4.0	
Winter (Jan-Mar)		19.0			5.0	
Spring (Apr-Jun)		14.0			4.0	
Min. Dissolved Oxygen (mg/L)	3.0	5.5	Instantaneous	5.0	5.5	30 days
BOD_5 (mg/L)	N/A	35	7 days	N/A	25	30 days

Antidegradation Level I Review

The objective of the Level I ADR is to ensure the protection of existing uses, defined as the beneficial uses attained in the receiving water on or after November 28, 1975. No evidence is known that the existing uses deviate from the designated beneficial uses for the receiving water. Therefore, the beneficial uses will be protected if the discharge remains below the WQBELs presented in this wasteload.

A Level II Antidegradation Review (ADR) is not required for this discharge since the pollutant concentration and load is not increasing under this permit renewal.

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Documents:

WLA Document: *orem_potw_q2kw_wla_2020.docx*
QUAL2Kw Calibration Model: *orem_potw_q2kw_cal_2015.xlsm*
QUAL2Kw Wasteload Model: *orem_potw_q2kw_wla_2020.xlsm*
QUAL2Kw Calibration Report: *PowellSloughQ2KwCalibrationReport.docx*

References:

Utah Wasteload Analysis Procedures Version 1.0. 2012. Utah Division of Water Quality.

Field Data Collection for QUAL2Kw Model Build and Calibration Standard Operating Procedures Version 1.0. 2012. Utah Division of Water Quality.

Using QUAL2K Modeling to Support Nutrient Criteria Development and Wasteload Analyses in Utah. 2012. Neilson, B.T., A.J. Hobson, N. von Stackelberg, M. Shupryt, and J.D. Ostermiller.

WASTELOAD ANALYSIS [WLA] Date: 12/22/2020

Appendix A: QUAL2Kw Analysis for Eutrophication

Discharging Facility:	Orem WRF	
UPDES No:	UT-0020915	
Permit Flow [MGD]:	13.50	Maximum Monthly Flow
	13.50	Maximum Daily Flow
Receiving Water:	Powell Slough	
Stream Classification:	2B, 3C, 3D	AUID: UT 16020201-010_00
Stream Flows [cfs]:	2.2	Summer (July-Sept) Critical Low Flow
	2.6	Fall (Oct-Dec)
	1.1	Winter (Jan-Mar)
	3.8	Spring (Apr-June)
Fully Mixed:	YES	
Acute River Width:	100%	
Chronic River Width:	100%	

Modeling Information

A QUAL2Kw model was used to determine these effluent limits.

Model Inputs

The following is upstream and discharge information that was utilized as inputs for the analysis. Dry washes are considered to have an upstream flow equal to the flow of the discharge.

Headwater/Upstream Information	Summer	Fall	Winter	Spring
Golden Pond Outfall Flow (cfs)	2.2	2.6	1.1	3.8
Groundwater Outfall Flow (cfs)	0.8	0.8	0.8	0.8
Temperature (deg C)	21.0	10.3	10.0	18.2
Specific Conductance (µmhos)	670	682	720	710
Inorganic Suspended Solids (mg/L)	14.0	8.1	10.1	14.4
Dissolved Oxygen (mg/L)	7.7	10.7	11.5	9.9
$CBOD_5$ (mg/L)	3.7	6.0	3.0	3.5
Organic Nitrogen (mg/L)	0.468	0.200	0.323	0.305
NH4-Nitrogen (mg/L)	0.048	0.019	0.025	0.025
NO3-Nitrogen (mg/L)	0.083	0.440	0.471	0.286
Organic Phosphorus (mg/L)	0.013	-0.044	0.000	0.009
Inorganic Ortho-Phosphorus (mg/L)	0.024	0.196	0.138	0.023
Phytoplankton (µg/L)	0.0	0.0	0.0	0.0
Detritus [POM] (mg/L)	6.0	3.5	4.3	6.2
Alkalinity (mg/L)	260	260	260	260
pH	7.9	8.0	7.9	7.9

Discharge Information

Chronic	Summer	Fall	Winter	Spring
Flow (MGD)	13.5	13.5	13.5	13.5
Temperature (deg C)	23.0	17.0	13.2	20.0
Specific Conductance (µmhos)	1045	1042	1006	1077
Inorganic Suspended Solids (mg/L)	4.8	4.7	5.3	5.5
Dissolved Oxygen (mg/L)	5.5	5.5	5.5	5.5
$CBOD_5$ (mg/L)	25.0	25.0	25.0	25.0
Organic Nitrogen (mg/L)	4.373	3.016	3.450	2.869
NH4-Nitrogen (mg/L)	3.000	4.000	5.000	4.000
NO3-Nitrogen (mg/L)	12.484	16.717	12.850	16.548
Organic Phosphorus (mg/L)	1.000	1.000	1.000	1.000
Inorganic Ortho-Phosphorus (mg/L)	0.200	0.200	0.200	0.200
Phytoplankton (µg/L)	0.0	0.0	0.0	0.0
Detritus [POM] (mg/L)	0.0	0.0	0.0	0.0
Alkalinity (mg/L)	188	154	168	160
pH	7.9	7.5	7.5	7.6

Acute	Summer	Fall	Winter	Spring
Flow (MGD)	13.5	13.5	13.5	13.5
Temperature (deg C)	23.0	17.0	13.2	20.0
Specific Conductance (μmhos)	1045	1042	1006	1077
Inorganic Suspended Solids (mg/L)	4.8	4.7	5.3	5.5
Dissolved Oxygen (mg/L)	5.5	5.5	5.5	5.5
$CBOD_5$ (mg/L)	35.0	35.0	35.0	35.0
Organic Nitrogen (mg/L)	4.373	3.016	3.450	2.869
NH4-Nitrogen (mg/L)	11.000	15.000	19.000	14.000
NO3-Nitrogen (mg/L)	12.484	16.717	12.850	16.548
Organic Phosphorus (mg/L)	0.200	0.200	0.200	0.200
Inorganic Ortho-Phosphorus (mg/L)	0.800	0.800	0.800	0.800
Phytoplankton (μg/L)	0.0	0.0	0.0	0.0
Detritus [POM] (mg/L)	0.0	0.0	0.0	0.0
Alkalinity (mg/L)	188	154	168	160
pH	7.8	7.8	7.8	7.8

All model numerical inputs, intermediate calculations, outputs and graphs are available for discussion, inspection and copy at the Division of Water Quality.

Effluent Limitations

Current State water quality standards are required to be met under a variety of conditions including in-stream flows targeted to the 7-day, 10-year low flow (R317-2-9).

Other conditions used in the modeling effort reflect the environmental conditions expected at low stream flows.

Effluent Limitations based upon Water Quality Standards for DO

In-stream criteria of downstream segments for Dissolved Oxygen will be met with an effluent limitation as follows:

Constituent	Standard	Summer	Fall	Winter	Spring
Flow [Maximum Daily] (MGD)	N/A	13.5	13.5	13.5	13.5
Flow [Monthly Average] (MGD)	N/A	13.5	13.5	13.5	13.5
BOD_5 [7-day Average] (mg/L)	N/A	35.0	35.0	35.0	35.0
BOD_5 [30-day Average] (mg/L)	N/A	25.0	25.0	25.0	25.0
Dissolved Oxygen [30-day Average] (mg/L)	5.0	5.5	5.5	5.5	5.5
Dissolved Oxygen [Minimum] (mg/L)	3.0	5.5	5.5	5.5	5.5
NH4-Nitrogen (mg/L)	N/A	3.0	4.0	5.0	4.0

Effluent Limitations based upon Water Quality Standards for Ammonia

In-stream criteria of downstream segments for Ammonia will be met with an effluent limitation as follows:

NH4-Nitrogen (mg/L)	Standard	Summer	Fall	Winter	Spring
Acute [1-hour Average]	Varies	11.0	15.0	19.0	14.0
Chronic [30-day Average]	Varies	3.0	4.0	5.0	4.0

Summary Comments

The mathematical modeling and best professional judgement indicate that violations of receiving water beneficial uses with their associated water quality standards, including important down-stream segments, will not occur for the evaluated parameters of concern as discussed above if the effluent limitations indicated above are met.

Coefficients and Other Model Information

Parameter	*Value*	*Units*
Stoichiometry:		
Carbon	40	gC
Nitrogen	7.2	gN
Phosphorus	1	gP
Dry weight	100	gD
Chlorophyll	1	gA
Inorganic suspended solids:		
Settling velocity	0.001	m/d
Oxygen:		
Reaeration model	Thackston-Dawson	
Temp correction	1.024	
Reaeration wind effect	None	
O2 for carbon oxidation	2.69	gO2/gC
O2 for NH4 nitrification	4.57	gO2/gN
Oxygen inhib model CBOD oxidation	Exponential	
Oxygen inhib parameter CBOD oxidation	0.60	L/mgO2
Oxygen inhib model nitrification	Exponential	
Oxygen inhib parameter nitrification	0.60	L/mgO2
Oxygen enhance model denitrification	Exponential	
Oxygen enhance parameter denitrification	0.60	L/mgO2
Oxygen inhib model phyto resp	Exponential	
Oxygen inhib parameter phyto resp	0.60	L/mgO2
Oxygen enhance model bot alg resp	Exponential	
Oxygen enhance parameter bot alg resp	0.60	L/mgO2
Slow CBOD:		
Hydrolysis rate	0	/d
Temp correction	1.047	
Oxidation rate	0.103	/d
Temp correction	1.047	
Fast CBOD:		
Oxidation rate	10	/d
Temp correction	1.047	
Organic N:		
Hydrolysis	0.84524491	/d
Temp correction	1.07	
Settling velocity	0.056128	m/d
Ammonium:		
Nitrification	0.1761337	/d
Temp correction	1.07	
Nitrate:		
Denitrification	0.66745388	/d
Temp correction	1.07	
Sed denitrification transfer coeff	0.045495	m/d
Temp correction	1.07	
Organic P:		
Hydrolysis	0.32642425	/d
Temp correction	1.07	
Settling velocity	0.086465	m/d
Inorganic P:		
Settling velocity	0.015655	m/d
Sed P oxygen attenuation half sat constant	0.28717	mgO2/L

Phytoplankton:		
Max Growth rate	2.8944	/d
Temp correction	1.07	
Respiration rate	0.480803	/d
Temp correction	1.07	
Death rate	0.86518	/d
Temp correction	1	
Nitrogen half sat constant	15	ugN/L
Phosphorus half sat constant	2	ugP/L
Inorganic carbon half sat constant	1.30E-05	moles/L
Phytoplankton use HCO3- as substrate	Yes	
Light model	Smith	
Light constant	57.6	langleys/d
Ammonia preference	25.4151	ugN/L
Settling velocity	0.468545	m/d
Bottom Plants:		
Growth model	Zero-order	
Max Growth rate	15.15954	gD/m2/d or /d
Temp correction	1.07	
First-order model carrying capacity	100	gD/m2
Basal respiration rate	0.6500528	/d
Photo-respiration rate parameter	0.01	unitless
Temp correction	1.07	
Excretion rate	0.192404	/d
Temp correction	1.07	
Death rate	0.168976	/d
Temp correction	1.07	
External nitrogen half sat constant	609.3926	ugN/L
External phosphorus half sat constant	166.1311	ugP/L
Inorganic carbon half sat constant	1.00E-04	moles/L
Bottom algae use HCO3- as substrate	Yes	
Light model	Smith	
Light constant	77.733	mgO^2/L
Ammonia preference	17.54875	ugN/L
Subsistence quota for nitrogen	5.1638	mgN/gD
Subsistence quota for phosphorus	3.7292	mgP/gD
Maximum uptake rate for nitrogen	80.134	mgN/gD/d
Maximum uptake rate for phosphorus	72.3308	mgP/gD/d
Internal nitrogen half sat ratio	2.531408	
Internal phosphorus half sat ratio	1.7292025	
Nitrogen uptake water column fraction	1	
Phosphorus uptake water column fraction	1	
Detritus (POM):		
Dissolution rate	2.7941785	/d
Temp correction	1.07	
Settling velocity	0.38251	m/d
pH:		
Partial pressure of carbon dioxide	370	ppm

Atmospheric Inputs:	Summer	Fall	Winter	Spring
Min. Air Temperature, F	61.6	31.4	24.5	48.4
Max. Air Temperature, F	89.5	49.4	42.5	74.1
Dew Point, Temp., F	58.6	35.0	30.3	48.5
Wind, ft./sec. @ 21 ft.	6.6	5.2	6.0	7.4
Cloud Cover, %	10%	10%	10%	10%

Other Inputs:	
Bottom Algae Coverage	100%
Bottom SOD Coverage	100%
Prescribed SOD, $gO_2/m^2/day$	0 to 1.5
Prescribed NH4 Flux, $\mu gN/m^2/day$	0 to 600
Prescribed PO4 Flux, $\mu gP/m^2/day$	0 to 300

WASTELOAD ANALYSIS [WLA] Date: 1/11/2021

Appendix B: Mass Balance Mixing Analysis for Conservative Constituents

Discharging Facility:	2B, 3C, 3D		
UPDES No:	UT-0020915		
Permit Flow [MGD]:	13.50	Maximum Daily Flow	
	13.50	Maximum Monthly Flow	
Receiving Water:	Powell Slough		
Stream Classification:	2B, 3C, 3D		
Stream Flows [cfs]:	3.04	Summer (July-Sept)	Critical Low Flow
	3.40	Fall (Oct-Dec)	
	1.85	Winter (Jan-Mar)	
	4.64	Spring (Apr-June)	
Fully Mixed:	YES		
Acute River Width:	100%		
Chronic River Width:	100%		

Modeling Information

A simple mixing analysis was used to determine these effluent limits.

Model Inputs

The following is upstream and discharge information that was utilized as inputs for the analysis.

Headwater/Upstream Information

	Flow cfs
Summer	3.0
Fall	3.4
Winter	1.9
Spring	4.6

Discharge Information

	Flow MGD
Maximum Daily	13.5
Maximum Monthly	13.5

All model numerical inputs, intermediate calculations, outputs and graphs are available for discussion, inspection and copy at the Division of Water Quality.

Effluent Limitations

Current State water quality standards are required to be met under a variety of conditions including in-stream flows targeted to the 7-day, 10-year low flow (R317-2-9).

Other conditions used in the modeling effort reflect the environmental conditions expected at low stream flows.

Effluent Limitations for Protection of Recreation (Class 2B Waters)

Physical Parameter	**Maximum Concentration**
pH Minimum	6.5
pH Maximum	9.0

Bacteriological

E. coli (30 Day Geometric Mean)	206 (#/100 mL)

E. coli (Maximum)	668 (#/100 mL)

Effluent Limitations for Protection of Aquatic Wildlife (Class 3C Waters)

Physical

Parameter	Maximum Concentration
Temperature (deg C)	27
Temperature Change (deg C)	4

Inorganics	Chronic Standard (4 Day Average)	Acute Standard (1 Hour Average)
Parameter	Standard	Standard
Phenol (mg/L)		0.010
Hydrogen Sulfide (Undissociated) [mg/L]		0.002

Total Recoverable Metals	Chronic Standard (4 Day Average)[1]			Acute Standard (1 Hour Average)[1]		
Parameter	Standard	Background[2]	Limit	Standard	Background[2]	Limit
Aluminum (µg/L)	87.0	24.3	N/A	750.0	24.3	855.6
Arsenic (µg/L)	150.0	1.1	171.7	340.0	1.1	389.3
Cadmium (µg/L)	0.52	0.05	0.59	5.3	0.1	6.0
Chromium VI (µg/L)[3]	11.0	7.4	11.5	16.0	7.4	17.3
Chromium III (µg/L)[3]	178.9	1.4	204.8	3743.5	1.4	4288.2
Copper (µg/L)	20.0	4.5	22.2	32.4	4.5	36.5
Cyanide (µg/L))[3]	5.2	3.5	5.4	22.0	3.5	24.7
Iron (µg/L)		46.4		1000.0	17.7	1143.0
Lead (µg/L)	9.9	0.3	11.3	254.1	0.3	291.1
Mercury (µg/L)[3]	0.012	0.008	0.013	2.4	0.0	2.7
Molybdenum (ug/L)		2.5			2.5	
Nickel (µg/L)	110.9	2.5	126.7	997.9	2.5	1142.7
Selenium (µg/L)	4.6	0.7	5.2	18.4	0.7	21.0
Silver (µg/L)		0.3		17.6	0.6	20.0
Tributylin (µg/L)[3]	0.072	0.048	0.075	0.46	0.05	0.52
Zinc (µg/L)	255.1	48.4	285.2	255.1	48.4	285.2

1: Based upon a Hardness of 244 mg/l as CaCO3

2: Background concentration average of monitoring data

3: Background assumed 67% of chronic standard

Organics [Pesticides]	Chronic Standard (4 Day Average)			Acute Standard (1 Hour Average)		
Parameter	Standard	Background[1]	Limit	Standard	Background[1]	Limit
Aldrin (µg/L)				1.5	1.0	1.6
Chlordane (µg/L)	0.0043	0.0029	0.0045	1.2	0.0	1.4
DDT, DDE (µg/L)	0.001	0.001	0.001	0.55	0.00	0.63
Diazinon (µg/L)	0.17	0.11	0.18	0.17	0.11	0.18
Dieldrin (µg/L)	0.0056	0.0038	0.0059	0.24	0.00	0.27
Endosulfan, a & b (µg/L)	0.056	0.038	0.059	0.11	0.04	0.12
Endrin (µg/L)	0.036	0.024	0.038	0.086	0.024	0.095
Heptachlor & H. epoxide (µg/L)	0.0038	0.0025	0.0040	0.26	0.00	0.30
Lindane (µg/L)	0.08	0.05	0.08	1.0	0.1	1.1
Methoxychlor (µg/L)				0.03	0.02	0.03
Mirex (µg/L)				0.001	0.001	0.001
Nonylphenol (µg/L)	6.6	4.4	6.9	28.0	4.4	31.4
Parathion (µg/L)	0.0130	0.0087	0.0136	0.066	0.009	0.074
PCB's (µg/L)	0.014	0.009	0.015			
Pentachlorophenol (µg/L)	15.0	10.1	15.7	19.0	10.1	20.3
Toxephene (µg/L)	0.0002	0.0001	0.0002	0.73	0.00	0.84

1: Background concentration assumed 67% of chronic standard

Radiological	Maximum Concentration		
Parameter	Standard	Background[1]	Limit
Gross Alpha (pCi/L)	15	10.1	15.7

1: Background concentration assumed 67% of chronic standard; TDS is based on observed ambient data

DWQ-2020-025811