

Delaware County Regional Water Quality Control Authority (DELCORA) CSO Long Term Control Plan Update

Identification of Sensitive Areas and Pollutants of Concern Report (Final)

February 2016 (May 2016)



Delaware County Regional Water Quality Control Authority CSO Long-Term Control Plan Update



Identification of Sensitive Areas and Pollutants of Concern Report

REPORT SIGNATURE COVER SHEET

Signature of this cover signifies agreement with the content of the DELCORA Identification of Sensitive Areas and Pollutants of Concern Report.

I certify under penalty of law that the document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated 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 submitted 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.

DELCORA MANAGEMENT						
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Identification of Sensitve Areas and Pollutants of Concern Report

REVISION CONTROL

REV. NO.	DATE ISSUED	PREPARED BY	DESCRIPTION OF CHANGES
1	5/17/16	Greeley and Hansen	 Updated Sections ES-3 and ES-4 to reflect changes in the report. Updated Section 1.1, second paragraph. Updated Sections 1.3.1, revised text reading 13.3 to be 20 MGD. Clarified Sections 1.3.2, and 2.1.2 Updated Table 2-1 and Section 2.3.1.2 to address USEPA comment. Revised Sections 2.3.2, 2.3.4, 2.3.4.2, 2.3.5.1 to address USEPA comment on sensitive areas. Updated Figure 2-1 Revised Sections 2.4, 2.4.1, 2.4.2 to address USEPA comments. Revised Section 3.7 to address USEPA comments. Updated Section 3.7.2 Updated Attachment A and Added Attachment K

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Identification of Sensitive Areas and Pollutants of Concern Report

Executive Summary

Executive Summary

ES-1 Background

The Delaware County Regional Water Quality Control Authority (DELCORA) is a municipal authority originally organized under the Pennsylvania Municipal Authorities Act of 1945 (P.L. 382), as amended and supplemented, pursuant to action taken by the Delaware County Council on October 20, 1971. Under County of Delaware Ordinance 2002-1, the term of existence of DELCORA was extended to January 15, 2052.

DELCORA is in the process of developing a Long Term Control Plan (LTCP) Update for the Combined Sewer System (CSS) as part of a Consent Decree entered with the United States Environmental Protection Agency (USEPA or EPA) and the Pennsylvania Department of Environmental Protection (PADEP or DEP). DELCORA's Combined Sewer System is comprised of a sewer that accepts stormwater and sanitary wastewater which is treated at DELCORA's Western Regional Treatment Plant WRTP. As part of this comprehensive effort, DELCORA is to submit a report to the USEPA and PADEP that identifies all Sensitive Areas and Pollutants of Concern (POCs) that are impacted by Combined Sewer Overflows (CSOs) and are within the Model Area for each of its receiving waters. DELCORA is also to identify any additional areas that have been determined by DELCORA as being appropriate for prioritization.

The purpose of this report is to meet the requirement in the Consent Decree for the submission of a report that identifies the Sensitive Areas and Pollutants of Concern that are impacted by DELCORA's CSOs.

ES-2 Consent Decree Requirements

The Consent Decree was lodged in the United States District Court for the Eastern District of Pennsylvania on August 17, 2015, and was approved by the Federal District Court on November 10, 2015. The Consent Decree requires DELCORA to complete and submit a revised and updated LTCP to the USEPA and the PADEP for review and approval. Consent Decree Paragraph V.A.11 (Identification of Sensitive Areas and Pollutants of Concern) requires that within six (6) months after the Date of Lodging, DELCORA shall submit a report that identifies all Sensitive Areas and Pollutants of Concern that are impacted by CSOs and are within the Model Area for each of its receiving waters. The receiving water bodies impacted by DELCORA's CSOs include the Delaware River, Chester Creek and Ridley Creek.

For the Identification of Sensitive Areas, Section V.A.11 of the Consent Decree specifically states:

"For each of its Receiving Waters, DELCORA shall contact appropriate agencies, access available data sources, and collect additional data as necessary to identify Sensitive



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Areas. DELCORA shall fully document all such contacts and the associated responses, and all additional investigations carried out to identify Sensitive Areas. DELCORA shall also identify any additional areas that, while not Sensitive Areas, have been identified by DELCORA as being appropriate for prioritization ("Priority Areas")." Additionally, "For each of its Receiving Waters, DELCORA shall conduct community outreach and appropriate studies to determine whether and to what extent primary contact recreation is occurring in each Receiving Water, and shall fully document its outreach and study methods, and its findings."

For the Identification of Pollutants of Concern, Section V.A.11 of the Consent Decree specifically states:

"For each of its Receiving Waters, DELCORA shall review existing water quality data and recent PADEP CWA § 303(d) listings to identify POCs. Even if a water body has not been formally listed as out of compliance with its water quality standards and designated uses, if available data indicate such impairment exists and such impairment involves pollutants associated with CSOs, DELCORA shall consider the related pollutants to be POCs."

ES-3 Sensitive Areas Summary

A comprehensive review of online databases, correspondence with regulatory agencies and local environmental organizations and review of responses to the public survey was conducted to identify potential Sensitive Areas within the combined sewer system portion of the collection system.

Outstanding National Resource Waters (ONRW) are maintained and protected by Tier 3 of the USEPA's Antidegradation Policy which can be accessed through the Agency's web portal. Only waters of "exceptional ecological significance" qualify as ONRWs, and States and Tribes determine whether or not a water body will be classified as such. In Chapter 93 of the Pennsylvania Code, it is stated that a water body will be classified as having Exceptional Value (EV) if it is considered by the Commonwealth of Pennsylvania to be an ONRW. No Outstanding National Resource Waters were located within the project boundaries.

The goal of the National Marine Sanctuaries Act (Title 16, Chapter 32, Section 1431 last amended in November 2000) is to identify and designate as National Marine Sanctuaries (NMS) areas of the marine environment which are of special national significance and to manage these areas as the National Marine Sanctuary System. The Office of National Marine Sanctuaries (ONMS) is the trustee of all national marine sanctuaries and as such, it currently recognizes fourteen (14) national marine sanctuaries, none of which are located within DELCORA's service area. Therefore, none of DELCORA's receiving waters, the Delaware River, Chester Creek or Ridley Creek, are considered to be a National Marine Sanctuary.



There are no commercial shellfish harvesters that operate within the study area. The Partnership for the Delaware Estuary reported shellfish areas well downstream of the most southern outfall in DELCORA's system. The uppermost shellfish harvesting area is approximately 32 miles outside the project boundaries. No shellfish beds are located within the project boundaries.

There are numerous drinking water intakes in this geographical area but none are located on the Delaware River downstream in close proximity to DELCORA's CSOs. There are no drinking water intakes located along Chester Creek or Ridley Creek in proximity to DELCORA's service area. Therefore, the Sensitive Area criteria for Drinking Water Intakes does not apply to the Chester or Ridley Creeks.

While the US Fish and Wildlife Service identified several Endangered or Threatened species which potentially could live in the project area, critical habitat was found for Atlantic Sturgeon only. The habitat for year-of-young Atlantic Sturgeon downstream of CSO #002 in the Delaware River meets the Sensitive Area criteria for Endangered or Threatened species. The Atlantic Sturgeon is listed as a threatened species by the US Fish and Wildlife Service with documented habitat in the Delaware River downstream approximately one-half mile downstream of DELCORA's most southern outfall. Therefore, the habitat for year-of-young Atlantic Sturgeon is considered a sensitive area.

The northern reaches of Ridley Creek within DELCORA's service area are designated as Approved Trout Waters and Trout Stocked Streams. The portion of the approved trout waters from CSO #033 downstream to Chestnut Street is considered a Priority Area because of this special environmental use.

The boat launch located between CSO #007 and #008 along the Delaware River is located within the portion of the waterbody rated for primary contact and may be impacted by CSO discharge. The boat launch is considered a Priority Area.

ES-4 Pollutants of Concern Summary

A comprehensive review of existing receiving water quality data was conducted to identify the Pollutants of Concern and this review was performed in accordance with the requirements of the Consent Decree and the CSO Guidance Manual. This review included on-line USEPA STORET data from the Years 2010-2015, results of sampling performed during the preparation of DELCORA's 1999 LTCP and additional CSO sampling. A parameter associated with CSO discharges was considered to be a POC when more than 10% of the total samples reviewed indicated an exceedance of the applicable water quality standard. A secondary category called Parameters of Potential Concern (POPC) was established for those parameters associated with CSO discharges where 2 to 10% of the total samples reviewed indicated an exceedance of the applicable water guality standard.



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The specific parameters identified by DELCORA as POCs in each of the receiving water bodies are listed below.

- For the lower Delaware River (Downstream of R.M. 81.8)
 - Fecal Coliform Bacteria
 - Enterococcus Bacteria
 - ➢ E. coli Bacteria
- For the upper Delaware River (Upstream of R.M. 81.8)
 - Fecal Coliform Bacteria
 - Enterococcus Bacteria
 - ➢ E. coli Bacteria
- For the Chester Creek
 - Fecal Coliform Bacteria
 - Enterococcus Bacteria
 - ➢ E. coli Bacteria
- For the Ridley Creek
 - Fecal Coliform Bacteria
 - Enterococcus Bacteria
 - E. coli Bacteria

The identified POCs for DELCORA's receiving water bodies have been listed and discussed in detail in Section 3.7. No POCP (Parameters of Potential Concern) were identified.



Identification of Sensitive Areas and Pollutants of Concern Report Section 1

Section 1 Introduction

1.1 Background of DELCORA's Facilities

Delaware County Regional Water Quality Control Authority (DELCORA) is responsible for the collection, transmission, treatment and disposal of approximately 65 million gallons per day (MGD) of wastewater generated in southeastern Pennsylvania. DELCORA's facilities serve residential, commercial, institutional, and industrial customers in Delaware County. DELCORA owns and operates an extensive system of pump stations, force mains, and sewers that provide the core infrastructure for the transmission of wastewater to treatment facilities in Delaware County and the City of Philadelphia as shown diagrammatically in Figure 1-1. The total service area served by DELCORA, as shown on Figure 1-2, is approximately 82,977 acres which illustrates that DELCORA serves a significant and widespread portion of Delaware County.

The combined sewer area simulated in DELCORA's existing Hydrologic and Hydraulic model is located within the City of Chester and consists of a drainage area of approximately 1,510 acres. It comprises approximately half of Chester City's serviced area. To support the service area, DELCORA owns and operates over 129 miles of separate and combined sewers. Included in the 129 miles of sewers are: 11.7 miles of an interceptor system; 3,209 manholes; and twenty-five (25) combined sewer outfall regulators controlling storm overflows. The location of Chester City's service area is illustrated on Figure 1-2.

Historically, DELCORA has characterized its service areas as "Eastern" and "Western." The Western service area discharges to DELCORA's Western Regional Treatment Plant (WRTP). The Eastern service area discharges to the Philadelphia Water Department's Southwest Water Pollution Control Plant (PWDSWPCP). In 2002, DELCORA completed the installation of a force main that connects the Eastern Service Area's Central Delaware Pump Station (CDPS) to the Chester Force Main. This connection allows DELCORA to send flow from the CDPS to the WRTP. Flows above 20 MGD are directed to the PWDSWPCP. As such, dry weather flows and a portion of the wet weather flows (total flow less than 20 MGD) from the Central Delaware County Authority in the Eastern Service Area are discharged to the WRTP.

There are a total of 26 combined sewer overflow outfalls listed with 25 discharge points (Outfall #009 and #010 both discharge at Outfall #009) in DELCORA's existing National Pollutant Discharge Elimination System (NPDES) Permit. Under its NPDES Permit No. PA0027103, issued and administered by the Pennsylvania Department of Environmental Protection (PADEP), DELCORA is authorized to discharge from the Western Regional Treatment Plant (Outfall #001), four storm water outfalls at the WRTP (028-031) and from 26 combined sewer overflow outfalls (#002-#026, #032, #033) that ultimately discharge to the Delaware River, Chester Creek and/or Ridley Creek.







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Part C – Other Requirements, Section V – Combined Sewer Overflows of the NPDES Permit details DELCORA's responsibilities with respect to the CSO system including reporting, continued implementation of and continued compliance with the Nine Minimum Controls (NMC), and implementation of the existing Long-Term Control Plan (LTCP) dated April 1999 and the July 2008 addendum to the LTCP until the updated LTCP is approved.

1.2 Consent Decree

On August 17, 2015, a Consent Decree was lodged in the United States District Court for the Eastern District of Pennsylvania that requires DELCORA to complete and submit a revised and updated LTCP to the United States Environmental Protection Agency (USEPA or EPA) and the Pennsylvania Department of Environmental Protection (PADEP or DEP) for review and approval. Consent Decree Paragraph V.A.11 (Identification of Sensitive Areas and Pollutants of Concern) requires that within six (6) months after the Date of Lodging, DELCORA shall submit a report to the USEPA and PADEP that identifies all Sensitive Areas and Pollutants of Concern that are impacted by CSOs and are within the Model Area for each of its receiving waters. Details of the Consent Decree requirements for Sensitive Areas and POCs are respectively found in Sections 1.2 and 3.1.

1.3 CSO System Description

1.3.1 DELCORA Facilities

DELCORA's Western service area wastewater is treated at the WRTP located at 3201 W. Front Street in Chester, Pennsylvania. The WRTP treats all wastewater from Southern Delaware County Authority, Marcus Hook Borough, Trainer Borough, Upland Borough, Parkside Borough, Eddystone Borough, Chester Township and the City of Chester as well as a portion of the wastewater from Brookhaven Borough and Nether Providence Township. The City of Chester CSO system is described in detail in Section 1.3.2.

One of the facilities in the City of Chester is the 40-MGD Chester Pump Station and the 48-inchdiameter, PCCP force main that runs to the WRTP. DELCORA has completed construction of a 54-inch-diameter ductile iron force main to replace the existing force main. In 2002, DELCORA completed a force main that connects the Central Delaware Pump Station via a 3.4-mile, 24-inch ductile iron force main to the Chester Force Main. This connection allows DELCORA to send up to 27 MGD of flow from the CDPS to the WRTP, however, DELCORA's operating policy limits this flow to 20 MGD, with flows above this point to be directed to PWD SWPCP. Figure 1-1 shows the interconnections in DELCORA's system. The left side of the figure indicates the Western service area and the right side indicates the Eastern service area. This interconnectivity coupled with the legal agreements DELCORA maintains with the municipalities and conveyance authorities in Delaware County creates the complicated legal/financial framework under which DELCORA operates.



Identification of Sensitive Areas and Pollutants of Concern Report Section 1

1.3.2 City of Chester CSO System

As noted in Section 1.1, the combined portion of DELCORA's sewer system is located within the City of Chester (City), and it comprises approximately half of the City's serviced area. The combined wastewater/stormwater system in the City of Chester is complicated by the fact that parts of the system are owned, operated and maintained by two governmental entities, the City and DELCORA. DELCORA owns, operates and maintains the parts of the system that convey wastewater, such as the street sewers, collectors, interceptors, and CSO regulators and CSO outfalls. The City owns, operates and maintains the inlets, stormwater-only sewers that connect to the combined sewer system and any stormwater-only outfalls. The City is also responsible for the maintenance and cleaning of the streets, planning, zoning, and development controls.

The Chester CSO system contains 26 permitted outfalls as listed in Table 1-1, and they discharge to three receiving water bodies: the Delaware River, Chester Creek, and Ridley Creek. However, there are only 25 CSO discharge locations, as CSO #010 discharges to the Delaware River through CSO #009. Figure 1-3 depicts the locations of CSO regulators and outfalls that are DELCORA's responsibility.

Name of Receiving Stream	CSO Outfall	Interceptor/CSO Regulator Location	Latitude	Longitude
Delaware River	002	Front and Booth	39°49'30"N	75°23'31"W
Delaware River	003	Front and Highland	39°49'34"N	75°23'11"W
Delaware River	004	Front and Haves	39°50'36"N	75°23'07"W
Delaware River	005	Front and Townsend	39°49'46"N	75°22'53"W
Delaware River	007	Delaware and Reaney	39°49'51"N	75°22'45"W
Delaware River	008	2 nd and Tilghman	39°50'05"N	75°22'22"W
Delaware River	009	2 nd and Lloyd	39°50'14"N	75°22'10"W
Delaware River ⁽¹⁾	010	5 th and Pusey	39°50'26"N	75°22'19"W
Delaware River	011	2 nd and Parker	39°50'26"N	75°21'54"W
Delaware River	013	2 nd and Welsh	39°50'37"N	75°21'17"W
Delaware River	014	3 rd and Upland	39°50'50"N	75°21'05"W
Delaware River ⁽²⁾	032	2 nd and Avenue of The States	39°50'34"N	75°21'25"W
Chester Creek	012	2 nd and Edgmont	39°50'42"N	75°21'38"W
Chester Creek	019	14 th and Crozer Hospital	39°51'24"N	75°21'54"W
Chester Creek	020	Kerlin and Finland	39°51'24"N	75°22'27"W
Chester Creek	021	9 th and Sproul	39°51'08"N	75°21'49"W
Chester Creek	022	6 th and Sproul	39°50'56"N	75°21'47"W
Chester Creek	023	3 rd and Edgmont	39°50'45"N	75°21'42"W
Chester Creek	024	3 rd and Dock	39°50'44"N	75°21'43"W
Chester Creek	025	5 th and Penn	39°50'49"N	75°21'50"W

Table 1-1: Permitted CSOs in the City of Chester



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Section 1

Name of Receiving Stream	CSO Outfall	Interceptor/CSO Regulator Location	Latitude	Longitude
Chester Creek	026	7 th and Penn	39°50'58"N	75°21'55"W
Ridley Creek	015	4 th and Melrose	39°51'03"N	75°20'48"W
Ridley Creek	016	8 th and McDowell	39°51'15"N	75°20'53"W
Ridley Creek	017	9 th and Campbell	39°51'16"N	75°20'51"W
Ridley Creek	018	Sun Drive and Hancock Street	39°51'47"N	75°20'57"W
Ridley Creek ⁽²⁾	033	Elkington Boulevard and Ridley Creek	39°52'22"N	75°22'29"W

Notes:

(1) CSO #010 discharges to the Delaware River through CSO #009.

(2) No mechanical regulator used for this outfall.

Figure 1-3 also provides a sewer system characterization and illustrate the breakdown of each outfall and how each drainage area has combined sewers and separate sewers. Figure 1-4 is a schematic of the Chester CSO system and shows the outfalls and the interceptors that are connected to each CSO.







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Figure 1-3

Location of Regulators and Combined Sewer Outfalls With Drainage Areas



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Section 2 Identification of Sensitive Areas

2.1 Regulatory Requirements

2.1.1 Consent Decree Requirements

For the Identification of Sensitive Areas, Section V.A.11 of the Consent Decree states:

"For each of its Receiving Waters, DELCORA shall contact appropriate agencies, access available data sources, and collect additional data as necessary to identify Sensitive Areas. DELCORA shall fully document all such contacts and the associated responses, and all additional investigations carried out to identify Sensitive Areas. DELCORA shall also identify any additional areas that, while not Sensitive Areas, have been identified by DELCORA as being appropriate for prioritization ("Priority Areas")."

Additionally, "For each of its Receiving Waters, DELCORA shall conduct community outreach and appropriate studies to determine whether and to what extent primary contact recreation is occurring in each Receiving Water, and shall fully document its outreach and study methods, and its findings."

2.1.2 Requirements of the USEPA's CSO Control Policy and Sensitive Areas Definition

The USEPA's CSO Control Policy (Federal Register 59 [April 19, 1994]: 18688-18698) "expects a permittee's long-term CSO control plan to give the highest priority to controlling overflows to sensitive areas" (Section II.C.3). The CSO Control Policy states the six (6) criteria for defining an area as a "Sensitive Area" include:

- 1. Designated Outstanding National Resource Waters
- 2. National Marine Sanctuaries
- 3. Waters with threatened or endangered species and their habitat
- 4. Waters with primary contact recreation
- 5. Public drinking water intakes or their designated protected areas
- 6. Shellfish beds

The CSO Control Policy states that if Sensitive Areas are present and impacted, the LTCP should include provisions to:

- Prohibit new or significantly increased overflows
- Eliminate or relocate overflows wherever physically possible and economically achievable



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Section 2

- Treat overflows where necessary
- Where elimination or treatment is not achievable, reassess impacts each permit cycle

Sensitive Areas should be considered prior to the evaluation of CSO control alternatives. This allows a CSO community to identify and estimate costs for controls that could eliminate or relocate CSOs from Sensitive Areas where pollutant loadings pose a high environmental or public health risk and where control efforts should be focused. The cost of these controls can then be considered, along with the community's financial capability, to evaluate cost-effective controls for all of the receiving waters.

2.2 Priority Areas Definition

The term "Priority Areas" is not specifically defined by the USEPA in the Consent Decree nor in the CSO Control Policy or Guidance Document. For the purposes of this report, the term "Priority Areas" is defined as follows:

"Areas having some environmental significance but not to the level of "sensitive areas" as defined in the federal CSO Control Policy. These priority areas may include: public access areas (i.e., near marinas, schools, playgrounds, parks, or athletic fields); or use of shallow streams for recreational activity, with something less than full contact (i.e., wading)".

In compliance with the Consent Decree, DELCORA conducted community outreach in order to determine whether and to what extent primary contact recreation is occurring in each Receiving Water. In order to cover DELCORA's large service area, a public survey was deemed to be the most comprehensive method to actively solicit community outreach. Multiple regulatory agencies and environmental organizations were also contacted.

2.3 Assessment of Sensitive and Priority Areas

The six criteria for Sensitive Areas identified in the CSO policy were evaluated for the Delaware River, Chester Creek and Ridley Creek within DELCORA's service area including reaches upstream of the CSOs. Special consideration was given to areas downstream and within the tidal influence of DELCORA's CSOs as any potential Sensitive Areas within hydraulic proximity to outfalls that may be impacted by their discharge.

2.3.1 Methodology

In order to develop a comprehensive understanding of the presence of designated Sensitive Areas within the study area, multiple strategies were used to complete these investigations including searching online data resources, sending letters to regulatory agencies and environmental organizations, and conducting a public survey. The goal of this multi-faceted approach was to



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gain a thorough understanding of the presence of sensitive and priority areas to support the development of future CSO control alternatives.

2.3.1.1 Letters with Regulatory Agencies

Letters were drafted and issued to key regulatory agencies at the federal and state levels, and environmental organizations at the state and local levels. Contacts were identified based on their governance over the three waterbodies of concern including the Delaware River, Chester Creek and Ridley Creek, or their local involvement with those associated watersheds. Agencies in New Jersey and Delaware were also contacted to further understand the surrounding environment even though the study area is limited to the boundaries of the Commonwealth of Pennsylvania. Table 2-1 lists the agencies which received requests for information. Follow-up telephone calls were made to all agencies that had not responded by November 30, 2015.

Agency	Contact	Title	Date Sent	Response Date
U.S. Fish and Wildlife Agency	Robert Anderson	Fish & Wildlife Biologist	10/29/2015	11/2/2015
U.S. Fish and Wildlife - John Heinz NWR Birds	Brendalee Phillips	Wildlife Biologist	10/29/2015	No Comments
PA DEP	Jennifer Fields	Clean Water Section Program Manager	10/29/2015	11/17/15 - phone call
Delaware River Basin Commission (DRBC)	Steve Tambini	Executive Director	10/29/2015	No Comments
PA Game Commission	Patti Barber	Endangered Bird Biologist	10/29/2015	12/29/2015 – phone call
PA Game Commission	lan Gregg	Wildlife Biologist	10/29/2015	No Response
PA Environmental Council	Carol F. McCabe, Esq.	Chair	10/29/2015	No Response
Chester Ridley Crum Watersheds Association	Brian Byrnes	Executive Director	10/29/2015	11/23/15 – phone call

Table 2-1:	Letters	Issued to	Agencies	and	Organizatio	ns
					• · g	



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Agency	Agency Contact		Date Sent	Response Date
New Jersey Department of Environmental Protection (NJDEP)	David Chanda	Director Fish and 10/29/2015 Wildlife		No Response
Delaware Department of Natural Resources and Environmental Control (DNREC)	Matt Fisher	Director Fish and Wildlife	10/29/2015	11/30/2015
PA Fish and Boat Commission (PFBC)	John Buzzar, Kathy Gipe and Greg Murphy	Fisheries Biologists	10/29/2015	12/22/15; follow- up 3/11/16 and 5/2/16
Partnership for the Delaware Estuary (PDE)	Dr. Danielle Kreeger	Science Director	10/29/2015	11/25/2015

Each letter requested information related to all six Sensitive Area criteria with the exception of the letter to the U.S. Fish and Wildlife Service, which was tailored based on telephone conversations held prior to issuance of the letter. Copies of the letters issued requesting information and responses are included in Attachment A.

2.3.1.2 Online Database Searches

An abundance of information is available online regarding the Delaware River, Chester Creek, and Ridley Creek waterbodies. The following entities and on-line databases were searched for information related to Sensitive Areas and Priority Areas within the study area boundary:

- National Oceanic and Atmospheric Administration (NOAA)
 - NOAA 2014 Environmental Sensitivity Index Maps
- United States Environmental Protection Agency
- Pennsylvania Department of Environmental Protection
- Office of National Marine Sanctuaries
- John Heinz National Wildlife Refuge
- Chester Creek Rails-to-Trails Project
- Ridley Creek State Park
- Pennsylvania Department of Conservation and Natural Resources (PA DCNR)

The results of these searches were used to determine the presence of Sensitive Areas and/or Priority Areas located within the study area boundaries.



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2.3.1.3 Public Survey

DELCORA prepared a public survey requesting information from local residents specifically about how the public is using the waterbodies within the CSS. Furthermore, the public survey also asked for the frequency that the residents are using the waterbody and within what time of the year they use the waterbody. Respondents were also provided an opportunity to leave comments in an open-ended format. The survey was mailed to approximately 14,000 customers within DELCORA's service area. The individuals contacted had the option to complete a hard copy of the survey or to complete the survey online. In addition to the 14,000 customers that received a hard copy of the survey) had the ability to complete the survey online at DELCORA's website. A copy of the survey, survey map, and the Public Survey Tally Sheet is included as Attachment B. A summary of the responses received by the residents in the Public Survey is included in Table 2-2.

Rivers and Creek Use Survey Summary							
	Delaware River		Chester River		Ridley Creek		
Activities	Percent Use per Year	Percent Never Used	Percent Use per Year	Percent Never Used	Percent Use per Year	Percent Never Used	
Fishing Bank/Boat	1.28%	98.72%	1.53%	98.47%	0.55%	99.45%	
Fishing from Wading	0.25%	99.75%	0.84%	99.16%	0.51%	99.49%	
Rowing/Canoeing	0.05%	99.95%	0.02%	99.98%	0.02%	99.98%	
Motor Boating	0.55%	99.45%	0.02%	99.98%	0.02%	99.98%	
Kayaking	0.05%	99.95%	0.03%	99.97%	0.02%	99.98%	
Jet Skiing	0.25%	99.75%	0.01%	99.99%	0.01%	99.99%	
Water Skiing	0.01%	99.99%	0.00%	100.00%	0.00%	100.00%	
Swimming	0.01%	99.99%	0.03%	99.97%	0.04%	99.96%	
Wading	0.24%	99.76%	0.09%	99.91%	0.26%	99.74%	
Other	0.01%	99.99%	0.01%	99.99%	0.01%	99.99%	

Table 2-2: River and Creeks Use Survey Summary

2.3.2 Outstanding National Resource Waters

Outstanding National Resource Waters (ONRW) are maintained and protected by Tier 3 of the USEPA's Antidegradation Policy which can be accessed through the Agency's web portal at <u>http://www.epa.gov/sites/production/files/2014-10/documents/diamond-outstanding-memo.pdf</u>. Only waters of "exceptional ecological significance" qualify as ONRWs, and States and Tribes determine whether or not a water body will be classified as such.

In Chapter 93 of the Pennsylvania Code, it is stated that a water body will be classified as having Exceptional Value (EV) if it is considered by the Commonwealth of Pennsylvania to be an

ONRW. Chapter 93 of the PA Code lists water bodies alongside their protected water uses. Neither the Delaware River, Chester Creek nor Ridley Creek are listed as being of Exceptional Value. Therefore, none of DELCORA's receiving waters, the Delaware River, Chester Creek or Ridley Creek, are considered to be an ONRW.

2.3.3 National Marine Sanctuaries

The goal of the National Marine Sanctuaries Act (Title 16, Chapter 32, Section 1431 last amended in November 2000) is to identify and designate as National Marine Sanctuaries (NMS) areas of the marine environment which are of special national significance and to manage these areas as the National Marine Sanctuary System. Receiving this designation results in the conservation and management of these special habitats, support of the natural biological communities through protection and restoration, enhances the public's awareness, understanding and appreciation for the marine sanctuary, and supports the vitality of these communities through research and Federal, State and Local government collaboration.

In order for a marine environment to be designated a National Marine Sanctuary, the United States Secretary of Commerce will determine if any of the following criteria apply:

<u>"Criteria 1</u>

The area's natural resources and ecological qualities are of special significance and contribute to: biological productivity or diversity; maintenance or enhancement of ecosystem structure and function; maintenance of ecologically or commercially important species or species assemblages, or both; or maintenance or enhancement of connectivity to other ecologically significant resources.

<u>Criteria 2</u>

The area contains submerged maritime heritage resources of special historical, cultural, or archaeological significance, that: individually or collectively are consistent with the criteria of eligibility for listing on the National Register of Historic Places; have met or which would meet the criteria for designation as a National Historic Landmark; or have special or sacred meaning to the indigenous people of the region or nation.

<u>Criteria 3</u>

The area supports present and potential economic uses, such as: tourism; commercial and recreational fishing; subsistence and traditional uses; diving; and other recreational uses that depend on conservation and management of the area's resources.

<u>Criteria 4</u>

The publically-derived benefits of the area, such as aesthetic value, public recreation, and access to places depend on conservation and management of the area's resources."



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The above criteria for National Marine Sanctuaries was taken directly from the Sanctuary Nomination Process Guide which can be found at http://www.nominate.noaa.gov/guide.html#document.

The Office of National Marine Sanctuaries (ONMS) is the trustee of all national marine sanctuaries and as such, it currently recognizes fourteen (14) national marine sanctuaries, none of which are located within DELCORA's service area. Therefore, none of DELCORA's receiving waters, the Delaware River, Chester Creek or Ridley Creek, are considered to be a National Marine Sanctuary.

2.3.4 Threatened or Endangered Species Criterion

The Federal CSO Policy states "waters with threatened or endangered species and their habitat" are considered a Sensitive Area. The U.S. Fish and Wildlife Service and PA Fish and Boat Commission were contacted and the NOAA Environmental Sensitivity Index maps reviewed to identify any threatened or endangered species with habitat within the project boundaries. Threatened and endangered species that could potentially occur within the project study area are listed in Table 2-3 below. A copy of the letters received from the U.S. Fish and Wildlife Service and PA Fish and Boat Commission can be found in Attachment A to this report.

Species	Status		
Bog Turtle	Threatened		
Eastern Redbelly Turtle	Threatened		
Indiana Bat	Endangered		
Northern Long-Eared Bat	Endangered		
Atlantic Sturgeon	Threatened		
Shortnose Sturgeon	Endangered		

 Table 2-3: Federally-Listed Threatened and Endangered Species

These species could potentially use the Delaware River, Chester Creek or Ridley Creek as habitat. However, the U.S. Fish and Wildlife Service stated that no critical habitat has been designated for any of the threated and endangered listed species in the Delaware River, Chester and Ridley Creeks as of November 2015.

The NOAA Environmental Sensitivity Index Maps for the project area, ESI-18 and ESI-19, were then reviewed to locate specific habitat for the above listed species. These NOAA maps are included as Attachment K. No habitat was found for the Bog Turtle, Indiana Bat, or Northern Long-Eared Bat within the project boundaries. The NOAA ESI maps do indicate the Shortnose Sturgeon concentrations are "medium" from April through October, and "high" November through March in the Delaware River. However, the NOAA ESI maps generically state this migratory species is present in the Delaware River and does not include any specific portion of the project area as being a nursery, spawning or year-of-young habitat for the species.



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The Eastern Redbelly Turtle habitat is located within the Heinz National Wildlife Refuge which enters the Delaware River approximately 2 miles upstream of the northern most CSO outfall. The Refuge is not directly on the Delaware River and outside the project boundaries.

Atlantic Sturgeon habitat is shown on NOAA map ESI-18 spanning the Pennsylvania/Delaware border. High concentrations of year-of-young Atlantic Sturgeon has been documented in this area. The most northern portion of the Atlantic Sturgeon habitat, as shown on Figure 2-1, is one-half mile from DELCORA's most down steam CSO #002. The criteria for a Sensitive Area is met because both a threatened species and its habitat are identified.

In the previously submitted 2012 DELCORA LTCP report, tidal flats were identified as a Sensitive Area meeting the criteria of critical habitat for threatened or endangered species. However, the current request for information from the U.S. Fish and Wildlife Service on threatened or endangered species and their habitat present within the project boundaries found that no critical habitat has been identified. The response from the U.S. Fish and Wildlife Service stating the same can be found in Attachment A. Therefore, the most current information is used in this report and the tidal flats are no longer considered a Sensitive Area.

2.3.4.1 Bald and Golden Eagle

Bald eagles are known to nest in the vicinity of the project area. While the bald eagle has been removed from the Federal list of threatened and endangered species, the bald eagle along with the golden eagle continues to be protected under the Bald and Golden Eagle Protection Act (BGEPA) and the Migratory Bird Treaty Act (MBTA). These Acts prohibit anyone to "pursue, shoot, shoot at, poison, wound, kill, capture, trap, collect, destroy, molest, disturb, or otherwise harm eagles, their nests, or their eggs". Under the BGEPA, "disturb" means to agitate or bother a bald or golden eagle to a degree that causes, or is likely to cause, based on the best scientific information available: (1) injury to an eagle; (2) decrease in its productivity, by substantially interfering with normal breeding, feeding, or sheltering behavior; or (3) nest abandonment, by substantially interfering with normal breeding, feeding, or sheltering behavior. Since the Bald Eagle has been removed from the Federal list of threatened and endangered species, the Sensitive Area criteria for Threatened or Endangered Species does not apply to the project study area. However, it is acknowledged that these species require special consideration. During the development of CSO abatement alternatives, the project will be evaluated for project size, location and layout in order to comply with the BGEPA and MBTA.

2.3.4.2 Special Considerations

The northern reaches of Ridley Creek within DELCORA's service area are designated as Approved Trout Waters and Trout Stocked Streams. The portion approved for stocking trout begins at Brookhaven Road upstream of CSO #033 and ends downstream of CSO #033 at Chestnut Street in Chester City as shown on Figure 2-1. The portion of the approved trout waters from CSO #033 downstream to Chestnut Street is considered a Priority Area because of







CSO Long Term Control Plan Update Delaware County Regional Water Quality Control Authority

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Figure 2-1 Sensitive and Priority Areas

this special environmental use and the need to meet water quality standards to continue to support trout stocking. Additionally, the public is provided an opportunity to use Ridley Creek for recreational purposes and that may include wading which further meets the criteria of a Priority Area.

2.3.5 Primary Contact Recreation Criterion

Primary contact is defined as an activity where people come directly in contact with the waterbody, such as at bathing beaches. The Upper Delaware River (defined as the portion of the river upstream of River Mile 81.8), Chester Creek and Ridley Creek are all designated for secondary contact and are not suitable for direct contact with the waterbody. The Lower Delaware River (downstream of River Mile 81.8), is rated for primary contact. Special water quality standards are used for water contact areas in order to protect the public from being exposed to waterborne diseases. The study area is located in a densely populated urban area with a mix of recreational uses including boating, fishing, hiking, and other uses by the public.

2.3.5.1 Delaware River

The Delaware River is designated as suitable for Water Contact (WC) Recreation below River Mile (R.M.) 81.8 (between CSO #009 and #011). It is to be noted that this stretch (Zone 4) of the Delaware River is not listed in the 2014 Pennsylvania Integrated Water Quality Monitoring and Assessment Report (PADEP, 2014) (a.k.a. the "303(d) list") as impaired for its WC use, and it has not been reported as impaired or not meeting designated uses from coliform bacteria or any other parameter commonly associated with CSOs or municipal wastewater treatment plant discharges. There are no designated bathing beaches or approved swimming facilities along the Delaware River within the project area boundaries.

There is one boat launch owned by the Chester Economic Development Authority located along the Delaware River within the project study area boundaries as shown on Figure 2-1. This boat launch is located between CSO #007 and #008 and may be impacted by CSO discharges. Additionally, this boat ramp is located within the portion of the waterbody rated for primary contact. Therefore, it was determined that this location does not qualify as a Sensitive Area because it is neither impaired, failing to meet the associated water quality standards, the public is not provided with access to the waterbody and is not using it for primary contact recreation activities according to the public survey. It is however considered a Priority Area because it provides the public with direct access to the Delaware River in a portion rated for primary contact. The Priority Area at the boat launch is shown in Figure 2-1 to extend for a total length of 500 feet along the shoreline; or 250 feet upstream and 250 feet downstream from the location of the boat launch. The Priority Area around the boat launch is also shown to extend into the river 250 feet from the shoreline. There are no defining boundaries for priority areas, however, a buffer zone of 250 feet around the boat launch includes the area one block upstream and one block downstream of the boat launch.



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2.3.5.2 Chester Creek and Ridley Creek

There are no identified boat launch ramps, boat docks, or designated bathing beaches within Chester or Ridley Creek within the project area boundaries. Results of the public survey indicate the public is not using Chester Creek or Ridley Creek for primary contact activities. Of all the activities listed, fishing was the most frequently identified use of the waterbodies which does not qualify as primary contact. Of the over 460 respondents only a few reported using the waterbodies for boating, wading or swimming. It was therefore concluded these waterbodies are not considered a Sensitive Area for primary contact.

As mentioned above, the approved trout waters of Ridley Creek are being considered a Priority Area. In addition to its environmental significance as approved trout waters, they provide the public with wading access to the water for recreational fishing activities. This further supports this section of Ridley Creek being considered a Priority Area worthy of special consideration.

2.3.6 Drinking Water Intakes

Several drinking water providers are located within the study area. The majority of Delaware County is served by Aqua Pennsylvania. Chester Water Authority serves portions of western Delaware County in Thornbury Township, Chester Heights Borough, Chadds Ford Township, Concord Township, Bethel Township, Aston Township, Upper Chichester, Lower Chichester, Trainer, Brookhaven, Parkside, Upland, Chester Township, and Chester City. All drinking water intakes for both Aqua Pennsylvania and the Chester Water Authority are upstream of the CSOs and are not affected by their discharges as they are located on tributaries of the Delaware River.

Upstream of DELCORA's service area (and upstream of Center City Philadelphia), the Delaware River is still tidal and the Philadelphia's Water Department's Baxter Water Treatment Plant is located alongside the tidal portion of the river. DELCORA's most upstream CSO on the Delaware, CSO #014, is over 26 miles downstream of this drinking water intake.

Downstream of DELCORA's service area and located in the State of Delaware, United Water customers receive most of their water from the Stanton Water Treatment Plant, which is capable of treating 30 million gallons of water per day. The Stanton Plant draws water from the White Clay and Red Clay Creeks which are tributary to the Christiana River, itself a tributary to the Delaware River. DELCORA's most downstream CSO, CSO #002, is over 10 miles upstream of the confluence of the Delaware and Christiana Rivers. The Stanton's plant drinking water intake is several miles upstream of this location.

Due to the large distances of the drinking water intakes noted above to DELCORA's CSOs, the Sensitive Area criteria for Drinking Water Intakes on the Delaware River does not apply to the areas associated with DELCORA's CSO discharges.



There are no drinking water intakes located along Chester Creek or Ridley Creek in proximity to DELCORA's service area. Therefore, the Sensitive Area criteria for Drinking Water Intakes does not apply to the Chester or Ridley Creeks.

2.3.7 Shellfish Beds

There are no commercial shellfish harvesters that operate within the study area. The Partnership for the Delaware Estuary reported shellfish areas well downstream of the most southern outfall in DELCORA's system. Shellfish consumption as a DRBC designated use, only applies to DRBC WQM Zone 6. The DRBC's 2014 Delaware River and Bay Water Quality Assessment presents a map that shows the approved shellfish harvesting areas in the Delaware Bay, and this map is re-presented in this report as Figure 2-2. The uppermost shellfish harvesting area is approximately 32 miles downstream from DELCORA's closest CSO discharge (CSO #002). The influence of tidal mixing and dilution coupled with the 32 mile separation between the most downstream discharge point and beginning of the shellfish harvest zone result in the CSO discharge having a negligible impact on the shellfish beds. Therefore, the Sensitive Area criteria for Shellfish Beds does not apply to the areas associated with DELCORA's CSO discharges.

2.4 Summary of Sensitive and Priority Areas

A comprehensive review of online databases, correspondence with regulatory agencies and local environmental organizations, and responses to the public survey was conducted to identify potential Sensitive Areas and Priority Areas within the CSS portion of the collection system.

2.4.1 Summary of Sensitive Areas

The habitat for year-of-young Atlantic Sturgeon downstream of CSO #002 in the Delaware River meets the Sensitive Area criteria for Endangered or Threatened species. The Atlantic Sturgeon is listed as a threatened species by the US Fish and Wildlife Service with documented habitat in the Delaware River downstream approximately one-half mile downstream of DELCORA's most southern outfall.

There are no Outstanding National Resource Waters nor National Marine Sanctuaries within the project area. Shellfish beds are located well downstream of the CSO locations and are outside the project boundaries. There are numerous drinking water intakes in the geographical area but none are located in close proximity downstream of DELCORA's CSOs on the Delaware River. No drinking water intake locations were found that meet the criteria of a Sensitive Area.



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*Image courtesy of the Delaware River Basin Commission
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2.4.2 Summary of Priority Areas

Priority Areas include areas having some environmental significance but not to the level of "Sensitive Areas" as defined in the federal CSO Control Policy. Two Priority Areas were identified:

- Approved trout waters in Ridley Creek,
- Chester Economic Development Authority's boat launch in Chester City.

The northern reaches of Ridley Creek within DELCORA's service area are designated as Approved Trout Waters and Trout Stocked Streams. The portion of the approved trout waters from CSO #033 downstream to Chestnut Street is considered a Priority Area because of this special environmental use.

The boat launch located between CSO #007 and #008 along the Delaware River is located within the portion of the waterbody rated for primary contact. The boat launch is considered a Priority Area due to its location to CSO #007 and #008.



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Section 3 Pollutants of Concern

3.1 Regulatory Requirements

3.1.1 Consent Decree Requirements

For the Identification of Pollutants of Concern, Section V.A.11 of the Consent Decree specifically states:

"For each of its Receiving Waters, DELCORA shall review existing water quality data and recent PADEP CWA § 303(d) listings to identify POCs. Even if a water body has not been formally listed as out of compliance with its water quality standards and designated uses, if available data indicate such impairment exists and such impairment involves pollutants associated with CSOs, DELCORA shall consider the related pollutants to be POCs."

3.1.2 Requirements of the USEPA's CSO Guidance Document

Section 2.5.3.3 of the USEPA's CSO Guidance document states that to assess the impacts of wet weather runoff, the water quality of the receiving waters should be understood for normal dry weather periods. The water quality data that is collected during dry weather conditions provides a basis for comparing the data collected during wet weather conditions. The CSO Guidance Document says:

"Receiving water monitoring should include identified parameters of concern. These parameters typically include those previously identified for combined sewage and CSO monitoring.

- *pH*
- BOD
- TDS
- TSS
- Nutrients
- Metals
- Indicator bacteria

Knowledge of the site-specific water quality concerns could expand the list to include dissolved oxygen, toxics, biological assessment, and sediment."



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3.2 Receiving Water Use Designations and General Water Quality Standards

Information about the applicable water quality standards (WQS) and designated uses for the three receiving water bodies impacted by DELCORA's CSOs were obtained from the PADEP's 2014 Integrated Water Quality Monitoring and Assessment Report (or "303(d) list"), the Pennsylvania Code, the Delaware River Basin Commission's (DRBC's) Water Quality Regulations (WQRs) and from the DRBC's 2014 Delaware River and Bay Water Quality Assessment.

3.2.1 2014 Pennsylvania Integrated Water Quality Monitoring and Assessment Report (303(d) list)

The primary source of information about the causes of impairment, and the Total Maximum Daily Load (TMDL) status of the water bodies (if any) is the 2014 PA Integrated Water Quality Monitoring and Assessment Report (PA Integrated Report), which satisfies Pennsylvania's requirement of both Section 303(d) and 305(b) of the Clean Water Act (CWA). The PA Integrated Report lists all impaired surface waters within Pennsylvania that are not attaining designated and existing uses, even after appropriate and required pollution control technologies have been applied. A TMDL is designed to reduce pollutant loads to impaired waters and enable these waters to meet water quality standards.

The Integrated Report uses a five-part categorization (lists) of water according to their use attainment status. The categories represent varying levels of use attainment, ranging from Category 1, where all designated water uses are met to Category 5, where impairment by pollutants required the development of a TMDL to correct. Each segment of the waterbody is placed into one of these five categories.

The PADEP's website explains the categories as follows:

- "Category 1: Waters attaining all designated uses.
- Category 2: Waters where some, but not all, designated uses are met. Attainment status of the remaining designated uses maybe unknown because data are insufficient to categorize a water body consistent with the states' listing methodology or may be impaired.
- Category 3: Waters for which there are insufficient or no data and information to determine, consistent with the state's listing methodology, if designated uses are met.
- Category 4: Waters impaired for one or more designated use but not needing a TMDL. States may place these waters in one of the following three subcategories:
 - *Category 4A: TMDL is approved.*
 - Category 4B: Expected to meet all designated uses within a reasonable timeframe (three years).
 - *Category 4C: Not impaired by a pollutant.*

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• Category 5: Waters impaired for one or more designated uses by any pollutant and requiring the development of a TMDL. Category five includes waters shown to be impaired as the result of biological assessment used to evaluate aquatic life even if the specific pollutant is not known unless the state can demonstrate that non-pollutant stressors cause impairment or that no pollutant(s) causes or contribute to the impairment."

The Category 5 list constitutes the Section 303(d) list that the USEPA will approve or disapprove under the CWA. For the purposes of the determination of Pollutants of Concern, Categories 4A and 5 are the relevant categories as they indicate the need for a TMDL in the receiving water body and the limiting of additional loadings for those parameters. All of the lists are sorted by an 8-digit Hydrologic Unit Code (HUC) that is particular for the water body of interest. For DELCORA's drainage area, the HUC for the Lower Delaware River (02040202) was used for searching the data in the PA Integrated Report for all three of DELCORA's receiving water bodies.

3.2.2 PA Code Chapter 25 §93.9g

The primary source of information for the Critical Use Designation for each section of the three receiving water bodies is Chapter 25 §93.9g – Drainage List from the Pennsylvania Code. The relevant Critical Use Designations for DELCORA's receiving water bodies include Warm Water Fishes (WWF), Migratory Fishes (MF), Trout Stocking (TSF), and Water Contact Sports/Recreation (WC).

- The "WWF" designation indicates the maintenance and propagation of fish species and additional flora and fauna which are indigenous to a warm water habitat.
- The "MF" designation indicates the passage, maintenance and propagation of anadromous and catadromous fishes and other fishes which move to or from flowing waters to complete their life cycle in other waters.
- The "TSF" designation indicates maintenance of stocked trout from February 15 to July 31 and maintenance and propagation of fish species and additional flora and fauna which are indigenous to a warm water habitat.
- The "WC" designation indicates the use of the water for swimming and related activities.

3.2.3 DRBC's Water Quality Regulations and PA Code Chapter 25 §93.7

The applicable water quality standards for the three receiving water bodies were found in the Delaware River Basin Commission's Water Quality Regulations, and in Water Quality Criteria lists found in Chapter 25 §93.7 and §93.8c of the Pennsylvania Code. For the Delaware River, the water quality standards are dictated by the DRBC's WQRs that have primacy over the standards in the PA Code. The water quality standards in the PA Code apply to the non-tidal



portions of the Chester Creek and Ridley Creek, and to the Delaware River if there is no standard listed for a particular parameter in the DRBC's WQRs.

3.2.4 DRBC's 2014 Delaware River and Bay Water Quality Assessment

The DRBC's 2014 Delaware River and Bay Water Quality Assessment (2014 Assessment) reports the extent to which waters of the Delaware River and Bay are attaining designated uses in accordance with Delaware River Basin Commissions' Water Quality Regulations for the period October 1, 2008 through September 30, 2013. The 2014 Assessment involves the comparison of key water quality parameters with the applicable DRBC water quality regulations. The states of Pennsylvania, New Jersey, Delaware and New York consider the DRBC's Assessment report as part of their determinations as to whether sections of the Delaware River should be listed on the state 303(d) list for a certain pollutant.

3.2.5 Delaware River

3.2.5.1 303(d) List Designation

The 2014 PA Integrated Water Quality and Assessment Report ("the 303(d) List") lists a 61.02 mile segment of the Lower Delaware River in Category 4A as having an approved TMDL for polychlorinated biphenyls (PCBs) from an unknown source related to its fish consumption use. The USEPA approved a TMDL for PCBs for Zone 2 through Zones 5 in 2003, and a second PCB TMDL was approved for Zone 6 in 2006. The TMDLs for PCBs encompass the Delaware River Estuary and stretch from the mouth of the Delaware River upstream to the Trenton, NJ /Morrisville, PA Bridge. The segment of the Delaware River having an approved TMDL for PCBs is shown in yellow in the map in Figure 3-1, which was derived from the PADEP's eMapPA website. Attachment C presents an excerpt from the 2014 PA Integrated Water Quality Monitoring and Assessment Report, and includes the applicable pages for the Delaware River.

Consequently, the impacts of DELCORA's CSO discharges on the level of PCBs within the Delaware River was evaluated further and is discussed herein.

3.2.5.2 Designated Critical Uses and Specific Water Quality Criteria from PA Code

The Critical Uses for the Delaware River in the area of DELCORA's CSO discharges are designated in Chapter 25 §93.9 of the PA Code. All stretches of the Delaware River in this area are designated as Warm Water Fishes (WWF) (maintenance only) and Migratory Fishes (MF) (passage only). Additionally the Delaware River has a Water Contact (WC) designation downstream of River Mile 81.8, which is located directly adjacent to the City of Chester between CSO #009 and #011.





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For WC-designated waters, Chapter 25 §93.7 of the PA Code establishes the following as the water quality criterion for fecal coliform bacteria:

• Fecal Coliform – A geometric mean of 200 colonies per 100 mL during the swimming season (May 1 through September 30) based on a minimum of five samples collected during a 30-day period. For the remainder of the year, the maximum fecal coliform level shall be a geometric mean of 2,000 colonies/100 mL based on a minimum of five samples collected during a 30-day period. There are no fecal coliform bacteria criteria for the Delaware River or tributaries that are not designated as WC waters or for Potable Water Supply (PWS).

For WWF and MF waters the WWF designation is the more restrictive of the two, and Chapter 25 §93.7 of the PA Code establishes the following additional standards for WWF waters:

- **Dissolved Oxygen** The minimum value for dissolved oxygen must be above 5.0 mg/L, with the 7-day average value above 5.5 mg/L
- Alkalinity A minimum of 20 mg/L as CaCO₃, except where naturally occurring conditions are less
- Ammonia Nitrogen the maximum total ammonia nitrogen concentration (in mg/L) at all times shall be the numerical value given by un-ionized ammonia nitrogen (NH₃-N) x (log⁻¹[pK_T-pH] + 1)
- **Iron** 30-day average 1.5 mg/L as total recoverable
- **pH** From 6.0 to 9.0 inclusive
- **Temperature** A table is included within Chapter 25 §93.7 for maximum water temperatures in the receiving water body at various times of the year
- Total Residual Chlorine Four-day average 0.011 mg/L; 1-hour average 0.019 mg/L

3.2.5.3 Designated Zone and Water Quality Regulations from the DRBC

Chapter 25 §93.9 of the PA Code lists the DRBC regulations for Water Quality Zone 4 as exceptions to PA Code's specific water quality criteria. The DRBC's water quality regulations have primacy over the standards in the PA Code for the Delaware River.

The DRBC defines Zone 4 as that part of the Delaware River extending from R.M. 78.8 to R.M. 95.0, the Pennsylvania-Delaware state boundary line to the upstream side of the Philadelphia Navy Yard, including the tidal portions of the tributaries thereof. The DRBC states that the quality of Zone 4 waters shall be maintained in a safe and satisfactory condition for the following uses:

- Industrial water supplies after reasonable treatment
- Maintenance of resident fish and other aquatic life

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- Passage of anadromous fish
- Wildlife
- Recreation secondary contact above R.M. 81.8
- Recreation (all water-contact sports) below R.M. 81.8
- Navigation

The DRBC's Stream Quality Objectives for Zone 4 are as follows:

1. Dissolved Oxygen

- 24-hour average concentration shall not be less than 3.5 mg/L.
- During the periods from April 1 to June 15, and September 16 to December 31, the DO shall not have a seasonal average less than 6.5 mg/L.
- 2. **Temperature** shall not exceed:
 - 5°F (2.8°C) above the average 24-hour temperature gradient displayed during the 1961-66 period, or
 - A maximum of 86°F (30.0°C), whichever is less.

(NOTE: The DRBC's 2014 Delaware River and Bay Water Quality Assessment states that "atmospheric temperatures and meteorological conditions are strong drivers of water temperature. DRBC previously demonstrated that water temperatures are strongly liked to air temperatures, and that a notable increase in air temperatures is observable between the temperature gradient period (1961-1966) and the current period. At present, we [i.e., DRBC] lack the tools to determine which portion of the exceedance is attributable to potentially controllable anthropogenic thermal inputs, and which portion is due to metrological drivers beyond our control".

- 3. **pH** between 6.5 and 8.5 inclusive, unless outside this range due to natural conditions.
- 4. **Phenols** maximum 0.02 mg/l, unless exceeded due to natural conditions.
- 5. Threshold Odor Number not to exceed 24 at 60°C.
- 6. Synthetic Detergents. (M.B.A.S.). Maximum 30- day average 1.0 mg/L.

7. Radioactivity

- Alpha emitters maximum 3 pc/L (picocuries per liter);
- Beta emitters maximum 1,000 pc/L.



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8. Bacteria

- Fecal Coliform
 - o Above R.M. 81.8: maximum geometric average 770 per 100 milliliters
 - o Below R.M. 81.8: maximum geometric average 200 per 100 milliliters
- Enterococcus
 - o Above R.M. 81.8: maximum geometric average 88 per 100 milliliters
 - o Below R.M. 81.8: maximum geometric average 33 per 100 milliliters

9. Total Dissolved Solids not to exceed 133% of background.

(NOTE: The background TDS concentration is at present undefined, according to the DRBC's 2014 Delaware River and Bay Water Quality Assessment.)

10. Turbidity unless exceeded due to natural conditions.

- Maximum 30-day average 40 units (NTU)
- Maximum 150 NTU
- 11. Alkalinity between 20 and 120 mg/L.
- 12. Toxic Pollutants
 - Applicable criteria to protect the taste and odor of ingested water and fish are presented in the DRBC's WQRs Table 4.
 - Applicable freshwater stream quality objectives for the protection of aquatic life are presented in the DRBC's WQRs Table 5.
 - Applicable freshwater stream quality objectives for the protection of human health are presented in the DRBC's WQRs Tables 6 and 7.

3.2.5.4 DRBC Evaluation of Use Attainment Status

Table 3-1 presents a summary of Table 23 from the DRBC's 2014 Delaware River and Bay Water Quality Assessment for Zone 4 of the Delaware River. Zone 4 is the portion of the Delaware River directly impacted by DELCORA's CSO discharges and it extends from R.M. 95.0 to R.M. 78.8, the Pennsylvania-Delaware state line including the tidal portions of the tributaries thereof. The extent of Zone 4 can be seen in Figure 2-2.



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Table 3-1: Summary of the 2014 DRBC Integrated Assessment for Zone 4of the Delaware River

Zana		Designated Use				
Zone	Aquatic Life	Drinking Water	Recreation	Fish Consumption		
4	NS	N/A	S	NS		

Notes:

N/A - Not applicable

NS - The Designated Use is not supported

S - The Designated Use is supported

3.2.5.4.1 Water Contact Recreation

Table 3-1 shows that the designated use for Water Contact Recreation is being attained for the Delaware River below R.M. 81.8.

3.2.5.4.2 Aquatic Life

Table 3-1 shows that the designated use for Aquatic Life is not being attained. According to the DRBC's Assessment report, "the composite aquatic life assessment for 2014 yields a result of "Not Supporting" for all assessment units (or zones). It is important to note, however, that this result is largely driven by the requirement to categorize as not meeting criteria any assessment unit (or zone) with 1 exceedance plus 1 confirmatory exceedance."

The DRBC's Assessment Report also states: "Data showed multiple exceedances of aluminum acute and chronic freshwater objectives for the support of aquatic life in Zone 4. Of 35 surface water samples tested for aluminum in Zone 4 during the assessment period, 34 exceeded the chronic criterion and 8 exceeded the acute criterion at 21PA_WQX-WQN0182 near Marcus Hook, PA. No exceedances of aluminum were reported in Zones 2, 3, 5 and 6." As part of the Recommendations for Future Action at the end of the report, the DRBC states that the "exceedances of aluminum criteria in Zone 4 warrant further attention".

3.2.5.4.3 Fish Consumption

Table 3-1 shows that the designated use for Fish Consumption is not being attained. The DRBC's 2014 Delaware River and Bay Water Quality Assessment report states that their assessment criterion for fish consumption is based on the presence of fish consumption advisories from the four Basin states for the mainstem of the Delaware River. If a fish consumption advisory is present, this resulted in the DRBC making an assessment of "not supporting the designated use".

The Assessment report states that the violation criteria for PCBs is also supported by the presence of measureable concentrations of PCBs in the river that exceeded the surface water quality standard. Twenty-two mainstem channel sites were sampled for PCBs in 2012, from



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Biles Channel near Trenton, NJ to the ocean boundary between Cape May and Lewis. It was found that all of the samples exceeded the current PCB water quality criteria of 16 μ g/L for the protection of human health from carcinogenic effects.

The 2016 Commonwealth of Pennsylvania Fish Consumption Advisories for Zones 2, 3, and 4 of the Delaware River (Trenton, NJ/Morrisville, PA Bridge to PA/DE border) are as shown below in Table 3-2. These advisories identify PCBs as a pollutant of concern in fish tissue.

 Table 3-2: PA Fish Consumption Advisory Summary for PCBs in the Delaware River

Fish Species	Meal Frequency	Contaminant
White Perch	1 meal/month	PCB
Flathead Catfish	1 meal/month	PCB
Channel Catfish	1 meal/month	PCB
Striped Bass: over 28 inches in length	1 meal/month	PCB
Carp	6 meals/year	PCB
American Eel	Do Not Eat	PCB

3.2.6 Chester Creek

3.2.6.1 303(d) List Designation

Chester Creek is listed in Category 5 of the 2014 Pennsylvania Integrated Water Quality Monitoring and Assessment Report as not meeting its recreational use due to pathogens, and for not meeting its aquatic life use due to siltation. "Pathogens" were listed in 2006 for three segments totaling 0.94 miles, and a TMDL is anticipated in 2019. The source for the pathogens is listed as "unknown", and these three stream segments are all well upstream of DELCORA's service area. Therefore it appears that the noted impairment of the Chester Creek due to pathogens is not related to DELCORA' CSO discharges.

"Siltation" was listed in 2014 for four segments of the creek totaling 18.41 miles, and a TMDL is anticipated in 2027. The source for the siltation was identified as "urban runoff/storm sewers". The majority of Chester Creek is not attaining its designated use for aquatic life due to siltation, and the vast majority of these impaired segments are located upstream of DELCORA's service area and are shown in red in the map in Figure 3-1. However, one of DELCORA's CSO outfalls does discharge to the furthest downstream segment of the Chester Creek that is impaired by siltation, which is Outfall #020 near Kerlin Street and Finland Drive. Siltation is measured by the water quality parameter Turbidity with units of Nephelometric Turbidity Units (NTU). The impacts of DELCORA's CSO discharges on the levels of Turbidity within the impaired sections of the Chester Creek have been evaluated further and are discussed herein.



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Category 4A lists a 0.81-mile segment of Chester Creek at its mouth that does not meet its designated use for fish consumption due to PCBs from an unknown source, and for which a TMDL for PCBs was issued in 2006. This is shown in yellow in the map in Figure 3-1, and is related to the TMDL for PCBs in the Delaware River Estuary. As a consequence, the impacts of DELCORA's CSO discharges on the level of PCBs within the section of the Chester Creek for which there is an approved TMDL for PCBs has been evaluated further and is discussed herein.

Attachment C presents an excerpt from the 2014 PA Integrated Water Quality Monitoring and Assessment Report, and includes the applicable pages for the Chester Creek. It is to be noted that the Integrated Report also identifies an approved TMDL for the protection of two segments of the creek for aquatic life, but after consultation with staff in the Clean Water Section of the PADEP's Southeast Regional Office it was determined that those two stream segments were listed in the Integrated Monitoring Report in error.

3.2.6.2 Designated Critical Uses and Specific Water Quality Criteria from PA Code

The Critical Uses for the Chester Creek in the area of DELCORA's CSO discharges are designated in Chapter 25 §93.9 of the PA Code. All stretches of the Chester Creek in this area are designated as Warm Water Fishes (WWF) (maintenance only) and Migratory Fishes (MF) (passage only). The same specific water quality criteria apply to the WWF and MF Critical Use designations for Chester Creek as was listed previously for the Delaware River in Section 3.2.5.2.

3.2.7 Ridley Creek

3.2.7.1 303(d) List Designation:

Ridley Creek is listed in Category 5 of the 2014 Pennsylvania Integrated Water Quality Monitoring and Assessment Report as not meeting its aquatic life use due to siltation. The "Siltation" was listed in 2012 for five segments totaling 26.76 miles, and a TMDL is anticipated in 2025. The source for the siltation was identified as "unknown" or from "urban runoff/storm sewers".

In actuality, it appears that the majority of Ridley Creek is not attaining its designated use for aquatic life due to siltation, and the vast majority of these impaired segments are located well upstream of DELCORA's service area and are shown in red in the map in Figure 3-1. However, all of Ridley Creek within DELCORA's service area is shown as impaired for aquatic life due to siltation. Attachment C presents an excerpt from the 2014 PA Integrated Water Quality Monitoring and Assessment Report, and includes the applicable pages for the Ridley Creek.

Siltation is measured by the water quality parameter Turbidity, and consequently the impacts of DELCORA's CSO discharges on the levels of Turbidity within the impaired sections of the Ridley Creek have been evaluated further and are discussed herein.



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3.2.7.2 Designated Critical Uses and Specific Water Quality Criteria from PA Code:

The Critical Uses for the Ridley Creek in the area of DELCORA's CSO discharges are designated in Chapter 25 §93.9 of the PA Code. All stretches of the Ridley Creek in this area are designated as Warm Water Fishes (WWF) (maintenance only), Migratory Fishes (MF) (passage only), or Trout Stocking (TSF). The TSF stretch only applies in the sections of the Ridley Creek upstream of the Chestnut Street bridge crossing.

The same specific water quality criteria apply to the WWF and MF Critical Use designations for Ridley Creek as was listed previously for the Delaware River in Section 3.2.5.2, except for the parameters of Dissolved Oxygen and Temperature – which are more stringent because of the high oxygen needs of trout.

Specifically, for TSF waters Chapter 25 §93.7 of the PA Code establishes the following additional standards:

- **Dissolved Oxygen** For the period February 15 to July 31 of any year, the minimum value for dissolved oxygen must be above 5.0 mg/L, with the 7-day average value above 6.0 mg/L. For the remainder of the year, the minimum value for dissolved oxygen must be above 5.0 mg/L, with the 7-day average value above 5.5 mg/L.
- **Temperature** A separate table is included within Chapter 25 §93.7 for maximum water temperatures in the receiving water body at various times of the year for TSF waters.

3.3 Approach for the Identification of the Applicable Water Quality Standards

For the Delaware River and the tidal portions of its tributaries, the DRBC's Water Quality Regulations are the prime source for the water quality standards, and the PA Code Chapter 93 WQS for the designated use serves as a secondary source. The DRBC's regulations have primacy over the PA Code for the Delaware River and the tidal portions of its tributaries. For the non-tidal portions of the Chester Creek and Ridley Creek, the specific designated use for the water body in the PA Code serves as the prime source of the WQS. If a parameter is not listed in the DRBC's Water Quality Regulations or in the PA Code, then there is not a WQS for that parameter that applies to the Delaware River, Chester Creek or Ridley Creeks.

A conservative approach was taken in the identification of the applicable WQS, such that the more stringent standard was used where the standards from the DRBC's Water Quality Regulations and the PA Code overlapped. The methodology for identifying the applicable WQS was complicated by the fact that the WQS vary for the three receiving water bodies and can also vary within the same water body depending on where the sample was taken.

Attachment D in the List of Attachments contains the master table that was developed to determine the applicable water quality standards for the expanded list of Parameters Considered for the Delaware River downstream of R.M. 81.8, the Delaware River upstream of R.M. 81.8,



the Chester Creek and Ridley Creek within the area impacted by DELCORA's CSO discharges. The specific methodology for identification of the applicable water quality standards is described in greater detail below.

In order to determine WQS for metals, an average hardness value of 84 mg/l (as CaCO₃) was used for the Delaware River based on an average of the hardness values obtained from the USEPA's Storage and Retrieval Data Repository (STORET) study data from the Years 2010-2015 for this portion of the Delaware River. Due to unavailable hardness data on STORET for the Chester and Ridley Creeks, an average hardness value of 74 mg/l (as CaCO₃) was used for the Chester and Ridley Creeks based on guidance in the DRBC Water Quality Regulations, Section 4.20.05, Paragraph A.2.

3.3.1 Delaware River Downstream of R.M. 81.8 (Water Contact Use Designation)

The "lower" Delaware River downstream of R.M. 81.8 has a Water Contact designated use. Therefore, there is stricter criteria for the lower Delaware River below R.M. 81.8 than there is for the "upper" Delaware River upstream of R.M. 81.8 that does not have the Water Contact use designation.

The following bullets describe the approach that was used for the identification of the applicable water quality standards on the Delaware River downstream of R.M. 81.8:

- The basis for determining the WQRs was to first look to the DRBC's WQRs in Section 3.30.4 for Zone 4.
- If there were no listings for a parameter in Section 3.30.4, we next referred to the "Human Health Criteria" in 25 PA Code Ch. 93 WQS, 93.8c, Table 5 as the primary water quality standard, unless a more restrictive standard was listed in the PA Code that applies to the Delaware River. The Human Health Criteria includes probable modes of exposure such as, but not limited to ingestion from drinking water and fish consumption, inhalation and dermal absorption and is the most appropriate for protecting human health from water contact or immersion.
- If there were no Human Health Criteria listed in Table 5 of the PA Code, we referred to the standards in the DRBC WQRs Tables 6 and 7 and used the more restrictive standard for Fish and Water Ingestion. These tables are respectfully titled "Stream Quality Objectives for Carcinogens" and "Stream Quality Objectives for Systemic Toxicants".

3.3.2 Delaware River Upstream of R.M. 81.8 (WWF and MF Use Designation)

The following bullets describe the approach that was used for the identification of the applicable water quality standards on the Delaware River upstream of R.M. 81.8:



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- The basis for determining the WQRs was to first look to the DRBC's WQRs in Section 3.30.4 for Zone 4.
- If there was no listing for a parameter in Section 3.30.4, we next referred to the DRBC's WQRs Table 5 "Stream Quality Objectives for Toxic Pollutants for the Protection of Aquatic Life" and used both the Acute and Chronic standards. If none was listed, we referred to DRBC Tables 6 and 7, and used the listed standard that is the next less restrictive than the Primary Contact standard that was used above for the Water Contact portion of the Delaware River. We used the Fish Ingestion Only criteria, not the Fish and Water Ingestion criteria for the Upper Delaware.
- If there is no DRBC standard listed for the parameter, we used the 25 PA Code Ch. 93 WQS Table 3 "Specific Water Quality Criteria" for the particular Critical Use Designation of the water body and also the 25 PA Code Ch. 93 WQS Table 5 "Fish and Aquatic Life Criteria" (for both Acute and Chronic) as the source of the water quality standard these tables are complimentary and do not overlap.

3.3.3 Chester Creek and Ridley Creek (TSF, WWF and MF Use Designations)

The following bullets describe the approach that was used for the identification of the applicable water quality standards on the Chester and Ridley Creeks:

- For the tidal portions of the creeks, we used as the basis the DRBC's WQRs in Section 3.30.4 for Zone 4. The DRBC regulations that were applied were for the Delaware River upstream of R.M. 81.8, since both creeks discharge to the Delaware River upstream of R.M. 81.8.
- For the non-tidal portions of the creeks, we used the 25 PA Code Ch. 93 WQS Table 3 "Specific Water Quality Criteria" for the particular Critical Use Designation of the water body and also the 25 PA Code Ch. 93 WQS Table 5 "Fish and Aquatic Life Criteria" (for both Acute and Chronic) as the source of the water quality standard these tables are complimentary and do not overlap.

3.4 Sampling of Select CSO Outfalls

3.4.1 Historical Sampling of Select CSO Outfalls

Under the current permit (NPDES Permit No. PA 0027103, Amendment 1, dated December 17, 2013), DELCORA is required to conduct on-going monitoring of its CSO outfalls at the following three locations within thirty (30) minutes of a rainfall:

- 2nd and Dock Streets Pump Station (wet well) (Chester Pump Station-CPS)
- CSO Outfall #018 Sun Drive and Hancock Street
- CSO Outfall #019 14th Street and Crozer Hospital

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The NPDES permit requires that the three (3) above locations be monitored for the five (5) parameters, sample type and at the frequency specified in Table 3-3 below. The grab samples are to be collected within the first 30 minutes of the discharge.

Parameter	Sample Type	Measurement Frequency
Biological Oxygen Demand (BOD ₅)	Grab (mg/l)	Annual
Ammonia	Grab (mg/l)	Annual
Total Suspended Solids (TSS)	Grab (mg/l)	Annual
Phosphorus	Grab (mg/l)	Annual
Fecal Coliform	Grab (#/ 100 ml)	Annual

Table 3-3: Permit-Specified CSO Monitoring Program Parameters,Sample Type and Frequency

DELCORA annually obtains CSO water quality samples in conformance with the NPDES permit requirements. The permit required CSO sampling results for the most recent three years (2012, 2013 and 2014) are contained in Attachment E and summarized in Table 3-4. Analyses for the consideration of these 5 parameters as a Pollutant of Concern are included within Sections 3.7 and 3.8.

 Table 3-4:
 Summary of NPDES Permit-Required CSO Samples (2012-2014)

		Parameters			
Sample Location	BOD5 (mg/L)	Ammonia (mg/L)	TSS (mg/L)	Phosphorus (mg/L)	Fecal Coliform (#/100 mL)
	201	2 Samples			
2 nd & Dock Streets (Chester Pump Station) (wet well) 10/29/2012	35	2.18	106	0.823	>600,000
Sun Drive & Hancock Street (CSO #018) 10/29/2012	28	1.79	47	0.813	>600,000
14 th Street & Crozer Hospital (CSO #019) 10/29/2012	21	0.81	48	0.499	>600,000
	201	3 Samples			
2 nd & Dock Streets (Chester Pump Station) (wet well) 11/27/2013	65	2.1	204	1.32	>200,000
Sun Drive & Hancock Street (CSO #018) 11/27/2013	13	0.2	40	0.35	150,000

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	Parameters				
Sample Location	BOD5 (mg/L)	Ammonia (mg/L)	TSS (mg/L)	Phosphorus (mg/L)	Fecal Coliform (#/100 mL)
14 th Street & Crozer Hospital (CSO #019) 11/27/2013	40	0.9	163	1.21	190,000
2014 Samples					
2 nd & Dock Streets (Chester Pump Station) (wet well) 09/25/2014	100	6.72	134	1.6	811,000
Sun Drive & Hancock Street (CSO #018) 09/25/2014	42.5	1.88	56	0.55	169,000
14 th Street & Crozer Hospital (CSO #019) 09/25/2014	39.5	3.26	45	0.78	430,000

3.4.2 Additional Sampling of CSO Outfalls

Additional sampling was undertaken at the three monitored CSOs by DELCORA on November 19th and December 1st, 2015 for a much longer list of parameters than is required by the NPDES permit. The sampling results were used to confirm the actual parameters prevalent in DELCORA's CSO discharges.

Attachment F in the List of Attachments includes the laboratory data for the additional sampling of the CSOs. Wet weather samples were collected primarily to analyze for the parameters thought to have been present at the plant influent due to the industrial wastewater discharged at that location (see Section 3.6.1). These wet weather samples were also intended to capture those parameters due to the first flush during a wet weather overflow event. The wet weather samples were collected when the minimum rainfall was 0.5" with a high intensity, and the samples were collected within 30 minutes from the beginning of a wet weather overflow event as required by the NPDES permit.

Figure 3-2 presents a map that shows the locations that were used for DELCORA's sampling of the combined sewer system, select CSOs, for the historical sampling of the Chester and Ridley Creeks, and for the USEPA's STORET Database monitoring stations on the receiving water bodies.



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3.5 Sampling of Receiving Waters

3.5.1 USEPA'S STORET Database

The USEPA's STORET database was used as the primary source for existing water quality data for all three receiving water bodies. Data was extracted using the appropriate hydrologic unit code for the Lower Delaware River, and all monitoring stations associated with the three receiving bodies within the area of DELCORA's CSO discharges were selected for gathering of water quality data. The water quality data was first extracted from STORET for the period of September 1, 2014 through September 1, 2015. The water quality data for this period) that were found to be exceeding the water quality standards. The parameters (during this period) that were found to be exceeding the water quality standards and/or were found to be associated with CSO discharges (as "detects" through the additional CSO sampling) were considered for further evaluation. The water quality data of these particular parameters was then extracted from STORET for a five year period ranging from September 1, 2010 through September 1, 2015 and evaluated against the applicable water quality standards. This five-year STORET data was used to confirm the presence of these parameters and to calculate the total number of observations as well as exceedance percentages in the receiving bodies. The evaluation of the STORET data is discussed in detail under Section 3.7 and 3.8.

Table 3-5 shows a list of the STORET monitoring stations that were used, along with their station identification numbers. There were a total of two stations that belong to Delaware River Basin Commission on the Delaware River and three station that belong to Pennsylvania Department of Environmental Protection on the Delaware River, Chester Creek and Ridley Creek. Figure 3-2 shows the locations of the STORET database monitoring stations with their respective identification numbers.

The parameters that were searched within the STORET database from the monitoring stations in Table 3-5 were based on the expanded list of the Parameters Considered discussed in Section 3.6 of this report. Once the data from the USEPA STORET database was extracted, each parameter was sorted based on its characteristic name and station identification number.





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Station Name	Station Identification Number	Agency	Period of Record	Latitude	Longitude
Marcus Hook (R.M. 78.1)	332049	DRBC	9/1/2014 – 9/1/2015	39.798611	-75.430111
Eddystone (R.M. 84.0)	892062	DRBC	9/1/2014 – 9/1/2015	39.849139	-75.329628
Chester Creek	DRBC422094	PADEP	9/1/2014 – 9/1/2015	39.8447	-75.36
Ridley Creek	DRBC422120	PADEP	9/1/2014 – 9/1/2015	39.8533	-75.3461
Delaware River	WQN0182	PADEP	9/1/2014 – 9/1/2015	39,8069	-75.4064

Table 3-5: Water Quality Monitoring Stations Used from USEPA's STORET Database

3.5.2 Historical Sampling of Chester and Ridley Creeks

The USEPA's STORET Database only has data for one monitoring station each for both the Chester and Ridley Creeks, and those stations are each located near the mouths of the creeks. In order to supplement the receiving water data for the Chester and Ridley Creeks and to obtain representative samples of the water quality in the creeks upstream of DELCORA's CSO discharge locations, DELCORA took its own water quality samples for the Chester and Ridley Creeks on five dates in 2010. Two samples were obtained during a storm event on October 14, 2010, including a sample taken at the beginning of the storm and a second sample taken after a minimum of 0.45 inch of rain had fallen.

In addition to the parameters listed in Table 3-3 for DELCORA's NPDES permit-specified CSO monitoring program, the following in-situ field measurements were also collected during the 2010 sampling:

- Temperature
- pH
- Conductivity
- Dissolved Oxygen (DO)

Besides being specified in DELCORA's NPDES permit, the parameters in Table 3-5 are indicative of the presence of wastewater. Dissolved Oxygen can also be used to indicate a water body that is being stressed and may inhibit natural biological activity.



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The sampling plan for the collection of the 2010 water quality samples from the Chester and Ridley Creeks specified collection during dry weather and during storm events in order to examine the impacts of CSO discharges on the water bodies. Discrete samples of receiving water collected for laboratory analyses were specified at four locations along the Chester and Ridley Creeks. The dry- and wet-weather water quality sampling locations that were used are listed below in Table 3-6, and are shown on the map in Figure 3-2. The data from the 2010 historical receiving water quality sampling is presented in Attachment G.

Sample Location Name as Shown in Figure 3-2	Sample Collection Location	Latitude	Longitude	Closest Upstream CSO	Closest Downstream CSO	Nearest Access Road or Address
Ridley Creek 1 (RC1)	Upstream Chester Park Drive crossing of Ridley Creek	39°52'23.83"N	75°22'30.82"W	None	33	Chester Park Drive
Ridley Creek 3 (RC3)	Downstream East 2 nd Street Bridge crossing of Ridley Creek	39°51'12.58"N	75°20'47.13"W	15	None	Old East 2 nd Street
Chester Creek 1 (CC1)	Upstream Kerlin Street crossing of Chester Creek	39°51'20.76"N	75°22'36.02"W	None	20	1556 Kerlin Street
Chester Creek 3 (CC3)	Downstream 2 nd Street Bridge crossing of Chester Creek	39°50'41.08"N	75°21'36.15"W	023, 024	12	Adjacent to Chester Pump Station

 Table 3-6: Receiving Water Body Sample Locations for Chester and Ridley Creeks

The sampling locations were carefully selected to provide an upstream (or background) sample above the furthest upstream CSO discharges on each creek to compare against a sample from a downstream location that is impacted by the CSO discharges.



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3.6 Methodology for Identification of the Parameters Considered

For the identification of the POCs, DELCORA took an inclusive approach to determine that all relevant water quality parameters were appropriately considered and evaluated. The first step was to develop a comprehensive list of the overall "Parameters Considered", which was then further evaluated and refined to determine the list of the applicable POCs. Development of the list of Parameters Considered was meant to cast a wide net as the first step towards identifying any parameters that might possibly be of concern.

3.6.1 Development of the Parameters Considered List

The initial list of the Parameters Considered was compiled from six (6) primary reference sources from the USEPA, PADEP and the DRBC. The Parameters Considered list initially consisted of those specific parameters listed in the USEPA's CSO Guidance Document (as noted in Section 3.1.2). Additional parameters were added from the parameters requiring sampling per DELCORA's NPDES permit, from the PA Code's specific water quality criteria for DELCORA's three receiving water bodies, from the DRBC's Water Quality Regulations for Zone 4 of the Delaware River, from the 2014 PA Integrated Water Quality Monitoring and Assessment Report (a.k.a. "303(d) List"), and from the DRBC's 2014 Delaware River and Bay Water Quality Assessment report. Attachment H provides the full version of the table used to develop the initial Parameters Considered list and includes the reference source for each of the parameters noted.

Table 3-7 provides a summary of the initial Parameters Considered list that was developed by compiling the parameters listed in each of the six primary reference sources noted above.

Bacteria - Enterococcus	Nutrients
Bacteria - Fecal Coliform	Oil and Grease
Alkalinity	PCBs (Fish Consumption)
Aluminum (Aquatic Life)	рН
Ammonia	Phenols
Biological Oxygen Demand (BOD)	Phosphorus
Cadmium	Radioactivity - alpha emitters
CBOD20	Radioactivity - beta emitters
CBOD5	Synthetic Detergents
Chlorine	Temperature
Chlorodibromomethane	Threshold Odor Number (TON)

Table 3-7: Initial List of Parameters Considered



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Copper	Total Kjeldahl Nitrogen (TKN)
Cyanide	Total Dissolved Solids (TDS)
Dichlorobromomethane	Total Phosphorus
Dissolved Oxygen	Total Residual Chlorine (TRC)
Iron	Total Suspended Solids (TSS)
Lead	Toxics
Metals	Turbidity
Nitrate	Zinc
Nitrite	

As shown in the table in Attachment H and as noted in Section 3.1.2, the USEPA's CSO Guidance Document lists "Metals", "Nutrients", and "Toxics" as parameters of concern but does not provide any further definition of the individual parameters in these three categories. Tables 3-8, 3-9, and 3-10 below list the specific parameters that were added onto the initial Parameters Considered list for Nutrients, Metals, and Toxics and the reference source stating the reason for the inclusion of each of the parameters.

Table 3-8: Nutrients Included in the Initial List of Parameters Considered

Parameter (Nutrients)	Reference Source
Ammonia	NPDES Permit Required Sampling for CSO Discharges
Nitrate	NPDES Permit Required Sampling for Outfall #001
Nitrite	NPDES Permit Required Sampling for Outfall #001
Phosphate	Implied by EPA CSO Guidance for LTCP
TKN	NPDES Permit Required Sampling for Outfall #001
Total Nitrogen	Implied by EPA CSO Guidance for LTCP
Total Phosphorus	NPDES Permit Required Sampling for CSO Discharges



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Parameter (Metals)	Reference Source
Aluminum (Al)	Listed in DRBC WQRs Table 5
Arsenic (trivalent) (As III)	Listed in DRBC WQRs Table 5
Cadmium (Cd)	Listed in DRBC WQRs Table 5
Chromium (trivalent) (Cr III)	Listed in DRBC WQRs Table 5
Chromium (hexavalent) (Cr VI)	Listed in DRBC WQRs Table 5
Copper (Cu)	Listed in DRBC WQRs Table 5
Iron (Fe)	PA Code for TSF, WWF, and MF Critical Use
Lead (Pb)	Listed in DRBC WQRs Table 5
Mercury (Hg)	Listed in DRBC WQRs Table 5
Nickel (Ni)	Listed in DRBC WQRs Table 5
Selenium (Se)	Listed in DRBC WQRs Table 5
Silver (Ag)	Listed in DRBC WQRs Table 5
Zinc (Zn)	Listed in DRBC WQRs Table 5

Table 3-9: Metals Included in the Initial List of Parameters Considered

Table 3-10: Toxics Included in the Initial List of Parameters Considered

Parameter (Toxics)	Reference Source
Phenols	Required by DRBC Zone 4 WQRs
Chlorodibromomethane	NPDES Permit Required Sampling for Outfall #001
Cyanide	NPDES Permit Required Sampling for Outfall #001
Dichlorobromomethane	NPDES Permit Required Sampling for Outfall #001

Once the initial list of Parameters Considered was developed, additional parameters were added onto the list if they had been detected during the historical sampling data of the influent to the WRTP (WRTP data), and in the existing CSO monitoring data (as required by the NPDES permit). One year's worth of DELCORA's plant influent historical sampling data from September 1, 2014 through September 1, 2015 was collected and analyzed to identify additional Parameters Considered.

It is important to state that that the historical sampling data noted above for the influent to the WRTP also included industrial wastewater from DELCORA's forty-five (45) Significant Industrial Users (SIUs). The industrial wastewater from forty-three (43) of DELCORA's SIUs is trucked directly to the WRTP and is discharged downstream of all CSOs into the combined sewer flow prior to the plant's influent sampling location. Consequently, the historical sampling data for the influent to the plant detected twenty-eight (28) industrial-type chemicals from these SIUs that are not normally associated with sanitary sewage or combined sewer overflows. Since the trucked-in industrial wastewater is discharged directly to the WRTP, it is not able to migrate back into the combined sewer system and, therefore, this industrial wastewater cannot be



discharged from any of DELCORA's CSOs. However, as part of the due diligence to address all possible POCs, the 28 industrial chemicals that were detected in the historical sampling of the plant influent were added onto an expanded list of Parameters Considered.

DELCORA actively maintains an Industrial Pretreatment program, and all of its industrial users are controlled by the sewer use regulations, Resolution No. 91-03, "The DELCORA Standards, Rules and Regulations," and the Local Limits, Resolution No. 95-11. In addition, all Significant and/or Categorical Industrial Users are further controlled by a permit, which is issued for not more than four (4) years. Each SIU is reviewed to determine how its wastewater is conveyed to the treatment plant. The only two (2) SIUs that discharge into the CSS, are commercial laundries with relatively benign wastewater compared to some of the truly industrial facilities that truck their wastewater to the WRTP. All of the parameters that are required to be analyzed by these commercial laundries in their wastewater based on their permit requirements were confirmed to be on the expanded list of the Parameters Considered. The two SIUs that discharge directly into DELCORA's combined sewer system are listed in Table 3-11 below.

ID No	Permit #	Industry	Activity	Site Address	Discharge Route
W1	1DE-01-02	Ace Linen Service, Inc.	Laundry Service	3120 W. 6 th St., Chester, PA 19013	Flows to Booth St. Interceptor to Delaware Interceptor to WRTP
W32	1DE-01-12	Delco Linen	Laundry Service	2626 W. 4th St., Chester, PA 19013	To 36-inch brick sewer on 4th St., to 48-inch brick sewer on Townsend St., to CSO Regulator #005, to Delaware River Interceptor, to WRTP

Table 3-11: Industrial Users Discharging into DELCORA's Combined Sewer System

To help eliminate from the expanded list of the Parameters Considered the industrial chemicals that were detected as a result of the SIUs discharging to the WRTP, it was determined that additional wet weather sampling at the CSOs was required as noted in Section 3.4.2. The purpose of the additional sampling was to verify and confirm that the industrial-type chemicals not normally associated with CSOs that were detected in the historical sampling of the plant influent were in fact actually from the trucked-in industrial wastewater and not a part of the normal flow within the CSS that might overflow at a CSO. The CSO sampling results were used to screen non-detected parameters from the list of the Parameters Considered.

Review of the November 19th and December 1st, 2015 additional sampling results allows for shortening of the list of the Parameters Considered as possible POCs by screening those parameters that were introduced from the historical sampling of the plant influent that included the trucked-in industrial wastewater. The additional sampling results more accurately reflect the actual characteristics of the wastewater discharged at the CSOs, than does the historical data at the plant influent since the trucked-in industrial wastewater only goes into the plant and does not enter into the CSS. Therefore, if a parameter on the expanded Parameters Considered list was



not detected in the November and December 2015 wet weather sampling of the CSOs, those parameters were not considered further as POCs.

3.7 Methodology for Identification of the Pollutants of Concern List

Once the Parameters Considered list was narrowed using the November/December 2015 additional sampling results at the CSOs, the parameters remaining on the narrowed list of Parameters Considered were further evaluated to determine if they are Pollutants of Concern, or Parameters of Potential Concern (POPC). A parameter is considered a "Pollutant of Concern" for a water body if more than 10% of the samples exceeded the applicable water quality standard. This criteria is based on guidance provided by the USEPA, which recommends a "greater than 10% exceedance percentage" for determining that waters only partially meet their designated use for aquatic life support. A parameter is considered a "Parameter of Potential Concern" if 2 - 10% of the samples exceeded the water quality standard.

Water quality data for the parameters on the narrowed Parameters Considered list were collected from the STORET data repository for the one-year period from September 1, 2014 to September 1, 2015, from the water quality monitoring stations on each of the three receiving water bodies as noted in Section 3.5.1.

The segments of the Delaware River, Chester Creek and Ridley Creek have unique water quality standards that apply to them depending on the regulating authority, their designated uses, and the specific location within the waterbody. The maximum concentrations detected for each of the Parameters Considered were compared against the applicable surface water quality standards to determine which parameters were exceeding their standards. Attachment I in the List of Attachments provides a table with the final Parameters Considered list for each of the three receiving water bodies for which there is a water quality standard. The Delaware River was broken down into two tables; one for the Delaware River upstream of R.M 81.8 ("upper Delaware") and one for the Delaware River downstream of R.M 81.8 ("lower Delaware") based on the Water Contact Recreation designated use for the Delaware River below R.M. 81.8 and the more stringent requirements associated with primary contact.

The receiving stream water quality data from the USEPA STORET data warehouse was compared against the applicable WQS to check for exceedances. Both the acute and chronic conditions for the Parameters Considered were compared to the WQS, where applicable, to determine if there were exceedances. In addition to listing the Parameters Considered for each receiving water body, the table in Attachment I list the applicable water quality standards for each of the receiving water bodies, and identifies those parameters were the STORET sample data exceeded the water quality standards.

A flowchart was created to help illustrate the decision-making methodology used for developing the Pollutants of Concern list. The flowchart represents the process used for answering five (5) screening questions about the Parameters Considered in order to determine if a parameter is to be



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considered a Pollutant of Concern, a Parameter of Potential Concern, or neither. The 5 screening questions for each Parameter Considered are:

- 1. Does a Water Quality Standard Exist for the parameter?
- 2. Do the available data indicate impairment exists and the impairment involves pollutants associated with CSOs?
- 3. Do greater than 10% of the samples for the receiving water body exceed the WQS?
- 4. Do 2% 10% of the samples for the receiving water body exceed the WQS?
- 5. Was the parameter detected in the additional sampling of the CSOs?

Figure 3-3 presents the Methodology Flowchart used for developing the list of POCs and POPCs, and the following subsections provide additional details about the methodology used to answer the 5 screening questions.

3.7.1 Screening of Parameters with No Water Quality Standard

The Methodology Flowchart for POC and POPC Determination shows that the first step is to determine if a Parameter Considered has an applicable PA State or DRBC water quality standard. If a parameter does not have an applicable water quality standard, there is no standard to exceed. Therefore, those parameters without a water quality standard are not considered further as a POC or a POPC. These include many of the Parameters Considered.

As noted previously in Section 3.1.2, the USEPA's CSO Guidance document states that receiving water monitoring should include identified parameters of concern and these typically include those previously identified for combined sewage and CSO monitoring:

- pH
- BOD
- TDS
- TSS
- Nutrients
- Metals
- Indicator bacteria

A number of the above listed parameters were screened as not a POC or POPC because they do not have an applicable surface water quality standard for the Delaware River, Chester Creek, or Ridley Creek. These include the parameters of BOD/CBOD, TDS and TSS, and the nutrients nitrate, nitrite, phosphorus, and TKN.



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The table of the final Parameters Considered in Attachment I shows in gray-highlighting those Parameters Considered that were screened-out as not being a POC because they do not have an applicable water quality standard. Of the 76 Parameters Considered, 25 were removed from further consideration because they do not have an applicable water quality standard.

3.7.2 Screening of Parameters Causing Impairment and that are Associated with CSOs

For the 51 Parameters Considered that do have an applicable water quality standard, the Methodology Flowchart shows that the second screening decision is to determine if existing water quality data indicate impairment of the receiving water bodies exists and the impairment involves pollutants associated with CSOs. The inclusion of this determination comes directly from the requirements of the Consent Decree as noted in Section 3.1.1.

"Impairment" of a receiving water body is "indicated" to exist in one of two ways. First, the receiving water body is considered impaired for a particular parameter if the parameter appears in the 2014 PA Integrated Water Quality & Assessment Report (303(d) List). The PA Integrated Report identifies surface water bodies that are not attaining their designated and existing uses as "impaired".

Secondly, for the purpose of this report, a receiving water body is also considered impaired for a parameter if any of the available sampling data for that parameter in the water body shows that there had been an exceedance of the applicable water quality standard. Those parameters that showed exceedances of the WQS and that may be associated with CSOs were evaluated further to determine if they should be considered as a POC.

The 2014 PA Integrated Water Quality & Assessment Report shows the Delaware River to be impaired for Fish Consumption by PCBs from an unknown source, and there is a PCB TMDL on the Delaware River stretching far upstream to Trenton, NJ. While the Delaware River is impaired from PCBs, the PCBs are not normally associated with CSOs. Given this reason, and the fact that the PCB impairment begins well upstream of DELCORA's service area – PCBs were screened as not being a POC. Furthermore, the additional CSO sampling results from November/December 2015 in Attachment I show that PCBs were found to be at a lower concentration than the Reporting Detection Limit (RDL). For this additional reason it was determined that PCBs are not associated with DELCORA's CSO discharges.

For the Chester Creek and Ridley Creeks, the 2014 PA Integrated Water Quality & Assessment Report shows that both of the creeks are impaired for Aquatic Life from siltation, with Urban Runoff/Storm Sewers identified as the source. The impairment of the Chester Creek and Ridley Creek by siltation primarily occurs upstream of DELCORA's service area as shown in Figure 3-1. The term "Siltation" is not defined in the 2014 PA Integrated Water Quality & Assessment Report, but through various sources could be defined as:



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"the pollution of water by fine particulate terrestrial clastic material, with a particle size dominated by silt or clay. It refers both to the increased concentration of suspended sediments, and to the increased accumulation (temporary or permanent) of fine sediments on bottoms where they are undesirable. Siltation is most often caused by soil erosion or sediment spill."

There is not a water quality standard for "siltation", however, siltation can be considered as closely related to the widely used water quality parameter of "Turbidity", which is associated with CSO discharges. For this reason "Turbidity" was reviewed further as a surrogate for siltation to determine if it might be considered as a POC. Per available USEPA STORET data, the Turbidity concentrations on all of the three receiving water bodies were found to be below the WQS (see Attachment I) and therefore siltation was screened-out as not being a POC.

3.7.3 Screening of Parameters where > 10% of Observations Exceed WQS

The concentrations of those Parameters Considered that were detected within the receiving water bodies from USEPA's STORET data for the years 2010 - 2015 were compared to the applicable water quality standards to determine if a Parameter Considered should be viewed as a Pollutant of Concern.

If 10% or more of the total number of samples for a Parameter Considered listed in Attachment I exceeded the WQS, then the parameter was further evaluated to see if it was detected in the CSO discharges.

If 2% - 10% of the total number of samples for a Parameter Considered exceeded the WQS, then the parameter was considered a Parameter of Potential Concern. The concentrations of the Parameters of Potential Concern will continued to be monitored over time, and re-evaluated should the monitoring show their concentrations to increase over time.

Per the flowchart, if 2% - 10% of the total number of samples for a Parameter Considered do not exceed the WQS, then the parameter was not considered to be a POC or POPC.

3.7.4 Screening of Parameters Not Detected at CSO Discharges

The Methodology Flowchart shows that additional analysis is required for those parameters that exceeded the water quality standards for the receiving water bodies in more than 10% of the samples. For those parameters, the concentration of the parameter detected in the November/December 2015 sampling of the CSO discharges was reviewed.

If the parameter was "Not Detected (ND)" or was below the Reporting Detection Limit (see Attachment F) in the November/December 2015 CSO sampling results, it indicates that the parameter was not observed in DELCORA's CSO discharges. In this case, the parameter is not considered to be a POC. In this manner, the industrial-type chemicals that had been originally



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detected in the historic sampling results from the influent to the WRTP were able to be removed from further consideration as a POC or POPC.

If the parameter was detected within the November/December 2015 CSO sampling results, it indicates that the parameter was in DELCORA's CSO discharge. In these cases the parameter is considered as a POC, and is to be further investigated through additional receiving water quality monitoring and modeling.

3.8 Discussion of the Pollutants of Concern and Parameters of Potential Concern

The Parameters Considered shown in Attachment I were analyzed against the WQS. The parameters that exceeded the WQS in the receiving bodies are shown in the summary table in Attachment J. The summary table also provides information on the number of observations for each parameter as well as the total number of exceedances for each parameter in all the receiving water bodies from 2010 to 2015. The POCs are shown in red highlight within the table, and POPCs are shown in yellow highlight.

The following discussion of the individual parameters is focused only on those parameters shown in the tables in Attachments I and J to be either a POC or a POPC.

3.8.1 Fecal Coliform Bacteria

Fecal coliform bacteria are the most common microbiological contaminants of natural waters, and are used to indicate contamination by human pathogens. Fecal coliform live in the digestive tracks of warm-blooded animals, including humans, and are excreted in the feces. The DRBC collects fecal coliform bacteria data at Stations 332049 and 892062 on the Delaware River. Additionally, DELCORA sampled the Chester and Ridley Creeks in 2010 for fecal coliform concentrations. The 2010 receiving water sampling results for the Chester and Ridley Creeks are presented in Attachment G.

There are no PA Code, Chapter 93 fecal coliform bacteria water quality standards for streams designated WWF, MF or TSF with no other qualifiers. However, the DRBC's Delaware River Zone 4 has a Stream Quality Objective for fecal coliform of no more than 770 CFU/100 mL for the section upstream of R.M. 81.8, which includes the tidal portions of the Chester and Ridley Creeks, and 200 CFU/100 mL for the section of the river downstream of R.M. 81.8. The tidal extent on Chester Creek and Ridley Creek is shown on Figure 3-1. Compliance with the DRBC Stream Quality Objectives for fecal coliform bacteria is based on a geometric average of samples taken at such frequency and location as to permit valid interpretation.

Of the six samples taken by DELCORA in 2010 on the Ridley Creek at RC1 (upstream) and RC3 (downstream), four show exceedances of the Stream Quality Objective for fecal coliform. These values indicate that the Ridley Creek was not meeting the DRBC Stream Quality Objective, however, more sampling is recommended to further confirm these results.



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Of the six samples taken by DELCORA on the Chester Creek at CC1 (upstream) and CC3 (downstream), four show exceedances of the Stream Quality Objective for fecal coliform. These values indicate that the Chester Creek was also not meeting the DRBC WQS at that time, however as with the Ridley Creek, more sampling is recommended to further confirm these results.

The table in Attachment I shows that the available data indicates that there were no exceedances observed of fecal coliform in the Delaware River.

Given that more than 10% of the fecal coliform samples for both the Ridley and Chester Creeks exceeded the WQS, fecal coliform should be considered as a POC for the two creeks. However, although the existing data for the Delaware River has demonstrated that there were no exceedances observed of fecal coliform, since fecal coliform is a primary pollutant typically associated with CSO discharges it has been decided to also include it as a POC for the Delaware River in the interest of minimizing potential impacts to human health and the environment.

- For the lower Delaware River (Downstream of R.M. 81.8)
 ➢ Fecal Coliform considered to be a Pollutant of Concern.
- For the upper Delaware River (Upstream of R.M. 81.8)
 ➢ Fecal Coliform considered to be a Pollutant of Concern.
- For the Chester Creek
 ➢ Fecal Coliform considered to be a Pollutant of Concern.
- For the Ridley Creek
 Fecal Coliform considered to be a Pollutant of Concern.

3.8.2 Enterococcus Bacteria

Enterococcus is a second bacteria genus that also resides in the digestive system of humans and animals, and that is used to indicate the presence of human pathogens. They have been long recognized as important human pathogens and are becoming increasingly so.

Unlike fecal coliform, the DRBC does not collect enterococcus bacteria data at Stations 332049 and 892062 on the Delaware River, and DELCORA did not collect samples for enterococcus bacteria in 2010 as it did for fecal coliform. Enterococcus are used as an indicator bacteria for marine waters.

As with fecal coliform, there are no PA Code, Chapter 93 water quality standards for enterococcus bacteria for streams designated WWF, MF or TSF with no other qualifiers. However, the DRBC's Delaware River Zone 4 has a WQS for enterococcus bacteria of no more



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than 88 CFU/100 mL for the section upstream of R.M. 81.8, which includes tidal portions of the Chester and Ridley Creeks, and 33 CFU/100 mL for the section of the river downstream of R.M. 81.8. Compliance with the DRBC WQS for enterococcus bacteria is based on a geometric average of samples taken at such frequency and location as to permit valid interpretation.

Very little existing data was available for enterococcus bacteria concentrations in the Delaware River, Chester Creek and Ridley Creek in the area of DELCORA's CSO discharges. However, enterococcus bacteria and fecal coliform bacteria are similar to each other, they are both produced in the human digestive tract, and are both considered to be parameters typically associated with CSOs. For this reason it was decided to also include enterococcus bacteria as a POC at the same locations identified for fecal coliform bacteria, which includes all three of DELCORA's receiving water bodies.

- For the lower Delaware River (Downstream of R.M. 81.8)
 - Enterococcus considered to be a Pollutant of Concern.
- For the upper Delaware River (Upstream of R.M. 81.8)
 ➢ Enterococcus considered to be a Pollutant of Concern.
- For the Chester Creek
 ➢ Enterococcus considered to be a Pollutant of Concern.
- For the Ridley Creek
 - > Enterococcus considered to be a Pollutant of Concern.

3.8.3 Escherichia Coli Bacteria

Escherichia coli (also known as E. coli) is a facultative anaerobic, rod-shaped bacterium of the genus *Escherichia* that is commonly found in the lower intestine of warm-blooded organisms. E. coli is expelled into the environment within fecal matter. Fecal material can enter the environment from many sources including wastewater treatment plants, CSO discharges, livestock or poultry manure, sanitary landfills, septic systems, sewage sludge, pets and wildlife.

E. coli was not listed as an initial Parameter Considered because it is listed in the applicable reference sources from the PA Code or DRBC. However, in consultation with the PADEP it is understood that Enterococcus bacteria could be replaced with E. coli in future regulations (on the anticipation that national standards for E. coli will be adopted in Pennsylvania) and therefore E. coli is included as a POC for all the receiving water bodies.

- For the lower Delaware River (Downstream of R.M. 81.8)
 - ➢ E. coli considered to be a Pollutant of Concern.


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- For the upper Delaware River (Upstream of R.M. 81.8)
 ➢ E. coli considered to be a Pollutant of Concern.
- For the Chester Creek
 ➢ E. coli considered to be a Pollutant of Concern.
- For the Ridley Creek
 E. coli considered to be a Pollutant of Concern.

3.8.4 Metals

During the data analysis, it was detected that some metal concentrations, in the receiving water bodies, exceeded the water quality standards. These metals include Aluminum, Copper, Iron, Lead, and Mercury. The appropriate control measures for metals from CSO discharges are the continued implementation of and compliance with the Nine Minimum Controls (NMCs) as required by DELCORA's NPDES permit.

The NPDES permit requires DELCORA to submit an annual report each year to the PADEP, with appropriate documentation demonstrating the continued implantation of and compliance with the NMC required on a system wide basis.

Additionally, the USEPA's guidance document Guidance for Nine Minimum Controls states;

"...municipalities should immediately implement best available technology economically achievable (BAT) or best conventional pollutant control technology (BCT). At a minimum, BAT/BCT should include the nine minimum controls, which are determined on a best professional judgement (BPJ) basis by the NPDES permitting authority".

For the removal of metals, the most applicable Nine Minimum Controls include the maximum use of the collection system for storage, the review and modification of pretreatment requirements to ensure that CSO impacts are minimized, maximization of flow to the POTW for treatment and pollution prevention programs (such as street sweeping) to reduce these contaminants in the CSOs.

Therefore, metals are not considered to be POCs.

3.9 Summary for Pollutants of Concern

In the effort to identify Pollutants of Concerns related to its CSO discharges, DELCORA has reviewed the 2014 PA Integrated Water Quality Monitoring and Assessment Report (303(d) List), the historic sampling data for the influent to the Western Regional Treatment Plant, the USEPA's STORET Data repository, historic water quality sampling data from the Chester and





Ridley Creeks, and additional sampling results from the CSOs from November and December of 2015.

Three (3) POCs were determined. These include Fecal Coliform bacteria, Enterococcus bacteria and E. coli bacteria. These three POCs are parameters typically associated with CSO discharges. The list of POCs is summarized in Table 3-12 with their respective exceedance percentage (%) for each of the receiving water bodies. The concentrations of these identified POCs in the Delaware River, Chester Creek and Ridley Creek will be further investigated through receiving water quality monitoring and modeling.

No Parameters of Potential Concern were identified at this time.

No.	Upper Delaware River		Lower Delaware River		Chester Creek		Ridley Creek	
Pollutants of Concern (>10% of observed samples exceed WQS)								
1	Fecal Coliform ^(b)	100%	Fecal Coliform ^(b)	100%	Fecal Coliform ^{(a),(b)}	100%	Fecal Coliform ^{(a),(b)}	100%
2	Enterococcus (b),(c)	100%	Enterococcus	100%	Enterococcus (b),(c)	100%	Enterococcus (b),(c)	100%
3	E. coli ^(c)	100%	E. coli ^(c)	100%	E. coli ^(c)	100%	E. coli ^(c)	100%

Table 3-12: List of Pollutants of Concern (POC)

^(a) Based on historical sampling conducted in 2010 upstream and downstream of CSO outfalls only on Chester and Ridley Creeks.

^(b) Fecal Coliform and Enterococcus are listed as POCs due to both being parameters typically associated with CSOs.

^(c) DRBC regulations are available for Enterococcus and it is typically associated with CSOs and therefore it is included as a POC. However, in consultation with PADEP Enterococcus could be replaced with E. coli bacteria in the future (based on the anticipation that national standards on E. coli will be adopted in Pennsylvania) and therefore E.coli is also included as a POC.



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- 15. National Oceanic and Atmospheric Administration, Waters with threatened or endangered species or their critical habitat, 2014 <u>http://response.restoration.noaa.gov/maps-and-spatial-data/download-esi-maps-and-gis-data.html</u>
- 16. National Oceanic and Atmospheric Administration (NOAA) -_DE_NJ_PA_2014_PDFs, 2014 <u>http://response.restoration.noaa.gov/maps-and-spatial-data/download-esi-maps-and-gis-data.html</u>
- 17. PA Code Chapter 93 WQS, 2010 http://www.pacode.com/secure/data/025/chapter93/chap93toc.html
- 18. PA Code Chapter 93 WQS, 2011 http://www.pacode.com/secure/data/025/chapter93/chap93toc.html
- 19. PADEP 2014 Pennsylvania Integrated Water Quality Monitoring and Assessment Report (aka 303(D) List), 2014 <u>http://www.portal.state.pa.us/portal/server.pt/community/water_quality_standards/10556/in</u> <u>tegrated_water_quality_report_-_2014/1702856</u>
- 20. PADEP DELCORA's NPDES Permit, October 17, 2013
- 21. Partnership for the Delaware Estuary (PDE), PDE-Report-15-02_FreshwaterMusselScientificResearch, 2015. <u>http://delawareestuary.org/science_reports_partnership.asp</u>
- 22. Partnership for the Delaware Estuary (PDE) http://www.delawareestuary.org/mussel-survey-program



Identification of Sensitive Areas and Pollutants of Concern Report
Section 4

- 23. Pennsylvania Fish and Boat Commission Map and Biologist Reports. http://fishandboat.com/afm.htm
- 24. Pennsylvania Department of Environmental Protection (PADEP) 2014 Pennsylvania Integrated Water Quality Monitoring and Assessment Report (aka 303(D) List), 2014 <u>http://www.portal.state.pa.us/portal/server.pt/community/water_quality_standards/10556/in</u> <u>tegrated_water_quality_report_-_2014/1702856</u>
- 25. Pennsylvania Department of Environmental Protection (PADEP) DELCORA's NPDES Permit, October 17, 2013
- 26. Pennsylvania Natural Heritage Program (PNHP),2011 http://www.naturalheritage.state.pa.us/CNAI_Download.aspx
- 27. Pennsylvania Natural Heritage Program (PNHP),2007 http://www.naturalheritage.state.pa.us/Aquatic_GIS.aspx
- 28. Pennsylvania Natural Heritage Program (PNHP),2015 http://www.gis.dcnr.state.pa.us/maps/index.html?nha=true
- 29. Pennsylvania Natural Heritage Program (PNHP) PNHP Species List http://www.naturalheritage.state.pa.us/Species.aspx
- 30. Philadelphia Water Department PWD LTCPU ("Green City Clean Waters"), September 1, 2009 <u>http://www.phillywatersheds.org/ltcpu/LTCPU_Complete.pdf</u>
- 31. United States Environmental Protection Agency (USEPA) -2006_12_01_standards_outstanding, 1989 <u>http://www.epa.gov/sites/production/files/2014-10/documents/diamond-outstandingmemo.pdf</u>
- 32. United States Environmental Protection Agency (USEPA) EPA CSO Guidance for LTCP, September, 1995 <u>http://water.epa.gov/polwaste/npdes/cso/upload/owm0272.pdf</u>



Identification of Sensitive Areas and Pollutants of Concern Report

Section 4

- 33. United States Environmental Protection Agency)USEPA) STORET Data Warehouse http://www.epa.gov/storet/
- 34. WREN, WRENWaterSupplyReport_000, 2006 http://wren.palwv.org/products/documents/WaterSupplyReport_000.pdf



ATTACHMENT A

Letters with Regulatory Agencies Regarding Sensitive Areas

DELCORA CSO LTCP Sensitive Areas Contact Sheet

No.	Sensitive Area Item	Contact	Title	Agency	Street	City	State	Zip	Phone Number	Date Sent	Response Date
									814-237-4090		
1	Endangered Species	Robert Anderson	Fish & Wildlife Biologist	US Fish and Wildlife Agency	110 Radnor Road, Suite 101	State College	PA	16801-7987	x7447	10/28/2015	11/2/2015
				US Fish and Wildlife - John Heinz					215-365-3118		
2	Threatened and Endangered Birds	Brendalee Phillips	Wildlife Biologist	NWR Birds	8601 Lindbergh Blvd.	Philadelphia	PA	19153	x119	10/29/2015	No Comments
			Program Manager								
3		Jennifer Fields	jefields@pa.gov	PA DEP	2 East Main Street	Norristown	PA	19401	484-250-5192	10/29/2015	11/17/15 - phone call
				Delaware River Basin Commission					609-883-9500		
4		Steve Tambini	Executive Director	(DRBC)	25 State Police Drive	West Trenton	NJ	08628-0360	x203	10/29/2015	No Comments
5	Threatened and Endangered Birds	Patti Barber	Endangered Bird Biologist	PA Game Commission	2001 Elmerton Ave	Harrisburg	PA	17110-9797	717-303-4482	10/29/2015	12/31/15 return call
6	Threatened and Endangered Birds	lan Gregg	Wildlife Biologist	PA Game Commission	2001 Elmerton Ave	Harrisburg	PA	17110-9797	814-422-8239	10/29/2015	No Response
7		Carol F. McCabe, Esq.	Chair	PA Environmental Council	1315 Walnut Street, Suite 532	Philadelphia	PA	19107	215-545-4570	10/29/2015	No Response
				Chester Ridley Crum Watersheds							
8	Primary Contact Areas	Brian Byrnes	Executive Director	Association	P.O. Box 227	Gradyville	PA	19039	610-359-1440	10/29/2015	11/23/15 - called
				New Jersey Department of	P.O. Box 420						
9		David Chanda	Director Fish and Wildlife	Environmental Protection (NJDEP)	501 E State Street, 3rd Floor	Trenton	NJ	08625	609-292-9410	10/29/2015	No Response
				Delaware Department of Natural							
	Atlantic and Shortnose Sturgeon,			Resources and Environmental	89 Kings Highway						
10	river herring, shad	Matt Fisher	Director Fish and Wildlife	Control (DNREC)		Dover	DE	19901	302-735-8663	10/29/2015	11/30/2015
									717-705-7800		12/22/2015
		John Buzzar		PA Fish and Boat Commission					610-847-5983		Follow up 3/11/16
11	Delaware River and tributaries	Kathy Gipe	Fisheries Biologist	(PFBC)	1601 Elmerton Ave	Harrisburg	PA	17110	814-359-5186	10/29/2015	and 5/2/16
				Patnership for the Delaware				1	302-655-4990 x		
12	Freshwater Mussels	Dr. Danielle Kreeger	Science Director	Estuary (PDE)	110 S Poplar Street, Suite 202	Wilmington	DE	19801	104	10/29/2015	11/25/2015



October 29, 2015

Carol F. McCabe, Esquire PA Environmental Council 1315 Walnut Street Suite 532 Philadelphia, PA 19107

Subject: Delaware County Regional Water Quality Authority CSO Long Term Control Plan Update Sensitive Areas Study

Dear Ms. McCabe:

Greeley and Hansen is developing a Long Term Control Plan (LTCP) for the Delaware County Regional Water Quality Control Authority (DELCORA) located in Chester, PA. A map of the study area is provided as an attachment to this letter. The goal of this LTCP is to reduce the frequency, duration and intensity of combined sewer overflow events into the local waterbodies, including portions of the Delaware River, Chester Creek and Ridley Creek. As part of this evaluation, environmentally sensitive areas within the study area need to be identified so that appropriate considerations can be made to reduce combined sewer overflows to these areas.

Sensitive Areas are defined by the United States Environmental Protection Agency (USEPA) Federal Register Combined Sewer Overflow (CSO) Control Policy and the US EPA Guidance for Long Term Control Plan as follows:

- Outstanding National Resource Waters (ONRW)
- National Marine Sanctuaries
- Waters with threatened or endangered species and their habitat
- Waters with primary contact recreation (i.e. beaches, boat ramps, boat launches, etc.)
- Public drinking water intakes or their designated protection areas
- Shellfish beds

USEPA requirements indicate that sensitive areas are given the highest priority during the development of technical alternatives.

- Complete list of identified Sensitive Areas;
- Narrative description of how the sensitive area criteria listed above applies to the study area;
- Map of specific locations within our study area identifying the specific sensitive areas; and
- Any additional information you deem appropriate.

Yours very truly,

Greeley and Hansen LLC

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Marlene Finizio Project Manager

c: Robert Willert, DELCORA Michael DeSantis, DELCORA Edwin Bothwell, DELCORA Michael Hope, Greeley and Hansen Julia Spicher, Greeley and Hansen

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October 29, 2015

Ms. Patti Barber PA Game Commission 2001 Elmerton Avenue Harrisburg, PA 17110-9797

Subject: Delaware County Regional Water Quality Authority CSO Long Term Control Plan Update Sensitive Areas Study

Dear Ms. Barber:

Greeley and Hansen is developing a Long Term Control Plan (LTCP) for the Delaware County Regional Water Quality Control Authority (DELCORA) located in Chester, PA. A map of the study area is provided as an attachment to this letter. The goal of this LTCP is to reduce the frequency, duration and intensity of combined sewer overflow events into the local waterbodies, including portions of the Delaware River, Chester Creek and Ridley Creek. As part of this evaluation, environmentally sensitive areas within the study area need to be identified so that appropriate considerations can be made to reduce combined sewer overflows to these areas.

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Yours very truly,

Greeley and Hansen LLC

imio Marlene Finizio

Project Manager

c: Robert Willert, DELCORA Michael DeSantis, DELCORA Edwin Bothwell, DELCORA Michael Hope, Greeley and Hansen Julia Spicher, Greeley and Hansen

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October 29, 2015

Ms. Jennifer Fields Pennsylvania Department of Environmental Protection 2 East Main Street Norristown, PA 19401

Subject: Delaware County Regional Water Quality Authority CSO Long Term Control Plan Update Sensitive Areas Study

Dear Ms. Fields:

Greeley and Hansen is developing a Long Term Control Plan (LTCP) for the Delaware County Regional Water Quality Control Authority (DELCORA) located in Chester, PA. A map of the study area is provided as an attachment to this letter. The goal of this LTCP is to reduce the frequency, duration and intensity of combined sewer overflow events into the local waterbodies, including portions of the Delaware River, Chester Creek and Ridley Creek. As part of this evaluation, environmentally sensitive areas within the study area need to be identified so that appropriate considerations can be made to reduce combined sewer overflows to these areas.

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Greeley and Hansen LLC

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Marlene Finizio Project Manager

c: Robert Willert, DELCORA Michael DeSantis, DELCORA Edwin Bothwell, DELCORA Michael Hope, Greeley and Hansen Julia Spicher, Greeley and Hansen

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October 29, 2015

Mr. Ian Gregg PA Game Commission 2001 Elmerton Avenue Harrisburg, PA 17110-9797

Subject: Delaware County Regional Water Quality Authority CSO Long Term Control Plan Update Sensitive Areas Study

Dear Mr. Gregg:

Greeley and Hansen is developing a Long Term Control Plan (LTCP) for the Delaware County Regional Water Quality Control Authority (DELCORA) located in Chester, PA. A map of the study area is provided as an attachment to this letter. The goal of this LTCP is to reduce the frequency, duration and intensity of combined sewer overflow events into the local waterbodies, including portions of the Delaware River, Chester Creek and Ridley Creek. As part of this evaluation, environmentally sensitive areas within the study area need to be identified so that appropriate considerations can be made to reduce combined sewer overflows to these areas.

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Mr. Ian Gregg

DELCORA is under a Consent Decree to submit this study to USEPA in February 2016. In order to meet project milestones, we respectfully request you provide a response within 30 days of receipt of this letter, no later than November 23, 2015. We appreciate your cooperation and assistance in completing this study. Should you need any additional information, please feel free to contact me at (215) 553-7919 or Julia Spicher at (215) 553-7926.

Yours very truly,

Greeley and Hansen LLC

injo Marlene Finizio

Marlene Finizio Project Manager

c: Robert Willert, DELCORA Michael DeSantis, DELCORA Edwin Bothwell, DELCORA Michael Hope, Greeley and Hansen Julia Spicher, Greeley and Hansen

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October 29, 2015

Mr. Steven Tambini Executive Director Delaware River Basin Commission 25 State Police Drive West Trenton, NJ 08628-0360

Subject: Delaware County Regional Water Quality Authority CSO Long Term Control Plan Update Sensitive Areas Study

Dear Mr. Tambini:

Greeley and Hansen is developing a Long Term Control Plan (LTCP) for the Delaware County Regional Water Quality Control Authority (DELCORA) located in Chester, PA. A map of the study area is provided as an attachment to this letter. The goal of this LTCP is to reduce the frequency, duration and intensity of combined sewer overflow events into the local waterbodies, including portions of the Delaware River, Chester Creek and Ridley Creek. As part of this evaluation, environmentally sensitive areas within the study area need to be identified so that appropriate considerations can be made to reduce combined sewer overflows to these areas.

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Yours very truly,

Greeley and Hansen LLC

mi Marlene Finizio

Project Manager

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October 29, 2015

Ms. Brendalee Phillips US Fish and Wildlife - John Heinz NWR Birds 8601 Lindbergh Boulevard Philadelphia, PA 19153

Subject: Delaware County Regional Water Quality Authority CSO Long Term Control Plan Update Sensitive Areas Study

Dear Ms. Phillips:

Greeley and Hansen is developing a Long Term Control Plan (LTCP) for the Delaware County Regional Water Quality Control Authority (DELCORA) located in Chester, PA. A map of the study area is provided as an attachment to this letter. The goal of this LTCP is to reduce the frequency, duration and intensity of combined sewer overflow events into the local waterbodies, including portions of the Delaware River, Chester Creek and Ridley Creek. As part of this evaluation, environmentally sensitive areas within the study area need to be identified so that appropriate considerations can be made to reduce combined sewer overflows to these areas.

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Yours very truly,

Greeley and Hansen LLC

mio Marlene Finizio

Marlene Finizio Project Manager

c: Robert Willert, DELCORA Michael DeSantis, DELCORA Edwin Bothwell, DELCORA Michael Hope, Greeley and Hansen Julia Spicher, Greeley and Hansen





United States Department of the Interior

FISH AND WILDLIFE SERVICE Pennsylvania Field Office 110 Radnor Road, Suite 101 State College, Pennsylvania 16801-4850

November 2, 2015

Marlene Finizio Greeley and Hansen LLC 1700 Market Street, Suite 2130 Philadelphia, PA 19103

RE: USFWS Project #2016-0026 PNDI Large Project

Dear Ms. Finizio:

This responds to your letter received on October 9, 2015, requesting information about federally listed and proposed endangered and threatened species within the area affected by the development of a Long Term Control Plan for the Delaware County Regional Authority. The project area is located in Delaware County, Pennsylvania. The following comments are provided pursuant to the Endangered Species Act of 1973 (Act, 87 Stat. 884, as amended; 16 U.S.C. 1531 et seq.), the Migratory Bird Treaty Act (MBTA, 16 U.S.C. 703-712; Ch. 128; July 13, 1918; 40 Stat. 755, as amended), and the Bald and Golden Eagle Protection Act (BGEPA, 16 U.S.C. 668-668d).

Federally Listed Species

There are a number of federally listed species that are either known to occur, or have the potential to occur, in the proposed study area. We describe general information about these species, but without more specific project information and locations are not able to provide additional information regarding potential avoidance or conservation measures. We fully support your planning efforts and desires to protect sensitive areas and overall water quality. Let us know how we can be of additional assistance.

No critical habitat has been designated for any of the below listed species, at this time.

Bog turtle

The project is within the known range of the bog turtle (*Clemmys muhlenbergii*), a species that is federally listed as threatened. Bog turtles inhabit shallow, spring-fed fens, sphagnum bogs, swamps, marshy meadows, and pastures characterized by soft, muddy bottoms; clear, cool, slow-flowing water, often forming a network of rivulets; high humidity; and an open canopy. Bog



turtles usually occur in small, discrete populations occupying suitable wetland habitat dispersed along a watershed. The occupied "intermediate successional stage" wetland habitat is usually a mosaic of micro-habitats ranging from dry pockets, to areas that are saturated with water, to areas that are periodically flooded. Some wetlands occupied by bog turtles are located in agricultural areas and are subject to grazing by livestock. More information on this species can be found at: http://ecos.fws.gov/tess_public/profile/speciesProfile.action?spcode=C048

Indiana bat

The project area is within the range of the federally endangered Indiana bat (*Myotis sodalis*). Indiana bats hibernate in caves and abandoned mines during the winter months (November through March), and use a variety of forested upland and wetland habitats during the spring, summer, and fall. Indiana bats usually roost in dead or living trees with exfoliating bark, crevices or cavities. Female Indiana bats form nursery colonies under the exfoliating bark of dead or living trees, such as shagbark hickory, black birch, red oak, white oak, and sugar maple, in upland or riparian areas. More information on this species can be found at: http://www.fws.gov/MIDWEST/endangered/mammals/inba/index.html

Northern long-eared bat

The project is within the known range of the northern long-eared bat (*Myotis septentrionalis*), a species that is federally listed as threatened. Northern long-eared bats hibernate in caves and abandoned mines during the winter months, and use a variety of forested upland and wetland habitats during the spring, summer, and fall. More information on this species can be found at: http://www.fws.gov/midwest/endangered/mammals/nlba/index.html

Atlantic sturgeon

The project is within the known range of the Atlantic sturgeon (*Acipenser oxyrinchus oxyrinchus*), a species that is federally listed as threatened. The Atlantic sturgeon is a long-lived, estuarine dependent, anadromous fish. Adult sturgeon spawn in freshwater in the spring and early summer and migrate into "estuarine" and marine waters where they spend most of their lives. The Atlantic sturgeon is under the jurisdiction of the National Marine Fisheries Service (NMFS). Please contact NMFS regarding this species or visit their website at: http://www.nmfs.noaa.gov/pr/species/fish/atlanticsturgeon.htm#status

Shortnose sturgeon

The project is within the known range of the Shortnose sturgeon (*Acipenser brevirostrum*), a species that is federally listed as endangered. The shortnose sturgeon is the smallest of the three sturgeon species that occur in eastern North America. The shortnose sturgeon is anadromous, living mainly in the slower moving riverine waters or nearshore marine waters, and migrating periodically into faster moving fresh water areas to spawn. The shortnose sturgeon is under the jurisdiction of the NMFS. Please contact NMFS regarding this species or visit their website at: http://www.nmfs.noaa.gov/pr/species/fish/shortnosesturgeon.htm

In cases where adverse effects to federally listed species cannot be avoided, further consultation with the Service would be necessary to avoid potential violations of section 9 (prohibiting "take" of listed species) and/or section 7 (requiring federal agencies to consult) of the Endangered Species Act. Information about the section 7 and section 10 consultation processes (for federal and non-federal actions, respectively) can be obtained by contacting this office or accessing the Service's Endangered Species Home Page (http://endangered.fws.gov).

Bald and golden eagles

Bald eagles (*Haliaeetus leucocephalus*) are known to nest in the vicinity of the project area. While the bald eagle has been removed from the Federal list of threatened and endangered species (August 8, 2007; 72 FR 37346), the bald eagle along with the golden eagle (*Aquila chrysaetos*) continues to be protected under the BGEPA and MBTA. Both the BGEPA and the

MBTA prohibit take as defined as "pursue, shoot, shoot at, poison, wound, kill, capture, trap, collect, destroy, molest, disturb, or otherwise harm eagles, their nests, or their eggs." Under the BGEPA, "disturb" means to agitate or bother a bald or golden eagle to a degree that causes, or is likely to cause, based on the best scientific information available: (1) injury to an eagle; (2) decrease in its productivity, by substantially interfering with normal breeding, feeding, or sheltering behavior; or (3) nest abandonment, by substantially interfering with normal breeding, feeding, feeding, or sheltering behavior.

We recommend that you evaluate the project type, size, location and layout in light of the National *Bald Eagle Management Guidelines* to determine whether or not bald eagles might be disturbed as a direct or indirect result of this project. If it appears that disturbance may occur, we recommend that you consider modifying your project consistent with the Guidelines. These guidelines, as well as additional eagle information, are available at http://www.fws.gov/northeast/EcologicalServices/eagle.html To assist you in making a decision regarding impacts to bald eagles, a screening form can be found at http://www.fws.gov/northeast/pafo/bald eagle.html.

Migratory Birds

The Service is the principal Federal agency charged with protecting and enhancing populations and habitat of migratory bird species. The MBTA prohibits the taking, killing, possession, transportation, and importation of migratory birds, their eggs, parts, and nests, except when specifically authorized by the Department of the Interior. While the MBTA has no provision for authorizing incidental take, the Service recognizes that some birds may be killed even if all reasonable measures to avoid take are implemented.

The potential exists for avian mortality if there is habitat destruction and alteration within the project boundaries. Site-specific factors that should be considered in project siting to avoid and minimize the risk to birds include avian abundance; the quality, quantity and type of habitat; geographic location; type and extent of bird use (e.g. breeding, foraging, migrating, etc.); and landscape features. Please review the enclosed information for general recommendations for avoiding and minimizing impacts to migratory birds within and around the project area. Please

be aware that since these are general guidelines, some of them may not be applicable to the current project design or they may have already been included in the project design.

The project area is located in the vicinity of the Important Bird Area (IBA) known as Upper Ridley-Crum Creek. IBAs are designated by the Pennsylvania Ornithological Technical Committee. They are the most critical regions in the Commonwealth for conserving bird diversity and abundance, and are the primary focus of Audubon Pennsylvania's conservation efforts. To find out more information about this IBA, including which bird species breed there, visit: http://netapp.audubon.org/IBA/State/US-PA

Please contact Brian Scofield of my staff at 814-234-4090 if you have any questions or require further assistance regarding this matter.

4

Sincerely,

InaJ. Sr.

Lora L. Zimmerman Field Office Supervisor

Enclosure

Adaptive Management Practices for Conserving Migratory Birds

The Fish and Wildlife Service is the principal Federal agency charged with protecting and enhancing populations and habitat of migratory bird species. The Migratory Bird Treaty Act (MBTA, 16 U.S.C. 703-712; Ch. 128; July 13, 1918; 40 Stat. 755, as amended) prohibits the taking, killing, possession, transportation, and importation of migratory birds, their eggs, parts, and nests, except when specifically authorized by the Department of the Interior. While the MBTA has no provision for authorizing incidental take, the Service recognizes that some birds may be killed even if all reasonable measures to avoid take are implemented. Unless the take is authorized, it is not possible to absolve individuals, companies or agencies from liability (even if they implement avian mortality avoidance or similar conservation measures). However, the Office of Law Enforcement focuses on those individuals, companies, or agencies that take migratory birds with disregard for their actions and the law.

The potential exists for avian mortality from habitat destruction and alteration within the project boundaries. Site-specific factors that should be considered in project siting to avoid and minimize the risk to birds include avian abundance; the quality, quantity and type of habitat; geographic location; type and extent of bird use (*e.g.* breeding, foraging, migrating, etc.); and landscape features.

We offer the following recommendations to avoid and minimize impacts to migratory birds within and around the project area:

- 1. Where disturbance is necessary, clear natural or semi-natural habitats (*e.g.*, forests, woodlots, reverting fields, shrubby areas) and perform maintenance activities (*e.g.*, mowing) between <u>September 1 and March 31</u>, which is outside the nesting season for most native bird species. Without undertaking specific analysis of breeding species and their respective nesting seasons on the project site, implementation of this seasonal restriction will avoid take of most breeding birds, their nests, and their young (*i.e.*, eggs, hatchlings, fledglings).
- 2. Minimize land and vegetation disturbance during project design and construction. To reduce habitat fragmentation, co-locate roads, fences, lay down areas, staging areas, and other infrastructure in or immediately adjacent to already-disturbed areas (*e.g.*, existing roads, pipelines, agricultural fields) and cluster development features (*e.g.*, buildings, roads) as opposed to distributing them throughout land parcels. Where this is not possible, minimize roads, fences, and other infrastructure.
- 3. Avoid permanent habitat alterations in areas where birds are highly concentrated. Examples of high concentration areas for birds are wetlands, State or Federal refuges, Audubon Important Bird Areas, private duck clubs, staging areas, rookeries, leks, roosts, and riparian areas. Avoid establishing sizable structures along known bird migration pathways or known daily movement flyways (*e.g.*, between roosting and feeding areas).
- 4. To conserve area-sensitive species, avoid fragmenting large, contiguous tracts of wildlife habitat, especially if habitat cannot be fully restored after construction. Maintain

contiguous habitat corridors to facilitate wildlife dispersal. Where practicable, concentrate construction activities, infrastructure, and man-made structures (*e.g.*, buildings, cell towers, roads, parking lots) on lands already altered or cultivated, and away from areas of intact and healthy native habitats. If not feasible, select fragmented or degraded habitats over relatively intact areas.

5. Develop a habitat restoration plan for the proposed site that avoids or minimizes negative impacts to birds, and that creates functional habitat for a variety of bird species. Use only plant species that are native to the local area for revegetation of the project area.

If you have any questions regarding these measures, please contact Lora Zimmerman of the Pennsylvania Field Office located in State College, PA at 814-234-4090.



October 29, 2015

Mr. Brian Byrnes Executive Director Chester Ridley Crum Watersheds Association 38 Bishop Hollow Road Newtown Square, PA 19073

Subject: Delaware County Regional Water Quality Authority CSO Long Term Control Plan Update Sensitive Areas Study

Dear Mr. Byrnes:

Greeley and Hansen is developing a Long Term Control Plan (LTCP) for the Delaware County Regional Water Quality Control Authority (DELCORA) located in Chester, PA. A map of the study area is provided as an attachment to this letter. The goal of this LTCP is to reduce the frequency, duration and intensity of combined sewer overflow events into the local waterbodies, including portions of the Delaware River, Chester Creek and Ridley Creek. As part of this evaluation, environmentally sensitive areas within the study area need to be identified so that appropriate considerations can be made to reduce combined sewer overflows to these areas.

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- National Marine Sanctuaries
- Waters with threatened or endangered species and their habitat
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- Complete list of identified Sensitive Areas;
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- Map of specific locations within our study area identifying the specific sensitive areas; and
- Any additional information you deem appropriate.

Yours very truly,

Greeley and Hansen LLC

ingio Marlene Finizio

Marlene Finizio Project Manager

c: Robert Willert, DELCORA Michael DeSantis, DELCORA Edwin Bothwell, DELCORA Michael Hope, Greeley and Hansen Julia Spicher, Greeley and Hansen

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October 29, 2015

Ms. Danielle Kreeger Partnership for the Delaware Estuary 110 S. Poplar Street Suite 202 Wilmington, DE 19801

Subject: Delaware County Regional Water Quality Authority CSO Long Term Control Plan Update Sensitive Areas Study

Dear Ms. Kreeger:

Greeley and Hansen is developing a Long Term Control Plan (LTCP) for the Delaware County Regional Water Quality Control Authority (DELCORA) located in Chester, PA. A map of the study area is provided as an attachment to this letter. The goal of this LTCP is to reduce the frequency, duration and intensity of combined sewer overflow events into the local waterbodies, including portions of the Delaware River, Chester Creek and Ridley Creek. As part of this evaluation, environmentally sensitive areas within the study area need to be identified so that appropriate considerations can be made to reduce combined sewer overflows to these areas.

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Yours very truly,

Greeley and Hansen LLC

innio in Marlene Finizio

Project Manager

c: Robert Willert, DELCORA Michael DeSantis, DELCORA Edwin Bothwell, DELCORA Michael Hope, Greeley and Hansen Julia Spicher, Greeley and Hansen

U:04103 DELCORA LTCP\06 General Studies - Rpts\06,07 Identification of Sensitive Areas and POC - Ph1Task 2\Correspondence with Agencies\DELCORA Sensitive Areas Letter - Kreeger 2015-10-29.docx



Finizio, Marlene

From:	Spicher, Julia
Sent:	Friday, January 15, 2016 3:25 PM
То:	Finizio, Marlene
Subject:	FW: Sensitive Areas Study
Attachments:	Sensitive Areas Study.docx

From: Kurt Cheng [mailto:kcheng@delawareestuary.org]

Sent: Tuesday, November 24, 2015 4:34 PM To: Spicher, Julia <jspicher@greeley-hansen.com> Cc: Danielle Kreeger <DKreeger@delawareestuary.org> Subject: Sensitive Areas Study

Hi Julia,

On behalf of Dr. Danielle Kreeger, please find attached the sensitive areas study document. Let me know if you have any questions.

Thanks,

Kurt

Kurt Cheng Shellfish Specialist

Partnership for the Delaware Estuary 110 South Poplar Street, Suite 202 Wilmington, DE 19801

302-655-4990 x107

www.delawareestuary.org



Sensitive Areas Study

Partnership for the Delaware Estuary has identified sensitive areas within the study area which are listed and described below along with a visual representation on the provided map. Additional information on the study area is also presented.

Sensitive Areas

- Ridley Creek watershed
- Schuylkill River watershed
- Darby Creek mouth / John Heinz National Wildlife Refuge at Tinicum

Ridley Creek watershed

Ridley Creek begins north of Delaware County and flows through the county and into the Delaware River. Healthy freshwater mussel populations comprised of the Eastern elliptio (*Elliptio complanata*) exist throughout the creek which warrants protection. Additionally, there are long term freshwater mussel monitoring studies within the creek. Therefore, the Ridley Creek watershed should be considered a sensitive area.

Schuylkill River watershed

The northeast section of Delaware County drains into the Schuylkill River which flows just east of the county. Freshwater mussel beds have been qualitatively identified and quantitatively surveyed within the Schuylkill River and include multiple species including the eastern elliptio, the alewife floater (*Anodonta implicata*), and the tidewater mucket (*Leptodea ochracea*). Surveys have also identified juvenile mussels in the river indicating the population is successfully reproducing.

Darby Creek mouth / John Heinz National Wildlife Refuge at Tinicum

Access to Darby Creek is made possible via the Ridley Township Municipal Marina where boaters may access the Delaware River as well as the John Heinz National Wildlife Refuge at Tinicum. As well as serving as a primary contact for recreation, freshwater mussel surveys at the mouth of Darby Creek have yielded positive detections of the eastern elliptio and the alewife floater.

Although a few sensitive areas have been described above, it should be noted that Partnership for the Delaware Estuary and other organizations has only surveyed a portion of all streams in Delaware County. Historical data and museum records indicate that multiple species of freshwater mussels were found in Chester and Crum Creeks (Ortmann 1919). It is possible that additional freshwater mussel beds still exist in some streams that have not been properly surveyed. Attention should be paid to areas with hydrological connectivity to downstream sites that support freshwater mussels. In example, although outside of the highlighted study area, freshwater mussel populations as well as beds of submerged aquatic vegetation between Pennsylvania's coast and Little Tinicum Island may be impacted from waters draining the Darby Creek watershed.

Ortmann, A.E. 1919. A monograph of the naiades of Pennsylvania. Part III: Systematic account of the genera and species. Memoirs of the Carnegie Museum 8(1): xvi -385 + 21 plates.





October 29, 2015

Mr. John Buzzar PA Fish and Boat Commission 1601 Elmerton Avenue Harrisburg, PA 17110

Subject: Delaware County Regional Water Quality Authority CSO Long Term Control Plan Update Sensitive Areas Study

Dear Mr. Buzzar:

Greeley and Hansen is developing a Long Term Control Plan (LTCP) for the Delaware County Regional Water Quality Control Authority (DELCORA) located in Chester, PA. A map of the study area is provided as an attachment to this letter. The goal of this LTCP is to reduce the frequency, duration and intensity of combined sewer overflow events into the local waterbodies, including portions of the Delaware River, Chester Creek and Ridley Creek. As part of this evaluation, environmentally sensitive areas within the study area need to be identified so that appropriate considerations can be made to reduce combined sewer overflows to these areas.

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- Map of specific locations within our study area identifying the specific sensitive areas; and
- Any additional information you deem appropriate.

Yours very truly,

Greeley and Hansen LLC

mio Marlene Finizio

Marlene Finizio Project Manager

c: Robert Willert, DELCORA Michael DeSantis, DELCORA Edwin Bothwell, DELCORA Michael Hope, Greeley and Hansen Julia Spicher, Greeley and Hansen

U:\04103 DELCORA LTCP\06 General Studies - Rpts\06.07 Identification of Sensitive Areas and POC - Ph1Task 2\Correspondence with Agencies\DELCORA Sensitive Areas Letter - Buzzar 2015-10-29.docx




Pennsylvania Fish & Boat Commission

Division of Environmental Services Natural Diversity Section 450 Robinson Lane Bellefonte, PA 16823 814-359-5237

December 22, 2015

IN REPLY REFER TO SIR# 45340

Greeley & Hansen Marlene Finizio 1700 Market Street Philadelphia, Pennsylvania 19103

RE: Species Impact Review (SIR) – Rare, Candidate, Threatened and Endangered Species PNDI Search No. Delaware County Regional Water Quality Authority CSO Long Term Control Plan Update Delaware County

Dear Ms. Finizio:

This responds to your inquiry about a Pennsylvania Natural Diversity Inventory (PNDI) Internet Database search "potential conflict" or a threatened and endangered species impact review. These projects are screened for potential conflicts with rare, candidate, threatened or endangered species under Pennsylvania Fish & Boat Commission jurisdiction (fish, reptiles, amphibians, aquatic invertebrates only) using the Pennsylvania Natural Diversity Inventory (PNDI) database and our own files. These species of special concern are listed under the Endangered Species Act of 1973, the Wild Resource Conservation Act, and the Pennsylvania Fish & Boat Code (Chapter 75), or the Wildlife Code.

Based on records maintained in the Pennsylvania Natural Diversity Inventory (PNDI) database and our own files, the following rare or protected species are known from the vicinity of the project site:

Common Name (Scientific Name, PA Status)

Atlantic Sturgeon (*Acipenser oxyrinchus*, Endangered) Shortnose Sturgeon (*Acipenser brevirostrum*, Endangered) Eastern Redbelly Turtle (*Pseudemys rubriventris*, Threatened)

The Shortnose and Atlantic Sturgeon, which are listed by both Pennsylvania and the U.S. Fish and Wildlife Service/National Marine Fisheries Service, occur in the Delaware River. They are especially vulnerable to physical (dredging, rip-rap, etc.) and chemical (pH, dissolved oxygen, temperature, heavy metals, and organic contaminants) changes to the aquatic environment. Although the mobile adults of these protected fish species may be capable of moving from the project area, their spawning grounds (including eggs, larvae, and immature fish) are vulnerable to burial, crushing by equipment, and siltation

Our Mission:

www.fish.state.pa.us

from construction projects. In-stream activities during their spawning period may also disrupt the adults' reproductive behavior. Both Atlantic Sturgeon and Shortnose Sturgeon adults and juveniles may also forage and migrate through the proposed project area and could be adversely impacted by the proposed project.

The Eastern Redbelly Turtle is one of Pennsylvania's largest native aquatic turtles. This turtle species is known to inhabit relatively large, deep streams, rivers, ponds, lakes, and marshes with permanent water and ample basking sites. Redbelly turtles are documented in the Delaware River, Darby Creek, Crum Creek, Ridley Creek, and Chester Creek within the project area. They can be found in deep, slow water habitats in the creeks, as well as impoundments and nearby ponds and lakes. The existence of this turtle species is threatened by habitat destruction, poor water quality and competition with aggressive non-native turtle species that share its range and habitat (e.g. red-eared slider).

Additionally, in response to your request, we recommend that you access county information on our website, at <u>http://fishandboat.com/county.htm</u> for locations of public boat launches on Darby Creek and the Delaware River.

This response represents the most up-to-date summary of the PNDI data and our files and is valid for two (2) years from the date of this letter. An absence of recorded species information does not necessarily imply species absence. Our data files and the PNDI system are continuously being updated with species occurrence information. Should project plans change or additional information on listed or proposed species become available, this determination may be reconsidered, and consultation shall be reinitiated.

If you have any questions regarding this review, please contact Kathy Gipe at 814-359-5186 and refer to the SIR # 45340. Thank you for your cooperation and attention to this important matter of species conservation and habitat protection.

Sincerely,

histordeen l. (ulum

Christopher A. Urban, Chief Natural Diversity Section

CAU/KDG/dn

Cc: John Buzzar, PFBC

April 29, 2016

G

GREELEY AND HANSEN

1700 Market Street, Suite 2130 Philadelphia, Pennsylvania 19103 p 215 563 3460 f 215 563 1139 www.greeley-hansen.com

Ms. Kathy Gipe PA Fish and Boat Commission Division of Environmental Services Natural Diversity Section 450 Robinson Lane Bellefonte, PA 16823

Subject: Delaware County Regional Water Quality Authority CSO Long Term Control Plan Update Sensitive Areas Study In Reply to SIR# 45340

Dear Ms. Gipe:

Greeley and Hansen is developing a Long Term Control Plan Update (LTCPU) for the Delaware County Regional Water Quality Control Authority (DELCORA) located in Chester, PA. As per our phone conversation on Wednesday, March 9, 2016, we are requesting additional information on the specific habitat location of the species listed in SIR #45340.

Two maps of the study area are provided as attachments to this letter including a map highlighting the specific focus area of Chester City and a second map showing the exact location of the combine sewer outfalls (CSOs). Per our telephone conversation, it is our understanding that a map of the specific habitat locations cannot be provided as this information is confidential. In order to properly determine if CSOs will impact these threatened and endangered species we need to better understand the species location within the focus project area. We request that you review the attached maps against your records and complete the table below.

CSO	Receiving Stream	Location	Distance Upstream to Nearest Species Habitat (miles)	Distance Downstream to Species Habitat (miles)	Above Tidal Boundary? (Yes or No)	Notes
2	1	Front & Booth				
3		Front & Highland				
4		Front & Haves				
5		Front & Townsend				
7		Delaware & Reaney			,,, _,, _	
8		2 nd & Tilahman				
9		2 nd & Llovd				
10		5 th & Pusev				
11		2 nd & Parker				
12		2 nd & Edamont				
13		2 nd & Welsh				
14		3 rd & Upland				
15		4 th & Melrose				
16		8 th & McDowell				
17		9 th & Campbell				
18		Sun Drive & Hancock				
19		14 th & Crozer				
20		Kerlin & Finland		·····	· · · · · · · · · · · · · · · · · · ·	
21		9th & Sproul				

Ms. Kathy Gipe

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CSO	Receiving Stream	Location	Distance Upstream to Nearest Species Habitat (miles)	Distance Downstream to Species Habitat (miles)	Above Tidal Boundary? (Yes or No)	Notes
22		6 th & Sproul				
23		3 rd & Edgmont		¥ 1		
24		3 rd & Dock				
25		5 th & Penn				

Additionally, information on the type of habitat (i.e. – spawning, nesting, siting) or other pertinent information would also be helpful. We appreciate your cooperation and assistance in completing this task. Should you need any additional information, please feel free to contact me at (215) 553-7919 or Julia Spicher at (215) 553-7926.

Yours very truly,

Greeley and Hansen LLC

Œ Marlene Finizio

Nariene Finizio Project Manager

/js Enclosures

c: Michael DeSantis, DELCORA, w/enclosures Edwin Bothwell, DELCORA, w/enclosures Michael Hope, Greeley and Hansen Julia Spicher, Greeley and Hansen

U/04103 DELCORA LTCP/06 General Studies - Rpts/06.07 ID of Sensitive Areas and POC - Ph1Task 2/Correspondence with Agencies/tish and boat/DELCORA Sensitive Areas Letter - Gipe 2016-04-29.docx









CSO Long Term Control Plan Update Delaware County Regional Water Quality Control Authority IDENTIFCATION OF SENSITIVE AREAS OUTFALL LOCATOIN MAP March 2015

GREELEY AND HANSEN



1700 Market Street, Suite 2130 Philadelphia, Pennsylvania 19103 p 215 563 3460 f 215 563 1139 www.greeley-hansen.com

October 29, 2015

Mr. Matthew Fisher Delaware Department of Natural Resources and Environmental Control 89 Kings Highway Dover, DE 19901

Subject: Delaware County Regional Water Quality Authority CSO Long Term Control Plan Update Sensitive Areas Study

Dear Mr. Fisher:

Greeley and Hansen is developing a Long Term Control Plan (LTCP) for the Delaware County Regional Water Quality Control Authority (DELCORA) located in Chester, PA. A map of the study area is provided as an attachment to this letter. The goal of this LTCP is to reduce the frequency, duration and intensity of combined sewer overflow events into the local waterbodies, including portions of the Delaware River, Chester Creek and Ridley Creek. As part of this evaluation, environmentally sensitive areas within the study area need to be identified so that appropriate considerations can be made to reduce combined sewer overflows to these areas.

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USEPA requirements indicate that sensitive areas are given the highest priority during the development of technical alternatives.

This letter is being submitted to your agency as a formal request for information that your agency may have on sensitive areas within Delaware County, PA. Specifically, we are interested in sensitive areas located within the area of study as shown in GREEN on the attached map. If portions of the study area meet the above sensitive area criteria, we request that you provide the following information:

- Complete list of identified Sensitive Areas;
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- Map of specific locations within our study area identifying the specific sensitive areas; and
- Any additional information you deem appropriate.

DELCORA is under a Consent Decree to submit this study to USEPA in February 2016. In order to meet project milestones, we respectfully request you provide a response within 30 days of receipt of this letter, no later than November 23, 2015. We appreciate your cooperation and assistance in completing this study. Should you need any additional information, please feel free to contact me at (215) 553-7919 or Julia Spicher at (215) 553-7926.

Yours very truly,

Greeley and Hansen LLC

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Marlene Finizio Project Manager

c: Robert Willert, DELCORA Michael DeSantis, DELCORA Edwin Bothwell, DELCORA Michael Hope, Greeley and Hansen Julia Spicher, Greeley and Hansen

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STATE OF DELAWARE DEPARTMENT OF NATURAL RESOURCES & ENVIRONMENTAL CONTROL DIVISION OF FISH & WILDLIFE 89 Kings Highway Dover, Delaware 19901

Phone: (302) 739-9910 Fax: (302) 739-6157

11/25/2015

Marlene Finizio Greeley and Hansen LLC 1700 Market St. Suite 2130 Philadelphia, Pennsylvania 19103

Dear Marlene Finizio:

In response to your request to comment on the Long Term Control Plan for the Delaware County Regional Water Quality Control Authority the Delaware Department of Natural Resources and Environmental Control Division of Fish and Wildlife would like to notify you that the Delaware River adjacent to your study area is inhabited by both the Atlantic Sturgeon, and the Shortnose Sturgeon. Both species are considered endangered and are protected by the Endangered Species Act. In addition this area is utilized by several anadromous fish species including but not limited to Striped Bass and American Shad. In regards to your specific study site, or further information on species that can be found in the Delaware River you should contact the Pennsylvania Fish and Boat Commission.

Thank You,

Ian Park

We Bring You Delaware's Great Outdoors through Science and Service

Find us on Facebook http://www.facebook.com/DelawareFishWildlife



1700 Market Street, Suite 2130 Philadelphia, Pennsylvania 19103 p 215 563 3460 f 215 563 1139 www.greeley-hansen.com

October 29, 2015

Mr. David Chanda Director Fish and Wildlife New Jersey Department of Environmental Protection P.O. Box 420 501 E. State Street, 3rd Floor Trenton, NJ 08625

Subject: Delaware County Regional Water Quality Authority CSO Long Term Control Plan Update Sensitive Areas Study

Dear Mr. Chanda:

Greeley and Hansen is developing a Long Term Control Plan (LTCP) for the Delaware County Regional Water Quality Control Authority (DELCORA) located in Chester, PA. A map of the study area is provided as an attachment to this letter. The goal of this LTCP is to reduce the frequency, duration and intensity of combined sewer overflow events into the local waterbodies, including portions of the Delaware River, Chester Creek and Ridley Creek. As part of this evaluation, environmentally sensitive areas within the study area need to be identified so that appropriate considerations can be made to reduce combined sewer overflows to these areas.

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Yours very truly,

Greeley and Hansen LLC

unio INAN Marlene Finizio

Project Manager

Robert Willert, DELCORA C: Michael DeSantis, DELCORA Edwin Bothwell, DELCORA Michael Hope, Greeley and Hansen Julia Spicher, Greeley and Hansen

U:104103 DELCORA LTCP106 General Studies - Rpts106.07 Identification of Sensitive Areas and POC - Ph1Task 21Correspondence with Agencies/DELCORA Sensitive Areas Letter - Chandra 2015-10-29.docx





ATTACHMENT B

Public Survey Tally Sheet



CSO Long Term Control Plan Delaware County Regional Water Quality Control Authority River and Creeks Use Survey

The Delaware River, Chester Creek and Ridley Creek provide enjoyment through many recreational activities (i.e. boating, fishing). The Delaware County Regional Water Quality Control Authority (DELCORA) is committed to enhancing the quality of the River and Creeks to support these uses. To assist in planning water quality improvements, please let us know how you use the Delaware River, Chester Creek and Ridley Creek by completing this survey. You can also go online to <u>www.DELCORA.org</u> and click on River and Creeks Use Survey to complete the survey. This survey only pertains to specific areas along the Delaware River, Chester Creek and Ridley Creek as identified by the green area of interest on the attached map (see reverse side). Please fill out only one (1) survey per household. Please return survey in the enclosed self-addressed envelope by December 18, 2015.

- 1. Do you or anyone in your household use the Delaware River, Chester Creek and/or Ridley Creek for any recreational activities (i.e. boating, swimming, fishing etc)?
 - YES 72

NO

421 (If no, skip questions 2 and 3)

2. Please check the appropriate water activities and how frequently you or members of your household participate in these activities along the Delaware River, Chester Creek and Ridley Creek, focusing only in the area indicated in GREEN on the map.4Participation of water activities along the river or creeks outside the green area should not be included.

Activities															
		Dela	ware.	River		Chester Creek					Ridley Creek				
		F	requer	icy			equer		Frequency						
	Daily	1x week	1x month	1x year	Never	Daily	1x week	1x month	1x year	Never	Daily	1x week	1x month	1x year	Never
Fishing Bank/Boat	4	10	12	10	457	6	5	9	12	461	1	8	11	14	459
Fishing from Wading	1	1	2	7	482	3	5	7	7	471	1	8	8	4	472
Rowing/Canoeing		1	3	4	485			3	3	487			3	2	488
Motor Boating	2	2	10	5	474			3	1	489			3	1	489
Kayaking			7	4	482			4	3	486			3	2	488
Jet Skiing	1	1	2	1	488			1	1	491			1	1	491
Water Skiing			1	2	490				2	491				2	491
Swimming			2	1	490			4	3	486			6	1	486
Wading	1	1	1	1	489		2	4	2	485	1		7	5	480
Other (Define) Tubing, Sailing			1	2	490			1		492			1		492

3. Please check the appropriate time of year you or a member of your household participates in any of the water activities.

Time of Year			
	Delaware River	Chester Creek	Ridley Creek
Year Round	11	8	8
April – October	37	35	34
November - March		1	2

4. Respondent Profile (please check all that apply)

Male	178	Age less than 18	6	Age 40-64	179
Female	289	Age 18-39	37	Age 65 and over	295

5. Comments:

ATTACHMENT C

Applicable Pages from the 2014 PA Integrated Water Quality and Assessment Report (303(d) List)

2014 PA INTEGRATED WATER QUALITY MONITORING AND ASSESSMENT REPORT

Category 5 Streams

(Pollutants Requiring a TMDL)

		2014 Penn Report - S	sylvania Integr treams, Catego	rated Water Qualit ory 5 Waterbodies	ty Monitoring and Asses , Pollutants Requiring a	sment TMDL
	St	eam Name			1/5/Mi-	
	HUC L	Jse Assessed Source	(Assessment ID)	- Miles Cause	Date Listed	TMDI Date
	·····			······································		
	Ch HUC	ester Creek				
Stream contin		Recreational (Source Unkno	12466) - 0.57 mi	es Pathogens	2006	2019
in red box are upstream of	far	Source Unkno Recreational (12469) - 0.11 mi wn 12474) - 0.26 mi	es Pathogens les	2006	2019
DELCORA's CS discharges	0	Source Unkno Aquatic Life (1	wn (7135) - 7.88 mile	Pathogens	2006	2019
		Urban Runoff	Storm Sewers	Cause Unknown Siltation	2014 2014	2027 2027
		Aquatic Life (* Urban Runoff/	(7136) - 0.35 mile Storm Sewers	es Cause Unknown	2014	2027
		Aquatic Life (1	7138) - 7.68 mile	Siltation	2014	2027
		Urban Runoff/	Storm Sewers	Cause Unknown Siltation	2014 2014	2027 2027
		Aquatic Life (1 Urban Runoff/	7372) - 2.5 miles Storm Sewers	s Siltation	2014	2027
	<u>Ch</u> HUC	ester Creek U	nnamed Of (ID:2	<u>5605816)</u>		
		Aquatic Life (1	7136) - 0.29 mile	es		
		Urban Runoff/	Storm Sewers	Cause Unknown Siltation	2014 2014	2027 2027
	<u>Ch</u> HUC	ester Creek U	nnamed Of (ID:2	5606068)		
		Aquatic Life (1	7136) - 0.39 mile	s		
	Sector Sector	Urban Runoff/	Storm Sewers	Cause Unknown Siltation	2014 2014	2027 2027
	<u>Ch</u> HUC	ester Creek U	nnamed Of (ID:2	<u>5606113)</u>		
		Aquatic Life (1 Urban Runoff/	7136) - 0.58 mile Storm Sewers	es Cause Unknown Siltation	2014 2014	2027 2027
	Ch HUC	ester Creek U 02040202	nnamed Of (ID:2	<u>5606116)</u>		
		Aquatic Life (1 Urban Runoff/	7136) - 0.21 mile Storm Sewers	es Cause Unknown Siltation	2014	2027
	Ch HUC	ester Creek U	nnamed Of (ID:28	5606161)	2014	2021
		Aquatic Life (1	7136) - 0.59 mile	s		
		Urban Runoff/	Storm Sewers	Cause Unknown Siltation	2014 2014	2027 2027
				Page 43 of 846		-021

2014 Pennsylvania Integrated Water Quality Monitoring and Assessment Report - Streams, Category 5 Waterbodies, Pollutants Requiring a TMDL

St	ream Name			
	Use Assessed (Assessment ID) Source	- Miles Cause	Date Listed	TMDL Date
Pc HU	Diguessing Creek Unnamed To (C: 02040202	ID:25600765)		n ann gu dh' m a' gunnn, a' gunnn, a' gugan gu
140 MA	Aquatic Life (9687) - 0.6 miles Urban Runoff/Storm Sewers	Excessive Algal Growth	2002	2015
<u>Рі</u> но	r <u>eston Run</u> D: 02040202			
	Aquatic Life (17117) - 1.43 mile Urban Runoff/Storm Sewers	es Cause Unknown Siltation	2014 2014	2027 2027
<u>R</u> (но	eses Run C: 02040202			
	Aquatic Life (17117) - 1.93 mile Urban Runoff/Storm Sewers	s Cause Unknown Siltation	2014 2014	2027 2027
Ri HU	diev Creek 02040202			
Stream sections	Aquatic Life (16609) - 2.39 mile Urban Runoff/Storm Sewers	es Cause Unknown Siltation	2012 2012	2025 2025
in red box are far upstream of DELCORA's CSO	Aquatic Life (16610) - 0.64 mile Urban Runoff/Storm Sewers	es Cause Unknown Siltation	2012 2012	2025 2025
discharges	Aquatic Life (16613) - 5.9 miles Urban Runoff/Storm Sewers	cause Unknown Siltation	2012 2012	2025 2025
_	Aquatic Life (16619) - 5.11 mile Source Unknown	s Cause Unknown	2012	2025
	Aquatic Life (16622) - 12.72 mi Urban Runoff/Storm Sewers	les Cause Unknown Siltation	2012 2012	2025 2025
<u>Ri</u> HU	dley Creek Unnamed Of (ID:256	01429)		
	Aquatic Life (16620) ~ 0.91 mile Urban Runoff/Storm Sewers	es Cause Unknown Siltation	2002 2002	2015 2015
Ri HU	dlev Creek Unnamed Of (ID:256 C: 02040202	02007)		
	Aquatic Life (16608) - 0.52 mile Urban Runoff/Storm Sewers	es Cause Unknown Siltation	2012 2012	2025 2025

2014 PA INTEGRATED WATER QUALITY MONITORING AND ASSESSMENT REPORT

Category 4a Streams

(Approved TMDLs)

2014 Pennsylvania In	tegrated Water Quality Monitoring and Asses Waterbodies, Approved TMD	ssment Report - Streams, Categ Ls	ory 4a
Stream Name			
Use Designation (Asses	sment ID)		
Source	Cause	Date Listed	TMDL Date

Hydrologic Unit Code: 02040202-Lower Delaware

C H	t <mark>hester Creek</mark> UC: 02040202			
Stream sections	Aquatic Life (9900) - 1.05 miles			
in red box are far	Municipal Point Source	Cause Unknown	2002	2008
upstream of	Aquatic Life (17372) - 2.5 miles			
DELCORA's CSO	Urban Runoff/Storm Sewers	Cause Unknown	2014	2008
discharges	Fish Consumption (17455) - 0.81 miles			
	Source Unknown	PCB	1996	2006
<u>c</u> H	Chester Creek_Unnamed_Of (ID:25621262) UC: 02040202			
	Aquatic Life (9900) - 0.98 miles			
	Municipal Point Source	Cause Unknown	2002	2008
<u>с</u> н	Chester Creek Unnamed Of (ID:25621282) UC: 02040202			
	Aquatic Life (9900) - 0.68 miles			
	Municipal Point Source	Cause Unknown	2002	2008
<u>с</u> н	Chester Creek Unnamed Of (ID:25621286) UC: 02040202 Aquatic Life (9900) - 0.6 miles			
	Municipal Point Source	Cause Unknown	2002	2008
<u>с</u> н	Chester Creek Unnamed Of (ID:25621308) UC: 02040202 Aquatic Life (9900) - 0.59 miles			
	Municipal Point Source	Cause Unknown	2002	2008
<u>с</u> н	Chester Creek Unnamed To (ID:25621322) UC: 02040202		2002	2000
	Aquatic Life (9900) - 4.89 miles			
	Municipal Point Source	Cause Unknown	2002	2008
<u>с</u> н	Chester Creek Unnamed To (ID:25621352) UC: 02040202			
	Aquatic Life (17372) - 0.65 miles			
	Urban Runoff/Storm Sewers	Cause Unknown	2014	2008
<u>c</u>	Crum Creek			
Н	UC: 02040202			
	Fish Consumption (17455) - 1.4 miles	DOD	4000	0000
	Source Unknown	PCB	1996	2006
	Delaware River			
н	Fish Consumption (17455) - 61.02 miles			
	Source Unknown	PCB	1996	2006
– –	Pelaware River Linnamed To (ID-133072413)		1000	2000
H.	UC; 02040202			
	Fish Consumption (17455) - 0.34 miles			
	Source Unknown	PCB	1996	2006
<u>p</u>	elaware River Unnamed To (ID:134395494)			
Н	UC: 02040202			
	Fish Consumption (17455) - 2.4 miles			
	Source Unknown	PCB	1996	2006
		Page 20 of 500		

ATTACHMENT D

Applicable Water Quality Standards (WQS) Master Table

DELCORA CSO LTCPU - Applicable Water Quality Standards

DELCORA CSO LTCPU -	Applicable Wa	ater Quality Stan	dards																Rev: 12-18-2015	
Parameter S	Source of Standard	Applicable Water Body	WQS Type	Water Quality Standard To Use	Standard Criterion (DRBC Zone 4 WQRs) Applies to Delaware &	Standard Criterion (25 PA Code Ch. 93 WQS, 93.7 Table 3 for TSF, WWF, MF & WC Critical Use	Freshwat (DRBC WQRS Tat Objectives for To Protection & Applies to Delaware &	er Objectives ole 5 - Stream Quality xic Pollutants for the of Aquatic Life) . Tidal Portions of Chester Ridley	Freshwater (DRBC WQRs Table Objectives for Applies to Delaware Chester of	Objectives 6 - Stream Quality Carcinogens) & Tidal Portions of & Ridley	Freshwate (DRBC WQRs Quality Objecti Toxi Applies to Delawa of Cheste	r Objectives Table 7 - Stream ves for Systemic cants) are & Tidal Portions er & Ridley	Fish & Aqua (25 PA Code Ch. 93 <i>Applies to Delawa</i>	tic Life Criteria WQS, 93.8c, Table 5) are, Chester, <i>Ridley</i>	Human Criteria (25 PA Code Ch. 93 WQS, 93.8c, Table 5) Applies to Delaware, Chester, Ridley	US EPA Nationa Water Qua Aquatic Life Applies to Delawa	al Recommended ality Criteria Criteria Table are, Chester, Ridley	- Units	Notes	Parameter
					Tidal Portions of Chester & Ridley	Designations) Applies to Delaware, Chester, Ridley	Acute	Chronic	Fish & Water Ingestion	Fish Ingestion Only	Fish & Water Ingestion	Fish Ingestion Only	Criteria Continuous Concentrations	Criteria Maximum Concentrations	Health Criteria	Acute Criteria Maximum Concentration (CMC)	Chronic Criteria Continuous Concentration (CCC)			
Alkalinity	DRBC WQRs - for Zone 4 / PA Code (WWF, MF, TSF)	Delaware River, Chester Creek, Ridley Creek	Minimum	20	20	20											20	mg/L as CaCO ₃	Can eliminate from POCs since it is naturally occurring	Alkalinity
Alkalinity	DRBC WQRs - for Zone 4	Delaware River	Maximum	120	120													mg/L as CaCO ₃	Can eliminate from POCs since it is naturally occurring	Alkalinity
Alkalinity	DRBC WQRs - for Zone 4	Chester Creek - Mouth to OF#20 (Tidal limit), & Ridley Creek - Mouth to OF#18 (Tidal limit)	Maximum	120	120													mg/L as $CaCO_3$	Can eliminate from POCs since it is naturally occurring	Alkalinity
Aluminum	DRBC WQRs - Table 5 / PA Code - Table 5	Delaware River, Chester Creek, Ridley Creek	Acute Maximum	750			750	87						750		750	87	µg/L	Total recoverable, restricted to pH 6.5 - 9	Aluminum
Aluminum	DRBC WQRs - Table 5	Delaware River	Chronic Maximum	87			750	87						750		750	87	μg/L	Total recoverable, restricted to pH 6.5 - 9	Aluminum
Aluminum	DRBC WQRs - Table 5	Chester Creek - Mouth to OF#20 (Tidal limit), & Ridley Creek - Mouth to OF#18 (Tidal limit)	Chronic Maximum	87			750	87						750		750	87	µg/L	Total recoverable, restricted to pH 6.5 - 9	Aluminum
Ammonia	PA Code (WWF, MF, TSF)	Delaware River, Chester Creek, Ridley Creek	Maximum	(NH ₃ - N) x (log ⁻¹ [pK _T - pH] + 1)		(NH ₃ - N) x (log ⁻¹ [pK _T · pH] + 1)	·											mg/L	pH dependent	Ammonia
Anthracene	DRBC WQRs - Table 7 / PA Code - Table 5	Delaware River	Maximum	8,300							8,300	40,000			8,300			µg/L		Anthracene
Anthracene	DRBC WQRs - Table 7	Chester Creek - Mouth to OF#20 (Tidal limit), & Ridley Creek - Mouth to OF#18 (Tidal limit)	Maximum	8,300							8,300	40,000			8,300			µg/L		Anthracene
Antimony	PA Code 25 - 93.8c, Table 5	upstream of OF#20, & Ridley Creek upstream from OF#18	Acute Maximum	1,100							5.6	640	220	1,100	5.6			µg/L		Antimony
Antimony	PA Code 25 - 93.8c, Table 5	Chester Creek upstream of OF#20, & Ridley Creek upstream from OF#18	Chronic Maximum	200							5.6	640	220	1,100	5.6			µg/L		Antimony
Antimony	DRBC WQRs - Table 7 / PA Code	Delaware River	Maximum	5.6							5.6	640	220	1,100	5.6			µg/L		Antimony
Antimony	DRBC WQRs - Table 7	Chester Creek - Mouth to OF#20 (Tidal limit), & Ridley Creek - Mouth to OF#18 (Tidal limit)	Maximum	5.6							5.6	640	220	1,100	5.6			µg/L		Antimony
Arsenic (trivalent) (As III)	DRBC WQRs - Table 5 / PA Code - Table 5	Chester Creek, Ridley Creek, Delaware Upstream of RM 81.8	Acute Maximum	340			340	150					150	340	10	340	150	µg/L	Dissolved criteria	Arsenic (trivalent) (As III)
Arsenic (trivalent) (As III)	DRBC WQRs - Table 5 / PA Code - Table 5	Chester Creek, Ridley Creek, Delaware Upstream of RM 81.8	Chronic Maximum	150			340	150					150	340	10	340	150	µg/L	Dissolved criteria	Arsenic (trivalent) (As III)
Arsenic (trivalent) (As III)	PA Code 25 - 93.8c, Table 5	Delaware River Downstream of RM 81.8	Maximum	10			340	150					150	340	10	340	150	µg/L	Dissolved criteria	Arsenic (trivalent) (As III)
Bacteria - Enterococcus (Above R.M. 81.8)	DRBC WQRs - for Zone 4	Delaware River Upstream of RM 81.8	Maximum Geometric Average	88	88													CFU/100 mL		Bacteria - Enterococcus (Above R.M. 81.8)
Bacteria - Enterococcus (Below R.M. 81.8)	DRBC WQRs - for Zone 4	Delaware River Downstream of RM 81.8	Maximum Geometric Average	33	33													CFU/100 mL		Bacteria - Enterococcus (Below R.M. 81.8)
Bacteria - Enterococcus	DRBC WQRs - for Zone 4	Chester Creek - Mouth to OF#20 (Tidal limit), & Ridley Creek - Mouth to OF#18 (Tidal limit)	Maximum Geometric Average	88	88													CFU/100 mL		Bacteria - Enterococcus (Above R.M. 81.8)
Bacteria - Fecal Coliform (Above R.M. 81.8)	DRBC WQRs - for Zone 4	Delaware River Upstream of RM 81.8	Maximum Geometric Average	770	770													CFU/100 mL		Bacteria - Fecal Coliform (Above R.M. 81.8)

Parameter Source Standa	Source of	Applicable Water	W00 T	Water Quality Standard To	Standard Criterion (DRBC Zone 4 WQRs)	Standard Criterion (25 PA Code Ch. 93 WQS, 93.7 Table 3 fo TSF, WWF, MF & WC	Freshwate (DRBC WQRs Tab Objectives for Too Protection o Applies to Delaware & r & F	er Objectives le 5 - Stream Quality cic Pollutants for the if Aquatic Life) Tidal Portions of Chester Ridley	Freshwater ((DRBC WQRs Table Objectives for (Applies to Delaware & Chester &	Objectives 6 - Stream Quality Carcinogens) & Tidal Portions of & Ridley	Freshwater (DRBC WQRs 1 Quality Objectiv Toxic Applies to Delawa of Chester	Objectives Table 7 - Stream ves for Systemic ants) re & Tidal Portions r & Ridley	Fish & Aquat (25 PA Code Ch. 93 Applies to Delawa	c Life Criteria NQS, 93.8c, Table 5) re, Chester, Ridley	Human Criteria (25 PA Code Ch. 93 WQS, 93.8c, Table 5) Applies to Delaware, Chester, Ridley	US EPA National Water Qual Aquatic Life (Applies to Delawar	l Recommended lity Criteria Criteria Table re, Chester, Ridley	Unite	Nutra	
r al allister	Standard	Body	WQS Type	Use	Appnes to Deleware & Tidal Portions of Chester & Ridley	Critical Use Designations) Applies to Delaware, Chester, Ridley	Acute	Chronic	Fish & Water Ingestion	Fish Ingestion Only	Fish & Water Ingestion	Fish Ingestion Only	Criteria Continuous Concentrations	Criteria Maximum Concentrations	Health Criteria	Acute Criteria Maximum Concentration (CMC)	Chronic Criteria Continuous Concentration (CCC)	Units	NOIES	Falanisty
Bacteria - Fecal Coliform (Below R.M. 81.8)	DRBC WQRs - for Zone 4	Delaware River Downstream of RM 81.8	Maximum Geometric Average	200	200													CFU/100 mL	DRBC WQRs and PA Code PA Code for WC Critical Use agree from May 1 - Sept 30, but PA Code of 2000 CFU/100 mL from Oct. 1 - April 30 for WC exceeds that allowed by DRBC Zone 4.	Bacteria - Fecal Coliform (Below R.M. 81.8)
Bacteria - Fecal Coliform	DRBC WQRs - for Zone 4	Chester Creek - Mouth to OF#20 (Tidal limit), & Ridley Creek - Mouth to OF#18 (Tidal limit)	Maximum Geometric Average	770	770													CFU/100 mL		Bacteria - Fecal Coliform (Above R.M. 81.8)
Barium	PA Code 25 - 93.8c, Table 5	Chester Creek, Ridley Creek, Delaware Upstream of RM 81.8	Acute Maximum	21,000									4,100	21,000	2,400			µg/L		Barium
Barium	PA Code 25 - 93.8c, Table 5	Chester Creek, Ridley Creek, Delaware Upstream of RM 81.8	Chronic Maximum	4,100									4,100	21,000	2,400			µg/L		Barium
Barium	PA Code 25 - 93.8c, Table 5	Delaware River Downstream of RM	Maximum	2,400									4,100	21,000	2,400			µg/L		Barium
Benzene	PA Code 25 - 93.8c, Table 5	81.8 Chester Creek upstream of OF#20, & Ridley Creek upstream from OF#18	Acute Maximum	640					0.61	14		3,100	130	640	1.2			µg/L		Benzene
Benzene	PA Code 25 - 93.8c, Table 5	Chester Creek upstream of OF#20, & Ridley Creek upstream from OF#18	Chronic Maximum	130					0.61	14		3,100	130	640	1.2			µg/L		Benzene
Benzene	DRBC WQRs - Table 6	Delaware River Upstream of RM 81.8	Maximum	14					0.61	14		3,100	130	640	1.2			µg/L		Benzene
Benzene	DRBC WQRs - Table 6	Chester Creek - Mouth to OF#20 (Tidal limit), & Ridley Creek - Mouth to OF#18 (Tidal limit)	Maximum	14					0.61	14		3,100	130	640	1.2			µg/L		Benzene
Benzene	DRBC WQRs - Table 6	Delaware River Downstream of RM	Maximum	0.61					0.61	14		3,100	130	640	1.2			µg/L		Benzene
benzo (a) anthracene	PA Code 25 - 93.8c, Table 5	Chester Creek, Ridley Creek, Delaware Upstream of RM 81.8	Acute Maximum	0.5									0.1	0.5	0.0038			µg/L		benzo (a) anthracene
benzo (a) anthracene	PA Code 25 - 93.8c, Table 5	Chester Creek, Ridley Creek, Delaware Upstream of RM 81.8	Chronic Maximum	0.1									0.1	0.5	0.0038			µg/L		benzo (a) anthracene
benzo (a) anthracene	PA Code 25 - 93.8c, Table 5	Delaware River Downstream of RM 81.8	Maximum	0.0038									0.1	0.5	0.0038			µg/L		benzo (a) anthracene
Beryllium	DRBC WQRs - Table 7	Delaware River	Maximum	420								420						μg/L		Beryllium
Beryllium	DRBC WQRs - Table 7	Chester Creek - Mouth to OF#20 (Tidal limit), & Ridley Creek - Mouth to OF#18 (Tidal limit)	Maximum	420								420						µg/L		Beryllium
Biological Oxygen Demand (BOD)	No Standard																			Biological Oxygen Demand (BOD)
Bis (2-ethylhexyl) phthalate	PA Code 25 - 93.8c, Table 5	Chester Creek upstream of OF#20, & Ridley Creek upstream from OF#18	Acute Maximum	4,500					1.2	2.2		620	910	4,500	1.2			µg/L		Bis (2-ethylhexyl) phthalate
Bis (2-ethylhexyl) phthalate	PA Code 25 - 93.8c, Table 5	Chester Creek upstream of OF#20, & Ridley Creek upstream from OF#18	Chronic Maximum	910					1.2	2.2		620	910	4,500	1.2			µg/L		Bis (2-ethylhexyl) phthalate
Bis (2-ethylhexyl) phthalate	DRBC WQRs - Table 6	Delaware River Upstream of RM 81.8	Maximum	2.2					1.2	2.2		620	910	4,500	1.2			µg/L		Bis (2-ethylhexyl) phthalate
Bis (2-ethylhexyl) phthalate	DRBC WQRs - Table 6	Chester Creek - Mouth to OF#20 (Tidal limit), & Ridley Creek - Mouth to OF#18 (Tidal limit)	Maximum	2.2					1.2	2.2		620	910	4,500	1.2			µg/L		Bis (2-ethylhexyl) phthalate
Bis (2-ethylhexyl) phthalate	DRBC WQRs - Table 6	Delaware River Downstream of RM 81.8	Maximum	1.2					1.2	2.2		620	910	4,500	1.2			µg/L		Bis (2-ethylhexyl) phthalate
Bromodichloromethane (aka Dichlorobromomethane)	DRBC WQRs - Table 6	Delaware River Upstream of RM 81.8	Maximum	17					0.55	17	680				0.55			µg/L		Bromodichloromethane (aka Dichlorobromomethane)

Parameter Stan	Source of	Applicable Water	WOS Tures	Water Quality Standard To	Standard Criterion (DRBC Zone 4 WQRs)	Standard Criterion (25 PA Code Ch. 93 WQS, 93.7 Table 3 foi TSF, WWF, MF & WC	Freshwate (DRBC WQRs Tabl Objectives for Tox Protection o Applies to Delaware & & R	r Objectives le 5 - Stream Quality ic Pollutants for the f Aquatic Life) Tidal Portions of Chester lidley	Freshwater ((DRBC WQRs Table Objectives for (Applies to Delaware Chester 8	Objectives 6 - Stream Quality Carcinogens) & Tidal Portions of & Ridley	Freshwater (DRBC WQRs 1 Quality Objectiv Toxic Applies to Delawa of Chester	r Objectives Fable 7 - Stream ves for Systemic cants) re & Tidal Portions re & Ridley	Fish & Aquat (25 PA Code Ch. 93 <i>Applies to Delawa</i>	ic Life Criteria WQS, 93.8c, Table 5) re, <i>Chester, Ridley</i>	Human Criteria (25 PA Code Ch. 93 WQS, 93.8c, Table 5) Applies to Delaware, Chester, Ridley	US EPA National Water Qual Aquatic Life (Applies to Delawar	l Recommended lity Criteria Criteria Table re, Chester, Ridley	Unite	Notes	Promotor
, and the	Standard	Body	indo type	Use	Tidal Portions of Chester & Ridley	Critical Use Designations) Applies to Delaware, Chester, Ridley	Acute	Chronic	Fish & Water Ingestion	Fish Ingestion Only	Fish & Water Ingestion	Fish Ingestion Only	Criteria Continuous Concentrations	Criteria Maximum Concentrations	Health Criteria	Acute Criteria Maximum Concentration (CMC)	Chronic Criteria Continuous Concentration (CCC)		Notes	
Bromodichloromethane (aka Dichlorobromomethane)	DRBC WQRs - Table 6	Chester Creek - Mouth to OF#20 (Tidal limit), & Ridley Creek - Mouth to OF#18 (Tidal limit)	Maximum	17					0.55	17	680				0.55			µg/L		Bromodichloromethane (aka Dichlorobromomethane)
Bromodichloromethane (aka Dichlorobromomethane)	PA Code 25 - 93.8c, Table 5 / DRBC WQRs - Table 6	Delaware River Downstream of RM 81.8	Maximum	0.55					0.55	17	680				0.55			µg/L		Bromodichloromethane (aka Dichlorobromomethane)
Butylbenzyl phthalate	PA Code 25 - 93.8c, Table 5	Delaware River, Chester Creek, Ridley Creek	Acute Maximum	140							1,500	1,900	35	140	150			µg/L		Butylbenzyl phthalate
Butylbenzyl phthalate	PA Code 25 - 93.8c, Table 5	Delaware River, Chester Creek, Ridley Creek	Chronic Maximum	35							1,500	1,900	35	140	150			µg/L		Butylbenzyl phthalate
Cadmium	DRBC WQRs - Table 5	Delaware River	Acute Maximum	0.651*EXP(1.0166*LN(har dness)-3.924)			0.651*EXP(1.0166*LN(h ardness)-3.924)	0.651*EXP(0.7409*LN(h ardness)-4.719)			3.4	16	(1.101672- (LN(hardness)x0.041838)) x Exp(0.7409 x LN(hardness)- 4.719)	(1.136672- (LN(hardness)x0.041838)) x Exp(1.0166 x LN(hardness)- 3.924)		2.0	0.25	µg/L	Dissolved criteria	Cadmium
Cadmium	DRBC WQRs - Table 5	Delaware River	Chronic Maximum	0.651*EXP(0.7409*LN(har dness)-4.719)			0.651*EXP(1.0166*LN(h ardness)-3.924)	0.651*EXP(0.7409*LN(h ardness)-4.719)			3.4	16	(1.101672- (LN(hardness)x0.041838)) x Exp(0.7409 x LN(hardness)- 4.719)	(1.136672- (LN(hardness)x0.041838)) x Exp(1.0166 x LN(hardness)- 3.924)		2.0	0.25	µg/L	Dissolved criteria	Cadmium
Cadmium	DRBC WQRs - Table 5	Chester Creek - Mouth to OF#20 (Tidal limit), & Ridley Creek - Mouth to OF#18 (Tidal limit)	Acute Maximum	0.651*EXP(1.0166*LN(har dness)-3.924)			0.651*EXP(1.0166*LN(h ardness)-3.924)	0.651*EXP(0.7409*LN(h ardness)-4.719)			3.4	16	(1.101672- (LN(hardness)x0.041838)) x Exp(0.7409 x LN(hardness)- 4.719)	(1.136672- (LN(hardness)x0.041838)) x Exp(1.0166 x LN(hardness)- 3.924)		2.0	0.25	µg/L	Dissolved criteria	Cadmium
Cadmium	DRBC WQRs - Table 5	Chester Creek - Mouth to OF#20 (Tidal limit), & Ridley Creek - Mouth to OF#18 (Tidal limit)	Chronic Maximum	0.651*EXP(0.7409*LN(har dness)-4.719)			0.651*EXP(1.0166*LN(h ardness)-3.924)	0.651*EXP(0.7409*LN(h ardness)-4.719)			3.4	16	(1.101672- (LN(hardness)x0.041838)) x Exp(0.7409 x LN(hardness)- 4.719)	(1.136672- (LN(hardness)x0.041838)) x Exp(1.0166 x LN(hardness)- 3.924)		2.0	0.25	µg/L	Dissolved criteria	Cadmium
Cadmium	PA Code - Table 5	Chester Creek upstream of OF#20, & Ridley Creek upstream from OF#18	Acute Maximum	(1.136672- (LN(hardness)x0.041838)) x Exp(1.0166 x LN(hardness)-3.924)			0.651*EXP(1.0166*LN(h ardness)-3.924)	0.651*EXP(0.7409*LN(h ardness)-4.719)			3.4	16	(1.101672- (LN(hardness)x0.041838)) x Exp(0.7409 x LN(hardness)- 4.719)	(1.136672- (LN(hardness)x0.041838)) x Exp(1.0166 x LN(hardness)- 3.924)		2.0	0.25	µg/L	Dissolved criteria	Cadmium
Cadmium	PA Code - Table 5	Chester Creek upstream of OF#20, & Ridley Creek upstream from OF#18	Chronic Maximum	(1.101672- (LN(hardness)x0.041838)) x Exp(0.7409 x LN(hardness)-4.719)			0.651*EXP(1.0166*LN(h ardness)-3.924)	0.651*EXP(0.7409*LN(h ardness)-4.719)			3.4	16	(1.101672- (LN(hardness)x0.041838)) x Exp(0.7409 x LN(hardness)-4.719)	(1.136672- (LN(hardness)x0.041838)) x Exp(1.0166 x LN(hardness)- 3.924)		2.0	0.25	µg/L	Dissolved criteria	Cadmium
CBOD5 CBOD20	No Standard																			CBOD5 CBOD20
Chlorine (Total Residual Chlorine)	PA Code (WWF, MF, TSF)	Delaware River, Chester Creek, Ridley Creek	4-day Average (Chronic Maximum)	11		11										19	11	µg/L		Chlorine (Total Residual Chlorine)
Chlorine (Total Residual Chlorine)	PA Code (WWF, MF, TSF)	Delaware River, Chester Creek, Ridley Creek	1-hour Average (Acute Maximum)	19		19										19	11	µg/L		Chlorine (Total Residual Chlorine)
Chlorodibromomethane	Table 6	Upstream of RM 81.8	Maximum	13					0.4	13					0.4			µg/L		Chlorodibromomethane
Chlorodibromomethane	DRBC WQRs - Table 6	Chester Creek - Mouth to OF#20 (Tidal limit), & Ridley Creek - Mouth to OF#18 (Tidal limit)	Maximum	13					0.4	13					0.4			µg/L		Chlorodibromomethane
Chlorodibromomethane	DRBC WQRs - Table 6 / PA Code	Delaware River Downstream of RM	Maximum	0.4					0.4	13					0.4			µg/L		Chlorodibromomethane
Chloroform	Table 5 DRBC WQRs - Tables 6 & 7 / PA Code Table 5	81.8 Chester Creek upstream of OF#20, & Ridley Creek upstream from	Acute Maximum	1,900					5.7	470	68	2,100	390	1,900	5.7			µg/L		Chloroform
Chloroform	DRBC WQRs - Tables 6 & 7 / PA Code Table 5	Chester Creek, Ridley Creek, Delaware River Upstream of RM 81.8	Chronic Maximum	390					5.7	470	68	2,100	390	1,900	5.7			µg/L		Chloroform
Chloroform	DRBC Table 6	Chester Creek - Mouth to OF#20 (Tidal limit), & Ridley Creek - Mouth to OF#18 (Tidal limit)	Maximum	470					5.7	470	68	2,100	390	1,900	5.7			µg/L		Chloroform
Chloroform	DRBC Table 6	Delaware River Upstream of RM 81.8	Maximum	470					5.7	470	68	2,100	390	1,900	5.7			μg/L		Chloroform

Parameter	Source of	Applicable Water	WQS Type	Water Quality Standard To	Standard Criterion (DRBC Zone 4 WQRs) Applies to Delaware &	Standard Criterion (25 PA Code Ch. 93 WQS, 93.7 Table 3 for TSF, WWF, MF & WC	Freshwate (DRBC WQRs Tab) Objectives for Too Protection o Applies to Delaware & & F	r Objectives le 5 - Stream Quality tic Pollutants for the f Aquatic Life) Tidal Portions of Chester tidley	Freshwater (DRBC WQRs Table Objectives for Applies to Delaware Chester &	Objectives 6 - Stream Quality Carcinogens) & Tidal Portions of & Ridley	Freshwate (DRBC WQRs Quality Objecti Toxic Applies to Delawa of Cheste	r Objectives Table 7 - Stream ves for Systemic cants) rre & Tidal Portions er & Ridley	Fish & Aqua (25 PA Code Ch. 93 <i>Applies to Delawa</i>	ic Life Criteria WQS, 93.8c, Table 5) rre, Chester, Ridley	Human Criteria (25 PA Code Ch. 93 WQS, 93.8c, Table 5) Applies to Delaware, Chester, Ridley	US EPA Nationa Water Qua Aquatic Life Applies to Delawa	Il Recommended lity Criteria Criteria Table re, Chester, Ridley	Units	Notes	Parameter
	Standard	Body		Use	Tidal Portions of Chester & Ridley	Critical Use Designations) Applies to Delaware, Chester, Ridley	Acute	Chronic	Fish & Water Ingestion	Fish Ingestion Only	Fish & Water Ingestion	Fish Ingestion Only	Criteria Continuous Concentrations	Criteria Maximum Concentrations	Health Criteria	Acute Criteria Maximum Concentration (CMC)	Chronic Criteria Continuous Concentration (CCC)			
Chloroform	PA Code 25 - 93.8c, Table 5 / DRBC Table 6 No Standard	Delaware River Downstream of RM 81.8	Maximum	5.7					5.7	470	68	2,100	390	1,900	5.7			µg/L		Chloroform
Chromium (trivalent) (Cr III)	DRBC WQRs - Table 5	Delaware River	Acute Maximum	0.277*EXP(0.819*LN(hard ness)+3.7256)	<u></u> ا		0.277*EXP(0.819*LN(ha rdness)+3.7256)	0.277*EXP(0.819*LN(har dness)+0.6848)				380,000	(0.819 x LN(hardness)+0.6848)	(0.819 x LN(hardness)+3.7256)		570	74	µg/L	Dissolved criteria. Values for federal regulations are based on a hardness of 100 mg/L.	Chromium (trivalent) (Cr III)
Chromium (trivalent) (Cr III)	DRBC WQRs - Table 5	Delaware River	Chronic Maximum	0.277*EXP(0.819*LN(harc ness)+0.6848)	1 I		0.277*EXP(0.819*LN(ha rdness)+3.7256)	0.277*EXP(0.819*LN(ha rdness)+0.6848)				380,000	(0.819 x LN(hardness)+0.6848)	(0.819 x LN(hardness)+3.7256)		570	74	μg/L	Dissolved criteria. Values for federal regulations are based on a bardness of 100 mg/l	Chromium (trivalent) (Cr III)
Chromium (trivalent) (Cr III)	DRBC WQRs - Table 5	Chester Creek - Mouth to OF#20 (Tidal limit), & Ridley Creek - Mouth to OF#18 (Tidal limit)	Acute Maximum	0.277*EXP(0.819*LN(hard ness)+3.7256)			0.277*EXP(0.819*LN(ha rdness)+3.7256)	0.277*EXP(0.819*LN(har dness)+0.6848)				380,000	(0.819 x LN(hardness)+0.6848)	(0.819 x LN(hardness)+3.7256)		570	74	µg/L	Dissolved criteria. Values for federal regulations are based on a hardness of 100 mg/L.	Chromium (trivalent) (Cr III)
Chromium (trivalent) (Cr III)	DRBC WQRs - Table 5	Chester Creek - Mouth to OF#20 (Tidal limit), & Ridley Creek - Mouth to OF#18 (Tidal limit)	Chronic Maximum	0.277*EXP(0.819*LN(harc ness)+0.6848)			0.277*EXP(0.819*LN(ha rdness)+3.7256)	0.277*EXP(0.819*LN(ha rdness)+0.6848)				380,000	(0.819 x LN(hardness)+0.6848)	(0.819 x LN(hardness)+3.7256)		570	74	µg/L	Dissolved criteria. Values for federal regulations are based on a hardness of 100 mg/L.	Chromium (trivalent) (Cr III)
Chromium (trivalent) (Cr III)	PA Code 25 - 93.8c, Table 5	Chester Creek upstream of OF#20, & Ridley Creek upstream from OF#18	Acute Maximum	(0.819 x LN(hardness)+3.7256	i)		0.277*EXP(0.819*LN(ha rdness)+3.7256)	0.277*EXP(0.819*LN(har dness)+0.6848)				380,000	(0.819 x LN(hardness)+0.6848)	(0.819 x LN(hardness)+3.7256)		570	74	µg/L	Dissolved criteria. Values for federal regulations are based on a hardness of 100 mg/L.	Chromium (trivalent) (Cr III)
Chromium (trivalent) (Cr III)	PA Code 25 - 93.8c, Table 5	Chester Creek upstream of OF#20, & Ridley Creek upstream from OF#18	Chronic Maximum	(0.819 x LN(hardness)+0.6848))		0.277*EXP(0.819*LN(ha rdness)+3.7256)	0.277*EXP(0.819*LN(har dness)+0.6848)				380,000	(0.819 x LN(hardness)+0.6848)	(0.819 x LN(hardness)+3.7256)		570	74	µg/L	Dissolved criteria. Values for federal regulations are based on a hardness of 100 mg/L.	Chromium (trivalent) (Cr III)
Chromium (hexavalent) (Cr VI)	DRBC WQRs - Tables 5 & 7 / PA Code - Table 5	Delaware River, Chester Creek, Ridley Creek	Acute Maximum	16			16	11			92		10	16		16	11	μg/L	Dissolved criteria	Chromium (hexavalent) (Cr VI)
Chromium (hexavalent) (Cr VI)	PA Code - Table 5	Delaware River, Chester Creek, Ridley Creek	Chronic Maximum	10			16	11			92		10	16		16	11	µg/L	Dissolved criteria	Chromium (hexavalent) (Cr VI)
Chyrsene	DRBC WQRs - Table 6	Delaware River Upstream of RM 81.8	Maximum	18					3.8	18					0.0038			μg/L		Chyrsene
Chyrsene	DRBC WQRs - Table 6	Chester Creek - Mouth to OF#20 (Tidal limit), & Ridley Creek - Mouth to OF#18 (Tidal limit)	Maximum	18					3.8	18					0.0038			µg/L		Chyrsene
Chyrsene	PA Code 25 - 93.8c, Table 5	Delaware River Downstream of RM 81.8	Maximum	0.0038					3.8	18					0.0038			μg/L		Chyrsene
Copper	DRBC WQRs - Table 5	Delaware River	Acute Maximum	0.908*EXP(0.9422*LN(har dness)-1.7)	r		0.908*EXP(0.9422*LN(h ardness)-1.7)	0.908*EXP(0.8545*LN(h ardness)-1.702)					0.960 x Exp(0.8545*LN(hardness)- 1.702)	0.960 x Exp(0.9422*LN(hardness)- 1.70)				µg/L	Dissolved criteria	Copper
Copper	DRBC WQRs - Table 5	Delaware River	Chronic Maximum	0.908*EXP(0.8545*LN(har dness)-1.702)	r		0.908*EXP(0.9422*LN(h ardness)-1.7)	0.908*EXP(0.8545*LN(h ardness)-1.702)					0.960 x Exp(0.8545*LN(hardness)- 1.702)	0.960 x Exp(0.9422*LN(hardness)- 1.70)				µg/L	Dissolved criteria	Copper
Copper	DRBC WQRs - Table 5	Chester Creek - Mouth to OF#20 (Tidal limit), & Ridley Creek - Mouth to OF#18 (Tidal limit)	Acute Maximum	0.908*EXP(0.9422*LN(har dness)-1.7)	r		0.908°EXP(0.9422°LN(h ardness)-1.7)	0.908*EXP(0.8545*LN(h ardness)-1.702)					0.960 x Exp(0.8545*LN(hardness)- 1.702)	0.960 x Exp(0.9422*LN(hardness)- 1.70)				µg/L	Dissolved criteria	Copper
Copper	DRBC WQRs - Table 5	Chester Creek - Mouth to OF#20 (Tidal limit), & Ridley Creek - Mouth to OF#18 (Tidal limit)	Chronic Maximum	0.908*EXP(0.8545*LN(har dness)-1.702)	r		0.908*EXP(0.9422*LN(h ardness)-1.7)	0.908*EXP(0.8545*LN(h ardness)-1.702)					0.960 x Exp(0.8545*LN(hardness)- 1.702)	0.960 x Exp(0.9422*LN(hardness)- 1.70)				µg/L	Dissolved criteria	Copper
Copper	PA Code 25 - 93.8c, Table 5	Chester Creek upstream of OF#20, & Ridley Creek upstream from OF#18	Acute Maximum	0.960 x Exp(0.9422*LN(hardness) 1.70))		0.908*EXP(0.9422*LN(h ardness)-1.7)	0.908*EXP(0.8545*LN(h ardness)-1.702)					0.960 x Exp(0.8545*LN(hardness)- 1.702)	0.960 x Exp(0.9422*LN(hardness)- 1.70)				µg/L	Dissolved criteria	Copper
Copper	PA Code 25 - 93.8c, Table 5	Chester Creek upstream of OF#20, & Ridley Creek upstream from OF#18	Chronic Maximum	0.960 x Exp(0.8545*LN(hardness 1.702))		0.908*EXP(0.9422*LN(h ardness)-1.7)	0.908*EXP(0.8545*LN(h ardness)-1.702)					0.960 x Exp(0.8545*LN(hardness)- 1.702)	0.960 x Exp(0.9422*LN(hardness)- 1.70)				µg/L	Dissolved criteria	Copper
Cyanide (free)	DRBC WQRs - Table 5 / PA Code - Table 5	Delaware River, Chester Creek, Ridley Creek	Acute Maximum	22			22	5.2			140	140	5.2	22	140	22	5.2	μg/L		Cyanide (free)
Cyanide (free)	DRBC WQRs - Table 5 / PA Code - Table 5	Delaware River, Chester Creek, Ridley Creek	Chronic Maximum	5.2			22	5.2			140	140	5.2	22	140	22	5.2	µg/L		Cyanide (free)
Dieldrin	PA Code Table 5	Chester Creek upstream of OF#20, & Ridley Creek upstream from OF#18	Acute Maximum	0.24			0.24	0.056	0.000052	0.000054	0.041	0.043	0.056	0.24	0.000052	0.24	0.056	µg/L		Dieldrin
Dieldrin	PA Code Table 5	Chester Creek upstream of OF#20, & Ridley Creek upstream from OF#18	Chronic Maximum	0.056			0.24	0.056	0.000052	0.000054	0.041	0.043	0.056	0.24	0.000052	0.24	0.056	µg/L		Dieldrin

Parameter	Source of	Applicable Water	WOSTure	Water Quality Standard To	Standard Criterion (DRBC Zone 4 WQRs)	Standard Criterion (25 PA Code Ch. 93 WQS, 93.7 Table 3 for TSF, WWF, MF & WC	Freshwa (DRBC WQRs Ta Objectives for T Protection Applies to Delaware &	ater Objectives able 5 - Stream Quality oxic Pollutants for the n of Aquatic Life) & Tidal Portions of Chester & Ridley	Freshwater (DRBC WQRs Table Objectives for Applies to Delaware Chester	Objectives 6 - Stream Quality Carcinogens) & Tidal Portions of & Ridley	Freshwate (DRBC WQRs Quality Objecti Toxis Applies to Delawa of Cheste	r Objectives Fable 7 - Stream ves for Systemic cants) re & Tidal Portions rr & Ridley	Fish & Aqua (25 PA Code Ch. 93 Applies to Delawa	tic Life Criteria WQS, 93.8c, Table 5) are, Chester, Ridley	Human Criteria (25 PA Code Ch. 93 WQS, 93.8c, Table 5) Applies to Delaware, Chester, Ridley	US EPA Nationa Water Qua Aquatic Life Applies to Delawa	l Recommended lity Criteria Criteria Table re, Chester, Ridley	Units	Notos	Beramoter
	Standard	Body	indo type	Use	Tidal Portins of Chester & Ridley	Critical Use Designations) Applies to Delaware, Chester, Ridley	Acute	Chronic	Fish & Water Ingestion	Fish Ingestion Only	Fish & Water Ingestion	Fish Ingestion Only	Criteria Continuous Concentrations	Criteria Maximum Concentrations	Health Criteria	Acute Criteria Maximum Concentration (CMC)	Chronic Criteria Continuous Concentration (CCC)			, a uncer
Dieldrin	DRBC WQRs - Table 6	Delaware River Upstream of RM 81.8	Maximum	0.000054			0.24	0.056	0.000052	0.000054	0.041	0.043	0.056	0.24	0.000052	0.24	0.056	µg/L		Dieldrin
Dieldrin	DRBC WQRs - Table 6	Chester Creek - Mouth to OF#20 (Tidal limit), & Ridley Creek - Mouth to OF#18 (Tidal limit)	Maximum	0.000054			0.24	0.056	0.000052	0.000054	0.041	0.043	0.056	0.24	0.000052	0.24	0.056	μg/L		Dieldrin
Dieldrin	DRBC WQRs - Table 6 / PA Code - Table 5	Delaware River Downstream of RM 81.8	Maximum	0.000052			0.24	0.056	0.000052	0.000054	0.041	0.043	0.056	0.24	0.000052	0.24	0.056	µg/L		Dieldrin
Diethylphthalate	PA Code - Table 5	Delaware River, Chester Creek, Ridley Creek	Acute Maximum	4,000							17,000	44,000	800	4,000	17,000			µg/L		Diethylphthalate
Diethylphthalate	PA Code - Table 5	Delaware River, Chester Creek, Ridley Creek	Chronic Maximum	800							17,000	44,000	800	4,000	17,000			µg/L		Diethylphthalate
Dissolved Oxygen (DO) ₁	DRBC WQRs - for Zone 4	Delaware River	24 hr. Average Minimum	3.5	3.5													mg/L	Year Round Minimum	Dissolved Oxygen (DO) ₁
Dissolved Oxygen (DO) ₁	DRBC WQRs - for Zone 4	Delaware River	24 hr. Average Minimum	6.5	6.5													mg/L	Minimum for April 1 to June 15 and Sept. 16 to Dec. 31	Dissolved Oxygen (DO) ₁
Dissolved Oxygen (DO) ₁	DRBC WQRs - for Zone 4	Chester Creek - Mouth to OF#20 (Tidal limit), & Ridley Creek - Mouth to OF#18 (Tidal limit)	24 hr. Average Minimum	3.5	3.5													mg/L	Year Round Minimum	Dissolved Oxygen (DO) ₁
Dissolved Oxygen (DO) ₁	DRBC WQRs - for Zone 4	Chester Creek - Mouth to OF#20 (Tidal limit), & Ridley Creek - Mouth to OF#18 (Tidal limit)	24 hr. Average Minimum	6.5	6.5													mg/L	Minimum for April 1 to June 15 and Sept. 16 to Dec. 31	Dissolved Oxygen (DO)1
Dissolved Oxygen (DO) $_{\rm 2}$	PA Code (WWF)	Chester Creek upstream of OF#20, & Ridley Creek from OF#18 upstream to Rt. 320	7-day Average	5.5		5.5												mg/L		Dissolved Oxygen (DO) ₂
Dissolved Oxygen (DO) ₂	PA Code (WWF)	Chester Creek upstream of OF#20, & Ridley Creek from OF#18 upstream to Rt. 320	Minimum	5.0		5.0												mg/L		Dissolved Oxygen (DO) ₂
Dissolved Oxygen (DO) ₃ (Feb. 15 - July 31)	PA Code (TSF)	Ridley Creek from Rt. 320 upstream to Media Water Intake	7-day Average	6.0		6.0												mg/L	TSF only applies to Ridley Creek for impacts by DELCORA CSOs	Dissolved Oxygen (DO) ₃
Dissolved Oxygen (DO) ₃ (Feb. 15 - July 31)	PA Code (TSF)	Ridley Creek from Rt. 320 upstream to Media Water Intake	Minimum	5.0		5.0												mg/L	TSF only applies to Ridley Creek for impacts by DELCORA CSOs	Dissolved Oxygen (DO) ₃
Dissolved Oxygen (DO) ₃ (Aug. 1 - Feb. 14)	PA Code (TSF)	Ridley Creek from Rt. 320 upstream to Media Water Intake	7-day Average	5.5		5.5												mg/L	TSF only applies to Ridley Creek for impacts by DELCORA CSOs	Dissolved Oxygen (DO) ₃
Dissolved Oxygen (DO) ₃ (Aug. 1 - Feb. 14)	PA Code (TSF)	Ridley Creek from Rt. 320 upstream to Media Water Intake	Minimum	5.0		5.0												mg/L	TSF only applies to Ridley Creek for impacts by DELCORA CSOs	Dissolved Oxygen (DO) ₃
Ethylbenzene	PA Code - Table 5	Chester Creek upstream of OF#20, & Ridley Creek upstream from OF#18	Acute Maximum	2,900							530	2,100	580	2,900	530			µg/L		Ethylbenzene
Ethylbenzene	PA Code - Table 5	Delaware River, Chester Creek, Ridley Creek	Chronic Maximum	580							530	2,100	580	2,900	530			µg/L		Ethylbenzene
Ethylbenzene	DRBC WQRs - Table 7	Delaware River Upstream of RM 81.8	Maximum	2,100							530	2,100	580	2,900	530			µg/L		Ethylbenzene
Ethylbenzene	DRBC WQRs - Table 7	Chester Creek - Mouth to OF#20 (Tidal limit), & Ridley Creek - Mouth to OF#18 (Tidal limit)	Maximum	2,100							530	2,100	580	2,900	530			μg/L		Ethylbenzene

Parameter	Source of	Applicable Water		Water Quality Standard To	Standard Criterion (DRBC Zone 4 WQRs)	Standard Criterion (25 PA Code Ch. 93 WQS, 93.7 Table 3 for TSF, WWF, MF & WC	Freshwate (DRBC WQRs Tab) Objectives for Tox Protection o Applies to Delaware & & F	r Objectives e 5 - Stream Quality ic Pollutants for the f Aquatic Life) <i>Tidal Portions of Chester</i> <i>idley</i>	Freshwater (DRBC WQRs Table Objectives for Applies to Delaware Chester &	Objectives 6 - Stream Quality Carcinogens) & Tidal Portions of & Ridley	Freshwate (DRBC WQRs Quality Objecti Toxi Applies to Delawa of Cheste	r Objectives Fable 7 - Stream ves for Systemic cants) re & Tidal Portions er & Ridley	Fish & Aquat (25 PA Code Ch. 93 Applies to Delawa	ic Life Criteria WQS, 93.8c, Table 5) rre, Chester, Ridley	Human Criteria (25 PA Code Ch. 93 WQS, 93.8c, Table 5) Applies to Delaware, Chester, Ridley	US EPA National Water Quali Aquatic Life C Applies to Delaward	Recommended ity Criteria triteria Table e, Chester, Ridley	11-11-		
rarameter	Standard	Body	wQS Type	Use	Apples to Delaware & Tidal Portions of Chester & Ridley	Critical Use Designations) Applies to Delaware, Chester, Ridley	Acute	Chronic	Fish & Water Ingestion	Fish Ingestion Only	Fish & Water Ingestion	Fish Ingestion Only	Criteria Continuous Concentrations	Criteria Maximum Concentrations	Health Criteria	Acute Criteria Maximum Concentration (CMC)	Chronic Criteria Continuous Concentration (CCC)	Units	Notes	rarameter
Ethylbenzene	DRBC WQRs - Table 7 / PA Code - Table 5	Delaware River Downstream of RM 81.8	Maximum	530							530	2,100	580	2,900	530			μg/L		Ethylbenzene
Fluorene	DRBC WQRs - Table 7 / PA Code - Table 5	Delaware River Upstream of RM 81.8	Maximum	5,300							1,100	5,300			1,100			µg/L		Fluorene
Fluorene	DRBC WQRs - Table 7 / PA Code - Table 5	Chester Creek - Mouth to OF#20 (Tidal limit), & Ridley Creek - Mouth to OF#18 (Tidal limit)	Maximum	5,300							1,100	5,300			1,100			µg/L		Fluorene
Fluorene	DRBC WQRs - Table 7 / PA Code - Table 5	Delaware River Downstream of RM 81.8	Maximum	1,100							1,100	5,300			1,100			µg/L		Fluorene
Hardness	No Standard	Delaware River, Chester Creek, Ridley Creek	r		-													mg/L as CaCO ₃	Needed to calculate some of the metal concentrations	Hardness
Iron (Fe)	PA Code (WWF, MF, TSF)	Delaware River, Chester Creek, Ridley Creek	30-day Average	1.5		1.5												mg/L as total recoverable	Iron as total recoverable	Iron (Fe) ₍₁₎
Iron (Fe)	PA Code (WWF, MF, TSF)	Delaware River, Chester Creek, Ridley Creek	Maximum	0.3		0.3											1.0	mg/L as dissolved	Iron as dissolved	Iron (Fe) ₍₂₎
Lead	DRBC WQRs - Table 5	Delaware River	Acute Maximum	38			38	5.4					(1.46203 - (LN(hardness) x 0.145712)) x Exp(1.273 x LN(hardness) -4.705)	(1.46203 - (LN(hardness) x 0.145712)) x Exp(1.273 x LN(hardness) -1.460)		65	2.5	µg/L	Dissolved criteria. Values for federal regulations are based on a hardness of 100 mg/L.	Lead
Lead	DRBC WQRs - Table 5	Delaware River	Chronic Maximum	5.4			38	5.4					(1.46203 - (LN(hardness) x 0.145712)) x Exp(1.273 x LN(hardness) -4.705)	(1.46203 - (LN(hardness) x 0.145712)) x Exp(1.273 x LN(hardness) -1.460)		65	2.5	µg/L	Dissolved criteria. Values for federal regulations are based on a hardness of 100 mg/L.	Lead
Lead	DRBC WQRs - Table 5	Chester Creek - Mouth to OF#20 (Tidal limit), & Ridley Creek - Mouth to OF#18 (Tidal limit)	Acute Maximum	38			38	5.4					(1.46203 - (LN(hardness) x 0.145712)) x Exp(1.273 x LN(hardness) -4.705)	(1.46203 - (LN(hardness) x 0.145712)) x Exp(1.273 x LN(hardness) -1.460)		65	2.5	µg/L	Dissolved criteria. Values for federal regulations are based on a hardness of 100 mg/L.	Lead
Lead	DRBC WQRs - Table 5	Chester Creek - Mouth to OF#20 (Tidal limit), & Ridley Creek - Mouth to OF#18 (Tidal limit)	Chronic Maximum	5.4			38	5.4					(1.46203 - (LN(hardness) x 0.145712)) x Exp(1.273 x LN(hardness) -4.705)	(1.46203 - (LN(hardness) x 0.145712)) x Exp(1.273 x LN(hardness) -1.460)		65	2.5	µg/L	Dissolved criteria. Values for federal regulations are based on a hardness of 100 mg/L.	Lead
Lead	PA Code 25 - 93.8c, Table 5	Chester Creek upstream of OF#20, & Ridley Creek upstream from OF#18	Acute Maximum	(1.46203 - (LN(hardness) x 0.145712)) x Exp(1.273 x LN(hardness) -1.460)			38	5.4					(1.46203 - (LN(hardness) x 0.145712)) x Exp(1.273 x LN(hardness) -4.705)	(1.46203 - (LN(hardness) x 0.145712)) x Exp(1.273 x LN(hardness) -1.460)		65	2.5	µg/L	Dissolved criteria. Values for federal regulations are based on a hardness of 100 mg/L.	Lead
Lead	PA Code 25 - 93.8c, Table 5	Chester Creek upstream of OF#20, & Ridley Creek upstream from OF#18	Chronic Maximum	(1.46203 - (LN(hardness) x 0.145712)) x Exp(1.273 x LN(hardness) -4.705)			38	5.4					(1.46203 - (LN(hardness) x 0.145712)) x Exp(1.273 x LN(hardness) -4.705)	(1.46203 - (LN(hardness) x 0.145712)) x Exp(1.273 x LN(hardness) -1.460)		65	2.5	µg/L	Dissolved criteria. Values for federal regulations are based on a hardness of 100 mg/L.	Lead
Mercury (Hg)	PA Code Table 5	Chester Creek upstream of OF#20, & Ridley Creek upstream from OF#18	Acute Maximum	1.4			1.4	0.77			0.05	0.051	0.77 (Hg2+)	1.4 (Hg2+)	0.05	1.4	0.77	μg/L	Dissolved criteria	Mercury (Hg)
Mercury (Hg)	PA Code Table 5	Chester Creek upstream of OF#20, & Ridley Creek upstream from OF#18	Chronic Maximum	0.77			1.4	0.77			0.05	0.051	0.77 (Hg2+)	1.4 (Hg2+)	0.05	1.4	0.77	μg/L	Dissolved criteria	Mercury (Hg)
Mercury (Hg)	DRBC WQRs - Table 7	Chester Creek - Mouth to OF#20 (Tidal limit), & Ridley Creek - Mouth to OF#18 (Tidal limit)	Maximum	0.051			1.4	0.77			0.05	0.051	0.77 (Hg2+)	1.4 (Hg2+)	0.05	1.4	0.77	µg/L	Dissolved criteria	Mercury (Hg)
Mercury (Hg)	DRBC WQRs - Table 7	Delaware River Upstream of RM 81.8	Maximum	0.051			1.4	0.77			0.05	0.051	0.77 (Hg2+)	1.4 (Hg2+)	0.05	1.4	0.77	μg/L	Dissolved criteria	Mercury (Hg)
Mercury (Hg)	DRBC WQRs - Table 7 / PA Code Table 5	Delaware River Downstream of RM 81.8	Maximum	0.05			1.4	0.77			0.05	0.051	0.77 (Hg2+)	1.4 (Hg2+)	0.05	1.4	0.77	µg/L	Dissolved criteria	Mercury (Hg)
Methylene chloride (Dichloromethane)	PA Code 25 - 93.8c, Table 5	Chester Creek upstream of OF#20, & Ridley Creek upstream from OF#18	Acute Maximum	12,000						590		260,000	2,400	12,000	4.6			µg/L		Methylene chloride (Dichloromethane)
Methylene chloride (Dichloromethane)	PA Code 25 - 93.8c, Table 5	Chester Creek upstream of OF#20, & Ridley Creek upstream from OF#18	Chronic Maximum	2,400						590		260,000	2,400	12,000	4.6			µg/L		Methylene chloride (Dichloromethane)
Methylene chloride (Dichloromethane)	DRBC WQRs - Table 6	Delaware River Upstream of RM 81.8	Maximum	590						590		260,000	2,400	12,000	4.6			µg/L		Methylene chloride (Dichloromethane)

Parameter	Source of	Applicable Water		Water Quality Standard To	Standard Criterion (DRBC Zone 4 WQRs)	Standard Criterion (25 PA Code Ch. 93 WQS, 93.7 Table 3 for TSF, WWF, MF & WC	Freshwate (DRBC WQRs Tabl Objectives for Tox Protection o Applies to Delaware & & R	r Objectives 6 5 - Stream Quality ic Pollutants for the f Aquatic Life) Tidal Portions of Chester tidley	Freshwater (DRBC WQRs Table Objectives for Applies to Delaware Chester &	Objectives 6 - Stream Quality Carcinogens) & Tidal Portions of & Ridley	Freshwate (DRBC WQRs ⁻ Quality Objecti Toxic Applies to Delawa of Cheste	Objectives Table 7 - Stream ves for Systemic ants) re & Tidal Portions r & Ridley	Fish & Aquat (25 PA Code Ch. 93 <i>Applies to Delawa</i>	ic Life Criteria WQS, 93.8c, Table 5) re, Chester, Ridley	Human Criteria (25 PA Code Ch. 93 WQS, 93.8c, Table 5) Applies to Delaware, Chester, Ridley	US EPA Nationa Water Qua Aquatic Life (Applies to Delawa	l Recommended lity Criteria Criteria Table re, Chester, Ridley	11-11-		
r al diffeter	Standard	Body	was type	Use	Appres to belaware & Tidal Portions of Chester & Ridley	Critical Use Designations) Applies to Delaware, Chester, Ridley	Acute	Chronic	Fish & Water Ingestion	Fish Ingestion Only	Fish & Water Ingestion	Fish Ingestion Only	Criteria Continuous Concentrations	Criteria Maximum Concentrations	Health Criteria	Acute Criteria Maximum Concentration (CMC)	Chronic Criteria Continuous Concentration (CCC)	Units	NULUS	rarameter
Methylene chloride (Dichloromethane)	DRBC WQRs - Table 6	Chester Creek - Mouth to OF#20 (Tidal limit), & Ridley Creek - Mouth to OF#18 (Tidal limit)	Maximum	590						590		260,000	2,400	12,000	4.6			µg/L		Methylene chloride (Dichloromethane)
Methylene chloride (Dichloromethane)	PA Code 25 - 93.8c, Table 5	Delaware River Downstream of RM 81.8	Maximum	4.6						590		260,000	2,400	12,000	4.6			µg/L		Methylene chloride (Dichloromethane)
Molybdenum	No Standard																			Molybdenum
Nanhthalene	PA Code 25 -	Delaware River, Chester Creek Ridley	Acute	140									43	140				ug/l		Nanhthalene
Naphthalono	93.8c, Table 5 PA Code 25 -	Creek Delaware River, Chostor Crook Bidlov	Maximum Chronic	43									43	140				19 ⁻		Naphthalono
Naprinaiene	93.8c, Table 5	Creek Creek	Maximum	+3									+3	140				P9/2		Naphthalene
Nickel	PA Code 25 - 93.8c, Table 5	Chester Creek upstream of OF#20, & Ridley Creek upstream from OF#18	Acute Maximum	0.998 x Exp(0.846 x LN(hardness)+2.255)			0.846*EXP(0.846*LN(ha rdness)+2.255)	0.846*EXP(0.846*LN(har dness)+0.0584)	r		500	1,700	0.997 x Exp(0.846 x LN(hardness)+0.0584)	0.998 x Exp(0.846 x LN(hardness)+2.255)	610	470	52	µg/L	Dissolved criteria. Values for federal regulations are based on a hardness of 100 mg/L.	Nickel
Nickel	PA Code 25 - 93.8c, Table 5	Chester Creek upstream of OF#20, & Ridley Creek upstream from OF#18	Chronic Maximum	0.997 x Exp(0.846 x LN(hardness)+0.0584)			0.846*EXP(0.846*LN(ha rdness)+2.255)	0.846*EXP(0.846*LN(har dness)+0.0584)	r		500	1,700	0.997 x Exp(0.846 x LN(hardness)+0.0584)	0.998 x Exp(0.846 x LN(hardness)+2.255)	610	470	52	µg/L	Dissolved criteria. Values for federal regulations are based on a hardness of 100 mg/L.	Nickel
Nickel	DRBC WQRs - Table 5	Chester Creek - Mouth to OF#20 (Tidal limit), & Ridley Creek - Mouth to OF#18 (Tidal limit)	Acute Maximum	0.846*EXP(0.846*LN(hard ness)+2.255)			0.846*EXP(0.846*LN(ha rdness)+2.255)	0.846*EXP(0.846*LN(har dness)+0.0584)	r		500	1,700	0.997 x Exp(0.846 x LN(hardness)+0.0584)	0.998 x Exp(0.846 x LN(hardness)+2.255)	610	470	52	µg/L	Dissolved criteria. Values for federal regulations are based on a hardness of 100 mg/L.	Nickel
Nickel	DRBC WQRs - Table 5	Chester Creek - Mouth to OF#20 (Tidal limit), & Ridley Creek - Mouth to OF#18 (Tidal limit)	Chronic Maximum	0.846*EXP(0.846*LN(hard ness)+0.0584)			0.846*EXP(0.846*LN(ha rdness)+2.255)	0.846*EXP(0.846*LN(ha rdness)+0.0584)			500	1,700	0.997 x Exp(0.846 x LN(hardness)+0.0584)	0.998 x Exp(0.846 x LN(hardness)+2.255)	610	470	52	µg/L	Dissolved criteria. Values for federal regulations are based on a hardness of 100 mg/L.	Nickel
Nickel	DRBC WQRs - Table 5	Delaware River Upstream of RM 81.8	Acute Maximum	0.846*EXP(0.846*LN(hard ness)+2.255)			0.846*EXP(0.846*LN(ha rdness)+2.255)	0.846*EXP(0.846*LN(har dness)+0.0584)	r		500	1,700	0.997 x Exp(0.846 x LN(hardness)+0.0584)	0.998 x Exp(0.846 x LN(hardness)+2.255)	610	470	52	µg/L	Dissolved criteria. Values for federal regulations are based on a hardness of 100 mg/L.	Nickel
Nickel	DRBC WQRs - Table 5	Delaware River Upstream of RM 81.8	Chronic Maximum	0.846*EXP(0.846*LN(hard ness)+0.0584)			0.846*EXP(0.846*LN(ha rdness)+2.255)	0.846*EXP(0.846*LN(ha rdness)+0.0584)			500	1,700	0.997 x Exp(0.846 x LN(hardness)+0.0584)	0.998 x Exp(0.846 x LN(hardness)+2.255)	610	470	52	μg/L	Dissolved criteria. Values for federal regulations are based on a hardness of 100 mg/L.	Nickel
Nickel	DRBC WQRs - Table 7	Delaware River Downstream of RM 81.8	Maximum	500			0.846*EXP(0.846*LN(ha rdness)+2.255)	0.846*EXP(0.846*LN(har dness)+0.0584)	r		500	1,700	0.997 x Exp(0.846 x LN(hardness)+0.0584)	0.998 x Exp(0.846 x LN(hardness)+2.255)	610	470	52	µg/L	Dissolved criteria. Values for federal regulations are based on a hardness of 100 mg/L.	Nickel
Nitrate	No Standard																			Nitrate
Nitrate + Nitrate	No Standard	Doloware Biver																		Nitrate + Nitrate
N-Nitroso-di-n-propylamine	Table 6	Upstream of RM 81.8	Maximum	0.51					0.005	0.51					0.005			µg/L		N-Nitroso-di-n-propylamine
N-Nitroso-di-n-propylamine	DRBC WQRs - Table 6	Chester Creek - Mouth to OF#20 (Tidal limit), & Ridley Creek - Mouth to OF#18 (Tidal limit)	Maximum	0.51					0.005	0.51					0.005			µg/L		N-Nitroso-di-n-propylamine
N-Nitroso-di-n-propylamine	DRBC WQRs - Table 6 / PA Code	Delaware River Downstream of RM	Maximum	0.005					0.005	0.51					0.005			µg/L		N-Nitroso-di-n-propylamine
Oil and Grease	No Standard	91.0																		Oil and Grease
Osmotic Pressure (OP)	PA Code (WWF, MF, TSF)	Delaware River, Chester Creek, Ridley Creek	Maximum	50		50												milliosmoles/kg		Osmotic Pressure (OP)
PCBs (Total)	DRBC WQRs - Table 5 / PA Code Table 5	upstream of OF#20, & Ridley Creek upstream from OF#18	Chronic Maximum	0.014			1.0	0.014	0.000016	0.000016	0.008390	0.008490	0.014		0.000064		0.014	µg/L		PCBs (Total)
PCBs (Total)	DRBC WQRs - Table 6	Chester Creek - Mouth to OF#20 (Tidal limit), & Ridley Creek - Mouth to OF#18 (Tidal limit)	Maximum	0.000016			1.0	0.014	0.000016	0.000016	0.008390	0.008490	0.014		0.000064		0.014	µg/L		PCBs (Total)
PCBs (Total)	DRBC WQRs - Table 6	Delaware River	Maximum	0.000016			1.0	0.014	0.000016	0.000016	0.008390	0.008490	0.014		0.000064		0.014	µg/L		PCBs (Total)
pH ₍₁₎	DRBC WQRs - for Zone 4	Delaware River	Maximum	8.5	8.5												6.5 - 9		Exceeds criteria from PA Code for WWF, MF, & TSF of pH 6 - 9	pH ₍₁₎
pH ₍₁₎	DRBC WQRs - for Zone 4	Delaware River	Minimum	6.5	6.5														Exceeds criteria from PA Code for WWF, MF, & TSF of pH 6 - 9	pH ₍₁₎

Parameter	Source of	Applicable Water	WOS Turce	Water Quality Standard To	Standard Criterion (DRBC Zone 4 WQRs)	Standard Criterion (25 PA Code Ch. 93 WQS, 93.7 Table 3 for TSF, WWF, MF & WC	Freshwater Ot (DRBC WQRs Table 5 Objectives for Toxic P Protection of Aq Applies to Delaware & Tida & Ridle	ojectives - Stream Quality Pollutants for the guatic Life) <i>I Portions of Chester</i> y	Freshwater (DRBC WQRS Table Objectives for Applies to Delaware Chester	Objectives 6 - Stream Quality Carcinogens) & Tidal Portions of & Ridley	Freshwate (DRBC WQRs Quality Objecti Toxis Applies to Delawa of Cheste	r Objectives Table 7 - Stream ves for Systemic cants) re & Tidal Portions er & Ridley	Fish & Aqua (25 PA Code Ch. 93 <i>Applies to Delawa</i>	ic Life Criteria WQS, 93.8c, Table 5) re, Chester, Ridley	Human Criteria (25 PA Code Ch. 93 WQS, 93.8c, Table 5) Applies to Delaware, Chester, Ridley	US EPA National Water Qual Aquatic Life O Applies to Delawar	Recommended ity Criteria criteria Table e, Chester, Ridley	Units	Notos	Deremoter
	Standard	Body		Use	Tidal Portions of Chester & Ridley	Critical Use Designations) Applies to Delaware, Chester, Ridley	Acute	Chronic	Fish & Water Ingestion	Fish Ingestion Only	Fish & Water Ingestion	Fish Ingestion Only	Criteria Continuous Concentrations	Criteria Maximum Concentrations	Health Criteria	Acute Criteria Maximum Concentration (CMC)	Chronic Criteria Continuous Concentration (CCC)		Notes	
pH ₍₁₎	DRBC WQRs - for Zone 4	Chester Creek - Mouth to OF#20 (Tidal limit), & Ridley Creek - Mouth to OF#18 (Tidal limit)	Maximum	8.5	8.5												6.5 - 9		Exceeds criteria from PA Code for WWF, MF, & TSF of pH 6 - 9	pH ₍₁₎
pH ₍₁₎	DRBC WQRs - for Zone 4	Chester Creek - Mouth to OF#20 (Tidal limit), & Ridley Creek - Mouth to OF#18 (Tidal limit)	Minimum	6.5	6.5														Exceeds criteria from PA Code for WWF, MF, & TSF of pH 6 - 9	pH ₍₁₎
pH ₍₂₎	PA Code (WWF, MF, TSF)	Chester Creek upstream of OF#20, & Ridley Creek upstream from OF#18	Maximum	9.0		9.0													Use the more stringent standard above from DRBC Zone 4 for the Delaware River	рН ₍₂₎
pH ₍₂₎	PA Code (WWF, MF, TSF)	Chester Creek upstream of OF#20, & Ridley Creek upstream from OF#18	Minimum	6.0		6.0													Use the more stringent standard above from DRBC Zone 4 for the Delaware River	pH ₍₂₎
Phenanthrene	PA Code 25 - 93.8c, Table 5	Chester Creek, Ridley Creek	Acute Maximum	5									1	5				µg/L		Phenanthrene
Phenanthrene	PA Code 25 - 93.8c, Table 5	Delaware River, Chester Creek, Ridley	Chronic Maximum	1									1	5				µg/L		Phenanthrene
Phenols	DRBC WQRs - for Zone 4	Delaware River	Maximum	0.02	0.02										10.4			mg/L		Phenols
Phenois	DRBC WQRs - for Zone 4	Chester Creek - Mouth to OF#20 (Tidal limit), & Ridley Creek - Mouth to OF#18 (Tidal limit)	Maximum	0.02	0.02										10.4			mg/L		Phenols
Phosphate	No Standard																			Phosphate
Pyrene	DRBC WQRs - Table 7	Chester Creek - Mouth to OF#20 (Tidal limit), & Ridley Creek - Mouth to OF#18 (Tidal limit)	Maximum	4,000							830	4,000			830			µg/L		Pyrene
Pyrene	DRBC WQRs - Table 7	Delaware River Upstream of RM 81.8	Maximum	4,000							830	4,000			830			μg/L		Pyrene
Pyrene	DRBC WQRs - Table 7 / PA Code Table 5	Delaware River Downstream of RM	Maximum	830							830	4,000			830			µg/L		Pyrene
Radioactivity - alpha emitters	DRBC WQRs - for Zone 4	Delaware River	Maximum	3	3													pc/L		Radioactivity - alpha emitters
Radioactivity - beta emitters	DRBC WQRs - for Zone 4	Delaware River	Maximum	1,000	1,000													pc/L		Radioactivity - beta emitters
Radioactivity - alpha emitters	DRBC WQRs - for Zone 4	Chester Creek - Mouth to OF#20 (Tidal limit), & Ridley Creek - Mouth to OF#18 (Tidal limit)	Maximum	3	3													pc/L		Radioactivity - alpha emitters
Radioactivity - beta emitters	DRBC WQRs - for Zone 4	Chester Creek - Mouth to OF#20 (Tidal limit), & Ridley Creek - Mouth to OF#18 (Tidal limit)	Maximum	1,000	1,000													pc/L		Radioactivity - beta emitters
Selenium (Se)	DRBC WQRs - Table 5	Delaware River	Acute Maximum	20			20	5.0			170	4,200	4.6				5.0	µg/L	Total recoverable criteria	Selenium (Se)
Selenium (Se)	DRBC WQRs - Table 5	Chester Creek - Mouth to OF#20 (Tidal limit), & Ridley Creek - Mouth to OF#18 (Tidal limit)	Acute Maximum	20			20	5.0			170	4,200	4.6				5.0	µg/L	Total recoverable criteria	Selenium (Se)
Selenium (Se)	PA Code 25 - 93.8c, Table 5	Delaware River, Chester Creek, Ridley Creek	Chronic Maximum	4.6			20	5.0			170	4,200	4.6				5.0	μg/L	Total recoverable criteria	Selenium (Se)
Silver (Ag)	DRBC WQRs - Tables 5 & 7 / PA Code - Table 5	Delaware River, Chester Creek, Ridley Creek	Acute Maximum	0.85*EXP(1.72*LN(hardne ss)-6.59)			0.85*EXP(1.72*LN(hard ness)-6.59)	NA			170	40,000		0.850 x Exp(1.72 x LN(hardness) - 6.590)		3.2		µg/L	Dissolved criteria	Silver (Ag)
Sulfide	No Standard																			Sulfide
Synthetic Detergents (B)	Zone 4	Delaware River	day Average	1.0	1.0													mg/L		Synthetic Detergents (B)
Synthetic Detergents ^(B)	DRBC WQRs - for Zone 4	Chester Creek - Mouth to OF#20 (Tidal limit), & Ridley Creek - Mouth to OF#18 (Tidal limit)	Maximum 30- day Average	1.0	1.0													mg/L		Synthetic Detergents ^(B)
Temperature (A) (1)	DRBC WQRs - for Zone 4	Delaware River	Maximum	30	30													°C		Temperature (A)
Temperature ^(A) (1)	DRBC WQRs - for Zone 4	Delaware River	Maximum	2.8 Deg above 24-hr gradient during the 1961- 66 period	2.8 Deg above 24-hr gradient during the 1961- 66 period													°C		Temperature (A)

Parameter	Source of	Applicable Water	W00 T	Water Quality Standard To	Standard Criterion (DRBC Zone 4 WQRs)	Standard Criterion (25 PA Code Ch. 93 WQS, 93.7 Table 3 for TSF, WWF, MF & WC	Freshwat (DRBC WQRs Tat Objectives for To Protection Applies to Delaware &	er Objectives ole 5 - Stream Quality xic Pollutants for the of Aquatic Life) Tidal Portions of Chester Ridley	Freshwater ((DRBC WQRs Table Objectives for (Applies to Delaware Chester &	Objectives 6 - Stream Quality Carcinogens) & Tidal Portions of & Ridley	Freshwate (DRBC WQRs Quality Objecti Toxi Applies to Delawa of Cheste	r Objectives Table 7 - Stream ves for Systemic cants) ire & Tidal Portions er & Ridley	Fish & Aquat (25 PA Code Ch. 93 Applies to Delawa	ic Life Criteria WQS, 93.8c, Table 5) <i>are, Chester, Ridley</i>	Human Criteria (25 PA Code Ch. 93 WQS, 93.8c, Table 5) Applies to Delaware, Chester, Ridley	US EPA National Recommended Water Quality Criteria Aquatic Life Criteria Table Applies to Delaware, Chester, Ridley	Unite	Nurr	
Falanotei	Standard	Body	wqs type	Use	Tidal Portions of Chester & Ridley	Critical Use Designations) Applies to Delaware, Chester, Ridley	Acute	Chronic	Fish & Water Ingestion	Fish Ingestion Only	Fish & Water Ingestion	Fish Ingestion Only	Criteria Continuous Concentrations	Criteria Maximum Concentrations	Health Criteria	Acute Chronic Criteria Maximum Concentration (CMC)	Units	Notes	Falanietei
Temperature ^(A) (1)	DRBC WQRs - for Zone 4	Chester Creek - Mouth to OF#20 (Tidal limit), & Ridley Creek - Mouth to OF#18 (Tidal limit)	Maximum	30	30												°C		Temperature (A)
Temperature ^(A) (1)	DRBC WQRs - for Zone 4	Chester Creek - Mouth to OF#20 (Tidal limit), & Ridley Creek - Mouth to OF#18 (Tidal limit)	Maximum	2.8 Deg above 24-hr gradient during the 1961- 66 period	2.8 Deg above 24-hr gradient during the 1961- 66 period												°C		Temperature (A)
Temperature ₍₂₎	PA Code (WWF, TSF)	Chester Creek upstream of OF#20, & Ridley Creek upstream from OF#18	Maximum	Varies - see table on pg. 93-21 & 93-22		Varies - see table on pg. 93-21 & 93-22											°F	Use the more stringent standard above from DRBC Zone 4 for the Delaware River	Temperature
Tetrachloroethene/ Tetrachloroethylene	PA Code 25 - 93.8c, Table 5	Chester Creek upstream of OF#20, & Ridley Creek upstream from OF#18	Acute Maximum	700					0.69	3.3		1,300	140	700			µg/L		Tetrachloroethene/ Tetrachloroethylene
Tetrachloroethene/ Tetrachloroethylene	PA Code 25 - 93.8c, Table 5	Chester Creek upstream of OF#20, & Ridley Creek upstream from OF#18	Chronic Maximum	140					0.69	3.3		1,300	140	700			μg/L		Tetrachloroethene/ Tetrachloroethylene
Tetrachloroethene/ Tetrachloroethylene	DRBC WQRs - Table 6	Delaware River Upstream of R.M.	Maximum	3.3					0.69	3.3		1,300	140	700			µg/L		Tetrachloroethene/ Tetrachloroethylene
Tetrachloroethene/ Tetrachloroethylene	DRBC WQRs - Table 6	Chester Creek - Mouth to OF#20 (Tidal limit), & Ridley Creek - Mouth to OF#18 (Tidal limit)	Maximum	3.3					0.69	3.3		1,300	140	700			µg/L		Tetrachloroethene/ Tetrachloroethylene
Tetrachloroethene/	DRBC WQRs - Table 6	Delaware River Downstream of R.M.	Maximum	0.69					0.69	3.3		1,300	140	700			µg/L		Tetrachloroethene/
Thallium	PA Code 25 - 93.8c, Table 5	81.8 Chester Creek upstream of OF#20, & Ridley Creek upstream from OF#18	Acute Maximum	65							0.24	0.47	13	65			µg/L		Thallium
Thallium	PA Code 25 - 93.8c, Table 5	Chester Creek upstream of OF#20, & Ridley Creek upstream from OF#18	Chronic Maximum	13							0.24	0.47	13	65			µg/L		Thallium
Thallium	DRBC WQRs - Table 7	Delaware River Upstream of R.M. 81.8	Maximum	0.47							0.24	0.47	13	65			µg/L		Thallium
Thallium	DRBC WQRs - Table 7	Chester Creek - Mouth to OF#20 (Tidal limit), & Ridley Creek - Mouth to OF#18 (Tidal limit)	Maximum	0.47							0.24	0.47	13	65			µg/L		Thallium
Thallium	DRBC WQRs - Table 7	Delaware River Downstream of R.M.	Maximum	0.24							0.24	0.47	13	65			µg/L		Thallium
Threshold Odor Number	DRBC WQRs - for Zone 4	Delaware River	Maximum	24 at 60 °C	24 at 60 °C														Threshold Odor Number
Threshold Odor Number	DRBC WQRs - for Zone 4	Chester Creek - Mouth to OF#20 (Tidal limit), & Ridley Creek - Mouth to OF#18 (Tidal limit)	Maximum	24 at 60 °C	24 at 60 °C												-		Threshold Odor Number
Toluene	PA Code 25 - 93.8c, Table 5	Chester Creek, Ridley Creek, Delaware Upstream of RM 81.8	Acute Maximum	1,700							1,300	15,000	330	1,700	1,300		µg/L		Toluene
Toluene	PA Code 25 - 93.8c, Table 5	Chester Creek, Ridley Creek, Delaware Upstream of RM 81.8	Chronic Maximum	330							1,300	15,000	330	1,700	1,300		µg/L		Toluene
Toluene	PA Code 25 - 93.8c, Table 5	Delaware River Downstream of RM 81.8	Maximum	1,300							1,300	15,000	330	1,700	1,300		µg/L		Toluene
Total Dissolved Solids (TDS)	DRBC WQRs - for Zone 4	Delaware River	Maximum	133% of background	133% of background												mg/L		Total Dissolved Solids (TDS)
Total Dissolved Solids (TDS)	DRBC WQRs - for Zone 4	Chester Creek - Mouth to OF#20 (Tidal limit), & Ridley Creek - Mouth to OF#18 (Tidal limit)	Maximum	133% of background	133% of background												mg/L		Total Dissolved Solids (TDS)
TKN Total Organic Carbon (TOC)	No Standard No Standard																		TKN Total Organic Carbon
Total Organic Halides (T.O.X.)	No Standard		1	1	1										1				(TOC) Total Organic Halides (TOX)
Total Nitrogen Total Petroleum Hydrocarbon	No Standard		-											1					Total Nitrogen Total Petroleum
(TPH)	No Standard	I	l		l]]		I	1	1	I	I	l	1	I			Hydrocarbon (TPH)

Parameter	Source of	Applicable Water	W00 T	Water Quality Standard To	Standard Criterion (DRBC Zone 4 WQRs)	Standard Criterion (25 PA Code Ch. 93 WQS, 93.7 Table 3 for TSF, WWF, MF & WC	Freshwatt (DRBC WQRs Tab Objectives for To Protection of Applies to Delaware & & I	er Objectives le 5 - Stream Quality kic Pollutants for the of Aquatic Life) Tidal Portions of Chester Ridley	Freshwater (DRBC WQRs Table Objectives for Applies to Delaware Chester &	Objectives 6 - Stream Quality Carcinogens) & Tidal Portions of & Ridley	Freshwate (DRBC WQRs ⁻ Quality Objecti Toxi Applies to Delawa of Cheste	r Objectives Table 7 - Stream ves for Systemic cants) re & Tidal Portions er & Ridley	Fish & Aqua (25 PA Code Ch. 93 Applies to Delawa	tic Life Criteria WQS, 93.8c, Table 5) are, Chester, Ridley	Human Criteria (25 PA Code Ch. 93 WQS, 93.8c, Table 5) Applies to Delaware, Chester, Ridley	US EPA National Water Qual Aquatic Life (Applies to Delawar	Recommended ity Criteria Criteria Table e, Chester, Ridley	Unite	Nerre	-
Parameter	Standard	Body	wQS Type	Use	Applies to Delaware & Tidal Portions of Chester & Ridley	Critical Use Designations) Applies to Delaware, Chester, Ridley	Acute	Chronic	Fish & Water Ingestion	Fish Ingestion Only	Fish & Water Ingestion	Fish Ingestion Only	Criteria Continuous Concentrations	Criteria Maximum Concentrations	Health Criteria	Acute Criteria Maximum Concentration (CMC)	Chronic Criteria Continuous Concentration (CCC)	Units	Notes	Parameter
Total Phosphorus	No Standard																			Total Phosphorus
Total Suspended Solids (TSS)	No Standard																			Total Suspended Solids (TSS)
Turbidity ^(C)	DRBC WQRs - for Zone 4	Delaware River	Maximum 30- day Average	40	40													NTU		Turbidity (C)
Turbidity ^(C)	DRBC WQRs - for Zone 4	Delaware River	Maximum	150	150													NTU		Turbidity (C)
Turbidity ^(C)	DRBC WQRs - for Zone 4	Chester Creek - Mouth to OF#20 (Tidal limit), & Ridley Creek - Mouth to OF#18 (Tidal limit)	Maximum 30- day Average	40	40													NTU		Turbidity $_{(C)}$
Turbidity ^(C)	DRBC WQRs - for Zone 4	Chester Creek - Mouth to OF#20 (Tidal limit), & Ridley Creek - Mouth to OF#18 (Tidal limit)	Maximum	150	150													NTU		Turbidity _(C)
Xylenes (total)	PA Code 25 - 93.8c, Table 5	Delaware River, Chester Creek, Ridley Creek	Acute Maximum	1,100									210	1,100	70,000			μg/L		Xylenes (total)
Xylenes (total)	PA Code 25 - 93.8c, Table 5	Delaware River, Chester Creek, Ridley Creek	Chronic Maximum	210									210	1,100	70,000			μg/L		Xylenes (total)
Zinc	DRBC WQRs - Tables 5 & 7	Delaware River	Acute Maximum	0.95*EXP(0.8473*LN(hard ness)+0.884)			0.95*EXP(0.8473*LN(ha rdness)+0.884)	a 0.95*EXP(0.8473*LN(har dness)+0.884)			7,400	26,000	0.986 x Exp(0.8473 x LN(hardness) + 0.884)	0.978 x Exp(0.8473 x LN(hardness) + 0.884)		120	120	µg/L	Dissolved criteria	Zinc
Zinc	DRBC WQRs - Tables 5 & 7	Delaware River	Chronic Maximum	0.95*EXP(0.8473*LN(hard ness)+0.884)			0.95*EXP(0.8473*LN(ha rdness)+0.884)	a 0.95*EXP(0.8473*LN(ha rdness)+0.884)			7,400	26,000	0.986 x Exp(0.8473 x LN(hardness) + 0.884)	0.978 x Exp(0.8473 x LN(hardness) + 0.884)		120	120	µg/L	Dissolved criteria	Zinc
Zinc	DRBC WQRs - Tables 5 & 7	Chester Creek - Mouth to OF#20 (Tidal limit), & Ridley Creek - Mouth to OF#18 (Tidal limit)	Acute Maximum	0.95*EXP(0.8473*LN(hard ness)+0.884)			0.95*EXP(0.8473*LN(h rdness)+0.884)	a 0.95*EXP(0.8473*LN(har dness)+0.884)			7,400	26,000	0.986 x Exp(0.8473 x LN(hardness) + 0.884)	0.978 x Exp(0.8473 x LN(hardness) + 0.884)		120	120	µg/L	Dissolved criteria	Zinc
Zinc	DRBC WQRs - Tables 5 & 7	Chester Creek - Mouth to OF#20 (Tidal limit), & Ridley Creek - Mouth to OF#18 (Tidal limit)	Chronic Maximum	0.95*EXP(0.8473*LN(hard ness)+0.884)			0.95*EXP(0.8473*LN(ha rdness)+0.884)	a 0.95*EXP(0.8473*LN(ha rdness)+0.884)			7,400	26,000	0.986 x Exp(0.8473 x LN(hardness) + 0.884)	0.978 x Exp(0.8473 x LN(hardness) + 0.884)		120	120	µg/L	Dissolved criteria	Zinc
Zinc	PA Code 25 - 93.8c, Table 5	Chester Creek upstream of OF#20, & Ridley Creek upstream from OF#18	Acute Maximum	0.978 x Exp(0.8473 x LN(hardness) + 0.884)			0.95*EXP(0.8473*LN(ha rdness)+0.884)	a 0.95*EXP(0.8473*LN(har dness)+0.884)			7,400	26,000	0.986 x Exp(0.8473 x LN(hardness) + 0.884)	0.978 x Exp(0.8473 x LN(hardness) + 0.884)		120	120	µg/L	Dissolved criteria	Zinc
Zinc	PA Code 25 - 93.8c, Table 5	Chester Creek upstream of OF#20, & Ridley Creek upstream from OF#18	Chronic Maximum	0.986 x Exp(0.8473 x LN(hardness) + 0.884)			0.95*EXP(0.8473*LN(ha rdness)+0.884)	a 0.95*EXP(0.8473*LN(har dness)+0.884)			7,400	26,000	0.986 x Exp(0.8473 x LN(hardness) + 0.884)	0.978 x Exp(0.8473 x LN(hardness) + 0.884)		120	120	µg/L	Dissolved criteria	Zinc

(A) Temperature shall not exceed 5 °F (2.8 °C) above the average 24-hour temperature gradient displayed during the 1961-66 period, or a maximum of 86 °F (30.0 °C) - whichever is less.

(B) Using M.B.A.S assay, with a maximum 30-day average of 1.0 mg/L.

(C) Unless exceeded due to natural conditions.

NOTES:

DRBC standards in their WQRs are referred to as "Stream Quality Objectives". DRBC's Stream Quality Objectives have primacy over the PA Code standards for the Delaware River.

PA CODE refers to the standards as "Water Quality Standards".

Ridley Creek is "TSF & MF" Critical Use from Rt. 320 Bridge upstream to the Media Water Intake. Ridley Creek is "WWF & MF" downstream from the Rt. 320 Bridge to mouth.

Chester Creek has a "TSF" Critical Use designation as well, but this is well upstream of the CSO discharge furthest upstream on Chester Creek and does not apply for this analysis.
ATTACHMENT E

CSO Outfalls Historical Sampling Data

<u>CSO Sampling</u> <u>25 – Sept – 14</u>

			Param	<u>ieters</u>	
Sample Point	BOD (mg/L)	Ammonia (mg/L)	TSS (mg/L)	Phosphorus (mg/L)	Fecal Coliform (# / 100mL)
2 nd & Dock Street	100	6.72	134	1.6	811,000
14 th & Crozer	39.5	3.26	45	0.78	430,000
Sun Drive and Hancock Street	42.5	1.88	56	0.55	169,000





NELAP Certifications: NJ PA010 , NY 11759 , PA 22-293 DoD ELAP: A2LA 0818.01 State Certifications: DE ID 11 , MA PA0102 , MD 128 , VA 460157 , WV 343

October 2, 2014

Mike Krause DELCORA P.O. Box 999 Chester, PA 19016

Certificate of Analysis

Project Name:	Annual Stormwaters	Workorder:	2031197
Purchase Order:		Workorder ID:	CSO Sampling

Dear Mike Krause:

Enclosed are the analytical results for samples received by the laboratory on Thursday, September 25, 2014.

The ALS Environmental laboratory in Middletown, Pennsylvania is a National Environmental Laboratory Accreditation Program (NELAP) accredited laboratory and as such, certifies that all applicable test results meet the requirements of NELAP.

If you have any questions regarding this certificate of analysis, please contact Mrs. Vanessa N Badman (Project Coordinator) at (717) 944-5541.

Analyses were performed according to our laboratory's NELAP-approved quality assurance program and any applicable state requirements. The test results meet requirements of the current NELAP standards or state requirements, where applicable. For a specific list of accredited analytes, refer to the certifications section of the ALS website at www.alsglobal.com/en/Our-Services/Life-Sciences/Environmental/Downloads.

This laboratory report may not be reproduced, except in full, without the written approval of ALS Environmental.

ALS Spring City: 10 Riverside Drive, Spring City, PA 19475 610-948-4903

CC: Ms. Irene Fitzgerald , Joe DiMatteo

This page is included as part of the Analytical Report and must be retained as a permanent record thereof.

Vanessa M. Badman

Mrs. Vanessa N Badman Project Coordinator

ALS Environmental Laboratory Locations Across North America





NELAP Certifications: NJ PA010 , NY 11759 , PA 22-293 DoD ELAP: A2LA 0818.01 State Certifications: DE ID 11 , MA PA0102 , MD 128 , VA 460157 , WV 343

SAMPLE SUMMARY

Workorder: 2031197 CSO Sampling

Lab ID	Sample ID	Matrix	Date Collected	Date Received	Collected By
2031197001	14th & Crozer	Water	9/25/2014 10:00	9/25/2014 20:30	Mike Krause
2031197002	2nd & Dock	Water	9/25/2014 09:40	9/25/2014 20:30	Mike Krause
2031197003	Sun & Hancock	Water	9/25/2014 09:50	9/25/2014 20:30	Mike Krause
2031197004	14th & Crozer	Water	9/25/2014 10:00	9/25/2014 16:10	Mike Krause
2031197005	2nd & Dock	Water	9/25/2014 09:40	9/25/2014 16:10	Mike Krause
2031197006	Sun & Hancock	Water	9/25/2014 09:50	9/25/2014 16:10	Mike Krause

Notes

- -- Samples collected by ALS personnel are done so in accordance with the procedures set forth in the ALS Field Sampling Plan (20 -Field Services Sampling Plan).
- -- All Waste Water analyses comply with methodology requirements of 40 CFR Part 136.
- -- All Drinking Water analyses comply with methodology requirements of 40 CFR Part 141.
- -- Unless otherwise noted, all quantitative results for soils are reported on a dry weight basis.
- -- The Chain of Custody document is included as part of this report.
- -- All Library Search analytes should be regarded as tentative identifications based on the presumptive evidence of the mass spectra. Concentrations reported are estimated values.
- -- Parameters identified as "analyze immediately" require analysis within 15 minutes of collection. Any "analyze immediately" parameters not listed under the header "Field Parameters" are preformed in the laboratory and are therefore analyzed out of hold time.
- -- Method references listed on this report beginning with the prefix "S" followed by a method number (such as S2310B-97)
- refer to methods from "Standard Methods for the Examination of Water and Wastewater".

Standard Acronyms/Flags

- J Indicates an estimated value between the Method Detection Limit (MDL) and the Practical Quantitation Limit (PQL) for the analyte
- U Indicates that the analyte was Not Detected (ND)
- N Indicates presumptive evidence of the presence of a compound
- MDL Method Detection Limit
- PQL Practical Quantitation Limit
- RDL Reporting Detection Limit
- ND Not Detected indicates that the analyte was Not Detected at the RDL
- Cntr Analysis was performed using this container
- RegLmt Regulatory Limit
- LCS Laboratory Control Sample
- MS Matrix Spike
- MSD Matrix Spike Duplicate
- DUP Sample Duplicate
- %Rec Percent Recovery
- RPD Relative Percent Difference
- LOD DoD Limit of Detection
- LOQ DoD Limit of Quantitation
- DL DoD Detection Limit

ALS Environmental Laboratory Locations Across North America





NELAP Certifications: NJ PA010 , NY 11759 , PA 22-293 DoD ELAP: A2LA 0818.01 State Certifications: DE ID 11 , MA PA0102 , MD 128 , VA 460157 , WV 343

ANALYTICAL RESULTS

Workorder: 2031197 CSO Sampling

Lab ID: Sample ID:	2031197001 14th & Crozer					Date Collected: Date Received:	9/25/2014 10:00 9/25/2014 20:30	Matrix: Water			
Parameters		Results	Flag	Units	RDL	Method	Prepared By	/ Analyzed	Ву	Cntr	
WET CHEMIS	TRY										
Ammonia-N		3.26		mg/L	0.100	D6919-09)	9/30/14 15:23	JAM	В	
Biochemical O Demand	xygen	39.5		mg/L	2.0	S5210B-0	1	9/26/14 06:30	NAK	А	
Phosphorus, T	otal	0.78		mg/L	0.10	EPA 365.1	9/26/14 LJ	IF 9/30/14 06:57	LJF	В	
Total Suspend	ed Solids	45		mg/L	5	S2540D-9	7	9/29/14 21:30	NV	А	

Vanessa M. Badman

Mrs. Vanessa N Badman Project Coordinator

ALS Environmental Laboratory Locations Across North America





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ANALYTICAL RESULTS

Workorder: 2031197 CSO Sampling

Lab ID: Sample ID:	2031197002 2nd & Dock					Date Collected: Date Received:	9/25/2014 09:40 9/25/2014 20:30	Matrix: Water			
Parameters		Results	Flag	Units	RDL	Method	Prepared By	Analyzed	Ву	Cntr	
WET CHEMIS	TRY										
Ammonia-N		6.72		mg/L	0.100	D6919-09)	9/30/14 15:43	JAM	В	
Biochemical O Demand	oxygen	100		mg/L	2.0	S5210B-0	1	9/26/14 06:30	NAK	А	
Phosphorus, T	otal	1.6		mg/L	0.10	EPA 365.1	9/26/14 LJ	F 9/30/14 06:57	LJF	В	
Total Suspend	ed Solids	134		mg/L	5	S2540D-9	7	9/29/14 21:30	NV	А	

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ALS Environmental Laboratory Locations Across North America





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ANALYTICAL RESULTS

Workorder: 2031197 CSO Sampling

Lab ID: Sample ID:	2031197003 Sun & Hancock	C.				Date Collected: Date Received:	9/25/2014 09:50 9/25/2014 20:30	Matrix: Water			
Parameters		Results	Flag	Units	RDL	Method	Prepared By	/ Analyzed	By	Cntr	
WET CHEMIS	TRY										
Ammonia-N		1.88		mg/L	0.100	D6919-09	1	9/30/14 16:03	JAM	В	
Biochemical O Demand	xygen	42.5		mg/L	2.0	S5210B-0	1	9/26/14 06:30	NAK	А	
Phosphorus, T	otal	0.55		mg/L	0.10	EPA 365.1	9/26/14 LJ	IF 9/30/14 06:57	LJF	В	
Total Suspend	ed Solids	56		mg/L	5	S2540D-9	7	9/29/14 21:30	NV	А	

Vanessa M. Badman

Mrs. Vanessa N Badman Project Coordinator

ALS Environmental Laboratory Locations Across North America





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ANALYTICAL RESULTS

Workorder: 2031197 CSO Sampling

Lab ID: Sample ID:	2031197004 14th & Crozer					Date Collected: Date Received:	9/25/2014 10:00 9/25/2014 16:10	Matrix: Water			
Parameters		Results	Flag	Units	RDL	Method	Prepared By	/ Analyzed	Ву	Cntr	
Spring City-P Fecal Coliform	י A1504546,NJPA ז	071 430000		col/100mL	1	S9222D-9	7	9/25/14 17:50	BSM	A	

Vanessa M. Badman

Mrs. Vanessa N Badman Project Coordinator

ALS Environmental Laboratory Locations Across North America





NELAP Certifications: NJ PA010 , NY 11759 , PA 22-293 DoD ELAP: A2LA 0818.01 State Certifications: DE ID 11 , MA PA0102 , MD 128 , VA 460157 , WV 343

ANALYTICAL RESULTS

Workorder: 2031197 CSO Sampling

Lab ID: Sample ID:	2031197005 2nd & Dock					Date Collected: Date Received:	9/25/2014 09:40 9/25/2014 16:10	Matrix: Water			
Parameters		Results	Flag	Units	RDL	Method	Prepared By	Analyzed	Ву	Cntr	
Spring City-P Fecal Coliform	יA1504546,NJPA י	071 811000	1	col/100mL	1	S9222D-9	7	9/25/14 16:45	BSM	A	

Vanessa M. Badman

Mrs. Vanessa N Badman Project Coordinator

ALS Environmental Laboratory Locations Across North America





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ANALYTICAL RESULTS

Workorder: 2031197 CSO Sampling

Lab ID: Sample ID:	2031197006 Sun & Hancock				Date Collected: Date Received:	9/25/2014 09:50 9/25/2014 16:10	Matrix: Water			
Parameters	Results	Flag	Units	RDL	Method	Prepared By	Analyzed	Ву	Cntr	
Spring City-P Fecal Coliform	A1504546,NJPA071	1	col/100mL	1	S9222D-9	7	9/25/14 17:08	BSM	А	

Vanessa M. Badman

Mrs. Vanessa N Badman Project Coordinator

ALS Environmental Laboratory Locations Across North America





NELAP Certifications: NJ PA010 , NY 11759 , PA 22-293 DoD ELAP: A2LA 0818.01 State Certifications: DE ID 11 , MA PA0102 , MD 128 , VA 460157 , WV 343

PARAMETER QUALIFIERS

Lab ID	#	Sample ID	Analytical Method	Analyte
2031197005	1	2nd & Dock	S9222D-97	Fecal Coliform
This is an estimated	result.			
2031197006	1	Sun & Hancock	S9222D-97	Fecal Coliform
This is an estimated	result.			

ALS Environmental Laboratory Locations Across North America

34 Dog	wood Lane				Ö	HAIN O	F CUSTO	IXO			coc #:		
Middlet	town, PA 17	057			REC	UEST	FOR ANA	LYSIS		c,			
Environmental F.717-9	44-1430			ALL SH	ADED AF Sampi	keas mus .er. inst	IT BE COMPL RUCTIONS O	eted By 1 N The Ba('HE CLIE SK.	NI CAN	ALS Quot		
Client Name: DELCORA			Container	plastic	plastic	plastic					Rect		I -
Address: 3201 W. Front Street			Container Size	Ħ	500ml	250ml					Cooler	Temp: 2°C Therm ID: 72	<i>462</i> /t
Chester PA 19013			Preservativ	a none	H2SO4	Na2S203					No. of C	oolers: / Y N	L Initial
Contact: Mike Krause						ANA	LYSES/METHO	D REQUEST	LED			Custody Seals Present?	Am
Phone#: 610-876-5523 x218			-									Tif present) Scats Intact?	-
Project Name/#: CSO Sampling												Received on Ice?	
Bilt To: Same											COCI	abels Complete/Accurate?	
TAT X Normal-Standard TAT is 10-	12 business	days.										Cont. in Good Cond.?	-
Rush-Subject to ALS approv	val and surch	larges.			CH1	l						Correct Samula Volumes?	
Email? [X]-Y	proved by.			S	1 'snu	motik						Correct Preservation?	
Fax? No.:			· ·	ST ,C	oyds	al Co						HeadspaceNolatiles?	4
Sample Description/Location	Sample		3 or C Matrix	800	юч <u>а</u>	Fec		_		_	Courier	Tracking #:	
(as it will appear on the lab report)	Date	Time)++)+			Enter Numbe	or of Containers	Per Sample o	r Field Res	ults Below.	-	Sample/COC Comments	
1 14th & Crozer	9/25/2014	10:00	N O	-	-	-		_					
2 2nd & Dock	9/25/2014	9:40	C M	-	-	-							
3 Sun & Hancock	9/25/2014	9:50	C W	1	1	1							
4													
5												Fecal Analyzed	-
9												@ Spring Uity	
2												YK-1/Som	
8											19-2	5-14 1610	
6												S Field Services: Bickup	Labor
10						-						ther	
Project Comments:		LOGGED BY(signature).		7	M		392		522	Standard	Special Processing Sta	ate Samples
		REVIEWED BY	r(signatur	e);				3140		ata ata		USACE	Collected In
Relinquished By / Company Nam	ne	Date	Time		Rece	ived By / C	ompany Name		Date	Time		Navy	ב זר
1 Mt L Xne		7/25/14	1300	2 0	& Los	1			8-25	1300			2
3 " of But Attenses		12.5	1836	4	X	5			4-52-6	1830 Rei	oortable to PADEP?	Sample Disposal	A S
5 × 1 0	1	9-25-14	3030	9	53			2	S	× ROZ	es		2 2
										ISMd	#0	Special	
6				ę						EUC	S: Format Type-		
• G=Grab	c=Composit	ALS ENV	IRONM	ENTAL	SHIPPING Wa	Her, GW=Gr	S: 34 DOGW	II, OL=Other	MIDDLE	TOWN, PA 17	; WP=Wipe; WW=W	Istewater	Rev 10/11

<u>C.S.O. Sampling</u> <u>29-Oct-12</u>

Sample Point	<u>P</u> a	arameters			
	BOD (mg/L)	<u>Ammonia</u> (mg/L)	<u>TSS</u> (mg/L)	Phosphorus (mg/L)	Fecal Coliform (# / 100mL)
2nd & Dock St	35	2.18	106	0.823	>600,000
14th & Crozer	21	0.81	48	0.499	>600,000
Sun Drive and Hancock St.	28	1.79	47	0.813	>600,000

626

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QC Laboratories

Analytical Report

MIKE KRAUSE DELCORA PRE-TREATMENT PO BOX 999 CHESTER, PA 19016 Regarding: MIKE KRAUSE DELCORA PRE-TREATMENT 3201 W. FRONT STREET CHESTER, PA 19016

Account No:AL0069, DELCORA Project No: AL0069, DELCORA		P.O. No	o: Inv. N PWSID N	lo: 1468769 No;
Sample Number Sample Descriptio L4369219-1 SUN & HANCOCK G Received Date/Time	n :RAB e/Temp 10/31/12 07:45pm	n 1.1 C Iced (Y/N): Y	Samp. Date/Time/Te 10/29/12 09:40am NA	mp Sampled by C Customer
Parameter	Method	Result	RLs	Test Date, Time, Analyst
GENERAL CHEMISTRY				
AMMONIA NITROGEN AS N PHOSPHORUS TOTAL TOTAL SUSPENDED SOLIDS	SM 4500NH3 B,D SM 4500P B.5 E SM 2540D	1.79 mg/l 0.813 mg/l 47.0 mg/l	0.100 mg/l 0.0600 mg/l 2.00 mg/l	11/08/12 03:55PM MRP 11/01/12 09:00AM NM 11/01/12 12:21PM LMB

Notes:

A result of "ND" indicates that the analyte tested was either not detected or the concentration was below the RLs.

Definitions: NEG=negative; POS=positive; COL=colonies; RLs=laboratory reporting limits; L/A=laboratory accident; TNTC= Too numerous to

count; pres=presumptive

A result marked with "DRY" indicates that the result was calculated and reported on a dry weight basis.

MCL= EPA recommended "maximum contaminant level", PLs = Customer-specific permit limits.

The test results meet all requirements of NELAC unless otherwise specified.

The report shall not be reproduced except in full without the written consent of the laboratory.

Unless otherwise specified, the Environmental and Food Chemistry testing except Field Parameters

were performed by QC Inc. located at 1205 Industrial Blvd., Southampton, PA 18966; Pharmaceutical, Dairy

and Food Microbiological tests were performed by QC Inc. located at 702 Electronic Dr., Horsham, PA 19044.

QCL Accreditations: Southampton Div: EPA ID PA00018; NELAP ID's: PA 09-00131, NJ PA166, NY 11223

State ID's: CT PH-0768, DE PA-018, MD 206, SC 89021001; FDA Reg. # : 2515238

ACL Div: NELAP ID's: PA 68-335, NJ DE568; State ID's: DE 00011, MD 138; Wind Gap Div: State ID's: PA 48-01334, NJ PA001

E. Rutherford Div: State ID: NJ 02015; Vineland Div: State ID: NJ 06005; Reading Div: State ID: PA 06-03543

The reported results relate only to the samples.

All samples are collected as "grab" samples unless otherwise identified.

Regulatory authorities are assessing substantial fines for testing omissions. Please track your sample collections and results on a weekly, monthly, or quarterly basis to ensure compliance. QC's internet program 'LIVE ACCESS' will provide you with real-time access to collection dates and results. Please contact Customer Service for further information on acquiring LIVE ACCESS.



Page 1 of 1

Serial Number: 2460396

Client													Atlantic	: Coa:	st Laboratories, Inc	
Client Name	Delcora					Ц Н	AIN	OFC	USTOD	/ RECO)RD		630 chi	urchm	ians Road	
Address	3201 W Fro	int St				Due							Newark	r, Dela	ware 19702	
	Chester, PA	V 19013				Quot	Ð						(302)26	6-912	1 * 454-8720 (FAX)	
Contact	Mike Kraus	0				Misc										
Phone Work ID	(610) 876-5	523 x 218				Sam	pled	by:						J.		
	7			Conta	iner		s									
Sample	Comp Date	Date				əlqm	ntainei	Sample								
Ω	Time Start	Smpl	Time	Size	G/P	eS deré	lo. of Co	Matrix	Preservative	c c F	Phos- phorus,					
Sun & Hancock		10/29/12	9:40	1000	٩) x	1-	MM	NONE						Comments	
Sun & Hancock		10/29/12	9:40	500	٩	×	-	M	H2S04		×	-				
						\neg	\downarrow									
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Lab Use Only	Yes No	Remarks												1		
Samples Iced		-1														
Samples FISIVU																

Sun & Hancock

QC Laboratories

Analytical Report

MIKE KRAUSE **DELCORA PRE-TREATMENT** PO BOX 999 CHESTER, PA 19016

Regarding: MIKE KRÅUSE DELCORA PRE-TREATMENT 3201 W. FRONT STREET CHESTER, PA 19016

Account No:AL0069, DELCORA Project No: AL0069, DELCORA		P.O. No	o: Inv. N PWSID N	lo: 1468768 No:
Sample Number Sample Descriptio L4369218-1 2ND & DOCK GRAB Received Date/Time	n e/Temp 10/31/12 07:45pm	1.1 C Iced (Y/N): Y	Samp. Date/Time/Te 10/29/12 10:00am NA	mp Sampled by C Customer
Parameter	Method	Result	RLs	Test Date, Time, Analyst
GENERAL CHEMISTRY				
AMMONIA NITROGEN AS N PHOSPHORUS TOTAL TOTAL SUSPENDED SOLIDS	SM 4500NH3 B,D SM 4500P B.5 E SM 2540D	2.18 mg/l 0.823 mg/l 106 mg/l	0.100 mg/l 0.0600 mg/l 2.00 mg/l	11/08/12 03:55PM MRP 11/01/12 09:00AM NM 11/01/12 12:50PM LMB

Notes:

A result of "ND" indicates that the analyte tested was either not detected or the concentration was below the RLs.

Definitions: NEG=negative; POS=positive; COL=colonies; RLs=laboratory reporting limits; L/A=laboratory accident; TNTC= Too numerous to count; pres=presumptive

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State ID's: CT PH-0768, DE PA-018, MD 206, SC 89021001; FDA Reg. # : 2515238

ACL Div: NELAP ID's: PA 68-335, NJ DE568; State ID's: DE 00011, MD 138; Wind Gap Div: State ID's: PA 48-01334, NJ PA001

E. Rutherford Div: State ID: NJ 02015; Vineland Div: State ID: NJ 06005; Reading Div: State ID: PA 06-03543

The reported results relate only to the samples.

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Regulatory authorities are assessing substantial fines for testing omissions. Please track your sample collections and results on a weekly, monthly, or quarterly basis to ensure compliance. QC's internet program 'LIVE ACCESS' will provide you with real-time access to collection dates and results. Please contact Customer Service for further information on acquiring LIVE ACCESS.



Page 1 of 1

Serial Number: 2460395

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	oast Laboratories, Inc. hmans Road	elaware 19702 121 * 454-8720 (FAX)					Comments														Received by:	Received for Laboratory by:	0	
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	Delcora	3201 W Fror Chester, PA	Mike Krause	(610) 876-55		Comp Date Time Start															7		Yes No 	
	Client Client Name	Address	Contact	Phone Work ID		Sample ID	2nd & Dock	2nd & Dock													Relinquished by:	Reliftgatished by:	Lab Use Only Samples Iced	Samples Prsrvd

QC Laboratories

Analytical Report

MIKE KRAUSE DELCORA PRE-TREATMENT PO BOX 999 CHESTER, PA 19016 Regarding: MIKE KRAUSE DELCORA PRE-TREATMENT 3201 W. FRONT STREET CHESTER, PA 19016

Account No:AL0069, DELCORA Project No: AL0069, DELCORA		P.O. No): Inv. N PWSID N	lo: 1468767 No:
Sample Number Sample Descriptio L4369220-1 14TH & CROZER GF Received Date/Time	n RAB e/Temp 10/31/12 07:45pm	n 1.1 C lced (Y/N): Y	Samp. Date/Time/Te 10/29/12 09:20am NA (mp Sampled by C Customer
Parameter	Method	Result	RLs	Test Date, Time, Analyst
GENERAL CHEMISTRY				
AMMONIA NITROGEN AS N PHOSPHORUS TOTAL TOTAL SUSPENDED SOLIDS	SM 4500NH3 B,D SM 4500P B.5 E SM 2540D	0.810 mg/l 0.499 mg/l 48.0 mg/l	0.100 mg/l 0.0300 mg/l 2.00 mg/l	11/08/12 03:55PM MRP 11/02/12 08:50AM NM 11/01/12 12:50PM LMB

Notes:

A result of "ND" indicates that the analyte tested was either not detected or the concentration was below the RLs.

Definitions: NEG=negative; POS=positive; COL=colonies; RLs=laboratory reporting limits; L/A=laboratory accident; TNTC= Too numerous to count; pres=presumptive

A result marked with "DRY" indicates that the result was calculated and reported on a dry weight basis.

MCL= EPA recommended "maximum contaminant level", PLs = Customer-specific permit limits.

The test results meet all requirements of NELAC unless otherwise specified.

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Unless otherwise specified, the Environmental and Food Chemistry testing except Field Parameters

were performed by QC Inc. located at 1205 Industrial Blvd., Southampton, PA 18966; Pharmaceutical, Dairy

and Food Microbiological tests were performed by QC Inc. located at 702 Electronic Dr., Horsham, PA 19044.

QCL Accreditations: Southampton Div: EPA ID PA00018; NELAP ID's: PA 09-00131, NJ PA166, NY 11223

State ID's: CT PH-0768, DE PA-018, MD 206, SC 89021001; FDA Reg. # : 2515238

ACL Div: NELAP ID's: PA 68-335, NJ DE568; State ID's: DE 00011, MD 138; Wind Gap Div: State ID's: PA 48-01334, NJ PA001

E. Rutherford Div: State ID: NJ 02015; Vineland Div: State ID: NJ 06005; Reading Div: State ID: PA 06-03543

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Page 1 of 1

Serial Number: 2460389

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bast Laboratories, Inc.	elaware 19702 121 * 454-8720 (FAX)					Comments					 								Domined her	Received by:	Received for Laboratory by:	-	
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Delcora	3201 W Froi Chester, PA	Mike Krause (610) 876-55		(Comp Date	Time Start														lar		Yes No	
Client Client Name	Address	Contact Phone	Work ID		Sample	Ω	14th & Crozer	14th & Crozer											Relinquished by:	THR	Relinquished by:	Lab Use Only Samples Iced	Samples Prsrvd

14th & Crozer

Fecal Daily Worksheet

	Analyst	Date	Time		
Setup & Sample Date	MK	10/29/2012	2:25 PM		
Read	MK	10/30/2012	2:00 PM		
14th & Crozer					
Dilutions	Blank 1	5TNTC	1TNTC	0.1TNTC	0.01
Raw Count (CFU)	0	TNTC	TNTC	TNTC	TNTC
Actual Density (CFU/100mL)		A Carl Carl	sound the first	at for Six on the	
Meets Target (20-40 CFU)?	Sala and	Above	Above	Above	Above
Results that Meet Target		一一元十年二十八日			I PERSONAL IN
Target Results Count/100mL				Maril I I I I I I I I I I I I I I I I I I I	
Average (CFU/100mL)	HU AN A UP STREET		>	600000	

	Analyst	Date	Time		
Setup & Sample Date	MK	10/29/2012	2:25 PM		
Read	MK	10/30/2012	2:00 PM		
2nd & Dock					
Dilutions	Blank 1	5TNTC	1TNTC	0.1TNTC	0.01
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Actual Density (CFU/100mL)	(index and in the	山市建筑建筑		and the second second	
Meets Target (20-40 CFU)?		Above	Above	Above	Above
Results that Meet Target	THE REAL PROPERTY OF		S. C. Martin Strate		
Target Results Count/100mL			A CALCER NO.		1.6. 1
Average (CFU/100mL)	No. 22 Start		>	600,000	

	Analyst	Date	Time		
Setup & Sample Date	MK	10/29/2012	2:25 PM		
Read	MK	10/30/2012	2:00 PM		
Sun & Hancock		1). 			
Dilutions	Blank 1	5TNTC	1TNTC	0.1TNTC	0.01
Raw Count (CFU)	0	TNTC	TNTC	TNTC	TNTC
Actual Density (CFU/100mL)					
Meets Target (20-40 CFU)?	1. 化墨西尔	Above	Above	Above	Above
Results that Meet Target		Star Clinic Street			The Superson Store
Target Results Count/100mL	and the second second				A RESTRICTION OF
Average (CFU/100mL)	Property States		>	600,000	

	Analyst	Date	Time		
Setup & Sample Date		が出っていた automation	I With the pro-		
Read					
Dilutions	Blank 1	125	75	25	5
Raw Count (CFU)	E SEA OF LAND		医斯特尔斯氏	The second second	
Actual Density (CFU/100mL)		化以外的行应量	的学校最近是	LE TO DE TRANSFER	
Meets Target (20-40 CFU)?			$(q) = ((10)^{1/2} q^{-1})^{1/2}$		
Results that Meet Target		ATTENT OF THE ATTENT			에게 유민 것 배역
Target Results Count/100mL			No. 2 States		n mrni Ca
Average (CFU/100mL)					

	Analyst	Date	Time
Setup & Sample Date			1. 18
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215 0 000 525 6.0 0.22 6.0 0.23 7 1 208 6.0 1 7 1 208 6.0 1 7 1 0 0 0 1 7 1 0 0 1 7 1 0 0 1 7 1 0 0 0 1 7 1 0 0 1 7 1 0 0 0 0 1 <td></td> <td>239</td> <td>(mL)</td> <td>Fraction</td> <td>Nutrient</td> <td>Nitr. Inhib</td> <td>DO 863</td> <td>8 37</td> <td>Depletion</td> <td>Volume</td> <td>Blank</td> <td>(mg/L)</td> <td>(AVG.)</td> <td>Control</td>		239	(mL)	Fraction	Nutrient	Nitr. Inhib	DO 863	8 37	Depletion	Volume	Blank	(mg/L)	(AVG.)	Control
1 0 000 1 000 1 0 000 238 600 200		215	00	00.0	EV-S TE	Card and	8.62	8.40	0.22	10 - 10 - 10 - 10 - 10 - 10 - 10 - 10 -	2 12 C	0.22	0.19	
1 231 6 002 566 360 475 2 500 205		12	0	00 0		- AND -	8.63	8.53	0.10			0.10		Pass
2 226 6 0.02 0 4/10		231	9	0.02	12 2 22	THE REAL	8.66	3.80	4.86	2	E a contra	215	000	
112 18 0.06 4.01 4.54 - 55% 0.57 6.66 0.65 </td <td>2</td> <td>226</td> <td>9</td> <td>0.02</td> <td></td> <td>A. TUEN</td> <td>8.66</td> <td>4.09</td> <td>4.57</td> <td>2</td> <td>121201</td> <td>200</td> <td>5007</td> <td>Pass</td>	2	226	9	0.02		A. TUEN	8.66	4.09	4.57	2	121201	200	5007	Pass
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11 30 010 866 5.35 2.35 2.63 2.63 2.63 2.8 <th2.8< th=""> 2.8 2.8 <th< td=""><td>11</td><td>61</td><td>20</td><td>0.07</td><td>NUCESCIENCE</td><td></td><td>8.60</td><td>3.05</td><td>5,55</td><td>10.00</td><td>65%</td><td>0.56</td><td></td><td></td></th<></th2.8<>	11	61	20	0.07	NUCESCIENCE		8.60	3.05	5,55	10.00	65%	0.56		
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$ \begin{array}{ c c c c c c c c c c c c c c c c c c c$	EXT-OF La	0	60	0,20	1. H. D. B		8.72	2.63	6.09	2		28	28	
616 500 0.10 666 594 272 2 2 2 71 900 0.20 0 0 0 2 2 2 2 2 2 2 2 2 2 2 1		79	06	0,30	11		8.77	0.25		2	No. 1			
123 60 0.20 830 810 301 50 322 488 2 23 21 23 24 24	10 X	616	30	0.10			8.66	5.94	2.72	2	THE COL	22		
71 90 030 030 030 030 030 030 031	States and	123	60	0.20		500	8.70	3.82	4.88	2	「日の長い」の	22	21	
301 300 010 864 451 451 413 2 36 <	Second in	71	06	0.30			8.73	1.97	6.76	2	Str	21		
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183 90 0.30 183 90 0.30 184 0 185 0 186 0 187 0 188 0 189 0		272	60	0.20		1. 12 M	8.63	1.01	7.62	2	ALL DATES	35	35	
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	and the second	The second			A Strategy	10 M	and the state	1000		2	A NAMES OF			

<u>C.S.O. Sampling</u> <u>27-Nov-13</u>

Sample Point	<u>P</u> .	arameters			
	BOD (mg/L)	<u>Ammonia</u> (mg/L)	<u>TSS</u> (mg/L)	Phosphorus (mg/L)	Fecal Coliform (# / 100mL)
2nd & Dock St	65	2.1	204	1.32	>200,000
14th & Crozer	40	0.9	163	1.21	190,000
Sun Drive and Hancock St.	13	0.2	40	0.350	150,000

3





Attention:	Michael Krause					Date of R	eport:	12/06	/13
Reported To:	DELCORA Plant Sampling					Lab ID:		2991	-13-0053078
	3201 West Front St. 😪								
	Chester PA 19016-0000					Date Coll	ected:	11/27	/13 00:00
						Collected	By:	Clien	t
Sample Desc:	CSO Outfall (Site 1) 14th + Crozer					Date Rece	ived:	11/27	/13 14:05
				Rep	Dilutn		Test	Test	
		Result	Unit	Limit	Factor	Procedure	Date	Time	Analyst

CHEMISTRY									
COLORMETRI	c								
Phosph	orus as P, Total	1.21	mg/l	.05	1	SM 4500P-E	12/02	11:15	ALD
NITROGENS									
Nitrog	en, Ammonia	0.9	mg/l	.1	1	D6919-03	11/27	17:37	JCL
OTHER									
Bioche	mical Oxygen Demand	40	mg/l	2	1	SM 5210B	11/27	16:00	EMW
RESIDUES									
Solids	, Total Suspended	163	mg/l	1	1	SM 2540D	12/03	08:40	тмн

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Reviewed and Approved by:

al Barbara Coyle

Laboratory Director

Page 1 of 1

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Attention:	Michael Krause					Date of R	eport:	12/06	/13
Reported To:	DELCORA Plant Sampling					Lab ID:		2991	-13-0053079
	3201 West Front St.								
	Chester PA 19016-0000					Date Coll	ected:	11/27	/13 00:15
						Collected	By:	Clien	t
Sample Desc:	CSO Outfall (Site 2) Sun + Hancock					Date Rece	ived:	11/27	/13 14:05
				Rep	Dilutn		Test	Test	
		Result	Unit	Limit	Factor	Procedure	Date	Time	Analyst
CHEMISTRY									
CHEMISTRY COLORMETRI	c								
CHEMISTRY COLORMETRI Phosph	C orus as P, Total	0.35	mg/l	.05	1	SM 4500P-E	12/02	11:15	ALD
CHEMISTRY COLORMETRI Phosph NITROGENS	C orus as P, Total	0.35	mg/l	.05	1	SM 4500P-E	12/02	11:15	ALD
CHEMISTRY COLORMETRI Phosph NITROGENS Nitrog	C orus as P, Total en, Ammonia	0.35	mg∕l mg∕l	.05 .1	1	SM 4500P-E D6919-03	12/02 11/27	11:15 17:37	ALD JCL
CHEMISTRY COLORMETRI Phosph NITROGENS Nitrog OTHER	C orus as P, Total en, Ammonia	0.35 0.2	mg/l mg/l	.05 .1	1	SM 4500P-E D6919-03	12/02 11/27	11:15 17:37	ALD JCL
CHEMISTRY COLORMETRI Phosph NITROGENS Nitrog OTHER Bioche	C orus as P, Total en, Ammonia mical Oxygen Demand	0.35 0.2 13	mg/l mg/l mg/l	.05 .1 2	1 1 1	SM 4500P-E D6919-03 SM 5210B	12/02 11/27 11/27	11:15 17:37 16:00	ALD JCL EMW
CHEMISTRY COLORMETRI Phosph NITROGENS Nitrog OTHER Bioche RESIDUES	C orus as P, Total en, Ammonia mical Oxygen Demand	0.35 0.2 13	mg/l mg/l mg/l	.05 .1 2	1 1 1	SM 4500P-E D6919-03 SM 5210B	12/02 11/27 11/27	11:15 17:37 16:00	ALD JCL EMW

Distribution of Reports:

Reviewed and Approved by:

ala Barbara Coyle

Laboratory Director

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Attention:	Michael Krause					Date of R	eport:	12/06	/13
Reported To:	DELCORA Plant Sampling					Lab ID:		2991	-13-0053080
	3201 West Front St.								
	Chester PA 19016-0000					Date Coll	ected:	11/27	/13 00:30
						Collected	By:	Clien	t
Sample Desc:	CSO Outfall (Site 3) 2nd + Dock (CPS)				Date Rece	ived:	11/27	/13 14:05
				Rep	Dilutn		Test	Test	
		Result	Unit	Limit	Factor	Procedure	Date	Time	Analyst
CHEMISTRY									
COLORMETRI	c								
Phosph	orus as P, Total	1.32	mg/l	.05	1	SM 4500P-E	12/02	11:15	ALD
NITROGENS									
Nitrog	en, Ammonia	2.1	mg/l	.1	1	D6919-03	11/27	17:37	JCL
OTHER									
Bioche	mical Oxygen Demand	65	mg/l	2	1	SM 5210B	11/27	16:00	EMW
RESIDUES							· · · ·		
Solida	, Total Suspended	204	mg/l	1	1	SM 2540D	12/03	08:40	тмн

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Reviewed and Approved by: hava,

Barbara Coyle Laboratory Director

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SOCIATES, INC. Ddy Project Leader: BRC No: 211349 Falls	Time (hours): Bottle Prep by: ipt Temp: 5 Deg C. If Temp Unacceptable, On Ice? Y N Approved By: Matting Unacceptable, On Ice? Y N	A - 1 X L BOD/TSS P W/ Cool to 6 C; B - 1 X Pt NH3/F04 P W/ H2SO4 (pH<2); A - 1 X Pt NH3/F04 P W/ H2SO4 (pH<2); A - 1 X 402 FECHL P W/ H2SO4 (pH<2); Matrix: ww Date: <u>Date: <u>Dof</u> B - 1 X L BOD/TSS P W/ Cool to 6 C; B - 1 X Pt NH3/F04 P W/ H2SO4 (pH<2); C - 1 X Pt NH3/F04 P W/ H2SO4 (pH<2);</u>	Matrix: ww Date: Hby//3 Time: 2030 A - 1 X L BOD/TSS P w/ Cool to 6 C; B - 1 X Pt NH3/P04 P w/ H2S04 (PH<2); C - 1 X for FEAN P w/ Btesile/Na2S203)	Received for laboratory by: Aufurd Junitadu
M. J. REIDER ASS Chain of Custo rder: 005523 rder Description: Annual CSO Outf Remarks:	Total Sampling 7 Laboratory Recei (Site 1) /474 1 /RoJf R	(Site 2) Sun + Haucock	(Site 3) 200 + Dock (CNS	Received by: futur
8:15:57 AM 2991 Work On Work On Wichael Krause Work O DELCORA Plant Sampling	3201 West Front St. Chester PA 19016-0000 610.876.5523 Ext: 218 CST 1 Desc: CSO Outfall	tss, po4-p, bod, to 2 Desc: CSO Outfall tss, po4-p, bod, to	3 Desc: CSO Outfall tss, po4-p, bod, E	pa by: M. R.
brc 12/31/12 Account: Customer: Address:	Phone: Samplers: ========	530 ^{7 % 13-n} , ^{Sample No:} 530 ^{7 % 13-n} ,	Samile No: 53 Shi3-n,	Relinquish

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100 UK 10 UK

A DATA STREET, AND A DATA

9 3

Sample entered by: 05M Time: //905 Date: 11/27/13 Time: 1020 Date: 11/27/13

	Analyst	Date	Time		
Setup & Sample Date	MK	11/27/2013	2:40 AM		
Read	MK	11/28/2013	2:00 AM		
14th & Crozer					
Dilutions	Blank 1	5tntc	1tntc	0.5tntc	0.1
Raw Count (CFU)	0	tntc	tntc	tntc	190
Actual Density (CFU/100mL)		Alm Street	and the second	an week to a	190000
Meets Target (20-40 CFU)?		Above	Above	Above	Above
Results that Meet Target					
Target Results Count/100mL		1.2.1.2.1.2.1		1.1.1	
Average (CFU/100mL)	190,000				

	Analyst	Date	Time		
Setup & Sample Date	MK	11/27/2013	2:40 AM		
Read	MK	11/28/2013	2:00 AM		
Sun & Hancock					
Dilutions	Blank 1	5tntc	1tntc	0.5tntc	0.1
Raw Count (CFU)	0	tntc	tntc	tntc	150
Actual Density (CFU/100mL)					150000
Meets Target (20-40 CFU)?		Above	Above	Above	Above
Results that Meet Target			-		
Target Results Count/100mL		in the line in			
Average (CFU/100mL)	150,000				

Analyst	Date	Time		
MK	11/27/2013	2:40 AM		
MK	11/28/2013	2:00 AM		
		1		
Blank 1	5tntc	1tntc	0.5tntc	0.1
	tntc	tntc	tntc	toto
				unco
	Above	Above	Above	Above
				1.5010
			10.0	
1. U.S		>	200.000	
	Analyst MK MK Blank 1	Analyst Date MK 11/27/2013 MK 11/28/2013 Blank 1 5tntc Blank 1 5tntc	Analyst Date Time MK 11/27/2013 2:40 AM MK 11/28/2013 2:00 AM Blank 1 5tntc 1tntc Above Above Above Above Above Above	Analyst Date Time MK 11/27/2013 2:40 AM MK 11/28/2013 2:00 AM Blank 1 5tntc 1tntc 0.5tntc Blank 1 5tntc 1tntc tntc Above Above Above Above Above Above Above > 200,000

	Analyst	Date	Time		
Setup & Sample Date			1		
Read	the second se				
Spring Hill Farm					
Dilutions	Blank 1	125	75	25	5
Raw Count (CFU)		Contraction of the		and the second secon	1 2 2 12
Actual Density (CFU/100mL)		12 . S	No. 1		
Meets Target (20-40 CFU)?				1.1	
Results that Meet Target		they have be		The second second	
Target Results Count/100mL			10.000		
Average (CFU/100mL)	1121-12421				

	Analyst	Date	Time
Setup & Sample Date	in the second		
Read			Constant Congrad

ATTACHMENT F

Laboratory Data for Additional Sampling of the CSO Outfalls





NELAP Certifications: NJ PA010 , NY 11759 , PA 22-293 DoD ELAP: A2LA 0818.01 State Certifications: DE ID 11 , MA PA0102 , MD 128 , VA 460157 , WV 343

December 3, 2015

Ms. Irene Fitzgerald DELCORA P.O. Box 999 Chester, PA 19016

Certificate of Analysis

Project Name:	2015-LOWER DELAWARE TESTING	Workorder:	2107040
Purchase Order:		Workorder ID:	CSO WW LTCP

Dear Ms. Fitzgerald:

Enclosed are the analytical results for samples received by the laboratory on Tuesday, November 10, 2015.

The ALS Environmental laboratory in Middletown, Pennsylvania is a National Environmental Laboratory Accreditation Program (NELAP) accredited laboratory and as such, certifies that all applicable test results meet the requirements of NELAP.

If you have any questions regarding this certificate of analysis, please contact Mr. Brad W Kintzer (Project Coordinator) at (717) 944-5541.

Analyses were performed according to our laboratory's NELAP-approved quality assurance program and any applicable state requirements. The test results meet requirements of the current NELAP standards or state requirements, where applicable. For a specific list of accredited analytes, refer to the certifications section of the ALS website at www.alsglobal.com/en/Our-Services/Life-Sciences/Environmental/Downloads.

This laboratory report may not be reproduced, except in full, without the written approval of ALS Environmental.

ALS Spring City: 10 Riverside Drive, Spring City, PA 19475 610-948-4903

CC: Mr. Ray Rios , Mr. Mike Krause

This page is included as part of the Analytical Report and must be retained as a permanent record thereof.

Mr. Brad W Kintzer Project Coordinator

ALS Environmental Laboratory Locations Across North America





NELAP Certifications: NJ PA010 , NY 11759 , PA 22-293 DoD ELAP: A2LA 0818.01 State Certifications: DE ID 11 , MA PA0102 , MD 128 , VA 460157 , WV 343

SAMPLE SUMMARY

Workorder: 2107040 CSO WW LTCP

Lab ID	Sample ID	Matrix	Date Collected	Date Received	Collected By
2107040001	CPS/EPS1 (74/26)	Water	11/10/2015 05:00	11/10/2015 12:05	Collected by Client

Notes

- -- Samples collected by ALS personnel are done so in accordance with the procedures set forth in the ALS Field Sampling Plan (20 Field Services Sampling Plan).
- -- All Waste Water analyses comply with methodology requirements of 40 CFR Part 136.
- -- All Drinking Water analyses comply with methodology requirements of 40 CFR Part 141.
- -- Unless otherwise noted, all quantitative results for soils are reported on a dry weight basis.
- -- The Chain of Custody document is included as part of this report.
- -- All Library Search analytes should be regarded as tentative identifications based on the presumptive evidence of the mass spectra. Concentrations reported are estimated values.
- -- Parameters identified as "analyze immediately" require analysis within 15 minutes of collection. Any "analyze immediately" parameters not listed under the header "Field Parameters" are preformed in the laboratory and are therefore analyzed out of hold time.
- -- Method references listed on this report beginning with the prefix "S" followed by a method number (such as S2310B-97)
- refer to methods from "Standard Methods for the Examination of Water and Wastewater".

Standard Acronyms/Flags

- J Indicates an estimated value between the Method Detection Limit (MDL) and the Practical Quantitation Limit (PQL) for the analyte
- U Indicates that the analyte was Not Detected (ND)
- N Indicates presumptive evidence of the presence of a compound
- MDL Method Detection Limit
- PQL Practical Quantitation Limit
- RDL Reporting Detection Limit
- ND Not Detected indicates that the analyte was Not Detected at the RDL
- Cntr Analysis was performed using this container
- RegLmt Regulatory Limit
- LCS Laboratory Control Sample
- MS Matrix Spike
- MSD Matrix Spike Duplicate
- DUP Sample Duplicate
- %Rec Percent Recovery
- RPD Relative Percent Difference
- LOD DoD Limit of Detection
- LOQ DoD Limit of Quantitation
- DL DoD Detection Limit
- I Indicates reported value is greater than or equal to the Method Detection Limit (MDL) but less than the Report Detection Limit (RDL)
- (S) Surrogate Compound
- NC Not Calculated
- * Result outside of QC limits

ALS Environmental Laboratory Locations Across North America





NELAP Certifications: NJ PA010 , NY 11759 , PA 22-293 DoD ELAP: A2LA 0818.01 State Certifications: DE ID 11 , MA PA0102 , MD 128 , VA 460157 , WV 343

PROJECT SUMMARY

Workorder: 2107040 CSO WW LTCP

Workorder Comments

See attached subcontracted radiological results from ALS-Ft. Collins. VLF 12/1/15

Sample Comments

Lab ID: 2107040001

Sample ID: CPS/EPS1 (74/26)

Sample Type: SAMPLE

MBAS calculated as LAS molecular weight 342 g/mol.

The reporting limits for GCMS volatile analytes were raised due to the dilution of the sample caused by matrix.

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ANALYTICAL RESULTS

Workorder: 2107040 CSO WW LTCP

Lab ID: 2107040001 Sample ID: CPS/EPS1 (74	/26)				Date Collected: Date Received:	11/10/2015 05:00 11/10/2015 12:05	Matrix: W	ater	
Parameters	Results	Flag	Units	RDL	Method	Prepared By	Analyzed	Ву	Cntr
VOLATILE ORGANICS									
Benzene	ND		ug/L	5.0	EPA 624		11/11/15 06:32	CJG	R
Bromodichloromethane	ND		ug/L	5.0	EPA 624		11/11/15 06:32	CJG	R
Chlorodibromomethane	ND		ug/L	5.0	EPA 624		11/11/15 06:32	CJG	R
Chloroform	9.0		ug/L	5.0	EPA 624		11/11/15 06:32	CJG	R
Ethylbenzene	ND		ug/L	5.0	EPA 624		11/11/15 06:32	CJG	R
Methyl t-Butyl Ether	ND		ug/L	5.0	EPA 624		11/11/15 06:32	CJG	R
Methylene Chloride	ND		ug/L	5.0	EPA 624		11/11/15 06:32	CJG	R
Tetrachloroethene	ND		ug/L	5.0	EPA 624		11/11/15 06:32	CJG	R
Toluene	ND		ug/L	5.0	EPA 624		11/11/15 06:32	CJG	R
Total Xylenes	ND		ug/L	15.0	EPA 624		11/11/15 06:32	CJG	R
Surrogate Recoveries	Results	Flag	Units	Limits	Method	Prepared By	Analyzed	By	Cntr
1,2-Dichloroethane-d4 (S)	93.5		%	72 - 142	EPA 624		11/11/15 06:32	CJG	R
4-Bromofluorobenzene (S)	89.7		%	73 - 119	EPA 624		11/11/15 06:32	CJG	R
Dibromofluoromethane (S)	87.5		%	74 - 132	EPA 624		11/11/15 06:32	CJG	R
Toluene-d8 (S)	88.8		%	75 - 133	EPA 624		11/11/15 06:32	CJG	R
SEMIVOLATILES									
Benzo(a)anthracene	ND		ug/L	1.4	EPA 625	11/16/15 LEH	11/17/15 04:41	DHF	Т
Chrysene	ND		ug/L	1.4	EPA 625	11/16/15 LEH	11/17/15 04:41	DHF	Т
bis(2-Ethylhexyl)phthalate	8.5		ug/L	2.8	EPA 625	11/16/15 LEH	11/17/15 04:41	DHF	Т
N-Nitroso-di-n-propylamine	ND		ug/L	2.8	EPA 625	11/16/15 LEH	11/17/15 04:41	DHF	Т
Phenanthrene	ND		ug/L	1.4	EPA 625	11/16/15 LEH	11/17/15 04:41	DHF	Т
Surrogate Recoveries	Results	Flag	Units	Limits	Method	Prepared By	Analyzed	By	Cntr
2,4,6-Tribromophenol (S)	98.7		%	38 - 134	EPA 625	11/16/15 LEH	11/17/15 04:41	DHF	Т
2-Fluorobiphenyl (S)	84.7		%	37 - 113	EPA 625	11/16/15 LEH	11/17/15 04:41	DHF	Т
2-Fluorophenol (S)	44		%	17 - 73	EPA 625	11/16/15 LEH	11/17/15 04:41	DHF	Т
Nitrobenzene-d5 (S)	73.6		%	37 - 124	EPA 625	11/16/15 LEH	11/17/15 04:41	DHF	Т
Phenol-d5 (S)	29.8		%	11 - 53	EPA 625	11/16/15 LEH	11/17/15 04:41	DHF	Т
Terphenyl-d14 (S)	86.3		%	33 - 125	EPA 625	11/16/15 LEH	11/17/15 04:41	DHF	Т
Pesticides and PCBs									
Dieldrin	0.024		ug/L	0.019	EPA 608	11/14/15 GEC	11/17/15 20:35	RWS	V
Total Polychlorinated Biphenyl	Ι		ug/L		EPA 608	11/14/15 GEC	11/17/15 20:35	RWS	V
Aroclor-1016	ND		ug/L	0.46	EPA 608	11/14/15 GEC	11/17/15 20:35	RWS	V
Aroclor-1221	ND		ug/L	0.46	EPA 608	11/14/15 GEC	11/17/15 20:35	RWS	V
Aroclor-1232	ND		ug/L	0.46	EPA 608	11/14/15 GEC	11/17/15 20:35	RWS	V
Aroclor-1242	ND		ug/L	0.46	EPA 608	11/14/15 GEC	11/17/15 20:35	RWS	V

ALS Environmental Laboratory Locations Across North America




NELAP Certifications: NJ PA010 , NY 11759 , PA 22-293 DoD ELAP: A2LA 0818.01 State Certifications: DE ID 11 , MA PA0102 , MD 128 , VA 460157 , WV 343

ANALYTICAL RESULTS

Workorder: 2107040 CSO WW LTCP

Lab ID: Sample ID:	2107040001 CPS/EPS1 (74/2	26)				Date Collected: 1 ⁻ Date Received: 1 ⁻	1/10/2015 05:00 1/10/2015 12:05	Matrix: W	ater	
Parameters		Results	Flag	Units	RDL	Method	Prepared By	Analyzed	Ву	Cntr
Aroclor-1248		ND		ug/L	0.46	EPA 608	11/14/15 GEC	11/17/15 20:35	RWS	V
Aroclor-1254		ND		ug/L	0.46	EPA 608	11/14/15 GEC	11/17/15 20:35	RWS	V
Aroclor-1260		ND		ug/L	0.46	EPA 608	11/14/15 GEC	11/17/15 20:35	RWS	V
Surrogate Rec	overies	Results	Flag	Units	Limits	Method	Prepared By	Analyzed	By	Cntr
Decachlorobipl	henyls (S)	36		%	30 - 150	EPA 608	11/14/15 GEC	11/17/15 20:35	RWS	V
Tetrachloro-m-	xylene (S)	46.9		%	36 - 112	EPA 608	11/14/15 GEC	11/17/15 20:35	RWS	V
WET CHEMIS	TRY									
Ammonia-N		5.93		mg/L	0.100	D6919-09		11/12/15 17:43	JAM	А
Biochemical O Demand	xygen	126		mg/L	2.0	S5210B-11		11/11/15 16:30	GMM	В
Carbonaceous	BOD	76.9	1	mg/L	2.0	S5210B-11		11/11/15 06:30	GMM	В
Carbonaceous	BOD 20 Day	101		mg/L	2.0	S5210B-11		11/11/15 11:20	RMM	В
Cyanide, Total		ND		mg/L	0.0050	EPA 335.4	11/11/15 MMA	11/13/15 09:53	SYB	F
Dissolved Oxy	gen	ND		mg/L	1.0	S4500OG-01		11/16/15 08:00	RMM	В
Halogen, Total (TOX)	Organic	41.8		ug/L	20.0	SW846 9020B	3	11/18/15 13:29	PAG	Μ
Hexavalent Ch	romium	ND		mg/L	0.010	S3500CrB-09		11/10/15 23:37	MSA	В
Nitrate-N		ND		mg/L	0.20	EPA 300.0		11/11/15 17:20	FSC	В
Nitrite-N		ND		mg/L	0.20	EPA 300.0		11/11/15 17:20	FSC	В
Odor		20		T.O.N.	1	S2150B-97		11/10/15 23:36	MSA	L
Oil/Grease Hex Extractable	kane	12.0		mg/L	2.2	EPA 1664B		11/15/15 13:20	AT	G
Oil/Grease Sili	ca Gel Treated	ND		mg/L	2.2	EPA 1664B		11/15/15 13:20	AT	G
Phenolics		0.010		mg/L	0.005	EPA 420.4	11/19/15 AMH	11/25/15 15:32	AMH	I
Phosphorus, To	otal	2.4		mg/L	0.10	EPA 365.1	11/16/15 NV	11/20/15 13:05	C_W	А
Sulfide, Total		ND		mg/L	1.0	S4500S2F-00	1	11/12/15 14:30	THB	К
Surfactants (M	BAS)	0.357		mg/L	0.025	S5540C-00		11/11/15 03:30	MBW	J
Total Dissolved	d Solids	173		mg/L	5	S2540C-11		11/12/15 12:42	ML	В
Total Kjeldahl N	Nitrogen	13.4		mg/L	4.0	S4500NH3G-1	1 11/11/15 J1H	11/11/15 13:31	DRM	А
Total Nitrogen		13.4		mg/L	1.00	Calculation		11/22/15 15:33	NJA	А
Total Suspende	ed Solids	222		mg/L	5	S2540D-11		11/11/15 21:56	NV	В
Turbidity		69.2		NTU	0.10	S2130B-01		11/11/15 00:00	MSA	В
METALS										
Hardness		93.7		mg/L	1.7	EPA 200.7	11/11/15 JPS	11/12/15 09:58	TSS	O1
Aluminum, Tota	al	1.8		mg/L	0.040	EPA 200.8	11/12/15 JPS	11/13/15 04:07	ZMC	O2
Antimony, Tota	I	0.0014		mg/L	0.0010	EPA 200.8	11/12/15 JPS	11/13/15 04:07	ZMC	O2
Arsenic, Total		ND		mg/L	0.0015	EPA 200.8	11/12/15 JPS	11/13/15 04:07	ZMC	02

ALS Environmental Laboratory Locations Across North America





NELAP Certifications: NJ PA010 , NY 11759 , PA 22-293 DoD ELAP: A2LA 0818.01 State Certifications: DE ID 11 , MA PA0102 , MD 128 , VA 460157 , WV 343

ANALYTICAL RESULTS

Workorder: 2107040 CSO WW LTCP

Lab ID: 2107040 Sample ID: CPS/EP)001 S1 (74/26	5)				Date Collected: Date Received:	11/10/2015 05:00 11/10/2015 12:05	Matrix: W	ater	
Parameters	F	Results	Flag	Units	RDL	Method	Prepared By	Analyzed	Ву	Cntr
Cadmium, Total	١	ND		mg/L	0.00050	EPA 200.8	11/12/15 JPS	11/13/15 04:07	ZMC	02
Chromium, Total	C	0.0045		mg/L	0.0010	EPA 200.8	11/12/15 JPS	11/13/15 04:07	ZMC	O2
Copper, Total	C	0.056		mg/L	0.0025	EPA 200.8	11/12/15 JPS	11/13/15 04:07	ZMC	O2
Iron, Total	3	3.7		mg/L	0.15	EPA 200.7	11/11/15 JPS	11/12/15 09:58	TSS	O1
Lead, Total	C	0.021		mg/L	0.0010	EPA 200.8	11/12/15 JPS	11/13/15 04:07	ZMC	O2
Mercury, Total	C	0.00025		mg/L	0.00020	EPA 245.1	11/23/15 MNP	11/23/15 09:41	MNP	O3
Molybdenum, Total	C	0.0022		mg/L	0.0010	EPA 200.8	11/12/15 JPS	11/13/15 04:07	ZMC	O2
Selenium, Total	١	ND		mg/L	0.0020	EPA 200.8	11/12/15 JPS	11/13/15 04:07	ZMC	O2
Silver, Total	١	ND		mg/L	0.0010	EPA 200.8	11/12/15 JPS	11/13/15 04:07	ZMC	O2
Thallium, Total	١	ND		mg/L	0.00050	EPA 200.8	11/12/15 JPS	11/13/15 04:07	ZMC	O2
Zinc, Total	C).13		mg/L	0.0025	EPA 200.8	11/12/15 JPS	11/13/15 04:07	ZMC	O2
MICROBIOLOGY										
Enterococcus	6	68700		col/100mL	100	S9230D		11/10/15 12:14	LLJ	Q
Fecal Coliform	3	3600000	2	col/100mL	100000	S9222D-97	7	11/10/15 14:50	LLJ	Р
Sub'd to NELAP CERT	IFIED La	b								
Gross Alpha	C	0.00		pCi/L		EPA 900.0	1	11/24/15 09:30	SUB	Х
Gross Alpha Uncertainty	y +/- 1	1.10		pCi/L		EPA 900.0	1	11/24/15 09:30	SUB	Х
Gross Beta	ε	3.20		pCi/L		EPA 900.0)	11/24/15 09:30	SUB	Х
Gross Beta Uncertainty	+/- 2	2.10		pCi/L		EPA 900.0	1	11/24/15 09:30	SUB	Х

Brod W. Kiston

Mr. Brad W Kintzer Project Coordinator

ALS Environmental Laboratory Locations Across North America





NELAP Certifications: NJ PA010 , NY 11759 , PA 22-293 DoD ELAP: A2LA 0818.01 State Certifications: DE ID 11 , MA PA0102 , MD 128 , VA 460157 , WV 343

PARAMETER QUALIFIERS

Lab ID	#	Sample ID	Analytical Method	Analyte
2107040001	1	CPS/EPS1 (74/26)	S5210B-11	Carbonaceous BOD
The laboratory contro Reanalysis was not p	ol samp performe	le associated with this analysis was re ed due to holding time restrictions.	ecovered at 83% which is outside the a	acceptance limit of 86% to 114%.
2107040001	2	CPS/EPS1 (74/26)	S9222D-97	Fecal Coliform
A seals stand and a seals sea	4 4 4 4	ha Ohayun halalin matusa		

Analyte was analyzed past the 8 hour holding time.

ALS Environmental Laboratory Locations Across North America

34 Dogwi	vood Lane wn. PA 17057				CHI	AIN O	F CU:	TOD	YI ISIS	Q	J.	<u> </u>	ŏ	
Environmental	14-5541 4-1430		ALL	SHADE	D ARE/	AS MUS	I BE CO	MPLETE VS ON T	ED BY TI HE BAC	HE CLIE K.	NT /			
Client Name: DELCORA		Conta	P.	astic	plastic	plastic	plastic	plastic	plastic	glass	glass	glass	plastin	
Address: 3201 W. Front Street		Conta	e 2	1m05	ı:	500ml	500ml	120ml	120ml	٦	IL	40ml	^{1L} Coo	ler Temp: 22. Therm 10: 74/- 294
Chester-PA 19013		Photon	ative-HZs	(020	none	HN03-	none h	la2S203 h	a2S203	-9UOU	none	9000	None Noo	I Goolers: Y N Initial
Contact: Mike Krause	23			1		ANAL	YSES/M	THOD R	EQUEST					Custody Seals Present?
Phone#: 610-876-5523 x218			-	┢	F		in							(If present) Seals Intact?
Project Name#: CSO WW LTCP					_		valer							Received on Ice7+
Bill To: Same					90		/einT						8	C/Labels CompletelAccurate7
TAT X Normal-Standard TAT is 10-12	2 business days.				008	ssəu	'wn							Cont. in Good Cond.?
Rush-Subject to ALS approva	al and surcharges				'030'	abraf	inon		3				5613	Correct Containers?
Date Required: App Email? X - App	sroved By:	1		əpiji	CBO	i lejo]	ent Ch m	mojilo	snoor				j /eyd	Correct Sample Volumes?
Fax?		3	x	INS IE	'900	L 'sle	uimo	al Co	00018		į		IA 22	Headspace/Volatiles?
Sample Description/Location	Sample	9 01 (inteM	5101	cec	19M	СРИ Нөх	cer	etn3	809	625	954	Cio Cio	ier/Tracking #:
(as it will appear on the lab report)	Date Tim	Ð.	V++		Ent	er Numbe	r of Conta	iners Per	sample or	Field Res	ults Belov			Sample/COC Comments
1 CPS/ EPS1 (74/26)	1/10/15 5:00	0	Ŵ	-	2	+	-	-	-	2	2	2	1	
2		_												
3		-												
4		F												
5		F	-											
9			\vdash		-									
2						-								
8			\vdash											
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Ft. Collins, Colorado

LIMS Version: 6.794

Monday, November 30, 2015

Brad Kintzer ALS Environmental 34 Dogwood Lane Middletown, PA 17057

Re: ALS Workorder: 1511233 Project Name: Project Number: 2107040

Dear Mr. Kintzer:

One water sample was received from ALS Environmental, on 11/12/2015. The sample was scheduled for the following analysis:

Gross Alpha/Beta

The results for these analyses are contained in the enclosed reports.

The data contained in the following report have been reviewed and approved by the personnel listed below. In addition, ALS certifies that the analyses reported herein are true, complete and correct within the limits of the methods employed.

Thank you for your confidence in ALS Environmental. Should you have any questions, please call.

Sincerely,

ALS Environmental Jeff R. Kujawa Project Manager

ADDRESS 225 Commerce Drive, Fort Collins, Colorado, USA 80524 | PHONE +1 970 490 1511 | FAX +1 970 490 1522 ALS GROUP USA, CORP. Part of the ALS Laboratory Group An ALS Limited Company

www.alsglobal.com

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ALS Environmental – Fort Collins is accredited by the following accreditation bodies for various testing scopes in accordance with requirements of each accreditation body. All testing is performed under the laboratory management system, which is maintained to meet these requirement and regulations. Please contact the laboratory or accreditation body for the current scope testing parameters.

ALS Environme	ental – Fort Collins
Accreditation Body	License or Certification Number
Alaska (AK)	UST-086
Alaska (AK)	CO01099
Arizona (AZ)	AZ0742
California (CA)	06251CA
Colorado (CO)	CO01099
Connecticut (CT)	PH-0232
Florida (FL)	E87914
Idaho (ID)	CO01099
Kansas (KS)	E-10381
Kentucky (KY)	90137
L-A-B (DoD ELAP/ISO 170250)	L2257
Louisiana (LA)	05057
Maryland (MD)	285
Missouri (MO)	175
Nebraska(NE)	NE-OS-24-13
Nevada (NV)	CO000782008A
New York (NY)	12036
North Dakota (ND)	R-057
Oklahoma (OK)	1301
Pennsylvania (PA)	68-03116
Tennessee (TN)	2976
Texas (TX)	T104704241
Utah (UT)	CO01099
Washington (WA)	C1280



1511233

Gross Alpha/Beta:

The samples were analyzed for gross alpha and beta activity by gas flow proportional counting according to the current revision of SOP 724. Gross alpha results are referenced to ²⁴¹Am. Gross beta results are referenced to ⁹⁰Sr/Y.

All acceptance criteria were met.

ADDRESS 225 Commerce Drive, Fort Collins Colorado 80524 USA | PHONE +1 970 490 1511 | FAX +1 970 490 1522 ALS GROUP USA, CORP. Part of the ALS Group An ALS Limited Company

ALS

Sample Number(s) Cross-Reference Table

OrderNum: 1511233 Client Name: ALS Environmental Client Project Name: Client Project Number: 2107040 Client PO Number: 2107040

COC Number Time **Client Sample** Lab Sample Matrix Date Number Collected Number Collected 2107040001 1511233-1 WATER 10-Nov-15 5:00 Page 1 of 1 ALS Environmental -- FC Date Printed: Monday, November 30, 2015 LIMS Version: 6.794

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5 of 10

ALS

Thursday, December 03, 2015 5:25:36 PM



ALS Environmental - Fort Collins CONDITION OF SAMPLE UPON RECEIPT FORM

(ALS)	ALS DA	Workorder No:	511733		
Project Manager:	SRU SRU	Initials: SC	Date:	11-12-	5
Does this project require an	v special handling in addition to s	tandard ALS procedures?		YES	- NO
Are custody seals on shir	pping containers intact?		NONE	YES	NO
Are Custody seals on san	nple containers intact?		NONE	YES	NO
Is there a COC (Chain-of	-Custody) present or other rep	resentative documents?		(YES	NO
Are the COC and bottle l	abels complete and legible?			(YES)	NO
Is the COC in agreement containers, matrix, reque	with samples received? (IDs, o sted analyses, etc.)	dates, times, no. of samples, no	o. of	(TES)	NO
Were airbills / shipping d	locuments present and/or remo	wable?	DROP OFF	(ES)	NO
Are all aqueous samples rec	quiring preservation preserved cor	rectly? (excluding volatiles)	N/A	(B)	NO
Are all aqueous non-pres	erved samples pH 4-9?		(N/A)	YES	NO
o. Is there sufficient sample	for the requested analyses?			TES	NO
1. Were all samples placed	in the proper containers for the	e requested analyses?		(ES)	NO
2. Are all samples within he	olding times for the requested a	analyses?		ES	NO
3. Were all sample contained	ers received intact? (not broke	n or leaking, etc.)		MES	NO
4 Are all samples requiring headspace free? Size	g no headspace (VOC, GRO, R of bubble: < green pea	SK/MEE, Rx CN/S, radon)	N)	YES	NO
s. Do any water samples co	ontain sediment?	Amou	int N/A	(YES	NO
Amount of sediment:	<u>dusting</u> moderate	heavy			
Were the samples shippe	ed on ice?			YES	NO
7. Were cooler temperature	s measured at 0.1-6.0°C?	IR gun used*: #2	#4 GNLY) YES	NO
No. of custod No. of custod Acceptance Information Were external µR/hr readings ≤ tw Additional Information: PR → 15.) 154-	Temperature (°C): $A = 6$ y seals on cooler: Q al μ R/hr reading: <u>11</u> ad μ R/hr reading: <u>17</u> to times background and within DOT according to times background according to the times backg	Eptance criteria? (YES) NO / NA (1) RESPONSE TO ANY QUESTION ABO Colort.	f no, see Form 008.) DVE, EXCEPT #1 A	ND #16.	·
f applicable, was the client conta	cted? YES / NO 🐼 Contact:	61-12-15	Date/Ti		
Form 201r24.xls (06/04/2012)	*IR Gun #2: Oaktor *IR Gun #4: Oaktor	n, SN 29922500201-0066 n, SN 2372220101-0002	<u> </u>	Page 1	of_6

ALS

Page 17 of 19

SAMPLE SUMMARY REPORT

ent:	ALS Environmental					Date: 30	Nov-15
ject:	2107040					Work Order: 151	1233
nple ID:	2107040001					Lab ID: 151	1233-1
al Location:						Matrix: WA	TER
lection Date:	11/10/2015 05:00			D	P	ercent Moisture:	
alyses		Result	Qual	Limit	Units	Dilution Factor	Date Analyzed
OSS Alpha/Bet ROSS ALPHA ROSS BETA	a by GFPC	ND (+/- 1.1) 8.2 (+/- 2.1)	PAI 72 U	4 2.6 2.8	pCi/l pCi/l	Prep Date: 11/20/2015 NA NA	PrepBy: ECP 11/24/2015 09:30 11/24/2015 09:30
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SAMPLE SUMMARY REPORT

lient: roject: ample ID: egal Location: collection Date:	ALS Environmental 2107040 2107040001				Wo	Date: 30 rk Order: 15 Lab ID: 15	- <i>Nov-15</i> 11233 11233-1	
roject: ample ID: egal Location: ollection Date:	2107040 2107040001				Wo	rk Order: 15 Lab ID: 15	11233 11233-1	
ample ID: egal Location: follection Date:	2107040001					Lab ID: 15	11233-1	
egal Location: ollection Date:	11/10/2015 05:00							1
ollection Date:	11/10/2015 05:00					Matrix: W	ATER	
	11/10/2013 03:00				Percent	Moisture:		
nalyses		Result	Qual	Report Limit	Units	Dilution Factor	Da	ate Analyzed
xplanation of Q	Qualifiers							
Radiochemistry:								
or ND - Result is le:	ss than the sample specific MDC			13 - The request	ed MDC was not m	et, but the reported		
1 - Chemical Yield is	s in control at 100-110%. Quanti	tative yield is assumed.		activity is gr	eater than the repo	rted MDC.		
2 - Chemical Yield o	utside default limits.			- LCS Recovery	below lower contro	al limit.		
- DER is greater the	an Warning Limit of 1.42			- LCS Recovery	above upper contra	oi simit.		1
- Aliquot Basis is 'As	Received' while the Report Bas	is is 'Dry Weight',		- LCS, Matrix S	pike Recovery with	n control limits.		
 Aliquot Basis is 'Dr Sample density di 	ry Weight' while the Report Basi: flers by more then 15% of LCS d	s is 'As Received',		 Matrix Spike r IC - Not Calculat 	ecovery outside co	nuros annas sulle loce than 5 tim	ALC NOC	
- DER is greater the	an Control Limit	ensity.		- Analyte conce	ntration greater that	n MDC	es MDC	
- Requested MDC r	not met.			3 - Analyte conce	entration greater the	an MDC but less th	an Requested	
r - Result is less that	in requested MDC but greater th	an achieved MDC.	i	ADC.	annanan Areatel (ii	an moo oo reaa u	an requested	
norganics:								
- Result is less than	the requested reporting limit bu	t greater than the instrum	ent metho	d detection limit	(MDL).			
or ND - Indicates the	at the compound was analyzed f	or but not detected.						
- The reported value	e is estimated because of the pre	sence of interference. Ar	n explana	tory note may be	included in the nar	rative,		
 Duplicate injection Spiked sample recently 	on precision was not met.	neet enike is analyzed to		analuses when th	a matrix enika and	or eniko		
uplicate fail and the r	native sample concentration is le	ss than four times the spi	ike added	concentration.	e matrix spike and	or spike		
- Spiked recovery no	ot within control limits. An explan	atory note may be include	d in the n	arrative.				
- Duplicate analysis	(relative percent difference) not	within control limits.						
- SAR value is estim	nated as one or more analytes us	sed in the calculation were	e not dete	cted above the d	etection limit.			<u> </u>
Organics:								
J or ND - Indicates the	at the compound was analyzed f	or but not detected.						
i - Analyte is detected	in the associated method blank	as well as in the sample.	. It indica	tes probable blar	k contamination an	d warns the data u	ser.	
- Analyte concentrat	tion exceeds the upper level of th	e calibration range.	26 28	38 - 18 3 4 4 4				
- Estimated value. T	The result is less than the report	ng limit but greater than t	he instrur	nent method deta	ection limit (MDL).			
- A tentatively identif	fied compound is a suspected al	dol-condensation product						
- The analyte was di	iluted below an accurate quantita	ation level.						
- The spike recovery	is equal to or outside the contro	I criteria used,						
- The relative percent	int difference (RPD) equals or ex	seeds the control criteria.						
- A pattern resembli	ing gasoline was detected in this su	sample.						
- A pattern resembli	ing motor oil was detected in this s	samole						
- A pattern resembli	ing crude oil was detected in this	sample						
- A pattern resemblir	ng JP-4 was detected in this san	nole.						
- A pattern resemblin	ng JP-5 was detected in this san	nple.						
- Indicates that the f	uel pattern was in the heavier er	d of the retention time wit	ndow for i	the analyte of inte	rest.			
- Indicates that the fi	uel pattern was in the lighter end	of the retention time wind	dow for th	e analyte of inter	est.			
- This flag indicates	that a significant fraction of the	reported result did not res	emble the	patterns of any	of the following pet	roleum hydrocarbo	n products:	
gasoline								
JP-8 diesel								
mineral spirits								
motor oil								
Chaddeed column								
Stoddard solvent								
Stoddard solvent bunker C								
Stoddard solvent bunker C								
Stoddard solvent bunker C								
Stoddard solvent bunker C								

LIMS Version: 6,794

ALS

Client: ALS Environmental Work Order: 1511233 Project: 2107040

Date: 11/30/2015 3:49

QC BATCH REPORT

LCS Sample ID: AB151120-1 Client ID: Run ID: AB151120-1A Units: pCI/I Analysis Date: 11/24/2015 09:30 Prep Date: 11/20/2015 DF: NA Analysis Date: 11/24/2015 09:30 DF: NA Analysis Date: 11/24/2015 09:30 DF: NA Control Decision DER Level Ref DER Limit Qu GROSS ALPHA 248 (+/-41) 3 225.4 110 70-130 P. GROSS BETA 201 (+/-33) 5 203.9 98.7 70-130 P. MB Sample ID: AB151120-1 Units: pCI/I Analysis Date: 11/24/2015 15:01 Client ID: Run ID: AB151120-1A Prep Date: 11/20/2015 DF: NA Analyse Result ReportLimit SPK Val SPK Ref Control Decision DER Analyse Result ReportLimit SPK Val Prep Date: 11/20/2015 DF: NA Analyse Result ReportLimit SPK Val Value %REC Control Decision DER Level Ref DER Limit Qu GROSS ALPHA ND 0.94 VI GROSS BETA ND 1.08 VI The following samples were analyzed in this batch: 1511233-1	Batch ID:	AB151120-1-5 In	strument ID LB	4100-C		Method: G	ross Alph	a/Beta by	GFPC				
Analyte Result ReportLimit SPK Val Value %Ref Control Decision DER DER Limit Que GROSS ALPHA 248 (+/-41) 3 225.4 110 70-130 P P GROSS BETA 201 (+/-33) 5 203.9 98.7 70-130 P P MB Sample ID: AB151120-1 Units: pCI/I Analysis Date: 11/24/2015 15:01 P Client ID: Run ID: AB151120-1A Prep Date: 11/20/2015 DF: NA Analyte Result ReportLimit SPK Val SPK Ref Control Decision DER DER DER DER Limit Que GROSS ALPHA ND 0.94 SPK Val SPK Ref Control Decision DER DER Limit< Que GROSS BETA ND 0.94 U U GROSS BETA ND 1.08 U U The following samples were analyzed in this batch: I511233-1 U	LCS Client ID:	Sample ID: AB151120-1	Run II): AB151120-	1A	Ur	nits: pCi/l	Pi	Analysi rep Date: 11/2	is Date: 0/2015	11/24/20	015 09:3	3
Arlayie Result Report Limit Or R Via Junco P GROSS ALPHA 248 (+/-41) 3 225.4 110 70-130 P GROSS BETA 201 (+/-33) 5 203.9 98.7 70-130 P,M MB Sample ID: AB151120-1 Units: pCl/I Analysis Date: 11/124/2015 15:01 DF: NA Client ID: Result ReportLimit SPK Ref Control Decision DER Analyte Result ReportLimit SPK Val Value %REC Limit Level Ref DER GROSS ALPHA ND 0.94 U U U U U GROSS BETA ND 1.08 U U U U	Anabda		Pacult	Report imit	SPK Val	SPK Ref Value	%PEC	Control Limit	Decision Level	DER Ref	DER	DER Limit	Qual
GROSS ALPHA 248 (r/-41) 3 225.4 110 70-130 P GROSS BETA 201 (r/-33) 5 203.9 98.7 70-130 P.M MB Sample ID: AB151120-1 Units: pCI/I Analysis Date: 11/24/2015 DF: NA Client ID: Run ID: AB151120-1A Prep Date: 11/20/2015 DF: NA Analyte Result ReportLimit SPK Ref Control Decision DER DER Analyte Result ReportLimit SPK Val Value %REC Control Decision DER DER GROSS ALPHA ND 0.94 U U U U U GROSS BETA ND 1.08 U U U U U The following samples were analyzed in this batch: 1511233-1 1 1 1 1 1	Analyte		result	reporterint	OF IC Val		ARCO						
MB Sample ID: AB151120-1 Units: pCI/I Analysis Date: 11/24/2015 15:01 Client ID: Run ID: AB151120-1A Prep Date: 11/20/2015 DF: NA Analyte Result ReportLimit SPK Ref Control Decision DER Analyte Result ReportLimit SPK Val Value %REC Limit Level Ref DER GROSS ALPHA ND 0.94 U U GROSS BETA ND 1.08 U	GROSS ALP GROSS BET	РНА ТА	248 (+/-41) 201 (+/-33)	3	225.4 203.9		110 98.7	70-130 70-130					P,M3
Client ID: Run ID: AB151120-1A Prep Date: 11/20/2015 DF: NA Analyte Result ReportLimit SPK Val Control Decision DER DER Analyte Result ReportLimit SPK Val Value %REC Control Decision DER DER Limit Qui GROSS ALPHA ND 0.94 U U GROSS BETA ND 1.08 U U The following samples were analyzed in this batch: 1511233-1 U	МВ	Sample ID: AB151120-1				Ur	nits: pCI/I		Analys	is Date:	11/24/20	15 15:0	1
Analyte Result ReportLimit SPK Ref Control Decision DER DER GROSS ALPHA ND 0.94 U U U U U GROSS BETA ND 1.08 U U The following samples were analyzed in this batch: 1511233-1 U	Client ID:		Run II	: AB151120-	1A			P	rep Date: 11/2	0/2015	DF	NA	
GROSS ALPHA ND 0.94 U GROSS BETA ND 1.08 U The following samples were analyzed in this batch: 1511233-1 U	Analyte		Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	Decision Level	DER Ref	DER	DER Limit	Qual
GROSS BETA ND 1.08 U The following samples were analyzed in this batch: 1511233-1 1	GROSS ALP	РНА	ND	0.94									Ū
The following samples were analyzed in this batch: 1511233-1	GROSS BET	TA	ND	1.08		0.000							υ
	The follow	wing samples were analyzed	in this batch:	15112	233-1								

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ALS Environmental -- FC LIMS Version: 6.794 QC Page: 1 of 1





NELAP Certifications: NJ PA010 , NY 11759 , PA 22-293 DoD ELAP: A2LA 0818.01 State Certifications: DE ID 11 , MA PA0102 , MD 128 , VA 460157 , WV 343

December 16, 2015

Ms. Irene Fitzgerald DELCORA P.O. Box 999 Chester, PA 19016

Certificate of Analysis

Project Name:	2015-LOWER DELAWARE TESTING	Workorder:	2109302
Purchase Order:		Workorder ID:	2015-LOWER DELAWARE TESTING

Dear Ms. Fitzgerald:

Enclosed are the analytical results for samples received by the laboratory on Thursday, November 19, 2015.

The ALS Environmental laboratory in Middletown, Pennsylvania is a National Environmental Laboratory Accreditation Program (NELAP) accredited laboratory and as such, certifies that all applicable test results meet the requirements of NELAP.

If you have any questions regarding this certificate of analysis, please contact Mr. Brad W Kintzer (Project Coordinator) at (717) 944-5541.

Analyses were performed according to our laboratory's NELAP-approved quality assurance program and any applicable state requirements. The test results meet requirements of the current NELAP standards or state requirements, where applicable. For a specific list of accredited analytes, refer to the certifications section of the ALS website at www.alsglobal.com/en/Our-Services/Life-Sciences/Environmental/Downloads.

This laboratory report may not be reproduced, except in full, without the written approval of ALS Environmental.

ALS Spring City: 10 Riverside Drive, Spring City, PA 19475 610-948-4903

CC: Mr. Ray Rios , Mr. Mike Krause

This page is included as part of the Analytical Report and must be retained as a permanent record thereof.

Mr. Brad W Kintzer Project Coordinator

ALS Environmental Laboratory Locations Across North America





NELAP Certifications: NJ PA010 , NY 11759 , PA 22-293 DoD ELAP: A2LA 0818.01 State Certifications: DE ID 11 , MA PA0102 , MD 128 , VA 460157 , WV 343

SAMPLE SUMMARY

Workorder: 2109302 2015-LOWER DELAWARE TESTING

Lab ID	Sample ID	Matrix	Date Collected	Date Received	Collected By
2109302001	CPS/EPS1 (72/28)	Water	11/19/2015 15:20	11/19/2015 21:10	Collected by Client
2109302002	CPS1	Water	11/19/2015 15:20	11/19/2015 21:10	Collected by Client
2109302003	14th & Crozer	Water	11/19/2015 15:10	11/19/2015 21:10	Collected by Client
2109302004	Sun & Hancock	Water	11/19/2015 16:10	11/19/2015 21:10	Collected by Client

Notes

-- Samples collected by ALS personnel are done so in accordance with the procedures set forth in the ALS Field Sampling Plan (20 -Field Services Sampling Plan).

-- All Waste Water analyses comply with methodology requirements of 40 CFR Part 136.

-- All Drinking Water analyses comply with methodology requirements of 40 CFR Part 141.

-- Unless otherwise noted, all quantitative results for soils are reported on a dry weight basis.

-- The Chain of Custody document is included as part of this report.

-- All Library Search analytes should be regarded as tentative identifications based on the presumptive evidence of the mass spectra. Concentrations reported are estimated values.

-- Parameters identified as "analyze immediately" require analysis within 15 minutes of collection. Any "analyze immediately" parameters not listed under the header "Field Parameters" are preformed in the laboratory and are therefore analyzed out of hold time.

-- Method references listed on this report beginning with the prefix "S" followed by a method number (such as S2310B-97)

refer to methods from "Standard Methods for the Examination of Water and Wastewater".

Standard Acronyms/Flags

- J Indicates an estimated value between the Method Detection Limit (MDL) and the Practical Quantitation Limit (PQL) for the analyte
- U Indicates that the analyte was Not Detected (ND)
- N Indicates presumptive evidence of the presence of a compound
- MDL Method Detection Limit
- PQL Practical Quantitation Limit
- RDL Reporting Detection Limit
- ND Not Detected indicates that the analyte was Not Detected at the RDL
- Cntr Analysis was performed using this container
- RegLmt Regulatory Limit
- LCS Laboratory Control Sample
- MS Matrix Spike
- MSD Matrix Spike Duplicate
- DUP Sample Duplicate
- %Rec Percent Recovery
- RPD Relative Percent Difference
- LOD DoD Limit of Detection
- LOQ DoD Limit of Quantitation
- DL DoD Detection Limit
- I Indicates reported value is greater than or equal to the Method Detection Limit (MDL) but less than the Report Detection Limit (RDL)
- (S) Surrogate Compound
- NC Not Calculated
- * Result outside of QC limits

ALS Environmental Laboratory Locations Across North America





NELAP Certifications: NJ PA010, NY 11759, PA 22-293 DoD ELAP: A2LA 0818.01 State Certifications: DE ID 11 , MA PA0102 , MD 128 , VA 460157 , WV 343

PROJECT SUMMARY

Workorder: 2109302 2015-LOWER DELAWARE TESTING

Workorder Comments

See attached subcontracted radiological results from ALS-Ft. Collins. VLF

Sample Comments

Lab	ID: 2109302001	Sample ID: CPS/EPS1 (72/28)	Sample Type: SAMPLE
	MBAS calculated as LAS mo	blecular weight 342 g/mol.	
	The reporting limits for GCM	S volatile analytes were raised due to the	dilution of the sample caused by matrix.
Lab	ID: 2109302002	Sample ID: CPS1	Sample Type: SAMPLE
	MBAS calculated as LAS mo	blecular weight 342 g/mol.	
	The reporting limits for GCM	S volatile analytes were raised due to the	dilution of the sample caused by matrix.
Lab	ID: 2109302003	Sample ID: 14th	Sample Type: SAMPLE
	MBAS calculated as LAS mo	blecular weight 342 g/mol.	
	The reporting limits for GCM	S volatile analytes were raised due to the	dilution of the sample caused by matrix.
Lab	ID: 2109302004	Sample ID: Sun	Sample Type: SAMPLE
	MBAS calculated as LAS mo	blecular weight 342 g/mol.	

The reporting limits for GCMS volatile analytes were raised due to the dilution of the sample caused by matrix.

ALS Environmental Laboratory Locations Across North America





NELAP Certifications: NJ PA010 , NY 11759 , PA 22-293 DoD ELAP: A2LA 0818.01 State Certifications: DE ID 11 , MA PA0102 , MD 128 , VA 460157 , WV 343

ANALYTICAL RESULTS

Workorder: 2109302 2015-LOWER DELAWARE TESTING

Lab ID: 2109302001 Sample ID: CPS/EPS1 (7	72/28)				Date Collected: Date Received:	11/19/2015 15:20 11/19/2015 21:10	Matrix: W	ater	
Parameters	Results	Flag	Units	RDL	Method	Prepared By	Analyzed	Ву	Cntr
VOLATILE ORGANICS									
Benzene	ND		ug/L	5.0	EPA 624		11/21/15 20:54	CJG	S
Bromodichloromethane	ND		ug/L	5.0	EPA 624		11/21/15 20:54	CJG	S
Chlorodibromomethane	ND		ug/L	5.0	EPA 624		11/21/15 20:54	CJG	S
Chloroform	ND		ug/L	5.0	EPA 624		11/21/15 20:54	CJG	S
Ethylbenzene	ND		ug/L	5.0	EPA 624		11/21/15 20:54	CJG	S
Methyl t-Butyl Ether	ND		ug/L	5.0	EPA 624		11/21/15 20:54	CJG	S
Methylene Chloride	ND		ug/L	5.0	EPA 624		11/21/15 20:54	CJG	S
Tetrachloroethene	ND		ug/L	5.0	EPA 624		11/21/15 20:54	CJG	S
Toluene	ND		ug/L	5.0	EPA 624		11/21/15 20:54	CJG	S
Total Xylenes	ND		ug/L	15.0	EPA 624		11/21/15 20:54	CJG	S
Surrogate Recoveries	Results	Flag	Units	Limits	Method	Prepared By	Analyzed	By	Cntr
1,2-Dichloroethane-d4 (S)	96.4		%	72 - 142	EPA 624		11/21/15 20:54	CJG	S
4-Bromofluorobenzene (S)	110		%	73 - 119	EPA 624		11/21/15 20:54	CJG	S
Dibromofluoromethane (S)	88.4		%	74 - 132	EPA 624		11/21/15 20:54	CJG	S
Toluene-d8 (S)	98.8		%	75 - 133	EPA 624		11/21/15 20:54	CJG	S
SEMIVOLATILES									
Benzo(a)anthracene	ND		ug/L	1.4	EPA 625	11/25/15 VLM	11/29/15 22:53	GEC	U
Chrysene	ND		ug/L	1.4	EPA 625	11/25/15 VLM	11/29/15 22:53	GEC	U
bis(2-Ethylhexyl)phthalate	20.3		ug/L	2.8	EPA 625	11/25/15 VLM	11/29/15 22:53	GEC	U
N-Nitroso-di-n-propylamine	ND		ug/L	2.8	EPA 625	11/25/15 VLM	11/29/15 22:53	GEC	U
Phenanthrene	ND		ug/L	1.4	EPA 625	11/25/15 VLM	11/29/15 22:53	GEC	U
Surrogate Recoveries	Results	Flag	Units	Limits	Method	Prepared By	Analyzed	By	Cntr
2,4,6-Tribromophenol (S)	95.9		%	47 - 128	EPA 625	11/25/15 VLM	11/29/15 22:53	GEC	U
2-Fluorobiphenyl (S)	74.4		%	52 - 118	EPA 625	11/25/15 VLM	11/29/15 22:53	GEC	U
2-Fluorophenol (S)	38.9		%	20 - 87	EPA 625	11/25/15 VLM	11/29/15 22:53	GEC	U
Nitrobenzene-d5 (S)	84.5		%	27 - 139	EPA 625	11/25/15 VLM	11/29/15 22:53	GEC	U
Phenol-d5 (S)	27		%	10 - 81	EPA 625	11/25/15 VLM	11/29/15 22:53	GEC	U
Terphenyl-d14 (S)	71.2		%	46 - 133	EPA 625	11/25/15 VLM	11/29/15 22:53	GEC	U
Pesticides and PCBs									
Dieldrin	0.022		ug/L	0.019	EPA 608	11/20/15 JSR	11/23/15 20:34	KJH	W
Total Polychlorinated Biphenyl	0.0		ug/L		EPA 608	11/20/15 JSR	11/23/15 20:34	KJH	W
Aroclor-1016	ND		ug/L	0.46	EPA 608	11/20/15 JSR	11/23/15 20:34	KJH	W
Aroclor-1221	ND		ug/L	0.46	EPA 608	11/20/15 JSR	11/23/15 20:34	KJH	W
Aroclor-1232	ND		ug/L	0.46	EPA 608	11/20/15 JSR	11/23/15 20:34	KJH	W
Aroclor-1242	ND		ug/L	0.46	EPA 608	11/20/15 JSR	11/23/15 20:34	KJH	W

ALS Environmental Laboratory Locations Across North America





NELAP Certifications: NJ PA010 , NY 11759 , PA 22-293 DoD ELAP: A2LA 0818.01 State Certifications: DE ID 11 , MA PA0102 , MD 128 , VA 460157 , WV 343

ANALYTICAL RESULTS

Workorder: 2109302 2015-LOWER DELAWARE TESTING

Lab ID: Sample ID:	2109302001 CPS/EPS1 (72/:	28)				Date Collected: 11/ Date Received: 11/	/19/2015 15:20 /19/2015 21:10	Matrix: W	ater	
Parameters		Results	Flag	Units	RDL	Method	Prepared By	Analyzed	Ву	Cntr
Aroclor-1248		ND		ug/L	0.46	EPA 608	11/20/15 JSR	11/23/15 20:34	KJH	W
Aroclor-1254		ND		ug/L	0.46	EPA 608	11/20/15 JSR	11/23/15 20:34	KJH	W
Aroclor-1260		ND		ug/L	0.46	EPA 608	11/20/15 JSR	11/23/15 20:34	KJH	W
Surrogate Rec	overies	Results	Flag	Units	Limits	Method	Prepared By	Analyzed	By	Cntr
Decachlorobip	henyls (S)	35.7		%	30 - 150	EPA 608	11/20/15 JSR	11/23/15 20:34	KJH	W
Tetrachloro-m-	xylene (S)	52.6		%	36 - 112	EPA 608	11/20/15 JSR	11/23/15 20:34	KJH	W
WET CHEMIS	TRY									
Ammonia-N		7.36		mg/L	0.100	D6919-09		11/20/15 16:33	JAM	А
Biochemical O: Demand	xygen	140	1	mg/L	2.0	S5210B-11		11/20/15 23:22	NAK	В
Carbonaceous	BOD	145	2	mg/L	2.0	S5210B-11		11/21/15 06:35	GMM	В
Carbonaceous	BOD 20 Day	38.8		mg/L	2.0	S5210B-11		11/21/15 09:00	RMM	В
Cyanide, Total		ND		mg/L	0.0050	EPA 335.4	11/23/15 MMA	11/25/15 05:30	LJF	G
Dissolved Oxy	gen	2.4		mg/L	1.0	S4500OG-01		11/25/15 06:50	RMM	В
Halogen, Total (TOX)	Organic	35.1		ug/L	20.0	SW846 9020B		11/30/15 14:02	PAG	Ν
Hexavalent Ch	romium	ND		mg/L	0.010	S3500CrB-09		11/20/15 04:56	MSA	В
Nitrate-N		ND		mg/L	0.50	EPA 300.0		11/20/15 15:08	FSC	В
Nitrite-N		ND		mg/L	0.50	EPA 300.0		11/20/15 15:08	FSC	В
Odor		40		T.O.N.	1	S2150B-97		11/21/16 10:12	MSA	Μ
Oil/Grease Hex Extractable	kane	15.0		mg/L	2.0	EPA 1664B		11/22/15 12:00	AT	Н
Oil/Grease Silio	ca Gel Treated	3.4		mg/L	2.0	EPA 1664B		11/22/15 12:00	AT	Н
Phenolics		0.024		mg/L	0.005	EPA 420.4	12/9/15 NV	12/10/15 16:34	AMH	J
Phosphorus, To	otal	2.5		mg/L	0.10	EPA 365.1	12/7/15 LJF	12/8/15 04:21	LJF	А
Sulfide, Total		ND		mg/L	1.0	S4500S2F-00		11/25/15 21:15	DRM	L
Surfactants (M	BAS)	0.652		mg/L	0.025	S5540C-00		11/21/15 05:00	MBW	К
Total Dissolved	d Solids	232		mg/L	5	S2540C-11		11/24/15 09:45	ML	В
Total Kjeldahl N	Nitrogen	19.1		mg/L	4.0	S4500NH3G-11	11/25/15 J1H	11/29/15 11:40	NJA	А
Total Nitrogen		19.1		mg/L	1.00	Calculation		12/2/15 14:27	NJA	А
Total Suspende	ed Solids	532	3	mg/L	5	S2540D-11		11/29/15 18:05	NV	В
Turbidity		117		NTU	0.10	S2130B-01		11/21/15 07:01	MSA	В
METALS										
Hardness		94.9		mg/L	1.7	EPA 200.7	11/23/15 JPS	11/24/15 16:59	TSS	P1
Aluminum, Tota	al	1.4		mg/L	0.20	EPA 200.8	11/23/15 JPS	11/24/15 03:21	ZMC	P2
Antimony, Tota	I	ND		mg/L	0.0010	EPA 200.8	11/29/15 JPS	12/1/15 12:34	MO	P3
Arsenic, Total		ND		mg/L	0.0075	EPA 200.8	11/23/15 JPS	11/24/15 03:21	ZMC	P2

ALS Environmental Laboratory Locations Across North America





NELAP Certifications: NJ PA010 , NY 11759 , PA 22-293 DoD ELAP: A2LA 0818.01 State Certifications: DE ID 11 , MA PA0102 , MD 128 , VA 460157 , WV 343

ANALYTICAL RESULTS

Workorder: 2109302 2015-LOWER DELAWARE TESTING

Lab ID: 2109302001 Sample ID: CPS/EPS1 (72/	28)			Date Collected: 11/ Date Received: 11/	/19/2015 15:20 /19/2015 21:10	Matrix: Wa	ater	
Parameters	Results	Flag Units	RDL	Method	Prepared By	Analyzed	By	Cntr
Cadmium, Total	ND	mg/L	0.0025	EPA 200.8	11/23/15 JPS	11/24/15 03:21	ZMC	P2
Chromium, Total	ND	mg/L	0.0050	EPA 200.8	11/23/15 JPS	11/24/15 03:21	ZMC	P2
Copper, Total	0.075	mg/L	0.013	EPA 200.8	11/23/15 JPS	11/24/15 03:21	ZMC	P2
Iron, Total	2.9	mg/L	0.15	EPA 200.7	11/23/15 JPS	11/24/15 16:59	TSS	P1
Lead, Total	0.027	mg/L	0.0050	EPA 200.8	11/23/15 JPS	11/24/15 03:21	ZMC	P2
Mercury, Total	0.00029	mg/L	0.00020	EPA 245.1	12/3/15 MNP	12/3/15 14:07	MNP	P4
Molybdenum, Total	0.0011	mg/L	0.0010	EPA 200.8	11/29/15 JPS	12/1/15 12:34	MO	P3
Selenium, Total	ND	mg/L	0.010	EPA 200.8	11/23/15 JPS	11/24/15 03:21	ZMC	P2
Silver, Total	ND	mg/L	0.0050	EPA 200.8	11/23/15 JPS	11/24/15 03:21	ZMC	P2
Thallium, Total	ND	mg/L	0.0025	EPA 200.8	11/23/15 JPS	11/24/15 03:21	ZMC	P2
Zinc, Total	0.22	mg/L	0.013	EPA 200.8	11/23/15 JPS	11/24/15 03:21	ZMC	P2
MICROBIOLOGY								
Enterococcus	199000	col/100mL	100	S9230D		11/19/15 21:58	ABL	R
Fecal Coliform	3200000	col/100mL	100000	SM9222D+EPA 625/R-92/013 APX F		11/19/15 22:24	ABL	Q
Sub'd to NELAP CERTIFIED	Lab							
Gross Alpha	ND	pCi/L	2.70	EPA 900.0		12/2/15 12:07	SUB	Y
Gross Alpha Uncertainty +/-	1.60	pCi/L		EPA 900.0		12/2/15 12:07	SUB	Υ
Gross Beta	9.00	pCi/L	2.70	EPA 900.0		12/2/15 12:07	SUB	Υ
Gross Beta Uncertainty +/-	2.20	pCi/L		EPA 900.0		12/2/15 12:07	SUB	Y

Brod W. Kiston

Mr. Brad W Kintzer Project Coordinator

ALS Environmental Laboratory Locations Across North America





NELAP Certifications: NJ PA010 , NY 11759 , PA 22-293 DoD ELAP: A2LA 0818.01 State Certifications: DE ID 11 , MA PA0102 , MD 128 , VA 460157 , WV 343

ANALYTICAL RESULTS

Workorder: 2109302 2015-LOWER DELAWARE TESTING

Lab ID: Sample ID:	2109302002 CPS1					Date Collected: Date Received:	11/19/2015 15:20 11/19/2015 21:10	Matrix: W	ater	
Parameters		Results	Flag	Units	RDL	Method	Prepared By	Analyzed	Ву	Cntr
VOLATILE OF	RGANICS									
Benzene		ND		ug/L	5.0	EPA 624		11/21/15 21:16	CJG	S
Bromodichloro	omethane	ND		ug/L	5.0	EPA 624		11/21/15 21:16	CJG	S
Chlorodibromo	omethane	ND		ug/L	5.0	EPA 624		11/21/15 21:16	CJG	S
Chloroform		ND		ug/L	5.0	EPA 624		11/21/15 21:16	CJG	S
Ethylbenzene		ND		ug/L	5.0	EPA 624		11/21/15 21:16	CJG	S
Methyl t-Butyl	Ether	ND		ug/L	5.0	EPA 624		11/21/15 21:16	CJG	S
Methylene Chl	loride	ND		ug/L	5.0	EPA 624		11/21/15 21:16	CJG	S
Tetrachloroeth	ene	ND		ug/L	5.0	EPA 624		11/21/15 21:16	CJG	S
Total Xylenes		ND		ug/L	15.0	EPA 624		11/21/15 21:16	CJG	S
Surrogate Rec	coveries	Results	Flag	Units	Limits	Method	Prepared By	Analyzed	By	Cntr
1,2-Dichloroet	hane-d4 (S)	100		%	72 - 142	EPA 624		11/21/15 21:16	CJG	S
4-Bromofluoro	benzene (S)	115		%	73 - 119	EPA 624		11/21/15 21:16	CJG	S
Dibromofluoro	methane (S)	89.6		%	74 - 132	EPA 624		11/21/15 21:16	CJG	S
Toluene-d8 (S)	101		%	75 - 133	EPA 624		11/21/15 21:16	CJG	S
SEMIVOLATI	LES									
Benzo(a)anthr	acene	ND		ug/L	1.4	EPA 625	11/25/15 VLM	11/29/15 23:18	GEC	U
Chrysene		ND		ug/L	1.4	EPA 625	11/25/15 VLM	11/29/15 23:18	GEC	U
bis(2-Ethylhex	yl)phthalate	12.0		ug/L	2.8	EPA 625	11/25/15 VLM	11/29/15 23:18	GEC	U
N-Nitroso-di-n	-propylamine	ND		ug/L	2.8	EPA 625	11/25/15 VLM	11/29/15 23:18	GEC	U
Phenanthrene		ND		ug/L	1.4	EPA 625	11/25/15 VLM	11/29/15 23:18	GEC	U
Surrogate Rec	coveries	Results	Flag	Units	Limits	Method	Prepared By	Analyzed	By	Cntr
2,4,6-Tribromo	ophenol (S)	96.5		%	47 - 128	EPA 625	11/25/15 VLM	11/29/15 23:18	GEC	U
2-Fluorobipher	nyl (S)	76.5		%	52 - 118	EPA 625	11/25/15 VLM	11/29/15 23:18	GEC	U
2-Fluoropheno	ol (S)	45.3		%	20 - 87	EPA 625	11/25/15 VLM	11/29/15 23:18	GEC	U
Nitrobenzene-	d5 (S)	90.8		%	27 - 139	EPA 625	11/25/15 VLM	11/29/15 23:18	GEC	U
Phenol-d5 (S)		30.9		%	10 - 81	EPA 625	11/25/15 VLM	11/29/15 23:18	GEC	U
Terphenyl-d14	(S)	71.2		%	46 - 133	EPA 625	11/25/15 VLM	11/29/15 23:18	GEC	U
Pesticides an	d PCBs									
Dieldrin		ND		ug/L	0.019	EPA 608	11/20/15 JSR	11/23/15 20:56	KJH	W
Total Polychlor Biphenyl	rinated	0.0		ug/L		EPA 608	11/20/15 JSR	11/23/15 20:56	KJH	W
Aroclor-1016		ND		ug/L	0.46	EPA 608	11/20/15 JSR	11/23/15 20:56	KJH	W
Aroclor-1221		ND		ug/L	0.46	EPA 608	11/20/15 JSR	11/23/15 20:56	KJH	W
Aroclor-1232		ND		ug/L	0.46	EPA 608	11/20/15 JSR	11/23/15 20:56	KJH	W
Aroclor-1242		ND		ug/L	0.46	EPA 608	11/20/15 JSR	11/23/15 20:56	KJH	W
Aroclor-1248		ND		ug/L	0.46	EPA 608	11/20/15 JSR	11/23/15 20:56	KJH	W

ALS Environmental Laboratory Locations Across North America





Water

34 Dogwood Lane Middletown, PA 17057 Phone: 717-944-5541 Fax: 717-944-1430 www.alsglobal.com

NELAP Certifications: NJ PA010 , NY 11759 , PA 22-293 DoD ELAP: A2LA 0818.01 State Certifications: DE ID 11 , MA PA0102 , MD 128 , VA 460157 , WV 343

ANALYTICAL RESULTS

Workorder: 2109302 2015-LOWER DELAWARE TESTING

Lab ID: 2109302002 Sample ID: CPS1
 Date Collected:
 11/19/2015 15:20
 Matrix:

 Date Received:
 11/19/2015 21:10

Parameters	Results	Flag	Units	RDL	Method	Prepared By	Analyzed	Ву	Cntr
Aroclor-1254	ND		ug/L	0.46	EPA 608	11/20/15 JSR	11/23/15 20:56	KJH	W
Aroclor-1260	ND		ug/L	0.46	EPA 608	11/20/15 JSR	11/23/15 20:56	KJH	W
Surrogate Recoveries	Results	Flag	Units	Limits	Method	Prepared By	Analyzed	By	Cntr
Decachlorobiphenyls (S)	29.1	4	%	30 - 150	EPA 608	11/20/15 JSR	11/23/15 20:56	KJH	W
Tetrachloro-m-xylene (S)	49.5		%	36 - 112	EPA 608	11/20/15 JSR	11/23/15 20:56	KJH	W
WET CHEMISTRY									
Ammonia-N	7.47		mg/L	0.100	D6919-09		11/21/15 01:03	JAM	А
Biochemical Oxygen Demand	57.7	1	mg/L	2.0	S5210B-11		11/20/15 23:22	NAK	В
Carbonaceous BOD	81.5	2	mg/L	2.0	S5210B-11		11/21/15 06:35	GMM	В
Carbonaceous BOD 20 Day	7.7		mg/L	2.0	S5210B-11		11/21/15 09:00	RMM	В
Cyanide, Total	ND		mg/L	0.0050	EPA 335.4	11/23/15 MMA	11/25/15 05:30	LJF	G
Dissolved Oxygen	2.5		mg/L	1.0	S4500OG-01		11/25/15 06:50	RMM	В
Halogen, Total Organic (TOX)	26.0		ug/L	20.0	SW846 9020B		11/30/15 15:46	PAG	Ν
Hexavalent Chromium	ND		mg/L	0.010	S3500CrB-09		11/20/15 04:56	MSA	В
Nitrate-N	ND		mg/L	0.50	EPA 300.0		11/20/15 15:21	FSC	В
Nitrite-N	ND		mg/L	0.50	EPA 300.0		11/20/15 15:21	FSC	В
Odor	30		T.O.N.	1	S2150B-97		11/21/16 10:12	MSA	Μ
Oil/Grease Hexane Extractable	14.8		mg/L	2.1	EPA 1664B		11/22/15 12:00	AT	Н
Oil/Grease Silica Gel Treated	ND		mg/L	2.1	EPA 1664B		11/22/15 12:00	AT	Н
Phenolics	0.068		mg/L	0.005	EPA 420.4	12/9/15 NV	12/10/15 16:35	AMH	J
Phosphorus, Total	2.1		mg/L	0.10	EPA 365.1	12/7/15 LJF	12/8/15 04:21	LJF	А
Sulfide, Total	1.3		mg/L	1.0	S4500S2F-00		11/25/15 21:15	DRM	L
Surfactants (MBAS)	0.557		mg/L	0.025	S5540C-00		11/21/15 05:00	MBW	К
Total Dissolved Solids	186		mg/L	5	S2540C-11		11/24/15 09:45	ML	В
Total Kjeldahl Nitrogen	21.2		mg/L	4.0	S4500NH3G-11	11/25/15 J1H	11/29/15 11:40	NJA	А
Total Nitrogen	21.2		mg/L	1.00	Calculation		12/2/15 14:27	NJA	А
Total Suspended Solids	108	3	mg/L	5	S2540D-11		11/29/15 18:05	NV	В
Turbidity	126		NTU	0.10	S2130B-01		11/21/15 07:01	MSA	В
METALS									
Hardness	85.2		mg/L	0.33	EPA 200.7	11/23/15 JPS	11/24/15 17:44	TSS	P1
Aluminum, Total	1.2		mg/L	0.20	EPA 200.8	11/23/15 JPS	11/24/15 03:25	ZMC	P2
Antimony, Total	ND		mg/L	0.0010	EPA 200.8	11/29/15 JPS	12/1/15 12:38	MO	P3
Arsenic, Total	ND		mg/L	0.0075	EPA 200.8	11/23/15 JPS	11/24/15 03:25	ZMC	P2
Cadmium, Total	ND		mg/L	0.0025	EPA 200.8	11/23/15 JPS	11/24/15 03:25	ZMC	P2

ALS Environmental Laboratory Locations Across North America





NELAP Certifications: NJ PA010 , NY 11759 , PA 22-293 DoD ELAP: A2LA 0818.01 State Certifications: DE ID 11 , MA PA0102 , MD 128 , VA 460157 , WV 343

ANALYTICAL RESULTS

Workorder: 2109302 2015-LOWER DELAWARE TESTING

Lab ID: 210930 Sample ID: CPS1	2002			Date Collected:	11/19/2015 15:20 11/19/2015 21:10	Matrix: W	ater	
Parameters	Results	Flag Units	RDL	Method	Prepared By	Analyzed	Ву	Cntr
Chromium, Total	0.011	mg/L	0.0050	EPA 200.8	11/23/15 JPS	11/24/15 03:25	ZMC	P2
Copper, Total	0.042	mg/L	0.013	EPA 200.8	11/23/15 JPS	11/24/15 03:25	ZMC	P2
Iron, Total	2.9	mg/L	0.030	EPA 200.7	11/23/15 JPS	11/24/15 17:44	TSS	P1
Lead, Total	0.028	mg/L	0.0050	EPA 200.8	11/23/15 JPS	11/24/15 03:25	ZMC	P2
Mercury, Total	0.00020	mg/L	0.00020	EPA 245.1	12/3/15 MNP	12/3/15 14:08	MNP	P4
Molybdenum, Total	0.0013	mg/L	0.0010	EPA 200.8	11/29/15 JPS	12/1/15 12:38	MO	P3
Selenium, Total	ND	mg/L	0.010	EPA 200.8	11/23/15 JPS	11/24/15 03:25	ZMC	P2
Silver, Total	ND	mg/L	0.0010	EPA 200.8	11/29/15 JPS	12/1/15 12:38	MO	P3
Thallium, Total	ND	mg/L	0.0025	EPA 200.8	11/23/15 JPS	11/24/15 03:25	ZMC	P2
Zinc, Total	0.22	mg/L	0.0025	EPA 200.8	11/29/15 JPS	12/1/15 12:38	MO	P3
MICROBIOLOGY								
Enterococcus	>241960 COL/100 ML	col/100mL	100	S9230D		11/19/15 21:58	ABL	R
Fecal Coliform	2600000	col/100mL	100000	SM9222D+EF 625/R-92/01 APX F	PA 3	11/19/15 22:24	ABL	Q
Sub'd to NELAP CER	TIFIED Lab							
Gross Alpha	2.70	pCi/L	2.10	EPA 900.0		12/2/15 12:07	SUB	Y
Gross Alpha Uncertain	ty +/- 1.40	pCi/L		EPA 900.0		12/2/15 12:07	SUB	Υ
Gross Beta	7.80	pCi/L	2.70	EPA 900.0		12/2/15 12:07	SUB	Y
Gross Beta Uncertainty	/ +/- 2.00	pCi/L		EPA 900.0		12/2/15 12:07	SUB	Y

Brod W. Kiston

Mr. Brad W Kintzer Project Coordinator

ALS Environmental Laboratory Locations Across North America





NELAP Certifications: NJ PA010 , NY 11759 , PA 22-293 DoD ELAP: A2LA 0818.01 State Certifications: DE ID 11 , MA PA0102 , MD 128 , VA 460157 , WV 343

ANALYTICAL RESULTS

Workorder: 2109302 2015-LOWER DELAWARE TESTING

Lab ID: Sample ID:	2109302003 14th & Crozer					Date Collected: Date Received:	11/19/2015 15:10 11/19/2015 21:10	Matrix: W	ater	
Parameters		Results	Flag	Units	RDL	Method	Prepared By	Analyzed	Ву	Cntr
VOLATILE OF	GANICS									
Benzene		ND		ug/L	5.0	EPA 624		11/21/15 21:38	CJG	S
Bromodichloro	methane	ND		ug/L	5.0	EPA 624		11/21/15 21:38	CJG	S
Chlorodibromo	omethane	ND		ug/L	5.0	EPA 624		11/21/15 21:38	CJG	S
Chloroform		ND		ug/L	5.0	EPA 624		11/21/15 21:38	CJG	S
Ethylbenzene		ND		ug/L	5.0	EPA 624		11/21/15 21:38	CJG	S
Methyl t-Butyl	Ether	ND		ug/L	5.0	EPA 624		11/21/15 21:38	CJG	S
Methylene Chl	oride	ND		ug/L	5.0	EPA 624		11/21/15 21:38	CJG	S
Tetrachloroeth	ene	ND		ug/L	5.0	EPA 624		11/21/15 21:38	CJG	S
Toluene		ND		ug/L	5.0	EPA 624		11/21/15 21:38	CJG	S
Total Xylenes		ND		ug/L	15.0	EPA 624		11/21/15 21:38	CJG	S
Surrogate Rec	overies	Results	Flag	Units	Limits	Method	Prepared By	Analyzed	By	Cntr
1,2-Dichloroet	hane-d4 (S)	101		%	72 - 142	EPA 624		11/21/15 21:38	CJG	S
4-Bromofluoro	benzene (S)	112		%	73 - 119	EPA 624		11/21/15 21:38	CJG	S
Dibromofluoro	methane (S)	90		%	74 - 132	EPA 624		11/21/15 21:38	CJG	S
Toluene-d8 (S))	100		%	75 - 133	EPA 624		11/21/15 21:38	CJG	S
SEMIVOLATIL	ES									
Benzo(a)anthr	acene	ND		ug/L	1.4	EPA 625	11/25/15 VLM	11/29/15 21:38	GEC	U
Chrysene		ND		ug/L	1.4	EPA 625	11/25/15 VLM	11/29/15 21:38	GEC	U
bis(2-Ethylhex	yl)phthalate	4.4		ug/L	2.8	EPA 625	11/25/15 VLM	11/29/15 21:38	GEC	U
N-Nitroso-di-n-	-propylamine	ND		ug/L	2.8	EPA 625	11/25/15 VLM	11/29/15 21:38	GEC	U
Phenanthrene		ND		ug/L	1.4	EPA 625	11/25/15 VLM	11/29/15 21:38	GEC	U
Surrogate Rec	coveries	Results	Flag	Units	Limits	Method	Prepared By	Analyzed	By	Cntr
2,4,6-Tribromo	phenol (S)	90.8		%	47 - 128	EPA 625	11/25/15 VLM	11/29/15 21:38	GEC	U
2-Fluorobipher	nyl (S)	75		%	52 - 118	EPA 625	11/25/15 VLM	11/29/15 21:38	GEC	U
2-Fluoropheno	ol (S)	40.3		%	20 - 87	EPA 625	11/25/15 VLM	11/29/15 21:38	GEC	U
Nitrobenzene-	d5 (S)	86.7		%	27 - 139	EPA 625	11/25/15 VLM	11/29/15 21:38	GEC	U
Phenol-d5 (S)		27.4		%	10 - 81	EPA 625	11/25/15 VLM	11/29/15 21:38	GEC	U
Terphenyl-d14	(S)	69.3		%	46 - 133	EPA 625	11/25/15 VLM	11/29/15 21:38	GEC	U
Pesticides an	d PCBs									
Dieldrin		ND		ug/L	0.019	EPA 608	11/20/15 JSR	11/23/15 17:14	KJH	W
Total Polychlor Biphenyl	rinated	0.0		ug/L		EPA 608	11/20/15 JSR	11/23/15 17:14	KJH	W
Aroclor-1016		ND		ug/L	0.46	EPA 608	11/20/15 JSR	11/23/15 17:14	KJH	W
Aroclor-1221		ND		ug/L	0.46	EPA 608	11/20/15 JSR	11/23/15 17:14	KJH	W
Aroclor-1232		ND		ug/L	0.46	EPA 608	11/20/15 JSR	11/23/15 17:14	KJH	W
Aroclor-1242		ND		ug/L	0.46	EPA 608	11/20/15 JSR	11/23/15 17:14	KJH	W

ALS Environmental Laboratory Locations Across North America





NELAP Certifications: NJ PA010 , NY 11759 , PA 22-293 DoD ELAP: A2LA 0818.01 State Certifications: DE ID 11 , MA PA0102 , MD 128 , VA 460157 , WV 343

ANALYTICAL RESULTS

Workorder: 2109302 2015-LOWER DELAWARE TESTING

Lab ID: Sample ID:	2109302003 14th & Crozer					Date Collected: 11/ ⁻ Date Received: 11/ ⁻	19/2015 15:10 19/2015 21:10	Matrix: W	ater	
Parameters		Results	Flag	Units	RDL	Method	Prepared By	Analyzed	Ву	Cntr
Aroclor-1248		ND		ug/L	0.46	EPA 608	11/20/15 JSR	11/23/15 17:14	KJH	W
Aroclor-1254		ND		ug/L	0.46	EPA 608	11/20/15 JSR	11/23/15 17:14	KJH	W
Aroclor-1260		ND		ug/L	0.46	EPA 608	11/20/15 JSR	11/23/15 17:14	KJH	W
Surrogate Rec	overies	Results	Flag	Units	Limits	Method	Prepared By	Analyzed	By	Cntr
Decachlorobip	henyls (S)	46.9		%	30 - 150	EPA 608	11/20/15 JSR	11/23/15 17:14	KJH	W
Tetrachloro-m-	xylene (S)	49.7		%	36 - 112	EPA 608	11/20/15 JSR	11/23/15 17:14	KJH	W
WET CHEMIS	TRY									
Ammonia-N		4.85		mg/L	0.100	D6919-09		11/20/15 16:52	JAM	А
Biochemical O	xygen	51.8	1	mg/L	2.0	S5210B-11		11/20/15 23:22	NAK	В
Carbonaceous	BOD	66.7	2	ma/L	2.0	S5210B-11		11/21/15 06:35	GMM	В
Carbonaceous	BOD 20 Day	12.8		mg/L	2.0	S5210B-11		11/21/15 09:00	RMM	В
Cyanide, Total	-	ND		mg/L	0.0050	EPA 335.4	11/23/15 MMA	11/25/15 05:30	LJF	G
Dissolved Oxy	gen	4.3		mg/L	1.0	S4500OG-01		11/25/15 06:50	RMM	В
Halogen, Total (TOX)	Organic	26.8		ug/L	20.0	SW846 9020B		12/1/15 13:58	PAG	Ν
Hexavalent Ch	romium	ND		mg/L	0.010	S3500CrB-09		11/20/15 04:56	MSA	В
Nitrate-N		0.85		mg/L	0.50	EPA 300.0		11/20/15 15:35	FSC	В
Nitrite-N		ND		mg/L	0.50	EPA 300.0		11/20/15 15:35	FSC	В
Odor		20		T.O.N.	1	S2150B-97		11/21/16 10:12	MSA	Μ
Oil/Grease Hex Extractable	xane	7.2		mg/L	2.0	EPA 1664B		11/22/15 12:00	AT	Н
Oil/Grease Sili	ca Gel Treated	2.3		mg/L	2.0	EPA 1664B		11/22/15 12:00	AT	Н
Phenolics		0.016		mg/L	0.005	EPA 420.4	12/9/15 NV	12/10/15 16:36	AMH	J
Phosphorus, To	otal	1.4		mg/L	0.10	EPA 365.1	12/7/15 LJF	12/8/15 04:21	LJF	А
Sulfide, Total		ND		mg/L	1.0	S4500S2F-00		11/25/15 21:15	DRM	L
Surfactants (M	BAS)	0.485		mg/L	0.025	S5540C-00		11/21/15 05:00	MBW	К
Total Dissolved	d Solids	150		mg/L	5	S2540C-11		11/24/15 09:45	ML	В
Total Kjeldahl N	Nitrogen	14.1		mg/L	4.0	S4500NH3G-11	11/25/15 J1H	11/29/15 11:40	NJA	А
Total Nitrogen		15.0		mg/L	1.00	Calculation		12/7/15 21:21	NJA	А
Total Suspende	ed Solids	140	3	mg/L	5	S2540D-11		11/29/15 18:05	NV	В
Turbidity		37.2		NTU	0.10	S2130B-01		11/21/15 07:01	MSA	В
METALS										
Hardness		58.1		mg/L	0.33	EPA 200.7	11/23/15 JPS	11/24/15 17:48	TSS	P1
Aluminum, Tota	al	0.64		mg/L	0.20	EPA 200.8	11/23/15 JPS	11/24/15 03:36	ZMC	P2
Antimony, Tota	l	0.0013		mg/L	0.0010	EPA 200.8	11/29/15 JPS	12/1/15 12:42	MO	P3
Arsenic, Total		ND		mg/L	0.0075	EPA 200.8	11/23/15 JPS	11/24/15 03:36	ZMC	P2

ALS Environmental Laboratory Locations Across North America





NELAP Certifications: NJ PA010 , NY 11759 , PA 22-293 DoD ELAP: A2LA 0818.01 State Certifications: DE ID 11 , MA PA0102 , MD 128 , VA 460157 , WV 343

ANALYTICAL RESULTS

Workorder: 2109302 2015-LOWER DELAWARE TESTING

Lab ID: Sample ID:	2109302003 14th & Crozer					Date Collected: 1 Date Received: 1	11/19/2015 15:10 11/19/2015 21:10	Matrix: Wa	ater	
Parameters		Results	Flag	Units	RDL	Method	Prepared By	Analyzed	By	Cntr
Cadmium, Tota	al	ND		mg/L	0.0025	EPA 200.8	11/23/15 JPS	11/24/15 03:36	ZMC	P2
Chromium, Tot	al	0.0094		mg/L	0.0050	EPA 200.8	11/23/15 JPS	11/24/15 03:36	ZMC	P2
Copper, Total		0.033		mg/L	0.013	EPA 200.8	11/23/15 JPS	11/24/15 03:36	ZMC	P2
Iron, Total		0.76		mg/L	0.030	EPA 200.7	11/23/15 JPS	11/24/15 17:48	TSS	P1
Lead, Total		0.016		mg/L	0.0050	EPA 200.8	11/23/15 JPS	11/24/15 03:36	ZMC	P2
Mercury, Total		ND		mg/L	0.00020	EPA 245.1	12/3/15 MNP	12/3/15 14:09	MNP	P4
Molybdenum,	Total	0.0027		mg/L	0.0010	EPA 200.8	11/29/15 JPS	12/1/15 12:42	МО	P3
Selenium, Tota	al	ND		mg/L	0.010	EPA 200.8	11/23/15 JPS	11/24/15 03:36	ZMC	P2
Silver, Total		ND		mg/L	0.0050	EPA 200.8	11/23/15 JPS	11/24/15 03:36	ZMC	P2
Thallium, Total		ND		mg/L	0.0025	EPA 200.8	11/23/15 JPS	11/24/15 03:36	ZMC	P2
Zinc, Total		0.11		mg/L	0.013	EPA 200.8	11/23/15 JPS	11/24/15 03:36	ZMC	P2
MICROBIOLO	GY									
Enterococcus		77000		col/100mL	100	S9230D		11/19/15 21:58	ABL	R
Fecal Coliform		470000		col/100mL	10000	SM9222D+EP 625/R-92/013 APX F	YA 3	11/19/15 22:24	ABL	Q
Sub'd to NEL	AP CERTIFIED L	.ab								
Gross Alpha		2.30		pCi/L	2.30	EPA 900.0		12/2/15 12:07	SUB	Υ
Gross Alpha U	ncertainty +/-	1.30		pCi/L		EPA 900.0		12/2/15 12:07	SUB	Y
Gross Beta		10.7		pCi/L	2.60	EPA 900.0		12/2/15 12:07	SUB	Y
Gross Beta Un	certainty +/-	2.40		pCi/L		EPA 900.0		12/2/15 12:07	SUB	Y

Brod W. Kiston

Mr. Brad W Kintzer Project Coordinator

ALS Environmental Laboratory Locations Across North America





NELAP Certifications: NJ PA010 , NY 11759 , PA 22-293 DoD ELAP: A2LA 0818.01 State Certifications: DE ID 11 , MA PA0102 , MD 128 , VA 460157 , WV 343

ANALYTICAL RESULTS

Workorder: 2109302 2015-LOWER DELAWARE TESTING

Lab ID:	2109302004					Date Collected:	11/19/2015 16:10	Matrix: W	ater	
Sample ID:	Sun & Hanco	ck				Date Received:	11/19/2015 21:10			
Parameters		Results	Flag	Units	RDL	Method	Prepared By	Analyzed	Ву	Cntr
VOLATILE OF	RGANICS									
Benzene		ND		ug/L	5.0	EPA 624		11/21/15 22:00	CJG	S
Bromodichloro	methane	ND		ug/L	5.0	EPA 624		11/21/15 22:00	CJG	S
Chlorodibromo	omethane	ND		ug/L	5.0	EPA 624		11/21/15 22:00	CJG	S
Chloroform		ND		ug/L	5.0	EPA 624		11/21/15 22:00	CJG	S
Ethylbenzene		ND		ug/L	5.0	EPA 624		11/21/15 22:00	CJG	S
Methyl t-Butyl	Ether	ND		ug/L	5.0	EPA 624		11/21/15 22:00	CJG	S
Methylene Chl	oride	ND		ug/L	5.0	EPA 624		11/21/15 22:00	CJG	S
Tetrachloroeth	ene	ND		ug/L	5.0	EPA 624		11/21/15 22:00	CJG	S
Toluene		ND		ug/L	5.0	EPA 624		11/21/15 22:00	CJG	S
Total Xylenes		ND		ug/L	15.0	EPA 624		11/21/15 22:00	CJG	S
Surrogate Rec	coveries	Results	Flag	Units	Limits	Method	Prepared By	Analyzed	By	Cntr
1,2-Dichloroet	hane-d4 (S)	101		%	72 - 142	EPA 624		11/21/15 22:00	CJG	S
4-Bromofluoro	benzene (S)	115		%	73 - 119	EPA 624		11/21/15 22:00	CJG	S
Dibromofluoro	methane (S)	92.3		%	74 - 132	EPA 624		11/21/15 22:00	CJG	S
Toluene-d8 (S))	99.9		%	75 - 133	EPA 624		11/21/15 22:00	CJG	S
SEMIVOLATIL	ES									
Benzo(a)anthr	acene	ND		ug/L	1.5	EPA 625	11/25/15 VLM	11/29/15 23:43	GEC	U
Chrysene		ND		ug/L	1.5	EPA 625	11/25/15 VLM	11/29/15 23:43	GEC	U
bis(2-Ethylhex	yl)phthalate	11.8		ug/L	3.1	EPA 625	11/25/15 VLM	11/29/15 23:43	GEC	U
N-Nitroso-di-n-	-propylamine	ND		ug/L	3.1	EPA 625	11/25/15 VLM	11/29/15 23:43	GEC	U
Phenanthrene		ND		ug/L	1.5	EPA 625	11/25/15 VLM	11/29/15 23:43	GEC	U
Surrogate Rec	coveries	Results	Flag	Units	Limits	Method	Prepared By	Analyzed	By	Cntr
2,4,6-Tribromo	phenol (S)	96.9		%	47 - 128	EPA 625	11/25/15 VLM	11/29/15 23:43	GEC	U
2-Fluorobipher	nyl (S)	76.5		%	52 - 118	EPA 625	11/25/15 VLM	11/29/15 23:43	GEC	U
2-Fluoropheno	ol (S)	46.8		%	20 - 87	EPA 625	11/25/15 VLM	11/29/15 23:43	GEC	U
Nitrobenzene-	d5 (S)	87.1		%	27 - 139	EPA 625	11/25/15 VLM	11/29/15 23:43	GEC	U
Phenol-d5 (S)		31.8		%	10 - 81	EPA 625	11/25/15 VLM	11/29/15 23:43	GEC	U
Terphenyl-d14	(S)	80.3		%	46 - 133	EPA 625	11/25/15 VLM	11/29/15 23:43	GEC	U
Pesticides an	d PCBs									
Dieldrin		ND		ug/L	0.019	EPA 608	11/20/15 JSR	11/23/15 14:16	KJH	W
Total Polychlor Biphenyl	rinated	0.0		ug/L		EPA 608	11/20/15 JSR	11/23/15 14:16	KJH	W
Aroclor-1016		ND		ug/L	0.46	EPA 608	11/20/15 JSR	11/23/15 14:16	KJH	W
Aroclor-1221		ND		ug/L	0.46	EPA 608	11/20/15 JSR	11/23/15 14:16	KJH	W
Aroclor-1232		ND		ug/L	0.46	EPA 608	11/20/15 JSR	11/23/15 14:16	KJH	W
Aroclor-1242		ND		ug/L	0.46	EPA 608	11/20/15 JSR	11/23/15 14:16	KJH	W

ALS Environmental Laboratory Locations Across North America





NELAP Certifications: NJ PA010 , NY 11759 , PA 22-293 DoD ELAP: A2LA 0818.01 State Certifications: DE ID 11 , MA PA0102 , MD 128 , VA 460157 , WV 343

ANALYTICAL RESULTS

Workorder: 2109302 2015-LOWER DELAWARE TESTING

Lab ID: 2109302004 Sample ID: Sun & Hancoo	ck				Date Collected: 11/ Date Received: 11/	/19/2015 16:10 /19/2015 21:10	Matrix: W	ater	
Parameters	Results	Flag	Units	RDL	Method	Prepared By	Analyzed	Ву	Cntr
Aroclor-1248	ND		ug/L	0.46	EPA 608	11/20/15 JSR	11/23/15 14:16	KJH	W
Aroclor-1254	ND		ug/L	0.46	EPA 608	11/20/15 JSR	11/23/15 14:16	KJH	W
Aroclor-1260	ND		ug/L	0.46	EPA 608	11/20/15 JSR	11/23/15 14:16	KJH	W
Surrogate Recoveries	Results	Flag	Units	Limits	Method	Prepared By	Analyzed	By	Cntr
Decachlorobiphenyls (S)	56.1		%	30 - 150	EPA 608	11/20/15 JSR	11/23/15 14:16	KJH	W
Tetrachloro-m-xylene (S)	50.7		%	36 - 112	EPA 608	11/20/15 JSR	11/23/15 14:16	KJH	W
WET CHEMISTRY									
Ammonia-N	1.63		mg/L	0.100	D6919-09		11/20/15 17:11	JAM	А
Biochemical Oxygen Demand	26.2	1	mg/L	2.0	S5210B-11		11/20/15 23:22	NAK	В
Carbonaceous BOD	17.3	2	mg/L	2.0	S5210B-11		11/21/15 06:35	GMM	В
Carbonaceous BOD 20 Day	ND		mg/L	20.0	S5210B-11		11/21/15 09:00	RMM	В
Cyanide, Total	ND		mg/L	0.0050	EPA 335.4	11/23/15 MMA	11/25/15 05:30	LJF	G
Dissolved Oxygen	5.4		mg/L	1.0	S4500OG-01		11/25/15 06:50	RMM	В
Halogen, Total Organic (TOX)	ND		ug/L	20.0	SW846 9020B		12/1/15 14:34	PAG	Ν
Hexavalent Chromium	ND		mg/L	0.010	S3500CrB-09		11/20/15 04:56	MSA	В
Nitrate-N	ND		mg/L	0.50	EPA 300.0		11/20/15 15:48	FSC	В
Nitrite-N	ND		mg/L	0.50	EPA 300.0		11/20/15 15:48	FSC	В
Odor	2		T.O.N.	1	S2150B-97		11/21/16 10:12	MSA	Μ
Oil/Grease Hexane Extractable	ND		mg/L	2.1	EPA 1664B		11/22/15 12:00	AT	Н
Oil/Grease Silica Gel Treated	ND		mg/L	2.1	EPA 1664B		11/22/15 12:00	AT	Н
Phenolics	0.012		mg/L	0.005	EPA 420.4	12/9/15 NV	12/10/15 16:37	AMH	J
Phosphorus, Total	0.56		mg/L	0.10	EPA 365.1	12/7/15 LJF	12/8/15 04:21	LJF	А
Sulfide, Total	ND		mg/L	1.0	S4500S2F-00		11/25/15 21:15	DRM	L
Surfactants (MBAS)	0.123		mg/L	0.025	S5540C-00		11/21/15 05:00	MBW	К
Total Dissolved Solids	39		mg/L	5	S2540C-11		11/24/15 09:45	ML	В
Total Kjeldahl Nitrogen	5.3	4	mg/L	1.0	S4500NH3G-11	12/1/15 DRM	12/1/15 12:57	DRM	А
Total Nitrogen	5.30		mg/L	1.00	Calculation		12/7/15 21:21	NJA	А
Total Suspended Solids	76	3	mg/L	5	S2540D-11		11/29/15 18:05	NV	В
Turbidity	26.2		NTU	0.10	S2130B-01		11/21/15 07:01	MSA	В
METALS									
Hardness	18.9		mg/L	0.33	EPA 200.7	11/23/15 JPS	11/24/15 17:52	TSS	P1
Aluminum, Total	0.47		mg/L	0.040	EPA 200.8	11/23/15 JPS	11/24/15 03:40	ZMC	P2
Antimony, Total	0.0023		mg/L	0.0010	EPA 200.8	11/30/15 JPS	12/1/15 12:49	MO	P3
Arsenic, Total	ND		mg/L	0.0015	EPA 200.8	11/23/15 JPS	11/24/15 03:40	ZMC	P2

ALS Environmental Laboratory Locations Across North America





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ANALYTICAL RESULTS

Workorder: 2109302 2015-LOWER DELAWARE TESTING

Lab ID: 2109302004 Sample ID: Sun & Hancoc	k				Date Collected: 11/ Date Received: 11/	19/2015 16:10 19/2015 21:10	Matrix: Wa	ater	
Parameters	Results	Flag	Units	RDL	Method	Prepared By	Analyzed	Ву	Cntr
Cadmium, Total	ND		mg/L	0.00050	EPA 200.8	11/23/15 JPS	11/24/15 03:40	ZMC	P2
Chromium, Total	0.0032		mg/L	0.0010	EPA 200.8	11/23/15 JPS	11/24/15 03:40	ZMC	P2
Copper, Total	0.025		mg/L	0.0025	EPA 200.8	11/23/15 JPS	11/24/15 03:40	ZMC	P2
Iron, Total	0.72		mg/L	0.030	EPA 200.7	11/23/15 JPS	11/24/15 17:52	TSS	P1
Lead, Total	0.0081		mg/L	0.0010	EPA 200.8	11/23/15 JPS	11/24/15 03:40	ZMC	P2
Mercury, Total	ND		mg/L	0.00020	EPA 245.1	12/3/15 MNP	12/3/15 14:10	MNP	P4
Molybdenum, Total	0.0031		mg/L	0.0010	EPA 200.8	11/30/15 JPS	12/1/15 12:49	МО	P3
Selenium, Total	ND		mg/L	0.0020	EPA 200.8	11/23/15 JPS	11/24/15 03:40	ZMC	P2
Silver, Total	ND		mg/L	0.0010	EPA 200.8	11/23/15 JPS	11/24/15 03:40	ZMC	P2
Thallium, Total	ND		mg/L	0.00050	EPA 200.8	11/23/15 JPS	11/24/15 03:40	ZMC	P2
Zinc, Total	0.14		mg/L	0.0025	EPA 200.8	11/23/15 JPS	11/24/15 03:40	ZMC	P2
MICROBIOLOGY									
Enterococcus	8160		col/100mL	10	S9230D		11/19/15 21:58	ABL	R
Fecal Coliform	1260000		col/100mL	10000	SM9222D+EPA 625/R-92/013 APX F		11/19/15 22:24	ABL	Q
Sub'd to NELAP CERTIFIED	Lab								
Gross Alpha	2.30		pCi/L	2.20	EPA 900.0		12/2/15 12:07	SUB	Y
Gross Alpha Uncertainty +/-	1.30		pCi/L		EPA 900.0		12/2/15 12:07	SUB	Y
Gross Beta	6.50		pCi/L	2.70	EPA 900.0		12/2/15 12:07	SUB	Y
Gross Beta Uncertainty +/-	1.90		pCi/L		EPA 900.0		12/2/15 12:07	SUB	Y

Brod W. Kiston

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ALS Environmental Laboratory Locations Across North America





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Lab ID	#	Sample ID	Analytical Method	Analyte
2109302001	1	CPS/EPS1 (72/28)	S5210B-11	Biochemical Oxygen Demand
The dilution water bla a maximum 0.2 mg/l.	ank ass	ociated with this analyte had a dissolv	ved oxygen depletion of 0.26 mg/l. Crit	eria states that the depletion should be at
2109302001	2	CPS/EPS1 (72/28)	S5210B-11	Carbonaceous BOD
The dilution water bla a maximum 0.2 mg/l.	ank ass	ociated with this analyte had a dissolv	ved oxygen depletion of 0.22 mg/l. Crit	eria states that the depletion should be at
2109302001	3	CPS/EPS1 (72/28)	S2540D-11	Total Suspended Solids
This sample was ana	alyzed a	fter the 7 day holding time for total su	spended solids had expired.	
2109302002	1	CPS1	S5210B-11	Biochemical Oxygen Demand
The dilution water bla a maximum 0.2 mg/l.	ank ass	ociated with this analyte had a dissolv	ved oxygen depletion of 0.26 mg/l. Crit	eria states that the depletion should be at
2109302002	2	CPS1	S5210B-11	Carbonaceous BOD
The dilution water bla a maximum 0.2 mg/l.	ank ass	ociated with this analyte had a dissolv	ved oxygen depletion of 0.22 mg/l. Crit	eria states that the depletion should be at
2109302002	3	CPS1	S2540D-11	Total Suspended Solids
This sample was ana	alyzed a	fter the 7 day holding time for total su	spended solids had expired.	
2109302002	4	CPS1	EPA 608	Decachlorobiphenyls
The surrogate Decad limits were 30 to 150	hlorobij . This re	phenyls for method EPA 608 was outs esult was reported at a dilution of 1.	side of control limits. The % Recovery	was reported as 29.1 and the control
2109302003	1	14th & Crozer	S5210B-11	Biochemical Oxygen Demand
The dilution water bla a maximum 0.2 mg/l.	ank ass	ociated with this analyte had a dissolv	ved oxygen depletion of 0.26 mg/l. Crit	eria states that the depletion should be at
2109302003	2	14th & Crozer	S5210B-11	Carbonaceous BOD
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2109302003	3	14th & Crozer	S2540D-11	Total Suspended Solids
This sample was ana	alyzed a	fter the 7 day holding time for total su	spended solids had expired.	
2109302004	1	Sun & Hancock	S5210B-11	Biochemical Oxygen Demand
The dilution water bla a maximum 0.2 mg/l.	ank ass	ociated with this analyte had a dissolv	ved oxygen depletion of 0.26 mg/l. Crit	eria states that the depletion should be at
2109302004	2	Sun & Hancock	S5210B-11	Carbonaceous BOD
The dilution water bla a maximum 0.2 mg/l.	ank ass	ociated with this analyte had a dissolv	ved oxygen depletion of 0.22 mg/l. Crit	eria states that the depletion should be at
2109302004	3	Sun & Hancock	S2540D-11	Total Suspended Solids
This sample was ana	alyzed a	fter the 7 day holding time for total su	spended solids had expired.	
2109302004	4	Sun & Hancock	S4500NH3G-11	Total Kjeldahl Nitrogen
The recovery of the M	Matrix S	nike (MS) associated to this analyte v	was outside of the established control I	imits

ALS Environmental Laboratory Locations Across North America

Erutronmental Client Name: DELCORA Client Name: DELCORA Address: 3201.W. Front.Street Chester PA 19013 Contact: Mike Krause Phone#: 610.876-5523 x218 Project Name/#: CSO WW LTG Bill To: Same TAT X Normal-Standard TAT X Normal-Standard TAT X Normal-Standard (10) Project to A Bill To: Same (st itwal appear on the lab report (st itw	34 Dogwood La Middletown, PA P. 717-944-5541 F. 717-944-1430 LS approval and st LS approval and st LS approval and st LS approval and st LS approved B Approved B Date Date Date Date Date Date	In 17057 In 7057 In 7057 In 15:20 In 15:20 In 15:20 In 15:20 In 15:20 In 15:20 In 15:20 In 15:20 In 15:20 In 17:20 In 17	Contract Con	LI SHA	Receiver Rec	AIN				Time 100 100 100 100 100 100 100 100 100 10			Z 1 0 9 3 0 2 At Intrormation (completed accurate) At Intrormation (completed accurate) (if present) Seats Intern ID: Contact Sample Volumes? Correct Sample Volumes? Correct Sample/COC Comme Sample/COC Comme Sample/COC Comme Special Processing Navy Navy	Image: State Samples Image: State Samples
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Contact: Brad Kintzer					ANALYS	ESIMETH	OD REQUE	STED			Custod	ly Seals Present?	
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Ft. Collins, Colorado

LIMS Version: 6.795

Page 1 of 1

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Thursday, December 10, 2015

Brad Kintzer ALS Environmental 34 Dogwood Lane Middletown, PA 17057

Re: ALS Workorder: 1511447 Project Name: Project Number: 2109302

Dear Mr. Kintzer:

Four water samples were received from ALS Environmental, on 11/24/2015. The samples were scheduled for the following analysis:

Gross Alpha/Beta

The results for these analyses are contained in the enclosed reports.

The data contained in the following report have been reviewed and approved by the personnel listed below. In addition, ALS certifies that the analyses reported herein are true, complete and correct within the limits of the methods employed.

Thank you for your confidence in ALS Environmental. Should you have any questions, please call.

Sincerely,

ALS Environmental Jeff R. Kujawa Project Manager

ADDRESS 225 Commerce Drive, Fort Collins, Colorado, USA 80524 | PHONE +1 970 490 1511 | FAX +1 970 490 1522 ALS GROUP USA, CORP. Part of the ALS Laboratory Group An ALS Limited Company

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ALS Environmental – Fort Collins is accredited by the following accreditation bodies for various testing scopes in accordance with requirements of each accreditation body. All testing is performed under the laboratory management system, which is maintained to meet these requirement and regulations. Please contact the laboratory or accreditation body for the current scope testing parameters.

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Accreditation Body 3	License or Certification Number
Alaska (AK)	UST-086
Alaska (AK)	CO01099
Arizona (AZ)	AZ0742
California (CA)	06251CA
Colorado (CO)	CO01099
Connecticut (CT)	PH-0232
Florida (FL)	E87914
Idaho (ID)	CO01099
Kansas (KS)	E-10381
Kentucky (KY)	90137
L-A-B (DoD ELAP/ISO 170250)	L2257
Louisiana (LA)	05057
Maryland (MD)	285
Missouri (MO)	175
Nebraska(NE)	NE-OS-24-13
Nevada (NV)	CO000782008A
New York (NY)	12036
North Dakota (ND)	R-057
Oklahoma (OK)	1301
Pennsylvania (PA)	68-03116
Tennessee (TN)	2976
Texas (TX)	T104704241
Utah (UT)	CO01099
Washington (WA)	C1280

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1511451

Gross Alpha/Beta:

The sample was analyzed for gross alpha and beta activity by gas flow proportional counting according to the current revision of SOP 724. Gross alpha results are referenced to ²⁴¹Am. Gross beta results are referenced to ⁹⁰Sr/Y.

All acceptance criteria were met.

ADDRESS 225 Commerce Drive, Fort Collins Colorado 80524 USA | PHONE +1 970 490 1511 | FAX +1 970 490 1522 ALS-CROUP USA, CORP. Part of the ALS Group An ALS Limited Company





Sample Number(s) Cross-Reference Table

OrderNum: 1511447 Client Name: ALS Environmental Client Project Name: Client Project Number: 2109302 Client PO Number: 2109302

Client Sample Number	Lab Sample Number	COC Number	Matrix	Date Collected	Time Collected
2109302001	1511447-1		WATER	19-Nov-15	15:20
2109302002	1511447-2		WATER	19-Nov-15	15:20
2109302003	1511447-3		WATER	19-Nov-15	15:10
2109302004	1511447-4		WATER	19-Nov-15	16:10

Page 1 of 1

ALS Environmental -- FC LIMS Version: 6,795 Date Printed: Thursday, December 10, 2015



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	Project	Manager:		SRK			Initials:	SOM	Date:	11-24-1	5
I.	Does this p	oject requir	e any specia	l handling	in addition to st	andard ALS proc	edures?			YES	NO
2.	Are custoo	y seals on	shipping c	ontainers i	intact?				NONE	YES	NO
3.	Are Custo	dy seals on	sample co	ntainers ir	itact?				NONE	YES	NO
4.	Is there a G	COC (Chai	n-of-Custo	dy) presen	t or other repr	esentative docu	uments?			YES	NO
5.	Are the CO	C and bot	le labels c	omplete a	nd legible?					YES	NO
6.	Is the COC containers	in agreem matrix, re	ent with sa quested an	imples rec alyses, etc	eived? (IDs, d	ates, times, no. (of sample	s, no. of		YES	Ð
7.	Were airbi	lls / shippi	ng docume	nts presen	t and/or remov	vable?			DROP OFF	(YES)	NO
8.	Are all aque	ous sample	requiring p	reservation	preserved corr	ectly? (excluding	y volatiles		N/A	TES	NO
9.	Are all aqu	eous non-	preserved s	amples pH	14-9?				(N/A)	YES	NO
10	Is there su	fficient san	ple for the	requested	i analyses?					(YE)	NO
'n	Were all s	amples plac	ed in the p	proper con	tainers for the	requested anal	yses?			(YES)	NO
12	Are all sar	nples withi	n holding t	imes for th	he requested a	nalyses?				(TE)	NO
13	Were all s	ample cont	ainers rece	ived intac	t? (not broken	or leaking, etc	.)			(YE)	NO
14	Are all sar headspace	nples requi free?	ring no hea	dspace (V	OC, GRO, RS < green pea	SK/MEE, Rx C > gree	N/S, rado n pea	m)	N/A	YES	NO
15	Do any wa	iter sample: f sediment:	s contain s	ediment?	moderate	heavy	A	mount	N/A	œ	NO
16	Were the s	amples shi	oped on ic	e?	_					YES	100
17	Were cool	er temperal	ures meas	ured at 0.1	-6.0°C?	IR own used*	#2	#4	(AA)	YES	NO
A	DOT Survey Acceptance Information Were external dditional In 6. Sa	No. of cus Ex Backg µR/hr readings formation:	Tempera tody seals o ternal µR/ha ≤ two times b PROVIDE I -> Se	reading: reading: reading: reading: reading: reading:	An6 0 12 12 d within DOT accept OW FOR A NO RI 0 an 6	Mance criteria? VE ESPONSE TO ANY HTLL Says		A (lf no, se ABOVE, E ZIO9	e Form 008.) XCEPT #1 A	ND #16.	
_	Coc	my Z	10930	2003	3 Xm	ghe date	4 1	men	etch.		
1	5.) Sa	mples	1 1200	uzh 4	have	a dust	ing c	<u>f</u> re	direct.		
If P	applicable, w roject Man Form 201r24	as the client c ager Signate xls (06/04/201	ontacted? YF are / Date: 2)		Contact: Gun #2: Oakton, Gun #4: Oakton	// ·) SN 29922500201- , SN 2372220101-0	9- <i>65</i> 0066 0002		Date/Tin	ne: Page 1 d	of 1 6

e.

\$107/52/11

00109540/07685 80524 DEN TUE - 24 NOV 3:00P STANDARD OVERNIGHT ACTWGT: 42 00 LB CAD: 1073531830VET 3670 00-US BILL SENDER EPT. ADM FORT COLLINS CO 80524 ALSENV. - FORT COLLINS FTCA 0201 7750 4462 5706 (717) 944-5541 225 COMMERCE DR WIDDLETOWN PA 17057 UNITED STATES US TO AMY WOLF 34 DOGWOOD LANE ORIGIN ID-MOTA STEVE SMITH -enh1151 7 10 1 93BY

Wednesday, December 16, 2015 5:19:04 PM

After printing this tabel: 1. Use the Print button on this page to print your label to your laser or inkjet printer. 2. Fold the printed page along the trontzontal line. 3. Place label in shipping pouch and affix it to your shipment so that the barcode portion of the label can be read and scanned.

extraordinary value is \$1,000, e.g. jeweiry, precious metals, negotiable instruments and other items listed in our ServiceGuide. Written claims must be filed within strict time limits, see current FedEx Service Guide. Warning: Use only the printed original label for shipping. Using a photocopy of this label for shipping purposes is traudulent and could result in additional billing charges, along with the cancellation of your FedEx account number. Use of this system constitutes your agreement to the service concellation of your FedEx second number. Will not be responsible for any claim in excess of \$100 per package, whether the result of loss, damage, delay, non-delivery,misdelivery,or misinformation, unless your declare a higher value, pay an additional charge, document your actual loss and file a timely claim.Limitations that even in the current FedEx for any claim in excess of \$100 per package, whether the result of loss, damage, delay, non-delivery,misdelivery,or misinformation, unless you declare a higher value, pay an additional charge, document your actual loss and file a timely claim.Limitations that even in the current FedEx for any claim in excess of \$100 per package, whether the result of loss, damage, delay, non-delivery,misdelivery,or misinformation, unless you declare a higher value, pay an additional charge, document your actual loss and file a timely claim.Limitations that even actual descence Guide apply. Your right to recover from FedEx to any loss in file out the package, loss total for any declare a profit, attorney's frees, costs, and other from so than additional charge, document your actual loss and file a time package, loss for any loss interval information. Underest, profit, attorney's frees, costs, and other from so thange whether direct, inclematic, profite on the automore costs, and other forms of damage whether direct, inclematic, profite actual document of the automore declared value. Recovery cannot exceed actual documented loss, Matter is existent of the gravity and other terms of terms of the automore declared soles, one exceed actual documented loss, whether at existent of the gravity of the automore declared soles. Network exceed actual documented loss, whether existent of the gravity and te

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SAMPLE SUMMARY REPORT

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Client: AL Project: 210 Cample ID: 210 Legal Location: 210 Collection Date: 11/ Analyses 210	S Environmental 9302 9302001 19/2015 15:20	Result	Qual	Report Limit	F Units	Date: Work Order: Lab ID: Matrix: Percent Moisture: Dilution Factor	10-Dec-15 1511447 1511447-1 WATER	Date Analyzed
GROSS Alpha/Beta by GROSS ALPHA GROSS BETA	GFPC	ND (+/- 1.6) 9 (+/- 2.2)	PAI 724 U	2.7	рСі/І рСі/І	Prep Date: 11/30/2 NA NA	0 15 Prep	By: ECP 12/2/2015 12:07 12/2/2015 12:07
		,					;	
			LINS Version:	ental 6.795	- FC		AR Pag	elof 5 8 of 1.



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SAMPLE SUMMARY REPORT

09302					Work Order: 1	511447
09302002					Lab ID: 1	511447-2
					Matrix: V	VATER
/19/2015 15:20				Р	ercent Moisture:	
	Result	Qual	Report Limit	Units	Dilution Factor	Date Analyzed
y GFPC	2.7 (+/- 1.4) 7.8 (+/- 2)	PAI 724	4 2.1 2.7	 рСі/І р Сі/І	Prep Date: 11/30/20 NA NA	15 PrepBy: ECP 12/2/2015 12:07 12/2/2015 12:07
						1
	A	LS Environm	ental 6.795	FC		1 AR Page 2 of 5 9 of 1
	09302 09302002 /19/2015 15:20	09302002 /19/2015 15:20 Result y GFPC 2.7 (+/- 1.4) 7.8 (+/- 2) A	09302 09302002 / 9/2015 15:20 Result Qual PAI 724 2.7 (+/- 1.4) LT 7.8 (+/- 2) ALS Environm LMS Vorsion:	09302 09302002 19/2015 15:20 7 GFPC PAI 724 2.7 (+/-1.4) UT 2.1 7.8 (+/-2) 2.7 7.8 (+/-2) 2.7 ALS Environmental LMS Version: 6.795	09302002 19/2015 15:20 PAI 724 2.7 (+/-1.4) 2.7 (+/-2) PAI 724 2.7 pC// 7.8 (+/-2) PAI 724 2.7 pC// PAI 724 PAI 724 2.7 pC// PAI 724 PAI	09302002 Lab ID: 1 09302002 Lab ID: 1 19/2015 15:20 Percent Moisture: 0 GFPC PAI 724 Prop Date: 11/30/20 2.7 (+f-1.4) LT 2.1 pC/J NA 7.8 (+f-2) 2.7 pC/J NA A A A A A A A A A A A A A

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Page 29 of 32

SAMPLE SUMMARY REPORT

15:10 Result 2.3 (+/- 1.3) 10.7 (+/- 2.4)	Qual PAI 7 LT	Report Limit 24 2.3 2.6	Perce Units Prep pCi/l pCi/l	Dilution Factor Date: 11/30/2015 NA NA	Date Analyzed PrepBy: ECP 12/2/2015 12:07 12/2/2015 12:07
15:10 Result 2.3 (+/- 1.3) 10.7 (+/- 2.4)	Qual PAI 7 LT	Report Limit 24 2.3 2.6	Perce Units Prep pCi/l pCi/l	Dilution Factor Date: 11/30/2015 NA NA	Date Analyzed PrepBy: ECP 12/2/2015 12:07 12/2/2015 12:07
Result 2.3 (+/- 1.3) 10.7 (+/- 2.4)	Qual PAI 7 LT	Report Limit 24 2.3 2.6	Units Prep pCi/l pCi/l	Dilution Factor	Date Analyzed PrepBy: ECP 12/2/2015 12:07 12/2/2015 12:07
Result 2.3 (+/- 1.3) 10.7 (+/- 2.4)	Qual PAI 7 LT	24 2.3 2.6	Units Prep pCi/l pCi/l	Date: 11/30/2015 NA NA	Date Analyzed PrepBy: ECP 12/2/2015 12:07 12/2/2015 12:07
2.3 (+/- 1.3) 10.7 (+/- 2.4)	PAI 7	24 2.3 2.6	Prep pCi/l pCi/l	Date: 11/30/2015 NA NA	PrepBy: ECP 12/2/2015 12:07 12/2/2015 12:07
					ę
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	ALS Environ: LIMS Versio	mental n: 6.795	FC	А	R Page 3 of 5 10 of 1
		ALS Environe LIMS Version	ALS Environmental LIMS Version: 6.795	ALS Environmental FC LIMS Version: 6.795	ALS Environmental FC LIMS Version: 6.795 A

SAMPLE SUMMARY REPORT

ample 1D: 2109302004 .egal Location: Collection Date: 11/19/2015 16:10	0		Demont	Perce	Lab ID: 1511 Matrix: WAT	TER 1
nalyses	Result	Qual	Limit	Units	Dilution Factor	Date Analyzed
Gross Alpha/Beta by GFPC GROSS ALPHA GROSS BETA	2.3 (+/- 1.3) 6.5 (+/- 1.9)	PAI 72	4 2.2 2.7	Prep pCi/l pCi/l	Date: 11/30/2015 NA NA	PrepBy: ECP 12/2/2015 12:07 12/2/2015 12:07
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	10					:
	AI	LS Environm	ental 6.795	FC	A	R Page 4 of 5 11 of 1

Wednesday, December 16, 2015 5:19:04 PM

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SAMPLE SUMMARY REPORT

ALS

lient:	AL	S Environmental				Date:	10-Dec-15
roject:	210	9302				Work Order:	1511447
mple ID:	210	9302004				Lab ID:	1511447-4
agal Location:						Matrix:	WATER
Ilection Date:	11/	9/2015 16-10			Per	cent Moisture:	
onection Date.		19/2010 10:10		Derect			
nalyses		Result	Qual	Limit	Units	Dilution Factor	Date Analyzed
xplanation of Q	uali	fiers					
adiochemistry:						544 - 520.	
or ND - Result is les	s that	the sample specific MDC.		M3 - The request	ed MDC was	not met, but the rep	brted
i - Chemical Yield is	in co	ntrol at 100-110%. Quantitative yield is assumed.		L - LCS Recovery	below lower	control limit.	
2 - Chemical Yield ou	utside	default limits.		H - LCS Recover	above uppe	r control limit.	
- DER is greater that	an Wa	ming Limit of 1.42		P - LCS, Matrix S	pike Recover	y within control limits	5.
- Aliquot Basis is 'As - Aliquot Basis is 'Do	v Wei	oht while the Report Basis is 'Dry weight.		N - Matrix Spike F	ecovery out	side control limits	
- Sample density diff	fers b	y more than 15% of LCS density.		NC - Not Calcula	ed for duplic	ate results less than	5 times MDC
- DER is greater that	n Con	frol Limit		B - Analyte conce	ntration grea	ter than MDC.	
- Requested MDC no	ot me	t.		B3 - Analyte cond	entration gre	ater than MDC but le	ess than Requested
- Result is less than	n requ	ested MDC but greater than achieved MDC.		MDC.			
organics:	-3367						
- Result is less than	the re	quested reporting limit but greater than the instrum	nent met	hod detection limit	(MDL).		
or ND - Indicates that	at the	compound was analyzed for but not detected.			leader to a	he assertion	
- The reported value	is est	amated because of the presence of interference. A	un explar	natory note may be	included in t	he narrative.	
- Duplicate injection	n prec	usion was not met.	or all ICI	D analuses when #	e matrix snik	e and or snike	
 Spiked sample recouplicate fail and the n 	ative	sample concentration is less than four times the sp	oke adde	ed concentration.	e manix apri	to and or apino	
- Spiked recovery not	t with	n control limits. An explanatory note may be include	ed in the	e narrative.			
- Duplicate analysis (relativ	e percent difference) not within control limits.					
- SAR value is estimation	ated a	as one or more analytes used in the calculation we	re not de	tected above the d	etection limit		
organics:							
J or ND - Indicates tha	atthe	compound was analyzed for but not detected.					
- Analyte is detected	in the	associated method blank as well as in the sample	. It india	cates probable blan	k contamina	tion and warns the d	ata user.
- Analyte concentration	ion ex	ceeds the upper level of the calibration range.					
- Estimated value. T	he res	sult is less than the reporting limit but greater than	the instr	ument method det	ection limit (M	ADL).	
 A tentatively identifi 	ied co	mpound is a suspected aldol-condensation produc	et.				
- The analyte was dil	luted I	below an accurate quantitation level.					
 The spike recovery in the relative percent 	is equ t diffe	at to or outside the control criteria used.	3				
- A pattern resemblin	na ga	soline was detected in this sample.					
- A pattern resemblin	ng die	sel was detected in this sample.					
- A pattern resemblin	ng ma	stor oil was detected in this sample.					
- A pattern resembling	ng cru	de oil was detected in this sample.					
 A pattern resemblin 	Ig JP	4 was detected in this sample.					
 A pattern resemblin 	Ig JPL	5 was detected in this sample.					
- Indicates that the fu	Jei pa	tern was in the heavier and of the retention time with	dow for	the analyte of inter	erest.		
- Indicates that the fu	that a	tem was in the lighter and of the recention time win	semble	the natterns of any	of the follow	ing petroleum hydroc	arbon products:
gasoline	that a	agrinoant naction of the reported result and not re-	o crimero i	ne patiente et any		a personal de la companya de la comp	
JP-8							
mineral spirits	<u>_</u>						
motor oil							
Stoddard solvent bunker C							
				10.110			
	_	ALS	Envi	ronmental	FC		
			LIMS V	ersion: 8.795	5725722		AR Page 5 of 5 12 of 13
			2/2000				
							4
							0.000

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Client:	ALS Environmental
Work Order:	1511447
Project:	2109302

Date: 12/10/2015 4:58

QC BATCH REPORT

Batch ID: AB151130-1-3	Instrument ID LB	4100-C		Method: G	ross Alph	a/Beta by	GFPC				
LCS Sample ID:	AB151130-1			Ur	nits: pCI/I		Analysi	s Date:	12/2/201	5 13:39	
Client ID:	Run II	D: AB151130-	1A			P	rep Date: 11/3	0/2015	DF:	NA	
Analyte	Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	Decision Level	DER Ref	DER	DER Limit	Qual
GROSS ALPHA	239 (+/- 43)	7	225.4		106	70-130					P,M3
GROSS BETA	197 (+/- 34)	12	203.8		96.6	70-130					P,M3
LCSD Sample ID:	AB151130-1			Ur	nits: pCi/l		Analysi	s Date:	12/2/201	5 13:39	
Client ID:	Run II	D: AB151130-	1 A			Р	rep Date: 11/3	0/2015	DF:	NA	
				SPK Ref		Control	Decision	DER	000	DER	Qual
Analyte	Result	ReportLimit	SPK Val	value	%REC	Lana	Lover	INGI	DER		Quai
GROSS ALPHA	208 (+/- 39)	7	225.4		92.5	70-130		239	0.5	2.1	P,M3
GRUSS BETA	200 (*/*30)		203.0		30.2	10-100		137	0.07	2.1	1,110
MB Sample ID:	AB151130-1			U	nits: pCi/l		Analysi	s Date: 1	12/3/201	5 12:06	
Client ID:	Run I	D: AB161130-	1A			P	rep Date: 11/3	0/2015	DF:	NA	
Analuta	Deevit	Report imit	SPK Val	SPK Ref Value	%REC	Control Limit	Decision Level	DER Ref	DER	DER	Qual
Analyte	Result	reportunit	OF IX Val		AUCC	1. 1999) 19					
GROSS ALPHA	ND ND	0.81								1122-0	U
		ALS	S Enviror LIMS Versi	nmental - on: 6.795	- FC			anie i	QC	Page: 1	of 1 f 13







NELAP Certifications: NJ PA010 , NY 11759 , PA 22-293 DoD ELAP: A2LA 0818.01 State Certifications: DE ID 11 , MA PA0102 , MD 128 , VA 460157 , WV 343

January 7, 2016

Ms. Irene Fitzgerald DELCORA P.O. Box 999 Chester, PA 19016

Certificate of Analysis

Revised Report - 1/7/2016 6:17:18 AM - See workorder comment section for explanation

Project Name:	2015-LOWER DELAWARE TESTING	Workorder:	2110770
Purchase Order:		Workorder ID:	2015-LOWER DELAWARE TESTING

Dear Ms. Fitzgerald:

Enclosed are the analytical results for samples received by the laboratory on Tuesday, December 1, 2015.

The ALS Environmental laboratory in Middletown, Pennsylvania is a National Environmental Laboratory Accreditation Program (NELAP) accredited laboratory and as such, certifies that all applicable test results meet the requirements of NELAP.

If you have any questions regarding this certificate of analysis, please contact Mr. Brad W Kintzer (Project Coordinator) at (717) 944-5541.

Analyses were performed according to our laboratory's NELAP-approved quality assurance program and any applicable state requirements. The test results meet requirements of the current NELAP standards or state requirements, where applicable. For a specific list of accredited analytes, refer to the certifications section of the ALS website at www.alsglobal.com/en/Our-Services/Life-Sciences/Environmental/Downloads.

This laboratory report may not be reproduced, except in full, without the written approval of ALS Environmental.

ALS Spring City: 10 Riverside Drive, Spring City, PA 19475 610-948-4903

CC: Mr. Ray Rios , Mr. Mike Krause

This page is included as part of the Analytical Report and must be retained as a permanent record thereof.

Mr. Brad W Kintzer Project Coordinator

ALS Environmental Laboratory Locations Across North America





NELAP Certifications: NJ PA010 , NY 11759 , PA 22-293 DoD ELAP: A2LA 0818.01 State Certifications: DE ID 11 , MA PA0102 , MD 128 , VA 460157 , WV 343

SAMPLE SUMMARY

Workorder: 2110770 2015-LOWER DELAWARE TESTING

Lab ID	Sample ID	Matrix	Date Collected	Date Received	Collected By
2110770001	CPS/EPS1 (72/28) LTCPWWCSO	Water	12/1/2015 09:43	12/1/2015 13:55	Mr. Ray Rios
2110770002	CPS1	Water	12/1/2015 09:43	12/1/2015 13:55	Mr. Ray Rios
2110770003	14th & Crozer	Water	12/1/2015 09:20	12/1/2015 13:55	Mr. Ray Rios
2110770004	Sun & Hancock	Water	12/1/2015 11:00	12/1/2015 13:55	Mr. Ray Rios

Notes

-- Samples collected by ALS personnel are done so in accordance with the procedures set forth in the ALS Field Sampling Plan (20 -Field Services Sampling Plan).

-- All Waste Water analyses comply with methodology requirements of 40 CFR Part 136.

-- All Drinking Water analyses comply with methodology requirements of 40 CFR Part 141.

-- Unless otherwise noted, all quantitative results for soils are reported on a dry weight basis.

-- The Chain of Custody document is included as part of this report.

-- All Library Search analytes should be regarded as tentative identifications based on the presumptive evidence of the mass spectra. Concentrations reported are estimated values.

-- Parameters identified as "analyze immediately" require analysis within 15 minutes of collection. Any "analyze immediately" parameters not listed under the header "Field Parameters" are preformed in the laboratory and are therefore analyzed out of hold time.

-- Method references listed on this report beginning with the prefix "S" followed by a method number (such as S2310B-97)

refer to methods from "Standard Methods for the Examination of Water and Wastewater".

Standard Acronyms/Flags

- J Indicates an estimated value between the Method Detection Limit (MDL) and the Practical Quantitation Limit (PQL) for the analyte
- U Indicates that the analyte was Not Detected (ND)
- N Indicates presumptive evidence of the presence of a compound
- MDL Method Detection Limit
- PQL Practical Quantitation Limit
- RDL Reporting Detection Limit
- ND Not Detected indicates that the analyte was Not Detected at the RDL
- Cntr Analysis was performed using this container
- RegLmt Regulatory Limit
- LCS Laboratory Control Sample
- MS Matrix Spike
- MSD Matrix Spike Duplicate
- DUP Sample Duplicate
- %Rec Percent Recovery
- RPD Relative Percent Difference
- LOD DoD Limit of Detection
- LOQ DoD Limit of Quantitation
- DL DoD Detection Limit
- I Indicates reported value is greater than or equal to the Method Detection Limit (MDL) but less than the Report Detection Limit (RDL)
- (S) Surrogate Compound
- NC Not Calculated
- * Result outside of QC limits

ALS Environmental Laboratory Locations Across North America





NELAP Certifications: NJ PA010 , NY 11759 , PA 22-293 DoD ELAP: A2LA 0818.01 State Certifications: DE ID 11 , MA PA0102 , MD 128 , VA 460157 , WV 343

PROJECT SUMMARY

Workorder: 2110770 2015-LOWER DELAWARE TESTING

Workorder Comments

See attached subcontracted radiological results from ALS-Ft. Collins. VLF 12/23/15

This report was modified on 1/6/16 to add Total Nitogen to all samples. BWK

Sample Comments

 Lab ID: 2110770001
 Sample ID: CPS/EPS1 (72/28) LTCPWWCSO
 Sample Type: SAMPLE

 MBAS calculated as LAS molecular weight 342 g/mol.
 The reporting limits for GCMS volatile analytes were raised due to the dilution of the sample caused by matrix.

 Lab ID: 2110770002
 Sample ID: CPS1
 Sample Type: SAMPLE

 MBAS calculated as LAS molecular weight 342 g/mol.
 MBAS calculated as LAS molecular weight 342 g/mol.

Sample ID: Sun

The reporting limits for GCMS volatile analytes were raised due to the dilution of the sample caused by matrix.

Lab ID: 2110770003 Sample ID: 14th

MBAS calculated as LAS molecular weight 342 g/mol.

The reporting limits for GCMS volatile analytes were raised due to the dilution of the sample caused by matrix.

Lab ID: 2110770004

Sample Type: SAMPLE

Sample Type: SAMPLE

MBAS calculated as LAS molecular weight 342 g/mol.

The reporting limits for GCMS volatile analytes were raised due to the dilution of the sample caused by matrix.

ALS Environmental Laboratory Locations Across North America





NELAP Certifications: NJ PA010 , NY 11759 , PA 22-293 DoD ELAP: A2LA 0818.01 State Certifications: DE ID 11 , MA PA0102 , MD 128 , VA 460157 , WV 343

ANALYTICAL RESULTS

Workorder: 2110770 2015-LOWER DELAWARE TESTING

Lab ID: Sample ID:	2110770001 CPS/EPS1 (72	/28) LTCPW	/wcso			Date Collected: Date Received:	12/1/2015 09:43 12/1/2015 13:55	Matrix: W	/ater	
Parameters		Results	Flag	Units	RDL	Method	Prepared By	Analyzed	Ву	Cntr
VOLATILE OR	GANICS									
Benzene		ND		ug/L	5.0	EPA 624		12/2/15 23:49	DD	S
Bromodichloror	methane	ND		ug/L	5.0	EPA 624		12/2/15 23:49	DD	S
Chlorodibromo	methane	ND		ug/L	5.0	EPA 624		12/2/15 23:49	DD	S
Chloroform		5.7		ug/L	5.0	EPA 624		12/2/15 23:49	DD	S
Ethylbenzene		ND		ug/L	5.0	EPA 624		12/2/15 23:49	DD	S
Methyl t-Butyl E	Ether	ND		ug/L	5.0	EPA 624		12/2/15 23:49	DD	S
Methylene Chlo	oride	ND		ug/L	5.0	EPA 624		12/2/15 23:49	DD	S
Tetrachloroethe	ene	ND		ug/L	5.0	EPA 624		12/2/15 23:49	DD	S
Toluene		8.6		ug/L	5.0	EPA 624		12/2/15 23:49	DD	S
Total Xylenes		ND		ug/L	15.0	EPA 624		12/2/15 23:49	DD	S
Surrogate Reco	overies	Results	Flag	Units	Limits	Method	Prepared By	Analyzed	By	Cntr
1,2-Dichloroeth	ane-d4 (S)	100		%	72 - 142	EPA 624		12/2/15 23:49	DD	S
4-Bromofluorob	penzene (S)	97.4		%	73 - 119	EPA 624		12/2/15 23:49	DD	S
Dibromofluoron	nethane (S)	86		%	74 - 132	EPA 624		12/2/15 23:49	DD	S
Toluene-d8 (S)		90.5		%	75 - 133	EPA 624		12/2/15 23:49	DD	S
SEMIVOLATIL	ES									
Benzo(a)anthra	acene	ND		ug/L	1.4	EPA 625	12/3/15 CAC	12/4/15 09:54	DHF	U
Chrysene		ND		ug/L	1.4	EPA 625	12/3/15 CAC	12/4/15 09:54	DHF	U
bis(2-Ethylhexy	l)phthalate	9.1		ug/L	2.8	EPA 625	12/3/15 CAC	12/4/15 09:54	DHF	U
N-Nitroso-di-n-	propylamine	ND		ug/L	2.8	EPA 625	12/3/15 CAC	12/4/15 09:54	DHF	U
Phenanthrene		ND		ug/L	1.4	EPA 625	12/3/15 CAC	12/4/15 09:54	DHF	U
Surrogate Reco	overies	Results	Flag	Units	Limits	Method	Prepared By	Analyzed	By	Cntr
2,4,6-Tribromor	phenol (S)	100		%	47 - 128	EPA 625	12/3/15 CAC	12/4/15 09:54	DHF	U
2-Fluorobiphen	yl (S)	74		%	52 - 118	EPA 625	12/3/15 CAC	12/4/15 09:54	DHF	U
2-Fluorophenol	(S)	35.2		%	20 - 87	EPA 625	12/3/15 CAC	12/4/15 09:54	DHF	U
Nitrobenzene-d	15 (S)	72.4		%	27 - 139	EPA 625	12/3/15 CAC	12/4/15 09:54	DHF	U
Phenol-d5 (S)		28		%	10 - 81	EPA 625	12/3/15 CAC	12/4/15 09:54	DHF	U
Terphenyl-d14	(S)	81		%	46 - 133	EPA 625	12/3/15 CAC	12/4/15 09:54	DHF	U
Pesticides and	d PCBs									
Dieldrin		0.023		ug/L	0.019	EPA 608	12/7/15 JSR	12/9/15 17:33	RWS	W
Total Polychlori Biphenyl	nated			ug/L		EPA 608	12/7/15 JSR	12/9/15 17:33	RWS	W
Aroclor-1016		ND		ug/L	0.47	EPA 608	12/7/15 JSR	12/9/15 17:33	RWS	W
Aroclor-1221		ND		ug/L	0.47	EPA 608	12/7/15 JSR	12/9/15 17:33	RWS	W
Aroclor-1232		ND		ug/L	0.47	EPA 608	12/7/15 JSR	12/9/15 17:33	RWS	W
Aroclor-1242		ND		ug/L	0.47	EPA 608	12/7/15 JSR	12/9/15 17:33	RWS	W

ALS Environmental Laboratory Locations Across North America





NELAP Certifications: NJ PA010 , NY 11759 , PA 22-293 DoD ELAP: A2LA 0818.01 State Certifications: DE ID 11 , MA PA0102 , MD 128 , VA 460157 , WV 343

ANALYTICAL RESULTS

Workorder: 2110770 2015-LOWER DELAWARE TESTING

Lab ID: Sample ID:	2110770001 CPS/EPS1 (72/	28) LTCPW	wcso			Date Collected: Date Received:	12/1/2015 09:43 12/1/2015 13:55	Matrix: V	/ater	
Parameters		Results	Flag	Units	RDL	Method	Prepared By	Analyzed	Ву	Cntr
Aroclor-1248		ND		ug/L	0.47	EPA 608	12/7/15 JS	R 12/9/15 17:33	RWS	W
Aroclor-1254		ND		ug/L	0.47	EPA 608	12/7/15 JS	R 12/9/15 17:33	RWS	W
Aroclor-1260		ND		ug/L	0.47	EPA 608	12/7/15 JS	R 12/9/15 17:33	RWS	W
Surrogate Rec	overies	Results	Flag	Units	Limits	Method	Prepared	By Analyzed	By	Cntr
Decachlorobip	henyls (S)	43.6		%	30 - 150	EPA 608	12/7/15 JS	R 12/9/15 17:33	RWS	W
Tetrachloro-m-	xylene (S)	52.3		%	36 - 112	EPA 608	12/7/15 JS	R 12/9/15 17:33	RWS	W
WET CHEMIS	TRY									
Ammonia-N		27.4		mg/L	0.100	D6919-09		12/2/15 19:05	JAM	А
Biochemical O Demand	xygen	119		mg/L	2.0	S5210B-11		12/2/15 04:20	GMM	В
Carbonaceous	BOD	105		mg/L	2.0	S5210B-11		12/2/15 06:55	GMM	В
Carbonaceous	BOD 20 Day	260		mg/L	2.0	S5210B-11		12/2/15 11:27	GMM	В
Cyanide, Total		ND		mg/L	0.0050	EPA 335.4	12/14/15 M	MA 12/15/15 00:20	LJF	G
Dissolved Oxy	gen	2.2		mg/L	1.0	S4500OG-0)1	12/7/15 07:28	RMM	В
Halogen, Total (TOX)	Organic	53.4		ug/L	20.0	SW846 9020)B	12/9/15 11:01	PAG	Ν
Hexavalent Ch	iromium	ND		mg/L	0.010	S3500CrB-0)9	12/2/15 01:11	MSA	В
Nitrate-N		0.65		mg/L	0.50	EPA 300.0	1	12/2/15 11:57	JP	В
Nitrite-N		ND		mg/L	0.50	EPA 300.0)	12/2/15 11:57	JP	В
Odor		10		T.O.N.	1	S2150B-97	7	12/2/15 04:05	MSA	Μ
Oil/Grease He Extractable	xane	20.7		mg/L	2.0	EPA 1664E	3	12/6/15 14:00	AT	Н
Oil/Grease Sili	ca Gel Treated	ND		mg/L	2.0	EPA 1664E	3	12/6/15 14:00	AT	Н
Phenolics		0.050		mg/L	0.005	EPA 420.4	12/14/15 N	/ 12/17/15 11:42	AMH	J
Phosphorus, T	otal	3.4		mg/L	0.10	EPA 365.1	12/4/15 N	/ 12/10/15 04:17	LJF	А
Sulfide, Total		ND		mg/L	1.0	S4500S2F-0	00	12/2/15 19:10	DRM	L
Surfactants (M	BAS)	0.539		mg/L	0.025	S5540C-00)	12/3/15 02:25	MBW	К
Total Dissolved	d Solids	300		mg/L	5	S2540C-11	l	12/2/15 08:53	ML	В
Total Kjeldahl I	Nitrogen	33.9		mg/L	4.0	S4500NH3G	-11 12/3/15 J1	H 12/8/15 11:00	C_W	А
Total Nitrogen		34.6		mg/L	1.20	Calculation	า	1/6/16 20:51	NJA	А
Total Suspende	ed Solids	190		mg/L	5	S2540D-11	l	12/1/15 22:18	NV	В
Turbidity		87.2		NTU	0.10	S2130B-01	l	12/3/15 03:09	MSA	В
METALS										
Hardness		137		mg/L	0.66	EPA 200.7	12/2/15 JF	S 12/3/15 13:05	TSS	P1
Trivalent Chron	mium	ND		mg/L	0.010	Calculation	า	12/15/15 10:51	AGM	В
Aluminum, Tota	al	0.75		mg/L	0.040	EPA 200.8	12/3/15 JF	PS 12/4/15 04:29	ZMC	P2
Antimony, Tota	l	ND		mg/L	0.0010	EPA 200.8	12/3/15 JF	2S 12/4/15 04:29	ZMC	P2

ALS Environmental Laboratory Locations Across North America





NELAP Certifications: NJ PA010 , NY 11759 , PA 22-293 DoD ELAP: A2LA 0818.01 State Certifications: DE ID 11 , MA PA0102 , MD 128 , VA 460157 , WV 343

ANALYTICAL RESULTS

Workorder: 2110770 2015-LOWER DELAWARE TESTING

Lab ID: 2110770001 Sample ID: CPS/EPS1 (72	2/28) LTCPW	wcso			Date Collected: 1 Date Received: 1	2/1/2015 09:43 2/1/2015 13:55	Matrix: W	ater	
Parameters	Results	Flag	Units	RDL	Method	Prepared By	Analyzed	By	Cntr
Arsenic, Total	ND		mg/L	0.0015	EPA 200.8	12/3/15 JPS	12/4/15 04:29	ZMC	P2
Cadmium, Total	ND		mg/L	0.00050	EPA 200.8	12/3/15 JPS	12/4/15 04:29	ZMC	P2
Chromium, Total	0.0048		mg/L	0.0010	EPA 200.8	12/3/15 JPS	12/4/15 04:29	ZMC	P2
Copper, Total	0.066		mg/L	0.0025	EPA 200.8	12/3/15 JPS	12/4/15 04:29	ZMC	P2
Iron, Total	2.7		mg/L	0.060	EPA 200.7	12/2/15 JPS	12/3/15 13:05	TSS	P1
Lead, Total	0.0094		mg/L	0.0010	EPA 200.8	12/3/15 JPS	12/4/15 04:29	ZMC	P2
Mercury, Total	ND		mg/L	0.00020	EPA 245.1	12/10/15 MNP	12/10/15 12:09	MNP	P3
Molybdenum, Total	0.0018		mg/L	0.0010	EPA 200.8	12/3/15 JPS	12/4/15 04:29	ZMC	P2
Selenium, Total	ND		mg/L	0.0020	EPA 200.8	12/3/15 JPS	12/4/15 04:29	ZMC	P2
Silver, Total	ND		mg/L	0.0010	EPA 200.8	12/3/15 JPS	12/4/15 04:29	ZMC	P2
Thallium, Total	ND		mg/L	0.00050	EPA 200.8	12/3/15 JPS	12/4/15 04:29	ZMC	P2
Zinc, Total	0.12		mg/L	0.0025	EPA 200.8	12/3/15 JPS	12/4/15 04:29	ZMC	P2
MICROBIOLOGY									
Enterococcus	242000		col/100mL	100	S9230D		12/1/15 14:18	LLJ	R
Fecal Coliform	21000000		col/100mL	100000 0	SM9222D+EP/ 625/R-92/013 APX F	A	12/1/15 15:04	LLJ	Q
Sub'd to NELAP CERTIFIED	Lab								
Gross Alpha	ND		pCi/L	2.60	EPA 900.0		12/11/15 10:43	SUB	Y
Gross Alpha Uncertainty +/-	1.20		pCi/L		EPA 900.0		12/11/15 10:43	SUB	Y
Gross Beta	10.5		pCi/L	2.80	EPA 900.0		12/11/15 10:43	SUB	Y
Gross Beta Uncertainty +/-	2.40		pCi/L		EPA 900.0		12/11/15 10:43	SUB	Y

1. Kiston

Mr. Brad W Kintzer Project Coordinator

ALS Environmental Laboratory Locations Across North America





NELAP Certifications: NJ PA010 , NY 11759 , PA 22-293 DoD ELAP: A2LA 0818.01 State Certifications: DE ID 11 , MA PA0102 , MD 128 , VA 460157 , WV 343

ANALYTICAL RESULTS

Workorder: 2110770 2015-LOWER DELAWARE TESTING

Lab ID: Sample ID:	2110770002 CPS1					Date Collected: Date Received:	12/1/2015 09:43 12/1/2015 13:55	Matrix: V	Vater	
Parameters		Results	Flag	Units	RDL	Method	Prepared By	Analyzed	By	Cntr
VOLATILE OF	RGANICS									
Benzene		ND		ug/L	5.0	EPA 624		12/2/15 23:27	DD	S
Bromodichloro	methane	ND		ug/L	5.0	EPA 624		12/2/15 23:27	DD	S
Chlorodibromo	omethane	ND		ug/L	5.0	EPA 624		12/2/15 23:27	DD	S
Chloroform		ND		ug/L	5.0	EPA 624		12/2/15 23:27	DD	S
Ethylbenzene		ND		ug/L	5.0	EPA 624		12/2/15 23:27	DD	S
Methyl t-Butyl	Ether	ND		ug/L	5.0	EPA 624		12/2/15 23:27	DD	S
Methylene Chl	oride	ND		ug/L	5.0	EPA 624		12/2/15 23:27	DD	S
Tetrachloroeth	ene	ND		ug/L	5.0	EPA 624		12/2/15 23:27	DD	S
Toluene		ND		ug/L	5.0	EPA 624		12/2/15 23:27	DD	S
Total Xylenes		ND		ug/L	15.0	EPA 624		12/2/15 23:27	DD	S
Surrogate Rec	coveries	Results	Flag	Units	Limits	Method	Prepared By	Analyzed	By	Cntr
1,2-Dichloroet	hane-d4 (S)	97.1		%	72 - 142	EPA 624		12/2/15 23:27	DD	S
4-Bromofluoro	benzene (S)	97.8		%	73 - 119	EPA 624		12/2/15 23:27	DD	S
Dibromofluoro	methane (S)	86.1		%	74 - 132	EPA 624		12/2/15 23:27	DD	S
Toluene-d8 (S))	89.4		%	75 - 133	EPA 624		12/2/15 23:27	DD	S
SEMIVOLATIL	ES									
Benzo(a)anthr	acene	ND		ug/L	1.4	EPA 625	12/3/15 CAC	12/4/15 10:21	DHF	U
Chrysene		ND		ug/L	1.4	EPA 625	12/3/15 CAC	12/4/15 10:21	DHF	U
bis(2-Ethylhex	yl)phthalate	7.3		ug/L	2.8	EPA 625	12/3/15 CAC	12/4/15 10:21	DHF	U
N-Nitroso-di-n-	-propylamine	ND		ug/L	2.8	EPA 625	12/3/15 CAC	12/4/15 10:21	DHF	U
Phenanthrene		ND		ug/L	1.4	EPA 625	12/3/15 CAC	12/4/15 10:21	DHF	U
Surrogate Rec	coveries	Results	Flag	Units	Limits	Method	Prepared By	Analyzed	By	Cntr
2,4,6-Tribromo	phenol (S)	98.4		%	47 - 128	EPA 625	12/3/15 CAC	12/4/15 10:21	DHF	U
2-Fluorobipher	nyl (S)	74		%	52 - 118	EPA 625	12/3/15 CAC	12/4/15 10:21	DHF	U
2-Fluoropheno	ol (S)	35		%	20 - 87	EPA 625	12/3/15 CAC	12/4/15 10:21	DHF	U
Nitrobenzene-	d5 (S)	74.3		%	27 - 139	EPA 625	12/3/15 CAC	12/4/15 10:21	DHF	U
Phenol-d5 (S)		26.6		%	10 - 81	EPA 625	12/3/15 CAC	12/4/15 10:21	DHF	U
Terphenyl-d14	(S)	82.4		%	46 - 133	EPA 625	12/3/15 CAC	12/4/15 10:21	DHF	U
Pesticides an	d PCBs									
Dieldrin		0.020		ug/L	0.019	EPA 608	12/7/15 JSR	12/9/15 17:55	RWS	W
Total Polychlor Biphenyl	rinated			ug/L		EPA 608	12/7/15 JSR	12/9/15 17:55	RWS	W
Aroclor-1016		ND		ug/L	0.47	EPA 608	12/7/15 JSR	12/9/15 17:55	RWS	W
Aroclor-1221		ND		ug/L	0.47	EPA 608	12/7/15 JSR	12/9/15 17:55	RWS	W
Aroclor-1232		ND		ug/L	0.47	EPA 608	12/7/15 JSR	12/9/15 17:55	RWS	W
Aroclor-1242		ND		ug/L	0.47	EPA 608	12/7/15 JSR	12/9/15 17:55	RWS	W

ALS Environmental Laboratory Locations Across North America





NELAP Certifications: NJ PA010 , NY 11759 , PA 22-293 DoD ELAP: A2LA 0818.01 State Certifications: DE ID 11 , MA PA0102 , MD 128 , VA 460157 , WV 343

ANALYTICAL RESULTS

Workorder: 2110770 2015-LOWER DELAWARE TESTING

Lab ID: Sample ID:	2110770002 CPS1					Date Collected: Date Received:	12/1/2015 09:43 12/1/2015 13:55	Matrix: W	'ater	
Parameters		Results	Flag	Units	RDL	Method	Prepared By	Analyzed	Ву	Cntr
Aroclor-1248		ND		ug/L	0.47	EPA 608	12/7/15 JSR	12/9/15 17:55	RWS	W
Aroclor-1254		ND		ug/L	0.47	EPA 608	12/7/15 JSR	12/9/15 17:55	RWS	W
Aroclor-1260		ND		ug/L	0.47	EPA 608	12/7/15 JSR	12/9/15 17:55	RWS	W
Surrogate Red	overies	Results	Flag	Units	Limits	Method	Prepared By	Analyzed	By	Cntr
Decachlorobip	henyls (S)	32.1		%	30 - 150	EPA 608	12/7/15 JSR	12/9/15 17:55	RWS	W
Tetrachloro-m-	xylene (S)	51.2		%	36 - 112	EPA 608	12/7/15 JSR	12/9/15 17:55	RWS	W
WET CHEMIS	TRY									
Ammonia-N		20.0		mg/L	0.100	D6919-09		12/2/15 19:24	JAM	А
Biochemical O Demand	xygen	94.0		mg/L	2.0	S5210B-11		12/2/15 04:20	GMM	В
Carbonaceous	BOD	92.3		mg/L	2.0	S5210B-11		12/2/15 06:55	GMM	В
Carbonaceous	BOD 20 Day	151		mg/L	2.0	S5210B-11		12/2/15 11:27	GMM	В
Cyanide, Total		ND		mg/L	0.0050	EPA 335.4	12/14/15 MMA	12/15/15 00:20	LJF	G
Dissolved Oxy	gen	2.5		mg/L	1.0	S4500OG-0	1	12/7/15 07:28	RMM	В
Halogen, Total (TOX)	Organic	36.1		ug/L	20.0	SW846 9020)B	12/9/15 11:36	PAG	Ν
Hexavalent Ch	nromium	ND		mg/L	0.010	S3500CrB-0)9	12/2/15 01:11	MSA	В
Nitrate-N		0.90		mg/L	0.50	EPA 300.0	1	12/2/15 12:10	JP	В
Nitrite-N		ND		mg/L	0.50	EPA 300.0	1	12/2/15 12:10	JP	В
Odor		5		T.O.N.	1	S2150B-97	7	12/2/15 04:05	MSA	Μ
Oil/Grease He Extractable	xane	12.4		mg/L	2.1	EPA 1664E	3	12/6/15 14:00	AT	Н
Oil/Grease Sili	ca Gel Treated	ND		mg/L	2.1	EPA 1664E	3	12/6/15 14:00	AT	Н
Phenolics		0.028		mg/L	0.005	EPA 420.4	12/14/15 NV	12/17/15 11:43	AMH	J
Phosphorus, T	otal	2.5		mg/L	0.10	EPA 365.1	12/4/15 NV	12/10/15 04:17	LJF	А
Sulfide, Total		ND		mg/L	1.0	S4500S2F-0	00	12/2/15 19:10	DRM	L
Surfactants (M	IBAS)	0.505		mg/L	0.025	S5540C-00)	12/3/15 02:25	MBW	К
Total Dissolved	d Solids	277		mg/L	5	S2540C-11		12/2/15 08:53	ML	В
Total Kjeldahl	Nitrogen	23.5		mg/L	4.0	S4500NH3G	-11 12/3/15 J1H	12/8/15 11:00	C_W	А
Total Nitrogen		24.4		mg/L	1.20	Calculation	1	12/14/15 14:11	NJA	А
Total Suspend	ed Solids	186		mg/L	5	S2540D-11	l	12/1/15 22:18	NV	В
Turbidity		81.9		NTU	0.10	S2130B-01	l	12/3/15 03:09	MSA	В
METALS										
Hardness		127		mg/L	0.66	EPA 200.7	12/2/15 JPS	12/3/15 13:17	TSS	P1
Trivalent Chro	mium	ND		mg/L	0.010	Calculation	ì	12/15/15 10:52	AGM	В
Aluminum, Tot	al	0.40		mg/L	0.040	EPA 200.8	12/3/15 JPS	12/4/15 04:33	ZMC	P2
Antimony, Tota	I	ND		mg/L	0.0010	EPA 200.8	12/3/15 JPS	12/4/15 04:33	ZMC	P2

ALS Environmental Laboratory Locations Across North America





NELAP Certifications: NJ PA010 , NY 11759 , PA 22-293 DoD ELAP: A2LA 0818.01 State Certifications: DE ID 11 , MA PA0102 , MD 128 , VA 460157 , WV 343

ANALYTICAL RESULTS

Workorder: 2110770 2015-LOWER DELAWARE TESTING

Lab ID: Sample ID:	2110770002 CPS1					Date Collected: Date Received:	12/1/2015 09:43 12/1/2015 13:55	Matrix: W	ater	
Parameters		Results	Flag	Units	RDL	Method	Prepared By	Analyzed	Ву	Cntr
Arsenic, Total		ND		mg/L	0.0015	EPA 200.8	12/3/15 JPS	12/4/15 04:33	ZMC	P2
Cadmium, Tota	al	ND		mg/L	0.00050	EPA 200.8	12/3/15 JPS	12/4/15 04:33	ZMC	P2
Chromium, Tot	al	0.0014		mg/L	0.0010	EPA 200.8	12/3/15 JPS	12/4/15 04:33	ZMC	P2
Copper, Total		0.041		mg/L	0.0025	EPA 200.8	12/3/15 JPS	12/4/15 04:33	ZMC	P2
Iron, Total		1.3		mg/L	0.060	EPA 200.7	12/2/15 JPS	12/3/15 13:17	TSS	P1
Lead, Total		0.0096		mg/L	0.0010	EPA 200.8	12/3/15 JPS	12/4/15 04:33	ZMC	P2
Mercury, Total		ND		mg/L	0.00020	EPA 245.1	12/10/15 MNP	12/10/15 12:10	MNP	P3
Molybdenum,	Total	0.0012		mg/L	0.0010	EPA 200.8	12/3/15 JPS	12/4/15 04:33	ZMC	P2
Selenium, Tota	al	ND		mg/L	0.0020	EPA 200.8	12/3/15 JPS	12/4/15 04:33	ZMC	P2
Silver, Total		ND		mg/L	0.0010	EPA 200.8	12/3/15 JPS	12/4/15 04:33	ZMC	P2
Thallium, Total		ND		mg/L	0.00050	EPA 200.8	12/3/15 JPS	12/4/15 04:33	ZMC	P2
Zinc, Total		0.13		mg/L	0.0025	EPA 200.8	12/3/15 JPS	12/4/15 04:33	ZMC	P2
MICROBIOLO	GY									
Enterococcus		199000		col/100mL	100	S9230D		12/1/15 14:18	LLJ	R
Fecal Coliform		3700000		col/100mL	100000	SM9222D+E 625/R-92/01 APX F	PA 13	12/1/15 16:28	LLJ	Q
Sub'd to NEL	AP CERTIFIED L	.ab								
Gross Alpha		ND		pCi/L	2.50	EPA 900.0)	12/11/15 10:43	SUB	Y
Gross Alpha U	ncertainty +/-	1.00		pCi/L		EPA 900.0	1	12/11/15 10:43	SUB	Y
Gross Beta	-	9.50		pCi/L	2.70	EPA 900.0	1	12/11/15 10:43	SUB	Y
Gross Beta Un	certainty +/-	2.20		pCi/L		EPA 900.0	1	12/11/15 10:43	SUB	Υ

1. Kiston

Mr. Brad W Kintzer Project Coordinator

ALS Environmental Laboratory Locations Across North America





NELAP Certifications: NJ PA010 , NY 11759 , PA 22-293 DoD ELAP: A2LA 0818.01 State Certifications: DE ID 11 , MA PA0102 , MD 128 , VA 460157 , WV 343

ANALYTICAL RESULTS

Workorder: 2110770 2015-LOWER DELAWARE TESTING

Lab ID:	2110770003					Date Collected:	12/1/2015 09:20	Matrix: W	/ater	
Sample ID:	14th & Crozer					Date Received:	12/1/2015 13:55			
Parameters		Results	Flag	Units	RDL	Method	Prepared By	Analyzed	Ву	Cntr
VOLATILE OR	GANICS									
Benzene		ND		ug/L	5.0	EPA 624		12/3/15 00:11	DD	S
Bromodichloro	methane	ND		ug/L	5.0	EPA 624		12/3/15 00:11	DD	S
Chlorodibromo	omethane	ND		ug/L	5.0	EPA 624		12/3/15 00:11	DD	S
Chloroform		ND		ug/L	5.0	EPA 624		12/3/15 00:11	DD	S
Ethylbenzene		ND		ug/L	5.0	EPA 624		12/3/15 00:11	DD	S
Methyl t-Butyl	Ether	ND		ug/L	5.0	EPA 624		12/3/15 00:11	DD	S
Methylene Chl	oride	ND		ug/L	5.0	EPA 624		12/3/15 00:11	DD	S
Tetrachloroeth	ene	ND		ug/L	5.0	EPA 624		12/3/15 00:11	DD	S
Toluene		ND		ug/L	5.0	EPA 624		12/3/15 00:11	DD	S
Total Xylenes		ND		ug/L	15.0	EPA 624		12/3/15 00:11	DD	S
Surrogate Rec	overies	Results	Flag	Units	Limits	Method	Prepared By	Analyzed	By	Cntr
1,2-Dichloroeth	nane-d4 (S)	100		%	72 - 142	EPA 624		12/3/15 00:11	DD	S
4-Bromofluorol	benzene (S)	98		%	73 - 119	EPA 624		12/3/15 00:11	DD	S
Dibromofluoro	methane (S)	83.4		%	74 - 132	EPA 624		12/3/15 00:11	DD	S
Toluene-d8 (S))	90.5		%	75 - 133	EPA 624		12/3/15 00:11	DD	S
SEMIVOLATIL	ES									
Benzo(a)anthra	acene	ND		ug/L	1.4	EPA 625	12/4/15 CAC	12/6/15 18:58	GEC	U
Chrysene		ND		ug/L	1.4	EPA 625	12/4/15 CAC	12/6/15 18:58	GEC	U
bis(2-Ethylhex	yl)phthalate	8.0		ug/L	2.8	EPA 625	12/4/15 CAC	12/6/15 18:58	GEC	U
N-Nitroso-di-n-	propylamine	ND		ug/L	2.8	EPA 625	12/4/15 CAC	12/6/15 18:58	GEC	U
Phenanthrene		ND		ug/L	1.4	EPA 625	12/4/15 CAC	12/6/15 18:58	GEC	U
Surrogate Rec	overies	Results	Flag	Units	Limits	Method	Prepared By	Analyzed	By	Cntr
2,4,6-Tribromo	phenol (S)	99.3		%	47 - 128	EPA 625	12/4/15 CAC	12/6/15 18:58	GEC	U
2-Fluorobipher	nyl (S)	64.3		%	52 - 118	EPA 625	12/4/15 CAC	12/6/15 18:58	GEC	U
2-Fluoropheno	l (S)	40.9		%	20 - 87	EPA 625	12/4/15 CAC	12/6/15 18:58	GEC	U
Nitrobenzene-	d5 (S)	68.9		%	27 - 139	EPA 625	12/4/15 CAC	12/6/15 18:58	GEC	U
Phenol-d5 (S)		31		%	10 - 81	EPA 625	12/4/15 CAC	12/6/15 18:58	GEC	U
Terphenyl-d14	(S)	85.6		%	46 - 133	EPA 625	12/4/15 CAC	12/6/15 18:58	GEC	U
Pesticides an	d PCBs									
Dieldrin		ND		ug/L	0.019	EPA 608	12/7/15 JSR	12/9/15 18:18	RWS	W
Total Polychlor Biphenyl	inated	I		ug/L		EPA 608	12/7/15 JSR	12/9/15 18:18	RWS	W
Aroclor-1016		ND		ug/L	0.47	EPA 608	12/7/15 JSR	12/9/15 18:18	RWS	W
Aroclor-1221		ND		ug/L	0.47	EPA 608	12/7/15 JSR	12/9/15 18:18	RWS	W
Aroclor-1232		ND		ug/L	0.47	EPA 608	12/7/15 JSR	12/9/15 18:18	RWS	W
Aroclor-1242		ND		ug/L	0.47	EPA 608	12/7/15 JSR	12/9/15 18:18	RWS	W

ALS Environmental Laboratory Locations Across North America





NELAP Certifications: NJ PA010 , NY 11759 , PA 22-293 DoD ELAP: A2LA 0818.01 State Certifications: DE ID 11 , MA PA0102 , MD 128 , VA 460157 , WV 343

ANALYTICAL RESULTS

Workorder: 2110770 2015-LOWER DELAWARE TESTING

Lab ID: Sample ID:	2110770003 14th & Crozer					Date Collected: 7	12/1/2015 09:20 12/1/2015 13:55	Matrix: W	ater	
Parameters		Results	Flag	Units	RDL	Method	Prepared By	Analyzed	Ву	Cntr
Aroclor-1248		ND		ug/L	0.47	EPA 608	12/7/15 JSR	12/9/15 18:18	RWS	W
Aroclor-1254		ND		ug/L	0.47	EPA 608	12/7/15 JSR	12/9/15 18:18	RWS	W
Aroclor-1260		ND		ug/L	0.47	EPA 608	12/7/15 JSR	12/9/15 18:18	RWS	W
Surrogate Rec	overies	Results	Flag	Units	Limits	Method	Prepared By	Analyzed	By	Cntr
Decachlorobiph	nenyls (S)	23.9	2	%	30 - 150	EPA 608	12/7/15 JSR	12/9/15 18:18	RWS	W
Tetrachloro-m->	xylene (S)	43.8		%	36 - 112	EPA 608	12/7/15 JSR	12/9/15 18:18	RWS	W
WET CHEMIST	TRY									
Ammonia-N		13.4		mg/L	0.100	D6919-09		12/2/15 19:43	JAM	А
Biochemical Ox	xygen	81.9		mg/L	2.0	S5210B-11		12/2/15 04:20	GMM	В
Demand	BOD	63.4		ma/l	2.0	\$5210B-11		12/2/15 06:55	GMM	в
Carbonaceous	BOD 20 Day	72.2		ma/l	2.0	S5210B-11		12/2/15 11:27	GMM	B
Cvanide. Total	202 20 20)	ND		ma/L	0.0050	EPA 335.4	12/14/15 MMA	12/15/15 00:20	LJF	G
Dissolved Oxvo	den	1.5		ma/L	1.0	S4500OG-01	1	12/7/15 07:28	RMM	В
Halogen, Total	Organic	41.2		ug/L	20.0	SW846 9020	В	12/9/15 12:08	PAG	N
Hexavalent Ch	romium	ND		mg/L	0.010	S3500CrB-09	9	12/2/15 01:11	MSA	В
Nitrate-N		2.0		mg/L	0.50	EPA 300.0		12/2/15 07:51	JP	В
Nitrite-N		ND		mg/L	0.50	EPA 300.0		12/2/15 07:51	JP	В
Odor		10		T.O.N.	1	S2150B-97		12/2/15 04:05	MSA	М
Oil/Grease Hex Extractable	ane	8.4		mg/L	2.0	EPA 1664B		12/6/15 14:00	AT	Н
Oil/Grease Silic	ca Gel Treated	ND		mg/L	2.0	EPA 1664B		12/6/15 14:00	AT	Н
Phenolics		0.016		mg/L	0.005	EPA 420.4	12/14/15 NV	12/17/15 11:44	AMH	J
Phosphorus, To	otal	2.3		mg/L	0.10	EPA 365.1	12/4/15 NV	12/10/15 04:17	LJF	А
Sulfide, Total		ND		mg/L	1.0	S4500S2F-00	0	12/2/15 19:10	DRM	L
Surfactants (M	BAS)	0.383		mg/L	0.025	S5540C-00		12/3/15 02:25	MBW	К
Total Dissolved	l Solids	230		mg/L	5	S2540C-11		12/2/15 08:53	ML	В
Total Kjeldahl N	Nitrogen	21.0		mg/L	4.0	S4500NH3G-	11 12/3/15 J1H	12/8/15 11:00	C_W	А
Total Nitrogen		23.0		mg/L	1.20	Calculation		12/14/15 14:11	NJA	А
Total Suspende	ed Solids	112		mg/L	5	S2540D-11		12/1/15 22:18	NV	В
Turbidity		57.4		NTU	0.10	S2130B-01		12/3/15 03:09	MSA	В
METALS										
Hardness		102		mg/L	0.66	EPA 200.7	12/2/15 JPS	12/3/15 13:21	TSS	P1
Trivalent Chron	nium	ND		mg/L	0.010	Calculation		12/15/15 10:52	AGM	В
Aluminum, Tota	al	0.25		mg/L	0.040	EPA 200.8	12/3/15 JPS	12/4/15 04:37	ZMC	P2
Antimony, Total	I	ND		mg/L	0.0010	EPA 200.8	12/3/15 JPS	12/4/15 04:37	ZMC	P2

ALS Environmental Laboratory Locations Across North America





NELAP Certifications: NJ PA010 , NY 11759 , PA 22-293 DoD ELAP: A2LA 0818.01 State Certifications: DE ID 11 , MA PA0102 , MD 128 , VA 460157 , WV 343

ANALYTICAL RESULTS

Workorder: 2110770 2015-LOWER DELAWARE TESTING

Lab ID: Sample ID:	2110770003 14th & Crozer					Date Collected: 12 Date Received: 12	2/1/2015 09:20 2/1/2015 13:55	Matrix: W	ater	
Parameters		Results	Flag	Units	RDL	Method	Prepared By	Analyzed	Ву	Cntr
Arsenic, Total		ND		mg/L	0.0015	EPA 200.8	12/3/15 JPS	12/4/15 04:37	ZMC	P2
Cadmium, Tota	al	ND		mg/L	0.00050	EPA 200.8	12/3/15 JPS	12/4/15 04:37	ZMC	P2
Chromium, Tot	tal	ND		mg/L	0.0010	EPA 200.8	12/3/15 JPS	12/4/15 04:37	ZMC	P2
Copper, Total		0.029		mg/L	0.0025	EPA 200.8	12/3/15 JPS	12/4/15 04:37	ZMC	P2
Iron, Total		0.47		mg/L	0.060	EPA 200.7	12/2/15 JPS	12/3/15 13:21	TSS	P1
Lead, Total		0.0060		mg/L	0.0010	EPA 200.8	12/3/15 JPS	12/4/15 04:37	ZMC	P2
Mercury, Total		ND		mg/L	0.00020	EPA 245.1	12/10/15 MNP	12/10/15 12:11	MNP	P3
Molybdenum,	Total	ND		mg/L	0.0010	EPA 200.8	12/3/15 JPS	12/4/15 04:37	ZMC	P2
Selenium, Tota	al	ND		mg/L	0.0020	EPA 200.8	12/3/15 JPS	12/4/15 04:37	ZMC	P2
Silver, Total		ND		mg/L	0.0010	EPA 200.8	12/3/15 JPS	12/4/15 04:37	ZMC	P2
Thallium, Total		ND		mg/L	0.00050	EPA 200.8	12/3/15 JPS	12/4/15 04:37	ZMC	P2
Zinc, Total		0.067		mg/L	0.0025	EPA 200.8	12/3/15 JPS	12/4/15 04:37	ZMC	P2
MICROBIOLO	GY									
Enterococcus		173000		col/100mL	100	S9230D		12/1/15 14:18	LLJ	R
Fecal Coliform	I	1030000	1	col/100mL	10000	SM9222D+EPA 625/R-92/013 APX F		12/1/15 16:28	LLJ	Q
Sub'd to NEL	AP CERTIFIED L	ab								
Gross Alpha		ND		pCi/L	2.30	EPA 900.0		12/11/15 10:43	SUB	Y
Gross Alpha U	ncertainty +/-	1.20		pCi/L		EPA 900.0		12/11/15 10:43	SUB	Y
Gross Beta	-	8.20		pCi/L	2.70	EPA 900.0		12/11/15 10:43	SUB	Y
Gross Beta Ur	certainty +/-	2.10		pCi/L		EPA 900.0		12/11/15 10:43	SUB	Y

1. Kiston

Mr. Brad W Kintzer Project Coordinator

ALS Environmental Laboratory Locations Across North America





NELAP Certifications: NJ PA010 , NY 11759 , PA 22-293 DoD ELAP: A2LA 0818.01 State Certifications: DE ID 11 , MA PA0102 , MD 128 , VA 460157 , WV 343

ANALYTICAL RESULTS

Workorder: 2110770 2015-LOWER DELAWARE TESTING

Lab ID: 2 Sample ID: 9	2110770004 Sun & Hancoc	k				Date Collected: Date Received:	12/1/2015 11:00 12/1/2015 13:55	Matrix: W	/ater	
Parameters		Results	Flag	Units	RDL	Method	Prepared By	Analyzed	Ву	Cntr
VOLATILE OR	GANICS									
Benzene		ND		ug/L	5.0	EPA 624		12/3/15 00:33	DD	S
Bromodichlorom	nethane	ND		ug/L	5.0	EPA 624		12/3/15 00:33	DD	S
Chlorodibromon	nethane	ND		ug/L	5.0	EPA 624		12/3/15 00:33	DD	S
Chloroform		ND		ug/L	5.0	EPA 624		12/3/15 00:33	DD	S
Ethylbenzene		ND		ug/L	5.0	EPA 624		12/3/15 00:33	DD	S
Methyl t-Butyl E	ther	ND		ug/L	5.0	EPA 624		12/3/15 00:33	DD	S
Methylene Chlo	ride	ND		ug/L	5.0	EPA 624		12/3/15 00:33	DD	S
Tetrachloroethe	ne	ND		ug/L	5.0	EPA 624		12/3/15 00:33	DD	S
Toluene		ND		ug/L	5.0	EPA 624		12/3/15 00:33	DD	S
Total Xylenes		ND		ug/L	15.0	EPA 624		12/3/15 00:33	DD	S
Surrogate Reco	overies	Results	Flag	Units	Limits	Method	Prepared By	Analyzed	By	Cntr
1,2-Dichloroetha	ane-d4 (S)	98.7		%	72 - 142	EPA 624		12/3/15 00:33	DD	S
4-Bromofluorob	enzene (S)	95		%	73 - 119	EPA 624		12/3/15 00:33	DD	S
Dibromofluorom	nethane (S)	85.1		%	74 - 132	EPA 624		12/3/15 00:33	DD	S
Toluene-d8 (S)		90.7		%	75 - 133	EPA 624		12/3/15 00:33	DD	S
SEMIVOLATILE	ES									
Benzo(a)anthra	cene	ND		ug/L	1.4	EPA 625	12/4/15 CAC	12/6/15 19:23	GEC	U
Chrysene		ND		ug/L	1.4	EPA 625	12/4/15 CAC	12/6/15 19:23	GEC	U
bis(2-Ethylhexyl	l)phthalate	4.9		ug/L	2.8	EPA 625	12/4/15 CAC	12/6/15 19:23	GEC	U
N-Nitroso-di-n-p	propylamine	ND		ug/L	2.8	EPA 625	12/4/15 CAC	12/6/15 19:23	GEC	U
Phenanthrene		ND		ug/L	1.4	EPA 625	12/4/15 CAC	12/6/15 19:23	GEC	U
Surrogate Reco	overies	Results	Flag	Units	Limits	Method	Prepared By	Analyzed	By	Cntr
2,4,6-Tribromop	henol (S)	45.9	2	%	47 - 128	EPA 625	12/4/15 CAC	12/6/15 19:23	GEC	U
2-Fluorobipheny	yl (S)	69.3		%	52 - 118	EPA 625	12/4/15 CAC	12/6/15 19:23	GEC	U
2-Fluorophenol	(S)	17.5	1	%	20 - 87	EPA 625	12/4/15 CAC	12/6/15 19:23	GEC	U
Nitrobenzene-d	5 (S)	76.9		%	27 - 139	EPA 625	12/4/15 CAC	12/6/15 19:23	GEC	U
Phenol-d5 (S)		23.6		%	10 - 81	EPA 625	12/4/15 CAC	12/6/15 19:23	GEC	U
Terphenyl-d14 (S)	88.4		%	46 - 133	EPA 625	12/4/15 CAC	12/6/15 19:23	GEC	U
Pesticides and	PCBs									
Dieldrin		ND		ug/L	0.019	EPA 608	12/7/15 JSR	12/9/15 18:40	RWS	W
Total Polychlorir Biphenyl	nated			ug/L		EPA 608	12/7/15 JSR	12/9/15 18:40	RWS	W
Aroclor-1016		ND		ug/L	0.47	EPA 608	12/7/15 JSR	12/9/15 18:40	RWS	W
Aroclor-1221		ND		ug/L	0.47	EPA 608	12/7/15 JSR	12/9/15 18:40	RWS	W
Aroclor-1232		ND		ug/L	0.47	EPA 608	12/7/15 JSR	12/9/15 18:40	RWS	W
Aroclor-1242		ND		ug/L	0.47	EPA 608	12/7/15 JSR	12/9/15 18:40	RWS	W

ALS Environmental Laboratory Locations Across North America





NELAP Certifications: NJ PA010 , NY 11759 , PA 22-293 DoD ELAP: A2LA 0818.01 State Certifications: DE ID 11 , MA PA0102 , MD 128 , VA 460157 , WV 343

ANALYTICAL RESULTS

Workorder: 2110770 2015-LOWER DELAWARE TESTING

Lab ID: 2110770004 Sample ID: Sun & Hancoo	k				Date Collected: 12 Date Received: 12	/1/2015 11:00 /1/2015 13:55	Matrix: W	ater	
Parameters	Results	Flag	Units	RDL	Method	Prepared By	Analyzed	Ву	Cntr
Aroclor-1248	ND		ug/L	0.47	EPA 608	12/7/15 JSR	12/9/15 18:40	RWS	W
Aroclor-1254	ND		ug/L	0.47	EPA 608	12/7/15 JSR	12/9/15 18:40	RWS	W
Aroclor-1260	ND		ug/L	0.47	EPA 608	12/7/15 JSR	12/9/15 18:40	RWS	W
Surrogate Recoveries	Results	Flag	Units	Limits	Method	Prepared By	Analyzed	By	Cntr
Decachlorobiphenyls (S)	39.8		%	30 - 150	EPA 608	12/7/15 JSR	12/9/15 18:40	RWS	W
Tetrachloro-m-xylene (S)	52.9		%	36 - 112	EPA 608	12/7/15 JSR	12/9/15 18:40	RWS	W
WET CHEMISTRY									
Ammonia-N	3.63		mg/L	0.100	D6919-09		12/2/15 20:02	JAM	А
Biochemical Oxygen	70.7		mg/L	2.0	S5210B-11		12/2/15 04:20	GMM	В
Demand	40.4		ma/l	2.0	S5010D 11		10/0/15 06.55	CMM	D
Carbonaceous BOD 20 Day	49.4 96.8		mg/L	2.0	S5210B-11		12/2/15 00.55	GMM	B
Cvanide Total			ma/l	0.0050	EPA 335 4	12/14/15 MMA	12/15/15 00.20	LIF	G
Dissolved Oxygen	4.4		mg/L	0.0000	S45000G-01		12/7/15 07:28	RMM	B
Halogen, Total Organic	ND		ua/l	20.0	SW846 9020B		12/9/15 12:40	PAG	N
(TOX)	NB		ug/L	20.0	011040 00200		12/0/10 12.40	17.0	N
Hexavalent Chromium	ND		mg/L	0.010	S3500CrB-09		12/2/15 01:11	MSA	В
Nitrate-N	ND		mg/L	0.50	EPA 300.0		12/2/15 09:26	JP	В
Nitrite-N	ND		mg/L	0.50	EPA 300.0		12/2/15 09:26	JP	В
Odor	2		T.O.N.	1	S2150B-97		12/2/15 04:05	MSA	М
Oil/Grease Hexane Extractable	2.6		mg/L	2.1	EPA 1664B		12/6/15 14:00	AT	Н
Oil/Grease Silica Gel Treated	ND		mg/L	2.1	EPA 1664B		12/6/15 14:00	AT	Н
Phenolics	0.009		mg/L	0.005	EPA 420.4	12/14/15 NV	12/17/15 11:45	AMH	J
Phosphorus, Total	1.4		mg/L	0.10	EPA 365.1	12/4/15 NV	12/10/15 04:17	LJF	А
Sulfide, Total	ND		mg/L	1.0	S4500S2F-00		12/2/15 19:10	DRM	L
Surfactants (MBAS)	0.067		mg/L	0.025	S5540C-00		12/3/15 02:25	MBW	К
Total Dissolved Solids	26		mg/L	5	S2540C-11		12/2/15 08:53	ML	В
Total Kjeldahl Nitrogen	8.3		mg/L	4.0	S4500NH3G-11	12/3/15 J1H	12/8/15 11:00	C_W	А
Total Nitrogen	8.30		mg/L	1.20	Calculation		12/14/15 14:11	NJA	А
Total Suspended Solids	200		mg/L	5	S2540D-11		12/1/15 22:18	NV	В
Turbidity	80.6		NTU	0.10	S2130B-01		12/3/15 03:09	MSA	В
METALS									
Hardness	31.5		mg/L	1.7	EPA 200.7	12/3/15 JPS	12/4/15 07:50	TSS	P1
Trivalent Chromium	ND		mg/L	0.010	Calculation		12/15/15 10:53	AGM	В
Aluminum, Total	0.44		mg/L	0.040	EPA 200.8	12/3/15 JPS	12/4/15 04:40	ZMC	P2
Antimony, Total	0.0018		mg/L	0.0010	EPA 200.8	12/3/15 JPS	12/4/15 04:40	ZMC	P2

ALS Environmental Laboratory Locations Across North America





NELAP Certifications: NJ PA010 , NY 11759 , PA 22-293 DoD ELAP: A2LA 0818.01 State Certifications: DE ID 11 , MA PA0102 , MD 128 , VA 460157 , WV 343

ANALYTICAL RESULTS

Workorder: 2110770 2015-LOWER DELAWARE TESTING

Lab ID: 2 Sample ID: 5	2110770004 Sun & Hancock					Date Collected: 1 Date Received: 1	12/1/2015 11:00 12/1/2015 13:55	Matrix: W	ater	
Parameters		Results	Flag	Units	RDL	Method	Prepared By	Analyzed	Ву	Cntr
Arsenic, Total		ND		mg/L	0.0015	EPA 200.8	12/3/15 JPS	12/4/15 04:40	ZMC	P2
Cadmium, Total		ND		mg/L	0.00050	EPA 200.8	12/3/15 JPS	12/4/15 04:40	ZMC	P2
Chromium, Tota	d	0.0031		mg/L	0.0010	EPA 200.8	12/3/15 JPS	12/4/15 04:40	ZMC	P2
Copper, Total		0.032		mg/L	0.0025	EPA 200.8	12/3/15 JPS	12/4/15 04:40	ZMC	P2
Iron, Total		1.5		mg/L	0.15	EPA 200.7	12/3/15 JPS	12/4/15 07:50	TSS	P1
Lead, Total		0.020		mg/L	0.0010	EPA 200.8	12/3/15 JPS	12/4/15 04:40	ZMC	P2
Mercury, Total		0.0011		mg/L	0.00020	EPA 245.1	12/10/15 MNP	12/10/15 12:12	MNP	P3
Molybdenum, To	otal	ND		mg/L	0.0010	EPA 200.8	12/3/15 JPS	12/4/15 04:40	ZMC	P2
Selenium, Total		ND		mg/L	0.0020	EPA 200.8	12/3/15 JPS	12/4/15 04:40	ZMC	P2
Silver, Total		ND		mg/L	0.0010	EPA 200.8	12/3/15 JPS	12/4/15 04:40	ZMC	P2
Thallium, Total		ND		mg/L	0.00050	EPA 200.8	12/3/15 JPS	12/4/15 04:40	ZMC	P2
Zinc, Total		0.20		mg/L	0.0025	EPA 200.8	12/3/15 JPS	12/4/15 04:40	ZMC	P2
MICROBIOLOG	θY									
Enterococcus		34500		col/100mL	100	S9230D		12/1/15 14:18	LLJ	R
Fecal Coliform		2100000		col/100mL	100000	SM9222D+EP 625/R-92/013 APX F	Ϋ́Α 3	12/1/15 16:28	LLJ	Q
Sub'd to NELA	P CERTIFIED L	ab								
Gross Alpha		2.70		pCi/L	2.40	EPA 900.0		12/11/15 10:43	SUB	Y
Gross Alpha Un	certainty +/-	1.50		pCi/L		EPA 900.0		12/11/15 10:43	SUB	Y
Gross Beta	-	4.20		pCi/L	2.70	EPA 900.0		12/11/15 10:43	SUB	Y
Gross Beta Und	ertainty +/-	1.60		pCi/L		EPA 900.0		12/11/15 10:43	SUB	Y

1. Kiston

Mr. Brad W Kintzer Project Coordinator

ALS Environmental Laboratory Locations Across North America





NELAP Certifications: NJ PA010 , NY 11759 , PA 22-293 DoD ELAP: A2LA 0818.01 State Certifications: DE ID 11 , MA PA0102 , MD 128 , VA 460157 , WV 343

PARAMETER QUALIFIERS

Lab ID	#	Sample ID	Analytical Method	Analyte
2110770003	1	14th & Crozer	SM9222D+EPA 625/R-92/013 APX F	Fecal Coliform
This is an estimated	result.			
2110770003	2	14th & Crozer	EPA 608	Decachlorobiphenyls
The surrogate Decad limits were 30 to 150	hlorobi <mark>r</mark> . This re	ohenyls for method EPA 608 was outs esult was reported at a dilution of 1.	side of control limits. The % Recovery v	was reported as 23.9 and the control
2110770004	1	Sun & Hancock	EPA 625	2-Fluorophenol
The surrogate 2-Fluo were 20 to 87. This re	rophen esult wa	ol for method EPA 625 was outside of as reported at a dilution of 1.	f control limits. The % Recovery was re	eported as 17.5 and the control limits
2110770004	2	Sun & Hancock	EPA 625	2,4,6-Tribromophenol

The surrogate 2,4,6-Tribromophenol for method EPA 625 was outside of control limits. The % Recovery was reported as 45.9 and the control limits were 47 to 128. This result was reported at a dilution of 1.

ALS Environmental Laboratory Locations Across North America

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ALS



Ft. Collins,	Colorado
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LIMS Version: 6.796

Page 1 of 1

Tuesday, December 22, 2015

Brad Kintzer ALS Environmental 34 Dogwood Lane Middletown, PA 17057

Re: ALS Workorder: 1512056 Project Name: Project Number: 2110770

Dear Mr. Kintzer:

Four water samples were received from ALS Environmental, on 12/3/2015. The samples were scheduled for the following analysis:

Gross Alpha/Beta

The results for these analyses are contained in the enclosed reports.

The data contained in the following report have been reviewed and approved by the personnel listed below. In addition, ALS certifies that the analyses reported herein are true, complete and correct within the limits of the methods employed.

Thank you for your confidence in ALS Environmental. Should you have any questions, please call.

Sincerely,

ALS Environmental Jeff R. Kujawa Project Manager

ADDRESS 225 Commerce Drive, Fort Collins, Colorado, USA 80524 | PHONE +1 970 490 1511 | FAX +1 970 490 1522 ALS GROUP USA, CORP. Part of the ALS Laboratory Group. An ALS Limited Company

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www.alsglobal.com

RIGHT SOLUTIONS RIGHT PARTNER



ALS Environmental – Fort Collins is accredited by the following accreditation bodies for various testing scopes in accordance with requirements of each accreditation body. All testing is performed under the laboratory management system, which is maintained to meet these requirement and regulations. Please contact the laboratory or accreditation body for the current scope testing parameters.

ALS Environme	ental – Fort Collins
Accreditation Body	License or Certification Number
Alaska (AK)	UST-086
Alaska (AK)	CO01099
Arizona (AZ)	AZ0742
California (CA)	06251CA
Colorado (CO)	CO01099
Connecticut (CT)	PH-0232
Florida (FL)	E87914
Idaho (ID)	CO01099
Kansas (KS)	E-10381
Kentucky (KY)	90137
L-A-B (DoD ELAP/ISO 170250)	L2257
Louisiana (LA)	05057
Maryland (MD)	285
Missouri (MO)	175
Nebraska(NE)	NE-OS-24-13
Nevada (NV)	CO000782008A
New York (NY)	12036
North Dakota (ND)	R-057
Oklahoma (OK)	1301
Pennsylvania (PA)	68-03116
Tennessee (TN)	2976
Texas (TX)	T104704241
Utah (UT)	CO01099
Washington (WA)	C1280



1512056

Gross Alpha/Beta:

The samples were analyzed for gross alpha and beta activity by gas flow proportional counting according to the current revision of SOP 724. Gross alpha results are referenced to ²⁴¹Am. Gross beta results are referenced to ⁹⁰Sr/Y.

All acceptance criteria were met.

ADDRESS 225 Commerce Drive, Fort Collins Colorado 80524 USA | PHONE +1 970 490 1511 | FAX +1 970 490 1522 ALS GROUP USA, CORP. Part of the ALS Group An ALS Limited Company



Sample Number(s) Cross-Reference Table

OrderNum: 1512056 Client Name: ALS Environmental Client Project Name: Client Project Number: 2110770 Client PO Number: 2110770

Client Sample Number	Lab Sample Number	COC Number	Matrix	Date Collected	Time Collected
2110770001	1512056-1	38 (C	WATER	01-Dec-15	9:43
2110770002	1512056-2		WATER	01-Dec-15	9:43
2110770003	1512056-3		WATER	01-Dec-15	9:20
2110770004	1512056-4		WATER	01-Dec-15	11:00

Page 1 of 1

ALS Environmental -- FC LIMS Version: 6.796 Date Printed: Tuesday, December 22, 2015

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ALS Environmental - Fort Collins CONDITION OF SAMPLE UPON RECEIPT FORM			
(ALS) Client: ALS Peno Workorder No: 18-1	205	6	
Project Manager: ARL PRK Initials: Or MM	Date:	213	15
Does this project require any special handling in addition to standard ALS procedures?	-	YES	-
Are custody seals on shipping containers intact?	NONE	YES	NO
Are Custody seals on sample containers intact?	NONE	YES	NO
Is there a COC (Chain-of-Custody) present or other representative documents?	10-2	(YES)	NO
Are the COC and bottle labels complete and legible?		YES	NO
Is the COC in agreement with samples received? (IDs, dates, times, no. of samples, no. of containers, matrix, requested analyses, etc.)		YES	NO
Were airbills / shipping documents present and/or removable?	DROP OFF	(YES)	NO
Are all aqueous samples requiring preservation preserved correctly? (excluding volatiles)	N/A	YES	NO
Are all aqueous non-preserved samples pH 4-9?	N/A	YES	NO
Is there sufficient sample for the requested analyses?		TES	NO
. Were all samples placed in the proper containers for the requested analyses?		(ES)	NO
2. Are all samples within holding times for the requested analyses?		TES	NO
³ . Were all sample containers received intact? (not broken or leaking, etc.)		TES	NO
 Are all samples requiring no headspace (VOC, GRO, RSK/MEE, Rx CN/S, radon) headspace free? Size of bubble: < green pea> green pea 	N/A	YES	NO
5. Do any water samples contain sediment? Amount	N/A	(YES)	NO
Amount of sediment:dusting _X_moderateheavy	1		6
. Were the samples shipped on ice?	RAD	YES	CNO
Were cooler temperatures measured at 0.1-6.0°C? IR gun used*: #2 #4	(ONLY	YES	NO
Cooler #: 1			
Temperature (°C): $\frac{41715}{5}$		-+	
No. of custody seals on cooler:			
Acceptance External µR/hr reading:	. <u> </u>		
Background µR/hr reading:			
Were external µR/hr readings ≤ two times background and within DOT acceptance criteria? KES NO / NA (If no, see	e Form 008.)		
Additional Information: PROVIDE DETAILS BELOW FOR A NO RESPONSE TO ANY QUESTION ABOVE, EX	KCEPT #1 A	ND #16.	
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fapplicable, was the client contacted? YES / NO (N) Contact:	Date/Ti	ne:	
Project Manager Signature / Date: (111 6 - 12-3-11-			
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/ / IR Gun #2: Oakton, SN 29922500201-0066			
Form 201r24.xls (06/04/2012) *IR Gun #4: Oakton, SN 2372220101-0002		Page 1	of
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After printing this label:

1. Use the 'Print' button on this page to print your label to your laser or inkjet printer.

2. Fold the printed page along the horizontal line.

3. Place label in shipping pouch and affix it to your shipment so that the barcode portion of the label can be read and scanned.

Warning: Use only the printed original label for shipping. Using a photocopy of this label for shipping purposes is fraudulent and could result in additional billing charges, along with the cancellation of your FedEx account number.

Use of this system constitutes your agreement to the service conditions in the current FedEx Service Guide, available on fedex.com, FedEx will not be responsible for any claim in excess of \$100 per package, whether the result of loss, damage, delay, non-delivery, misdelivery, or misinformation, unless you declare a higher value, pay an additional charge, document your actual loss and file a timely claim.Limitations found in the current FedEx Service Guide apply. Your right to recover from FedEx for any loss, including intrinsic value of the package, loss of sales, income interest, profit, attorney's fees, costs, and other forms of damage whether direct, incidental, consequential, or special is limited to the greater of \$100 or the authorized declared value. Recovery cannot exceed actual documented loss.Maximum for items of extraordinary value is \$1,000, e.g. jewelry, precious metals, negotiable instruments and other items listed in our ServiceGuide. Written claims must be filed within strict time limits, see current FedEx Service Guide.

https://www.fedex.com/shipping/html/en//PrintIFrame.html

12/2/2015

SAMPLE SUMMARY REPORT

lient:	ALS Environmental					Date:	22-Dec-15	
roject:	2110770					Work Order:	1512056	
ample ID:	2110770001					Lab ID:	1512056-1	
egal Location:						Matrix:	WATER	
Collection Date:	12/1/2015 09:43				F	Percent Moisture:		
Analyses	19932555599 335 1335	Result	Qual	Report Limit	Units	Dilution Factor	Date	Anałyzed
Gross Alpha/Bet GROSS ALPHA GROSS BETA	ta by GFPC	ND (+/- 1.2) 10.5 (+/- 2.4)	PAI 72 4 U	1 2.6 2.8	pCi/l pCi/l	Prep Date: 12/9/20 NA NA	015 PrepBy: E 12/1 12/1	CP 1/2015 10:43 1/2015 10:43
			1.1			12		
				6 10000				
		A	LS Environm	ental -	FC		AP Page 1	5 8 of 12
			LIMO VERSION:	9.190				

Thursday, January 07, 2016 6:17:25 AM Page 27 of 32

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SAMPLE SUMMARY REPORT

lient: ALS Environmental Date: 22-Dec-15 roject: 2110770 Work Order: 1512056 umple ID: 2110770002 Lab ID: 1512056-2 egal Location: Matrix: WATER ollection Date: 12/1/2015 09:43 Percent Moisture: nalyses Result Qual Limit Uaits Pate ross Alpha/Beta by GFPC PAI 724 Prep Date: 12/1/2015 10:43 PreBBy: ECP GROSS ALPHA ND (+/-1) U 2.5 pCM NA 12/11/2015 10:43 GROSS BETA 9.5 (+/-2.2) 2.7 pC/I NA 12/11/2015 10:43								
roject: 2110770 Imple ID: 2110770002 Imple ID: 2110770002 Imple ID: 2110770002 Imple ID: 2110770002 Imple ID: 2110770002 Imple ID: 2110770002 Imple ID: 211070002 Imple ID: 12107002 Imple ID: 1207002 Imple ID: 1207002 Imple ID: 12107002 Imple ID: 12107002 Imple ID: 1207002 Imple ID: 120	lient: ALS Env	vironmental				Date: 22	?-Dec-15	
ample ID: 2110770002 egal Location: ollection Date: 12/1/2015 09:43 ress Alpha/Beta by GFPC GROSS Alpha/Beta by GFPC GROSS ALPHA 9.5 (+f-2.2) 2.7 pCit NA 12/11/2015 10:43 Result CP Result NA 12/11/2015 10:43 CP Result	roject: 2110770					Work Order: 15	12056	
egal Location: ollection Date: 12/1/2015 09:43 Result Qual Report Limit Units Factor Date Analyzed ross Alpha/Beta by GFPC PAI 724 Prep Date: 12/9/2015 PrepBy: ECP GROSS ALPHA ND (+/-1) U 2.5 pCi/l NA 12/11/2015 10.43 GROSS BETA 9.6 (+/-2.2) 2.7 pCi/l NA 12/11/2015 10.43	ample ID: 2110770	002				Lab ID: 15	12056-2	
Percent Moisture: nalyses Result Report Qual Dilution Limit Dilution Factor Date Analyzed kross Alpha/Beta by GFPC PAI 724 Prep Date: 12/9/2015 PrepBy: ECP GROSS ALPHA ND (+/-1) U 2.5 pCM NA 12/11/2015 10.43 GROSS BETA 9.5 (+/-2.2) 2.7 pC//l NA 12/11/2015 10.43	egal Location:					Matrix: W	ATER	
nalyses Result Qual Limit Units Dilution Factor Date Analyzed Irross Alpha/Beta by GFPC PAI 724 Prep Date: 12/9/2015 PrepBy: ECP GROSS ALPHA ND (+/-1) U 2.5 pC/I NA 12/11/2015 10:43 GROSS BETA 9.5 (+/-2.2) 2.7 pC/I NA 12/11/2015 10:43	Collection Date: 12/1/201	5 09:43			Perce	nt Moisture:		
Iross Alpha/Beta by GFPC PAI 724 Prep Date: 12/9/2015 PrepBy: ECP GROSS ALPHA ND (+/- 1) U 2.5 pC/I NA 12/11/2015 10:43 GROSS BETA 9.5 (+/- 2.2) 2.7 pC/II NA 12/11/2015 10:43	Analyses	Result	Qual	Report Limit	Units	Dilution Factor	Date	Analyzed
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SAMPLE SUMMARY REPORT

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Client:	ALS Environmental					Date:	22-Dec-15	
roject:	2110770					Work Order:	1512056	
ample ID:	2110770003					Lab ID:	1512056-3	
egal Location:						Matrix:	WATER	
Collection Date:	12/1/2015 09:20				1	Percent Moisture:		
Analyses		Result	Qual	Report Limit	Units	Dilution Factor	Da	te Analyzed
Gross Alpha/Be	ta by GFPC		PAI 724	•		Prep Date: 12/9/20	015 PrepBy	ECP
GROSS ALPHA		ND (+/- 1.2)	U	2.3	pCi/l	NA	12	11/2015 10:43
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			2.4					

SAMPLE SUMMARY REPORT

Client:	ALS Environmental					Date:	22-Dec-15	
Project:	2110770					Work Order:	1512056	
Sample ID:	2110770004					Lab ID:	1512056-4	
Legal Location:						Matrix:	WATER	
Collection Date:	12/1/2015 11:00				P	ercent Moisture:		
Analyses		Result	l Qual	Report Limit	Units	Dilution Factor	D	te Analyzed
Gross Alpha/Be GROSS ALPHA GROSS BETA	ta by GFPC	2.7 (+/- 1.5) 4.2 (+/- 1.6)	PAI 724	2.4 2.7	рСі/І рСі/І	Prep Date: 12/9/20 NA NA	015 PrepBy 12 12	ECP 711/2015 10:43 711/2015 10:43
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	<u> </u>	AL	S Environme	ental	FC		AR Page 4	of 5 11 of 13
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SAMPLE SUMMARY REPORT

Client: ALS Environmental Date: 22-02-C-15 spaper Discrete Standard Client Sta									
Project: 21107700 Work Order:: 5120364 Sample Do: 2110770004 Lab Do: 5120364 Callection Date: 1210770004 Percent Moisture: Matrix: WATER Callection Date: 1210770004 Percent Moisture: Description	Client:	ALS Environmental					Date:	22-Dec-15	
Simple ID: 2110/70004 Lab ID: 151/200644 agel Lecation: Matrix: WATER Percent Mostrix: WATER Aualyses Result Qual Explanation Callection Date: 12/1/2015 11:00 Percent Mostrix: Dilution Explanation of Qualifiers Init Units Parcent Mostrix: Dilution Eddichemistric: Water Rote Handle State St	Project:	2110770					Work Order:	1512056	
Legal Leasting: Matrix: WATER callection Date: 12/1/2015 11:00 Percent Moisture: inalyses Result Qual Report Limit Units Piactor Date Analyzes Splanation of Qualifiers MS - The regulated MDC was not not, but the record monotone 0.5<	Sample ID:	2110770004					Lab ID:	1512056-4	1
Callection Date: 12/1/2015 11:00 Percent Moisture: Images in the second sec	egal Location:						Matrix:	WATER	
Analyses Result Qual Report Dilution Dilution Analyses Analyses Analyses	Collection Date:	: 12/1/2015 11:00				Pere	cent Moisture:		
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U v No. Result is tes than he sample specific MDC, Y - Owning Vide double default limits. Y - Owning Vide Vide is the Report Basis is Y owning. D - Bit g arged in the reported Basis Y - Constraints. Y - Owning Vide Vide is the Report Basis is Y - Weight. Y - Result is less than the requested MDC but greater than achieved MDC. I - LOS Macrosci Vide double default limits. Y - Result is less than the requested MDC but greater than achieved MDC. I - The requested MDC but is a strange of the default of the response of interference. An explanatory note may be induced in the narrative. Y - Diptical major within control limit. Y - Diptical major within control limits. An explanatory note may be induced in the narrative. Y - Diptical major within control limits. An explanatory note may be induced in the narrative. Y - Diptical major (edance peecing within control limits. An explanatory note may be induced in the narrative. Y - Diptical major (edance peecing within control limits. An explanatory note may be induced in the narrative. Y - Diptical major (edance peecing within control limits. An explanatory note may be induced in the narrative. Y - Diptical major (edance peecing within control limits. An explanatory note may be induced in the narrative. Y - Diptical major (edance peecing within control limits. An explanatory note may be induced in the narrative. Y - Diptical major (edance peecing within control limits. An explanatory note may be induced in the narrative. Y - Diptical major (edance peecing within control limits. An explanatory note may be induced in the narrative. Y - Diptical major (edance) peecing within control limits. Y - Anartive reference in the sample. Y - Anartive reference if the conference in the defaultation range. Y - Anartive reference in the sample. Y - Anartive reference in	Radiochemistry:								
Y1 - Orientical Vietal is notified a 100-110%. Countilative yield is assumed. L-CLS Reacowy to build work that the topological times. Y2 - Orientical Vietal outside datability in the Report Basis is 'Dry Weight'. L-LCS Reacowy to build work of the topological times. Y2 - Orientical Vietal present than Varining Limit of 1.42 Y- LOS Reacowy to build work of the topological times. Y2 - Orientical Vietal outside datability while the Report Basis is 'Dry Weight'. Y- LOS Meacowy to build work of the topological times. Y2 - Orientical Vietal outside datability of the Report Basis is 'Dry Weight'. Y- LOS Meacowy to build work of the topological times. Y2 - Orientical Vietal outside datability of the Report Basis is 'Dry Weight'. Y- LOS Meacowy to build work of the topological times. Y2 - Orientical Vietal is estimated back origon times the subjet added concentration greater than MDC. B- Analyte concentration greater than MDC. Y2 - Orientical Vietal is estimated back origon times the subjet added concentration. Y- LOS Meacowy to the matrix splice and or splite topological times. Y2 - Orientical Vietal is estimated back orientific. An explanatory note may be included in the narrative. Y- Orientical and the nailes assigne concentration is less than for Unites the subjet added concentration. Y3 - Orientical and the naile assigne and year of the databactory note may be included in the narrative. Y- Orientical and the naile calculated orientical time. Y2 - Orientical Vietal is estimated above the databactory note may be included in the narrative. Y- Orientical and the naile assingle	U or ND - Result is le	ess than the sample specific MD	с.		M3 - The request	ed MDC was	not met, but the report	ted	
 V2- Characterization of 14.2 V3- V3- Reserved: White the Report Basis is "Oy Weight". V3- V3- Reserved: White the Report Basis is "Oy Weight". V3- V3- V3- V3- V3- V3- V3- V3- V3- V3-	Y1 - Chemical Yield	is in control at 100-110%. Quan	titative yield is assumed.		L - LCS Recovery	below lower	control limit.		
 V: DEX to greater than X-aming Lumit of 1.42 Anduot Basis is A Received while the Report Basis is Tory Weight: Alloud Basis is Tory Weight while the Report Basis is A Received. An addition of the Report Basis is A Received. An addition of the Report Basis is A Received. A Requested MDC not mat. The Requested MDC but greater than achieved MDC. A Requested reporting limit but greater than the instrument method detection limit (MDL). A Routh is test than the requested reporting limit but greater than the instrument method detection limit. A Routh is set stimated because of the presence of Interference. An explanatory note may be included in the narrative. A Splated amigicate mission was not met. A Splated amigicate analysis (data was analyzed for but not detected. A Analys concentration greater than the campound was analyzed for but not detected. A Analys concentration in the calculation were not detected above the detection limit. A During field is detected in the associater method tabk as well as in the sample. It indicates probable black contamination and warns the data user. A Analys concentration greater than the data user. A Analys concentration in the data base of the calculation range. A Splate aming during the accurate quantification range. A Analys concentration in the data base. A Analys concentration in the data base. A patter second in the associater method black as well as in the sample. A Analys concentration in the data base. A Analys concentration macked black contamination and warns the data user. A Analys concent	r2 - Chemical Yield	outside default limits.			H - LCS Recover	above uppe	r control limit.		
Adjuct Basis is Ap Acceler while the Report Basis is Drify Weight" Allocat Basis is Ap Noteweight With Report Basis is A Received. Allocat Basis is Dry Weight while the Report Basis is A Received. Allocat Basis is Dry Weight while the Report Basis is A Received. Allocat Basis the Dry Weight while the Report Basis is A Received. Allocat Basis the Dry Weight while the Report Basis is A Received. Allocat Basis the Dry Weight while the Report Basis is A Received. B - Analyte concentration greater than MDC. B - Analyte concentration greater than MDC. B - Analyte concentration greater than MDC but less than Requested MCC. Hore Indices that the compound was analyzed for but not detected. The reported value is estimated because of the presence of indeference. An explanatory note may be included in the narrative. Outplote analysis (detabe precent difference) A Detable basis of the analyte and the splice and the Detable of the splice analyte of all CP analyses when the marks splice and or splice Judicide allocaties that the compound was analyzed for but not detected. Substance and the maints ample concentration is a splice addition over not detected above the detection limit. Duplicate inalysis (detable precent difference) on the marks the splice addition the narrative. Subject as a splice addition or more analyses used in the calculation were not detected above the detection limit. Duplicate inalysis (detable precent difference) on the difference for but not detected. Analyte concentration exceeds the upper level of the addition in the instrument method detection limit. Additional splice and the splice addition interviewed by the associated method black as well as in the sample. Analyte concentration exceeds the upper level of the analyte of interest. Analyte additional detected in this sample. Apatern resembling difference (RCP) equals or exceeds the control criteria. Apatern resembling difference (RCP) equals or exceed	N - DER is greater ti	han Warning Limit of 1.42	1.1.10.141.1.1.1		P - LCS, Matrix S	oike Recover	within control limits.		
Or Sample density offers by more than 15% of LGS density. OFRE is granted than Control Limits OFFRE is granted than Control Limits	- Aliquot Basis is 'A	s received while the Report Bas	sis is 'Dry weight'. is is 'As Received'		N - Matrix Spike F	ecovery outs	side control limits		
	G - Sample density d	liffers by more than 15% of LCS	density.		NC - Not Calculat	ed for duplic	ate results less than 5	times MDC	
M - Requested MDC not met. Description: B3 - Analyte concentration greater than MDC but less than Requested MDC. MCC. M - Result is less than the quested MDC but greater than achieved MDC. M - Result is less than the quested reporting limit but greater than the instrument method detection limit (MDL). J - ND - Indicates than the compound was analyzed for but not detected. S - Shark a sample concentration or spike added concentration. S - Shark a sample recovery not whitin control limits. A post spike is analyzed for all CP analyses when the matrix spike and or spike spike and or spike spike and or spike spike and or spike spike and spike spike and or spike spike and spike spike and spike spike and spike spike and or spike spike added concentration. C - Spiket recovery not whitin control limits. A post spike is analyzed for all CP analyses when the matrix spike and or spike spi	D - DER is greater th	an Control Limit			B - Analyte conce	ntration grea	ter than MDC.		
A Presult is leas than the requested reporting limit but greater than the instrument method detection limit (MDL). Jor ND - Indicates that the compound was analyzed for but not detected. Subset assumption control limits. A post spike is analyzed for all ICP analyses when the matrix spike and or spike updicate infection precision was not met. Subset assumption post whitis control limits. A post spike is analyzed for all ICP analyses when the matrix spike and or spike updicate analysis (definite) percent difference) not within control limits. Subset assumption post whitis control limits. A post spike is analyzed for all ICP analyses when the matrix spike and or spike updicate analysis (definite) percent difference) not within control limits. Subset assumption within control limits. A post spike is analyzed for all ICP analyses when the matrix spike and or spike Subset assumption post whitis control limits. A post spike is analyzed for but not detected above the detection limit. D updicate analysis (definite) percent difference) not within control limits. Subset assumption to the associated method blank as well as in the sample. It indicates probable blank contamination and warns the data user. Analys contentiation exacted the upper level of the calibration range. Subset accounts in equiption that calibration range. Subset accounts is easysted ad add-condensation product. The reality was diluted below an accurate quantifiation level. A pattern resembling dised was detected in this sample. A pattern resembling dised was detected in this sample. A pattern resembling dised was detected in this sample. A pattern resembling dised was and settered in this sample. A pattern resembling dised was an the flaghter and of the retention time window for the analyse of interest. A pattern resembling dised was an the flaghter and of the retention time window for the analyse of interest. A pattern resembling dised was as in the header and of the retention tinte window for the analyse of interest. A pattern rese	I - Requested MDC T - Result is less the second	not met, an requested MDC but greater ti	an achieved MDC		B3 - Analyte cond MDC.	entration gre	ater than MDC but les	s than Requested	1
Pesult is less than the requested reporting limit but greater than the instrument method detection limit (MDL). I/or locitates that the compound was analyzed for but not detected. Stree approved value is a stimmated because of the presence of interference. An explanatory note may be included in the narrative. Outplicate injection precores not within control limits. A post spike is analyzed for all (CP analyses when the matrix spike and or spike update in the narrative is easily the eccent difference) not within control limits. Subdat sample recovery not within control limits. A post spike is unalyzed for but not detected. Outplicate analysis (relative percent difference) not within control limits. Detection of the associated method black as well as in the sample. Subdat decomposition was analyzed for but not detected. Or NO - Indicates that the compound was analyzed for but not detected. Analyze is detected in the associated method black as well as in the sample. Extender develope the update level of the calibration rang. Extender develope the update level of the calibration rang. Substate resembling diverse was detected in this sample. A patter resembling diverse was detected in this sample. A patter resembling diverse was detected in this sample. A patter resembling diverse was detected in this sample. A patter resembling diverse was in the flighter end of the retention time window for the analyte of interest. A patter resembling diverse was in the flighter end of the retention time window for the analyte of interest. A patter resembling diverse was in the flighter end of the retention time window for the analyte of interest. Horizes that the fuel pattern was in the flighter end of the retention time window for the analyte of interest. Horizes that the fuel pattern was in the flighter end of the retention time window for the analyte of interest. Horizes that fuel fuel pattern was in the flighter end of the retention time	norganics:	an equeres more par greater o							
Oranics: U or ND - Indicates that the compound was analyzed for but not detected. B - Analyte is detected in the associated method blank sa well as in the sample. It indicates probable blank contamination and warms the data user. E - Analyte concentration exceeds the upper level of the calibration range. J - Estimated value. The result is less than the reporting limit but greater than the instrument method detection limit (MDL). A - A netatively identified compound is a suspected addo-condensation product. X - The analyte was diluted below an accurate quantitation level. • The spike recovery is equal to or outside the control criteria used. • The relatively percent difference (RPD) equals or exceeds the control criteria. G - A pattern resembling gasoline was detected in this sample. • A pattern resembling orude oil was detected in this sample. • A pattern resembling upper was detected in this sample. • A pattern resembling upper was detected in the sample. • Indicates that the full pattern was in the lighter end of the retention time window for the analyte of interest. • Indicates that the full pattern was in the lighter end of the retention time window for the analyte of interest. • Indicates that the full pattern was in the lighter end of the retention time window for the analyte of interest. • Indicates that a significant fraction of the reported result did not resemble the patterns of any of the following petroleum hydrocarbon products:	B - Result is less that U or ND - Indicates the E - The reported value M - Duplicate injecti N - Spiked sample re duplicate fail and the Z - Spiked recovery n * - Duplicate analysis S - SAR value is estin	In the requested reporting limit b hat the compound was analyzed le is estimated because of the pri- ion precision was not met, acovery not within control limits, native sample concentration is l not within control limits. An expla- is (relative percent difference) not mated as one or more analytes i	ut greater than the instrum for but not detected. resence of interference. A A post spike is analyzed f ess than four times the sy- natory note may be includ within control limits. used in the calculation we	nent met An explar for all ICi pike adde led in the re not de	hod detection limit natory note may be P analyses when th ad concentration, e narrative, rected above the d	(MDL). included in the matrix spike etection limit	he narrative. te and or spike		
U or ND - Indicates that the compound was analyzed for but not detected. 8 - Analyte is detected in the associated method blank as well as in the sample. It indicates probable blank contamination and warns the data user. 5 - Analyte concentration exceeds the upper level of the calibration range. 9 - Estimated value. The result is less than the reporting limit but greater than the instrument method detection limit (MDL). A - A fantatively identified compound is a suspected aldol-condensation product. 8 - The analyte was diluted below an accurate quantitation level. • The spike recovery is equal to or outside the control criteria used. • The spike recovery is equal to or outside the control criteria used. • The spike recovery is equal to or outside the control criteria. 6 - A pattern resembling glasoline was detected in this sample. • A pattern resembling motor oil was detected in this sample. • A pattern resembling orude oil was detected in this sample. • A pattern resembling up-5 was detected in this sample. • A pattern resembling up-5 was detected in this sample. • A pattern resembling up-5 was detected in this sample. • A pattern resembling up-5 was detected in this sample. • Indicates that the fuel pattern was in the leavier end of the retention time window for the analyte of interest. • Indicates that the fuel pattern was in the lighter end of the retention time window for the analyte of interest. • Indicates that a significant fraction of the reported result did not resemble the patterns of any of the following petroleum hydrocarbon products: gasoline minor al spirits minotor al spirits minot	Organics:								
B - Analyte is detected in the associated method blank as well as in the sample. It indicates probable blank contamination and warns the data user. E - Analyte concentration exceeds the upper level of the calibration range. J - Estimated value. The result is less than the reporting limit but greater than the instrument method detection limit (MDL). A - A tentatively identified compound is a suspected aldol-condensation product. X - The analyte was diluted below an accurate quantitation level. • The spike recovery is equal to or outside the control criteria used. • The spike recovery is equal to or outside the control criteria. G - A pattern resembling gascine was detected in this sample. D - A pattern resembling drude oil was detected in this sample. C - A pattern resembling crude oil was detected in this sample. A - A pattern resembling crude oil was detected in this sample. C - A pattern resembling upper was in the beaker end of the retention time window for the analyte of interest Indicates that the fuel pattern was in the lighter end of the retention time window for the analyte of interest This flag indicates that a significant fraction of the reported result did not resemble the patterns of any of the following petroleum hydrocarbon products: gasolineg.P-8d. ALS Environmental FCLNS Version: 6.218 0	U or ND - Indicates th	hat the compound was analyzed	for but not detected.						
E - Analyte concentration exceeds the upper level of the calibration range. J - Estimated value. The result is less than the reporting limit but greater than the instrument method detection limit (MDL). A - A fantiatively identified compound is a suspected aldoi-condensation product. K - The analyte was diluted below an accurate quantitation level The result percent difference (RPD) equals or exceeds the control criteria. G - A pattern resembling gasoline was detected in this sample A pattern resembling motor oil was detected in this sample A pattern resembling motor oil was detected in this sample A pattern resembling group oil was detected in this sample A pattern resembling up-4 was detected in this sample A pattern resembling JP-4 was detected in this sample A pattern resembling JP-5 was detected in this sample Indicates that the fuel pattern was in the heavier end of the retention time window for the analyte of interest Indicates that the fuel pattern was in the lighter end of the retention time window for the analyte of interest Indicates that a significant fraction of the reported result did not resemble the patterns of any of the following petroleum hydrocarbon products: gasoline - mineral splits - motor oil - Stoddard solvent - wurker C - MLNS Version: 6 706 - A R Page 5 of 5 12 of	B - Analyte is detecte	d in the associated method blan	k as well as in the sample	e. It india	cates probable blar	k contamina	tion and warns the dat	a user,	
J - Estimated value. The result is less than the reporting limit but greater than the instrument method detection limit (MDL). A - A tentalively identified compound is a suspected aldoi-condensation product. X - The anjve was ditted below an accurate quanitation level The relative year ditted below an accurate quantitation level The relative percent difference (RPD) equals or exceeds the control criteria. G - A pattern resembling gasoline was detected in this sample. O - A pattern resembling motor oil was detected in this sample. C - A pattern resembling crude oil was detected in this sample A pattern resembling diseel was a detected in this sample A pattern resembling JP-5 was detected in this sample Indicates that the fuel pattern was in the heavier end of the retention time window for the analyte of interest Indicates that the fuel pattern was in the lighter end of the retention time window for the analyte of interest This significant fraction of the reported result did not resemble the patterns of any of the following petroleum hydrocarbon products: gasoline - JP-8 - diesel - dised -	E - Analyte concentra	tion exceeds the upper level of t	he calibration range.						
A - A tentatively identified compound is a suspected aldoi-condensation product. X - The analyte was diluted below an accurate quantitation level The spike recovery is equal to or outside the control criteria used The relative percent difference (RPD) equals or exceeds the control criteria. G - A pattern resembling guesoline was detected in this sample. D - A pattern resembling outpoint was detected in this sample. C - A pattern resembling outpoint was detected in this sample. A - A pattern resembling outpoint was detected in this sample. A - A pattern resembling outpoint was detected in this sample. A - A pattern resembling outpoint was detected in this sample. A - A pattern resembling outpoint was detected in this sample. A - A pattern resembling up-4 was detected in this sample. A - A pattern resembling up-4 was detected in this sample. A - A pattern resembling up-4 was detected in this sample. A - A pattern resembling up-4 was detected in this sample. A - A pattern resembling up-4 was detected in this sample. A - A pattern resembling up-4 was detected in this sample. A - A pattern resembling up-4 was detected in this sample. A - A pattern resembling up-4 was detected in this sample. A - A pattern resembling up-4 was detected in the sample. A - A pattern resembling up-4 was detected in the retention time window for the analyte of interest Indicates that the fuel pattern was in the lighter end of the retention time window for the analyte of interest Indicates that a significant fraction of the reported result did not resemble the patterns of any of the following petroleum hydrocarbon products: - gasoline - wineral spirits - mineral spirits - mineral spirits - mineral spirits - mineral spirits - worker C - MALS Environmental FC - LIMS Version: 6.706 - A R Page 5 of 5 12 of	J - Estimated value.	The result is less than the repor	ting limit but greater than	the instr	ument method dete	ection limit (N	IDL).		
A: The analyte was diluted below an accurate quantitation level. • The spike recovery is equal to or outside the control criteria used. • The relative percent difference (RPD) equals or exceeds the control criteria. G: A pattern resembling gasoline was detected in this sample. • A pattern resembling motor oil was detected in this sample. • A pattern resembling used was detected in this sample. • A pattern resembling UP-4 was detected in this sample. • A pattern resembling UP-4 was detected in this sample. • A pattern resembling UP-4 was detected in this sample. • A pattern resembling UP-4 was detected in this sample. • A pattern resembling UP-4 was detected in this sample. • A pattern resembling UP-5 was detected in this sample. • Indicates that the fuel pattern was in the leavier end of the retention time window for the analyte of interest. • Indicates that the fuel pattern was in the lighter end of the retention time window for the analyte of interest. • Indicates that a significant fraction of the reported result did not resemble the patterns of any of the following petroleum hydrocarbon products: gasoline g-8 dicesel mineral spirits • Stoddard solvent bunker C ALS Environmental FC LINS Version: 6.706 AR Page 5 of 5 12 of	A - A tentatively ident	ified compound is a suspected a	Idol-condensation produc	Ħ.					
The relative percent difference (RPD) equals or exceeds the control criteria. A pattern resembling gasoline was detected in this sample. A pattern resembling motor oil was detected in this sample. A pattern resembling motor oil was detected in this sample. A pattern resembling JP-4 was detected in this sample. A pattern resembling JP-5 was detected in this sample. A pattern resembling JP-5 was detected in this sample. A pattern resembling JP-5 was detected in this sample. A pattern resembling JP-5 was detected in this sample. A pattern resembling JP-5 was detected in this sample. A pattern resembling JP-5 was detected in this sample. A pattern resembling JP-5 was detected in this sample. A pattern resembling JP-5 was detected in this sample. A pattern resembling JP-5 was detected in this sample. A pattern resembling JP-5 was detected in this sample. A pattern resembling JP-5 was detected in this sample. A pattern resembling JP-5 was detected in this sample. A pattern resembling JP-5 was detected in the sample. A pattern resembling JP-5 was detected in the sample. A pattern resembling JP-5 was detected in the sample. A pattern resembling JP-5 was detected in the sample. I - Indicates that the fuel pattern was in the lighter end of the retention time window for the analyte of interest. I - Indicates that a significant fraction of the reported result did not resemble the patterns of any of the following petroleum hydrocarbon products: gasoline mineral splrits mineral splrits mineral splrits matter at splrits matter at plants MALS Environmental FC LINS Version: 6.796 AR Page S of 5 12 of	X - The analyte was o	diluted below an accurate quanti	lation level.						81
A pattern resembling gasoline was detected in this sample. A pattern resembling rotor oil was detected in this sample. A pattern resembling rotor oil was detected in this sample. A pattern resembling JP-4 was detected in this sample. A pattern resembling JP-4 was detected in this sample. A pattern resembling JP-5 was detected in this sample. A pattern resembling JP-5 was detected in this sample. A pattern resembling JP-5 was detected in this sample. A pattern resembling JP-5 was detected in this sample. A pattern resembling JP-5 was detected in this sample. A pattern resembling JP-5 was detected in this sample. A pattern resembling JP-5 was detected in this sample. A pattern resembling JP-5 was detected in this sample. A pattern resembling JP-5 was detected in this sample. A pattern resembling JP-5 was detected in this sample. A pattern resembling JP-5 was detected in this sample. A pattern resembling JP-5 was detected in this sample. A pattern resembling JP-5 was detected in this sample. A pattern resembling JP-5 was detected in this sample. A pattern resembling indicates that the fuel pattern was in the fighter end of the retention time window for the analyte of interest. I indicates that the fuel pattern was in the fighter end of the retention time window for the analyte of interest. I his flag indicates that a significant fraction of the reported result did not resemble the patterns of any of the following petroleum hydrocarbon products: JP-8 diesel mineral splrits matter oil Stodard solvent bunker C	- The spike recovery	y is equal to or outside the contri-	ceeds the control criteria	8					
D - A pattern resembling diesel was detected in this sample. M - A pattern resembling motor oil was detected in this sample. C - A pattern resembling JP-4 was detected in this sample. A - A pattern resembling JP-5 was detected in this sample. A - A pattern resembling JP-5 was detected in this sample. A - A pattern resembling JP-5 was detected in this sample. H - Indicates that the fuel pattern was in the heavier end of the retention time window for the analyte of interest. L - Indicates that the fuel pattern was in the lighter end of the retention time window for the analyte of interest. Z - This flag indicates that a significant fraction of the reported result did not resemble the patterns of any of the following petroleum hydrocarbon products: gasoline JP-8 diesel mineral spirits mineral spirits mineral spirits M - A deternt - Stoddard solvent - bunker C ALS Environmental FC LINS Version: 6.796 AR Page 5 of 5 12 of	G - A pattern resemb	ling pasoline was detected in thi	s sample.						
M - A pattern resembling motor oil was detected in this sample. C - A pattern resembling vP-4 was detected in this sample. 4 - A pattern resembling JP-5 was detected in this sample. 5 - A pattern resembling JP-5 was detected in this sample. H - Indicates that the fuel pattern was in the lighter end of the retention time window for the analyte of interest. - Indicates that the fuel pattern was in the lighter end of the retention time window for the analyte of interest. - Indicates that the fuel pattern was in the lighter end of the retention time window for the analyte of interest. - This flag indicates that a significant fraction of the reported result did not resemble the patterns of any of the following petroleum hydrocarbon products: gasoline JP-8 diesel mineral spirits motor oil Stoddard solvent bunker C ALS Environmental FC LIMS Version: 6 796 AR Page 5 of 5 12 of	D - A pattern resembl	ling diesel was detected in this s	sample.						
C - A pattern resembling crude oil was detected in this sample. 4 - A pattern resembling JP-4 was detected in this sample. 5 - A pattern resembling JP-5 was detected in this sample. 1 - Indicates that the fuel pattern was in the heavier end of the retention time window for the analyte of interest. 2 - This flag indicates that a significant fraction of the reported result did not resemble the patterns of any of the following petroleum hydrocarbon products: 3 - Stodard solvent 5 - Bunker C ALS Environmental FC LIMS Version: 6 796 AR Page 5 of 5 12 of	M - A pattern resemb	ling motor oil was detected in th	is sample.						
A pattern resembling JP-4 was detected in this sample. A pattern resembling JP-5 was detected in this sample. H - Indicates that the fuel pattern was in the heavier end of the retention time window for the analyte of interest. Indicates that the fuel pattern was in the lighter end of the retention time window for the analyte of interest. This flag indicates that a significant fraction of the reported result did not resemble the patterns of any of the following petroleum hydrocarbon products: gasoline JP-8 diesel mineral spirits motor oil Stoddard solvent bunker C	C - A pattern resembl	ling crude oil was detected in thi	s sample.						
Solution Apartem resembling JP-5 was detected in this sample. I - Indicates that the fuel pattern was in the heavier end of the retention time window for the analyte of interest. I - Indicates that the fuel pattern was in the lighter end of the retention time window for the analyte of interest. I - This flag indicates that a significant fraction of the reported result did not resemble the patterns of any of the following petroleum hydrocarbon products: gasoline JP-8 diesel mineral spirits motor oil Stoddard solvent bunker C ALS Environmental FC UMS Version: 6 796 AR Page 5 of 5 12 of	4 - A pattern resembl	ing JP-4 was detected in this sa	mple.						
H - Indicates that the fuel pattern was in the heaver end of the retention time window for the analyte of interest. L - Indicates that the fuel pattern was in the lighter end of the retention time window for the analyte of interest. Z - This flag indicates that a significant fraction of the reported result did not resemble the patterns of any of the following petroleum hydrocarbon products: gasoline . jP-8 - diesel - mineral spirits - motor oil - Stoddard solvent - bunker C - MLS Environmental FC LIMS Version: 6.796 - AR Page 5 of 5 12 of	5 - A pattern resembl	ing JP-5 was detected in this sa	mple.						
- malcates that the rule pattern was in the lighter end of the reported result did not resemble the patterns of any of the following petroleum hydrocarbon products: gasoline JP-8 diesel mineral spirits Stoddard solvent bunker C ALS Environmental FC	- Indicates that the	tuel pattern was in the heavier e	na of the retention time w	nridow fo	r the analyte of inte	NCSI.			
ALS Environmental FC	 Indicates that the l This flag indicates 	ruel pattern was in the lighter en s that a significant fraction of the	reported result did not re	semble (the patterns of any	est. of the followi	ng petroleum hydroca	bon products:	13
- diesel - mineral spirits - motor oil - Stoddard solvent - bunker C - AR Page 5 of 5 12 of LIMS Version: 6 796 - AR Page 5 of 5 12 of	JP-8]
ALS Environmental FC	diesel								-
ALS Environmental FC	 mineral spirits motor oil 								
ALS Environmental FC	Stoddard solvent								
ALS Environmental FC	- bunker Ç								
ALS Environmental FC	Narianing								
ALS Environmental FC LIMS Version: 6 796 AR Page 5 of 5 12 of				End		50			
			ALS		ersion: 6.796	ru -		AR Page 5	of 5 12 of

ALS

Client:ALS EnvironmentalWork Order:1512056Project:2110770

Date: 12/22/2015 2:08

QC BATCH REPORT

Project:	2110770											
Batch ID: AI	B151209-3-2	Instrument ID LB	4100-C		Method: G	ross Alph	a/Beta by (GFPC				
LCS	Sample ID: AB151209	-3			Ur	nits: pCi/l		Analysi	is Date: 12	2/10/20	15 13:2:	2
Client ID:		Run II	D: AB151209-	3A			Pr	rep Date: 12/9	/2015	DF:	NA	
Analyte		Result	ReportLimit	SPK Val	SPK Ref Value	%REC	Control Limit	Decision Level	DER Ref	DER	DER Limit	Qual
GROSS AL PL	44	235 (+/- 43)	7	225 4		104	70-130					P M3
GROSS BET	A	204 (+/- 35)	12	203.7	-	100	70-130					P,M3
LCSD	Sample ID: AB151209	L.1			Ur	its: nCi/l		Analysi	is Date: 12	10/20	15 13:2	2
Client ID:	Sample ID. ABTOTES	Run I	: AB151209-	3A	01	no. pour	Pr	rep Date: 12/9	/2015	DF:	NA	20
					SPK Ref		Control	Decision	DER		DER	
Analyte		Result	ReportLimit	SPK Val	Value	%REC	Limit	Level	Ref	DER	Limit	Qual
GROSS ALPH	на	249 (+/- 45)	8	225.4		111	70-130		235	0.2	2.1	P,M3
GROSS BETA	A	201 (+/- 35)	12	203.7		98.8	70-130		204	0.05	2.1	P,M3
мв	Sample ID: AB151209	-3			Ur	its: pCi/l		Analysi	is Date: 12	2/20/20	15 09:0	1
Client ID:		Run II	: AB151209-	3A			Pr	ep Date: 12/9	/2015	DF:	NA	
Analyle		Result	Report imit	SPK Val	SPK Ref Value	%REC	Control Limit	Decision Level	DER Ref	DER	DER Limit	Qual
OPOSS AL DE	45	ND	0.95	Gritter		ANLO						
GROSS BETA	4	ND	1.11									
			15120	56-4	151147	3-9					7	
	19		ALS	Enviror	amental on: 6.796	FC				QC	Page: 1	of 1



ATTACHMENT G

Historical Receiving Water Sampling for the Chester and Ridley Creeks

Coursels Dotte	C*4 -	Test	D	T1	DDI	M . (b 1	Associate Decta
Sample Date	Site	Test	Result	Units	KDL	Method	Analysis Date
		DO	8.38	mg/L		Multimeter Probe	7/20/2010 16:21 PM
		Temperature	25.9	°C			7/20/2010 16:21 PM
		Conductivity	461	μS			7/20/2010 16:21 PM
		pH	7.81	рН			7/20/2010 16:21 PM
		BOD-5	<3	mg/L	3	SM 5210 B	7/21/10 7:45 AM
		TSS	4	mg/L	4	SM 2540D	7/26/10 12:34 PM
		Ammonia as N	< 0.2		0.2	SM 4500 NH3 G	//26/10 11:44 AM
		Digestion, TKN-TP	7/22/2010	Date completed	N/A	EPA 351.2	
		Total Phosphorous as P	0.42	mg/L	0.05	EPA 365.2	7/23/10 11:30 AM
		Fecal Coliform, MF	3400	colonies/100mL	N/A	SM 9222 D	//20/10 5:49 PM
		Antimony, Total, MS	<0.002	mg/L	0.002	EPA 200.8	2/4/2011 2:29 P.M.
	CC1	Arsenic, Total, MS	<0.002	mg/L	0.002	EPA 200.8	2/4/2011 2:29 P.M.
		Beryllium, Total, MS	<0.001	mg/L	0.001	EPA 200.8	2/4/2011 2:29 P.M.
		Cadmium, Total, MS	<0.001	mg/L	0.001	EPA 200.8	2/4/2011 2:29 P.M.
		Chromium, Total, MS	<0.002	mg/L	0.002	EPA 200.8	2/4/2011 2:29 P.M.
		Copper, Total, ICP	<0.005	mg/L	0.005	EPA 200.7	2/4/2011 10:59 P.M.
		ICP-OES	2/4/2011	Date completed	N/A	EPA 200.7	2/4/2011 2:20, P.M.
		Matala Propagation D2002	<0.002	mg/L Data annulated	0.002	EPA 200.8	2/4/2011 2:29 P.MI.
		Niekal Tatal MS	2/2/2011	Date completed	IN/A	EPA 200.2	2/4/2011 2:20 P.M
7/20/2010 (Test Run)		Salamium Tatal MS	<0.002	mg/L m a/I	0.002	EPA 200.8	2/4/2011 2:29 P.M.
		Selenium, Total, MS	< 0.002	mg/L mg/I	0.002	EPA 200.8	2/4/2011 2:29 P.M.
		Thallium Tatal MS	<0.001	mg/L	0.001	EPA 200.8	2/4/2011 2:29 P.M.
		Zina Total ICP	<0.002	mg/L mg/I	0.002	EFA 200.8 EPA 200.7	2/4/2011 2.29 F.M.
			6.6	mg/L	0.005	EI A 200.7	2/4/2011 10.39 1.M.
		DO	0.0				7/20/2010 15:05:00 PM
		Conductivity	23 447				7/20/2010 15:05:00 PM
		pH	7.54	μ3 nH			7/20/2010 15:05:00 PM
		BOD-5	<3	ma/I	3	SM 5210 B	7/21/10 7:45 AM
		TSS	6	mg/L mg/I	4	SM 2540D	7/26/10 12:34 PM
		Ammonia as N	<0.2	ing/L	0.2	SM 2540D SM 4500 NH3 G	7/26/10 11:44 AM
		Digestion TKN-TP	7/22/2010	Date completed	0.2 N/A	FPA 351 2	//20/10 11.44 / INI
		Total Phosphorous as P	0.39	mg/L	0.05	EPA 365 2	7/23/10 11:30 AM
		Fecal Coliform MF	7400	colonies/100mL	N/A	SM 9222 D	7/20/10 5:49 PM
		Antimony, Total, MS	< 0.002	mg/L	0.002	EPA 200.8	2/4/2011 2:33 P.M.
		Arsenic, Total, MS	< 0.002	mg/L	0.002	EPA 200.8	2/4/2011 2:33 P.M.
	CC3	Beryllium, Total , MS	< 0.001	mg/L	0.001	EPA 200.8	2/4/2011 2:33 P.M.
		Cadmium, Total, MS	< 0.001	mg/L	0.001	EPA 200.8	2/4/2011 2:33 P.M.
		Chromium, Total, MS	< 0.002	mg/L	0.002	EPA 200.8	2/4/2011 2:33 P.M.
		Copper, Total, ICP	< 0.005	mg/L	0.005	EPA 200.7	2/4/2011 11:05 P.M.
		ICP-OES	2/4/2011	Date completed	N/A	EPA 200.7	
		Lead, Total, MS	< 0.002	mg/L	0.002	EPA 200.8	2/4/2011 2:33 P.M.
		Metals Preparation, D2002	2/2/2011	Date completed	N/A	EPA 200.2	
		Nickel, Total, MS	< 0.002	mg/L	0.002	EPA 200.8	2/4/2011 2:33 P.M.
		Selenium, Total, MS	< 0.002	mg/L	0.002	EPA 200.8	2/4/2011 2:33 P.M.
		Silver, Total, MS	< 0.001	mg/L	0.001	EPA 200.8	2/4/2011 2:33 P.M.
		Thallium, Total, MS	< 0.002	mg/L	0.002	EPA 200.8	2/4/2011 2:33 P.M.
		Zinc, Total, ICP	0.011	mg/L	0.005	EPA 200.7	2/4/2011 11:05 P.M.

	~						
Sample Date	Site	Test	Result	Units	RDL	Method	Analysis Date
		DO	8.53	mg/L			7/20/2010 15:55 PM
		Temperature	25.6	°С			7/20/2010 15:55 PM
		Conductivity	311	μS			7/20/2010 15:55 PM
		pН	8.05	pН			7/20/2010 15:55 PM
		BOD-5	<3	mg/L	3	SM 5210 B	7/21/10 7:45 AM
		TSS	5	mg/L	4	SM 2540D	7/26/10 12:34 PM
		Ammonia as N	<0.2		0.2	SM 4500 NH3 G	7/26/10 11:44 AM
		Digestion, TKN-TP	7/22/2010	Date completed	N/A	EPA 351.2	
		Total Phosphorous as P	0.13	mg/L	0.05	EPA 365.2	7/23/10 11:30 AM
		Fecal Coliform, MF	1300	colonies/100mL	N/A	SM 9222 D	7/20/10 5:49 PM
		Antimony, Total, MS	< 0.002	mg/L	0.002	EPA 200.8	2/4/2011 2:52 P.M.
	RC1	Arsenic, Total, MS	< 0.002	mg/L	0.002	EPA 200.8	2/4/2011 2:52 P.M.
	Rei	Beryllium, Total , MS	< 0.001	mg/L	0.001	EPA 200.8	2/4/2011 2:52 P.M.
		Cadmium, Total, MS	< 0.001	mg/L	0.001	EPA 200.8	2/4/2011 2:52 P.M.
7/20/2010 (Test Run)		Chromium, Total, MS	< 0.002	mg/L	0.002	EPA 200.8	2/4/2011 2:52 P.M.
		Copper, Total, ICP	< 0.005	mg/L	0.005	EPA 200.7	2/4/2011 11:11 P.M.
		ICP-OES	2/4/2011	Date completed	N/A	EPA 200.7	
		Lead, Total, MS	< 0.002	mg/L	0.002	EPA 200.8	2/4/2011 2:52 P.M.
		Metals Preparation, D2002	2/2/2011	Date completed	N/A	EPA 200.2	
		Nickel, Total, MS	< 0.002	mg/L	0.002	EPA 200.8	2/4/2011 2:52 P.M.
		Selenium, Total, MS	< 0.002	mg/L	0.002	EPA 200.8	2/4/2011 2:52 P.M.
		Silver, Total, MS	< 0.001	mg/L	0.001	EPA 200.8	2/4/2011 2:52 P.M.
		Thallium, Total, MS	< 0.002	mg/L	0.002	EPA 200.8	2/4/2011 2:52 P.M.
		Zinc, Total, ICP	0.012	mg/L	0.005	EPA 200.7	2/4/2011 11:11 P.M.
		DO	7.39	mg/L			7/20/2010 15:25 AM
		Temperature	26	°С			7/20/2010 15:25 AM
		Conductivity	333	μS			7/20/2010 15:25 AM
		рН	7.57	рН			7/20/2010 15:25 AM
		BOD-5	<3	mg/L	3	SM 5210 B	7/21/10 7:45 AM
		TSS	13	mg/L	4	SM 2540D	7/26/10 12:34 PM
		Ammonia as N	<0.2		0.2	SM 4500 NH3 G	7/26/10 11:44 AM
		Digestion, TKN-TP	7/22/2010	Date completed	N/A	EPA 351.2	
		Total Phosphorous as P	0.16	mg/L	0.05	EPA 365.2	7/23/10 11:30 AM
		Fecal Coliform, MF	3200	colonies/100mL	N/A	SM 9222 D	7/20/10 5:49 PM
		Antimony, Total, MS	< 0.002	mg/L	0.002	EPA 200.8	2/4/2011 2:56 P.M.
	RC3	Arsenic, Total, MS	< 0.002	mg/L	0.002	EPA 200.8	2/4/2011 2:56 P.M.
		Beryllium, Total , MS	< 0.001	mg/L	0.001	EPA 200.8	2/4/2011 2:56 P.M.
		Cadmium, Total, MS	< 0.001	mg/L	0.001	EPA 200.8	2/4/2011 2:56 P.M.
		Chromium, Total, MS	< 0.002	mg/L	0.002	EPA 200.8	2/4/2011 2:56 P.M.
		Copper, Total, ICP	< 0.005	mg/L	0.005	EPA 200.7	2/4/2011 11:17 P.M.
		ICP-OES	2/4/2011	Date completed	N/A	EPA 200.7	
		Lead, Total, MS	< 0.002	mg/L	0.002	EPA 200.8	2/4/2011 2:56 P.M.
		Metals Preparation, D2002	2/2/2011	Date completed	N/A	EPA 200.2	
		Nickel, Total, MS	0.002	mg/L	0.002	EPA 200.8	2/4/2011 2:56 P.M.
		Selenium, Total, MS	< 0.002	mg/L	0.002	EPA 200.8	2/4/2011 2:56 P.M.
		Silver, Total, MS	< 0.001	mg/L	0.001	EPA 200.8	2/4/2011 2:56 P.M.
		Thallium, Total, MS	< 0.002	mg/L	0.002	EPA 200.8	2/4/2011 2:56 P.M.
		Zinc, Total, ICP	0.014	mg/L	0.005	EPA 200.7	2/4/2011 11:17 P.M.

Comula Data	C:4.	Test	Desult	TIn:4a	DDI	Mathad	A malausia Data
Sample Date	Site	lest	Result	Units	RDL	Niethod	Analysis Date
		DO	8.44	mg/L		Multimeter Probe	7/23/10 10:05 AM
		Temperature	25.2	°C			7/23/10 10:05 AM
		Conductivity	483	μS			7/23/10 10:05 AM
		рН	7.81	pН			7/23/10 10:05 AM
		BOD-5	<3	mg/L	3	SM 5210 B	7/23/10 4:00 PM
		TSS	<4	mg/L	4	SM 2540D	7/29/10 10:09 AM
		Ammonia as N	<0.2		0.2	SM 4500 NH3 G	7/26/10 3:30 PM
		Digestion, TKN-TP	07/30/010	Date completed	N/A	EPA 351.2	
		Total Phosphorous as P	0.36	mg/L	0.05	EPA 365.2	7/30/10 10:01 AM
		Fecal Coliform, MF	1400	colonies/100mL	N/A	SM 9222 D	7/23/10 2:55 PM
		Antimony, Total, MS	< 0.002	mg/L	0.002	EPA 200.8	2/4/2011 3:00 P.M.
	CC1	Arsenic, Total , MS	< 0.002	mg/L	0.002	EPA 200.8	2/4/2011 3:00 P.M.
		Beryllium, Total , MS	< 0.001	mg/L	0.001	EPA 200.8	2/4/2011 3:00 P.M.
		Cadmium, Total, MS	< 0.001	mg/L	0.001	EPA 200.8	2/4/2011 3:00 P.M.
		Chromium, Total, MS	< 0.002	mg/L	0.002	EPA 200.8	2/4/2011 3:00 P.M.
		Copper, Total, ICP	< 0.005	mg/L	0.005	EPA 200.7	2/4/2011 11:23 P.M.
		ICP-OES	2/4/2011	Date completed	N/A	EPA 200.7	
		Lead, Total, MS	< 0.002	mg/L	0.002	EPA 200.8	2/4/2011 3:00 P.M.
		Metals Preparation, D2002	2/2/2011	Date completed	N/A	EPA 200.2	
7/23/2010 (Run 1)		Nickel, Total, MS	< 0.002	mg/L	0.002	EPA 200.8	2/4/2011 3:00 P.M.
		Selenium, Total, MS	< 0.002	mg/L	0.002	EPA 200.8	2/4/2011 3:00 P.M.
		Silver, Total, MS	< 0.001	mg/L	0.001	EPA 200.8	2/4/2011 3:00 P.M.
		Thallium, Total, MS	<0.002	mg/L	0.002	EPA 200.8	2/4/2011 3:00 P.M.
		Zinc, Total, ICP	0.016	mg/L	0.005	EPA 200.7	2/4/2011 11:23 P.M.
		DO	5.86	mg/L			7/23/10 9:10 AM
		Temperature	25.7	°C			7/23/10 9:10 AM
		Conductivity	390	μS			7/23/10 9:10 AM
		pH DOD 5	7.54	рН	2	Ch (2010 D	7/23/10 9:10 AM
		BOD-5	<9	mg/L	3	SM 5210 B	7/23/10 4:00 PM
		188	18	mg/L	4	SM 2540D	7/29/10 10:09 AM
		Ammonia as N	<0.2	Determinated	0.2	SM 4500 NH3 G	//26/10 3:30 PM
		Digestion, TKN-TP	//30/2010	Date completed	N/A	EPA 351.2	7/20/10 10 01 434
		Total Phosphorous as P	0.09	mg/L	0.05	EPA 365.2	7/30/10 10:01 AM
		Autimenter Tetel MS	580	colonies/100mL	IN/A	SM 9222 D	7/23/10/2:33 PM
		Antimony, Total, MS	<0.002	mg/L	0.002	EPA 200.8	2/4/2011 3:04 P.M.
	CC3	Arsenic, Total, MS	<0.002	mg/L ma/I	0.002	EPA 200.8	2/4/2011 3:04 P.M.
		Cadmium, Total, MS	<0.001	mg/L mg/I	0.001	EPA 200.8	2/4/2011 3:04 P.M.
		Chromium Total MS	<0.001	mg/L mg/I	0.001	EFA 200.8	2/4/2011 3:04 P.M.
		Conner Total ICP	<0.002	mg/L mg/I	0.002	EFA 200.8	2/4/2011 5.04 F.M.
		ICD OES	<0.005	Data completed	0.003 N/A	EFA 200.7	2/4/2011 11.34 F.Ivi.
		Lood Total MS	2/4/2011	ma/I	1N/A	EFA 200.7	2/4/2011 2:04 P.M
		Matals Propagation D2002	<0.002	Data completed	0.002 N/A	EFA 200.8	2/4/2011 3.04 F.MI.
		Niekal Total MS	2/2/2011	ma/I	IN/A	EFA 200.2 EDA 200.9	2/4/2011 2:04 P.M
		Selenium Total MS	<0.002	mg/L mg/I	0.002	EPA 200.8	2/4/2011 3:04 P M
		Silver Total MS	<0.002	mg/L mg/I	0.002	EPA 200.8	2/4/2011 3.04 P M
		Thallium Total MS	<0.001	mg/L mg/I	0.001	EPA 200.8	2/4/2011 3:04 P M
		Zine Total ICP	0.011	mg/L mg/I	0.002	EFA 200.8	2/4/2011 11·34 P M
		Zine, rotai, ier	0.011	Ing/L	0.003	EI A 200.7	2/7/2011 11.34 F.IVI.

Coursels Dotte	C *4 -	Test	D	TL.t.	DDI	Made	Assolution Detail
Sample Date	Site	lest	Result	Units	KDL	Niethod	Analysis Date
		DO	9.18	mg/L			7/23/10 9:50 AM
		Temperature	24.4	°С			7/23/10 9:50 AM
		Conductivity	332	μS			7/23/10 9:50 AM
		рН	8.03	pН			7/23/10 9:50 AM
		BOD-5	<3	mg/L	3	SM 5210 B	7/23/10 4:00 PM
		TSS	<4	mg/L	4	SM 2540D	7/29/10 10:09 AM
		Ammonia as N	<0.2		0.2	SM 4500 NH3 G	7/26/10 3:30 PM
		Digestion, TKN-TP	7/30/2010	Date completed	N/A	EPA 351.2	
		Total Phosphorous as P	0.16	mg/L	0.05	EPA 365.2	7/30/10 10:01 AM
		Fecal Coliform, MF	590	colonies/100mL	N/A	SM 9222 D	7/23/10 2:55 PM
		Antimony, Total, MS	< 0.002	mg/L	0.002	EPA 200.8	2/4/2011 3:28 P.M.
	RC1	Arsenic, Total, MS	< 0.002	mg/L	0.002	EPA 200.8	2/4/2011 3:28 P.M.
		Beryllium, Total , MS	< 0.001	mg/L	0.001	EPA 200.8	2/4/2011 3:28 P.M.
		Cadmium, Total, MS	< 0.001	mg/L	0.001	EPA 200.8	2/4/2011 3:28 P.M.
		Chromium, Total, MS	< 0.002	mg/L	0.002	EPA 200.8	2/4/2011 3:28 P.M.
		Copper, Total, ICP	< 0.005	mg/L	0.005	EPA 200.7	2/5/2011 12:09 A.M.
		ICP-OES	2/5/2011	Date completed	N/A	EPA 200.7	
		Lead, Total, MS	< 0.002	mg/L	0.002	EPA 200.8	2/4/2011 3:28 P.M.
		Metals Preparation, D2002	2/2/2011	Date completed	N/A	EPA 200.2	
		Nickel, Total, MS	< 0.002	mg/L	0.002	EPA 200.8	2/4/2011 3:28 P.M.
		Selenium, Total, MS	< 0.002	mg/L	0.002	EPA 200.8	2/4/2011 3:28 P.M.
		Silver, Total, MS	< 0.001	mg/L	0.001	EPA 200.8	2/4/2011 3:28 P.M.
		Thallium, Total, MS	<0.002	mg/L	0.002	EPA 200.8	2/4/2011 3:28 P.M.
7/23/2010		Zinc, Total, ICP	0.006	mg/L	0.005	EPA 200.7	2/5/2011 12:09 A.M.
(Run 1)		DO	6.12	mg/L			7/23/10 9:25 AM
		Temperature	28.6	°C			7/23/10 9:25 AM
		Conductivity	366	μS			7/23/10 9:25 AM
		pH	7.39	рН			7/23/10 9:25 AM
		BOD-5	5	mg/L	3	SM 5210 B	7/23/10 4:00 PM
		TSS	22	mg/L	4	SM 2540D	7/29/10 10:09 AM
		Ammonia as N	<0.2	D. 1.1	0.2	SM 4500 NH3 G	7/26/10 3:30 PM
		Digestion, TKN-TP	7/30/2010	Date completed	N/A	EPA 351.2	7/20/40 40 04 13 4
		Total Phosphorous as P	0.07	mg/L	0.05	EPA 365.2	7/30/10 10:01 AM
		Fecal Coliform, MF	540	colonies/100mL	N/A	SM 9222 D	7/23/10 2:55 PM
		Antimony, Total, MS	<0.002	mg/L	0.002	EPA 200.8	2/4/2011 3:32 P.M.
	RC3	Arsenic, Total, MS	<0.002	mg/L	0.002	EPA 200.8	2/4/2011 3:32 P.M.
		Beryllium, Total, MS	<0.001	mg/L	0.001	EPA 200.8	2/4/2011 3:32 P.M.
		Cadmium, Total, MS	<0.001	mg/L	0.001	EPA 200.8	2/4/2011 3:32 P.M.
		Chromium, Total, MS	<0.002	mg/L	0.002	EPA 200.8	2/4/2011 3:32 P.M.
		Copper, Total, ICP	< 0.005	mg/L	0.005	EPA 200.7	2/5/2011 12:15 A.M.
		ICP-OES	2/5/2011	Date completed	N/A	EPA 200.7	2/4/2011 2 22 . D.M.
		Lead, 10tal, MS	<u>>0.002</u>	IIIg/L Data commisto i	0.002	EFA 200.8	2/4/2011 3:32 P.M.
		Nichal Tetal MS	2/2/2011	Date completed	IN/A	EPA 200.2	2/4/2011 2:22 D.M
		Nickel, Total, MS	<u>>0.002</u>	IIIg/L	0.002	EFA 200.8	2/4/2011 3:52 P.M.
		Science, Total, MS	<0.002	Img/L	0.002	EPA 200.8	2/4/2011 3:32 P.M.
		Suver, 10tal, MS	<u>>0.001</u>	mg/L I/π	0.001	EFA 200.8	2/4/2011 3:52 P.M.
		Thailium, Total, MS	<0.002	mg/L	0.002	EPA 200.8	2/4/2011 3:32 P.M.
		Zinc, Total, ICP	0.014	mg/L	0.005	EPA 200.7	2/5/2011 12:15 A.M.

Sample Date	Sito	Tost	Docult	Unite	DDI	Mathad	Analysis Data
Sample Date	Site		Kesun	Units 	KDL	Maltimates Dr. 1	
	Site	DO	5.65	mg/L		Multimeter Probe	8/12/10 10:02 AM
		Temperature	25.1	°C			8/12/10 10:02 AM
		Conductivity	597	μS			8/12/10 10:02 AM
		pH	7.39	pH			8/12/10 10:02 AM
		BOD-5	229	mg/L	3	SM 5210 B	8/12/10 2:50 PM
		TSS	7	mg/L	4	SM 2540D	8/17/10 2:10 PM
		Ammonia as N	<0.2		0.2	SM 4500 NH3 G	8/18/10 10:49 AM
		Digestion, TKN-TP	8/17/2010	Date completed	N/A	EPA 351.2	
		Total Phosphorous as P	0.57	mg/L	0.05	EPA 365.2	8/17/10 1:39 PM
		Fecal Coliform, MF	9700	colonies/100mL	N/A	SM 9222 D	8/12/10 2:38 PM
		Antimony, Total, MS	< 0.002	mg/L	0.002	EPA 200.8	2/4/2011 3:36 P.M.
	CC1	Arsenic, Total , MS	< 0.002	mg/L	0.002	EPA 200.8	2/4/2011 3:36 P.M.
		Beryllium, Total , MS	< 0.001	mg/L	0.001	EPA 200.8	2/4/2011 3:36 P.M.
		Cadmium, Total, MS	< 0.001	mg/L	0.001	EPA 200.8	2/4/2011 3:36 P.M.
		Chromium, Total, MS	< 0.002	mg/L	0.002	EPA 200.8	2/4/2011 3:36 P.M.
		Copper, Total, ICP	0.007	mg/L	0.005	EPA 200.7	2/5/2011 12:21 A.M.
		ICP-OES	2/5/2011	Date completed	N/A	EPA 200.7	
		Lead, Total, MS	< 0.002	mg/L	0.002	EPA 200.8	2/4/2011 3:36 P.M.
		Metals Preparation, D2002	2/2/2011	Date completed	N/A	EPA 200.2	
		Nickel, Total, MS	0.002	mg/L	0.002	EPA 200.8	2/4/2011 3:36 P.M.
		Selenium, Total, MS	< 0.002	mg/L	0.002	EPA 200.8	2/4/2011 3:36 P.M.
8/12/2010		Silver, Total, MS	< 0.001	mg/L	0.001	EPA 200.8	2/4/2011 3:36 P.M.
(Attempted		Thallium, Total, MS	< 0.002	mg/L	0.002	EPA 200.8	2/4/2011 3:36 P.M.
Wet Run		Zinc, Total, ICP	0.019	mg/L	0.005	EPA 200.7	2/5/2011 12:21 A.M.
Dained but not		DO	5.42	mg/L			8/12/10 9:09 AM
kand anough)		Temperature	25.1	⁰ C			8/12/10 9:09 AM
naru enougn)		Conductivity	651	μS			8/12/10 9:09 AM
		pН	7.47	pH			8/12/10 9:09 AM
		BOD-5	<3	mg/L	3	SM 5210 B	8/13/10 11:00 AM
		TSS	12	mg/L	4	SM 2540D	8/17/10 2:10 PM
		Ammonia as N	<.2		0.2	SM 4500 NH3 G	8/18/10 10:49 AM
		Digestion, TKN-TP	8/17/2010	Date completed	N/A	EPA 351.2	
		Total Phosphorous as P	0.5	mg/L	0.05	EPA 365.2	8/17/10 1:39 PM
		Fecal Coliform, MF	830	colonies/100mL	N/A	SM 9222 D	8/12/10 2:38 PM
		Antimony, Total, MS	< 0.002	mg/L	0.002	EPA 200.8	2/4/2011 3:56 P.M.
	CC3	Arsenic, Total, MS	< 0.002	mg/L	0.002	EPA 200.8	2/4/2011 3:56 P.M.
	005	Beryllium, Total, MS	< 0.001	mg/L	0.001	EPA 200.8	2/4/2011 3:56 P.M.
		Cadmium, Total, MS	< 0.001	mg/L	0.001	EPA 200.8	2/4/2011 3:56 P.M.
		Chromium, Total, MS	< 0.002	mg/L	0.002	EPA 200.8	2/4/2011 3:56 P.M.
		Copper, Total, ICP	0.006	mg/L	0.005	EPA 200.7	2/5/2011 12:26 A.M.
		ICP-OES	2/5/2011	Date completed	N/A	EPA 200.7	
		Lead, Total, MS	< 0.002	mg/L	0.002	EPA 200.8	2/4/2011 3:56 P.M.
		Metals Preparation, D2002	2/2/2011	Date completed	N/A	EPA 200.2	
		Nickel, Total, MS	0.002	mg/L	0.002	EPA 200.8	2/4/2011 3:56 P.M.
		Selenium, Total, MS	< 0.002	mg/L	0.002	EPA 200.8	2/4/2011 3:56 P.M.
		Silver, Total, MS	< 0.001	mg/L	0.001	EPA 200.8	2/4/2011 3:56 P.M.
		Thallium, Total, MS	< 0.002	mg/L	0.002	EPA 200.8	2/4/2011 3:56 P.M.
		Zinc, Total, ICP	0.018	mg/L	0.005	EPA 200.7	2/5/2011 12:26 A.M.

Dry	Events
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Simple Date One For Form Form	Sample Date	Sito	Test	Regult	Units	BDI	Method	Analysis Data
RC1 Conductivity 40.7 µS No.12(10) No.12(10) <th>Sample Date</th> <th>Site</th> <th></th> <th>L 05</th> <th>e may</th> <th>RDL</th> <th>Methou</th> <th>2/12/10 0:40 AM</th>	Sample Date	Site		L 05	e may	RDL	Methou	2/12/10 0:40 AM
8/12/2010 24.4 C. No. 8/12/10/39/AM Formation of the second seco			DO T	6.85	mg/L			8/12/10 9:49 AM
8/12/10 9:49 AM N12/10 9:49 AM BOD-5 <3 mgL 3 SM 210 B SU12/10 9:49 AM BOD-5 <3 mgL 3 SM 210 B SU12/10 9:49 AM BOD-5 <3 mgL 3 SM 2510 B SU12/10 1:00 AM Ammonia as N <2 0.2 SM 4500 NH3 G SU12/10 1:02 AM Digestion, TKN:TP SU17/2010 Date completed N/A EPA 365.2 SU17/10 1:39 PM Fecal Coliform, MF 720 colonies/100mL N/A SM 9222 D SU12/10 1:35 P.M. Fecal Coliform, MS <0.002 mgL 0.002 EPA 200.8 2:4/2011 3:59 P.M. Choronium, Total, MS <0.001 mgL 0.001 EPA 200.8 2:4/2011 3:59 P.M. Cadmium, Total, MS <0.002 mgL 0.002 EPA 200.8 2:4/2011 3:59 P.M. Copper, Total, ICP <0.002 mgL 0.002 EPA 200.7 Cadmium, Total, MS <0.002 mgL 0.002 EPA 200.7 Lead, Total, MS <0.0			Temperature	24.4				8/12/10 9:49 AM
8/12/101 PH -1.38 PH -3 SM 5210 B S1/21/0 9.29 AM BOD-5 <3 mgL 3 SM 5210 B S1/10 11.00 AM TSS <4 mgL 4 SM 4500 NH3 G S1/81/10 2.10 PM Ammonia as N <2 0.2 SM 4500 NH3 G S1/81/10 1.049 AM Digestion, TKN-TP S1/72010 Date completed N/A EVA 551.2 Fotal Phosphorous as P 0.3 mgL 0.005 EPA 365.2 S1/71/10 139 PM Fecal Coliform, MF 720 colonies/100mL N/A SM 4222 D S1/210 2.38 PM Antimony, Total, MS <0.002 mgL 0.002 EPA 200.8 2/4/2011 359 P.M. Chromium, Total, MS <0.001 mgL 0.001 EPA 200.8 2/4/2011 359 P.M. Chromium, Total, MS <0.002 mgL 0.002 EPA 200.8 2/4/2011 359 P.M. Chromium, Total, MS <0.002 mgL 0.002 EPA 200.8 2/4/2011 359 P.M. Lead, Total, MS <0.002 mgL <td< th=""><td rowspan="2"></td><th></th><td>Conductivity</td><td>407</td><td>μS</td><td></td><td></td><td>8/12/10 9:49 AM</td></td<>			Conductivity	407	μS			8/12/10 9:49 AM
8/12/2010 Silver Total, MS <3 Silver Total, MS <3 Silver Total, MS Silver Total, MS </th <th></th> <td>pH</td> <td>7.38</td> <td>pH</td> <td></td> <td>01 (11 (0 1</td> <td>8/12/10 9:49 AM</td>			pH	7.38	pH		01 (11 (0 1	8/12/10 9:49 AM
8/12/2010 ISS <4 mgL 4 MN 25400 8/17/10/21(0) PM Digestion, TKN-TP 8/17/2010 Date completed N/A EPA 351.2 File Pigestion, TKN-TP 8/17/2010 Date completed N/A EPA 351.2 File Antimony, Total, MS <0.03 mgL 0.05 EPA 365.2 8/17/10/139 PM Fecal Coliform, MF 720 colonics/100mL N/A SM 9222 D 8/12/10/238 PM. Antimony, Total, MS <0.002 mgL 0.002 EPA 200.8 2/4/2011 359 P.M. Artimin, Total, MS <0.001 mgL 0.001 EPA 200.8 2/4/2011 359 P.M. Chromium, Total, MS <0.002 mgL 0.003 EPA 200.8 2/4/2011 359 P.M. Chromium, Total, MS <0.002 mgL 0.002 EPA 200.8 2/4/2011 359 P.M. Chromium, Total, MS <0.002 mgL 0.002 EPA 200.8 2/4/2011 359 P.M. Kitek, Total, MS <0.002 mgL 0.002 EPA 200.8 2/4/2011 359 P.M.			BOD-5	<3	mg/L	3	SM 5210 B	8/13/10 11:00 AM
8/12/2010 Animonia as N <2 0.2 0.4 S04 3500 M(3.6) 8/18/10 10/39 AM 8/12/2010 Digstion, TKN-TP 8/17/2010 Date completed NA EPA 35.2 8/17/10 1:39 PM Antimony, Total, MS <0.002 mg/L 0.002 EPA 305.2 8/17/10 1:39 PM Antimony, Total, MS <0.002 mg/L 0.002 EPA 200.8 2/4/2011 3:59 P.M. Antimony, Total, MS <0.001 mg/L 0.001 EPA 200.8 2/4/2011 3:59 P.M. Cadmium, Total, MS <0.001 mg/L 0.001 EPA 200.8 2/4/2011 3:59 P.M. Cadmium, Total, MS <0.002 mg/L 0.002 EPA 200.8 2/4/2011 3:59 P.M. Copper, Total, ICP <0.002 mg/L 0.002 EPA 200.8 2/4/2011 3:59 P.M. Lead, Total, MS <0.002 mg/L 0.002 EPA 200.8 2/4/2011 3:59 P.M. Lead, Total, MS <0.002 mg/L 0.002 EPA 200.7 2/5/20111 2:32 P.M. Metals Preparation, D2002 2/2/2011 Date completed NA			188	<4	mg/L	4	SM 2540D	8/17/10 2:10 PM
8/12/2010 Digestion, 1KN-1P 8/17/2010 Date completed NA EPA 351.2 PA 8/12 Digestion, 1KN-1P 720 colonies/100mL NA SM 9222.D S/12/10/2.38 PM. Arimony, Total, MS <0.002 mg/L 0.002 EPA 200.8 24/2011 3:59 P.M. Arisenic, Total, MS <0.002 mg/L 0.001 EPA 200.8 24/2011 3:59 P.M. Beryllium, Total, MS <0.001 mg/L 0.001 EPA 200.8 24/2011 3:59 P.M. Chromium, Total, MS <0.001 mg/L 0.001 EPA 200.8 24/2011 3:59 P.M. Copper, Total, ICP <0.002 mg/L 0.003 EPA 200.7 25/2011 12:32 A.M. Copper, Total, MS <0.002 mg/L 0.002 EPA 200.8 24/2011 3:59 P.M. Lead, Total, MS <0.002 mg/L 0.002 EPA 200.7 25/2011 12:32 A.M. Kicker, Total, MS <0.002 mg/L 0.002 EPA 200.8 24/2011 3:59 P.M. Lead, Total, MS <0.002 mg/L 0.002 EPA 200.8			Ammonia as N	<.2		0.2	SM 4500 NH3 G	8/18/10 10:49 AM
8/12/2010 Iolal Prosphorous as P 0.3 ingL 0.00 EPA 365.2 8/1/1011:39 PM Antimony, Total, MS -0.002 mgL 0.002 EPA 200.8 2/4/2011 3:59 P.M. Ansenic, Total, MS -0.002 mgL 0.002 EPA 200.8 2/4/2011 3:59 P.M. Beryllium, Total, MS -0.001 mgL 0.001 EPA 200.8 2/4/2011 3:59 P.M. Cadmium, Total, MS -0.001 mgL 0.001 EPA 200.8 2/4/2011 3:59 P.M. Cadmium, Total, MS -0.001 mgL 0.002 EPA 200.8 2/4/2011 3:59 P.M. Corpoer, Total, ICP -0.002 mgL 0.002 EPA 200.7 2/2/2011 1:3:39 P.M. Corpoer, Total, MS -0.002 mgL 0.002 EPA 200.8 2/4/2011 3:59 P.M. Kickl, Total, MS -0.002 mgL 0.002 EPA 200.8 2/4/2011 3:59 P.M. Kitekl, Total, MS -0.002 mgL 0.002 EPA 200.8 2/4/2011 3:59 P.M. Siter, Total, MS -0.001 mgL 0.002 EPA 200.8 2/4/201			Digestion, TKN-TP	8/17/2010	Date completed	N/A	EPA 351.2	0/17/10 1 20 D (
8/12/2010 RC1 RC2 RC2 RC1 RC2 RC2 RC2 RC2 RC2 RC2 RC1 RC2 RC2 RC2 RC1 RC2 R			Total Phosphorous as P	0.3	mg/L	0.05	EPA 365.2	8/1//10 1:39 PM
8/12/2010 Antimiony, 1otal, MS <0.002 mg/L 0.002 EPA 200.8 2/4/2011 3:59 P.M. Antimiony, 1otal, MS <0.001 mg/L 0.001 EPA 200.8 2/4/2011 3:59 P.M. Carbinium, Total, MS <0.001 mg/L 0.001 EPA 200.8 2/4/2011 3:59 P.M. Chromium, Total, MS <0.002 mg/L 0.002 EPA 200.8 2/4/2011 3:59 P.M. Chromium, Total, MS <0.002 mg/L 0.002 EPA 200.8 2/4/2011 3:59 P.M. Chromium, Total, MS <0.002 mg/L 0.002 EPA 200.8 2/4/2011 3:59 P.M. Chromium, Total, MS <0.002 mg/L 0.002 EPA 200.8 2/4/2011 3:59 P.M. Mickel, Total, MS <0.002 mg/L 0.002 EPA 200.8 2/4/2011 3:59 P.M. Silver, Total, MS <0.002 mg/L 0.002 EPA 200.8 2/4/2011 3:59 P.M. Katempted Wet Run, Rained but not mg/L 0.002 EPA 200.8 2/4/2011 3:59 P.M. Rained but not Thallium, Total, MS <0.002			Fecal Coliform, MF	/20	colonies/100mL	N/A	SM 9222 D	8/12/10 2:38 PM
RC1 Arsenic, Iotal, MS 40.002 Ing/L 0.002 IPA 200.8 2/4/2011 3:59 P.M. Cadmium, Total, MS 40.001 mg/L 0.001 IPA 200.8 2/4/2011 3:59 P.M. Chromium, Total, MS 40.002 mg/L 0.001 IPA 200.8 2/4/2011 3:59 P.M. Chromium, Total, MS 40.002 mg/L 0.002 IPA 200.8 2/4/2011 3:59 P.M. Chromium, Total, MS 40.002 mg/L 0.003 IPA 200.7 2/5/2011 3:59 P.M. Lead, Total, MS 50.002 mg/L 0.002 IPA 200.8 2/4/2011 3:59 P.M. Kickel, Total, MS 40.002 mg/L 0.002 IPA 200.8 2/4/2011 3:59 P.M. Silver, Total, MS 40.002 mg/L 0.002 IPA 200.8 2/4/2011 3:59 P.M. Silver, Total, MS 40.002 mg/L 0.002 IPA 200.8 2/4/2011 3:59 P.M. Silver, Total, MS 40.002 mg/L 0.002 IPA 200.8 2/4/2011 3:59 P.M. Silver, Total, MS 40.002 mg/L 0.002 IPA 200.8 2/4/			Antimony, 1 otal, MS	<0.002	mg/L	0.002	EPA 200.8	2/4/2011 3:59 P.M.
8/12/2010 Beryllium, Total, MS <0.001 mg/L 0.001 EPA 200.8 2/4/2011 359 P.M. Chromium, Total, MS <0.002 mg/L 0.002 EPA 200.8 2/4/2011 359 P.M. Copper, Total, ICP <0.005 mg/L 0.005 EPA 200.8 2/4/2011 359 P.M. Copper, Total, ICP <0.005 mg/L 0.005 EPA 200.7 Lead, Total, MS <0.002 mg/L 0.002 EPA 200.8 2/4/2011 3:59 P.M. Metals Preparation, D2002 2/2/2011 Date completed N/A EPA 200.8 2/4/2011 3:59 P.M. Selenium, Total, MS <0.002 mg/L 0.002 EPA 200.8 2/4/2011 3:59 P.M. Selenium, Total, MS <0.002 mg/L 0.002 EPA 200.8 2/4/2011 3:59 P.M. Katempted Xire, Total, ICP 0.012 mg/L 0.002 EPA 200.8 2/4/2011 3:59 P.M. Rained but not Thallium, Total, MS <0.002 mg/L 0.002 EPA 200.7 2/5/2011 12:32 A.M. BOD-5 <3 mg/L 0.00		RC1	Arsenic, Total, MS	<0.002	mg/L	0.002	EPA 200.8	2/4/2011 3:59 P.M.
8/12/2010 Cadmium, Total, MS <0.001 mg/L 0.002 EPA 200.8 2/4/2011 3:59 P.M. Copper, Total, ICP <0.005 mg/L 0.005 EPA 200.7 2/5/2011 12:32 A.M. ICP-OES 2/5/2011 Date completed N/A EPA 200.7 2/5/2011 12:32 A.M. ICP-OES 2/5/2011 Date completed N/A EPA 200.8 2/4/2011 3:59 P.M. Metals Preparation, D2002 2/2/2011 Date completed N/A EPA 200.8 2/4/2011 3:59 P.M. Selenium, Total, MS <0.002 mg/L 0.002 EPA 200.8 2/4/2011 3:59 P.M. Silver, Total, MS <0.002 mg/L 0.002 EPA 200.8 2/4/2011 3:59 P.M. Silver, Total, MS <0.002 mg/L 0.002 EPA 200.8 2/4/2011 3:59 P.M. Silver, Total, MS <0.002 mg/L 0.002 EPA 200.8 2/4/2011 3:59 P.M. Charter Mark <0.002 mg/L 0.002 EPA 200.8 2/4/2011 3:59 P.M. Silver, Total, MS <0.002 mg/L 0.002 EPA 200.7 <th></th> <th></th> <td>Beryllium, Total, MS</td> <td><0.001</td> <td>mg/L</td> <td>0.001</td> <td>EPA 200.8</td> <td>2/4/2011 3:59 P.M.</td>			Beryllium, Total, MS	<0.001	mg/L	0.001	EPA 200.8	2/4/2011 3:59 P.M.
8/12/2010 Corper, Total, ICP <0.002 EPA 200.8 2/4/2011 3:59 P.M. Keta Corper, Total, ICP <0.002 mg/L 0.002 EPA 200.7 2/5/2011 12:32 A.M. ICP-OES 2/5/2011 Date completed N/A EPA 200.7 2/4/2011 3:59 P.M. Metals Preparation, D2002 2/2/2011 Date completed N/A EPA 200.8 2/4/2011 3:59 P.M. Nickel, Total, MS <0.002 mg/L 0.002 EPA 200.8 2/4/2011 3:59 P.M. Selenium, Total, MS <0.002 mg/L 0.002 EPA 200.8 2/4/2011 3:59 P.M. Silver, Total, MS <0.002 mg/L 0.001 EPA 200.8 2/4/2011 3:59 P.M. Attempted Silver, Total, MS <0.002 mg/L 0.001 EPA 200.8 2/4/2011 3:59 P.M. Attempted Wet Run, Rained but not mg/L 0.002 EPA 200.8 2/4/2011 3:59 P.M. Attempted DO mg/L 0.002 EPA 200.7 2/5/2011 12:32 A.M. BOD mg/L BU Sita Sita			Cadmium, Total, MS	<0.001	mg/L	0.001	EPA 200.8	2/4/2011 3:59 P.M.
8/12/2010 Coper, 10ai, 1CP Co002 mg/L 0.002 EPA 200.7 2/3/2011 12:32 A.M. 8/12/2010 Lead, Total, MS <0.002 mg/L 0.002 EPA 200.7 Nickel, Total, MS <0.002 mg/L 0.002 EPA 200.8 2/4/2011 3:59 P.M. Nickel, Total, MS <0.002 mg/L 0.002 EPA 200.8 2/4/2011 3:59 P.M. Selenium, Total, MS <0.002 mg/L 0.002 EPA 200.8 2/4/2011 3:59 P.M. Silver, Total, MS <0.001 mg/L 0.002 EPA 200.8 2/4/2011 3:59 P.M. Silver, Total, MS <0.002 mg/L 0.002 EPA 200.8 2/4/2011 3:59 P.M. Finalium, Total, MS <0.001 mg/L 0.002 EPA 200.7 2/5/2011 12:32 A.M. Metab not hard enough) DO mg/L 0.002 EPA 200.7 2/5/2011 12:32 A.M. BOD mg/L g8 mg/L 8 8/12/10 9:22 AM Conductivity µS S S/12/10 9:22 AM S/12/10 9:22 AM <td< th=""><th></th><th></th><td>Carpon Tatal ICP</td><td><0.002</td><td>mg/L</td><td>0.002</td><td>EPA 200.8</td><td>2/4/2011 3:59 P.M.</td></td<>			Carpon Tatal ICP	<0.002	mg/L	0.002	EPA 200.8	2/4/2011 3:59 P.M.
8/12/2010 (Attempted Wet Run, Rained but not hard enough) ICA POES 2/3/2011 Date completed N/A N/A EPA 200.8 2/4/2011 3:59 P.M. 8/12/2010 (Attempted Wet Run, Rained but not hard enough) Vial Solon2 mg/L 0.002 EPA 200.8 2/4/2011 3:59 P.M. 0 DO mg/L 0.002 EPA 200.8 2/4/2011 3:59 P.M. Silver, Total, MS <0.001 mg/L 0.001 EPA 200.8 2/4/2011 3:59 P.M. Silver, Total, MS <0.002 mg/L 0.002 EPA 200.8 2/4/2011 3:59 P.M. Silver, Total, MS <0.002 mg/L 0.005 EPA 200.8 2/4/2011 3:59 P.M. Silver, Total, MS <0.002 mg/L 0.005 EPA 200.7 2/5/2011 2:32 A.M. Mard enough) DO mg/L 0.005 EPA 200.8 2/4/2013 3:59 P.M. Silver, Total, MS <0.002 mg/L 0.005 EPA 200.7 2/5/2011 2:32 A.M. BOD-5 <3 mg/L 4 SM 5210 B 8/12/10 9:22 AM BOD-5 <3 mg/L 4			Copper, Total, ICP	< 0.005	mg/L	0.005	EPA 200.7	2/5/2011 12:32 A.M.
8/12/2010 Lead, 10di, MS \$0.002 Ingl. 0.002 EPA 200.8 2/4/2011 3:59 P.M. 8/12/2010 Metals Preparation, D2002 2/2/2011 Date completed N/A EPA 200.8 2/4/2011 3:59 P.M. Sclenium, Total, MS <0.002 mg/L 0.002 EPA 200.8 2/4/2011 3:59 P.M. Kattempted Silver, Total, MS <0.001 mg/L 0.002 EPA 200.8 2/4/2011 3:59 P.M. Silver, Total, MS <0.002 mg/L 0.001 EPA 200.8 2/4/2011 3:59 P.M. Thallium, Total, MS <0.002 mg/L 0.002 EPA 200.7 2/5/2011 12:32 A.M. Wet Run, DO mg/L 0.005 EPA 200.7 2/5/2011 12:32 A.M. DO mg/L 0.005 EPA 200.8 2/4/2013 3:59 P.M. Temperature 25.4 %C 8/12/10 9:22 AM 8/12/10 9:22 AM BOD-5 <3 mg/L 3 SM 5210 B 8/13/10 11:00 AM 1500 AM TSS			ICP-OES	2/3/2011	Date completed	N/A	EPA 200.7	2/4/2011 2:50 D.M
8/12/2010 (Attempted Reading Preparation), D2002 D2/22/011 Date completed N/A DFA 200.2 2/4/2011 3:59 P.M. 8/12/2010 (Attempted Wet Run, Rained but not hard enough) Nickel, Total, MS <0.002 mg/L 0.002 EPA 200.8 2/4/2011 3:59 P.M. DO mg/L 0.001 EPA 200.8 2/4/2011 3:59 P.M. 2/4/2011 3:59 P.M. Rained but not hard enough) Total, MS <0.002 mg/L 0.002 EPA 200.8 2/4/2011 3:59 P.M. Temperature 0.012 mg/L 0.002 EPA 200.8 2/4/2011 3:59 P.M. Met Run, Rained but not hard enough) DO mg/L 0.002 EPA 200.8 2/4/2011 3:59 P.M. Temperature 25.4 °C 8/12/10 9:22 AM PH 7.2 pH 8/12/10 9:22 AM BOD-5 <3 mg/L 3 SM 5210 B 8/13/10 11:00 AM TSS 8 mg/L 4 SM 2540D 8/17/10 1:39 P.M. Ecal Coliform, MF 880 colonies/100mL N/A EPA 365.2 8/17/10 1:39 P.M.			Matala Propagation D2002	<0.002	mg/L Data assumilated	0.002	EPA 200.8	2/4/2011 3:39 P.M.
8/12/2010 (Attempted Wet Run, Rained but not hard enough) NMS <0.002 mg/L 0.002 EPA 200.8 2/4/2011 3:59 P.M. Bilver, Total, MS <0.002 mg/L 0.002 EPA 200.8 2/4/2011 3:59 P.M. Rained but not hard enough) DO mg/L 0.002 EPA 200.8 2/4/2011 3:59 P.M. DO mg/L 0.002 EPA 200.8 2/4/2011 3:59 P.M. Born mg/L 0.002 EPA 200.8 2/4/2011 3:59 P.M. Mained but not hard enough) DO mg/L 0.002 EPA 200.8 2/4/2011 3:59 P.M. BOD-5 startine pg/L 0.005 EPA 200.7 2/5/2011 12:32 A.M. BOD-5 <3 mg/L 4 SM 12/10 9:22 AM BOD-5 <3 mg/L 3 SM 5210 B 8/13/1011:00 AM TSS 8 mg/L 4 SM 2540D 8/17/10 2:10 PM Ammonia as N <.2 0.2 SM 4500 NH3 G 8/18/10 10:49 AM Digestion, TKN-TP 8/17/2010 Date completed N/A SM			Niekal Total MS	2/2/2011	ma/I	N/A	EPA 200.2	2/4/2011 2:50 D.M
8/12/2010 (Attempted Wet Run, Rained but not hard enough) Silver, Total, MS <0.001			Salanium Tatal MS	<0.002	mg/L	0.002	EFA 200.8	2/4/2011 3.39 F.M.
8/12/2010 (Attempted Wet Run, Rained but not hard enough) Silver, 10dal, MS 60.001 Img/L 0.000 EPA 200.3 2/4/2011 3.59 P.M. Pailinum, Total, MS <0.002 mg/L 0.005 EPA 200.8 2/4/2011 3.59 P.M. Rained but not hard enough) DO mg/L 0.005 EPA 200.7 2/5/2011 12:32 A.M. PU 0.012 mg/L 0.005 EPA 200.7 2/5/2011 12:32 A.M. BOD mg/L 0.005 EPA 200.7 2/5/2011 12:32 A.M. PI 7.2 pH 8/12/10 9:22 AM BOD-5 <3 mg/L 3 SM 5210 B 8/13/10 11:00 AM TSS 8 mg/L 4 SM 2540D 8/17/10 2:10 PM Digestion, TKN-TP 8/17/2010 Date completed N/A EPA 351.2 10.014 09 AM Total Phosphorous as P 0.27 mg/L 0.002 EPA 200.8 2/4/2011 4:03 P.M. Arsenic, Total, MS <0.002 mg/L 0.002 EPA 200.8 2/4/2011 4:03 P.M. Chromum, Total, MS <0.001 mg/L 0.002			Seleman, Total, MS	<0.002	mg/L mg/I	0.002	EFA 200.8	2/4/2011 3.39 F.M.
(Attempted Wet Run, Rained but not hard enough) Imanual, rotal, MS Co.002 Img/L 0.002 EPA 200.8 2/4/2011 3:39 P.M. BOD mg/L 0.005 EPA 200.7 2/5/2011 12:32 A.M. Rained but not hard enough) DO mg/L 0.005 EPA 200.7 2/5/2011 12:32 A.M. PI mg/L 0.012 mg/L 0.012 8/12/10 9:22 A.M. PI 7.2 PI 8/12/10 9:22 A.M. 8/12/10 9:22 A.M. BOD-5 <3 mg/L 3 SM 5210 B 8/13/10 10:00 A.M. TSS 8 mg/L 4 SM 2540D 8/17/10 1:00 P.M. Ammonia as N <.2 0.2 SM 4500 NH3 G 8/18/10 10:49 A.M. Digestion, TKN-TP 8/17/2010 Date completed N/A SM 9222 D 8/17/10 1:39 P.M. Antimony, Total, MS <0.002 mg/L 0.002 EPA 200.8 2/4/2011 4:03 P.M. Arsenic, Total, MS <0.002 mg/L 0.001 EPA 200.8 2/4/2011 4:03 P.M. Copper, Total, MS <0.001 <td< th=""><th>8/12/2010</th><th>Thallium Tatal MS</th><th><0.001</th><th>mg/L</th><th>0.001</th><th>EPA 200.8</th><th>2/4/2011 3:59 P.M.</th></td<>	8/12/2010		Thallium Tatal MS	<0.001	mg/L	0.001	EPA 200.8	2/4/2011 3:59 P.M.
Wet Run, Rained but not hard enough) DO mg/L 0.003 EFA 200.7 2/3/2011 12.32 A.M. Bard enough Temperature 25.4 °C 8/12/10 9:22 AM Conductivity µS 8/12/10 9:22 AM BOD-5 <3 mg/L 3 TSS 8 mg/L 3 SM 5210 B 8/12/10 9:22 AM BOD-5 <3 mg/L 3 SM 5210 B 8/13/10 11:00 AM TSS 8 mg/L 4 SM 2540D 8/17/10 2:10 PM Ammonia as N <.2 0.2 SM 4500 NH3 G 8/18/10 10:49 AM Digestion, TKN-TP 8/17/2010 Date completed N/A EPA 365.2 8/17/10 1:39 PM Fecal Coliform, MF 880 colonies/100mL N/A SM 9222 D 8/12/10 2:38 PM Antimony, Total, MS <0.002 mg/L 0.002 EPA 200.8 2/4/2011 4:03 P.M. Beryllium, Total, MS <0.002 mg/L 0.001 EPA 200.8 2/4/2011 4:03 P.M. Chromium, Total, MS <0.002 mg/L	(Attempted		Zina Total ICP	<0.002 0.012	mg/L mg/I	0.002	EFA 200.8	2/4/2011 5.39 F.M.
Rained but not hard enough) DO Imple OC 8/12/10/9:22 AM hard enough) Temperature 25.4 °C 8/12/10/9:22 AM PH J.2 PH 8/12/10/9:22 AM BOD-5 <3 mg/L 3 SM 5210 B 8/13/10/11:00 AM TSS 8 mg/L 4 SM 2540D 8/17/10/2:10 PM Ammonia as N <.2 0.2 SM 4500 NH3 G 8/18/10 0:49 AM Digestion, TKN-TP 8/17/2010 Date completed N/A EPA 351.2 Total Phosphorous as P 0.27 mg/L 0.05 EPA 365.2 8/17/10 1:39 PM Fecal Coliform, MF 880 colonies/100mL N/A SM 9222 D 8/12/10/2:38 PM Antimony, Total, MS <0.002 mg/L 0.002 EPA 200.8 2/4/2011 4:03 P.M. Beryllium, Total, MS <0.001 mg/L 0.001 EPA 200.8 2/4/2011 4:03 P.M. Comium, Total, MS <0.002 mg/L 0.002 EPA 200.8 2/4/2011 4:03 P.M. Copper, Total, ICP <th>Wet Run,</th> <th></th> <th>0.012</th> <th>mg/L</th> <th>0.005</th> <th>LI A 200.7</th> <th>2/5/2011 12.52 A.W.</th>	Wet Run,			0.012	mg/L	0.005	LI A 200.7	2/5/2011 12.52 A.W.
hard enough Imperature 23.4 C Imperature 8/12/10 9:22 AM Conductivity µS 8/12/10 9:22 AM 8/12/10 9:22 AM PH 7.2 pH 8/12/10 9:22 AM BOD-5 <3 mg/L 3 SM 5210 B 8/13/10 11:00 AM TSS 8 mg/L 4 SM 2540D 8/17/10 2:10 PM Ammonia as N <2 0.2 SM 4500 NH3 G 8/18/10 10:49 AM Digestion, TKN-TP 8/17/2010 Date completed N/A EPA 351.2 Total Phosphorous as P 0.27 mg/L 0.05 EPA 365.2 8/17/10 1:39 PM Fecal Coliform, MF 880 colonies/100mL N/A SM 9222 D 8/12/10 2:38 PM Antimory, Total, MS <0.002 mg/L 0.002 EPA 200.8 2/4/2011 4:03 P.M. Cadmium, Total, MS <0.001 mg/L 0.001 EPA 200.8 2/4/2011 4:03 P.M. Cadmium, Total, MS <0.002 mg/L 0.002 EPA 200.8 2/4/2011 4:03 P.M. Chro	Rained but not		DO	25.4				8/12/10 9:22 AM
RC3 Conductivity pH 8/12/10 9:22 AM BD-5 <3 mg/L 3 SM 5210 B 8/13/10 11:00 AM TSS 8 mg/L 4 SM 2540D 8/17/10 2:10 PM Ammonia as N <.2 0.2 SM 4500 NH3 G 8/18/10 10:49 AM Digestion, TKN-TP 8/17/2010 Date completed N/A EPA 351.2 Total Phosphorous as P 0.27 mg/L 0.05 EPA 365.2 8/17/10 1:39 PM Fecal Coliform, MF 880 colonies/100mL N/A SM 9222 D 8/12/10 3:28 PM Antimony, Total, MS <0.002 mg/L 0.002 EPA 200.8 2/4/2011 4:03 P.M. Arsenic, Total , MS <0.002 mg/L 0.001 EPA 200.8 2/4/2011 4:03 P.M. Commun, Total, MS <0.002 mg/L 0.002 EPA 200.8 2/4/2011 4:03 P.M. Copper, Total, ICP <0.001 mg/L 0.001 EPA 200.8 2/4/2011 4:03 P.M. Copper, Total, ICP <0.002 mg/L 0.002 EPA 200.8 2/4/20	hard enough)		Conductivity	23.4	e			8/12/10 9:22 AM
RC3 Image: Non-state of the state of the st	_			7.2	μ5 nU			8/12/10 9:22 AM
RC3 Ing L 3 SM 3210 B 813710 H.00 AM TSS 8 mg/L 4 SM 2540D 8/17/10 2:10 PM Ammonia as N <.2 0.2 SM 4500 NH3 G 8/18/10 10:49 AM Digestion, TKN-TP 8/17/2010 Date completed N/A EPA 351.2 Total Phosphorous as P 0.27 mg/L 0.05 EPA 365.2 8/17/10 1:39 PM Fecal Coliform, MF 880 colonies/100mL N/A SM 9222 D 8/12/10 2:38 PM Antimony, Total, MS <0.002 mg/L 0.002 EPA 200.8 2/4/2011 4:03 P.M. Beryllium, Total, MS <0.001 mg/L 0.001 EPA 200.8 2/4/2011 4:03 P.M. Cadmium, Total, MS <0.001 mg/L 0.001 EPA 200.8 2/4/2011 4:03 P.M. Copper, Total, ICP <0.005 mg/L 0.002 EPA 200.8 2/4/2011 4:03 P.M. Copper, Total, ICP <0.005 mg/L 0.002 EPA 200.7 2/5/2011 12:38 A.M. ICP-OES 2/5/2011 Date completed N/A			BOD 5	/.2	pri mg/I	3	SM 5210 B	8/12/10 9.22 AM
RC3 0 11g1 4 5M 2340D 617/10 2.101 M Ammonia as N <.2 0.2 SM 4500 NH3 G 8/18/10 10:49 AM Digestion, TKN-TP 8/17/2010 Date completed N/A EPA 351.2 Total Phosphorous as P 0.27 mg/L 0.05 EPA 365.2 8/17/10 1:39 PM Fecal Coliform, MF 880 colonies/100mL N/A SM 9222 D 8/12/10 2:38 PM Antimony, Total, MS <0.002 mg/L 0.002 EPA 200.8 2/4/2011 4:03 P.M. Arsenic, Total , MS <0.002 mg/L 0.001 EPA 200.8 2/4/2011 4:03 P.M. Cadmium, Total, MS <0.001 mg/L 0.001 EPA 200.8 2/4/2011 4:03 P.M. Chromium, Total, MS <0.001 mg/L 0.001 EPA 200.8 2/4/2011 4:03 P.M. Copper, Total, ICP <0.005 mg/L 0.002 EPA 200.8 2/4/2011 4:03 P.M. ICP-OES 2/5/2011 Date completed N/A EPA 200.7 2/5/2011 12:38 A.M. ICP-OES 2/5/2011 Date completed N/A EPA 200.2 Metals Preparation, D2002 2/2/201			TSS	8	mg/L mg/I	4	SM 2540D	8/17/10 2·10 PM
RC3 NAMINONI da SI N22 0.2 SM PA301415 0 0.10/10/10/20 AM Digestion, TKN-TP 8/17/2010 Date completed N/A EPA 351.2 Total Phosphorous as P 0.27 mg/L 0.05 EPA 365.2 8/17/10 1:39 PM Fecal Coliform, MF 880 colonies/100mL N/A SM 9222 D 8/12/10 2:38 PM Antimony, Total, MS <0.002 mg/L 0.002 EPA 200.8 2/4/2011 4:03 P.M. Arsenic, Total , MS <0.002 mg/L 0.001 EPA 200.8 2/4/2011 4:03 P.M. Cadmium, Total , MS <0.001 mg/L 0.001 EPA 200.8 2/4/2011 4:03 P.M. Chromium, Total , MS <0.001 mg/L 0.001 EPA 200.8 2/4/2011 4:03 P.M. Chromium, Total , MS <0.002 mg/L 0.005 EPA 200.8 2/4/2011 4:03 P.M. Copper, Total, ICP <0.005 mg/L 0.005 EPA 200.7 1/2/2011 4:03 P.M. ICP-OES 2/5/2011 Date completed N/A EPA 200.2 1/2/2011 4:03 P.M. Metals Preparation, D2002 2/2/2011 Date completed N/A EP			Ammonia as N	0 < 7	Ing/L	0.2	SM 2540D SM 4500 NH3 G	8/18/10 10:49 AM
RC3 Total Phosphorous as P 0.27 mg/L 0.05 EPA 365.2 $8/17/10$ $1:39$ PM RC3 Fecal Coliform, MF 880 colonies/100mL N/A SM 9222 D $8/12/10$ $2:38$ PM Antimony, Total, MS <0.002 mg/L 0.002 EPA 200.8 $2/4/2011$ $4:03$ P.M. Arsenic, Total, MS <0.002 mg/L 0.001 EPA 200.8 $2/4/2011$ $4:03$ P.M. Beryllium, Total, MS <0.002 mg/L 0.001 EPA 200.8 $2/4/2011$ $4:03$ P.M. Cadmium, Total, MS <0.001 mg/L 0.001 EPA 200.8 $2/4/2011$ $4:03$ P.M. Chromium, Total, MS <0.001 mg/L 0.001 EPA 200.8 $2/4/2011$ $4:03$ P.M. Corper, Total, ICP <0.002 mg/L 0.005 EPA 200.7 $2/5/2011$ $12:38$ A.M. ICP-OES $2/5/2011$ Date completed N/A EPA 200.8 $2/4/2011$ $4:03$ P.M. Metals Preparation, D2002 $2/2/2011$ Date completed N/A EPA 200.2 $2/4/2011$ $4:03$ P.M.			Digestion TKN-TP	8/17/2010	Date completed	0.2 N/Δ	EPA 351 2	0/10/10 10.47 ANI
RC3 For all hispinoids as 1 6.27 high 6.12 6.17 6.17 6.17 6.17 6.17 6.17 10.17 11.17			Total Phosphorous as P	0.27	mg/I	0.05	EPA 365 2	8/17/10 1·39 PM
RC3 Antimony, Total, MS 60000 mg/L 0002 EPA 200.8 $2/4/20114.03$ P.M. Arsenic, Total, MS <0.002 mg/L 0.002 EPA 200.8 $2/4/20114.03$ P.M. Beryllium, Total, MS <0.002 mg/L 0.002 EPA 200.8 $2/4/20114.03$ P.M. Cadmium, Total, MS <0.001 mg/L 0.001 EPA 200.8 $2/4/20114.03$ P.M. Cadmium, Total, MS <0.001 mg/L 0.001 EPA 200.8 $2/4/20114.03$ P.M. Chromium, Total, MS <0.001 mg/L 0.001 EPA 200.8 $2/4/20114.03$ P.M. Copper, Total, ICP <0.002 mg/L 0.002 EPA 200.8 $2/4/20114.03$ P.M. ICP-OES $2/5/2011$ Date completed N/A EPA 200.7 $2/5/201112.38$ A.M. ICP-OES $2/5/2011$ Date completed N/A EPA 200.7 $2/4/20114.03$ P.M. Lead, Total, MS <0.002 mg/L 0.002 EPA 200.8 $2/4/20114.03$ P.M. Metals Preparation, D2002 $2/2/2011$ Date completed N/A EPA 200.8 $2/4/20114.03$ P.M. Seleni			Fecal Coliform ME	880	colonies/100mL	N/A	SM 9222 D	8/12/10 2:38 PM
RC3 Arsenic, Total, MS 50.002 mg/L 0.002 EPA 200.8 2/4/2011 4:03 P.M. Beryllium, Total, MS <0.001 mg/L 0.001 EPA 200.8 2/4/2011 4:03 P.M. Cadmium, Total, MS <0.001 mg/L 0.001 EPA 200.8 2/4/2011 4:03 P.M. Cadmium, Total, MS <0.001 mg/L 0.001 EPA 200.8 2/4/2011 4:03 P.M. Cadmium, Total, MS <0.001 mg/L 0.001 EPA 200.8 2/4/2011 4:03 P.M. Copper, Total, ICP <0.002 mg/L 0.002 EPA 200.7 2/5/2011 12:38 A.M. ICP-OES 2/5/2011 Date completed N/A EPA 200.7 2/4/2011 4:03 P.M. Metals Preparation, D2002 2/2/2011 Date completed N/A EPA 200.8 2/4/2011 4:03 P.M. Metals Preparation, D2002 2/2/2011 Date completed N/A EPA 200.8 2/4/2011 4:03 P.M. Selenium, Total, MS <0.002 mg/L 0.002 EPA 200.8 2/4/2011 4:03 P.M. Selenium, Total, MS <0.002 mg			Antimony Total MS	< 0.002	mg/I	0.002	EPA 200.8	2/4/2011 4:03 P M
RC3 Interfer 100 mg/L 0.001 mg/L 0.001 EPA 200.8 $2/4/20114.03$ P.M. Beryllium, Total, MS <0.001 mg/L 0.001 EPA 200.8 $2/4/20114.03$ P.M. Cadmium, Total, MS <0.001 mg/L 0.001 EPA 200.8 $2/4/20114.03$ P.M. Chromium, Total, MS <0.002 mg/L 0.002 EPA 200.8 $2/4/20114.03$ P.M. Chromium, Total, MS <0.002 mg/L 0.005 EPA 200.7 $2/5/201112.38$ A.M. ICP-OES $2/5/2011$ Date completed N/A EPA 200.7 Lead, Total, MS <0.002 mg/L 0.002 EPA 200.8 $2/4/20114.03$ P.M. Metals Preparation, D2002 $2/2/2011$ Date completed N/A EPA 200.2 Nickel, Total, MS <0.002 mg/L 0.002 EPA 200.8 $2/4/20114.03$ P.M. Selenium, Total, MS <0.002 mg/L 0.002 EPA 200.8 $2/4/20114.03$ P.M. Selenium, Total, MS <0.002 mg/L 0.002 EPA 200.8 $2/4/20114.03$ P.M. Selenium, Total, MS <0.002 mg/L 0.002 EPA 200.8 $2/4/20114.03$ P.M. Selenium, Total, MS <0.001 mg/L 0.002 EPA 200.8 $2/4/20114.03$ P.M. Selenium, Total, MS <0			Arsenic Total MS	<0.002	mg/L mg/I	0.002	EPA 200.8	2/4/2011 4:03 P M
Cadmium, Total, MS60.001mg/L60.001EPA 200.8 $2/4/2011$ 4:03P.M.Chromium, Total, MS<0.002mg/L0.001EPA 200.8 $2/4/2011$ 4:03P.M.Chromium, Total, MS<0.002mg/L0.005EPA 200.8 $2/4/2011$ 4:03P.M.Copper, Total, ICP<0.005mg/L0.005EPA 200.7 $2/5/2011$ 12:38A.M.ICP-OES $2/5/2011$ Date completedN/AEPA 200.8 $2/4/2011$ 4:03P.M.Metals Preparation, D2002 $2/2/2011$ Date completedN/AEPA 200.8 $2/4/2011$ 4:03P.M.Metals Preparation, D2002 $2/2/2011$ Date completedN/AEPA 200.8 $2/4/2011$ 4:03P.M.Selenium, Total, MS<0.002mg/L0.002EPA 200.8 $2/4/2011$ 4:03P.M.		RC3	Bervllium Total MS	<0.002	mg/L	0.002	EPA 200.8	2/4/2011 4:03 P.M
Chromium, Total, MS 0.001 mg/L 0.002 EPA 200.8 2/4/2011 4:03 P.M. Copper, Total, ICP <0.005 mg/L 0.002 EPA 200.8 2/4/2011 4:03 P.M. ICP-OES 2/5/2011 Date completed N/A EPA 200.8 2/4/2011 4:03 P.M. ICP-OES 2/5/2011 Date completed N/A EPA 200.8 2/4/2011 4:03 P.M. Metals Preparation, D2002 2/2/2011 Date completed N/A EPA 200.2			Cadmium Total MS	<0.001	mg/L	0.001	EPA 200.8	2/4/2011 4:03 P M
Copper, Total, ICP <0.005 mg/L 0.005 EPA 200.7 2/5/2011 12:38 A.M. ICP-OES 2/5/2011 Date completed N/A EPA 200.7 2/5/2011 12:38 A.M. ICP-OES 2/5/2011 Date completed N/A EPA 200.7 2/4/2011 4:03 P.M. Lead, Total, MS <0.002 mg/L 0.002 EPA 200.8 2/4/2011 4:03 P.M. Metals Preparation, D2002 2/2/2011 Date completed N/A EPA 200.2 Nickel, Total, MS <0.002 mg/L 0.002 EPA 200.8 2/4/2011 4:03 P.M. Selenium, Total, MS <0.002 mg/L 0.002 EPA 200.8 2/4/2011 4:03 P.M. Ciper, Total, MS <0.001 mg/L 0.002 EPA 200.8 2/4/2011 4:03 P.M. Selenium, Total, MS <0.002 mg/L 0.001 EPA 200.8 2/4/2011 4:03 P.M.			Chromium Total MS	<0.001	mg/L	0.002	EPA 200.8	2/4/2011 4:03 P.M
ICP-DES 2/5/2011 Date completed N/A EPA 200.7 Lead, Total, MS <0.002 mg/L 0.002 EPA 200.8 2/4/2011 4:03 P.M. Metals Preparation, D2002 2/2/2011 Date completed N/A EPA 200.8 2/4/2011 4:03 P.M. Nickel, Total, MS <0.002 mg/L 0.002 EPA 200.8 2/4/2011 4:03 P.M. Selenium, Total, MS <0.002 mg/L 0.002 EPA 200.8 2/4/2011 4:03 P.M. Selenium, Total, MS <0.002 mg/L 0.002 EPA 200.8 2/4/2011 4:03 P.M.			Copper Total ICP	<0.002	mg/L	0.005	EPA 200 7	2/5/2011 12:38 A M
Lead, Total, MS <0.002 mg/L 0.002 EPA 200.8 2/4/2011 4:03 P.M. Metals Preparation, D2002 2/2/2011 Date completed N/A EPA 200.2 Nickel, Total, MS <0.002 mg/L 0.002 EPA 200.8 2/4/2011 4:03 P.M. Selenium, Total, MS <0.002 mg/L 0.002 EPA 200.8 2/4/2011 4:03 P.M. Silenium, Total, MS <0.002 mg/L 0.002 EPA 200.8 2/4/2011 4:03 P.M.			ICP-OES	2/5/2011	Date completed	N/A	EPA 200 7	2.5.2011 12.50 11.01.
Metals Preparation, D2002 2/2/2011 Date completed N/A EPA 200.2 Nickel, Total, MS <0.002 mg/L 0.002 EPA 200.8 2/4/2011 4:03 P.M. Selenium, Total, MS <0.002 mg/L 0.002 EPA 200.8 2/4/2011 4:03 P.M. Silenium, Total, MS <0.001 mg/L 0.002 EPA 200.8 2/4/2011 4:03 P.M.			Lead. Total. MS	< 0.002	mg/L	0.002	EPA 200.8	2/4/2011 4:03 P.M.
Nickel, Total, MS <0.002			Metals Preparation, D2002	2/2/2011	Date completed	N/A	EPA 200.2	
Seleni, m, Total, MS <0.002			Nickel, Total, MS	<0.002	mg/L	0.002	EPA 200.8	2/4/2011 4:03 P.M.
			Selenium, Total, MS	< 0.002	mg/L	0.002	EPA 200.8	2/4/2011 4:03 P.M.
Silver, 10tal, MS $1 \le 0.001$ $1 mg/L$ 1 0.001 1EPA 200.8 $12/4/2011.4.03$ P M			Silver, Total, MS	< 0.001	mg/L	0.001	EPA 200.8	2/4/2011 4:03 P.M.
Thallium, Total, MS <0.002 mm/L 0.002 EPA 200.8 274/2011 4:03 P M			Thallium, Total, MS	< 0.002	mg/L	0.002	EPA 200.8	2/4/2011 4:03 P.M.
Zinc, Total, ICP 0.01 mg/L 0.005 EPA 200.7 2/5/2011 12:38 A.M.			Zinc, Total, ICP	0.01	mg/L	0.005	EPA 200.7	2/5/2011 12:38 A.M.

Sample Date Site Do RSuite Curity ROL Without Analysis Date 9/30/2010 DO 8.36 mg/L Multimeter Probe 9/30/10 10:12 AM Temperature 21 °C P 9/30/10 10:12 AM Pill 7.76 pH P 9/30/10 10:12 AM PDD-5 44 mg/L 3 SM 5210 B 10/10/11:15 AM TSS 158 mg/L 4 SM 4900 N13 G 10/210 11:50 AM Digestion, TKN-TP 10/5/2010 Date completed NA EPA 351:2 10/1/10/11:50 AM Fccal Coliform, MF >10000 colonics/100mL NA SM 490 N13G 10/2/10/11:50 AM Assents, Total, MS -0.002 mg/L 0.002 EPA 200.2 2/4/2011 423 P.M. Assents, Total, MS -0.001 mg/L 0.002 EPA 200.8 2/4/2011 423 P.M. Chromium, Total, MS -0.001 mg/L 0.002 EPA 200.7 2/4/2011 423 P.M. Chromium, Total, MS -0.011 mg/L	Coursels Dotte	C *4 -	Test	D	T1	DDI	Mada d	An alexia Data	
DO 8.36 mgL Multimeter Probe 9/3010 10:12 AM Temperature 21 °C Within the properties of the probability of the probabili	Sample Date	Site	lest	Result	Units	RDL	Method	Analysis Date	
9/30/2010 Temperature 21 °C 9/30/10 10:12 AM pH 7.76 pH 9/30/10 10:12 AM pH 7.76 pH 9/30/10 10:12 AM BDD5-5 44 mg/L 3 SM 5210 B 10/10/11:135 AM TSS 158 mg/L 4 SM 5210 B 10/10/11:135 AM Digestion, TKN-TP 10/5/2010 Date completed N/A EPA 351.2 10/11/10/11:58 AM Total Phosphorous as P 0.46 mg/L 0.05 EPA 365.2 10/11/10/11:58 AM Ammonia AN <0.002			DO	8.36	mg/L		Multimeter Probe	9/30/10 10:12 AM	
9/30/2010 Conductivity 202 µS 9/30/10 10:12 AM BOD-5 -4 mgL 3 SM 5210 9/30/10 10:12 AM BOD-5 -4 mgL 4 SM 5210 10/1/10 11:15 AM BOD-5 -4 mgL 4 SM 5210 10/4/10 150 PM Ammonia as N <2			Temperature	21	°C			9/30/10 10:12 AM	
9/30/2010 pH p3/0/10 10:12 AM BOD-5 44 mg/L 3 SM 5210 B 10/1/10 11:3 AM TSS 158 mg/L 4 SM 5210 B 10/1/10 11:3 AM Ammonia as N 5.2 0.2 SM 4500 NH3 G 10/2/10 11:50 AM Digestion, TKN-TP 10/52010 Date completed NA EPA 355.2 10/11/10 11:58 AM Fecal Colform, MF >10000 colonies/100mL NA SM 4500 NH3 G 10/2/10 11:52 AM Animony, Total, MS <0.002			Conductivity	202	μS			9/30/10 10:12 AM	
9/30/2010 BOD-5 158 mg/L 3 SS 13/10 B ID(1/10 11:15 AM TSS 158 mg/L 4 SN 2540D ID(1/10 11:50 PM Ammonia as N <2			рН	7.76	pН			9/30/10 10:12 AM	
9/30/2010 TSS 158 mg/L 4 SN 25400 10/4/10 1:50 PM Ammonia as N <.2			BOD-5	<4	mg/L	3	SM 5210 B	10/1/10 11:15 AM	
9/30/2010 Anmonia as N <-2 0.2 SM 4500 NH3 G 100/210 11:50 AM Total Phosphorous as P 0.46 mg/L 0.05 EPA 355.2 10/11/10 11:58 AM Total Phosphorous as P 0.46 mg/L 0.002 EPA 355.2 10/11/10 11:58 AM Antimony, Total, MS <0.002			TSS	158	mg/L	4	SM 2540D	10/4/10 1:50 PM	
9/30/2010 Digestion, TKN-TP 10%2010 Date completed N/A EPA 351.2 PA 351.2 Fecal Coliform, MF >10000 colonies/100mL N/A SM 9222 D 9/30/10.232 PM Antimony, Total, MS <0.002			Ammonia as N	<.2		0.2	SM 4500 NH3 G	10/2/10 11:50 AM	
9/30/2010 Total Phosphorous as P 0.46 mg/L 0.00 EPA 365.2 10/11/10/11/58 AM For Cell Coliform, MF >10000 colonies/1000L N/A SM 9222 D 9/30/10/232 PM Antimory, Total, MS <0.002			Digestion, TKN-TP	10/5/2010	Date completed	N/A	EPA 351.2		
9/30/2010 Feeal Coliform, MF >10000 colonics/100mL N/x SM 9222 D 9/30/10/232 PM Arsenic, Total, MS <0.002			Total Phosphorous as P	0.46	mg/L	0.05	EPA 365.2	10/11/10 11:58 AM	
9/30/2010 Antmony, Iotal, MS <0.002 mg/L 0.001 EPA 200.8 2/4/2011 4/23 P.M. Beryllium, Total, MS <0.001			Fecal Coliform, MF	>10000	colonies/100mL	N/A	SM 9222 D	9/30/10 2:32 PM	
9/30/2010 Arsenic, Total, MS <0.002 mg/L 0.002 FPA 200.8 2/4/2011 4:23 P.M. Cadmium, Total, MS <0.001			Antimony, Total, MS	< 0.002	mg/L	0.002	EPA 200.8	2/4/2011 4:23 P.M.	
9/30/2010 Berglitum, Total, MS <0.001 mg/L 0.001 EPA 200.8 2/4/2011 4:23 P.M. Chromium, Total, MS 0.0016 mg/L 0.002 EPA 200.8 2/4/2011 4:23 P.M. Copper, Total, ICP 0.017 mg/L 0.002 EPA 200.8 2/4/2011 4:23 P.M. Copper, Total, ICP 0.017 mg/L 0.002 EPA 200.7 2/8/2011 3:27 P.M. Lead, Total, MS 0.013 mg/L 0.002 EPA 200.8 2/4/2011 4:23 P.M. Metals Preparation, D2002 2/2/2011 Date completed N/A EPA 200.2 Nickel, Total, MS 0.019 mg/L 0.002 EPA 200.8 2/4/2011 4:23 P.M. Selenium, Total, MS <0.002		CC1	Arsenic, Total, MS	< 0.002	mg/L	0.002	EPA 200.8	2/4/2011 4:23 P.M.	
9/30/2010 Cadmum, Total, MS <0.001 mg/L 0.001 EPA 200.8 2/4/2011 4:23 P.M. Copper, Total, ICP 0.017 mg/L 0.005 EPA 200.8 2/4/2011 4:23 P.M. ICP-OES 2/8/2011 Date completed N/A EPA 200.7 2/8/2011 3:27 P.M. ICP-OES 2/8/2011 Date completed N/A EPA 200.8 2/4/2011 4:23 P.M. Metals Preparation, D2002 2/2/2011 Date completed N/A EPA 200.8 2/4/2011 4:23 P.M. Silver, Total, MS 0.019 mg/L 0.002 EPA 200.8 2/4/2011 4:23 P.M. Silver, Total, MS <0.001			Beryllium, Total , MS	< 0.001	mg/L	0.001	EPA 200.8	2/4/2011 4:23 P.M.	
9/30/2010 Chromum, 1otal, MS 0.016 mg/L 0.002 EPA 200.7 2/4/2011 4:23 P.M. Copper, Total, MS 0.013 mg/L 0.002 EPA 200.7 2/8/2011 3:27 P.M. ICP-OES 2/8/2011 Date completed N/A EPA 200.7 2/4/2011 4:23 P.M. Metals Preparation, D2002 2/2/2011 Date completed N/A EPA 200.8 2/4/2011 4:23 P.M. Silver, Total, MS 0.019 mg/L 0.002 EPA 200.8 2/4/2011 4:23 P.M. Silver, Total, MS <0.001			Cadmium, Total, MS	< 0.001	mg/L	0.001	EPA 200.8	2/4/2011 4:23 P.M.	
9/30/2010 Copper, Total, ICP 0.017 mg/L 0.005 EPA 200.7 2/8/2011 327 P.M. ICP-OES 2/8/2011 Date completed N/A EPA 200.7			Chromium, Total, MS	0.016	mg/L	0.002	EPA 200.8	2/4/2011 4:23 P.M.	
9/30/2010 Date completed N/A EPA 200.7 Lead, Total, MS 0.013 mg/L 0.002 EPA 200.8 2/4/2011 4:23 P.M. Metals Preparation, D2002 2/2/2011 Date completed N/A EPA 200.8 2/4/2011 4:23 P.M. Selenium, Total, MS -0.002 mg/L 0.002 EPA 200.8 2/4/2011 4:23 P.M. Silver, Total, MS -0.001 mg/L 0.001 EPA 200.8 2/4/2011 4:23 P.M. Silver, Total, MS -0.002 mg/L 0.001 EPA 200.8 2/4/2011 4:23 P.M. Silver, Total, MS -0.001 mg/L 0.001 EPA 200.8 2/4/2011 4:23 P.M. Zine, Total, ICP 0.001 mg/L 0.001 EPA 200.7 2/8/2011 3:27 P.M. Conductivity 206 µS 9/30/10 10:28 AM 9/30/10 10:28 AM P.M. 9/30/10 10:28 AM FS 56 mg/L 4 SM 5210 B 10/1/10 11:50 AM BOD-5 8 mg/L 3 SM			Copper, Total, ICP	0.017	mg/L	0.005	EPA 200.7	2/8/2011 3:27 P.M.	
9/30/2010 Lead. 10tal, MS 0.013 mg/L 0.002 EPA 200.8 2/4/2011 4:23 P.M. Nickel, Total, MS 0.019 mg/L 0.002 EPA 200.8 2/4/2011 4:23 P.M. Selenium, Total, MS <0.001			ICP-OES	2/8/2011	Date completed	N/A	EPA 200.7		
9/30/2010 Metals Preparation, D2002 $2/2/2011$ Date completed NA EPA 200.2 Nickel, Total, MS 0.002 mg/L 0.002 EPA 200.8 $2/4/2011 4:23$ P.M. Silver, Total, MS <0.002			Lead, Total, MS	0.013	mg/L	0.002	EPA 200.8	2/4/2011 4:23 P.M.	
9/30/2010 Nickel, Iotal, MS 0.019 mg/L 0.002 EPA 200.8 2/4/2011 4:23 P.M. 9/30/2010 Selenium, Total, MS <0.002			Metals Preparation, D2002	2/2/2011	Date completed	N/A	EPA 200.2	2/4/2011 4 22 D M	
9/30/2010 Selentum, 1otal, MS <0.002 Img/L 0.002 EPA 200.8 2/4/2011 4:23 P.M. 9/30/2010 Thallium, Total, MS <0.001			Nickel, Total, MS	0.019	mg/L	0.002	EPA 200.8	2/4/2011 4:23 P.M.	
9/30/2010 Sliver, 10tal, MS <0.001 mg/L 0.001 EPA 200.8 2/4/2011 4:23 P.M. 9/30/2010 Thallium, Total, MS <0.002			Selenium, Total, MS	<0.002	mg/L	0.002	EPA 200.8	2/4/2011 4:23 P.M.	
9/30/2010 Inalitum, Total, MS <0.002 mg/L 0.002 EPA 200.8 2/4/2011 4:23 F.M. Jine, Total, ICP 0.051 mg/L 0.005 EPA 200.7 2/8/2011 3:27 P.M. DO 7.33 mg/L 9/30/10 10:28 AM 9/30/10 10:28 AM Temperature 21.5 %C 9/30/10 10:28 AM Onductivity 206 µS 9/30/10 10:28 AM PH 7.73 PH 9/30/10 10:28 AM BOD-5 8 mg/L 3 SM 5210 B 10/1/10 11:50 AM TSS 56 mg/L 4 SM 2540D 10/4/10 1:50 PM Ammonia as N <2			Silver, Total, MS	<0.001	mg/L	0.001	EPA 200.8	2/4/2011 4:23 P.M.	
9/30/2010 DO 7.33 mg/L 0.005 EPA 200.7 $2/8/2011.5/27$ P.M. 9/30/2010 DO 7.33 mg/L 9/30/10 10:28 AM Temperature 21.5 °C 9/30/10 10:28 AM Conductivity 206 μ S 9/30/10 10:28 AM pH 7.73 pH 9/30/10 10:28 AM BOD-5 8 mg/L 4 SM 2540D 10/1/10 11:50 AM TSS 56 mg/L 4 SM 2540D 10/4/10 11:50 AM Digestion, TKN-TP 10/5/2010 Date completed N/A EPA 351.2 Total Phosphorous as P 0.21 mg/L 0.02 EPA 400.8 2/4/2011 5:07 P.M. Antimony, Total, MS <0.002			Thailium, Total, MS	<0.002	mg/L	0.002	EPA 200.8	2/4/2011 4:23 P.M.	
CC3 DO 7.33 mg/L 9/30/10 10:28 AM Temperature 21.5 $^{\circ}$ C 9/30/10 10:28 AM Conductivity 206 μ S 9/30/10 10:28 AM pH 7.73 pH 9/30/10 10:28 AM BOD-5 8 mg/L 3 SM 5210 B 10/1/10 11:15 AM TSS 56 mg/L 4 SM 2540D 10/4/10 1:50 PM Ammonia as N <.2	9/30/2010		Zinc, Total, ICP	0.031	mg/L	0.005	EPA 200.7	2/8/2011 3:27 P.M.	
CC3 Interference 21.5 C 9/30/10 10:28 AM Conductivity 206 μ S 9/30/10 10:28 AM PH 7.73 pH 9/30/10 10:28 AM BOD-5 8 mg/L 3 SM 5210 B 10/1/10 11:51 AM TSS 56 mg/L 4 SM 2540D 10/4/10 1:50 PM Ammonia as N <.2			DO	7.33	mg/L			9/30/10 10:28 AM	
CC3 Conductivity 206 μ S μ S γ S/0/10 10:28 AM PH 7.73 PH 9/30/10 10:28 AM BOD-5 8 mg/L 3 SM 5210 B 10/1/10 11:50 AM TSS 56 mg/L 4 SM 2540D 10/4/10 1:50 PM Ammonia as N <.2			Conductivity	21.5				9/30/10 10:28 AM	
CC3 BD-5 8 mg/L 3 SM 5210 B 101/10 11:53 AM BO5 8 mg/L 4 SM 5210 B 101/10 11:50 AM TSS 56 mg/L 4 SM 2540D 104/10 11:50 PM Ammonia as N <.2				200	μ5 			9/30/10 10:28 AM	
BOD-3 6 Ing/L 5 SM 3210 B 101/10 11:13 AM TSS 56 mg/L 4 SM 2540D 10/4/10 1:50 PM Ammonia as N <.2				0	pH ma/I	2	SM 5210 D	9/30/10 10:28 AM	
CC3 133 30 102 4 334 (2)40D 104/10 (1.00 f)M Ammonia as N <.2			TSS	0 56	mg/L mg/I	3	SM 3210 B	10/1/10 11:13 AM	
CC3 Animona as N N=2 0.2 SM 4300 NHS G 10/2/10 11:30 AM Digestion, TKN-TP 10/5/2010 Date completed N/A EPA 351.2 Total Phosphorous as P 0.21 mg/L 0.05 EPA 365.2 10/11/10 11:58 AM Fecal Coliform, MF >10000 colonies/100mL N/A SM 9222 D 9/30/10 2:32 PM Antimony, Total, MS <0.002			Ammonio og N	20	IIIg/L	4	SM 2540D	10/4/10 11:50 AM	
CC3 Digestion, TKN-TP 10/3/2/01 Date completed 10/A DFA 351.2 Total Phosphorous as P 0.21 mg/L 0.05 EPA 365.2 10/11/10 11:58 AM Feecal Coliform, MF >10000 colonies/100mL N/A SM 9222 D 9/30/10 2:32 PM Antimony, Total, MS <0.002			Digastion TKN TP	<u>>.2</u>	Data completed	0.2 N/A	EDA 251 2	10/2/10 11.50 Alvi	
CC3 For all rules photods as 1 0.21 ing/L 0.003 EFA 303.2 101 r101 r1.35 RM Feeal Coliform, MF >10000 colonies/100mL N/A SM 9222 D 9/30/10 2:32 PM Antimony, Total, MS <0.002			Total Phosphorous as P	0.21	ma/I	0.05	EFA 365 2	10/11/10 11:58 AM	
<td column="" in="" second="" stru<="" structure="" td="" the=""><th></th><td>Facal Coliform ME</td><td>>10000</td><td>nig/L colonies/100mI</td><td>0.05 N/A</td><td>ETA 303.2 SM 0222 D</td><td>0/11/10 11.38 AM</td></td>	<th></th> <td>Facal Coliform ME</td> <td>>10000</td> <td>nig/L colonies/100mI</td> <td>0.05 N/A</td> <td>ETA 303.2 SM 0222 D</td> <td>0/11/10 11.38 AM</td>			Facal Coliform ME	>10000	nig/L colonies/100mI	0.05 N/A	ETA 303.2 SM 0222 D	0/11/10 11.38 AM
CC3Animoly, 10tal, MS < 0.002 Ing L 0.002 $E PA 200.8$ $2/4/2011 5:07$ P.M.Arsenic, 7otal, MS < 0.002 mg/L 0.002 EPA 200.8 $2/4/2011 5:07$ P.M.Beryllium, Total, MS < 0.001 mg/L 0.001 EPA 200.8 $2/4/2011 5:07$ P.M.Cadmium, Total, MS < 0.001 mg/L 0.001 EPA 200.8 $2/4/2011 5:07$ P.M.Chromium, Total, MS < 0.001 mg/L 0.001 EPA 200.8 $2/4/2011 5:07$ P.M.Chromium, Total, MS 0.005 mg/L 0.002 EPA 200.8 $2/4/2011 5:07$ P.M.Copper, Total, ICP 0.008 mg/L 0.005 EPA 200.7 $2/8/2011 3:50$ P.M.ICP-OES $2/8/2011$ Date completedN/AEPA 200.8 $2/4/2011 5:07$ P.M.Metals Preparation, D2002 $2/2/2011$ Date completedN/AEPA 200.2Image: Completed N/AEPA 200.8 $2/4/2011 5:07$ P.M.Nickel, Total, MS 0.003 mg/L 0.002 EPA 200.8 $2/4/2011 5:07$ P.M.Selenium, Total, MS < 0.002 mg/L 0.002 EPA 200.8 $2/4/2011 5:07$ P.M.Silver, Total, MS < 0.002 mg/L 0.002 EPA 200.8 $2/4/2011 5:07$ P.M.Silver, Total, MS < 0.002 mg/L 0.002 EPA 200.8 $2/4/2011 5:07$ P.M.Silver, Total, MS < 0.002 mg/L 0.002 EPA 200.8 $2/4/2011 5:07$ P.M.Silver, Total, MS $< $			Antimony Total MS	<0.002	ma/I	0.002	5N1 9222 D	2/4/2011 5:07 P M	
CC3 Ansender, May 0.0002 Ing/L 0.001 EPA 200.8 $2/4/2011$ 5:07 P.M. Beryllium, Total, MS < 0.001 mg/L 0.001 EPA 200.8 $2/4/2011$ 5:07 P.M. Cadmium, Total, MS < 0.001 mg/L 0.001 EPA 200.8 $2/4/2011$ 5:07 P.M. Chromium, Total, MS 0.005 mg/L 0.002 EPA 200.8 $2/4/2011$ 5:07 P.M. Copper, Total, ICP 0.008 mg/L 0.005 EPA 200.7 $2/8/2011$ 5:07 P.M. ICP-OES $2/8/2011$ Date completed N/A EPA 200.8 $2/4/2011$ 5:07 P.M. Metals Preparation, D2002 $2/2/2011$ Date completed N/A EPA 200.2 Nickel, Total, MS 0.003 mg/L 0.002 EPA 200.8 $2/4/2011$ 5:07 P.M. Selenium, Total, MS 0.003 mg/L 0.002 EPA 200.8 $2/4/2011$ 5:07 P.M. Silver, Total, MS < 0.002 mg/L 0.002 EPA 200.8 $2/4/2011$ 5:07 P.M. Silver, Total, MS < 0.002 mg/L 0.002 EPA 200.8 $2/4/2011$ 5:07 P.M. Silver, Total, MS <t< td=""><th></th><th></th><td>Arsenic Total MS</td><td><0.002</td><td>mg/L mg/I</td><td>0.002</td><td>EPA 200.8</td><td>2/4/2011 5:07 P M</td></t<>			Arsenic Total MS	<0.002	mg/L mg/I	0.002	EPA 200.8	2/4/2011 5:07 P M	
Deryman, rotal, MD 0.001 Mg/L 0.001 $EPA 200.8$ $2/4/2011 5:07$ $P.M.$ Cadmium, Total, MS 0.005 mg/L 0.001 $EPA 200.8$ $2/4/2011 5:07$ $P.M.$ Chromium, Total, MS 0.005 mg/L 0.002 $EPA 200.8$ $2/4/2011 5:07$ $P.M.$ Chromium, Total, MS 0.005 mg/L 0.005 $EPA 200.8$ $2/4/2011 5:07$ $P.M.$ ICP-OES $2/8/2011$ Date completed N/A $EPA 200.7$ $2/8/2011 5:07$ $P.M.$ Lead, Total, MS 0.006 mg/L 0.002 $EPA 200.8$ $2/4/2011 5:07$ $P.M.$ Metals Preparation, D2002 $2/2/2011$ Date completed N/A $EPA 200.2$ $EPA 200.8$ $2/4/2011 5:07$ $P.M.$ Selenium, Total, MS 0.002 mg/L 0.002 $EPA 200.8$ $2/4/2011 5:07$ $P.M.$ Silver, Total, MS <0.002 mg/L 0.002 $EPA 200.8$ $2/4/2011 5:07$ $P.M.$ Silver, Total, MS <0.002 mg/L 0.002 $EPA 200.8$ $2/4/2011 5:07$ $P.M$		CC3	Beryllium Total MS	<0.002	mg/L mg/I	0.002	EFA 200.8	2/4/2011 5:07 P M	
Cdamman, road, MD 0.0001 mg/L 0.001 EPA 200.8 2/4/2011 5:07 P.M. Chromium, Total, MS 0.005 mg/L 0.002 EPA 200.8 2/4/2011 5:07 P.M. Copper, Total, ICP 0.008 mg/L 0.005 EPA 200.7 2/8/2011 3:50 P.M. ICP-OES 2/8/2011 Date completed N/A EPA 200.8 2/4/2011 5:07 P.M. Lead, Total, MS 0.006 mg/L 0.002 EPA 200.8 2/4/2011 5:07 P.M. Metals Preparation, D2002 2/2/2011 Date completed N/A EPA 200.2			Cadmium Total MS	<0.001	mg/L mg/I	0.001	EPA 200.8	2/4/2011 5:07 P M	
Corper, Total, ICP 0.008 mg/L 0.005 EPA 200.7 2/8/2011 3:50 P.M. ICP-OES 2/8/2011 Date completed N/A EPA 200.7 2/4/2011 5:07 P.M. Lead, Total, MS 0.006 mg/L 0.002 EPA 200.8 2/4/2011 5:07 P.M. Metals Preparation, D2002 2/2/2011 Date completed N/A EPA 200.8 2/4/2011 5:07 P.M. Nickel, Total, MS 0.003 mg/L 0.002 EPA 200.8 2/4/2011 5:07 P.M. Selenium, Total, MS <0.002			Chromium Total MS	0.005	mg/L	0.002	EPA 200.8	2/4/2011 5:07 P M	
ICP-OES 2/8/2011 Date completed N/A EPA 200.7 Lead, Total, MS 0.006 mg/L 0.002 EPA 200.8 2/4/2011 5:07 P.M. Metals Preparation, D2002 2/2/2011 Date completed N/A EPA 200.8 2/4/2011 5:07 P.M. Nickel, Total, MS 0.003 mg/L 0.002 EPA 200.8 2/4/2011 5:07 P.M. Selenium, Total, MS <0.002			Copper Total ICP	0.005	mg/L mg/L	0.002	EPA 200.7	2/8/2011 3:50 P M	
Lead, Total, MS 0.006 mg/L 0.002 EPA 200.8 2/4/2011 5:07 P.M. Metals Preparation, D2002 2/2/2011 Date completed N/A EPA 200.8 2/4/2011 5:07 P.M. Nickel, Total, MS 0.003 mg/L 0.002 EPA 200.8 2/4/2011 5:07 P.M. Selenium, Total, MS <0.002			ICP-OES	2/8/2011	Date completed	N/A	EPA 200.7	2/0/2011 5:50 1:101	
Metals Preparation, D2002 2/2/2011 Date completed N/A EPA 200.2 EPA 200.2 Nickel, Total, MS 0.003 mg/L 0.002 EPA 200.8 2/4/2011 5:07 P.M. Selenium, Total, MS <0.002			Lead Total MS	0.006	mg/L	0.002	EPA 200.8	2/4/2011 5:07 P M	
Nickel, Total, MS 0.003 mg/L 0.002 EPA 200.8 2/4/2011 5:07 P.M. Selenium, Total, MS <0.002			Metals Preparation, D2002	2/2/2011	Date completed	N/A	EPA 200.2		
Selenium, Total, MS <0.002 mg/L 0.002 EPA 200.8 2/4/2011 5:07 P.M. Silver, Total, MS <0.001			Nickel, Total, MS	0.003	mg/L	0.002	EPA 200.8	2/4/2011 5:07 P.M.	
Silver, Total, MS <0.001 mg/L 0.001 EPA 200.8 2/4/2011 5:07 P.M. Thellium Total, MS <0.002			Selenium, Total MS	< 0.002	mg/L	0.002	EPA 200.8	2/4/2011 5:07 P M	
The line Total MS < 0.002 mg/L $= 0.003$ EPA 200.8 $24/20115.07$ PM			Silver, Total, MS	< 0.001	mg/L	0.001	EPA 200.8	2/4/2011 5:07 P.M.	
11121110111, 10121, 1013 = 100002 = 1019/L = 100002 = 10002 = 10002 = 10000000000			Thallium, Total, MS	< 0.002	mg/L	0.002	EPA 200.8	2/4/2011 5:07 P.M.	
Zinc, Total, ICP 0.027 mg/L 0.005 EPA 200.7 [2/8/2011 3:50 P.M.			Zinc, Total, ICP	0.027	mg/L	0.005	EPA 200.7	2/8/2011 3:50 P.M.	

Coursels Dotte	C*4 -	Track	D	TL.tt.	DDI	M . (1 1	Associate Device
Sample Date	Site	lest	Result	Units	RDL	Niethod	Analysis Date
		DO	7.49	mg/L			9/30/10 9:48 AM
		Temperature	21.4	°C			9/30/10 9:48 AM
		Conductivity	209	μS			9/30/10 9:48 AM
		pH	6.3	pH			9/30/10 9:48 AM
		BOD-5	<4	mg/L	3	SM 5210 B	10/1/10 11:15 AM
		TSS	58	mg/L	4	SM 2540D	10/4/10 1:50 PM
		Ammonia as N	<.2	.	0.2	SM 4500 NH3 G	10/2/10 11:50 AM
		Digestion, TKN-TP	10/5/2010	Date completed	N/A	EPA 351.2	
		Total Phosphorous as P	0.26	mg/L	0.05	EPA 365.2	10/11/10 11:58 AM
		Fecal Coliform, MF	>10000	colonies/100mL	N/A	SM 9222 D	9/30/10 2:32 PM
		Antimony, Total, MS	<0.002	mg/L	0.002	EPA 200.8	2/4/2011 5:10 P.M.
	RC1	Arsenic, Total, MS	<0.002	mg/L	0.002	EPA 200.8	2/4/2011 5:10 P.M.
		Beryllium, Total, MS	<0.001	mg/L	0.001	EPA 200.8	2/4/2011 5:10 P.M.
		Cadmium, Total, MS	<0.001	mg/L	0.001	EPA 200.8	2/4/2011 5:10 P.M.
		Chromium, Total, MS	0.005	mg/L	0.002	EPA 200.8	2/4/2011 5:10 P.M.
		Copper, Total, ICP	0.015	mg/L	0.005	EPA 200.7	2/8/2011 3:56 P.M.
		ICP-OES	2/8/2011	Date completed	N/A	EPA 200.7	2/4/2011 5 10 D M
		Lead, Total, MS	0.008	mg/L	0.002	EPA 200.8	2/4/2011 5:10 P.M.
		Metals Preparation, D2002	2/2/2011	Date completed	N/A	EPA 200.2	2/4/2011 5 10 D.M.
		Nickel, Total, MS	0.006	mg/L	0.002	EPA 200.8	2/4/2011 5:10 P.M.
		Selenium, Total, MS	<0.002	mg/L	0.002	EPA 200.8	2/4/2011 5:10 P.M.
		Silver, Total, MS	<0.001	mg/L	0.001	EPA 200.8	2/4/2011 5:10 P.M.
		Thallium, Total, MS	<0.002	mg/L	0.002	EPA 200.8	2/4/2011 5:10 P.M.
9/30/2010			0.034	IIIg/L	0.003	EFA 200.7	2/8/2011 5.30 F.M.
		DO	7.09	mg/L			9/30/10 9:53 AM
		Competature	21.0	-0			9/30/10 9:53 AM
			1/2.5	μ5			9/30/10 9:53 AM
			1.52	рн	2	SM 5210 D	9/30/10 9:33 AM
		BOD-5	0	mg/L mg/I	3	SM 3210 D	10/1/10 11:15 AM
		155	44	IIIg/L	4	SM 2540D	10/4/10 1:50 PM
		Direction TVN TD	<.2 10/5/2010	Data assumptated	0.2 N/A	SM 4300 NH3 G	10/2/10 11:30 AM
		Total Phosphorous as P	0.2	ma/I	1N/A	EFA 351.2 EDA 265 2	10/11/10 11:58 AM
		Facal Caliform ME	>1000	nig/L colonies/100mI	0.05 N/A	ETA 303.2 SM 0222 D	0/30/10 2:32 PM
		Antimony Total MS	< 0.002	mg/I	0.002	EDA 200 8	2/4/2011 5:14 PM
		Arsenic Total MS	<0.002	mg/L	0.002	EFA 200.8	2/4/2011 5:14 P.M
	RC3	Beryllium Total MS	<0.002	mg/L mg/I	0.002	EFA 200.8	2/4/2011 5:14 P.M
		Cadmium Total MS	<0.001	mg/L mg/I	0.001	EPA 200.8	2/4/2011 5:14 P.M
		Chromium Total MS	0.001	mg/L mg/I	0.001	EPA 200.8	2/4/2011 5:14 P.M
		Copper Total ICP	0.009	mg/L mg/I	0.002	EPA 200.7	2/8/2011 4:02 P M
		ICP-OFS	2/8/2011	Date completed	N/A	EPA 200.7	2/0/2011 4.02 1.001
		Lead Total MS	0.004	mg/L	0.002	EPA 200.8	2/4/2011 5:14 P M
		Metals Preparation D2002	2/2/2011	Date completed	N/A	EPA 200.2	2, 12011 5.11 1.141
		Nickel Total MS	0.004	mg/L	0.002	EPA 200.2	2/4/2011 5:14 P M
		Selenium Total MS	<0.002	mg/L	0.002	EPA 200.8	2/4/2011 5:14 P M
		Silver, Total, MS	<0.001	mg/L	0.001	EPA 200.8	2/4/2011 5:14 P M
		Thallium Total MS	<0.001	mg/L	0.001	EPA 200.8	2/4/2011 5:14 P M
		Zinc. Total. ICP	0.029	mg/L	0.002	EPA 200.7	2/8/2011 4:02 P M
		2mi, 10mi, 101	0.047	mg n	0.005	2111200.1	

Wet Events									
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Sample Date	Site	Test	Result	Units	RDL	Method	Analysis Date		
		DO	8.5	mg/L		Multimeter Probe	12:54 P.M.		
		Temperature	14.5	°C			12:54 P.M.		
		Conductivity	497	μS			12:54 P.M.		
		рН	7.6				12:54 P.M.		
		BOD-5	<4	mg/L	3	SM 5210 B	10/15/2010 11:00 A.M.		
		TSS	<4	mg/L	4	SM 2540D	10/18/2010 9:31 A.M.		
		Ammonia as N	<0.2		0.2	SM 4500 NH3 G	10/21/2010 1:04 P.M.		
		Digestion, TKN-TP	10/18/2010	Date completed	N/A	EPA 351.2			
		Total Phosphorous as P	0.31	mg/L	0.05	EPA 365.2	10/19/2010 12:39 P.M.		
		Fecal Coliform, MF	240	colonies/100mL	N/A	SM 9221 E	10/14/2010 5:35 P.M.		
		Antimony, Total, MS	< 0.002	mg/L	0.002	EPA 200.8	2/4/2011 5:18 P.M.		
	CC1	Arsenic, Total, MS	< 0.002	mg/L	0.002	EPA 200.8	2/4/2011 5:18 P.M.		
		Beryllium, Total , MS	< 0.001	mg/L	0.001	EPA 200.8	2/4/2011 5:18 P.M.		
		Cadmium, Total, MS	< 0.001	mg/L	0.001	EPA 200.8	2/4/2011 5:18 P.M.		
		Chromium, Total, MS	< 0.002	mg/L	0.002	EPA 200.8	2/4/2011 5:18 P.M.		
		Copper, Total, ICP	0.007	mg/L	0.005	EPA 200.7	2/8/2011 4:08 P.M.		
		ICP-OES	2/8/2011	Date completed	N/A	EPA 200.7			
		Lead, Total, MS	< 0.002	mg/L	0.002	EPA 200.8	2/4/2011 5:18 P.M.		
		Metals Preparation, D2002	2/2/2011	Date completed	N/A	EPA 200.2			
		Nickel, Total, MS	< 0.002	mg/L	0.002	EPA 200.8	2/4/2011 5:18 P.M.		
		Selenium, Total, MS	< 0.002	mg/L	0.002	EPA 200.8	2/4/2011 5:18 P.M.		
		Silver, Total, MS	< 0.001	mg/L	0.001	EPA 200.8	2/4/2011 5:18 P.M.		
		Thallium, Total, MS	< 0.002	mg/L	0.002	EPA 200.8	2/4/2011 5:18 P.M.		
10/14/2010		Zinc, Total, ICP	0.02	mg/L	0.005	EPA 200.7	2/8/2011 4:08 P.M.		
10/14/2010		DO	7.2	mg/L			11:45 A.M.		
		Temperature	15.1	°C			11:45 A.M.		
		Conductivity	480	μS			11:45 A.M.		
		pН	7.34				11:45 A.M.		
		BOD-5	<4	mg/L	3	SM 5210 B	10/15/2010 11:00 A.M.		
		TSS	<4	mg/L	4	SM 2540D	10/18/2010 9:31 A.M.		
		Ammonia as N	<0.2		0.2	SM 4500 NH3 G	10/21/2010 1:01 P.M.		
		Digestion, TKN-TP	10/19/2010	Date completed	N/A	EPA 351.2			
		Total Phosphorous as P	0.33	mg/L	0.05	EPA 365.2	10/19/2010 12:39 P.M.		
		Fecal Coliform, MF	350	colonies/100mL	N/A	SM 9221 E	10/14/2010 5:21 P.M.		
		Antimony, Total, MS	< 0.002	mg/L	0.002	EPA 200.8	2/4/2011 5:22 P.M.		
	CC3	Arsenic, Total, MS	< 0.002	mg/L	0.002	EPA 200.8	2/4/2011 5:22 P.M.		
	005	Beryllium, Total , MS	< 0.001	mg/L	0.001	EPA 200.8	2/4/2011 5:22 P.M.		
		Cadmium, Total, MS	< 0.001	mg/L	0.001	EPA 200.8	2/4/2011 5:22 P.M.		
		Chromium, Total, MS	< 0.002	mg/L	0.002	EPA 200.8	2/4/2011 5:22 P.M.		
		Copper, Total, ICP	0.007	mg/L	0.005	EPA 200.7	2/8/2011 4:25 P.M.		
		ICP-OES	2/8/2011	Date completed	N/A	EPA 200.7			
		Lead, Total, MS	< 0.002	mg/L	0.002	EPA 200.8	2/4/2011 5:22 P.M.		
		Metals Preparation, D2002	2/2/2011	Date completed	N/A	EPA 200.2			
		Nickel, Total, MS	< 0.002	mg/L	0.002	EPA 200.8	2/4/2011 5:22 P.M.		
		Selenium, Total, MS	< 0.002	mg/L	0.002	EPA 200.8	2/4/2011 5:22 P.M.		
		Silver, Total, MS	< 0.001	mg/L	0.001	EPA 200.8	2/4/2011 5:22 P.M.		
		Thallium, Total, MS	< 0.002	mg/L	0.002	EPA 200.8	2/4/2011 5:22 P.M.		
		Zinc, Total, ICP	0.025	mg/L	0.005	EPA 200.7	2/8/2011 4:25 P.M.		

Wet Events									
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Sample Date	Site	Test	Result	Units	RDL	Method	Analysis Date		
		DO	7.6	mg/L			12:24 PM		
		Temperature	13.6	°C			12:24 PM		
		Conductivity	345	μS			12:24 PM		
		pH	7.69				12:24 PM		
		BOD-5	<4	mg/L	3	SM 5210 B	10/15/2010 11:00 A.M.		
		TSS	<4	mg/L	4	SM 2540D	10/18/2010 9:31 A.M.		
		Ammonia as N	<0.2		0.2	SM 4500 NH3 G	10/21/2010 1:04 P.M.		
		Digestion, TKN-TP	10/19/2010	Date completed	N/A	EPA 351.2			
		Total Phosphorous as P	0.17	mg/L	0.05	EPA 365.2	10/19/2010 12:39 P.M.		
		Fecal Coliform, MF	240	colonies/100mL	N/A	SM 9221 E	10/14/2010 5:32 P.M.		
		Antimony, Total, MS	< 0.002	mg/L	0.002	EPA 200.8	2/4/2011 5:26 P.M.		
	RC1	Arsenic, Total, MS	< 0.002	mg/L	0.002	EPA 200.8	2/4/2011 5:26 P.M.		
	ner	Beryllium, Total , MS	< 0.001	mg/L	0.001	EPA 200.8	2/4/2011 5:26 P.M.		
		Cadmium, Total, MS	< 0.001	mg/L	0.001	EPA 200.8	2/4/2011 5:26 P.M.		
		Chromium, Total, MS	< 0.002	mg/L	0.002	EPA 200.8	2/4/2011 5:26 P.M.		
		Copper, Total, ICP	0.006	mg/L	0.005	EPA 200.7	2/8/2011 4:31 P.M.		
		ICP-OES	2/8/2011	Date completed	N/A	EPA 200.7			
		Lead, Total, MS	< 0.002	mg/L	0.002	EPA 200.8	2/4/2011 5:26 P.M.		
		Metals Preparation, D2002	2/2/2011	Date completed	N/A	EPA 200.2			
		Nickel, Total, MS	< 0.002	mg/L	0.002	EPA 200.8	2/4/2011 5:26 P.M.		
		Selenium, Total, MS	< 0.002	mg/L	0.002	EPA 200.8	2/4/2011 5:26 P.M.		
		Silver, Total, MS	0.001	mg/L	0.001	EPA 200.8	2/4/2011 5:26 P.M.		
		Thallium, Total, MS	< 0.002	mg/L	0.002	EPA 200.8	2/4/2011 5:26 P.M.		
10/14/2010		Zinc, Total, ICP	0.013	mg/L	0.005	EPA 200.7	2/8/2011 4:31 P.M.		
10/11/2010		DO	8.4	mg/L			11:56 A.M.		
		Temperature	13.6	°C			11:56 A.M.		
		Conductivity	349	μS			11:56 A.M.		
		pH	7.11	~		01 / 11 / 0 / 0	11:56 A.M.		
		BOD-5	8	mg/L	3	SM 5210 B	10/15/2010 11:00 A.M.		
		TSS	<4	mg/L	4	SM 2540D	10/18/2010 9:31 A.M.		
		Ammonia as N	<0.2		0.2	SM 4500 NH3 G	10/21/2010 1:04 P.M.		
		Digestion, TKN-TP	10/19/2010	Date completed	N/A	EPA 351.2	10/10/2010 12 20 D M		
		Total Phosphorous as P	0.16	mg/L	0.05	EPA 365.2	10/19/2010 12:39 P.M.		
		Fecal Coliform, MF	>1600	colonies/100mL	N/A	SM 9221 E	10/14/2010 5:29 P.M.		
		Antimony, Total, MS	<0.002	mg/L	0.002	EPA 200.8	2/4/2011 5:30 P.M.		
	RC3	Arsenic, Total, MS	<0.002	mg/L	0.002	EPA 200.8	2/4/2011 5:30 P.M.		
		Beryllium, Total, MS	<0.001	mg/L	0.001	EPA 200.8	2/4/2011 5:30 P.M.		
		Cadmium, Total, MS	<0.001	mg/L	0.001	EPA 200.8	2/4/2011 5:30 P.M.		
		Chromium, Total, MS	<0.002	mg/L	0.002	EPA 200.8	2/4/2011 5:30 P.M.		
		ICD OFS	0.000	Ing/L Data completed	0.005	EPA 200.7	2/8/2011 4:37 P.M.		
		ICP-OES	2/8/2011	Date completed	N/A	EPA 200.7	2/4/2011 5:20 P M		
		Metals Preparation D2002	~0.002	Data completed	0.002 N/A	EFA 200.8	2/4/2011 3.30 F.WI.		
		Niekel Total MS	0.004	ma/I	1N/A	EDA 200.2	2/4/2011 5:20 P M		
		Selenium Total MS	0.004	mg/L	0.002	EFA 200.8	2/4/2011 5:30 P.M.		
		Scientulli, Total, MS	<0.002	mg/L	0.002	EDA 200.8	2/4/2011 5.30 F.WI.		
		Thallium Total MS	<0.001	mg/L mg/I	0.001	EDA 200.8	2/4/2011 5.30 P.M.		
		Zine Total ICP	~0.002	mg/L	0.002	EFA 200.8	2/4/2011 3.30 F.MI. 2/8/2011 4:37 D M		
		Zinc, Total, ICr	0.015	Ing/L	1 0.005	ETA 200.7	2/0/2011 4.3/ F.IVI.		

				T+0			
Sample Date	Site	Test	Result	Units	RDL	Method	Analysis Date
		DO	9.3	mg/L		Multimeter Probe	3:53 P.M.
		Temperature	14.3	°C			3:53 P.M.
		Conductivity	442	μS			3:53 P.M.
		pH	7.52				3:53 P.M.
		BOD-5	15	mg/L	3	SM 5210 B	10/15/10 11:00 AM
		TSS	13	mg/L	4	SM 2540D	10/18/10 9:31 AM
		Ammonia as N	<0.2		0.2	SM 4500 NH3 G	10/21/10 1:04 PM
		Digestion, TKN-TP	10/18/2010	Date completed	N/A	EPA 351.2	
		Total Phosphorous as P	0.31	mg/L	0.05	EPA 365.2	10/19/10 12:39 PM
		Fecal Coliform, MF	1600	colonies/100mL	N/A	SM 9221 E	10/14/10 5:20 PM
		Antimony, Total, MS	< 0.002	mg/L	0.002	EPA 200.8	2/4/2011 5:34 P.M.
	CC1	Arsenic, Total, MS	< 0.002	mg/L	0.002	EPA 200.8	2/4/2011 5:34 P.M.
	001	Beryllium, Total, MS	< 0.001	mg/L	0.001	EPA 200.8	2/4/2011 5:34 P.M.
		Cadmium, Total, MS	< 0.001	mg/L	0.001	EPA 200.8	2/4/2011 5:34 P.M.
		Chromium, Total, MS	< 0.002	mg/L	0.002	EPA 200.8	2/4/2011 5:34 P.M.
		Copper, Total, ICP	0.011	mg/L	0.005	EPA 200.7	2/8/2011 4:43 P.M.
		ICP-OES	2/8/2011	Date completed	N/A	EPA 200.7	
		Lead, Total, MS	0.003	mg/L	0.002	EPA 200.8	2/4/2011 5:34 P.M.
		Metals Preparation, D2002	2/2/2011	Date completed	N/A	EPA 200.2	
		Nickel, Total, MS	0.002	mg/L	0.002	EPA 200.8	2/4/2011 5:34 P.M.
		Selenium, Total, MS	< 0.002	mg/L	0.002	EPA 200.8	2/4/2011 5:34 P.M.
		Silver, Total, MS	< 0.001	mg/L	0.001	EPA 200.8	2/4/2011 5:34 P.M.
		Thallium, Total, MS	<0.002	mg/L	0.002	EPA 200.8	2/4/2011 5:34 P.M.
10/14/2010		Zinc, Total, ICP	0.031	mg/L	0.005	EPA 200.7	2/8/2011 4:43 P.M.
		DO	6.7	mg/L			3:08 P.M.
		Temperature	16.4	°C			3:08 P.M.
		Conductivity	218	μS			3:08 P.M.
		pH	6.95	/T		C) (2210 D	3:08 P.M.
		BOD-5	7	mg/L	3	SM 5210 B	10/15/10 11:00 AM
		188	28	mg/L	4	SM 2540D	10/18/10 9:31 AM
		Ammonia as N	<0.2	Deterministed	0.2	SM 4500 NH3 G	10/21/10 1:04 PM
		Digestion, TKN-TP	10/18/2010	Date completed	N/A	EPA 351.2	10/10/10 12:20 DM
		Facal California ME	0.12	mg/L	0.05	EPA 303.2	10/19/10 12:39 PM
		Antimony Total MS	240	colonies/100mL	N/A	SIM 9221 E	10/14/10 5:20 PM
		Antimony, Total, MS	<0.002	mg/L mg/I	0.002	EPA 200.8	2/4/2011 5:54 P.M.
	CC3	Arsenic, Total, MS	<0.002	mg/L mg/I	0.002	EFA 200.8	2/4/2011 5:54 P.M.
		Cadmium Total MS	<0.001	mg/L mg/I	0.001	EFA 200.8	2/4/2011 5:54 P.M
		Chromium Total MS	0.001	mg/L	0.001	EFA 200.8	2/4/2011 5:54 P M
		Copper Total ICP	0.002	mg/L mg/I	0.002	EFA 200.8	2/8/2011 4·48 P M
		ICP-OFS	2/8/2011	Date completed	N/A	EFA 200.7	2/0/2011 4.40 1.101.
		Lead Total MS	0.002	mg/L	0.002	EPA 200.8	2/4/2011 5·54 P M
		Metals Preparation D2002	2/2/2011	Date completed	N/A	EPA 200 2	2, 1, 2011 0.0 + 1 dV1.
		Nickel, Total, MS	0.002	mg/L	0.002	EPA 200.8	2/4/2011 5:54 P M
		Selenium, Total MS	< 0.002	mg/L	0.002	EPA 200.8	2/4/2011 5:54 P M
		Silver, Total, MS	< 0.001	mg/L	0.001	EPA 200.8	2/4/2011 5:54 P.M.
		Thallium, Total, MS	<0.002	mg/L	0.002	EPA 200.8	2/4/2011 5:54 P.M.
		Zinc, Total, ICP	0.017	mg/L	0.005	EPA 200.7	2/8/2011 4:48 P.M.
		Nickel, Total, MS Selenium, Total, MS Silver, Total, MS Thallium, Total, MS Zinc, Total, ICP	0.002 <0.002 <0.001 <0.002 0.017	mg/L mg/L mg/L mg/L mg/L	0.002 0.002 0.001 0.002 0.005	EPA 200.8 EPA 200.8 EPA 200.8 EPA 200.8 EPA 200.8	2/4/2011 5:54 P.M. 2/4/2011 5:54 P.M. 2/4/2011 5:54 P.M. 2/4/2011 5:54 P.M. 2/4/2011 5:54 P.M. 2/8/2011 4:48 P.M.

Wet Events After Storm

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Sample Date	Site	Test	Result	Units	RDL	Method	Analysis Date			
		DO	9.3	mg/L		Multimeter Probe	3:53 P.M.			
		DO	8.9	mg/L			3:40 P.M.			
		Temperature	14.3	°C			3:40 P.M.			
		Conductivity	287	μS			3:40 P.M.			
		pH	7.39				3:40 P.M.			
		BOD-5	11	mg/L	3	SM 5210 B	10/15/10 11:00 AM			
		TSS	4	mg/L	4	SM 2540D	10/18/10 9:31 AM			
		Ammonia as N	<0.2		0.2	SM 4500 NH3 G	10/21/10 1:04 PM			
		Digestion, TKN-TP	10/18/2010	Date completed	N/A	EPA 351.2				
		Total Phosphorous as P	0.13	mg/L	0.05	EPA 365.2	10/19/10 12:39 PM			
		Fecal Coliform, MF	1600	colonies/100mL	N/A	SM 9221 E	10/14/10 5:23 PM			
		Antimony, Total, MS	< 0.002	mg/L	0.002	EPA 200.8	2/4/2011 5:58 P.M.			
	PC1	Arsenic, Total, MS	< 0.002	mg/L	0.002	EPA 200.8	2/4/2011 5:58 P.M.			
	KU1	Beryllium, Total, MS	< 0.001	mg/L	0.001	EPA 200.8	2/4/2011 5:58 P.M.			
		Cadmium, Total, MS	< 0.001	mg/L	0.001	EPA 200.8	2/4/2011 5:58 P.M.			
		Chromium, Total, MS	< 0.002	mg/L	0.002	EPA 200.8	2/4/2011 5:58 P.M.			
		Copper, Total, ICP	0.008	mg/L	0.005	EPA 200.7	2/8/2011 5:00 P.M.			
		ICP-OES	2/8/2011	Date completed	N/A	EPA 200.7				
		Lead, Total, MS	< 0.002	mg/L	0.002	EPA 200.8	2/4/2011 5:58 P.M.			
		Metals Preparation, D2002	2/2/2011	Date completed	N/A	EPA 200.2				
		Nickel, Total, MS	< 0.002	mg/L	0.002	EPA 200.8	2/4/2011 5:58 P.M.			
		Selenium, Total, MS	< 0.002	mg/L	0.002	EPA 200.8	2/4/2011 5:58 P.M.			
		Silver, Total, MS	< 0.001	mg/L	0.001	EPA 200.8	2/4/2011 5:58 P.M.			
		Thallium, Total, MS	< 0.002	mg/L	0.002	EPA 200.8	2/4/2011 5:58 P.M.			
10/14/2010		Zinc, Total, ICP	0.022	mg/L	0.005	EPA 200.7	2/8/2011 5:00 P.M.			
10/14/2010		DO	8.3	mg/L			3:17 P.M.			
		Temperature	16.4	⁰ C			3:17 P.M.			
		Conductivity	204	μS			3:17 P.M.			
		рН	6.72				3:17 P.M.			
		BOD-5	13	mg/L	3	SM 5210 B	10/15/10 11:00 AM			
		TSS	10	mg/L	4	SM 2540D	10/18/10 9:31 AM			
		Ammonia as N	<0.2		0.2	SM 4500 NH3 G	10/21/10 1:04 PM			
		Digestion, TKN-TP	10/18/2010	Date completed	N/A	EPA 351.2				
		Total Phosphorous as P	0.09	mg/L	0.05	EPA 365.2	10/19/10 12:39 PM			
		Fecal Coliform, MF	80	colonies/100mL	N/A	SM 9221 E	10/14/10 5:16 PM			
		Antimony, Total, MS	< 0.002	mg/L	0.002	EPA 200.8	2/4/2011 6:21 P.M.			
	RC3	Arsenic, Total, MS	< 0.002	mg/L	0.002	EPA 200.8	2/4/2011 6:21 P.M.			
	nes	Beryllium, Total , MS	< 0.001	mg/L	0.001	EPA 200.8	2/4/2011 6:21 P.M.			
		Cadmium, Total, MS	< 0.001	mg/L	0.001	EPA 200.8	2/4/2011 6:21 P.M.			
		Chromium, Total, MS	< 0.002	mg/L	0.002	EPA 200.8	2/4/2011 6:21 P.M.			
		Copper, Total, ICP	0.007	mg/L	0.005	EPA 200.7	2/8/2011 5:34 P.M.			
		ICP-OES	2/8/2011	Date completed	N/A	EPA 200.7				
		Lead, Total, MS	< 0.002	mg/L	0.002	EPA 200.8	2/4/2011 6:21 P.M.			
		Metals Preparation, D2002	2/2/2011	Date completed	N/A	EPA 200.2				
		Nickel, Total, MS	< 0.002	mg/L	0.002	EPA 200.8	2/4/2011 6:21 P.M.			
		Selenium, Total, MS	< 0.002	mg/L	0.002	EPA 200.8	2/4/2011 6:21 P.M.			
		Silver, Total, MS	< 0.001	mg/L	0.001	EPA 200.8	2/4/2011 6:21 P.M.			
		Thallium, Total, MS	< 0.002	mg/L	0.002	EPA 200.8	2/4/2011 6:21 P.M.			
		Zinc, Total, ICP	0.017	mg/L	0.005	EPA 200.7	2/8/2011 5:34 P.M.			

Wet Events After Storm

ATTACHMENT H

Development of the Initial Parameters Considered List

DEVELOPMENT OF THE INITIAL PARAMETERS CONSIDERED LIST

			REFERENCES FO	R THE LIST				SUMMARY
From 2014 PA Integrated Water Quality Monitoring and Assessment Report [aka 303(d) List]	From PA Code CH 93, 25 §93.7 for TSF, WWF & MF Designations	From DRBC for Zone 4	From DRBC's 2014 Delaware River and Bay Water Quality Assessment	FROM NPDES PERMIT - required sampling of CSO discharges	FROM NPDES PERMIT - required sampling of Stormwater Outfall #28 at Plant	FROM NPDES PERMIT - required sampling of Plant's Effluent at Outfall 001	FROM EPA's CSO Guidance Document (Pg. 2-32)	INITIAL LIST OF PARAMETERS CONSIDERED
PCBs (Fish Consumption)	Alkalinity	Alkalinity	Aluminum (Aquatic Life)	Ammonia	CBOD5	Ammonia	Indicator Bacteria	Bacteria - Enterococcus
Siltation (TSS)	Ammonia	Bacteria - Enterococcus	PCBs (Fish Consumption)	Biological Oxygen Demand	Chemical Oxygen Demand	Bacteria - Fecal Coliform	BOD	Bacteria - Fecal Coliform
	Bacteria - Fecal Coliform	Bacteria - Fecal Coliform		Fecal Coliform	Dissolved Iron	Cadmium	Metals	Alkalinity
	Total Residual Chlorine (TRC)	Dissolved Oxygen (DO)		Phosphorus	рН	CBOD20	Nutrients	Aluminum (Aquatic Life)
	Dissolved Oxygen (DO)	рН		TSS	Oil and Grease	CBOD5	рН	Ammonia
	Fecal Coliform Bacteria	Phenols			TKN	Chlorine	TDS	Biological Oxygen Demand (BOD)
	Iron (Fe)	Radioactivity - alpha emitters			Total Phosphorus	Chlorodibromomethane	TSS	Cadmium
	Osmotic Pressure	Radioactivity - beta emitters			TSS	Copper	Dissolved Oxygen (DO)	CBOD20
	рН	Synthetic Detergents				Cyanide	Toxics	CBOD5
	Temperature	Temperature				Dichlorobromomethane	Biological Assessment	Chlorine
		Threshold Odor Number (TON)				Lead	Sediment	Chlorodibromomethane
		Total Dissolved Solids (TDS)				Nitrate		Copper
		Turbidity				Nitrite		Cyanide
						Oil and Grease		Dichlorobromomethane
						PCBs		Dissolved Oxygen (DO)
						pН		Iron (Fe)
						TDS		Lead
						Total Kjeldahl Nitrogen (TKN)		Metals
						TSS		Nitrate
						Zinc		Nitrite
								Nutrients
								Oil and Grease
								PCBs (Fish Consumption)
								Phonois
								Phosphorus
								Radioactivity - alpha emitters
								Radioactivity - beta emitters
								Synthetic Detergents
								Temperature
								Threshold Odor Number (TON)
								Total Kjeldahl Nitrogen (TKN)
								Total Dissolved Solids (TDS)
								Total Phosphorus
								Total Residual Chlorine (TRC)
								Zing
								ZINC

ATTACHMENT I

Final Parameters Considered List with STORET Data

DELCORA LTCPU POI Sampling Results Comparison 1/15/2016

Parameter of Interest (POIs)	Units	Upper Delaware 100% WQS	WET W CPS WE SAMPLIN	EATHER T WELL G RESULTS	Dry U	STO pper Delaware)RET/ River Sampling	results	Lower Delaware 100% WQS	Dry Lo	STOR wer Delaware Ri	ET/ iver Sampling I	results	STORET/ Wet Lower Delaware River Sampling results	Chester 100% WQS	WET WEAT	HER CSO 19 G RESULTS			H Chester Cree	listorical ek Sampling resu	ults		STORET/ Chester Creek Wet Sampling results	Ridley 100% WQS	WET WEAT SAMPLING	HER CSO 18 5 RESULTS			His Ridley Creek	storical < Sampling result	ts		STORET/ Ridley Creek Wet Sampling results
Sampling Date Sampling location			Nov 19, 2015 CPS1	Dec 1, 2015 CPS1	9/15/2014 892062 1.16 miles Upstream of Outfall 14	10/20/2014 892062 1.16 miles Upstream of Outfall 14	4/21/2015 892062 1.16 miles Upstream of Outfall 14	5/19/2015 892062 1.16 miles Upstream of Outfall 14		9/15/2014 332049 2.82 miles Downstream of Outfall 2	10/20/2014 332049 2.82 miles Downstream of Outfall 2	4/21/2015 332049 2.82 miles Downstream of Outfall 2	5/19/2015 332049 2.82 miles Downstream of Outfall 2	12/3/2014 WQN0182 1.98 miles Downstream of Outfall 2		Nov 19, 2015 14TH & CROZER	5 Dec 1, 201 14TH & CROZER	8/12/2010 5 Baseline/ Upstream of 14TH & CROZER	9/30/2010 1 Baseline/ Upstream of 14TH & CROZER	10/14/2010 Baseline/ Upstream of 14TH & CROZER	8/12/2010 Downstream of 14TH & CROZER	9/30/2010 Downstream of 14TH & CROZER	10/14/2010 Downstream of 14TH & CROZER	5/12/2010 DRBC422094 0.09 miles Downstream of Outfall 12		Nov 19, 2015 SUN & HANCOCK	Dec 1, 2015 SUN & HANCOCK	8/12/2010 Baseline/ Upstream of SUN & HANCOCK	9/30/2010 Baseline/ Upstream of SUN & HANCOCK	10/14/2010 Baseline/ Upstream of SUN & HANCOCK	8/12/2010 Downstream of SUN & HANCOCK	9/30/2010 Downstream of SUN & HANCOCK	10/14/2010 Downstream of SUN & HANCOCK	5/12/2010 DRBC422120 0.13 miles Downstream of Outfall 15
Benzene	ug/L	14	ND	ND					0.61						14	ND	ND								14	ND	ND							
Bromodichloromethane	ug/L	17	ND	ND					0.55						17	ND	ND								17	ND	ND							
Chiorodibromomethane	ug/L ug/l	13 470	ND ND	ND ND					0.4						13	ND ND	ND							0.5	13 470	ND	ND							0.5
Ethylbenzene	ug/L	2100	ND	ND					530						2100	ND	ND							0.5	2100	ND	ND					-		0.5
Methyl t-Butyl Ether	ug/L	No Standard	ND	ND					No Standard						No Standard	NÐ	ND							0.5	No Standard	ND	ND							0.5
Methylene Chloride	ug/L	590	ND	ND					4.6						590	ND	ND								590	ND	ND							
Teluese	ug/L	3.3	ND	ND					0.69						3.3	ND	ND							0.5	3.3	ND	ND							0.5
Total Xylenes, Acute	ug/L	1100	ND.	ND					1100						1100	ND	ND		+					0.0	1100	ND	ND							0.0
Total Xylenes, Chronic	ug/L	210	ND	ND					210						210	ND	ND								210	ND	ND							
Benzo(a)anthracene, Acute	ug/L	0.5	ND	ND	ND	ND			0.0038	ND	ND				0.5	ND	ND								0.5	ND	ND							
Benzo(a)anthracene, Chronic	ug/L	0.1	ND	ND ND	ND	ND			0.0038	ND ND	ND.				0.1										0.1	ND ND	ND							
bis(2-Ethylhexyl)phthalate	ug/L	2.2	12.0	7.3					1.2	no-	ND				2.2	4.4	8.0								2.2	11.8	4.9							
N-Nitroso-di-n-propylamine	ug/L	0.51	ND	ND			ND	ND	0.005	ND	ND				0.51	ND	ND								0.51	ND	ND							
Phenanthrene, Acute	ug/L	5	ND	ND					5						5	ND	ND								5	ND	ND							
Phenanthrene, Chronic	ug/L	1	ND	ND 0.020					1						1	ND	ND								1	ND	ND							
Total Polychlorinated Biphenyl (PCB)	ug/L	0.000034	0.0	0.020					0.000052						0.000054	0.0	ND								0.000034	0.0	ND I							
Aroclor-1016	ug/L	No Standard	ND	ND ND					No Standard						No Standard	NĐ	ND								No Standard	ND	ND ND					-		
Aroclor-1221	ug/L	No Standard	ND	NÐ					No Standard						No Standard	ND	ND								No Standard	ND	ND							
Aroclor-1232	ug/L	No Standard	ND	ND					No Standard						No Standard	ND	ND								No Standard	ND	ND							
Arocior-1242 Arocior-1248	ug/L	No Standard	ND	ND					No Standard						No Standard		ND								No Standard	ND	ND							
Aroclor-1254	ug/L	No Standard	ND	ND					No Standard						No Standard	ND	ND								No Standard	ND	ND							
Aroclor-1260	ug/L	No Standard	ND	ND					No Standard						No Standard	ND	ND								No Standard	ND	ND					-		
Ammonia-N	mg/L	10.45ª	7.47	20.0					10.45°						10.45*	4.85	13.4								10.45°	1.63	3.63							
Carbonaceous BOD	mg/L mg/l	No Standard	57.7	94.0					No Standard						No Standard No Standard	51.8	63.4								No Standard	26.2	70.7							
Carbonaceous BOD 20 Day	mg/L	No Standard	7.7	151					No Standard						No Standard	12.8	72.2								No Standard	ND	96.8							
Cyanide, Acute	mg/L	22	ND	ND					22						22	ND	ND								22	ND	ND							
Cyanide, Chronic	mg/L	5.2	ND	ND					5.2						5.2	ND	ND								5.2	ND	ND							
Dissolved Oxygen Halogen, Total Organic (TOX)	mg/L ug/L	3.5 No Standard	2.5	2.5	6.56	8.59	10.39	6.84	3.5 No Standard	7.17	8.14	10.32	7.20	13.04	3.5 No Standard	4.3	41.2	5.65	8.36	8.50	5.42	7.33	7.20		3.5 No Standard	5.4 ND	4.4 ND	6.85	7.49	7.6		7.09	8.4	
Hexavalent Chromium, Acute	mg/L	16	ND	ND					16						16	ND	ND								16	ND	ND							
Hexavalent Chromium, Chronic	mg/L	10	ND	ND					10						10	ND	ND								10	ND	ND							
Nitrate-N	mg/L	No Standard	ND	0.90					No Standard						No Standard	0.85	2.0								No Standard	ND	ND							
Odor	T.O.N.	24	30	5					24						24	20	10								24	2	2							
Oil/Grease Hexane Extractable	mg/L	No Standard	14.8	12.4					No Standard						No Standard	7.2	8.4								No Standard	ND	2.6							
Oil/Grease Silica Gel Treated	mg/L	No Standard	ND	ND					No Standard						No Standard	2.3	ND								No Standard	ND	ND							
Phenolics Phosphorus Total	mg/L mg/l	0.020 No Standard	0.068	0.028	ND	ND			0.020 No Standard	ND	ND				0.020 No Standard	0.016	0.016								0.020 No Standard	0.012	0.009							
Sulfide, Total	mg/L	No Standard	1.3	ND					No Standard						No Standard	ND	ND								No Standard	ND	ND							
Surfactants (MBAS)	mg/L	1.000	0.557	0.505					1.000						1.000	0.485	0.383								1.000	0.123	0.067							
Total Dissolved Solids	mg/L	No Standard	186	277					No Standard						No Standard	150	230								No Standard	39	26							
Total Kjeldahl Nitrogen Total Nitrogen	mg/L mg/l	No Standard	21.2	23.5					No Standard						No Standard	14.1	21.0								No Standard	5.3	8.3							
Total Suspended Solids	mg/L	No Standard	108	186	30	36	21	30	No Standard	27	35	22	19	124	No Standard	140	112	7	158	4	12	56	4	10	No Standard	76	200	<4	58	<4	8	44	<4	
Turbidity	NTU	150.0	126	81.9	26	29	16	16	150.0	26	33	17	14		150.0	37.2	57.4								150.0	26.2	80.6							
Hardness	mg/L	No Standard	85.2 ND	127					No Standard						No Standard	58.1	102								No Standard	18.9	31.5							
Trivalent Chromium, Acute	mg/L	0.4994	ND	ND					0.4994						0.4994	ND	ND								0.0239	ND	ND							
Aluminum, Acute	mg/L	0.75	1.2	0.40					0.75					2.875	0.75	0.64	0.25								0.75	0.47	0.44							
Aluminum, Chronic	mg/L	0.09	1.2	0.40					0.09					2.875	0.09	0.64	0.25								0.09	0.47	0.44							
Antimony, Total	mg/L	0.0056	ND	ND					0.0056						0.0056	0.0013	ND	<0.002	<0.002	<0.002	<0.002	<0.002	< 0.002		0.0056	0.0023	0.0018	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	
Arsenic, Acute Arsenic, Chronic	mg/L	0.34	ND	ND					0.01						0.34	ND	ND	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002		0.15	ND	ND	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	
Cadmium, Acute	mg/L	0.0010 b	ND	ND					0.0010 b						0.0010 b	ND	ND	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001		0.0010 b	ND	ND	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	
Cadmium, Chronic	mg/L	0.0001 b	ND	ND					0.0001 b						0.0001 b	ND	ND	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001		0.0001 b	ND	ND	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	
Chromium, Total	mg/L	No Standard	0.011	0.0014			0.0000	0.0000	No Standard	ND	0.0000			0.0100	No Standard	0.0094	ND	<0.002	0.016	<0.002	<0.002	0.005	<0.002	-0.010	No Standard	0.0032	0.0031	<0.002	0.005	<0.002	<0.002	0.003	<0.002	-0.010
Copper, Acute Copper, Chronic	mg/L mg/l	0.011 b 0.007 b	0.042	0.041			0.0028	0.0032	0.011 b 0.007 b	0.005	0.0068			0.0103	0.010°	0.033	0.029	0.007	0.017	0.007	0.006	0.008	0.007	<0.010	0.010°	0.025	0.032	<0.005	0.015	0.006	<0.005	0.009	0.006	<0.010
Iron, Total	mg/L	0.3	2.9	1.3					0.3					4.2	0.30	0.76	0.47	5.007						0.37	0.3	0.72	1.5	2.000			2.300			0.561
Lead, Acute	mg/L	0.0380	0.028	0.0096		-	0.0016	0.0023	0.0380	ND	ND			0.0069	0.0380	0.016	0.0060	0.002	0.013	0.002	0.002	0.006	0.002		0.0380	0.0081	0.020	<0.002	0.008	<0.002	<0.002	0.004	<0.002	
Lead, Chronic	mg/L	0.0054	0.028	0.0096			0.0016	0.0023	0.0054		115			0.0069	0.0054	0.016	0.0060	0.002	0.013	0.002	0.002	0.006	0.002		0.0054	0.0081	0.020	<0.002	0.008	<0.002	<0.002	0.004	<0.002	
Mercury, Total Molybdenum, Total	mg/L mg/l	0.000051 No Standard	0.00020	ND 0.0012			ND	0.000022	0.00005 No Standard	ÛИ	UИ				0.000051 No Standard	ND 0.0027	ND								0.000051 No Standard	ND 0.0031	0.0011 ND							
Selenium, Acute	mg/L	0.02	ND	ND					0.02						0.02	ND	ND	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002		0.02	ND	ND	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	
Selenium, Chronic	mg/L	0.0046	ND	ND					0.0046						0.0046	ND	ND	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002		0.0046	ND	ND	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	
Silver, Total	mg/L	0.0019 b	ND	ND					0.0019 b						0.0019 •	ND	ND	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002		0.0019 •	ND	ND	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	
Zinc, Total	mg/L mg/L	0.00047 0.098 b	ND 0.22	ND 0.13	0.0042	0.0138	0.0033	0.0112	0.00024 0.098 b	0.0020	0.0087	0.0032	0.0102	0.025	0.088 b	ND 0.11	ND 0.067	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	0.012	0.00047 0.088 b	ND 0.14	ND 0.20	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	0.011
Enterococcus	CFU/100ml	88	241960	199000					33						88	77000	173000								88	8160	34500							
Fecal Coliform	CFU/100ml	770	2600000	3700000	160	170	160	93	200	83	120		110		770	470000	1030000	9700	10000	240	830	10000	350		770	1260000	2100000	720	>10000	240	880	>10000	1600	

 LEGEND:

 Value Exceeds WQS

 ND

 Non Detection

 ND

 Screening of POIs

303(d) list Impairement Value Greater than or Equal to Method Detection Limit but Below Reportable Detection Limit (RDL)

No Standard but Present in Combined Sewer Discharge

	Footnotes
а	Value for pH = 7.1 found in DRBC Water Quality Regulations, Section 4.20.5 Paragraph A.3
b	Value for Average Ca, Mg Hardness = 84 mg/l. Average value is based on EPA STORET station data from 2010-2015 in Delaware River
C	Value for Average Ca, Mg Hardness = 74 mg/l found in DRBC Water Quality Regulations, Section 4.20.5 Paragraph A.2 in Chester and Ridley Creeks

ATTACHMENT J

Summary of STORET Data Exceedances

DELCORA LTCPU Summary of STORET Data Showing Exceedance in All Receiving Bodies 2010-2015

Parameter	Num	ber of Storet Ob	servations (2010	-2015)		Number of (2010	Exceedances)-2015)			Note			
Location	Dela	aware	Chester	Ridley	Dela	aware	Chester	Ridley	Dela	aware	Chester	Ridley	
		WQN0182,				WQN0182,				WQN0182,			
Station ID	892062	332049	422094	422120	892062	332049	422094	422120	892062	332049	422094	422120	
(Upstream or	(Upstream	(Downstream	(Downstream	(Downstream	(Upstream	(Downstream	(Downstream	(Downstream	(Upstream	(Downstream	(Downstream	(Downstream	
Downstream of Outfall)	of Outfall 14)	of Outfall 2)	of Outfall 12)	of Outfall 15)	of Outfall 14)	of Outfall 2)	of Outfall 12)	of Outfall 15)	of Outfall 14)	of Outfall 2)	of Outfall 12)	of Outfall 15)	
bis(2-Ethylhexyl)phthalate	0	0	0	0	0	0	0	0	0	0	0	0	
Dieldrin	0	0	0	0	0	0	0	0	0	0	0	0	
Total Polychlorinated Biphenyl	0	0	0	0	0	0	0	0	0	0	0	0	
Ammonia-N	0	25	0	0	0	0	0	0	0	0	0	0	
Biochemical Oxygen Demand	0	0	0	0	0	0	0	0	0	0	0	0	No Standard
Carbonaceous BOD	0	0	0	0	0	0	0	0	0	0	0	0	No Standard
Carbonaceous BOD 20 Day	0	0	0	0	0	0	0	0	0	0	0	0	No Standard
Dissolved Oxygen	34	61	0	0	0	0	0	0	0	0	0	0	
Nitrate-N	0	0	0	0	0	0	0	0	0	0	0	0	No Standard
Nitrite-N	0	0	0	0	0	0	0	0	0	0	0 0		
Odor	0	0	0	0	0	0	0	0	0	0	0 0		
Phenolics	7	10	0	0	0	0	0	0	7	8	0	0	
Phosphorus, Total	0	10	1	1	0	0	0	0	0	0	0	0	No Standard
Surfactants (MBAS)	0	0	0	0	0	0	0	0	0	0	0	0	
Total Dissolved Solids	34	64	1	1	0	0	0	0	0	0	0	0	No Standard
Total Kjeldahl Nitrogen	0	0	1	1	0	0	0	0	0	0	0	0	No Standard
Total Nitrogen	0	0	0	0	0	0	0	0	0	0	0	0	No Standard
Total Suspended Solids	34	64	1	1	0	0	0	0	0	0	0	0	No Standard
Turbidity	34	35	0	0	0	0	0	0	0	0	0	0	
Hardness	36	66	0	0	0	0	0	0	0	0	0	0	No Standard
Aluminum, Acute	0	29	0	0	0	14	0	0	0	0	0	0	
Aluminum, Chronic	0	29	0	0	0	29	0	0	0	0	0	0	
Antimony, Total	4	0	0	0	0	0	0	0	4	0	0	0	
Arsenic, Acute	0	0	0	0	0	0	0	0	0	0	0	0	
Arsenic, Chronic	0	0	0	0	0	0	0	0	0	0	0	0	
Copper, Acute	36	67	1	1	0	3	0	0	10	6	1	1	
Copper, Chronic	36	67	1	1	0	6	1	1	10	6	0	0	
Iron, Total	0	29	1	1	0	29	1	1	0	0	0	0	
Lead, Acute	36	67	0	0	0	0	0	0	31	37	0	0	
Lead, Chronic	36	67	0	0	0	4	0	0	31	37	0	0	
Mercury, Total	10	16	0	0	1	0	0	0	6 10 0		0		
Zinc, Total	36	67	1	1	0	0	0	0	5	5	0	0	
Enterococcus*	0	0	0	0	0	0	0	0	0	0	0	0	
Fecal Coliform*	34	35	0	0	0	0	0	0	0	0	0	0	

*Fecal Coliform was identified as a parameter exceeding water quality standards (WQS) for Chester and Ridley Creeks based on historical data from 2010 (see Attachment J). Sufficient historical data indicating WQS exceedance for all receiving waterbodies was unavailable, however Enterococcus and Fecal Coliform are considered typical parameters associated with CSOs and for this reason are included as POCs.

LEGEND
Pollutant Of Concern (POC)
Parameter of Potential Concern (POPC)

ATTACHMENT K

NOAA Environmental Sensitivity Index Maps
ENVIRONMENTAL SENSITIVITY INDEX MAP









39 45'00"



Delaware Bay ESI - Volume 1 ESI-18

Delaware/New Jersey/Pennsylvania: ESIMAP 18

BIOLOGICAL RESOURCES:

BIRD:

RAR#	Species	S F ST	Conc.	JFMAMJJASOND	Nesting	Migrating	Molting	
111	Endangered raptor 2	E NJ			JAN-JUL	-	-	
171	Osprey			ххххххх	MAR-AUG	MAR-MAR SEP-OCT	-	
317	Threatened raptor	t NJ		X X X X X X X X	APR-AUG	SEP-OCT	-	
441	Bufflehead		10S	X X X X X X X X X X X X X X X X X X X	-	MAR-APR OCT-DEC	-	
	Canada goose Canvashack		10005		_	MAR-APR SEP-NOV	_	
	Common goldeneve		105		_	MAR-APR NOV-DEC	_	
	Hooded merganser		105	X X X X X X X	-	FEB-MAR OCT-DEC	-	
	Red-breasted merganser		10S	X X X X X X X X X	-	MAR-APR OCT-DEC	-	
	Ring-necked duck		100S	X X X X X X X X X	-	MAR-APR OCT-DEC	-	
	Ruddy duck		100S	X X X X X X X X X X X X X X X X X X X	-	MAR-APR OCT-NOV	-	
	Scaup Snow goose		10005		_	MAR-APR OCT-DEC	_	
442	American black duck		1000S		APR-JUN	APR-APR SEP-DEC	_	
	American coot		100S	X X X X X X X X X X X X X X X X X X X	_	FEB-MAR SEP-NOV	-	
	American wigeon		100S	X X X X X X X X X X X X X X X X X X X	-	MAR-APR AUG-NOV	-	
	Bufflehead		105	X X X X X X X X X	-	MAR-APR OCT-DEC	-	
	Canada goose		10005		-	MAR-APR SEP-NOV	-	
	Common goldeneve		1005		_	MAR-APR NOV-DEC	-	
	Common merganser		100S	X X X X X X X	-	FEB-MAR NOV-DEC	-	
	Gadwall		100S	* * * * * * * * * * * * *	MAY-JUL	MAR-APR OCT-NOV	-	
	Green-winged teal		100S	X X X X X X X X X X X X X X X X X X X	-	FEB-MAR SEP-NOV	-	
	Hooded merganser		105	X X X X X X X X	-	FEB-MAR OCT-DEC	-	
	Mallard Muto gwan		10005		MAR-JUN	-	-	
	Northern pintail		100S		_	- FEB-APR AUG-SED	-	
	Northern shoveler		10S	X X X X X X X X X X X X X X X X X X X	_	MAR-APR SEP-OCT	_	
	Red-breasted merganser		10S	X X X X X X X X X	-	MAR-APR OCT-DEC	-	
	Ring-necked duck		100S	X X X X X X X X X	-	MAR-APR OCT-DEC	-	
	Ruddy duck		100S	X X X X X X X X X X X X X X X X X X X	-	MAR-APR OCT-NOV	-	
	Scaup		1008		-	MAR-APR OCT-DEC	-	
	Tundra swan		10005		_	FEB-APR OCT-NOV	-	
449	Bufflehead		105	XXXXX XXX	_	MAR-MAR OCT-NOV	_	
	Canada goose		10000S	* * * * * * * * * * * * *	MAR-JUN	MAR-APR SEP-NOV	-	
	Ring-necked duck		100S	X X X X X X X X X	-	MAR-APR OCT-NOV	-	
	Ruddy duck		1000S	X X X X X X X X X X X X X X X X X X X	-	FEB-MAR OCT-NOV	-	
	Scaup		10005		_	MAR-APR OCT-DEC	-	
450	American black duck		1005	× × × × × × × × × × × × × × × × × × ×	APR-ITIN	CCT-APR OCI-NOV	-	
150	American coot		1000S	X X X X X X X X X X X X X X X X X X X	-	FEB-APR OCT-NOV	-	
	American wigeon		10S	X X X X X X X X X X X X X X X X X X X	-	MAR-APR SEP-OCT	-	
	Bufflehead		10S	X X X X X X X X X X	-	MAR-MAR OCT-NOV	-	
	Canada goose		10000S	X X X X X X X X X X X X X X X X X X X	MAR-JUN	MAR-APR SEP-NOV	-	
	Common merganser		105		-	FEB-MAR NOV-DEC	-	
	Green-winged teal		1005	* * * * * * * * * * * * * *	MAY-JUL MAY-JUL	MAR-APR OCI-NOV	-	
	Mallard		100S		MAR-JUL	FEB-MAY OCT-DEC	-	
	Mute swan		10S	* * * * * * * * * * * * * *	-	-	-	
	Northern pintail		100S	X X X X X X X X X X X X X X X X X X X	-	FEB-MAY SEP-DEC	-	
	Northern shoveler		100S	X X X X X X X X X X X X X X X X X X X	-	MAR-APR OCT-NOV	-	
	Ring-necked duck		10005		_	MAR-APR OCT-NOV	_	
	Scaup		10005		_	MAR-APR OCT-DEC	-	
	Snow goose		100S	X X X X X X X X X	-	FEB-APR OCT-NOV	-	
	Wood duck		10S	* * * * * * * * * * * * * *	MAR-JUN	FEB-MAR OCT-DEC	-	
457	Bufflehead		100S	X X X X X X X X X X X	-	MAR-MAY OCT-DEC	-	
	Canada goose		100S	X X X X X X X X X X X X X X X X X X X	APR-JUL	FEB-APR SEP-NOV	-	
	Canvasback Common goldeneve		100S		_	FEB-APR SEP-NOV	_	
	Long-tailed duck		105		_	FEB-APR OCT-NOV	_	
	Mergansers		100S	* * * * * * * * * * * * * *	APR-JUN	FEB-APR OCT-DEC	-	
	Northern shoveler		10S	X X X X X X X X X X X X X X X X X X X	-	MAR-APR AUG-NOV	-	
	Ruddy duck		1000S	X X X X X X X X X X X X X X X X X X X	-	MAR-APR OCT-NOV	-	
450	Scaup		100S	X X X X X X X X X X X X X X X X X X X	-	MAR-APR OCT-DEC	-	
458	American black duck		10005		APR-JUN	FEB-APR OCT-DEC	_	
	Canada goose		1005		APR-JUL	FEB-APR SEP-NOV	_	
	Canvasback		100S	X X X X X X X X X X X X	_	FEB-APR SEP-NOV	-	
	Common goldeneye		10S	X X X X X X X X X X	-	FEB-APR NOV-DEC	-	
	Green-winged teal		100S	X X X X X X X X X X X X X X X X X X X	-	MAR-MAY AUG-NOV	-	
	Long-tailed duck		105	X X X X X X X X X X	-	FEB-APR OCT-NOV	-	
	Mallaru Mergansers		1005	X X X X X X X X X X X X X X X X	APR-AUG	FEB-MAY SEP-DEC	-	
	Northern pintail		100S	X X X X X X X X X X X X X X X X X X X		FEB-APR SEP-DEC	_	
	Northern shoveler		10S		-	MAR-APR AUG-NOV	-	
	Ruddy duck		1000S	X X X X X X X X X X X X X X X X X X X	-	MAR-APR OCT-NOV	-	
	Scaup		100S	X X X X X X X X	-	MAR-APR OCT-DEC	-	
	Tundra swan		100S	X X X X X X X X X	-	FEB-APR OCT-DEC	-	
FISH	:							
RAR#	Species	S F ST	Conc.	JFMAMJJASOND	Spawning	Eggs Larvae	Juveniles	Adults
99	Alewife		HIGH SPAWNING	* * * * * * * * * * * * * * *	MAR-MAY	MAR-MAY APR-JUN	JAN-DEC	MAR-JUN
	American eel		PRESENT	X X X X X X X X X X X X X X X X X X X	- MAD TIT	- DEC-APR	JAN-DEC	JAN-DEC
	AMELICAN SHAU		NIGH SPAWNING	ΛΛΛΛΛΧΧΧΧ	MAR-JUN	APR-UUN MAY-JUL	VOM-NOC	MAR-JUN

	Blueback herring		HIGH SPAWNING	* * * * * * * * * * * * * *	MAR-JUN	MAR-JUN	MAY-JUL	JAN-DEC	MAR-JUN
									OCT-NOV
100	Alewife		HIGH SPAWNING	* * * * * * * * * * * * *	MAR-MAY	MAR-MAY	APR-JUN	JAN-DEC	MAR-JUN
	American eel		PRESENT	* * * * * * * * * * * * * *	-	-	DEC-APR	JAN-DEC	JAN-DEC
	Blueback herring		HIGH SPAWNING	* * * * * * * * * * * * * *	MAR-JUN	MAR-JUN	MAY-JUL	JAN-DEC	MAR-JUN
									OCT-NOV
362	Alewife		HIGH SPAWNING	X X X X X X X X	MAR-MAY	MAR-MAY	APR-JUN	JUN-AUG	MAR-OCT
	American eel		LOW	* * * * * * * * * * * * * *	-	-	DEC-APR	JAN-DEC	JAN-DEC
	American shad		HIGH SPAWNING	X X X X X X X X X	MAR-JUN	APR-JUN	MAY-JUL	JUN-NOV	MAR-NOV
	Atlantic croaker		MED	ххххх	-	-	-	JUL-OCT	JUN-NOV
	Atlantic menhaden		HIGH	ХХХ	-	-	-	JUN-JUL	JUN-AUG
	Bay anchovy		MED	ХХХХ	-	-	-	AUG-OCT	AUG-NOV
	Blueback herring		HIGH	X X X X X X X X X	MAR-JUN	MAR-JUN	MAR-JUN	JUN-NOV	MAR-NOV
	Channel catfish		PRESENT	X X X X X X	-	-	-	JUL-SEP	JUN-NOV
	Gizzard shad		LOW	X X X X X X	-	-	-	JUN-OCT	JUL-NOV
	Hickory shad		LOW	ХХХХ	MAR-JUN	MAR-JUN	MAR-JUN	-	MAR-JUN
	Hickory shad	Е	PA LOW	ХХХХ	MAR-JUN	MAR-JUN	MAR-JUN	-	MAR-JUN
	Spot		HIGH SPRING	ХХХ	_	_	_	JUL-SEP	JUL-SEP

OCT-NOV

Biological information shown on the maps represents known concentration areas or occurrences, but does not necessarily represent the full distribution or range of each species. DNREC, NJDEP ENSP, and PGC provided information for some of the federally and state listed species and species of conservation concern for display in the ESI atlas and accompanying digital data in 2013-2014. These data represent existing information known to these agencies at the time of the request and should never be substituted for consultation with these agencies. This atlas was developed using NJDEP GIS digital data for archaeological and historic sites, but this secondary product has not been verified by NJDEP and is not state-authorized. Archaeological and historical site information for Delaware was provided by DE Division of Historical and Cultural Affairs.

Delaware/New Jersey/Pennsylvania: ESIMAP 18 (cont.)

BIOLOGICAL RESOURCES: (cont.)

FISH: (cont.)

RAR#	Species	S F S	I Conc.	J F M A M 	JJASOND	Spawning	Eggs	Larvae	Juveniles	Adults
362	Striped bass		HIGH SPAWNING	XXXXX	X X X X X X X X X X X X X X X X X X X	APR-JUN	APR-JUN	APR-JUL	JAN-DEC	APR-NOV
	Yellow perch		LOM		~ ~ ^ ^ ^ ^ ^ ^ ^	MAR-JUN	MAR-JUN	APR-JUL	JUN-AUG	JUN-OCT
363	Alewife		HIGH SPAWNING	ххххх	XXXXXXXX	MAR-MAY	MAR-MAY	APR-JUN	JAN-DEC	MAR-OCT
	American eel		MED	ххххх	x x x x x x x	-	-	DEC-APR	JAN-DEC	JAN-DEC
	American shad		HIGH SPAWNING	X X X X X	X X X X X X X X	_	-	-	JAN-DEC	MAR-OCT
	Atlantic croaker		HIGH	XX	XXXXXXX	_	_	_	JUL-OCT	APR-NOV
	Bay anchovy		MED	XX	XXXXXX	_	_	_	APR-NOV	APR-NOV
	Blueback herring		HIGH	ххххх	* * * * * * * *	MAR-JUN	MAR-JUN	APR-JUN	JAN-DEC	APR-NOV
	Bluefish		LOW		ххххх	-	-	-	JUN-OCT	-
	Channel catfish		PRESENT	ххххх	XXXXXXXX	-	-	-	JUN-OCT	JAN-DEC
	Hickory shad		MED	xxx	× × × × × × ×	-	_	-	JUN-OCI MAY-OCT	MAR-JUN
	hickory blad			11 11 11					1111 001	OCT-NOV
	Hickory shad	E P.	A MED	ХХХ	X X X X X X	-	-	-	MAY-OCT	MAR-JUN
										OCT-NOV
	Spot		MED	X	XXXXX	-		-	JUN-OCT	MAY-OCT
	Striped bass Weakfish		DRESENT	* * * * * *	~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~ ~	APR-JUN	APR-JUN	APR-JUL	JAN-DEC	APR-NOV
	White perch		HIGH	ххххх	XXXXXXXX	MAR-JUN	MAR-JUN	APR-JUL	JAN-DEC	JAN-DEC
	Yellow perch		LOW		X X X X X X	-	-	-	JUN-NOV	JUN-NOV
407	Shortnose sturgeon	EED	E MED	XX	XXXXX	_	-	-	APR-OCT	APR-OCT
	Shorthose sturgeon	EEN	A MED	XX XX	XXXXX XXXXX	-	_	-	APR-OCT APR-OCT	APR-OCT
408	Shortnose sturgeon	EED	E HIGH	XXX	ХХ	-	_	_	NOV-MAR	-
	Shortnose sturgeon	ΕΕΝ	J HIGH	ХХХ	ХХ	-	_	-	NOV-MAR	-
410	Shortnose sturgeon	EEP.	A HIGH	XXX	XX	-	-	-	NOV-MAR	-
412	Atlantic sturgeon	EED. EEN	E HIGH T HIGH	XX XX	X	APR-JUN	APR-JUN	MAY-JUN MAY-JUN	APR-JUN APR-JUN	APR-JUN
	Atlantic sturgeon	E E P.	A HIGH	XX	X	APR-JUN	APR-JUN	MAY-JUN	APR-JUN	APR-JUN
416	Atlantic sturgeon	EED	E HIGH YOY	X X X X X	X X X X X X X	APR-JUN	APR-JUN	MAY-JUN	JAN-DEC	MAR-NOV
	Atlantic sturgeon	EEN	J HIGH YOY	XXXXX	X X X X X X X X	APR-JUN	APR-JUN	MAY-JUN	JAN-DEC	MAR-NOV
417	Atlantic sturgeon	EEP.	A HIGH YOY F DREGENT	XXXXX		APR-JUN	APR-JUN	MAY-JUN	JAN-DEC	MAR-NOV
11/	Actalitic Stargeon		E FRESENT	ААА	лллллл				0 0 LI - MAIX	JUL-NOV
	Atlantic sturgeon	ΕΕΝ	J PRESENT	ХХХ	хххххх	-	-	-	JUL-MAR	MAR-MAR
										JUL-NOV
	Atlantic sturgeon	EEP.	A PRESENT	ххх	XXXXXX	-	-	-	JUL-MAR	MAR-MAR
418	Atlantic sturgeon	EED	E PRESENT	ххххх	X X X X X X X	-	-	-	JAN-DEC	MAR-NOV
	Atlantic sturgeon	EEN	J PRESENT	ххххх	X X X X X X X	-	-	-	JAN-DEC	MAR-NOV
навт	ጥልጥ•									
PAR#	Species	5 8 5	T Conc	.т е м а м						
175	Endangered plant	E N	Ţ	ххххх	X X X X X X X					
178	Rare plant		-	X X X X X	X X X X X X X X					
292	Endangered plant	EN	т	XXXXX						
293	Sensitive Joint-vetch	EIN	J	XXXXXX						
366	Eelgrass (water celery)			ххххх	X X X X X X X					
367	Eelgrass (water celery)			X X X X X	X X X X X X X X					
368	Submerged aquatic vegetation			* * * * * *	* * * * * * * *					
INVE	RTEBRATE:									
RAR#	Species	SFS	r Conc.	JFMAM	JJASOND	Spawning	Eggs	Larvae	Juveniles	Adults
362	Plue crab		LOW							TUN_NOV
363	Blue crab		LOW	ххххх	XXXXXXXX	_	-	_	JAN-DEC	JAN-DEC
MART										
MARL	NE MAMMAL:					No. 4 day	G - 1	D	No. 1 + 4	
RAR#	species	SFS	r conc.	JFMAM	JJASOND	Mating	Calving	Pupping	MOITING	
170	Gray seal		OCCASIONAL	ххххх	ХХ	-	_	-	-	
	Harbor seal		COMMON	хххх	ХХ	-	-	-	-	
	Harp seal		OCCASIONAL	X X X X X	XX	_	-	-	-	
	HOODED SEAL		VERY RARE		X X				-	
нима	N USE RESOURCES:									
AIRP	ORT:									
HUN#	Name		Contact				Phone	e		
14	BRIDGEPORT-CAHILL FIELD									
39	SPITFIRE AERODROME									
BOAT	RAMP:									
	 Name		Contact				Phone	-		
88	FLOWER STREET- CHESTER CITY BOAT R	AMP	CITY OF CHI	ESTER						
MANA	GEMENT AREA:									
нттм#	Name		Contact				Phone	-		

298 **PARK:**

GAME BRANCH

HUN#	Name	Contact	Phone
565 579	BELLEVUE STATE PARK FOX POINT STATE PARK	DELAWARE STATE PARKS DELAWARE STATE PARKS	
WATER	INTAKE:		
HUN#	Name	Contact	Phone
659 666 667 669 671 684	CLAYMONT STEEL, INC. DUPONT EDGEMOOR PLANT FPL ENERGY GENERAL CHEMICAL LOGAN GENERATING CORP. SUNOCO INC (R&M)		

Biological information shown on the maps represents known concentration areas or occurrences, but does not necessarily represent the full distribution or range of each species. DNREC, NJDEP ENSP, and PGC provided information for some of the federally and state listed species and species of conservation concern for display in the ESI atlas and accompanying digital data in 2013-2014. These data represent existing information known to these agencies at the time of the request and should never be substituted for consultation with these agencies. This atlas was developed using NJDEP GIS digital data for archaeological and historic sites, but this secondary product has not been verified by NJDEP and is not state-authorized. Archaeological and historical site information for Delaware was provided by DE Division of Historical and Cultural Affairs.

NJ DEPT OF NATURAL LANDS TRUST

ENVIRONMENTAL SENSITIVITY INDEX MAP









Delaware/New Jersey/Pennsylvania: ESIMAP 19

BIOLOGICAL RESOURCES:

BIRD:

RAR#	Species	SF	ST	Conc.	JF	ма	мј	JJ	A S	ΟΝΟ	Nesting	Migrati	ng	Molting
111	Endangered raptor 2		N.T		 v v	 v v			 v v					
TTT	Endangered raptor 2	T	PA		XX	ХХ	. <u> </u>	XX	XX	XXX	JAN-JUL	_		_
247	American bittern	E	PA	COMMON	ХХ	ХХ	ХХ	ХΧ	ХХ	XXX	MAY-AUG	-		-
	American black duck			ABUNDANT	ХХ	ХХ	ХХ	ХΧ	ΧХ	ххх	APR-JUN	FEB-APR	OCT-DEC	-
	American coot			COMMON	ХХ	ХХ	ХХ	ХΧ	ХХ	ххх	APR-JUN	-		-
	American woodcock	-		COMMON	ХХ	XX	ХХ	X 2	ХХ	XXX	MAR-JUN	-		-
	Bald eagle	Т	PA	UNCOMMON	XX	XX	. X X		XX	XXX	FEB-APR	-		-
	Black tern	E	Þ۵	OCCASIONAL	A A	лл	 	x x	XX	A A A	JAN-DEC	-		_
	Black-bellied plover		111	COMMON		Х	XX	XX	XX	х	_	MAY-OCT		-
	Black-crowned night-heron	Е	PA	ABUNDANT	ХХ	ХХ	XX	ХΧ	ХХ	ХХХ	APR-JUL	MAR-APR	JUL-DEC	-
	Blackpoll warbler	Е	PA	COMMON			ХХ	ζ	ХХ	Х	-	MAY-JUN	AUG-OCT	-
	Blue-winged teal			COMMON		ХХ	ХХ	ХΧ	ХХ	ххх	MAY-JUN	MAR-MAY	AUG-OCT	-
	Canada goose			ABUNDANT	ХХ	ХХ	ХХ	ХΧ	ХХ	ххх	APR-JUL	FEB-APR	SEP-NOV	-
	Common moorhen			UNCOMMON		ХХ	X X	X	ХХ	X	MAY-SEP	-		-
	Common snipe		7 7	COMMON	ХХ	XX	X	X	XX	XXX	-	MAR-MAY	JUL-NOV	-
	Double-greated cormorant	L	PA	COMMON	v	v v	. A A V V		X X V V	A X X X	_	MAR-MAY	AUG-SEP	_
	Forster's tern			COMMON	Α	X	. <u> </u>	X X	ХХ	ХХ	_	APR-MAY	JUL-OCT	_
	Great blue heron			COMMON	хх	хх	ХХ	ΧX	ХХ	ххх	-	MAR-MAY		-
	Great egret	Е	PA	ABUNDANT		ХХ	ХХ	ХΧ	ХХ	ХХХ	APR-JUL	MAR-MAY	JUL-DEC	-
	Greater scaup			COMMON	ХХ	ХХ		Х	ХХ	ххх	-	NOV-APR		-
	Greater yellowlegs			COMMON		ХХ	Х	Х	ХХ	ХХ	-	MAR-MAY	JUL-NOV	-
	Green heron					XX	XX	(X	XX	X	-	-	ALLO MOLT	-
	Green-Winged teal			COMMON ABUNDANI.	ХХ vv	XX	. X X	X	ХХ vv	XXX	JUL-AUG	мак-МАҮ	AUG-NOV	_
	Hooded merganser			OCCASTONAL.	л Л X X	л Х X V	 	x x	л Л X X	A A A X X X		- MAR-ADP	OCT-JAN	_
	Killdeer			ABUNDANT	XX	x x	. <u>.</u>		XX	XXX	APR-ITIN	FEB-MAR	AUG-NOV	_
	King rail	Е	PA	OCCASIONAL		XX	XX	XX	XX	XX	MAY-AUG			-
	Laughing gull			COMMON		ХХ	ХХ	ΧХ	ХХ	ххх	-	APR-MAY	AUG-OCT	-
	Least bittern	Е	PA	COMMON		Х	ХХ	ХΧ	ХХ	Х	MAY-AUG	-		-
	Little blue heron			COMMON		Х	ХХ	ХΧ	ХХ		-	-		-
	Loggerhead shrike	Е	PA	RARE		XX		,	ХХ	XXX	-	MAR-APR	AUG-SEP	-
	Mallard			ABUNDANT	XX	XX			XX	XXX	APR-AUG	FEB-MAY	SEP-DEC	-
	Marsh wren	Ŧ	۸C	COMMON	XX	X X V V	. X X . V V	X	XX	XXX	MAY-AUG	- 00T-EED		_
	Northern pintail	T	PA	COMMON	XX	XX	 	XX	XX	XXX	MAY-JUN	FEB-APR	SEP-DEC	_
	Northern shoveler			COMMON	XX	XX		ζ	X	XXX	MAY-JUN	MAR-APR	SEP-NOV	_
	Osprey	Т	PA	OCCASIONAL		ХХ	ХХ	XX	ХХ	ХХ	-	MAR-MAY	AUG-OCT	-
	Peregrine falcon	Е	PA	RARE	ХХ	хх	хх	ΧХ	ХХ	ххх	-	-		-
	Pied-billed grebe			COMMON	ХХ	хх	ХХ	ХΧ	ХХ	ххх	MAY-AUG	MAR-MAY	AUG-AUG	_
	Piping plover	ΕE	PA	RARE		Х	ХХ	ХΧ	ХХ	Х	-	-		-
	Ring-billed gull			COMMON	ХХ	ХХ	ХХ	ХΧ	ХХ	ХХХ	-	OCT-MAR		-
	Ruddy duck	-		COMMON	ХХ	XX		, .,	37 37	XXX	-	MAR-APR	OCT-NOV	-
	Sedge wren	E	PA	COMMON		X	. X X · V V	X	XX	X	JUN-AUG			-
	Semipalmated sandpiper			COMMON		X	· x x	x x	XX	x	_	APR-OCT		_
	Short-eared owl	Е	PA	OCCASIONAL	хх	XX		1 21	21 21	XXX	_	MAR-APR	OCT-NOV	_
	Snowy egret			ABUNDANT		ХХ	хх	ΧХ	ХХ	ХХ	APR-AUG	MAR-MAY	JUL-SEP	-
	Solitary sandpiper			COMMON		Х	Х	Х	ХХ	Х	-	APR-MAY	JUL-OCT	-
	Sora			OCCASIONAL		хх	ХХ	ХΧ	ХХ	Х	MAY-JUL	-		-
	Spotted sandpiper			COMMON		Х	ХХ	ХΧ	ХХ	Х	MAY-JUN	APR-MAY	JUL-OCT	-
	Swamp sparrow	_			ХХ	ХХ	XX	(X	XX	ххх	MAY-JUL	-		-
	Upland sandpiper	E	PA	CCASTONAL		X V V	. X X · V V	X	XX	v		APR-MAY	JUL-SEP	-
	Wood duck			ABUNDANT	хх	x x	 	x x	x x	x x x	APR-JUN	MAR-APR	SEP-NOV	_
	Yellow-bellied flycatcher	Е	PA	UNCOMMON	21 21	21 21	X X	ζ 21	XX	X	-	MAY-JUN	AUG-OCT	-
	Yellow-crowned night-heron	E	PA	RARE		Х	ХХ	x X	ХХ		-	-		-
317	Threatened raptor	Т	NJ			ХХ	хх	ХΧ	х х	Х	APR-AUG	SEP-OCT		-
330	Peregrine falcon	Е	PA	1 NEST	ХХ	ХХ	ХХ	ХΧ	ХХ	ХХХ	FEB-JUL	MAR-MAY		-
441	Bufflehead			10S	ХХ	ХХ	Х			ххх	-	MAR-APR	OCT-DEC	-
	Canada goose			10005	XX	XX	. X X	ΥX	ХХ	XXX	-	MAR-APR	SEP-NOV	-
	Canvasback			1005 1005	X X V V	л X v v	. X. . V			X X V V	_	MAR-APR	NOV-DEC	_
	Hooded merganser			105	л Х X V	л X X				A A X X V	_	FER-MAP	OGL-DEC	_
	Red-breasted merganser			105	XX	x x				XXX	_	MAR-APR	OCT-DEC	_
	Ring-necked duck			100S	хx	хх				XXX	-	MAR-APR	OCT-DEC	_
	Ruddy duck			100S	хх	хх				ххх	-	MAR-APR	OCT-NOV	-
	Scaup			100S	ХХ	хх				ххх	-	MAR-APR	OCT-DEC	-
	Snow goose			1000S	ХХ	хх	Х		Х	ххх	-	FEB-MAY	SEP-OCT	-
442	American black duck			1000S	ХХ	хх	ХХ	ХХ	ХХ	ххх	APR-JUN	APR-APR	SEP-DEC	-
	American coot			1005	XX	XX	X		XX	XXX	-	FEB-MAR	SEP-NOV	-
	American wigeon			1005	XX	XX	. X		ХХ	XXX	-	MAR-APR	AUG-NOV	-
	Canada goose			10005	л Л X X	л Х Х У	. <u>^</u> . X V	(y	хv	A A A X X X	_	MAR-APR	SEP-NOV	_
	Canvasback			100S	XX	XX	X	. ^	21 A	XX	_	MAR-APR	NOV-DEC	_
	Common goldeneve			10S	XX	XX	x			XX	-	MAR-APR	NOV-DEC	-
	Common merganser			100S	ХХ	хх				хх	-	FEB-MAR	NOV-DEC	-
	Gadwall			100S	ХХ	хх	хх	хх	х х	ххх	MAY-JUL	MAR-APR	OCT-NOV	-
	Green-winged teal			100S	ХХ	ХХ	Х		х х	ххх	-	FEB-MAR	SEP-NOV	-
	Hooded merganser			10S	ХХ	Х		_		ххх	-	FEB-MAR	OCT-DEC	-
	Mallard			10005	XX	XX	ХХ	(X	ХХ	XXX	MAR-JUN	-		-
	Mute swan			100g	XX	XX	. Х Х	X	XX	XXX	-	- 		-
	Northern shoveler			105	л Х X V	л X у V	x		л Х V	A A A X X V	_	NAB-9DD WAB-9DD	AUG-SEP SEP-ACT	_
	Red-breasted merganser			10S	XX	XX	. <u>.</u> .		Δ	XXX	_	MAR-APR	OCT-DEC	-
	Ring-necked duck			100S	ХХ	хх				ххх	-	MAR-APR	OCT-DEC	-
	Ruddy duck			100S	ХХ	хх				ххх	-	MAR-APR	OCT-NOV	-

	Scaup	100S	ХХ	Х	Х	ХХ	X	-	MAR-APR	OCT	-DEC	-
	Snow goose	1000S	ΧХ	Х	ХХ	ххх	Х	-	FEB-MAY	SEP	'-OCT	-
	Tundra swan	100S	ХХ	Х	Х	ХХ	ХХ	-	FEB-APR	OCT	-NOV	-
443	Bufflehead	10S	ХХ	Х	ХХ	ХХ	ХХ	-	MAR-APR	OCT	-DEC	-
	Canada goose	10000S	ХХ	Х	ххххх	ххх	ХХ	-	MAR-APR	SEP	'-NOV	-
	Canvasback	100S	ХХ	Х	ХХ	Х	Х	-	MAR-APR	NOV	-DEC	-
	Common goldeneye	10S	ХХ	Х	ХХ	Х	ХХ	-	MAR-APR	NOV	-DEC	-
	Red-breasted merganser	10S	ХХ	Х	Х	ХХ	ХХ	-	MAR-APR	OCT	-DEC	-
	Ring-necked duck	10S	ХХ	Х	Х	ХХ	ХХ	-	MAR-APR	OCT	-DEC	-
	Ruddy duck	10S	ХХ	Х	Х	ХХ	ХХ	-	MAR-APR	OCT	-NOV	-
	Scaup	100S	ХХ	Х	Х	ХХ	Х	-	MAR-APR	OCT	-DEC	-
457	Bufflehead	100S	ХХ	Х	ххх	ХХ	Х	-	MAR-MAY	OCT	-DEC	-
	Canada goose	100S	ХХ	Х	ххххх	ххх	ХХ	APR-JUL	FEB-APR	SEP	'-NOV	-
	Canvasback	100S	ХХ	Х	ХХ	ххх	ХХ	-	FEB-APR	SEP	'-NOV	-
	Common goldeneye	10S	ХХ	Х	ХХ	ХХ	ХХ	-	FEB-APR	NOV	-DEC	-
	Long-tailed duck	10S	хх	Х	Х	ХХ	Х	-	FEB-APR	OCT	'-NOV	-

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Delaware/New Jersey/Pennsylvania: ESIMAP 19 (cont.)

BIOLOGICAL RESOURCES: (cont.)

BIRD: (cont.)

DIKD	. (conc.)										
RAR#	Species	S F ST	Conc.	JFMAM	JJAS	OND	Nesting	Migrating	J	Molting	
457	Mergansers		100S	ххххх	хххх	ХХХ	APR-JUN	FEB-APR (OCT-DEC	-	
	Northern shoveler		10S	XXXXX	. X X	ххх	-	MAR-APR A	AUG-NOV	-	
	Ruddy duck		1000S	XXXXX	X X	ххх	-	MAR-APR (OCT-NOV	-	
	Scaup		1005	хххх		ххх	-	MAR-APR (JCT-DEC	-	
458	American black duck		10005	X X X X X		XXX	APR-JUN	FEB-APR (JCT-DEC	-	
	Butflehead		1005	X X X X X	X	XXX	-	MAR-MAY (DCT-DEC	-	
	Canada goose		100S	XXXXX		ххх	APR-JUL	FEB-APR S	SEP-NOV	-	
	Canvasback		100S	XXXXX	X	ххх	-	FEB-APR S	SEP-NOV	-	
	Common goldeneye		105	XXXXX		ххх	-	FEB-APR I	NOV-DEC	-	
	Green-winged teal		100S	XXXXX	. X X	ххх	-	MAR-MAY A	AUG-NOV	-	
	Long-tailed duck		10S	хххх		ххх	-	FEB-APR (OCT-NOV	-	
	Mallard		1000S	XXXXX		ххх	APR-AUG	FEB-MAY S	SEP-DEC	-	
	Mergansers		100S	XXXXX		ххх	APR-JUN	FEB-APR (OCT-DEC	-	
	Northern pintail		100S	ххххх	X	ххх	-	FEB-APR S	SEP-DEC	-	
	Northern shoveler		10S	XXXXX	. X X	ххх	-	MAR-APR A	AUG-NOV	-	
	Ruddy duck		1000S	ххххх	х х	ХХХ	-	MAR-APR (OCT-NOV	-	
	Scaup		100S	хххх		ххх	-	MAR-APR (OCT-DEC	-	
	Tundra swan		100S	хххх		ххх	-	FEB-APR (OCT-DEC	-	
FISH	•										
	•		_				_	_	_		
RAR#	Species	SFST	Conc.	JFMAM	JJAS	OND	Spawning	Eggs	Larvae	Juveniles	Adults
99	Alewife		HIGH SPAWNING	ххххх	хххх	ХХХ	MAR-MAY	MAR-MAY	APR-JUN	JAN-DEC	MAR-JUN
	American eel		PRESENT	ххххх	хххх	ХХХ	-	-	DEC-APR	JAN-DEC	JAN-DEC
	American shad		HIGH SPAWNING	ХХХ	хххх	ХХ	MAR-JUN	APR-JUN	MAY-JUL	JUN-NOV	MAR-JUN
											OCT-NOV
	Blueback herring		HIGH SPAWNING	ххххх	хххх	ххх	MAR-JUN	MAR-JUN	MAY-JUL	JAN-DEC	MAR-JUN
											OCT-NOV
100	Alewife		HIGH SPAWNING	ххххх	хххх	ххх	MAR-MAY	MAR-MAY	APR-JUN	JAN-DEC	MAR-JUN
	American eel		PRESENT	ххххх	хххх	ххх	-	-	DEC-APR	JAN-DEC	JAN-DEC
	Blueback herring		HIGH SPAWNING	ххххх	хххх	ХХХ	MAR-JUN	MAR-JUN	MAY-JUL	JAN-DEC	MAR-JUN
											OCT-NOV
248	Alewife		PRESENT	ххххх	хххх	ХХХ	MAR-MAY	MAR-MAY	APR-JUN	JAN-DEC	MAR-JUN
	American eel		PRESENT	ххххх	хххх	ХХХ	-	-	DEC-APR	JAN-DEC	JAN-DEC
	Atlantic croaker		PRESENT		хххх	ХХ	-	-	-	JUL-OCT	JUN-NOV
	Atlantic menhaden		PRESENT		ххх		-	-	-	JUN-JUL	JUN-AUG
	Blueback herring		PRESENT	ххххх	хххх	ХХХ	MAR-JUN	MAR-JUN	MAY-JUL	JAN-DEC	MAR-JUN
											OCT-NOV
	Channel catfish		PRESENT	ххххх	хххх	ххх	-	-	-	JUN-OCT	JAN-DEC
	Gizzard shad		PRESENT		хххх	ХХ	-	-	-	JUN-OCT	JUL-NOV
	Hickory shad		PRESENT	ххххх	хххх	ххх	MAR-JUN	MAR-JUN	MAR-JUN	JAN-DEC	MAR-JUN
	-										OCT-NOV
	Hickory shad	E PA	PRESENT	ххххх	. x x x x	ХХХ	MAR-JUN	MAR-JUN	MAR-JUN	JAN-DEC	MAR-JUN
	-										OCT-NOV
	Largemouth bass		PRESENT	ХХ	. x x x x	хх	APR-MAY	APR-MAY	APR-MAY	MAY-JUL	APR-NOV
	Smallmouth bass		PRESENT	ххххх	. x x x x	ххх	-	-	-	-	_
	Spot		PRESENT		ххх		-	-	-	JUL-SEP	JUL-SEP
	Striped bass		PRESENT	ххххх	. x x x x	ххх	-	APR-JUN	APR-JUL	JAN-DEC	MAR-DEC
	White perch		PRESENT	ххххх	. x x x x	ххх	MAR-JUN	MAR-JUN	APR-JUL	JAN-DEC	JAN-DEC
	Yellow perch		PRESENT		хххх	Х	-	-	-	JUN-AUG	JUN-OCT
362	Alewife		HIGH SPAWNING	ХХХ	хххх	Х	MAR-MAY	MAR-MAY	APR-JUN	JUN-AUG	MAR-OCT
	American eel		LOW	ххххх	хххх	ххх	-	-	DEC-APR	JAN-DEC	JAN-DEC
	American shad		HIGH SPAWNING	ХХХ	хххх	ХХ	MAR-JUN	APR-JUN	MAY-JUL	JUN-NOV	MAR-NOV
	Atlantic croaker		MED		хххх	ХХ	-	-	-	JUL-OCT	JUN-NOV
	Atlantic menhaden		HIGH		ХХХ		-	-	-	JUN-JUL	JUN-AUG
	Bay anchovy		MED		ХХ	ХХ	-	-	-	AUG-OCT	AUG-NOV
	Blueback herring		HIGH	ХХХ	хххх	ХХ	MAR-JUN	MAR-JUN	MAR-JUN	JUN-NOV	MAR-NOV
	Channel catfish		PRESENT		хххх	ХХ	-	-	-	JUL-SEP	JUN-NOV
	Gizzard shad		LOW		хххх	ХХ	-	-	-	JUN-OCT	JUL-NOV
	Hickory shad		LOW	ХХХ	Х		MAR-JUN	MAR-JUN	MAR-JUN	-	MAR-JUN
	Hickory shad	E PA	LOW	ХХХ	Х		MAR-JUN	MAR-JUN	MAR-JUN	-	MAR-JUN
	Spot		HIGH SPRING		ХХХ		-	-	-	JUL-SEP	JUL-SEP
	Striped bass		HIGH SPAWNING	ххххх	хххх	ххх	APR-JUN	APR-JUN	APR-JUL	JAN-DEC	APR-NOV
	White perch		HIGH	ххххх	хххх	ХХХ	MAR-JUN	MAR-JUN	APR-JUL	JAN-DEC	JAN-DEC
	Yellow perch		LOW		хххх	Х	-	-	-	JUN-AUG	JUN-OCT
407	Shortnose sturgeon	E E NJ	MED	XX	хххх	Х	-	-	-	APR-OCT	APR-OCT
	Shortnose sturgeon	E E PA	MED	ХХ	хххх	Х	-	-	-	APR-OCT	APR-OCT
408	Shortnose sturgeon	E E NJ	HIGH	ХХХ		ХХ	-	-	-	NOV-MAR	-
	Shortnose sturgeon	E E PA	HIGH	ХХХ		ХХ	-	-	-	NOV-MAR	-
412	Atlantic sturgeon	E E NJ	HIGH	ХХ	X		APR-JUN	APR-JUN	MAY-JUN	APR-JUN	APR-JUN
	Atlantic sturgeon	E E PA	HIGH	ХХ	X		APR-JUN	APR-JUN	MAY-JUN	APR-JUN	APR-JUN
416	Atlantic sturgeon	E E NJ	HIGH YOY	ххххх	хххх	ХХХ	APR-JUN	APR-JUN	MAY-JUN	JAN-DEC	MAR-NOV
	Atlantic sturgeon	E E PA	HIGH YOY	ххххх	хххх	ХХХ	APR-JUN	APR-JUN	MAY-JUN	JAN-DEC	MAR-NOV
417	Atlantic sturgeon	E E NJ	PRESENT	ххх	ХХХ	ХХХ	-	-	-	JUL-MAR	MAR-MAR
											JUL-NOV
	Atlantic sturgeon	ЕЕРА	PRESENT	ххх	ХХХ	ХХХ	-	-	-	JUL-MAR	MAR-MAR
											JUL-NOV
HABI	FAT:										

RAR#	Species	SF	ST	Conc.	J	F	М	А	М	J	J	А	s	0 1	NI	D
					-	-	-	-	-	-	-	-	-	-		-
175	Endangered plant	Ε	NJ		Χ	Х	Х	Х	Х	Х	Х	Х	Х	X	XX	X
247	Field dodder	Т	PA		Χ	Х	Х	Х	Х	Х	Х	Х	Х	X	ХХ	X
	Forked rush	Е	PA		Х	Х	Х	Х	Х	Х	Х	Х	Х	X	XX	X
	Walter's barnyard grass	Е	PA		Х	Х	Х	Х	Х	Х	Х	Х	Х	X	XX	X
294	Endangered plant	Е	NJ		Х	Х	Х	Х	Х	Х	Х	Х	Х	X	XX	X
	Swamp-pink	ΕТ	NJ		Χ	Х	Х	Х	Х	Х	Х	Х	Х	X	XX	X

298	Swamp-pink	ETNJ	Х	Х	Х	Х	Х	Х	Х	Х	Х	X X	ΧХ
366	Eelgrass (water celery)		Х	Х	Х	Х	Х	Х	Х	Х	Х	Χž	ΧХ
368	Submerged aquatic vegetation		Х	Х	Х	Х	Х	Х	Х	Х	Х	XX	ΧХ
371	Submerged aquatic vegetation		Х	Х	Х	Х	Х	Х	Х	Х	Х	Χž	ΧХ

INVERTEBRATE:

RAR#	Species	SFS	f Conc.	JFM	AMJ	JAS	SOND	Spawning	Eggs	Larvae	Juveniles	Adul	lts
283	Eastern elliptio		COMMON	XXXX	ххх	ХХХ	ΧХХХ	-	-	-	JAN-DEC	JAN-	-DEC
	Eastern floater		COMMON	хххх	ххх	ХХХ	хххх	-	-	-	JAN-DEC	JAN-	-DEC
362	Blue crab		LOW		Х	ххх	ххх	-	-	-	JUN-OCT	JUN-	-NOV
REPT	ILE:												
RAR#	Species	SFS	[Conc.	JFM	АМЈ	JAS	BOND	Nesting	Hatching	Internest	ing Juvenil	les	Adults
247	Eastern redbelly turtle	T PA	A UNCOMMON	XXXX	ххх	XXX	ХХХХ	JUN-JUL	-	-	-		-
	Southern leopard frog	E PA	A COMMON	XXXX	ххх	ХХХ	ХХХХ	MAR-JUN	-	-	-		-

Biological information shown on the maps represents known concentration areas or occurrences, but does not necessarily represent the full distribution or range of each species. DNREC, NJDEP ENSP, and PGC provided information for some of the federally and state listed species and species of conservation concern for display in the ESI atlas and accompanying digital data in 2013-2014. These data represent existing information known to these agencies at the time of the request and should never be substituted for consultation with these agencies. This atlas was developed using NJDEP GIS digital data for archaeological and historic sites, but this secondary product has not been verified by NJDEP and is not state-authorized. Archaeological and historical site information for Delaware was provided by DE Division of Historical and Cultural Affairs.

Delaware/New Jersey/Pennsylvania: ESIMAP 19 (cont.)

Contact

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NJ DIV OF FISH AND WILDLIFE

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HUN#	Name	

123 RIDLEY TOWNSHIP MARINA

HELIPORT:

HUN# Name

168 BOEING HELICOPTERS CENTER 3 SOUTH

JOHN HEINZ NTL WILDLIFE REFUGE TINICUM

181 CROZER-CHESTER207 PIAC

MANAGEMENT AREA:

HUN# Name

316	LOGAN POND WMA

339	NEHONSEY	BROOK	PRESERVE
000	1.21101.021	Dittooit	11000100

MARINA:

691

HUN#	Name	Contact
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