Jeffries, Dawn (DEQ)

From: Jeffries, Dawn (DEQ)
Sent: Monday, January 04, 2016 2:33 PM
To: 'john.merriner@winchesterva.gov'
Subject: Opequon WRF, VPDES Permit No. VA0065552, Frederick County

Dear Mr. Merriner:

Your application has been reviewed and appears to be complete pending receipt of the results of the three sampling events for total dissolved solids and oil& grease sampling that we discussed earlier today. The next steps involve assembling the information necessary to develop the permit limitations and then drafting the permit. Once the draft permit is prepared and the appropriate reviews are performed, I will transmit the draft permit and supporting documentation to you for review. I expect to have this draft permit package to you within the next 3 months.

The Department of Environmental Quality strives to complete the permitting process in a timely manner. If you have any questions about our procedures or the status of your draft permit, please do not hesitate to contact us.

Sincerely,
Dawn Jeffries
VA Dept. of Environmental Quality
Valley Regional Office
P.O. Box 3000
Harrisonburg, Virginia 22801
540-574-7898
dawn.jeffries@deq.virginia.gov

Jeffries, Dawn (DEQ)

From: Jeffries, Dawn (DEQ)
Sent: Tuesday, December 22, 2015 2:04 PM
To: 'john.merriner@winchesterva.gov'
Subject: Reissuance of Permit No. VA0065552 - Opequon Water Reclamation Facility

Mr. Merriner,

In reviewing the reissuance application for the Opequon WRF, I have a question on Form 2A.
I see on PartB.6 of that form, no sampling data for Oil & Grease or for Total Dissolved Solids.
I assume there are sampling data to submit. Are you planning to get this, or are you requesting a waiver for these two parameters?

Thank you for your help.

Dawn Jeffries
VA Dept. of Environmental Quality
Valley Regional Office
P.O. Box 3000
Harrisonburg, Virginia 22801
540-574-7898
dawn.jeffries@deq.virginia.gov

Frederick-Winchester Service Authority
P.O. Box 43
Winchester, VA 22604

Office: 107 N. Kent St.
County Office Complex
Winchester, VA 22601
(540) 722 – 3579

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DEQ – Valley
DEC 17 2015
To: _____
FILE: _____

December 10, 2015

Dawn Jeffries
Virginia Department of Environmental Quality
Valley Regional Office
4411 Early Road
P.O. Box 3000
Harrisonburg, VA 22801

Subject: **Reissuance of VPDES Permit No. VA0065552 – Opequon Water Reclamation Facility**

Dear Ms. Jeffries:

Please find enclosed a completed application for reissuance of the above-mentioned discharge permit issued to the Frederick-Winchester Service Authority for the Opequon Water Reclamation Facility. We have assembled the application into four sections.

Section1 titled - Form 2A- which contains the "Basic Application Information"- Parts A, B and C.

Section 2 titled - Part D, E, & F which contains supplementary information on effluent testing data, toxicity monitoring data, and industrial users related to the Opequon Facility

Section 3 titled -Sludge Permit- which contains information regarding processing, testing and disposal of sludge produced at the Opequon Facility.

Section 4 titled -Other Forms- which contains VPDES Permit Application Addendum, Permit Billing Information Form and Public Notice Billing Information Form.

Should there be any need for clarification or additional information regarding this permit application I would direct you to Mr. John Merriner – Operations Superintendent, Public Service Department. Mr. Merriner can be reached at (540) 686-7173 or by e-mail at John.Merriner@winchesterva.gov.

Sincerely yours,

Jesse W Moffett
Executive Director
Frederick Winchester Service Authority

CC: John Merriner – Operations Superintendent
Richard Wadkins – Facility Manager – Opequon Water Reclamation Facility

SECTION 1

FORM 2A

"BASIC APPLICATION INFORMATION"

PARTS A, B AND C

FACILITY NAME AND PERMIT NUMBER:
Opequon Water Reclamation Facility VA0065552

Form Approved 1/14/99
OMB Number 2040-0086

FORM **2A** NPDES

NPDES FORM 2A APPLICATION OVERVIEW

APPLICATION OVERVIEW

Form 2A has been developed in a modular format and consists of a "Basic Application Information" packet and a "Supplemental Application Information" packet. The Basic Application Information packet is divided into two parts. All applicants must complete Parts A and C. Applicants with a design flow greater than or equal to 0.1 mgd must also complete Part B. Some applicants must also complete the Supplemental Application Information packet. The following items explain which parts of Form 2A you must complete.

BASIC APPLICATION INFORMATION:

A. **Basic Application Information for all Applicants.** All applicants must complete questions A.1 through A.8. A treatment works that discharges effluent to surface waters of the United States must also answer questions A.9 through A.12.

B. **Additional Application Information for Applicants with a Design Flow ≥ 0.1 mgd.** All treatment works that have design flows greater than or equal to 0.1 million gallons per day must complete questions B.1 through B.6.

C. **Certification.** All applicants must complete Part C (Certification).

SUPPLEMENTAL APPLICATION INFORMATION:

D. **Expanded Effluent Testing Data.** A treatment works that discharges effluent to surface waters of the United States and meets one or more of the following criteria must complete Part D (Expanded Effluent Testing Data):

1. Has a design flow rate greater than or equal to 1 mgd,
2. Is required to have a pretreatment program (or has one in place), or
3. Is otherwise required by the permitting authority to provide the information.

E. **Toxicity Testing Data.** A treatment works that meets one or more of the following criteria must complete Part E (Toxicity Testing Data):

1. Has a design flow rate greater than or equal to 1 mgd,
2. Is required to have a pretreatment program (or has one in place), or
3. Is otherwise required by the permitting authority to submit results of toxicity testing.

F. **Industrial User Discharges and RCRA/CERCLA Wastes.** A treatment works that accepts process wastewater from any significant industrial users (SIUs) or receives RCRA or CERCLA wastes must complete Part F (Industrial User Discharges and RCRA/CERCLA Wastes). SIUs are defined as:

1. All industrial users subject to Categorical Pretreatment Standards under 40 Code of Federal Regulations (CFR) 403.6 and 40 CFR Chapter I, Subchapter N (see instructions); and
2. Any other industrial user that:
   a. Discharges an average of 25,000 gallons per day or more of process wastewater to the treatment works (with certain exclusions); or
   b. Contributes a process wastestream that makes up 5 percent or more of the average dry weather hydraulic or organic capacity of the treatment plant; or
   c. Is designated as an SIU by the control authority.

G. **Combined Sewer Systems.** A treatment works that has a combined sewer system must complete Part G (Combined Sewer Systems).

ALL APPLICANTS MUST COMPLETE PART C (CERTIFICATION)

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To: _____
FILE: _____

FACILITY NAME AND PERMIT NUMBER:
Opequon Water Reclamation Facility VA0065552

Form Approved 1/14/99
OMB Number 2040-0086

BASIC APPLICATION INFORMATION

PART A. BASIC APPLICATION INFORMATION FOR ALL APPLICANTS:

All treatment works must complete questions A.1 through A.8 of this Basic Application Information packet.

A.1. Facility Information.

Facility name: Opequon Water Reclamation Facility

Mailing Address: 3100 Berryville Pike
Winchester, Virginia 22603

Contact person: Mr. Richard Wadkins

Title: Facility Manager

Telephone number: (540) 665-9867

Facility Address (not P.O. Box): 3100 Berryville Pike
Winchester, Virginia 22603

A.2. Applicant Information. If the applicant is different from the above, provide the following:

Applicant name: Frederick-Winchester Service Authority

Mailing Address: P.O. Box 43
Winchester, Virginia 22603

Contact person: Jesse W Moffett

Title: Executive Director - Frederick-Winchester Service Authority

Telephone number: (540) 722-3579

Is the applicant the owner or operator (or both) of the treatment works?

✓ owner ____ operator

Indicate whether correspondence regarding this permit should be directed to the facility or the applicant.

____ facility ✓ applicant

A.3. Existing Environmental Permits. Provide the permit number of any existing environmental permits that have been issued to the treatment works (include state-issued permits).

NPDES	VA0065552	PSD	
UIC		Other	81711 (Air Permit)
RCRA		Other	

A.4. Collection System Information. Provide information on municipalities and areas served by the facility. Provide the name and population of each entity and, if known, provide information on the type of collection system (combined vs. separate) and its ownership (municipal, private, etc.).

Name	Population Served	Type of Collection System	Ownership
Frederick County	25,480	Separate	Municipal - FCSA
City of Winchester, VA	25,900	Separate	Municipal - City

Total population served 51,380

A.5. Indian Country.

a. Is the treatment works located in Indian Country?

____ Yes ✓ No

b. Does the treatment works discharge to a receiving water that is either in Indian Country or that is upstream from (and eventually flows through) Indian Country?

____ Yes ✓ No

A.6. Flow. Indicate the design flow rate of the treatment plant (i.e., the wastewater flow rate that the plant was built to handle). Also provide the average daily flow rate and maximum daily flow rate for each of the last three years. Each year's data must be based on a 12-month time period with the 12th month of "this year" occurring no more than three months prior to this application submittal.

a. Design flow rate 12.6 mgd

	Two Years Ago	Last Year	This Year	
b. Annual average daily flow rate	7.201	7.745	6.921	mgd
c. Maximum daily flow rate	19.620	19.860	18.010	mgd

A.7. Collection System. Indicate the type(s) of collection system(s) used by the treatment plant. Check all that apply. Also estimate the percent contribution (by miles) of each.

✓ Separate sanitary sewer 100 %

____ Combined storm and sanitary sewer ____ %

A.8. Discharges and Other Disposal Methods.

a. Does the treatment works discharge effluent to waters of the U.S.? ✓ Yes ____ No

If yes, list how many of each of the following types of discharge points the treatment works uses:

i. Discharges of treated effluent 1

ii. Discharges of untreated or partially treated effluent 0

iii. Combined sewer overflow points 0

iv. Constructed emergency overflows (prior to the headworks) 0

v. Other ____ 0

b. Does the treatment works discharge effluent to basins, ponds, or other surface impoundments that do not have outlets for discharge to waters of the U.S.? ____ Yes ✓ No

If yes, provide the following for each surface impoundment:

Location: ____

Annual average daily volume discharged to surface impoundment(s) ____ mgd

Is discharge ____ continuous or ____ intermittent?

c. Does the treatment works land-apply treated wastewater? ____ Yes ✓ No

If yes, provide the following for each land application site:

Location: ____

Number of acres: ____

Annual average daily volume applied to site: ____ Mgd

Is land application ____ continuous or ____ intermittent?

d. Does the treatment works discharge or transport treated or untreated wastewater to another treatment works? ____ Yes ✓ No

If yes, describe the mean(s) by which the wastewater from the treatment works is discharged or transported to the other treatment works (e.g., tank truck, pipe).

_____

If transport is by a party other than the applicant, provide:

Transporter name: _____

Mailing Address: _____

_____

Contact person: _____

Title: _____

Telephone number: _____

For each treatment works that receives this discharge, provide the following:

Name: _____

Mailing Address: _____

_____

Contact person: _____

Title: _____

Telephone number: _____

If known, provide the NPDES permit number of the treatment works that receives this discharge. _____

Provide the average daily flow rate from the treatment works into the receiving facility. NA mgd

e. Does the treatment works discharge or dispose of its wastewater in a manner not included in A.8.a through A.8.d above (e.g., underground percolation, well injection)? ____ Yes ✓ No

If yes, provide the following for each disposal method:

Description of method (including location and size of site(s) if applicable):

_____

Annual daily volume disposed of by this method: _____

Is disposal through this method _____ continuous or _____ intermittent?

FACILITY NAME AND PERMIT NUMBER:
Opequon Water Reclamation Facility VA0065552

Form Approved 1/14/99
OMB Number 2040-0086

WASTEWATER DISCHARGES:

If you answered "yes" to question A.8.a, complete questions A.9 through A.12 **once for each outfall** (including bypass points) through which effluent is discharged. Do not include information on combined sewer overflows in this section. **If you answered "no" to question A.8.a**, go to Part B, "Additional Application Information for Applicants with a Design Flow Greater than or Equal to 0.1 mgd."

A.9. Description of Outfall.

a. Outfall number 001

b. Location
N/A (City or town, if applicable) — 22603 (Zip Code)
Frederick County (County) — Virginia (State)
39 deg 10' 36" (Latitude) — 78 deg 04' 29" (Longitude)

c. Distance from shore (if applicable) N/A ft.

d. Depth below surface (if applicable) N/A ft.

e. Average daily flow rate 7.13 mgd

f. Does this outfall have either an intermittent or a periodic discharge? ____ Yes ✓ No (go to A.9.g.)

If yes, provide the following information:

Number of times per year discharge occurs: ____

Average duration of each discharge: ____

Average flow per discharge: ____ mgd

Months in which discharge occurs: ____

g. Is outfall equipped with a diffuser? ____ Yes ✓ No

A.10. Description of Receiving Waters.

a. Name of receiving water Opequon Creek

b. Name of watershed (if known) Opequon, Waterbody VAV-B08R

United States Soil Conservation Service 14-digit watershed code (if known): Not Known

c. Name of State Management/River Basin (if known): Potomac

United States Geological Survey 8-digit hydrologic cataloging unit code (if known): 02070004

d. Critical low flow of receiving stream (if applicable):
acute ____ cfs chronic ____ cfs

e. Total hardness of receiving stream at critical low flow (if applicable): ____ mg/l of $CaCO_3$

FACILITY NAME AND PERMIT NUMBER:
Opequon Water Reclamation Facility VA0065552

Form Approved 1/14/99
OMB Number 2040-0086

A.11. Description of Treatment.

a. What levels of treatment are provided? Check all that apply.

✓ Primary ✓ Secondary
✓ Advanced ✓ Other. Describe: Enhanced Nutrient Removal for N and P

b. Indicate the following removal rates (as applicable):

Design BOD_5 removal or Design $CBOD_5$ removal	97	%
Design SS removal	88	%
Design P removal	95	%
Design N removal	92	%
Other _____		%

c. What type of disinfection is used for the effluent from this outfall? If disinfection varies by season, please describe.

If disinfection is by chlorination, is dechlorination used for this outfall? ✓ Yes ____ No

d. Does the treatment plant have post aeration? ✓ Yes ____ No

A.12. Effluent Testing Information. All Applicants that discharge to waters of the US must provide effluent testing data for the following parameters. Provide the indicated effluent testing required by the permitting authority for each outfall through which effluent is discharged. Do not include information on combined sewer overflows in this section. All information reported must be based on data collected through analysis conducted using 40 CFR Part 136 methods. In addition, this data must comply with QA/QC requirements of 40 CFR Part 136 and other appropriate QA/QC requirements for standard methods for analytes not addressed by 40 CFR Part 136. At a minimum, effluent testing data must be based on at least three samples and must be no more than four and one-half years apart.

Outfall number: 001

PARAMETER	MAXIMUM DAILY VALUE		AVERAGE DAILY VALUE		
	Value	Units	Value	Units	Number of Samples
pH (Minimum)	7.00	s.u.			
pH (Maximum)	8.43	s.u.			
Flow Rate	19.86	MGD	7.12	MGD	1,795
Temperature (Winter)	21.60	deg C	13.91	deg C	911
Temperature (Summer)	26.20	deg C	21.58	deg C	884

* For pH please report a minimum and a maximum daily value

POLLUTANT		MAXIMUM DAILY DISCHARGE		AVERAGE DAILY DISCHARGE			ANALYTICAL METHOD	ML / MDL
		Conc.	Units	Conc.	Units	Number of Samples		
CONVENTIONAL AND NONCONVENTIONAL COMPOUNDS.								
BIOCHEMICAL OXYGEN	BOD-5	24.04	mg/l	2.93	mg/l	498		
DEMAND (Report one)	CBOD-5	9.00	mg/l	2.69	mg/l	204		
FECAL COLIFORM		58	MPN/100	3.35	MPN/100	339		
TOTAL SUSPENDED SOLIDS (TSS)		3.5	mg/l	1.08	mg/l	60		

END OF PART A.
REFER TO THE APPLICATION OVERVIEW TO DETERMINE WHICH OTHER PARTS OF FORM 2A YOU MUST COMPLETE

FACILITY NAME AND PERMIT NUMBER:
Opequon Water Reclamation Facility VA0065552

Form Approved 1/14/99
OMB Number 2040-0086

BASIC APPLICATION INFORMATION

PART B. ADDITIONAL APPLICATION INFORMATION FOR APPLICANTS WITH A DESIGN FLOW GREATER THAN OR EQUAL TO 0.1 MGD (100,000 gallons per day).

All applicants with a design flow rate ≥ 0.1 mgd must answer questions B.1 through B.6. All others go to Part C (Certification).

B.1. Inflow and Infiltration. Estimate the average number of gallons per day that flow into the treatment works from inflow and/or infiltration.

925,000 gpd

Briefly explain any steps underway or planned to minimize inflow and infiltration.

The City of Winchester and the Frederick County Sanitation Authority have on going programs for I/I reductiom

B.2. Topographic Map. Attach to this application a topographic map of the area extending at least one mile beyond facility property boundaries. This map must show the outline of the facility and the following information. (You may submit more than one map if one map does not show the entire area.)

a. The area surrounding the treatment plant, including all unit processes.

b. The major pipes or other structures through which wastewater enters the treatment works and the pipes or other structures through which treated wastewater is discharged from the treatment plant. Include outfalls from bypass piping, if applicable.

c. Each well where wastewater from the treatment plant is injected underground.

d. Wells, springs, other surface water bodies, and drinking water wells that are: 1) within 1/4 mile of the property boundaries of the treatment works, and 2) listed in public record or otherwise known to the applicant.

e. Any areas where the sewage sludge produced by the treatment works is stored, treated, or disposed.

f. If the treatment works receives waste that is classified as hazardous under the Resource Conservation and Recovery Act (RCRA) by truck, rail, or special pipe, show on the map where that hazardous waste enters the treatment works and where it is treated, stored, and/or disposed.

B.3. Process Flow Diagram or Schematic. Provide a diagram showing the processes of the treatment plant, including all bypass piping and all backup power sources or redundancy in the system. Also provide a water balance showing all treatment units, including disinfection (e.g, chlorination and dechlorination). The water balance must show daily average flow rates at influent and discharge points and approximate daily flow rates between treatment units. Include a brief narrative description of the diagram.

B.4. Operation/Maintenance Performed by Contractor(s).

Are any operational or maintenance aspects (related to wastewater treatment and effluent quality) of the treatment works the responsibility of a contractor? ✓ Yes ___ No

If yes, list the name, address, telephone number, and status of each contractor and describe the contractor's responsibilities (attach additional pages if necessary).

Name: see attached list

Mailing Address: _____

Telephone Number: _____

Responsibilities of Contractor: _____

B.5. Scheduled Improvements and Schedules of Implementation. Provide information on any uncompleted implementation schedule or uncompleted plans for improvements that will affect the wastewater treatment, effluent quality, or design capacity of the treatment works. If the treatment works has several different implementation schedules or is planning several improvements, submit separate responses to question B.5 for each. (If none, go to question B.6.)

a. List the outfall number (assigned in question A.9) for each outfall that is covered by this implementation schedule.

001

b. Indicate whether the planned improvements or implementation schedule are required by local, State, or Federal agencies.

___ Yes ✓ No

c If the answer to B.5.b is "Yes," briefly describe, including new maximum daily inflow rate (if applicable).
See Attached Project Scope

d. Provide dates imposed by any compliance schedule or any actual dates of completion for the implementation steps listed below, as applicable. For improvements planned independently of local, State, or Federal agencies, indicate planned or actual completion dates, as applicable. Indicate dates as accurately as possible.

Implementation Stage	Schedule MM / DD / YYYY	Actual Completion MM / DD / YYYY
– Begin construction	03 / 03 / 2014	03 / 03 / 2014
– End construction	05 / 01 / 2016	___/___/_____
– Begin discharge	___/___/_____	___/___/_____
– Attain operational level	___/___/_____	___/___/_____

e. Have appropriate permits/clearances concerning other Federal/State requirements been obtained? ✓ Yes ___ No

Describe briefly: Have Certificate to Construct issued by the Department of Environment Quality

B.6. EFFLUENT TESTING DATA (GREATER THAN 0.1 MGD ONLY).

Applicants that discharge to waters of the US must provide effluent testing data for the following parameters. Provide the indicated effluent testing required by the permitting authority for each outfall through which effluent is discharged. Do not include information on combined sewer overflows in this section. All information reported must be based on data collected through analysis conducted using 40 CFR Part 136 methods. In addition, this data must comply with QA/QC requirements of 40 CFR Part 136 and other appropriate QA/QC requirements for standard methods for analytes not addressed by 40 CFR Part 136. At a minimum, effluent testing data must be based on at least three pollutant scans and must be no more than four and one-half years old.

Outfall Number: 001

POLLUTANT	MAXIMUM DAILY DISCHARGE		AVERAGE DAILY DISCHARGE			ANALYTICAL METHOD	ML / MDL
	Conc.	Units	Conc.	Units	Number of Samples		
CONVENTIONAL AND NONCONVENTIONAL COMPOUNDS.							
AMMONIA (as N)	12.18	mg/l	.239	mg/l	1,700		
CHLORINE (TOTAL RESIDUAL, TRC)	.82	mg/l	0.00	mg/l	1460	4500-CL-D	0.1 mg/l
DISSOLVED OXYGEN	12.87	mg/l	9.32	mg/l	1795	4500-OG	.01 mg/l
TOTAL KJELDAHL NITROGEN (TKN)	6.17	mg/l	1.10	mg/l	286		
NITRATE PLUS NITRITE NITROGEN	3.72	mg/l	1.15	mg/l	288	4500Norg	0.5 mg/l
OIL and GREASE	N/A		N/A				
PHOSPHORUS (Total)	10.78	mg/l	.19	mg/l	322	4500PBE	0.10 mg/l
TOTAL DISSOLVED SOLIDS (TDS)	N/A		N/A				
OTHER							

END OF PART B.
REFER TO THE APPLICATION OVERVIEW TO DETERMINE WHICH OTHER PARTS OF FORM 2A YOU MUST COMPLETE

FACILITY NAME AND PERMIT NUMBER:

Opequon Water Reclamation Facility VA0065552

Form Approved 1/14/99
OMB Number 2040-0086

BASIC APPLICATION INFORMATION

PART C. CERTIFICATION

All applicants must complete the Certification Section. Refer to instructions to determine who is an officer for the purposes of this certification. All applicants must complete all applicable sections of Form 2A, as explained in the Application Overview. Indicate below which parts of Form 2A you have completed and are submitting. By signing this certification statement, applicants confirm that they have reviewed Form 2A and have completed all sections that apply to the facility for which this application is submitted.

Indicate which parts of Form 2A you have completed and are submitting:

✓ Basic Application Information packet

Supplemental Application Information packet:

✓ Part D (Expanded Effluent Testing Data)

✓ Part E (Toxicity Testing: Biomonitoring Data)

✓ Part F (Industrial User Discharges and RCRA/CERCLA Wastes)

____ Part G (Combined Sewer Systems)

ALL APPLICANTS MUST COMPLETE THE FOLLOWING CERTIFICATION.

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system or those persons directly responsible for gathering the information, the information is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Name and official title: Jesse W. Moffett

Signature: [signature]

Telephone number: (540) 722-3579

Date signed: 8/6/15

Upon request of the permitting authority, you must submit any other information necessary to assess wastewater treatment practices at the treatment works or identify appropriate permitting requirements.

SEND COMPLETED FORMS TO:

Contractors performing maintenance or operational functions related to the Opequon Water Reclamation Facility (Item B.4. of Part B of Application)

Abel Pumps
79 N Industrial Park
Sewickley, PA 15143-2339
412-741-3222
Press feed pump parts repairs and service

Coastal Bioanalysts
6400 Enterprise Ct.
Glouchester, VA 23061
804-694-8285
Toxic Monitoring

Environmental Systems Services
218 North Main Street
Culpeper, VA 22701
540-825-6660
Contract Lab

Instrulogic
P0 Box 468
Round Hill, VA 20142-0468
540-338-2222
Flow meter calibration — press control system service

Miller & Anderson
4150 Martinsburg Pike
Clearbrook, VA 22624
540-667-4757
Electrical, HVAC service

Substation Test Company
4110 Forrestville Rd.
Forrestville, MD 20747
301-967-3500
Main power switchgear, high voltage breaker, and transformer service

Universal Filtration
703 Bascomb Commercial Park
Suite 103
Woodstock, GA 30189
770-592-7564
Filter press parts and service

SECTION 2

SUPPLEMENTAL APPLICATION INFORMATION

PARTS D, E AND F

FACILITY NAME AND PERMIT NUMBER: **Opeqoun Water Reclamation Facility VA0065552**

SUPPLEMENTAL APPLICATION INFORMATION

PART D. EXPANDED EFFLUENT TESTING DATA

Refer to the directions on the cover page to determine whether this section applies to the treatment works.

Effluent Testing: 1.0 mgd and Pretreatment Treatment Works. If the treatment works has a design flow greater than or equal to 1.0 mgd or it has (or is required to have) a pretreatment program, or is otherwise required by the permitting authority to provide the data, then provide effluent testing data for the following pollutants. Provide the indicated effluent testing information and any other information required by the permitting authority for each outfall through which effluent is discharged. Do not include information on combined sewer overflows in this section. All information reported must be based on data collected through analyses conducted using 40 CFR Part 136 methods. In addition, these data must comply with QA/QC requirements of 40 CFR Part 136 and other appropriate QA/QC requirements for standard methods for analytes not addressed by 40 CFR Part 136. Indicate in the blank rows provided below any data you may have on pollutants not specifically listed in this form. At a minimum, effluent testing data must be based on at least three pollutant scans and must be no more than four and one-half years old.

Outfall number: 001 (Complete once for each outfall discharging effluent to waters of the United States.)

POLLUTANT	MAXIMUM DAILY DISCHARGE				AVERAGE DAILY DISCHARGE					ANALYTICAL METHOD	ML/ MDL
	Conc.	Units	Mass	Units	Conc.	Units	Mass	Units	Number of Samples		
METALS (TOTAL RECOVERABLE), CYANIDE, PHENOLS, AND HARDNESS.											
ANTIMONY	6.8	ug/l			< 5.60	ug/l	0.275		3	EPA 6010	
ARSENIC	8.1	ug/l			< 8.73	ug/l	0.430		3	EPA 6010	
BERYLLIUM	<QL	ug/l			< 1.00	ug/l	0.049		3	EPA 6010	
CADMIUM	<QL	ug/l			< 1.00	ug/l	0.049		3	EPA 6010	
CHROMIUM	<QL	ug/l			< 5.00	ug/l	0.246		3	EPA 6010	
COPPER	9.1	ug/l			6.43	ug/l	0.316		3	EPA 6010	
LEAD	<QL	ug/l			< 5.00	ug/l	0.246		3	EPA 6010	
MERCURY	<QL	ug/l			< 0.2	ug/l	0.010		3	EPA 7470	
NICKEL	6.5	ug/l			4.03	ug/l	0.198		3	EPA 6010	
SELENIUM	6.8	ug/l			< 7.87	ug/l	0.387		3	EPA 6010	
SILVER	<QL	ug/l			< 5.00	ug/l	0.246		3	EPA 6010	
THALLIUM	<QL	ug/l			< 10.00	ug/l	0.492		3	EPA 6010	
ZINC	43.1	ug/l			40.8	ug/l	2.007		3	EPA 6010	
CYANIDE	0.0086	mg/l			< 0.0066	mg/l			3	SM 4500-CN-E	
TOTAL PHENOLIC COMPOUNDS	0.012	mg/l			< 0.0085	mg/l			3	EPA 420.4	
HARDNESS (AS CaCO3)		mg/l			209.00	mg/l			2	EPA 200.7	
Use this space (or a separate sheet) to provide information on other metals requested by the permit writer.											

FACILITY NAME AND PERMIT NUMBER: Opequon Water Reclamation Facility

VA0065552

Outfall number: 001 (Complete once for each outfall discharging effluent to waters of the United States.)

POLLUTANT	MAXIMUM DAILY DISCHARGE				AVERAGE DAILY DISCHARGE					ANALYTICAL METHOD	ML/ MDL
	Conc.	Units	Mass	Units	Conc.	Units	Mass	Units	Number of Samples		
VOLATILE ORGANIC COMPOUNDS.											
ACROLEIN		ug/l				ug/l			3	EPA 8270	
ACRYLONITRILE		ug/l				ug/l			3	EPA 8270	
BENZENE	<QL	ug/l			< 1.00	ug/l	0.049185	kg	3	EPA 8270	
BROMOFORM	<QL	ug/l			< 2.00	ug/l	0.09837	kg	3	EPA 8270	
CARBON TETRACHLORIDE	<QL	ug/l			< 1.00	ug/l	0.049185	kg	3	EPA 8270	
CLOROBENZENE	<QL	ug/l			< 1.00	ug/l	0.049185	kg	3	EPA 8270	
CHLORODIBROMO-METHANE		ug/l				ug/l			3	EPA 8270	
CHLOROETHANE	<QL	ug/l			< 1.00	ug/l	0.049185	kg	3	EPA 8270	
2-CHLORO-ETHYLVINYL ETHER		ug/l				ug/l			3	EPA 8270	
CHLOROFORM	12.30	ug/l			8.27	ug/l			3	EPA 8270	
DICHLOROBROMO-METHANE	2.30	ug/l			1.85	ug/l			3	EPA 8270	
1,1-DICHLOROETHANE	<QL	ug/l			< 1.00	ug/l			3	EPA 8270	
1,2-DICHLOROETHANE	<QL	ug/l			< 1.00	ug/l			3	EPA 8270	
TRANS-1,2-DICHLORO-ETHYLENE	<QL	ug/l			< 1.00	ug/l			3	EPA 8270	
1,1-DICHLOROETHYLENE	<QL	ug/l			< 1.00	ug/l			3	EPA 8270	
1,2-DICHLOROPROPANE	<QL	ug/l			< 1.00	ug/l			3	EPA 8270	
1,3-DICHLORO-PROPYLENE		ug/l				ug/l			3	EPA 8270	
ETHYLBENZENE	<QL	ug/l			< 1.00	ug/l			3	EPA 8270	
METHYL BROMIDE		ug/l				ug/l			3	EPA 8270	
METHYL CHLORIDE		ug/l				ug/l			3	EPA 8270	
METHYLENE CHLORIDE	<QL	ug/l			< 2.00	ug/l			3	EPA 8270	
1,1,2,2-TETRACHLORO-ETHANE	<QL	ug/l			< 1.00	ug/l			3	EPA 8270	
TETRACHLORO-ETHYLENE	<QL	ug/l			< 1.00	ug/l			3	EPA 8270	
TOLUENE	<QL	ug/l			< 1.00	ug/l			3	EPA 8270	

FACILITY NAME AND PERMIT NUMBER: Opequon Water Reclamation Facility
VA0065552

Outfall number: 001 (Complete once for each outfall discharging effluent to waters of the United States.)

POLLUTANT	MAXIMUM DAILY DISCHARGE				AVERAGE DAILY DISCHARGE					ANALYTICAL METHOD	ML/ MDL
	Conc.	Units	Mass	Units	Conc.	Units	Mass	Units	Number of Samples		
1,1,1-TRICHLOROETHANE	<QL	ug/l			< 1.00	ug/l			3	EPA 8260	
1,1,2-TRICHLOROETHANE	<QL	ug/l			< 1.00	ug/l			3	EPA 8260	
TRICHLORETHYLENE	<QL	ug/l			< 1.00	ug/l			3	EPA 8260	
VINYL CHLORIDE	<QL	ug/l			< 1.00	ug/l			3	EPA 8260	
Use this space (or a separate sheet) to provide information on other volatile organic compounds requested by the permit writer.											
ACID-EXTRACTABLE COMPOUNDS											
P-CHLORO-M-CRESOL		ug/l				ug/l			3	EPA 8270	
2-CHLOROPHENOL	<QL	ug/l			< 10.00	ug/l			3	EPA 8270	
2,4-DICHLOROPHENOL	<QL	ug/l			< 10.00	ug/l			3	EPA 8270	
2,4-DIMETHYLPHENOL	<QL	ug/l			< 10.00	ug/l			3	EPA 8270	
4,6-DINITRO-O-CRESOL		ug/l				ug/l			3	EPA 8270	
2,4-DINITROPHENOL	<QL	ug/l			< 10.00	ug/l			3	EPA 8270	
2-NITROPHENOL	<QL	ug/l			< 10.00	ug/l			3	EPA 8270	
4-NITROPHENOL	<QL	ug/l			< 10.00	ug/l			3	EPA 8270	
PENTACHLOROPHENOL	<QL	ug/l			< 10.00	ug/l			3	EPA 8270	
PHENOL	0.012	ug/l			< 0.0085	ug/l			3	EPA 8270	
2,4,6-TRICHLOROPHENOL	<QL	ug/l			< 10.00	ug/l			3	EPA 8270	
Use this space (or a separate sheet) to provide information on other acid-extractable compounds requested by the permit writer.											
BASE-NEUTRAL COMPOUNDS.											
ACENAPHTHENE	<QL				< 10.00	ug/l			3	EPA 8270	
ACENAPHTHYLENE	<QL				< 10.00	ug/l			3	EPA 8270	
ANTHRACENE	<QL				< 10.00	ug/l			3	EPA 8270	
BENZIDINE						ug/l			3	EPA 8270	
BENZO(A)ANTHRACENE	<QL				< 10.00	ug/l			3	EPA 8270	
BENZO(A)PYRENE	<QL				< 10.00	ug/l			3	EPA 8270	

FACILITY NAME AND PERMIT NUMBER: Opequon Water Reclamation Facility
VA0065552

Outfall number: 001 (Complete once for each outfall discharging effluent to waters of the United States.)

POLLUTANT	MAXIMUM DAILY DISCHARGE					AVERAGE DAILY DISCHARGE					ANALYTICAL METHOD	ML/ MDL
	Conc.	Units	Mass	Units		Conc.	Units	Mass	Units	Number of Samples		
3,4 BENZO-FLUORANTHENE	<QL	ug/l					ug/l				EPA 8270	
BENZO(GHI)PERYLENE	<QL	ug/l			<	10.00	ug/l			3	EPA 8270	
BENZO(K)FLUORANTHENE	<QL	ug/l			<	10.00	ug/l			3	EPA 8270	
BIS (2-CHLOROETHOXY) METHANE	<QL	ug/l			<	10.00	ug/l			3	EPA 8270	
BIS (2-CHLOROETHYL)-ETHER	<QL	ug/l			<	10.00	ug/l			3	EPA 8270	
BIS (2-CHLOROISO-PROPYL) ETHER	<QL	ug/l			<	10.00	ug/l			3	EPA 8270	
BIS (2-ETHYLHEXYL) PHTHALATE	<QL	ug/l				35.83	ug/l			3	EPA 8270	
4-BROMOPHENYL PHENYL ETHER	<QL	ug/l			<	20.00	ug/l			3	EPA 8270	
BUTYL BENZYL PHTHALATE	<QL	ug/l			<	10.00	ug/l			3	EPA 8270	
2-CHLORONAPHTHALENE	<QL	ug/l			<	10.00	ug/l			3	EPA 8270	
4-CHLORPHENYL PHENYL ETHER	<QL	ug/l			<	10.00	ug/l			3	EPA 8270	
CHRYSENE	<QL	ug/l			<	10.00	ug/l			3	EPA 8270	
DI-N-BUTYL PHTHALATE	<QL	ug/l			<	10.00	ug/l			3	EPA 8270	
DI-N-OCTYL PHTHALATE	<QL	ug/l			<	10.00	ug/l			3	EPA 8270	
DIBENZO(A,H) ANTHRACENE	<QL	ug/l			<	10.00	ug/l			3	EPA 8270	
1,2-DICHLOROBENZENE	<QL	ug/l			<	1.00	ug/l			3	EPA 8270	
1,3-DICHLOROBENZENE	<QL	ug/l			<	10.00	ug/l			3	EPA 8270	
1,4-DICHLOROBENZENE	<QL	ug/l			<	10.00	ug/l			3	EPA 8270	
3,3-DICHLOROBENZIDINE	<QL	ug/l			<	20.00	ug/l			3	EPA 8270	
DIETHYL PHTHALATE	<QL	ug/l			<	10.00	ug/l			3	EPA 8270	
DIMETHYL PHTHALATE	<QL	ug/l			<	10.00	ug/l			3	EPA 8270	
2,4-DINITROTOLUENE	<QL	ug/l			<	10.00	ug/l			3	EPA 8270	
2,6-DINITROTOLUENE	<QL	ug/l			<	10.00	ug/l			3	EPA 8270	
1,2-DIPHENYLHYDRAZINE		ug/l					ug/l			3	EPA 8270	

FACILITY NAME AND PERMIT NUMBER: Opequon Water Reclamation Facility
VA0065552

Outfall number: 001 (Complete once for each outfall discharging effluent to waters of the United States.)

POLLUTANT	MAXIMUM DAILY DISCHARGE				AVERAGE DAILY DISCHARGE					ANALYTICAL METHOD	ML/ MDL
	Conc.	Units	Mass	Units	Conc.	Units	Mass	Units	Number of Samples		
FLUORANTHENE	<QL	ug/l			< 10.00	ug/l			3	EPA 8270	
FLUORENE	<QL	ug/l			< 10.00	ug/l			3	EPA 8270	
HEXACHLOROBENZENE	<QL	ug/l			< 10.00	ug/l			3	EPA 8270	
HEXACHLOROBUTADIENE	<QL	ug/l				ug/l			3	EPA 8270	
HEXACHLOROCYCLO- PENTADIENE	<QL	ug/l			< 10.00	ug/l			3	EPA 8270	
HEXACHLOROETHANE	<QL	ug/l			< 10.00	ug/l			3	EPA 8270	
INDENO(1,2,3-CD)PYRENE	<QL	ug/l			< 10.00	ug/l			3	EPA 8270	
ISOPHORONE	<QL	ug/l			< 10.00	ug/l			3	EPA 8270	
NAPHTHALENE	<QL	ug/l			< 10.00	ug/l			3	EPA 8270	
NITROBENZENE	<QL	ug/l			< 10.00	ug/l			3	EPA 8270	
N-NITROSODI-N-PROPYLAMINE	<QL	ug/l			< 10.00	ug/l			3	EPA 8270	
N-NITROSODI- METHYLAMINE	<QL	ug/l			< 10.00	ug/l			3	EPA 8270	
N-NITROSODI-PHENYLAMINE	<QL	ug/l			< 10.00	ug/l			3	EPA 8270	
PHENANTHRENE	<QL	ug/l			< 10.00	ug/l			3	EPA 8270	
PYRENE	<QL	ug/l			< 10.00	ug/l			3	EPA 8270	
1,2,4-TRICHLOROBENZENE	<QL	ug/l			< 10.00	ug/l			3	EPA 8270	
Use this space (or a separate sheet) to provide information on other base-neutral compounds requested by the permit writer.											
Use this space (or a separate sheet) to provide information on other pollutants (e.g., pesticides) requested by the permit writer.											

END OF PART D.
REFER TO THE APPLICATION OVERVIEW TO DETERMINE WHICH OTHER PARTS OF FORM 2A YOU MUST COMPLETE

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9800 Kincey Ave. Suite 100
Huntersville, NC 28078
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August 27, 2012

Ms. Andrea Martin
Greenway Engineering Inc
151 Windy Hill Ln.
Winchester, VA 22602

RE: Project: OWRF EE 081412
Pace Project No.: 92128348

Dear Ms. Martin:
Enclosed are the analytical results for sample(s) received by the laboratory on August 15, 2012. The results relate only to the samples included in this report. Results reported herein conform to the most current TNI standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

Analyses were performed at the Pace Analytical Services location indicated on the sample analyte page for analysis unless otherwise footnoted.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Bonnie McKee

Bonnie McKee

bonnie.mckee@pacelabs.com
Project Manager

Enclosures

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CERTIFICATIONS

Project: OWRF EE 081412
Pace Project No.: 92128348

Ormond Beach Certification IDs
8 East Tower Circle, Ormond Beach, FL 32174
Alabama Certification #: 41320
Arizona Certification #: AZ0735
Colorado Certification: FL NELAC Reciprocity
Connecticut Certification #: PH 0216
Florida Certification #: E83079
Georgia Certification #: 955
Guam Certification: FL NELAC Reciprocity
Hawaii Certification: FL NELAC Reciprocity
Illinois Certification #: 200068
Indiana Certification: FL NELAC Reciprocity
Kansas Certification #: E-10383
Kentucky Certification #: 90050
Louisiana Certification #: FL NELAC Reciprocity
Louisiana Environmental Certificate #: 05007
Maine Certification #: FL01264
Massachusetts Certification #: M-FL1264
Michigan Certification #: 9911
Mississippi Certification: FL NELAC Reciprocity
Missouri Certification #: 236
Montana Certification #: Cert 0074
Nevada Certification: FL NELAC Reciprocity
New Hampshire Certification #: 2958
New Jersey Certification #: FL765
New York Certification #: 11608
North Carolina Environmental Certificate #: 667
North Carolina Certification #: 12710
Pennsylvania Certification #: 68-00547
Puerto Rico Certification #: FL01264
Tennessee Certification #: TN02974
Texas Certification: FL NELAC Reciprocity
US Virgin Islands Certification: FL NELAC Reciprocity
Virginia Environmental Certification #: 460165
Washington Certification #: C955
West Virginia Certification #: 9962C
Wisconsin Certification #: 399079670
Wyoming (EPA Region 8): FL NELAC Reciprocity

Charlotte Certification IDs
9800 Kincey Ave. Ste 100, Huntersville, NC 28078
North Carolina Drinking Water Certification #: 37706
North Carolina Field Services Certification #: 5342
North Carolina Wastewater Certification #: 12
South Carolina Certification #: 99006001
Florida/NELAP Certification #: E87627
Kentucky UST Certification #: 84
West Virginia Certification #: 357
Virginia/VELAP Certification #: 460221

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SAMPLE SUMMARY

Project: OWRF EE 081412
Pace Project No.: 92128348

Lab ID	Sample ID	Matrix	Date Collected	Date Received
92128348001	**1208141639**	Water	08/14/12 07:30	08/15/12 09:30
92128348002	**120814163A**	Water	08/14/12 07:30	08/15/12 09:30
92128348003	**1208141640**	Water	08/14/12 07:30	08/15/12 09:30
92128348004	**1208141641**	Water	08/14/12 07:30	08/15/12 09:30
92128348005	**1208141643**	Water	08/14/12 07:30	08/15/12 09:30
92128348006	**1208141642**	Water	08/14/12 07:30	08/15/12 09:30

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SAMPLE ANALYTE COUNT

Project: OWRF EE 081412
Pace Project No.: 92128348

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
92128348001	**1208141639**	EPA 8270	PPM	74	PASI-C
92128348002	**120814163A**	EPA 8260	KJM	63	PASI-C
92128348003	**1208141640**	EPA 420.4	KDM	1	PASI-O
92128348004	**1208141641**	EPA 200.8	DRS	12	PASI-O
		EPA 245.1	DRS	1	PASI-O
92128348005	**1208141643**	EPA 335.4	SOA	1	PASI-O
92128348006	**1208141642**	EPA 200.7	JTJ	1	PASI-O

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ANALYTICAL RESULTS

Project: OWRF EE 081412
Pace Project No.: 92128348

Sample: 1208141639 **Lab ID: 92128348001** Collected: 08/14/12 07:30 Received: 08/15/12 09:30 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8270 MSSV Semivolatile Organic	Analytical Method: EPA 8270 Preparation Method: EPA 3510								
Acenaphthene	ND	ug/L	10.0	0.25	1	08/18/12 18:30	08/21/12 16:03	83-32-9	
Acenaphthylene	ND	ug/L	10.0	0.21	1	08/18/12 18:30	08/21/12 16:03	208-96-8	
Aniline	ND	ug/L	10.0	2.0	1	08/18/12 18:30	08/21/12 16:03	62-53-3	
Anthracene	ND	ug/L	10.0	0.14	1	08/18/12 18:30	08/21/12 16:03	120-12-7	
Benzo(a)anthracene	ND	ug/L	10.0	0.33	1	08/18/12 18:30	08/21/12 16:03	56-55-3	
Benzo(a)pyrene	ND	ug/L	10.0	0.30	1	08/18/12 18:30	08/21/12 16:03	50-32-8	
Benzo(b)fluoranthene	ND	ug/L	10.0	0.28	1	08/18/12 18:30	08/21/12 16:03	205-99-2	
Benzo(g,h,i)perylene	ND	ug/L	10.0	0.38	1	08/18/12 18:30	08/21/12 16:03	191-24-2	
Benzo(k)fluoranthene	ND	ug/L	10.0	0.43	1	08/18/12 18:30	08/21/12 16:03	207-08-9	
Benzoic Acid	ND	ug/L	50.0	11.5	1	08/18/12 18:30	08/21/12 16:03	65-85-0	
Benzyl alcohol	ND	ug/L	20.0	2.4	1	08/18/12 18:30	08/21/12 16:03	100-51-6	
4-Bromophenylphenyl ether	ND	ug/L	10.0	0.82	1	08/18/12 18:30	08/21/12 16:03	101-55-3	
Butylbenzylphthalate	ND	ug/L	10.0	0.79	1	08/18/12 18:30	08/21/12 16:03	85-68-7	
4-Chloro-3-methylphenol	ND	ug/L	20.0	3.7	1	08/18/12 18:30	08/21/12 16:03	59-50-7	
4-Chloroaniline	ND	ug/L	20.0	2.8	1	08/18/12 18:30	08/21/12 16:03	106-47-8	
bis(2-Chloroethoxy)methane	ND	ug/L	10.0	0.92	1	08/18/12 18:30	08/21/12 16:03	111-91-1	
bis(2-Chloroethyl) ether	ND	ug/L	10.0	1.0	1	08/18/12 18:30	08/21/12 16:03	111-44-4	
bis(2-Chloroisopropyl) ether	ND	ug/L	10.0	0.95	1	08/18/12 18:30	08/21/12 16:03	108-60-1	
2-Chloronaphthalene	ND	ug/L	10.0	0.98	1	08/18/12 18:30	08/21/12 16:03	91-58-7	
2-Chlorophenol	ND	ug/L	10.0	1.3	1	08/18/12 18:30	08/21/12 16:03	95-57-8	
4-Chlorophenylphenyl ether	ND	ug/L	10.0	0.87	1	08/18/12 18:30	08/21/12 16:03	7005-72-3	
Chrysene	ND	ug/L	10.0	0.21	1	08/18/12 18:30	08/21/12 16:03	218-01-9	
Dibenz(a,h)anthracene	ND	ug/L	10.0	0.55	1	08/18/12 18:30	08/21/12 16:03	53-70-3	
Dibenzofuran	ND	ug/L	10.0	0.89	1	08/18/12 18:30	08/21/12 16:03	132-64-9	
1,2-Dichlorobenzene	ND	ug/L	10.0	0.88	1	08/18/12 18:30	08/21/12 16:03	95-50-1	
1,3-Dichlorobenzene	ND	ug/L	10.0	0.81	1	08/18/12 18:30	08/21/12 16:03	541-73-1	
1,4-Dichlorobenzene	ND	ug/L	10.0	0.95	1	08/18/12 18:30	08/21/12 16:03	106-46-7	
3,3'-Dichlorobenzidine	ND	ug/L	20.0	2.1	1	08/18/12 18:30	08/21/12 16:03	91-94-1	
2,4-Dichlorophenol	ND	ug/L	10.0	1.7	1	08/18/12 18:30	08/21/12 16:03	120-83-2	
Diethylphthalate	ND	ug/L	10.0	0.58	1	08/18/12 18:30	08/21/12 16:03	84-66-2	
2,4-Dimethylphenol	ND	ug/L	10.0	1.2	1	08/18/12 18:30	08/21/12 16:03	105-67-9	
Dimethylphthalate	ND	ug/L	10.0	0.76	1	08/18/12 18:30	08/21/12 16:03	131-11-3	
Di-n-butylphthalate	ND	ug/L	10.0	0.75	1	08/18/12 18:30	08/21/12 16:03	84-74-2	
4,6-Dinitro-2-methylphenol	ND	ug/L	20.0	2.6	1	08/18/12 18:30	08/21/12 16:03	534-52-1	
2,4-Dinitrophenol	ND	ug/L	50.0	9.0	1	08/18/12 18:30	08/21/12 16:03	51-28-5	
2,4-Dinitrotoluene	ND	ug/L	10.0	0.90	1	08/18/12 18:30	08/21/12 16:03	121-14-2	
2,6-Dinitrotoluene	ND	ug/L	10.0	0.98	1	08/18/12 18:30	08/21/12 16:03	606-20-2	
Di-n-octylphthalate	ND	ug/L	10.0	0.66	1	08/18/12 18:30	08/21/12 16:03	117-84-0	
bis(2-Ethylhexyl)phthalate	**45.3**	ug/L	6.0	0.79	1	08/18/12 18:30	08/21/12 16:03	117-81-7	
Fluoranthene	ND	ug/L	10.0	0.21	1	08/18/12 18:30	08/21/12 16:03	206-44-0	
Fluorene	ND	ug/L	10.0	0.21	1	08/18/12 18:30	08/21/12 16:03	86-73-7	
Hexachloro-1,3-butadiene	ND	ug/L	10.0	0.94	1	08/18/12 18:30	08/21/12 16:03	87-68-3	
Hexachlorobenzene	ND	ug/L	10.0	0.72	1	08/18/12 18:30	08/21/12 16:03	118-74-1	
Hexachlorocyclopentadiene	ND	ug/L	10.0	0.88	1	08/18/12 18:30	08/21/12 16:03	77-47-4	
Hexachloroethane	ND	ug/L	10.0	1.1	1	08/18/12 18:30	08/21/12 16:03	67-72-1	
Indeno(1,2,3-cd)pyrene	ND	ug/L	10.0	0.29	1	08/18/12 18:30	08/21/12 16:03	193-39-5	

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ANALYTICAL RESULTS

Project: OWRF EE 081412
Pace Project No.: 92128348

Sample: 1208141639 **Lab ID: 92128348001** Collected: 08/14/12 07:30 Received: 08/15/12 09:30 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8270 MSSV Semivolatile Organic	Analytical Method: EPA 8270 Preparation Method: EPA 3510								
Isophorone	ND	ug/L	10.0	0.89	1	08/18/12 18:30	08/21/12 16:03	78-59-1	
1-Methylnaphthalene	ND	ug/L	10.0	0.32	1	08/18/12 18:30	08/21/12 16:03	90-12-0	
2-Methylnaphthalene	ND	ug/L	10.0	0.28	1	08/18/12 18:30	08/21/12 16:03	91-57-6	
2-Methylphenol(o-Cresol)	ND	ug/L	10.0	1.6	1	08/18/12 18:30	08/21/12 16:03	95-48-7	
3&4-Methylphenol(m&p Cresol)	ND	ug/L	10.0	2.0	1	08/18/12 18:30	08/21/12 16:03		
Naphthalene	ND	ug/L	10.0	0.34	1	08/18/12 18:30	08/21/12 16:03	91-20-3	
2-Nitroaniline	ND	ug/L	50.0	2.0	1	08/18/12 18:30	08/21/12 16:03	88-74-4	
3-Nitroaniline	ND	ug/L	50.0	2.0	1	08/18/12 18:30	08/21/12 16:03	99-09-2	
4-Nitroaniline	ND	ug/L	20.0	2.1	1	08/18/12 18:30	08/21/12 16:03	100-01-6	
Nitrobenzene	ND	ug/L	10.0	1.1	1	08/18/12 18:30	08/21/12 16:03	98-95-3	
2-Nitrophenol	ND	ug/L	10.0	0.91	1	08/18/12 18:30	08/21/12 16:03	88-75-5	
4-Nitrophenol	ND	ug/L	50.0	4.1	1	08/18/12 18:30	08/21/12 16:03	100-02-7	
N-Nitrosodimethylamine	ND	ug/L	10.0	0.91	1	08/18/12 18:30	08/21/12 16:03	62-75-9	
N-Nitroso-di-n-propylamine	ND	ug/L	10.0	0.99	1	08/18/12 18:30	08/21/12 16:03	621-64-7	
N-Nitrosodiphenylamine	ND	ug/L	10.0	1.0	1	08/18/12 18:30	08/21/12 16:03	86-30-6	
Pentachlorophenol	ND	ug/L	25.0	4.6	1	08/18/12 18:30	08/21/12 16:03	87-86-5	
Phenanthrene	ND	ug/L	10.0	0.22	1	08/18/12 18:30	08/21/12 16:03	85-01-8	
Phenol	ND	ug/L	10.0	1.9	1	08/18/12 18:30	08/21/12 16:03	108-95-2	
Pyrene	ND	ug/L	10.0	0.19	1	08/18/12 18:30	08/21/12 16:03	129-00-0	
1,2,4-Trichlorobenzene	ND	ug/L	10.0	0.98	1	08/18/12 18:30	08/21/12 16:03	120-82-1	
2,4,5-Trichlorophenol	ND	ug/L	10.0	0.92	1	08/18/12 18:30	08/21/12 16:03	95-95-4	
2,4,6-Trichlorophenol	ND	ug/L	10.0	1.3	1	08/18/12 18:30	08/21/12 16:03	88-06-2	
Surrogates									
Nitrobenzene-d5 (S)	41	%	21-110		1	08/18/12 18:30	08/21/12 16:03	4165-60-0	
2-Fluorobiphenyl (S)	44	%	27-110		1	08/18/12 18:30	08/21/12 16:03	321-60-8	
Terphenyl-d14 (S)	72	%	31-107		1	08/18/12 18:30	08/21/12 16:03	1718-51-0	
Phenol-d6 (S)	11	%	10-110		1	08/18/12 18:30	08/21/12 16:03	13127-88-3	
2-Fluorophenol (S)	20	%	12-110		1	08/18/12 18:30	08/21/12 16:03	367-12-4	
2,4,6-Tribromophenol (S)	50	%	27-110		1	08/18/12 18:30	08/21/12 16:03	118-79-6	

Sample: 120814163A **Lab ID: 92128348002** Collected: 08/14/12 07:30 Received: 08/15/12 09:30 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV Low Level	Analytical Method: EPA 8260								
Acetone	**6.6J**	ug/L	25.0	2.2	1		08/21/12 03:51	67-64-1	
Benzene	ND	ug/L	1.0	0.25	1		08/21/12 03:51	71-43-2	
Bromobenzene	ND	ug/L	1.0	0.30	1		08/21/12 03:51	108-86-1	
Bromochloromethane	ND	ug/L	1.0	0.17	1		08/21/12 03:51	74-97-5	
Bromodichloromethane	**3.9**	ug/L	1.0	0.18	1		08/21/12 03:51	75-27-4	
Bromoform	ND	ug/L	1.0	0.26	1		08/21/12 03:51	75-25-2	
Bromomethane	ND	ug/L	2.0	0.29	1		08/21/12 03:51	74-83-9	
2-Butanone (MEK)	ND	ug/L	5.0	0.96	1		08/21/12 03:51	78-93-3	
Carbon tetrachloride	ND	ug/L	1.0	0.25	1		08/21/12 03:51	56-23-5	

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ANALYTICAL RESULTS

Project: OWRF EE 081412
Pace Project No.: 92128348

Sample: 120814163A **Lab ID: 92128348002** Collected: 08/14/12 07:30 Received: 08/15/12 09:30 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV Low Level	Analytical Method: EPA 8260								
Chlorobenzene	ND	ug/L	1.0	0.23	1		08/21/12 03:51	108-90-7	
Chloroethane	ND	ug/L	1.0	0.54	1		08/21/12 03:51	75-00-3	
Chloroform	**12.3**	ug/L	1.0	0.14	1		08/21/12 03:51	67-66-3	
Chloromethane	ND	ug/L	1.0	0.11	1		08/21/12 03:51	74-87-3	
2-Chlorotoluene	ND	ug/L	1.0	0.35	1		08/21/12 03:51	95-49-8	
4-Chlorotoluene	ND	ug/L	1.0	0.31	1		08/21/12 03:51	106-43-4	
1,2-Dibromo-3-chloropropane	ND	ug/L	5.0	2.5	1		08/21/12 03:51	96-12-8	
Dibromochloromethane	**1.4**	ug/L	1.0	0.21	1		08/21/12 03:51	124-48-1	
1,2-Dibromoethane (EDB)	ND	ug/L	1.0	0.27	1		08/21/12 03:51	106-93-4	
Dibromomethane	ND	ug/L	1.0	0.21	1		08/21/12 03:51	74-95-3	
1,2-Dichlorobenzene	ND	ug/L	1.0	0.30	1		08/21/12 03:51	95-50-1	
1,3-Dichlorobenzene	ND	ug/L	1.0	0.24	1		08/21/12 03:51	541-73-1	
1,4-Dichlorobenzene	ND	ug/L	1.0	0.33	1		08/21/12 03:51	106-46-7	
Dichlorodifluoromethane	ND	ug/L	1.0	0.21	1		08/21/12 03:51	75-71-8	
1,1-Dichloroethane	ND	ug/L	1.0	0.32	1		08/21/12 03:51	75-34-3	
1,2-Dichloroethane	ND	ug/L	1.0	0.12	1		08/21/12 03:51	107-06-2	
1,1-Dichloroethene	ND	ug/L	1.0	0.56	1		08/21/12 03:51	75-35-4	
cis-1,2-Dichloroethene	ND	ug/L	1.0	0.19	1		08/21/12 03:51	156-59-2	
trans-1,2-Dichloroethene	ND	ug/L	1.0	0.49	1		08/21/12 03:51	156-60-5	
1,2-Dichloropropane	ND	ug/L	1.0	0.27	1		08/21/12 03:51	78-87-5	
1,3-Dichloropropane	ND	ug/L	1.0	0.28	1		08/21/12 03:51	142-28-9	
2,2-Dichloropropane	ND	ug/L	1.0	0.13	1		08/21/12 03:51	594-20-7	
1,1-Dichloropropene	ND	ug/L	1.0	0.49	1		08/21/12 03:51	563-58-6	
cis-1,3-Dichloropropene	ND	ug/L	1.0	0.13	1		08/21/12 03:51	10061-01-5	
trans-1,3-Dichloropropene	ND	ug/L	1.0	0.26	1		08/21/12 03:51	10061-02-6	
Diisopropyl ether	ND	ug/L	1.0	0.12	1		08/21/12 03:51	108-20-3	
Ethylbenzene	ND	ug/L	1.0	0.30	1		08/21/12 03:51	100-41-4	
Hexachloro-1,3-butadiene	ND	ug/L	1.0	0.71	1		08/21/12 03:51	87-68-3	
2-Hexanone	ND	ug/L	5.0	0.46	1		08/21/12 03:51	591-78-6	
p-Isopropyltoluene	ND	ug/L	1.0	0.31	1		08/21/12 03:51	99-87-6	
Methylene Chloride	ND	ug/L	2.0	0.97	1		08/21/12 03:51	75-09-2	
4-Methyl-2-pentanone (MIBK)	ND	ug/L	5.0	0.33	1		08/21/12 03:51	108-10-1	
Methyl-tert-butyl ether	ND	ug/L	1.0	0.21	1		08/21/12 03:51	1634-04-4	
Naphthalene	ND	ug/L	1.0	0.24	1		08/21/12 03:51	91-20-3	
Styrene	ND	ug/L	1.0	0.26	1		08/21/12 03:51	100-42-5	
1,1,1,2-Tetrachloroethane	ND	ug/L	1.0	0.33	1		08/21/12 03:51	630-20-6	
1,1,2,2-Tetrachloroethane	ND	ug/L	1.0	0.40	1		08/21/12 03:51	79-34-5	
Tetrachloroethene	ND	ug/L	1.0	0.46	1		08/21/12 03:51	127-18-4	
Toluene	ND	ug/L	1.0	0.26	1		08/21/12 03:51	108-88-3	
1,2,3-Trichlorobenzene	ND	ug/L	1.0	0.33	1		08/21/12 03:51	87-61-6	
1,2,4-Trichlorobenzene	ND	ug/L	1.0	0.35	1		08/21/12 03:51	120-82-1	
1,1,1-Trichloroethane	ND	ug/L	1.0	0.48	1		08/21/12 03:51	71-55-6	
1,1,2-Trichloroethane	ND	ug/L	1.0	0.29	1		08/21/12 03:51	79-00-5	
Trichloroethene	ND	ug/L	1.0	0.47	1		08/21/12 03:51	79-01-6	
Trichlorofluoromethane	ND	ug/L	1.0	0.20	1		08/21/12 03:51	75-69-4	
1,2,3-Trichloropropane	ND	ug/L	1.0	0.41	1		08/21/12 03:51	96-18-4	

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ANALYTICAL RESULTS

Project: OWRF EE 081412
Pace Project No.: 92128348

Sample: 120814163A **Lab ID: 92128348002** Collected: 08/14/12 07:30 Received: 08/15/12 09:30 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV Low Level	Analytical Method: EPA 8260								
Vinyl acetate	ND	ug/L	2.0	0.35	1		08/21/12 03:51	108-05-4	
Vinyl chloride	ND	ug/L	1.0	0.62	1		08/21/12 03:51	75-01-4	
m&p-Xylene	ND	ug/L	2.0	0.66	1		08/21/12 03:51	179601-23-1	
o-Xylene	ND	ug/L	1.0	0.23	1		08/21/12 03:51	95-47-6	
Surrogates									
4-Bromofluorobenzene (S)	97	%	70-130		1		08/21/12 03:51	460-00-4	
Dibromofluoromethane (S)	110	%	70-130		1		08/21/12 03:51	1868-53-7	
1,2-Dichloroethane-d4 (S)	122	%	70-130		1		08/21/12 03:51	17060-07-0	
Toluene-d8 (S)	102	%	70-130		1		08/21/12 03:51	2037-26-5	

Sample: 1208141640 **Lab ID: 92128348003** Collected: 08/14/12 07:30 Received: 08/15/12 09:30 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
420.4 Phenolics, Total	Analytical Method: EPA 420.4								
Phenolics, Total Recoverable	ND	mg/L	0.010	0.0050	1		08/24/12 12:43		

Sample: 1208141641 **Lab ID: 92128348004** Collected: 08/14/12 07:30 Received: 08/15/12 09:30 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.8 MET ICPMS	Analytical Method: EPA 200.8								
Antimony	ND	ug/L	1.0	0.50	1	08/23/12 07:20	08/23/12 16:34	7440-36-0	
Arsenic	ND	ug/L	1.0	0.50	1	08/23/12 07:20	08/23/12 16:34	7440-38-2	
Beryllium	ND	ug/L	0.10	0.050	1	08/23/12 07:20	08/23/12 16:34	7440-41-7	
Cadmium	ND	ug/L	0.10	0.050	1	08/23/12 07:20	08/23/12 16:34	7440-43-9	
Chromium	ND	ug/L	1.0	0.50	1	08/23/12 07:20	08/23/12 16:34	7440-47-3	
Copper	**3.4**	ug/L	1.0	0.93	1	08/23/12 07:20	08/23/12 16:34	7440-50-8	
Lead	ND	ug/L	1.0	0.50	1	08/23/12 07:20	08/23/12 16:34	7439-92-1	
Nickel	**3.0**	ug/L	1.0	0.62	1	08/23/12 07:20	08/23/12 16:34	7440-02-0	
Selenium	ND	ug/L	1.0	0.50	1	08/23/12 07:20	08/23/12 16:34	7782-49-2	
Silver	ND	ug/L	0.10	0.050	1	08/23/12 07:20	08/23/12 16:34	7440-22-4	
Thallium	ND	ug/L	1.0	0.50	1	08/23/12 07:20	08/23/12 16:34	7440-28-0	
Zinc	**40.0**	ug/L	5.0	2.5	1	08/23/12 07:20	08/23/12 16:34	7440-66-6	
245.1 Mercury	Analytical Method: EPA 245.1								
Mercury	ND	ug/L	0.20	0.10	1	08/22/12 03:00	08/22/12 10:37	7439-97-6	

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ANALYTICAL RESULTS

Project: OWRF EE 081412
Pace Project No.: 92128348

Sample: 1208141643 **Lab ID: 92128348005** Collected: 08/14/12 07:30 Received: 08/15/12 09:30 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
335.4 Cyanide, Total	Analytical Method: EPA 335.4								
Cyanide	ND	mg/L	0.010	0.0050	1	08/22/12 10:30	08/22/12 13:58	57-12-5	

Sample: 1208141642 **Lab ID: 92128348006** Collected: 08/14/12 07:30 Received: 08/15/12 09:30 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 MET ICP	Analytical Method: EPA 200.7								
Tot Hardness asCaCO3 (SM 2340B	**324000**	ug/L	3300	1600	1	08/21/12 06:20	08/22/12 22:50		

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QUALITY CONTROL DATA

Project: OWRF EE 081412
Pace Project No.: 92128348

QC Batch: ICP/9959
QC Batch Method: EPA 200.7
Analysis Method: EPA 200.7
Analysis Description: 200.7 MET
Associated Lab Samples: 92128348006

METHOD BLANK: 451009
Matrix: Water
Associated Lab Samples: 92128348006

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Tot Hardness asCaCO3 (SM 2340B	ug/L	ND	3300	08/22/12 21:45	

LABORATORY CONTROL SAMPLE: 451010

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Tot Hardness asCaCO3 (SM 2340B	ug/L	82700	84300	102	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 451138 451139

Parameter	Units	3565496001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Tot Hardness asCaCO3 (SM 2340B	ug/L	232 mg/L	82700	82700	324000	316000	111	102	70-130	2	20	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 451158 451159

Parameter	Units	3565637006 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Tot Hardness asCaCO3 (SM 2340B	ug/L	175000	82700	82700	253000	252000	95	94	70-130	.2	20	

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QUALITY CONTROL DATA

Project: OWRF EE 081412
Pace Project No.: 92128348

QC Batch: ICPM/9981
QC Batch Method: EPA 200.8
Analysis Method: EPA 200.8
Analysis Description: 200.8 MET
Associated Lab Samples: 92128348004

METHOD BLANK: 452643
Matrix: Water
Associated Lab Samples: 92128348004

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Antimony	ug/L	ND	1.0	08/23/12 15:52	
Arsenic	ug/L	ND	1.0	08/23/12 15:52	
Beryllium	ug/L	ND	0.10	08/23/12 15:52	
Cadmium	ug/L	ND	0.10	08/23/12 15:52	
Chromium	ug/L	ND	1.0	08/23/12 15:52	
Copper	ug/L	ND	1.0	08/23/12 15:52	
Lead	ug/L	ND	1.0	08/23/12 15:52	
Nickel	ug/L	ND	1.0	08/23/12 15:52	
Selenium	ug/L	ND	1.0	08/23/12 15:52	
Silver	ug/L	ND	0.10	08/23/12 15:52	
Thallium	ug/L	ND	1.0	08/23/12 15:52	
Zinc	ug/L	ND	5.0	08/23/12 15:52	

LABORATORY CONTROL SAMPLE: 452644

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Antimony	ug/L	50	52.1	104	85-115	
Arsenic	ug/L	50	53.4	107	85-115	
Beryllium	ug/L	5	5.7	114	85-115	
Cadmium	ug/L	5	5.3	106	85-115	
Chromium	ug/L	50	54.2	108	85-115	
Copper	ug/L	50	56.0	112	85-115	
Lead	ug/L	50	52.4	105	85-115	
Nickel	ug/L	50	54.5	109	85-115	
Selenium	ug/L	50	53.9	108	85-115	
Silver	ug/L	5	5.4	107	85-115	
Thallium	ug/L	50	53.0	106	85-115	
Zinc	ug/L	250	275	110	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 452645 452646

Parameter	Units	3565436001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Antimony	ug/L	0.00050 U mg/L	50	50	50.0	51.5	100	103	70-130	3	20	
Arsenic	ug/L	0.00050 U mg/L	50	50	51.6	52.9	103	106	70-130	2	20	
Beryllium	ug/L	0.00005 0U mg/L	5	5	5.3	5.3	106	107	70-130	1	20	

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QUALITY CONTROL DATA

Project: OWRF EE 081412
Pace Project No.: 92128348

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 452645 452646

Parameter	Units	3565436001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Cadmium	ug/L	0.00005 0U mg/L	5	5	5.0	5.3	100	106	70-130	6	20	
Chromium	ug/L	0.0022 mg/L	50	50	54.3	55.0	104	105	70-130	1	20	
Copper	ug/L	0.0037 mg/L	50	50	55.1	56.8	103	106	70-130	3	20	
Lead	ug/L	0.00050 U mg/L	50	50	51.1	52.4	102	104	70-130	3	20	
Nickel	ug/L	0.00062 U mg/L	50	50	51.5	51.8	103	103	70-130	.5	20	
Selenium	ug/L	0.00050 U mg/L	50	50	50.7	51.5	101	103	70-130	2	20	
Silver	ug/L	0.00005 0U mg/L	5	5	5.0	5.2	100	104	70-130	3	20	
Thallium	ug/L	0.00050 U mg/L	50	50	52.2	53.3	104	107	70-130	2	20	
Zinc	ug/L	0.0025 U mg/L	250	250	256	262	102	105	70-130	3	20	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 452647 452648

Parameter	Units	3565522011 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Antimony	ug/L	0.50U	50	50	51.4	49.5	103	99	70-130	4	20	
Arsenic	ug/L	0.68J	50	50	52.7	51.0	105	102	70-130	3	20	
Beryllium	ug/L	0.050U	5	5	5.2	5.0	104	99	70-130	4	20	
Cadmium	ug/L	0.050U	5	5	5.2	5.1	105	101	70-130	3	20	
Chromium	ug/L	0.80J	50	50	53.3	51.2	107	102	70-130	4	20	
Copper	ug/L	1.4	50	50	54.3	53.1	109	106	70-130	2	20	
Lead	ug/L	0.50U	50	50	51.4	50.1	103	100	70-130	3	20	
Nickel	ug/L	2.6	50	50	54.0	52.8	108	106	70-130	2	20	
Selenium	ug/L	0.50U	50	50	51.6	51.0	103	102	70-130	1	20	
Silver	ug/L	0.050U	5	5	5.1	5.0	102	100	70-130	2	20	
Thallium	ug/L	0.50U	50	50	52.2	51.2	104	102	70-130	2	20	
Zinc	ug/L	72.7	250	250	330	320	132	128	70-130	3	20	

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QUALITY CONTROL DATA

Project: OWRF EE 081412
Pace Project No.: 92128348

QC Batch: MERC/3065
QC Batch Method: EPA 245.1
Analysis Method: EPA 245.1
Analysis Description: 245.1 Mercury
Associated Lab Samples: 92128348004

METHOD BLANK: 451691
Matrix: Water
Associated Lab Samples: 92128348004

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Mercury	ug/L	ND	0.20	08/22/12 10:33	

LABORATORY CONTROL SAMPLE: 451692

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Mercury	ug/L	2	1.9	94	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 451693 451694

Parameter	Units	92128348004 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Mercury	ug/L	ND	2	2	2.2	2.2	112	110	70-130	1	20	

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QUALITY CONTROL DATA

Project: OWRF EE 081412
Pace Project No.: 92128348

QC Batch: MSV/20137
QC Batch Method: EPA 8260
Analysis Method: EPA 8260
Analysis Description: 8260 MSV Low Level
Associated Lab Samples: 92128348002

METHOD BLANK: 818078
Matrix: Water
Associated Lab Samples: 92128348002

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1,1,1,2-Tetrachloroethane	ug/L	ND	1.0	08/21/12 00:11	
1,1,1-Trichloroethane	ug/L	ND	1.0	08/21/12 00:11	
1,1,2,2-Tetrachloroethane	ug/L	ND	1.0	08/21/12 00:11	
1,1,2-Trichloroethane	ug/L	ND	1.0	08/21/12 00:11	
1,1-Dichloroethane	ug/L	ND	1.0	08/21/12 00:11	
1,1-Dichloroethene	ug/L	ND	1.0	08/21/12 00:11	
1,1-Dichloropropene	ug/L	ND	1.0	08/21/12 00:11	
1,2,3-Trichlorobenzene	ug/L	ND	1.0	08/21/12 00:11	
1,2,3-Trichloropropane	ug/L	ND	1.0	08/21/12 00:11	
1,2,4-Trichlorobenzene	ug/L	ND	1.0	08/21/12 00:11	
1,2-Dibromo-3-chloropropane	ug/L	ND	5.0	08/21/12 00:11	
1,2-Dibromoethane (EDB)	ug/L	ND	1.0	08/21/12 00:11	
1,2-Dichlorobenzene	ug/L	ND	1.0	08/21/12 00:11	
1,2-Dichloroethane	ug/L	ND	1.0	08/21/12 00:11	
1,2-Dichloropropane	ug/L	ND	1.0	08/21/12 00:11	
1,3-Dichlorobenzene	ug/L	ND	1.0	08/21/12 00:11	
1,3-Dichloropropane	ug/L	ND	1.0	08/21/12 00:11	
1,4-Dichlorobenzene	ug/L	ND	1.0	08/21/12 00:11	
2,2-Dichloropropane	ug/L	ND	1.0	08/21/12 00:11	
2-Butanone (MEK)	ug/L	ND	5.0	08/21/12 00:11	
2-Chlorotoluene	ug/L	ND	1.0	08/21/12 00:11	
2-Hexanone	ug/L	ND	5.0	08/21/12 00:11	
4-Chlorotoluene	ug/L	ND	1.0	08/21/12 00:11	
4-Methyl-2-pentanone (MIBK)	ug/L	ND	5.0	08/21/12 00:11	
Acetone	ug/L	ND	25.0	08/21/12 00:11	
Benzene	ug/L	ND	1.0	08/21/12 00:11	
Bromobenzene	ug/L	ND	1.0	08/21/12 00:11	
Bromochloromethane	ug/L	ND	1.0	08/21/12 00:11	
Bromodichloromethane	ug/L	ND	1.0	08/21/12 00:11	
Bromoform	ug/L	ND	1.0	08/21/12 00:11	
Bromomethane	ug/L	ND	2.0	08/21/12 00:11	
Carbon tetrachloride	ug/L	ND	1.0	08/21/12 00:11	
Chlorobenzene	ug/L	ND	1.0	08/21/12 00:11	
Chloroethane	ug/L	ND	1.0	08/21/12 00:11	
Chloroform	ug/L	ND	1.0	08/21/12 00:11	
Chloromethane	ug/L	ND	1.0	08/21/12 00:11	
cis-1,2-Dichloroethene	ug/L	ND	1.0	08/21/12 00:11	
cis-1,3-Dichloropropene	ug/L	ND	1.0	08/21/12 00:11	
Dibromochloromethane	ug/L	ND	1.0	08/21/12 00:11	
Dibromomethane	ug/L	ND	1.0	08/21/12 00:11	
Dichlorodifluoromethane	ug/L	ND	1.0	08/21/12 00:11	
Diisopropyl ether	ug/L	ND	1.0	08/21/12 00:11	
Ethylbenzene	ug/L	ND	1.0	08/21/12 00:11	

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QUALITY CONTROL DATA

Project: OWRF EE 081412
Pace Project No.: 92128348

METHOD BLANK: 818078 Matrix: Water

Associated Lab Samples: 92128348002

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Hexachloro-1,3-butadiene	ug/L	ND	1.0	08/21/12 00:11	
m&p-Xylene	ug/L	ND	2.0	08/21/12 00:11	
Methyl-tert-butyl ether	ug/L	ND	1.0	08/21/12 00:11	
Methylene Chloride	ug/L	ND	2.0	08/21/12 00:11	
Naphthalene	ug/L	ND	1.0	08/21/12 00:11	
o-Xylene	ug/L	ND	1.0	08/21/12 00:11	
p-Isopropyltoluene	ug/L	ND	1.0	08/21/12 00:11	
Styrene	ug/L	ND	1.0	08/21/12 00:11	
Tetrachloroethene	ug/L	ND	1.0	08/21/12 00:11	
Toluene	ug/L	ND	1.0	08/21/12 00:11	
trans-1,2-Dichloroethene	ug/L	ND	1.0	08/21/12 00:11	
trans-1,3-Dichloropropene	ug/L	ND	1.0	08/21/12 00:11	
Trichloroethene	ug/L	ND	1.0	08/21/12 00:11	
Trichlorofluoromethane	ug/L	ND	1.0	08/21/12 00:11	
Vinyl acetate	ug/L	ND	2.0	08/21/12 00:11	
Vinyl chloride	ug/L	ND	1.0	08/21/12 00:11	
1,2-Dichloroethane-d4 (S)	%	115	70-130	08/21/12 00:11	
4-Bromofluorobenzene (S)	%	97	70-130	08/21/12 00:11	
Dibromofluoromethane (S)	%	108	70-130	08/21/12 00:11	
Toluene-d8 (S)	%	102	70-130	08/21/12 00:11	

LABORATORY CONTROL SAMPLE: 818079

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,1,1,2-Tetrachloroethane	ug/L	50	51.4	103	70-130	
1,1,1-Trichloroethane	ug/L	50	51.8	104	70-130	
1,1,2,2-Tetrachloroethane	ug/L	50	48.7	97	70-130	
1,1,2-Trichloroethane	ug/L	50	52.8	106	70-130	
1,1-Dichloroethane	ug/L	50	48.6	97	70-130	
1,1-Dichloroethene	ug/L	50	50.5	101	70-132	
1,1-Dichloropropene	ug/L	50	52.6	105	70-130	
1,2,3-Trichlorobenzene	ug/L	50	50.4	101	70-135	
1,2,3-Trichloropropane	ug/L	50	47.2	94	70-130	
1,2,4-Trichlorobenzene	ug/L	50	51.1	102	70-134	
1,2-Dibromo-3-chloropropane	ug/L	50	53.1	106	70-130	
1,2-Dibromoethane (EDB)	ug/L	50	50.8	102	70-130	
1,2-Dichlorobenzene	ug/L	50	49.9	100	70-130	
1,2-Dichloroethane	ug/L	50	50.1	100	70-130	
1,2-Dichloropropane	ug/L	50	53.3	107	70-130	
1,3-Dichlorobenzene	ug/L	50	49.7	99	70-130	
1,3-Dichloropropane	ug/L	50	49.4	99	70-130	
1,4-Dichlorobenzene	ug/L	50	49.6	99	70-130	
2,2-Dichloropropane	ug/L	50	37.7	75	58-145	
2-Butanone (MEK)	ug/L	100	112	112	70-145	
2-Chlorotoluene	ug/L	50	49.2	98	70-130	

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QUALITY CONTROL DATA

Project: OWRF EE 081412
Pace Project No.: 92128348

LABORATORY CONTROL SAMPLE: 818079

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
2-Hexanone	ug/L	100	105	105	70-144	
4-Chlorotoluene	ug/L	50	50.6	101	70-130	
4-Methyl-2-pentanone (MIBK)	ug/L	100	107	107	70-140	
Acetone	ug/L	100	111	111	50-175	
Benzene	ug/L	50	52.7	105	70-130	
Bromobenzene	ug/L	50	50.4	101	70-130	
Bromochloromethane	ug/L	50	51.5	103	70-130	
Bromodichloromethane	ug/L	50	52.6	105	70-130	
Bromoform	ug/L	50	56.8	114	70-130	
Bromomethane	ug/L	50	55.5	111	54-130	
Carbon tetrachloride	ug/L	50	50.2	100	70-132	
Chlorobenzene	ug/L	50	49.9	100	70-130	
Chloroethane	ug/L	50	67.9	136	64-134	L3
Chloroform	ug/L	50	47.8	96	70-130	
Chloromethane	ug/L	50	56.0	112	64-130	
cis-1,2-Dichloroethene	ug/L	50	51.1	102	70-131	
cis-1,3-Dichloropropene	ug/L	50	50.9	102	70-130	
Dibromochloromethane	ug/L	50	52.8	106	70-130	
Dibromomethane	ug/L	50	50.7	101	70-131	
Dichlorodifluoromethane	ug/L	50	76.7	153	56-130	L3,SS
Diisopropyl ether	ug/L	50	49.2	98	70-130	
Ethylbenzene	ug/L	50	47.9	96	70-130	
Hexachloro-1,3-butadiene	ug/L	50	48.5	97	70-130	
m&p-Xylene	ug/L	100	96.4	96	70-130	
Methyl-tert-butyl ether	ug/L	50	50.6	101	70-130	
Methylene Chloride	ug/L	50	52.5	105	63-130	
Naphthalene	ug/L	50	51.5	103	70-138	
o-Xylene	ug/L	50	46.6	93	70-130	
p-Isopropyltoluene	ug/L	50	50.8	102	70-130	
Styrene	ug/L	50	51.3	103	70-130	
Tetrachloroethene	ug/L	50	48.3	97	70-130	
Toluene	ug/L	50	49.2	98	70-130	
trans-1,2-Dichloroethene	ug/L	50	48.7	97	70-130	
trans-1,3-Dichloropropene	ug/L	50	55.7	111	70-132	
Trichloroethene	ug/L	50	51.8	104	70-130	
Trichlorofluoromethane	ug/L	50	47.8	96	62-133	
Vinyl acetate	ug/L	100	94.9	95	66-157	
Vinyl chloride	ug/L	50	49.6	99	69-130	
1,2-Dichloroethane-d4 (S)	%			93	70-130	
4-Bromofluorobenzene (S)	%			98	70-130	
Dibromofluoromethane (S)	%			98	70-130	
Toluene-d8 (S)	%			98	70-130	

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QUALITY CONTROL DATA

Project: OWRF EE 081412
Pace Project No.: 92128348

QC Batch: OEXT/18640
QC Batch Method: EPA 3510
Associated Lab Samples: 92128348001

Analysis Method: EPA 8270
Analysis Description: 8270 Water MSSV

METHOD BLANK: 817597
Matrix: Water
Associated Lab Samples: 92128348001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1,2,4-Trichlorobenzene	ug/L	ND	10.0	08/21/12 14:56	
1,2-Dichlorobenzene	ug/L	ND	10.0	08/21/12 14:56	
1,3-Dichlorobenzene	ug/L	ND	10.0	08/21/12 14:56	
1,4-Dichlorobenzene	ug/L	ND	10.0	08/21/12 14:56	
1-Methylnaphthalene	ug/L	ND	10.0	08/21/12 14:56	
2,4,5-Trichlorophenol	ug/L	ND	10.0	08/21/12 14:56	
2,4,6-Trichlorophenol	ug/L	ND	10.0	08/21/12 14:56	
2,4-Dichlorophenol	ug/L	ND	10.0	08/21/12 14:56	
2,4-Dimethylphenol	ug/L	ND	10.0	08/21/12 14:56	
2,4-Dinitrophenol	ug/L	ND	50.0	08/21/12 14:56	
2,4-Dinitrotoluene	ug/L	ND	10.0	08/21/12 14:56	
2,6-Dinitrotoluene	ug/L	ND	10.0	08/21/12 14:56	
2-Chloronaphthalene	ug/L	ND	10.0	08/21/12 14:56	
2-Chlorophenol	ug/L	ND	10.0	08/21/12 14:56	
2-Methylnaphthalene	ug/L	ND	10.0	08/21/12 14:56	
2-Methylphenol(o-Cresol)	ug/L	ND	10.0	08/21/12 14:56	
2-Nitroaniline	ug/L	ND	50.0	08/21/12 14:56	
2-Nitrophenol	ug/L	ND	10.0	08/21/12 14:56	
3&4-Methylphenol(m&p Cresol)	ug/L	ND	10.0	08/21/12 14:56	
3,3'-Dichlorobenzidine	ug/L	ND	20.0	08/21/12 14:56	
3-Nitroaniline	ug/L	ND	50.0	08/21/12 14:56	
4,6-Dinitro-2-methylphenol	ug/L	ND	20.0	08/21/12 14:56	
4-Bromophenylphenyl ether	ug/L	ND	10.0	08/21/12 14:56	
4-Chloro-3-methylphenol	ug/L	ND	20.0	08/21/12 14:56	
4-Chloroaniline	ug/L	ND	20.0	08/21/12 14:56	
4-Chlorophenylphenyl ether	ug/L	ND	10.0	08/21/12 14:56	
4-Nitroaniline	ug/L	ND	20.0	08/21/12 14:56	
4-Nitrophenol	ug/L	ND	50.0	08/21/12 14:56	
Acenaphthene	ug/L	ND	10.0	08/21/12 14:56	
Acenaphthylene	ug/L	ND	10.0	08/21/12 14:56	
Aniline	ug/L	ND	10.0	08/21/12 14:56	
Anthracene	ug/L	ND	10.0	08/21/12 14:56	
Benzo(a)anthracene	ug/L	ND	10.0	08/21/12 14:56	
Benzo(a)pyrene	ug/L	ND	10.0	08/21/12 14:56	
Benzo(b)fluoranthene	ug/L	ND	10.0	08/21/12 14:56	
Benzo(g,h,i)perylene	ug/L	ND	10.0	08/21/12 14:56	
Benzo(k)fluoranthene	ug/L	ND	10.0	08/21/12 14:56	
Benzoic Acid	ug/L	ND	50.0	08/21/12 14:56	
Benzyl alcohol	ug/L	ND	20.0	08/21/12 14:56	
bis(2-Chloroethoxy)methane	ug/L	ND	10.0	08/21/12 14:56	
bis(2-Chloroethyl) ether	ug/L	ND	10.0	08/21/12 14:56	
bis(2-Chloroisopropyl) ether	ug/L	ND	10.0	08/21/12 14:56	
bis(2-Ethylhexyl)phthalate	ug/L	ND	5.0	08/21/12 14:56	

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QUALITY CONTROL DATA

Project: OWRF EE 081412
Pace Project No.: 92128348

METHOD BLANK: 817597 Matrix: Water

Associated Lab Samples: 92128348001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Butylbenzylphthalate	ug/L	ND	10.0	08/21/12 14:56	
Chrysene	ug/L	ND	10.0	08/21/12 14:56	
Di-n-butylphthalate	ug/L	ND	10.0	08/21/12 14:56	
Di-n-octylphthalate	ug/L	ND	10.0	08/21/12 14:56	
Dibenz(a,h)anthracene	ug/L	ND	10.0	08/21/12 14:56	
Dibenzofuran	ug/L	ND	10.0	08/21/12 14:56	
Diethylphthalate	ug/L	ND	10.0	08/21/12 14:56	
Dimethylphthalate	ug/L	ND	10.0	08/21/12 14:56	
Fluoranthene	ug/L	ND	10.0	08/21/12 14:56	
Fluorene	ug/L	ND	10.0	08/21/12 14:56	
Hexachloro-1,3-butadiene	ug/L	ND	10.0	08/21/12 14:56	
Hexachlorobenzene	ug/L	ND	10.0	08/21/12 14:56	
Hexachlorocyclopentadiene	ug/L	ND	10.0	08/21/12 14:56	
Hexachloroethane	ug/L	ND	10.0	08/21/12 14:56	
Indeno(1,2,3-cd)pyrene	ug/L	ND	10.0	08/21/12 14:56	
Isophorone	ug/L	ND	10.0	08/21/12 14:56	
N-Nitroso-di-n-propylamine	ug/L	ND	10.0	08/21/12 14:56	
N-Nitrosodimethylamine	ug/L	ND	10.0	08/21/12 14:56	
N-Nitrosodiphenylamine	ug/L	ND	10.0	08/21/12 14:56	
Naphthalene	ug/L	ND	10.0	08/21/12 14:56	
Nitrobenzene	ug/L	ND	10.0	08/21/12 14:56	
Pentachlorophenol	ug/L	ND	25.0	08/21/12 14:56	
Phenanthrene	ug/L	ND	10.0	08/21/12 14:56	
Phenol	ug/L	ND	10.0	08/21/12 14:56	
Pyrene	ug/L	ND	10.0	08/21/12 14:56	
2,4,6-Tribromophenol (S)	%	76	27-110	08/21/12 14:56	
2-Fluorobiphenyl (S)	%	81	27-110	08/21/12 14:56	
2-Fluorophenol (S)	%	34	12-110	08/21/12 14:56	
Nitrobenzene-d5 (S)	%	74	21-110	08/21/12 14:56	
Phenol-d6 (S)	%	20	10-110	08/21/12 14:56	
Terphenyl-d14 (S)	%	102	31-107	08/21/12 14:56	

LABORATORY CONTROL SAMPLE & LCSD: 817598 817599

Parameter	Units	Spike Conc.	LCS Result	LCSD Result	LCS % Rec	LCSD % Rec	% Rec Limits	RPD	Max RPD	Qualifiers
1,2,4-Trichlorobenzene	ug/L	50	33.5	34.4	67	69	10-110	3	30	
1,2-Dichlorobenzene	ug/L	50	35.0	35.9	70	72	10-110	3	30	
1,3-Dichlorobenzene	ug/L	50	33.3	35.0	67	70	10-110	5	30	
1,4-Dichlorobenzene	ug/L	50	34.0	34.4	68	69	10-110	1	30	
1-Methylnaphthalene	ug/L	50	36.9	39.5	74	79	21-110	7	30	
2,4,5-Trichlorophenol	ug/L	50	41.2	44.8	82	90	23-116	8	30	
2,4,6-Trichlorophenol	ug/L	50	38.9	43.3	78	87	21-114	11	30	
2,4-Dichlorophenol	ug/L	50	33.3	36.8	67	74	22-120	10	30	
2,4-Dimethylphenol	ug/L	50	33.0	36.2	66	72	15-109	9	30	
2,4-Dinitrophenol	ug/L	250	196	215	78	86	10-103	9	30	

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QUALITY CONTROL DATA

Project: OWRF EE 081412
Pace Project No.: 92128348

LABORATORY CONTROL SAMPLE & LCSD: 817598 817599

Parameter	Units	Spike Conc.	LCS Result	LCSD Result	LCS % Rec	LCSD % Rec	% Rec Limits	RPD	Max RPD	Qualifiers
2,4-Dinitrotoluene	ug/L	50	38.1	41.6	76	83	24-119	9	30	
2,6-Dinitrotoluene	ug/L	50	41.9	45.7	84	91	25-116	9	30	
2-Chloronaphthalene	ug/L	50	44.3	47.2	89	94	18-110	6	30	
2-Chlorophenol	ug/L	50	33.3	36.2	67	72	10-104	8	30	
2-Methylnaphthalene	ug/L	50	36.6	39.0	73	78	16-110	6	30	
2-Methylphenol(o-Cresol)	ug/L	50	30.7	33.7	61	67	13-110	9	30	
2-Nitroaniline	ug/L	100	66.6	74.3	67	74	20-117	11	30	
2-Nitrophenol	ug/L	50	34.1	37.5	68	75	16-108	9	30	
3&4-Methylphenol(m&p Cresol)	ug/L	50	26.6	29.7	53	59	14-110	11	30	
3,3'-Dichlorobenzidine	ug/L	100	91.4	93.8	91	94	13-131	3	30	
3-Nitroaniline	ug/L	100	76.3	85.4	76	85	15-117	11	30	
4,6-Dinitro-2-methylphenol	ug/L	100	88.6	96.1	89	96	13-119	8	30	
4-Bromophenylphenyl ether	ug/L	50	42.4	44.6	85	89	23-120	5	30	
4-Chloro-3-methylphenol	ug/L	100	64.2	71.3	64	71	21-119	11	30	
4-Chloroaniline	ug/L	100	59.2	64.1	59	64	10-122	8	30	
4-Chlorophenylphenyl ether	ug/L	50	42.0	45.8	84	92	22-112	8	30	
4-Nitroaniline	ug/L	100	76.5	83.6	76	84	14-118	9	30	
4-Nitrophenol	ug/L	250	87.1	96.8	35	39	10-110	11	30	
Acenaphthene	ug/L	50	42.1	44.7	84	89	20-105	6	30	
Acenaphthylene	ug/L	50	41.3	44.6	83	89	23-106	8	30	
Aniline	ug/L	50	26.4	27.8	53	56	10-110	5	30	
Anthracene	ug/L	50	44.0	46.0	88	92	25-120	5	30	
Benzo(a)anthracene	ug/L	50	45.0	47.5	90	95	21-128	5	30	
Benzo(a)pyrene	ug/L	50	47.7	49.7	95	99	25-116	4	30	
Benzo(b)fluoranthene	ug/L	50	47.6	49.1	95	98	23-117	3	30	
Benzo(g,h,i)perylene	ug/L	50	47.1	49.9	94	100	17-128	6	30	
Benzo(k)fluoranthene	ug/L	50	51.0	53.6	102	107	25-127	5	30	
Benzoic Acid	ug/L	250	50.1	73.2	20	29	10-110	38	30	R1
Benzyl alcohol	ug/L	100	61.0	67.5	61	67	10-101	10	30	
bis(2-Chloroethoxy)methane	ug/L	50	40.1	43.3	80	87	19-107	8	30	
bis(2-Chloroethyl) ether	ug/L	50	36.3	39.2	73	78	10-108	8	30	
bis(2-Chloroisopropyl) ether	ug/L	50	27.5	29.9	55	60	10-108	8	30	
bis(2-Ethylhexyl)phthalate	ug/L	50	40.3	43.9	81	88	16-123	9	30	
Butylbenzylphthalate	ug/L	50	42.4	45.3	85	91	20-118	7	30	
Chrysene	ug/L	50	45.2	47.6	90	95	24-125	5	30	
Di-n-butylphthalate	ug/L	50	37.9	40.7	76	81	23-115	7	30	
Di-n-octylphthalate	ug/L	50	35.1	39.2	70	78	20-115	11	30	
Dibenz(a,h)anthracene	ug/L	50	46.2	49.7	92	99	18-131	7	30	
Dibenzofuran	ug/L	50	43.1	46.2	86	92	23-106	7	30	
Diethylphthalate	ug/L	50	37.7	40.6	75	81	24-115	7	30	
Dimethylphthalate	ug/L	50	36.8	40.5	74	81	22-113	9	30	
Fluoranthene	ug/L	50	44.0	45.9	88	92	24-125	4	30	
Fluorene	ug/L	50	40.9	44.5	82	89	24-114	9	30	
Hexachloro-1,3-butadiene	ug/L	50	32.8	33.2	66	66	10-110	1	30	
Hexachlorobenzene	ug/L	50	42.2	43.7	84	87	22-127	3	30	
Hexachlorocyclopentadiene	ug/L	50	50.5	51.8	101	104	10-110	2	30	
Hexachloroethane	ug/L	50	37.8	38.7	76	77	10-110	2	30	
Indeno(1,2,3-cd)pyrene	ug/L	50	48.5	51.1	97	102	18-130	5	30	

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QUALITY CONTROL DATA

Project: OWRF EE 081412
Pace Project No.: 92128348

LABORATORY CONTROL SAMPLE & LCSD: 817598 817599

Parameter	Units	Spike Conc.	LCS Result	LCSD Result	LCS % Rec	LCSD % Rec	% Rec Limits	RPD	Max RPD	Qualifiers
Isophorone	ug/L	50	25.7	28.2	51	56	23-114	9	30	
N-Nitroso-di-n-propylamine	ug/L	50	37.1	40.1	74	80	21-114	8	30	
N-Nitrosodimethylamine	ug/L	50	20.8	22.7	42	45	10-110	8	30	
N-Nitrosodiphenylamine	ug/L	50	41.3	43.8	83	88	24-123	6	30	
Naphthalene	ug/L	50	34.2	35.7	68	71	14-110	4	30	
Nitrobenzene	ug/L	50	26.2	28.4	52	57	16-106	8	30	
Pentachlorophenol	ug/L	100	89.0	94.4	89	94	10-123	6	30	
Phenanthrene	ug/L	50	42.4	44.7	85	89	25-119	5	30	
Phenol	ug/L	50	14.4	16.5	29	33	10-110	14	30	
Pyrene	ug/L	50	44.7	48.1	89	96	22-127	7	30	
2,4,6-Tribromophenol (S)	%				91	92	27-110			
2-Fluorobiphenyl (S)	%				79	82	27-110			
2-Fluorophenol (S)	%				39	44	12-110			
Nitrobenzene-d5 (S)	%				62	65	21-110			
Phenol-d6 (S)	%				25	28	10-110			
Terphenyl-d14 (S)	%				96	99	31-107			

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QUALITY CONTROL DATA

Project: OWRF EE 081412
Pace Project No.: 92128348

QC Batch: WETA/19471
QC Batch Method: EPA 335.4
Analysis Method: EPA 335.4
Analysis Description: 335.4 Cyanide, Total
Associated Lab Samples: 92128348005

METHOD BLANK: 451963
Matrix: Water
Associated Lab Samples: 92128348005

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Cyanide	mg/L	ND	0.010	08/22/12 13:37	

LABORATORY CONTROL SAMPLE: 451964

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Cyanide	mg/L	.05	0.049	98	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 451965 451966

Parameter	Units	3565120001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Cyanide	mg/L	0.0050 U	.05	.05	0.049	0.049	96	96	90-110	.2	20	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 451967 451968

Parameter	Units	3565191001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Cyanide	mg/L	0.0050 U	.05	.05	0.049	0.049	95	96	90-110	2	20	

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QUALITY CONTROL DATA

Project: OWRF EE 081412
Pace Project No.: 92128348

QC Batch: WETA/19479 — Analysis Method: EPA 420.4
QC Batch Method: EPA 420.4 — Analysis Description: 420.4 Phenolics
Associated Lab Samples: 92128348003

METHOD BLANK: 452042 — Matrix: Water
Associated Lab Samples: 92128348003

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Phenolics, Total Recoverable	mg/L	ND	0.010	08/24/12 12:00	

LABORATORY CONTROL SAMPLE: 452043

Parameter	Units	Spike Conc.	LCS Result	LCS %Rec	% Rec Limits	Qualifiers
Phenolics, Total Recoverable	mg/L	.4	0.39	97	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 452044 452045

Parameter	Units	3565673001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Phenolics, Total Recoverable	mg/L	0.014	.4	.4	0.40	0.39	97	95	90-110	2	20	

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QUALIFIERS

Project: OWRF EE 081412
Pace Project No.: 92128348

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to changes in sample preparation, dilution of the sample aliquot, or moisture content.

ND - Not Detected at or above adjusted reporting limit.

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PRL - Pace Reporting Limit.

RL - Reporting Limit.

S - Surrogate

1,2-Diphenylhydrazine (8270 listed analyte) decomposes to Azobenzene.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Acid preservation may not be appropriate for 2-Chloroethylvinyl ether, Styrene, and Vinyl chloride.

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

LABORATORIES

PASI-C	Pace Analytical Services - Charlotte
PASI-O	Pace Analytical Services - Ormond Beach

ANALYTE QUALIFIERS

L3	Analyte recovery in the laboratory control sample (LCS) exceeded QC limits. Analyte presence below reporting limits in associated samples. Results unaffected by high bias.
R1	RPD value was outside control limits.
SS	This analyte did not meet the secondary source verification criteria for the initial calibration. The reported result should be considered an estimated value.

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: OWRF EE 081412
Pace Project No.: 92128348

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
92128348006	**1208141642**	EPA 200.7	ICP/9959	EPA 200.7	ICP/6501
92128348004	**1208141641**	EPA 200.8	ICPM/9981	EPA 200.8	ICPM/4141
92128348004	**1208141641**	EPA 245.1	MERC/3065	EPA 245.1	MERC/3067
92128348001	**1208141639**	EPA 3510	OEXT/18640	EPA 8270	MSSV/6641
92128348002	**120814163A**	EPA 8260	MSV/20137		
92128348005	**1208141643**	EPA 335.4	WETA/19471	EPA 335.4	WETA/19473
92128348003	**1208141640**	EPA 420.4	WETA/19479		

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October 18, 2013

Ms. Andrea Martin
Greenway Engineering Inc
151 Windy Hill Ln.
Winchester, VA 22602

RE: Project: OWRF EE 100813
Pace Project No.: 92175160

Dear Ms. Martin:
Enclosed are the analytical results for sample(s) received by the laboratory on October 09, 2013. The results relate only to the samples included in this report. Results reported herein conform to the most current TNI standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

Analyses were performed at the Pace Analytical Services location indicated on the sample analyte page for analysis unless otherwise footnoted.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Tabitha Dacal

Tabitha M Dacal

tabitha.dacal@pacelabs.com
Project Manager

Enclosures

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CERTIFICATIONS

Project: OWRF EE 100813
Pace Project No.: 92175160

Charlotte Certification IDs
9800 Kincey Ave. Ste 100, Huntersville, NC 28078
North Carolina Drinking Water Certification #: 37706
North Carolina Field Services Certification #: 5342
North Carolina Wastewater Certification #: 12
South Carolina Certification #: 99006001
Florida/NELAP Certification #: E87627
Kentucky UST Certification #: 84
West Virginia Certification #: 357
Virginia/VELAP Certification #: 460221

Asheville Certification IDs
2225 Riverside Dr., Asheville, NC 28804
Florida/NELAP Certification #: E87648
Massachusetts Certification #: M-NC030
North Carolina Drinking Water Certification #: 37712
North Carolina Wastewater Certification #: 40
South Carolina Certification #: 99030001
West Virginia Certification #: 356
Virginia/VELAP Certification #: 460222

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SAMPLE SUMMARY

Project: OWRF EE 100813
Pace Project No.: 92175160

Lab ID	Sample ID	Matrix	Date Collected	Date Received
92175160001	**1310081421**	Water	10/08/13 07:30	10/09/13 09:45

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SAMPLE ANALYTE COUNT

Project: OWRF EE 100813
Pace Project No.: 92175160

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
92175160001	**1310081421**	EPA 200.7	JMW	13	PASI-A
		EPA 245.1	MTS	1	PASI-A
		EPA 8270	BPJ	74	PASI-C
		EPA 8260	MCK	63	PASI-C
		EPA 420.4	JTM	1	PASI-A
		SM 4500-CN-E	JDA	1	PASI-A

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ANALYTICAL RESULTS

Project: OWRF EE 100813
Pace Project No.: 92175160

Sample: 1310081421 **Lab ID: 92175160001** Collected: 10/08/13 07:30 Received: 10/09/13 09:45 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
200.7 MET ICP	Analytical Method: EPA 200.7 Preparation Method: EPA 200.7								
Antimony	ND	ug/L	5.0	2.6	1	10/10/13 09:05	10/14/13 20:55	7440-36-0	
Arsenic	**8.1J**	ug/L	10.0	2.7	1	10/10/13 09:05	10/14/13 20:55	7440-38-2	
Beryllium	ND	ug/L	1.0	0.10	1	10/10/13 09:05	10/14/13 20:55	7440-41-7	
Cadmium	ND	ug/L	1.0	0.50	1	10/10/13 09:05	10/14/13 20:55	7440-43-9	
Chromium	ND	ug/L	5.0	0.40	1	10/10/13 09:05	10/14/13 20:55	7440-47-3	
Copper	**9.1**	ug/L	5.0	0.30	1	10/10/13 09:05	10/14/13 20:55	7440-50-8	B
Lead	ND	ug/L	5.0	4.0	1	10/10/13 09:05	10/14/13 20:55	7439-92-1	
Nickel	**2.6J**	ug/L	5.0	1.7	1	10/10/13 09:05	10/14/13 20:55	7440-02-0	
Selenium	**6.8J**	ug/L	10.0	3.8	1	10/10/13 09:05	10/14/13 20:55	7782-49-2	B
Silver	ND	ug/L	5.0	0.10	1	10/10/13 09:05	10/14/13 20:55	7440-22-4	
Thallium	ND	ug/L	10.0	3.0	1	10/10/13 09:05	10/14/13 20:55	7440-28-0	
Total Hardness	**303000**	ug/L	662	662	1	10/10/13 09:05	10/14/13 20:55		
Zinc	**39.3**	ug/L	10.0	0.40	1	10/10/13 09:05	10/14/13 20:55	7440-66-6	
245.1 Mercury	Analytical Method: EPA 245.1 Preparation Method: EPA 245.1								
Mercury	ND	ug/L	0.20	0.070	1	10/14/13 17:05	10/17/13 19:53	7439-97-6	
8270 MSSV Semivolatile Organic	Analytical Method: EPA 8270 Preparation Method: EPA 3510								
Acenaphthene	ND	ug/L	10.0	0.25	1	10/10/13 08:10	10/11/13 22:49	83-32-9	
Acenaphthylene	ND	ug/L	10.0	0.21	1	10/10/13 08:10	10/11/13 22:49	208-96-8	
Aniline	ND	ug/L	10.0	2.0	1	10/10/13 08:10	10/11/13 22:49	62-53-3	
Anthracene	ND	ug/L	10.0	0.14	1	10/10/13 08:10	10/11/13 22:49	120-12-7	
Benzo(a)anthracene	ND	ug/L	10.0	0.33	1	10/10/13 08:10	10/11/13 22:49	56-55-3	
Benzo(a)pyrene	ND	ug/L	10.0	0.30	1	10/10/13 08:10	10/11/13 22:49	50-32-8	
Benzo(b)fluoranthene	ND	ug/L	10.0	0.28	1	10/10/13 08:10	10/11/13 22:49	205-99-2	
Benzo(g,h,i)perylene	ND	ug/L	10.0	0.38	1	10/10/13 08:10	10/11/13 22:49	191-24-2	
Benzo(k)fluoranthene	ND	ug/L	10.0	0.43	1	10/10/13 08:10	10/11/13 22:49	207-08-9	
Benzoic Acid	ND	ug/L	50.0	11.5	1	10/10/13 08:10	10/11/13 22:49	65-85-0	
Benzyl alcohol	ND	ug/L	20.0	2.4	1	10/10/13 08:10	10/11/13 22:49	100-51-6	
4-Bromophenylphenyl ether	ND	ug/L	10.0	0.82	1	10/10/13 08:10	10/11/13 22:49	101-55-3	
Butylbenzylphthalate	ND	ug/L	10.0	0.79	1	10/10/13 08:10	10/11/13 22:49	85-68-7	
4-Chloro-3-methylphenol	ND	ug/L	20.0	3.7	1	10/10/13 08:10	10/11/13 22:49	59-50-7	
4-Chloroaniline	ND	ug/L	20.0	2.8	1	10/10/13 08:10	10/11/13 22:49	106-47-8	
bis(2-Chloroethoxy)methane	ND	ug/L	10.0	0.92	1	10/10/13 08:10	10/11/13 22:49	111-91-1	
bis(2-Chloroethyl) ether	ND	ug/L	10.0	1.0	1	10/10/13 08:10	10/11/13 22:49	111-44-4	
bis(2-Chloroisopropyl) ether	ND	ug/L	10.0	0.95	1	10/10/13 08:10	10/11/13 22:49	108-60-1	
2-Chloronaphthalene	ND	ug/L	10.0	0.98	1	10/10/13 08:10	10/11/13 22:49	91-58-7	
2-Chlorophenol	ND	ug/L	10.0	1.3	1	10/10/13 08:10	10/11/13 22:49	95-57-8	
4-Chlorophenylphenyl ether	ND	ug/L	10.0	0.87	1	10/10/13 08:10	10/11/13 22:49	7005-72-3	
Chrysene	ND	ug/L	10.0	0.21	1	10/10/13 08:10	10/11/13 22:49	218-01-9	
Dibenz(a,h)anthracene	ND	ug/L	10.0	0.55	1	10/10/13 08:10	10/11/13 22:49	53-70-3	
Dibenzofuran	ND	ug/L	10.0	0.89	1	10/10/13 08:10	10/11/13 22:49	132-64-9	
1,2-Dichlorobenzene	ND	ug/L	10.0	0.88	1	10/10/13 08:10	10/11/13 22:49	95-50-1	
1,3-Dichlorobenzene	ND	ug/L	10.0	0.81	1	10/10/13 08:10	10/11/13 22:49	541-73-1	
1,4-Dichlorobenzene	ND	ug/L	10.0	0.95	1	10/10/13 08:10	10/11/13 22:49	106-46-7	
3,3'-Dichlorobenzidine	ND	ug/L	20.0	2.1	1	10/10/13 08:10	10/11/13 22:49	91-94-1	

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ANALYTICAL RESULTS

Project: OWRF EE 100813
Pace Project No.: 92175160

Sample: 1310081421 **Lab ID: 92175160001** Collected: 10/08/13 07:30 Received: 10/09/13 09:45 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8270 MSSV Semivolatile Organic	Analytical Method: EPA 8270 Preparation Method: EPA 3510								
2,4-Dichlorophenol	ND	ug/L	10.0	1.7	1	10/10/13 08:10	10/11/13 22:49	120-83-2	
Diethylphthalate	ND	ug/L	10.0	0.58	1	10/10/13 08:10	10/11/13 22:49	84-66-2	
2,4-Dimethylphenol	ND	ug/L	10.0	1.2	1	10/10/13 08:10	10/11/13 22:49	105-67-9	
Dimethylphthalate	ND	ug/L	10.0	0.76	1	10/10/13 08:10	10/11/13 22:49	131-11-3	
Di-n-butylphthalate	ND	ug/L	10.0	0.75	1	10/10/13 08:10	10/11/13 22:49	84-74-2	
4,6-Dinitro-2-methylphenol	ND	ug/L	20.0	2.6	1	10/10/13 08:10	10/11/13 22:49	534-52-1	
2,4-Dinitrophenol	ND	ug/L	50.0	9.0	1	10/10/13 08:10	10/11/13 22:49	51-28-5	
2,4-Dinitrotoluene	ND	ug/L	10.0	0.90	1	10/10/13 08:10	10/11/13 22:49	121-14-2	
2,6-Dinitrotoluene	ND	ug/L	10.0	0.98	1	10/10/13 08:10	10/11/13 22:49	606-20-2	
Di-n-octylphthalate	ND	ug/L	10.0	0.66	1	10/10/13 08:10	10/11/13 22:49	117-84-0	
bis(2-Ethylhexyl)phthalate	**21.1**	ug/L	6.0	0.79	1	10/10/13 08:10	10/11/13 22:49	117-81-7	
Fluoranthene	ND	ug/L	10.0	0.21	1	10/10/13 08:10	10/11/13 22:49	206-44-0	
Fluorene	ND	ug/L	10.0	0.21	1	10/10/13 08:10	10/11/13 22:49	86-73-7	
Hexachloro-1,3-butadiene	ND	ug/L	10.0	0.94	1	10/10/13 08:10	10/11/13 22:49	87-68-3	
Hexachlorobenzene	ND	ug/L	10.0	0.72	1	10/10/13 08:10	10/11/13 22:49	118-74-1	
Hexachlorocyclopentadiene	ND	ug/L	10.0	0.88	1	10/10/13 08:10	10/11/13 22:49	77-47-4	
Hexachloroethane	ND	ug/L	10.0	1.1	1	10/10/13 08:10	10/11/13 22:49	67-72-1	
Indeno(1,2,3-cd)pyrene	ND	ug/L	10.0	0.29	1	10/10/13 08:10	10/11/13 22:49	193-39-5	
Isophorone	ND	ug/L	10.0	0.89	1	10/10/13 08:10	10/11/13 22:49	78-59-1	
1-Methylnaphthalene	ND	ug/L	10.0	0.32	1	10/10/13 08:10	10/11/13 22:49	90-12-0	
2-Methylnaphthalene	ND	ug/L	10.0	0.28	1	10/10/13 08:10	10/11/13 22:49	91-57-6	
2-Methylphenol(o-Cresol)	ND	ug/L	10.0	1.6	1	10/10/13 08:10	10/11/13 22:49	95-48-7	
3&4-Methylphenol(m&p Cresol)	ND	ug/L	10.0	2.0	1	10/10/13 08:10	10/11/13 22:49		
Naphthalene	ND	ug/L	10.0	0.34	1	10/10/13 08:10	10/11/13 22:49	91-20-3	
2-Nitroaniline	ND	ug/L	50.0	2.0	1	10/10/13 08:10	10/11/13 22:49	88-74-4	
3-Nitroaniline	ND	ug/L	50.0	2.0	1	10/10/13 08:10	10/11/13 22:49	99-09-2	
4-Nitroaniline	ND	ug/L	20.0	2.1	1	10/10/13 08:10	10/11/13 22:49	100-01-6	
Nitrobenzene	ND	ug/L	10.0	1.1	1	10/10/13 08:10	10/11/13 22:49	98-95-3	
2-Nitrophenol	ND	ug/L	10.0	0.91	1	10/10/13 08:10	10/11/13 22:49	88-75-5	
4-Nitrophenol	ND	ug/L	50.0	4.1	1	10/10/13 08:10	10/11/13 22:49	100-02-7	
N-Nitrosodimethylamine	ND	ug/L	10.0	0.91	1	10/10/13 08:10	10/11/13 22:49	62-75-9	
N-Nitroso-di-n-propylamine	ND	ug/L	10.0	0.99	1	10/10/13 08:10	10/11/13 22:49	621-64-7	
N-Nitrosodiphenylamine	ND	ug/L	10.0	1.0	1	10/10/13 08:10	10/11/13 22:49	86-30-6	
Pentachlorophenol	ND	ug/L	25.0	4.6	1	10/10/13 08:10	10/11/13 22:49	87-86-5	
Phenanthrene	ND	ug/L	10.0	0.22	1	10/10/13 08:10	10/11/13 22:49	85-01-8	
Phenol	ND	ug/L	10.0	1.9	1	10/10/13 08:10	10/11/13 22:49	108-95-2	
Pyrene	ND	ug/L	10.0	0.19	1	10/10/13 08:10	10/11/13 22:49	129-00-0	
1,2,4-Trichlorobenzene	ND	ug/L	10.0	0.98	1	10/10/13 08:10	10/11/13 22:49	120-82-1	
2,4,5-Trichlorophenol	ND	ug/L	10.0	0.92	1	10/10/13 08:10	10/11/13 22:49	95-95-4	
2,4,6-Trichlorophenol	ND	ug/L	10.0	1.3	1	10/10/13 08:10	10/11/13 22:49	88-06-2	
Surrogates									
Nitrobenzene-d5 (S)	53	%	21-110		1	10/10/13 08:10	10/11/13 22:49	4165-60-0	
2-Fluorobiphenyl (S)	54	%	27-110		1	10/10/13 08:10	10/11/13 22:49	321-60-8	
Terphenyl-d14 (S)	33	%	31-107		1	10/10/13 08:10	10/11/13 22:49	1718-51-0	
Phenol-d6 (S)	19	%	10-110		1	10/10/13 08:10	10/11/13 22:49	13127-88-3	
2-Fluorophenol (S)	27	%	12-110		1	10/10/13 08:10	10/11/13 22:49	367-12-4	

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ANALYTICAL RESULTS

Project: OWRF EE 100813
Pace Project No.: 92175160

Sample: 1310081421 **Lab ID: 92175160001** Collected: 10/08/13 07:30 Received: 10/09/13 09:45 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8270 MSSV Semivolatile Organic	Analytical Method: EPA 8270 Preparation Method: EPA 3510								
Surrogates									
2,4,6-Tribromophenol (S)	59	%	27-110		1	10/10/13 08:10	10/11/13 22:49	118-79-6	
8260 MSV Low Level	Analytical Method: EPA 8260								
Acetone	ND	ug/L	25.0	10.0	1		10/16/13 08:53	67-64-1	
Benzene	ND	ug/L	1.0	0.25	1		10/16/13 08:53	71-43-2	
Bromobenzene	ND	ug/L	1.0	0.30	1		10/16/13 08:53	108-86-1	
Bromochloromethane	ND	ug/L	1.0	0.17	1		10/16/13 08:53	74-97-5	
Bromodichloromethane	**5.0**	ug/L	1.0	0.18	1		10/16/13 08:53	75-27-4	
Bromoform	ND	ug/L	1.0	0.26	1		10/16/13 08:53	75-25-2	
Bromomethane	ND	ug/L	2.0	0.29	1		10/16/13 08:53	74-83-9	
2-Butanone (MEK)	ND	ug/L	5.0	0.96	1		10/16/13 08:53	78-93-3	
Carbon tetrachloride	ND	ug/L	1.0	0.25	1		10/16/13 08:53	56-23-5	
Chlorobenzene	ND	ug/L	1.0	0.23	1		10/16/13 08:53	108-90-7	
Chloroethane	ND	ug/L	1.0	0.54	1		10/16/13 08:53	75-00-3	
Chloroform	**9.5**	ug/L	1.0	0.14	1		10/16/13 08:53	67-66-3	
Chloromethane	ND	ug/L	1.0	0.11	1		10/16/13 08:53	74-87-3	
2-Chlorotoluene	ND	ug/L	1.0	0.35	1		10/16/13 08:53	95-49-8	
4-Chlorotoluene	ND	ug/L	1.0	0.31	1		10/16/13 08:53	106-43-4	
1,2-Dibromo-3-chloropropane	ND	ug/L	5.0	2.5	1		10/16/13 08:53	96-12-8	
Dibromochloromethane	**2.3**	ug/L	1.0	0.21	1		10/16/13 08:53	124-48-1	
1,2-Dibromoethane (EDB)	ND	ug/L	1.0	0.27	1		10/16/13 08:53	106-93-4	
Dibromomethane	ND	ug/L	1.0	0.21	1		10/16/13 08:53	74-95-3	
1,2-Dichlorobenzene	ND	ug/L	1.0	0.30	1		10/16/13 08:53	95-50-1	
1,3-Dichlorobenzene	ND	ug/L	1.0	0.24	1		10/16/13 08:53	541-73-1	
1,4-Dichlorobenzene	ND	ug/L	1.0	0.33	1		10/16/13 08:53	106-46-7	
Dichlorodifluoromethane	ND	ug/L	1.0	0.21	1		10/16/13 08:53	75-71-8	
1,1-Dichloroethane	ND	ug/L	1.0	0.32	1		10/16/13 08:53	75-34-3	
1,2-Dichloroethane	ND	ug/L	1.0	0.12	1		10/16/13 08:53	107-06-2	
1,1-Dichloroethene	ND	ug/L	1.0	0.56	1		10/16/13 08:53	75-35-4	
cis-1,2-Dichloroethene	ND	ug/L	1.0	0.19	1		10/16/13 08:53	156-59-2	
trans-1,2-Dichloroethene	ND	ug/L	1.0	0.49	1		10/16/13 08:53	156-60-5	
1,2-Dichloropropane	ND	ug/L	1.0	0.27	1		10/16/13 08:53	78-87-5	
1,3-Dichloropropane	ND	ug/L	1.0	0.28	1		10/16/13 08:53	142-28-9	
2,2-Dichloropropane	ND	ug/L	1.0	0.13	1		10/16/13 08:53	594-20-7	
1,1-Dichloropropene	ND	ug/L	1.0	0.49	1		10/16/13 08:53	563-58-6	
cis-1,3-Dichloropropene	ND	ug/L	1.0	0.13	1		10/16/13 08:53	10061-01-5	
trans-1,3-Dichloropropene	ND	ug/L	1.0	0.26	1		10/16/13 08:53	10061-02-6	
Diisopropyl ether	ND	ug/L	1.0	0.12	1		10/16/13 08:53	108-20-3	
Ethylbenzene	ND	ug/L	1.0	0.30	1		10/16/13 08:53	100-41-4	
Hexachloro-1,3-butadiene	ND	ug/L	1.0	0.71	1		10/16/13 08:53	87-68-3	
2-Hexanone	ND	ug/L	5.0	0.46	1		10/16/13 08:53	591-78-6	
p-Isopropyltoluene	ND	ug/L	1.0	0.31	1		10/16/13 08:53	99-87-6	
Methylene Chloride	ND	ug/L	2.0	0.97	1		10/16/13 08:53	75-09-2	
4-Methyl-2-pentanone (MIBK)	ND	ug/L	5.0	0.33	1		10/16/13 08:53	108-10-1	
Methyl-tert-butyl ether	ND	ug/L	1.0	0.21	1		10/16/13 08:53	1634-04-4	

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ANALYTICAL RESULTS

Project: OWRF EE 100813
Pace Project No.: 92175160

Sample: 1310081421 **Lab ID: 92175160001** Collected: 10/08/13 07:30 Received: 10/09/13 09:45 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV Low Level	Analytical Method: EPA 8260								
Naphthalene	ND	ug/L	1.0	0.24	1		10/16/13 08:53	91-20-3	
Styrene	ND	ug/L	1.0	0.26	1		10/16/13 08:53	100-42-5	
1,1,1,2-Tetrachloroethane	ND	ug/L	1.0	0.33	1		10/16/13 08:53	630-20-6	
1,1,2,2-Tetrachloroethane	ND	ug/L	1.0	0.40	1		10/16/13 08:53	79-34-5	
Tetrachloroethene	ND	ug/L	1.0	0.46	1		10/16/13 08:53	127-18-4	
Toluene	ND	ug/L	1.0	0.26	1		10/16/13 08:53	108-88-3	
1,2,3-Trichlorobenzene	ND	ug/L	1.0	0.33	1		10/16/13 08:53	87-61-6	
1,2,4-Trichlorobenzene	ND	ug/L	1.0	0.35	1		10/16/13 08:53	120-82-1	
1,1,1-Trichloroethane	ND	ug/L	1.0	0.48	1		10/16/13 08:53	71-55-6	
1,1,2-Trichloroethane	ND	ug/L	1.0	0.29	1		10/16/13 08:53	79-00-5	
Trichloroethene	ND	ug/L	1.0	0.47	1		10/16/13 08:53	79-01-6	
Trichlorofluoromethane	ND	ug/L	1.0	0.20	1		10/16/13 08:53	75-69-4	
1,2,3-Trichloropropane	ND	ug/L	1.0	0.41	1		10/16/13 08:53	96-18-4	
Vinyl acetate	ND	ug/L	2.0	0.35	1		10/16/13 08:53	108-05-4	
Vinyl chloride	ND	ug/L	1.0	0.62	1		10/16/13 08:53	75-01-4	
Xylene (Total)	ND	ug/L	2.0	0.66	1		10/16/13 08:53	1330-20-7	
m&p-Xylene	ND	ug/L	2.0	0.66	1		10/16/13 08:53	179601-23-1	
o-Xylene	ND	ug/L	1.0	0.23	1		10/16/13 08:53	95-47-6	
Surrogates									
4-Bromofluorobenzene (S)	97	%	70-130		1		10/16/13 08:53	460-00-4	
1,2-Dichloroethane-d4 (S)	96	%	70-130		1		10/16/13 08:53	17060-07-0	
Toluene-d8 (S)	97	%	70-130		1		10/16/13 08:53	2037-26-5	
420.4 Phenolics, Total	Analytical Method: EPA 420.4								
Phenol	**0.0091**	mg/L	0.0050	0.0050	1		10/12/13 13:58	108-95-2	
4500CNE Cyanide, Total	Analytical Method: SM 4500-CN-E								
Cyanide	**0.0086**	mg/L	0.0050	0.0050	1		10/13/13 15:06	57-12-5	

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QUALITY CONTROL DATA

Project: OWRF EE 100813
Pace Project No.: 92175160

QC Batch: MERP/5678
QC Batch Method: EPA 245.1
Analysis Method: EPA 245.1
Analysis Description: 245.1 Mercury
Associated Lab Samples: 92175160001

METHOD BLANK: 1065424
Matrix: Water
Associated Lab Samples: 92175160001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Mercury	ug/L	ND	0.20	10/17/13 19:29	

LABORATORY CONTROL SAMPLE: 1065425

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Mercury	ug/L	2.5	2.3	92	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1065426 1065427

Parameter	Units	92175201002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec.	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Mercury	ug/L	ND	2.5	2.5	2.4	2.4	94	95	70-130	1	20	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1065428 1065429

Parameter	Units	92175402003 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Mercury	ug/L	ND	2.5	2.5	2.3	2.2	93	90	70-130	3	20	

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QUALITY CONTROL DATA

Project: OWRF EE 100813
Pace Project No.: 92175160

QC Batch: MPRP/14388 — Analysis Method: EPA 200.7
QC Batch Method: EPA 200.7 — Analysis Description: 200.7 MET
Associated Lab Samples: 92175160001

METHOD BLANK: 1063108 — Matrix: Water
Associated Lab Samples: 92175160001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Antimony	ug/L	ND	5.0	10/14/13 19:30	
Arsenic	ug/L	ND	10.0	10/14/13 19:30	
Beryllium	ug/L	ND	1.0	10/14/13 19:30	
Cadmium	ug/L	ND	1.0	10/14/13 19:30	
Chromium	ug/L	0.45J	5.0	10/14/13 19:30	
Copper	ug/L	1.1J	5.0	10/14/13 19:30	
Lead	ug/L	ND	5.0	10/14/13 19:30	
Nickel	ug/L	ND	5.0	10/14/13 19:30	
Selenium	ug/L	4.6J	10.0	10/14/13 19:30	
Silver	ug/L	ND	5.0	10/14/13 19:30	
Thallium	ug/L	ND	10.0	10/14/13 19:30	
Total Hardness	ug/L	ND	662	10/14/13 19:30	
Zinc	ug/L	1.1J	10.0	10/15/13 14:07	

LABORATORY CONTROL SAMPLE: 1063109

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Antimony	ug/L	500	510	102	85-115	
Arsenic	ug/L	500	497	99	85-115	
Beryllium	ug/L	500	480	96	85-115	
Cadmium	ug/L	500	492	98	85-115	
Chromium	ug/L	500	475	95	85-115	
Copper	ug/L	500	487	97	85-115	
Lead	ug/L	500	496	99	85-115	
Nickel	ug/L	500	494	99	85-115	
Selenium	ug/L	500	510	102	85-115	
Silver	ug/L	250	242	97	85-115	
Thallium	ug/L	500	494	99	85-115	
Total Hardness	ug/L		31900			
Zinc	ug/L	500	494	99	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1063110 — 1063111

Parameter	Units	92175093001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Antimony	ug/L	ND	500	500	529	550	105	110	70-130	4	20	
Arsenic	ug/L	ND	500	500	526	548	105	109	70-130	4	20	
Beryllium	ug/L	ND	500	500	486	506	97	101	70-130	4	20	
Cadmium	ug/L	ND	500	500	498	517	100	103	70-130	4	20	
Chromium	ug/L	ND	500	500	479	497	96	99	70-130	4	20	

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QUALITY CONTROL DATA

Project: OWRF EE 100813
Pace Project No.: 92175160

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1063110 1063111

Parameter	Units	92175093001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Copper	ug/L	0.042 mg/L	500	500	538	555	99	103	70-130	3	20	
Lead	ug/L	0.024 mg/L	500	500	497	516	95	98	70-130	4	20	
Nickel	ug/L	0.23 mg/L	500	500	714	730	98	101	70-130	2	20	
Selenium	ug/L	ND	500	500	515	532	102	106	70-130	3	20	
Silver	ug/L	ND	250	250	245	254	98	101	70-130	4	20	
Thallium	ug/L	ND	500	500	457	476	91	95	70-130	4	20	
Total Hardness	ug/L	191 mg/L			225000	223000				1	20	
Zinc	ug/L	0.017 mg/L	500	500	519	540	100	105	70-130	4	20	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1063112 1063113

Parameter	Units	92175279002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Antimony	ug/L	ND	500	500	533	532	106	106	70-130	0	20	
Arsenic	ug/L	23.9	500	500	632	633	122	122	70-130	0	20	
Beryllium	ug/L	ND	500	500	487	488	97	97	70-130	0	20	
Cadmium	ug/L	ND	500	500	527	524	105	105	70-130	1	20	
Chromium	ug/L	13.6	500	500	535	546	104	106	70-130	2	20	
Copper	ug/L	282	500	500	805	801	105	104	70-130	0	20	
Lead	ug/L	ND	500	500	462	460	92	92	70-130	0	20	
Nickel	ug/L	286	500	500	780	772	99	97	70-130	1	20	
Selenium	ug/L	17.2	500	500	666	674	130	131	70-130	1	20	M1
Silver	ug/L	ND	250	250	278	279	111	111	70-130	0	20	
Thallium	ug/L	ND	500	500	410	407	82	81	70-130	1	20	
Total Hardness	ug/L	2460			33200	34000				2	20	
Zinc	ug/L	59.1	500	500	621	615	112	111	70-130	1	20	

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QUALITY CONTROL DATA

Project: OWRF EE 100813
Pace Project No.: 92175160

QC Batch: MSV/24560
QC Batch Method: EPA 8260
Analysis Method: EPA 8260
Analysis Description: 8260 MSV Low Level
Associated Lab Samples: 92175160001

METHOD BLANK: 1066133
Matrix: Water
Associated Lab Samples: 92175160001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1,1,1,2-Tetrachloroethane	ug/L	ND	1.0	10/16/13 03:14	
1,1,1-Trichloroethane	ug/L	ND	1.0	10/16/13 03:14	
1,1,2,2-Tetrachloroethane	ug/L	ND	1.0	10/16/13 03:14	
1,1,2-Trichloroethane	ug/L	ND	1.0	10/16/13 03:14	
1,1-Dichloroethane	ug/L	ND	1.0	10/16/13 03:14	
1,1-Dichloroethene	ug/L	ND	1.0	10/16/13 03:14	
1,1-Dichloropropene	ug/L	ND	1.0	10/16/13 03:14	
1,2,3-Trichlorobenzene	ug/L	ND	1.0	10/16/13 03:14	
1,2,3-Trichloropropane	ug/L	ND	1.0	10/16/13 03:14	
1,2,4-Trichlorobenzene	ug/L	ND	1.0	10/16/13 03:14	
1,2-Dibromo-3-chloropropane	ug/L	ND	5.0	10/16/13 03:14	
1,2-Dibromoethane (EDB)	ug/L	ND	1.0	10/16/13 03:14	
1,2-Dichlorobenzene	ug/L	ND	1.0	10/16/13 03:14	
1,2-Dichloroethane	ug/L	ND	1.0	10/16/13 03:14	
1,2-Dichloropropane	ug/L	ND	1.0	10/16/13 03:14	
1,3-Dichlorobenzene	ug/L	ND	1.0	10/16/13 03:14	
1,3-Dichloropropane	ug/L	ND	1.0	10/16/13 03:14	
1,4-Dichlorobenzene	ug/L	ND	1.0	10/16/13 03:14	
2,2-Dichloropropane	ug/L	ND	1.0	10/16/13 03:14	
2-Butanone (MEK)	ug/L	ND	5.0	10/16/13 03:14	
2-Chlorotoluene	ug/L	ND	1.0	10/16/13 03:14	
2-Hexanone	ug/L	ND	5.0	10/16/13 03:14	
4-Chlorotoluene	ug/L	ND	1.0	10/16/13 03:14	
4-Methyl-2-pentanone (MIBK)	ug/L	ND	5.0	10/16/13 03:14	
Acetone	ug/L	ND	25.0	10/16/13 03:14	
Benzene	ug/L	ND	1.0	10/16/13 03:14	
Bromobenzene	ug/L	ND	1.0	10/16/13 03:14	
Bromochloromethane	ug/L	ND	1.0	10/16/13 03:14	
Bromodichloromethane	ug/L	ND	1.0	10/16/13 03:14	
Bromoform	ug/L	ND	1.0	10/16/13 03:14	
Bromomethane	ug/L	ND	2.0	10/16/13 03:14	
Carbon tetrachloride	ug/L	ND	1.0	10/16/13 03:14	
Chlorobenzene	ug/L	ND	1.0	10/16/13 03:14	
Chloroethane	ug/L	ND	1.0	10/16/13 03:14	
Chloroform	ug/L	ND	1.0	10/16/13 03:14	
Chloromethane	ug/L	ND	1.0	10/16/13 03:14	
cis-1,2-Dichloroethene	ug/L	ND	1.0	10/16/13 03:14	
cis-1,3-Dichloropropene	ug/L	ND	1.0	10/16/13 03:14	
Dibromochloromethane	ug/L	ND	1.0	10/16/13 03:14	
Dibromomethane	ug/L	ND	1.0	10/16/13 03:14	
Dichlorodifluoromethane	ug/L	ND	1.0	10/16/13 03:14	
Diisopropyl ether	ug/L	ND	1.0	10/16/13 03:14	
Ethylbenzene	ug/L	ND	1.0	10/16/13 03:14	

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QUALITY CONTROL DATA

Project: OWRF EE 100813
Pace Project No.: 92175160

METHOD BLANK: 1066133 Matrix: Water

Associated Lab Samples: 92175160001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Hexachloro-1,3-butadiene	ug/L	ND	1.0	10/16/13 03:14	
m&p-Xylene	ug/L	ND	2.0	10/16/13 03:14	
Methyl-tert-butyl ether	ug/L	ND	1.0	10/16/13 03:14	
Methylene Chloride	ug/L	ND	2.0	10/16/13 03:14	
Naphthalene	ug/L	ND	1.0	10/16/13 03:14	
o-Xylene	ug/L	ND	1.0	10/16/13 03:14	
p-Isopropyltoluene	ug/L	ND	1.0	10/16/13 03:14	
Styrene	ug/L	ND	1.0	10/16/13 03:14	
Tetrachloroethene	ug/L	ND	1.0	10/16/13 03:14	
Toluene	ug/L	ND	1.0	10/16/13 03:14	
trans-1,2-Dichloroethene	ug/L	ND	1.0	10/16/13 03:14	
trans-1,3-Dichloropropene	ug/L	ND	1.0	10/16/13 03:14	
Trichloroethene	ug/L	ND	1.0	10/16/13 03:14	
Trichlorofluoromethane	ug/L	ND	1.0	10/16/13 03:14	
Vinyl acetate	ug/L	ND	2.0	10/16/13 03:14	
Vinyl chloride	ug/L	ND	1.0	10/16/13 03:14	
Xylene (Total)	ug/L	ND	2.0	10/16/13 03:14	
1,2-Dichloroethane-d4 (S)	%	90	70-130	10/16/13 03:14	
4-Bromofluorobenzene (S)	%	99	70-130	10/16/13 03:14	
Toluene-d8 (S)	%	96	70-130	10/16/13 03:14	

LABORATORY CONTROL SAMPLE: 1066134

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,1,1,2-Tetrachloroethane	ug/L	50	50.8	102	70-130	
1,1,1-Trichloroethane	ug/L	50	44.4	89	70-130	
1,1,2,2-Tetrachloroethane	ug/L	50	53.9	108	70-130	
1,1,2-Trichloroethane	ug/L	50	53.5	107	70-130	
1,1-Dichloroethane	ug/L	50	47.4	95	70-130	
1,1-Dichloroethene	ug/L	50	47.9	96	70-132	
1,1-Dichloropropene	ug/L	50	53.0	106	70-130	
1,2,3-Trichlorobenzene	ug/L	50	56.3	113	70-135	
1,2,3-Trichloropropane	ug/L	50	56.3	113	70-130	
1,2,4-Trichlorobenzene	ug/L	50	54.9	110	70-134	
1,2-Dibromo-3-chloropropane	ug/L	50	56.5	113	70-130	
1,2-Dibromoethane (EDB)	ug/L	50	55.1	110	70-130	
1,2-Dichlorobenzene	ug/L	50	56.3	113	70-130	
1,2-Dichloroethane	ug/L	50	44.2	88	70-130	
1,2-Dichloropropane	ug/L	50	57.5	115	70-130	
1,3-Dichlorobenzene	ug/L	50	54.2	108	70-130	
1,3-Dichloropropane	ug/L	50	57.1	114	70-130	
1,4-Dichlorobenzene	ug/L	50	53.4	107	70-130	
2,2-Dichloropropane	ug/L	50	41.6	83	58-145	
2-Butanone (MEK)	ug/L	100	129	129	70-145	
2-Chlorotoluene	ug/L	50	56.3	113	70-130	

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QUALITY CONTROL DATA

Project: OWRF EE 100813
Pace Project No.: 92175160

LABORATORY CONTROL SAMPLE: 1066134

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
2-Hexanone	ug/L	100	128	128	70-144	
4-Chlorotoluene	ug/L	50	54.3	109	70-130	
4-Methyl-2-pentanone (MIBK)	ug/L	100	118	118	70-140	
Acetone	ug/L	100	110	110	50-175	
Benzene	ug/L	50	52.8	106	70-130	
Bromobenzene	ug/L	50	52.0	104	70-130	
Bromochloromethane	ug/L	50	46.9	94	70-130	
Bromodichloromethane	ug/L	50	48.8	98	70-130	
Bromoform	ug/L	50	51.8	104	70-130	
Bromomethane	ug/L	50	36.5	73	54-130	
Carbon tetrachloride	ug/L	50	45.2	90	70-132	
Chlorobenzene	ug/L	50	51.2	102	70-130	
Chloroethane	ug/L	50	37.3	75	64-134	
Chloroform	ug/L	50	47.3	95	70-130	
Chloromethane	ug/L	50	49.6	99	64-130	
cis-1,2-Dichloroethene	ug/L	50	49.2	98	70-131	
cis-1,3-Dichloropropene	ug/L	50	53.9	108	70-130	
Dibromochloromethane	ug/L	50	50.2	100	70-130	
Dibromomethane	ug/L	50	51.5	103	70-131	
Dichlorodifluoromethane	ug/L	50	47.2	94	56-130	
Diisopropyl ether	ug/L	50	54.3	109	70-130	
Ethylbenzene	ug/L	50	50.2	100	70-130	
Hexachloro-1,3-butadiene	ug/L	50	51.1	102	70-130	
m&p-Xylene	ug/L	100	104	104	70-130	
Methyl-tert-butyl ether	ug/L	50	51.4	103	70-130	
Methylene Chloride	ug/L	50	51.3	103	63-130	
Naphthalene	ug/L	50	58.4	117	70-138	
o-Xylene	ug/L	50	56.3	113	70-130	
p-Isopropyltoluene	ug/L	50	55.5	111	70-130	
Styrene	ug/L	50	54.7	109	70-130	
Tetrachloroethene	ug/L	50	55.4	111	70-130	
Toluene	ug/L	50	51.4	103	70-130	
trans-1,2-Dichloroethene	ug/L	50	49.9	100	70-130	
trans-1,3-Dichloropropene	ug/L	50	56.4	113	70-132	
Trichloroethene	ug/L	50	51.1	102	70-130	
Trichlorofluoromethane	ug/L	50	37.8	76	62-133	
Vinyl acetate	ug/L	100	116	116	66-157	
Vinyl chloride	ug/L	50	51.1	102	69-130	
Xylene (Total)	ug/L	150	160	107	70-130	
1,2-Dichloroethane-d4 (S)	%			96	70-130	
4-Bromofluorobenzene (S)	%			100	70-130	
Toluene-d8 (S)	%			99	70-130	

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QUALITY CONTROL DATA

Project: OWRF EE 100813
Pace Project No.: 92175160

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1066633 1066634

Parameter	Units	92175656014 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
1,1-Dichloroethene	ug/L	ND	50	50	53.7	50.9	107	102	70-166	5	30	
Benzene	ug/L	ND	50	50	58.9	56.6	118	113	70-148	4	30	
Chlorobenzene	ug/L	ND	50	50	55.2	54.6	110	109	70-146	1	30	
Toluene	ug/L	ND	50	50	53.6	52.0	106	103	70-155	3	30	
Trichloroethene	ug/L	ND	50	50	60.3	57.7	121	115	69-151	4	30	
1,2-Dichloroethane-d4 (S)	%						94	95	70-130			
4-Bromofluorobenzene (S)	%						96	98	70-130			
Toluene-d8 (S)	%						97	97	70-130			

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QUALITY CONTROL DATA

Project: OWRF EE 100813
Pace Project No.: 92175160

QC Batch: OEXT/24182
QC Batch Method: EPA 3510
Associated Lab Samples: 92175160001

Analysis Method: EPA 8270
Analysis Description: 8270 Water MSSV

METHOD BLANK: 1063104
Matrix: Water
Associated Lab Samples: 92175160001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1,2,4-Trichlorobenzene	ug/L	ND	10.0	10/11/13 14:04	
1,2-Dichlorobenzene	ug/L	ND	10.0	10/11/13 14:04	
1,3-Dichlorobenzene	ug/L	ND	10.0	10/11/13 14:04	
1,4-Dichlorobenzene	ug/L	ND	10.0	10/11/13 14:04	
1-Methylnaphthalene	ug/L	ND	10.0	10/11/13 14:04	
2,4,5-Trichlorophenol	ug/L	ND	10.0	10/11/13 14:04	
2,4,6-Trichlorophenol	ug/L	ND	10.0	10/11/13 14:04	
2,4-Dichlorophenol	ug/L	ND	10.0	10/11/13 14:04	
2,4-Dimethylphenol	ug/L	ND	10.0	10/11/13 14:04	
2,4-Dinitrophenol	ug/L	ND	50.0	10/11/13 14:04	
2,4-Dinitrotoluene	ug/L	ND	10.0	10/11/13 14:04	
2,6-Dinitrotoluene	ug/L	ND	10.0	10/11/13 14:04	
2-Chloronaphthalene	ug/L	ND	10.0	10/11/13 14:04	
2-Chlorophenol	ug/L	ND	10.0	10/11/13 14:04	
2-Methylnaphthalene	ug/L	ND	10.0	10/11/13 14:04	
2-Methylphenol(o-Cresol)	ug/L	ND	10.0	10/11/13 14:04	
2-Nitroaniline	ug/L	ND	50.0	10/11/13 14:04	
2-Nitrophenol	ug/L	ND	10.0	10/11/13 14:04	
3&4-Methylphenol(m&p Cresol)	ug/L	ND	10.0	10/11/13 14:04	
3,3'-Dichlorobenzidine	ug/L	ND	20.0	10/11/13 14:04	
3-Nitroaniline	ug/L	ND	50.0	10/11/13 14:04	
4,6-Dinitro-2-methylphenol	ug/L	ND	20.0	10/11/13 14:04	
4-Bromophenylphenyl ether	ug/L	ND	10.0	10/11/13 14:04	
4-Chloro-3-methylphenol	ug/L	ND	20.0	10/11/13 14:04	
4-Chloroaniline	ug/L	ND	20.0	10/11/13 14:04	
4-Chlorophenylphenyl ether	ug/L	ND	10.0	10/11/13 14:04	
4-Nitroaniline	ug/L	ND	20.0	10/11/13 14:04	
4-Nitrophenol	ug/L	ND	50.0	10/11/13 14:04	
Acenaphthene	ug/L	ND	10.0	10/11/13 14:04	
Acenaphthylene	ug/L	ND	10.0	10/11/13 14:04	
Aniline	ug/L	ND	10.0	10/11/13 14:04	
Anthracene	ug/L	ND	10.0	10/11/13 14:04	
Benzo(a)anthracene	ug/L	ND	10.0	10/11/13 14:04	
Benzo(a)pyrene	ug/L	ND	10.0	10/11/13 14:04	
Benzo(b)fluoranthene	ug/L	ND	10.0	10/11/13 14:04	
Benzo(g,h,i)perylene	ug/L	ND	10.0	10/11/13 14:04	
Benzo(k)fluoranthene	ug/L	ND	10.0	10/11/13 14:04	
Benzoic Acid	ug/L	ND	50.0	10/11/13 14:04	
Benzyl alcohol	ug/L	ND	20.0	10/11/13 14:04	
bis(2-Chloroethoxy)methane	ug/L	ND	10.0	10/11/13 14:04	
bis(2-Chloroethyl) ether	ug/L	ND	10.0	10/11/13 14:04	
bis(2-Chloroisopropyl) ether	ug/L	ND	10.0	10/11/13 14:04	
bis(2-Ethylhexyl)phthalate	ug/L	ND	5.0	10/11/13 14:04	

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QUALITY CONTROL DATA

Project: OWRF EE 100813
Pace Project No.: 92175160

METHOD BLANK: 1063104 Matrix: Water

Associated Lab Samples: 92175160001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Butylbenzylphthalate	ug/L	ND	10.0	10/11/13 14:04	
Chrysene	ug/L	ND	10.0	10/11/13 14:04	
Di-n-butylphthalate	ug/L	ND	10.0	10/11/13 14:04	
Di-n-octylphthalate	ug/L	ND	10.0	10/11/13 14:04	
Dibenz(a,h)anthracene	ug/L	ND	10.0	10/11/13 14:04	
Dibenzofuran	ug/L	ND	10.0	10/11/13 14:04	
Diethylphthalate	ug/L	ND	10.0	10/11/13 14:04	
Dimethylphthalate	ug/L	ND	10.0	10/11/13 14:04	
Fluoranthene	ug/L	ND	10.0	10/11/13 14:04	
Fluorene	ug/L	ND	10.0	10/11/13 14:04	
Hexachloro-1,3-butadiene	ug/L	ND	10.0	10/11/13 14:04	
Hexachlorobenzene	ug/L	ND	10.0	10/11/13 14:04	
Hexachlorocyclopentadiene	ug/L	ND	10.0	10/11/13 14:04	
Hexachloroethane	ug/L	ND	10.0	10/11/13 14:04	
Indeno(1,2,3-cd)pyrene	ug/L	ND	10.0	10/11/13 14:04	
Isophorone	ug/L	ND	10.0	10/11/13 14:04	
N-Nitroso-di-n-propylamine	ug/L	ND	10.0	10/11/13 14:04	
N-Nitrosodimethylamine	ug/L	ND	10.0	10/11/13 14:04	
N-Nitrosodiphenylamine	ug/L	ND	10.0	10/11/13 14:04	
Naphthalene	ug/L	ND	10.0	10/11/13 14:04	
Nitrobenzene	ug/L	ND	10.0	10/11/13 14:04	
Pentachlorophenol	ug/L	ND	25.0	10/11/13 14:04	
Phenanthrene	ug/L	ND	10.0	10/11/13 14:04	
Phenol	ug/L	ND	10.0	10/11/13 14:04	
Pyrene	ug/L	ND	10.0	10/11/13 14:04	
2,4,6-Tribromophenol (S)	%	49	27-110	10/11/13 14:04	
2-Fluorobiphenyl (S)	%	48	27-110	10/11/13 14:04	
2-Fluorophenol (S)	%	27	12-110	10/11/13 14:04	
Nitrobenzene-d5 (S)	%	51	21-110	10/11/13 14:04	
Phenol-d6 (S)	%	19	10-110	10/11/13 14:04	
Terphenyl-d14 (S)	%	61	31-107	10/11/13 14:04	

LABORATORY CONTROL SAMPLE: 1063105

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,2,4-Trichlorobenzene	ug/L	50	25.6	51	10-110	
1,2-Dichlorobenzene	ug/L	50	31.4	63	10-110	
1,3-Dichlorobenzene	ug/L	50	30.0	60	10-110	
1,4-Dichlorobenzene	ug/L	50	30.3	61	10-110	
1-Methylnaphthalene	ug/L	50	26.3	53	21-110	
2,4,5-Trichlorophenol	ug/L	50	36.1	72	23-116	
2,4,6-Trichlorophenol	ug/L	50	34.1	68	21-114	
2,4-Dichlorophenol	ug/L	50	25.8	52	22-120	
2,4-Dimethylphenol	ug/L	50	26.0	52	15-109	
2,4-Dinitrophenol	ug/L	250	183	73	10-103	

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QUALITY CONTROL DATA

Project: OWRF EE 100813
Pace Project No.: 92175160

LABORATORY CONTROL SAMPLE: 1063105

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
2,4-Dinitrotoluene	ug/L	50	50.6	101	24-119	
2,6-Dinitrotoluene	ug/L	50	50.4	101	25-116	
2-Chloronaphthalene	ug/L	50	38.1	76	18-110	
2-Chlorophenol	ug/L	50	28.7	57	10-104	
2-Methylnaphthalene	ug/L	50	26.9	54	16-110	
2-Methylphenol(o-Cresol)	ug/L	50	28.9	58	13-110	
2-Nitroaniline	ug/L	100	88.9	89	20-117	
2-Nitrophenol	ug/L	50	28.4	57	16-108	
3&4-Methylphenol(m&p Cresol)	ug/L	50	21.3	43	14-110	
3,3'-Dichlorobenzidine	ug/L	100	102	102	13-131	
3-Nitroaniline	ug/L	100	87.0	87	15-117	
4,6-Dinitro-2-methylphenol	ug/L	100	87.4	87	13-119	
4-Bromophenylphenyl ether	ug/L	50	34.7	69	23-120	
4-Chloro-3-methylphenol	ug/L	100	58.8	59	21-119	
4-Chloroaniline	ug/L	100	50.6	51	10-122	
4-Chlorophenylphenyl ether	ug/L	50	32.8	66	22-112	
4-Nitroaniline	ug/L	100	97.8	98	14-118	
4-Nitrophenol	ug/L	250	106	42	10-110	
Acenaphthene	ug/L	50	36.7	73	20-105	
Acenaphthylene	ug/L	50	37.1	74	23-106	
Aniline	ug/L	50	26.6	53	10-110	
Anthracene	ug/L	50	44.3	89	25-120	
Benzo(a)anthracene	ug/L	50	45.6	91	21-128	
Benzo(a)pyrene	ug/L	50	45.6	91	25-116	
Benzo(b)fluoranthene	ug/L	50	49.5	99	23-117	
Benzo(g,h,i)perylene	ug/L	50	46.0	92	17-128	
Benzo(k)fluoranthene	ug/L	50	40.6	81	25-127	
Benzoic Acid	ug/L	250	46.1J	18	10-110	
Benzyl alcohol	ug/L	100	48.7	49	10-101	
bis(2-Chloroethoxy)methane	ug/L	50	27.9	56	19-107	
bis(2-Chloroethyl) ether	ug/L	50	29.8	60	10-108	
bis(2-Chloroisopropyl) ether	ug/L	50	26.3	53	10-108	
bis(2-Ethylhexyl)phthalate	ug/L	50	58.2	116	16-123	
Butylbenzylphthalate	ug/L	50	57.8	116	20-118	
Chrysene	ug/L	50	47.0	94	24-125	
Di-n-butylphthalate	ug/L	50	54.3	109	23-115	
Di-n-octylphthalate	ug/L	50	52.6	105	20-115	
Dibenz(a,h)anthracene	ug/L	50	45.9	92	18-131	
Dibenzofuran	ug/L	50	34.3	69	23-106	
Diethylphthalate	ug/L	50	48.5	97	24-115	
Dimethylphthalate	ug/L	50	45.4	91	22-113	
Fluoranthene	ug/L	50	48.0	96	24-125	
Fluorene	ug/L	50	42.0	84	24-114	
Hexachloro-1,3-butadiene	ug/L	50	24.6	49	10-110	
Hexachlorobenzene	ug/L	50	43.1	86	22-127	
Hexachlorocyclopentadiene	ug/L	50	39.7	79	10-110	
Hexachloroethane	ug/L	50	35.3	71	10-110	
Indeno(1,2,3-cd)pyrene	ug/L	50	47.3	95	18-130	

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QUALITY CONTROL DATA

Project: OWRF EE 100813
Pace Project No.: 92175160

LABORATORY CONTROL SAMPLE: 1063105

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Isophorone	ug/L	50	29.9	60	23-114	
N-Nitroso-di-n-propylamine	ug/L	50	31.5	63	21-114	
N-Nitrosodimethylamine	ug/L	50	19.7	39	10-110	
N-Nitrosodiphenylamine	ug/L	50	36.2	72	24-123	
Naphthalene	ug/L	50	25.0	50	14-110	
Nitrobenzene	ug/L	50	28.7	57	16-106	
Pentachlorophenol	ug/L	100	78.1	78	10-123	
Phenanthrene	ug/L	50	43.4	87	25-119	
Phenol	ug/L	50	16.4	33	10-110	
Pyrene	ug/L	50	46.1	92	22-127	
2,4,6-Tribromophenol (S)	%			89	27-110	
2-Fluorobiphenyl (S)	%			68	27-110	
2-Fluorophenol (S)	%			39	12-110	
Nitrobenzene-d5 (S)	%			58	21-110	
Phenol-d6 (S)	%			29	10-110	
Terphenyl-d14 (S)	%			78	31-107	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1064061 1064062

Parameter	Units	92175370002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
1,2,4-Trichlorobenzene	ug/L	ND	100	100	85.1	53.0	85	53	10-110	46	30	
1,2-Dichlorobenzene	ug/L	ND	100	100	89.2	54.3	89	54	10-110	49	30	
1,3-Dichlorobenzene	ug/L	ND	100	100	85.8	52.3	86	52	10-110	49	30	
1,4-Dichlorobenzene	ug/L	ND	100	100	85.5	53.4	86	53	10-110	46	30	
1-Methylnaphthalene	ug/L	ND	100	100	86.8	54.3	87	54	14-110	46	30	
2,4,5-Trichlorophenol	ug/L	ND	100	100	85.5	58.5	86	58	19-105	38	30	
2,4,6-Trichlorophenol	ug/L	ND	100	100	89.3	57.0	89	57	13-108	44	30	
2,4-Dichlorophenol	ug/L	ND	100	100	87.8	53.3	88	53	29-111	49	30	
2,4-Dimethylphenol	ug/L	ND	100	100	89.4	53.7	89	54	21-103	50	30	
2,4-Dinitrophenol	ug/L	ND	500	500	409	321	82	64	10-109	24	30	
2,4-Dinitrotoluene	ug/L	ND	100	100	108	85.1	108	85	27-104	24	30	M1
2,6-Dinitrotoluene	ug/L	ND	100	100	109	76.2	109	76	28-101	36	30	M1
2-Chloronaphthalene	ug/L	ND	100	100	94.4	59.9	94	60	14-102	45	30	
2-Chlorophenol	ug/L	ND	100	100	86.7	51.6	87	52	16-110	51	30	
2-Methylnaphthalene	ug/L	ND	100	100	88.2	54.5	88	54	13-110	47	30	
2-Methylphenol(o-Cresol)	ug/L	ND	100	100	94.5	54.1	95	54	19-110	54	30	
2-Nitroaniline	ug/L	ND	200	200	204	147	102	73	26-103	33	30	
2-Nitrophenol	ug/L	ND	100	100	92.2	57.2	92	57	20-110	47	30	
3&4-Methylphenol(m&p Cresol)	ug/L	ND	100	100	80.9	47.1	81	47	20-110	53	30	
3,3'-Dichlorobenzidine	ug/L	ND	200	200	70.0	49.1	35	25	25-112	35	30	
3-Nitroaniline	ug/L	ND	200	200	174	138	87	69	29-110	23	30	
4,6-Dinitro-2-methylphenol	ug/L	ND	200	200	192	151	96	76	10-117	24	30	
4-Bromophenylphenyl ether	ug/L	ND	100	100	80.6	57.5	81	58	20-105	33	30	
4-Chloro-3-methylphenol	ug/L	ND	200	200	177	114	88	57	22-110	43	30	
4-Chloroaniline	ug/L	ND	200	200	133	103	67	52	20-100	25	30	

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: OWRF EE 100813
Pace Project No.: 92175160

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1064061 1064062

Parameter	Units	92175370002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
4-Chlorophenylphenyl ether	ug/L	ND	100	100	79.4	53.0	79	53	19-102	40	30	
4-Nitroaniline	ug/L	ND	200	200	202	161	101	80	29-110	23	30	
4-Nitrophenol	ug/L	ND	500	500	312	238	62	48	10-110	27	30	
Acenaphthene	ug/L	ND	100	100	94.8	60.8	95	61	17-100	44	30	
Acenaphthylene	ug/L	ND	100	100	94.6	60.6	95	61	21-100	44	30	
Aniline	ug/L	ND	100	100	42.2	37.2	42	37	10-110	13	30	
Anthracene	ug/L	ND	100	100	98.0	76.4	98	76	24-109	25	30	
Benzo(a)anthracene	ug/L	ND	100	100	94.9	76.5	95	76	22-117	22	30	
Benzo(a)pyrene	ug/L	ND	100	100	92.7	75.9	93	76	23-104	20	30	
Benzo(b)fluoranthene	ug/L	ND	100	100	88.7	69.7	89	70	23-103	24	30	
Benzo(g,h,i)perylene	ug/L	ND	100	100	97.0	76.5	97	77	18-111	24	30	
Benzo(k)fluoranthene	ug/L	ND	100	100	92.2	75.5	92	76	22-113	20	30	
Benzoic Acid	ug/L	ND	500	500	258	156	52	31	10-110	49	30	
Benzyl alcohol	ug/L	ND	200	200	166	97.4	83	49	19-101	52	30	
bis(2-Chloroethoxy)methane	ug/L	ND	100	100	74.1	44.5	74	45	22-110	50	30	
bis(2-Chloroethyl) ether	ug/L	ND	100	100	88.5	49.5	89	49	16-110	57	30	
bis(2-Chloroisopropyl) ether	ug/L	ND	100	100	75.3	43.7	75	44	14-110	53	30	
bis(2-Ethylhexyl)phthalate	ug/L	ND	100	100	117	90.3	117	90	23-102	26	30	M1
Butylbenzylphthalate	ug/L	ND	100	100	112	89.6	112	90	25-110	22	30	M1
Chrysene	ug/L	ND	100	100	99.8	79.1	100	79	23-115	23	30	
Di-n-butylphthalate	ug/L	ND	100	100	114	89.2	114	89	26-110	24	30	M1
Di-n-octylphthalate	ug/L	ND	100	100	101	80.5	101	80	22-110	22	30	
Dibenz(a,h)anthracene	ug/L	ND	100	100	96.3	76.6	96	77	21-112	23	30	
Dibenzofuran	ug/L	ND	100	100	83.7	55.6	84	56	19-102	40	30	
Diethylphthalate	ug/L	ND	100	100	107	81.6	107	82	29-110	27	30	
Dimethylphthalate	ug/L	ND	100	100	104	74.3	104	74	27-110	34	30	
Fluoranthene	ug/L	ND	100	100	104	81.3	104	81	23-112	24	30	
Fluorene	ug/L	ND	100	100	98.9	68.8	99	69	22-104	36	30	
Hexachloro-1,3-butadiene	ug/L	ND	100	100	82.0	49.2	82	49	10-110	50	30	
Hexachlorobenzene	ug/L	ND	100	100	96.4	71.8	96	72	21-116	29	30	
Hexachlorocyclopentadiene	ug/L	ND	100	100	109	63.7	109	64	10-110	53	30	
Hexachloroethane	ug/L	ND	100	100	87.3	51.6	87	52	10-110	51	30	
Indeno(1,2,3-cd)pyrene	ug/L	ND	100	100	98.6	79.4	99	79	20-113	22	30	
Isophorone	ug/L	ND	100	100	95.5	58.9	95	59	50-150	47	30	
N-Nitroso-di-n-propylamine	ug/L	ND	100	100	91.6	54.1	92	54	21-105	52	30	
N-Nitrosodimethylamine	ug/L	ND	100	100	68.2	44.3	68	44	10-110	42	30	
N-Nitrosodiphenylamine	ug/L	ND	100	100	80.7	61.6	81	62	23-107	27	30	
Naphthalene	ug/L	ND	100	100	81.5	51.5	82	51	10-110	45	30	
Nitrobenzene	ug/L	ND	100	100	92.5	58.5	93	58	20-110	45	30	
Pentachlorophenol	ug/L	ND	200	200	170	134	85	67	10-118	23	30	
Phenanthrene	ug/L	ND	100	100	96.1	75.0	96	75	24-106	25	30	
Phenol	ug/L	ND	100	100	58.9	34.5	59	34	12-110	52	30	1g,R1
Pyrene	ug/L	ND	100	100	92.0	75.8	92	76	24-114	19	30	
2,4,6-Tribromophenol (S)	%						97	72	27-110			
2-Fluorobiphenyl (S)	%						94	58	27-110			
2-Fluorophenol (S)	%						68	39	12-110			
Nitrobenzene-d5 (S)	%						93	58	21-110			

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QUALITY CONTROL DATA

Project: OWRF EE 100813
Pace Project No.: 92175160

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1064061 1064062

Parameter	Units	92175370002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Phenol-d6 (S)	%						60	34	10-110			
Terphenyl-d14 (S)	%						70	54	31-107			

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QUALITY CONTROL DATA

Project: OWRF EE 100813
Pace Project No.: 92175160

QC Batch: WETA/16727 — Analysis Method: EPA 420.4
QC Batch Method: EPA 420.4 — Analysis Description: 420.4 Phenolics
Associated Lab Samples: 92175160001

METHOD BLANK: 1065010 — Matrix: Water
Associated Lab Samples: 92175160001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Phenol	mg/L	ND	0.0050	10/12/13 14:05	

LABORATORY CONTROL SAMPLE: 1065011

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Phenol	mg/L	.05	0.051	102	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1065012 — 1065013

Parameter	Units	92174839001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Phenol	mg/L	0.0092	.05	.05	0.049	0.049	80	80	90-110	1	20	M1

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1065016 — 1065017

Parameter	Units	92175626002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Phenol	mg/L	0.017	.05	.05	0.061	0.061	88	87	90-110	1	20	M1

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Asheville, NC 28804
(828)254-7176

Pace Analytical Services, Inc.
9800 Kincey Ave. Suite 100
Huntersville, NC 28078
(704)875-9092

QUALITY CONTROL DATA

Project: OWRF EE 100813
Pace Project No.: 92175160

QC Batch: WETA/16733
QC Batch Method: SM 4500-CN-E
Associated Lab Samples: 92175160001

Analysis Method: SM 4500-CN-E
Analysis Description: 4500CNE Cyanide, Total

METHOD BLANK: 1065097
Matrix: Water
Associated Lab Samples: 92175160001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Cyanide	mg/L	ND	0.0050	10/13/13 15:23	

LABORATORY CONTROL SAMPLE: 1065098

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Cyanide	mg/L	.1	0.11	111	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1065099 1065100

Parameter	Units	92174517003 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Cyanide	mg/L	0.0052	.1	.1	0.11	0.12	107	112	75-125	4	20	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1065101 1065102

Parameter	Units	92175052008 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Cyanide	mg/L	ND	.1	.1	0.12	0.10	111	96	75-125	13	20	

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QUALIFIERS

Project: OWRF EE 100813
Pace Project No.: 92175160

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to changes in sample preparation, dilution of the sample aliquot, or moisture content.

ND - Not Detected at or above adjusted reporting limit.

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PRL - Pace Reporting Limit.

RL - Reporting Limit.

S - Surrogate

1,2-Diphenylhydrazine (8270 listed analyte) decomposes to Azobenzene.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Acid preservation may not be appropriate for 2-Chloroethylvinyl ether, Styrene, and Vinyl chloride.

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

LABORATORIES

PASI-A	Pace Analytical Services - Asheville
PASI-C	Pace Analytical Services - Charlotte

ANALYTE QUALIFIERS

1g	This flag applies to all RPD greater than 30%.
B	Analyte was detected in the associated method blank.
M1	Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.
R1	RPD value was outside control limits.

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: OWRF EE 100813
Pace Project No.: 92175160

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
92175160001	**1310081421**	EPA 200.7	MPRP/14388	EPA 200.7	ICP/13082
92175160001	**1310081421**	EPA 245.1	MERP/5678	EPA 245.1	MERC/5496
92175160001	**1310081421**	EPA 3510	OEXT/24182	EPA 8270	MSSV/8293
92175160001	**1310081421**	EPA 8260	MSV/24560		
92175160001	**1310081421**	EPA 420.4	WETA/16727		
92175160001	**1310081421**	SM 4500-CN-E	WETA/16733		

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Pace Analytical	Sample Condition Upon Receipt (SCUR)	Page 1 of 2
	Document Number: F-CHR-CS-03-rev.11	Issuing Authority: Pace Huntersville Quality Office

Client Name: Grainger

Where Received: ☑ Huntersville ☐ Asheville ☐ Eden ☐ Raleigh

Courier: ☑ Fed Ex ☐ UPS ☐ USPS ☐ Client ☐ Commercial ☐ Pace Other_____

Custody Seal on Cooler/Box Present: ☐ yes ☑ no Seals intact: ☐ yes ☐ no

Optional: Proj. Due Date: Proj. Name:

Packing Material: ☐ Bubble Wrap ☑ Bubble Bags ☐ None ☐ Other_____

Thermometer Used: IR Gun T1102 T1301 **Type of Ice:** (Wet) Blue None ☑ Samples on ice, cooling process has begun

Temp Correction Factor **T1102**: No Correction **T1301**: No Correction

Corrected Cooler Temp.: 3.8 C **Biological Tissue is Frozen:** Yes No N/A

Date and Initials of person examining contents: TM 10/9

Temp should be above freezing to 6°C

				Comments:
Chain of Custody Present:	☑Yes	☐No	☐N/A	1.
Chain of Custody Filled Out:	☑Yes	☐No	☐N/A	2.
Chain of Custody Relinquished:	☑Yes	☐No	☐N/A	3.
Sampler Name & Signature on COC:	☑Yes	☐No	☐N/A	4.
Samples Arrived within Hold Time:	☑Yes	☐No	☐N/A	5.
Short Hold Time Analysis (<72hr):	☐Yes	☑No	☐N/A	6.
Rush Turn Around Time Requested:	☐Yes	☑No	☐N/A	7.
Sufficient Volume:	☑Yes	☐No	☐N/A	8.
Correct Containers Used:	☑Yes	☐No	☐N/A	9.
-Pace Containers Used:	☑Yes	☐No	☐N/A	
Containers Intact:	☑Yes	☐No	☐N/A	10.
Filtered volume received for Dissolved tests	☐Yes	☐No	☑N/A	11.
Sample Labels match COC:	☑Yes	☐No	☐N/A	12.
-Includes date/time/ID/Analysis Matrix:_____				
All containers needing preservation have been checked.	☑Yes	☐No	☐N/A	13.
All containers needing preservation are found to be in compliance with EPA recommendation.	☑Yes	☐No	☐N/A	
exceptions: VOA, coliform, TOC, O&G, WI-DRO (water)	☐Yes	☐No		
Samples checked for dechlorination:	☑Yes	☐No	☐N/A	14.
Headspace in VOA Vials (>6mm):	☐Yes	☐No	☑N/A	15.
Trip Blank Present:	☐Yes	☐No	☑N/A	16.
Trip Blank Custody Seals Present	☐Yes	☐No	☐N/A	
Pace Trip Blank Lot # (if purchased):				

Client Notification/ Resolution: Field Data Required? Y / N

Person Contacted: _____ Date/Time: _____

Comments/ Resolution: _____

SCURF Review:	QW	Date:	10/9/13
SRF Review:	QW	Date:	10/9/13

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e out of hold, incorrect preservative, out of temp, incorrect containers)

Place label here

WO#: 92175160

92175160

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CHAIN-OF-CUSTODY / Analytical Request Document

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.

Page: 1 of 1

Section A Required Client Information:

Company:	Greenway Engineering
Address:	151 Windy Hill Lane
	Winchester, VA 22602
Email To:	amartin@greenwayeng.com
Phone: 540-662-4185	Fax: 540-722-9528
Requested Due Date/TAT:	10 working days

Section B Required Project Information:

Report To:	Andrea R. Martin
Copy To:	N/A
Purchase Order No.:	1606
Project Name:	OWRF EE 100813
Project Number:	

Section C Invoice Information:

Attention:	Andrea R. Martin
Company Name:	Greenway Engineering
Address:	151 Windy Hill Ln.
Pace Quote Reference:	92061009.16
Pace Project Manager:	Tabitha Dacal
Pace Profile #:	3345-27

REGULATORY AGENCY

☑ NPDES ☐ GROUND WATER ☐ DRINKING WATER
☐ UST ☐ RCRA ☐ OTHER _____

Site Location STATE: VA

Section D Required Client Information

Valid Matrix Codes

MATRIX	CODE
DRINKING WATER	DW
WATER	WT
WASTE WATER	WW
PRODUCT	P
SOIL/SOLID	SL
OIL	OL
WIPE	WP
AIR	AR
OTHER	OT
TISSUE	TS

SAMPLE ID (A-Z, 0-9 / ,-) Sample IDs MUST BE UNIQUE

Requested Analysis Filtered (Y/N)

ITEM #	SAMPLE ID	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED Composite Start Date	Composite Start Time	Composite End/Grab Date	Composite End/Grab Time	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Analysis Test (Y/N)	SVOCs by 8270	VOCs by 8260	Phenol, wet 420	Metals*	Mercury	Cyanide, Total	Hardness, Total	Residual Chlorine (Y/N)	Pace Project No./ Lab I.D.
										Preservatives									N	N	N	N	N	N			92175160
1	1310081421	WW	C	10/7/13	7:30	10/08/13	7:30	\	8	2	4	1		1					X	X	X	X	X	X	X	N	001
2																											
3																											
4																											
5																											
6																											
7																											
8																											
9																											
10																											
11																											
12																											

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS			
Sb, As, Be, Cd, Cr, Cu, Pb, Hg, Ni, Se, Ag, Tl, Zn, Good - To Fed Ex	Chris Karol	10/8/13	1830	[illegible]	10/9	945	3.8	Y	N	Y

SAMPLER NAME AND SIGNATURE	
PRINT Name of SAMPLER:	Randy Jackson (cont'd from GWE COC)
SIGNATURE of SAMPLER:	Cont'd from GWE COC
DATE Signed (MM/DD/YY):	Cont'd from GWE COC

Temp in °C | Received on Ice (Y/N) | Custody Sealed Cooler (Y/N) | Samples Intact (Y/N)

*Important Note: By signing this form you are accepting Pace's NET 30 day payment terms and agreeing to late charges of 1.5% per month for any invoices not paid within 30 days.

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February 17, 2014

Ms. Andrea Martin
Greenway Engineering Inc
151 Windy Hill Ln.
Winchester, VA 22602

RE: Project: OWRF EE 020414
Pace Project No.: 92188853

Dear Ms. Martin:
Enclosed are the analytical results for sample(s) received by the laboratory on February 06, 2014. The results relate only to the samples included in this report. Results reported herein conform to the most current TNI standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

Analyses were performed at the Pace Analytical Services location indicated on the sample analyte page for analysis unless otherwise footnoted.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Tabitha Dacal

Tabitha M Dacal
tabitha.dacal@pacelabs.com
Project Manager

Enclosures

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CERTIFICATIONS

Project: OWRF EE 020414
Pace Project No.: 92188853

Charlotte Certification IDs
9800 Kincey Ave. Ste 100, Huntersville, NC 28078
North Carolina Drinking Water Certification #: 37706
North Carolina Field Services Certification #: 5342
North Carolina Wastewater Certification #: 12
South Carolina Certification #: 99006001
Florida/NELAP Certification #: E87627
Kentucky UST Certification #: 84
West Virginia Certification #: 357
Virginia/VELAP Certification #: 460221

Asheville Certification IDs
2225 Riverside Dr., Asheville, NC 28804
Florida/NELAP Certification #: E87648
Massachusetts Certification #: M-NC030
North Carolina Drinking Water Certification #: 37712
North Carolina Wastewater Certification #: 40
South Carolina Certification #: 99030001
West Virginia Certification #: 356
Virginia/VELAP Certification #: 460222

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SAMPLE SUMMARY

Project: OWRF EE 020414
Pace Project No.: 92188853

Lab ID	Sample ID	Matrix	Date Collected	Date Received
92188853001	1402041314	Water	02/04/14 07:30	02/06/14 10:20
92188853002	1402041315	Water	02/04/14 07:30	02/06/14 10:20
92188853003	1402041317	Water	02/04/14 07:30	02/06/14 10:20
92188853004	140204131A	Water	02/04/14 07:30	02/06/14 10:20
92188853005	1402041319	Water	02/04/14 07:30	02/06/14 10:20

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SAMPLE ANALYTE COUNT

Project: OWRF EE 020414
Pace Project No.: 92188853

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
92188853001	1402041314	EPA 8270	BPJ	74	PASI-C
92188853002	1402041315	EPA 8260	MCK	63	PASI-C
92188853003	1402041317	EPA 420.4	JDA	1	PASI-A
92188853004	140204131A	EPA 6010	SH1	12	PASI-A
		EPA 7470	MTS	1	PASI-A
92188853005	1402041319	SM 4500-CN-E	JDA	1	PASI-A

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ANALYTICAL RESULTS

Project: OWRF EE 020414
Pace Project No.: 92188853

Sample: 1402041314 **Lab ID: 92188853001** Collected: 02/04/14 07:30 Received: 02/06/14 10:20 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8270 MSSV Semivolatile Organic	Analytical Method: EPA 8270 Preparation Method: EPA 3510								
Acenaphthene	ND	ug/L	10.0	0.25	1	02/10/14 16:30	02/12/14 15:45	83-32-9	
Acenaphthylene	ND	ug/L	10.0	0.21	1	02/10/14 16:30	02/12/14 15:45	208-96-8	
Aniline	ND	ug/L	10.0	2.0	1	02/10/14 16:30	02/12/14 15:45	62-53-3	
Anthracene	ND	ug/L	10.0	0.14	1	02/10/14 16:30	02/12/14 15:45	120-12-7	
Benzo(a)anthracene	ND	ug/L	10.0	0.33	1	02/10/14 16:30	02/12/14 15:45	56-55-3	
Benzo(a)pyrene	ND	ug/L	10.0	0.30	1	02/10/14 16:30	02/12/14 15:45	50-32-8	
Benzo(b)fluoranthene	ND	ug/L	10.0	0.28	1	02/10/14 16:30	02/12/14 15:45	205-99-2	
Benzo(g,h,i)perylene	ND	ug/L	10.0	0.38	1	02/10/14 16:30	02/12/14 15:45	191-24-2	
Benzo(k)fluoranthene	ND	ug/L	10.0	0.43	1	02/10/14 16:30	02/12/14 15:45	207-08-9	
Benzoic Acid	ND	ug/L	50.0	11.5	1	02/10/14 16:30	02/12/14 15:45	65-85-0	
Benzyl alcohol	ND	ug/L	20.0	2.4	1	02/10/14 16:30	02/12/14 15:45	100-51-6	
4-Bromophenylphenyl ether	ND	ug/L	10.0	0.82	1	02/10/14 16:30	02/12/14 15:45	101-55-3	
Butylbenzylphthalate	ND	ug/L	10.0	0.79	1	02/10/14 16:30	02/12/14 15:45	85-68-7	
4-Chloro-3-methylphenol	ND	ug/L	20.0	3.7	1	02/10/14 16:30	02/12/14 15:45	59-50-7	
4-Chloroaniline	ND	ug/L	20.0	2.8	1	02/10/14 16:30	02/12/14 15:45	106-47-8	
bis(2-Chloroethoxy)methane	ND	ug/L	10.0	0.92	1	02/10/14 16:30	02/12/14 15:45	111-91-1	
bis(2-Chloroethyl) ether	ND	ug/L	10.0	1.0	1	02/10/14 16:30	02/12/14 15:45	111-44-4	
bis(2-Chloroisopropyl) ether	ND	ug/L	10.0	0.95	1	02/10/14 16:30	02/12/14 15:45	108-60-1	
2-Chloronaphthalene	ND	ug/L	10.0	0.98	1	02/10/14 16:30	02/12/14 15:45	91-58-7	
2-Chlorophenol	ND	ug/L	10.0	1.3	1	02/10/14 16:30	02/12/14 15:45	95-57-8	
4-Chlorophenylphenyl ether	ND	ug/L	10.0	0.87	1	02/10/14 16:30	02/12/14 15:45	7005-72-3	
Chrysene	ND	ug/L	10.0	0.21	1	02/10/14 16:30	02/12/14 15:45	218-01-9	
Dibenz(a,h)anthracene	ND	ug/L	10.0	0.55	1	02/10/14 16:30	02/12/14 15:45	53-70-3	
Dibenzofuran	ND	ug/L	10.0	0.89	1	02/10/14 16:30	02/12/14 15:45	132-64-9	
1,2-Dichlorobenzene	ND	ug/L	10.0	0.88	1	02/10/14 16:30	02/12/14 15:45	95-50-1	
1,3-Dichlorobenzene	ND	ug/L	10.0	0.81	1	02/10/14 16:30	02/12/14 15:45	541-73-1	
1,4-Dichlorobenzene	ND	ug/L	10.0	0.95	1	02/10/14 16:30	02/12/14 15:45	106-46-7	
3,3'-Dichlorobenzidine	ND	ug/L	20.0	2.1	1	02/10/14 16:30	02/12/14 15:45	91-94-1	
2,4-Dichlorophenol	ND	ug/L	10.0	1.7	1	02/10/14 16:30	02/12/14 15:45	120-83-2	
Diethylphthalate	ND	ug/L	10.0	0.58	1	02/10/14 16:30	02/12/14 15:45	84-66-2	
2,4-Dimethylphenol	ND	ug/L	10.0	1.2	1	02/10/14 16:30	02/12/14 15:45	105-67-9	
Dimethylphthalate	ND	ug/L	10.0	0.76	1	02/10/14 16:30	02/12/14 15:45	131-11-3	
Di-n-butylphthalate	ND	ug/L	10.0	0.75	1	02/10/14 16:30	02/12/14 15:45	84-74-2	
4,6-Dinitro-2-methylphenol	ND	ug/L	20.0	2.6	1	02/10/14 16:30	02/12/14 15:45	534-52-1	
2,4-Dinitrophenol	ND	ug/L	50.0	9.0	1	02/10/14 16:30	02/12/14 15:45	51-28-5	
2,4-Dinitrotoluene	ND	ug/L	10.0	0.90	1	02/10/14 16:30	02/12/14 15:45	121-14-2	
2,6-Dinitrotoluene	ND	ug/L	10.0	0.98	1	02/10/14 16:30	02/12/14 15:45	606-20-2	
Di-n-octylphthalate	ND	ug/L	10.0	0.66	1	02/10/14 16:30	02/12/14 15:45	117-84-0	
bis(2-Ethylhexyl)phthalate	**41.1**	ug/L	6.0	0.79	1	02/10/14 16:30	02/12/14 15:45	117-81-7	
Fluoranthene	ND	ug/L	10.0	0.21	1	02/10/14 16:30	02/12/14 15:45	206-44-0	
Fluorene	ND	ug/L	10.0	0.21	1	02/10/14 16:30	02/12/14 15:45	86-73-7	
Hexachloro-1,3-butadiene	ND	ug/L	10.0	0.94	1	02/10/14 16:30	02/12/14 15:45	87-68-3	
Hexachlorobenzene	ND	ug/L	10.0	0.72	1	02/10/14 16:30	02/12/14 15:45	118-74-1	
Hexachlorocyclopentadiene	ND	ug/L	10.0	0.88	1	02/10/14 16:30	02/12/14 15:45	77-47-4	
Hexachloroethane	ND	ug/L	10.0	1.1	1	02/10/14 16:30	02/12/14 15:45	67-72-1	
Indeno(1,2,3-cd)pyrene	ND	ug/L	10.0	0.29	1	02/10/14 16:30	02/12/14 15:45	193-39-5	

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ANALYTICAL RESULTS

Project: OWRF EE 020414
Pace Project No.: 92188853

Sample: 1402041314 **Lab ID: 92188853001** Collected: 02/04/14 07:30 Received: 02/06/14 10:20 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8270 MSSV Semivolatile Organic	Analytical Method: EPA 8270 Preparation Method: EPA 3510								
Isophorone	ND	ug/L	10.0	0.89	1	02/10/14 16:30	02/12/14 15:45	78-59-1	
1-Methylnaphthalene	ND	ug/L	10.0	0.32	1	02/10/14 16:30	02/12/14 15:45	90-12-0	
2-Methylnaphthalene	ND	ug/L	10.0	0.28	1	02/10/14 16:30	02/12/14 15:45	91-57-6	
2-Methylphenol(o-Cresol)	ND	ug/L	10.0	1.6	1	02/10/14 16:30	02/12/14 15:45	95-48-7	
3&4-Methylphenol(m&p Cresol)	ND	ug/L	10.0	2.0	1	02/10/14 16:30	02/12/14 15:45		
Naphthalene	ND	ug/L	10.0	0.34	1	02/10/14 16:30	02/12/14 15:45	91-20-3	
2-Nitroaniline	ND	ug/L	50.0	2.0	1	02/10/14 16:30	02/12/14 15:45	88-74-4	
3-Nitroaniline	ND	ug/L	50.0	2.0	1	02/10/14 16:30	02/12/14 15:45	99-09-2	
4-Nitroaniline	ND	ug/L	20.0	2.1	1	02/10/14 16:30	02/12/14 15:45	100-01-6	
Nitrobenzene	ND	ug/L	10.0	1.1	1	02/10/14 16:30	02/12/14 15:45	98-95-3	
2-Nitrophenol	ND	ug/L	10.0	0.91	1	02/10/14 16:30	02/12/14 15:45	88-75-5	
4-Nitrophenol	ND	ug/L	50.0	4.1	1	02/10/14 16:30	02/12/14 15:45	100-02-7	
N-Nitrosodimethylamine	ND	ug/L	10.0	0.91	1	02/10/14 16:30	02/12/14 15:45	62-75-9	
N-Nitroso-di-n-propylamine	ND	ug/L	10.0	0.99	1	02/10/14 16:30	02/12/14 15:45	621-64-7	
N-Nitrosodiphenylamine	ND	ug/L	10.0	1.0	1	02/10/14 16:30	02/12/14 15:45	86-30-6	
Pentachlorophenol	ND	ug/L	25.0	4.6	1	02/10/14 16:30	02/12/14 15:45	87-86-5	
Phenanthrene	ND	ug/L	10.0	0.22	1	02/10/14 16:30	02/12/14 15:45	85-01-8	
Phenol	ND	ug/L	10.0	1.9	1	02/10/14 16:30	02/12/14 15:45	108-95-2	
Pyrene	ND	ug/L	10.0	0.19	1	02/10/14 16:30	02/12/14 15:45	129-00-0	
1,2,4-Trichlorobenzene	ND	ug/L	10.0	0.98	1	02/10/14 16:30	02/12/14 15:45	120-82-1	
2,4,5-Trichlorophenol	ND	ug/L	10.0	0.92	1	02/10/14 16:30	02/12/14 15:45	95-95-4	
2,4,6-Trichlorophenol	ND	ug/L	10.0	1.3	1	02/10/14 16:30	02/12/14 15:45	88-06-2	
Surrogates									
Nitrobenzene-d5 (S)	38	%	21-110		1	02/10/14 16:30	02/12/14 15:45	4165-60-0	
2-Fluorobiphenyl (S)	42	%	27-110		1	02/10/14 16:30	02/12/14 15:45	321-60-8	
Terphenyl-d14 (S)	61	%	31-107		1	02/10/14 16:30	02/12/14 15:45	1718-51-0	
Phenol-d6 (S)	18	%	10-110		1	02/10/14 16:30	02/12/14 15:45	13127-88-3	
2-Fluorophenol (S)	25	%	12-110		1	02/10/14 16:30	02/12/14 15:45	367-12-4	
2,4,6-Tribromophenol (S)	73	%	27-110		1	02/10/14 16:30	02/12/14 15:45	118-79-6	

Sample: 1402041315 **Lab ID: 92188853002** Collected: 02/04/14 07:30 Received: 02/06/14 10:20 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV Low Level	Analytical Method: EPA 8260								
Acetone	ND	ug/L	25.0	10.0	1		02/07/14 20:38	67-64-1	
Benzene	ND	ug/L	1.0	0.25	1		02/07/14 20:38	71-43-2	
Bromobenzene	ND	ug/L	1.0	0.30	1		02/07/14 20:38	108-86-1	
Bromochloromethane	ND	ug/L	1.0	0.17	1		02/07/14 20:38	74-97-5	
Bromodichloromethane	**0.98J**	ug/L	1.0	0.18	1		02/07/14 20:38	75-27-4	
Bromoform	ND	ug/L	1.0	0.26	1		02/07/14 20:38	75-25-2	
Bromomethane	ND	ug/L	2.0	0.29	1		02/07/14 20:38	74-83-9	
2-Butanone (MEK)	ND	ug/L	5.0	0.96	1		02/07/14 20:38	78-93-3	
Carbon tetrachloride	ND	ug/L	1.0	0.25	1		02/07/14 20:38	56-23-5	

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ANALYTICAL RESULTS

Project: OWRF EE 020414
Pace Project No.: 92188853

Sample: 1402041315 **Lab ID: 92188853002** Collected: 02/04/14 07:30 Received: 02/06/14 10:20 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV Low Level	Analytical Method: EPA 8260								
Chlorobenzene	ND	ug/L	1.0	0.23	1		02/07/14 20:38	108-90-7	
Chloroethane	ND	ug/L	1.0	0.54	1		02/07/14 20:38	75-00-3	
Chloroform	**3.0**	ug/L	1.0	0.14	1		02/07/14 20:38	67-66-3	
Chloromethane	ND	ug/L	1.0	0.11	1		02/07/14 20:38	74-87-3	
2-Chlorotoluene	ND	ug/L	1.0	0.35	1		02/07/14 20:38	95-49-8	
4-Chlorotoluene	ND	ug/L	1.0	0.31	1		02/07/14 20:38	106-43-4	
1,2-Dibromo-3-chloropropane	ND	ug/L	5.0	2.5	1		02/07/14 20:38	96-12-8	
Dibromochloromethane	**0.37J**	ug/L	1.0	0.21	1		02/07/14 20:38	124-48-1	
1,2-Dibromoethane (EDB)	ND	ug/L	1.0	0.27	1		02/07/14 20:38	106-93-4	
Dibromomethane	ND	ug/L	1.0	0.21	1		02/07/14 20:38	74-95-3	
1,2-Dichlorobenzene	ND	ug/L	1.0	0.30	1		02/07/14 20:38	95-50-1	
1,3-Dichlorobenzene	ND	ug/L	1.0	0.24	1		02/07/14 20:38	541-73-1	
1,4-Dichlorobenzene	ND	ug/L	1.0	0.33	1		02/07/14 20:38	106-46-7	
Dichlorodifluoromethane	ND	ug/L	1.0	0.21	1		02/07/14 20:38	75-71-8	
1,1-Dichloroethane	ND	ug/L	1.0	0.32	1		02/07/14 20:38	75-34-3	
1,2-Dichloroethane	ND	ug/L	1.0	0.12	1		02/07/14 20:38	107-06-2	
1,1-Dichloroethene	ND	ug/L	1.0	0.56	1		02/07/14 20:38	75-35-4	
cis-1,2-Dichloroethene	ND	ug/L	1.0	0.19	1		02/07/14 20:38	156-59-2	
trans-1,2-Dichloroethene	ND	ug/L	1.0	0.49	1		02/07/14 20:38	156-60-5	
1,2-Dichloropropane	ND	ug/L	1.0	0.27	1		02/07/14 20:38	78-87-5	
1,3-Dichloropropane	ND	ug/L	1.0	0.28	1		02/07/14 20:38	142-28-9	
2,2-Dichloropropane	ND	ug/L	1.0	0.13	1		02/07/14 20:38	594-20-7	
1,1-Dichloropropene	ND	ug/L	1.0	0.49	1		02/07/14 20:38	563-58-6	
cis-1,3-Dichloropropene	ND	ug/L	1.0	0.13	1		02/07/14 20:38	10061-01-5	
trans-1,3-Dichloropropene	ND	ug/L	1.0	0.26	1		02/07/14 20:38	10061-02-6	
Diisopropyl ether	ND	ug/L	1.0	0.12	1		02/07/14 20:38	108-20-3	
Ethylbenzene	ND	ug/L	1.0	0.30	1		02/07/14 20:38	100-41-4	
Hexachloro-1,3-butadiene	ND	ug/L	1.0	0.71	1		02/07/14 20:38	87-68-3	
2-Hexanone	ND	ug/L	5.0	0.46	1		02/07/14 20:38	591-78-6	
p-Isopropyltoluene	ND	ug/L	1.0	0.31	1		02/07/14 20:38	99-87-6	
Methylene Chloride	ND	ug/L	2.0	0.97	1		02/07/14 20:38	75-09-2	
4-Methyl-2-pentanone (MIBK)	ND	ug/L	5.0	0.33	1		02/07/14 20:38	108-10-1	
Methyl-tert-butyl ether	ND	ug/L	1.0	0.21	1		02/07/14 20:38	1634-04-4	
Naphthalene	ND	ug/L	1.0	0.24	1		02/07/14 20:38	91-20-3	
Styrene	ND	ug/L	1.0	0.26	1		02/07/14 20:38	100-42-5	
1,1,1,2-Tetrachloroethane	ND	ug/L	1.0	0.33	1		02/07/14 20:38	630-20-6	
1,1,2,2-Tetrachloroethane	ND	ug/L	1.0	0.40	1		02/07/14 20:38	79-34-5	
Tetrachloroethene	ND	ug/L	1.0	0.46	1		02/07/14 20:38	127-18-4	
Toluene	ND	ug/L	1.0	0.26	1		02/07/14 20:38	108-88-3	
1,2,3-Trichlorobenzene	ND	ug/L	1.0	0.33	1		02/07/14 20:38	87-61-6	
1,2,4-Trichlorobenzene	ND	ug/L	1.0	0.35	1		02/07/14 20:38	120-82-1	
1,1,1-Trichloroethane	ND	ug/L	1.0	0.48	1		02/07/14 20:38	71-55-6	
1,1,2-Trichloroethane	ND	ug/L	1.0	0.29	1		02/07/14 20:38	79-00-5	
Trichloroethene	ND	ug/L	1.0	0.47	1		02/07/14 20:38	79-01-6	
Trichlorofluoromethane	ND	ug/L	1.0	0.20	1		02/07/14 20:38	75-69-4	
1,2,3-Trichloropropane	ND	ug/L	1.0	0.41	1		02/07/14 20:38	96-18-4	

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ANALYTICAL RESULTS

Project: OWRF EE 020414
Pace Project No.: 92188853

Sample: 1402041315 **Lab ID: 92188853002** Collected: 02/04/14 07:30 Received: 02/06/14 10:20 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
8260 MSV Low Level	Analytical Method: EPA 8260								
Vinyl acetate	ND	ug/L	2.0	0.35	1		02/07/14 20:38	108-05-4	
Vinyl chloride	ND	ug/L	1.0	0.62	1		02/07/14 20:38	75-01-4	
Xylene (Total)	ND	ug/L	2.0	0.66	1		02/07/14 20:38	1330-20-7	
m&p-Xylene	ND	ug/L	2.0	0.66	1		02/07/14 20:38	179601-23-1	
o-Xylene	ND	ug/L	1.0	0.23	1		02/07/14 20:38	95-47-6	
Surrogates									
4-Bromofluorobenzene (S)	97	%	70-130		1		02/07/14 20:38	460-00-4	
1,2-Dichloroethane-d4 (S)	101	%	70-130		1		02/07/14 20:38	17060-07-0	
Toluene-d8 (S)	99	%	70-130		1		02/07/14 20:38	2037-26-5	

Sample: 1402041317 **Lab ID: 92188853003** Collected: 02/04/14 07:30 Received: 02/06/14 10:20 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
420.4 Phenolics, Total	Analytical Method: EPA 420.4								
Phenol	**0.012**	mg/L	0.0050	0.0050	1		02/17/14 15:00	108-95-2	

Sample: 140204131A **Lab ID: 92188853004** Collected: 02/04/14 07:30 Received: 02/06/14 10:20 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
6010 MET ICP	Analytical Method: EPA 6010 Preparation Method: EPA 3010								
Antimony	**6.8**	ug/L	5.0	2.6	1	02/07/14 09:25	02/09/14 20:50	7440-36-0	
Arsenic	ND	ug/L	10.0	2.7	1	02/07/14 09:25	02/09/14 20:50	7440-38-2	
Beryllium	ND	ug/L	1.0	0.50	1	02/07/14 09:25	02/09/14 20:50	7440-41-7	
Cadmium	ND	ug/L	1.0	0.50	1	02/07/14 09:25	02/09/14 20:50	7440-43-9	
Chromium	ND	ug/L	5.0	2.0	1	02/07/14 09:25	02/09/14 20:50	7440-47-3	
Copper	**6.8**	ug/L	5.0	2.0	1	02/07/14 09:25	02/09/14 20:50	7440-50-8	
Lead	ND	ug/L	5.0	4.0	1	02/07/14 09:25	02/10/14 21:53	7439-92-1	
Nickel	**6.5**	ug/L	5.0	2.5	1	02/07/14 09:25	02/09/14 20:50	7440-02-0	
Selenium	ND	ug/L	10.0	5.0	1	02/07/14 09:25	02/09/14 20:50	7782-49-2	
Silver	ND	ug/L	5.0	2.5	1	02/07/14 09:25	02/09/14 20:50	7440-22-4	
Thallium	ND	ug/L	10.0	5.0	1	02/07/14 09:25	02/09/14 20:50	7440-28-0	
Zinc	**43.1**	ug/L	10.0	5.0	1	02/07/14 09:25	02/09/14 20:50	7440-66-6	B
7470 Mercury	Analytical Method: EPA 7470 Preparation Method: EPA 7470								
Mercury	ND	ug/L	0.20	0.10	1	02/07/14 19:00	02/07/14 21:36	7439-97-6	

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ANALYTICAL RESULTS

Project: OWRF EE 020414
Pace Project No.: 92188853

Sample: 1402041319 **Lab ID: 92188853005** Collected: 02/04/14 07:30 Received: 02/06/14 10:20 Matrix: Water

Parameters	Results	Units	Report Limit	MDL	DF	Prepared	Analyzed	CAS No.	Qual
4500CNE Cyanide, Total	Analytical Method: SM 4500-CN-E								
Cyanide	**0.0082**	mg/L	0.0050	0.0050	1		02/15/14 15:37	57-12-5	

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QUALITY CONTROL DATA

Project: OWRF EE 020414
Pace Project No.: 92188853

QC Batch: MERP/6165
QC Batch Method: EPA 7470
Analysis Method: EPA 7470
Analysis Description: 7470 Mercury
Associated Lab Samples: 92188853004

METHOD BLANK: 1135524
Matrix: Water
Associated Lab Samples: 92188853004

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Mercury	ug/L	ND	0.20	02/07/14 21:28	

LABORATORY CONTROL SAMPLE: 1135525

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Mercury	ug/L	2.5	2.7	108	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1135526 1135527

Parameter	Units	92188853004 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Mercury	ug/L	ND	2.5	2.5	2.6	2.6	104	104	75-125	0	25	

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QUALITY CONTROL DATA

Project: OWRF EE 020414
Pace Project No.: 92188853

QC Batch: MPRP/15207
QC Batch Method: EPA 3010
Analysis Method: EPA 6010
Analysis Description: 6010 MET
Associated Lab Samples: 92188853004

METHOD BLANK: 1134921
Matrix: Water
Associated Lab Samples: 92188853004

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Antimony	ug/L	ND	5.0	02/09/14 20:15	
Arsenic	ug/L	ND	10.0	02/09/14 20:15	
Beryllium	ug/L	ND	1.0	02/09/14 20:15	
Cadmium	ug/L	ND	1.0	02/09/14 20:15	
Chromium	ug/L	ND	5.0	02/09/14 20:15	
Copper	ug/L	ND	5.0	02/09/14 20:15	
Lead	ug/L	ND	5.0	02/10/14 21:04	
Nickel	ug/L	ND	5.0	02/09/14 20:15	
Selenium	ug/L	ND	10.0	02/09/14 20:15	
Silver	ug/L	ND	5.0	02/09/14 20:15	
Thallium	ug/L	ND	10.0	02/09/14 20:15	
Zinc	ug/L	5.2J	10.0	02/09/14 20:15	

LABORATORY CONTROL SAMPLE: 1134922

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Antimony	ug/L	500	517	103	80-120	
Arsenic	ug/L	500	493	99	80-120	
Beryllium	ug/L	500	486	97	80-120	
Cadmium	ug/L	500	497	99	80-120	
Chromium	ug/L	500	480	96	80-120	
Copper	ug/L	500	511	102	80-120	
Lead	ug/L	500	485	97	80-120	
Nickel	ug/L	500	490	98	80-120	
Selenium	ug/L	500	502	100	80-120	
Silver	ug/L	250	250	100	80-120	
Thallium	ug/L	500	486	97	80-120	
Zinc	ug/L	500	481	96	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1134923 1134924

Parameter	Units	92188447001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Antimony	ug/L	86.0	500	500	579	579	99	99	75-125	0	20	
Arsenic	ug/L	ND	500	500	524	522	105	104	75-125	0	20	
Beryllium	ug/L	ND	500	500	487	489	97	98	75-125	0	20	
Cadmium	ug/L	205	500	500	712	713	101	102	75-125	0	20	
Chromium	ug/L	12.6	500	500	468	477	91	93	75-125	2	20	
Copper	ug/L	192	500	500	717	714	105	105	75-125	0	20	
Lead	ug/L	364	500	500	787	791	85	85	75-125	1	20	

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: OWRF EE 020414
Pace Project No.: 92188853

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1134923 1134924

Parameter	Units	92188447001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Nickel	ug/L	446	500	500	890	905	89	92	75-125	2	20	
Selenium	ug/L	ND	500	500	543	542	108	108	75-125	0	20	
Silver	ug/L	ND	250	250	260	262	104	105	75-125	1	20	
Thallium	ug/L	ND	500	500	394	398	79	80	75-125	1	20	
Zinc	ug/L	124000	500	500	123000	127000	-340	520	75-125	3	20	M1

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QUALITY CONTROL DATA

Project: OWRF EE 020414
Pace Project No.: 92188853

QC Batch: MSV/25727 | Analysis Method: EPA 8260
QC Batch Method: EPA 8260 | Analysis Description: 8260 MSV Low Level
Associated Lab Samples: 92188853002

METHOD BLANK: 1135297 | Matrix: Water
Associated Lab Samples: 92188853002

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1,1,1,2-Tetrachloroethane	ug/L	ND	1.0	02/07/14 18:18	
1,1,1-Trichloroethane	ug/L	ND	1.0	02/07/14 18:18	
1,1,2,2-Tetrachloroethane	ug/L	ND	1.0	02/07/14 18:18	
1,1,2-Trichloroethane	ug/L	ND	1.0	02/07/14 18:18	
1,1-Dichloroethane	ug/L	ND	1.0	02/07/14 18:18	
1,1-Dichloroethene	ug/L	ND	1.0	02/07/14 18:18	
1,1-Dichloropropene	ug/L	ND	1.0	02/07/14 18:18	
1,2,3-Trichlorobenzene	ug/L	ND	1.0	02/07/14 18:18	
1,2,3-Trichloropropane	ug/L	ND	1.0	02/07/14 18:18	
1,2,4-Trichlorobenzene	ug/L	ND	1.0	02/07/14 18:18	
1,2-Dibromo-3-chloropropane	ug/L	ND	5.0	02/07/14 18:18	
1,2-Dibromoethane (EDB)	ug/L	ND	1.0	02/07/14 18:18	
1,2-Dichlorobenzene	ug/L	ND	1.0	02/07/14 18:18	
1,2-Dichloroethane	ug/L	ND	1.0	02/07/14 18:18	
1,2-Dichloropropane	ug/L	ND	1.0	02/07/14 18:18	
1,3-Dichlorobenzene	ug/L	ND	1.0	02/07/14 18:18	
1,3-Dichloropropane	ug/L	ND	1.0	02/07/14 18:18	
1,4-Dichlorobenzene	ug/L	ND	1.0	02/07/14 18:18	
2,2-Dichloropropane	ug/L	ND	1.0	02/07/14 18:18	
2-Butanone (MEK)	ug/L	ND	5.0	02/07/14 18:18	
2-Chlorotoluene	ug/L	ND	1.0	02/07/14 18:18	
2-Hexanone	ug/L	ND	5.0	02/07/14 18:18	
4-Chlorotoluene	ug/L	ND	1.0	02/07/14 18:18	
4-Methyl-2-pentanone (MIBK)	ug/L	ND	5.0	02/07/14 18:18	
Acetone	ug/L	ND	25.0	02/07/14 18:18	
Benzene	ug/L	ND	1.0	02/07/14 18:18	
Bromobenzene	ug/L	ND	1.0	02/07/14 18:18	
Bromochloromethane	ug/L	ND	1.0	02/07/14 18:18	
Bromodichloromethane	ug/L	ND	1.0	02/07/14 18:18	
Bromoform	ug/L	ND	1.0	02/07/14 18:18	
Bromomethane	ug/L	ND	2.0	02/07/14 18:18	
Carbon tetrachloride	ug/L	ND	1.0	02/07/14 18:18	
Chlorobenzene	ug/L	ND	1.0	02/07/14 18:18	
Chloroethane	ug/L	ND	1.0	02/07/14 18:18	
Chloroform	ug/L	ND	1.0	02/07/14 18:18	
Chloromethane	ug/L	ND	1.0	02/07/14 18:18	
cis-1,2-Dichloroethene	ug/L	ND	1.0	02/07/14 18:18	
cis-1,3-Dichloropropene	ug/L	ND	1.0	02/07/14 18:18	
Dibromochloromethane	ug/L	ND	1.0	02/07/14 18:18	
Dibromomethane	ug/L	ND	1.0	02/07/14 18:18	
Dichlorodifluoromethane	ug/L	ND	1.0	02/07/14 18:18	
Diisopropyl ether	ug/L	ND	1.0	02/07/14 18:18	
Ethylbenzene	ug/L	ND	1.0	02/07/14 18:18	

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QUALITY CONTROL DATA

Project: OWRF EE 020414
Pace Project No.: 92188853

METHOD BLANK: 1135297 Matrix: Water
Associated Lab Samples: 92188853002

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Hexachloro-1,3-butadiene	ug/L	ND	1.0	02/07/14 18:18	
m&p-Xylene	ug/L	ND	2.0	02/07/14 18:18	
Methyl-tert-butyl ether	ug/L	ND	1.0	02/07/14 18:18	
Methylene Chloride	ug/L	ND	2.0	02/07/14 18:18	
Naphthalene	ug/L	ND	1.0	02/07/14 18:18	
o-Xylene	ug/L	ND	1.0	02/07/14 18:18	
p-Isopropyltoluene	ug/L	ND	1.0	02/07/14 18:18	
Styrene	ug/L	ND	1.0	02/07/14 18:18	
Tetrachloroethene	ug/L	ND	1.0	02/07/14 18:18	
Toluene	ug/L	ND	1.0	02/07/14 18:18	
trans-1,2-Dichloroethene	ug/L	ND	1.0	02/07/14 18:18	
trans-1,3-Dichloropropene	ug/L	ND	1.0	02/07/14 18:18	
Trichloroethene	ug/L	ND	1.0	02/07/14 18:18	
Trichlorofluoromethane	ug/L	ND	1.0	02/07/14 18:18	
Vinyl acetate	ug/L	ND	2.0	02/07/14 18:18	
Vinyl chloride	ug/L	ND	1.0	02/07/14 18:18	
Xylene (Total)	ug/L	ND	2.0	02/07/14 18:18	
1,2-Dichloroethane-d4 (S)	%	100	70-130	02/07/14 18:18	
4-Bromofluorobenzene (S)	%	98	70-130	02/07/14 18:18	
Toluene-d8 (S)	%	99	70-130	02/07/14 18:18	

LABORATORY CONTROL SAMPLE: 1135298

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,1,1,2-Tetrachloroethane	ug/L	50	48.8	98	70-130	
1,1,1-Trichloroethane	ug/L	50	49.5	99	70-130	
1,1,2,2-Tetrachloroethane	ug/L	50	45.3	91	70-130	
1,1,2-Trichloroethane	ug/L	50	48.5	97	70-130	
1,1-Dichloroethane	ug/L	50	49.5	99	70-130	
1,1-Dichloroethene	ug/L	50	51.6	103	70-132	
1,1-Dichloropropene	ug/L	50	50.7	101	70-130	
1,2,3-Trichlorobenzene	ug/L	50	34.2	68	70-135	L0
1,2,3-Trichloropropane	ug/L	50	45.0	90	70-130	
1,2,4-Trichlorobenzene	ug/L	50	39.3	79	70-134	
1,2-Dibromo-3-chloropropane	ug/L	50	39.2	78	70-130	
1,2-Dibromoethane (EDB)	ug/L	50	48.7	97	70-130	
1,2-Dichlorobenzene	ug/L	50	47.9	96	70-130	
1,2-Dichloroethane	ug/L	50	48.0	96	70-130	
1,2-Dichloropropane	ug/L	50	49.4	99	70-130	
1,3-Dichlorobenzene	ug/L	50	47.3	95	70-130	
1,3-Dichloropropane	ug/L	50	48.5	97	70-130	
1,4-Dichlorobenzene	ug/L	50	49.0	98	70-130	
2,2-Dichloropropane	ug/L	50	49.8	100	58-145	
2-Butanone (MEK)	ug/L	100	90.9	91	70-145	
2-Chlorotoluene	ug/L	50	48.4	97	70-130	

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QUALITY CONTROL DATA

Project: OWRF EE 020414
Pace Project No.: 92188853

LABORATORY CONTROL SAMPLE: 1135298

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
2-Hexanone	ug/L	100	91.7	92	70-144	
4-Chlorotoluene	ug/L	50	50.4	101	70-130	
4-Methyl-2-pentanone (MIBK)	ug/L	100	91.6	92	70-140	
Acetone	ug/L	100	91.2	91	50-175	
Benzene	ug/L	50	50.4	101	70-130	
Bromobenzene	ug/L	50	48.8	98	70-130	
Bromochloromethane	ug/L	50	48.5	97	70-130	
Bromodichloromethane	ug/L	50	47.3	95	70-130	
Bromoform	ug/L	50	46.9	94	70-130	
Bromomethane	ug/L	50	52.1	104	54-130	
Carbon tetrachloride	ug/L	50	48.6	97	70-132	
Chlorobenzene	ug/L	50	49.4	99	70-130	
Chloroethane	ug/L	50	45.7	91	64-134	
Chloroform	ug/L	50	48.5	97	70-130	
Chloromethane	ug/L	50	50.7	101	64-130	
cis-1,2-Dichloroethene	ug/L	50	48.4	97	70-131	
cis-1,3-Dichloropropene	ug/L	50	48.2	96	70-130	
Dibromochloromethane	ug/L	50	48.0	96	70-130	
Dibromomethane	ug/L	50	46.6	93	70-131	
Dichlorodifluoromethane	ug/L	50	47.2	94	56-130	
Diisopropyl ether	ug/L	50	51.5	103	70-130	
Ethylbenzene	ug/L	50	48.7	97	70-130	
Hexachloro-1,3-butadiene	ug/L	50	44.4	89	70-130	
m&p-Xylene	ug/L	100	100	100	70-130	
Methyl-tert-butyl ether	ug/L	50	49.3	99	70-130	
Methylene Chloride	ug/L	50	54.3	109	63-130	
Naphthalene	ug/L	50	33.5	67	70-138	L0
o-Xylene	ug/L	50	49.9	100	70-130	
p-Isopropyltoluene	ug/L	50	49.7	99	70-130	
Styrene	ug/L	50	51.5	103	70-130	
Tetrachloroethene	ug/L	50	50.6	101	70-130	
Toluene	ug/L	50	48.5	97	70-130	
trans-1,2-Dichloroethene	ug/L	50	49.4	99	70-130	
trans-1,3-Dichloropropene	ug/L	50	48.7	97	70-132	
Trichloroethene	ug/L	50	47.5	95	70-130	
Trichlorofluoromethane	ug/L	50	48.5	97	62-133	
Vinyl acetate	ug/L	100	157	157	66-157	
Vinyl chloride	ug/L	50	50.7	101	69-130	
Xylene (Total)	ug/L	150	150	100	70-130	
1,2-Dichloroethane-d4 (S)	%			98	70-130	
4-Bromofluorobenzene (S)	%			100	70-130	
Toluene-d8 (S)	%			99	70-130	

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QUALITY CONTROL DATA

Project: OWRF EE 020414
Pace Project No.: 92188853

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1135299 1135300

Parameter	Units	92188812003 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
1,1-Dichloroethene	ug/L	ND	50	50	56.5	52.7	113	105	70-166	7	30	
Benzene	ug/L	ND	50	50	66.6	61.9	133	124	70-148	7	30	
Chlorobenzene	ug/L	ND	50	50	59.9	56.3	120	113	70-146	6	30	
Toluene	ug/L	ND	50	50	59.7	55.5	119	110	70-155	7	30	
Trichloroethene	ug/L	ND	50	50	66.3	62.1	133	124	69-151	7	30	
1,2-Dichloroethane-d4 (S)	%						87	85	70-130			
4-Bromofluorobenzene (S)	%						101	102	70-130			
Toluene-d8 (S)	%						98	97	70-130			

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QUALITY CONTROL DATA

Project: OWRF EE 020414
Pace Project No.: 92188853

QC Batch: OEXT/25871 | Analysis Method: EPA 8270
QC Batch Method: EPA 3510 | Analysis Description: 8270 Water MSSV
Associated Lab Samples: 92188853001

METHOD BLANK: 1136231 | Matrix: Water
Associated Lab Samples: 92188853001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
1,2,4-Trichlorobenzene	ug/L	ND	10.0	02/11/14 11:28	
1,2-Dichlorobenzene	ug/L	ND	10.0	02/11/14 11:28	
1,3-Dichlorobenzene	ug/L	ND	10.0	02/11/14 11:28	
1,4-Dichlorobenzene	ug/L	ND	10.0	02/11/14 11:28	
1-Methylnaphthalene	ug/L	ND	10.0	02/11/14 11:28	
2,4,5-Trichlorophenol	ug/L	ND	10.0	02/11/14 11:28	
2,4,6-Trichlorophenol	ug/L	ND	10.0	02/11/14 11:28	
2,4-Dichlorophenol	ug/L	ND	10.0	02/11/14 11:28	
2,4-Dimethylphenol	ug/L	ND	10.0	02/11/14 11:28	
2,4-Dinitrophenol	ug/L	ND	50.0	02/11/14 11:28	
2,4-Dinitrotoluene	ug/L	ND	10.0	02/11/14 11:28	
2,6-Dinitrotoluene	ug/L	ND	10.0	02/11/14 11:28	
2-Chloronaphthalene	ug/L	ND	10.0	02/11/14 11:28	
2-Chlorophenol	ug/L	ND	10.0	02/11/14 11:28	
2-Methylnaphthalene	ug/L	ND	10.0	02/11/14 11:28	
2-Methylphenol(o-Cresol)	ug/L	ND	10.0	02/11/14 11:28	
2-Nitroaniline	ug/L	ND	50.0	02/11/14 11:28	
2-Nitrophenol	ug/L	ND	10.0	02/11/14 11:28	
3&4-Methylphenol(m&p Cresol)	ug/L	ND	10.0	02/11/14 11:28	
3,3'-Dichlorobenzidine	ug/L	ND	20.0	02/11/14 11:28	
3-Nitroaniline	ug/L	ND	50.0	02/11/14 11:28	
4,6-Dinitro-2-methylphenol	ug/L	ND	20.0	02/11/14 11:28	
4-Bromophenylphenyl ether	ug/L	ND	10.0	02/11/14 11:28	
4-Chloro-3-methylphenol	ug/L	ND	20.0	02/11/14 11:28	
4-Chloroaniline	ug/L	ND	20.0	02/11/14 11:28	
4-Chlorophenylphenyl ether	ug/L	ND	10.0	02/11/14 11:28	
4-Nitroaniline	ug/L	ND	20.0	02/11/14 11:28	
4-Nitrophenol	ug/L	ND	50.0	02/11/14 11:28	
Acenaphthene	ug/L	ND	10.0	02/11/14 11:28	
Acenaphthylene	ug/L	ND	10.0	02/11/14 11:28	
Aniline	ug/L	ND	10.0	02/11/14 11:28	
Anthracene	ug/L	ND	10.0	02/11/14 11:28	
Benzo(a)anthracene	ug/L	ND	10.0	02/11/14 11:28	
Benzo(a)pyrene	ug/L	ND	10.0	02/11/14 11:28	
Benzo(b)fluoranthene	ug/L	ND	10.0	02/11/14 11:28	
Benzo(g,h,i)perylene	ug/L	ND	10.0	02/11/14 11:28	
Benzo(k)fluoranthene	ug/L	ND	10.0	02/11/14 11:28	
Benzoic Acid	ug/L	ND	50.0	02/11/14 11:28	
Benzyl alcohol	ug/L	ND	20.0	02/11/14 11:28	
bis(2-Chloroethoxy)methane	ug/L	ND	10.0	02/11/14 11:28	
bis(2-Chloroethyl) ether	ug/L	ND	10.0	02/11/14 11:28	
bis(2-Chloroisopropyl) ether	ug/L	ND	10.0	02/11/14 11:28	
bis(2-Ethylhexyl)phthalate	ug/L	ND	5.0	02/11/14 11:28	

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QUALITY CONTROL DATA

Project: OWRF EE 020414
Pace Project No.: 92188853

METHOD BLANK: 1136231 Matrix: Water
Associated Lab Samples: 92188853001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Butylbenzylphthalate	ug/L	ND	10.0	02/11/14 11:28	
Chrysene	ug/L	ND	10.0	02/11/14 11:28	
Di-n-butylphthalate	ug/L	ND	10.0	02/11/14 11:28	
Di-n-octylphthalate	ug/L	ND	10.0	02/11/14 11:28	
Dibenz(a,h)anthracene	ug/L	ND	10.0	02/11/14 11:28	
Dibenzofuran	ug/L	ND	10.0	02/11/14 11:28	
Diethylphthalate	ug/L	ND	10.0	02/11/14 11:28	
Dimethylphthalate	ug/L	ND	10.0	02/11/14 11:28	
Fluoranthene	ug/L	ND	10.0	02/11/14 11:28	
Fluorene	ug/L	ND	10.0	02/11/14 11:28	
Hexachloro-1,3-butadiene	ug/L	ND	10.0	02/11/14 11:28	
Hexachlorobenzene	ug/L	ND	10.0	02/11/14 11:28	
Hexachlorocyclopentadiene	ug/L	ND	10.0	02/11/14 11:28	
Hexachloroethane	ug/L	ND	10.0	02/11/14 11:28	
Indeno(1,2,3-cd)pyrene	ug/L	ND	10.0	02/11/14 11:28	
Isophorone	ug/L	ND	10.0	02/11/14 11:28	
N-Nitroso-di-n-propylamine	ug/L	ND	10.0	02/11/14 11:28	
N-Nitrosodimethylamine	ug/L	ND	10.0	02/11/14 11:28	
N-Nitrosodiphenylamine	ug/L	ND	10.0	02/11/14 11:28	
Naphthalene	ug/L	ND	10.0	02/11/14 11:28	
Nitrobenzene	ug/L	ND	10.0	02/11/14 11:28	
Pentachlorophenol	ug/L	ND	25.0	02/11/14 11:28	
Phenanthrene	ug/L	ND	10.0	02/11/14 11:28	
Phenol	ug/L	ND	10.0	02/11/14 11:28	
Pyrene	ug/L	ND	10.0	02/11/14 11:28	
2,4,6-Tribromophenol (S)	%	86	27-110	02/11/14 11:28	
2-Fluorobiphenyl (S)	%	60	27-110	02/11/14 11:28	
2-Fluorophenol (S)	%	35	12-110	02/11/14 11:28	
Nitrobenzene-d5 (S)	%	56	21-110	02/11/14 11:28	
Phenol-d6 (S)	%	26	10-110	02/11/14 11:28	
Terphenyl-d14 (S)	%	93	31-107	02/11/14 11:28	

LABORATORY CONTROL SAMPLE: 1136232

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
1,2,4-Trichlorobenzene	ug/L	50	36.1	72	10-110	
1,2-Dichlorobenzene	ug/L	50	34.6	69	10-110	
1,3-Dichlorobenzene	ug/L	50	33.0	66	10-110	
1,4-Dichlorobenzene	ug/L	50	34.1	68	10-110	
1-Methylnaphthalene	ug/L	50	43.3	87	21-110	
2,4,5-Trichlorophenol	ug/L	50	43.5	87	23-116	
2,4,6-Trichlorophenol	ug/L	50	40.8	82	21-114	
2,4-Dichlorophenol	ug/L	50	42.2	84	22-120	
2,4-Dimethylphenol	ug/L	50	44.3	89	15-109	
2,4-Dinitrophenol	ug/L	250	213	85	10-103	

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QUALITY CONTROL DATA

Project: OWRF EE 020414
Pace Project No.: 92188853

LABORATORY CONTROL SAMPLE: 1136232

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
2,4-Dinitrotoluene	ug/L	50	49.5	99	24-119	
2,6-Dinitrotoluene	ug/L	50	48.2	96	25-116	
2-Chloronaphthalene	ug/L	50	34.2	68	18-110	
2-Chlorophenol	ug/L	50	38.9	78	10-104	
2-Methylnaphthalene	ug/L	50	44.7	89	16-110	
2-Methylphenol(o-Cresol)	ug/L	50	34.4	69	13-110	
2-Nitroaniline	ug/L	100	82.1	82	20-117	
2-Nitrophenol	ug/L	50	46.8	94	16-108	
3&4-Methylphenol(m&p Cresol)	ug/L	50	33.0	66	14-110	
3,3'-Dichlorobenzidine	ug/L	100	89.9	90	13-131	
3-Nitroaniline	ug/L	100	84.5	84	15-117	
4,6-Dinitro-2-methylphenol	ug/L	100	89.7	90	13-119	
4-Bromophenylphenyl ether	ug/L	50	46.6	93	23-120	
4-Chloro-3-methylphenol	ug/L	100	86.9	87	21-119	
4-Chloroaniline	ug/L	100	74.5	75	10-122	
4-Chlorophenylphenyl ether	ug/L	50	45.7	91	22-112	
4-Nitroaniline	ug/L	100	92.9	93	14-118	
4-Nitrophenol	ug/L	250	99.9	40	10-110	
Acenaphthene	ug/L	50	38.6	77	20-105	
Acenaphthylene	ug/L	50	40.4	81	23-106	
Aniline	ug/L	50	23.6	47	10-110	
Anthracene	ug/L	50	43.7	87	25-120	
Benzo(a)anthracene	ug/L	50	42.8	86	21-128	
Benzo(a)pyrene	ug/L	50	46.3	93	25-116	
Benzo(b)fluoranthene	ug/L	50	42.4	85	23-117	
Benzo(g,h,i)perylene	ug/L	50	44.7	89	17-128	
Benzo(k)fluoranthene	ug/L	50	41.5	83	25-127	
Benzoic Acid	ug/L	250	92.2	37	10-110	
Benzyl alcohol	ug/L	100	68.4	68	10-101	
bis(2-Chloroethoxy)methane	ug/L	50	40.4	81	19-107	
bis(2-Chloroethyl) ether	ug/L	50	40.0	80	10-108	
bis(2-Chloroisopropyl) ether	ug/L	50	33.2	66	10-108	
bis(2-Ethylhexyl)phthalate	ug/L	50	39.4	79	16-123	
Butylbenzylphthalate	ug/L	50	42.2	84	20-118	
Chrysene	ug/L	50	43.8	88	24-125	
Di-n-butylphthalate	ug/L	50	42.5	85	23-115	
Di-n-octylphthalate	ug/L	50	37.2	74	20-115	
Dibenz(a,h)anthracene	ug/L	50	45.8	92	18-131	
Dibenzofuran	ug/L	50	36.9	74	23-106	
Diethylphthalate	ug/L	50	40.2	80	24-115	
Dimethylphthalate	ug/L	50	39.0	78	22-113	
Fluoranthene	ug/L	50	48.0	96	24-125	
Fluorene	ug/L	50	42.5	85	24-114	
Hexachloro-1,3-butadiene	ug/L	50	35.7	71	10-110	
Hexachlorobenzene	ug/L	50	43.2	86	22-127	
Hexachlorocyclopentadiene	ug/L	50	46.9	94	10-110	
Hexachloroethane	ug/L	50	32.0	64	10-110	
Indeno(1,2,3-cd)pyrene	ug/L	50	47.0	94	18-130	

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QUALITY CONTROL DATA

Project: OWRF EE 020414
Pace Project No.: 92188853

LABORATORY CONTROL SAMPLE: 1136232

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Isophorone	ug/L	50	45.8	92	23-114	
N-Nitroso-di-n-propylamine	ug/L	50	37.0	74	21-114	
N-Nitrosodimethylamine	ug/L	50	20.6	41	10-110	
N-Nitrosodiphenylamine	ug/L	50	35.5	71	24-123	
Naphthalene	ug/L	50	39.2	78	14-110	
Nitrobenzene	ug/L	50	39.8	80	16-106	
Pentachlorophenol	ug/L	100	99.4	99	10-123	
Phenanthrene	ug/L	50	42.2	84	25-119	
Phenol	ug/L	50	17.0	34	10-110	
Pyrene	ug/L	50	42.5	85	22-127	
2,4,6-Tribromophenol (S)	%			122	27-110	S0
2-Fluorobiphenyl (S)	%			77	27-110	
2-Fluorophenol (S)	%			47	12-110	
Nitrobenzene-d5 (S)	%			77	21-110	
Phenol-d6 (S)	%			35	10-110	
Terphenyl-d14 (S)	%			88	31-107	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1136233 1136234

Parameter	Units	92188853001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
1,2,4-Trichlorobenzene	ug/L	ND	100	100	49.3	46.0	49	46	10-110	7	30	
1,2-Dichlorobenzene	ug/L	ND	100	100	47.9	44.2	48	44	10-110	8	30	
1,3-Dichlorobenzene	ug/L	ND	100	100	45.5	41.6	45	42	10-110	9	30	
1,4-Dichlorobenzene	ug/L	ND	100	100	47.2	44.0	47	44	10-110	7	30	
1-Methylnaphthalene	ug/L	ND	100	100	60.0	53.7	60	54	14-110	11	30	
2,4,5-Trichlorophenol	ug/L	ND	100	100	72.3	67.6	72	68	19-105	7	30	
2,4,6-Trichlorophenol	ug/L	ND	100	100	64.8	58.5	65	59	13-108	10	30	
2,4-Dichlorophenol	ug/L	ND	100	100	59.1	53.7	59	54	29-111	10	30	
2,4-Dimethylphenol	ug/L	ND	100	100	33.9	29.0	34	29	21-103	15	30	
2,4-Dinitrophenol	ug/L	ND	500	500	323	343	65	69	10-109	6	30	
2,4-Dinitrotoluene	ug/L	ND	100	100	83.1	77.2	83	77	27-104	7	30	
2,6-Dinitrotoluene	ug/L	ND	100	100	80.1	74.1	80	74	28-101	8	30	
2-Chloronaphthalene	ug/L	ND	100	100	51.7	46.2	52	46	14-102	11	30	
2-Chlorophenol	ug/L	ND	100	100	56.3	49.2	56	49	16-110	13	30	
2-Methylnaphthalene	ug/L	ND	100	100	62.6	56.0	63	56	13-110	11	30	
2-Methylphenol(o-Cresol)	ug/L	ND	100	100	49.4	42.2	49	42	19-110	16	30	
2-Nitroaniline	ug/L	ND	200	200	97.4J	92.6J	49	46	26-103		30	
2-Nitrophenol	ug/L	ND	100	100	62.1	56.2	62	56	20-110	10	30	
3&4-Methylphenol(m&p Cresol)	ug/L	ND	100	100	49.3	42.0	49	42	20-110	16	30	
3,3'-Dichlorobenzidine	ug/L	ND	200	200	4.8J	ND	2	2	25-112		30	M1
3-Nitroaniline	ug/L	ND	200	200	105	86.1J	53	43	29-110		30	
4,6-Dinitro-2-methylphenol	ug/L	ND	200	200	147	146	74	73	10-117	1	30	
4-Bromophenylphenyl ether	ug/L	ND	100	100	83.8	75.1	84	75	20-105	11	30	
4-Chloro-3-methylphenol	ug/L	ND	200	200	138	128	69	64	22-110	8	30	
4-Chloroaniline	ug/L	ND	200	200	11.3J	6.8J	6	3	20-100		30	M1

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9800 Kincey Ave. Suite 100
Huntersville, NC 28078
(704)875-9092

QUALITY CONTROL DATA

Project: OWRF EE 020414
Pace Project No.: 92188853

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1136233 1136234

Parameter	Units	92188853001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
4-Chlorophenylphenyl ether	ug/L	ND	100	100	75.4	68.2	75	68	19-102	10	30	
4-Nitroaniline	ug/L	ND	200	200	89.5	90.1	45	45	29-110	1	30	
4-Nitrophenol	ug/L	ND	500	500	237	232	47	46	10-110	2	30	
Acenaphthene	ug/L	ND	100	100	61.8	54.9	62	55	17-100	12	30	
Acenaphthylene	ug/L	ND	100	100	63.2	56.7	63	57	21-100	11	30	
Aniline	ug/L	ND	100	100	ND	ND	0	0	10-110		30	M1
Anthracene	ug/L	ND	100	100	67.9	62.1	68	62	24-109	9	30	
Benzo(a)anthracene	ug/L	ND	100	100	73.6	68.3	74	68	22-117	7	30	
Benzo(a)pyrene	ug/L	ND	100	100	71.2	64.4	71	64	23-104	10	30	
Benzo(b)fluoranthene	ug/L	ND	100	100	79.4	72.3	79	72	23-103	9	30	
Benzo(g,h,i)perylene	ug/L	ND	100	100	81.8	76.3	82	76	18-111	7	30	
Benzo(k)fluoranthene	ug/L	ND	100	100	80.3	71.7	80	72	22-113	11	30	
Benzoic Acid	ug/L	ND	500	500	205	193	41	39	10-110	6	30	
Benzyl alcohol	ug/L	ND	200	200	104	88.6	52	44	19-101	16	30	
bis(2-Chloroethoxy)methane	ug/L	ND	100	100	54.6	48.6	55	49	22-110	12	30	
bis(2-Chloroethyl) ether	ug/L	ND	100	100	53.3	47.1	53	47	16-110	12	30	
bis(2-Chloroisopropyl) ether	ug/L	ND	100	100	45.1	39.5	45	40	14-110	13	30	
bis(2-Ethylhexyl)phthalate	ug/L	41.1	100	100	128	123	87	82	23-102	4	30	
Butylbenzylphthalate	ug/L	ND	100	100	76.1	68.7	76	69	25-110	10	30	
Chrysene	ug/L	ND	100	100	79.9	73.4	80	73	23-115	8	30	
Di-n-butylphthalate	ug/L	ND	100	100	74.5	67.2	74	67	26-110	10	30	
Di-n-octylphthalate	ug/L	ND	100	100	61.3	57.5	61	58	22-110	6	30	
Dibenz(a,h)anthracene	ug/L	ND	100	100	83.0	76.4	83	76	21-112	8	30	
Dibenzofuran	ug/L	ND	100	100	60.3	54.7	60	55	19-102	10	30	
Diethylphthalate	ug/L	ND	100	100	70.1	62.7	70	63	29-110	11	30	
Dimethylphthalate	ug/L	ND	100	100	67.5	61.2	67	61	27-110	10	30	
Fluoranthene	ug/L	ND	100	100	81.6	76.9	82	77	23-112	6	30	
Fluorene	ug/L	ND	100	100	71.1	65.3	71	65	22-104	9	30	
Hexachloro-1,3-butadiene	ug/L	ND	100	100	47.3	44.3	47	44	10-110	7	30	
Hexachlorobenzene	ug/L	ND	100	100	78.2	69.6	78	70	21-116	12	30	
Hexachlorocyclopentadiene	ug/L	ND	100	100	58.9	57.4	59	57	10-110	3	30	
Hexachloroethane	ug/L	ND	100	100	41.9	38.5	42	39	10-110	8	30	
Indeno(1,2,3-cd)pyrene	ug/L	ND	100	100	84.5	78.2	84	78	20-113	8	30	
Isophorone	ug/L	ND	100	100	61.6	55.2	62	55	50-150	11	30	
N-Nitroso-di-n-propylamine	ug/L	ND	100	100	48.3	41.6	48	42	21-105	15	30	
N-Nitrosodimethylamine	ug/L	ND	100	100	38.6	34.6	39	35	10-110	11	30	
N-Nitrosodiphenylamine	ug/L	ND	100	100	43.8	40.7	44	41	23-107	7	30	
Naphthalene	ug/L	ND	100	100	55.8	50.9	56	51	10-110	9	30	
Nitrobenzene	ug/L	ND	100	100	62.1	58.5	62	58	20-110	6	30	
Pentachlorophenol	ug/L	ND	200	200	161	160	81	80	10-118	1	30	
Phenanthrene	ug/L	ND	100	100	75.9	69.1	76	69	24-106	9	30	
Phenol	ug/L	ND	100	100	38.1	31.5	38	31	12-110	19	30	
Pyrene	ug/L	ND	100	100	80.2	71.8	80	72	24-114	11	30	
2,4,6-Tribromophenol (S)	%						108	99	27-110			
2-Fluorobiphenyl (S)	%						58	51	27-110			
2-Fluorophenol (S)	%						41	36	12-110			
Nitrobenzene-d5 (S)	%						53	48	21-110			

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: OWRF EE 020414
Pace Project No.: 92188853

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1136233 1136234

Parameter	Units	92188853001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Phenol-d6 (S)	%						36	30	10-110			
Terphenyl-d14 (S)	%						83	74	31-107			

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QUALITY CONTROL DATA

Project: OWRF EE 020414
Pace Project No.: 92188853

QC Batch: WETA/18057 | Analysis Method: EPA 420.4
QC Batch Method: EPA 420.4 | Analysis Description: 420.4 Phenolics
Associated Lab Samples: 92188853003

METHOD BLANK: 1138467 | Matrix: Water
Associated Lab Samples: 92188853003

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Phenol	mg/L	ND	0.0050	02/17/14 14:56	

LABORATORY CONTROL SAMPLE: 1138468

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Phenol	mg/L	.05	0.048	97	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1138469 1138470

Parameter	Units	92189181001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Phenol	mg/L	0.11	.05	.05	0.13	0.091	42	-34	90-110	35	20	M6,R1

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1138471 1138472

Parameter	Units	92188922002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Phenol	mg/L	0.068	.05	.05	0.085	0.10	33	64	90-110	16	20	M1

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QUALITY CONTROL DATA

Project: OWRF EE 020414
Pace Project No.: 92188853

QC Batch: WETA/18044
QC Batch Method: SM 4500-CN-E
Analysis Method: SM 4500-CN-E
Analysis Description: 4500CNE Cyanide, Total
Associated Lab Samples: 92188853005

METHOD BLANK: 1137797
Matrix: Water
Associated Lab Samples: 92188853005

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Cyanide	mg/L	ND	0.0050	02/15/14 15:24	

LABORATORY CONTROL SAMPLE: 1137798

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Cyanide	mg/L	.1	0.12	117	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1137799 1137800

Parameter	Units	92189028001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Cyanide	mg/L	0.013	.1	.1	0.12	0.12	108	106	75-125	2	20	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 1137801 1137802

Parameter	Units	92188914002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Cyanide	mg/L	0.0051	.1	.1	0.0085	0.0082	3	3	75-125	4	20	M1

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QUALIFIERS

Project: OWRF EE 020414
Pace Project No.: 92188853

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to changes in sample preparation, dilution of the sample aliquot, or moisture content.

ND - Not Detected at or above adjusted reporting limit.

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PRL - Pace Reporting Limit.

RL - Reporting Limit.

S - Surrogate

1,2-Diphenylhydrazine (8270 listed analyte) decomposes to Azobenzene.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Acid preservation may not be appropriate for 2-Chloroethylvinyl ether, Styrene, and Vinyl chloride.

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

LABORATORIES

PASI-A	Pace Analytical Services - Asheville
PASI-C	Pace Analytical Services - Charlotte

ANALYTE QUALIFIERS

B	Analyte was detected in the associated method blank.
L0	Analyte recovery in the laboratory control sample (LCS) was outside QC limits.
M1	Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery.
M6	Matrix spike and Matrix spike duplicate recovery not evaluated against control limits due to sample dilution.
R1	RPD value was outside control limits.
S0	Surrogate recovery outside laboratory control limits.

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: OWRF EE 020414
Pace Project No.: 92188853

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
92188853004	**140204131A**	EPA 3010	MPRP/15207	EPA 6010	ICP/13800
92188853004	**140204131A**	EPA 7470	MERP/6165	EPA 7470	MERC/5947
92188853001	**1402041314**	EPA 3510	OEXT/25871	EPA 8270	MSSV/8741
92188853002	**1402041315**	EPA 8260	MSV/25727		
92188853003	**1402041317**	EPA 420.4	WETA/18057		
92188853005	**1402041319**	SM 4500-CN-E	WETA/18044		

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Pace Analytical	Sample Condition Upon Receipt (SCUR)	Page 1 of 2
	Document Number: F-CHR-CS-03-rev.13	Issuing Authority: Pace Huntersville Quality Office

Client Name: Greenway Engineering

Courier: ☐ Fed Ex ☐ UPS ☐ USPS ☐ Client ☐ Commercial ☑ Pace Other_____

Custody Seal on Cooler/Box Present: ☑ yes ☐ no Seals intact: ☑ yes ☐ no

Optional
Proj. Due Date:
Proj. Name:

Packing Material: ☐ Bubble Wrap ☑ Bubble Bags ☐ None ☐ Other_____

Thermometer Used: IR Gun T1102 T1301 Type of Ice: Wet Blue None ☑ Samples on ice, cooling process has begun

Temp Correction Factor T1102: No Correction T1301: No Correction

Corrected Cooler Temp.: 4.1 °C Biological Tissue is Frozen: Yes No N/A

Date and Initials of person examining contents: KW 2/6/14

Temp should be above freezing to 6°C

		Comments:
Chain of Custody Present:	☑Yes ☐No ☐N/A	1.
Chain of Custody Filled Out:	☑Yes ☐No ☐N/A	2.
Chain of Custody Relinquished:	☑Yes ☐No ☐N/A	3.
Sampler Name & Signature on COC:	☑Yes ☐No ☐N/A	4.
Samples Arrived within Hold Time:	☑Yes ☐No ☐N/A	5.
Short Hold Time Analysis (<72hr):	☐Yes ☑No ☐N/A	6.
Rush Turn Around Time Requested:	☐Yes ☑No ☐N/A	7.
Sufficient Volume:	☑Yes ☐No ☐N/A	8.
Correct Containers Used:	☑Yes ☐No ☐N/A	9.
-Pace Containers Used:	☑Yes ☐No ☐N/A	
Containers Intact:	☑Yes ☐No ☐N/A	10.
Filtered volume received for Dissolved tests	☐Yes ☐No ☑N/A	11.
Sample Labels match COC:	☑Yes ☐No ☐N/A	12.
-Includes date/time/ID/Analysis Matrix:_____		
All containers needing preservation have been checked.	☑Yes ☐No ☐N/A	13.
All containers needing preservation are found to be in compliance with EPA recommendation.	☑Yes ☐No ☐N/A	
exceptions: VOA, coliform, TOC, O&G, WI-DRO (water)	☑Yes ☐No	
Samples checked for dechlorination:	☑Yes ☐No ☐N/A	14.
Headspace in VOA Vials (>6mm):	☐Yes ☑No ☐N/A	15.
Trip Blank Present:	☐Yes ☐No ☑N/A	16.
Trip Blank Custody Seals Present	☐Yes ☐No ☑N/A	
Pace Trip Blank Lot # (if purchased):_____		

Client Notification/ Resolution: Field Data Required? Y / N

Person Contacted: _____ Date/Time: _____

Comments/ Resolution: _____

SCURF Review:	AMB	Date:	2-6-14
SRF Review:	MD	Date:	2-6-14

Note: Whenever there is a discrepancy affecting North Carolina compliance samples, a copy of this form will be sent to the North Carolina DEHNR Certification Office (i.e out of hold, incorrect preservative, out of temp, incorrect containers)

Place label here

OR

Handwrite project number (if no label available)

Pace Analytical
www.pacelabs.com

CHAIN-OF-CUSTODY / Analytical Request Document

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.

Page: 1 of 1

Section A Required Client Information:

Company:	Greenway Engineering
Address:	151 Windy Hill Lane
	Winchester, VA 22602
Email To:	akaval@greenwayeng.com
Phone: 540-662-4185	Fax: 540-722-9528
Requested Due Date/TAT:	10 working days

Section B Required Project Information:

Report To:	Andrea R. Kaval
Copy To:	
Purchase Order No.:	1649
Project Name:	OWRF EE 020414
Project Number:	

Section C Invoice Information:

Attention:	Andrea R. Kaval
Company Name:	Greenway Engineering
Address:	151 Windy Hill Ln.
Pace Quote Reference:	92061009.16
Pace Project Manager:	Tabitha Dacal
Pace Profile #:	3345-27

REGULATORY AGENCY

☑ NPDES ☐ GROUND WATER ☐ DRINKING WATER
☐ UST ☐ RCRA ☐ OTHER _____

Site Location STATE: VA

Section D Required Client Information

SAMPLE ID (A-Z, 0-9 / ,-) Sample IDs MUST BE UNIQUE

Valid Matrix Codes

MATRIX	CODE
DRINKING WATER	DW
WATER	WT
WASTE WATER	WW
PRODUCT	P
SOIL/SOLID	SL
OIL	OL
WIPE	WP
AIR	AR
OTHER	OT
TISSUE	TS

Requested Analysis Filtered (Y/N)

ITEM #	SAMPLE ID	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED Composite Start DATE	Composite Start TIME	Composite End/Grab DATE	Composite End/Grab TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Unpreserved	H_2SO_4	HNO_3	HCl	NaOH	$Na_2S_2O_3$	Methanol	Other	Analysis Test (Y/N)	SVOC's by 8270	VOC's by 8260	Phenol, Total (wet 420)	Metals * + Hg + Hardness	Cyanide, Total	Residual Chlorine (Y/N)	Pace Project No./ Lab I.D.
										Preservatives									N	N	N	N	N	N	
1	1402041314	WW	C	2/3/14	7:30	02/04/14	7:30	\	2	x									x					N	001
2	1402041315	WW	C	2/3/14	7:30	02/04/14	7:30	\	3				x							x				N	002
3	1402041317	WW	C	2/3/14	7:30	02/04/14	7:30	\	1		x										x			N	003
4	140204131A	WW	C	2/3/14	7:30	02/04/14	7:30	\	1			x										x		N	004
5	1402041319	WW	C	2/3/14	7:30	02/04/14	7:30	\	1					x									x	N	005
6																									
7																									
8																									
9																									
10																									
11																									
12																									

92188853

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS			
*Sb, As, Be, Co, Cr, Cu, Pb, Ni, Se, Ag, Tl, Zn Good - To Fed Ex	Andrea R Kaval	2/5/14	1800	Zack Koehler Pace	2/6/14	1620	4.1	Y	N	Y

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: Annverda P. Laird

SIGNATURE of SAMPLER: Cont'd from GWE COC

DATE Signed (MM/DD/YY): Cont'd from GWE COC

Temp in °C | Received on Ice (Y/N) | Custody Sealed Cooler (Y/N) | Samples Intact (Y/N)

*Important Note: By signing this form you are accepting Pace's NET 30 day payment terms and agreeing to late charges of 1.5% per month for any invoices not paid within 30 days.

F-ALL-Q-020rev.07, 15-Feb-2007

Client: City of Winchester
Project ID: WINC1101
Client Sample ID: Opequon WRF Outfall 001
Permit No: VA0065552
Sample Period: 1/17/11 to 1/20/11

Coastal Bioanalysts, Inc.

Report of Analysis: Whole Effluent Toxicity (WET)

Submitted To:	Prepared By:
Ms. Jennifer Morgan Public Utilities Department City of Winchester P.O. Box 75 Winchester, VA 22604	Coastal Bioanalysts, Inc. 6400 Enterprise Court Gloucester, VA 23061 (804) 694-8285 www.coastalbio.com Contact: Peter F. De Lisle, Technical Director

Chronic Test Results*

Species-Test Method	Endpoint	NOEC	LOEC	ChrV	PMSD	$T.U._C$	IC25	48-h LC50	LC50 95% C.L.	$T.U._{Ac}$
C. dubia	Survival	100	>100	>100	N/A	1.00	N/A	>100	N/A	<1.00
EPA 1002.0	Reproduction	100	>100	>100	46	1.00	>100	N/A	N/A	N/A
P. promelas	Survival	100	>100	>100	N/A	1.00	N/A	>100	N/A	<1.00
EPA 1000.0	Biomass	100	>100	>100	16	1.00	>100	N/A	N/A	N/A

*Note: Details regarding test conduct and data analysis provided in attached bench sheets and printouts as applicable.

Chronic Test Biological Summary Data		Sample Concentration (%)					
Species-Method	Endpoint	Control	16.0	32.0	64.0	82.0	100
C. dubia EPA 1002.0	Survival (%):	100	80	80	100	100	90
	Repro (# young):	16.3	12.4	12.3	15.5	15.9	16.7
P. promelas EPA 1000.0	Survival (%):	100	100	95	95	98	100
	Biomass (mg):	0.931	0.854	0.833	0.835	0.791	0.818

Test Information Species-Method	Start Date/Time End Date/Time	Organism Source	Hatch/Harvest Date/Time	Acclimation Temp.	Acclimation Water	Test Aerated?
C. dubia EPA 1002.0	1/18/11 1200 1/25/11 1130	CBI Stock	1/17/11 1640 1/17/11 2200	25° C	Mod. Hard Syn. FW	No
P. promelas EPA 1000.0	1/18/11 1215 1/25/11 1225	CBI Stock	1/17/11 1630 1/18/11 1030	25° C	Mod. Hard Syn. FW	No

Sample/Dilution Water Data	Chronic Test			
	Sample		Dilution Water*	
Water Quality Parameter (Units)	Mean	Std. Dev.	Mean	Std. Dev.
Arrival Temperature (°C)	1	0	N/A	N/A
Use Temperature (°C)	25	0.4	25	0
Conductivity (µS/cm)	1327	89	302	5.0
pH (S.U.)	8.02	0.09	7.75	0.05
Dissolved Oxygen (mg/l)	8.2	0	8.2	0
Total Hardness (mg/l as $CaCO_3$)	350	13	91	3.2
Alkalinity (mg/l as $CaCO_3$)	256	16	61	0.5
Total Residual Chlorine (mg/l)	<Q.L.	0	N/A	N/A
Ammonia (mg/l NH_3-N)	<1.0	0	N/A	N/A

*Dilution water = Moderately hard synthetic freshwater

VELAP# 460030
EPA# VA01116

Client: City of Winchester
Project ID: WINC1101
Client Sample ID: Opequon WRF Outfall 001
Permit No: VA0065552
Sample Period: 1/17/11 to 1/20/11

Coastal Bioanalysts, Inc.

Sample Aging/Use/Pretreatment				
CBI Sample I.D.	Collection Date/Time	Date(s)/Time(s) 1st Used in Tests	Date(s)/Time(s) Used in Renewals	Sample Adjustments
WINC1101-A	1/17/11 0730	1/18/11 1200, 1215	N/A	Aerated 2 min
WINC1101-B	1/18/11 0730	1/19/11 1245, 1325	1/20/11 1300, 1315	Aerated 2 min
WINC1101-C	1/20/11 0730	1/21/11 1540, 1600	1/22/11 1240, 1400 1/23/11 1230, 1400 1/24/11 1230, 1345	Aerated 0.5-2 min

Chronic Test Water Quality (Mean/Std. Dev.)												
Test:	*C. dubia* 1002.0						*P. promelas* 1000.0					
% Conc:	Cont.	16.0	32.0	64.0	82.0	100	Cont.	16.0	32.0	64.0	82.0	100
Temp. (°C)	25 0	25 0	25 0	25 0	25 0	25 0	25 0	25 0	25 0	25 0	25 0	25 0
D.O. (mg/l)	7.8 0.5	7.8 0.5	7.9 0.4	7.9 0.4	7.9 0.4	7.9 0.5	7.5 0.8	7.5 0.9	7.4 0.9	7.4 0.8	7.3 0.8	7.3 0.9
pH (S.U.)	7.69 0.09	7.88 0.15	8.05 0.13	8.15 0.15	8.21 0.17	8.23 0.20	7.49 0.21	7.65 0.25	7.80 0.19	7.96 0.13	8.02 0.07	8.06 0.07
Cond. (µS/cm)	303 7.8	466 9.6	635 21	955 31	1125 46	1336 66	305 8.0	469 11	636 21	957 32	1155 43	1339 51

Chronic Test QA/QC Reference Toxicant: KCl Units: mg/l Test Organism Source: CBI Stock Cultures									
Species-Method (Ref. Test Date)	Data Source	% Survival		Reproduction (# Young) or Biomass (mg)					RTT in Control?
		Cont.	NOEC	Cont.	NOEC	PMSD	IC25	IC25 A.L.	
C. dubia 1002.0 (1/5/11-1/11/11)	RTT	100	500	17.8	250	30	315	N/A	Yes
	CC	98	500	23.7	250	25	311	231-390	
P. promelas 1000.0 (1/4/11-1/11/11)	RTT	100	500	0.87	500	7	621	N/A	Yes
	CC	99	500	0.73	500	15	598	564-631	

Note: RTT = Reference Toxicant Test, CC = Control Chart, Cont. = Control group.

The results of analysis contained within this report relate only to the sample as received in the laboratory. This report shall not be reproduced except in full without written approval from the laboratory. Unless noted below, these test results meet all requirements of NELAP.

APPROVED:

Peter F. De Lisle, Ph.D.
Technical Director

1/26/11
Date

Deviations from, additions to, or exclusions from the test method, non-standard conditions or data qualifiers and, as appropriate, a statement of compliance/non-compliance: **NONE**

GLOSSARY OF TERMS AND ABBREVIATIONS

VELAP# 460030
EPA# VA01116

Client: City of Winchester
Project ID: WINC1101
Client Sample ID: Opequon WRF Outfall 001
Permit No: VA0065552
Sample Period: 1/17/11 to 1/20/11

Coastal Bioanalysts, Inc.

A.L. (Acceptance Limits): The results of a given reference toxicant test are compared to the control chart mean value ± 2 standard deviations. These limits approximate the 95% probability limits for the "true" reference toxicant value.

Chronic Value (ChrV): The geometric mean of the NOEC and LOEC. Units are same as test concentration units.

C.L. (Confidence Limits): These are the probability limits, based on the data set and statistical model employed, that the "true value" lies within the limits specified. Typically limits are based on 95% or 99% probabilities.

Control chart: A cumulative summary chart of results from QC tests with reference toxicants. The results of a given reference toxicant test are compared to the control chart mean value and 95% Acceptance Limits (A.L.) (mean ± 2 standard deviations).

IC25: The concentration of sample or chemical, calculated from the data set using statistical models, causing a 25% reduction in test organism growth, reproduction, etc. The lower the IC25, the more toxic the chemical or sample. Units are same as test concentration units.

LC50: The concentration of sample or chemical, calculated from the data set using statistical models, causing a 50% reduction in test organism survival. The lower the LC50, the more toxic the chemical or sample. Units are same as test concentration units. Note: The LC50 value must always be associated with the duration of exposure. Thus 48-h LC50, 96-h LC50, etc. are calculated.

LOEC: Lowest-observable-effect-concentration. The lowest concentration of sample or chemical in a chronic test dilution series in which the test organisms exhibit a statistically significant reduction in any of the test end points (e.g. growth, survival, reproduction) compared to control organisms. Units are same as test concentration units.

PMSD: Percent Minimum Significant Difference: The minimum difference which can exist between a test treatment and the controls in a particular test and be statistically significant; a measure of test sensitivity. The lower the PMSD the more sensitive the test.

N/A: Not applicable.

N/D: Not determined or measured.

NOAEC: No-observable-acute-effect-concentration. The highest concentration of sample or chemical in an acute test dilution series in which the test organisms exhibit no statistically significant reduction in the test end point (e.g. survival) compared to control organisms. Units are same as test concentration units.

NOEC: No-observable-effect-concentration. The highest concentration of sample or chemical in a chronic test dilution series in which the test organisms exhibit no statistically significant reduction in any of the test end points (e.g. growth, survival, reproduction) compared to control organisms. Some regulatory definitions also require that the NOEC be less than the LOEC. Units are same as test concentration units.

Q.L.: Quantitation Limit. Level, concentration, or quantity of a target variable (analyte) that can be reported at a specified degree of confidence.

T.U.: Toxic units. Expresses the relative toxicity of an effluent in such a manner that the larger the toxic unit value the more toxic the effluent. $T.U._{Ac}$ = 100/LC50. $T.U._{Chr}$ = 100/NOEC or 100/IC25. A dimensionless unit.

VELAP# 460030
EPA# VA01116

BASELINE TEST INFO – *Ceriodaphnia* 3-BROOD TEST

Coastal Bioanalysts, Inc
Form ETF0051E
Effective Date: 2/1/09

TEST ORGANISM INFO

Species: *Ceriodaphnia dubia*

Source: CBI Stock Cultures

Acclimation: **Water:** Mod. hard syn. FW ✓

Other: _____

Temp. (°C): 25

Brood Release: (start date/time) 1/17/11 1640

Brood Release: (end date/time) 1/17/11 2200

Feeding Prior to Test: *Selenastrum* + YCT mix[1]

Feeding During Test: *Selenastrum* + YCT mix[1]

TEST DESIGN

Test Chamber: ~30 ml glass vial ✓

Other _____

Solution Vol: 15 ml ✓

Other _____

Illumination: 16:8 L:D 10-20 uE/m²/s

Number of Replicates/Concentration: 10

Initial Number of Daphnids/Replicate: 1

Template No. 5

TEST SET UP (Day 0)

Set Up Date: 1/18/11

Set Up By: AG

Time Water Added: 1140

Time Animals Added: 1200

NOTES

[1]Food added to dilution water and test solutions for a final feeding level of 0.2 ml of YCT + algae mix per chamber (chamber algae concentration 2-2.3E5 cells/ml)

Peer Review by: PB Date: 1/20/11

Test I.D. WINC1101 -CCD

Client: City of Winchester
Project ID: WINC1102
Client Sample ID: Opequon WRF Outfall 001
Permit No: VA0065552
Sample Period: 4/11/11 to 4/14/11

Coastal Bioanalysts, Inc.

Report of Analysis: Whole Effluent Toxicity (WET)

Submitted To:	Prepared By:
Ms. Jennifer Morgan Public Utilities Department City of Winchester P.O. Box 75 Winchester, VA 22604	Coastal Bioanalysts, Inc. 6400 Enterprise Court Gloucester, VA 23061 (804) 694-8285 www.coastalbio.com Contact: Peter F. De Lisle, Technical Director

Chronic Test Results*

Species-Test Method	Endpoint	NOEC	LOEC	ChrV	PMSD	$T.U._C$	IC25	48-h LC50	LC50 95% C.L.	$T.U._{Ac}$
C. dubia	Survival	100	>100	>100	N/A	1.00	N/A	>100	N/A	<1.00
EPA 1002.0	Reproduction	100	>100	>100	24	1.00	>100	N/A	N/A	N/A
P. promelas	Survival	100	>100	>100	N/A	1.00	N/A	>100	N/A	<1.00
EPA 1000.0	Biomass	100	>100	>100	14	1.00	>100	N/A	N/A	N/A

*Note: Details regarding test conduct and data analysis provided in attached bench sheets and printouts as applicable.

Chronic Test Biological Summary Data		Sample Concentration (%)					
Species-Method	Endpoint	Control	16.0	32.0	64.0	82.0	100
C. dubia EPA 1002.0	Survival (%):	100	100	100	100	100	100
	Repro (# young):	24.1	23.0	19.2	20.7	20.6	20.2
P. promelas EPA 1000.0	Survival (%):	100	98	100	98	100	100
	Biomass (mg):	0.739	0.746	0.794	0.728	0.710	0.681

Test Information Species-Method	Start Date/Time End Date/Time	Organism Source	Hatch/Harvest Date/Time	Acclimation Temp.	Acclimation Water	Test Aerated?
C. dubia EPA 1002.0	4/12/11 1450 4/18/11 1450	CBI Stock	4/11/11 1625 4/11/11 2045	25° C	Mod. Hard Syn. FW	No
P. promelas EPA 1000.0	4/12/11 1520 4/19/11 1445	CBI Stock	4/11/11 1630 4/12/11 0900	25° C	Mod. Hard Syn. FW	No

Sample/Dilution Water Data	Chronic Test			
	Sample		Dilution Water*	
Water Quality Parameter (Units)	Mean	Std. Dev.	Mean	Std. Dev.
Arrival Temperature (°C)	1	0	N/A	N/A
Use Temperature (°C)	25	0	25	0
Conductivity (µS/cm)	956	115	298	5.4
pH (S.U.)	8.06	0.12	7.67	0.05
Dissolved Oxygen (mg/l)	8.2	0	8.2	0
Total Hardness (mg/l as $CaCO_3$)	291	24	95	4.2
Alkalinity (mg/l as $CaCO_3$)	205	22	59	1.6
Total Residual Chlorine (mg/l)	<Q.L.	0	N/A	N/A
Ammonia (mg/l NH_3-N)	<1.0	0	N/A	N/A

*Dilution water = Moderately hard synthetic freshwater

VELAP# 460030
EPA# VA01116

Client: City of Winchester
Project ID: WINC1102
Client Sample ID: Opequon WRF Outfall 001
Permit No: VA0065552
Sample Period: 4/11/11 to 4/14/11

Coastal Bioanalysts, Inc.

Sample Aging/Use/Pretreatment				
CBI Sample I.D.	Collection Date/Time	Date(s)/Time(s) 1st Used in Tests	Date(s)/Time(s) Used in Renewals	Sample Adjustments
WINC1102-A	4/11/11 0730	4/12/11 1450, 1520	N/A	Aerated 1.5 min
WINC1102-B	4/12/11 0730	4/13/11 1415, 1435	4/14/11 1335, 1410	Aerated 1.5-2 min
WINC1102-C	4/14/11 0730	4/15/11 1425, 1520	4/16/11 1410, 1430 4/17/11 1345, 1450 4/18/11 1330	Aerated 2-2.5 min

Chronic Test Water Quality (Mean/Std. Dev.)												
Test:	*C. dubia* 1002.0						*P. promelas* 1000.0					
% Conc:	Cont.	16.0	32.0	64.0	82.0	100	Cont.	16.0	32.0	64.0	82.0	100
Temp.	25	25	25	25	25	25	25	25	25	25	25	25
(°C)	0.3	0.3	0.3	0.4	0.4	0.4	0.3	0.3	0.3	0.4	0.4	0.4
D.O.	8.0	8.0	8.0	8.1	8.0	8.1	7.7	7.6	7.6	7.5	7.4	7.3
(mg/l)	0.3	0.3	0.3	0.2	0.2	0.2	0.6	0.6	0.6	0.7	0.7	1.0
pH	7.65	7.81	7.94	8.10	8.16	8.19	7.41	7.53	7.69	7.81	7.87	7.91
(S.U.)	0.06	0.07	0.08	0.12	0.14	0.15	0.23	0.27	0.27	0.21	0.17	0.16
Cond.	295	394	492	691	801	916	296	395	497	692	807	926
(µS/cm)	9.9	15	33	75	88	118	5.7	19	37	67	89	107

Chronic Test QA/QC Reference Toxicant: KCl Units: mg/l Test Organism Source: CBI Stock Cultures									
Species-Method	Data	% Survival		Reproduction (# Young) or Biomass (mg)					RTT in
(Ref. Test Date)	Source	Cont.	NOEC	Cont.	NOEC	PMSD	IC25	IC25 A.L.	Control?
C. dubia 1002.0	RTT	100	500	27.9	250	29	290	N/A	Yes
(4/1/11-4/7/11)	CC	99	500	23.8	250	25	309	230-389	
P. promelas 1000.0	RTT	95	500	0.65	500	11	639	N/A	Yes
(4/1/11-4/8/11)	CC	98	500	0.77	500	16	596	556-636	

Note: RTT = Reference Toxicant Test, CC = Control Chart, Cont. = Control group.

The results of analysis contained within this report relate only to the sample as received in the laboratory. This report shall not be reproduced except in full without written approval from the laboratory. Unless noted below, these test results meet all requirements of NELAP.

APPROVED:

Peter F. De Lisle, Ph.D.
Technical Director

4/22/11
Date

Deviations from, additions to, or exclusions from the test method, non-standard conditions or data qualifiers and, as appropriate, a statement of compliance/non-compliance: **NONE**

GLOSSARY OF TERMS AND ABBREVIATIONS

VELAP# 460030
EPA# VA01116

Coastal Bioanalysts, Inc.

A.L. (Acceptance Limits): The results of a given reference toxicant test are compared to the control chart mean value ± 2 standard deviations. These limits approximate the 95% probability limits for the "true" reference toxicant value.

Chronic Value (ChrV): The geometric mean of the NOEC and LOEC. Units are same as test concentration units.

C.L. (Confidence Limits): These are the probability limits, based on the data set and statistical model employed, that the "true value" lies within the limits specified. Typically limits are based on 95% or 99% probabilities.

Control chart: A cumulative summary chart of results from QC tests with reference toxicants. The results of a given reference toxicant test are compared to the control chart mean value and 95% Acceptance Limits (A.L.) (mean ± 2 standard deviations).

IC25: The concentration of sample or chemical, calculated from the data set using statistical models, causing a 25% reduction in test organism growth, reproduction, etc. The lower the IC25, the more toxic the chemical or sample. Units are same as test concentration units.

LC50: The concentration of sample or chemical, calculated from the data set using statistical models, causing a 50% reduction in test organism survival. The lower the LC50, the more toxic the chemical or sample. Units are same as test concentration units. Note: The LC50 value must always be associated with the duration of exposure. Thus 48-h LC50, 96-h LC50, etc. are calculated.

LOEC: Lowest-observable-effect-concentration. The lowest concentration of sample or chemical in a chronic test dilution series in which the test organisms exhibit a statistically significant reduction in any of the test end points (e.g. growth, survival, reproduction) compared to control organisms. Units are same as test concentration units.

PMSD: Percent Minimum Significant Difference: The minimum difference which can exist between a test treatment and the controls in a particular test and be statistically significant; a measure of test sensitivity. The lower the PMSD the more sensitive the test.

N/A: Not applicable.

N/D: Not determined or measured.

NOAEC: No-observable-acute-effect-concentration. The highest concentration of sample or chemical in an acute test dilution series in which the test organisms exhibit no statistically significant reduction in the test end point (e.g. survival) compared to control organisms. Units are same as test concentration units.

NOEC: No-observable-effect-concentration. The highest concentration of sample or chemical in a chronic test dilution series in which the test organisms exhibit no statistically significant reduction in any of the test end points (e.g. growth, survival, reproduction) compared to control organisms. Some regulatory definitions also require that the NOEC be less than the LOEC. Units are same as test concentration units.

Q.L.: Quantitation Limit. Level, concentration, or quantity of a target variable (analyte) that can be reported at a specified degree of confidence.

T.U.: Toxic units. Expresses the relative toxicity of an effluent in such a manner that the larger the toxic unit value the more toxic the effluent. $T.U._{Ac}$ = 100/LC50. $T.U._{Chr}$ = 100/NOEC or 100/IC25. A dimensionless unit.

VELAP# 460030
EPA# VA01116

Client: City of Winchester
Project ID: WINC1103
Client Sample ID: Opequon WRF Outfall 001
Permit No: VA0065552
Sample Period: 7/11/11 to 7/14/11

Coastal Bioanalysts, Inc.

Report of Analysis: Whole Effluent Toxicity (WET)

Submitted To:	Prepared By:
Mr. David Smith Public Utilities Department City of Winchester P.O. Box 75 Winchester, VA 22604	Coastal Bioanalysts, Inc. 6400 Enterprise Court Gloucester, VA 23061 (804) 694-8285 www.coastalbio.com Contact: Peter F. De Lisle, Technical Director

Chronic Test Results*

Species-Test Method	Endpoint	NOEC	LOEC	ChrV	PMSD	$T.U._C$	IC25	48-h LC50	LC50 95% C.L.	$T.U._{Ac}$
C. dubia	Survival	100	>100	>100	N/A	1.00	N/A	>100	N/A	<1.00
EPA 1002.0	Reproduction	100	>100	>100	19	1.00	>100	N/A	N/A	N/A
P. promelas	Survival	100	>100	>100	N/A	1.00	N/A	>100	N/A	<1.00
EPA 1000.0	Biomass	100	>100	>100	18	1.00	>100	N/A	N/A	N/A

*Note: Details regarding test conduct and data analysis provided in attached bench sheets and printouts as applicable.

Chronic Test Biological Summary Data		Sample Concentration (%)					
Species-Method	Endpoint	Control	16.0	32.0	64.0	82.0	100
C. dubia EPA 1002.0	Survival (%):	100	100	100	90	100	100
	Repro (# young):	27.6	32.3	27.9	30.5	32.7	30.5
P. promelas EPA 1000.0	Survival (%):	98	98	98	98	98	100
	Biomass (mg):	0.839	0.698	0.754	0.755	0.734	0.709

Test Information Species-Method	Start Date/Time End Date/Time	Organism Source	Hatch/Harvest Date/Time	Acclimation Temp.	Acclimation Water	Test Aerated?
C. dubia EPA 1002.0	7/12/11 1210 7/18/11 1010	CBI Stock	7/11/11 1455 7/11/10 1625	25° C	Mod. Hard Syn. FW	No
P. promelas EPA 1000.0	7/12/11 1215 7/19/11 1230	CBI Stock	7/11/11 1630 7/12/11 1045	25° C	Mod. Hard Syn. FW	No

Sample/Dilution Water Data	Chronic Test			
	Sample		Dilution Water*	
Water Quality Parameter (Units)	Mean	Std. Dev.	Mean	Std. Dev.
Arrival Temperature (°C)	1	0	N/A	N/A
Use Temperature (°C)	25	0.4	25	0
Conductivity (µS/cm)	1235	100	299	3.7
pH (S.U.)	7.92	0.09	7.63	0.03
Dissolved Oxygen (mg/l)	7.8	0.4	8.2	0
Total Hardness (mg/l as $CaCO_3$)	317	69	90	3.8
Alkalinity (mg/l as $CaCO_3$)	254	14	59	0.5
Total Residual Chlorine (mg/l)	<Q.L.	0	N/A	N/A
Ammonia (mg/l NH_3-N)	<1.0	0	N/A	N/A

*Dilution water = Moderately hard synthetic freshwater

VELAP# 460030
EPA# VA01116

Client: City of Winchester
Project ID: WINC1103
Client Sample ID: Opequon WRF Outfall 001
Permit No: VA0065552
Sample Period: 7/11/11 to 7/14/11

Coastal Bioanalysts, Inc.

Sample Aging/Use/Pretreatment				
CBI Sample I.D.	**Collection Date/Time**	**Date(s)/Time(s) 1st Used in Tests**	**Date(s)/Time(s) Used in Renewals**	**Sample Adjustments**
WINC1103-A	7/11/11 0730	7/12/11 1210, 1215	N/A	N/A
WINC1103-B	7/12/11 0730	7/13/11 1215, 1310	7/14/11 1130, 1150	N/A
WINC1103-C	7/14/11 0730	7/15/11 1305, 1350	7/16/11 1240, 1330 7/17/11 1105, 1205 7/18/11 1205	Aerated 0-2 min

Chronic Test Water Quality (Mean/Std. Dev.)												
Test:	*C. dubia* 1002.0						*P. promelas* 1000.0					
% Conc:	**Cont.**	**16.0**	**32.0**	**64.0**	**82.0**	**100**	**Cont.**	**16.0**	**32.0**	**64.0**	**82.0**	**100**
Temp.	25	25	25	25	25	25	25	25	25	25	25	25
(°C)	0	0	0	0	0	0	0.4	0.4	0.4	0.4	0.4	0.4
D.O.	8.3	8.4	8.6	8.6	8.6	8.6	7.6	7.6	7.6	7.6	7.6	7.7
(mg/l)	0.1	0.3	0.5	0.7	0.7	0.7	0.6	0.7	0.7	0.7	0.6	0.6
pH	7.81	8.04	8.16	8.22	8.23	8.24	7.43	7.60	7.81	7.93	7.99	8.02
(S.U.)	0.23	0.26	0.29	0.29	0.29	0.30	0.21	0.22	0.13	0.08	0.07	0.08
Cond.	295	444	598	892	1063	1232	296	450	605	904	1091	1255
(µS/cm)	4.5	17	26	51	73	75	2.7	12	24	39	60	69

Chronic Test QA/QC Reference Toxicant: KCl Units: mg/l Test Organism Source: CBI Stock Cultures									
Species-Method	**Data**	**% Survival**		**Reproduction (# Young) or Biomass (mg)**					**RTT in**
(Ref. Test Date)	**Source**	**Cont.**	**NOEC**	**Cont.**	**NOEC**	**PMSD**	**IC25**	**IC25 A.L.**	**Control?**
C. dubia 1002.0	RTT	100	500	33.6	250	22	384	N/A	Yes
(7/5/11-7/11/11)	CC	99	500	24.3	250	25	315	247-388	
P. promelas 1000.0	RTT	100	500	0.83	500	12	628	N/A	Yes
(7/5/11-7/12/11)	CC	97	500	0.77	500	16	605	557-652	

Note: RTT = Reference Toxicant Test, CC = Control Chart, Cont. = Control group.

The results of analysis contained within this report relate only to the sample as received in the laboratory. This report shall not be reproduced except in full without written approval from the laboratory. Unless noted below, these test results meet all requirements of NELAP.

APPROVED:

Peter F. De Lisle, Ph.D.
Technical Director

7/20/11
Date

Deviations from, additions to, or exclusions from the test method, non-standard conditions or data qualifiers and, as appropriate, a statement of compliance/non-compliance: **NONE**

GLOSSARY OF TERMS AND ABBREVIATIONS

A.L. (Acceptance Limits): The results of a given reference toxicant test are compared to the control chart mean value ± 2 standard deviations. These limits approximate the 95% probability limits for the "true" reference toxicant value.

VELAP# 460030
EPA# VA01116

Coastal Bioanalysts, Inc.

Chronic Value (ChrV): The geometric mean of the NOEC and LOEC. Units are same as test concentration units.

C.L. (Confidence Limits): These are the probability limits, based on the data set and statistical model employed, that the "true value" lies within the limits specified. Typically limits are based on 95% or 99% probabilities.

Control chart: A cumulative summary chart of results from QC tests with reference toxicants. The results of a given reference toxicant test are compared to the control chart mean value and 95% Acceptance Limits (A.L.) (mean $\pm$ 2 standard deviations).

IC25: The concentration of sample or chemical, calculated from the data set using statistical models, causing a 25% reduction in test organism growth, reproduction, etc. The lower the IC25, the more toxic the chemical or sample. Units are same as test concentration units.

LC50: The concentration of sample or chemical, calculated from the data set using statistical models, causing a 50% reduction in test organism survival. The lower the LC50, the more toxic the chemical or sample. Units are same as test concentration units. Note: The LC50 value must always be associated with the duration of exposure. Thus 48-h LC50, 96-h LC50, etc. are calculated.

LOEC: Lowest-observable-effect-concentration. The lowest concentration of sample or chemical in a chronic test dilution series in which the test organisms exhibit a statistically significant reduction in any of the test end points (e.g. growth, survival, reproduction) compared to control organisms. Units are same as test concentration units.

PMSD: Percent Minimum Significant Difference: The minimum difference which can exist between a test treatment and the controls in a particular test and be statistically significant; a measure of test sensitivity. The lower the PMSD the more sensitive the test.

N/A: Not applicable.

N/D: Not determined or measured.

NOAEC: No-observable-acute-effect-concentration. The highest concentration of sample or chemical in an acute test dilution series in which the test organisms exhibit no statistically significant reduction in the test end point (e.g. survival) compared to control organisms. Units are same as test concentration units.

NOEC: No-observable-effect-concentration. The highest concentration of sample or chemical in a chronic test dilution series in which the test organisms exhibit no statistically significant reduction in any of the test end points (e.g. growth, survival, reproduction) compared to control organisms. Some regulatory definitions also require that the NOEC be less than the LOEC. Units are same as test concentration units.

Q.L.: Quantitation Limit. Level, concentration, or quantity of a target variable (analyte) that can be reported at a specified degree of confidence.

T.U.: Toxic units. Expresses the relative toxicity of an effluent in such a manner that the larger the toxic unit value the more toxic the effluent. $T.U._{Ac}$ = 100/LC50. $T.U._{Chr}$ = 100/NOEC or 100/IC25. A dimensionless unit.

VELAP# 460030
EPA# VA01116

Client: City of Winchester
Project ID: WINC1104
Client Sample ID: Opequon WRF Outfall 001
Permit No: VA0065552
Sample Period: 10/3/11 to 10/6/11

Coastal Bioanalysts, Inc.

Report of Analysis: Whole Effluent Toxicity (WET)

Submitted To:	Prepared By:
Mr. David Smith Public Utilities Department City of Winchester P.O. Box 75 Winchester, VA 22604	Coastal Bioanalysts, Inc. 6400 Enterprise Court Gloucester, VA 23061 (804) 694-8285 www.coastalbio.com Contact: Peter F. De Lisle, Technical Director

Chronic Test Results*

Species-Test Method	Endpoint	NOEC	LOEC	ChrV	PMSD	$T.U._C$	IC25	48-h LC50	LC50 95% C.L.	$T.U._{Ac}$
C. dubia	Survival	100	>100	>100	N/A	1.00	N/A	>100	N/A	<1.00
EPA 1002.0	Reproduction	100	>100	>100	16	1.00	>100	N/A	N/A	N/A
P. promelas	Survival	100	>100	>100	N/A	1.00	N/A	>100	N/A	<1.00
EPA 1000.0	Biomass	100	>100	>100	15	1.00	>100	N/A	N/A	N/A

*Note: Details regarding test conduct and data analysis provided in attached bench sheets and printouts as applicable.

Chronic Test Biological Summary Data		Sample Concentration (%)					
Species-Method	Endpoint	Control	16.0	32.0	64.0	82.0	100
C. dubia EPA 1002.0	Survival (%):	100	100	100	100	100	100
	Repro (# young):	27.8	31.4	31.8	32.3	31.4	31.7
P. promelas EPA 1000.0	Survival (%):	98	100	98	98	100	100
	Biomass (mg):	0.816	0.804	0.835	0.794	0.817	0.860

Test Information Species-Method	Start Date/Time End Date/Time	Organism Source	Hatch/Harvest Date/Time	Acclimation Temp.	Acclimation Water	Test Aerated?
C. dubia EPA 1002.0	10/4/11 1320 10/10/11 1430	CBI Stock	10/3/11 1640 10/3/10 2030	25° C	Mod. Hard Syn. FW	No
P. promelas EPA 1000.0	10/4/11 1320 10/11/11 1255	CBI Stock	10/3/11 1630 10/4/11 1000	25° C	Mod. Hard Syn. FW	No

Sample/Dilution Water Data	Chronic Test			
	Sample		Dilution Water*	
Water Quality Parameter (Units)	Mean	Std. Dev.	Mean	Std. Dev.
Arrival Temperature (°C)	1	0	N/A	N/A
Use Temperature (°C)	25	0.4	25	0.4
Conductivity (µS/cm)	1086	73	298	4.7
pH (S.U.)	7.96	0.05	7.63	0.04
Dissolved Oxygen (mg/l)	8.2	0.1	8.2	0
Total Hardness (mg/l as $CaCO_3$)	311	3.1	96	4.2
Alkalinity (mg/l as $CaCO_3$)	222	4.6	58	1.9
Total Residual Chlorine (mg/l)	<Q.L.	0	N/A	N/A
Ammonia (mg/l NH_3-N)	<1.0	0	N/A	N/A

*Dilution water = Moderately hard synthetic freshwater

VELAP# 460030
EPA# VA01116

Client: City of Winchester
Project ID: WINC1104
Client Sample ID: Opequon WRF Outfall 001
Permit No: VA0065552
Sample Period: 10/3/11 to 10/6/11

Coastal Bioanalysts, Inc.

Sample Aging/Use/Pretreatment				
CBI Sample I.D.	**Collection Date/Time**	**Date(s)/Time(s) 1st Used in Tests**	**Date(s)/Time(s) Used in Renewals**	**Sample Adjustments**
WINC1104-A	10/3/11 0730	10/4/11 1320, 1320	N/A	Aerated 1 min
WINC1104-B	10/4/11 0730	10/5/11 1220, 1320	10/6/11 1330, 1340	Aerated 2 min
WINC1104-C	10/6/11 0730	10/7/11 1410, 1410	10/8/11 1230, 1305 10/9/11 1245, 1410 10/10/11 1140	Aerated 1-2 min

Chronic Test Water Quality (Mean/Std. Dev.)												
Test:	*C. dubia* 1002.0						*P. promelas* 1000.0					
% Conc:	**Cont.**	**16.0**	**32.0**	**64.0**	**82.0**	**100**	**Cont.**	**16.0**	**32.0**	**64.0**	**82.0**	**100**
Temp.	25	25	25	25	25	25	25	25	25	25	25	25
(°C)	0	0	0	0	0	0.3	0.5	0.5	0.5	0.5	0.5	0.5
D.O.	8.3	8.5	8.6	8.6	8.7	8.7	7.7	7.5	7.6	7.5	7.6	7.6
(mg/l)	0.2	0.3	0.4	0.5	0.6	0.6	0.6	0.7	0.7	0.7	0.6	0.6
pH	7.76	7.97	8.09	8.19	8.21	8.23	7.44	7.59	7.72	7.87	7.94	8.00
(S.U.)	0.23	0.24	0.24	0.24	0.23	0.23	0.14	0.18	0.15	0.10	0.08	0.06
Cond.	295	426	551	807	9493	1093	297	428	556	811	959	1115
(µS/cm)	2.6	15	25	51	44	60	1.0	11	19	33	43	56

Chronic Test QA/QC Reference Toxicant: KCl Units: mg/l Test Organism Source: CBI Stock Cultures									
Species-Method	**Data**	**% Survival**		**Reproduction (# Young) or Biomass (mg)**					**RTT in**
(Ref. Test Date)	**Source**	**Cont.**	**NOEC**	**Cont.**	**NOEC**	**PMSD**	**IC25**	**IC25 A.L.**	**Control?**
C. dubia 1002.0	RTT	100	500	31.1	250	17	367	N/A	Yes
(9/6/11-9/12/11)	CC	99	500	24.6	250	24	316	236-397	
P. promelas 1000.0	RTT	98	500	0.82	500	15	606	N/A	Yes
(9/6/11-9/13/11)	CC	98	500	0.77	500	16	607	559-654	

Note: RTT = Reference Toxicant Test, CC = Control Chart, Cont. = Control group.

The results of analysis contained within this report relate only to the sample as received in the laboratory. This report shall not be reproduced except in full without written approval from the laboratory. Unless noted below, these test results meet all requirements of NELAP.

APPROVED:

Peter F. De Lisle, Ph.D.
Technical Director

10/14/11
Date

Deviations from, additions to, or exclusions from the test method, non-standard conditions or data qualifiers and, as appropriate, a statement of compliance/non-compliance: **NONE**

GLOSSARY OF TERMS AND ABBREVIATIONS

A.L. (Acceptance Limits): The results of a given reference toxicant test are compared to the control chart mean value ± 2 standard deviations. These limits approximate the 95% probability limits for the "true" reference toxicant value.

VELAP# 460030
EPA# VA01116

Coastal Bioanalysts, Inc.

Chronic Value (ChrV): The geometric mean of the NOEC and LOEC. Units are same as test concentration units.

C.L. (Confidence Limits): These are the probability limits, based on the data set and statistical model employed, that the "true value" lies within the limits specified. Typically limits are based on 95% or 99% probabilities.

Control chart: A cumulative summary chart of results from QC tests with reference toxicants. The results of a given reference toxicant test are compared to the control chart mean value and 95% Acceptance Limits (A.L.) (mean $\pm$ 2 standard deviations).

IC25: The concentration of sample or chemical, calculated from the data set using statistical models, causing a 25% reduction in test organism growth, reproduction, etc. The lower the IC25, the more toxic the chemical or sample. Units are same as test concentration units.

LC50: The concentration of sample or chemical, calculated from the data set using statistical models, causing a 50% reduction in test organism survival. The lower the LC50, the more toxic the chemical or sample. Units are same as test concentration units. Note: The LC50 value must always be associated with the duration of exposure. Thus 48-h LC50, 96-h LC50, etc. are calculated.

LOEC: Lowest-observable-effect-concentration. The lowest concentration of sample or chemical in a chronic test dilution series in which the test organisms exhibit a statistically significant reduction in any of the test end points (e.g. growth, survival, reproduction) compared to control organisms. Units are same as test concentration units.

PMSD: Percent Minimum Significant Difference: The minimum difference which can exist between a test treatment and the controls in a particular test and be statistically significant; a measure of test sensitivity. The lower the PMSD the more sensitive the test.

N/A: Not applicable.

N/D: Not determined or measured.

NOAEC: No-observable-acute-effect-concentration. The highest concentration of sample or chemical in an acute test dilution series in which the test organisms exhibit no statistically significant reduction in the test end point (e.g. survival) compared to control organisms. Units are same as test concentration units.

NOEC: No-observable-effect-concentration. The highest concentration of sample or chemical in a chronic test dilution series in which the test organisms exhibit no statistically significant reduction in any of the test end points (e.g. growth, survival, reproduction) compared to control organisms. Some regulatory definitions also require that the NOEC be less than the LOEC. Units are same as test concentration units.

Q.L.: Quantitation Limit. Level, concentration, or quantity of a target variable (analyte) that can be reported at a specified degree of confidence.

T.U.: Toxic units. Expresses the relative toxicity of an effluent in such a manner that the larger the toxic unit value the more toxic the effluent. $T.U._{Ac}$ = 100/LC50. $T.U._{Chr}$ = 100/NOEC or 100/IC25. A dimensionless unit.

VELAP# 460030
EPA# VA01116

Client: City of Winchester
Project ID: WINC1201
Client Sample ID: Opequon WRF Outfall 001
Permit No: VA0065552
Sample Period: 1/16/12 to 1/19/12

Coastal Bioanalysts, Inc.

Report of Analysis: Whole Effluent Toxicity (WET)

Submitted To:	Prepared By:
Mr. David Smith Public Utilities Department City of Winchester P.O. Box 75 Winchester, VA 22604	Coastal Bioanalysts, Inc. 6400 Enterprise Court Gloucester, VA 23061 (804) 694-8285 www.coastalbio.com Contact: Peter F. De Lisle, Technical Director

Chronic Test Results*

Species-Test Method	Endpoint	NOEC	LOEC	ChrV	PMSD	$T.U._C$	IC25	48-h LC50	LC50 95% C.L.	$T.U._{Ac}$
C. dubia	Survival	100	>100	>100	N/A	1.00	N/A	>100	N/A	<1.00
EPA 1002.0	Reproduction	100	>100	>100	19	1.00	>100	N/A	N/A	N/A
P. promelas	Survival	100	>100	>100	N/A	1.00	N/A	>100	N/A	<1.00
EPA 1000.0	Biomass	100	>100	>100	20	1.00	>100	N/A	N/A	N/A

*Note: Details regarding test conduct and data analysis provided in attached bench sheets and printouts as applicable.

Chronic Test Biological Summary Data		Sample Concentration (%)					
Species-Method	Endpoint	Control	16.0	32.0	64.0	82.0	100
C. dubia EPA 1002.0	Survival (%):	100	100	100	100	100	100
	Repro (# young):	24.3	28.5	22.6	28.2	28.0	29.5
P. promelas EPA 1000.0	Survival (%):	95	100	98	98	98	93
	Biomass (mg):	0.719	0.709	0.718	0.606	0.642	0.602

Test Information Species-Method	Start Date/Time End Date/Time	Organism Source	Hatch/Harvest Date/Time	Acclimation Temp.	Acclimation Water	Test Aerated?
C. dubia EPA 1002.0	1/17/12 1135 1/24/12 0920	CBI Stock	1/16/12 1230 1/16/10 2030	25° C	Mod. Hard Syn. FW	No
P. promelas EPA 1000.0	1/17/12 1115 1/24/12 1050	CBI Stock	1/16/12 1700 1/17/12 1000	25° C	Mod. Hard Syn. FW	No

Sample/Dilution Water Data	Chronic Test			
	Sample		Dilution Water*	
Water Quality Parameter (Units)	Mean	Std. Dev.	Mean	Std. Dev.
Arrival Temperature (°C)	1	0	N/A	N/A
Use Temperature (°C)	25	0.4	25	0
Conductivity (µS/cm)	1018	37	300	3.7
pH (S.U.)	7.93	0.06	7.62	0.02
Dissolved Oxygen (mg/l)	8.2	0	8.2	0
Total Hardness (mg/l as $CaCO_3$)	326	17	99	1.1
Alkalinity (mg/l as $CaCO_3$)	218	11	60	1.9
Total Residual Chlorine (mg/l)	<Q.L.	0	N/A	N/A
Ammonia (mg/l NH_3-N)	<1.0	0	N/A	N/A

*Dilution water = Moderately hard synthetic freshwater

VELAP# 460030
EPA# VA01116

Client: City of Winchester
Project ID: WINC1201
Client Sample ID: Opequon WRF Outfall 001
Permit No: VA0065552
Sample Period: 1/16/12 to 1/19/12

Coastal Bioanalysts, Inc.

Sample Aging/Use/Pretreatment				
CBI Sample I.D.	Collection Date/Time	Date(s)/Time(s) 1st Used in Tests	Date(s)/Time(s) Used in Renewals	Sample Adjustments
WINC1201-A	1/16/12 0730	1/17/12 1115, 1135	N/A	Aerated 1 min
WINC1201-B	1/17/12 0730	1/18/12 1155, 1215	1/19/12 1235, 1300	Aerated 2-2.5 min
WINC1201-C	1/19/12 0730	1/20/12 1240, 1300	1/21/12 1300, 1330 1/22/12 1245, 1330 1/23/12 1120, 1235	Aerated 2 min

Chronic Test Water Quality (Mean/Std. Dev.)												
Test:	*C. dubia* 1002.0						*P. promelas* 1000.0					
% Conc:	Cont.	16.0	32.0	64.0	82.0	100	Cont.	16.0	32.0	64.0	82.0	100
Temp.	25	25	25	25	25	25	25	25	25	25	25	25
(°C)	0.3	0.3	0.3	0.3	0.3	0.3	0.5	0.5	0.5	0.5	0.5	0.5
D.O.	8.3	8.3	8.5	8.6	8.7	8.8	7.7	7.5	7.4	7.4	7.4	7.4
(mg/l)	0.2	0.2	0.4	0.5	0.6	0.7	0.6	0.7	0.9	0.8	0.8	0.8
pH	7.90	8.09	8.17	8.24	8.27	8.28	7.47	7.58	7.70	7.86	7.92	7.98
(S.U.)	0.25	0.26	0.28	0.30	0.31	0.31	0.19	0.24	0.19	0.12	0.08	0.08
Cond.	301	414	529	754	898	1028	302	421	544	768	908	1039
(µS/cm)	2.5	8.7	8.7	31	23	28	3.4	4.3	12	18	21	26

Chronic Test QA/QC Reference Toxicant: KCl Units: mg/l Test Organism Source: CBI Stock Cultures									
Species-Method	Data	% Survival		Reproduction (# Young) or Biomass (mg)					RTT in
(Ref. Test Date)	Source	Cont.	NOEC	Cont.	NOEC	PMSD	IC25	IC25 A.L.	Control?
C. dubia 1002.0	RTT	100	250	30.7	125	17	255	N/A	Yes
(1/3/12-1/10/12)	CC	100	500	25.6	250	23	311	245-377	
P. promelas 1000.0	RTT	98	500	0.82	500	18	608	N/A	Yes
(1/2/12-1/9/12)	CC	98	500	0.77	500	16	607	560-654	

Note: RTT = Reference Toxicant Test, CC = Control Chart, Cont. = Control group.

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APPROVED:

Peter F. De Lisle, Ph.D.
Technical Director

1/30/12
Date

Deviations from, additions to, or exclusions from the test method, non-standard conditions or data qualifiers and, as appropriate, a statement of compliance/non-compliance: **NONE**

GLOSSARY OF TERMS AND ABBREVIATIONS

A.L. (Acceptance Limits): The results of a given reference toxicant test are compared to the control chart mean value ± 2 standard deviations. These limits approximate the 95% probability limits for the "true" reference toxicant value.

VELAP# 460030
EPA# VA01116

Coastal Bioanalysts, Inc.

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IC25: The concentration of sample or chemical, calculated from the data set using statistical models, causing a 25% reduction in test organism growth, reproduction, etc. The lower the IC25, the more toxic the chemical or sample. Units are same as test concentration units.

LC50: The concentration of sample or chemical, calculated from the data set using statistical models, causing a 50% reduction in test organism survival. The lower the LC50, the more toxic the chemical or sample. Units are same as test concentration units. Note: The LC50 value must always be associated with the duration of exposure. Thus 48-h LC50, 96-h LC50, etc. are calculated.

LOEC: Lowest-observable-effect-concentration. The lowest concentration of sample or chemical in a chronic test dilution series in which the test organisms exhibit a statistically significant reduction in any of the test end points (e.g. growth, survival, reproduction) compared to control organisms. Units are same as test concentration units.

PMSD: Percent Minimum Significant Difference: The minimum difference which can exist between a test treatment and the controls in a particular test and be statistically significant; a measure of test sensitivity. The lower the PMSD the more sensitive the test.

N/A: Not applicable.

N/D: Not determined or measured.

NOAEC: No-observable-acute-effect-concentration. The highest concentration of sample or chemical in an acute test dilution series in which the test organisms exhibit no statistically significant reduction in the test end point (e.g. survival) compared to control organisms. Units are same as test concentration units.

NOEC: No-observable-effect-concentration. The highest concentration of sample or chemical in a chronic test dilution series in which the test organisms exhibit no statistically significant reduction in any of the test end points (e.g. growth, survival, reproduction) compared to control organisms. Some regulatory definitions also require that the NOEC be less than the LOEC. Units are same as test concentration units.

Q.L.: Quantitation Limit. Level, concentration, or quantity of a target variable (analyte) that can be reported at a specified degree of confidence.

T.U.: Toxic units. Expresses the relative toxicity of an effluent in such a manner that the larger the toxic unit value the more toxic the effluent. $T.U._{Ac} = 100/LC50$. $T.U._{Chr} = 100/NOEC$ or $100/IC25$. A dimensionless unit.

VELAP# 460030
EPA# VA01116

Client: City of Winchester
Project ID: WINC1202
Client Sample ID: Opequon WRF Outfall 001
Permit No: VA0065552
Sample Period: 4/2/12 to 4/5/12

Coastal Bioanalysts, Inc.

Report of Analysis: Whole Effluent Toxicity (WET)

Submitted To:	Prepared By:
Mr. David Smith Public Utilities Department City of Winchester P.O. Box 75 Winchester, VA 22604	Coastal Bioanalysts, Inc. 6400 Enterprise Court Gloucester, VA 23061 (804) 694-8285 www.coastalbio.com Contact: Peter F. De Lisle, Technical Director

Chronic Test Results*

Species-Test Method	Endpoint	NOEC	LOEC	ChrV	PMSD	$T.U._C$	IC25	48-h LC50	LC50 95% C.L.	$T.U._{Ac}$
C. dubia	Survival	100	>100	>100	N/A	1.00	N/A	>100	N/A	<1.00
EPA 1002.0	Reproduction	100	>100	>100	15	1.00	>100	N/A	N/A	N/A
P. promelas	Survival	100	>100	>100	N/A	1.00	N/A	>100	N/A	<1.00
EPA 1000.0	Biomass	100	>100	>100	11	1.00	>100	N/A	N/A	N/A

*Note: Details regarding test conduct and data analysis provided in attached bench sheets and printouts as applicable.

Chronic Test Biological Summary Data		Sample Concentration (%)					
Species-Method	Endpoint	Control	16.0	32.0	64.0	82.0	100
C. dubia EPA 1002.0	Survival (%):	100	100	100	100	100	100
	Repro (# young):	24.7	28.7	25.8	28.7	27.7	29.0
P. promelas EPA 1000.0	Survival (%):	98	100	100	100	98	98
	Biomass (mg):	0.704	0.688	0.671	0.667	0.709	0.628

Test Information Species-Method	Start Date/Time End Date/Time	Organism Source	Hatch/Harvest Date/Time	Acclimation Temp.	Acclimation Water	Test Aerated?
C. dubia EPA 1002.0	4/3/12 1210 4/9/12 1400	CBI Stock	4/2/12 1440 4/2/10 2040	25° C	Mod. Hard Syn. FW	No
P. promelas EPA 1000.0	4/3/12 1225 4/10/12 1140	CBI Stock	4/2/12 1700 4/3/12 0830	25° C	Mod. Hard Syn. FW	No

Sample/Dilution Water Data	Chronic Test			
	Sample		Dilution Water*	
Water Quality Parameter (Units)	Mean	Std. Dev.	Mean	Std. Dev.
Arrival Temperature (°C)	1	0	N/A	N/A
Use Temperature (°C)	25	0	25	0
Conductivity (µS/cm)	1142	84	296	3.2
pH (S.U.)	7.96	0.12	7.61	0.05
Dissolved Oxygen (mg/l)	8.2	0	8.2	0
Total Hardness (mg/l as $CaCO_3$)	327	8.3	100	0
Alkalinity (mg/l as $CaCO_3$)	238	4.5	59	1.3
Total Residual Chlorine (mg/l)	<Q.L.	0	N/A	N/A
Ammonia (mg/l NH_3-N)	<1.0	0	N/A	N/A

*Dilution water = Moderately hard synthetic freshwater

VELAP# 460030
EPA# VA01116

Client: City of Winchester
Project ID: WINC1202
Client Sample ID: Opequon WRF Outfall 001
Permit No: VA0065552
Sample Period: 4/2/12 to 4/5/12

Coastal Bioanalysts, Inc.

Sample Aging/Use/Pretreatment				
CBI Sample I.D.	Collection Date/Time	Date(s)/Time(s) 1st Used in Tests	Date(s)/Time(s) Used in Renewals	Sample Adjustments
WINC1202-A	4/2/12 0730	4/3/12 1210, 1225	N/A	Aerated 1 min
WINC1202-B	4/3/12 0730	4/4/12 1210, 1305	4/5/12 1155, 1230	Aerated 2 min
WINC1202-C	4/5/12 0730	4/6/12 1400, 1500	4/7/12 1120, 1230 4/8/12 1115, 1220 4/9/12 1100	Aerated 1-2 min

Chronic Test Water Quality (Mean/Std. Dev.)												
Test:	*C. dubia* 1002.0						*P. promelas* 1000.0					
% Conc:	Cont.	16.0	32.0	64.0	82.0	100	Cont.	16.0	32.0	64.0	82.0	100
Temp. (°C)	25 0	25 0	25 0	25 0	25 0	25 0	25 0.5	25 0.5	25 0.5	25 0.5	25 0.3	25 0.3
D.O. (mg/l)	8.2 0.2	8.4 0.5	8.6 0.7	8.9 1.0	8.9 1.0	9.1 1.1	7.6 0.5	7.6 0.6	7.6 0.6	7.6 0.5	7.6 0.6	7.6 0.6
pH (S.U.)	7.76 0.28	8.01 0.30	8.13 0.32	8.23 0.31	8.26 0.31	8.26 0.28	7.42 0.12	7.53 0.17	7.64 0.17	7.81 0.13	7.91 0.09	8.00 0.08
Cond. (µS/cm)	296 12	435 8.6	573 20	841 50	999 69	1143 76	303 11	445 16	581 26	865 68	1011 81	1163 75

Chronic Test QA/QC Reference Toxicant: KCl Units: mg/l Test Organism Source: CBI Stock Cultures									
Species-Method (Ref. Test Date)	Data Source	% Survival		Reproduction (# Young) or Biomass (mg)					RTT in Control?
		Cont.	NOEC	Cont.	NOEC	PMSD	IC25	IC25 A.L.	
C. dubia 1002.0 (3/7/12-3/13/12)	RTT	100	250	22.3	250	34	274	N/A	Yes
	CC	99	500	25.6	250	24	304	231-378	
P. promelas 1000.0 (3/7/12-3/14/12)	RTT	98	500	0.85	500	9	601	N/A	Yes
	CC	97	500	0.76	500	16	608	563-654	

Note: RTT = Reference Toxicant Test, CC = Control Chart, Cont. = Control group.

The results of analysis contained within this report relate only to the sample as received in the laboratory. This report shall not be reproduced except in full without written approval from the laboratory. Unless noted below, these test results meet all requirements of NELAP.

APPROVED:

Peter F. De Lisle, Ph.D.
Technical Director

4/12/12
Date

Deviations from, additions to, or exclusions from the test method, non-standard conditions or data qualifiers and, as appropriate, a statement of compliance/non-compliance: **NONE**

GLOSSARY OF TERMS AND ABBREVIATIONS

A.L. (Acceptance Limits): The results of a given reference toxicant test are compared to the control chart mean value ± 2 standard deviations. These limits approximate the 95% probability limits for the "true" reference toxicant value.

VELAP# 460030
EPA# VA01116

Coastal Bioanalysts, Inc.

Chronic Value (ChrV): The geometric mean of the NOEC and LOEC. Units are same as test concentration units.

C.L. (Confidence Limits): These are the probability limits, based on the data set and statistical model employed, that the "true value" lies within the limits specified. Typically limits are based on 95% or 99% probabilities.

Control chart: A cumulative summary chart of results from QC tests with reference toxicants. The results of a given reference toxicant test are compared to the control chart mean value and 95% Acceptance Limits (A.L.) (mean $\pm$ 2 standard deviations).

IC25: The concentration of sample or chemical, calculated from the data set using statistical models, causing a 25% reduction in test organism growth, reproduction, etc. The lower the IC25, the more toxic the chemical or sample. Units are same as test concentration units.

LC50: The concentration of sample or chemical, calculated from the data set using statistical models, causing a 50% reduction in test organism survival. The lower the LC50, the more toxic the chemical or sample. Units are same as test concentration units. Note: The LC50 value must always be associated with the duration of exposure. Thus 48-h LC50, 96-h LC50, etc. are calculated.

LOEC: Lowest-observable-effect-concentration. The lowest concentration of sample or chemical in a chronic test dilution series in which the test organisms exhibit a statistically significant reduction in any of the test end points (e.g. growth, survival, reproduction) compared to control organisms. Units are same as test concentration units.

PMSD: Percent Minimum Significant Difference: The minimum difference which can exist between a test treatment and the controls in a particular test and be statistically significant; a measure of test sensitivity. The lower the PMSD the more sensitive the test.

N/A: Not applicable.

N/D: Not determined or measured.

NOAEC: No-observable-acute-effect-concentration. The highest concentration of sample or chemical in an acute test dilution series in which the test organisms exhibit no statistically significant reduction in the test end point (e.g. survival) compared to control organisms. Units are same as test concentration units.

NOEC: No-observable-effect-concentration. The highest concentration of sample or chemical in a chronic test dilution series in which the test organisms exhibit no statistically significant reduction in any of the test end points (e.g. growth, survival, reproduction) compared to control organisms. Some regulatory definitions also require that the NOEC be less than the LOEC. Units are same as test concentration units.

Q.L.: Quantitation Limit. Level, concentration, or quantity of a target variable (analyte) that can be reported at a specified degree of confidence.

T.U.: Toxic units. Expresses the relative toxicity of an effluent in such a manner that the larger the toxic unit value the more toxic the effluent. $T.U._{Ac}$ = 100/LC50. $T.U._{Chr}$ = 100/NOEC or 100/IC25. A dimensionless unit.

VELAP# 460030
EPA# VA01116

Client: City of Winchester
Project ID: WINC1301
Client Sample ID: Opequon WRF Outfall 001
Permit No: VA0065552
Sample Period: 1/14/13 to 1/17/13

Coastal Bioanalysts, Inc.

Report of Analysis: Whole Effluent Toxicity (WET)

Submitted To:	Prepared By:
Mr. David Smith Public Utilities Department City of Winchester P.O. Box 75 Winchester, VA 22604	Coastal Bioanalysts, Inc. 6400 Enterprise Court Gloucester, VA 23061 (804) 694-8285 www.coastalbio.com Contact: Peter F. De Lisle, Technical Director

Chronic Test Results*

Species-Test Method	Endpoint	NOEC	LOEC	ChrV	PMSD	$T.U._C$	IC25	48-h LC50	LC50 95% C.L.	$T.U._{Ac}$
C. dubia	Survival	100	>100	>100	N/A	1.00	N/A	>100	N/A	<1.00
EPA 1002.0	Reproduction	100	>100	>100	21	1.00	>100	N/A	N/A	N/A
P. promelas	Survival	100	>100	>100	N/A	1.00	N/A	>100	N/A	<1.00
EPA 1000.0	Biomass	100	>100	>100	23	1.00	>100	N/A	N/A	N/A

*Note: Details regarding test conduct and data analysis provided in attached bench sheets and printouts as applicable.

Chronic Test Biological Summary Data		Sample Concentration (%)					
Species-Method	Endpoint	Control	16.0	32.0	64.0	82.0	100
C. dubia EPA 1002.0	Survival (%):	100	100	100	100	100	100
	Repro (# young):	29.9	33.6	30.1	34.5	34.2	35.7
P. promelas EPA 1000.0	Survival (%):	90	90	93	98	85	78
	Biomass (mg):	0.675	0.663	0.729	0.713	0.591	0.550

Test Information Species-Method	Start Date/Time End Date/Time	Organism Source	Hatch/Harvest Date/Time	Acclimation Temp.	Acclimation Water	Test Aerated?
C. dubia EPA 1002.0	1/15/13 1145 1/21/13 1140	CBI Stock	1/14/13 1215 1/14/13 1430	25° C	Mod. Hard Syn. FW	No
P. promelas EPA 1000.0	1/15/13 1210 1/22/13 1200	CBI Stock	1/14/13 1700 1/15/13 0930	25° C	Mod. Hard Syn. FW	No

Sample/Dilution Water Data	Chronic Test			
	Sample		Dilution Water*	
Water Quality Parameter (Units)	Mean	Std. Dev.	Mean	Std. Dev.
Arrival Temperature (°C)	1	0	N/A	N/A
Use Temperature (°C)	25	0.4	25	0.5
Conductivity (µS/cm)	963	133	292	2.1
pH (S.U.)	7.82	0.08	7.80	0.05
Dissolved Oxygen (mg/l)	8.1	0.2	8.2	0.1
Total Hardness (mg/l as $CaCO_3$)	301	13	90	8.8
Alkalinity (mg/l as $CaCO_3$)	196	14	59	1.7
Total Residual Chlorine (mg/l)	<Q.L.	0	N/A	N/A
Ammonia (mg/l NH_3-N)	<1.0	0	N/A	N/A

*Dilution water = Moderately hard synthetic freshwater

VELAP# 460030
EPA# VA01116

Client: City of Winchester
Project ID: WINC1301
Client Sample ID: Opequon WRF Outfall 001
Permit No: VA0065552
Sample Period: 1/14/13 to 1/17/13

Coastal Bioanalysts, Inc.

Sample Aging/Use/Pretreatment				
CBI Sample I.D.	Collection Date/Time	Date(s)/Time(s) 1st Used in Tests	Date(s)/Time(s) Used in Renewals	Sample Adjustments
WINC1301-A	1/14/13 0730	1/15/13 1145, 1210	N/A	Aerated 1 min
WINC1301-B	1/15/13 0730	1/16/13 1200, 1220	1/17/13 1210, 1250	Aerated 0-1.5 min
WINC1301-C	1/17/13 0730	1/18/13 1340, 1345	1/19/13 1155, 1230 1/20/13 1150, 1305 1/21/13 1335	Aerated 0-1.5 min

Chronic Test Water Quality (Mean/Std. Dev.)												
Test:	*C. dubia* 1002.0						*P. promelas* 1000.0					
% Conc:	Cont.	16.0	32.0	64.0	82.0	100	Cont.	16.0	32.0	64.0	82.0	100
Temp.	25	25	25	25	25	25	25	25	25	25	25	25
(°C)	0.4	0.4	0.4	0.3	0.3	0.3	0.5	0.5	0.5	0.5	0.5	0.5
D.O.	8.2	8.2	8.2	8.3	8.3	8.3	7.7	7.7	7.7	7.6	7.7	7.7
(mg/l)	0.2	0.3	0.3	0.3	0.3	0.4	0.4	0.4	0.4	0.4	0.4	0.4
pH	7.99	8.06	8.11	8.15	8.17	8.18	7.68	7.65	7.67	7.75	7.83	7.88
(S.U.)	0.14	0.21	0.27	0.32	0.32	0.32	0.15	0.19	0.20	0.15	0.11	0.08
Cond.	292	389	488	687	801	916	291	389	491	692	810	935
(µS/cm)	1.8	17	39	76	97	123	4.1	19	39	69	90	106

Chronic Test QA/QC Reference Toxicant: KCl Units: mg/l Test Organism Source: CBI Stock Cultures									
Species-Method	Data	% Survival		Reproduction (# Young) or Biomass (mg)					RTT in
(Ref. Test Date)	Source	Cont.	NOEC	Cont.	NOEC	PMSD	IC25	IC25 A.L.	Control?
C. dubia 1002.0	RTT	100	250	18.7	250	28	325	N/A	Yes
(1/2/13-1/8/13)	CC	97	500	26.6	250	22	314	231-396	
P. promelas 1000.0	RTT	95	500	0.62	500	27	580	N/A	Yes
(1/2/13-1/9/13)	CC	98	500	0.73	500	15	612	572-651	

Note: RTT = Reference Toxicant Test, CC = Control Chart, Cont. = Control group.

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APPROVED:

Peter F. De Lisle, Ph.D.
Technical Director

1/24/13
Date

Deviations from, additions to, or exclusions from the test method, non-standard conditions or data qualifiers and, as appropriate, a statement of compliance/non-compliance: **NONE**

GLOSSARY OF TERMS AND ABBREVIATIONS

A.L. (Acceptance Limits): The results of a given reference toxicant test are compared to the control chart mean value ± 2 standard deviations. These limits approximate the 95% probability limits for the "true" reference toxicant value.

VELAP# 460030
EPA# VA01116

Coastal Bioanalysts, Inc.

Chronic Value (ChrV): The geometric mean of the NOEC and LOEC. Units are same as test concentration units.

C.L. (Confidence Limits): These are the probability limits, based on the data set and statistical model employed, that the "true value" lies within the limits specified. Typically limits are based on 95% or 99% probabilities.

Control chart: A cumulative summary chart of results from QC tests with reference toxicants. The results of a given reference toxicant test are compared to the control chart mean value and 95% Acceptance Limits (A.L.) (mean $\pm$ 2 standard deviations).

IC25: The concentration of sample or chemical, calculated from the data set using statistical models, causing a 25% reduction in test organism growth, reproduction, etc. The lower the IC25, the more toxic the chemical or sample. Units are same as test concentration units.

LC50: The concentration of sample or chemical, calculated from the data set using statistical models, causing a 50% reduction in test organism survival. The lower the LC50, the more toxic the chemical or sample. Units are same as test concentration units. Note: The LC50 value must always be associated with the duration of exposure. Thus 48-h LC50, 96-h LC50, etc. are calculated.

LOEC: Lowest-observable-effect-concentration. The lowest concentration of sample or chemical in a chronic test dilution series in which the test organisms exhibit a statistically significant reduction in any of the test end points (e.g. growth, survival, reproduction) compared to control organisms. Units are same as test concentration units.

PMSD: Percent Minimum Significant Difference: The minimum difference which can exist between a test treatment and the controls in a particular test and be statistically significant; a measure of test sensitivity. The lower the PMSD the more sensitive the test.

N/A: Not applicable.

N/D: Not determined or measured.

NOAEC: No-observable-acute-effect-concentration. The highest concentration of sample or chemical in an acute test dilution series in which the test organisms exhibit no statistically significant reduction in the test end point (e.g. survival) compared to control organisms. Units are same as test concentration units.

NOEC: No-observable-effect-concentration. The highest concentration of sample or chemical in a chronic test dilution series in which the test organisms exhibit no statistically significant reduction in any of the test end points (e.g. growth, survival, reproduction) compared to control organisms. Some regulatory definitions also require that the NOEC be less than the LOEC. Units are same as test concentration units.

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VELAP# 460030
EPA# VA01116

Client: City of Winchester
Project ID: WINC1401
Client Sample ID: Opequon WRF Outfall 001
Permit No: VA0065552
Sample Period: 1/13/14 to 1/16/14

Coastal Bioanalysts, Inc.

Report of Analysis: Whole Effluent Toxicity (WET)

Submitted To:	**Prepared By:**
Mr. David Smith Public Utilities Department City of Winchester P.O. Box 75 Winchester, VA 22604	Coastal Bioanalysts, Inc. 6400 Enterprise Court Gloucester, VA 23061 (804) 694-8285 www.coastalbio.com Contact: Peter F. De Lisle, Technical Director

Chronic Test Results*

Species-Test Method	Endpoint	NOEC	LOEC	ChrV	PMSD	$T.U._C$	IC25	48-h LC50	LC50 95% C.L.	$T.U._{Ac}$
C. dubia	Survival	100	>100	>100	N/A	1.00	N/A	>100	N/A	<1.00
EPA 1002.0	Reproduction	100	>100	>100	11	**1.00**	>100	N/A	N/A	N/A
P. promelas	Survival	100	>100	>100	N/A	1.00	N/A	>100	N/A	<1.00
EPA 1000.0	Biomass	100	>100	>100	29	**1.00**	>100	N/A	N/A	N/A

*Note: Details regarding test conduct and data analysis provided in attached bench sheets and printouts as applicable.
For each test method record the highest endpoint T.U.c value (bold) on the DMR.

Chronic Test QA/QC Reference Toxicant: KCl Units: mg/l Test Organism Source: CBI Stock Cultures

Species-Method (Ref. Test Date)	Data Source	% Survival Cont.	% Survival NOEC	Reproduction (# Young) or Biomass (mg) Cont.	NOEC	PMSD	IC25	IC25 A.L.	RTT in Control?
C. dubia 1002.0	RTT	100	500	26.1	250	26	306	N/A	Yes
(1/2/14-1/8/14)	CC	98	500	26.4	250	23	336	257-415	
P. promelas 1000.0	RTT	100	500	0.61	500	13	627	N/A	Yes
(1/2/14-1/9/14)	CC	98	500	0.66	500	14	618	576-659	

Note: RTT = Reference Toxicant Test, CC = Control Chart, Cont. = Control group.

The results of analysis contained within this report relate only to the sample as received in the laboratory. This report shall not be reproduced except in full without written approval from the laboratory. Unless noted below, these test results meet all requirements of NELAP.

APPROVED:

Peter F. De Lisle, Ph.D.
Technical Director

1/23/14
Date

Deviations from, additions to, or exclusions from the test method, non-standard conditions or data qualifiers and, as appropriate, a statement of compliance/non-compliance: **NONE**

VELAP# 460030
EPA# VA01116

Coastal Bioanalysts, Inc.

GLOSSARY OF TERMS AND ABBREVIATIONS

A.L. (Acceptance Limits): The results of a given reference toxicant test are compared to the control chart mean value ± 2 standard deviations. These limits approximate the 95% probability limits for the "true" reference toxicant value.

Chronic Value (ChrV): The geometric mean of the NOEC and LOEC. Units are same as test concentration units.

C.L. (Confidence Limits): These are the probability limits, based on the data set and statistical model employed, that the "true value" lies within the limits specified. Typically limits are based on 95% or 99% probabilities.

Control chart: A cumulative summary chart of results from QC tests with reference toxicants. The results of a given reference toxicant test are compared to the control chart mean value and 95% Acceptance Limits (A.L.) (mean ± 2 standard deviations).

IC25: The concentration of sample or chemical, calculated from the data set using statistical models, causing a 25% reduction in test organism growth, reproduction, etc. The lower the IC25, the more toxic the chemical or sample. Units are same as test concentration units.

LC50: The concentration of sample or chemical, calculated from the data set using statistical models, causing a 50% reduction in test organism survival. The lower the LC50, the more toxic the chemical or sample. Units are same as test concentration units. Note: The LC50 value must always be associated with the duration of exposure. Thus 48-h LC50, 96-h LC50, etc. are calculated.

LOEC: Lowest-observable-effect-concentration. The lowest concentration of sample or chemical in a chronic test dilution series in which the test organisms exhibit a statistically significant reduction in any of the test end points (e.g. growth, survival, reproduction) compared to control organisms. Units are same as test concentration units.

PMSD: Percent Minimum Significant Difference: The minimum difference which can exist between a test treatment and the controls in a particular test and be statistically significant; a measure of test sensitivity. The lower the PMSD the more sensitive the test.

N/A: Not applicable.

N/D: Not determined or measured.

NOAEC: No-observable-acute-effect-concentration. The highest concentration of sample or chemical in an acute test dilution series in which the test organisms exhibit no statistically significant reduction in the test end point (e.g. survival) compared to control organisms. Units are same as test concentration units.

NOEC: No-observable-effect-concentration. The highest concentration of sample or chemical in a chronic test dilution series in which the test organisms exhibit no statistically significant reduction in any of the test end points (e.g. growth, survival, reproduction) compared to control organisms. Some regulatory definitions also require that the NOEC be less than the LOEC. Units are same as test concentration units.

Q.L.: Quantitation Limit. Level, concentration, or quantity of a target variable (analyte) that can be reported at a specified degree of confidence.

T.U.: Toxic units. Expresses the relative toxicity of an effluent in such a manner that the larger the toxic unit value the more toxic the effluent. $T.U._{Ac}$ = 100/LC50. $T.U._{Chr}$ = 100/NOEC or 100/IC25. A dimensionless unit.

VELAP# 460030
EPA# VA01116

Client: City of Winchester
Project ID: WINC1501
Client Sample ID: Opequon WRF Outfall 001
Permit No: VA0065552
Sample Period: 1/19/15 to 1/22/15

Coastal Bioanalysts, Inc.

Report of Analysis: Whole Effluent Toxicity (WET)

Submitted To:	**Prepared By:**
Mr. David Smith Public Utilities Department City of Winchester P.O. Box 75 Winchester, VA 22604	Coastal Bioanalysts, Inc. 6400 Enterprise Court Gloucester, VA 23061 (804) 694-8285 www.coastalbio.com Contact: Peter F. De Lisle, Technical Director

Chronic Test Results*

Species-Test Method	Endpoint	NOEC	LOEC	ChrV	PMSD	$T.U._C$	IC25	48-h LC50	LC50 95% C.L.	$T.U._{Ac}$
C. dubia	Survival	100	>100	>100	N/A	1.00	N/A	>100	N/A	<1.00
EPA 1002.0	Reproduction	100	>100	>100	16	**1.00**	>100	N/A	N/A	N/A
P. promelas	Survival	100	>100	>100	N/A	1.00	N/A	>100	N/A	<1.00
EPA 1000.0	Biomass	100	>100	>100	13	**1.00**	>100	N/A	N/A	N/A

*Note: Details regarding test conduct and data analysis provided in attached bench sheets and printouts as applicable.
For each test method record the highest endpoint T.U.c value (bold) on the DMR.

Chronic Test QA/QC Reference Toxicant: KCl Units: mg/l Test Organism Source: CBI Stock Cultures

Species-Method (Ref. Test Date)	Data Source	% Survival Cont.	% Survival NOEC	Reproduction (# Young) or Biomass (mg) Cont.	NOEC	PMSD	IC25	IC25 A.L.	RTT in Control?
C. dubia 1002.0	RTT	100	500	34.6	250	19	386	N/A	Yes
(1/2/15-1/8/15)	CC	99	500	27.8	250	19	341	263-419	
P. promelas 1000.0	RTT	100	500	0.67	500	14	625	N/A	Yes
(1/2/15-1/9/15)	CC	99	500	0.61	500	13	625	598-652	

Note: RTT = Reference Toxicant Test, CC = Control Chart, Cont. = Control group.

The results of analysis contained within this report relate only to the sample as received in the laboratory. This report shall not be reproduced except in full without written approval from the laboratory. Unless noted below, these test results meet all requirements of NELAP.

APPROVED:

Peter F. De Lisle, Ph.D.
Technical Director

1/28/15
Date

Deviations from, additions to, or exclusions from the test method, non-standard conditions or data qualifiers and, as appropriate, a statement of compliance/non-compliance: **NONE**

VELAP# 460030
EPA# VA01116

Coastal Bioanalysts, Inc.

GLOSSARY OF TERMS AND ABBREVIATIONS

A.L. (Acceptance Limits): The results of a given reference toxicant test are compared to the control chart mean value ± 2 standard deviations. These limits approximate the 95% probability limits for the "true" reference toxicant value.

Chronic Value (ChrV): The geometric mean of the NOEC and LOEC. Units are same as test concentration units.

C.L. (Confidence Limits): These are the probability limits, based on the data set and statistical model employed, that the "true value" lies within the limits specified. Typically limits are based on 95% or 99% probabilities.

Control chart: A cumulative summary chart of results from QC tests with reference toxicants. The results of a given reference toxicant test are compared to the control chart mean value and 95% Acceptance Limits (A.L.) (mean ± 2 standard deviations).

IC25: The concentration of sample or chemical, calculated from the data set using statistical models, causing a 25% reduction in test organism growth, reproduction, etc. The lower the IC25, the more toxic the chemical or sample. Units are same as test concentration units.

LC50: The concentration of sample or chemical, calculated from the data set using statistical models, causing a 50% reduction in test organism survival. The lower the LC50, the more toxic the chemical or sample. Units are same as test concentration units. Note: The LC50 value must always be associated with the duration of exposure. Thus 48-h LC50, 96-h LC50, etc. are calculated.

LOEC: Lowest-observable-effect-concentration. The lowest concentration of sample or chemical in a chronic test dilution series in which the test organisms exhibit a statistically significant reduction in any of the test end points (e.g. growth, survival, reproduction) compared to control organisms. Units are same as test concentration units.

PMSD: Percent Minimum Significant Difference: The minimum difference which can exist between a test treatment and the controls in a particular test and be statistically significant; a measure of test sensitivity. The lower the PMSD the more sensitive the test.

N/A: Not applicable.

N/D: Not determined or measured.

NOAEC: No-observable-acute-effect-concentration. The highest concentration of sample or chemical in an acute test dilution series in which the test organisms exhibit no statistically significant reduction in the test end point (e.g. survival) compared to control organisms. Units are same as test concentration units.

NOEC: No-observable-effect-concentration. The highest concentration of sample or chemical in a chronic test dilution series in which the test organisms exhibit no statistically significant reduction in any of the test end points (e.g. growth, survival, reproduction) compared to control organisms. Some regulatory definitions also require that the NOEC be less than the LOEC. Units are same as test concentration units.

Q.L.: Quantitation Limit. Level, concentration, or quantity of a target variable (analyte) that can be reported at a specified degree of confidence.

T.U.: Toxic units. Expresses the relative toxicity of an effluent in such a manner that the larger the toxic unit value the more toxic the effluent. $T.U._{Ac}$ = 100/LC50. $T.U._{Chr}$ = 100/NOEC or 100/IC25. A dimensionless unit.

VELAP# 460030
EPA# VA01116

FACILITY NAME AND PERMIT NUMBER:
Opequon Water Reclamation Facility VA0065552

Form Approved 1/14/99
OMB Number 2040-0086

SUPPLEMENTAL APPLICATION INFORMATION

PART F. INDUSTRIAL USER DISCHARGES AND RCRA/CERCLA WASTES

All treatment works receiving discharges from significant industrial users or which receive RCRA, CERCLA, or other remedial wastes must complete Part F.

GENERAL INFORMATION:

F.1. Pretreatment Program. Does the treatment works have, or is it subject to, an approved pretreatment program?

✓ Yes ___ No

F.2. Number of Significant Industrial Users (SIUs) and Categorical Industrial Users (CIUs). Provide the number of each of the following types of industrial users that discharge to the treatment works.

a. Number of non-categorical SIUs. 4

b. Number of CIUs. 0

SIGNIFICANT INDUSTRIAL USER INFORMATION:

Supply the following information for each SIU. If more than one SIU discharges to the treatment works, copy questions F.3 through F.8 and provide the information requested for each SIU.

F.3. Significant Industrial User Information. Provide the name and address of each SIU discharging to the treatment works. Submit additional pages as necessary.

Name: Significant User Information provided on separate for each user following Part F

Mailing Address: _____

F.4. Industrial Processes. Describe all of the industrial processes that affect or contribute to the SIU's discharge.

_____

F.5. Principal Product(s) and Raw Material(s). Describe all of the principal processes and raw materials that affect or contribute to the SIU's discharge.

Principal product(s): _____

Raw material(s): _____

F.6. Flow Rate.

a. Process wastewater flow rate. Indicate the average daily volume of process wastewater discharged into the collection system in gallons per day (gpd) and whether the discharge is continuous or intermittent.

_____ gpd (____continuous or _____intermittent)

b. Non-process wastewater flow rate. Indicate the average daily volume of non-process wastewater flow discharged into the collection system in gallons per day (gpd) and whether the discharge is continuous or intermittent.

_____ gpd (____continuous or _____intermittent)

F.7. Pretreatment Standards. Indicate whether the SIU is subject to the following:

a. Local limits ✓ Yes ___ No

b. Categorical pretreatment standards ___ Yes ✓ No

If subject to categorical pretreatment standards, which category and subcategory?

_____

FACILITY NAME AND PERMIT NUMBER:
Opequon Water Reclamation Facility VA0065552

Form Approved 1/14/99
OMB Number 2040-0086

F.8. Problems at the Treatment Works Attributed to Waste Discharged by the SIU. Has the SIU caused or contributed to any problems (e.g., upsets, interference) at the treatment works in the past three years?

____Yes ✓ No If yes, describe each episode.

SIGNIFICANT INDUSTRIAL USER INFORMATION:

RCRA HAZARDOUS WASTE RECEIVED BY TRUCK, RAIL, OR DEDICATED PIPELINE:

F.9. RCRA Waste. Does the treatment works receive or has it in the past three years received RCRA hazardous waste by truck, rail, or dedicated pipe? ____Yes ✓ No (go to F.12.)

F.10. Waste Transport. Method by which RCRA waste is received (check all that apply):

_____Truck _____Rail _____Dedicated Pipe

F.11. Waste Description. Give EPA hazardous waste number and amount (volume or mass, specify units).

EPA Hazardous Waste Number	Amount	Units

CERCLA (SUPERFUND) WASTEWATER, RCRA REMEDIATION/CORRECTIVE ACTION WASTEWATER, AND OTHER REMEDIAL ACTIVITY WASTEWATER:

F.12. Remediation Waste. Does the treatment works currently (or has it been notified that it will) receive waste from remedial activities?

____Yes (complete F.13 through F.15.) ✓ No

Provide a list of sites and the requested information (F.13 - F.15.) for each current and future site.

F.13. Waste Origin. Describe the site and type of facility at which the CERCLA/RCRA/or other remedial waste originates (or is expected to originate in the next five years).

F.14. Pollutants. List the hazardous constituents that are received (or are expected to be received). Include data on volume and concentration, if known. (Attach additional sheets if necessary).

F.15. Waste Treatment.

a. Is this waste treated (or will it be treated) prior to entering the treatment works?

____Yes ____No

If yes, describe the treatment (provide information about the removal efficiency):

b. Is the discharge (or will the discharge be) continuous or intermittent?

____Continuous ____Intermittent If intermittent, describe discharge schedule.

END OF PART F.
REFER TO THE APPLICATION OVERVIEW TO DETERMINE WHICH OTHER PARTS OF FORM 2A YOU MUST COMPLETE

SIGNIFICANT INDUSTRIAL USER INFORMATION:
Trex Company Inc.

Supply the following information for each SIU. If more than one SIU discharges to the treatment works, copy questions F.3 through F.8 and provide the information requested for each SIU.

F.3. Significant Industrial User Information. Provide the name and address of each SIU discharging to the treatment works. Submit additional pages as necessary.

Name: **Trex Company, Inc.- Manufacturing Site**

Mailing Address: **3229 Shawnee Drive Winchester, Virginia 22602**

Name: **Trex Company, Inc.- Trex Polyco Site**

Mailing Address: **181 Battaile Drive Winchester, Virginia 22601**

F.4. Industrial Processes. Describe all of the industrial processes that affect or contribute to the SIU's discharge.
SEE ATTACHED USER SHEET

F.5. Principal Product(s) and Raw Material(s). Describe all of the principal processes and raw materials that affect or contribute to the SIU's discharge.

Principal product(s): **Wood/plastic composite boards for construction of decks, picnic tables, benches, composite construction material**

Raw material(s): **Polyethylene scraps (grocery bags, filmwrap, etc.) Wood chips are broughtto the site and pulverized into sawdust, Colorant (carbon black or ferric oxide) are additives.**

F.6. Flow Rate

a. Process wastewater flow rate. Indicate the average daily volume of process wastewater discharged into the collection system in gallons per day (gpd) and whether the discharge is continuous or intermittent.

29,960 gpd (**XXX** continuous or _____ intermittent)

b. Non-process wastewater flow rate. Indicate the average daily volume of non-process wastewater flow discharged into the collection system in gallons per day (gpd) and whether the discharge is continuous or intermittent.

30,150 gpd (**XXX** continuous or _____ intermittent)

F.7. Pretreatment Standards. Indicate whether the SIU is subject to the following:

a. Local limits **XXX** Yes ____ No

b. Categorical pretreatment standards ____ Yes **XXX** No

If subject to categorical pretreatment standards, which category and subcategory?

F.8. Problems at the Treatment Works Attributed to Waste Discharge by the SIU. Has the SIU caused or contributed to any problems (e.g., upsets, interference) at the treatment works in the past three years?

____ Yes **XXX** No If yes, describe each episode

Trex Company,Inc.

Significant User Data Sheet

Opequon Water Reclamation Facility

VPDES Permit No. VA0065552

F4. Industrial Processes

BUILDING# 1: This facility produces wood/plastic composite boards for construction of decks, picnic tables, benches, railing and fencing, Polyethylene scraps (grocery bags, film wrap, etc.) are brought to the site, separated and ground into "fluff" and then processed into polyethylene pellets. Wood chips are also brought to the site and pulverized into sawdust. The wood and polyethylene pellets are weighed and mixed along with a colorant (carbon black or ferric oxide) being added. The melted and mixed ingredients are extruded and conveyed through a cooling water trough. A hose directs a stream of water at the point the board is extruded for quick cooling, then the board travels through the cooling trough. Water is sprayed on the board as it goes through the bath. Chillers have been installed, which have resulted in a decrease in water usage, The contact lines with chillers can recycle, but the problem with the other lines is the high temp of the water at the end of the process. Contact cooling water from cleaning and draining of the cooling troughs and periodic blowdown is discharged to the sanitary sewer. Process and sanitary lines discharge into the same manhole as separate waste streams. The process discharge line includes boiler blowdown and compressor water. Contact cooling water is discharged to the sanitary sewer via the process lines. Compressor condensate is also discharged to the sanitary sewer Boiler blowdown is routed to a flash tank which overflows to the discharge pumps. The blowdown is pumped to the sanitary sewer via the process line. The boiler discharge has time to cool prior to pumping to the sanitary sewer. Boiler blowdown is estimated at <1,000 gallons per day.

BUILDING# 2: R&D building. DI water from the Trex testing equipment and pilot-plant equipment is discharged.

BUILDING# 3: Bundle cover operation and hollow post extrusion line are housed in this building. White rail co-extrusion lines use the same processes as building #1

BUILDING# 4: Processes will be the same as in Building# 1. One line is installed. Boiler blowdown will be discharged to the sanitary sewer.

BUILDING# 5: Houses recycled plastic sorting, grading and conversion to polyethylene pellets used in the extrusion lines.

SIGNIFICANT INDUSTRIAL USER INFORMATION:
County of Frederick Regional Landfill

Supply the following information for each SIU. If more than one SIU discharges to the treatment works, copy questions F.3 through F.8 and provide the information requested for each SIU.

F.3. Significant Industrial User Information. Provide the name and address of each SIU discharging to the treatment works. Submit additional pages as necessary.

Name: **County of Frederick Regional Landfill**

Mailing Address: **107 North Kent Street, County Complex, Winchester, Virginia 22601**

F.4. Industrial Processes. Describe all of the industrial processes that affect or contribute to the SIU's discharge.

SEE ATTACHED USER SHEET

F.5. Principal Product(s) and Raw Material(s). Describe all of the principal processes and raw materials that affect or contribute to the SIU's discharge.

Principal product(s): **Collection of solid waste generated in Frederick and Clarke County, Virginia and the City of Winchester**

Raw material(s): **Commerial, Industrial, Construction and Municipal solid waste.**

F.6. Flow Rate

a. Process wastewater flow rate. Indicate the average daily volume of process wastewater discharged into the collection system in gallons per day (gpd) and whether the discharge is continuous or intermittent.

100,000 gpd (___ continuous or **XXX** intermittent)

b. Non-process wastewater flow rate. Indicate the average daily volume of non-process wastewater flow discharged into the collection system in gallons per day (gpd) and whether the discharge is continuous or intermittent.

0 gpd (___ continuous or _____ intermittent)

F.7. Pretreatment Standards. Indicate whether the SIU is subject to the following:

a. Local limits **XXX** Yes ____ No

b. Categorical pretreatment standards ____ Yes **XXX** No

If subject to categorical pretreatment standards, which category and subcategory?

F.8. Problems at the Treatment Works Attributed to Waste Discharge by the SIU. Has the SIU caused or contributed to any problems (e.g., upsets, interference) at the treatment works in the past three years?

____ Yes **XXX** No If yes, describe each episode

County of Frederick, Virginia – Regional Landfill

Significant User Data Sheet

Opequon Water Reclamation Facility

VPDES Permit No. VA0065552

F4. Industrial Processes

The Frederick County Landfill receives solid wastes that are generated from Commercial, Industrial and Municipal sources located in Frederick and Clarke Counties and the City of Winchester. Leachate is generated by liquids in the waste and rainfall on the landfill cells. The liquids migrate through the waste mass and are collected via a network of under-laid piping and stone. The Leachate is then transported via gravity collection system to a pumping station where it is pumped to the on-site pretreatment facility. After pretreatment, the liquid is transferred to the Opequon WRF via force main connected to the Frederick County Sanitation Authority sanitary sewer collection system.

SIGNIFICANT INDUSTRIAL USER INFORMATION:
Kraft Foods Global, Inc.

Supply the following information for each SIU. If more than one SIU discharges to the treatment works, copy questions F.3 through F.8 and provide the information requested for each SIU.

F.3. Significant Industrial User Information. Provide the name and address of each SIU discharging to the treatment works. Submit additional pages as necessary.

Name: **Kraft Global, Inc.**

Mailing Address: **220 Park Center Drive, Winchester, Virginia 22603**

F.4. Industrial Processes. Describe all of the industrial processes that affect or contribute to the SIU's discharge.

SEE ATTACHED USER SHEET

F.5. Principal Product(s) and Raw Material(s). Describe all of the principal processes and raw materials that affect or contribute to the SIU's discharge.

Principal product(s): **Kool Aid, Kool Burst, Capri Sun, Kool-Aid Jammers and MIO (concentrated flavor enhancer)**

Raw material(s): **Water, High Fructose Corn Syrup, Fruit Juices & concentrates, Preservatives, Sucrose, Citric Acid, Product colors, Product flavors, Polyethylene resins, and Mylar foil**

F.6. Flow Rate

a. Process wastewater flow rate. Indicate the average daily volume of process wastewater discharged into the collection system in gallons per day (gpd) and whether the discharge is continuous or intermittent.

180,000 gpd (___ continuous or **XXX** intermittent)

b. Non-process wastewater flow rate. Indicate the average daily volume of non-process wastewater flow discharged into the collection system in gallons per day (gpd) and whether the discharge is continuous or intermittent.

14,500 gpd (**XXX** continuous or _____ intermittent)

F.7. Pretreatment Standards. Indicate whether the SIU is subject to the following:

a. Local limits **XXX** Yes ____ No

b. Categorical pretreatment standards ____ Yes **XXX** No

If subject to categorical pretreatment standards, which category and subcategory?

F.8. Problems at the Treatment Works Attributed to Waste Discharge by the SIU. Has the SIU caused or contributed to any problems (e.g., upsets, interference) at the treatment works in the past three years?

____ Yes **XXX** No If yes, describe each episode

Kraft Foods Global, Inc.

Significant User Data Sheet

Opequon Water Reclamation Facility

VPDES Permit No. VA0065552

F4. Industrial Processes

The Kraft Facility is a Ready-to-Drink beverage production facility. The only process discharge to the sanitary sewer is from overfilled pouches. Filled bottle and pouches are run through a bath to remove stickiness from the outside of the packages. Also, contributing to discharged waste is the CIP for equipment. The wash down procedure for the filling equipment is performed every week, plus on color change days. Lines are rinsed with a hot caustic solution, and the solution is recycled until spent. All of this cleaning water is discharged to the sanitary sewer. Boiler blowdown is also discharged to the sanitary sewer. Incoming water filter backwash is also discharged to the sanitary sewer. Discharge is continuously pH adjusted.

SIGNIFICANT INDUSTRIAL USER INFORMATION:
O'Sullivan Films, Inc.

Supply the following information for each SIU. If more than one SIU discharges to the treatment works, copy questions F.3 through F.8 and provide the information requested for each SIU.

F.3. Significant Industrial User Information. Provide the name and address of each SIU discharging to the treatment works. Submit additional pages as necessary.

Name: **O'Sullivan Films, Inc.**

Mailing Address: **1944 Valley Avenue, Winchester, Virginia 22601**

F.4. Industrial Processes. Describe all of the industrial processes that affect or contribute to the SIU's discharge.

SEE ATTACHED USER SHEET

F.5. Principal Product(s) and Raw Material(s). Describe all of the principal processes and raw materials that affect or contribute to the SIU's discharge.

Principal product(s): **Vinyl sheet material formation: cut to specific size and laminated, painted and/or printed. RCRA wastes.**

Raw material(s): **Plastic resins, plasticizers, fillers, pigments, stabilizers, and process aids, water based adhesives, solvent-based products and paints**

F.6. Flow Rate

a. Process wastewater flow rate. Indicate the average daily volume of process wastewater discharged into the collection system in gallons per day (gpd) and whether the discharge is continuous or intermittent.

49,000 gpd (**XXX** continuous or ___ intermittent)

b. Non-process wastewater flow rate. Indicate the average daily volume of non-process wastewater flow discharged into the collection system in gallons per day (gpd) and whether the discharge is continuous or intermittent.

6,200 gpd (**XXX** continuous or _____ intermittent)

F.7. Pretreatment Standards. Indicate whether the SIU is subject to the following:

a. Local limits **XXX** Yes ____ No

b. Categorical pretreatment standards ____ Yes **XXX** No

If subject to categorical pretreatment standards, which category and subcategory?

F.8. Problems at the Treatment Works Attributed to Waste Discharge by the SIU. Has the SIU caused or contributed to any problems (e.g., upsets, interference) at the treatment works in the past three years?

____ Yes **XXX** No If yes, describe each episode

O'Sullivan Films, Inc.

Significant User Data Sheet

Opequon Water Reclamation Facility

VPDES Permit No. VA0065552

F4. Industrial Processes

All plastics wastewater is sent to the sanitary sewer. Non contact cooling water from cooling towers and refrigerated chilling units is discharged to the sanitary system via blowdown and/or system clean-up. Contact cooling water is discharged from dip tanks that are used to directly cool plastic rolls. No chemicals are added to the contact cooling water. Truck and Forklift maintenance is done in an onsite shop. Wastewater from the shop floor drains into a pit to allow solids and oil & grease to separate, and the liquid component is drained to the sanitary sewer.

O'Sullivan Films, Inc. is a producer of RCRA waste. These wastes are not discharged to the sanitary wastewater collection system but are contained on site and shipped off-site for disposal. RCRA wastes are shipped via truck.

Chemtron Corp: acids, isocyonates, mercury

AERC from Frederick County Landfill: universal waste (light bulbs, batteries, computer monitors, etc.)

Recoil: Oil and water

Safety Kleen: waste oils and ;parts cleaner

Potomac Environmental is transport broker for hazardous/non-hazardous materials, oils and oily rags disposed of or recycled off-site.

Southeastern OMNI Chemical and Solvent: solvent glue, ink waste, base glue, paint scrapings, waste solvents and rag waste.

Potomac Environmental: Still bottoms are collected in 55-gallon drums for disposal

Aerosol cans are recycled

Chern Met Services and Environmental Quality: Lab packs

Spirit Services: Currently recycles on site used oil from Banbury mixers; approximately 12 drums per year

SECTION 3

SLUDGE PERMIT

VPDES Sewage Sludge Permit Application for Permit Reissuance

Instructions

WHO MUST SUBMIT THE APPLICATION - All facilities with a current VPDES Permit that authorizes the discharge of treated sewage wastewater that are applying for reissuance must complete and submit this application.
Part 1 is general information to be provided by all facilities.
Part 2 must be completed by all facilities that generate Class A or Class B biosolids that are land applied.
Part 3 must be completed by all facilities that land apply Class B biosolids.

Part 1 – Sludge Disposal Management (To be completed by all facilities)

Facility Name: Opequon Water Reclamation Facility **VPDES Permit No:** VA0065552

1. **Shipment Off Site for Treatment or Blending**

Is sewage sludge from your facility sent to another facility that provides treatment or blending? ☐ Yes ☑ No

If you send sewage sludge to more than one facility, attach additional sheets as necessary.

Shipment off site is: ☐ The primary method of sludge disposal ☐ A back up method of sludge disposal

a. Receiving Facility Name _____

b. Receiving Facility VPDES Permit No. _____

c. Include an acceptance letter from the Receiving Facility.

d. Receiving Facility's ultimate disposal method for sewage sludge _____

2. **Disposal in a Municipal Solid Waste Landfill**

Is sewage sludge from your facility placed in a municipal solid waste landfill? ☑ Yes ☐ No

If sewage sludge is placed on more than one municipal solid waste landfill, attach additional pages as necessary.

Landfilling is: ☑ The primary method of sludge disposal ☐ A back up method of sludge disposal

a. Landfill Name Frederick County Regional Landfill

b. Landfill Permit No. 529

c. Include an acceptance letter from the landfill.

3. **Incineration**

Is sewage sludge from your facility fired in a sewage sludge incinerator? ☐ Yes ☑ No

Incineration is: ☐ The primary method of sludge disposal ☐ A back up method of sludge disposal

a. Do you own or operate all sewage sludge incinerators in which sewage sludge from your facility is fired? ☐ Yes ☑ No

If yes, provide the Air Registration No. _____

If no, complete items b - d for each incinerator that you do not own or operate.

b. Facility Name _____

c. Air Registration No. _____

d. Include an acceptance letter from the Incinerator.

4. **Class A Biosolids**

Do you produce Class A biosolids for land application or distribution and marketing? If yes, complete Part 2. ☐ Yes ☑ No

Are Class A biosolids from your facility land applied in bulk? ☐ Yes ☑ No

Do you sell or give away Class A biosolids in a bag or other container for application to the land? If yes, provide the VDACS certification number? _____ ☐ Yes ☑ No

5. **Class B Biosolids**

Do you produce Class B biosolids? If yes, complete Part 2. ☑ *Yes* ☐ *No*

Are Class B biosolids from your facility land applied land applied under the authorization of this VPDES Permit? If yes, complete Part 3. ☐ *Yes* ☑ *No*

6. **Land Application Under a Separate Permit**

Are biosolids from your facility land applied under the authorization of a permit other than your VPDES Permit? ☐ Yes ☑ No

Biosolids are land applied under the authorization of a ☐ VPA permit ☐ Another VPDES Permit ☐ Out of State

Complete items a - c for each VPA permit authorized to land apply biosolids from your facility.

a. Permittee Name _____ b. Permit No. _____

c. Include copy of any information you provide to the Receiving VPDES or VPA Permittee to comply with the "notice and necessary information" requirement of 9VAC25-31-530 F.

VPDES Sewage Sludge Permit Application for Permit Reissuance

Part 2 – Biosolids Characterization (To be completed by all facilities that generate biosolids that are land applied.)

1. Have there been changes to sludge treatment processes or storage facilities since the previous permit issuance/reissuance? ☐ Yes ☑ No
2. Do the biosolids generated under this permit that will be land applied meet one of the Class A pathogen requirements in 9VAC25-31-710 A 3 through A 8 or Class B pathogen requirements in 9VAC25-31-710 B 1 through B 4? ☐ Yes ☐ No

   Identify the pathogen reduction option utilized to demonstrate compliance with the pathogen reductions requirements and provide the data that demonstrate compliance with the applicable alternative. _____
3. Do the biosolids generated under this permit that will be land applied meet one of the vector attraction reduction requirements in 9VAC25-31-720 B 1 through B 10? ☐ Yes ☐ No

   Identify the vector attraction reduction option utilized to demonstrate compliance with the vector attraction reductions requirements and provide the data that demonstrate compliance with the applicable alternative. _____
4. Do the biosolids to be land applied meet the ceiling/pollutant concentrations in 9VAC25-31-540 B? ☐ Yes ☐ No
5. Has data from the most recent 3 samples for pH (S.U.), Percent Solids (%), Ammonium Nitrogen (mg/kg), Nitrate Nitrogen (mg/kg), Total Kjeldahl Nitrogen (mg/kg), Total Phosphorus (mg/kg), Total Potassium (mg/kg), Alkalinity as $CaCO_3$ (mg/kg), Arsenic (mg/kg), Cadmium (mg/kg), Copper (mg/kg), Lead (mg/kg), Mercury (mg/kg), Nickel (mg/kg), Selenium (mg/kg), Zinc (mg/kg) been submitted to DEQ? The samples shall be no more than 4½ years old and each sampling date shall be at least 1 month apart. ☐ Yes ☐ No

   If no, provide the data with this application.

Part 3 – Land Application of Class B Biosolids (To be completed by all facilities that land apply Class B biosolids.)

1. Provide to DEQ and to each locality in which biosolids are to be land applied, written evidence of financial responsibility. Evidence of financial responsibility shall be provided in accordance with 9VAC25-31-100 P 9.
2. For each site, provide a properly completed landowner agreement for each landowner, using the most current Land Application Agreement - Biosolids Form (VPDES Sewage Sludge Permit Application Form – Attachment to Section C).
3. Are any new land application fields proposed at this reissuance? ☐ Yes ☑ No

   If yes, contact the DEQ Regional Office for additional submittal requirements.
4. For the currently permitted land application fields, are the previously submitted site booklets, maps and acreage accurate. ☐ Yes ☐ No

   If no, contact the DEQ Regional Office for additional submittal requirements.
5. Does the facility's Biosolids Management Plan on file with DEQ include the following minimum information? ☐ Yes ☐ No
   a. An odor control plan that addresses the abatement of odors resulting from the storage and/or land application of biosolids.
   b. A description of the transport vehicles to be used.
   c. Procedures for biosolids offloading at the land application site including spill prevention, cleanup (including vehicle cleaning), field reclamation, and emergency notification and cleanup measures.
   d. A description of the land application equipment including procedures for calibrating equipment to ensure uniform distribution and appropriate loading rates.
   e. Procedures used to ensure that land application activities address notification requirements, signage requirements, slope restrictions, operation limitations during periods of inclement weather, soil pH requirements, buffer zone requirements, and site restrictions.
   f. Any other information necessary to ensure compliance with the requirements of the Biosolids Program of the VPDES Permit Regulation (9VAC25-31-420 through 720).

Certification

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system or those persons directly responsible for gathering the information, the information is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Name and Official Title: Jesse W. Moffett - Executive Director

Signature: _____

Telephone number / Email: (540) 722-3579 / jmoffett@fredwin.com

Date signed: 08/27/2015

(Based on a review of this information, it may be necessary to submit additional information to meet other legal or technical review requirements.)

VPDES SEWAGE SLUDGE PERMIT APPLICATION FORM

SCREENING INFORMATION

This application is divided into sections. Sections A pertain to all applicants. The applicability of Sections B, C and D depend on your facility's sewage sludge use or disposal practices. The information provided on this page will help you determine which sections to fill out.

1. All applicants must complete Section A (General Information).

2. Will this facility generate sewage sludge? _X_ Yes ___ No

   Will this facility derive a material from sewage sludge? ___ Yes _X_ No

   If you answered Yes to either, complete Section B (Generation Of Sewage Sludge Or Preparation Of A Material Derived From Sewage Sludge).

3. Will this facility apply sewage sludge to the land? ___ Yes _X_ No

   Will sewage sludge from this facility be applied to the land? ___ Yes _X_ No

   If you answered No to both questions above, skip Section C.

   If you answered Yes to either, answer the following three questions:

   a. Will the sewage sludge from this facility meet the ceiling concentrations, pollutant concentrations, Class A pathogen reduction requirements and one of the vector attraction reduction requirements 1-8, as identified in the instructions?

   ___ Yes ___ No

   b. Will sewage sludge from this facility be placed in a bag or other container for sale or give-away for application to the land? ___ Yes ___ No

   c. Will sewage sludge from this facility be sent to another facility for treatment or blending? __ Yes ___ No

   If you answered No to all three, complete Section C (Land Application Of Bulk Sewage Sludge).

   If you answered Yes to a, b or c, skip Section C.

4. Do you own or operate a surface disposal site? ___ Yes _X_ No

   If Yes, complete Section D (Surface Disposal).

SECTION A. GENERAL INFORMATION

All applicants must complete this section.

1. Facility Information.

   a. Facility name: Opequon Water Reclamation Facility

   b. Contact person: Mr. RICHARD WADKINS
   Title: Facility Manager
   Phone: (540) 665-9867

   c. Mailing address:
   Street or P.O. Box: 3100 Berryville Pike
   City or Town: Winchester State: VA Zip: 22603

   d. Facility location:
   Street or Route #: 3100 Berryville Pike
   County: Frederick County
   City or Town: Winchester State: VA Zip: 22603

   e. Is this facility a Class I sludge management facility? X Yes ___ No

   f. Facility design flow rate: 12.6 mgd

   g. Total population served: 48,600

   h. Indicate the type of facility:
   X Publicly owned treatment works (POTW)
   ___ Privately owned treatment works
   ___ Federally owned treatment works Blending or treatment operation
   ___ Surface disposal site
   ___ Other (describe): _____

2. Applicant Information. If the applicant is different from the above, provide the following:

   a. Applicant name: Frederick-Winchester Service Authority

   b. Mailing address: P.O. Box 43
   Street or P.O. Box: _____
   City or Town: Winchester State: VA Zip: 22604

   c. Contact person: Jesse W. Moffett
   Title: Executive Director
   Phone: (540) 722-3579

   d. Is the applicant the owner or operator (or both) of this facility?
   X owner ___ operator

   e. Should correspondence regarding this permit be directed to the facility or the applicant? (Check one)
   ___ facility X applicant

3. Permit Information.

   a. Facility's VPDES permit number (if applicable): VA 0065552

   b. List on this form or an attachment, all other federal, state or local permits or construction approvals received or applied for that regulate this facility's sewage sludge management practices:

Permit Number:	Type of Permit

4. Indian Country. Does any generation, treatment, storage, application to land or disposal of sewage sludge from this facility occur in Indian Country? ___ Yes X No If yes, describe:

_____

5. Topographic Map. Provide a topographic map or maps (or other appropriate maps if a topographic map is unavailable) that shows the following information. Maps should include the area one mile beyond all property boundaries of the facility:

   a. Location of all sewage sludge management facilities, including locations where sewage sludge is generated, stored, treated, or disposed.

   b. Location of all wells, springs, and other surface water bodies listed in public records or otherwise known to the applicant within 1/4 mile of the property boundaries.

6. Line Drawing. Provide a line drawing and/or a narrative description that identifies all sewage sludge processes that will be employed during the term of the permit including all processes used for collecting, dewatering, storing, or treating sewage sludge, the destination(s) of all liquids and solids leaving each unit, and all methods used for pathogen reduction and vector attraction reduction.

7. Contractor Information. Are any operational or maintenance aspects of this facility related to sewage sludge generation, treatment, use or disposal the responsibility of a contractor? ___Yes _X_No

   If yes, provide the following for each contractor (attach additional pages if necessary).

   Name: _____

   Mailing address: _____

   Street or P.O. Box: _____

   City or Town: _____State: _____Zip: _____

   Phone: ( ) _____

   Contractor's Federal, State or Local Permit Number(s) applicable to this facility's sewage sludge:

   _____

   If the contractor is responsible for the use and/or disposal of the sewage sludge, provide a description of the service to be provided to the applicant and the respective obligations of the applicant and the contractor(s).

8. Pollutant Concentrations. Using the table below or a separate attachment, provide sewage sludge monitoring data for the pollutants which limits in sewage sludge have been established in 9 VAC 25-31-10 et seq. for this facility's expected use or disposal practices. All data must be based on three or more samples taken at least one month apart and must be no more than four and one-half years old.

POLLUTANT	CONCENTRATION (mg/kg dry weight)	SAMPLE DATE	ANALYTICAL METHOD	DETECTION LEVEL FOR ANALYSIS
Arsenic	See Attached Summary Sheet of Sludge Testing			
Cadmium				
Chromium				
Copper				
Lead				
Mercury				
Molybdenum				
Nickel				
Selenium				
Zinc				

9. Certification. Read and submit the following certification statement with this application. Refer to the instructions to determine who is an officer for purposes of this certification. Indicate which parts of the application you have completed and are submitting:

   _X_Section A (General Information)

   _X_Section B (Generation of Sewage Sludge or Preparation of a Material Derived from Sewage Sludge)

   _____Section C (Land Application of Bulk Sewage Sludge)

   _____Section D (Surface Disposal)

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system or those persons directly responsible for gathering the information, the information is, to the best of my knowledge and belief, true, accurate and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Name and official title Jesse W. Moffett – Executive Director - Frederick-Winchester Service Authority

Signature _____ Date Signed 8/12/10

Telephone number (540) 722 -3579

Upon request of the department, you must submit any other information necessary to assess sewage sludge use or disposal practices at your facility or identify appropriate permitting requirements.

SECTION B. GENERATION OF SEWAGE SLUDGE OR PREPARATION OF A MATERIAL DERIVED FROM SEWAGE SLUDGE

Complete this section if your facility generates sewage sludge or derives a material from sewage sludge

1. Amount Generated On Site.
   Total dry metric tons per 365-day period generated at your facility: 4,875.31 dry metric tons

2. Amount Received from Off Site. If your facility receives sewage sludge from another facility for treatment, use or disposal, provide the following information for each facility from which sewage sludge is received. If you receive sewage sludge from more than one facility, attach additional pages as necessary.
   a. Facility name:_____
   b. Contact Person:_____
      Title: _____
      Phone ( )_____
   c. Mailing address:
      Street or P.O. Box:_____
      City or Town:_____ State:_____ Zip:_____
   d. Facility Address:_____
      (not P.O. Box) _____
   e. Total dry metric tons per 365-day period received from this facility:_____ dry metric tons
   f. Describe, on this form or on another sheet of paper, any treatment processes known to occur at the off-site facility, including blending activities and treatment to reduce pathogens or vector attraction characteristics:
      _____
      _____

3. Treatment Provided at Your Facility.
   a. Which class of pathogen reduction is achieved for the sewage sludge at your facility?
      X Class A ____Class B ____Neither or unknown
   b. Describe, on this form or another sheet of paper, any treatment processes used at your facility to reduce pathogens in sewage sludge: Lime Stabilization of sludge resulting in elevated pH is undertaken prior to dewatering of sludge
   c. Which vector attraction reduction option is met for the sewage sludge at your facility?
      ____Option 1 (Minimum 38 percent reduction in volatile solids)
      ____Option 2 (Anaerobic process, with bench-scale demonstration)
      ____Option 3 (Aerobic process, with bench-scale demonstration)
      ____Option 4 (Specific oxygen uptake rate for aerobically digested sludge)
      ____Option 5 (Aerobic processes plus raised temperature)
      X Option 6 (Raise pH to 12 and retain at 11.5)
      ____Option 7 (75 percent solids with no unstabilized solids)
      ____Option 8 (90 percent solids with unstabilized solids)
      ____None or unknown
   d. Describe, on this form or another sheet of paper, any treatment processes used at your facility to reduce vector attraction properties of sewage sludge: Lime Stabilization of sludge resulting in elevated pH is undertaken prior to dewatering of sludge
   e. Describe, on this form or another sheet of paper, any other sewage sludge treatment activities, including blending, not identified in a - d above: _____
      _____

4. Preparation of Sewage Sludge Meeting Ceiling and Pollutant Concentrations, Class A Pathogen Requirements and One of Vector Attraction Reduction Options 1-8 (EQ Sludge).
   (If sewage sludge from your facility does not meet all of these criteria, skip Question 4.)
   a. Total dry metric tons per 365-day period of sewage sludge subject to this section that is applied to the land: -
      _____ dry metric tons
   b. Is sewage sludge subject to this section placed in bags or other containers for sale or give-away?
      ___Yes ___No

5. Sale or Give-Away in a Bag or Other Container for Application to the Land.
(Complete this question if you place sewage sludge in a bag or other container for sale or give-away prior to land application. Skip this question if sewage sludge is covered in Question 4.)
   a. Total dry metric tons per 365-day period of sewage sludge placed in a bag or other container at your facility for sale or give-away for application to the land:_____ dry metric tons
   b. Attach, with this application, a copy of all labels or notices that accompany the sewage sludge being sold or given away in a bag or other container for application to the land.

6. Shipment Off Site for Treatment or Blending.
(Complete this question if sewage sludge from your facility is sent to another facility that provides treatment or blending. This question does not apply to sewage sludge sent directly to a land application or surface disposal site. Skip this question if the sewage sludge is covered in Questions 4 or 5. If you send sewage sludge to more than one facility, attach additional sheets as necessary.)
   a. Receiving facility name:_____
   b. Facility contact: _____
      Title: _____
      Phone: ( )_____
   c. Mailing address:
      Street or P.O. Box:_____
      City or Town:_____ State:_____ Zip:_____
   d. Total dry metric tons per 365-day period of sewage sludge provided to receiving facility: _____ dry metric tons
   e. List, on this form or an attachment, the receiving facility's VPDES permit number as well as the numbers of all other federal, state or local permits that regulate the receiving facility's sewage sludge use or disposal practices:
      Permit Number: Type of Permit
      _____ _____
      _____ _____
   f. Does the receiving facility provide additional treatment to reduce pathogens in sewage sludge from your facility? ___Yes ___No
      Which class of pathogen reduction is achieved for the sewage sludge at the receiving facility?
      ___Class A ___Class B ___Neither or unknown
      Describe, on this form or another sheet of paper, any treatment processes used at the receiving facility to reduce pathogens in sewage sludge:_____
   g. Does the receiving facility provide additional treatment to reduce vector attraction characteristics of the sewage sludge? ___Yes ___No
      Which vector attraction reduction option is met for the sewage sludge at the receiving facility?
      ___Option 1 (Minimum 38 percent reduction in volatile solids)
      ___Option 2 (Anaerobic process, with bench-scale demonstration)
      ___Option 3 (Aerobic process, with bench-scale demonstration)
      ___Option 4 (Specific oxygen uptake rate for aerobically digested sludge)
      ___Option 5 (Aerobic processes plus raised temperature)
      ___Option 6(Raise pH to 12 and retain at 11.5)
      ___Option 7 (75 percent solids with no unstabilized solids)
      ___Option 8(90 percent solids with unstabilized solids)
      ___None unknown
      Describe, on this form or another sheet of paper, any treatment processes used at the receiving facility to reduce vector attraction properties of sewage sludge:_____
   h. Does the receiving facility provide any additional treatment or blending not identified in for g above?
      ___Yes ___No
      If yes, describe, on this form or another sheet of paper, the treatment processes not identified in for g above:
      _____
      _____
   i. If you answered yes to f., g or h above, attach a copy of any information you provide to the receiving facility to comply with the "notice and necessary information" requirement of 9 VAC 25-3 1-530.G.

j. Does the receiving facility place sewage sludge from your facility in a bag or other container for sale or give away for application to the land? ___Yes ___No
If yes, provide a copy of all labels or notices that accompany the product being sold or given away.

k. Will the sewage sludge be transported to the receiving facility in a truck-mounted watertight tank normally used for such purposes? ___ Yes ___ No. If no, provide description and specification on the vehicle used to transport the sewage sludge to the receiving facility.
Show the haul route(s) on a location map or briefly describe the haul route below and indicate the days of the week and the times of the day sewage sludge will be transported. _____
_____
_____

7. Land Application of Bulk Sewage Sludge.
(Complete Question 7.a if sewage sludge from your facility is applied to the land, unless the sewage sludge is covered in Questions 4, 5 or 6; complete Question 7.b, c & d only If you are responsible for land application of sewage sludge.)

a. Total dry metric tons per 365-day period of sewage sludge applied to all land application sites: dry metric tons

b. Do you identify all land application sites in Section C of this application? ___Yes ___No
If no, submit a copy of the Land Application Plan (LAP) with this application (LAP should be prepared in accordance with the instructions).

c. Are any land application sites located in States other than Virginia? ___Yes ___No
If yes, describe, on this form or on another sheet of paper, how you notify the permitting authority for the States where the land application sites are located. Provide a copy of the notification.
_____
_____

d. Attach a copy of any information you provide to the owner or lease holder of the land application sites to comply with the "notice and necessary" information requirement of 9 VAC 25-31-530 F and/or H (Examples may be obtained in Appendix IV).

8. Surface Disposal.
(Complete Question S if sewage sludge from your facility is placed on a surface disposal site.)

a. Total dry metric tons per 365-day period of sewage sludge from your facility placed on all surface disposal sites: _____ dry metric tons

b. Do you own or operate all surface disposal sites to which you send sewage sludge for disposal?
___ Yes ___No
If no, answer questions - g for each surface disposal site that you do not own or operate. If you send sewage sludge to more than one surface disposal site, attach additional pages as necessary.

c. Site name or number: _____

d. Contact person: _____
Title: _____
Phone: ( )_____
Contact is: ___Site Owner ___Site operator

e. Mailing address.
Street or P.O. Box:_____
City or Town:_____ State: Zip:_____

f. Total dry metric tons per 365-day period of sewage sludge from your facility placed on this surface disposal site: _____ dry metric tons

g. List, on this form or an attachment, the surface disposal site VPDES permit number as well as the numbers of all other federal, state or local permits that regulate the sewage sludge use or disposal practices at the surface disposal site:

Permit Number:	Type of Permit
_____	_____
_____	_____

9. Incineration.
(Complete Question 9 if sewage sludge from your facility is tired in a sewage sludge incinerator.)

a. Total dry metric tons per 365-day period of sewage sludge from your facility fired in a sewage sludge incinerator: _____ dry metric tons

b. Do you own or operate all sewage sludge incinerators in which sewage sludge from your facility is fired?
___Yes ___No
If no, answer questions c - g for each sewage sludge incinerator that you do not own or operate. If you send sewage sludge to more than one sewage sludge incinerator, attach additional pages as necessary.

c. Incinerator name or number: _____

d. Contact person:
Title:
Phone: ( )_____
Contact is: ___Incinerator Owner ___Incinerator Operator

e. Mailing address.
Street or P.O. Box:_____
City or Town:_____ State:_____ Zip:_____

f. Total dry metric tons per 365-day period of sewage sludge from your facility fired in this sewage sludge incinerator: _____ dry metric tons

g. List on this form or an attachment the numbers of all other federal, state or local permits that regulate the firing of sewage sludge at this incinerator:

Permit Number:	Type of Permit

10. Disposal in a Municipal Solid Waste Landfill.
(Complete Question 10 If sewage sludge from your facility is placed on a municipal solid waste landfill. Provide the following Information for each municipal solid waste landfill on which sewage sludge from your facility is placed. If sewage sludge is placed on more than one municipal solid waste landfill, attach additional pages as necessary.)

a. Landfill name: Frederick County Regional Landfill

b. Contact person: Mr. Steven Frye
Title: Landfill Manager
Phone: (540) 665-5658
Contact is: ___Landfill Owner _X_Landfill Operator

c. Mailing address. Street or P.O. Box: 280 Landfill Road
City or Town: Winchester State: VA Zip: 22602

d. Landfill location.
Street or Route #: Located off of Sulfur Spring Road
County: Frederick
City or Town: Winchester State: VA Zip: 22602

e. Total dry metric tons per 365-day period of sewage sludge placed in this municipal solid waste landfill:
4,875.31 dry metric tons

f. List, on this form or an attachment, the numbers of all federal, state or local permits that regulate the operation of this municipal solid waste landfill:

Permit Number:	Type of Permit
529	Solid Waste
VRO81312	Air
VA0088471	Wastewater

g. Does sewage sludge meet applicable requirements in the Virginia Solid Waste Management Regulation, 9 VAC 20-80-10 et seq., concerning the quality of materials disposed in a municipal solid waste landfill?
_X_Yes ___No

h. Does the municipal solid waste landfill comply with all applicable criteria set forth in the Virginia Solid Waste Management Regulation, 9 VAC 20-80-10 et seq.? _X_Yes ___No

i. Will the vehicle bed or other container used to transport sewage sludge to the municipal solid waste landfill be watertight and covered? _X_Yes ___ No
Show the haul route(s) on a location map or briefly describe the route below and indicate the days of the week and time of the day sewage sludge will be transported. See Attached Routing Map

5 Year Sludge Analysis Summary						
Pollutant	2011 Annual Average Concentration (mg/kg dry weight)	2012 Annual Average Concentration (mg/kg dry weight)	2013 Annual Average Concentration (mg/kg dry weight)	2014 Annual Average Concentration (mg/kg dry weight)	2015 Annual Average Concentration (mg/kg dry weight)	5 Year Average
Arsenic	1.35	0.78	1.47	1.33	2.30	1.45
Cadmium	0.87	0.38	1.12	0.49	0.63	0.70
Chromium	32.62	12.90	23.66	21.12	21.14	22.29
Copper	327.67	116.10	235.80	169.63	187.80	207.40
Lead	12.73	3.55	7.92	5.42	5.78	7.08
Mercury	0.10	0.10	0.18	0.08	0.36	0.17
Molybdenum	7.73	3.87	7.28	5.75	10.76	7.08
Nickel	22.52	9.82	13.32	9.08	10.16	12.98
Selenium	3.80	1.93	2.00	5.02	2.14	2.98
Zinc	282.83	134.68	277.20	202.80	291.75	237.85

Frederick-Winchester Service Authority

Facility: Opequon Water Reclamation Facility	
Permit Number: VAL0065552	

Sludge Disposal - January 1, 2010 to December 31, 2010

Month	wet tons	% solids	dry tons	conv.	Metric dry tons	
January	930.02	29.89%	277.98	0.9072	252.19	$ 22,432.08
February	1,026.80	30.48%	312.97	0.9072	283.93	$ 24,766.42
March	1,425.37	30.07%	428.61	0.9072	388.83	$ 34,379.92
April	1,278.00	30.00%	383.40	0.9072	347.82	$ 30,825.36
May	1,295.65	32.15%	416.55	0.9072	377.90	$ 31,251.08
June	1,420.73	32.42%	460.60	0.9072	417.86	$ 34,268.01
July	1,237.27	32.09%	397.04	0.9072	360.19	$ 29,842.95
August	1,178.62	31.99%	377.04	0.9072	342.05	$ 28,428.31
September	992.15	32.31%	320.56	0.9072	290.82	$ 23,930.66
October	1,137.27	34.04%	387.13	0.9072	351.20	$ 27,430.95
November	1,345.68	33.78%	454.57	0.9072	412.39	$ 32,457.80
December	1,100.01	31.93%	351.23	0.9072	318.64	$ 26,532.24
Totals	**14,367.57**	**31.76%**	**4,567.69**		**4,143.81**	$ 346,545.79
Prior Yr.	**14,753.88**					
	(386.31)	-2.62%				

Frederick-Winchester Service Authority

Facility: Opequon Water Reclamation Facility	
Permit Number: VAL0065552	

Sludge Disposal - January 1, 2011 to December 31, 2011

Month	wet tons	% solids	dry tons	conv.	Metric dry tons	
January	1,222.30	32.12%	392.60	0.9072	356.17	$ 29,481.88
February	1,188.32	31.80%	377.89	0.9072	342.82	$ 28,662.28
March	1,451.29	30.38%	440.90	0.9072	399.99	$ 35,005.11
April	1,039.43	31.14%	323.68	0.9072	293.64	$ 25,071.05
May	1,194.92	32.29%	385.84	0.9072	350.03	$ 28,821.47
June	1,014.26	34.54%	350.33	0.9072	317.82	$ 24,463.95
July	1,299.73	34.59%	449.58	0.9072	407.86	$ 31,349.49
August	1,285.43	34.51%	443.60	0.9072	402.44	$ 31,004.57
September	1,179.08	32.95%	388.51	0.9072	352.45	$ 28,439.41
October	1,068.88	30.46%	325.58	0.9072	295.37	$ 25,781.39
November	982.08	31.89%	313.19	0.9072	284.12	$ 23,687.77
December	993.33	31.04%	308.33	0.9072	279.72	$ 23,959.12
Totals	**13,919.05**	**32.31%**	**4,500.02**		**4,082.41**	$335,727.49
Prior Yr.	**14,367.57**					
	(448.52)	-3.12%				
	6808.53		2228.78			

Frederick-Winchester Service Authority

Facility: Opequon Water Reclamation Facility	
Permit Number: VAL0065552	

Sludge Disposal - January 1, 2012 to December 31, 2012

Month	wet tons	% solids	dry tons	conv.	Metric dry tons	
January	1,079.27	29.24%	315.58	0.9072	286.29	$ 26,031.99
February	1,076.84	32.36%	348.47	0.9072	316.13	$ 25,973.38
March	1,338.67	32.44%	434.26	0.9072	393.96	$ 32,288.72
April	1,161.85	32.82%	381.32	0.9072	345.93	$ 28,023.82
May	1,252.81	32.90%	412.17	0.9072	373.92	$ 30,217.78
June	1,133.54	34.23%	388.01	0.9072	352.00	$ 27,340.98
July	773.99	36.18%	280.03	0.9072	254.04	$ 18,668.64
August	1,332.94	35.80%	477.19	0.9072	432.91	$ 32,150.51
September	1,306.71	36.26%	473.81	0.9072	429.84	$ 31,517.85
October	1,365.30	34.71%	473.90	0.9072	429.92	$ 32,931.04
November	1,277.06	34.74%	443.65	0.9072	402.48	$ 30,802.69
December	1,171.10	32.23%	377.45	0.9072	342.42	$ 28,246.93
Totals	**14,270.08**	**33.66%**	**4,805.84**		**4,359.86**	$344,194.33
Prior Yr.	**13,919.05**					
	351.03	2.52%	2526.03			
	7,227.10		2,526.03			
	1,079.27	17%	183.48	0.581395349		
	431.71	0.17	73.39			

Frederick-Winchester Service Authority

Facility: Opequon Water Reclamation Facility	
Permit Number: VAL0065552	

Sludge Disposal - January 1, 2013 to December 31, 2013

Month	wet tons	% solids	dry tons	conv.	Metric dry tons	
January	1,175.81	29.00%	340.98	0.9072	309.34	$ 28,360.54
February	1,152.36	32.00%	368.76	0.9072	334.53	$ 27,794.92
March	1,202.97	30.00%	360.89	0.9072	327.40	$ 29,015.64
April	1,263.46	31.00%	391.67	0.9072	355.33	$ 30,474.66
May	1,589.36	33.00%	524.49	0.9072	475.82	$ 38,335.36
June	1,407.23	34.00%	478.46	0.9072	434.06	$ 33,942.39
July	1,325.53	34.00%	450.68	0.9072	408.86	$ 31,971.78
August	1,002.63	33.00%	330.87	0.9072	300.16	$ 24,183.44
September	1,116.48	34.00%	379.60	0.9072	344.38	$ 26,929.50
October	1,190.38	34.00%	404.73	0.9072	367.17	$ 28,711.97
November	1,214.30	34.00%	412.86	0.9072	374.55	$ 29,288.92
December	1,169.44	34.00%	397.61	0.9072	360.71	$ 28,206.89
Totals	**14,809.95**	**32.67%**	**4,841.60**		**4,392.30**	$357,215.99
Prior Yr.	**14,270.08**		**4,805.84**			
	539.87	3.78%	2376.35			
	7,018.76		2,376.35			
	1,079.27	17%	183.48	0.53807632		
	431.71	0.17	73.39			

Frederick-Winchester Service Authority

Facility: Opequon Water Reclamation Facility	
Permit Number: VAL0065552	

Sludge Disposal - January 1, 2014 to December 31, 2014

Month	wet tons	% solids	dry tons	conv.	Metric dry tons	
January	1,155.87	30.82%	356.24	0.9072	323.18	$ 27,879.58
February	995.83	29.69%	295.66	0.9072	268.22	$ 24,019.42
March	1,232.50	29.47%	363.22	0.9072	329.51	$ 29,727.90
April	1,181.73	31.73%	374.96	0.9072	340.17	$ 28,503.33
May	1,315.50	32.82%	431.75	0.9072	391.68	$ 31,729.86
June	1,434.89	34.04%	488.44	0.9072	443.11	$ 34,609.55
July	1,345.72	34.07%	458.49	0.9072	415.94	$ 32,458.77
August	1,334.95	32.87%	438.80	0.9072	398.08	$ 32,198.99
September	1,335.74	31.02%	414.35	0.9072	375.90	$ 32,218.05
October	1,335.87	31.76%	424.27	0.9072	384.90	$ 32,221.18
November	936.76	30.87%	289.18	0.9072	262.34	$ 22,594.65
December	1,139.75	29.38%	334.86	0.9072	303.78	$ 27,490.77
Totals	**14,745.11**	**31.55%**	**4,670.21**		**4,236.81**	$ 355,652.05
Prior Yr.	**14,809.95**		**4,841.60**			
	(64.84)	-0.44%	2359.94			
	7,428.79		2,359.94			

Pollutant	Concentration (mg/kg dry weight)	Sample Date	Analytical Method
Arsenic	2.40	5-Jan-11	EPA 6010
Cadmium	0.62	5-Jan-11	EPA 6010
Chromium	28.40	5-Jan-11	EPA 6010
Copper	277.00	5-Jan-11	EPA 6010
Lead	7.00	5-Jan-11	EPA 6010
Mercury	0.096	5-Jan-11	EPA 7471
Molybdenum	5.30	5-Jan-11	EPA 6010
Nickel	20.70	5-Jan-11	EPA 6010
Selenium	3.40	5-Jan-11	EPA 6010
Zinc	218.00	5-Jan-11	EPA 6010
Pollutant	Concentration (mg/kg dry weight)	Sample Date	Analytical Method
Arsenic	1.00	1-Mar-11	EPA 6010
Cadmium	2.10	1-Mar-11	EPA 6010
Chromium	31.30	1-Mar-11	EPA 6010
Copper	304.00	1-Mar-11	EPA 6010
Lead	6.30	1-Mar-11	EPA 6010
Mercury	0.12	1-Mar-11	EPA 7471
Molybdenum	6.10	1-Mar-11	EPA 6010
Nickel	21.00	1-Mar-11	EPA 6010
Selenium	3.40	1-Mar-11	EPA 6010
Zinc	233.00	1-Mar-11	EPA 6010
Pollutant	Concentration (mg/kg dry weight)	Sample Date	Analytical Method
Arsenic	0.83	13-May-11	EPA 6010
Cadmium	1.00	13-May-11	EPA 6010
Chromium	27.20	13-May-11	EPA 6010
Copper	328.00	13-May-11	EPA 6010
Lead	8.20	13-May-11	EPA 6010
Mercury	0.060	13-May-11	EPA 7471
Molybdenum	6.70	13-May-11	EPA 6010
Nickel	19.60	13-May-11	EPA 6010
Selenium	5.30	13-May-11	EPA 6010
Zinc	272.00	13-May-11	EPA 6010
Pollutant	Concentration (mg/kg dry weight)	Sample Date	Analytical Method
Arsenic	1.00	5-Jul-11	EPA 6010
Cadmium	0.54	5-Jul-11	EPA 6010
Chromium	39.10	5-Jul-11	EPA 6010
Copper	329.00	5-Jul-11	EPA 6010
Lead	9.30	5-Jul-11	EPA 6010
Mercury	0.071	5-Jul-11	EPA 7471
Molybdenum	8.90	5-Jul-11	EPA 6010
Nickel	27.90	5-Jul-11	EPA 6010
Selenium	3.30	5-Jul-11	EPA 6010
Zinc	359.00	5-Jul-11	EPA 6010
Pollutant	Concentration (mg/kg dry weight)	Sample Date	Analytical Method
Arsenic	0.98	6-Sep-11	EPA 6010
Cadmium	0.64	6-Sep-11	EPA 6010
Chromium	23.90	6-Sep-11	EPA 6010
Copper	252.00	6-Sep-11	EPA 6010
Lead	8.00	6-Sep-11	EPA 6010
Mercury	0.061	6-Sep-11	EPA 7471
Molybdenum	6.80	6-Sep-11	EPA 6010
Nickel	15.50	6-Sep-11	EPA 6010
Selenium	2.70	6-Sep-11	EPA 6010
Zinc	216.00	6-Sep-11	EPA 6010
Pollutant	Concentration (mg/kg dry weight)	Sample Date	Analytical Method
Arsenic	1.90	3-Nov-11	EPA 6010
Cadmium	0.34	3-Nov-11	EPA 6010
Chromium	45.80	3-Nov-11	EPA 6010
Copper	476.00	3-Nov-11	EPA 6010
Lead	37.60	3-Nov-11	EPA 6010
Mercury	0.18	3-Nov-11	EPA 7471
Molybdenum	12.60	3-Nov-11	EPA 6010
Nickel	30.40	3-Nov-11	EPA 6010
Selenium	4.70	3-Nov-11	EPA 6010
Zinc	399.00	3-Nov-11	EPA 6010

Yellow Highlighted values are below QL

Pollutant	2011 Annual Average Concentration (mg/kg dry weight)
Arsenic	1.35
Cadmium	0.87
Chromium	32.62
Copper	327.67
Lead	12.73
Mercury	0.10
Molybdenum	7.73
Nickel	22.52
Selenium	3.80
Zinc	282.83

Pollutant	Concentration (mg/kg dry weight)	Sample Date	Analytical Method
Arsenic	2.00	9-Jan-13	EPA 6010
Cadmium	0.48	9-Jan-13	EPA 6010
Chromium	19.10	9-Jan-13	EPA 6010
Copper	232.00	9-Jan-13	EPA 6010
Lead	4.30	9-Jan-13	EPA 6010
Mercury	0.190	9-Jan-13	EPA 7471
Molybdenum	5.40	9-Jan-13	EPA 6010
Nickel	12.50	9-Jan-13	EPA 6010
Selenium	2.50	9-Jan-13	EPA 6010
Zinc	234.00	9-Jan-13	EPA 6010
Pollutant	**Concentration**	**Sample Date**	**Analytical Method**
Arsenic	1.00	5-Mar-13	EPA 6010
Cadmium	1.50	5-Mar-13	EPA 6010
Chromium	25.80	5-Mar-13	EPA 6010
Copper	237.00	5-Mar-13	EPA 6010
Lead	12.60	5-Mar-13	EPA 6010
Mercury	0.230	5-Mar-13	EPA 7471
Molybdenum	5.60	5-Mar-13	EPA 6010
Nickel	12.40	5-Mar-13	EPA 6010
Selenium	2.70	5-Mar-13	EPA 6010
Zinc	252.00	5-Mar-13	EPA 6010
Pollutant	**Concentration**	**Sample Date**	**Analytical Method**
Arsenic	0.83	6-May-13	EPA 6010
Cadmium	1.50	6-May-13	EPA 6010
Chromium	22.70	6-May-13	EPA 6010
Copper	200.00	6-May-13	EPA 6010
Lead	4.70	6-May-13	EPA 6010
Mercury	0.210	6-May-13	EPA 7471
Molybdenum	6.90	6-May-13	EPA 6010
Nickel	11.40	6-May-13	EPA 6010
Selenium	2.00	6-May-13	EPA 6010
Zinc	253.00	6-May-13	EPA 6010
Pollutant	**Concentration**	**Sample Date**	**Analytical Method**
Arsenic	2.00	10-Jul-13	EPA 6010
Cadmium	1.10	10-Jul-13	EPA 6010
Chromium	21.60	10-Jul-13	EPA 6010
Copper	227.00	10-Jul-13	EPA 6010
Lead	8.20	10-Jul-13	EPA 6010
Mercury	0.099	10-Jul-13	EPA 7471
Molybdenum	9.20	10-Jul-13	EPA 6010
Nickel	13.60	10-Jul-13	EPA 6010
Selenium	1.10	10-Jul-13	EPA 6010
Zinc	259.00	10-Jul-13	EPA 6010
Pollutant	**Concentration**	**Sample Date**	**Analytical Method**
Arsenic	1.50	3-Sep-13	EPA 6010
Cadmium	1.00	3-Sep-13	EPA 6010
Chromium	29.10	3-Sep-13	EPA 6010
Copper	283.00	3-Sep-13	EPA 6010
Lead	9.80	3-Sep-13	EPA 6010
Mercury	0.180	3-Sep-13	EPA 7471
Molybdenum	9.30	3-Sep-13	EPA 6010
Nickel	16.70	3-Sep-13	EPA 6010
Selenium	1.70	3-Sep-13	EPA 6010
Zinc	388.00	3-Sep-13	EPA 6010
Pollutant	**Concentration**	**Sample Date**	**Analytical Method**
Arsenic			EPA 6010
Cadmium			EPA 6010
Chromium			EPA 6010
Copper			EPA 6010
Lead			EPA 6010
Mercury			EPA 7471
Molybdenum			EPA 6010
Nickel			EPA 6010
Selenium			EPA 6010
Zinc			EPA 6010

Yellow Highlighted values are below QL

Pollutant	2013 Annual Average Concentration (mg/kg dry weight)
Arsenic	1.47
Cadmium	1.12
Chromium	23.66
Copper	235.80
Lead	7.92
Mercury	0.18
Molybdenum	7.28
Nickel	13.32
Selenium	2.00
Zinc	277.20

Pollutant	Concentration (mg/kg dry weight)	Sample Date	Analytical Method
Arsenic	0.37	4-Jan-12	EPA 6010
Cadmium	0.34	4-Jan-12	EPA 6010
Chromium	8.10	4-Jan-12	EPA 6010
Copper	78.00	4-Jan-12	EPA 6010
Lead	3.00	4-Jan-12	EPA 6010
Mercury	0.052	4-Jan-12	EPA 7471
Molybdenum	2.30	4-Jan-12	EPA 6010
Nickel	7.60	4-Jan-12	EPA 6010
Selenium	0.88	4-Jan-12	EPA 6010
Zinc	83.00	4-Jan-12	EPA 6010
Pollutant	**Concentration (mg/kg dry weight)**	**Sample Date**	**Analytical Method**
Arsenic	0.98	5-Mar-12	EPA 6010
Cadmium	0.59	5-Mar-12	EPA 6010
Chromium	23.90	5-Mar-12	EPA 6010
Copper	220.00	5-Mar-12	EPA 6010
Lead	5.20	5-Mar-12	EPA 6010
Mercury	0.210	5-Mar-12	EPA 7471
Molybdenum	6.20	5-Mar-12	EPA 6010
Nickel	19.10	5-Mar-12	EPA 6010
Selenium	1.90	5-Mar-12	EPA 6010
Zinc	234.00	5-Mar-12	EPA 6010
Pollutant	**Concentration (mg/kg dry weight)**	**Sample Date**	**Analytical Method**
Arsenic	1.10	7-May-12	EPA 6010
Cadmium	0.16	7-May-12	EPA 6010
Chromium	8.60	7-May-12	EPA 6010
Copper	69.80	7-May-12	EPA 6010
Lead	2.80	7-May-12	EPA 6010
Mercury	0.044	7-May-12	EPA 7471
Molybdenum	2.90	7-May-12	EPA 6010
Nickel	8.30	7-May-12	EPA 6010
Selenium	1.60	7-May-12	EPA 6010
Zinc	72.00	7-May-12	EPA 6010
Pollutant	**Concentration (mg/kg dry weight)**	**Sample Date**	**Analytical Method**
Arsenic	0.26	10-Jul-12	EPA 6010
Cadmium	0.51	10-Jul-12	EPA 6010
Chromium	8.10	10-Jul-12	EPA 6010
Copper	66.40	10-Jul-12	EPA 6010
Lead	1.60	10-Jul-12	EPA 6010
Mercury	0.064	10-Jul-12	EPA 7471
Molybdenum	2.80	10-Jul-12	EPA 6010
Nickel	3.90	10-Jul-12	EPA 6010
Selenium	2.60	10-Jul-12	EPA 6010
Zinc	76.90	10-Jul-12	EPA 6010
Pollutant	**Concentration (mg/kg dry weight)**	**Sample Date**	**Analytical Method**
Arsenic	0.57	5-Sep-12	EPA 6010
Cadmium	0.63	5-Sep-12	EPA 6010
Chromium	7.90	5-Sep-12	EPA 6010
Copper	57.40	5-Sep-12	EPA 6010
Lead	1.70	5-Sep-12	EPA 6010
Mercury	0.040	5-Sep-12	EPA 7471
Molybdenum	2.60	5-Sep-12	EPA 6010
Nickel	3.40	5-Sep-12	EPA 6010
Selenium	2.40	5-Sep-12	EPA 6010
Zinc	68.20	5-Sep-12	EPA 6010
Pollutant	**Concentration (mg/kg dry weight)**	**Sample Date**	**Analytical Method**
Arsenic	1.40	5-Nov-12	EPA 6010
Cadmium	0.07	5-Nov-12	EPA 6010
Chromium	20.80	5-Nov-12	EPA 6010
Copper	205.00	5-Nov-12	EPA 6010
Lead	7.00	5-Nov-12	EPA 6010
Mercury	0.200	5-Nov-12	EPA 7471
Molybdenum	6.40	5-Nov-12	EPA 6010
Nickel	16.60	5-Nov-12	EPA 6010
Selenium	2.20	5-Nov-12	EPA 6010
Zinc	274.00	5-Nov-12	EPA 6010

Yellow Highlighted values are below QL

Pollutant	2012 Annual Average Concentration (mg/kg dry weight)
Arsenic	0.78
Cadmium	0.38
Chromium	12.90
Copper	116.10
Lead	3.55
Mercury	0.10
Molybdenum	3.87
Nickel	9.82
Selenium	1.93
Zinc	134.68

Pollutant	Concentration (mg/kg dry weight)	Sample Date	Analytical Method
Arsenic	0.48	7-Jan-14	EPA 6010
Cadmium	0.21	7-Jan-14	EPA 6010
Chromium	7.60	7-Jan-14	EPA 6010
Copper	67.80	7-Jan-14	EPA 6010
Lead	1.70	7-Jan-14	EPA 6010
Mercury	0..035	7-Jan-14	EPA 7471
Molybdenum	1.80	7-Jan-14	EPA 6010
Nickel	3.90	7-Jan-14	EPA 6010
Selenium	0.90	7-Jan-14	EPA 6010
Zinc	71.80	7-Jan-14	EPA 6010
Pollutant	**Concentration**	**Sample Date**	**Analytical Method**
Arsenic	1.70	6-Mar-14	EPA 6010
Cadmium	0.20	6-Mar-14	EPA 6010
Chromium	19.90	6-Mar-14	EPA 6010
Copper	169.00	6-Mar-14	EPA 6010
Lead	4.70	6-Mar-14	EPA 6010
Mercury	0.140	6-Mar-14	EPA 7471
Molybdenum	4.20	6-Mar-14	EPA 6010
Nickel	11.20	6-Mar-14	EPA 6010
Selenium	2.10	6-Mar-14	EPA 6010
Zinc	176.00	6-Mar-14	EPA 6010
Pollutant	**Concentration**	**Sample Date**	**Analytical Method**
Arsenic	1.30	6-May-14	EPA 6010
Cadmium	0.96	6-May-14	EPA 6010
Chromium	26.00	6-May-14	EPA 6010
Copper	202.00	6-May-14	EPA 6010
Lead	5.10	6-May-14	EPA 6010
Mercury	0.130	6-May-14	EPA 7471
Molybdenum	5.50	6-May-14	EPA 6010
Nickel	10.00	6-May-14	EPA 6010
Selenium	2.20	6-May-14	EPA 6010
Zinc	241.00	6-May-14	EPA 6010
Pollutant	**Concentration**	**Sample Date**	**Analytical Method**
Arsenic	0.79	7-Jul-14	EPA 6010
Cadmium	0.15	7-Jul-14	EPA 6010
Chromium	26.60	7-Jul-14	EPA 6010
Copper	207.00	7-Jul-14	EPA 6010
Lead	12.40	7-Jul-14	EPA 6010
Mercury	0.014	7-Jul-14	EPA 7471
Molybdenum	7.70	7-Jul-14	EPA 6010
Nickel	11.20	7-Jul-14	EPA 6010
Selenium	21.80	7-Jul-14	EPA 6010
Zinc	251.00	7-Jul-14	EPA 6010
Pollutant	**Concentration**	**Sample Date**	**Analytical Method**
Arsenic	2.30	2-Sep-14	EPA 6010
Cadmium	1.10	2-Sep-14	EPA 6010
Chromium	34.60	2-Sep-14	EPA 6010
Copper	256.00	2-Sep-14	EPA 6010
Lead	5.80	2-Sep-14	EPA 6010
Mercury	0.120	2-Sep-14	EPA 7471
Molybdenum	9.90	2-Sep-14	EPA 6010
Nickel	12.20	2-Sep-14	EPA 6010
Selenium	2.20	2-Sep-14	EPA 6010
Zinc	315.00	2-Sep-14	EPA 6010
Pollutant	**Concentration**	**Sample Date**	**Analytical Method**
Arsenic	1.40	5-Nov-14	EPA 6010
Cadmium	0.30	5-Nov-14	EPA 6010
Chromium	12.00	5-Nov-14	EPA 6010
Copper	116.00	5-Nov-14	EPA 6010
Lead	2.80	5-Nov-14	EPA 6010
Mercury	0.016	5-Nov-14	EPA 7471
Molybdenum	5.40	5-Nov-14	EPA 6010
Nickel	6.00	5-Nov-14	EPA 6010
Selenium	0.93	5-Nov-14	EPA 6010
Zinc	162.00	5-Nov-14	EPA 6010

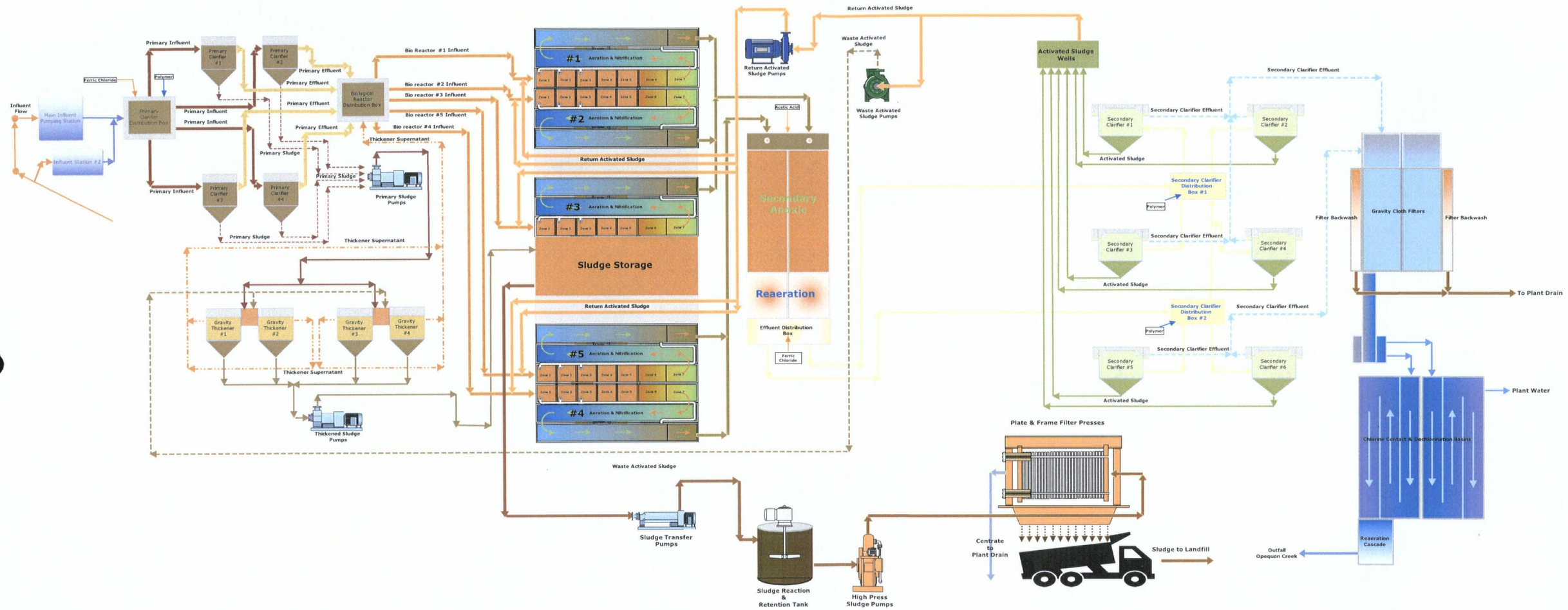
Yellow Highlighted values are below QL

Pollutant	2014 Annual Average Concentration (mg/kg dry weight)
Arsenic	1.33
Cadmium	0.49
Chromium	21.12
Copper	169.63
Lead	5.42
Mercury	0.08
Molybdenum	5.75
Nickel	9.08
Selenium	5.02
Zinc	202.80

Pollutant	Concentration (mg/kg dry weight)	Sample Date	Analytical Method
Arsenic	2.90	5-Jan-15	EPA 6010
Cadmium	0.87	5-Jan-15	EPA 6010
Chromium	24.20	5-Jan-15	EPA 6010
Copper	242.00	5-Jan-15	EPA 6010
Lead	6.50	5-Jan-15	EPA 6010
Mercury	1.200	5-Jan-15	EPA 7471
Molybdenum	18.60	5-Jan-15	EPA 6010
Nickel	11.50	5-Jan-15	EPA 6010
Selenium	1.20	5-Jan-15	EPA 6010
Zinc	266.00	5-Jan-15	EPA 6010
Pollutant	**Concentration**	**Sample Date**	**Analytical Method**
Arsenic	1.30	2-Mar-15	EPA 6010
Cadmium	0.46	2-Mar-15	EPA 6010
Chromium	15.40	2-Mar-15	EPA 6010
Copper	148.00	2-Mar-15	EPA 6010
Lead	5.90	2-Mar-15	EPA 6010
Mercury	0.097	2-Mar-15	EPA 7471
Molybdenum	7.00	2-Mar-15	EPA 6010
Nickel	9.70	2-Mar-15	EPA 6010
Selenium	1.10	2-Mar-15	EPA 6010
Zinc			EPA 6010
Pollutant	**Concentration**	**Sample Date**	**Analytical Method**
Arsenic	2.30	5-May-15	EPA 6010
Cadmium	0.48	5-May-15	EPA 6010
Chromium	17.90	5-May-15	EPA 6010
Copper	120.00	5-May-15	EPA 6010
Lead	3.60	5-May-15	EPA 6010
Mercury	0.160	5-May-15	EPA 7471
Molybdenum	7.40	5-May-15	EPA 6010
Nickel	6.90	5-May-15	EPA 6010
Selenium	3.50	5-May-15	EPA 6010
Zinc	192.00	5-May-15	EPA 6010
Pollutant	**Concentration**	**Sample Date**	**Analytical Method**
Arsenic	2.30	7-Jul-15	EPA 6010
Cadmium	0.89	7-Jul-15	EPA 6010
Chromium	27.50	7-Jul-15	EPA 6010
Copper	235.00	7-Jul-15	EPA 6010
Lead	8.10	7-Jul-15	EPA 6010
Mercury	0.120	7-Jul-15	EPA 7471
Molybdenum	8.30	7-Jul-15	EPA 6010
Nickel	13.40	7-Jul-15	EPA 6010
Selenium	2.70	7-Jul-15	EPA 6010
Zinc	366.00	7-Jul-15	EPA 6010
Pollutant	**Concentration**	**Sample Date**	**Analytical Method**
Arsenic	2.70	1-Sep-15	EPA 6010
Cadmium	0.43	1-Sep-15	EPA 6010
Chromium	20.70	1-Sep-15	EPA 6010
Copper	194.00	1-Sep-15	EPA 6010
Lead	4.80	1-Sep-15	EPA 6010
Mercury	0.240	1-Sep-15	EPA 7471
Molybdenum	12.50	1-Sep-15	EPA 6010
Nickel	9.30	1-Sep-15	EPA 6010
Selenium	2.20	1-Sep-15	EPA 6010
Zinc	343.00	1-Sep-15	EPA 6010
Pollutant	**Concentration**	**Sample Date**	**Analytical Method**
Arsenic			EPA 6010
Cadmium			EPA 6010
Chromium			EPA 6010
Copper			EPA 6010
Lead			EPA 6010
Mercury			EPA 7471
Molybdenum			EPA 6010
Nickel			EPA 6010
Selenium			EPA 6010
Zinc			EPA 6010

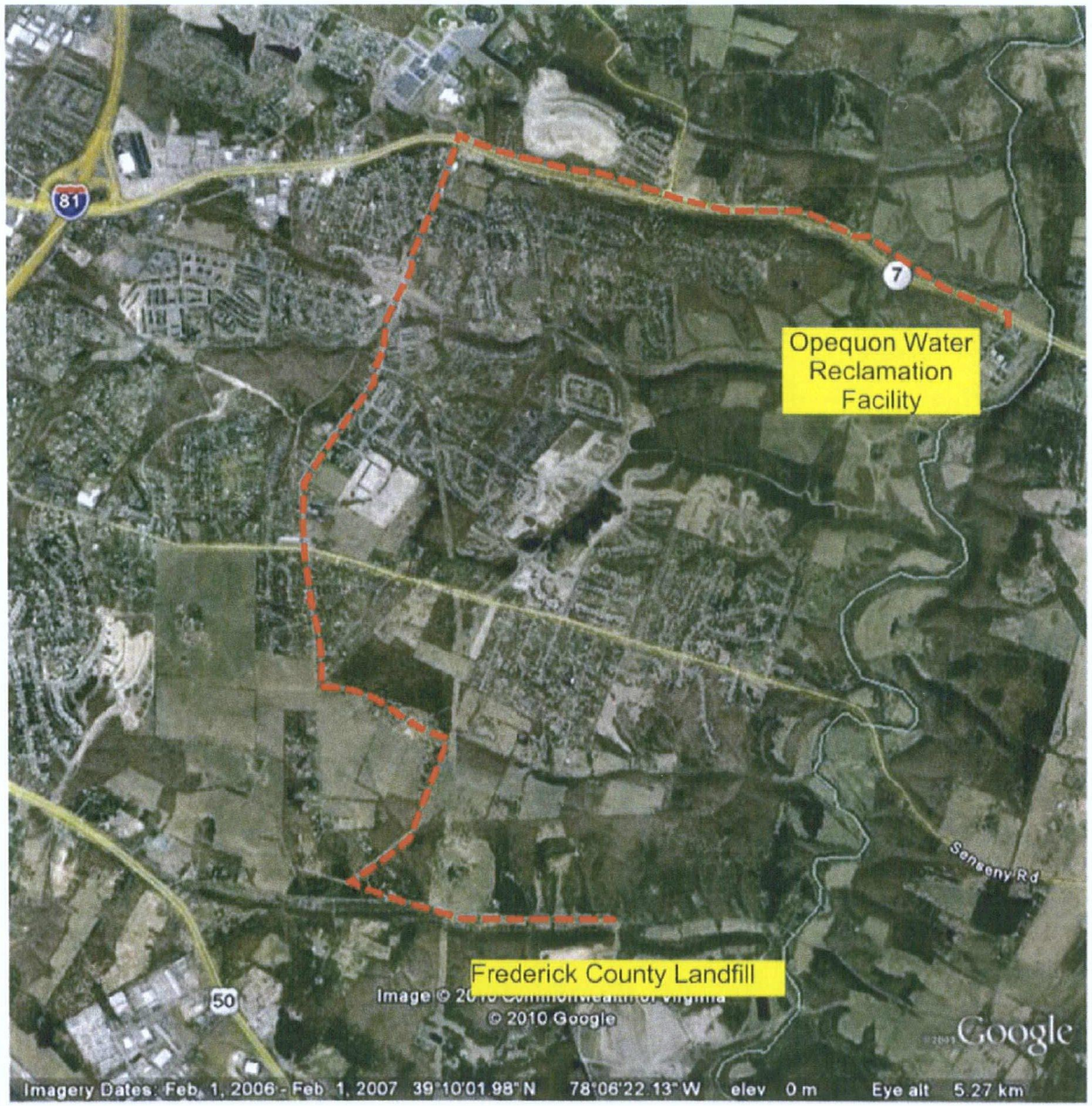
Yellow Highlighted values are below QL

Pollutant	2015 Annual Average Concentration (mg/kg dry weight)
Arsenic	2.30
Cadmium	0.63
Chromium	21.14
Copper	187.80
Lead	5.78
Mercury	0.36
Molybdenum	10.76
Nickel	10.16
Selenium	2.14
Zinc	291.75



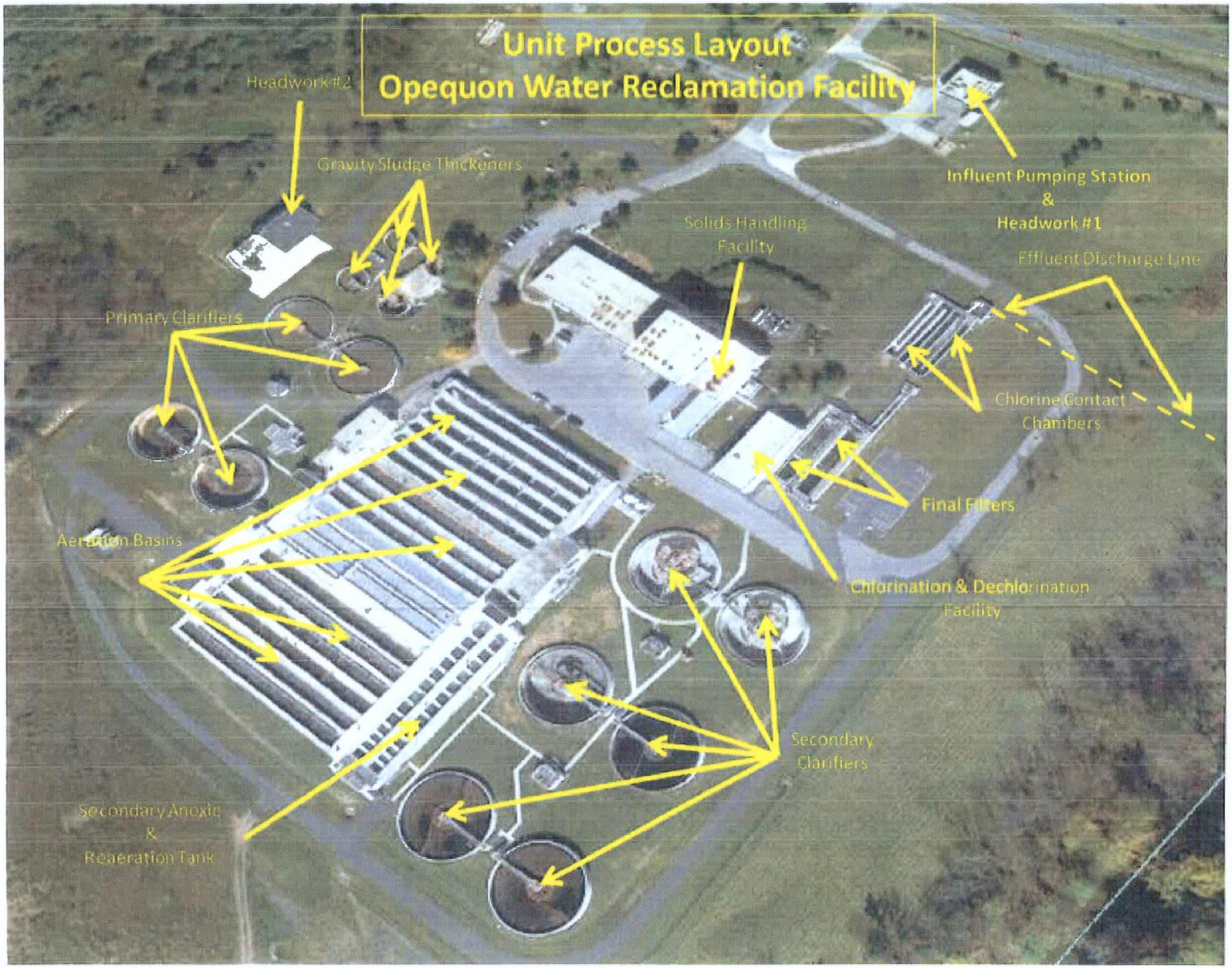
Opequon Water Reclamation Facility
Flow and Process Schematic

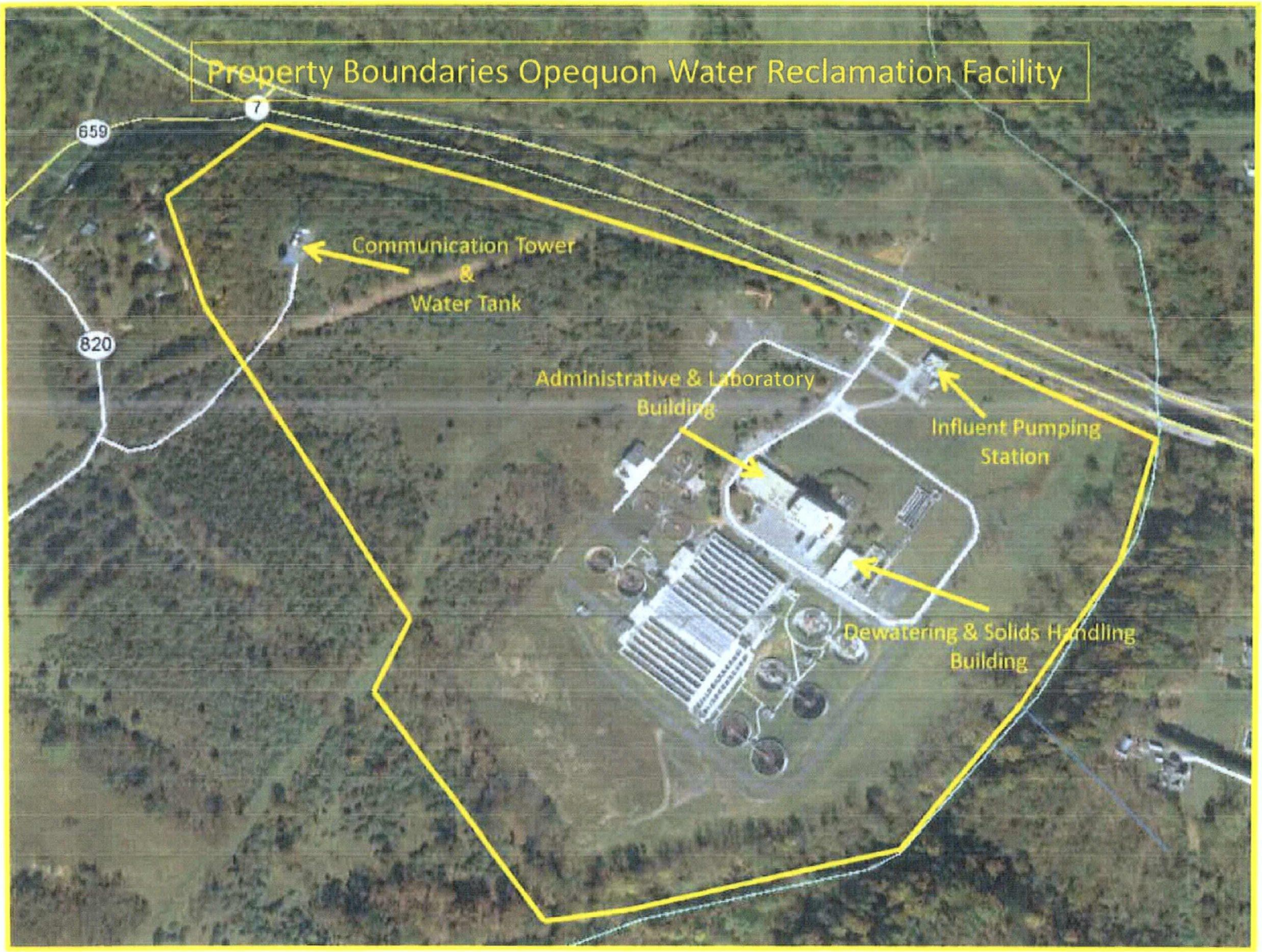
Opequon Water Reclamation Facility - Sludge Disposal Route



Sludge Hauling Route

1) Exit Opequon Facility onto Route 7 West
2) Turn left onto Greenwood Road (SR 656)
3) Follow Greenwood Road to intersection with Sulphur Spring Road (SR 655)
4) Turn left on Sulphur Spring Road to Landfill Road. Entrance to Frederick County Landfill.


Unit Process Layout
Opequon Water Reclamation Facility
Headwork #2
Gravity Sludge Thickeners
Influent Pumping Station
&
Headwork #1
Solids Handling
Facility
Effluent Discharge Line
Primary Clarifiers
Chlorine Contact
Chambers
Final Filters
Aeration Basins
Chlorination & Dechlorination
Facility
Secondary
Clarifiers
Secondary Anoxic
&
Reaeration Tank


Property Boundaries Opequon Water Reclamation Facility
7
659
820
Communication Tower
&
Water Tank
Administrative & Laboratory
Building
Influent Pumping
Station
Dewatering & Solids Handling
Building

SECTION 4

OTHER FORMS

(VPDES PERMIT APPLICATION ADDENDUM,

PERMIT BILLING FORM,

PUBLIC NOTICE BILLING INFORMATION FORM)

VPDES Permit Application Addendum

1. **Entity to whom the permit is to be issued:** Frederick-Winchester Service Authority
   Who will be legally responsible for the wastewater treatment facilities and compliance with the permit? This may or may not be the facility or property owner.

2. **Is this facility located within city or town boundaries?** ☐ YES ☑ NO
   Include a topographic map identifying the location of the facility, the property boundaries, and the discharge point.

3. **What is the tax map parcel number for the land where this facility is located?** 56A-18

4. **For the facility to be covered by this permit, how many acres will be disturbed during the next five years due to new construction activities?** 5 Acres

5. ALL FACILITIES: **What is the design average flow of this facility?** 12.6 MGD
   Industrial facilities: **What is the maximum 30-day avg. production level (include units)?** N/A

   In addition to the above design flow or production level, should the permit be written with limits for any other discharge flow tiers or production levels? ☐ YES ☑ NO

   If "Yes", please specify the other flow tiers (in MGD) or production levels: _____
   Please consider: Is your facility's design flow considerably greater than your current flow? Do you plan to expand operations during the next five years?

6. **Nature of operations generating wastewater:**

   _____

   80 % of flow from domestic connections/sources
   Number of private residences to be served by the wastewater treatment facilities: ☐ 0 ☐ 1-49 ☑ 50 or more

   20 % of flow from non-domestic connections/sources

7. **Mode of discharge:** ☑ Continuous ☐ Intermittent ☐ Seasonal
   Describe frequency and duration of intermittent or seasonal discharges:

   _____

8. **Identify the characteristics of the receiving stream at the point just above the facility's discharge point:**
   ☑ Permanent stream, never dry
   ☐ Intermittent stream, usually flowing, sometimes dry
   ☐ Ephemeral stream, wet-weather flow, often dry
   ☐ Effluent-dependent stream, usually or always dry
   ☐ Lake or pond at or below the discharge point
   ☐ Other: _____

9. **Consent to receive electronic mail**
   The Department of Environmental Quality (DEQ) may deliver permits, certifications and plan approvals to recipients, including applicants or permittees, by electronically certified mail where the recipients notify DEQ of their consent to receive mail electronically (§ 10.1-1183). Check *only one* of the following to consent to or decline receipt of electronic mail from DEQ as follows:

   ☑ Applicant or permittee agrees to receive by electronic mail the permit and any plan approvals associated with the permit that may be issued for the proposed pollutant management activity, and to certify receipt of such electronic mail when requested by the DEQ.
   Please provide email: jmoffett@fredwin.com

   ☐ Applicant or permittee declines to receive by electronic mail the permit and any plan approvals associated with the permit that may be issued for the proposed pollutant management activity.

PUBLIC NOTICE BILLING INFORMATION

I hereby authorize the Department of Environmental Quality to have the cost of publishing a public notice billed to the Agent/Department identified below. The public notice will be published once a week for two consecutive weeks in the Winchester Star in accordance with 9 VAC 25-31-290.C.2.

Agent/Department to be billed:	Frederick-Winchester Service Authority
Owner:	
Agent/Department Address:	P.O Box 43
	Winchester, Virginia
	22604
Agent's Telephone No.:	(540) 722-3579
Printed Name:	Jesse W. Moffett
Authorizing Agent – Signature:	
Date:	12/10/15

☐ *Please check the box if you have verified with the Winchester Star that you have an acceptable credit account with them.*

VPDES Permit No. VA0065552
Opequon WRF

Attention Permittee: Please complete the above information and return this form with your application to Trevor Wallace, DEQ-Valley Regional Office, P.O. Box 3000, Harrisonburg, Virginia 22801.

VPDES/VPA Permit Billing Information Form for Annual Maintenance Fee

Facility Name: Opequon Water Reclamation Facility

Permit Number: VA0065552

Tax Payer ID (Federal Identification Number): 54-1035792

Social Security Number if no Tax Payer ID:

Owner Name: Frederick-Winchester Service Authority

Owner Address: P.O. Box 43

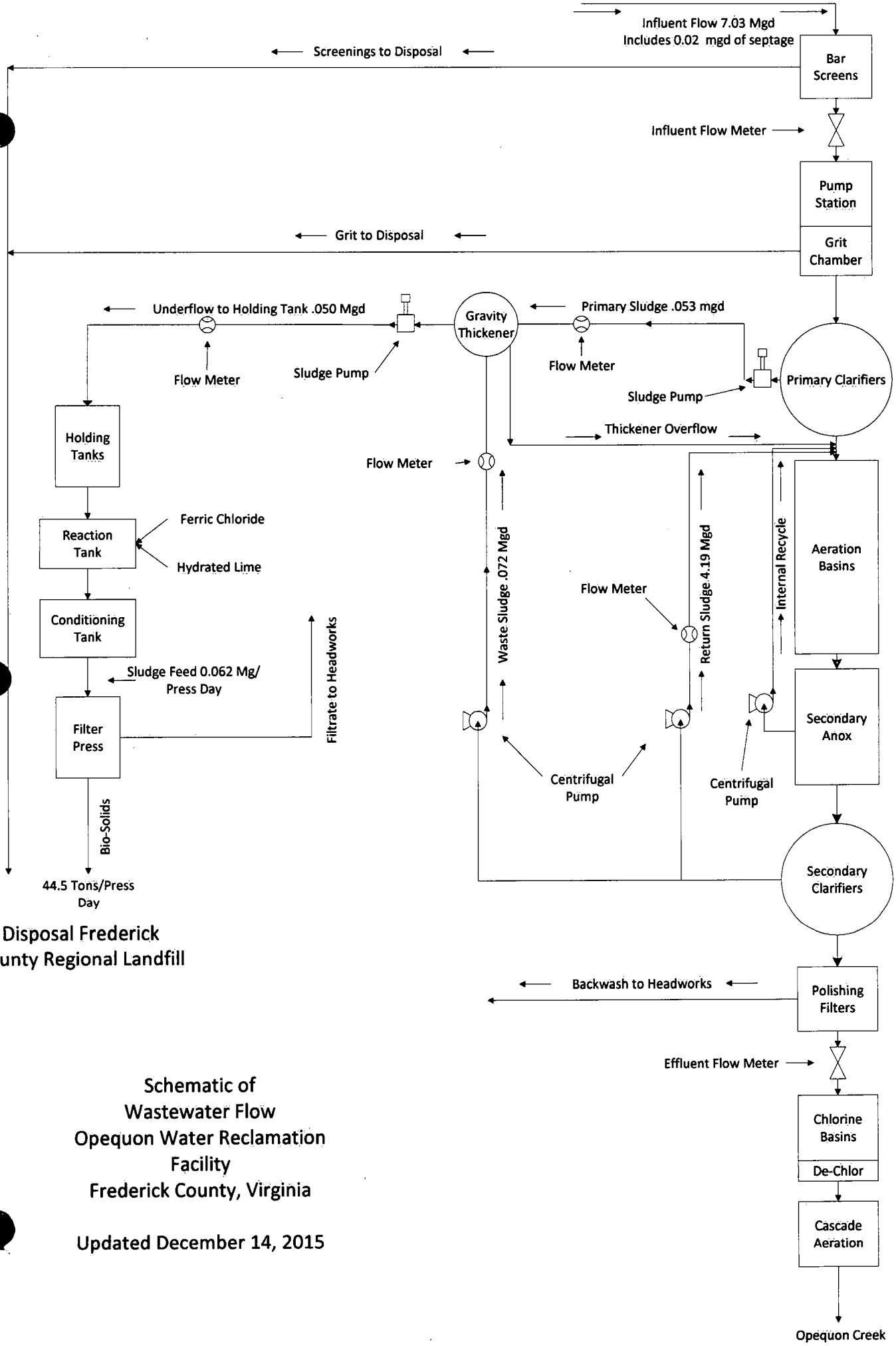
Winchester, VA 22604

Billing Contact Name: Jesse W. Moffett

Title: Executive Director

Phone Number: (540) 722-3579

E-Mail Address: jmoffett@fredwin.com



Schematic of
Wastewater Flow
Opequon Water Reclamation
Facility
Frederick County, Virginia

Updated December 14, 2015

COUNTY of FREDERICI

Stephen F. Owe
Assistant County Administratc

703/665-565

June 12, 1987

John G. Whitacre
Project Manager
Fred-Winc Service Authority
P. O. Box 53
Winchester, VA 22601

Dear Mr. Whitacre:

The Board of Supervisors for the County of Frederick, Virginia, meeting in regular session on June 10, 1987, voted unanimously to permit the disposal of sludge from the Opequon Water Reclamation Facility within the County Landfill.

If you have any questions, please do not hesitate to contact me.

With kindest regards, I am

Very truly yours,

Stephen F. Owen
Assistant County
Administrator

SFO/tjp