

Environment

Submitted on behalf of The Chemours Company

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Ramapo-Pompton River Sediment Investigation Report Pompton Lakes Works PI# 907411 Pompton Lakes, New Jersey

July 2015 18986635

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# **Acronym List**

Acronym	Explanation
ADQM	Analytical Data Quality Management
COC	Chain of custody
CSM	Conceptual site model
DDR	DuPont Data Review
EPA	Environmental Protection Agency
GIS	Geographic information system
GPS	Global positioning system
LCS/LCSD	Laboratory control sample/laboratory control sample duplicate
mm	Millimeter
MS/MSD	Matrix spike/matrix spike duplicate
MUA	Municipal Utility Authority
NJDEP	New Jersey Department of Environmental Protection
NJPDES	New Jersey Pollution Discharge Elimination System
PLW	Pompton Lakes Works
PVWC	Passaic Valley Water Commission
RCRA	Resource Conservation and Recovery Act
REP	Laboratory replicate
RPD	Relative percent difference
RPR	Relative percent recovery
THg	Total mercury
TOC	Total organic carbon



## **Executive Summary**

This report presents the results of sediment investigations conducted on the Ramapo River and Pompton River downstream of the Pompton Lake Dam located near Pompton Lakes, New Jersey (Passaic County and Morris County; see Figure 1). The overall purpose of these investigations was to characterize mercury concentrations and other physical sediment characteristics to support the conceptual site model regarding the potential downstream transport of mercury from Pompton Lake.

The spatial scope of sediment investigations included approximately three miles of the Ramapo River and Pompton River downstream of the Pompton Lake Dam, extending from Hamburg Turnpike to Riverside Park (see Figure 1). Specific objectives of the sediment investigations on the Ramapo River and Pompton River downstream of the Pompton Lake Dam were to:

- Create a contiguous geospatial database of substrate composition to identify areas of fine-grained sediment (silts, clays, and fine sands) deposition; and
- Characterize total mercury (THg) concentrations and other physical sediment characteristics, with sampling biased to mapped areas of fine-grained sediment deposition.

Substrate mapping and visual bank surveys were conducted to identify and document existing riverbed and bank conditions. Riverbed substrates were classified into one of six types based on the predominant particle diameter. The locations of outfalls within the study area were also noted to identify other potential sources of mercury to the Ramapo River and Pompton River. Following the field mapping of riverbed substrates, geospatial data and associated observations were post-processed and integrated into a geographic information system (GIS) platform to produce contiguous geospatial mapping of the riverbed substrate types.

Based on the observed spatial distribution of substrate types within the three-mile study area, a sediment sampling program was designed to characterize THg concentrations in representative sediment depositional areas downstream of Pompton Lake. The selection of sediment sampling stations was biased to areas of fine-grained deposits identified during the substrate mapping survey based on the association of mercury with fine-grained sediment particles. Therefore, the resulting dataset represents a conservative characterization of THg concentrations in sediment within the study area.

Sediment samples were collected from cores advanced to refusal and sectioned at the following sampling intervals within the recovered core:

- 0 to 0.5-foot
- 0.5-foot to a maximum of 1.0 foot, depending on the depth of recovery
- 1.5-foot intervals thereafter (e.g., 1.0 to 2.5 feet) to the depth of recovery

The results of substrate mapping and sediment characterization sampling investigations support the following findings:

 Results of the substrate mapping survey indicate that fine-grained sediment deposits represented a relatively minor component (8.2 percent) of overall habitat availability within the surveyed areas; substrates with predominantly silt and clay size fractions represented only 5.4 percent of the mapped study area.

- Field survey observations and a database review identified current and historical outfalls, which may represent potential sources of mercury to the Ramapo River downstream of the Pompton Lake Dam.
- Consistent with previous investigations, the results of characterization sampling biased to areas of fine-grained sediment deposition indicate relatively low THg concentrations:
  - THg concentrations in the surficial sampling interval (0 to 0.5-foot) were less than 1 mg/kg in 25 of 34 samples, with all but one sample containing less than 5 mg/kg.
  - The geometric mean THg concentration in samples from the 0 to 0.5-foot sampling interval was 0.58 mg/kg.
  - The maximum concentration of 23.5 mg/kg in the surface interval was measured in a spatially-limited (approximately 0.06 acres) fine-grained sediment deposit and was not consistent with THg concentrations observed in surface samples from other fine-grained deposits within the study area.
- Surficial samples with greater THg concentrations were associated with greater concentrations of total organic carbon (TOC) and percent silt/clay-sized particles (grain size less than 0.063 mm); samples with THg concentrations greater than 1 mg/kg contained greater than 1.5 percent TOC and greater than 25 percent silt/clays.
- Given that the results of the substrate mapping survey indicate that silts/clays are the predominant substrate type in only 5.4 percent of surveyed areas, sediment deposits with surficial THg concentrations exceeding 1 mg/kg are likely spatiallylimited.
- Vertical characterization of THg concentrations in sediment cores generally indicated decreasing THg concentrations with increasing sampling depth.

The results of substrate mapping and sediment characterization sampling, which was biased to fine-grained sediment deposits in the Ramapo River and Pompton River downstream of the Pompton Lake Dam, indicate a limited distribution of fine-grain sediment depositional areas within the 3-mile study area. The general association between THg concentration with TOC and fine-grain sediment, and the characterization mapping of the substrate indicates that the distribution of mercury in the sediment is not widespread.

# 1.0 Introduction

This report presents the results of sediment investigations conducted on the Ramapo River and Pompton River downstream of the Pompton Lake Dam located near Pompton Lakes, New Jersey (Passaic County and Morris County; see Figure 1). The overall purpose of these investigations was to characterize mercury concentrations and other physical sediment characteristics to support the conceptual site model (CSM) regarding the potential downstream transport of mercury from Pompton Lake.

Environmental investigations are being conducted to confirm or further refine the CSM identifying the source(s), fate, and transport of mercury in Pompton Lake and portions of the Ramapo River and Pompton River downstream of the Pompton Lake Dam. As part of the Corrective Action program under the Resource Conservation and Recovery Act (RCRA), numerous environmental investigations have been conducted to characterize the nature and extent of site-related constituents attributed to the Pompton Lakes Works (PLW) facility. As part of the RCRA Corrective Action program, the U.S. Environmental Protection Agency (EPA) requested additional sediment sampling in the Ramapo River and Pompton River downstream of Pompton Lake to evaluate the potential downstream transport of mercury (EPA, 2012).

Sediment investigations in the Ramapo River and Pompton River were conducted in a phased approach. To support the development of a sediment sampling plan for the downstream area, a riverbed substrate mapping survey was conducted in August 2013 to identify and map depositional areas that have accumulated fine-grained sediments (silts/clays and fine sands). Based on the substrate mapping information, sampling stations were located in identified fine-grained sediment deposits for mercury characterization. Fine-grained sediment deposits were the focus of the analytical sampling program due to the association of mercury with fine-grained sediment particles.

The findings of the substrate mapping survey and a proposed sampling plan to characterize mercury concentrations in sediment were presented in the *Ramapo River and Pompton River Substrate Characterization Technical Memorandum* (Substrate Characterization Technical Memorandum) that was submitted to EPA in January 2014 (URS, 2014a). The sampling plan was refined based on comments on the Substrate Characterization Technical Memorandum received from EPA and the New Jersey Department of Environmental Protection (NJDEP) on June 20, 2014. The revised sampling plan was implemented in July 2014.

This report presents the findings of the substrate mapping and the analytical characterization of mercury in fine-grained sediment deposits in the Ramapo River and Pompton River downstream of the Pompton Lake Dam.

#### 1.1 Objectives and Scope

Specific objectives of the sediment investigations on the Ramapo River and Pompton River downstream of the Pompton Lake Dam were to:

- Create a contiguous geospatial database of substrate composition to identify areas of fine-grained sediment deposition; and
- Characterize total mercury (THg) concentrations and other physical sediment characteristics, with sampling biased to mapped areas of fine-grained sediment deposition.

The spatial scope of sediment investigations included approximately three miles of the Ramapo River and Pompton River downstream of the Pompton Lake Dam, extending from Hamburg Turnpike to Riverside Park (see Figure 1). Detailed maps of study area reaches are provided in Figures 2 through 12. Due to access issues, substrate mapping and/or analytical sediment sampling was not conducted within the following reaches in the overall study area:

- Between the Hamburg Turnpike Bridge and the Pompton Lake Dam: Substrate mapping and sediment sampling were not conducted due to restricted access and safety concerns associated with high water velocity discharging from the Pompton Lake Dam;
- Between the Pompton Dam and the Passaic Valley Water Commission (PVWC) Dam: Substrate mapping and sediment sampling were not conducted due to restricted access at the 12-acre Top Soil Depot Site. This site has been an ongoing subject of legal action by the NJDEP (NJDEP, 2010) and is not accessible without permission from the court or NJDEP, pending cleanup (Petrick, 2012); and
- Upstream of the Pompton Dam and Pequannock Dam: Substrate mapping was not conducted within 150 feet of the Pompton Dam and Pequannock Dam; due to safety concerns associated with low-head dams. However, two sediment stations were sampled upstream of each dam using a modified safety approach developed specifically to access these areas.

#### **1.2 Report Organization**

The report is organized into the following sections:

- Section 2.0 provides background information for the investigation.
- Section 3.0 presents the methods and findings of the substrate mapping survey.
- Section 4.0 presents the methods and findings of sediment characterization sampling.
- Section 5.0 summarizes the findings of the investigation.
- Section 6.0 lists the references cited in the report.

# 2.0 Investigation Background

The following sections provide background information on the study area.

#### 2.1 Hydrologic Setting

Within the study area, the Ramapo River flows from the Pompton Lake Dam to its confluence with the Pequannock River between the Pompton and PVWC Dams to form the Pompton River (see Figure 1). Northeast of Aquatic Park, the Ramapo River braids, with a branch flowing to the west-southwest to the Pequannock Dam and the main channel continuing to flow south. During high flow conditions, the Ramapo River branch that flows west-southwest to the Pequannock Dam may represent a transport pathway for sediments from the Ramapo River below the Pompton Lake Dam. Downstream of the study area, the Pompton River discharges to the Passaic River, which flows to Newark Bay.

#### 2.2 Previous Sediment Characterizations

Several sediment samples were collected as a part of a Feasibility Study for the removal of the Pequannock and Pompton Dams (Civil Dynamics, 2012). This study was conducted by Civil Dynamics for the State of New Jersey Division of Property Management and Construction. Sediment samples were collected for analytical or physical characterizations in 2004, 2011, and 2012, as summarized below.

Seven samples were collected for physical characterization of the substrate in the Ramapo River within the current survey area extending from just below the Pompton Lake Dam to just above the Pompton Dam (see Figure 1; Civil Dynamics, 2012). Substrate consistency and depth of the river bottom were probed at regular intervals with a long pole and representative grab samples were collected using a petite Ponar® clamshell-style dredge. Physical characterization samples were submitted for particle size analysis. The results of the particle size analyses indicated that one sample was well-graded gravel with some sand; the remaining six samples were poorly-graded sand. With the exception of one sample that contained nine percent silt/clay size fraction (< 0.063 mm particle size diameter), samples contained less than five percent silt/clay size fraction. These results, coupled with visual observations, indicated that sediments at these stations are generally sand and gravel (bed load material), with little to no fine-grained material.

Chemical analyses of surficial sediments, including THg analyses, were conducted in areas upstream of the Pequannock Dam, Pompton Dam, and at the PVWC Dam (Civil Dynamics, 2012). Sampling and analysis of sediments focused on stations closer to the feeder dams because these stations had a greater likelihood of containing fine-grained sediment deposits, based on the 2011 physical characterization that indicated upstream sediments were generally sand and gravel (Civil Dynamics, 2012). In the Ramapo River upstream of the Pompton Dam, one sample was collected adjacent to the right wing wall of the dam in October 2004; six additional samples were collected in areas upstream of the Pompton Dam in April 2012. Within the branch of the Ramapo River that flows west-southwest from where the channel braids near Aquatic Park, one analytical sample was collected immediately upstream of the spillway at the Pequannock Dam (October 2004) and three additional samples were collected at the PVWC Dam. Sampling stations with available sediment THg concentrations are illustrated in Figures 5 through 9.

Sediment data collected during multiple sampling events as part of the PLW investigations in the Ramapo River main channel and the branch of the Ramapo River that flows from the channel braid near Aquatic Park indicate relatively low THg concentrations in surface sediment intervals when compared to concentrations measured in Pompton Lake (Civil Dynamics, 2012; URS, 2014b; ARCADIS et al., 2013; DuPont CRG, 2006; DuPont CRG, 2008; Exponent, 2003). Concentrations of THg in surficial sediments collected upstream of the Pompton Dam in 2012 ranged from 0.11 to 0.34 mg/kg. The sample collected adjacent to the right wing wall of the Pompton Dam (2004) contained 2.4 mg THg/kg. In the branch of the Ramapo River that flows to the Pequannock Dam, concentrations were less than 0.53 mg THg/kg, with the exception of the sample collected upstream of the spillway of the dam that contained 1.4 mg THg/kg (Civil Dynamics, 2012). The THg concentration in the sediment sample collected at the PVWC Dam was 1.5 mg/kg (see Figure 9).

Analytical data were not available to evaluate the potential contribution of mercury from the Top Soil Depot Site to Pompton River sediment (see Figure 9). As stated above, this site has been the subject of legal action by the NJDEP for the disposal, storage, and handling of solid waste, primarily kaofin, which was reported to have entered the river adjacent to the site (NJDEP, 2010; Justia, 2008). In 2008, a settlement was reached for a removal action at the site (NJDEP, 2008). In May 2012, another settlement was reached between NJDEP and 20 trucking companies to remove as much as 22,000 cubic yards of fill and solid waste that was allegedly delivered to the site since 2009, in violation of court orders (Petrick, 2012). The potential impacts of the Top Soil Depot Site on sediment quality within the river could not be assessed because site-specific analytical data were not identified; however, the site represents a potential source of sediment-associated contaminants to the Pompton River downstream of the Pompton Dam.

# 3.0 Substrate Mapping Survey

The substrate field mapping survey was conducted to create a contiguous geospatial database of substrate composition within approximately three miles of the Ramapo River and Pompton Rivers from Hamburg Turnpike downstream of the Pompton Lake Dam to Riverside Park (see Figure 1). The following sections present the technical approach and findings of the substrate mapping survey conducted in August 2013.

#### 3.1 Technical Scope and Approach

Substrate mapping and visual bank surveys were conducted in two phases: an initial reconnaissance to identify river access, followed by detailed field mapping. Reconnaissance efforts were conducted on the Ramapo River and Pompton River below the Pompton Lake Dam on July 16, 2013 to identify: access/egress points, river conditions (depth/width, general substrate type), and locations of several low-head dams (Pompton Dam, Pequannock Dam, and PVWC Dam). During the reconnaissance, outfalls were also identified and recorded on the field map.

The field survey was conducted during August 12 through 14, 2013. The study area was assessed during the field survey to identify and document existing riverbed and bank conditions, consistent with the field operational procedures provided in the *Substrate Mapping Protocol* (see Appendix A). Predetermined locations were established using a 50-foot x 100-foot grid to facilitate systematic spatial coverage of the study area. Bank disturbances and features, including fallen trees (large woody debris/snags) and additional outfalls, were photographed and detailed notes regarding overall bank condition were recorded.

A Trimble® Geo-XH 6000 sub-meter global positioning system (GPS) unit was used to record the spatial position of predominant substrate types (> 50 percent coverage) and bank features. Substrate mapping was performed at the highest resolution possible given the weather and hydrologic conditions at the time of survey. Generally, substrate patches greater than or equal to approximately 100 square feet were mapped in detail. Where surface water depths precluded the clear identification of substrate type, a rod was used to probe the benthic layer and identify substrate type. Petite Ponar® grab samples and photographs were also collected at 10 percent of the sediment probing locations to enable qualitative characterization and photo documentation of sediments. The photographic log is provided in Appendix B.

Sediment Classification	Description	Particle Diameter (mm)
Type 1	Silts and clays	< 0.063
Type 2	Fine sands	0.064 – 0.25
Туре 3	Medium/coarse sand and granules	0.26 – 4.00
Туре 4	Pebbles	4.01 – 64
Туре 5	Pebble/cobble/boulder	64.01 – 4,096
Туре 6	Bedrock	> 4,096

Riverbed substrates were classified into one of six types based on the predominant particle diameter size, as adopted from the Wentworth scale (Leeder, 1982):

Following the field mapping of riverbed substrates, geospatial data and associated observations were post-processed and integrated into a geographic information system (GIS) platform to produce contiguous geospatial mapping of the riverbed substrate types, as follows:

- Depositional areas with fine-grained substrates were identified based on detailed mapping;
- Larger surveyed areas with uniform coarse substrate types (Types 4, 5, or 6) were approximated based on survey results at discrete locations; except at discrete survey points, no distinction was made between substrate Types 4 through 6 in mapping the spatial coverage of coarse-grained substrates.

The approximate spatial extent (i.e., areal coverage) of substrate types was calculated in GIS based on the resulting maps.

#### 3.2 Mapping Survey Findings

The findings of the substrate mapping survey indicate that fine-grained sediment deposits represent a relatively minor component of overall habitat availability within the surveyed areas. Figures 2 through 12 illustrate the mapped substrate types for the survey areas within the Ramapo River and Pompton River between the Pompton Lake Dam and Riverside Park; Table 1 provides a summary of spatial coverage by predominant substrate type. The results indicate that the substrates are generally coarse (Types 3 to 6), with approximately 92 percent of the mapped area characterized by predominantly coarse substrates with particle sizes greater than 0.26 millimeters (mm). Silts and clays (< 0.063 mm particle diameter) comprise only 5.4 percent of the mapped area, with substrates predominated by fine sands representing an additional 2.8 percent of the available benthic habitat. Fine-grained substrates were primarily located in the following depositional areas:

- Areas within the branch of the Ramapo River that flows southwest-south to the Pequannock Dam from where the channel braids near Aquatic Park (see Figures 5 and 6);
- Several areas within the braided channel of the Ramapo River downstream of the Pequannock Dam and upstream of the Pompton Dam (see Figures 6 through 8); and
- Backwater areas along the downstream banks within the Pompton River approximately between 1,200 and 1,600 feet downstream of the PVWC Dam (see Figure 10).

Typically, hand probing in fine-grained sediment deposits encountered refusal at less than one foot below the sediment-surface water interface. One exception was the deposit in a backwater area on the east bank approximately 1,500 feet downstream of the PVWC Dam (see Figure 10), where the substrate depth was one to two feet. Water depths in the thalweg within the study area generally averaged five feet in the areas upstream of Pompton Dam and four feet in the areas downstream of the PVWC Dam. No significant bank erosion was observed during the survey period; bank conditions were generally vegetated and stable.

The survey team was unable to access two portions of the study area to complete substrate mapping efforts. The reach between the Pompton Dam and the PVWC Dam could not be accessed due to the on-going legal action by NJDEP at the Top Soil Depot

Site (see Figure 9). Access to the floodplain and river in this area is primarily through the 12acre Top Soil Depot Site, which is not accessible without permission from the court or NJDEP (NJDEP, 2010; Petrick, 2012). Only visual observations were made in this area via boat and land adjacent to the PVWC Dam. Based on photos and visual observations, predominant substrates along the left downstream bank appeared to be coarse (Types 3-6). In addition to the reach between the Pompton Dam and PVWC Dam, a survey location within a small area upstream of Pequannock Dam and west of Aquatic Park could not be mapped due to inaccessibility by boat (see Figure 5). Observations from accessible points surrounding this area indicated predominantly coarse substrate (Type 3); however, this observation could not be confirmed for the entire area due to inaccessibility.

The survey results indicate that fine-grained sediment deposits (silts/clays to fine sands) represent only a minor component (approximately 8% spatial coverage) of available habitat within the mapped areas. A greater distribution of fine-grained sediment deposits was found upstream of three feeder dams: Pompton Dam, Pequannock Dam, and PVWC Dam. These fine-grained deposits were the focus of the analytical sampling program to characterize the distribution of mercury given their greater binding capacity (see Section 4.0).

In addition to the mapping substrates, the locations of outfalls within the study area were noted to identify other potential sources of mercury to the Ramapo River and Pompton River. Field survey observations were also supplemented by the results of a search of the New Jersey GeoWeb database (see Table 2). Three outfalls were identified during field activities. The Pompton Lakes Municipal Utility Authority (MUA) outfall (NJPDES # 0023698), which discharges treated municipal wastewater, was identified on the Ramapo River immediately upstream of the braided channel/confluence with the Pequannock River (see Table 2 and Figure 4). Outfalls were also observed along the Ramapo River adjacent to the Dawes Highway Bridge (see Figure 3) and opposite of sample station RPR-24 on the east bank at the edge of an agricultural field (see Figure 8); records for these outfalls were not available in the New Jersey GeoWeb database. In addition to the observed outfalls, the New Jersey GeoWeb database identified two historical permitted discharges within the study area (see Table 2). The Wayne Township – Sheffield Hills (NJPDES # NJ0026841) and the Plains Plaza Shopping Center (NJPDES # NJ0026514) wastewater treatment outfalls historically discharged to the Pompton River downstream of the Route 680 (Jackson Avenue) bridge in Wayne Township (see Figure 10) and were removed from service in 1990 and 2009, respectively.

# 4.0 Analytical Characterization of Sediment

Based on the observed spatial distribution of substrate types within the three-mile study area, a sediment sampling program was designed to characterize THg concentrations in representative sediment depositional areas. Sediment sampling activities were completed from July 28 through 31, 2014. The following sections summarize the scope and objectives, sampling approach, and findings of the sediment characterization sampling.

#### 4.1 Study Design and Sampling Methodology

The following sections provide an overview of the study design and sampling approach used to characterize THg concentrations in fine-grained sediment deposits downstream of the Pompton Lake Dam. The study design and sampling methodology were based on the general approach presented to EPA and NJDEP in the Substrate Technical Memorandum, with modifications based on EPA and NJDEP comments received in the June 20, 2014 comment letter.

#### 4.1.1 Study Design

The primary objective of the sediment sampling scope was to characterize THg concentrations in representative sediment depositional areas identified within the threemile Ramapo River and Pompton River study area (see Figure 1). The selection of sediment sampling stations was biased to areas of fine-grained sediment deposits identified during the substrate mapping survey based on the association of mercury with fine-grained sediment particles (e.g., silts, clays, fine sands). Therefore, the resulting dataset represents a conservative characterization of THg concentrations in sediment within the study area.

Based on the findings of the August 2013 substrates mapping survey and comments from EPA and NJDEP, 34 discrete sampling stations were selected to characterize sediment THg concentrations within the three-mile study area. Fine-grained sediment deposits, as represented by Substrate Types 1 or 2 in Figures 2 through 12, were defined as areas with the predominant substrate particle diameter equivalent to or less than fine sand ( $\leq 0.25$  mm particle size). The findings of the substrate mapping survey and the limited historical sediment sampling available for the study area indicate that areas of fine-grained sediment are generally located immediately upstream of the Pequannock Dam (see Figure 6), between the Pequannock and Pompton Dams (see Figures 6 through 8), and downstream of the PVWC Dam adjacent to Riverside Park (see Figures 9 through 12). Consistent with the distribution of fine-grained sediments, higher densities of sampling stations were located in areas upstream of Pompton Dam (see Figure 8) and along the branch of the Ramapo River that flows to the Pequannock Dam (see Figure 6). As requested by EPA and NJDEP in the June 20, 2014 comment letter, two sediment stations each were located upstream of Pompton Dam and Pequannock Dam (see Figure 6 and Figure 8, respectively).

Consistent with the substrate mapping survey, analytical sampling was not conducted in two reaches between the Pompton Lake Dam and Riverside Park due to restricted and/or unsafe access:

 Analytical sampling was not conducted between the Hamburg Turnpike Bridge and the Pompton Lake Dam due to restricted access and safety concerns associated with high water velocity discharging from the Pompton Lake Dam; and

 No samples were collected between the Pompton Dam and the PVWC Dam (see Figure 9) due restricted access at the 12-acre Top Soil Depot Site (see Section 3.2).

The following section details the sampling approach to characterize THg concentrations in fine-grained sediment deposits within the study area.

#### 4.1.2 Sampling Methodology

Field sampling activities were conducted consistent with the approach outlined in the Substrate Characterization Technical Memorandum (URS, 2014a). Actual sampling stations were selected based on conditions observed in the field at the proposed sampling stations, specifically confirmation of the predominance of fine-grained sediments. The spatial position of each sampling station was recorded in the field using a Trimble® Geo-XH 6000 sub-meter GPS unit. Sediment samples were collected using a coring device advanced by hand (e.g., 2-inch diameter core liner and/or AMS sediment corer). Sediment cores were advanced to refusal and sectioned at the following sampling intervals within the recovered core:

- 0 to 0.5-foot
- 0.5-foot to a maximum of 1.0 foot, depending on the depth of recovery
- 1.5-foot intervals thereafter (e.g., 1.0 to 2.5 feet) to the depth of recovery

Sediment cores were visually inspected and characterized in the core log for each station. Intact cores were evaluated visually to identify potential discrete depositional sediment layers that may be indicative of increased sediment transport and deposition associated with hydrodynamic events, as requested by EPA and NJDEP in the June 20, 2014 comment letter.

Surface and subsurface sediment samples collected within the study area were characterized based on the analyses proposed in URS (2014a). Surface sediment samples were analyzed for THg, total organic carbon (TOC), and grain size distribution; subsurface samples were analyzed for THg only. Quality control samples included equipment blanks, field duplicates, and matrix spike/matrix spike duplicate samples (MS/MSD). Field duplicate and MS/MSD samples were collected at a rate of five (5) percent of the total samples collected for each sampling matrix. Equipment blanks associated with sediment sampling were collected at a rate of one per day. Sediment samples were shipped overnight under proper chain-of-custody (COC) procedures to an NJDEP-approved laboratory for analysis.

#### 4.2 Sediment Analytical Characterization Results

The followings sections present the results of the sediment characterization sampling. The findings of the analytical data quality review are presented followed by a summary of the findings of the sediment characterization sampling.

#### 4.2.1 Reliability of Analytical Data

The DuPont Analytical Data Quality Management (ADQM) Group conducted data validation on the electronic data deliverable using the DuPont data review (DDR) process. This process reviews and evaluates laboratory data including hold time criteria,

blank contamination, MS/MSD recoveries, duplicate sample relative percent difference (RPD), laboratory control sample/control sample duplicate (LCS/LCSD) recoveries, and surrogate recoveries. Based on the DDR process, the following qualifiers were assigned to the supplemental sediment data, as applicable:

Qualifier	Definition
В	Not detected substantially above the level reported in the laboratory or field
	blanks.
R	Unusable result. Analyte may or may not be present in the sample.
J	Analyte present. Reported value may not be accurate or precise.
UJ	Not detected. Reporting limit may not be accurate or precise.

The results of the DDR data review indicate that the sample results were considered useable with appropriate qualification. As presented in the DDR reports provided as Appendix C, select samples were qualified as 'UJ' or 'J' based on the following:

- Associated MS and/or MSD analysis had relative percent recovery (RPR) values less than the lower control limit. The actual detection limits may be higher than reported.
- Associated MS and/or MSD analysis had RPR values higher than the upper control limit. The reported result may be biased high.
- Associated MS and/or MSD analysis had RPR values less than the lower control limit but above the rejection limit. The reported result may be biased low.
- High RPD observed between field duplicate and parent sample. The reported result may be imprecise.
- High RPD observed between REP (laboratory replicate) and parent sample. The reported result may be imprecise.

Based on the findings of the DDR, sediment data were considered to be reliable for the purposes of the investigation.

#### 4.2.2 Sediment Characterization Findings

As stated in Section 4.1.1, sediment characterization sampling in the Ramapo River and Pompton River downstream of the Pompton Lake Dam was biased to areas of finegrained sediment deposits. As a result of this biased sampling design, the sampling results provide a conservative estimate of the distribution of mercury in sediments downstream of the Pompton Lake Dam, especially considering that fine-grained sediment deposits represent only approximately eight percent of the mapped study area (Section 3.2). Analytical results of characterization sampling are provided in Table 3. Figures 2 through 12 illustrate the spatial distribution of THg concentrations in the context of the substrate mapping survey results. A photographic log of sediment cores collected as part of the characterization sampling is provided as Appendix D; field data sheets are provided in Appendix E.

Consistent with previous investigations, analytical results for characterization sampling biased to areas of fine-grained sediment deposition indicated relatively low THg concentrations (Civil Dynamics, 2012; URS, 2014; ARCADIS et al., 2013; DuPont CRG, 2006; DuPont CRG, 2008; Exponent, 2003). Geometric mean THg concentrations in sediment sampling intervals ranged from 0.12 mg/kg (> 1-foot) to 0.58 mg/kg (0 to 0.5-foot; Table 3). THg concentrations in the surficial sampling interval (0 to 0.5-foot) were

less than 1 mg/kg in 25 of 34 samples, with all but one sample containing less than 5 mg/kg (see Figure 13). The maximum concentration of 23.5 mg/kg in the surface interval was not consistent with THg concentrations observed in surface samples from other fine-grained deposits within the study area. THg concentrations in the 0.5- to 1.0-foot sampling interval ranged from < 0.01 mg/kg to 7.36 mg/kg (geometric mean of 0.34 mg/kg) and THg concentrations in sampling intervals greater than 1-foot ranged from < 0.01 mg/kg to 0.48 mg/kg (see Figure 13). This sample point is downstream of existing outfalls observed within the river system.

#### **Surficial Distribution of THg**

The spatial distribution of THg concentrations in the surficial sampling interval (0 to 0.5-foot) indicated generally consistent concentrations in fine-grained sediment deposits. Surficial samples with greater THg concentrations were associated with greater concentrations of TOC and percent silt/clay-sized particles (grain size less than 0.063 mm). Samples with THg concentrations greater than 1 mg/kg contained greater than 1.5 percent TOC and greater than 25 percent silt/clay concentrations (see Figure 14). The maximum THg concentration (23.5 mg/kg) was measured in a sample collected from a spatially-limited (approximately 0.06 acres) fine-grained sediment deposit containing the maximum TOC concentration of 6.56 percent and 44 percent silts and clays. Although sampling was biased to areas of fine-grained sediment deposition, 13 of 34 samples contained less than 1.5 percent TOC and 25 percent silts/clays sediment. This indicates that the predominant substrate in nearly half of the characterization samples contained substrates with grain size diameter equivalent to or greater than fine sands (> 0.064 mm) that contain relatively low THg concentrations. As previously stated, substrates with predominantly silt and clay fractions represented only 5.4 percent of the mapped study area.

#### Vertical Distribution of THg

Fine-grained sediment deposits within the study area were relatively shallow (< 1 foot) and did not indicate distinct sediment layers potentially associated with episodic depositional events (see Table 3 and Appendix D). Samples were recovered from depth intervals greater than the 0 to 0.5-foot interval in sediment cores collected from 20 of 34 sampling stations; however, samples were recovered at depths greater than the 1-foot interval at only four of 34 sampling stations (see Table 3). No sediment cores greater than 1.5-feet were recovered (see Table 3). No distinct sediment layers that may be indicative of increased sediment transport and deposition associated with hydrodynamic events were observed in any of the cores.

Vertical characterization of THg concentrations in sediment cores generally indicated decreasing THg concentrations with increasing sampling depth. Fourteen of the 20 sampling stations contained greater THg concentrations in the surficial 0 to 0.5-foot interval compared to the 0.5- to 1.0-foot interval in the same core (see Table 3). In all four cores where samples greater than 1-foot were recovered, THg concentrations decreased with depth in each interval below the surface interval (see Table 3). These findings indicate that subsurface sediments sampled within the study area generally do not contain greater concentrations than what was observed in surface intervals.

# 5.0 Summary of Findings

Substrate mapping and sediment characterization sampling were conducted to characterize mercury concentrations and other physical sediment characteristics to support the CSM regarding the potential downstream transport of mercury from Pompton Lake. The results of these investigations support the following findings:

- Results of the substrate mapping survey indicate that fine-grained sediment deposits represented a relatively minor component (8.2 percent) of overall habitat availability within the surveyed areas; substrates with predominantly silt and clay size fractions represented only 5.4 percent of the mapped study area.
- Field survey observations and a database review identified current and historical outfalls which may represent potential sources of mercury to the Ramapo River downstream of the Pompton Lake Dam.
- Consistent with previous investigations, the results of characterization sampling biased to areas of fine-grained sediment deposition indicate relatively low THg concentrations.
  - THg concentrations in the surficial sampling interval (0 to 0.5-foot) were less than 1 mg/kg in 25 of 34 samples, with all but one sample containing less than 5 mg/kg.
  - The geometric mean THg concentration in samples from the 0 to 0.5-foot sampling interval was 0.58 mg/kg.
  - The maximum concentration of 23.5 mg/kg in the surface interval was measured in a spatially-limited fine-grained sediment deposit and was not consistent with THg concentrations observed in surface samples from other fine-grained deposits within the study area.
- Surficial samples with greater THg concentrations were associated with greater concentrations of TOC and percent silt/clay-sized particles (grain size less than 0.063 mm); samples with THg concentrations greater than 1 mg/kg contained greater than 1.5 percent TOC and greater than 25 percent silt/clays.
- Given that the results of the substrate mapping survey indicate that silts/clays are the predominant substrate type in only 5.4 percent of surveyed areas, sediment deposits with surficial THg concentrations exceeding 1 mg/kg are likely spatiallylimited.
- Vertical characterization of THg concentrations in sediment cores generally indicated decreasing THg concentrations with increasing sampling depth.

The results of substrate mapping and sediment characterization sampling biased to finegrained sediment deposits in the Ramapo River and Pompton River downstream of the Pompton Lake Dam indicate a limited distribution of mercury in sediments. The distribution of mercury in sediments in the three-mile study area downstream of the Pompton Lake Dam is generally associated with fine-grained sediment deposits with predominantly silt/clay grain size fraction (> 25% silts/clays) and higher TOC concentrations (> 1.5 percent). Given that silts/clays were the predominant substrate type in only 5.4 percent of the mapped area, the distribution of mercury in sediments downstream of the Pompton Lake Dam is not considered to be widespread throughout the study area.

### 6.0 References

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Tables



# Table 1Summary of Predominant Substrate Types Based on Substrate Mapping SurveyRamapo-Pompton River Sediment Investigation ReportChemours Pompton Lakes WorksMorris and Passaic Counties, New Jersey

Substrate Type	Particle Diameter (mm)	Mapped Sediment Area (acres)	Percentage of Mapped Area (%)
1) Silts and Clays	< 0.063	2.7	5.4%
2) Fine Sands	0.064 – 0.25	1.4	2.8%
Total Fine-Grained Sediments		4.1	8.2%
3) Medium / Coarse Sands and Granules	0.26 - 4.00	17.5	35.7%
4-6) Pebbles, Cobbles, Boulders, Bedrock	4.01 -> 4,096	27.5	56.0%
Total Coarse-Grained Sediments		45.1	91.8%

# Table 2Summary of Outfalls Identified within the Study AreaRamapo-Pompton River Sediment Investigation ReportChemours Pompton Lakes WorksMorris and Passaic Counties, New Jersey

NJPDES ID	D Facility Name Outfall Type		Notes	
NJ0023698	Pompton Lakes MUA	Wastewater Treatment Plant	Active outfall	
NJ0026841	Wayne Township -Sheffield Hills	Wastewater Treatment Plant	Outfall taken out of service - 11/1990	
NJ0026514	Plains Plaza Shopping Center	Wastewater Treatment Plant	Outfall taken out of service - 11/2009	
NA	NA	Unknown Outfall Observed	Outfall observed adjacent to Dawes Highway Bridge	
NA	NA	Unknown Outfall Observed	Outfall observed adjacent to agricultural field	

Notes:

NJPDES, New Jersey Pollutant Discharge Elimination System

NA, Data not available

# Table 3Summary of Sediment Analytical ResultsRamapo-Pompton River Sediment Investigation ReportChemours Pompton Lakes WorksMorris and Passaic Counties, New Jersey

Sample ID	Sample Interval (ft)	THg (mg/kg)	Total Organic Carbon (%)	Percent Fines <sup>1</sup> (%)	
RPR-01	0.0-0.5	0.44 J	0.78	7	
KFK-UI	0.5-0.75	0.12 J			
RPR-02	0.0-0.5	0.13 J	0.77	9	
RPR-03	0.0-0.5	0.64	0.89	39	
RPR-04	0.0-0.5	0.93	0.72	18	
RPR-05	0.0-0.5	0.48	0.96	11	
RPR-06	0.0-0.5	0.40	1.47	4	
RPR-07	0.0-0.5	3.92	1.56	39	
KFK-07	0.575	0.03 J			
	0.0-0.5	3.97	3.17	49	
RPR-08	0.5-1.0	3.38			
RPR-09	0.0-0.5	Z	2.27	13.5	
RPR-10	0.0-0.5	0.04 J	0.01 U	2	
RPR-11	0.0-0.5	0.10 J	0.18	2	
RPR-12	0.0-0.5	2.77 J	3.38	32	
NF N- 12	0.5-0.75	4.97 J			
	0.0-0.5	0.69 J	4.16 J	59	
RPR-13	0.575	0.53 J			
	1.0-1.1	0.18 J			
	0.0-0.5	0.55 J	3.71	40.5	
RPR-14	0.5-1.0	0.29 J			
•	1.0-1.5	0.21 J			
RPR-15	0.0-0.5	23.5 J	6.56	44	
NFN-13	0.5-1.0	6.34 J			
RPR-16	0.0-0.5	0.45 J	1.30	15	
RPR-17	0.0-0.5	1.61 J	1.83	27	
KFK-17	0.5-1.0	2 J			
RPR-18	0.0-0.5	2.41 J	4.55	42	
	0.5-0.8	2.15 J			
RPR-19	0.0-0.5	0.34 J	0.66	7	
	0.5-0.8	0.38 J			
	0.0-0.5	0.22	0.36	18	
RPR-20	0.5-1.0	0.01 U			
	1.0-1.4	0.01 U			

# Table 3Summary of Sediment Analytical ResultsRamapo-Pompton River Sediment Investigation ReportChemours Pompton Lakes WorksMorris and Passaic Counties, New Jersey

Sample ID	Sample Interval (ft)	THg (mg/kg)	Total Organic Carbon (%)	Percent Fines <sup>1</sup> (%)	
	0.0-0.5	3.31 J	3.16	45	
RPR-21	0.5-1.0	0.19 J			
	1.0-1.2	0.48 J			
RPR-22	0.0-0.5	0.38	2.37	13	
RPR-23	0.0-0.5	1.86 J	4.64	62	
IXF IX-23	0.5-0.9	0.14 J			
RPR-24	0.0-0.5	0.28	2.53	7.5	
RPR-25	0.0-0.5	0.31	1.59	11.5	
NF N-23	0.5-0.95	0.71			
RPR-26	0.0-0.5	4.95	5.09	30	
NF N-20	0.5-1.0	7.36			
RPR-27	0.0-0.5	0.28	0.60	7.5	
NF N-21	0.5-1.0	1.12			
RPR-28	0.0-0.5	0.71	4.37	39	
RPR-29	0.0-0.5	0.94	3.02	48	
NF N-29	0.5-0.75	0.30			
RPR-30	0.0-0.5	0.58	2.67	30	
RPR-31	0.0-0.5	0.20 J	0.23	3	
NF N-31	0.5-0.9	0.10 J			
RPR-32	0.0-0.5	0.17 J	1.97	14	
NF K-32	0.5-1.0	0.01 UJ			
RPR-33	0.0-0.5	0.06 J	0.03 J	2	
RPR-34	0.0-0.5	0.04 J	0.15	77	
KFK-34	0.5-0.75	0.01 UJ			

Geometric Mean THg Concentrations					
Sample Interval (ft)	THg (mg/kg)				
0.0-0.5	0.58				
0.5-1.0	0.34				
>1	0.12				

#### Notes:

J - Analyte present. Reported value may not be accurate or precise

U - Not detected

UJ - Not detected. Reporting limit may not be accurate or prescise

-- Not analyzed

1, Percent fines is the percent of sediment passing 0.064  $\ensuremath{\mathsf{mm}}$ 

sieve, which is representative of silt and clay fractions.

Figures



Ramapo-Pompton River Sediment Investigation Report POM\_Ram-Pom River Sediment\_070815.docx





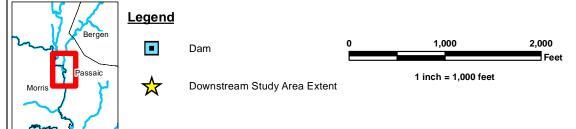
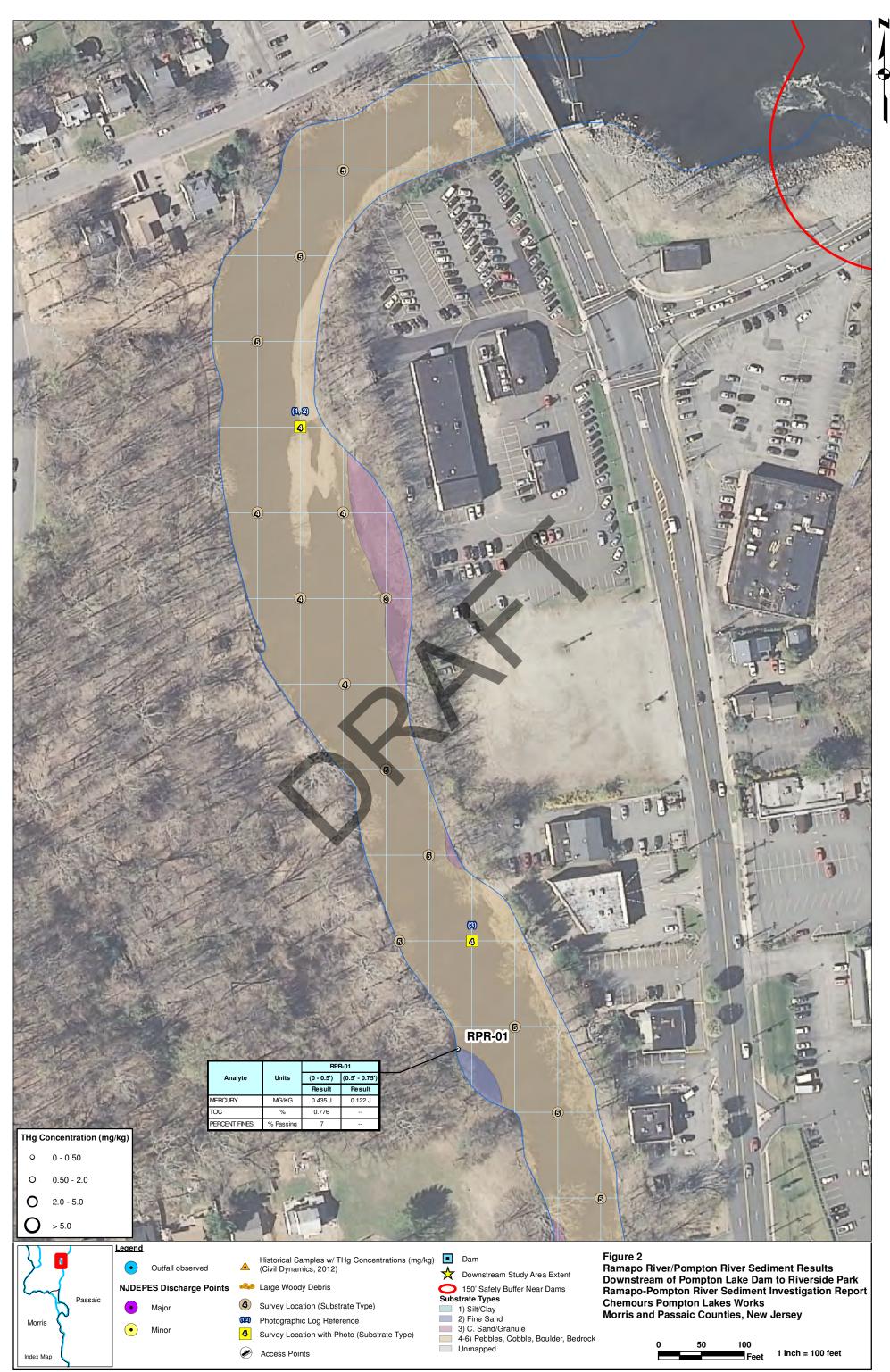
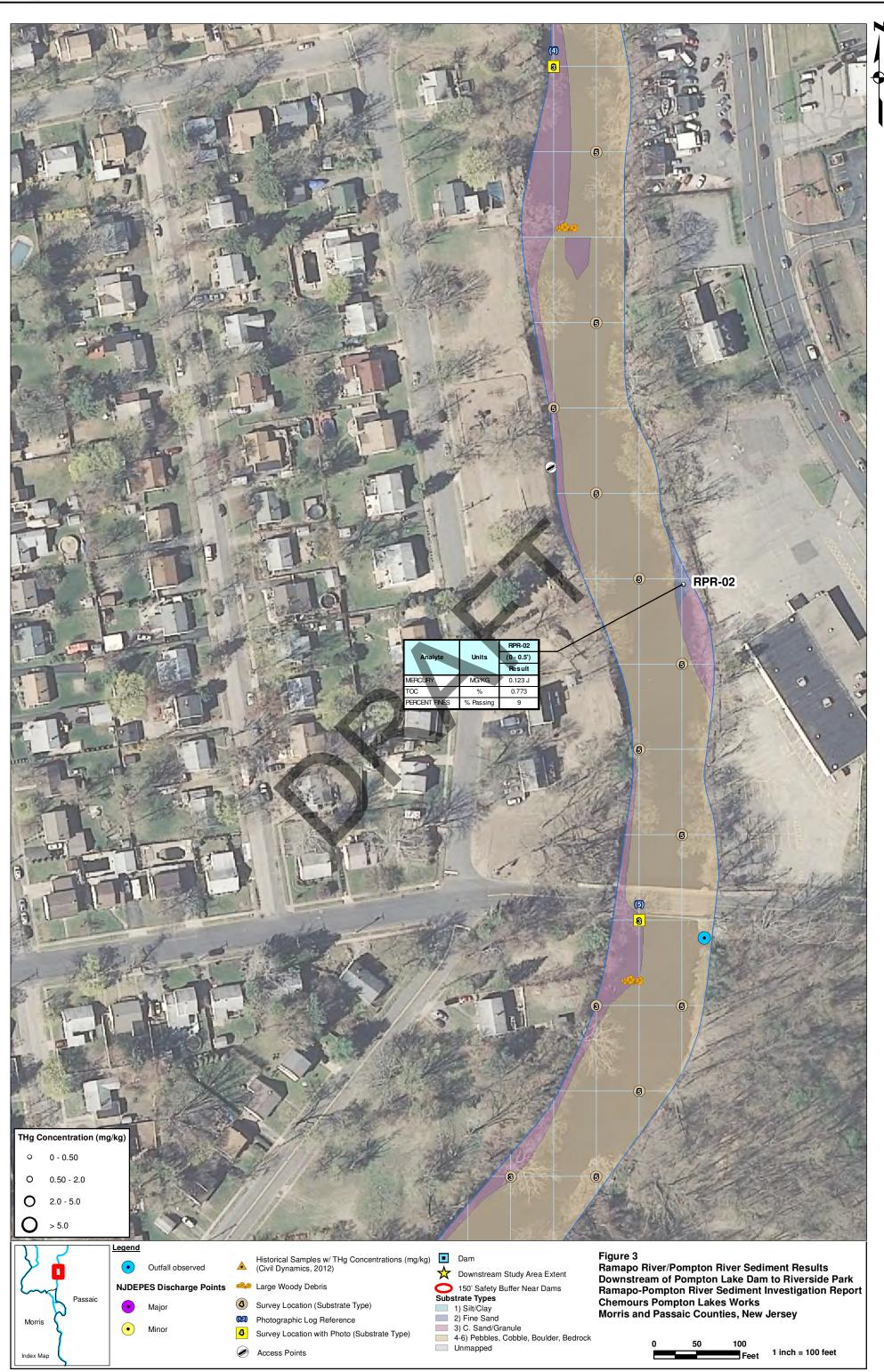


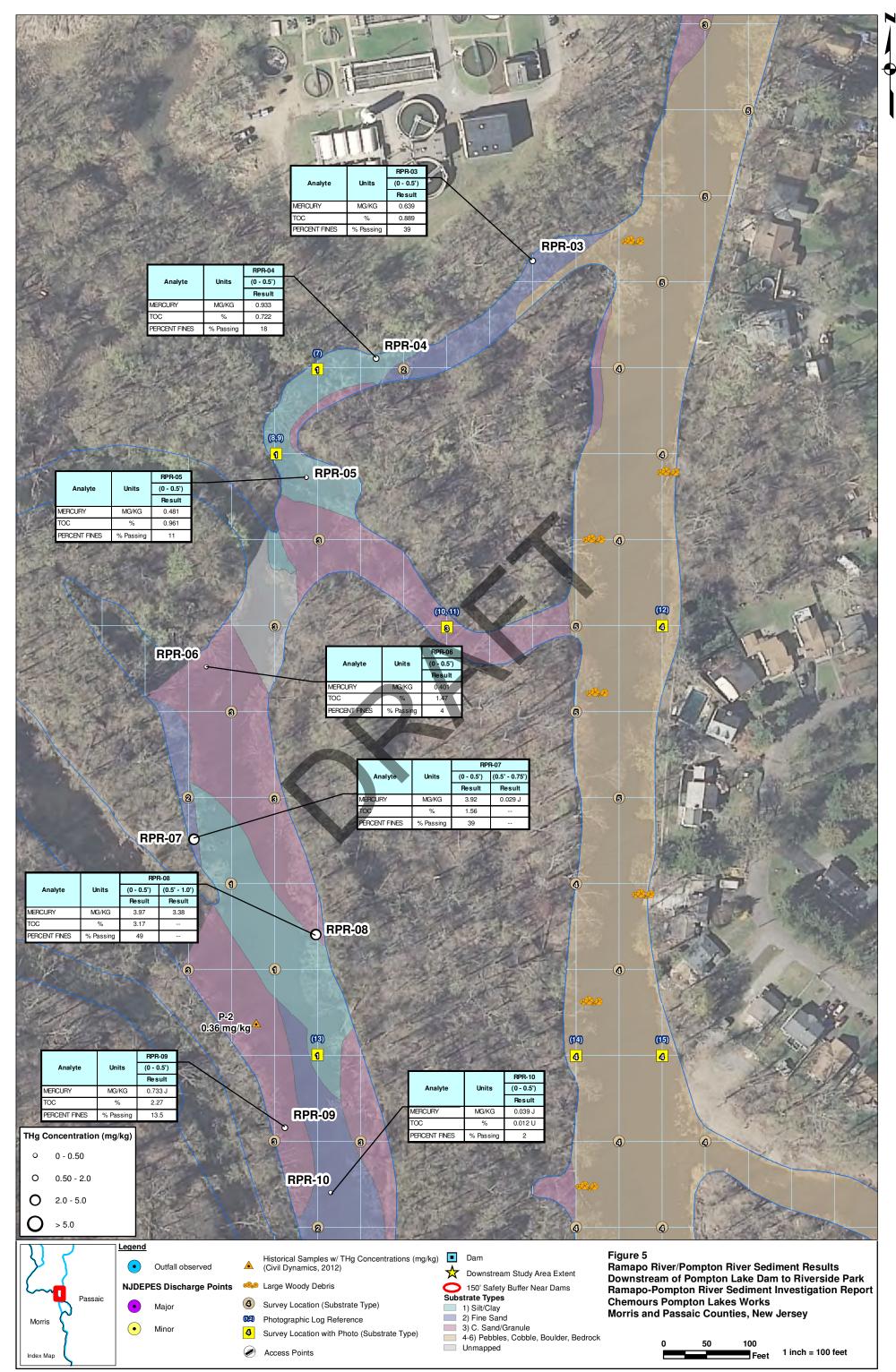
Figure 1 Ramapo River/Pompton River Sediment Investigation Study Area Ramapo-Pompton River Sediment Investigation Report Chemours Pompton Lakes Works Morris and Passaic Counties, New Jersey

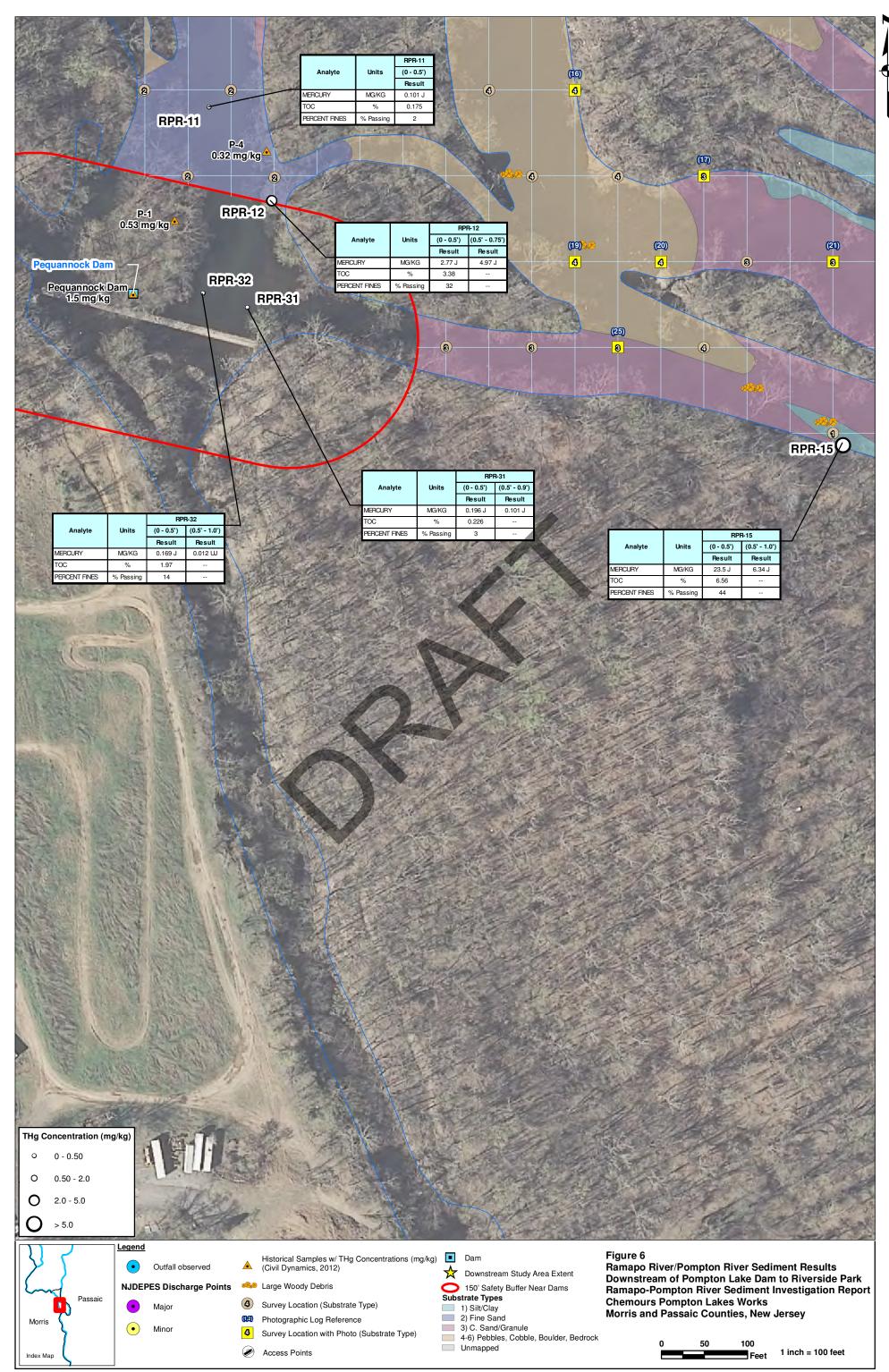
S:\Projects\IMS\DUPONT\PMPTNLKS\Projects\PomLke\_ERA\Ramapo River Substrate Field Reconnaissance\Figure 1 Ramapo River Substrate Mapping Overview\_10142014.mxd

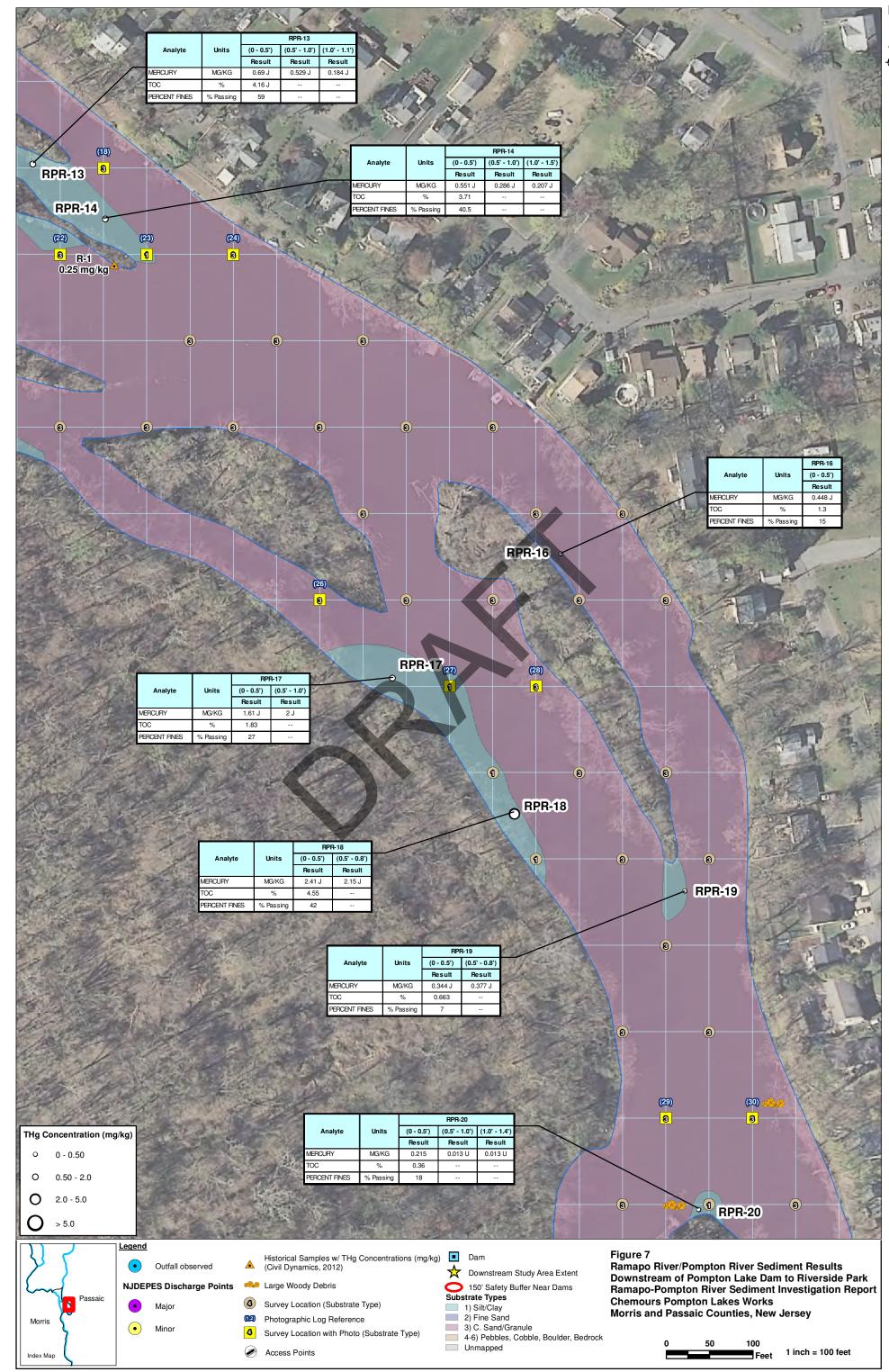




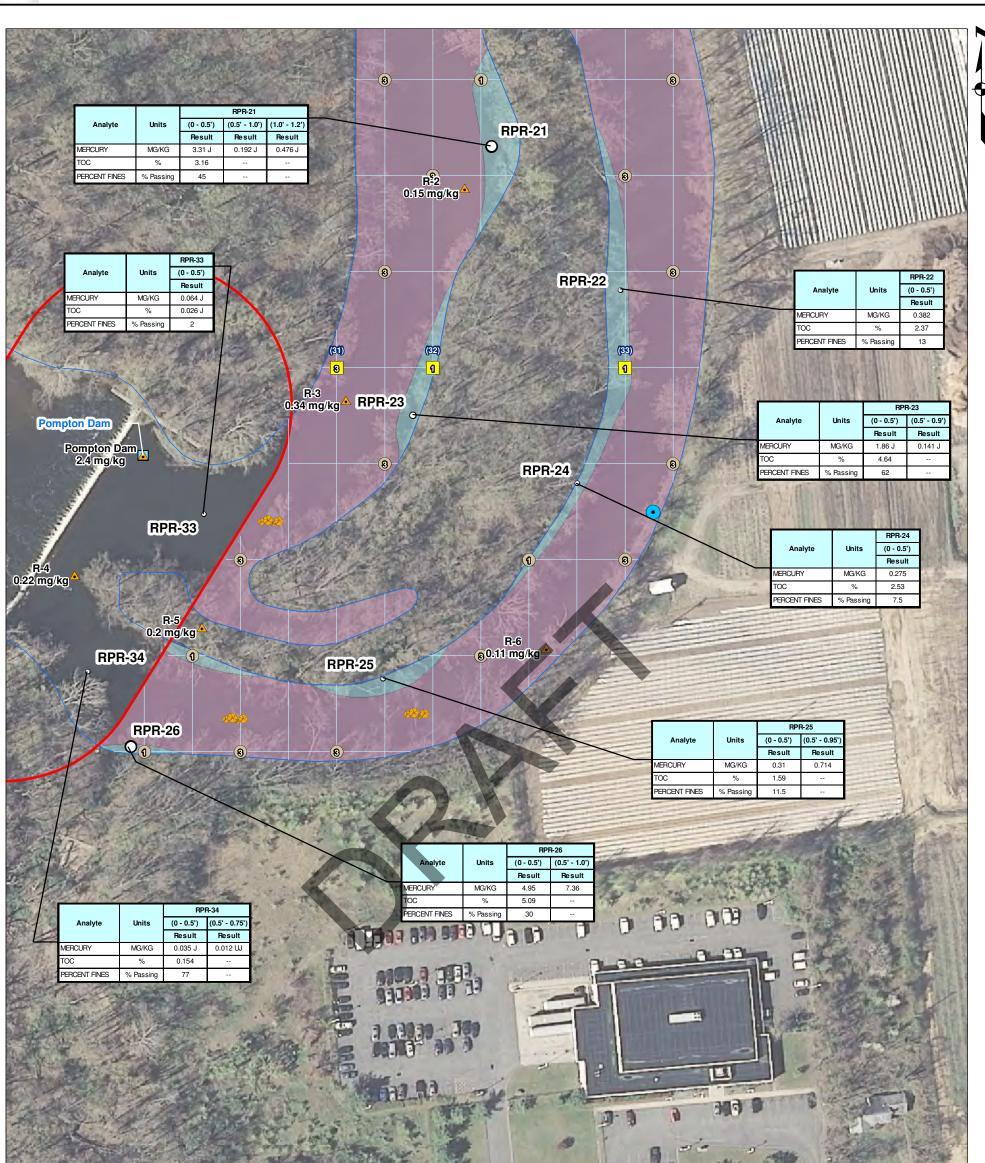






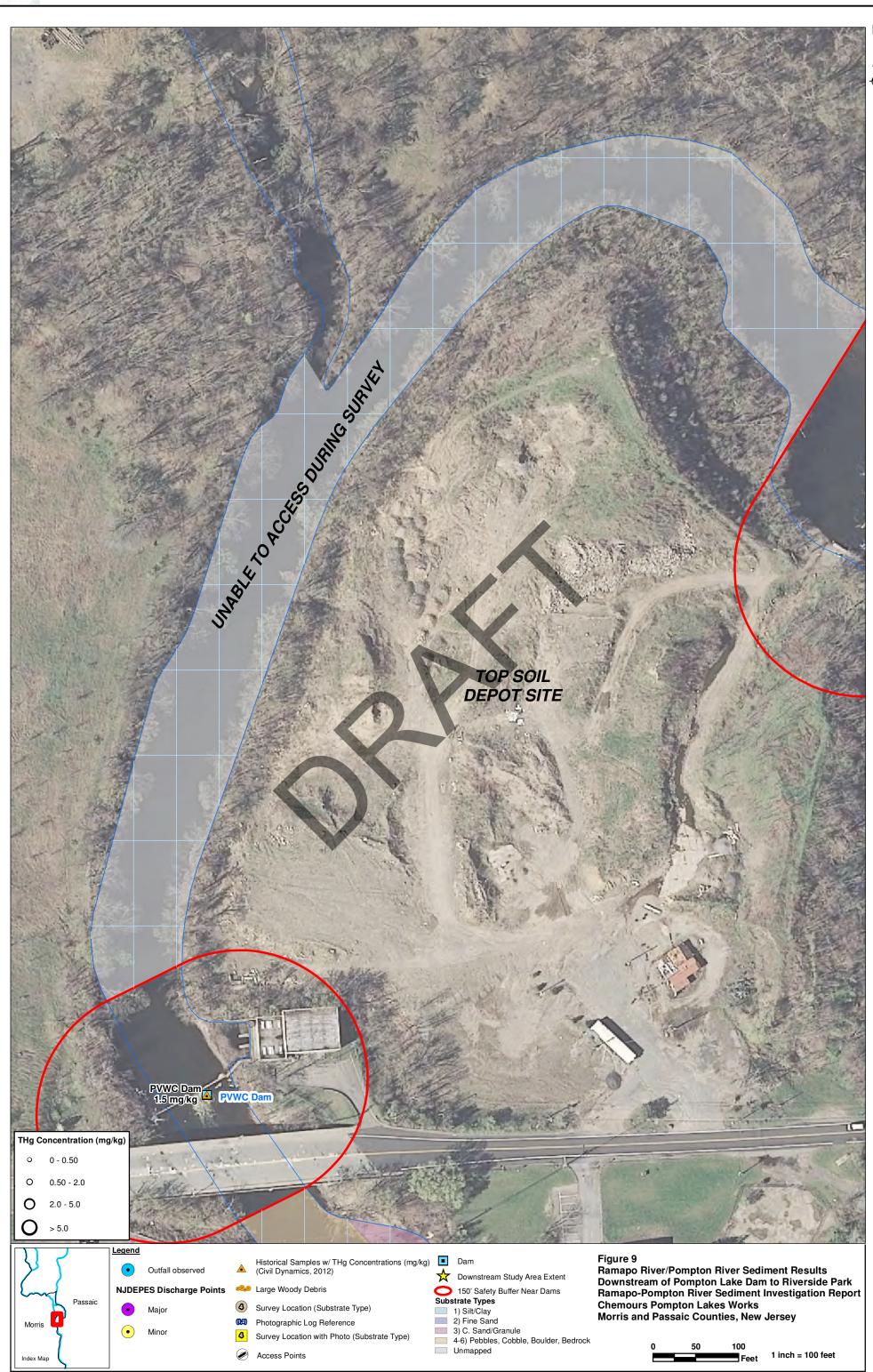


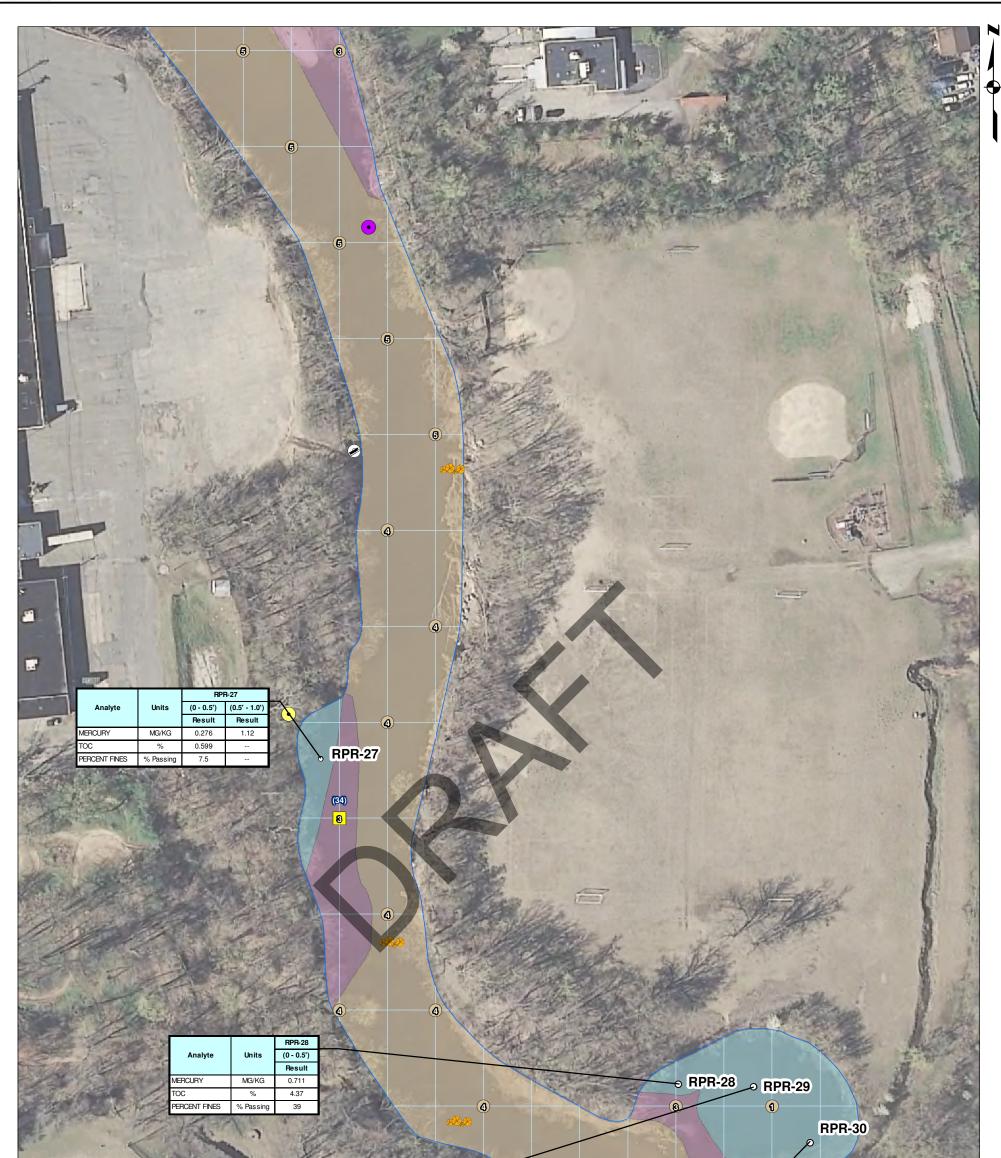




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Passaic	• Major	Survey Location (Substrate Type)	Substrate Types 1) Silt/Clay	Chemours Pompton Lakes Works Morris and Passaic Counties, New Jersey
Morris	• Minor	Photographic Log Reference	<ul><li>2) Fine Sand</li><li>3) C. Sand/Granule</li></ul>	· · · · · · · · · · · · · · · · · · ·
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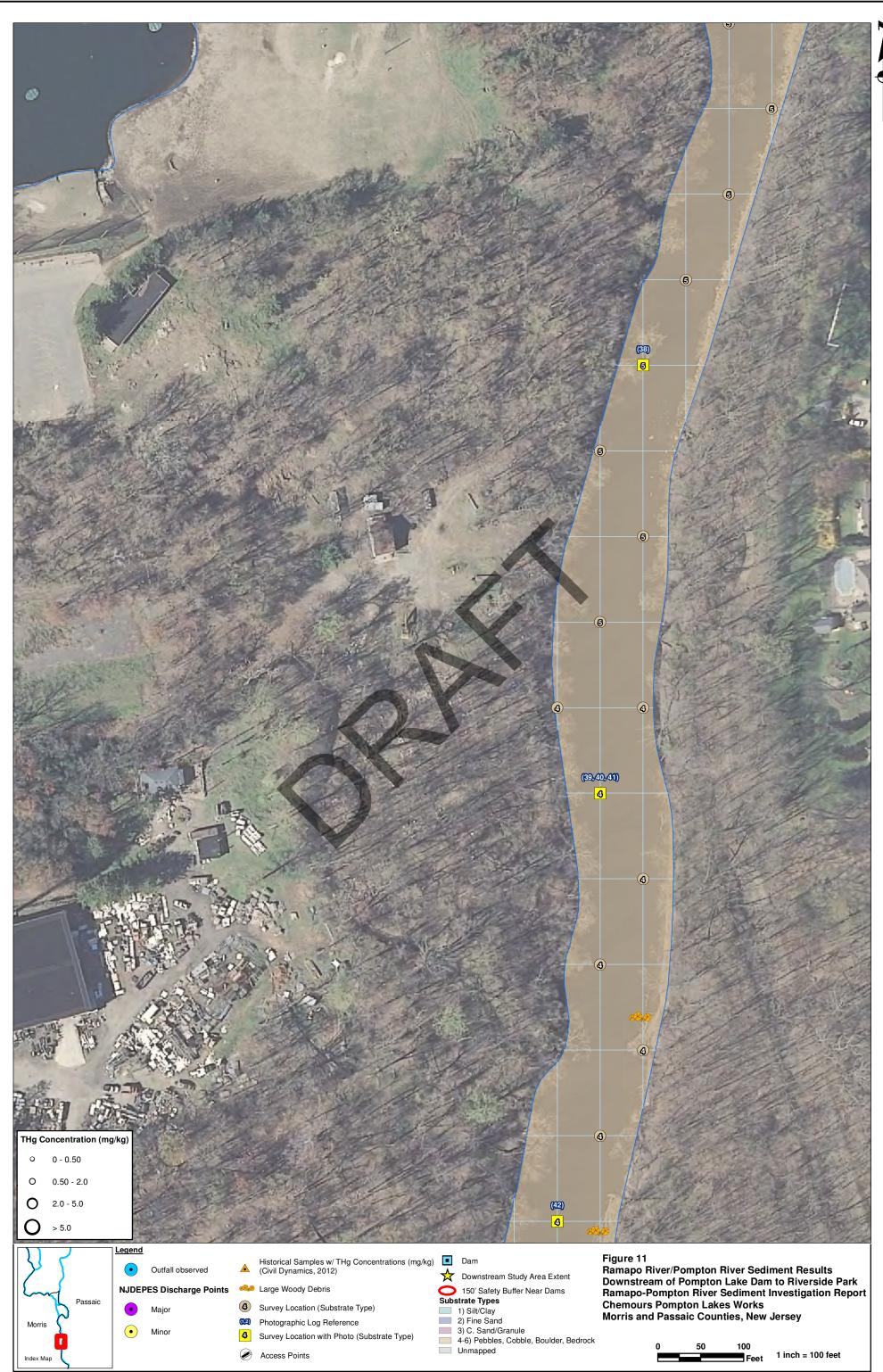






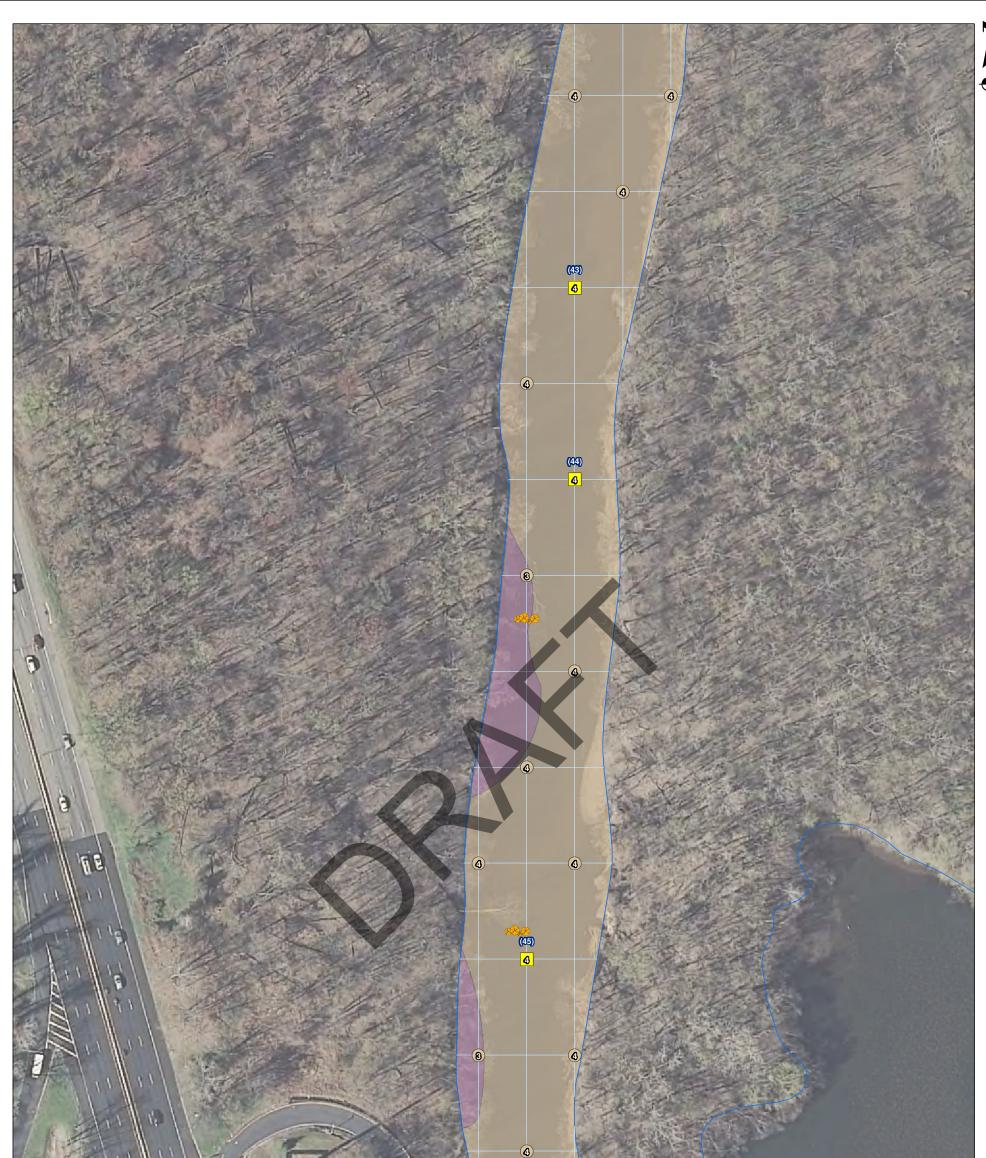
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	<ul> <li>Major</li> </ul>	Surve	y Location	Substrate 7	ype)	1) Silt/C	lay		Chemours Pompton Lakes Works Morris and Passaic Counties, New Jersey
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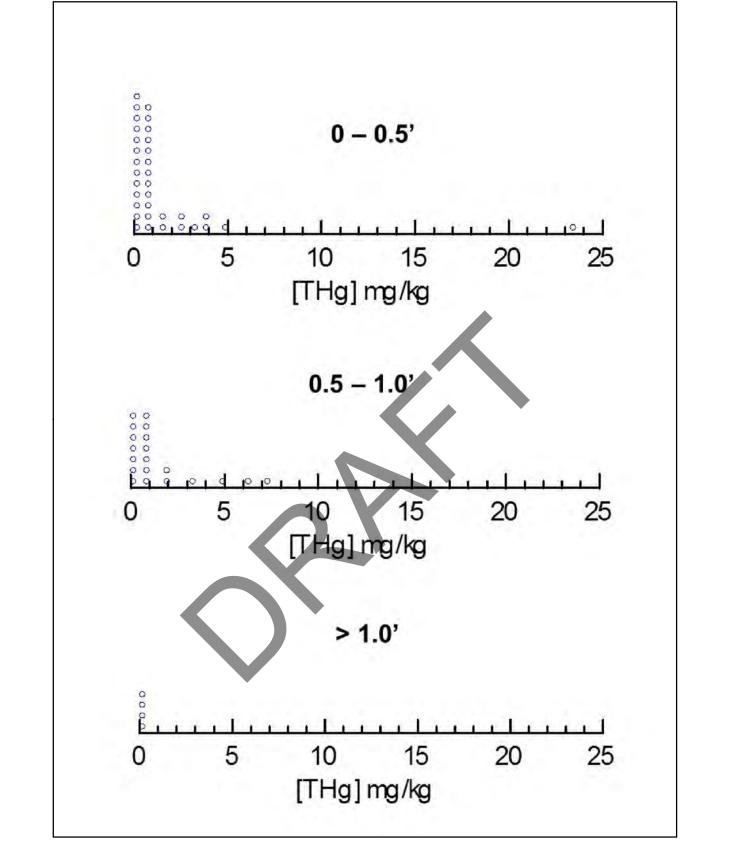
S:\Projects\IMS\DUPONT\PMPTNLKS\Projects\PomLke\_ERA\Ramapo River Substrate Field Reconnaissance\Figure 2-12 Ramapo River Substrate Field Reconnaissance Sept 2014\_v3.mxd

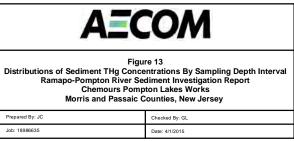


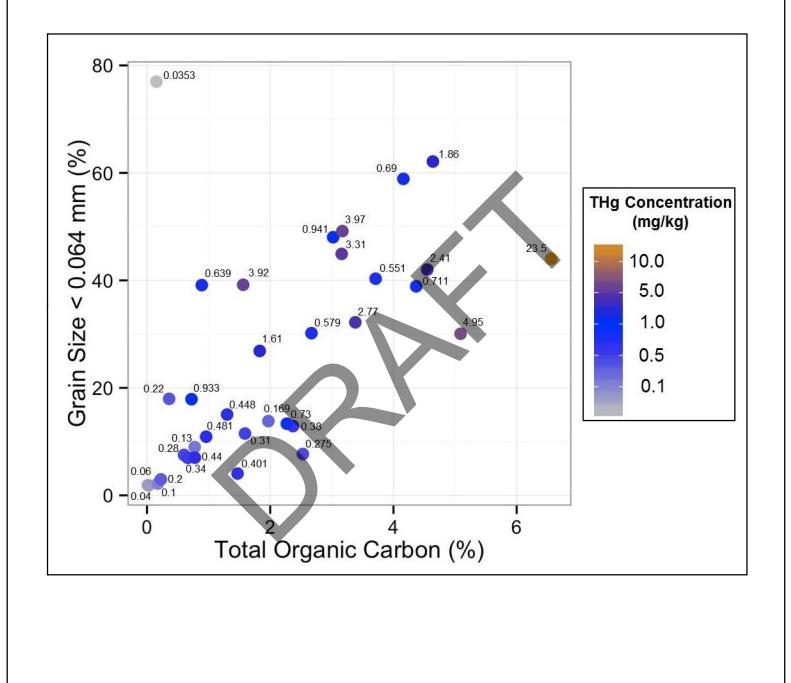


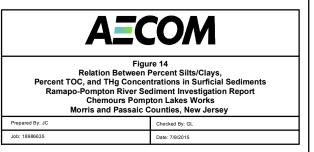
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	• Outfall observed	Historical Samples w/ THg Concentrations (mg/kg) (Civil Dynamics, 2012)	<ul> <li>Dam</li> <li>Downstream Study Area Extent</li> </ul>	Ramapo River/Pompton River Sediment Results Downstream of Pompton Lake Dam to Riverside Park
1 Long	NJDEPES Discharge Points	network the second seco	150' Safety Buffer Near Dams	Ramapo-Pompton River Sediment Investigation Report
Passaic	• Major	Survey Location (Substrate Type)	Substrate Types 1) Silt/Clay	Chemours Pompton Lakes Works Morris and Passaic Counties, New Jersey
Morris	Minor	Photographic Log Reference	<ul><li>2) Fine Sand</li><li>3) C. Sand/Granule</li></ul>	morris and rassale counties, new Jersey
ן ב וו	• Minor	<b>4</b> Survey Location with Photo (Substrate Type)	4-6) Pebbles, Cobble, Boulder, Bedrock	0 50 100
Index Map		Access Points	Unmapped	0 50 100 Feet 1 inch = 100 feet

S:\Projects\IMS\DUPONT\PMPTNLKS\Projects\PomLke\_ERA\Ramapo River Substrate Field Reconnaissance\Figure 2-12 Ramapo River Substrate Field Reconnaissance Sept 2014\_v3.mxd









Brow the 0 – 0.5' sampling interval.
 Percent passing grain size diameter < 0.064 mm represents the percentage of fine-grained sediments (e.g., clays and silts) in the sample.</li>

# Appendices



Appendix A

Substrate Mapping Protocol



Ramapo-Pompton River Sediment Investigation Report POM\_Ram-Pom River Sediment\_070815.docx

### Riverbed Substrate Mapping Protocol Ramapo River Investigation Chemours Pompton Lakes Site

This protocol describes the approach that will be used to identify and map riverbed substrates in the Ramapo River below the Pompton Lake dam in Pompton Lakes, New Jersey.

The survey will extend for approximately three miles of the Ramapo River, from below the Pompton Lake dam (Figures 1 & 2). Detailed substrate mapping will not be conducted upstream of the Route Hamburg Turnpike bridge or within 150' upstream of downstream of the other dams within the reach.

The overall goal of this task is to identify and quantify the distribution of fine-grain sediments (silts, clays, fine sands) within the three mile reach of the Ramapo River below the Pompton Lake dam. Other key features such as stormwater outfalls, tributaries, submerged aquatic vegetation (SAV) and large woody debris (LWD) will also be documented.

This protocol is divided by task into the following sections:

- Equipment List
- □ Field Mapping Assessment
- □ Field Log Book and Field Sketch Maps

### Equipment

The following equipment/supplies may be used to conduct substrate characterization field surveys:

- □ Field notebook/field sketch maps
- □ Pencils and waterproof/permanent marking pens
- □ Trimble® Geo-XH 6000 global positioning system (GPS)
- □ Camera and waterproof dry bags
- □ Field sediment grain size and texture guides
- □ Graduated sediment probe
- □ Ruler and measuring tapes
- □ Jon boat and necessary boating supplies (*e.g.*, anchor, paddles, motor, PFDs, etc.)
- □ Appropriate health and safety equipment

### **Field Mapping Assessment**

The field mapping assessment will utilize the Trimble GPS unit to accurately map the spatial extent of riverbed substrate in the Ramapo River.

Substrate Mapping

- □ Field survey mapping will begin on the channel margin and work inward toward the center of the riverbed in an upstream-to-downstream direction. If water depths prohibit safely wading the reach a boat will be used to survey the area of concern.
- Substrate patches will be identified by the predominant coverage (>50%) of a sediment type. Determination of the predominant sediment type may require the measurement of the median axis width of several randomly selected particles within a patch. The six substrate types adopted from the Wentworth Scale (Leeder, 1982) are:

Type 1) Silts and Clays	< 0.063 mm
Type 2) Fine Sands	0.064  mm - 0.25  mm
Type 3) Medium / Coarse Sands and Granules	0.26  mm - 4.00  mm
Type 4) Pebbles	4.01 mm - 64.00 mm
Type 5) Cobbles and Boulders	64.01 mm – 4,096 mm
Type 6) Bedrock	> 4,096 mm

- □ Finer substrates will be worked between the thumb and forefinger to identify particle sizes.
- □ Substrate mapping will be performed at the highest resolution possible given the weather and hydrologic conditions at the time of survey. Generally, substrate patches greater than or equal to approximately 100 square feet will be mapped.
- □ Where surface water depths prohibit clear determination of substrate type, a probing rod will be used to probe the benthic layer at pre-determined points in order to identify substrate type. If predominate particle size cannot be determined with the probing rod alone, a petite Ponar® sampler will be used to retrieve for qualitative characterization/confirmation.
- Sediment types will be photo-documented at predetermined points (every fifth transect) to provide representative visual documentation of substrate type.
- □ The average depth of fine-grained deposits (*i.e.*, Type 1 and Type 2 substrates) will be estimated to approximate the volume and extent of accumulated sediment.
- Observations of any unique morphological features that describe sediment dynamics, such as the degree of embeddedness, imbrication, and sorting will be noted on the field sketch maps created in the preliminary geospatial assessment.

### **Field Logbook and Field Data Sheet**

Thorough, organized, and accurate records will be made using field logbooks and field maps to document findings. Information pertinent to the investigation will be recorded in the field logbook and/or field data sheets. Entries will include the following, as applicable:

- □ Project name and number
- □ Name of sampler and field personnel
- **Date and time of survey**
- Dependence of the substrate

- Dependence of the provided and spatial locations Photograph log with comments and spatial locations
- Observations at the sampling site (e.g., weather conditions)

Field investigation situations vary widely. No general rules can include each type of information that must be entered in a logbook or data sheet for a particular site. Site-specific recording will include sufficient information so that the sampling activity can be reconstructed without relying on the memory of field personnel.

### References

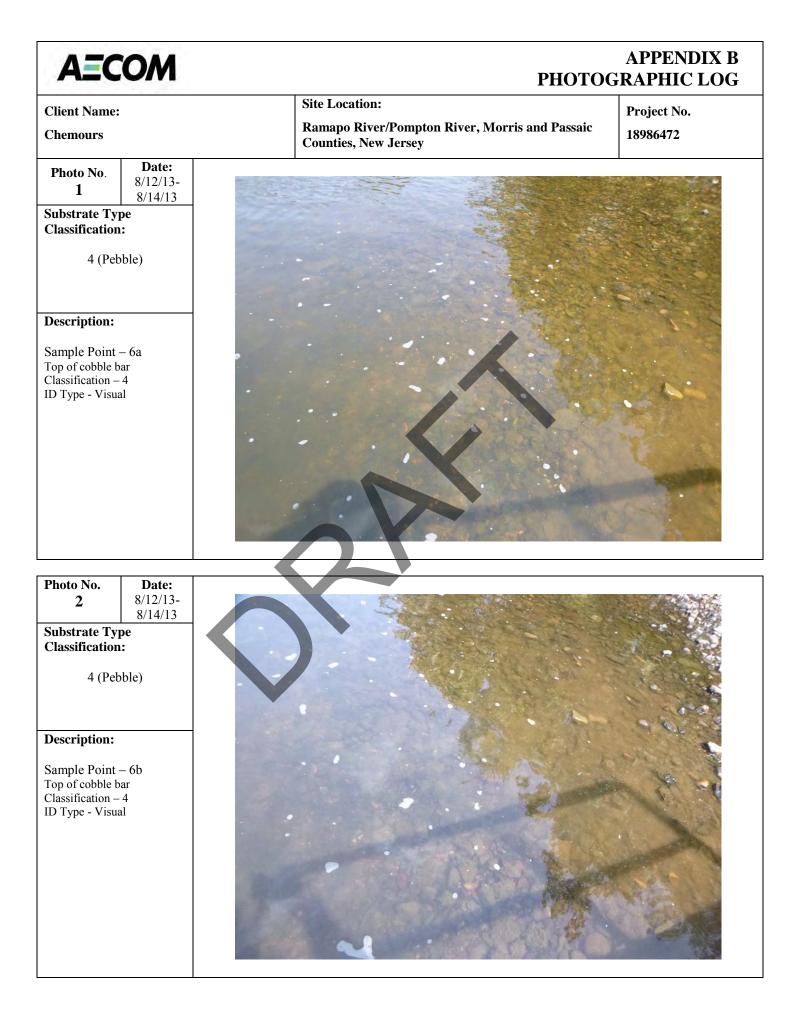
Leeder, M. R. 1982. Sedimentology: Process and Product. George Allen and Unwin Ltd, London, UK.



Appendix B

## Substrate Mapping Photographic Log







#### Client Name:

#### Chemours

Photo No.<br/>3Date:<br/>8/12/13-<br/>8/14/13Substrate Type<br/>Classification:4 (Pebble)Description:Sampling Point - 15<br/>Transition to cobble along<br/>shoreline.Classification - 4<br/>ID Type - Visual /Ponar

#### Site Location:

Ramapo River/Pompton River, Morris and Passaic Counties, New Jersey

Project No.

18986472

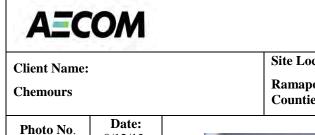


Photo No.	Date:	
4	8/12/13-	
	8/14/13	
Substrate Type Classification:		
3 (Coarse Sand/Granule)		

### **Description:**

Sampling Point – 19 Classification – 3 ID Type – Visual /Ponar





8/12/13-

8/14/13

Date: 8/12/13-

8/14/13

5

**Description:** 

Sampling Point -29 Classification -3ID Type - Visual /Ponar

Substrate Type **Classification:** 

3 (Coarse Sand/Granule)

### **APPENDIX B PHOTOGRAPHIC LOG**

Site Location:

Ramapo River/Pompton River, Morris and Passaic **Counties**, New Jersey

Project No. 18986472



**Description:** 

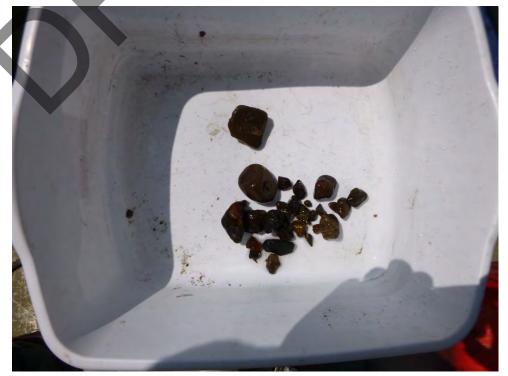
Photo No.

6

Substrate Type Classification:

Sampling Point - 48 Classification – 4 ID Type - Visual/Ponar

4 (Pebble)





#### **Client Name:**

#### Chemours

 Photo No.
 Date: 8/12/13-8/14/13

 Substrate Type Classification: 1 (Silt/Clay)
 Image: Classification = 1

 Description:
 Sampling Point -55

 Classification = 1
 ID Type - Visual /Probe

 Silt substrate; sink ~1 foot while wading.
 Image: Classification = 1

#### Site Location:

Ramapo River/Pompton River, Morris and Passaic Counties, New Jersey

Project No.

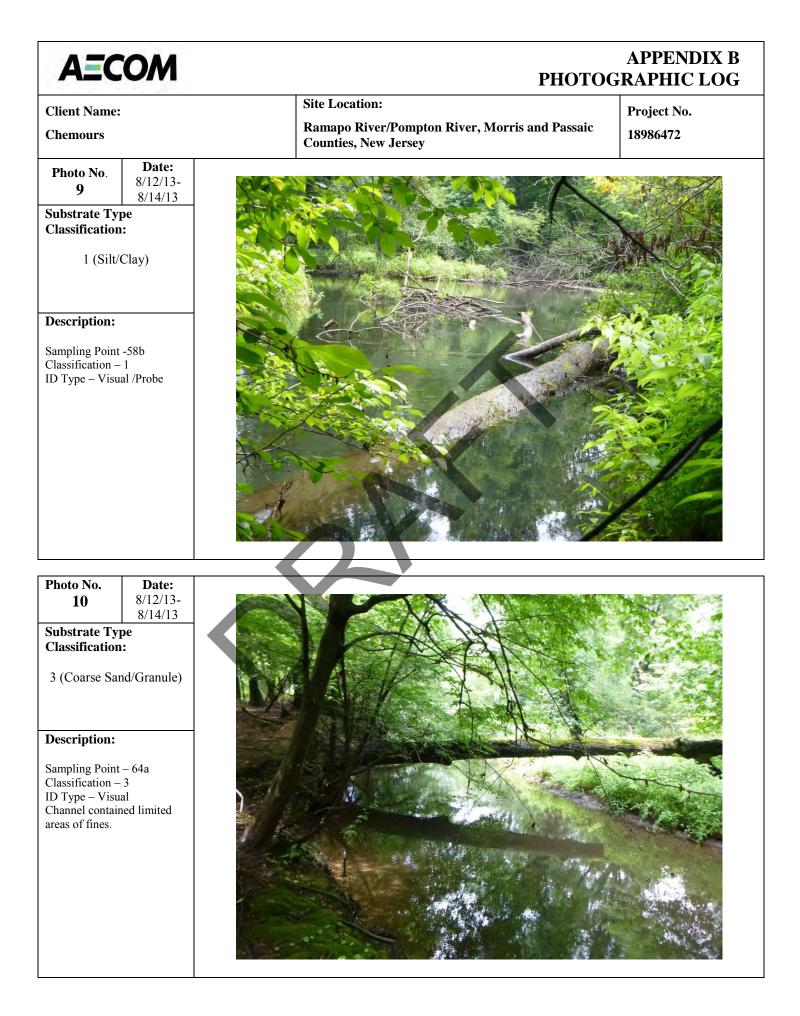
18986472



Photo No.	Date:			
8	8/12/13-			
	8/14/13			
Substrate Type				
Classification	Classification:			
1 (Silt/Clay)				
Description:				

Sampling Point – 58a Classification – 1 ID Type – Visual/Probe







#### **Client Name:**

#### Chemours

Photo No. 11 Substrate Typ Classification 3 (Coarse Sar	:	a second and
<b>Description:</b> Sampling Point Classification – ID Type – Visu Channel contair areas of fines.	3 al	

#### Site Location:

Ramapo River/Pompton River, Morris and Passaic Counties, New Jersey

Project No.

18986472



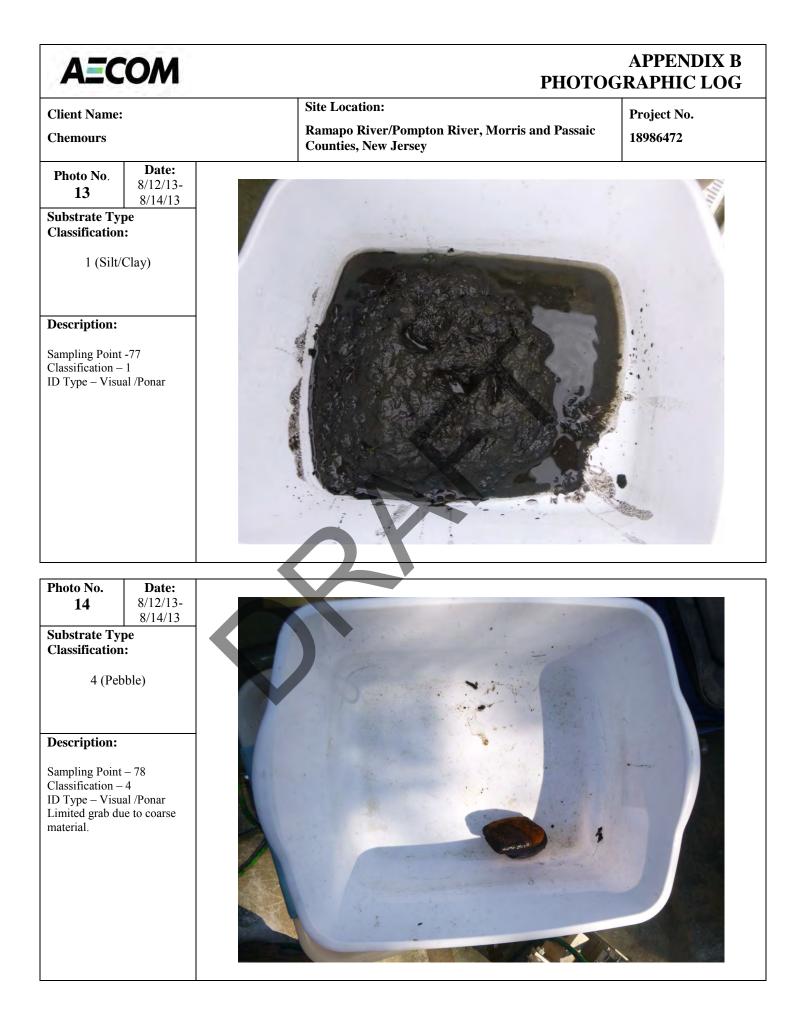
Photo No.	Date:
12	8/12/13-
	8/14/13
Substrate Type Classification:	

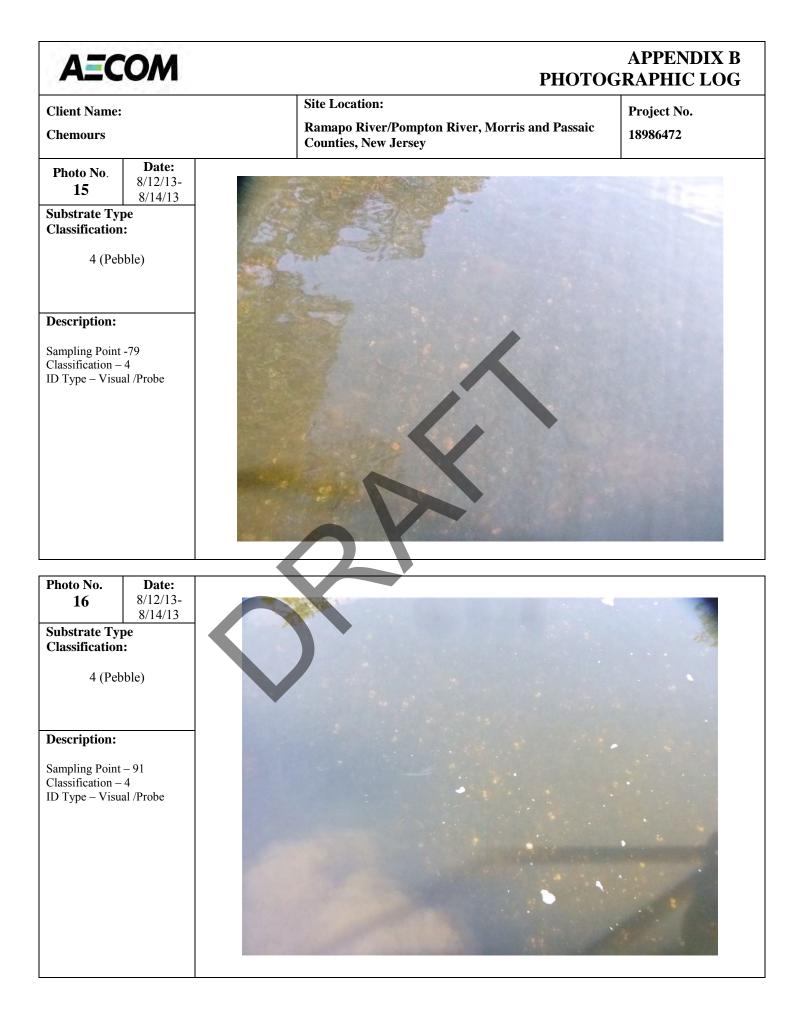
4 (Pebble)

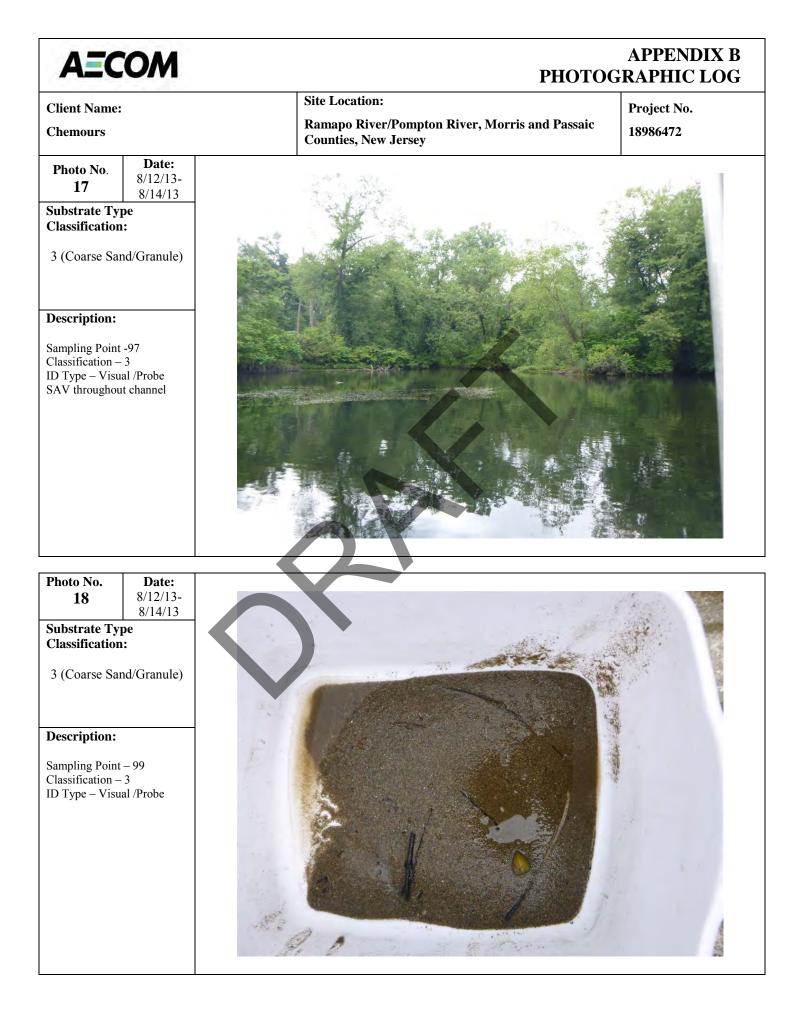
#### **Description:**

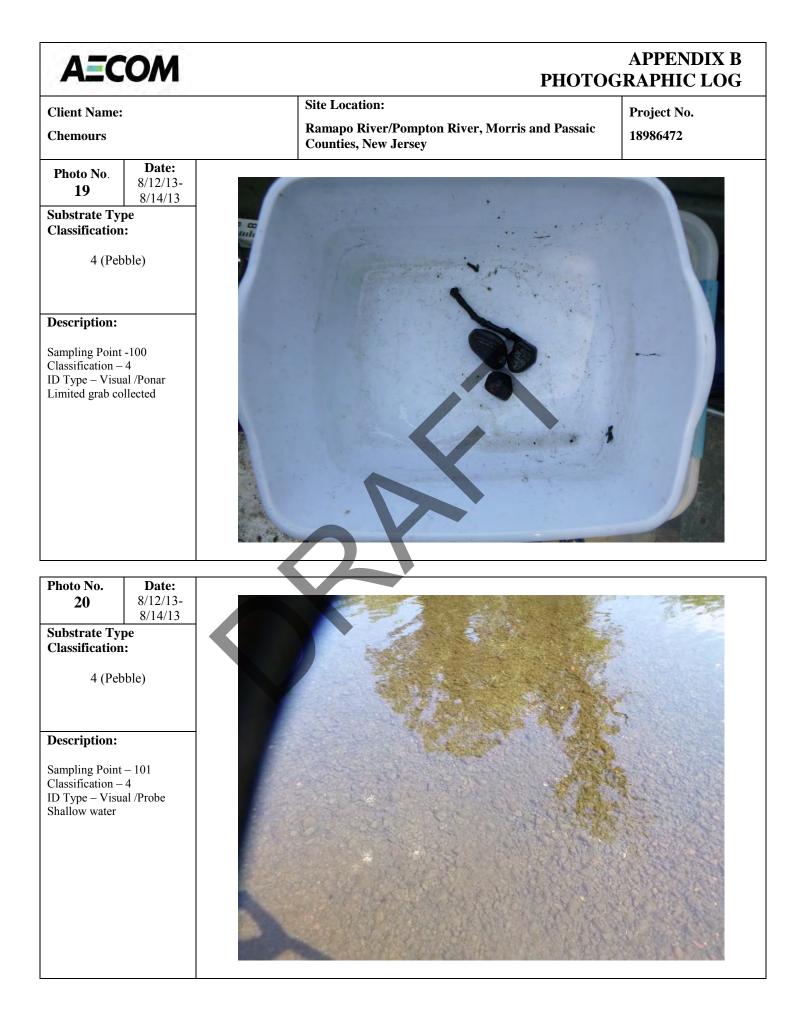
Sampling Point – 66 Classification – 4 ID Type – Visual /Ponar













#### **Client Name:**

#### Chemours

#### Site Location:

Ramapo River/Pompton River, Morris and Passaic Counties, New Jersey

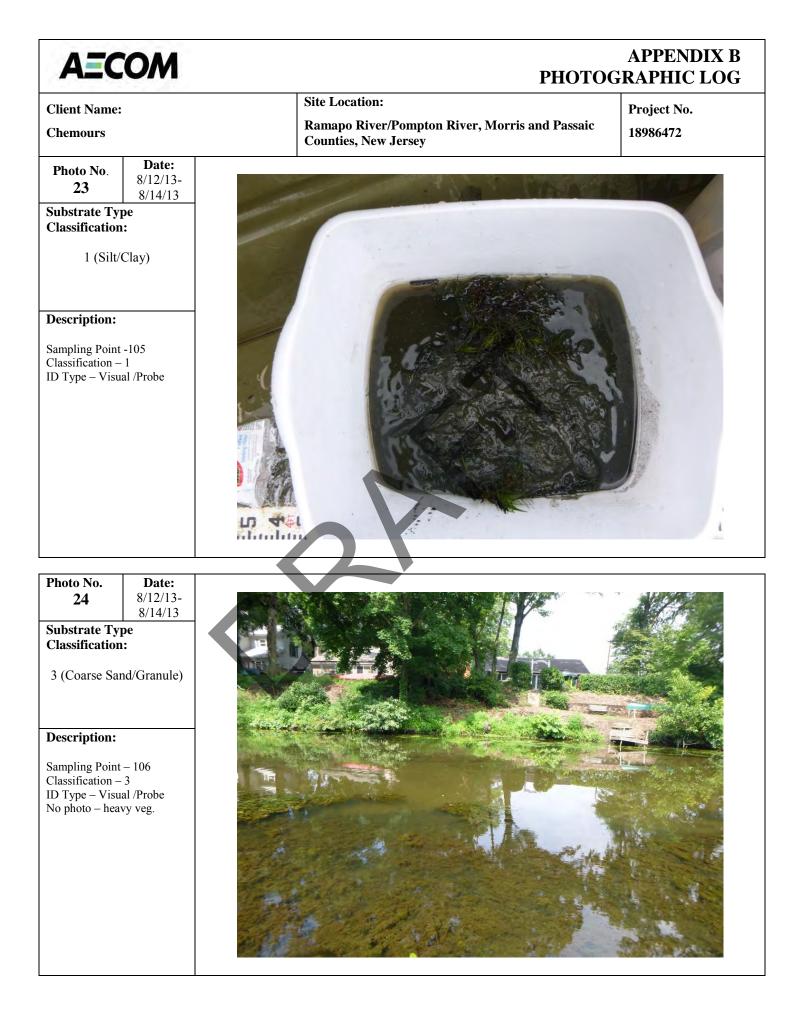
Project No.

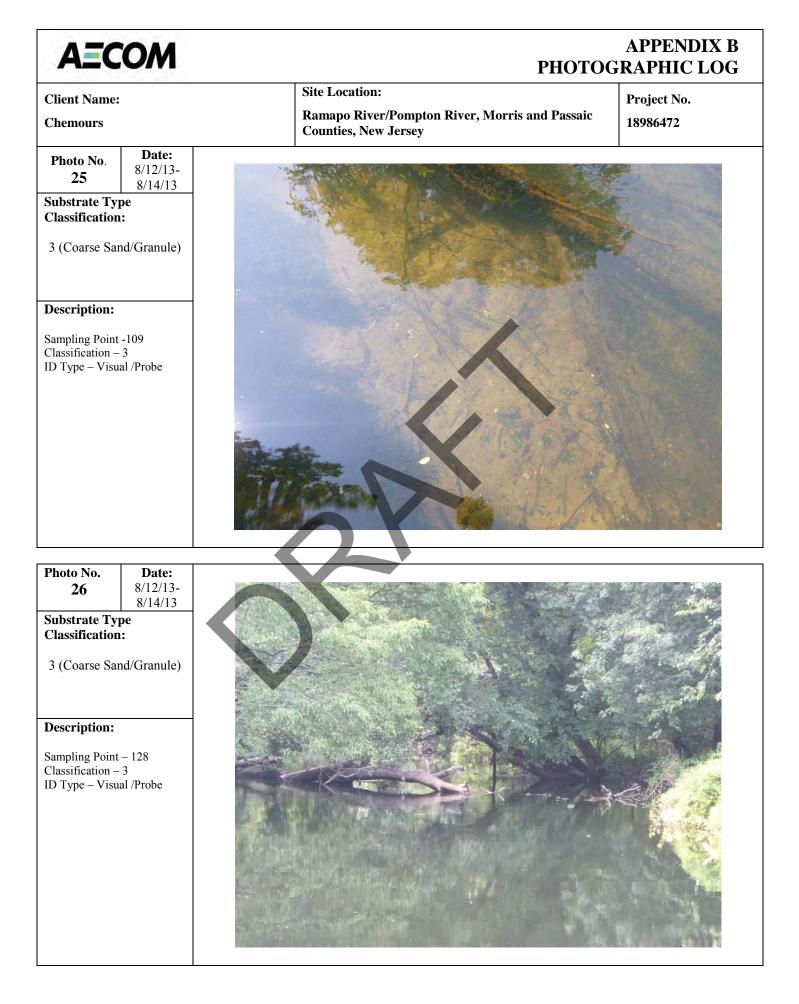
18986472

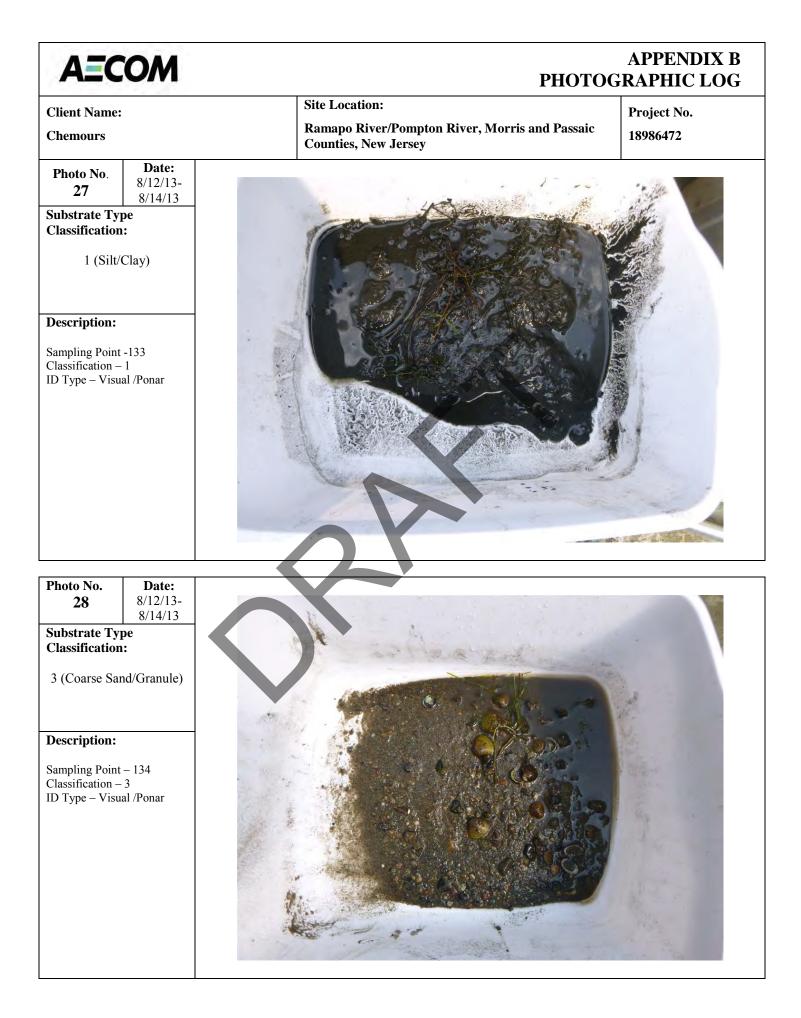


Photo No.	Date:			
22	8/12/13-			
	8/14/13			
Substrate Typ	•			
Classification	:			
3 (Coarse Sand/Granule)				
<b>Description:</b> Sampling Point – 104				
Classification – 3 ID Type – Visual /Ponar				











#### **Client Name:**

#### Chemours

		cou
Photo No. 29	Date: 8/12/13- 8/14/13	
Substrate Tyj Classification 3 (Coarse San	:	
Description:		
Sampling Point Classification – ID Type – Visu Numerous <i>corb</i>	3 al /Ponar	

#### Site Location:

Ramapo River/Pompton River, Morris and Passaic Counties, New Jersey

Project No.

18986472



Photo No.	Date:	
30	8/12/13-	
	8/14/13	
Substrate Type Classification:		
3 (Coarse Sand/Granule)		

#### **Description:**

Sampling Point – 145 Classification – 3 ID Type – Visual /Ponar Woody debris on bottom limited material collected.





#### **Client Name:**

#### Chemours

Photo No. 31	<b>Date:</b> 8/12/13- 8/14/13	
Substrate Typ Classification		
3 (Coarse Sar	nd/Granule)	
Description:		
Sampling Point Classification – ID Type – Visua Coarse sand lost grab.	3 al /Ponar	

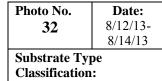
#### Site Location:

Ramapo River/Pompton River, Morris and Passaic Counties, New Jersey

Project No.

18986472





1 (Silt/Clay)

#### **Description:**

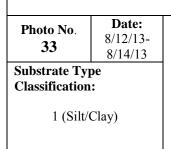
Sampling Point – 157 Classification – 1 ID Type – Visual /Ponar





#### **Client Name:**

#### Chemours



#### **Description:**

Sampling Point -158 Classification – 1 ID Type – Visual /Ponar



Ramapo River/Pompton River, Morris and Passaic Counties, New Jersey

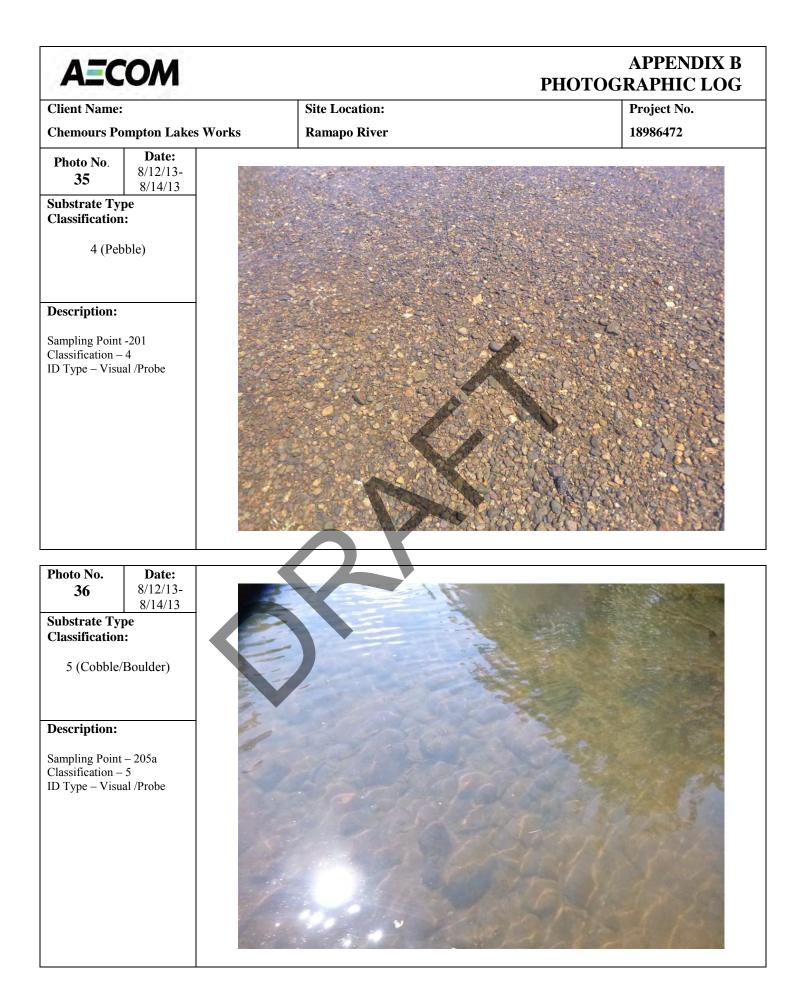
Project No.

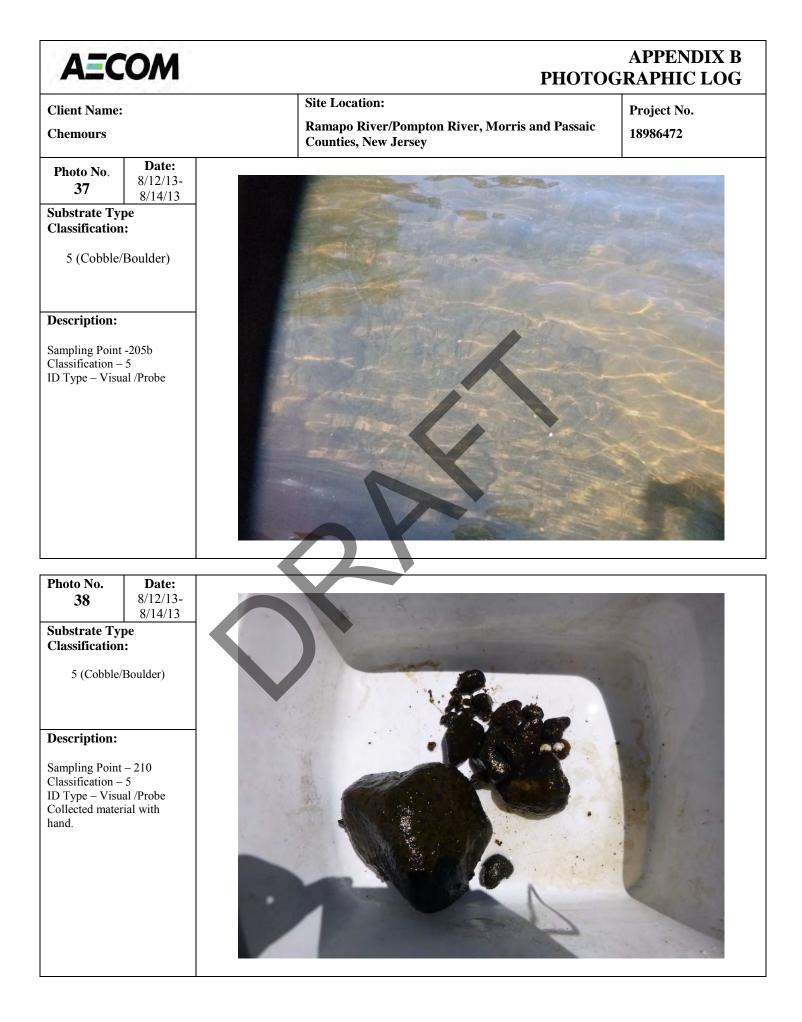
18986472

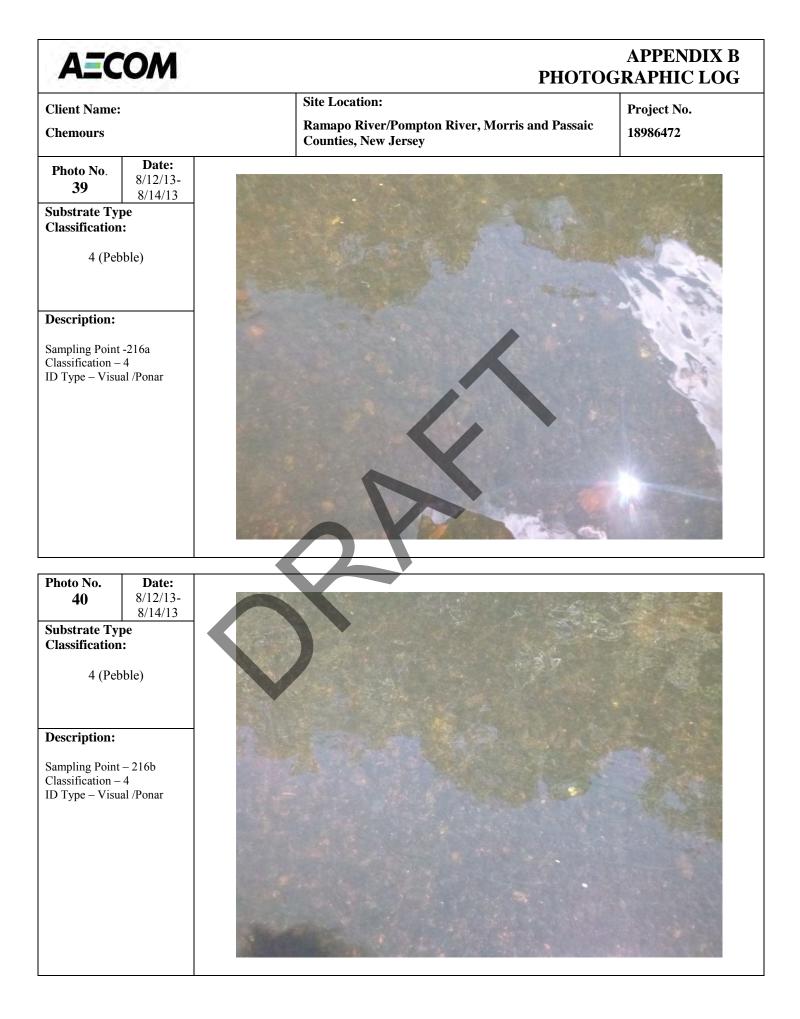


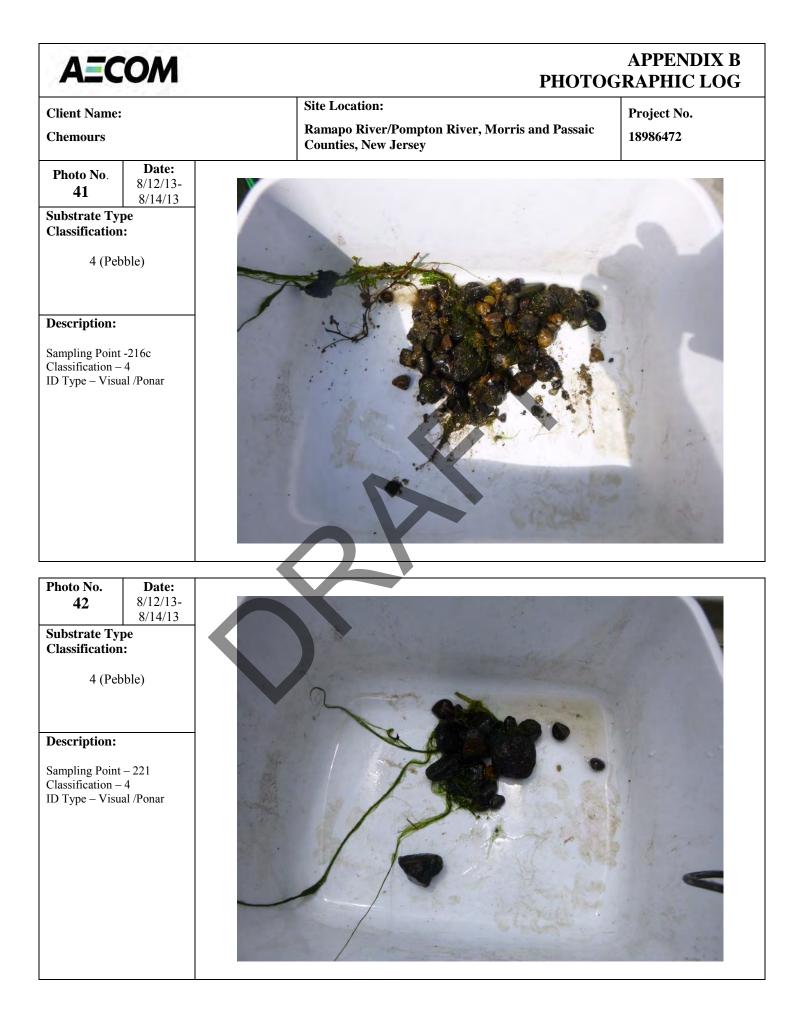
Photo No. 34	<b>Date:</b> 8/12/13- 8/14/13			
Substrate Type Classification:				
3 (Coarse Sand/Granule)				
Description:				
Sampling Point – 194 Classification – 3 ID Type – Visual /Ponar				

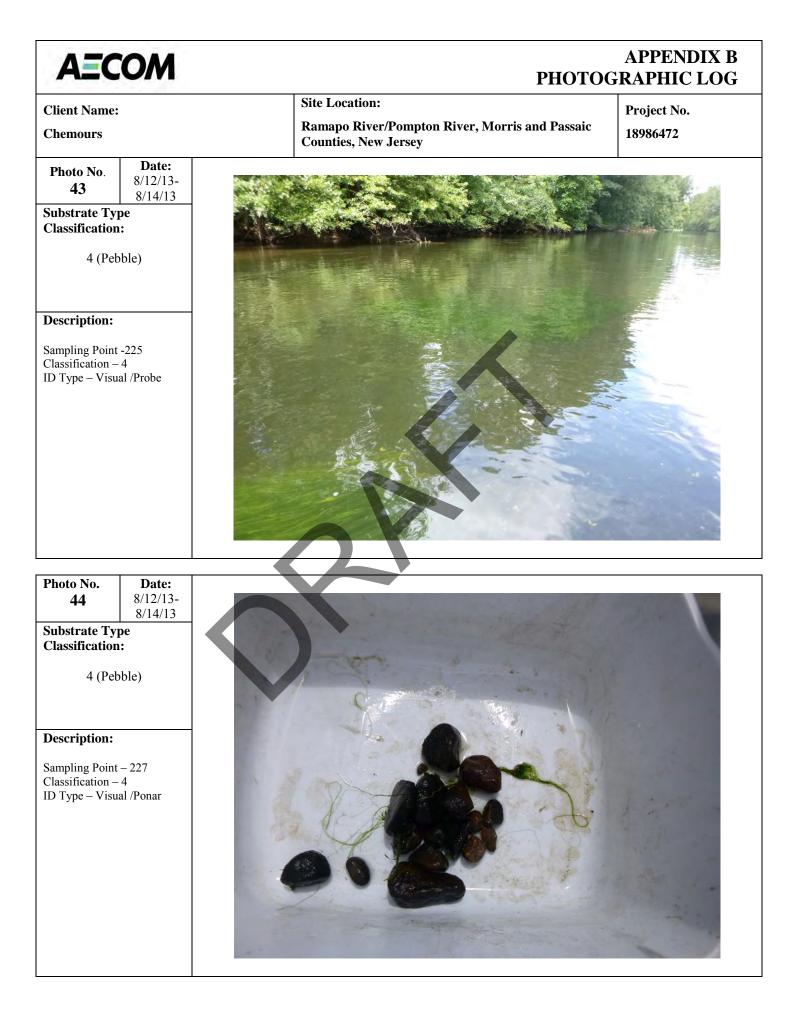


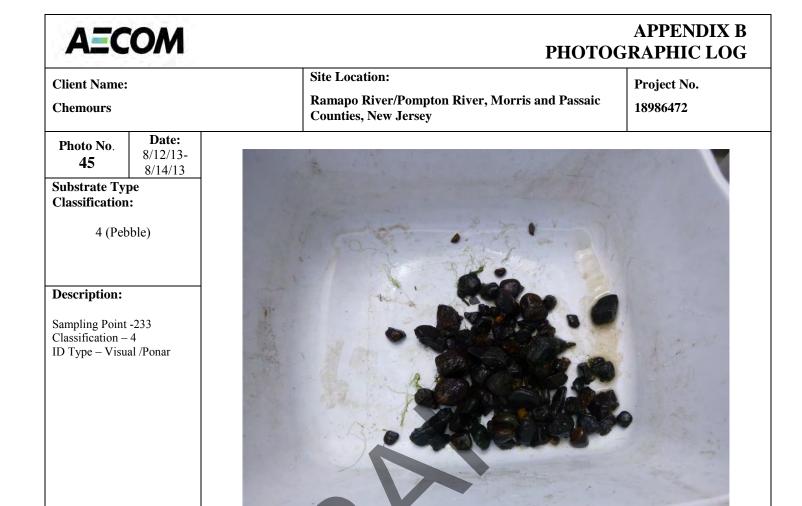












Appendix C

**DuPont Data Review** 



Ramapo-Pompton River Sediment Investigation Report POM\_Ram-Pom River Sediment\_070815.docx

#### ADQM DATA REVIEW NARRATIVE

<u>Site</u>	POM – Pompton Lakes Works

Project	Ramapo River Sediment Sampling 7/14
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**<u>Project Reviewer</u>** Candia Carle

Sampling Date July 28 - 31, 2014

#### **Analytical Protocol**

<b>Laboratory</b>	Analytical Method	Parameter(s)
Lancaster	SW 846 7470A/7471A	Mercury
Lancaster	SM 5310C 2000/Lloyd K	TOC TOC
Lancaster	ASTM D422	Grain Size
Lancaster	SM 2540 G 1997	Moisture

#### Sample Receipt

The following items are noted for this data set:

- All samples were received in satisfactory condition and within EPA temperature guidelines on July 29 31 and August 1, 2014.
- Not all line-outs on the chain of custodies were both initialed and dated.
- Three samples received at the lab on July 30, 2014 were not recorded on the chains. The chains for these three samples were sent to the laboratory via email.
- The sample ID RPR-2<u>1</u>-0.0-0.5 was recorded on the chain. The project team corrected this ID and submitted a revised chain to the lab. The lab reported this sample as RPR-2<u>2</u>-0-0.5.

#### Data Review

The electronic data submitted for this project was reviewed via the DuPont Data Review (DDR) process. Overall the data is acceptable for use without qualification, except as noted below:

• Some of the analytical results have been qualified in the database. See the DuPont Data Review (DDR) Narrative Report for which samples were qualified, the specific reasons for qualification, and potential bias in reported results.

#### **Attachments**

The DDR Narrative report and Lancaster Labs summary level report are attached. The full deliverables provided by the lab, due to the large file size, are not attached but are stored on the server in the project folder.

#### **DuPont In-House Review (DDR)**

The DDR is an internal review process used by the ADQM group to assist with the determination of data usability. The electronic data deliverables received from the laboratory are loaded into the Locus EIM<sup>TM</sup> database and processed through a series of data quality checks, which are a combination of software (Locus EIM<sup>TM</sup> database Data Validation Module (DVM) and manual reviewer evaluations. The data is evaluated against the following data usability checks:

- Field and laboratory blank contamination
- US EPA hold time criteria
- Missing Quality Control (QC) samples
- Matrix spike(MS)/matrix spike duplicate (MSD) recoveries and the relative percent differences (RPDs) between these spikes
- Laboratory control sample(LCS)/control sample duplicate (LCSD) recoveries and the RPD between these spikes
- Surrogate spike recoveries for organic analyses
- RPD between field duplicate sample pairs
- RPD between laboratory replicates for inorganic analyses
- Difference / percent difference between total and dissolved sample pairs.

The DDR applies the following data evaluation qualifiers to analysis results, as warranted:

Qualifier	Definition
В	Not detected substantially above the level reported in the laboratory or field blanks.
R	Unusable result. Analyte may or may not be present in the sample.
J	Analyte present. Reported value may not be accurate or precise.
UJ	Not detected. Reporting limit may not be accurate or precise.

Please refer to the laboratory report for a description of the lab qualifiers.

## **DDR Narrative Report**

Site: Pompton Lakes Works

Sampling Program: Ramapo River Sediment Sampling 7/14 Va

Validation Options: LABSTATS

Validation Reason Code: Associated MS and/or MSD analysis had relative percent recovery (RPR) values less than the lower control limit. The actual detection limits may be higher than reported.

Field Sample ID	Date Sampled Lab Sample II	Analyte	Result Units	Туре	MDL		Validation Qualifier	Analytical Method	Pre-prep	Prep
SD073114-RPR-32-0.5- 1.0	07/31/2014 7552074	Mercury	0.0123 MG/KG	MDL	0.0123	0.123	UJ	7471A		7471A MOD.
SD073114-RPR-34-0.5- 0.75	07/31/2014 7552075	Mercury	0.0122 MG/KG	MDL	0.0122	0.122	UJ	7471A		7471A MOD.



Validation Reason Code: Associated MS and/or MSD analysis had relative percent recovery (RPR) values higher than the upper control limit. The reported result may be biased high.

	Date								Validation	Analytical		
Field Sample ID	Sampled	Lab Sample ID	Analyte	Result	Units	Туре	MDL		Qualifier	Method	Pre-prep	Prep
SD072914-RPR-01-0.0- 0.5	07/29/2014	7548881	Mercury	0.435	6 MG/KG	MDL	0.0152	0.152	J	7471A		7471A MOD.
SD072914-RPR-09-0.0- 0.5	07/29/2014	7548859	Mercury	0.733	B MG/KG	MDL	0.0193	0.193	J	7471A		7471A MOD.
SD072914-RPR-12-0.0- 0.5	07/29/2014	7548862	Mercury	2.77	MG/KG	MDL	0.114	1.14	J	7471A		7471A MOD.
SD072914-RPR-12-0.5- 0.75	07/29/2014	7548863	Mercury	4.97	MG/KG	MDL	0.105	1.05	J	7471A		7471A MOD.
SD072914-RPR-13-0.0- 0.5	07/29/2014	7548864	Mercury	0.690	MG/KG	MDL	0.0301	0.301	J	7471A		7471A MOD.
SD072914-RPR-13-0.5- 1.0	07/29/2014	7548867	Mercury	0.529	MG/KG	MDL	0.0169	0.169	J	7471A		7471A MOD.
SD072914-RPR-13-1.0-	07/29/2014	7548868	Mercury	0.184	MG/KG	MDL	0.0176	0.176	J	7471A		7471A MOD.
SD072914-RPR-14-0.0- 0.5	07/29/2014	7548865	Mercury	0.551	MG/KG	MDL	0.0246	0.246	J	7471A		7471A MOD.
SD072914-RPR-14-0.5- 1.0	07/29/2014	7548869	Mercury	0.286	6 MG/KG	MDL	0.0153	0.153	J	7471A		7471A MOD.
SD072914-RPR-14-1.0- 1.5	07/29/2014	7548870	Mercury	0.207	MG/KG	MDL	0.0153	0.153	J	7471A		7471A MOD.
SD072914-RPR-15-0.0- 0.5	07/29/2014	7548866	Mercury	23.5	5 MG/KG	MDL	1.07	10.7	J	7471A		7471A MOD.
SD072914-RPR-15-0.0- 0.5-D	07/29/2014	7548872	Mercury	23.9	MG/KG	MDL	1.06	10.6	J	7471A		7471A MOD.
SD072914-RPR-15-0.5- 1.0	07/29/2014	7548871	Mercury	6.34	MG/KG	MDL	0.180	1.80	J	7471A		7471A MOD.
SD072914-RPR-16-0.0- 0.5	07/29/2014	7548873	Mercury	0.448	B MG/KG	MDL	0.0176	0.176	J	7471A		7471A MOD.
SD072914-RPR-17-0.0- 0.5	07/29/2014	7548874	Mercury	1.61	MG/KG	MDL	0.0468	0.468	J	7471A		7471A MOD.
SD072914-RPR-17-0.5- 1.0	07/29/2014	7548877	Mercury	2.00	MG/KG	MDL	0.0804	0.804	J	7471A		7471A MOD.
SD072914-RPR-18-0.0- 0.5	07/29/2014	7548875	Mercury	2.41	MG/KG	MDL	0.0705	0.705	J	7471A		7471A MOD.
SD072914-RPR-18-0.5- 0.8	07/29/2014	7548878	Mercury	2.15	6 MG/KG	MDL	0.0897	0.897	J	7471A		7471A MOD.
SD072914-RPR-19-0.0- 0.5	07/29/2014	7548876	Mercury	0.344	MG/KG	MDL	0.0158	0.158	J	7471A		7471A MOD.
SD072914-RPR-19-0.5- 0.8	07/29/2014	7548879	Mercury	0.377	′ MG/KG	MDL	0.0195	0.195	J	7471A		7471A MOD.
SD072914-RPR-02-0.0- 0.5	07/29/2014	7548882	Mercury	0.123	8 MG/KG	MDL	0.0146	0.146	J	7471A		7471A MOD.
0.5 SD072914-RPR-10-0.0- 0.5	07/29/2014	7548860	Mercury	0.0389	) MG/KG	MDL	0.0123	0.123	J	7471A		7471A MOD.

Validation Reason Code: Associated MS and/or MSD analysis had relative percent recovery (RPR) values higher than the upper control limit. The reported result may be biased

high.

Field Sample ID	Date Sampled	Lab Sample ID	Analyte	Result	Units	Туре	MDL		Validation Qualifier	Analytical Method	Pre-prep	Prep
SD072914-RPR-11-0.0- 0.5	07/29/2014	7548861	Mercury	0.101	MG/KG	MDL	0.0132	0.132	J	7471A		7471A MOD.
SD072914-RPR-01-0.5- 0.75	07/29/2014	7548883	Mercury	0.122	MG/KG	MDL	0.0137	0.137	J	7471A		7471A MOD.



## Validation Reason Code: High relative percent difference (RPD) observed between field duplicate and parent sample. The reported result may be imprecise.

Field Sample ID	Date Sampled	Lab Sample ID	Analyte	Result	Units	Туре	MDL	PQL	Validation Qualifier	Analytical Method	Pre-prep	Prep
SD073014-RPR-26-0.0- 0.5	07/30/2014	7550174	0.001 MM	2.0	% PASSI NG	MDL	0.50	0.50	J	D422		
SD073014-RPR-26-0.0- 0.5	07/30/2014	7550174	0.002 MM	2.0	% PASSI NG	MDL	0.50	0.50	J	D422		
SD073014-RPR-26-0.0- 0.5-D	07/30/2014	7550179	0.001 MM	4.0	% PASSI NG	MDL	0.50	0.50	J	D422		
SD073014-RPR-26-0.0- 0.5-D	07/30/2014	7550179	0.002 MM	4.0	% PASSI NG	MDL	0.50	0.50	J	D422		

## Validation Reason Code: High relative percent difference (RPD) observed between REP (laboratory replicate) and parent sample. The reported result may be imprecise.

Field Sample ID	Date Sampled	Lab Sample ID	Analyte	Result Units	Type	MDL	POI	Validation Qualifier	Analytical Method	Pre-prep	Prep
SD072914-RPR-01-0.0-	07/29/2014		Percent Moisture	38.7 %	MDL	0.50	0.50	J	2540 G-1997		
0.5	07/29/2014	1040001		30.1 %	NDL	0.50	0.50	J	2040 G-1997		
SD072914-RPR-02-0.0-	07/29/2014	7548882	Percent Moisture	35.5 %	MDL	0.50	0.50	J	2540 G-1997		
0.5											
SD072914-RPR-01-0.5- 0.75	07/29/2014	7548883	Percent Moisture	32.4 %	MDL	0.50	0.50	J	2540 G-1997		
SD073014-RPR-20-0.0-	07/30/2014	7550165	Percent Moisture	31.5 %	MDL	0.50	0.50	J	2540 G-1997		
0.5											
SD073014-RPR-20-0.5-	07/30/2014	7550167	Percent Moisture	24.6 %	MDL	0.50	0.50	J	2540 G-1997		
1.0 SD072014 BDB 20.1.0	07/30/2014	7550169	Percent Moisture	25.0.9/	MDL	0.50	0.50	J	2540 G-1997		
SD073014-RPR-20-1.0- 1.4	07/30/2014	100100		25.9 %	WIDE	0.50	0.50	J	2040 G-1997		
SD073014-RPR-22-0.0-	07/30/2014	7550166	Percent Moisture	52.2 %	MDL	0.50	0.50	J	2540 G-1997		
0.5											
SD073014-RPR-24-0.0-	07/30/2014	7550169	Percent Moisture	49.3 %	MDL	0.50	0.50	J	2540 G-1997		
0.5 SD073014-RPR-25-0.0-	07/30/2014	7550170	Percent Moisture	47.2 %	MDL	0.50	0.50	J	2540 G-1997		
0.5	01/00/2014			71.2 70		0.00	0.00	v	2040 0-1001		
SD073014-RPR-25-0.5-	07/30/2014	7550176	Percent Moisture	51.6 %	MDL	0.50	0.50	J	2540 G-1997		
0.95	07/00/004	7550474	Demonst Major			0.50	0		0540 0 4055		
SD073014-RPR-26-0.0- 0.5	07/30/2014	/5501/4	Percent Moisture	69.9 %	MDL	0.50	0.50	J	2540 G-1997		
SD073014-RPR-27-0.0-	07/30/2014	7550175	Percent Moisture	35.1 %	MDL	0.50	0.50	J	2540 G-1997		
0.5								-			
SD073014-RPR-28-0.0-	07/30/2014	7550161	Percent Moisture	58.9 %	MDL	0.50	0.50	J	2540 G-1997		
0.5 SD073014 PPP 20.0.0	07/20/204 4	7550162	Porcont Moisture	56.0.0/	MDI	0 50		J	2540 C 1007		
SD073014-RPR-29-0.0- 0.5	07/30/2014	1000102	Percent Moisture	56.0 %	MDL	0.50	0.50	J	2540 G-1997		
SD073014-RPR-29-0.5-	07/30/2014	7550164	Percent Moisture	30.2 %	MDL	0.50	0.50	J	2540 G-1997		
0.75											
SD073014-RPR-30-0.0-	07/30/2014	7550163	Percent Moisture	50.3 %	MDL	0.50	0.50	J	2540 G-1997		
0.5 SD072914-RPR-13-0.0-	07/29/2014	7548864	Total Organic Carbon	41600 MG/KG	MDL	2360	7090	J	LLOYD KAHN		
0.5	0172072014	, 0-000-	rotar organio Odrbon			2000	1050	Ŭ	modified		
SD072914-RPR-14-0.5-	07/29/2014	7548869	Percent Moisture	39.5 %	MDL	0.50	0.50	J	2540 G-1997		
1.0	07/00/004	7540070	Demonst Majar	05 4 94		0 50	0		0540 0 4055		
SD072914-RPR-14-1.0- 1.5	07/29/2014	/5488/0	Percent Moisture	35.1 %	MDL	0.50	0.50	J	2540 G-1997		
SD072914-RPR-15-0.0-	07/29/2014	7548872	Percent Moisture	55.5 %	MDL	0.50	0.50	J	2540 G-1997		
0.5-D								-			
SD072914-RPR-15-0.5-	07/29/2014	7548871	Percent Moisture	48.4 %	MDL	0.50	0.50	J	2540 G-1997		
1.0 20072014 DDD 16 0 0	07/20/2044	75 400 70	Dereent Maisture	44.6.9/		0.50	0.50		2540 0 4007		
SD072914-RPR-16-0.0- 0.5	07/29/2014	1040013	Percent Moisture	44.6 %	MDL	0.50	0.50	J	2540 G-1997		
SD072914-RPR-17-0.0-	07/29/2014	7548874	Percent Moisture	50.2 %	MDL	0.50	0.50	J	2540 G-1997		
0.5											

Validation Reason Code: High relative percent difference (RPD) observed between REP (laboratory replicate) and parent sample. The reported result may be imprecise.

	Dete									Amahatiaal		
Field Sample ID	Date Sampled	Lab Sample ID	Analyte	Result	Units	Туре	MDL	PQL	Validation Qualifier	Analytical Method	Pre-prep	Prep
SD072914-RPR-17-0.5- 1.0	07/29/2014	7548877	Percent Moisture	39.5	%	MDL	0.50	0.50	J	2540 G-1997		
SD072914-RPR-18-0.0- 0.5	07/29/2014	7548875	Percent Moisture	65.2	%	MDL	0.50	0.50	J	2540 G-1997		
SD072914-RPR-18-0.5- 0.8	07/29/2014	7548878	Percent Moisture	48.3	%	MDL	0.50	0.50	J	2540 G-1997		
SD072914-RPR-19-0.0- 0.5	07/29/2014	7548876	Percent Moisture	37.2	%	MDL	0.50	0.50	J	2540 G-1997		
SD072914-RPR-19-0.5- 0.8	07/29/2014	7548879	Percent Moisture	49.5	%	MDL	0.50	0.50	J	2540 G-1997		
SD073014-RPR-26-0.0- ).5-D	07/30/2014	7550179	Percent Moisture	73.6	%	MDL	0.50	0.50	J	2540 G-1997		
SD073014-RPR-26-0.5- 1.0	07/30/2014	7550177	Percent Moisture	56.7	%	MDL	0.50	0.50	J	2540 G-1997		
SD073014-RPR-27-0.5- 1.0	07/30/2014	7550178	Percent Moisture	29.5	%	MDL	0.50	0.50	J	2540 G-1997		

 $\checkmark$ 

Validation Reason Code: Associated MS and/or MSD analysis had relative percent recovery (RPR) values less than the lower control limit but above the rejection limit. The reported result may be biased low.

Field Sample ID	Date Sampled	Lab Sample ID	Analyte	Result	Units	Туре	MDL	PQL	Validation Qualifier	Analytical Method	Pre-prep	Prep
SD073114-RPR-21-1.0- 1.2	07/31/2014	7552079	Mercury	0.476	MG/KG	MDL	0.0182	0.182	J	7471A		7471A MOD.
SD073114-RPR-23-0.0- 0.5	07/31/2014	7552080	Mercury	1.86	MG/KG	MDL	0.0349	0.349	J	7471A		7471A MOD.
SD073114-RPR-23-0.5- 0.9	07/31/2014	7552081	Mercury	0.141	MG/KG	MDL	0.0141	0.141	J	7471A		7471A MOD.
SD073114-RPR-31-0.0- 0.5	07/31/2014	7552069	Mercury	0.196	MG/KG	MDL	0.0130	0.130	J	7471A		7471A MOD.
SD073114-RPR-21-0.0- 0.5	07/31/2014	7552077	Mercury	3.31	MG/KG	MDL	0.0580	0.580	J	7471A		7471A MOD.
SD073114-RPR-21-0.5- 1.0	07/31/2014	7552078	Mercury	0.192	MG/KG	MDL	0.0262	0.262	J	7471A		7471A MOD.
SD073114-RPR-31-0.5- 0.9	07/31/2014	7552073	Mercury	0.101	MG/KG	MDL	0.0116	0.116	, J	7471A		7471A MOD.
SD073114-RPR-32-0.0- 0.5	07/31/2014	7552070	Mercury	0.169	MG/KG	MDL	0.0194	0.194	J	7471A		7471A MOD.
SD073114-RPR-33-0.0- 0.5	07/31/2014	7552071	Mercury	0.0643	MG/KG	MDL	0.0115	0.115	J	7471A		7471A MOD.
SD073114-RPR-34-0.0- 0.5	07/31/2014	7552072	Mercury	0.0353	MG/KG	MDL	0.0134	0.134	J	7471A		7471A MOD.

## Validation Reason Code: The result is estimated since the concentration is between the method detection limit and practical quantitation limit.

Field Sample ID	Date Sampled	Lab Sample ID	Analyte	Result Units	Туре	MDL	PQL	Validation Qualifier	Analytical Method	Pre-prep	Prep
SD072814-RPR-07-0.5-	07/28/2014		Mercury	0.0299 MG/KG	MDL	0.0161	0.161		7471A		7471A MOD.
).75 SDW072814-FB-1	07/28/2014	7547457	Total Organic Carbon	0.98 MG/L	MDL	0.50	1.0	J	5310 C-2000		
SDW073114-FB-4	07/31/2014	7552076	Total Organic Carbon	0.97 MG/L	MDL	0.50	1.0	J	5310 C-2000		
SD073114-RPR-33-0.0- 0.5	07/31/2014	7552071	Total Organic Carbon	264 MG/KG	MDL	124	372	J	LLOYD KAHN modified	I	
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					X						





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#### ANALYTICAL RESULTS

Prepared by:

Eurofins Lancaster Laboratories Environmental 2425 New Holland Pike Lancaster, PA 17601 Prepared for:

CRG-E.I.DuPont de Nemours & Co URS Corporation Iron Hill Corporate Center 4051 Ogletown Road, Suite 300 Newark DE 19713

Lancaster Labs (LL) #

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August 19, 2014

#### Project: POM - RAMAPO RIVER SEDIMENT SAMPLING

Submittal Date: 07/29/2014 Group Number: 1492182 SDG: POM20 PO Number: LBIO-66380 State of Sample Origin: NJ

Client Sample Description SD072814-RPR-03-0.0-0.5 Sediment SD072814-RPR-04-0.0-0.5 Sediment SD072814-RPR-05-0.0-0.5 Sediment SD072814-RPR-06-0.0-0.5 Sediment SD072814-RPR-07-0.0-0.5 MS Sediment SD072814-RPR-07-0.0-0.5 MSD Sediment SD072814-RPR-07-0.0-0.5 Dupl Sediment SD072814-RPR-07-0.0-0.5 Sediment SD072814-RPR-08-0.0-0.5 Sediment SD072814-RPR-08-0.5-1.0 Sediment SD072814-RPR-08-0.5-1.0 Sediment SD072814-FB-1 Blank Water

The specific methodologies used in obtaining the enclosed analytical results are indicated on the Laboratory Sample Analysis Record.

1 COPY TO Data Package Group





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Respectfully Submitted,

Nancy lan Bornhow

Nancy Jean Bornholm Principal Specialist

(717) 556-7250



**Analysis Report** 

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#### Sample Description: SD072814-RPR-03-0.0-0.5 Sediment RAMAPO RIVER SEDIMENT SAMPLING 7/14

#### LL Sample # SW 7547446 LL Group # 1492182 Account # 07032

#### Project Name: POM - RAMAPO RIVER SEDIMENT SAMPLING

Collected: 07/28/2014 12:55 by JC

Submitted: 07/29/2014 09:15 Reported: 08/19/2014 14:06 CRG-E.I.DuPont de Nemours & Co URS Corporation Iron Hill Corporate Center 4051 Ogletown Road, Suite 300 Newark DE 19713

PRP03 SDG#: POM20-01

CAT No.	Analysis Name		CAS Number	Dry Result	Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
Metal	s	SW-846 747	1A	mg/kg	mg/kg	mg/kg	
00159	Mercury		7439-97-6	0.639	0.0211	0.211	1
Wet C	hemistry	Lloyd Kahn	modified	mg/kg	mg/kg	mg/kg	
00383	TOC by Lloyd Kahn		n.a.	8,890	1,650	4,950	1
Wet C	hemistry	ASTM D422		% Passing	% Passing	% Passing	
07103	75 mm		n.a.	100	0.50	0.50	1
07103	37.5 mm		n.a.	100	0.50	0.50	1
07103	19 mm		n.a.	100	0.50	0.50	1
07103	4.75 mm		n.a.	99.3	0.50	0.50	1
07103	3.35 mm		n.a.	98.4	0.50	0.50	1
07103	2.36 mm		n.a.	96.8	0.50	0.50	1
07103	1.18 mm		n.a.	96.0	0.50	0.50	1
07103	0.6 mm		n.a.	95.1	0.50	0.50	1
07103	0.3 mm		n.a.	91.1	0.50	0.50	1
07103	0.15 mm		n.a.	68.1	0.50	0.50	1
07103	0.075 mm		n.a.	42.8	0.50	0.50	1
07103	0.064 mm		n.a.	39.0	0.50	0.50	1
07103	0.05 mm		n.a.	32.0	0.50	0.50	1
07103	0.02 mm		n.a.	16.5	0.50	0.50	1
07103	0.005 mm		n.a.	7.5	0.50	0.50	1
07103	0.002 mm		n.a.	3.0	0.50	0.50	1
07103	0.001 mm		n.a.	2.0	0.50	0.50	1
Wet C	hemistry	SM 2540 G-	1997	8	8	%	
00111	_ Moisture		n.a.	56.2	0.50	0.50	1
	Moisture represents 103 - 105 degrees (		eight of the s	sample after over	n drying at		
	as-received basis.						

#### General Sample Comments

State of New Jersey Lab Certification No. PA011

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

#### Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time		Analyst	Dilution Factor
00159	Mercury	SW-846 7471A	1	142115711001	08/01/2014 11	1:18	Damary Valentin	1
05711	SW SW846 Hg Digest	SW-846 7471A modified	1	142115711001	07/31/2014 10	):25	Christopher M Klumpp	1
00383	TOC by Lloyd Kahn	Lloyd Kahn modified	1	14211049531A	07/30/2014 02	2:34	James S Mathiot	1
07103	Grain Size to 1 um	ASTM D422	1	14211710301A	07/30/2014 01	L:30	Daniel S Smith	1
00111	Moisture	SM 2540 G-1997	1	14217820001A	08/05/2014 19	9:51	Scott W Freisher	1



**Analysis Report** 

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#### Sample Description: SD072814-RPR-04-0.0-0.5 Sediment RAMAPO RIVER SEDIMENT SAMPLING 7/14

#### LL Sample # SW 7547447 LL Group # 1492182 Account # 07032

#### Project Name: POM - RAMAPO RIVER SEDIMENT SAMPLING

Collected: 07/28/2014 13:30 by JC

Submitted: 07/29/2014 09:15 Reported: 08/19/2014 14:06 CRG-E.I.DuPont de Nemours & Co URS Corporation Iron Hill Corporate Center 4051 Ogletown Road, Suite 300 Newark DE 19713

#### PRP04 SDG#: POM20-02

CAT No.	Analysis Name		CAS Number	Dry Result	Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
Metal	s	SW-846 747	71A	mg/kg	mg/kg	mg/kg	
00159	Mercury		7439-97-6	0.933	0.0191	0.191	1
Wet C	hemistry	Lloyd Kahr	n modified	mg/kg	mg/kg	mg/kg	
00383	TOC by Lloyd Kahn		n.a.	7,220	1,570	4,710	1
Wet C	hemistry	ASTM D422		% Passing	% Passing	% Passing	
07103	75 mm		n.a.	100	0.50	0.50	1
07103	37.5 mm		n.a.	100	0.50	0.50	1
07103	19 mm		n.a.	99.9	0.50	0.50	1
07103	4.75 mm		n.a.	98.7	0.50	0.50	1
07103	3.35 mm		n.a.	98.1	0.50	0.50	1
07103	2.36 mm		n.a.	97.2	0.50	0.50	1
07103	1.18 mm		n.a.	95.6	0.50	0.50	1
07103	0.6 mm		n.a.	92.0	0.50	0.50	1
07103	0.3 mm		n.a.	75.1	0.50	0.50	1
07103	0.15 mm		n.a.	41.3	0.50	0.50	1
07103	0.075 mm		n.a.	21.8	0.50	0.50	1
07103	0.064 mm		n.a.	18.0	0.50	0.50	1
07103	0.05 mm		n.a.	14.5	0.50	0.50	1
07103	0.02 mm		n.a.	10.0	0.50	0.50	1
07103	0.005 mm		n.a.	3.0	0.50	0.50	1
07103	0.002 mm		n.a.	2.0	0.50	0.50	1
07103	0.001 mm		n.a.	2.0	0.50	0.50	1
Wet C	hemistry	SM 2540 G	-1997	8	8	8	
00111	Moisture		n.a.	49.2	0.50	0.50	1
	Moisture represents 103 - 105 degrees C as-received basis.		weight of the s	sample after ove	n drying at		

#### General Sample Comments

State of New Jersey Lab Certification No. PA011

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

#### Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
00159	Mercury	SW-846 7471A	1	142115711001	08/01/2014 11:	20 Damary Valentin	1
05711	SW SW846 Hg Digest	SW-846 7471A modified	1	142115711001	07/31/2014 10:	25 Christopher M Klumpp	1
00383	TOC by Lloyd Kahn	Lloyd Kahn modified	1	14211049531A	07/30/2014 02:	42 James S Mathiot	1
07103	Grain Size to 1 um	ASTM D422	1	14211710301A	07/30/2014 01:	30 Daniel S Smith	1
00111	Moisture	SM 2540 G-1997	1	14217820001A	08/05/2014 19:	51 Scott W Freisher	1



**Analysis Report** 

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#### Sample Description: SD072814-RPR-05-0.0-0.5 Sediment RAMAPO RIVER SEDIMENT SAMPLING 7/14

#### LL Sample # SW 7547448 LL Group # 1492182 Account # 07032

#### Project Name: POM - RAMAPO RIVER SEDIMENT SAMPLING

Collected: 07/28/2014 14:00 by JC

Submitted: 07/29/2014 09:15 Reported: 08/19/2014 14:06 CRG-E.I.DuPont de Nemours & Co URS Corporation Iron Hill Corporate Center 4051 Ogletown Road, Suite 300 Newark DE 19713

PRP05 SDG#: POM20-03

CAT No.	Analysis Name		CAS Number	Dry Result	Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
Metal	s	SW-846 747	'1A	mg/kg	mg/kg	mg/kg	
00159	Mercury		7439-97-6	0.481	0.0148	0.148	1
Wet C	hemistry	Lloyd Kahr	n modified	mg/kg	mg/kg	mg/kg	
00383	TOC by Lloyd Kahn		n.a.	9,610	984	2,950	1
Wet C	hemistry	ASTM D422		% Passing	% Passing	% Passing	
07103	75 mm		n.a.	100	0.50	0.50	1
07103	37.5 mm		n.a.	100	0.50	0.50	1
07103	19 mm		n.a.	100	0.50	0.50	1
07103	4.75 mm		n.a.	98.1	0.50	0.50	1
07103	3.35 mm		n.a.	97.4	0.50	0.50	1
07103	2.36 mm		n.a.	96.4	0.50	0.50	1
07103	1.18 mm		n.a.	95.7	0.50	0.50	1
07103	0.6 mm		n.a.	93.0	0.50	0.50	1
07103	0.3 mm		n.a.	70.3	0.50	0.50	1
07103	0.15 mm		n.a.	29.0	0.50	0.50	1
07103	0.075 mm		n.a.	13.3	0.50	0.50	1
07103	0.064 mm		n.a.	11.0	0.50	0.50	1
07103	0.05 mm		n.a.	8.5	0.50	0.50	1
07103	0.02 mm		n.a.	4.0	0.50	0.50	1
07103	0.005 mm		n.a.	3.0	0.50	0.50	1
07103	0.002 mm		n.a.	2.0	0.50	0.50	1
07103	0.001 mm		n.a.	2.0	0.50	0.50	1
Wet C	hemistry	SM 2540 G-	1997	8	8	8	
00111	Moisture		n.a.	37.4	0.50	0.50	1
	Moisture represents 103 - 105 degrees C as-received basis.		-	-			

#### General Sample Comments

State of New Jersey Lab Certification No. PA011

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

## Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
00159	Mercury	SW-846 7471A	1	142115711001	08/01/2014 11:2	6 Damary Valentin	1
05711	SW SW846 Hg Digest	SW-846 7471A modified	1	142115711001	07/31/2014 10:2	5 Christopher M Klumpp	1
00383	TOC by Lloyd Kahn	Lloyd Kahn modified	1	14211049531A	07/30/2014 01:1	9 James S Mathiot	1
07103	Grain Size to 1 um	ASTM D422	1	14211710301A	07/30/2014 01:3	0 Daniel S Smith	1
00111	Moisture	SM 2540 G-1997	1	14217820001A	08/05/2014 19:5	1 Scott W Freisher	1



# **Analysis Report**

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## Sample Description: SD072814-RPR-06-0.0-0.5 Sediment RAMAPO RIVER SEDIMENT SAMPLING 7/14 LL Sample # SW 7547449 LL Group # 1492182 Account # 07032 Project Name: POM - RAMAPO RIVER SEDIMENT SAMPLING CRG-E.I.DuPont de Nemours & Co Collected: 07/28/2014 14:30 by JC

Submitted: 07/29/2014 09:15 Reported: 08/19/2014 14:06 URS Corporation Iron Hill Corporate Center 4051 Ogletown Road, Suite 300 Newark DE 19713

PRP06 SDG#: POM20-04

CAT No.	Analysis Name		CAS Number	Dry Result	Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
Metal	s	SW-846 747	'1A	mg/kg	mg/kg	mg/kg	
00159	Mercury		7439-97-6	0.401	0.0146	0.146	1
Wet C	hemistry	Lloyd Kahr	n modified	mg/kg	mg/kg	mg/kg	
00383	TOC by Lloyd Kahn		n.a.	14,700	1,540	4,620	1
Wet C	hemistry	ASTM D422		% Passing	% Passing	% Passing	
07103	75 mm		n.a.	100	0.50	0.50	1
07103	37.5 mm		n.a.	100	0.50	0.50	1
07103	19 mm		n.a.	100	0.50	0.50	1
07103	4.75 mm		n.a.	98.8	0.50	0.50	1
07103	3.35 mm		n.a.	98.4	0.50	0.50	1
07103	2.36 mm		n.a.	97.8	0.50	0.50	1
07103	1.18 mm		n.a.	97.3	0.50	0.50	1
07103	0.6 mm		n.a.	92.5	0.50	0.50	1
07103	0.3 mm		n.a.	72.5	0.50	0.50	1
07103	0.15 mm		n.a.	23.2	0.50	0.50	1
07103	0.075 mm		n.a.	6.3	0.50	0.50	1
07103	0.064 mm		n.a.	4.0	0.50	0.50	1
07103	0.05 mm		n.a.	4.0	0.50	0.50	1
07103	0.02 mm		n.a.	3.0	0.50	0.50	1
07103	0.005 mm		n.a.	2.0	0.50	0.50	1
07103	0.002 mm		n.a.	2.0	0.50	0.50	1
07103	0.001 mm		n.a.	2.0	0.50	0.50	1
Wet C	hemistry	SM 2540 G-	1997	8	8	8	
00111	Moisture		n.a.	35.2	0.50	0.50	1
	Moisture represents 103 - 105 degrees C as-received basis.						

#### General Sample Comments

State of New Jersey Lab Certification No. PA011

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

#### Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
00159	Mercury	SW-846 7471A	1	142115711001	08/01/2014 11:28	Damary Valentin	1
05711	SW SW846 Hg Digest	SW-846 7471A modified	1	142115711001	07/31/2014 10:29	Christopher M Klumpp	1
00383	TOC by Lloyd Kahn	Lloyd Kahn modified	1	14211049531A	07/30/2014 01:2	James S Mathiot	1
07103	Grain Size to 1 um	ASTM D422	1	14211710301A	07/30/2014 01:30	Daniel S Smith	1
00111	Moisture	SM 2540 G-1997	1	14217820001A	08/05/2014 19:53	Scott W Freisher	1



**Analysis Report** 

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#### Sample Description: SD072814-RPR-07-0.0-0.5 Sediment RAMAPO RIVER SEDIMENT SAMPLING 7/14

#### LL Sample # SW 7547450 LL Group # 1492182 Account # 07032

#### Project Name: POM - RAMAPO RIVER SEDIMENT SAMPLING

Collected: 07/28/2014 15:15 by JC

Submitted: 07/29/2014 09:15 Reported: 08/19/2014 14:06 CRG-E.I.DuPont de Nemours & Co URS Corporation Iron Hill Corporate Center 4051 Ogletown Road, Suite 300 Newark DE 19713

#### PRP07 SDG#: POM20-05BKG

CAT No.	Analysis Name		CAS Number	Dry Result	Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
Metal	s	SW-846 747	/1A	mg/kg	mg/kg	mg/kg	
00159	Mercury		7439-97-6	3.92	0.0898	0.898	5
Wet C	hemistry	Lloyd Kahr	n modified	mg/kg	mg/kg	mg/kg	
00383	TOC by Lloyd Kahn		n.a.	15,600	2,900	8,700	1
Wet C	hemistry	ASTM D422		% Passing	% Passing	% Passing	
07103	75 mm		n.a.	100	0.50	0.50	1
07103	37.5 mm		n.a.	100	0.50	0.50	1
07103	19 mm		n.a.	100	0.50	0.50	1
07103	4.75 mm		n.a.	99.5	0.50	0.50	1
07103	3.35 mm		n.a.	98.8	0.50	0.50	1
07103	2.36 mm		n.a.	97.1	0.50	0.50	1
07103	1.18 mm		n.a.	96.8	0.50	0.50	1
07103	0.6 mm		n.a.	96.1	0.50	0.50	1
07103	0.3 mm		n.a.	94.6	0.50	0.50	1
07103	0.15 mm		n.a.	77.8	0.50	0.50	1
07103	0.075 mm		n.a.	44.7	0.50	0.50	1
07103	0.064 mm		n.a.	39.0	0.50	0.50	1
07103	0.05 mm		n.a.	31.0	0.50	0.50	1
07103	0.02 mm		n.a.	17.0	0.50	0.50	1
07103	0.005 mm		n.a.	7.0	0.50	0.50	1
07103	0.002 mm		n.a.	3.0	0.50	0.50	1
07103	0.001 mm		n.a.	0.50 U	0.50	0.50	1
Wet C	hemistry	SM 2540 G-	-1997	8	8	8	
00111	Moisture		n.a.	46.3	0.50	0.50	1
	Moisture represents 103 - 105 degrees C as-received basis.						

#### General Sample Comments

State of New Jersey Lab Certification No. PA011

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

#### Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
00159	Mercury	SW-846 7471A	1	142115711001	08/01/2014 10:44	Damary Valentin	5
05711	SW SW846 Hg Digest	SW-846 7471A modified	1	142115711001	07/31/2014 10:25	Christopher M Klumpp	1
00383	TOC by Lloyd Kahn	Lloyd Kahn modified	1	14211049531A	07/30/2014 01:35	James S Mathiot	1
07103	Grain Size to 1 um	ASTM D422	1	14211710301A	07/30/2014 01:30	Daniel S Smith	1
00111	Moisture	SM 2540 G-1997	1	14217820001A	08/05/2014 19:51	Scott W Freisher	1



**Analysis Report** 

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	SD072814-RPR-07-0.0-0. RAMAPO RIVER SEDIMENT				SW 7547451 1492182 07032
Project Name: POM -	RAMAPO RIVER SEDIMENT	SAMPLING			
Collected: 07/28/201	2		CRG-E.I.DuPont de N URS Corporation		
Submitted: 07/29/201			Iron Hill Corporate		
Reported: 08/19/201	4 14:06		4051 Ogletown Road, Newark DE 19713	Suite 300	
PRP07 SDG#: POM20-	05MS				
CAT No. Analysis Name	CAS Number	Dry Result	Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
Metals	SW-846 7471A	mg/kg	mg/kg	mg/kg	
00159 Mercury	7439-97-6	4.29	0.0926	0.926	5
Wet Chemistry	SM 2540 G-1997	8	8	8	
00118 Moisture	n.a.	46.3	0.50	0.50	1

#### General Sample Comments

State of New Jersey Lab Certification No. PA011

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

	Laboratory Sample Analysis Record											
CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Ti	me	Analyst	Dilution Factor				
00159	Mercury	SW-846 7471A	1	142115711001	08/01/2014	10:50	Damary Valentin	5				
05711	SW SW846 Hg Digest	SW-846 7471A modified	1	142115711001	07/31/2014	10:25	Christopher M Klumpp	1				
00118	Moisture	SM 2540 G-1997	1	14217820001A	08/05/2014	19:51	Scott W Freisher	1				



**Analysis Report** 

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	SD072814-RPR-07-0.0-0. RAMAPO RIVER SEDIMENT	SAMPLING 7			SW 7547452 1492182 07032
Project Name: POM -	RAMAPO RIVER SEDIMENT	SAMPLING			
Collected: 07/28/201	4 15:15 by JC		CRG-E.I.DuPont de N URS Corporation	emours & Co	
Submitted: 07/29/201	4 09:15		Iron Hill Corporate	Center	
Reported: 08/19/201	4 14:06		4051 Ogletown Road, Newark DE 19713	Suite 300	
PRP07 SDG#: POM20-	05MSD				
CAT No. Analysis Name	CAS Number	Dry Result	Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
Metals	SW-846 7471A	mg/kg	mg/kg	mg/kg	
00159 Mercury	7439-97-6	2.51	0.0910	0.910	5
Wet Chemistry	SM 2540 G-1997	8	8	8	
00118 Moisture	n.a.	46.3	0.50	0.50	1

### General Sample Comments

State of New Jersey Lab Certification No. PA011

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

	Laboratory Sample Analysis Record											
CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Ti	me	Analyst	Dilution Factor				
00159	Mercury	SW-846 7471A	1	142115711001	08/01/2014	10:52	Damary Valentin	5				
05711	SW SW846 Hg Digest	SW-846 7471A modified	1	142115711001	07/31/2014	10:25	Christopher M Klumpp	1				
00118	Moisture	SM 2540 G-1997	1	14217820001A	08/05/2014	19:51	Scott W Freisher	1				



**Analysis Report** 

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Sampl	e Description: S F		R-07-0.0-0. R SEDIMENT	-		-	SW 7547453 1492182 07032				
Proje	ct Name: POM - F	RAMAPO RIVE	R SEDIMENT	SAMPLING							
Colle	Collected: 07/28/2014 15:15 by JC CRG-E.I.DuPont de Nemours & Co URS Corporation										
Submi	tted: 07/29/2014	ł 09:15			Iron Hill Corporate	e Center					
Repor	ted: 08/19/2014	14:06			4051 Ogletown Road, Newark DE 19713						
PRP07	SDG#: POM20-0	)5DUP									
CAT No.	Analysis Name		CAS Number	Dry Result	Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor				
Metal	s	SW-846 74	71A	mg/kg	mg/kg	mg/kg					
					mg/ ng	mg/ng					
00159	Mercury		7439-97-6	5.12	0.0868	0.868	5				
	Mercury hemistry	SM 2540 G		5.12 %			5				
	-	SM 2540 G				0.868	5				
Wet C	hemistry Moisture		-1997	8	0.0868 %	0.868 %					

General Sample Comments

State of New Jersey Lab Certification No. PA011

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

#### Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
00159	Mercury	SW-846 7471A	1	142115711001	08/01/2014 10:	18 Damary Valentin	5
05711	SW SW846 Hg Digest	SW-846 7471A modified	1	142115711001	07/31/2014 10:	25 Christopher M Klumpp	1
00118	Moisture	SM 2540 G-1997	1	14217820001A	08/05/2014 19:	51 Scott W Freisher	1
00121	Moisture Duplicate	SM 2540 G-1997	1	14217820001A	08/05/2014 19:	51 Scott W Freisher	1



**Analysis Report** 

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#### Sample Description: SD072814-RPR-08-0.0-0.5 Sediment RAMAPO RIVER SEDIMENT SAMPLING 7/14

#### LL Sample # SW 7547454 LL Group # 1492182 Account # 07032

#### Project Name: POM - RAMAPO RIVER SEDIMENT SAMPLING

Collected: 07/28/2014 15:45 by JC

Submitted: 07/29/2014 09:15 Reported: 08/19/2014 14:06 CRG-E.I.DuPont de Nemours & Co URS Corporation Iron Hill Corporate Center 4051 Ogletown Road, Suite 300 Newark DE 19713

PRP08 SDG#: POM20-06

CAT No.	Analysis Name	(	CAS Number	Dry Result	Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
Metal	s	SW-846 7471	A	mg/kg	mg/kg	mg/kg	
00159	Mercury		7439-97-6	3.97	0.159	1.59	5
Wet C	hemistry	Lloyd Kahn	modified	mg/kg	mg/kg	mg/kg	
00383	TOC by Lloyd Kahn	1	n.a.	31,700	4,150	12,500	1
Wet C	hemistry	ASTM D422		% Passing	% Passing	% Passing	
07103	75 mm	1	n.a.	100	0.50	0.50	1
07103	37.5 mm	1	n.a.	100	0.50	0.50	1
07103	19 mm	1	n.a.	100	0.50	0.50	1
07103	4.75 mm	1	n.a.	99.2	0.50	0.50	1
07103	3.35 mm	1	n.a.	98.3	0.50	0.50	1
07103	2.36 mm	1	n.a.	95.3	0.50	0.50	1
07103	1.18 mm	1	n.a.	91.6	0.50	0.50	1
07103	0.6 mm	1	n.a.	90.6	0.50	0.50	1
07103	0.3 mm	1	n.a.	88.1	0.50	0.50	1
07103	0.15 mm	1	n.a.	74.3	0.50	0.50	1
07103	0.075 mm	1	n.a.	52.5	0.50	0.50	1
07103	0.064 mm	1	n.a.	49.0	0.50	0.50	1
07103	0.05 mm	1	n.a.	45.0	0.50	0.50	1
07103	0.02 mm	1	n.a.	26.0	0.50	0.50	1
07103	0.005 mm	1	n.a.	7.0	0.50	0.50	1
07103	0.002 mm	1	n.a.	6.0	0.50	0.50	1
07103	0.001 mm	1	n.a.	6.0	0.50	0.50	1
Wet C	hemistry	SM 2540 G-1	.997	8	8	8	
00111	Moisture	1	n.a.	70.9	0.50	0.50	1
	Moisture represents 103 - 105 degrees C as-received basis.		-	-			

#### General Sample Comments

State of New Jersey Lab Certification No. PA011

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

## Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
00159	Mercury	SW-846 7471A	1	142115711001	08/01/2014 11:43	Damary Valentin	5
05711	SW SW846 Hg Digest	SW-846 7471A modified	1	142115711001	07/31/2014 10:25	Christopher M Klumpp	1
00383	TOC by Lloyd Kahn	Lloyd Kahn modified	1	14211049531A	07/30/2014 02:08	James S Mathiot	1
07103	Grain Size to 1 um	ASTM D422	1	14211710301A	07/30/2014 01:30	Daniel S Smith	1
00111	Moisture	SM 2540 G-1997	1	14217820001A	08/05/2014 19:51	Scott W Freisher	1



00111 Moisture

Lancaster Laboratories Environmental

**Analysis Report** 

1

Klumpp

08/05/2014 19:51

Scott W Freisher

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_	R	D072814-RPR-07-0.5 AMAPO RIVER SEDIME AMAPO RIVER SEDIME	ENT SAMPLING		LL Samp LL Group Account	
Colle	ected: 07/28/2014	15:15 by JC		CRG-E.I.DuPont	de Nemours & C	0
				URS Corporation		
Subm	ltted: 07/29/2014	09:15		Iron Hill Corpo	rate Center	
Repoi	cted: 08/19/2014	14:06		4051 Ogletown R Newark DE 19713		
PRP-7	7 SDG#: POM20-0	7				
CAT No.	Analysis Name	CAS Numb	Dry Der Result	Dry Method Detection Limit	Dry Limit of t* Quantitatio	n Dilution Factor
Metal	ls	SW-846 7471A	mg/kg	mg/kg	mg/kg	
00159	Mercury	7439-97-	-6 0.0299 J	0.0161	0.161	1
Wet (	Chemistry	SM 2540 G-1997	%	8	*	
00111		n.a. s the loss in weight of Celsius. The moisture r			0.50	1
			General Samp	le Comments		
State	of New Jersey Lab Ce	rtification No. PA011	General samp			
		otherwise noted. Plea l QC performance data				
		Labor	atory Sample	Analysis Record		
CAT No.	Analysis Name	Method	Trial# Batch	# Analysis Date and T	Analyst	Dilution Factor
00159	-	SW-846 7471A		5711001 08/01/2014		
05711	SW SW846 Hg Digest	SW-846 7471A modified	1 14211	.5711001 07/31/2014	10:25 Christop	her M 1

14217820001A

1

modified

SM 2540 G-1997



**Analysis Report** 

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-	e Description: S R ct Name: POM - R	AMAPO RIVER	R SEDIMENT S	SAMPLING 7		LL Sample # LL Group # Account #	
Colle	cted: 07/28/2014 tted: 07/29/2014 ted: 08/19/2014	15:45 k 09:15	by JC		CRG-E.I.DuPont de N URS Corporation Iron Hill Corporate 4051 Ogletown Road, Newark DE 19713	e Center	
PRP-8	SDG#: POM20-0	8					
CAT No.	Analysis Name		CAS Number	Dry Result	Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
Metal	5	SW-846 747	71A	mg/kg	mg/kg	mg/kg	
00159	Mercury		7439-97-6	3.38	0.0829	0.829	5
Wet C	hemistry	SM 2540 G-	-1997	8	*	%	
	Moisture Moisture represents 103 - 105 degrees ( as-received basis.					0.50	1
			Gene	eral Sampl	e Comments		
	of New Jersey Lab Ce is compliant unless		D. PA011	-			
Contro	l Summary for overal	l QC performan	nce data and a	ssociated sa	mples.		
			Tabath		Anglergig Degend		

#### Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
00159	Mercury	SW-846 7471A	1	142115711001	08/01/2014 11:45	Damary Valentin	5
05711	SW SW846 Hg Digest	SW-846 7471A modified	1	142115711001	07/31/2014 10:25	Christopher M Klumpp	1
00111	Moisture	SM 2540 G-1997	1	14217820001A	08/05/2014 19:51	Scott W Freisher	1



**Analysis Report** 

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Sample Description: SI RA		-FB-1 Blank W VER SEDIMENT		14	LL Group	# WW 7547457 # 1492182 # 07032
Project Name: POM - RA	MAPO RI	VER SEDIMENT	SAMPLING			
Collected: 07/28/2014	17:30	by JC		CRG-E.I.DuPont de Ne URS Corporation	mours & Co	
Submitted: 07/29/2014	09:15			Iron Hill Corporate	Center	
Reported: 08/19/2014	14:06			4051 Ogletown Road, Newark DE 19713	Suite 300	
PRPFB SDG#: POM20-09	FB*					
CAT No. Analysis Name		CAS Number	As Received Result	As Received Method Detection Limit*	As Received Limit of Quantitation	Dilution Factor
Metals	SW-846	7470A	mg/l	mg/l	mg/l	
00259 Mercury		7439-97-6	0.000060 U	0.000060	0.00020	1
Wet Chemistry	SM 5310	C-2000	mg/l	mg/l	mg/l	
00273 Total Organic Carbon	n	n.a.	0.98 J	0.50	1.0	1

General Sample Comments

State of New Jersey Lab Certification No. PA011

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

		Labora	tory Sam	nple Analysi	ls Record			
CAT No.	Analysis Name	Method	Trial# 1	Batch#	Analysis Date and Ti	me	Analyst	Dilution Factor
00259	Mercury	SW-846 7470A	1 1	142115713003	08/01/2014	09:40	Damary Valentin	1
05713	WW SW846 Hg Digest	SW-846 7470A	1 :	142115713003	07/31/2014	10:26	Micaela L Dishong	1
00273	Total Organic Carbon	SM 5310 C-2000		14212049501A	07/31/2014	04:25	James S Mathiot	1



**Analysis Report** 

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Page 1 of 2

## Quality Control Summary

Client Name: CRG-E.I.DuPont de Nemours & Co Reported: 08/19/14 at 02:06 PM Group Number: 1492182

Matrix QC may not be reported if insufficient sample or site-specific QC samples were not submitted. In these situations, to demonstrate precision and accuracy at a batch level, a LCS/LCSD was performed, unless otherwise specified in the method.

All Inorganic Initial Calibration and Continuing Calibration Blanks met acceptable method criteria unless otherwise noted on the Analysis Report.

## Laboratory Compliance Quality Control

Analysis Name	Blank <u>Result</u>	Blank MDL**	Blank <u>LOQ</u>	Report <u>Units</u>	LCS <u>%REC</u>	LCSD <u>%REC</u>	LCS/LCSD <u>Limits</u>	<u>RPD</u>	<u>RPD Max</u>
Batch number: 142115711001 Mercury	Sample num 0.0100 U	ber(s): 75 0.0100	0.100	7456 mg/kg	100		80-120		
Batch number: 142115713003 Mercury	Sample num 0.000060 U	ber(s): 75 0.00006 0	547457 0.00020	mg/l	89		80-120		
Batch number: 14211049531A TOC by Lloyd Kahn	Sample num 100 U	ber(s): 75 100.	347446-754 300	7450,7547454 mg/kg	108		47-143		
Batch number: 14212049501A Total Organic Carbon	Sample num 0.50 U	ber(s): 75 0.50	1.0	mg/1	103		91-113		
Batch number: 14217820001A Moisture Moisture Moisture Duplicate	Sample num	ber(s): 75	547446-754	7456	100 100 100		99-101 99-101 99-101		

### Sample Matrix Quality Control

Unspiked (UNSPK) = the sample used in conjunction with the matrix spike Background (BKG) = the sample used in conjunction with the duplicate

Analysis Name	MS MSD <u>%REC</u> <u>%REC</u>	MS/MSD <u>Limits RPD</u>	RPD <u>MAX</u>	BKG <u>Conc</u>	DUP <u>Conc</u>	DUP <u>RPD</u>	Dup RPD <u>Max</u>
Batch number: 142115711001 Mercury	Sample number(s 117 (2) -467 (2)	): 7547446-75474 80-120 52*	156 UNSP 20	K: 7547450 2.11	BKG: 7547450 2.75	26* (1)	20
Batch number: 142115713003 Mercury	Sample number(s 60 (2) 91 (2)	): 7547457 UNSPK 80-120 4	C: P5444 20	20 BKG: P54 0.0064	4420 0.0063	2	20
Batch number: 14211049531A TOC by Lloyd Kahn	Sample number(s) 104	): 7547446-75474 59-125	150,7547	454 UNSPK: 8,360	7547450 BKG: 8,660	7547450 3 (1)	15
Batch number: 14212049501A Total Organic Carbon	Sample number(s) 106	): 7547457 UNSPK 63-142	C: ₽5478	17 BKG: P54 14.6	7817 14.7	0	4
Batch number: 14217820001A Moisture	Sample number(s	): 7547446-75474	156 BKG	: 7547450 46.3	47.7	3	5

\*- Outside of specification

\*\*-This limit was used in the evaluation of the final result for the blank

(1) The result for one or both determinations was less than five times the LOQ.

(2) The unspiked result was more than four times the spike added.





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Page 2 of 2

## Quality Control Summary

Client Name: CRG-E.I.DuPont de Nemours & Co Reported: 08/19/14 at 02:06 PM Group Number: 1492182

Sample Matrix Quality Control

Unspiked (UNSPK) = the sample used in conjunction with the matrix spike Background (BKG) = the sample used in conjunction with the duplicate



\*- Outside of specification

\*\*-This limit was used in the evaluation of the final result for the blank

(1) The result for one or both determinations was less than five times the LOQ.

(2) The unspiked result was more than four times the spike added.

Lancaster Laboratories	Anal	ysis F	Requ	est /	Envir	For Gro Acc	Lanca up No 't: 070	aster : <u> </u> )32	Laboi 197	ratorie <u>18</u> SF:_2	es Use	e Oni Sa <u>3</u>	y mple N	Nos.:	58932	174	<u>146</u> Cod	<u>s-S</u> bler No	7676	1 of 1 7 <b>29551</b>
Facility Name: Pompton Lakes	Project	t Manager: (	Gary Lon	g							Ana	lyse	s Re	qui	ed				Comments:	
Facility Contact: Josh Collins	Facility	Contact Pl	none No.:	609.602.4	1694															
Facility Address: Pompton Lakes Works	Job No	o.: 9267 772	0100C W	H06 50																
2000 Cannonball Road	Releas	e No.:																		
Pompton Lakes NJ 07442	PO Nu	mber: LBIO	-66380				D422)													
Sampler(s): SC, M JOSH Collins, 1	lictori	a Musi	Jmeci				(ASTM		(2540 G)	ahn)										
Project Name: RAMAPO RIVER SEDIMENT SAMPL	ING 7/14	<b>,</b>					e (A	R	(254	(Lloyd Kahn)										
	Date Collected	Time Collected	Matrix	C Volume (ml)	ontainers Preserv	No.	Grain Size	Hg (7471A)	Moisture	TOC (LIC									Condition upo	tác t n receipt:
SB <del>07</del> 14-RPR-01-0.0-		and the state of the	SW	125	None	1		X	x	- X		ويرويون				and the second		~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~		1
SD07 14-RPR-01-0.0-			_ <del>sw</del> _		None		-X-					ania unitéritanose		_		-		_		-Not :
SD07 14-RPR-02-0.0-				125	None	1		x	x	х									~	collected
SD07 14-RPR-02-0.0-	ىرىنىنى <del>ئىلى</del> ىتىرلەرچاتىتىمىرىرىن		SW	500	None	1	-x-	وحندتيوونيك			ومستندوسيني								Contraction and the Contraction of C	$\downarrow$
SD07.) 14-RPR-03-0.0- 0, 5	7/28/14	12:55	sw	125	None	1		x	x	х										
SD07 🧏 14-RPR-03-0.0-0,5		12:55	SW	500	None	1	x													
SD07 ⋧寮 14-RPR-04-0.0-0,5		13:30	SW	125	None	1		x	x	х										
SD07 수황 14-RPR-04-0.0-0.5		13:30	sw	500	None	1	x													
			·															-		
Turnaround Time Requested (please circle) :	Standard	RUSH	Number	of days: _	· 8	Spe	cial I	nstru	ction	IS:		Full	Delive	erabl	es nee	ded				
Bottles Relinquished by: John & Alolut		Date フ/ひ/	17	Time 18 ం	0	Bott	les R	eceiv	ed by	:		<u> </u>							Date:	Time:
Bottles Relinquished by:		Date	<u>}</u>	Time		Bott	les R	eceiv	ed by	:							~		Date:	Time:
Bottles Relinquished by:	Product Contractory	Date		Time		Bott	les R	eceiv	ed by	: 1			٨			/			Date:	Time:
Bottles Relinquished by:		Date	~~~	Time		Bott	les R	eceiv	ed by	: 5	W	1/		M		£			Pate: A.H	Time

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Copies: White copy should accompany samples to Lancas the bar de the samplers.

<b>eurofins</b> Lancaster Laboratories	Anal	ysis F	Requ	est /	Envir	For	Lanca	aster	Labo	ratorie	es Us	se On	lv		in 754				-	1 of 1
Caporatories						Acc	't: 070			SF:_2	20960	<u>)3</u>			58932	)	Coo C	oler N	o.: <u>5 15</u> . ntainer No.:	29552
Facility Name: Pompton Lakes	Projec	t Manager: (	Gary Lon	g	90						Ana	lyse	es Re	quir	ed				Comments:	
Facility Contact: Josh Collins	Facility	y Contact Ph	one No.:	609.602.4	1694														1	
Facility Address: Pompton Lakes Works	Job No	o.: 9267 772	0100C W	/H06 50			1													
	Releas	se No.:					1													
2000 Cannonball Road Pompton Lakes NJ 07442	PO NI	imber: LBIO	-66380				D422)													
Sampler(s): 5C, UM							(ASTM I		() 0	ahn)										
Project Name: RAMAPO RIVER SEDIMENT SAMPL	ING 7/14						AS AS	A	(254	(Lloyd Kahn)										
	Date	Time	Matrix	Volume	ontainers		Grain Size	Hg (7471A)	Moisture (2540 G)	TOC (LIO										tact
	7/28/14	Collected		(ml)	Preserv	No.	0									+	+			
SD07 <sup>2</sup> 8 14-RPR-05-0.0- 0.5 SD07 <sup>28</sup> 14-RPR-05-0.0- 0.5	1.1	14:00	sw sw	125	None None			X	X	X						+	+			
SD07 28 14-RPR-05-0.0-0.5 SD07 28 14-RPR-06-0.0-0.5		14:30	sw	500 125	None		X	x	x	x						+		+		
SD07 28 14-RPR-06-0.0-(),5		14:30	sw	500	None	1	x													
SD07 28 14-RPR-07-0.0- 0.5		15:15	sw	125	None			x	x	х										
SD07 8 14-RPR-07-0.0-0.5		15:15	SW	500	None	1	x													
SD07 28 14-RPR-08-0.0-0,5		15:45	SW	125	None	1		x	x	х										
SD07 28 14-RPR-08-0.0- 0.5		15:45	sw	500	None	1	x								-					
5007 38H -RPR-07-0.0-0.5 MS/13	D 7128	15:15	SW	125	None	д		X												
50077814 - RAR - 07-05-0,75	7/28/4		50	125	None	1		X.	X											
10072814- RPR-08-0,5-1.0	7/28/14	15:45	SW	125	None	1		X	$\boldsymbol{X}$											
Turnaround Time Requested (please circle) :	Standard		Number	of days: _	8	Spe	cial I	nstru	ctior	is:		Full	Deliv	erabl	es nee	eded				
Bottles Relinquished by:		Date 7/2	8/14	Time /2	800	Bott	les R	eceiv	ed by	r:									Date:	Time:
Bottles Relinquished by:		Date		Time		Bott	les R	eceiv	ed by	r:									Date:	Time:
Bottles Relinquished by:		Date		Time				eceiv	-	Λ									Date:	Time:
Bottles Relinquished by:		Date		Time		Bott	tles R	eceiv	ed by	N .	W.	1/	R	<u>M</u> _					Pate; A.K.	Time:

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Copies: White copy should accompany samples to Lancas Rage of Big 17 the pink copy should be retained by the samplers.

Lancaster Laboratories	Analy	ysis F	Requ	est /	Envir	For I	anca	aster I	abor	ratorie	as I lae	e Onl	v						<b>dy</b>	1 of 1 <b>2955</b>
Facility Name: Pompton Lakes	Project	Manager: (	Garv Ion	a		Cool	er Te	mper	ature							_°C			ainer No.: Comments:	
Facility Contact: Josh Collins		Contact Pl	-	-	4604					T	Anal	lyse	s Red	luire	d 	T1			comments.	
					4094															
Facility Address: Pompton Lakes Works	Job No	o.: 9267 772	0100C W	H06 50																
2000 Cannonball Road	Releas	e No.:																		
Pompton Lakes NJ 07442	PO Nu	mber: LBIO	-66380																	
Sampler(s): JC, VM																				
Project Name: RAMAPO RIVER SEDIMENT SAMPL	ING 7/14						Â)	(5310 C)												
	Date	Time		C Volume	Containers	-	(7470A)	531											tn	GC+
Sample Identification		Collected	Matrix	(ml)	Preserv	No.		тос										ľ	Condition upo	on receipt:
SDW07->: 14-FB-1	7/25/14	17:30	ww	250	HNO3	1	x													
SDW07	7/28/14	17:30	ww	40	НЗРО4	2		x												·····
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Turnaround Time Requested (please circle) :	Standard	RUSH	Number	of days: _	88	Spec	iai ir	istruc	tions	5:	1	rull l	Deliver	ables	need	ed				
Bottles Relinquished by:		Date	1/18/14	Time /	18:00	Bottle	es Re	ceive	d by:						~	$\overline{}$		Ľ	Date:	Time:
Bottles Relinquished by:		Date		Time		Bottle	es Re	ceive	d by:										Date:	Time:
Bottles Relinquished by:		Date		Time		Bottle	es Re	ceive	d by:										Date:	Time:
Bottles Relinquished by:		Date		Time		Bottle	es Re	ceive	d by:		in,	1/	Rin		/				Pate: 24. (4	Time

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\_Copies: White copy should accompany samples to Lancaster Laboratories. The pink copy should be retained by the samplers.

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Lancaster Laboratories Environmental

## Sample Administration Receipt Documentation Log

## Client: Dupont

Doc Log ID:

21454

Group Number(s):1492182

			Delivery and	d Receip	t Informati	ion				
	Delivery Method:	Fed	Ex	Arriva	al Timestamp:	07/2	9/2014	<u>9:15</u>		
	Number of Packages: <u>1</u>			Number of Projects: <u>1</u>						
;	State/Province of Ori	gin: <u>NJ</u>								
			Arrival C	ondition	Summary					
:	Shipping Container S	Sealed:	<u>Yes</u>	To	tal Trip Blank	Qty:		<u>0</u>		
(	Custody Seal Present:			Tri	p Blank Type	:	]	<u>N/A</u>		
Custody Seal Intact:				Air	Quality Sam	ples Present:	]	No		
Samples Chilled:				Air	Quality Flow	esent:	<u>N/A</u>			
Paperwork Enclosed:			<u>Yes</u>	Flo	ow Controller	<u> </u>	<u>0</u>			
Samples Intact:			<u>Yes</u>	Air	Quality Retu	rns:	<u> </u>	<u>N/A</u>		
Missing Samples:			<u>No</u>							
I	Extra Samples:		<u>No</u>							
ĺ	Discrepancy in Conta	ainer Qty on C	COC: <u>No</u>							
:	Sample IDs on COC	match Conta	iners: <u>Yes</u>							
:	Sample Date/Times	match COC:	<u>Yes</u>							
١	VOA Vial Headspace	e ≥ 6mm:	<u>N/A</u>							
v	VOA IDs ( $\geq$ 6mm):		<u>N/A</u>							
L	Inpacked by Brandy	Barclay (229	9) at 11:50 on 0	7/29/2014						
	:		Sample	es Chille	d Details					
The	ermometer Types:	DT = Dig	ital (Temp. Bottl	'e) IR =	Infrared (Su	rface Temp)	All Tei	nperatı	ıres in °C.	
							<u>Sam</u> r Collected			
Cooler #		rrected Temp	<u>Therm. Type</u>	<u>Ice Type</u>	Ice Present?	Ice Container	<u>Day as F</u>	Receipt?	Elevated Temp?	
1	DT146	0.7	DT	Wet	Y	Bagged	N		N	

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#### Lancaster Laboratories Environmental

# **Explanation of Symbols and Abbreviations**

The following defines common symbols and abbreviations used in reporting technical data:

RL	Reporting Limit	BMQL	Below Minimum Quantitation Level
N.D.	none detected	MPN	Most Probable Number
TNTC	Too Numerous To Count	CP Units	cobalt-chloroplatinate units
IU	International Units	NTU	nephelometric turbidity units
umhos/cm	micromhos/cm	ng	nanogram(s)
С	degrees Celsius	F	degrees Fahrenheit
meq	milliequivalents	lb.	pound(s)
g	gram(s)	kg	kilogram(s)
μg	microgram(s)	mg	milligram(s)
mL	milliliter(s)	Ĺ	liter(s)
m3	cubic meter(s)	μL	microliter(s)
		pg/L	picogram/liter

- < less than The number following the sign is the <u>limit of quantitation</u>, the smallest amount of analyte which can be reliably determined using this specific test.
- > greater than
- **ppm** parts per million One ppm is equivalent to one milligram per kilogram (mg/kg), or one gram per million grams. For aqueous liquids, ppm is usually taken to be equivalent to milligrams per liter (mg/l), because one liter of water has a weight very close to a kilogram. For gases or vapors, one ppm is equivalent to one microliter per liter of gas.
- ppb parts per billion

#### **Dry weight basis** Results printed under this heading have been adjusted for moisture content. This increases the analyte weight concentration to approximate the value present in a similar sample without moisture. All other results are reported on an as-received basis.

Data Qualifiers:

C - result confirmed by reanalysis.

- J estimated value The result is  $\geq$  the Method Detection Limit (MDL) and < the Limit of Quantitation (LOQ).
- U.S. EPA CLP Data Qualifiers:

## Organic Qualifiers

- A TIC is a possible aldol-condensation product
- B Analyte was also detected in the blank
- C Pesticide result confirmed by GC/MS
- D Compound quantitated on a diluted sample
- E Concentration exceeds the calibration range of the instrument
- **N** Presumptive evidence of a compound (TICs only)
- P Concentration difference between primary and confirmation columns >25%
- U Compound was not detected
- **X,Y,Z** Defined in case narrative

## Inorganic Qualifiers

- **B** Value is  $\langle CRDL, but \geq IDL$
- E Estimated due to interference
- M Duplicate injection precision not met
- N Spike sample not within control limits
- S Method of standard additions (MSA) used for calculation
- U Compound was not detected
- W Post digestion spike out of control limits
- \* Duplicate analysis not within control limits
- + Correlation coefficient for MSA < 0.995

## Analytical test results meet all requirements of NELAC unless otherwise noted under the individual analysis.

Measurement uncertainty values, as applicable, are available upon request.

Tests results relate only to the sample tested. Clients should be aware that a critical step in a chemical or microbiological analysis is the collection of the sample. Unless the sample analyzed is truly representative of the bulk of material involved, the test results will be meaningless. If you have questions regarding the proper techniques of collecting samples, please contact us. We cannot be held responsible for sample integrity, however, unless sampling has been performed by a member of our staff. This report shall not be reproduced except in full, without the written approval of the laboratory.

Times are local to the area of activity. Parameters listed in the 40 CFR part 136 Table II as "analyze immediately" are not performed within 15 minutes.

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#### ANALYTICAL RESULTS

Prepared by:

Eurofins Lancaster Laboratories Environmental 2425 New Holland Pike Lancaster, PA 17601 Prepared for:

CRG-E.I.DuPont de Nemours & Co URS Corporation Iron Hill Corporate Center 4051 Ogletown Road, Suite 300 Newark DE 19713

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August 22, 2014

#### Project: POM - RAMAPO RIVER SEDIMENT SAMPLING

Submittal Date: 07/30/2014 Group Number: 1492505 SDG: POM21 PO Number: LBIO-66380 State of Sample Origin: NJ

Client Sample Description SD072914-RPR-09-0.0-0.5 Sediment SD072914-RPR-10-0.0-0.5 Sediment SD072914-RPR-11-0.0-0.5 Sediment SD072914-RPR-12-0.0-0.5 Sediment SD072914-RPR-12-0.5-0.75 Sediment SD072914-RPR-13-0.0-0.5 Sediment SD072914-RPR-14-0.0-0.5 Sediment SD072914-RPR-15-0.0-0.5 Sediment SD072914-RPR-13-0.5-1.0 Sediment SD072914-RPR-13-1.0-1.1 Sediment SD072914-RPR-14-0.5-1.0 Sediment SD072914-RPR-14-1.0-1.5 Sediment SD072914-RPR-15-0.5-1.0 Sediment SD072914-RPR-15-0.0-0.5-D Sediment SD072914-RPR-16-0.0-0.5 Sediment SD072914-RPR-17-0.0-0.5 Sediment SD072914-RPR-18-0.0-0.5 Sediment SD072914-RPR-19-0.0-0.5 Sediment SD072914-RPR-17-0.5-1.0 Sediment SD072914-RPR-18-0.5-0.8 Sediment SD072914-RPR-19-0.5-0.8 Sediment SDW072914-FB-2 Blank Water SD072914-RPR-01-0.0-0.5 Sediment SD072914-RPR-02-0.0-0.5 Sediment SD072914-RPR-01-0.5-0.75 Sediment

The specific methodologies used in obtaining the enclosed analytical results are indicated on the Laboratory Sample Analysis Record.



Analysis Report

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Environmental

1 COPY TO Data Package Group

Respectfully Submitted,

Bornhow

Nancy Jean Bornholm Principal Specialist

(717) 556-7250



**Analysis Report** 

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#### Sample Description: SD072914-RPR-09-0.0-0.5 Sediment RAMAPO RIVER SEDIMENT SAMPLING 7/14

#### LL Sample # SW 7548859 LL Group # 1492505 Account # 07032

#### Project Name: POM - RAMAPO RIVER SEDIMENT SAMPLING

Collected: 07/29/2014 10:15 by JC

Submitted: 07/30/2014 09:25 Reported: 08/22/2014 13:34 CRG-E.I.DuPont de Nemours & Co URS Corporation Iron Hill Corporate Center 4051 Ogletown Road, Suite 300 Newark DE 19713

RMP-1 SDG#: POM21-01

CAT No.	Analysis Name		CAS Number	Dry Result	Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
Metal	s	SW-846 747	'1A	mg/kg	mg/kg	mg/kg	
00159	Mercury		7439-97-6	0.733	0.0193	0.193	1
Wet C	hemistry	Lloyd Kahr	n modified	mg/kg	mg/kg	mg/kg	
00383	TOC by Lloyd Kahn		n.a.	22,700	2,040	6,130	1
Wet C	hemistry	ASTM D422		% Passing	% Passing	% Passing	
07103	75 mm		n.a.	100	0.50	0.50	1
07103	37.5 mm		n.a.	100	0.50	0.50	1
07103	19 mm		n.a.	100	0.50	0.50	1
07103	4.75 mm		n.a.	99.6	0.50	0.50	1
07103	3.35 mm		n.a.	99.3	0.50	0.50	1
07103	2.36 mm		n.a.	98.9	0.50	0.50	1
07103	1.18 mm		n.a.	98.4	0.50	0.50	1
07103	0.6 mm		n.a.	96.2	0.50	0.50	1
07103	0.3 mm		n.a.	83.4	0.50	0.50	1
07103	0.15 mm		n.a.	37.7	0.50	0.50	1
07103	0.075 mm		n.a.	16.7	0.50	0.50	1
07103	0.064 mm		n.a.	13.5	0.50	0.50	1
07103	0.05 mm		n.a.	12.0	0.50	0.50	1
07103	0.02 mm		n.a.	8.0	0.50	0.50	1
07103	0.005 mm		n.a.	5.0	0.50	0.50	1
07103	0.002 mm		n.a.	2.0	0.50	0.50	1
07103	0.001 mm		n.a.	1.0	0.50	0.50	1
Wet C	hemistry	SM 2540 G-	1997	8	8	%	
00111	Moisture		n.a.	49.3	0.50	0.50	1
	Moisture represents 103 - 105 degrees C as-received basis.		-	-			

#### General Sample Comments

State of New Jersey Lab Certification No. PA011

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

#### Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
00159	Mercury	SW-846 7471A	1	142125711001	08/04/2014 16:5	9 Damary Valentin	1
05711	SW SW846 Hg Digest	SW-846 7471A modified	1	142125711001	08/04/2014 10:0	0 Christopher M Klumpp	1
00383	TOC by Lloyd Kahn	Lloyd Kahn modified	1	14212049531A	08/01/2014 00:3	1 James S Mathiot	1
07103	Grain Size to 1 um	ASTM D422	1	14212710301A	07/31/2014 01:4	0 Daniel S Smith	1
00111	Moisture	SM 2540 G-1997	1	14217820003A	08/05/2014 17:5	1 Scott W Freisher	1



**Analysis Report** 

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#### Sample Description: SD072914-RPR-10-0.0-0.5 Sediment RAMAPO RIVER SEDIMENT SAMPLING 7/14

#### LL Sample # SW 7548860 LL Group # 1492505 Account # 07032

#### Project Name: POM - RAMAPO RIVER SEDIMENT SAMPLING

Collected: 07/29/2014 09:45 by JC

Submitted: 07/30/2014 09:25 Reported: 08/22/2014 13:34 CRG-E.I.DuPont de Nemours & Co URS Corporation Iron Hill Corporate Center 4051 Ogletown Road, Suite 300 Newark DE 19713

RMP-2 SDG#: POM21-02

CAT No.	Analysis Name		CAS Number	Dry Result	Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor		
Metal	s	SW-846 74	71A	mg/kg	mg/kg	mg/kg			
00159	Mercury		7439-97-6	0.0389 J	0.0123	0.123	1		
Wet C	hemistry	Lloyd Kahı	n modified	mg/kg	mg/kg	mg/kg			
00383	TOC by Lloyd Kahn	-	n.a.	123 U	123	369	1		
Wet C	hemistry	ASTM D422		% Passing	% Passing	% Passing			
07103	75 mm		n.a.	100	0.50	0.50	1		
07103	37.5 mm		n.a.	100	0.50	0.50	1		
07103	19 mm		n.a.	100	0.50	0.50	1		
07103	4.75 mm		n.a.	95.2	0.50	0.50	1		
07103	3.35 mm		n.a.	91.8	0.50	0.50	1		
07103	2.36 mm		n.a.	86.8	0.50	0.50	1		
	1.18 mm		n.a.	73.3	0.50	0.50	1		
07103	0.6 mm		n.a.	51.9	0.50	0.50	1		
07103	0.3 mm		n.a.	15.8	0.50	0.50	1		
07103	0.15 mm		n.a.	2.6	0.50	0.50	1		
07103	0.075 mm		n.a.	1.6	0.50	0.50	1		
07103			n.a.	2.0	0.50	0.50	1		
07103			n.a.	2.5	0.50	0.50	1		
07103	0.02 mm		n.a.	2.5	0.50	0.50	1		
07103			n.a.	1.5	0.50	0.50	1		
07103	0.002 mm		n.a.	1.5	0.50	0.50	1		
07103	0.001 mm		n.a.	1.5	0.50	0.50	1		
	grain size percent p s 0.075 mm, 0.064 mm								
Wet C	hemistry	SM 2540 G	-1997	8	8	8			
00111	Moisture		n.a.	18.8	0.50	0.50	1		
	00111       Moisture       n.a.       18.8       0.50       0.50       1         Moisture represents the loss in weight of the sample after oven drying at       103 - 105 degrees Celsius. The moisture result reported is on an as-received basis.       0.50       1								

#### General Sample Comments

State of New Jersey Lab Certification No. PA011

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

#### Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Ti	me	Analyst	Dilution Factor
00159	Mercury	SW-846 7471A	1	142125711001	08/04/2014	17:11	Damary Valentin	1
05711	SW SW846 Hg Digest	SW-846 7471A modified	1	142125711001	08/04/2014	10:00	Christopher M Klumpp	1
00383	TOC by Lloyd Kahn	Lloyd Kahn modified	1	14212049531A	08/01/2014	00:46	James S Mathiot	1
07103	Grain Size to 1 um	ASTM D422	1	14212710301A	07/31/2014	01:40	Daniel S Smith	1
		* 151 * 1* *		1. a 1. a a				



**Analysis Report** 

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	72914-RPR-10-0.0-0.5 Sediment APO RIVER SEDIMENT SAMPLING 7/14	LL Sample # SW 7548860 LL Group # 1492505 Account # 07032					
Project Name: POM - RAMA	APO RIVER SEDIMENT SAMPLING						
Collected: 07/29/2014 09 Submitted: 07/30/2014 09 Reported: 08/22/2014 13	9:25 URS Cor 3:34 4051 Og	.DuPont de Nemours & Co poration 11 Corporate Center detown Road, Suite 300 DE 19713					
RMP-2 SDG#: POM21-02							
Laboratory Sample Analysis Record							

CAT	Analysis Name	Method	Trial#	Batch#	Analysis	Analyst	Dilution
No. 00111		SM 2540 G-1997	1	14217820003A	Date and Time 08/05/2014 17:51	Scott W Freisher	Factor 1



**Analysis Report** 

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#### Sample Description: SD072914-RPR-11-0.0-0.5 Sediment RAMAPO RIVER SEDIMENT SAMPLING 7/14

#### LL Sample # SW 7548861 LL Group # 1492505 Account # 07032

#### Project Name: POM - RAMAPO RIVER SEDIMENT SAMPLING

Collected: 07/29/2014 09:15 by JC

Submitted: 07/30/2014 09:25 Reported: 08/22/2014 13:34 CRG-E.I.DuPont de Nemours & Co URS Corporation Iron Hill Corporate Center 4051 Ogletown Road, Suite 300 Newark DE 19713

RMP-3 SDG#: POM21-03

CAT No.	Analysis Name		CAS Number	Dry Result	Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
Metal	S	SW-846 747	/1A	mg/kg	mg/kg	mg/kg	
00159	Mercury		7439-97-6	0.101 J	0.0132	0.132	1
Wet C	hemistry	Lloyd Kahr	n modified	mg/kg	mg/kg	mg/kg	
00383	TOC by Lloyd Kahn	-	n.a.	1,750	133	400	1
Wet C	hemistry	ASTM D422		% Passing	% Passing	% Passing	
07103	75 mm		n.a.	100	0.50	0.50	1
07103	37.5 mm		n.a.	100	0.50	0.50	1
07103	19 mm		n.a.	100	0.50	0.50	1
07103	4.75 mm		n.a.	97.0	0.50	0.50	1
07103	3.35 mm		n.a.	93.8	0.50	0.50	1
07103	2.36 mm		n.a.	88.3	0.50	0.50	1
	1.18 mm		n.a.	73.7	0.50	0.50	1
07103	0.6 mm		n.a.	54.0	0.50	0.50	1
07103	0.3 mm		n.a.	20.0	0.50	0.50	1
07103	0.15 mm		n.a.	3.4	0.50	0.50	1
07103	0.075 mm		n.a.	2.2	0.50	0.50	1
07103	0.064 mm		n.a.	2.0	0.50	0.50	1
07103	0.05 mm		n.a.	2.5	0.50	0.50	1
07103	0.02 mm		n.a.	3.0	0.50	0.50	1
07103	0.005 mm		n.a.	1.0	0.50	0.50	1
07103	0.002 mm		n.a.	1.0	0.50	0.50	1
07103	0.001 mm		n.a.	1.0	0.50	0.50	1
	grain size percent pa s 0.075 mm, 0.064 mm						
Wet C	hemistry	SM 2540 G-	-1997	8	8	8	
00111	Moisture		n.a.	25.0	0.50	0.50	1
	Moisture represents 103 - 105 degrees C as-received basis.						

#### General Sample Comments

State of New Jersey Lab Certification No. PA011

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

#### Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Tir	ne	Analyst	Dilution Factor
00159	Mercury	SW-846 7471A	1	142125711001	08/04/2014	17:13	Damary Valentin	1
05711	SW SW846 Hg Digest	SW-846 7471A modified	1	142125711001	08/04/2014	10:00	Christopher M Klumpp	1
00383	TOC by Lloyd Kahn	Lloyd Kahn modified	1	14212049531A	08/01/2014	00:58	James S Mathiot	1
07103	Grain Size to 1 um	ASTM D422	1	14212710301A	07/31/2014	01:40	Daniel S Smith	1
		* 1715 - 1500		the dealers lead to a d	4			



**Analysis Report** 

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Sample Description: SD072914-RPR-11-0.0-0.5 Sediment RAMAPO RIVER SEDIMENT SAMPLING 7/14	LL Sample # SW 7548861 LL Group # 1492505 Account # 07032						
Project Name: POM - RAMAPO RIVER SEDIMENT SAMPLING							
Submitted:07/30/2014 09:25URS CorporationIron Hill Corp	oorate Center Road, Suite 300						
RMP-3 SDG#: POM21-03							
Laboratory Sample Analysis Record							

CAT		Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor		
No. 001	11	Moisture	SM 2540 G-1997	1	14217820003A	Date and Time 08/05/2014 17:51	Scott W Freisher	Factor 1		



**Analysis Report** 

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#### Sample Description: SD072914-RPR-12-0.0-0.5 Sediment RAMAPO RIVER SEDIMENT SAMPLING 7/14

#### LL Sample # SW 7548862 LL Group # 1492505 Account # 07032

### Project Name: POM - RAMAPO RIVER SEDIMENT SAMPLING

Collected: 07/29/2014 08:40 by JC

Submitted: 07/30/2014 09:25 Reported: 08/22/2014 13:34 CRG-E.I.DuPont de Nemours & Co URS Corporation Iron Hill Corporate Center 4051 Ogletown Road, Suite 300 Newark DE 19713

RMP-4 SDG#: POM21-04

CAT No.	Analysis Name		CAS Number	Dry Result	Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
Metal	s	SW-846 747	1A	mg/kg	mg/kg	mg/kg	
00159	Mercury		7439-97-6	2.77	0.114	1.14	5
Wet C	hemistry	Lloyd Kahn	modified	mg/kg	mg/kg	mg/kg	
00383	TOC by Lloyd Kahn		n.a.	33,800	1,160	3,480	1
Wet C	hemistry	ASTM D422		% Passing	% Passing	% Passing	
07103	75 mm		n.a.	100	0.50	0.50	1
07103	37.5 mm		n.a.	100	0.50	0.50	1
07103	19 mm		n.a.	100	0.50	0.50	1
07103	4.75 mm		n.a.	96.1	0.50	0.50	1
07103	3.35 mm		n.a.	94.7	0.50	0.50	1
07103	2.36 mm		n.a.	92.7	0.50	0.50	1
07103	1.18 mm		n.a.	89.7	0.50	0.50	1
07103	0.6 mm		n.a.	87.7	0.50	0.50	1
07103	0.3 mm		n.a.	83.2	0.50	0.50	1
07103	0.15 mm		n.a.	60.2	0.50	0.50	1
07103	0.075 mm		n.a.	35.3	0.50	0.50	1
07103	0.064 mm		n.a.	32.0	0.50	0.50	1
07103	0.05 mm		n.a.	27.0	0.50	0.50	1
07103	0.02 mm		n.a.	16.0	0.50	0.50	1
07103	0.005 mm		n.a.	5.0	0.50	0.50	1
07103	0.002 mm		n.a.	2.5	0.50	0.50	1
07103	0.001 mm		n.a.	1.5	0.50	0.50	1
Wet C	hemistry	SM 2540 G-	1997	8	8	8	
00111	Moisture		n.a.	56.7	0.50	0.50	1
	Moisture represents 103 - 105 degrees C as-received basis.		-	-			

#### General Sample Comments

State of New Jersey Lab Certification No. PA011

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

#### Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
00159	Mercury	SW-846 7471A	1	142125711001	08/04/2014 17:59	Damary Valentin	5
05711	SW SW846 Hg Digest	SW-846 7471A modified	1	142125711001	08/04/2014 10:00	Christopher M Klumpp	1
00383	TOC by Lloyd Kahn	Lloyd Kahn modified	1	14212049531A	08/01/2014 01:14	James S Mathiot	1
07103	Grain Size to 1 um	ASTM D422	1	14212710301A	07/31/2014 01:40	Daniel S Smith	1
00111	Moisture	SM 2540 G-1997	1	14217820003A	08/05/2014 17:51	Scott W Freisher	1



No.

00159 Mercury

00111 Moisture

05711 SW SW846 Hg Digest

Lancaster Laboratories Environmental

SW-846 7471A

SW-846 7471A

modified SM 2540 G-1997

# **Analysis Report**

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	SD072914-RPR-12-0.5-0. RAMAPO RIVER SEDIMENT			LL Group	# SW 7548863 # 1492505 # 07032
Project Name: POM - H	RAMAPO RIVER SEDIMENT	SAMPLING			
Collected: 07/29/2014	4 08:40 by JC		CRG-E.I.DuPont de	Nemours & Co	
			URS Corporation		
Submitted: 07/30/2014	4 09:25		Iron Hill Corporat		
Reported: 08/22/2014	4 13:34		4051 Ogletown Road Newark DE 19713	l, Suite 300	
RMP-5 SDG#: POM21-0	05				
CAT No. Analysis Name	CAS Number	Dry Result	Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
Metals	SW-846 7471A	mg/kg	mg/kg	mg/kg	
00159 Mercury	7439-97-6	4.97	0.105	1.05	5
Wet Chemistry	SM 2540 G-1997	%	z	8	
	n.a. s the loss in weight of the Celsius. The moisture result			0.50	1
State of New Jersey Lab C		eral Samp	le Comments		
State of New Dersey hab C	ertification No. FAUL				
	s otherwise noted. Please r ll QC performance data and a				
	Laborato	ry Sample	Analysis Record		
CAT Analysis Name	Method I	rial# Batch	# Analysis	Analyst	Dilution

142125711001

142125711001

14217820003A

1

1

1

Date and Time

08/04/2014 18:01 08/04/2014 10:00

08/05/2014 17:51

Factor

5

1

1

Damary Valentin

Scott W Freisher

Christopher M

Klumpp



**Analysis Report** 

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#### Sample Description: SD072914-RPR-13-0.0-0.5 Sediment RAMAPO RIVER SEDIMENT SAMPLING 7/14

#### LL Sample # SW 7548864 LL Group # 1492505 Account # 07032

#### Project Name: POM - RAMAPO RIVER SEDIMENT SAMPLING

Collected: 07/29/2014 12:00 by JC

Submitted: 07/30/2014 09:25 Reported: 08/22/2014 13:34 CRG-E.I.DuPont de Nemours & Co URS Corporation Iron Hill Corporate Center 4051 Ogletown Road, Suite 300 Newark DE 19713

RMP-6 SDG#: POM21-06

CAT No.	Analysis Name		CAS Number	Dry Result	Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
Metal	s	SW-846 747	'1A	mg/kg	mg/kg	mg/kg	
	Mercury		7439-97-6	0.690	0.0301	0.301	1
Wet C	hemistry	Lloyd Kahn	modified	mg/kg	mg/kg	mg/kg	
00383	TOC by Lloyd Kahn		n.a.	41,600	2,360	7,090	1
Wet C	hemistry	ASTM D422		% Passing	% Passing	% Passing	
07103	75 mm		n.a.	100	0.50	0.50	1
07103	37.5 mm		n.a.	100	0.50	0.50	1
07103	19 mm		n.a.	100	0.50	0.50	1
07103	4.75 mm		n.a.	99.5	0.50	0.50	1
07103	3.35 mm		n.a.	97.4	0.50	0.50	1
07103	2.36 mm		n.a.	93.0	0.50	0.50	1
07103	1.18 mm		n.a.	90.4	0.50	0.50	1
07103	0.6 mm		n.a.	89.9	0.50	0.50	1
07103	0.3 mm		n.a.	89.0	0.50	0.50	1
07103	0.15 mm		n.a.	85.1	0.50	0.50	1
07103	0.075 mm		n.a.	64.4	0.50	0.50	1
07103	0.064 mm		n.a.	59.0	0.50	0.50	1
07103	0.05 mm		n.a.	50.0	0.50	0.50	1
07103	0.02 mm		n.a.	29.0	0.50	0.50	1
07103	0.005 mm		n.a.	11.0	0.50	0.50	1
07103	0.002 mm		n.a.	7.0	0.50	0.50	1
07103	0.001 mm		n.a.	3.0	0.50	0.50	1
Wet C	hemistry	SM 2540 G-	1997	8	8	8	
00111	Moisture		n.a.	67.6	0.50	0.50	1
	Moisture represents 103 - 105 degrees C as-received basis.						

#### General Sample Comments

State of New Jersey Lab Certification No. PA011

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

#### Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
00159	Mercury	SW-846 7471A	1	142125711001	08/04/2014 17:2	3 Damary Valentin	1
05711	SW SW846 Hg Digest	SW-846 7471A modified	1	142125711001	08/04/2014 10:0	) Christopher M Klumpp	1
00383	TOC by Lloyd Kahn	Lloyd Kahn modified	1	14212049531A	08/01/2014 01:3	4 James S Mathiot	1
07103	Grain Size to 1 um	ASTM D422	1	14212710301A	07/31/2014 01:4	) Daniel S Smith	1
00111	Moisture	SM 2540 G-1997	1	14217820003A	08/05/2014 17:5	1 Scott W Freisher	1



**Analysis Report** 

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#### Sample Description: SD072914-RPR-14-0.0-0.5 Sediment RAMAPO RIVER SEDIMENT SAMPLING 7/14

#### LL Sample # SW 7548865 LL Group # 1492505 Account # 07032

#### Project Name: POM - RAMAPO RIVER SEDIMENT SAMPLING

Collected: 07/29/2014 11:30 by JC

Submitted: 07/30/2014 09:25 Reported: 08/22/2014 13:34 CRG-E.I.DuPont de Nemours & Co URS Corporation Iron Hill Corporate Center 4051 Ogletown Road, Suite 300 Newark DE 19713

RMP-7 SDG#: POM21-07

CAT No.	Analysis Name		CAS Number	Dry Result	Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
Metal	s	SW-846 747	'1A	mg/kg	mg/kg	mg/kg	
00159	Mercury		7439-97-6	0.551	0.0246	0.246	1
Wet C	hemistry	Lloyd Kahr	modified	mg/kg	mg/kg	mg/kg	
00383	TOC by Lloyd Kahn		n.a.	37,100	2,570	7,720	1
Wet C	hemistry	ASTM D422		% Passing	% Passing	% Passing	
07103	75 mm		n.a.	100	0.50	0.50	1
07103	37.5 mm		n.a.	100	0.50	0.50	1
07103	19 mm		n.a.	100	0.50	0.50	1
07103	4.75 mm		n.a.	99.8	0.50	0.50	1
07103	3.35 mm		n.a.	98.8	0.50	0.50	1
07103	2.36 mm		n.a.	96.9	0.50	0.50	1
07103	1.18 mm		n.a.	96.0	0.50	0.50	1
07103	0.6 mm		n.a.	95.3	0.50	0.50	1
07103	0.3 mm		n.a.	93.4	0.50	0.50	1
07103	0.15 mm		n.a.	76.2	0.50	0.50	1
07103	0.075 mm		n.a.	45.4	0.50	0.50	1
07103			n.a.	40.5	0.50	0.50	1
07103	0.05 mm		n.a.	33.0	0.50	0.50	1
07103	0.02 mm		n.a.	17.0	0.50	0.50	1
07103	0.005 mm		n.a.	7.0	0.50	0.50	1
07103	0.002 mm		n.a.	6.0	0.50	0.50	1
07103	0.001 mm		n.a.	6.0	0.50	0.50	1
Wet C	hemistry	SM 2540 G-	1997	8	8	8	
00111	Moisture		n.a.	59.3	0.50	0.50	1
	Moisture represents 103 - 105 degrees C as-received basis.						

#### General Sample Comments

State of New Jersey Lab Certification No. PA011

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

#### Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
00159	Mercury	SW-846 7471A	1	142125711001	08/04/2014 17:	25 Damary Valentin	1
05711	SW SW846 Hg Digest	SW-846 7471A modified	1	142125711001	08/04/2014 10:	00 Christopher M Klumpp	1
00383	TOC by Lloyd Kahn	Lloyd Kahn modified	1	14212049531A	08/01/2014 02:	46 James S Mathiot	1
07103	Grain Size to 1 um	ASTM D422	1	14212710301A	07/31/2014 01:	40 Daniel S Smith	1
00111	Moisture	SM 2540 G-1997	1	14217820003A	08/05/2014 17:	51 Scott W Freisher	1



**Analysis Report** 

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#### Sample Description: SD072914-RPR-15-0.0-0.5 Sediment RAMAPO RIVER SEDIMENT SAMPLING 7/14

#### LL Sample # SW 7548866 LL Group # 1492505 Account # 07032

#### Project Name: POM - RAMAPO RIVER SEDIMENT SAMPLING

Collected: 07/29/2014 11:00 by JC

Submitted: 07/30/2014 09:25 Reported: 08/22/2014 13:34 CRG-E.I.DuPont de Nemours & Co URS Corporation Iron Hill Corporate Center 4051 Ogletown Road, Suite 300 Newark DE 19713

RMP-8 SDG#: POM21-08

CAT No.	Analysis Name		CAS Number	Dry Result	Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
Metal	5	SW-846 747	/1A	mg/kg	mg/kg	mg/kg	
00159	Mercury		7439-97-6	23.5	1.07	10.7	50
Wet C	hemistry	Lloyd Kahr	n modified	mg/kg	mg/kg	mg/kg	
00383	TOC by Lloyd Kahn		n.a.	65,600	2,420	7,250	1
Wet C	hemistry	ASTM D422		% Passing	% Passing	% Passing	
07103	75 mm		n.a.	100	0.50	0.50	1
07103	37.5 mm		n.a.	100	0.50	0.50	1
07103	19 mm		n.a.	100	0.50	0.50	1
07103	4.75 mm		n.a.	99.3	0.50	0.50	1
07103	3.35 mm		n.a.	98.3	0.50	0.50	1
07103	2.36 mm		n.a.	94.6	0.50	0.50	1
07103	1.18 mm		n.a.	90.4	0.50	0.50	1
07103	0.6 mm		n.a.	83.9	0.50	0.50	1
07103	0.3 mm		n.a.	78.3	0.50	0.50	1
07103	0.15 mm		n.a.	61.9	0.50	0.50	1
07103	0.075 mm		n.a.	47.5	0.50	0.50	1
07103	0.064 mm		n.a.	44.0	0.50	0.50	1
07103	0.05 mm		n.a.	39.5	0.50	0.50	1
07103	0.02 mm		n.a.	25.0	0.50	0.50	1
07103	0.005 mm		n.a.	11.0	0.50	0.50	1
07103	0.002 mm		n.a.	7.0	0.50	0.50	1
07103	0.001 mm		n.a.	4.0	0.50	0.50	1
Wet C	hemistry	SM 2540 G-	-1997	8	%	%	
00111	Moisture		n.a.	56.3	0.50	0.50	1
	Moisture represents 103 - 105 degrees C as-received basis.		weight of the s	sample after ove	n drying at		

#### General Sample Comments

State of New Jersey Lab Certification No. PA011

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

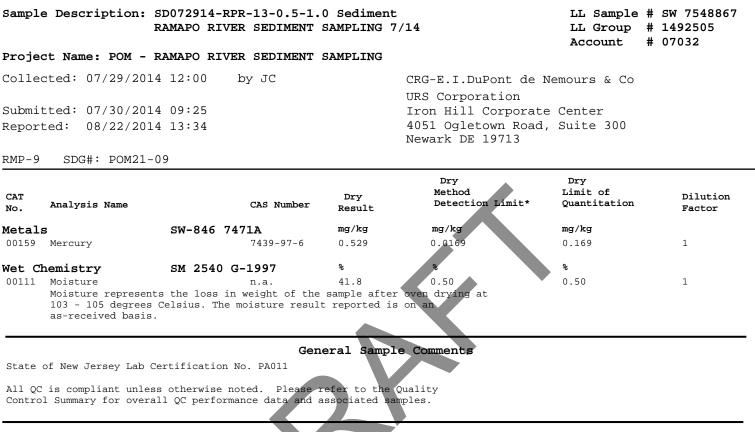
#### Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
00159	Mercury	SW-846 7471A	1	142125711001	08/04/2014 18:	05 Damary Valentin	50
05711	SW SW846 Hg Digest	SW-846 7471A modified	1	142125711001	08/04/2014 10:	00 Christopher M Klumpp	1
00383	TOC by Lloyd Kahn	Lloyd Kahn modified	1	14215049531A	08/03/2014 23:	21 James S Mathiot	1
07103	Grain Size to 1 um	ASTM D422	1	14212710301A	07/31/2014 01:	40 Daniel S Smith	1
00111	Moisture	SM 2540 G-1997	1	14217820003A	08/05/2014 17:	51 Scott W Freisher	1



# **Analysis Report**

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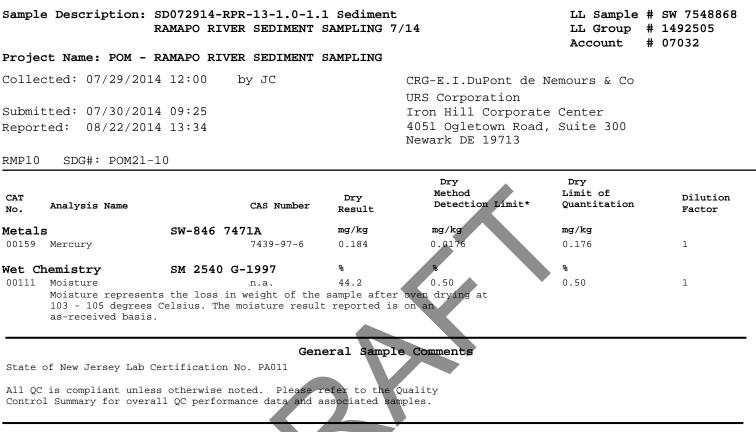


CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time		Analyst	Dilution Factor
00159	Mercury	SW-846 7471A	1	142125711001	08/04/2014 17	7:29	Damary Valentin	1
05711	SW SW846 Hg Digest	SW-846 7471A modified	1	142125711001	08/04/2014 10	0:00	Christopher M Klumpp	1
00111	Moisture	SM 2540 G-1997	1	14217820003A	08/05/2014 17	7:51	Scott W Freisher	1



# **Analysis Report**

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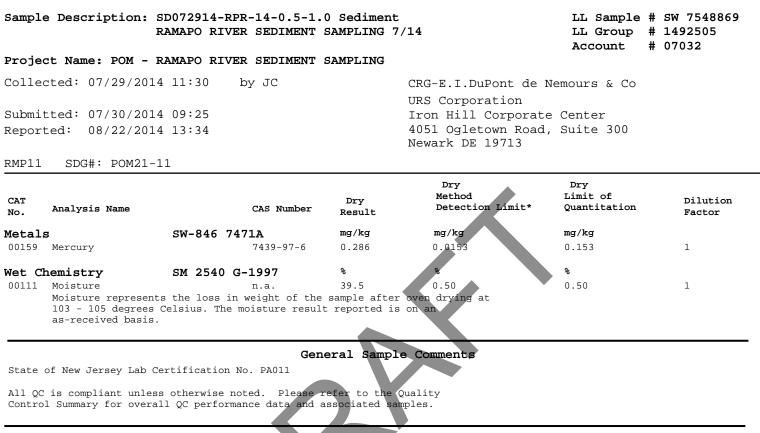


CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
00159	Mercury	SW-846 7471A	1	142125711001	08/04/2014 17:31	Damary Valentin	1
05711	SW SW846 Hg Digest	SW-846 7471A modified	1	142125711001	08/04/2014 10:00	Christopher M Klumpp	1
00111	Moisture	SM 2540 G-1997	1	14217820003A	08/05/2014 17:51	Scott W Freisher	1



# **Analysis Report**

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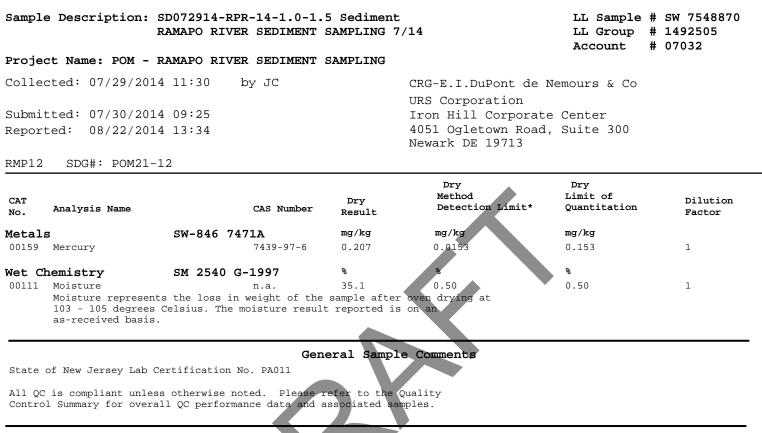
#### Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
00159	Mercury	SW-846 7471A	1	142125711001	08/04/2014 17:33	Damary Valentin	1
05711	SW SW846 Hg Digest	SW-846 7471A modified	1	142125711001	08/04/2014 10:00	Christopher M Klumpp	1
00111	Moisture	SM 2540 G-1997	1	14217820003B	08/05/2014 17:51	Scott W Freisher	1



# **Analysis Report**

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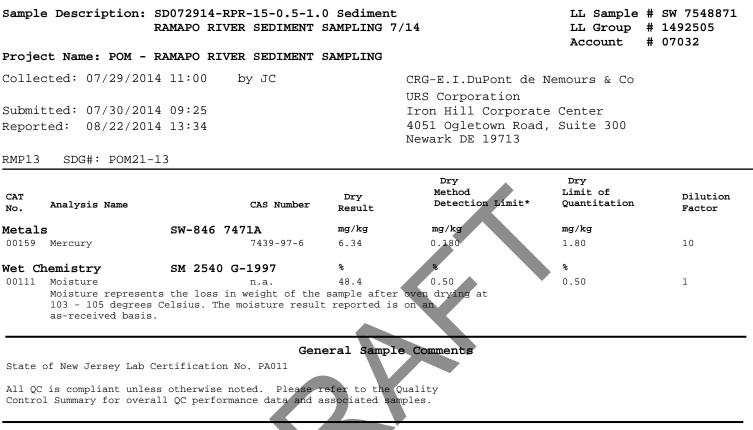


CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	e	Analyst	Dilution Factor
00159	Mercury	SW-846 7471A	1	142125711001	08/04/2014 1	17:35	Damary Valentin	1
05711	SW SW846 Hg Digest	SW-846 7471A modified	1	142125711001	08/04/2014 1	10:00	Christopher M Klumpp	1
00111	Moisture	SM 2540 G-1997	1	14217820003B	08/05/2014 1	17:51	Scott W Freisher	1



**Analysis Report** 

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#### Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	9	Analyst	Dilution Factor
00159	Mercury	SW-846 7471A	1	142125711001	08/04/2014 1	8:11	Damary Valentin	10
05711	SW SW846 Hg Digest	SW-846 7471A modified	1	142125711001	08/04/2014 1	0:00	Christopher M Klumpp	1
00111	Moisture	SM 2540 G-1997	1	14217820003B	08/05/2014 1	7:51	Scott W Freisher	1



# **Analysis Report**

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Sample Description:	SD072914-RPR-15-0.0-0.5-D Sediment	LL Sample	#	SW 7548872
	RAMAPO RIVER SEDIMENT SAMPLING 7/14	LL Group	#	1492505
		Account	#	07032

#### Project Name: POM - RAMAPO RIVER SEDIMENT SAMPLING

Collected: 07/29/2014 11:00 by JC

Submitted: 07/30/2014 09:25 Reported: 08/22/2014 13:34 CRG-E.I.DuPont de Nemours & Co URS Corporation Iron Hill Corporate Center 4051 Ogletown Road, Suite 300 Newark DE 19713

RMP14 SDG#: POM21-14FD

CAT No.	Analysis Name		CAS Number	Dry Result	Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
Metal	s	SW-846 747	71A	mg/kg	mg/kg	mg/kg	
	Mercury		7439-97-6	23.9	1.06	10.6	50
Wet C	hemistry	Lloyd Kahr	n modified	mg/kg	mg/kg	mg/kg	
00383	TOC by Lloyd Kahn		n.a.	63,700	2,470	7,420	1
Wet C	hemistry	ASTM D422		% Passing	% Passing	% Passing	
07103	75 mm		n.a.	100	0.50	0.50	1
07103	37.5 mm		n.a.	100	0.50	0.50	1
07103	19 mm		n.a.	100	0.50	0.50	1
07103	4.75 mm		n.a.	98.8	0.50	0.50	1
07103	3.35 mm		n.a.	96.4	0.50	0.50	1
07103	2.36 mm		n.a.	95.0	0.50	0.50	1
07103	1.18 mm		n.a.	91.8	0.50	0.50	1
07103	0.6 mm		n.a.	89.6	0.50	0.50	1
07103	0.3 mm		n.a.	86.0	0.50	0.50	1
07103	0.15 mm		n.a.	70.4	0.50	0.50	1
07103	0.075 mm		n.a.	51.8	0.50	0.50	1
07103	0.064 mm		<u>n.a.</u>	48.0	0.50	0.50	1
07103	0.05 mm		n.a.	42.5	0.50	0.50	1
07103	0.02 mm		n.a.	29.0	0.50	0.50	1
07103	0.005 mm		n.a.	12.0	0.50	0.50	1
07103	0.002 mm		n.a.	7.0	0.50	0.50	1
07103	0.001 mm		n.a.	4.0	0.50	0.50	1
Wet C	hemistry	SM 2540 G-	-1997	8	8	%	
00111	-	-	n.a.	55.5	0.50	0.50	1
	Moisture represents	the loss in the					-
	103 - 105 degrees C as-received basis.		5	-	1 5		

#### General Sample Comments

State of New Jersey Lab Certification No. PA011

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

#### Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
00159	Mercury	SW-846 7471A	1	142125711001	08/04/2014 18:	13 Damary Valentin	50
05711	SW SW846 Hg Digest	SW-846 7471A modified	1	142125711001	08/04/2014 10:	00 Christopher M Klumpp	1
00383	TOC by Lloyd Kahn	Lloyd Kahn modified	1	14215049531A	08/03/2014 23:	29 James S Mathiot	1
07103	Grain Size to 1 um	ASTM D422	1	14212710301A	07/31/2014 01:	40 Daniel S Smith	1
00111	Moisture	SM 2540 G-1997	1	14217820003B	08/05/2014 17:	51 Scott W Freisher	1



**Analysis Report** 

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#### Sample Description: SD072914-RPR-16-0.0-0.5 Sediment RAMAPO RIVER SEDIMENT SAMPLING 7/14

#### LL Sample # SW 7548873 LL Group # 1492505 Account # 07032

#### Project Name: POM - RAMAPO RIVER SEDIMENT SAMPLING

Collected: 07/29/2014 16:00 by JC

Submitted: 07/30/2014 09:25 Reported: 08/22/2014 13:34 CRG-E.I.DuPont de Nemours & Co URS Corporation Iron Hill Corporate Center 4051 Ogletown Road, Suite 300 Newark DE 19713

RMP15 SDG#: POM21-15

CAT No.	Analysis Name	CZ	AS Number	Dry Result	Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
Metal	s	SW-846 7471A	A	mg/kg	mg/kg	mg/kg	
00159	Mercury		439-97-6	0.448	0.0176	0.176	1
Wet C	hemistry	Lloyd Kahn m	nodified	mg/kg	mg/kg	mg/kg	
00383	TOC by Lloyd Kahn	n.	.a.	13,000	2,620	7,860	1
Wet C	hemistry	ASTM D422		% Passing	% Passing	% Passing	
07103	75 mm	n.	.a.	100	0.50	0.50	1
07103	37.5 mm	n.	.a.	100	0.50	0.50	1
07103	19 mm	n.	.a.	100	0.50	0.50	1
07103	4.75 mm	n.	.a.	99.3	0.50	0.50	1
07103	3.35 mm	n.	.a.	98.8	0.50	0.50	1
07103	2.36 mm	n.	.a.	98.2	0.50	0.50	1
07103	1.18 mm	n.	.a.	97.8	0.50	0.50	1
07103	0.6 mm	n.	.a.	97.2	0.50	0.50	1
07103	0.3 mm	n.	.a.	89.1	0.50	0.50	1
07103	0.15 mm	n.	.a.	44.5	0.50	0.50	1
07103	0.075 mm	n.	.a.	19.1	0.50	0.50	1
07103	0.064 mm	n.	.a.	15.0	0.50	0.50	1
07103	0.05 mm	n.	.a.	12.0	0.50	0.50	1
07103	0.02 mm	n.	.a.	7.0	0.50	0.50	1
07103	0.005 mm	n.	.a.	2.0	0.50	0.50	1
07103	0.002 mm	n.	.a.	1.5	0.50	0.50	1
07103	0.001 mm	n.	.a.	1.5	0.50	0.50	1
Wet C	hemistry	SM 2540 G-19	97	8	8	%	
00111	Moisture	n.	.a.	44.6	0.50	0.50	1
	Moisture represents						
	103 - 105 degrees C as-received basis.						

#### General Sample Comments

State of New Jersey Lab Certification No. PA011

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

#### Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
00159	Mercury	SW-846 7471A	1	142125711001	08/04/2014 17:	47 Damary Valentin	1
05711	SW SW846 Hg Digest	SW-846 7471A modified	1	142125711001	08/04/2014 10:	00 Christopher M Klumpp	1
00383	TOC by Lloyd Kahn	Lloyd Kahn modified	1	14215049531A	08/03/2014 23:	55 James S Mathiot	1
07103	Grain Size to 1 um	ASTM D422	1	14212710301A	07/31/2014 01:	40 Daniel S Smith	1
00111	Moisture	SM 2540 G-1997	1	14217820003B	08/05/2014 17:	51 Scott W Freisher	1



# **Analysis Report**

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## Sample Description: SD072914-RPR-17-0.0-0.5 Sediment RAMAPO RIVER SEDIMENT SAMPLING 7/14 LL Sample # SW 7548874 LL Group # 1492505 Account # 07032 Project Name: POM - RAMAPO RIVER SEDIMENT SAMPLING CRG-E.I.DuPont de Nemours & Co URS Corporation Iron Hill Corporate Center

Reported: 08/22/2014 13:34

SDG#: POM21-16

RMP16

URS Corporation Iron Hill Corporate Center 4051 Ogletown Road, Suite 300 Newark DE 19713

Drv

Drv

CAT No.	Analysis Name		CAS Number	Dry Result	Method Detection Limit*	Limit of Quantitation	Dilution Factor
Metal	S	SW-846 747	/1A	mg/kg	mg/kg	mg/kg	
00159	Mercury		7439-97-6	1.61	0.0468	0.468	2.5
Wet C	hemistry	Lloyd Kahr	n modified	mg/kg	mg/kg	mg/kg	
00383	TOC by Lloyd Kahn		n.a.	18,300	1,760	5,280	1
Wet C	hemistry	ASTM D422		% Passing	% Passing	% Passing	
07103	75 mm		n.a.	100	0.50	0.50	1
07103	37.5 mm		n.a.	100	0.50	0.50	1
07103	19 mm		n.a.	100	0.50	0.50	1
07103	4.75 mm		n.a.	99.7	0.50	0.50	1
07103	3.35 mm		n.a.	99.3	0.50	0.50	1
07103	2.36 mm		n.a.	98.5	0.50	0.50	1
	1.18 mm		n.a.	98.0	0.50	0.50	1
07103	0.6 mm		n.a.	97.3	0.50	0.50	1
07103	0.3 mm		n.a.	94.9	0.50	0.50	1
07103	0.15 mm		n.a.	64.1	0.50	0.50	1
07103	0.075 mm		n.a.	31.8	0.50	0.50	1
07103	0.064 mm		n.a.	27.0	0.50	0.50	1
07103	0.05 mm		n.a.	22.0	0.50	0.50	1
07103	0.02 mm		n.a.	10.5	0.50	0.50	1
07103	0.005 mm		n.a.	4.0	0.50	0.50	1
07103	0.002 mm		n.a.	3.0	0.50	0.50	1
07103	0.001 mm		n.a.	1.0	0.50	0.50	1
Wet C	hemistry	SM 2540 G-	1997	8	8	8	
00111	Moisture		n.a.	50.2	0.50	0.50	1
	Moisture represents	the loss in v					
	103 - 105 degrees C						
	as-received basis.			-			

#### General Sample Comments

State of New Jersey Lab Certification No. PA011

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

### Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
00159	Mercury	SW-846 7471A	1	142125711001	08/04/2014 18:15	Damary Valentin	2.5
05711	SW SW846 Hg Digest	SW-846 7471A modified	1	142125711001	08/04/2014 10:00	Christopher M Klumpp	1
00383	TOC by Lloyd Kahn	Lloyd Kahn modified	1	14215049531A	08/04/2014 00:03	James S Mathiot	1
07103	Grain Size to 1 um	ASTM D422	1	14212710301A	07/31/2014 01:40	Daniel S Smith	1
00111	Moisture	SM 2540 G-1997	1	14217820003B	08/05/2014 17:51	Scott W Freisher	1



**Analysis Report** 

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#### Sample Description: SD072914-RPR-18-0.0-0.5 Sediment RAMAPO RIVER SEDIMENT SAMPLING 7/14

#### LL Sample # SW 7548875 LL Group # 1492505 Account # 07032

#### Project Name: POM - RAMAPO RIVER SEDIMENT SAMPLING

Collected: 07/29/2014 15:00 by JC

Submitted: 07/30/2014 09:25 Reported: 08/22/2014 13:34 CRG-E.I.DuPont de Nemours & Co URS Corporation Iron Hill Corporate Center 4051 Ogletown Road, Suite 300 Newark DE 19713

RMP17 SDG#: POM21-17

CAT No.	Analysis Name		CAS Number	Dry Result	Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
Metal	s	SW-846 747	'1A	mg/kg	mg/kg	mg/kg	
	Mercury		7439-97-6	2.41	0.0705	0.705	2.5
Wet C	hemistry	Lloyd Kahr	n modified	mg/kg	mg/kg	mg/kg	
00383	TOC by Lloyd Kahn	-	n.a.	45,500	2,520	7,570	1
Wet C	hemistry	ASTM D422		% Passing	% Passing	% Passing	
07103	75 mm		n.a.	100	0.50	0.50	1
07103	37.5 mm		n.a.	100	0.50	0.50	1
07103	19 mm		n.a.	100	0.50	0.50	1
07103	4.75 mm		n.a.	99.1	0.50	0.50	1
07103	3.35 mm		n.a.	98.3	0.50	0.50	1
07103	2.36 mm		n.a.	96.7	0.50	0.50	1
07103	1.18 mm		n.a.	95.8	0.50	0.50	1
07103	0.6 mm		n.a.	94.7	0.50	0.50	1
07103	0.3 mm		n.a.	92.4	0.50	0.50	1
07103	0.15 mm		n.a.	72.9	0.50	0.50	1
07103	0.075 mm		n.a.	45.2	0.50	0.50	1
07103	0.064 mm		n.a.	42.0	0.50	0.50	1
07103	0.05 mm		n.a.	38.0	0.50	0.50	1
07103	0.02 mm		n.a.	23.0	0.50	0.50	1
07103	0.005 mm		n.a.	7.5	0.50	0.50	1
07103	0.002 mm		n.a.	4.0	0.50	0.50	1
07103	0.001 mm		n.a.	3.0	0.50	0.50	1
Wet C	hemistry	SM 2540 G-	1997	8	8	8	
00111	Moisture		n.a.	65.2	0.50	0.50	1
	Moisture represents 103 - 105 degrees C as-received basis.		weight of the s				

#### General Sample Comments

State of New Jersey Lab Certification No. PA011

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

#### Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
00159	Mercury	SW-846 7471A	1	142125711001	08/04/2014 18:17	Damary Valentin	2.5
05711	SW SW846 Hg Digest	SW-846 7471A modified	1	142125711001	08/04/2014 10:00	Christopher M Klumpp	1
00383	TOC by Lloyd Kahn	Lloyd Kahn modified	1	14215049531A	08/04/2014 00:18	James S Mathiot	1
07103	Grain Size to 1 um	ASTM D422	1	14212710301A	07/31/2014 01:40	Daniel S Smith	1
00111	Moisture	SM 2540 G-1997	1	14217820003B	08/05/2014 17:51	Scott W Freisher	1



**Analysis Report** 

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#### Sample Description: SD072914-RPR-19-0.0-0.5 Sediment RAMAPO RIVER SEDIMENT SAMPLING 7/14

#### LL Sample # SW 7548876 LL Group # 1492505 Account # 07032

#### Project Name: POM - RAMAPO RIVER SEDIMENT SAMPLING

Collected: 07/29/2014 14:30 by JC

Submitted: 07/30/2014 09:25 Reported: 08/22/2014 13:34 CRG-E.I.DuPont de Nemours & Co URS Corporation Iron Hill Corporate Center 4051 Ogletown Road, Suite 300 Newark DE 19713

#### RMP18 SDG#: POM21-18

CAT No.	Analysis Name		CAS Number	Dry Result	Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
Metal	5	SW-846 747	'1A	mg/kg	mg/kg	mg/kg	
00159	Mercury		7439-97-6	0.344	0.0158	0.158	1
Wet C	hemistry	Lloyd Kahr	n modified	mg/kg	mg/kg	mg/kg	
00383	TOC by Lloyd Kahn		n.a.	6,630	895	2,680	1
Wet C	hemistry	ASTM D422		% Passing	% Passing	% Passing	
07103	75 mm		n.a.	100	0.50	0.50	1
07103	37.5 mm		n.a.	100	0.50	0.50	1
07103	19 mm		n.a.	100	0.50	0.50	1
07103	4.75 mm		n.a.	98.2	0.50	0.50	1
07103	3.35 mm		n.a.	97.7	0.50	0.50	1
07103	2.36 mm		n.a.	97.3	0.50	0.50	1
07103	1.18 mm		n.a.	97.1	0.50	0.50	1
07103	0.6 mm		n.a.	96.8	0.50	0.50	1
07103	0.3 mm		n.a.	79.6	0.50	0.50	1
07103	0.15 mm		n.a.	21.7	0.50	0.50	1
07103	0.075 mm		n.a.	8.2	0.50	0.50	1
07103	0.064 mm		n.a.	7.0	0.50	0.50	1
07103	0.05 mm		n.a.	5.5	0.50	0.50	1
07103	0.02 mm		n.a.	3.0	0.50	0.50	1
07103	0.005 mm		n.a.	1.5	0.50	0.50	1
07103	0.002 mm		n.a.	1.5	0.50	0.50	1
07103	0.001 mm		n.a.	1.5	0.50	0.50	1
Wet Cl	hemistry	SM 2540 G-	1997	8	8	%	
00111	Moisture		n.a.	37.2	0.50	0.50	1
	Moisture represents 103 - 105 degrees C as-received basis.						

#### General Sample Comments

State of New Jersey Lab Certification No. PA011

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

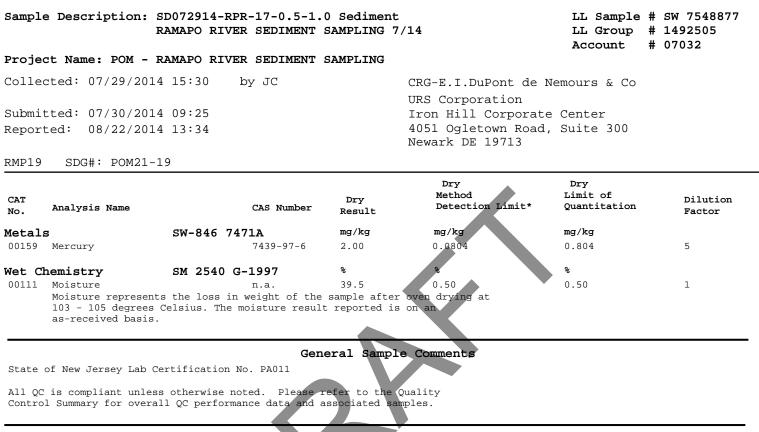
#### Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
00159	Mercury	SW-846 7471A	1	142125711001	08/04/2014 17:	53 Damary Valentin	1
05711	SW SW846 Hg Digest	SW-846 7471A modified	1	142125711001	08/04/2014 10:	00 Christopher M Klumpp	1
00383	TOC by Lloyd Kahn	Lloyd Kahn modified	1	14215049531A	08/04/2014 02:	08 James S Mathiot	1
07103	Grain Size to 1 um	ASTM D422	1	14212710301A	07/31/2014 01:	40 Daniel S Smith	1
00111	Moisture	SM 2540 G-1997	1	14217820003B	08/05/2014 17:	51 Scott W Freisher	1



# **Analysis Report**

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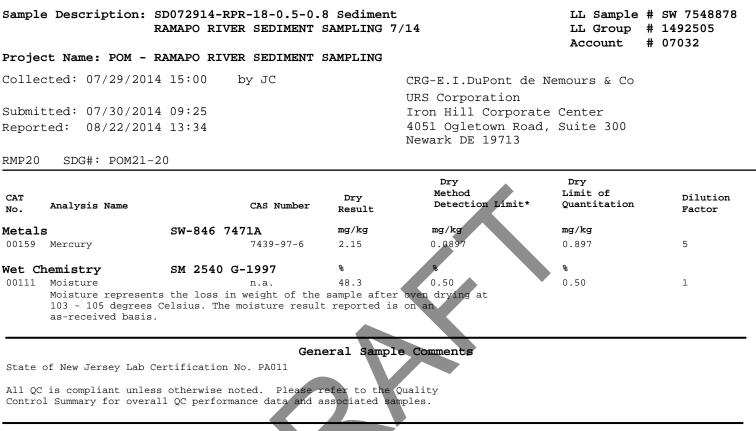


CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
00159	Mercury	SW-846 7471A	1	142125711001	08/04/2014 18:19	Damary Valentin	5
05711	SW SW846 Hg Digest	SW-846 7471A modified	1	142125711001	08/04/2014 10:00	Christopher M Klumpp	1
00111	Moisture	SM 2540 G-1997	1	14217820003B	08/05/2014 17:51	Scott W Freisher	1



# **Analysis Report**

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CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
00159	Mercury	SW-846 7471A	1	142125711001	08/04/2014 18:21	Damary Valentin	5
05711	SW SW846 Hg Digest	SW-846 7471A modified	1	142125711001	08/04/2014 10:00	Christopher M Klumpp	1
00111	Moisture	SM 2540 G-1997	1	14217820003B	08/05/2014 17:51	Scott W Freisher	1



# **Analysis Report**

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Sample Description: S R Project Name: POM - R	AMAPO RIVER SEDIMENT	SAMPLING 7		LL Group	# SW 7548879 # 1492505 # 07032			
Collected: 07/29/2014 14:30 by JC CRG-E.I.DuPont de Nemours & Co URS Corporation Submitted: 07/30/2014 09:25 Iron Hill Corporate Center Reported: 08/22/2014 13:34 4051 Ogletown Road, Suite 300 Newark DE 19713 RMP21 SDG#: POM21-21								
CAT No. Analysis Name	CAS Number	Dry Result	Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor			
<b>Metals</b> 00159 Mercury	<b>SW-846 7471A</b> 7439-97-6	<b>mg/kg</b> 0.377	<b>mg/kg</b> 0.0195	<b>mg/kg</b> 0.195	1			
Wet Chemistry       SM 2540 G-1997       %       %       %         00111       Moisture       n.a.       49.5       0.50       0.50       1         Moisture represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The moisture result reported is on an as-received basis.       *       *       *								
General Sample Comments State of New Jersey Lab Certification No. PA011 All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.								

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Ti	me	Analyst	Dilution Factor
00159	Mercury	SW-846 7471A	2	142185711001	08/08/2014	07:00	Damary Valentin	1
05711	SW SW846 Hg Digest	SW-846 7471A modified	1	142165711004	08/05/2014	09:24	Christopher M Klumpp	1
05711	SW SW846 Hg Digest	SW-846 7471A modified	2	142185711001	08/07/2014	11:20	Christopher M Klumpp	1
00111	Moisture	SM 2540 G-1997	1	14217820004A	08/05/2014	20:21	Scott W Freisher	1



**Analysis Report** 

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Sample Description:		-FB-2 Blank W VER SEDIMENT		4	LL Group	# WW 7548880 # 1492505 # 07032
Project Name: POM - 1	RAMAPO RI	VER SEDIMENT	SAMPLING			
Collected: 07/29/2014	4 18:00	by JC	-	RG-E.I.DuPont de Ne IRS Corporation	emours & Co	
Submitted: 07/30/2014	4 09:25			ron Hill Corporate	Center	
Reported: 08/22/2014	4 13:34		4	051 Ogletown Road, Newark DE 19713		
RMP22 SDG#: POM21-	22FB					
CAT No. Analysis Name		CAS Number	As Received Result	As Received Method Detection Limit*	As Received Limit of Quantitation	Dilution Factor
Metals	SW-846	7470A	mg/l	mg/l	mg/l	
00259 Mercury		7439-97-6	0.000060 U	0.000060	0.00020	1
Wet Chemistry	SM 5310	C-2000	mg/l	mg/l	mg/l	
00273 Total Organic Carb	oon	n.a.	1.0	0.50	1.0	1

General Sample Comments

State of New Jersey Lab Certification No. PA011

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

	Laboratory Sample Analysis Record								
CAT No.	Analysis Name	Method	Trial#	# Batch#	Analysis Date and Ti	me	Analyst	Dilution Factor	
00259	Mercury	SW-846 7470A	1	142125713004	08/04/2014	13:42	Damary Valentin	1	
05713	WW SW846 Hg Digest	SW-846 7470A	1	142125713004	08/01/2014	08:02	Christopher M Klumpp	1	
00273	Total Organic Carbon	SM 5310 C-2000	1	14213049501B	08/01/2014	08:13	James S Mathiot	1	



# **Analysis Report**

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### Sample Description: SD072914-RPR-01-0.0-0.5 Sediment RAMAPO RIVER SEDIMENT SAMPLING 7/14

#### LL Sample # SW 7548881 LL Group # 1492505 Account # 07032

#### Project Name: POM - RAMAPO RIVER SEDIMENT SAMPLING

Collected: 07/29/2014 13:00 by JC

Submitted: 07/30/2014 09:25 Reported: 08/22/2014 13:34 CRG-E.I.DuPont de Nemours & Co URS Corporation Iron Hill Corporate Center 4051 Ogletown Road, Suite 300 Newark DE 19713

RMP23 SDG#: POM21-23

CAT No.	Analysis Name	CZ	AS Number	Dry Result	Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
Metal	S	SW-846 7471A	4	mg/kg	mg/kg	mg/kg	
00159	Mercury	74	439-97-6	0.435	0.0152	0.152	1
Wet C	hemistry	Lloyd Kahn m	nodified	mg/kg	mg/kg	mg/kg	
00383	TOC by Lloyd Kahn	n	.a.	7,760	1,230	3,680	1
Wet C	hemistry	ASTM D422		% Passing	% Passing	% Passing	
07103	75 mm	n	.a.	100	0.50	0.50	1
07103	37.5 mm	n	.a.	100	0.50	0.50	1
07103	19 mm	n	.a.	100	0.50	0.50	1
07103	4.75 mm	n	.a.	99.4	0.50	0.50	1
07103	3.35 mm	n	.a.	99.1	0.50	0.50	1
07103	2.36 mm	n	.a.	98.6	0.50	0.50	1
07103	1.18 mm	n	.a.	97.8	0.50	0.50	1
07103	0.6 mm	n	.a.	93.7	0.50	0.50	1
07103	0.3 mm	n	.a.	61.6	0.50	0.50	1
07103	0.15 mm	n	.a.	24.5	0.50	0.50	1
07103	0.075 mm	n	.a.	8.6	0.50	0.50	1
07103	0.064 mm	n.	.a.	7.0	0.50	0.50	1
07103	0.05 mm	n.	.a.	6.0	0.50	0.50	1
07103	0.02 mm	n.	.a.	5.0	0.50	0.50	1
07103	0.005 mm	n.	.a.	1.5	0.50	0.50	1
07103	0.002 mm	n.	.a.	1.5	0.50	0.50	1
07103	0.001 mm	n.	.a.	1.5	0.50	0.50	1
Wet C	hemistry	SM 2540 G-19	97	8	8	8	
00111	Moisture		.a.	38.7	0.50	0.50	1
	Moisture represents 103 - 105 degrees C as-received basis.	the loss in wei	ght of the s	ample after oven	drying at		

#### General Sample Comments

State of New Jersey Lab Certification No. PA011

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

#### Laboratory Sample Analysis Record Method CAT Analysis Name Trial# Batch# Analysis Analyst Dilution No. Date and Time Factor SW-846 7471A 2 142185711001 08/08/2014 07:11 Damary Valentin 00159 Mercury 1 05711 SW SW846 Hg Digest 142165711004 SW-846 7471A 1 08/05/2014 09:24 Christopher M 1 modified Klumpp 05711 SW SW846 Hg Digest SW-846 7471A 2 142185711001 08/07/2014 11:20 Christopher M 1 modified Klumpp 00383 TOC by Lloyd Kahn Lloyd Kahn 1 14215049531A 08/04/2014 00:37 James S Mathiot 1 modified



**Analysis Report** 

2425 New Holland Pike, Lancaster, PA 17601 • 717-656-2300 • Fax: 717-656-2681 • www.LancasterLabs.com

Sample Description: SD072914 RAMAPO B	4-RPR-01-0.0-0.5 Sedimen RIVER SEDIMENT SAMPLING	7/14	LL Sample # SW 7 LL Group # 1492 Account # 0703	2505
Project Name: POM - RAMAPO H	RIVER SEDIMENT SAMPLING			
Collected: 07/29/2014 13:00	by JC	CRG-E.I.DuPont de Nemo URS Corporation	ours & Co	
Submitted: 07/30/2014 09:25 Reported: 08/22/2014 13:34		Iron Hill Corporate Co 4051 Ogletown Road, Su Newark DE 19713		
RMP23 SDG#: POM21-23				
CAT Analysis Name	Laboratory Sample ethod Trial# Batch	# Analysis	Analyst	Dilution
		Date and Time 710301A 07/31/2014 01:40 820004A 08/05/2014 20:21	Daniel S Smith Scott W Freisher	Factor 1 1



**Analysis Report** 

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#### Sample Description: SD072914-RPR-02-0.0-0.5 Sediment RAMAPO RIVER SEDIMENT SAMPLING 7/14

#### LL Sample # SW 7548882 LL Group # 1492505 Account # 07032

Dilution

Factor

1

1

1

1

#### Project Name: POM - RAMAPO RIVER SEDIMENT SAMPLING

Collected: 07/29/2014 12:45 by JC

Submitted: 07/30/2014 09:25 Reported: 08/22/2014 13:34 CRG-E.I.DuPont de Nemours & Co URS Corporation Iron Hill Corporate Center 4051 Ogletown Road, Suite 300 Newark DE 19713

RMP24 SDG#: POM21-24

CAT No.	Analysis Name	c	AS Number	Dry Result	Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
Metal	s	SW-846 7471	A	mg/kg	mg/kg	mg/kg	
00159	Mercury	7	439-97-6	0.123 J	0.0146	0.146	1
Wet C	hemistry	Lloyd Kahn 1	modified	mg/kg	mg/kg	mg/kg	
00383	TOC by Lloyd Kahn	n	ı.a.	7,730	944	2,830	1
Wet C	hemistry	ASTM D422		% Passing	% Passing	% Passing	
07103	75 mm	n	ı.a.	100	0.50	0.50	1
07103	37.5 mm	n	ı.a.	100	0.50	0.50	1
07103	19 mm	n	ı.a.	100	0.50	0.50	1
07103	4.75 mm	n	ı.a.	98.2	0.50	0.50	1
07103	3.35 mm	n	ı.a.	97.4	0.50	0.50	1
07103	2.36 mm	n	a.	96.5	0.50	0.50	1
07103	1.18 mm	n	ı.a.	95.7	0.50	0.50	1
07103	0.6 mm	n	ı.a.	94.1	0.50	0.50	1
07103	0.3 mm	n	ı.a.	83.6	0.50	0.50	1
07103	0.15 mm	n	ı.a.	44.5	0.50	0.50	1
07103	0.075 mm	n	ı.a.	12.1	0.50	0.50	1
07103	0.064 mm	n	a.	9.0	0.50	0.50	1
07103	0.05 mm	n	ı.a.	8.0	0.50	0.50	1
07103	0.02 mm	n	ı.a.	5.0	0.50	0.50	1
07103	0.005 mm	n	ı.a.	2.0	0.50	0.50	1
07103	0.002 mm	n	ı.a.	2.0	0.50	0.50	1
07103	0.001 mm	n	a.	2.0	0.50	0.50	1
Wet C	hemistry	SM 2540 G-1	997	8	8	8	
00111	Moisture	n	a.	35.5	0.50	0.50	1
	Moisture represents 103 - 105 degrees C as-received basis.						

#### General Sample Comments

State of New Jersey Lab Certification No. PA011

CAT

No.

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

modified

#### Laboratory Sample Analysis Record Method Analysis Name Trial# Batch# Analysis Analyst Date and Time SW-846 7471A 2 142185711001 08/08/2014 07:13 Damary Valentin 00159 Mercury 05711 SW SW846 Hg Digest 142165711004 SW-846 7471A 1 08/05/2014 09:24 Christopher M modified Klumpp 05711 SW SW846 Hg Digest SW-846 7471A 2 142185711001 08/07/2014 11:20 Christopher M modified Klumpp 00383 TOC by Lloyd Kahn Lloyd Kahn 1 14215049531A 08/04/2014 02:18 James S Mathiot



**Analysis Report** 

2425 New Holland Pike, Lancaster, PA 17601 • 717-656-2300 • Fax: 717-656-2681 • www.LancasterLabs.com

Sample Description: SD072 RAMAP	914-RPR-02-0.0-0.5 Sedime O RIVER SEDIMENT SAMPLING		LL Sample # SW 75 LL Group # 14925 Account # 07032	05
Project Name: POM - RAMAP	O RIVER SEDIMENT SAMPLING			
Collected: 07/29/2014 12:	45 by JC	CRG-E.I.DuPont de Nem URS Corporation	ours & Co	
Submitted: 07/30/2014 09: Reported: 08/22/2014 13:		Iron Hill Corporate C 4051 Ogletown Road, S Newark DE 19713		
RMP24 SDG#: POM21-24				
CAT Analysis Name	Laboratory Sampl Method Trial# Bate		Analyst Di	ilution
No. 07103 Grain Size to 1 um 00111 Moisture		Date and Time 12710301A 07/31/2014 01:40 08/05/2014 20:21	Daniel S Smith	Factor 1 1



# **Analysis Report**

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R	D072914-RPR-01-0.5-0. RAMAPO RIVER SEDIMENT RAMAPO RIVER SEDIMENT	SAMPLING 7		LL Group	# SW 7548883 # 1492505 # 07032			
2								
Collected: 07/29/2014	13:00 by JC		CRG-E.I.DuPont de No	emours & Co				
$C_{\rm rel}$	00.00		URS Corporation	Comb out				
Submitted: 07/30/2014 09:25 Iron Hill Corporate Center								
Reported: 08/22/2014	Reported: 08/22/2014 13:34 4051 Ogletown Road, Suite 300 Newark DE 19713							
RMP25 SDG#: POM21-2	5*							
CAT No. Analysis Name	CAS Number	Dry Result	Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor			
Metals	SW-846 7471A	mg/kg	mg/kg	mg/kg				
00159 Mercury	7439-97-6	0.122 J	0.0137	0.137	1			
Wet Chemistry	SM 2540 G-1997	%	*	8				
00111 Moisture	n.a.	32.4	0.50	0.50	1			
Moisture represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The moisture result reported is on an as-received basis.								
	Gen	eral Sampl	e Comments					
State of New Jersey Lab Certification No. PA011								
	s otherwise noted. Please r Ll QC performance data and a							

### Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Tim	ie	Analyst	Dilution Factor
00159	Mercury	SW-846 7471A	2	142185711001	08/08/2014	07:15	Damary Valentin	1
05711	SW SW846 Hg Digest	SW-846 7471A modified	1	142165711004	08/05/2014	09:24	Christopher M Klumpp	1
05711	SW SW846 Hg Digest	SW-846 7471A modified	2	142185711001	08/07/2014	11:20	Christopher M Klumpp	1
00111	Moisture	SM 2540 G-1997	1	14217820004A	08/05/2014	20:21	Scott W Freisher	1



**Analysis Report** 

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Page 1 of 2

### Quality Control Summary

Client Name: CRG-E.I.DuPont de Nemours & Co Reported: 08/22/14 at 01:34 PM Group Number: 1492505

Matrix QC may not be reported if insufficient sample or site-specific QC samples were not submitted. In these situations, to demonstrate precision and accuracy at a batch level, a LCS/LCSD was performed, unless otherwise specified in the method.

All Inorganic Initial Calibration and Continuing Calibration Blanks met acceptable method criteria unless otherwise noted on the Analysis Report.

### Laboratory Compliance Quality Control

Analysis Name	Blank <u>Result</u>	Blank MDL**	Blank <u>LOQ</u>	Report <u>Units</u>	LCS <u>%REC</u>	LCSD <u>%REC</u>	LCS/LCSD Limits	<u>RPD</u>	<u>RPD Max</u>
Batch number: 142125711001 Mercury	Sample num 0.0100 U	ber(s): 754 0.0100	48859-7548 0.100	3878 mg/kg	101		80-120		
Batch number: 142125713004 Mercury	Sample num) 0.000060 U	ber(s): 754 0.00006 0	48880 0.00020	mg/l	102		80-120		
Batch number: 142185711001 Mercury	Sample num 0.0100 U	ber(s): 754 0.0100		3881-7548883 mg/kg	3 104		80-120		
Batch number: 14212049531A TOC by Lloyd Kahn	Sample num 100 U	ber(s): 754 100.	48859-7548 300	3862,7548864 mg/kg	1-75488 83	65	47-143		
Batch number: 14213049501B Total Organic Carbon	Sample num 0.50 U	ber(s): 754 0.50	48880 1.0	mg/l	104		91-113		
Batch number: 14215049531A	Sample num	ber(s): 754	48866,7548	3872-7548876	5,75488	81-7548	8882		
TOC by Lloyd Kahn	100	100.	300	mg/kg	92		47-143		
Batch number: 14217820003A Moisture	U Sample numl	ber( <b>s</b> ): 754	48859-7548	3868	100		99-101		
Batch number: 14217820003B Moisture	Sample num	ber(s): 754	48869-7548	3878	100		99-101		
Batch number: 14217820004A Moisture	Sample num	ber(s): 754	48879,7548	3881-7548883	3 100		99-101		

### Sample Matrix Quality Control

Unspiked (UNSPK) = the sample used in conjunction with the matrix spike Background (BKG) = the sample used in conjunction with the duplicate

Analysis Name	MS <u>%REC</u>	MSD <u>%REC</u>	MS/MSD <u>Limits</u>	<u>RPD</u>	RPD <u>MAX</u>	BKG <u>Conc</u>	DUP <u>Conc</u>	DUP <u>RPD</u>	Dup RPD <u>Max</u>
Batch number: 142125711001 Mercury	Sample 266*	number(s) 108	: 7548859 80-120	-754887 40*	8 UNSP 20	K: 7548859 0.372	BKG: 7548859 0.482	) 26* (1)	20
Batch number: 142125713004	Sample	number(s)	: 7548880	UNSPK:	P5503	65 BKG: P5	50365		

\*- Outside of specification

\*\*-This limit was used in the evaluation of the final result for the blank

(1) The result for one or both determinations was less than five times the LOQ.

(2) The unspiked result was more than four times the spike added.



**Analysis Report** 

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Page 2 of 2

### Quality Control Summary

Client Name: CRG-E.I.DuPont de Nemours & Co Reported: 08/22/14 at 01:34 PM Group Number: 1492505

Sample Matrix Quality Control

Unspiked (UNSPK) = the sample used in conjunction with the matrix spike Background (BKG) = the sample used in conjunction with the duplicate

<u>Analysis Name</u> Mercury	MS         MSD <u>%REC</u> <u>%REC</u> 106         109	MS/MSD           Limits         RPD           80-120         3	RPD         BKG <u>MAX</u> Conc           20         0.00016 J	<b>DUP <u>Conc</u> 0.00018 J</b>	<b>DUP</b> <u>RPD</u> 14 (1)	<b>Dup RPD</b> <u>Max</u> 20
Batch number: 142185711001 Mercury	Sample number(s 110 162*	a): 7548879,75488 80-120 19	81-7548883 UNSPK: 20 0.190	7548879 BKG 0.196	: 7548879 3 (1)	20
Batch number: 14212049531A TOC by Lloyd Kahn	Sample number(s 74	e): 7548859-75488 59-125	62,7548864-7548869 13,500	5 UNSPK: 754 11,300	8864 BKG: 7 17* (1)	7548864 15
Batch number: 14213049501B Total Organic Carbon	Sample number(s 106	e): 7548880 UNSPK 63-142	: P548484 BKG: P54 4.7	18484 4.7	0 (1)	4
Batch number: 14215049531A	Sample number(s 7548881	): 7548866,75488	72-7548876,754888	1-7548882 UN	SPK: 754888	31 BKG:
TOC by Lloyd Kahn	96	59-125	4,760	3,560	29* (1)	15
Batch number: 14217820003A Moisture	Sample number(s	e): 7548859-75488	68 BKG: 7548866 56.3	56.5	0	5
Batch number: 14217820003B Moisture	Sample number(s	): 7548869-75488	78 BKG: 7548871 48.4	48.6	0	5
Batch number: 14217820004A Moisture	Sample number(s	;): 7548 <b>879</b> ,75488	81-7548883 BKG: 1 14.7	2549132 15.5	б*	5

\*- Outside of specification

(1) The result for one or both determinations was less than five times the LOQ.

 $\left( \right)$ 

(2) The unspiked result was more than four times the spike added.

<sup>\*\*-</sup>This limit was used in the evaluation of the final result for the blank

Seurofins Lancaster Laboratories	Envir	For Gro	Lanca	aster	Laboi	ratori ZSC	es Us	se On Sa	ly mple l	Nos.:	ain ( <u>751</u> 58932	188	59	<u>- 8</u>	•	1 of 1				
	and the second second second						ler Te							5.8	/	°(	2		tainer No.:	
Facility Name: Pompton Lakes	-	t Manager:	-	_							Ana	alyse	s Re	qui	red				Comments:	
Facility Contact: Josh Collins	Facilit	y Contact Pl	hone No.:	609.602.4	4694															
Facility Address: Pompton Lakes Works	Job N	o.: 9267 772	20100C W	/H06 50																
2000 Cannonball Road	Relea	se No.:																		
Pompton Lakes NJ 07442	PO N	umber: LBIC	-66380				D422)	:												
Sampler(s): Project Name: RAMAPO RIVER SEDIMENT SAM		(ASTM	7	(2540 G)	(Lloyd Kahn)															
Sample Identification	Date Collected	Time Collected	Matrix	C Volume (ml)	ontainers Preserv	No.	Grain Size	Hg (7471A)	Moisture	TOC (Lloy										on receipt:
SD07 ZG 14-RPR-09-0.0-0.5	7 29/14	1015	sw	125	None	1		x		x										
SD07 29 14-RPR-09-0.0-0.5	)	1015	sw	500	None	1	x													
SD07 19 14-RPR-10-0.0-0.5		0945	sw	125	None	1		x	x	x										
SD07 29 14-RPR-10-0.0-0.5		0945	sw	500	None	1	x													
SD07 29 14-RPR-11-0.0- 0.5		0915	sw	125	None	1		х	x	x										
SD07 29 14-RPR-11-0.0-0.5		0915	sw	500	None	1	x													
SD07 29 14-RPR-12-0.0-(),5		0840	SW	125	None	1		x	x	x										
SD07 29 14-RPR-12-0.0-0.5		0840	sw	500	None	1	x													
SD07 29 14- KPR-12-0.5-0.75	V	0840	SW	125	None	**tronus		χ	Х											
	_															_	-	-		
Turnaround Time Requested (please circle):(	ted (please circle) : (Standard) RUSH Number of days:8									ns:		Full	Deliv	erabl	es nee	ded				
Bottles Relinquished by:	1		114	Time 180	50	Bott	les R	eceiv	ed by	:									Date:	Time:
Bottles Relinquished by:	- t	Date	1	Time		Bott	les R	eceiv	ed by										Date:	Time:
Bottles Relinquished by:		Date		Time			les R												Date:	Time:
Bottles Relinquished by:	tles Relinquished by: Date Time tles Relinquished by: Date Time										~								Pate: 11-1	Timezs

Copies. White copy should accompany samples to Lancaspageogatore and the pink copy should be retained by the samplers.

Lancaster Laboratories	Analy	ysis R	lequ	est /	Envir	For Gro Acc	Lanca	aster   : <u> </u> 032	Laboi 192	ratorie <u>SO</u> SF: <u>2</u>	es Us 5 20960	se Onl Sa <u>03</u>	y mple l	Nos.:	1 <b>in</b> 754 58932	883	<u>69-8</u> Cool	<u>BJ</u> ler No	$-[(\alpha')]$	1 of 1
Facility Name: Pompton Lakes	Project	: Manager: (	Gary Lon	g							Ana	lyse	s Re	quir	ed				Comments:	
Facility Contact: Josh Collins	Facility	Contact Ph	one No.:	609.602.4	4694	-														
Facility Address: Pompton Lakes Works	Job No	o.: 9267 772	0100C W	H06 50			1													
	Releas	e No.:					1													
2000 Cannonball Road Pompton Lakes NJ 07442	PO Nu	mber: LBIO	-66380				D422)													
Sampler(s): VICtoria MUSUMECI, So Project Name: RAMAPO RIVER SEDIMENT SAMF	sh Col Pling 7/14	lins					(ASTM	(A)	Moisture (2540 G)	(Lloyd Kahn)										
Sample Identification	Date Collected	Time Collected	Matrix	C Volume (ml)	ontainers Preserv	No.	Grain Size	Hg (7471A)	Moisture	TOC (LIC									Condition upo	n receipt:
SD07 29 14-RPR-13-0.0-0.5	7 29 14	1200	sw	125	None	1		x	х	х										
SD07 29 14-RPR-13-0.0-0.5	1.	1200	SW	500	None	1	X													
SD07 29 14-RPR-14-0.0-0 5		1130	sw	125	None	1		×	X	х										
SD07 29 14-RPR-14-0.0-0.5		1130	sw	500	None	1	X													
SD07 29 14-RPR-15-0.0- 0.5		1100	sw	125	None	1		x	х	х										<u>.</u>
SD07 29 14-RPR-15-0.0-0.5		110,0	SW	500	None	1.1	x													
SD072914-RPR-13-0.5-1.0		1200	SW	125	None	1		Х	X							_				
SD072914-RPR-13-1.0-1.1		1200	SW	125	None	1		X	×											
SD072914-RPR-14-0.5-1.0		1130	SW	125	None	1		X	Х							_				
SD072914-RPR-14-1.0-1.5		1130	SW	125	None			Χ	$\times$											
SD 072914-RPR-15-0.5-1.0	$\vee$	1100	SW	125	None	Ì		X	Х											
Turnaround Time Requested (please circle):(	Standard	RUSH	Number	of days: _	8	Spe	cial I	nstru	ction	IS:		Full	Deliv	erable	es nee	ded				
Bottles Relinquished by:		Date 7/29	1,11	Time イタロフ	2		les R		-										Date:	Time:
Bottles Relinquished by:		Date		Time		Bott	les R	eceive	ed by	:									Date:	Time:
Bottles Relinquished by:	$\backslash$	Date		Time			les R		-			<b>\</b>							Date:	Time:
Bottles Relinquished by:	X	Date		Time		Bott	les R	eceive	əd by	: ~	2	)							30/14	Eime: S

Copies. White copy should accompany samples to Lancas Page 35 ofer 1 The pink copy should be retained by the samplers.

Seurofins Lancaster Laboratories	Lancaster Laboratories								Laboi 192	ratorio <u>SO</u> SF: <u>:</u> 2	es Us	e On Sa <u>)3</u>	v	los.:_ lo.: 1{	754		<u>59 - 9</u> Cool	83 Ier No	<b>dy</b>	1 of 1 <b>2955</b>
Facility Name: Pompton Lakes	Project	t Manager:	Gary Lon	g			1				Ana	lyse	s Re	quire	ed				Comments:	
Facility Contact: Josh Collins	Facility	/ Contact Pl	none No.:	609.602.4	1694															
Facility Address: Pompton Lakes Works	Job No	o.: 9267 772	0100C W	/H06 50			1													
	Releas	e No.:			<b>N</b>		1													
2000 Cannonball Road	PO Nu	mber: LBIC	-66380				52													
Pompton Lakes NJ 07442 Sampler(s):\\\\							A D422)		(j)											
		e (ASTM	A)	(2540 0	(Lloyd Kahn)															
Sample Identification	Date Collected	Time Collected	Matrix	C Volume (ml)	ontainers Preserv	No.	Grain Size	Hg (7471A)	Moisture (2540 G)	TOC (LIo									Condition upc	n receipt:
SD07 14-RPR0.0			sw	125	None	1		×	×	×			a gouosia sinsiantiga poisuat						MS	
SD07 14-RPR0.0-			sw	125	None			x	x	х	and the state of the	antifation and the second	440000000000 amiti	sector parts an filiation	entetta anti-tu-p <u>ort</u>				MSD	
SD07 14-RPR0.0-	anativ		SW	500	None	1	X		-	69-ministerina		96-02_2200000.0k	1997-1997 (Santa		and the second				MSD	
SD07 79 14-RPR- 15 -0.0-0.5 -D	HHE	11,00	sw	125	None	1	1	х	x	х										
SD07 29 14-RPR- 15 -0.0- 0.5 -D	7/29/14	1100	sw	500	None		x													
						$\uparrow$										1				
<u></u>						+														
Turnaround Time Requested (please circle) :	Standard		Number	of days:	8	Spe	cial l	nstru	ction	s:		Full	Delive	erable	s need	led	1			
Bottles Relinquished by:		Date	1	Time	~	Bott	les R	eceive	ed by	:									Date:	Time:
Bottles Relinquished by:		7/29 Date	114	19C Time	0	Bott	les R	eceive	ed by	:	1	\							Date:	Time:
Bottles Relinquished by:		Date		Time			les R		-	$\sim$		/							Date:	Time:
Bottles Relinquished by:		Date		Time		Bott	les R	eceive	ed by	:2	5-	2_	634 						Dates	Timeis

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Lancaster Laboratories	Anal	ysis F	Requ	est /	Envir	For Grou Acc'	Lanca up No t: 070	aster .: <u> </u> L 032	Labo	ratori	es Us <u>}S</u> 2096	se On Sa <u>03</u>		los.:_	754		9-6 Cool	3 <u>]</u> Ier No	-	1 of 1
Facility Name: Pompton Lakes	Projec	t Manager:	Gary Lon	g							Ana	alyse	s Re	quire	ed				Comments:	
Facility Contact: Josh Collins	Facility	y Contact Pl	none No.:	609.602.4	1694									Τ		Τ			1	
Facility Address: Pompton Lakes Works	Job No	o.: 9267 772	0100C W	H06 50																
	Releas	se No.:																		
2000 Cannonball Road	PO NI	imber: LBIO	-66380				D422)													
Pompton Lakes NJ 07442 Sampler(s):							(ASTM D4		(2540 G)	L)										
Project Name: RAMAPO RIVER SEDIMENT SAMP	Name: RAMAPO RIVER SEDIMENT SAMPLING 7/14														-					
Sample Identification	Date Collected	Time Collected	Matrix	C Volume (ml)	ontainers Preserv	No.	Grain Size	Hg (7471A)	Moisture (	TOC (Lloyd Kahn)									Condition upo	on receipt:
SD07 Z9 14-RPR-16-0.0-0.5	7/29/14		sw	125	None	1		x	x	x										
SD07 29 14-RPR-16-0.0-0.5	1	1600	sw	500	None	1	x													
SD07 2 9 14-RPR-17-0.0-0.5		1530	SW	125	None	1		x	x	x										
SD07 29 14-RPR-17-0.0-0.5		1530	sw	500	None	1	x													
SD07 29 14-RPR-18-0.0-0.5		1500	sw	125	None	1		х	х	х										
SD07 29 14-RPR-18-0.0-0.5		1500	SW	500	None	1	x													
SD07 29 14-RPR-19-0.0-0.5		1430	SW	125	None	1		х	х	x										
SD07 29 14-RPR-19-0.0-0.5		143,6	sw	500	None	1	x													
SD072914-RPR-17-0.5-1.0		1530	SW	125	None	il.		χ	Х											
SD072914-RPR-18-0.5-0.8		1500	SW	125	None	A. C. Sandar		Х	Х											
SD072914-RPR-19-0.5-0.8		1430	SW	125	None	annes		Х	Х											
Turnaround Time Requested (please circle) :	Standard	RUSH	Number	of days: _	8	Spe	cial l	nstru	ction	is:		Full	Delive	rable	s need	led				
		Date/28	114		30		es Re												Date:	Time:
Bottles Relinquished by:		Date /	14	Time 18(	50		es Re												Date:	Time:
Bottles Relinquished by:		Date Date	,	Time Time			es Re		~	: >		<u>/</u>							Date:	Time:
Botalos Reiniquisited by.							53 N			·∠									Date: 130(11	Time

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Lancaster Laboratories	Anal	ysis F	Requ	est /	Envir	For Gro Acc	Lanca up No 't: 070	aster I	Labor 192	ratorie <u>SO</u> SF: <u>2</u>	es Us <u>5</u> 20960	e Onl Sai <u>)3</u> :	y mple N SCR N	os.: <u>7</u>	<u>54</u> 3932	085	9 - 8 Coole	3 <u>3</u> er No.:/	ling	1 of 1	557
Facility Name: Pompton Lakes	Project	t Manager: (	Gary Lon	g							Ana	lyse	s Rec	uire	d			С	omments:		
Facility Contact: Josh Collins	Facility	/ Contact Pr	one No.:	609.602.4	1694		1										Т				
Facility Address: Pompton Lakes Works	Job No	o.: 9267 772	0100C W	H06 50			1														
2000 Cannonball Road	Releas	e No.:					1														
Pompton Lakes NJ 07442	PO Nu	mber: LBIO	-66380				1														
Sampler(s):																					
Project Name: RAMAPO RIVER SEDIMENT SAMPI	LING 7/14						ि	(5310 C)													
Sample Identification	Date Collected	Time Collected	Matrix	C Volume (ml)	ontainers Preserv	No.	Hg (7470A)	UΟ										C	ondition up	on receipt:	
SDW07 29 14-FB-2	7/29/14	1800	ww	250	HNO3	1	x														
SDW07 29 14-FB-2	7/29/14	1800	ww	40	H3PO4	2		x									_				
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Turnaround Time Requested (please circle) :	Standard		Number	of days:	8	Spe	cial I	nstru	ction	s:		Full	Deliver	ables	need	ed					
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Bottles Relinquished by:	Last, .	Date	<u>, , , ,</u>	Time	<u></u>	Bott	les R	eceive	ed by:	:								Da	ate:	Time:	
Bottles Relinquished by:		Date		Time		Bott	les R	eceive	ed by:	:	$\overline{\ }$							Da	ate:	Time:	
Bottles Relinquished by:	/	Date		Time		Bott	les R	eceive	d by:	2	2		8. 					7	ate: SOLU	Time:	 

Copies: White copy should accompany samples to Lanca state by the samplers.

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Facility Name: Pompton Lakes	Project	Manager: C	Sary Long	]			1			1	Analy	yses	Req	uired				6	Comments:	
Facility Contact: Josh Collins	Facility	Contact Ph	one No.:	609.602.4	694		1			2	<u> </u>	T						[		
Facility Address: Pompton Lakes Works	Job No.	: 9267 772	0100C W	H06 50						42										
	Release	e No.:				*******			S	· q										
2000 Cannonball Road Pompton Lakes NJ 07442	PO Nur	nber: LBIO-	-66380						kahn	ASTM										
Sampler(s): Josh Collins, Victoria N	A USUI	Melli						(Ö 0	N	-										
Project Name: RAMAPO RIVER SEDIMENT SAMPLING	G 7/14	· · IX <u>V</u>	efizie);;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;				1	(2540 G)	10	- S										
Da		Time		Volume	ontainers		g (7471A)	Moisture	DC CI	Grain '								L.	Condition upo	n receipt:
		Collected	Matrix	(ml)	Preserv	No.	Рġ	Σ		4	<u> </u>			-			: 			
1	6	1300	SW	125	None	1	X	X	A								r Partin ann an S			
	-inaning mental	1300	SW	125	None	1.	X	X				<u> </u>	(i)			·	·			
SD07 29 14-RPR-02-0.0-0.5 7	29 14	1245	SW	125	None	1	X	<u>x</u>	X.					_						
SD07 14-RPR-			sw	125	None	1	X	x												
SD07 14-RPR-			sw 🗸	125	None	1	x	x	·	·							<u>.</u>			
SD07 14-RPR-			sw	125	None	1	x	x							ļ		ļ			
SD07 14-RPR-		1	SW	125	None	1	X	x		: 						ļ				taanin diidhaanii dagaaa
SD07 14-RPR-			sw	125	None	1	x	x								<u> </u>				
SD072914-RPR-01-0.0-0.5 7	129/14	1300	SV	500	rene	1			l.	X										
	129/14	1245	SW	500	None					X										
		1																		
Turnaround Time Requested (please circle) : Sta	andard	) RUSH	Number	of days: _	8	Spe	ecial I	nstru	ctior	າຣ:		Full I	Delive	rables	need	ed				Proc. 1
Bottles Relinquished by		Date ()	\$14	Time 1	45	Bot	tles R	eceiv	ed by	/:								1	Date:	Time:
Bottles Relinquished by		Date 1	9/14	Time 19	;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;	Bot	tles R	eceiv	ed by	/:									Date:	Tíme:
Bottles Relinquished by:		Date		Time	<b>W</b>	Bot	tles R	eceiv	ed by	<i>r</i> :									Date:	Time:
Bottles Relinquished by:		Date		Time		Bot	ttles R	eceiv	red by	/:									Date:	Time:

Copies: White copy should accompany samples to Lancaster Laboratories. The pink copy should be retained by the samplers.

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Lancaster Laboratories Environmental

# Sample Administration Receipt Documentation Log

Doc Log ID:

21754

Group Number(s): 149 2505

### Client: Dupont Pompton Lakes

	Deliv	ery and R	eceipt Informat	on	
Delivery Method:	<u>Fed Ex</u>		Arrival Timestamp	<u>07/30/2014</u>	9:25
Number of Packages:	<u>2</u>		Number of Project	s: <u>1</u>	
State/Province of Orig	in: <u>NJ</u>				
	Ar	rival Cond	dition Summary		
Shipping Container Se	ealed:	Yes	Total Trip Blank	Qty:	<u>0</u>
Custody Seal Present		Yes	Trip Blank Type		<u>N/A</u>
Custody Seal Intact:		Yes	Air Quality Sam	oles Present:	<u>No</u>
Samples Chilled:		<u>Yes</u>	Air Quality Flow	Controllers Present:	<u>N/A</u>
Paperwork Enclosed:		<u>Yes</u>	Flow Controller	Quantity:	<u>0</u>
Samples Intact:		<u>Yes</u>	Air Quality Retu	rns:	<u>N/A</u>
Missing Samples:		<u>No</u>			
Extra Samples:		Yes			
Discrepancy in Contai	ner Qty on COC:	<u>No</u>			
Sample IDs on COC r	natch Containers:	<u>Yes</u>			
Sample Date/Times m	atch COC:	Yes			
VOA Vial Headspace	≥ 6mm:	<u>N/A</u>			
VOA IDs ( $\geq$ 6mm):		<u>N/A</u>			
Unpacked by Wesley N	(iller (2308) at 13.1	2 00 07/30/	2014		
Oripacked by Wesley I	viller (2300) at 15.1	2 01 07/30/2			
		Samples C	Chilled Details		
Thermometer Types:	DT = Digital (Tei	-	IR = Infrared (Sul	face Temp) All T	emperatures in °C.
				Sar	<u>mples</u> ted Same
	ected Temp Therm	<u>n. Type Ic</u>	e Type Ice Present?		Receipt? Elevated Temp?
1 DT121		ЭT	Wet Y	Bagged	N N
2 DT121	1.2 C	DT	Wet Y	Bagged	N N

## **Extra Sample Details**

		•	
Sample ID on Label	Number of Extra Containers	Date on Label	Comments
SD072914-RPR-01-0.0- 0.5	2	7/29/2014 13:00	1 125mL jar and 1 500mL jar
SD072914-RPR-02-0.0- 0.5	2	7/29/2014 12:45	1 125mL jar and 1 500mL jar
SD072914-RPR-01-0.5- 0.75	1	7/29/2014 13:00	1 125mL jar

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#### Lancaster Laboratories Environmental

# **Explanation of Symbols and Abbreviations**

The following defines common symbols and abbreviations used in reporting technical data:

RL	Reporting Limit	BMQL	Below Minimum Quantitation Level
N.D.	none detected	MPN	Most Probable Number
TNTC	Too Numerous To Count	CP Units	cobalt-chloroplatinate units
IU	International Units	NTU	nephelometric turbidity units
umhos/cm	micromhos/cm	ng	nanogram(s)
С	degrees Celsius	F	degrees Fahrenheit
meq	milliequivalents	lb.	pound(s)
g	gram(s)	kg	kilogram(s)
μg	microgram(s)	mg	milligram(s)
mL	milliliter(s)	Ĺ	liter(s)
m3	cubic meter(s)	μL	microliter(s)
		pg/L	picogram/liter

- < less than The number following the sign is the <u>limit of quantitation</u>, the smallest amount of analyte which can be reliably determined using this specific test.
- > greater than
- **ppm** parts per million One ppm is equivalent to one milligram per kilogram (mg/kg), or one gram per million grams. For aqueous liquids, ppm is usually taken to be equivalent to milligrams per liter (mg/l), because one liter of water has a weight very close to a kilogram. For gases or vapors, one ppm is equivalent to one microliter per liter of gas.
- ppb parts per billion

#### **Dry weight basis** Results printed under this heading have been adjusted for moisture content. This increases the analyte weight concentration to approximate the value present in a similar sample without moisture. All other results are reported on an as-received basis.

Data Qualifiers:

C - result confirmed by reanalysis.

- J estimated value The result is  $\geq$  the Method Detection Limit (MDL) and < the Limit of Quantitation (LOQ).
- U.S. EPA CLP Data Qualifiers:

### Organic Qualifiers

- A TIC is a possible aldol-condensation product
- B Analyte was also detected in the blank
- C Pesticide result confirmed by GC/MS
- D Compound quantitated on a diluted sample
- E Concentration exceeds the calibration range of the instrument
- **N** Presumptive evidence of a compound (TICs only)
- P Concentration difference between primary and confirmation columns >25%
- U Compound was not detected
- **X,Y,Z** Defined in case narrative

### Inorganic Qualifiers

- **B** Value is  $\langle CRDL, but \geq IDL$
- E Estimated due to interference
- M Duplicate injection precision not met
- N Spike sample not within control limits
- S Method of standard additions (MSA) used for calculation
- U Compound was not detected
- W Post digestion spike out of control limits
- \* Duplicate analysis not within control limits
- + Correlation coefficient for MSA < 0.995

### Analytical test results meet all requirements of NELAC unless otherwise noted under the individual analysis.

Measurement uncertainty values, as applicable, are available upon request.

Tests results relate only to the sample tested. Clients should be aware that a critical step in a chemical or microbiological analysis is the collection of the sample. Unless the sample analyzed is truly representative of the bulk of material involved, the test results will be meaningless. If you have questions regarding the proper techniques of collecting samples, please contact us. We cannot be held responsible for sample integrity, however, unless sampling has been performed by a member of our staff. This report shall not be reproduced except in full, without the written approval of the laboratory.

Times are local to the area of activity. Parameters listed in the 40 CFR part 136 Table II as "analyze immediately" are not performed within 15 minutes.

WARRANTY AND LIMITS OF LIABILITY - In accepting analytical work, we warrant the accuracy of test results for the sample as submitted. THE FOREGOING EXPRESS WARRANTY IS EXCLUSIVE AND IS GIVEN IN LIEU OF ALL OTHER WARRANTIES, EXPRESSED OR IMPLIED. WE DISCLAIM ANY OTHER WARRANTIES, EXPRESSED OR IMPLIED, INCLUDING A WARRANTY OF FITNESS FOR PARTICULAR PURPOSE AND WARRANTY OF MERCHANTABILITY. IN NO EVENT SHALL EUROFINS LANCASTER LABORATORIES ENVIRONMENTAL, LLC BE LIABLE FOR INDIRECT, SPECIAL, CONSEQUENTIAL, OR INCIDENTAL DAMAGES INCLUDING, BUT NOT LIMITED TO, DAMAGES FOR LOSS OF PROFIT OR GOODWILL REGARDLESS OF (A) THE NEGLIGENCE (EITHER SOLE OR CONCURRENT) OF EUROFINS LANCASTER LABORATORIES ENVIRONMENTAL AND (B) WHETHER EUROFINS LANCASTER LABORATORIES ENVIRONMENTAL HAS BEEN INFORMED OF THE POSSIBILITY OF SUCH DAMAGES. We accept no legal responsibility for the purposes for which the client uses the test results. No purchase order or other order for work shall be accepted by Eurofins Lancaster Laboratories Environmental which includes any conditions that vary from the Standard Terms and Conditions, and Eurofins Lancaster Laboratories Environmental hereby objects to any conflicting terms contained in any acceptance or order submitted by client.





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#### ANALYTICAL RESULTS

Prepared by:

Eurofins Lancaster Laboratories Environmental 2425 New Holland Pike Lancaster, PA 17601 Prepared for:

CRG-E.I.DuPont de Nemours & Co URS Corporation Iron Hill Corporate Center 4051 Ogletown Road, Suite 300 Newark DE 19713

August 27, 2014

### Project: POM - RAMAPO RIVER SEDIMENT SAMPLING

Submittal Date: 07/31/2014 Group Number: 1492797 SDG: POM22 PO Number: LBIO-66380 State of Sample Origin: NJ

Client Sample Description	Lancaster Labs (LL) #
SD073014-RPR-28-0.0-0.5 Sediment	7550161
SD073014-RPR-29-0.0-0.5 Sediment	7550162
SD073014-RPR-30-0.0-0.5 Sediment	7550163
SD073014-RPR-29-0.5-0.75 Sediment	7550164
SD073014-RPR-20-0.0-0.5 Sediment	7550165
SD073014-RPR-22-0.0-0.5 Sediment	7550166
SD073014-RPR-20-0.5-1.0 Sediment	7550167
SD073014-RPR-20-1.0-1.4 Sediment	7550168
SD073014-RPR-24-0.0-0.5 Sediment	7550169
SD073014-RPR-25-0.0-0.5 Sediment	7550170
SD073014-RPR-25-0.0-0.5 MS Sediment	7550171
SD073014-RPR-25-0.0-0.5 MSD Sediment	7550172
SD073014-RPR-25-0.0-0.5 Dupl Sediment	7550173
SD073014-RPR-26-0.0-0.5 Sediment	7550174
SD073014-RPR-27-0.0-0.5 Sediment	7550175
SD073014-RPR-25-0.5-0.95 Sediment	7550176
SD073014-RPR-26-0.5-1.0 Sediment	7550177
SD073014-RPR-27-0.5-1.0 Sediment	7550178
SD073014-RPR-26-0.0-0.5-D Sediment	7550179
SDW073014-FB-3 Blank Water	7550180

The specific methodologies used in obtaining the enclosed analytical results are indicated on the Laboratory Sample Analysis Record.

1 COPY TO Data Package Group





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Respectfully Submitted,

Nances Jean Bornhow

Nancy Jean Bornholm Principal Specialist

(717) 556-7250



**Analysis Report** 

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# Sample Description: SD073014-RPR-28-0.0-0.5 Sediment RAMAPO RIVER SEDIMENT SAMPLING 7/14

# LL Sample # SW 7550161 LL Group # 1492797 Account # 07032

# Project Name: POM - RAMAPO RIVER SEDIMENT SAMPLING

Collected: 07/30/2014 10:40 by JC

Submitted: 07/31/2014 09:20 Reported: 08/27/2014 08:28 CRG-E.I.DuPont de Nemours & Co URS Corporation Iron Hill Corporate Center 4051 Ogletown Road, Suite 300 Newark DE 19713

RPR28 SDG#: POM22-01

CAT No.	Analysis Name	CZ	AS Number	Dry Result	Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
Metal	s	SW-846 7471A	7	mg/kg	mg/kg	mg/kg	
00159	Mercury	74	439-97-6	0.711	0.0225	0.225	1
Wet C	hemistry	Lloyd Kahn m	nodified	mg/kg	mg/kg	mg/kg	
00383	TOC by Lloyd Kahn	n	.a.	43,700	2,090	6,270	1
Wet C	hemistry	ASTM D422		% Passing	% Passing	% Passing	
07103	75 mm	n	.a.	100	0.50	0.50	1
07103	37.5 mm	n	.a.	100	0.50	0.50	1
07103	19 mm	n	.a.	100	0.50	0.50	1
07103	4.75 mm	n	.a.	98.3	0.50	0.50	1
07103	3.35 mm	n	.a.	96.6	0.50	0.50	1
07103	2.36 mm	n	.a.	94.9	0.50	0.50	1
07103	1.18 mm	n	.a.	92.2	0.50	0.50	1
07103	0.6 mm	n	.a.	88.2	0.50	0.50	1
07103	0.3 mm	n	.a.	80.0	0.50	0.50	1
07103	0.15 mm	n	.a.	63.0	0.50	0.50	1
07103	0.075 mm	n	.a.	43.8	0.50	0.50	1
07103	0.064 mm	n.	.a.	39.0	0.50	0.50	1
07103	0.05 mm	n.	.a.	32.0	0.50	0.50	1
07103	0.02 mm	n.	.a.	17.0	0.50	0.50	1
07103	0.005 mm	n.	.a.	5.0	0.50	0.50	1
07103	0.002 mm	n.	.a.	2.0	0.50	0.50	1
07103	0.001 mm	n	.a.	1.0	0.50	0.50	1
Wet C	hemistry	SM 2540 G-19	97	8	8	8	
00111	Moisture	n	.a.	58.9	0.50	0.50	1
	Moisture represents 103 - 105 degrees ( as-received basis.						

### General Sample Comments

State of New Jersey Lab Certification No. PA011

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

# Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
00159	Mercury	SW-846 7471A	1	142165711003	08/05/2014 11:12	Damary Valentin	1
05711	SW SW846 Hg Digest	SW-846 7471A modified	1	142165711003	08/05/2014 08:26	Christopher M Klumpp	1
00383	TOC by Lloyd Kahn	Lloyd Kahn modified	1	14216049531A	08/04/2014 22:01	James S Mathiot	1
07103	Grain Size to 1 um	ASTM D422	1	14213710301A	08/01/2014 00:35	Daniel S Smith	1
00111	Moisture	SM 2540 G-1997	1	14218820004A	08/06/2014 19:42	Scott W Freisher	1



# **Analysis Report**

Iron Hill Corporate Center 4051 Ogletown Road, Suite 300

Newark DE 19713

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Sample Description: SD07 RAMA Project Name: POM - RAMA	PO RIVER SEDIMENT	SAMPLING 7/14	LL Sample # SW 7550162 LL Group # 1492797 Account # 07032
Collected: 07/30/2014 10	:15 by JC	CRG-E.I.DuPont de URS Corporation	Nemours & Co

Submitted: 07/31/2014 09:20 Reported: 08/27/2014 08:28

RPR29 SDG#: POM22-02

CAT No.	Analysis Name		CAS Number	Dry Result	Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
Metal	5	SW-846 747	'1A	mg/kg	mg/kg	mg/kg	
00159	Mercury		7439-97-6	0.941	0.0220	0.220	1
Wet Cl	hemistry	Lloyd Kahn	modified	mg/kg	mg/kg	mg/kg	
00383	TOC by Lloyd Kahn		n.a.	30,200	1,340	4,010	1
Vet Cl	hemistry	ASTM D422		% Passing	% Passing	% Passing	
07103	75 mm		n.a.	100	0.50	0.50	1
07103	37.5 mm		n.a.	100	0.50	0.50	1
07103	19 mm		n.a.	100	0.50	0.50	1
07103	4.75 mm		n.a.	97.9	0.50	0.50	1
07103	3.35 mm		n.a.	96.4	0.50	0.50	1
07103	2.36 mm		n.a.	93.1	0.50	0.50	1
07103	1.18 mm		n.a.	90.3	0.50	0.50	1
07103	0.6 mm		n.a.	88.5	0.50	0.50	1
07103	0.3 mm		n.a.	83.4	0.50	0.50	1
07103	0.15 mm		n.a.	70.5	0.50	0.50	1
07103	0.075 mm		n.a.	53.1	0.50	0.50	1
07103	0.064 mm		n.a.	48.0	0.50	0.50	1
07103	0.05 mm		n.a.	42.0	0.50	0.50	1
07103	0.02 mm		n.a.	23.0	0.50	0.50	1
07103	0.005 mm		n.a.	7.0	0.50	0.50	1
07103	0.002 mm		n.a.	4.0	0.50	0.50	1
07103	0.001 mm		n.a.	2.0	0.50	0.50	1
Vet Cl	hemistry	SM 2540 G-	1997	8	8	8	
00111	Moisture		n.a.	56.0	0.50	0.50	1
	Moisture represents 103 - 105 degrees ( as-received basis.						

### General Sample Comments

State of New Jersey Lab Certification No. PA011

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

# Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
00159	Mercury	SW-846 7471A	1	142165711003	08/05/2014 11:	14 Damary Valentin	1
05711	SW SW846 Hg Digest	SW-846 7471A modified	1	142165711003	08/05/2014 08:	26 Christopher M Klumpp	1
00383	TOC by Lloyd Kahn	Lloyd Kahn modified	1	14216049531A	08/04/2014 22:	10 James S Mathiot	1
07103	Grain Size to 1 um	ASTM D422	1	14213710301A	08/01/2014 00:	35 Daniel S Smith	1
00111	Moisture	SM 2540 G-1997	1	14218820004A	08/06/2014 19:	42 Scott W Freisher	1



**Analysis Report** 

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# Sample Description: SD073014-RPR-30-0.0-0.5 Sediment RAMAPO RIVER SEDIMENT SAMPLING 7/14

# LL Sample # SW 7550163 LL Group # 1492797 Account # 07032

# Project Name: POM - RAMAPO RIVER SEDIMENT SAMPLING

Collected: 07/30/2014 10:00 by JC

Submitted: 07/31/2014 09:20 Reported: 08/27/2014 08:28 CRG-E.I.DuPont de Nemours & Co URS Corporation Iron Hill Corporate Center 4051 Ogletown Road, Suite 300 Newark DE 19713

RPR30 SDG#: POM22-03

CAT No.	Analysis Name		CAS Number	Dry Result	Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
Metal	s	SW-846 747	'1A	mg/kg	mg/kg	mg/kg	
00159	Mercury		7439-97-6	0.579	0.0193	0.193	1
Wet C	hemistry	Lloyd Kahr	n modified	mg/kg	mg/kg	mg/kg	
00383	TOC by Lloyd Kahn		n.a.	26,700	1,310	3,920	1
Wet C	hemistry	ASTM D422		% Passing	% Passing	% Passing	
07103	75 mm		n.a.	100	0.50	0.50	1
07103	37.5 mm		n.a.	100	0.50	0.50	1
07103	19 mm		n.a.	100	0.50	0.50	1
07103	4.75 mm		n.a.	98.3	0.50	0.50	1
07103	3.35 mm		n.a.	97.2	0.50	0.50	1
07103	2.36 mm		n.a.	95.9	0.50	0.50	1
07103	1.18 mm		n.a.	93.4	0.50	0.50	1
07103	0.6 mm		n.a.	87.7	0.50	0.50	1
07103	0.3 mm		n.a.	76.8	0.50	0.50	1
07103	0.15 mm		n.a.	63.0	0.50	0.50	1
07103	0.075 mm		n.a.	34.2	0.50	0.50	1
07103	0.064 mm		n.a.	30.0	0.50	0.50	1
07103	0.05 mm		n.a.	24.0	0.50	0.50	1
07103	0.02 mm		n.a.	9.5	0.50	0.50	1
07103	0.005 mm		n.a.	3.0	0.50	0.50	1
07103	0.002 mm		n.a.	2.0	0.50	0.50	1
07103	0.001 mm		n.a.	2.0	0.50	0.50	1
Wet C	hemistry	SM 2540 G-	1997	8	8	8	
00111	Moisture		n.a.	50.3	0.50	0.50	1
	Moisture represents 103 - 105 degrees ( as-received basis.						

### General Sample Comments

State of New Jersey Lab Certification No. PA011

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

### Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
00159	Mercury	SW-846 7471A	1	142165711003	08/05/2014 11:16	Damary Valentin	1
05711	SW SW846 Hg Digest	SW-846 7471A modified	1	142165711003	08/05/2014 08:26	Christopher M Klumpp	1
00383	TOC by Lloyd Kahn	Lloyd Kahn modified	1	14216049531A	08/04/2014 22:22	James S Mathiot	1
07103	Grain Size to 1 um	ASTM D422	1	14213710301A	08/01/2014 00:35	Daniel S Smith	1
00111	Moisture	SM 2540 G-1997	1	14218820004A	08/06/2014 19:42	Scott W Freisher	1



00159 Mercury

00111 Moisture

05711 SW SW846 Hg Digest

Lancaster Laboratories Environmental

SW-846 7471A

SW-846 7471A

SM 2540 G-1997

modified

**Analysis Report** 

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	SD073014-RPR-29-0.5-0. RAMAPO RIVER SEDIMENT			LL Group	# SW 7550164 # 1492797 # 07032
Project Name: POM - 1	RAMAPO RIVER SEDIMENT	SAMPLING			
Collected: 07/30/201	-		CRG-E.I.DuPont de M URS Corporation		
Submitted: 07/31/201 Reported: 08/27/201			Iron Hill Corporate 4051 Ogletown Road Newark DE 19713		
PR292 SDG#: POM22-	04				
CAT No. Analysis Name	CAS Number	Dry Result	Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
Metals	SW-846 7471A	mg/kg	mg/kg	mg/kg	
00159 Mercury	7439-97-6	0.300	0.0141	0.141	1
Wet Chemistry	SM 2540 G-1997	%	%	8	
	n.a. s the loss in weight of the Celsius. The moisture resul			0.50	1
	Gen	eral Samp	Le Comments		
State of New Jersey Lab C	ertification No. PA011				
	s otherwise noted. Please a ll QC performance data and a				
	Laborato	ry Sample	Analysis Record		
CAT Analysis Name No.	Method .	Frial# Batch	# Analysis Date and Time	Analyst	Dilution Factor

142165711003

142165711003

14218820004A

1

1

1

08/05/2014 11:18 08/05/2014 08:26

08/06/2014 19:42

Damary Valentin

Scott W Freisher

Christopher M

Klumpp

1

1

1



**Analysis Report** 

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# Sample Description: SD073014-RPR-20-0.0-0.5 Sediment RAMAPO RIVER SEDIMENT SAMPLING 7/14

# LL Sample # SW 7550165 LL Group # 1492797 Account # 07032

# Project Name: POM - RAMAPO RIVER SEDIMENT SAMPLING

Collected: 07/30/2014 13:45 by JC

Submitted: 07/31/2014 09:20 Reported: 08/27/2014 08:28 CRG-E.I.DuPont de Nemours & Co URS Corporation Iron Hill Corporate Center 4051 Ogletown Road, Suite 300 Newark DE 19713

RPR20 SDG#: POM22-05

CAT No.	Analysis Name	CAS	8 Number	Dry Result	Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
Metal	s	SW-846 7471A		mg/kg	mg/kg	mg/kg	
00159	Mercury	743	89-97-6	0.215	0.0144	0.144	1
Wet C	hemistry	Lloyd Kahn mo	dified	mg/kg	mg/kg	mg/kg	
00383	TOC by Lloyd Kahn	n.a	ι.	3,600	676	2,030	1
Wet C	hemistry	ASTM D422		% Passing	% Passing	% Passing	
07103	75 mm	n.a	ι.	100	0.50	0.50	1
07103	37.5 mm	n.a	ι.	100	0.50	0.50	1
07103	19 mm	n.a	ι.	100	0.50	0.50	1
07103	4.75 mm	n.a	ι.	99.4	0.50	0.50	1
07103	3.35 mm	n.a	ι.	99.8	0.50	0.50	1
07103	2.36 mm	n.a	ı. 🖉	98.3	0.50	0.50	1
07103	1.18 mm	n.a	ι.	98.0	0.50	0.50	1
07103	0.6 mm	n.a	ι.	97.3	0.50	0.50	1
07103	0.3 mm	n.a	ι.	84.6	0.50	0.50	1
07103	0.15 mm	n.a	ι.	44.1	0.50	0.50	1
07103	0.075 mm	n.a	ι.	22.1	0.50	0.50	1
07103	0.064 mm	n.a	ι.	18.0	0.50	0.50	1
07103	0.05 mm	n.a	ι.	13.0	0.50	0.50	1
07103	0.02 mm	n.a	ι.	6.0	0.50	0.50	1
07103	0.005 mm	n.a	ι.	3.0	0.50	0.50	1
07103	0.002 mm	n.a	ι.	1.0	0.50	0.50	1
07103	0.001 mm	n.a	ι.	1.0	0.50	0.50	1
Wet C	hemistry	SM 2540 G-199	7	8	8	8	
00111	Moisture	n.a		31.5	0.50	0.50	1
	Moisture represents 103 - 105 degrees ( as-received basis.	-		-			

### General Sample Comments

State of New Jersey Lab Certification No. PA011

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

### Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
00159	Mercury	SW-846 7471A	1	142165711003	08/05/2014 11:20	Damary Valentin	1
05711	SW SW846 Hg Digest	SW-846 7471A modified	1	142165711003	08/05/2014 08:26	Christopher M Klumpp	1
00383	TOC by Lloyd Kahn	Lloyd Kahn modified	1	14216049531A	08/04/2014 22:34	James S Mathiot	1
07103	Grain Size to 1 um	ASTM D422	1	14213710301A	08/01/2014 00:35	Daniel S Smith	1
00111	Moisture	SM 2540 G-1997	1	14218820004A	08/06/2014 19:42	Scott W Freisher	1



# **Analysis Report**

Iron Hill Corporate Center 4051 Ogletown Road, Suite 300

Newark DE 19713

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Sample Description: S R Project Name: POM - R	RAMAPO RIVER	SEDIMENT	SAMPLING 7	/14	LL Sample LL Group Account	#	
Collected: 07/30/2014	4 14:15 by	JC		CRG-E.I.DuPont de Nem URS Corporation	ours & Co		

Submitted: 07/31/2014 09:20 Reported: 08/27/2014 08:28

RPR21 SDG#: POM22-06

CAT No.	Analysis Name	CZ	AS Number	Dry Result	Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
Metal	5	SW-846 7471A		mg/kg	mg/kg	mg/kg	
00159	Mercury	74	139-97-6	0.382	0.0209	0.209	1
Wet Cl	hemistry	Lloyd Kahn m	odified	mg/kg	mg/kg	mg/kg	
00383	TOC by Lloyd Kahn	n.	a.	23,700	1,420	4,260	1
Vet Cl	hemistry	ASTM D422		% Passing	% Passing	% Passing	
07103	75 mm	n.	a.	100	0.50	0.50	1
07103	37.5 mm	n.	a.	100	0.50	0.50	1
07103	19 mm	n.	a.	99.5	0.50	0.50	1
07103	4.75 mm	n.	a.	96.1	0.50	0.50	1
07103	3.35 mm	n.	a.	94.4	0.50	0.50	1
07103	2.36 mm	n.	a.	92.9	0.50	0.50	1
07103	1.18 mm	n.	a.	91.9	0.50	0.50	1
07103	0.6 mm	n.	a.	90.5	0.50	0.50	1
07103	0.3 mm	n.	a.	81.5	0.50	0.50	1
07103	0.15 mm	n.	.a.	33.2	0.50	0.50	1
07103	0.075 mm	n.	a.	15.0	0.50	0.50	1
07103	0.064 mm	n.	a.	13.0	0.50	0.50	1
07103	0.05 mm	n.	a.	10.0	0.50	0.50	1
07103	0.02 mm	n.	a.	6.0	0.50	0.50	1
07103	0.005 mm	n.	.a.	2.5	0.50	0.50	1
07103	0.002 mm	n.	a.	2.0	0.50	0.50	1
07103	0.001 mm	n.	a.	2.0	0.50	0.50	1
Wet Cl	hemistry	SM 2540 G-19	97	%	%	8	
00111	- Moisture		a.	52.2	0.50	0.50	1
	Moisture represents 103 - 105 degrees ( as-received basis.	s the loss in wei	ght of the	sample after o	oven drying at		

### General Sample Comments

State of New Jersey Lab Certification No. PA011

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

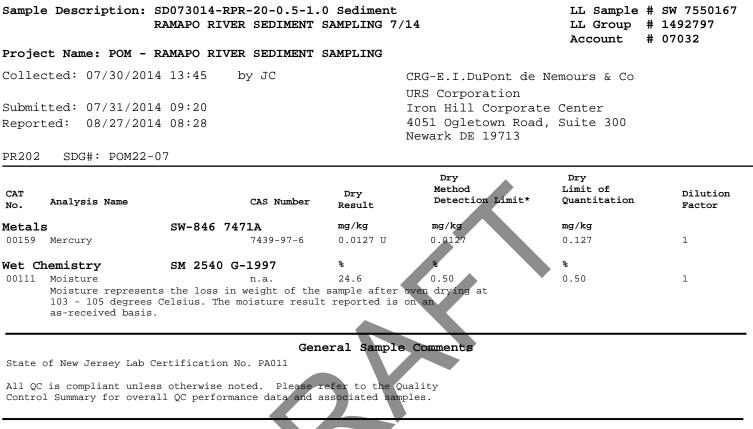
# Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
00159	Mercury	SW-846 7471A	1	142165711003	08/05/2014 11:22	Damary Valentin	1
05711	SW SW846 Hg Digest	SW-846 7471A modified	1	142165711003	08/05/2014 08:26	Christopher M Klumpp	1
00383	TOC by Lloyd Kahn	Lloyd Kahn modified	1	14216049531A	08/04/2014 22:42	James S Mathiot	1
07103	Grain Size to 1 um	ASTM D422	1	14213710301A	08/01/2014 00:35	Daniel S Smith	1
00111	Moisture	SM 2540 G-1997	1	14218820004A	08/06/2014 19:42	Scott W Freisher	1



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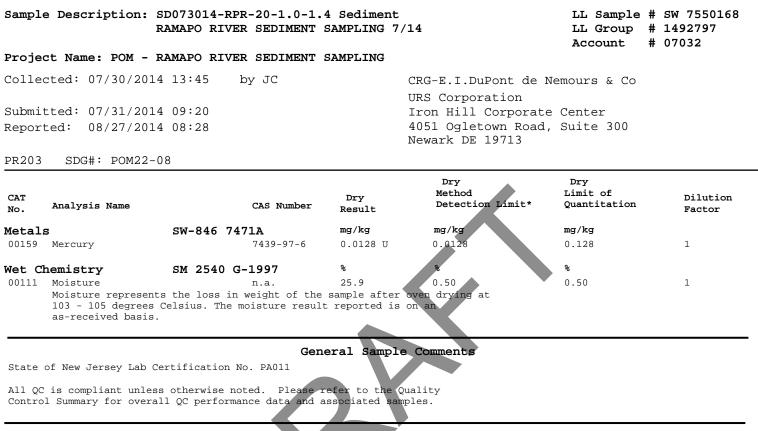
### Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
00159	Mercury	SW-846 7471A	1	142165711003	08/05/2014 11:24	Damary Valentin	1
05711	SW SW846 Hg Digest	SW-846 7471A modified	1	142165711003	08/05/2014 08:20	Christopher M Klumpp	1
00111	Moisture	SM 2540 G-1997	1	14218820004A	08/06/2014 19:42	Scott W Freisher	1



# **Analysis Report**

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### Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time		Analyst	Dilution Factor
00159	Mercury	SW-846 7471A	1	142165711003	08/05/2014 11	1:26	Damary Valentin	1
05711	SW SW846 Hg Digest	SW-846 7471A modified	1	142165711003	08/05/2014 08	8:26	Christopher M Klumpp	1
00111	Moisture	SM 2540 G-1997	1	14218820004A	08/06/2014 19	9:42	Scott W Freisher	1



**Analysis Report** 

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# Sample Description: SD073014-RPR-24-0.0-0.5 Sediment RAMAPO RIVER SEDIMENT SAMPLING 7/14

# LL Sample # SW 7550169 LL Group # 1492797 Account # 07032

# Project Name: POM - RAMAPO RIVER SEDIMENT SAMPLING

Collected: 07/30/2014 14:45 by JC

Submitted: 07/31/2014 09:20 Reported: 08/27/2014 08:28 CRG-E.I.DuPont de Nemours & Co URS Corporation Iron Hill Corporate Center 4051 Ogletown Road, Suite 300 Newark DE 19713

### RPR24 SDG#: POM22-09

CAT No.	Analysis Name		CAS Number	Dry Result	Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
Metal	s	SW-846 747	1A	mg/kg	mg/kg	mg/kg	
00159	Mercury		7439-97-6	0.275	0.0194	0.194	1
Wet C	hemistry	Lloyd Kahn	modified	mg/kg	mg/kg	mg/kg	
00383	TOC by Lloyd Kahn		n.a.	25,300	1,960	5,890	1
Wet C	hemistry	ASTM D422		% Passing	% Passing	% Passing	
07103	75 mm		n.a.	100	0.50	0.50	1
07103	37.5 mm		n.a.	100	0.50	0.50	1
07103	19 mm		n.a.	99.8	0.50	0.50	1
07103	4.75 mm		n.a.	99.0	0.50	0.50	1
07103	3.35 mm		n.a.	98.5	0.50	0.50	1
07103	2.36 mm		n.a.	97.8	0.50	0.50	1
07103	1.18 mm		n.a.	97.3	0.50	0.50	1
07103	0.6 mm		n.a.	96.4	0.50	0.50	1
07103	0.3 mm		n.a.	88.5	0.50	0.50	1
07103	0.15 mm		n.a.	28.9	0.50	0.50	1
07103	0.075 mm		n.a.	9.0	0.50	0.50	1
07103	0.064 mm		n.a.	7.5	0.50	0.50	1
07103	0.05 mm		n.a.	6.0	0.50	0.50	1
07103	0.02 mm		n.a.	2.5	0.50	0.50	1
07103	0.005 mm		n.a.	1.5	0.50	0.50	1
07103	0.002 mm		n.a.	1.5	0.50	0.50	1
07103	0.001 mm		n.a.	1.5	0.50	0.50	1
Wet C	hemistry	SM 2540 G-	1997	%	8	8	
00111	Moisture		n.a.	49.3	0.50	0.50	1
	Moisture represents 103 - 105 degrees C as-received basis.		eight of the s	sample after ove	n drying at		-

### General Sample Comments

State of New Jersey Lab Certification No. PA011

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

### Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
00159	Mercury	SW-846 7471A	1	142165711003	08/05/2014 11:28	Damary Valentin	1
05711	SW SW846 Hg Digest	SW-846 7471A modified	1	142165711003	08/05/2014 08:26	Christopher M Klumpp	1
00383	TOC by Lloyd Kahn	Lloyd Kahn modified	1	14216049531A	08/04/2014 22:55	James S Mathiot	1
07103	Grain Size to 1 um	ASTM D422	1	14213710301A	08/01/2014 00:35	Daniel S Smith	1
00111	Moisture	SM 2540 G-1997	1	14218820004A	08/06/2014 19:42	Scott W Freisher	1



# **Analysis Report**

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Sample	Description:	SD07301	L4-RPR-	25-0.0-0.	5 Sedimen	t	
		RAMAPO	RIVER	SEDIMENT	SAMPLING	7/14	

LL Sample # SW 7550170 LL Group # 1492797 Account # 07032

# Project Name: POM - RAMAPO RIVER SEDIMENT SAMPLING

Collected: 07/30/2014 15:15 by JC

Submitted: 07/31/2014 09:20 Reported: 08/27/2014 08:28 CRG-E.I.DuPont de Nemours & Co URS Corporation Iron Hill Corporate Center 4051 Ogletown Road, Suite 300 Newark DE 19713

RPR25 SDG#: POM22-10BKG

CAT No.	Analysis Name		CAS Number	Dry Result	Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
Metal	s	SW-846 747	'1A	mg/kg	mg/kg	mg/kg	
00159	Mercury		7439-97-6	0.310	0.0186	0.186	1
	hemistry	Lloyd Kahr	n modified	mg/kg	mg/kg	mg/kg	
00383	TOC by Lloyd Kahn		n.a.	15,900	1,530	4,600	1
Wet C	hemistry	ASTM D422		% Passing	% Passing	% Passing	
07103	75 mm		n.a.	100	0.50	0.50	1
07103	37.5 mm		n.a.	100	0.50	0.50	1
07103	19 mm		n.a.	100	0.50	0.50	1
07103	4.75 mm		n.a.	99.2	0.50	0.50	1
07103	3.35 mm		n.a.	98.7	0.50	0.50	1
07103	2.36 mm		n.a.	98.0	0.50	0.50	1
07103	1.18 mm		n.a.	97.7	0.50	0.50	1
07103	0.6 mm		n.a.	97.2	0.50	0.50	1
07103	0.3 mm		n.a.	92.2	0.50	0.50	1
07103	0.15 mm		n.a.	34.0	0.50	0.50	1
07103	0.075 mm		n.a.	13.8	0.50	0.50	1
07103	0.064 mm		n.a.	11.5	0.50	0.50	1
07103	0.05 mm		n.a.	10.0	0.50	0.50	1
07103	0.02 mm		n.a.	7.0	0.50	0.50	1
07103	0.005 mm		n.a.	2.5	0.50	0.50	1
07103	0.002 mm		n.a.	2.0	0.50	0.50	1
07103	0.001 mm		n.a.	2.0	0.50	0.50	1
Wet C	hemistry	SM 2540 G	1997	8	8	%	
00111	Moisture		n.a.	47.2	0.50	0.50	1
	Moisture represents 103 - 105 degrees C as-received basis.		-	-			

### General Sample Comments

State of New Jersey Lab Certification No. PA011

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

### Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
00159	Mercury	SW-846 7471A	1	142165711003	08/05/2014 10:	19 Damary Valentin	1
05711	SW SW846 Hg Digest	SW-846 7471A modified	1	142165711003	08/05/2014 08:	26 Christopher M Klumpp	1
00383	TOC by Lloyd Kahn	Lloyd Kahn modified	1	14216049531A	08/04/2014 23:	)5 James S Mathiot	1
07103	Grain Size to 1 um	ASTM D422	1	14213710301A	08/01/2014 00:	35 Daniel S Smith	1
00111	Moisture	SM 2540 G-1997	1	14218820004A	08/06/2014 19:	42 Scott W Freisher	1



# **Analysis Report**

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Sample Description:	SD073014-RPR-25-0.0-0.5 MS Sediment RAMAPO RIVER SEDIMENT SAMPLING 7/14	LL Sample # SW 7550171 LL Group # 1492797
		Account # 07032
Project Name: POM -	RAMAPO RIVER SEDIMENT SAMPLING	

Collected: 07/30/2014 15:15 by JC

Submitted: 07/31/2014 09:20 Reported: 08/27/2014 08:28 CRG-E.I.DuPont de Nemours & Co URS Corporation Iron Hill Corporate Center 4051 Ogletown Road, Suite 300 Newark DE 19713

RPR25 SDG#: POM22-10MS

CAT No. Analysis Name	CAS Number	Dry Result	Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
Metals	SW-846 7471A	mg/kg	mg/kg	mg/kg	
00159 Mercury	7439-97-6	0.571	0.0189	0.189	1
Wet Chemistry	Lloyd Kahn modified	mg/kg	mg/kg	mg/kg	
00383 TOC by Lloyd Kahn	n.a.	145,000	4,560	13,700	1
Wet Chemistry	SM 2540 G-1997	00	8	8	
00118 Moisture	n.a.	47.2	0.50	0.50	1

General Sample Comments

State of New Jersey Lab Certification No. PA011

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

# Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	e	Analyst	Dilution Factor
00159	Mercury	SW-846 7471A	1	142165711003	08/05/2014	10:55	Damary Valentin	1
05711	SW SW846 Hg Digest	SW-846 7471A modified	1	142165711003	08/05/2014 (	08:26	Christopher M Klumpp	1
00383	TOC by Lloyd Kahn	Lloyd Kahn modified	1	14216049531A	08/04/2014	23:14	James S Mathiot	1
00118	Moisture	SM 2540 G-1997	1	14218820004A	08/06/2014	19:42	Scott W Freisher	1



**Analysis Report** 

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	SD073014-RPR-25-0.0-0. RAMAPO RIVER SEDIMENT RAMAPO RIVER SEDIMENT	SAMPLING 7		-	SW 7550172 1492797 07032
Collected: 07/30/201 Submitted: 07/31/201 Reported: 08/27/201	4 09:20		CRG-E.I.DuPont de N URS Corporation Iron Hill Corporate 4051 Ogletown Road, Newark DE 19713	Center	
RPR25 SDG#: POM22-	10MSD		Dry	Dry	
CAT No. Analysis Name	CAS Number	Dry Result	Method Detection Limit*	Limit of Quantitation	Dilution Factor
Metals	SW-846 7471A	mg/kg	mg/kg	mg/kg	
00159 Mercury	7439-97-6	0.648	0.0177	0.177	1
Wet Chemistry	SM 2540 G-1997	%	8	8	
00118 Moisture	n.a.	47.2	0.50	0.50	1

# General Sample Comments

State of New Jersey Lab Certification No. PA011

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

	Laboratory Sample Analysis Record										
CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Ti	me	Analyst	Dilution Factor			
00159	Mercury	SW-846 7471A	1	142165711003	08/05/2014	10:57	Damary Valentin	1			
05711	SW SW846 Hg Digest	SW-846 7471A modified	1	142165711003	08/05/2014	08:26	Christopher M Klumpp	1			
00118	Moisture	SM 2540 G-1997	1	14218820004A	08/06/2014	19:42	Scott W Freisher	1			



**Analysis Report** 

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Sample Description:	SD073014-RPR-25-0.0-0.5 Dupl Sediment	LL Sample	#	SW 7550173
	RAMAPO RIVER SEDIMENT SAMPLING 7/14	LL Group	#	1492797
		Account	#	07032
Duadant Mamai DOM				

#### Project Name: POM - RAMAPO RIVER SEDIMENT SAMPLING

Collected: 07/30/2014 15:15 by JC

Submitted: 07/31/2014 09:20 Reported: 08/27/2014 08:28 CRG-E.I.DuPont de Nemours & Co URS Corporation Iron Hill Corporate Center 4051 Ogletown Road, Suite 300 Newark DE 19713

RPR25 SDG#: POM22-10DUP

CAT No. Analysis Name	CAS Number	Dry Result	Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor				
Metals	SW-846 7471A	mg/kg	mg/kg	mg/kg					
00159 Mercury	7439-97-6	0.224	0.0181	0.181	1				
Wet Chemistry	Lloyd Kahn modified	mg/kg	mg/kg	mg/kg					
00383 TOC by Lloyd Kahn	n.a.	13,500	1,550	4,660	1				
Wet Chemistry	SM 2540 G-1997	8	8	8					
00118 Moisture	n.a.	47.2	0.50	0.50	1				
00121 Moisture Duplicate	n.a.	44.2	0.50	0.50	1				
The duplicate moist	The duplicate moisture value is provided to assess the precision of the								
	r comparability purposes, th								
	a value uged to perform dru								

determination is the value used to perform dry weight calculations.

General Sample Comments

State of New Jersey Lab Certification No. PA011

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

### Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Tim	ne	Analyst	Dilution Factor
00159	Mercury	SW-846 7471A	1	142165711003	08/05/2014	10:53	Damary Valentin	1
05711	SW SW846 Hg Digest	SW-846 7471A modified	1	142165711003	08/05/2014	08:26	Christopher M Klumpp	1
00383	TOC by Lloyd Kahn	Lloyd Kahn modified	1	14216049531A	08/05/2014	00:54	James S Mathiot	1
00118	Moisture	SM 2540 G-1997	1	14218820004A	08/06/2014	19:42	Scott W Freisher	1
00121	Moisture Duplicate	SM 2540 G-1997	1	14218820004A	08/06/2014	19:42	Scott W Freisher	1



# **Analysis Report**

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# Sample Description: SD073014-RPR-26-0.0-0.5 Sediment RAMAPO RIVER SEDIMENT SAMPLING 7/14

# LL Sample # SW 7550174 LL Group # 1492797 Account # 07032

# Project Name: POM - RAMAPO RIVER SEDIMENT SAMPLING

Collected: 07/30/2014 15:45 by JC

Submitted: 07/31/2014 09:20 Reported: 08/27/2014 08:28 CRG-E.I.DuPont de Nemours & Co URS Corporation Iron Hill Corporate Center 4051 Ogletown Road, Suite 300 Newark DE 19713

### RPR26 SDG#: POM22-11

CAT No.	Analysis Name		CAS Number	Dry Result	Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
Metal	s	SW-846 747	'1A	mg/kg	mg/kg	mg/kg	
	Mercury		7439-97-6	4.95	0.158	1.58	5
Wet C	hemistry	Lloyd Kahn	modified	mg/kg	mg/kg	mg/kg	
00383	TOC by Lloyd Kahn		n.a.	50,900	2,530	7,590	1
Wet C	hemistry	ASTM D422		% Passing	% Passing	% Passing	
07103	75 mm		n.a.	100	0.50	0.50	1
07103	37.5 mm		n.a.	100	0.50	0.50	1
07103	19 mm		n.a.	100	0.50	0.50	1
07103	4.75 mm		n.a.	96.5	0.50	0.50	1
07103	3.35 mm		n.a.	94.4	0.50	0.50	1
07103	2.36 mm		n.a.	91.6	0.50	0.50	1
07103	1.18 mm		n.a.	88.3	0.50	0.50	1
07103	0.6 mm		n.a.	83.9	0.50	0.50	1
07103	0.3 mm		n.a.	77.2	0.50	0.50	1
07103	0.15 mm		n.a.	58.8	0.50	0.50	1
07103	0.075 mm		n.a.	33.5	0.50	0.50	1
07103	0.064 mm		n.a.	30.0	0.50	0.50	1
07103	0.05 mm		n.a.	25.0	0.50	0.50	1
07103	0.02 mm		n.a.	14.0	0.50	0.50	1
07103	0.005 mm		n.a.	4.0	0.50	0.50	1
07103	0.002 mm		n.a.	2.0	0.50	0.50	1
07103	0.001 mm		n.a.	2.0	0.50	0.50	1
Wet C	hemistry	SM 2540 G-	1997	%	8	8	
00111	Moisture		n.a.	69.9	0.50	0.50	1
	Moisture represents 103 - 105 degrees ( as-received basis.		weight of the s	sample after ove			

### General Sample Comments

State of New Jersey Lab Certification No. PA011

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

### Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
00159	Mercury	SW-846 7471A	1	142165711003	08/05/2014 11:	46 Damary Valentin	5
05711	SW SW846 Hg Digest	SW-846 7471A modified	1	142165711003	08/05/2014 08:	26 Christopher M Klumpp	1
00383	TOC by Lloyd Kahn	Lloyd Kahn modified	1	14216049531A	08/05/2014 00:	18 James S Mathiot	1
07103	Grain Size to 1 um	ASTM D422	1	14213710301A	08/01/2014 00:	35 Daniel S Smith	1
00111	Moisture	SM 2540 G-1997	1	14218820004A	08/06/2014 19:	42 Scott W Freisher	1



**Analysis Report** 

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# Sample Description: SD073014-RPR-27-0.0-0.5 Sediment RAMAPO RIVER SEDIMENT SAMPLING 7/14

# LL Sample # SW 7550175 LL Group # 1492797 Account # 07032

# Project Name: POM - RAMAPO RIVER SEDIMENT SAMPLING

Collected: 07/30/2014 11:30 by JC

Submitted: 07/31/2014 09:20 Reported: 08/27/2014 08:28 CRG-E.I.DuPont de Nemours & Co URS Corporation Iron Hill Corporate Center 4051 Ogletown Road, Suite 300 Newark DE 19713

### RPR27 SDG#: POM22-12

CAT No.	Analysis Name		CAS Number	Dry Result	Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
Metal	s	SW-846 747	1A	mg/kg	mg/kg	mg/kg	
00159	Mercury		7439-97-6	0.276	0.0143	0.143	1
Wet C	hemistry	Lloyd Kahn	modified	mg/kg	mg/kg	mg/kg	
00383	TOC by Lloyd Kahn		n.a.	5,990	669	2,010	1
Wet C	hemistry	ASTM D422		% Passing	% Passing	% Passing	
07103	75 mm		n.a.	100	0.50	0.50	1
07103	37.5 mm		n.a.	100	0.50	0.50	1
07103	19 mm		n.a.	100	0.50	0.50	1
07103	4.75 mm		n.a.	99.8	0.50	0.50	1
07103	3.35 mm		n.a.	99.6	0.50	0.50	1
07103	2.36 mm		n.a.	99.3	0.50	0.50	1
07103	1.18 mm		n.a.	99.0	0.50	0.50	1
07103	0.6 mm		n.a.	97.4	0.50	0.50	1
07103	0.3 mm		n.a.	71.5	0.50	0.50	1
07103	0.15 mm		n.a.	26.8	0.50	0.50	1
07103	0.075 mm		n.a.	7.8	0.50	0.50	1
07103	0.064 mm		n.a.	7.5	0.50	0.50	1
07103	0.05 mm		n.a.	5.0	0.50	0.50	1
07103	0.02 mm		n.a.	2.0	0.50	0.50	1
07103	0.005 mm		n.a.	1.5	0.50	0.50	1
07103	0.002 mm		n.a.	1.5	0.50	0.50	1
07103	0.001 mm		n.a.	1.5	0.50	0.50	1
Wet C	hemistry	SM 2540 G-	1997	8	8	8	
00111	Moisture		n.a.	35.1	0.50	0.50	1
	Moisture represents 103 - 105 degrees C as-received basis.		eight of the s	ample after over	n drying at		

### General Sample Comments

State of New Jersey Lab Certification No. PA011

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

### Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
00159	Mercury	SW-846 7471A	1	142165711003	08/05/2014 11:36	Damary Valentin	1
05711	SW SW846 Hg Digest	SW-846 7471A modified	1	142165711003	08/05/2014 08:26	Christopher M Klumpp	1
00383	TOC by Lloyd Kahn	Lloyd Kahn modified	1	14216049531A	08/05/2014 00:29	James S Mathiot	1
07103	Grain Size to 1 um	ASTM D422	1	14213710301A	08/01/2014 00:35	Daniel S Smith	1
00111	Moisture	SM 2540 G-1997	1	14218820004A	08/06/2014 19:42	Scott W Freisher	1



**Analysis Report** 

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	AMAPO RIVER SEDIMENT	SAMPLING 7		LL Group #	⊧ SW 7550176 ⊧ 1492797 ⊧ 07032				
Project Name: POM - R	AMAPO RIVER SEDIMENT	SAMPLING							
Collected: 07/30/2014	15:15 by JC		CRG-E.I.DuPont de N	lemours & Co					
Submitted: 07/31/2014 09:20URS CorporationReported: 08/27/2014 08:28Iron Hill Corporate Center4051 Ogletown Road, Suite 300Newark DE 19713									
PR252 SDG#: POM22-1	3								
CAT No. Analysis Name	CAS Number	Dry Result	Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor				
Metals	SW-846 7471A	mg/kg	mg/kg	mg/kg					
00159 Mercury	7439-97-6	0.714	0.0197	0.197	1				
Wet Chemistry	SM 2540 G-1997	%	8	%					
00111 Moisture	n.a.	51.6	0.50	0.50	1				
	the loss in weight of the clsius. The moisture resul								
	Gen	eral Sampl	e Comments						
State of New Jersey Lab Ce									
All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.									

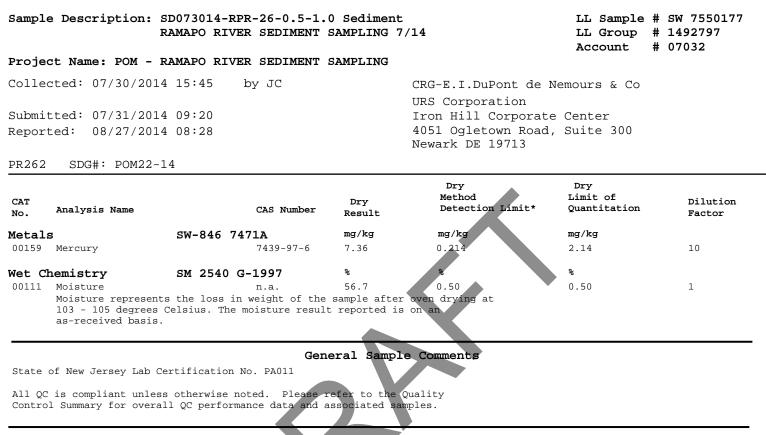
# Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
00159	Mercury	SW-846 7471A	1	142165711003	08/05/2014 11:38	Damary Valentin	1
05711	SW SW846 Hg Digest	SW-846 7471A modified	1	142165711003	08/05/2014 08:26	Christopher M Klumpp	1
00111	Moisture	SM 2540 G-1997	1	14218820004A	08/06/2014 19:42	Scott W Freisher	1



# **Analysis Report**

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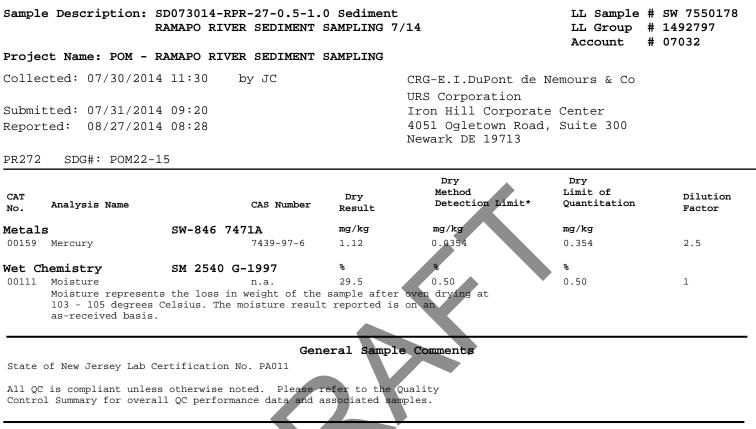
#### Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
00159	Mercury	SW-846 7471A	1	142165711003	08/05/2014 11:48	Damary Valentin	10
05711	SW SW846 Hg Digest	SW-846 7471A modified	1	142165711003	08/05/2014 08:20	Christopher M Klumpp	1
00111	Moisture	SM 2540 G-1997	1	14218820004A	08/06/2014 19:42	Scott W Freisher	1



**Analysis Report** 

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### Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
00159	Mercury	SW-846 7471A	1	142165711003	08/05/2014 11:50	Damary Valentin	2.5
05711	SW SW846 Hg Digest	SW-846 7471A modified	1	142165711003	08/05/2014 08:26	Christopher M Klumpp	1
00111	Moisture	SM 2540 G-1997	1	14218820004A	08/06/2014 19:42	Scott W Freisher	1



# **Analysis Report**

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# Sample Description: SD073014-RPR-26-0.0-0.5-D Sediment LL Sample # SW 7550179 RAMAPO RIVER SEDIMENT SAMPLING 7/14 LL Group # 1492797 Account # 07032

# Project Name: POM - RAMAPO RIVER SEDIMENT SAMPLING

Collected: 07/30/2014 15:45 by JC

Submitted: 07/31/2014 09:20 Reported: 08/27/2014 08:28 CRG-E.I.DuPont de Nemours & Co URS Corporation Iron Hill Corporate Center 4051 Ogletown Road, Suite 300 Newark DE 19713

# PR263 SDG#: POM22-16FD

CAT No.	Analysis Name		CAS Number	Dry Result	Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
Metal	s	SW-846 747	'1A	mg/kg	mg/kg	mg/kg	
00159	Mercury		7439-97-6	5.95	0.178	1.78	5
Wet C	hemistry	Lloyd Kahn	modified	mg/kg	mg/kg	mg/kg	
00383	TOC by Lloyd Kahn		n.a.	57,500	2,810	8,440	1
Wet C	hemistry	ASTM D422		% Passing	% Passing	% Passing	
07103	75 mm		n.a.	100	0.50	0.50	1
07103	37.5 mm		n.a.	100	0.50	0.50	1
07103	19 mm		n.a.	99.9	0.50	0.50	1
07103	4.75 mm		n.a.	94.6	0.50	0.50	1
07103	3.35 mm		n.a.	92.2	0.50	0.50	1
07103	2.36 mm		n.a.	89.8	0.50	0.50	1
07103	1.18 mm		n.a.	87.1	0.50	0.50	1
07103	0.6 mm		n.a.	83.3	0.50	0.50	1
07103	0.3 mm		n.a.	76.3	0.50	0.50	1
07103	0.15 mm		n.a.	58.0	0.50	0.50	1
07103	0.075 mm		n.a.	32.8	0.50	0.50	1
07103	0.064 mm		n.a.	29.0	0.50	0.50	1
07103	0.05 mm		n.a.	25.0	0.50	0.50	1
07103	0.02 mm		n.a.	15.0	0.50	0.50	1
07103	0.005 mm		n.a.	6.0	0.50	0.50	1
07103	0.002 mm		n.a.	4.0	0.50	0.50	1
07103	0.001 mm		n.a.	4.0	0.50	0.50	1
Wet C	hemistry	SM 2540 G-	1997	8	8	8	
00111	Moisture		n.a.	73.6	0.50	0.50	1
	Moisture represents 103 - 105 degrees ( as-received basis.		weight of the s				

#### General Sample Comments

State of New Jersey Lab Certification No. PA011

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

### Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time		Analyst	Dilution Factor
00159	Mercury	SW-846 7471A	1	142165711003	08/05/2014 11	:52	Damary Valentin	5
05711	SW SW846 Hg Digest	SW-846 7471A modified	1	142165711003	08/05/2014 08		Christopher M Klumpp	1
00383	TOC by Lloyd Kahn	Lloyd Kahn modified	1	14216049531A	08/05/2014 00	:40	James S Mathiot	1
07103	Grain Size to 1 um	ASTM D422	1	14213710301A	08/01/2014 00	:35	Daniel S Smith	1
00111	Moisture	SM 2540 G-1997	1	14218820004A	08/06/2014 19	:42	Scott W Freisher	1



**Analysis Report** 

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Sample Description: SI RA		-FB-3 Blank W VER SEDIMENT		14	LL Group	# WW 7550180 # 1492797 # 07032
Project Name: POM - RA	MAPO RIV	VER SEDIMENT	SAMPLING			
Collected: 07/30/2014	18:00	by JC		CRG-E.I.DuPont de Ne URS Corporation	mours & Co	
Submitted: 07/31/2014	09:20			Iron Hill Corporate	Center	
Reported: 08/27/2014	08:28			4051 Ogletown Road, Newark DE 19713		
RPRB3 SDG#: POM22-17	FB*					
CAT No. Analysis Name		CAS Number	As Received Result	As Received Method Detection Limit*	As Received Limit of Quantitation	Dilution Factor
Metals	SW-846	7470A	mg/l	mg/l	mg/l	
00259 Mercury		7439-97-6	0.000060 U	0.000060	0.00020	1
Wet Chemistry	SM 5310	C-2000	mg/l	mg/l	mg/l	
00273 Total Organic Carbon	n	n.a.	2.9	0.50	1.0	1

General Sample Comments

State of New Jersey Lab Certification No. PA011

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

		Labora	tory S	ample Analys:	is Record			
CAT No.	Analysis Name	Method	Trial	# Batch#	Analysis Date and Ti	me	Analyst	Dilution Factor
00259	Mercury	SW-846 7470A	1	142125713004	08/04/2014	13:44	Damary Valentin	1
05713	WW SW846 Hg Digest	SW-846 7470A	1	142125713004	08/01/2014	08:02	Christopher M Klumpp	1
00273	Total Organic Carbon	SM 5310 C-2000	1	14216049501A	08/04/2014	05:28	James S Mathiot	1



**Analysis Report** 

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# Quality Control Summary

Client Name: CRG-E.I.DuPont de Nemours & Co Reported: 08/27/14 at 08:28 AM Group Number: 1492797

Matrix QC may not be reported if insufficient sample or site-specific QC samples were not submitted. In these situations, to demonstrate precision and accuracy at a batch level, a LCS/LCSD was performed, unless otherwise specified in the method.

All Inorganic Initial Calibration and Continuing Calibration Blanks met acceptable method criteria unless otherwise noted on the Analysis Report.

# Laboratory Compliance Quality Control

Analysis Name	Blank <u>Result</u>	Blank MDL**	Blank <u>LOQ</u>	Report <u>Units</u>	LCS <u>%REC</u>	LCSD <u>%REC</u>	LCS/LCSD <u>Limits</u>	<u>RPD</u>	<u>RPD Max</u>
Batch number: 142125713004 Mercury	Sample num 0.000060 U	ber(s): 75 0.00006 0	550180 0.00020	mg/l	102		80-120		
Batch number: 142165711003 Mercury	Sample num 0.0100 U	ber(s): 75 0.0100	550161-755 0.100	0179 mg/kg	95	•	80-120		
Batch number: 14216049501A Total Organic Carbon	Sample num 0.50 U	ber(s): 75 0.50	550180 1.0	mg/l	105		91-113		
Batch number: 14216049531A	Sample num 7550175,75	· · /	50161-755	0163,755016	5-75501	66,7550	169-755017:	1,75503	173-
TOC by Lloyd Kahn	100 U	100.	300	mg/kg	101		47-143		
Batch number: 14218820004A Moisture Moisture Moisture Duplicate	Sample num	ber(s): 75	550161-755	0179	100 100 100		99-101 99-101 99-101		

# Sample Matrix Quality Control

Unspiked (UNSPK) = the sample used in conjunction with the matrix spike Background (BKG) = the sample used in conjunction with the duplicate

Analysis Name	MS MSD <u>%REC</u> <u>%REC</u>	MS/MSD <u>Limits RPD</u>	RPD <u>MAX</u>	BKG <u>Conc</u>	DUP <u>Conc</u>	DUP <u>RPD</u>	Dup RPD <u>Max</u>
Batch number: 142125713004 Mercury	Sample number(s) 106 109	: 7550180 UNSPK 80-120 3	: P5503 20	65 BKG: P550 0.00016 J	0.00018 J	14 (1)	20
Batch number: 142165711003 Mercury	Sample number(s) 83 114	: 7550161-75501 80-120 13	79 UNSP 20	K: 7550170 H 0.164	BKG: 7550170 0.118	) 32* (1)	20
Batch number: 14216049501A Total Organic Carbon	Sample number(s) 118	: 7550180 UNSPK 63-142	: P5494	59 BKG: P549 3.6	9459 3.6	2 (1)	4
Batch number: 14216049531A	Sample number(s) 7550175,7550179				,7550169-755	50171,755017	3-
TOC by Lloyd Kahn	94	59-125		8,380	7,110	16* (1)	15
Batch number: 14218820004A	Sample number(s)	: 7550161-75501	79 BKG	: 7550170			

\*- Outside of specification

\*\*-This limit was used in the evaluation of the final result for the blank

(1) The result for one or both determinations was less than five times the LOQ.

(2) The unspiked result was more than four times the spike added.





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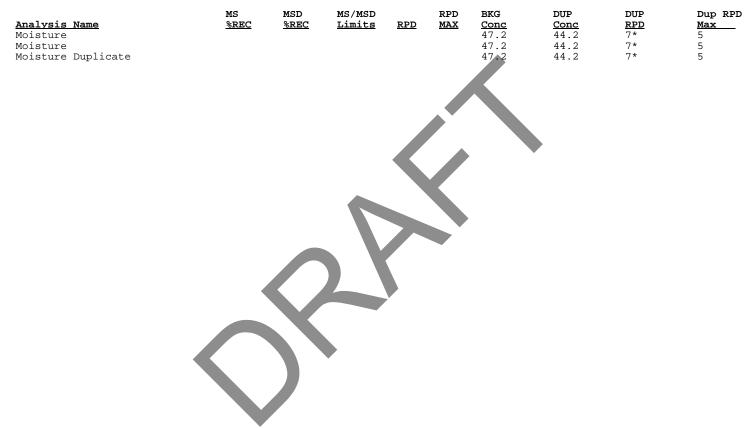
Page 2 of 2

# Quality Control Summary

Client Name: CRG-E.I.DuPont de Nemours & Co Reported: 08/27/14 at 08:28 AM Group Number: 1492797

Sample Matrix Quality Control

Unspiked (UNSPK) = the sample used in conjunction with the matrix spike Background (BKG) = the sample used in conjunction with the duplicate



\*- Outside of specification

\*\*-This limit was used in the evaluation of the final result for the blank

(1) The result for one or both determinations was less than five times the LOQ.

(2) The unspiked result was more than four times the spike added.

Lancaster Laboratories	est /	Envir	For Grou Acc'	Lanca up No t: 070	aster .: <u>/</u> .32	Labo <i>49∂</i>	ratori 2 <u>79</u> SF: <u>:</u>	es Us 7 20960	se On Sa <u>03</u>	ly Imple SCR	Nos.: No.:	<u>. 75 :</u> 159055	501	<u>61-</u> Cod	- <i>80</i> bler N	-11075	1 of 1				
Facility Name: Pompton Lakes	Pro	ject Ma	anager: G	Gary Lon	g							Ana	alyse	es Re	equi	red				Comments:	
Facility Contact: Josh Collins	Fac	ility Co	ontact Ph	one No.:	609.602.4	694							-				Τ	<u> </u>	Τ	-	
Facility Address: Pompton Lakes Works	Job	No.: 9	267 772	0100C W	H06 50			1													
	Rel	ease N	lo.:																		
2000 Cannonball Road	PO	Numbe	er: LBIO-	-66380				D422)													
Pompton Lakes NJ 07442 Sampler(s):								M D4		ତି	6										
Sampler(s): Project Name: RAMAPO RIVER SEDIMENT SAMPI	LING 7/	14						(ASTM		(2540 G)	(Lloyd Kahn)										
	1				C	ontainers			T1A)	e (2	Lloyd									TY	tort
Sample Identification	Date     Time     Collected       Time     Volume       Collected     Matrix     (ml)							Grain Size	Hg (7471A)	Moisture	TOC (I									Condition up	on receipt:
SD07_3()14-RPR-28-0.0-(),5	730	14 10	940	SW	125	None	1		x	x	x						_				
SD07 30 14-RPR-28-0.0-0.5		ic	040	SW	500	None	1	X													
SD07 30 14-RPR-29-0.0- 0.5		į	015	SW	125	None	1		X,	x	x										
SD07 30 14-RPR-29-0.0-0.5		-	015	sw	500	None	1	x													
SD07 <sup>공이</sup> 14-RPR-30-0.0-0.5		10	000	sw	125	None	1		x	x	x										
SD07 30 14-RPR-30-0.0-0.5	We wanted a second s	10	000	SW	500	None	1	x									_				
SD013014-RPR-29-0.5-0.75		1	015	SW	125	None	l		χ	Х											
				•																	
Turnaround Time Requested (please circle) :	Standar	d F	RUSH	Number	of days: _	8	Spe	cial I	nstru	ctior	is:		Full	Deliv	/erab	les nee	eded				
Bottles Relinquished by	Branchase 1	Da	ate 7/2	8/14	Time	30		les R		-										Date:	Time:
Bottles Relinquished by:	Л	Da	ate 13	0/14	Time   8	130	Bott	les R	eceiv	ed by	<i>r</i> :									Date:	Time:
Bottles Relinquished by:		Da	ate		Time		Bott	les R	eceiv	ed by	r: /	1			A					Date:	Time:
Bottles Relinquished by:		Da	ate		Time		Bott	les R	eceiv	ed by	r:  {}	, M	<u>M</u>			M				Pate: 31.14	Time

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Lancaster Laboratories	Anal	ysis F	Requ	est /	Envir	For Grou Acc'	lance	aster : <u>/</u> 032	Labo 49	ratori タフ SF:_	es Us <u>77</u> 2096	se On Sa <u>03</u>	lv.	Nos.: No.: 1		50	16 I Cod	/ - 8 bler N	<b>ody</b> <u>0.:</u> ] <u>6</u> 78 itainer No.:_]	1 of 1
Facility Name: Pompton Lakes	Projec	t Manager:	Gary Lon	g							Ana	alyse	es R	equii	red				Comments:	And Annual Constraints (200 ST) of a 1
Facility Contact: Josh Collins	Facilit	/ Contact Pl	hone No.:	609.602.4	694															
Facility Address: Pompton Lakes Works	Job N	o.: 9267 772	20100C W	/H06 50			1													
2000 Cannonball Road	Relea	se No.:					1													
Pompton Lakes NJ 07442	PO Nu	imber: LBIC	-66380				D422)													
Sampler(s): JOSH Collins, Victoria Project Name: RAMAPO RIVER SEDIMENT SAMP				e (ASTM	(A)	(2540 G)	TOC (Lloyd Kahn)									+	- <del>-</del>			
Sample Identification	ontainers Preserv	No.	Grain Size	Hg (7471A)	Moisture	TOC (LI									Condition up	n receipt:				
SD07 30 14-RPR-20-0.0-0.5	7/30/14	1345	sw	125	None	1		x	х	х										
sD07 30 14-RPR-20-0.0- 0.5		1345	sw	500	None	1	X													
sdo7 30 14-RPR-21-0.0-0.5		1415	sw	125	None	1		x	X	x										
SD07 30 14-RPR-21-0.0- 0.5		1415	sw	500	None	1	x													
SD07 14-RPR-22-0.9-			SW	125	None	1		x	Х	Х				*****************************	972-1998 <b>-19</b> 94-1999					
S <del>D07</del> 14-RPR-22-0.0-			SW	500	None	1	x		fwlerrfeluffenn		10.000			90 <del></del>						
SD07 14-RPR-23-0.0-			SW	125	None	-1-		x	X	X	and a second second second								21 Martin 1988 (1999) - 1978 (2014) - 1978 (2014) - 1978 (2014) - 1978 (2014) - 1978 (2014) - 1978 (2014) - 1978	
SD07 14-RPR-23-0.0-			sw	500	None	1	x									_	~~~			94
SD073014-RPR-20-0.5-1.0	7 30/14	1345	SW	125	Non	-		Х	Χ											
SID073014-RPR-20-1.0-1.4	7 30/14	1345	SW	125	None	- Contraction of the Contraction		Х	Х								_	_		
Turnaround Time Requested (please circle) :	Standard		Number	of days:	8	Spe	cial I	nstru	ctior	is:		Full	Deliv	verabl	es nee	eded				
Bottles Relinquished by		Date 12	8/14	Time	30	Bott	les R	eceiv	ed by					$\overline{}$					Date:	Time:
Bottles Relinquished by	ottles Relinquished by Defendence Date Date Time Time Date Date Time Time							eceiv	ed by	:									Date:	Time:
Bottles Relinquished by:		Date		Time		Bott	les R	eceiv	ed by	r: 1				Л				$\overline{\}$	Date:	Time:
Bottles Relinquished by:		Date		Time		Bott	les R	eceiv	ed by	": 1 N	$\checkmark$	/	- //	m					Pates I. M	Time:20

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Laboratories						Acc	t: 070	032		SF	20960 n rece		CR N	0::159 2:5	055	°C	Coole	er No.	: <u>] ()   ()</u> iiner No.:	<u>)</u> t/~ 2	295
acility Name: Pompton Lakes	Project	Manager:	Gary Lon	g							Ana	lyses	s Red	quire	d			C	Comments		
acility Contact: Josh Collins	Facility	Contact P	hone No.:	609.602.	.4694		1	Ι													-
acility Address: Pompton Lakes Works	Job No	.: 9267 772	20100C W	/H06 50			1														
000 Cannonball Road	Releas	e No.:					1								5.9 1						
	PO Nu	mber: LBIC	-66380				D422)														
ompton Lakes NJ 07442 ampler(s):	 	1 1 2 2 2 1	* 1997 •				MD4		6	Ê											
roject Name: RAMAPO RIVER SEDIMENT SAM		())119( (					(ASTM		(2540 G)	Kahi				I							
		n de la seconda de seconda de la seconda de	l.	l de la compañía de la	Containers		bize	(7471A)		Lloyd											
Sample Identification	Date Collected	Time Collected	Matrix	Volume (ml)		No.	Grain Size	Hg (74	Moisture	TOC (Lloyd Kahn)								Ī	Condition u	pon receip	<b>t:</b>
D07 30 14-RPR-20-0.0-0.5	730/14	1345	sw	125	None	1		x	x	x											
D07 <u> </u>		1345	sw	500	None	1	X														
22 SD07 30 14-RPR-∰-0.0-0-5		1415	sw	125	None	1		X	x	х											
22 SD07 30 14-RPR-₩0.0-0.5		1915	sw	500	None	1	X														
SD07 14-RPR <del>/22-0.0</del> -			SW	125	None	1		X	X	X										•	
SD07 14-RPR-22-0.0		4 4	- <del>SW</del>	500	None	1	x														
SD07 14-RPR-23-0.0-			SW	125	None	<u> </u>		x	X	x											*******
5007			SW	500	None	1	x								-						
SD073014-RPR-20-0.5-110	130/14	1345	SVV	125	NORA	Į Į		X	Х										le por la Thirthead	n sen en sen En sen en sen	
SD013014-KPR-20-1.0-1.4	7 3014	1345	SW	125	Nicre			Х	Х												
		an da ser an an 1971 - An Angelan Alian an Angelana					Allena Jahren														
Turnaround Time Requested (please circle) :	Standard	) RUSH	Number	of days:	8	Spe	cial I	nstru	ction	15:		Full	)elive	rables	need	ed					
Bottles Relinquished by-	2	Date	AN	Time	30	Bott	les R	eceiv	ed by	r:				linina. List				<b>C</b>	Date:	Time:	
Bottles Relinquished by Musume		Date 3	:juj	Time	30	Bott	les R	eceiv	ed by	;		n an de ser Maria Altra	and an					C	Date:	Time:	
Bottles Relinquished by:	<u>84</u>	Date	• 1.4.4 (a)	Time		Bott	les R	eceiv	ed by	r:								E	Date:	Time:	
Bottles Relinquished by:		Date		Time	4)	Datt	D	eceiv	: (وز برما است							••••••			Date:	Time:	i. <del></del>

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<b>Cancaster</b> Laboratories	Anal	ysis f	kequ	est /	Envir	For Gro	Lanc: up No	aster .: <u>/</u>	Labo	ratorie ⊋つ	es Us 97	e Onl Sa	y mple N	os.: <u>7</u>	55	6/6	o   -	80,178	L 29579
							't: 070 der Te		erature	SF: <u>2</u> e upor			SCR N	p.: 159(	<u>S</u>	_°C		No.: <u>  (0                                    </u>	U 29519
Facility Name: Pompton Lakes	Projec	t Manager:	Gary Lon	g	<u></u>						Ana	lyse	s Rec	uired				Comments:	
Facility Contact: Josh Collins	Facility	/ Contact Pl	hone No.:	609.602.4	4694		1												
Facility Address: Pompton Lakes Works	Job No	o.: 9267 772	20100C W	H06 50															
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2000 Cannonball Road	PO Nu	mber: LBIC	-66380			•	D422)												
Pompton Lakes NJ 07442 Sampler(s):									6	î									
Project Name: RAMAPO RIVER SEDIMENT SAMPI	_ING 7/14						(ASTM		(2540 G)	Kah									
-		I		0	ontainers	. <u> </u>	Size	(7471A)		(Lloyd Kahn)								TO	trict
	Date	Time	D. d. e. turis (	Volume			ain	Hg (72	Moisture	TOC (								Conditión up	on receipt:
Sample Identification	7/30/14	Collected 1445		(ml)	Preserv	No.	U												
SD07 30 14-RPR-24-0.0-0.5	120114	1445	SW	125	None	1		X	X	X									
SD07 3() 14-RPR-24-0.0-0.5			SW	500	None		X												
SD07 <u>30</u> 14-RPR-25-0.0- <u>0</u> <u>5</u>		1515	SW	125	None		-	X	X	X									
SD07 30 14-RPR-25-0.0-0.5		1515	SW	500	None		X												
SD07 30 14-RPR-26-0.0-0.5			SW	125	None		+	X	X	X								·····	
SD07 30 14-RPR-26-0.0-0.5		1545	SW		None	1	X												
SD07 30 14-RPR-27-0.0-0.5		1130	SW	125	None			X	X	X									
SD07 30 14-RPR-27-0.0-0.5		1130	sw SW	500 X25	None None		X	X	X										
SD073014-RPR-25-0.5-0.95		1545	SAL	125	None	1		X	X										
SD073014- KPR-26-0.5-1.0		1130	SW	125	None			$\lambda$	X										
SD073014 RPR-27-0.5-1.0		\			1.9	Spe			uctior	l 1s:		Full	Deliver	ables	neede	ed			
	Standard		Number		<u> </u>	Po#			ved by	<i>,</i> .		~						Date:	Time:
Bottles Relinquished by DOM		Date 2	8714		<u>130                                    </u>				-										
Bottles Relinquished by:		Date 130	JIH	Time	30	Bott	les R	ecei	ved by	<i>ı</i> :								Date:	Time:
Bottles Relinquished by:	~	Date	- <u>F</u> 1 4	Time		Bott	les R	ecei	/ed by	<i>ı</i> :							and the second	Date:	Time:
Bottles Relinquished by:		Date		Time		Bott	les R	eceiv	/ed by	r: Bi	M		h		<u>/</u>			Date 31.11	Time

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Facility Name: Pompton Lakes	Proiect	t Manager: (	Garv Lon	q	and the second	Cool	er Te	mper	ature		n rece		<i>,</i>	quire		_°C	1		ainer No.: Comments:	<u>&gt;                                    </u>
Facility Contact: Josh Collins		Contact Pl	-	-	4694							Tyse		quire						
Facility Address: Pompton Lakes Works		o.: 9267 772																		
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Pompton Lakes NJ 07442 Sampler(s):							(ASTM D422)		) G)	hn)										
Project Name: RAMAPO RIVER SEDIMENT SAMPL	LING 7/14						(AS	A)	Moisture (2540 G)	(Lloyd Kahn)										. i
					ontainers		) Size	Hg (7471A)	ture	(Lloj									JV	Itact
Sample Identification	Date Collected	Time Collected	Matrix	Volume (ml)	Preserv	No.	Grain Size	) бн	Moist	тос		Ť							Condition upc	n receipt:
SD07 30 14-RPR-25 -0.0-0.5 - MS	7/30/14	1515	sw	125	None	1		x	х	х									MS	
SD07 30 14-RPR- 25 -0.0-0.5 - MSD	7/30/14	1515	sw	125	None	1		х	x	х									MSD	
SD07 14-RPR0.0-	ennen för liv där sokalanssporer		SW	50Q	None	1	x				nannaan oo ah dooloo			and the second		Celebore Notice Carlos	5000,000,000,000,000,000,000,000	AND THE OWNER AND ADDRESS	MSD	
SD07 30 14-RPR- 76 -0.0-0.5 -D	7/30/14	1545	sw	125	None	1		x	х	x										
SD07 30 14-RPR- 26 -0.0-0.5 -D	7/30/14	1645	sw	500	None	1	x													
Turnaround Time Requested (please circle) :	Standard	RUSH	Number	of days:	8	Spe	cial l	nstru	ctior	IS:		Full	Delive	erable	s need	led				
Bottles Relinquished by:	2	Date	28/14	Time	30	Bott	les R	eceiv	ed by	<i>'</i> :		÷							Date:	Time:
Bottles Relinquished by		Date	0/14	Time	30	Bott	les R	eceiv	ed by	<i>י</i> :									Date:	Time:
Bottles Relinquished by:	<	Date	<u></u>	Time		Bott	les R	eceiv	ed by	<i>'</i> :	/						~		Date:	Time:
Bottles Relinquished by:		Date		Time		Bott	les R	eceiv	ed by	r:	54		///	'n					Pate; 1.14	Time 20
Eurofins La	ancaster La	aboratories	Environm	ental • 242	25 New Hol	land P	ike, L	.anca	ster,	PA 1 <sup>.</sup>	7601	• (717	) 656-	2300						

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						Cool	ler Te	mper	ature	upon	recei	ipt: _		5		_°C		ontainer No.:		
Facility Name: Pompton Lakes	Project	Manager: (	Gary Lon	g									s Req					Comments	:	
Facility Contact: Josh Collins	Facility	Contact Pl	none No.:	609.602.4	4694					Τ										
Facility Address: Pompton Lakes Works	Job No	o.: 9267 772	0100C W	H06 50																
	Releas	e No.:																		
2000 Cannonball Road Pompton Lakes NJ 07442	PO Nu	mber: LBIO	-66380																	
Sampler(s):																				
Project Name: RAMAPO RIVER SEDIMENT SAMPL	ING 7/14						٦ آ	(5310 C)											,	
	Date Collected	Time Collected	Matrix	C Volume (ml)	Containers Preserv	No.	Hg (7470A)	TOC (53										Condition u	<u>pon receipt:</u>	t
SDW07 3○ 14-FB-3	7/30/14		ww	250	HNO3	1	х													
SDW07 30 14-FB-3	7/30/14	1800	ww	40	НЗРО4	2		x												
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Bottles Relinquished by:		Date		Time		Bott	les R	eceiv	ed by	1 1 1	M	$\square$	hn					Pate: 17-31.1		20

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Lancaster Laboratories Environmental

# Client: Dupont

# Sample Administration **Receipt Documentation Log**

Doc Log ID:

21996

Group Number(s): 1492797

			Receipt Information		
Delivery Method:	Fed Ex		Arrival Timestamp:	<u>07/31/2014</u>	9:20
Number of Packages:	<u>2</u>		Number of Projects:	<u>1</u>	
State/Province of Origin:	NJ				
	Arriv	val Con	dition Summary		
Shipping Container Sealed:		<u>Yes</u>	Total Trip Blank Qty:		<u>0</u>
Custody Seal Present:		Yes	Trip Blank Type:		<u>N/A</u>
Custody Seal Intact:		<u>Yes</u>	Air Quality Samples Pre	sent:	<u>No</u>
Samples Chilled:		<u>Yes</u>	Air Quality Flow Control	lers Present:	<u>N/A</u>
Paperwork Enclosed:		<u>Yes</u>	Flow Controller Quantity	<u>/:</u>	<u>0</u>
Samples Intact:		<u>Yes</u>	Air Quality Returns:		<u>N/A</u>
Missing Samples:		<u>No</u>			
Extra Samples:		<u>No</u>			
Discrepancy in Container Q	ty on COC:	No			
Sample IDs on COC match	Containers:	<u>Yes</u>			
Sample Date/Times match	COC:	<u>Yes</u>			
VOA Vial Headspace $\geq$ 6mr	n:	<u>N/A</u>			
VOA IDs ( $\geq$ 6mm):		<u>N/A</u>			
Unpacked by Brandy Barclay	/ (2299) at 11:24	4 on 07/3 <sup>-</sup>	1/2014		

# Chilled Details

Thermometer Types: DT = Digital (Temp. Bottle)			IR = Infrared (Surface Temp)			All Temperatures in °C.		
			· ·				<u>Samples</u> Collected Same	
<u>Cooler #</u>	Thermometer ID	Corrected Temp	<u>Therm. Type</u>	Ice Type	Ice Present?	Ice Container	Day as Receipt?	Elevated Temp?
1	DT146	0.5	DT	Wet	Y	Bagged	Ν	Ν
2	DT146	0.8	DT	Wet	Y	Bagged	Ν	Ν

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### Lancaster Laboratories Environmental

# **Explanation of Symbols and Abbreviations**

The following defines common symbols and abbreviations used in reporting technical data:

RL	Reporting Limit	BMQL	Below Minimum Quantitation Level
N.D.	none detected	MPN	Most Probable Number
TNTC	Too Numerous To Count	CP Units	cobalt-chloroplatinate units
IU	International Units	NTU	nephelometric turbidity units
umhos/cm	micromhos/cm	ng	nanogram(s)
С	degrees Celsius	F	degrees Fahrenheit
meq	milliequivalents	lb.	pound(s)
g	gram(s)	kg	kilogram(s)
μg	microgram(s)	mg	milligram(s)
mL	milliliter(s)	L	liter(s)
m3	cubic meter(s)	μL	microliter(s)
		pg/L	picogram/liter

- < less than The number following the sign is the <u>limit of quantitation</u>, the smallest amount of analyte which can be reliably determined using this specific test.
- > greater than
- **ppm** parts per million One ppm is equivalent to one milligram per kilogram (mg/kg), or one gram per million grams. For aqueous liquids, ppm is usually taken to be equivalent to milligrams per liter (mg/l), because one liter of water has a weight very close to a kilogram. For gases or vapors, one ppm is equivalent to one microliter per liter of gas.
- ppb parts per billion

#### **Dry weight basis** Results printed under this heading have been adjusted for moisture content. This increases the analyte weight concentration to approximate the value present in a similar sample without moisture. All other results are reported on an as-received basis.

Data Qualifiers:

C - result confirmed by reanalysis.

- J estimated value The result is  $\geq$  the Method Detection Limit (MDL) and < the Limit of Quantitation (LOQ).
- U.S. EPA CLP Data Qualifiers:

# Organic Qualifiers

- A TIC is a possible aldol-condensation product
- B Analyte was also detected in the blank
- C Pesticide result confirmed by GC/MS
- D Compound quantitated on a diluted sample
- E Concentration exceeds the calibration range of the instrument
- **N** Presumptive evidence of a compound (TICs only)
- P Concentration difference between primary and confirmation columns >25%
- U Compound was not detected
- **X,Y,Z** Defined in case narrative

# Inorganic Qualifiers

- **B** Value is  $\langle CRDL, but \geq IDL$
- E Estimated due to interference
- M Duplicate injection precision not met
- N Spike sample not within control limits
- S Method of standard additions (MSA) used for calculation
- U Compound was not detected
- W Post digestion spike out of control limits
- \* Duplicate analysis not within control limits
- + Correlation coefficient for MSA < 0.995

# Analytical test results meet all requirements of NELAC unless otherwise noted under the individual analysis.

Measurement uncertainty values, as applicable, are available upon request.

Tests results relate only to the sample tested. Clients should be aware that a critical step in a chemical or microbiological analysis is the collection of the sample. Unless the sample analyzed is truly representative of the bulk of material involved, the test results will be meaningless. If you have questions regarding the proper techniques of collecting samples, please contact us. We cannot be held responsible for sample integrity, however, unless sampling has been performed by a member of our staff. This report shall not be reproduced except in full, without the written approval of the laboratory.

Times are local to the area of activity. Parameters listed in the 40 CFR part 136 Table II as "analyze immediately" are not performed within 15 minutes.

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# ANALYTICAL RESULTS

Prepared by:

Eurofins Lancaster Laboratories Environmental 2425 New Holland Pike Lancaster, PA 17601 Prepared for:

CRG-E.I.DuPont de Nemours & Co URS Corporation Iron Hill Corporate Center 4051 Ogletown Road, Suite 300 Newark DE 19713

August 27, 2014

# Project: POM - RAMAPO RIVER SEDIMENT SAMPLING

Submittal Date: 08/01/2014 Group Number: 1493166 SDG: POM23 PO Number: LBIO-66380 State of Sample Origin: NJ

Client Sample Description SD073114-RPR-31-0.0-0.5 Sediment SD073114-RPR-32-0.0-0.5 Sediment SD073114-RPR-33-0.0-0.5 Sediment SD073114-RPR-34-0.0-0.5 Sediment SD073114-RPR-31-0.5-0.9 Sediment SD073114-RPR-32-0.5-1.0 Sediment SD073114-RPR-34-0.5-0.75 Sediment SD073114-RPR-21-0.0-0.5 Sediment SD073114-RPR-21-0.5-1.0 Sediment SD073114-RPR-21-0.5-1.0 Sediment SD073114-RPR-21-0.5-1.0 Sediment SD073114-RPR-21-0.5-1.0 Sediment SD073114-RPR-21-0.5-1.0 Sediment SD073114-RPR-21-0.5-0.9 Sediment

# Lancaster Labs (LL) #

The specific methodologies used in obtaining the enclosed analytical results are indicated on the Laboratory Sample Analysis Record.

1 COPY TO Data Package Group





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Respectfully Submitted,

Nancy lan Bornhow

Nancy Jean Bornholm Principal Specialist

(717) 556-7250



# **Analysis Report**

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# Sample Description: SD073114-RPR-31-0.0-0.5 Sediment RAMAPO RIVER SEDIMENT SAMPLING 7/14

# LL Sample # SW 7552069 LL Group # 1493166 Account # 07032

# Project Name: POM - RAMAPO RIVER SEDIMENT SAMPLING

Collected: 07/31/2014 11:00 by JC

Submitted: 08/01/2014 09:20 Reported: 08/27/2014 08:38 CRG-E.I.DuPont de Nemours & Co URS Corporation Iron Hill Corporate Center 4051 Ogletown Road, Suite 300 Newark DE 19713

R3100 SDG#: POM23-01

CAT No.	Analysis Name		CAS Number	Dry Result	Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
Metal	s	SW-846 747	'1A	mg/kg	mg/kg	mg/kg	
00159	Mercury		7439-97-6	0.196	0.0130	0.130	1
Wet C	hemistry	Lloyd Kahn	modified	mg/kg	mg/kg	mg/kg	
00383	TOC by Lloyd Kahn		n.a.	2,260	286	859	1
Wet C	hemistry	ASTM D422		% Passing	% Passing	% Passing	
07103	75 mm		n.a.	100	0.50	0.50	1
07103	37.5 mm		n.a.	100	0.50	0.50	1
07103	19 mm		n.a.	100	0.50	0.50	1
07103	4.75 mm		n.a.	96.9	0.50	0.50	1
07103	3.35 mm		n.a.	93.4	0.50	0.50	1
07103	2.36 mm		n.a.	87.1	0.50	0.50	1
07103	1.18 mm		n.a.	61.8	0.50	0.50	1
07103	0.6 mm		n.a.	31.9	0.50	0.50	1
07103	0.3 mm		n.a.	15.4	0.50	0.50	1
07103	0.15 mm		n.a.	6.5	0.50	0.50	1
07103	0.075 mm		n.a.	3.0	0.50	0.50	1
07103	0.064 mm		n.a.	3.0	0.50	0.50	1
07103	0.05 mm		n.a.	3.0	0.50	0.50	1
07103	0.02 mm		n.a.	1.0	0.50	0.50	1
07103	0.005 mm		n.a.	1.0	0.50	0.50	1
07103	0.002 mm		n.a.	1.0	0.50	0.50	1
07103	0.001 mm		n.a.	1.0	0.50	0.50	1
Wet C	hemistry	SM 2540 G-	1997	%	8	8	
00111	Moisture		n.a.	27.0	0.50	0.50	1
	Moisture represents 103 - 105 degrees C as-received basis.						

### General Sample Comments

State of New Jersey Lab Certification No. PA011

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

# Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
00159	Mercury	SW-846 7471A	1	142165711002	08/05/2014 18	:33 Katlin N Cataldi	1
05711	SW SW846 Hg Digest	SW-846 7471A modified	1	142165711002	08/05/2014 10	:37 Christopher M Klumpp	1
00383	TOC by Lloyd Kahn	Lloyd Kahn modified	1	14217049531A	08/06/2014 00	:49 James S Mathiot	1
07103	Grain Size to 1 um	ASTM D422	1	14214710301A	08/02/2014 10	:45 Daniel S Smith	1
00111	Moisture	SM 2540 G-1997	1	14219820001A	08/07/2014 19	:06 Scott W Freisher	1



**Analysis Report** 

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# Sample Description: SD073114-RPR-32-0.0-0.5 Sediment RAMAPO RIVER SEDIMENT SAMPLING 7/14

# LL Sample # SW 7552070 LL Group # 1493166 Account # 07032

### Project Name: POM - RAMAPO RIVER SEDIMENT SAMPLING

Collected: 07/31/2014 11:30 by JC

Submitted: 08/01/2014 09:20 Reported: 08/27/2014 08:38 CRG-E.I.DuPont de Nemours & Co URS Corporation Iron Hill Corporate Center 4051 Ogletown Road, Suite 300 Newark DE 19713

R3200 SDG#: POM23-02

CAT No.	Analysis Name	CAS Numbe	Dry er Result	Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
Metal	s	SW-846 7471A	mg/kg	mg/kg	mg/kg	
00159	Mercury	7439-97-0	5 0.169 J	0.0194	0.194	1
Wet C	hemistry	Lloyd Kahn modifi	ed mg/kg	mg/kg	mg/kg	
00383	TOC by Lloyd Kahn	n.a.	19,700	850	2,550	1
Wet C	hemistry	ASTM D422	% Passing	% Passing	% Passing	
07103	75 mm	n.a.	100	0.50	0.50	1
07103	37.5 mm	n.a.	100	0.50	0.50	1
07103	19 mm	n.a.	100	0.50	0.50	1
07103	4.75 mm	n.a.	87.9	0.50	0.50	1
07103	3.35 mm	n.a.	84.4	0.50	0.50	1
07103	2.36 mm	n.a.	81.8	0.50	0.50	1
07103	1.18 mm	n.a.	77.9	0.50	0.50	1
07103	0.6 mm	n.a.	71.7	0.50	0.50	1
07103	0.3 mm	n.a.	52.7	0.50	0.50	1
07103	0.15 mm	n.a.	27.0	0.50	0.50	1
07103	0.075 mm	n.a.	16.1	0.50	0.50	1
07103	0.064 mm	n.a.	14.0	0.50	0.50	1
07103	0.05 mm	n.a.	11.0	0.50	0.50	1
07103	0.02 mm	n.a.	7.0	0.50	0.50	1
07103	0.005 mm	n.a.	3.0	0.50	0.50	1
07103	0.002 mm	n.a.	2.0	0.50	0.50	1
07103	0.001 mm	n.a.	2.0	0.50	0.50	1
Wet C	hemistry	SM 2540 G-1997	8	8	8	
00111	Moisture	n.a.	49.9	0.50	0.50	1
	Moisture represents	s the loss in weight of Celsius. The moisture re	the sample after o	oven drying at		

### General Sample Comments

State of New Jersey Lab Certification No. PA011

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

# Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
00159	Mercury	SW-846 7471A	1	142165711002	08/05/2014 18:3	5 Katlin N Cataldi	1
05711	SW SW846 Hg Digest	SW-846 7471A modified	1	142165711002	08/05/2014 10:3	7 Christopher M Klumpp	1
00383	TOC by Lloyd Kahn	Lloyd Kahn modified	1	14217049531A	08/06/2014 00:5	7 James S Mathiot	1
07103	Grain Size to 1 um	ASTM D422	1	14214710301A	08/02/2014 10:4	5 Daniel S Smith	1
00111	Moisture	SM 2540 G-1997	1	14219820001A	08/07/2014 19:0	5 Scott W Freisher	1



# **Analysis Report**

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# Sample Description: SD073114-RPR-33-0.0-0.5 Sediment RAMAPO RIVER SEDIMENT SAMPLING 7/14

# LL Sample # SW 7552071 LL Group # 1493166 Account # 07032

### Project Name: POM - RAMAPO RIVER SEDIMENT SAMPLING

Collected: 07/31/2014 12:30 by JC

Submitted: 08/01/2014 09:20 Reported: 08/27/2014 08:38 CRG-E.I.DuPont de Nemours & Co URS Corporation Iron Hill Corporate Center 4051 Ogletown Road, Suite 300 Newark DE 19713

R3300 SDG#: POM23-03

CAT No.	Analysis Name		CAS Number	Dry Result	Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
Metal	s	SW-846 747	'1A	mg/kg	mg/kg	mg/kg	
00159	Mercury		7439-97-6	0.0643 J	0.0115	0.115	1
Wet C	hemistry	Lloyd Kahr	n modified	mg/kg	mg/kg	mg/kg	
00383	TOC by Lloyd Kahn		n.a.	264 J	124	372	1
Wet C	hemistry	ASTM D422		% Passing	% Passing	% Passing	
07103	75 mm		n.a.	100	0.50	0.50	1
07103	37.5 mm		n.a.	100	0.50	0.50	1
07103	19 mm		n.a.	90.6	0.50	0.50	1
07103	4.75 mm		n.a.	47.2	0.50	0.50	1
07103	3.35 mm		n.a.	39.3	0.50	0.50	1
07103	2.36 mm		n.a.	34.7	0.50	0.50	1
	1.18 mm		n.a.	30.3	0.50	0.50	1
07103	0.6 mm		n.a.	27.1	0.50	0.50	1
07103	0.3 mm		n.a.	17.0	0.50	0.50	1
07103	0.15 mm		n.a.	4.9	0.50	0.50	1
	0.075 mm		n.a.	2.2	0.50	0.50	1
07103	0.064 mm		n.a.	2.0	0.50	0.50	1
07103	0.05 mm		n.a.	1.0	0.50	0.50	1
07103	0.02 mm		n.a.	1.0	0.50	0.50	1
07103	0.005 mm		n.a.	1.0	0.50	0.50	1
07103	0.002 mm		n.a.	1.0	0.50	0.50	1
07103	0.001 mm		n.a.	1.0	0.50	0.50	1
Wet C	hemistry	SM 2540 G-	1997	8	%	8	
00111	Moisture		n.a.	19.4	0.50	0.50	1
	Moisture represents 103 - 105 degrees C as-received basis.						

### General Sample Comments

State of New Jersey Lab Certification No. PA011

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

### Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time		Analyst	Dilution Factor
00159	Mercury	SW-846 7471A	1	142165711002	08/05/2014 18	8:37	Katlin N Cataldi	1
05711	SW SW846 Hg Digest	SW-846 7471A modified	1	142165711002	08/05/2014 10	0:37	Christopher M Klumpp	1
00383	TOC by Lloyd Kahn	Lloyd Kahn modified	1	14217049531A	08/06/2014 02	2:27	James S Mathiot	1
07103	Grain Size to 1 um	ASTM D422	1	14214710301A	08/02/2014 10	):45	Daniel S Smith	1
00111	Moisture	SM 2540 G-1997	1	14219820001A	08/07/2014 19	9:06	Scott W Freisher	1



# **Analysis Report**

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# Sample Description: SD073114-RPR-34-0.0-0.5 Sediment RAMAPO RIVER SEDIMENT SAMPLING 7/14

# LL Sample # SW 7552072 LL Group # 1493166 Account # 07032

# Project Name: POM - RAMAPO RIVER SEDIMENT SAMPLING

Collected: 07/31/2014 13:30 by JC

Submitted: 08/01/2014 09:20 Reported: 08/27/2014 08:38 CRG-E.I.DuPont de Nemours & Co URS Corporation Iron Hill Corporate Center 4051 Ogletown Road, Suite 300 Newark DE 19713

R3400 SDG#: POM23-04

CAT No.	Analysis Name		CAS Number	Dry Result	Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor		
Metal	S	SW-846 747	1A	mg/kg	mg/kg	mg/kg			
00159	Mercury		7439-97-6	0.0353 J	0.0134	0.134	1		
Wet C	hemistry	Lloyd Kahn	modified	mg/kg	mg/kg	mg/kg			
00383	TOC by Lloyd Kahn		n.a.	1,540	301	902	1		
Wet C	hemistry	ASTM D422		% Passing	% Passing	% Passing			
07103	75 mm		n.a.	100	0.50	0.50	1		
07103	37.5 mm		n.a.	100	0.50	0.50	1		
07103	19 mm		n.a.	100	0.50	0.50	1		
07103	4.75 mm		n.a.	98.9	0.50	0.50	1		
07103	3.35 mm		n.a.	96.7	0.50	0.50	1		
07103	2.36 mm		n.a.	94.8	0.50	0.50	1		
07103	1.18 mm		n.a.	92.1	0.50	0.50	1		
07103	0.6 mm		n.a.	82.6	0.50	0.50	1		
07103	0.3 mm		n.a.	80.8	0.50	0.50	1		
07103	0.15 mm		n.a.	78.7	0.50	0.50	1		
07103	0.075 mm		n.a.	77.7	0.50	0.50	1		
07103	0.064 mm		n.a.	77.0	0.50	0.50	1		
07103	0.05 mm		n.a.	76.0	0.50	0.50	1		
07103	0.02 mm		n.a.	64.0	0.50	0.50	1		
07103	0.005 mm		n.a.	25.0	0.50	0.50	1		
07103	0.002 mm		n.a.	13.0	0.50	0.50	1		
07103	0.001 mm		n.a.	7.0	0.50	0.50	1		
Wet C	hemistry	SM 2540 G-	1997	%	%	8			
00111	Moisture		n.a.	26.8	0.50	0.50	1		
	Moisture represents the loss in weight of the sample after oven drying at 103 - 105 degrees Celsius. The moisture result reported is on an as-received basis.								

### General Sample Comments

State of New Jersey Lab Certification No. PA011

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

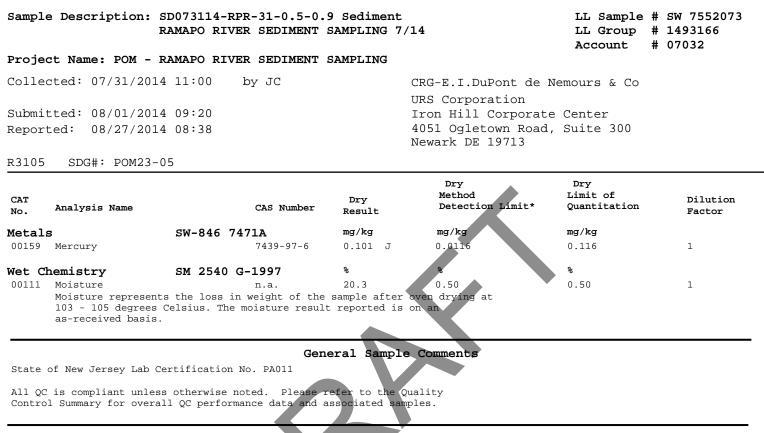
### Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
00159	Mercury	SW-846 7471A	1	142165711002	08/05/2014 18:3	9 Katlin N Cataldi	1
05711	SW SW846 Hg Digest	SW-846 7471A modified	1	142165711002	08/05/2014 10:3	7 Christopher M Klumpp	1
00383	TOC by Lloyd Kahn	Lloyd Kahn modified	1	14217049531A	08/06/2014 01:2	2 James S Mathiot	1
07103	Grain Size to 1 um	ASTM D422	1	14214710301A	08/02/2014 10:4	5 Daniel S Smith	1
00111	Moisture	SM 2540 G-1997	1	14219820001A	08/07/2014 19:0	6 Scott W Freisher	1



# **Analysis Report**

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#### Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
00159	Mercury	SW-846 7471A	1	142165711002	08/05/2014 18:41	Katlin N Cataldi	1
05711	SW SW846 Hg Digest	SW-846 7471A modified	1	142165711002	08/05/2014 10:37	Christopher M Klumpp	1
00111	Moisture	SM 2540 G-1997	1	14219820001A	08/07/2014 19:06	Scott W Freisher	1



# **Analysis Report**

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1	SD073114-RPR-32-0.5-1.0 RAMAPO RIVER SEDIMENT S RAMAPO RIVER SEDIMENT S	SAMPLING 7		LL Sample # LL Group # Account #					
Collected: 07/31/2014 11:30 by JC CRG-E.I.DuPont de Nemours & Co URS Corporation Submitted: 08/01/2014 09:20 Iron Hill Corporate Center Reported: 08/27/2014 08:38 4051 Ogletown Road, Suite 300 Newark DE 19713 R3205 SDG#: POM23-06									
CAT No. Analysis Name	CAS Number	Dry Result	Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor				
Metals	SW-846 7471A	mg/kg	mg/kg	mg/kg					
00159 Mercury	7439-97-6	0.0123 U	0.0123	0.123	1				
Wet Chemistry	SM 2540 G-1997	8	8	8					
	n.a. s the loss in weight of the Celsius. The moisture result			0.50	1				
		efer to the (							

## Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
00159	Mercury	SW-846 7471A	1	142165711002	08/05/2014 18:43	Katlin N Cataldi	1
05711	SW SW846 Hg Digest	SW-846 7471A modified	1	142165711002	08/05/2014 10:37	Christopher M Klumpp	1
00111	Moisture	SM 2540 G-1997	1	14219820001A	08/07/2014 19:06	Scott W Freisher	1



# **Analysis Report**

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	SD073114-RPR-34-0.5-0. RAMAPO RIVER SEDIMENT RAMAPO RIVER SEDIMENT	SAMPLING 7/		LL Sample # LL Group # Account #						
Collected: 07/31/2014	4 13:30 by JC		CRG-E.I.DuPont de I	Nemours & Co						
Submitted: 08/01/2014 09:20URS CorporationReported: 08/27/2014 08:38Iron Hill Corporate CenterNewark DE 19713										
R3405 SDG#: POM23-0	7									
CAT No. Analysis Name	CAS Number	Dry Result	Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor					
Metals	SW-846 7471A	mg/kg	mg/kg	mg/kg						
00159 Mercury	7439-97-6	0.0122 U	0.0122	0.122	1					
Wet Chemistry	SM 2540 G-1997	8	8	8						
	n.a. s the loss in weight of the Celsius. The moisture result			0.50	1					
			uality							

### Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Ti	me	Analyst	Dilution Factor
00159	Mercury	SW-846 7471A	1	142165711002	08/05/2014	19:30	Katlin N Cataldi	1
05711	SW SW846 Hg Digest	SW-846 7471A modified	1	142165711002	08/05/2014	10:37	Christopher M Klumpp	1
00111	Moisture	SM 2540 G-1997	1	14219820001A	08/07/2014	19:06	Scott W Freisher	1



**Analysis Report** 

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Sample Description: SI Ri		-FB-4 Blank W VER SEDIMENT		14	LL Group	# WW 7552076 # 1493166 # 07032
Project Name: POM - R	AMAPO RI	VER SEDIMENT	SAMPLING			
Collected: 07/31/2014	15:00	by JC		CRG-E.I.DuPont de Ne URS Corporation	mours & Co	
Submitted: 08/01/2014	09:20			Iron Hill Corporate	Center	
Reported: 08/27/2014	08:38			4051 Ogletown Road, Newark DE 19713	Suite 300	
RFB-4 SDG#: POM23-08	8FB					
CAT No. Analysis Name		CAS Number	As Received Result	As Received Method Detection Limit*	As Received Limit of Quantitation	Dilution Factor
Metals	SW-846	7470A	mg/l	mg/l	mg/l	
00259 Mercury		7439-97-6	0.000060 U	0.000060	0.00020	1
Wet Chemistry	SM 5310	C-2000	mg/l	mg/l	mg/l	
00273 Total Organic Carbo	n	n.a.	0.97 J	0.50	1.0	1

General Sample Comments

State of New Jersey Lab Certification No. PA011

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

	Laboratory Sample Analysis Record										
CAT No.	Analysis Name	Method	Trial	# Batch#	Analysis Date and Ti	me	Analyst	Dilution Factor			
00259	Mercury	SW-846 7470A	1	142165713001	08/05/2014	07:35	Damary Valentin	1			
05713	WW SW846 Hg Digest	SW-846 7470A	1	142165713001	08/05/2014	00:10	Annamaria Kuhns	1			
00273	Total Organic Carbon	SM 5310 C-2000		14217049501A	08/05/2014	05:47	James S Mathiot	1			



# **Analysis Report**

4051 Ogletown Road, Suite 300

Newark DE 19713

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Sample Description:	SD073114-RP RAMAPO RIVE				LL Sample LL Group Account	
Project Name: POM -	RAMAPO RIVE	R SEDIMENT	SAMPLING			
Collected: 07/31/201	4 08:45	by JC		CRG-E.I.DuPont de Nem	nours & Co	
				URS Corporation		
Submitted: 08/01/201	4 09:20			Iron Hill Corporate C	Center	

R2100 SDG#: POM23-09

Reported: 08/27/2014 08:38

CAT No.	Analysis Name		CAS Number	Dry Result	Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
Metal	S	SW-846 747	/1A	mg/kg	mg/kg	mg/kg	
00159	Mercury		7439-97-6	3.31	0.0580	0.580	2
Wet Cl	hemistry	Lloyd Kahr	n modified	mg/kg	mg/kg	mg/kg	
00383	TOC by Lloyd Kahn		n.a.	31,600	2,740	8,230	1
Wet Cl	hemistry	ASTM D422		% Passing	% Passing	% Passing	
07103	75 mm		n.a.	100	0.50	0.50	1
07103	37.5 mm		n.a.	100	0.50	0.50	1
07103	19 mm		n.a.	100	0.50	0.50	1
07103	4.75 mm		n.a.	97.5	0.50	0.50	1
07103	3.35 mm		n.a.	95.6	0.50	0.50	1
07103	2.36 mm		n.a.	92.0	0.50	0.50	1
07103	1.18 mm		n.a.	89.5	0.50	0.50	1
07103	0.6 mm		n.a.	87.6	0.50	0.50	1
07103	0.3 mm		n.a.	84.2	0.50	0.50	1
07103	0.15 mm		n.a.	73.6	0.50	0.50	1
07103	0.075 mm		n.a.	49.1	0.50	0.50	1
07103	0.064 mm		n.a.	45.0	0.50	0.50	1
07103	0.05 mm		n.a.	38.0	0.50	0.50	1
07103	0.02 mm		n.a.	22.0	0.50	0.50	1
07103	0.005 mm		n.a.	7.0	0.50	0.50	1
07103	0.002 mm		n.a.	5.0	0.50	0.50	1
07103	0.001 mm		n.a.	3.0	0.50	0.50	1
Wet C	hemistry	SM 2540 G-	-1997	8	8	%	
00111	- Moisture		n.a.	66.5	0.50	0.50	1
	Moisture represents 103 - 105 degrees ( as-received basis.		weight of the	sample after o	ven drying at		

#### General Sample Comments

State of New Jersey Lab Certification No. PA011

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

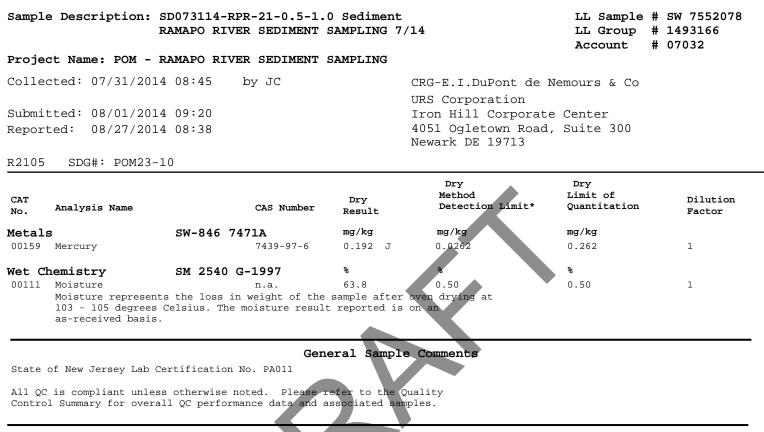
## Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
00159	Mercury	SW-846 7471A	1	142165711002	08/05/2014 19:42	Katlin N Cataldi	2
05711	SW SW846 Hg Digest	SW-846 7471A modified	1	142165711002	08/05/2014 10:37	Christopher M Klumpp	1
00383	TOC by Lloyd Kahn	Lloyd Kahn modified	1	14217049531A	08/06/2014 01:30	James S Mathiot	1
07103	Grain Size to 1 um	ASTM D422	1	14214710301A	08/02/2014 10:45	Daniel S Smith	1
00111	Moisture	SM 2540 G-1997	1	14219820001A	08/07/2014 19:06	Scott W Freisher	1



# **Analysis Report**

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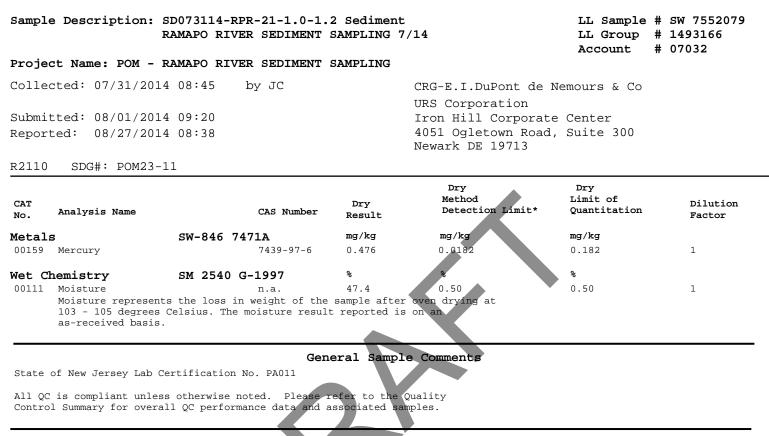
#### Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
00159	Mercury	SW-846 7471A	1	142165711002	08/05/2014 19:34	Katlin N Cataldi	1
05711	SW SW846 Hg Digest	SW-846 7471A modified	1	142165711002	08/05/2014 10:37	Christopher M Klumpp	1
00111	Moisture	SM 2540 G-1997	1	14219820001A	08/07/2014 19:06	Scott W Freisher	1



# **Analysis Report**

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#### Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
00159	Mercury	SW-846 7471A	1	142165711002	08/05/2014 19:36	Katlin N Cataldi	1
05711	SW SW846 Hg Digest	SW-846 7471A modified	1	142165711002	08/05/2014 10:37	Christopher M Klumpp	1
00111	Moisture	SM 2540 G-1997	1	14219820001A	08/07/2014 19:06	Scott W Freisher	1



# **Analysis Report**

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## Sample Description: SD073114-RPR-23-0.0-0.5 Sediment RAMAPO RIVER SEDIMENT SAMPLING 7/14 LL Sample # SW 7552080 LL Group # 1493166 Account # 07032 Project Name: POM - RAMAPO RIVER SEDIMENT SAMPLING CRG-E.I.DuPont de Nemours & Co Collected: 07/31/2014 09:15 by JC CRG-E.I.DuPont de Nemours & Co

Submitted: 08/01/2014 09:20 Reported: 08/27/2014 08:38 URS Corporation Iron Hill Corporate Center 4051 Ogletown Road, Suite 300 Newark DE 19713

R2300 SDG#: POM23-12

CAT No.	Analysis Name		CAS Number	Dry Result	Dry Method Detection Limit*	Dry Limit of Quantitation	Dilution Factor
Metal	s	SW-846 747	1A	mg/kg	mg/kg	mg/kg	
00159	Mercury		7439-97-6	1.86	0.0349	0.349	1
Wet C	hemistry	Lloyd Kahn	modified	mg/kg	mg/kg	mg/kg	
00383	TOC by Lloyd Kahn		n.a.	46,400	2,680	8,030	1
Wet C	hemistry	ASTM D422		% Passing	% Passing	% Passing	
07103	75 mm		n.a.	100	0.50	0.50	1
07103	37.5 mm		n.a.	100	0.50	0.50	1
07103	19 mm		n.a.	99.7	0.50	0.50	1
07103	4.75 mm		n.a.	95.5	0.50	0.50	1
07103	3.35 mm		n.a.	92.9	0.50	0.50	1
07103	2.36 mm		n.a.	86.7	0.50	0.50	1
07103	1.18 mm		n.a.	84.9	0.50	0.50	1
07103	0.6 mm		n.a.	83.4	0.50	0.50	1
07103	0.3 mm		n.a.	81.2	0.50	0.50	1
07103	0.15 mm		n.a.	74.8	0.50	0.50	1
07103	0.075 mm		n.a.	63.6	0.50	0.50	1
07103	0.064 mm		n.a.	62.0	0.50	0.50	1
07103	0.05 mm		n.a.	60.0	0.50	0.50	1
07103	0.02 mm		n.a.	38.0	0.50	0.50	1
07103	0.005 mm		n.a.	14.0	0.50	0.50	1
07103	0.002 mm		n.a.	7.0	0.50	0.50	1
07103	0.001 mm		n.a.	3.0	0.50	0.50	1
Wet C	hemistry	SM 2540 G-	1997	8	8	8	
00111	Moisture		n.a.	71.9	0.50	0.50	1
	Moisture represents 103 - 105 degrees C as-received basis.						

#### General Sample Comments

State of New Jersey Lab Certification No. PA011

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

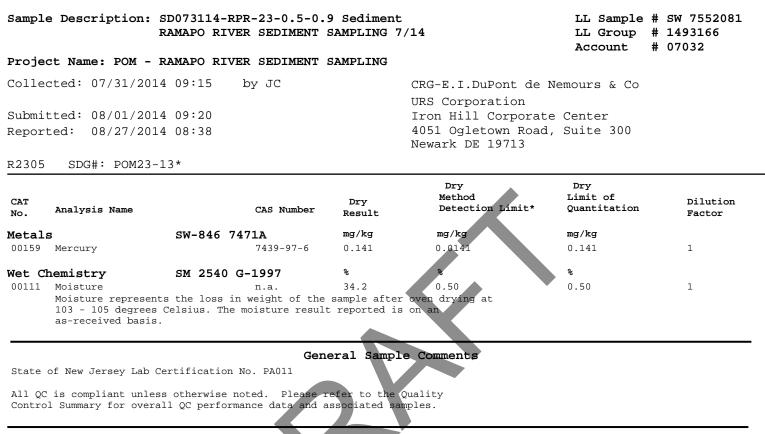
### Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
00159	Mercury	SW-846 7471A	1	142165711002	08/05/2014 19:38	Katlin N Cataldi	1
05711	SW SW846 Hg Digest	SW-846 7471A modified	1	142165711002	08/05/2014 10:37	Christopher M Klumpp	1
00383	TOC by Lloyd Kahn	Lloyd Kahn modified	1	14217049531A	08/06/2014 01:45	James S Mathiot	1
07103	Grain Size to 1 um	ASTM D422	1	14214710301A	08/02/2014 10:45	Daniel S Smith	1
00111	Moisture	SM 2540 G-1997	1	14219820001A	08/07/2014 19:06	Scott W Freisher	1



# **Analysis Report**

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#### Laboratory Sample Analysis Record

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
00159	Mercury	SW-846 7471A	1	142165711002	08/05/2014 19:40	Katlin N Cataldi	1
05711	SW SW846 Hg Digest	SW-846 7471A modified	1	142165711002	08/05/2014 10:37	Christopher M Klumpp	1
00111	Moisture	SM 2540 G-1997	1	14219820001A	08/07/2014 19:06	Scott W Freisher	1



**Analysis Report** 

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### Quality Control Summary

Client Name: CRG-E.I.DuPont de Nemours & Co Reported: 08/27/14 at 08:38 AM Group Number: 1493166

Matrix QC may not be reported if insufficient sample or site-specific QC samples were not submitted. In these situations, to demonstrate precision and accuracy at a batch level, a LCS/LCSD was performed, unless otherwise specified in the method.

All Inorganic Initial Calibration and Continuing Calibration Blanks met acceptable method criteria unless otherwise noted on the Analysis Report.

### Laboratory Compliance Quality Control

Analysis Name	Blank <u>Result</u>	Blank MDL**	Blank <u>LOO</u>	Report <u>Units</u>	LCS <u>%REC</u>	LCSD <u>%REC</u>	LCS/LCSD <u>Limits</u>	<u>RPD</u>	<u>RPD Max</u>
Batch number: 142165711002 Mercury	Sample num 0.0100 U	ber(s): 79 0.0100	552069-755 0.100	2075,755207 mg/kg	7-75520 95	81	80-120		
Batch number: 142165713001 Mercury	Sample num 0.000060 U	nber(s): 7! 0.00006 0	552076 0.00020	mg/l	92		80-120		
Batch number: 14217049501A Total Organic Carbon	Sample num 0.50 U	nber(s): 7! 0.50	552076 1.0	mg/l	107	105	91-113	1	20
Batch number: 14217049531A TOC by Lloyd Kahn	Sample num 100 U	uber(s): 79	552069-755 300	2072,755207 mg/kg	7,75520 96	80	47-143		
Batch number: 14219820001A Moisture	Sample num	uber(s): 7	552069-755	2075,755207	7-75520 100	81	99-101		

### Sample Matrix Quality Control

Unspiked (UNSPK) = the sample used in conjunction with the matrix spike Background (BKG) = the sample used in conjunction with the duplicate

Analysis Name	MS MSD	MS/MSD	RPD	BKG	DUP	DUP	Dup RPD
	<u>%REC</u> <u>%REC</u>	<u>Limits RPI</u>	<u>MAX</u>	<u>Conc</u>	<u>Conc</u>	<u>RPD</u>	<u>Max</u>
Batch number: 142165711002	Sample number(s	s): 7552069-755		077-7552081	UNSPK: P55	0983 BKG:	P550983
Mercury	111 37*	80-120 26*		0.334	0.448	29* (1)	20
Batch number: 142165713001 Mercury	Sample number(s 93 89	s): 7552076 UNS 80-120 3	SPK: P5514 20		1435 0.000060 t	J O (1)	20
Batch number: 14217049501A Total Organic Carbon	Sample number(s 113	s): 7552076 UNS 63-142	SPK: P5509	35 BKG: P55 9.3	0935 9.5	3	4
Batch number: 14217049531A	Sample number(s	s): 7552069-755	2072,7552	077,7552080	UNSPK: 755	2080 BKG:	7552080
TOC by Lloyd Kahn	81	59-125		13,000	12,100	8	15
Batch number: 14219820001A Moisture	Sample number(s	s): 7552069-755	2075,7552	077-7552081 8.1	BKG: P555 8.4	761 3	5

\*- Outside of specification

\*\*-This limit was used in the evaluation of the final result for the blank

(1) The result for one or both determinations was less than five times the LOQ.

(2) The unspiked result was more than four times the spike added.



**Analysis Report** 

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Page 2 of 2

## Quality Control Summary

Client Name: CRG-E.I.DuPont de Nemours & Co Reported: 08/27/14 at 08:38 AM Group Number: 1493166



\*- Outside of specification

\*\*-This limit was used in the evaluation of the final result for the blank

(1) The result for one or both determinations was less than five times the LOQ.

(2) The unspiked result was more than four times the spike added.

Carter Lancaster Laboratories	Ana	lysis F	Requ	est /								~							<u>-8</u> o.: <u>271</u> tainer No.: <u>1</u>	1 of 1 96 <b>29606</b>
Facility Name: Pompton Lakes	Proje	ct Manager: (	Gary Lon	g							Ana	lyse	es Re	quir	ed				Comments:	
Facility Contact: Josh Collins	Facili	ty Contact Pl	none No.:	609.602.4	1694														1	
Facility Address: Pompton Lakes Works	Job N	lo.: 9267 772	0100C W	H06 50																
	Relea	se No.:									-									
2000 Cannonball Road Pompton Lakes NJ 07442		umber: LBIC	-66380				D422)													
Sampler(s): Josh Collins, Victoria Musum a	U, Bill	Ruse					(ASTM		() 0 C	ahn)										
Project Name: RAMAPO RIVER SEDIMENT SAMPI	LING 7/14							A)	(254	(Lloyd Kahn)										
Sample Identification	Date	Time I Collected	Matrix	C Volume (ml)	ontainers Preserv	No.	Grain Size	Hg (7471A	Moisture (2540 G)	TOC (LIo									Condition upo	on receipt:
sD07 31 14-RPR-31-0.0- 0.5	7 31 14		sw	125	None	1		x	X	X							-			
SD07 31 14-RPR-31-0.0- 0,5		1100	sw	500	None		x		Ň									-	·····	
SD07 31 14-RPR-32-0.0-0.5		1130	sw	125	None	1		x	x	x										
SD07 31 14-RPR-32-0.0-0.5		1130	sw	500	None	1	x													
SD07 31 14-RPR-33-0.0- 0.5		1230	sw	125	None			x	x	x								1		/
SD07 31 14-RPR-33-0.0-0.5		1230	sw	500	None	1	x													
SD07 31 14-RPR-34-0.0-0.5		1330	SW	125	None	1		x	x	x										· ·
SD07 3 14-RPR-34-0.0-0,5		1330	sw	500	None	1	x											-		
SD073114-RPR-31-0.5-0.9		1100	SW	125	Non	1		X	Х											
SD073114-RPR-32-0.5-1.0		1130	SW	125	None	1		X	X		<b>†</b>									
SD073114-RPR-34-0.5-0.15		1330	SW	125	None	1		X	X					1				1		
	Standard	<hr/>	Number	of days:	8	Spe	cial I	nstru	ctior	ıs:		Full	Delive	erabl	es nee	ded				
Bottles Relinquished by: ADG MJGashKe		Date 130	114	Time, //.	03			eceiv	-	(									Date:	Time:
Bottles Relinquished by:		Date /	14	Time	00	Bott	les R	eceiv	ed by	/: \	, ,								Date:	Time:
Bottles Relinquished by:		Date	<u> </u>	Time				eceiv											Date:	Time:
Bottles Relinquished by:		Date		Time		Bott	les,⁄R	eceiv	edby	<sup>1</sup> :2		*							Date S()//	Time:

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Copies: White copy should accompany samples to Lancas Rageb 4 @tofe 1 The pink copy should be retained by the samplers.

Lancaster Laboratories	Anal	ysis R	lequ	est /	Envir	For Gro Acc	Lanca up No 't: 070	aster : <u>1</u> 2 )32	Laboi	ratorie <u>3</u> ] SF: <u>1</u>	es Us <u>LOL</u> 20960	se Onl 2 Sa 23	y mple N	hai	15 <u>5</u>	520	<u>} -8</u> r No.]		1 of	2 <b>9583</b>
Facility Name: Pompton Lakes	Project	: Manager: (	Gary Lon	g							Ana	alyse	s Re	quire	d		C	omments:		
Facility Contact: Josh Collins	Facility	Contact Ph	one No.:	609.602.4	1694										<b></b>					
Facility Address: Pompton Lakes Works	Job No	0.: 9267 772	0100C W	/H06 50			1			422					Í					
2000 Cannonball Road	Releas	e No.:					1			0	(4									
Pompton Lakes NJ 07442	PO Nu	mber: LBIO	-66380						40 6	ASTM	Kahi									
Sampler(s): JC V M									(25	e (1)	Yd									
Project Name: RAMAPO RIVER SEDIMENT SAMF	PLING 7/14						) (Y	10 C)	UVE	5121	Clicyd									
Sample Identification	Date Collected	Time Collected	Matrix	C Volume (ml)	ontainers Preserv	No.	Hg (7470A)	TOC (5310 C)	Moishure (2540 c)	Grain Size	TUC							ondition up	on recei	pt:
SDW07 3 14-FB-4	7/31/14	1500	ww	250	HNO3	1	x											~~~~		
SDW07 31 14-FB-4	7/31/14	1500	ww	40	H3PC4	2		x												
5D073114-RPR-21-0.0-0.5	7/31/14	0845	SW	125	None	1	X		X		X									
SD073114-RPR-21.0.0-0.5	7/31/14	0845	SW	500	None	1				Х										
SD073114 - RPR - 21-0.5-1.0	7   31   14	0845	SVV	125	None	V	X		X											
SD073114-RPR-21-1.0-1.2	7/81/14	0845	SW	125	None	1	X		X											
SID073114- RPR-23-0.0-0.5	7/31/14	0915	SW	125	None	1	X		X		×									
SD073114-RPR-23-0.5-0.9	7/31/14	0915	SW	125	None	1	$\chi$		X											
SD673114-RPR-23-0.0-0.5	7/31/14	0915	SW	500	None	۱				X										
											ļ									
Turnaround Time Requested (please circle) :	Standard		Number	of days:	8	Spe	cial I	nstru	uctior	IS:		Full	Delive	rables	need	ed				
		Date 72	8/14	Time	:45				red by								Da	ate:	Time:	
Bottles Relinquished by	<i>.</i>	Date 1	1/14	Time	00	Boti	les R	eceiv	red by	 \							D	ate:	Time:	
Bottles Relinquished by:	$\backslash$	Date	<u>_( ' '</u>	Time	<u> </u>	Bott	les R	eceiv	ed by	;: \				, <u> </u>			 Di	ate:	Time:	
Bottles Relinquished by:	$\overline{}$	Date		Time		Bott	les R	eceiv	ed by			2	~				 D	ate: 21/14	Time:	20

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Lancaster Laboratories Environmental

## Sample Administration Receipt Documentation Log

Doc Log ID:

22263

Group Number(s): 1493166

### Client: Dupont Pompton Lakes

		Delive	ery and R	eceipt Information		5.40-518.0
Delivery	/ Method:	Fed Ex		Arrival Timestamp:	08/01/2014	9:20
Number	r of Packages:	1		Number of Projects:	<u>1</u>	
State/Pr	rovince of Origin:	<u>NJ</u>				
		Arr	ival Con	dition Summary		
Shipping	g Container Sealed:		<u>Yes</u>	Total Trip Blank Qty:		<u>0</u>
Custody	/ Seal Present:		Yes	Trip Blank Type:		<u>N/A</u>
Custody	/ Seal Intact:		Yes	Air Quality Samples Pre	sent:	<u>No</u>
Sample	s Chilled:		<u>Yes</u>	Air Quality Flow Control	ers Present:	<u>N/A</u>
Paperwo	ork Enclosed:		<u>Yes</u>	Flow Controller Quantity	:	<u>0</u>
Samples	s Intact:		Yes	Air Quality Returns:		<u>N/A</u>
Missing	Samples:		<u>No</u>			
Extra Sa	amples:		<u>No</u>			
Discrepa	ancy in Container Qt	y on COC:	<u>No</u>			
Sample	IDs on COC match (	Containers:	<u>Yes</u>			
Sample	Date/Times match C	COC:	<u>Yes</u>			
VOA Via	al Headspace $\geq$ 6mm	n:	<u>N/A</u>			
VOA ID:	s ( ≥ 6mm):		<u>N/A</u>			
Unpacke	d by Wesley Miller (2	2308) at 12.4	7 on 08/01/:	2014		

Unpacked by Wesley Miller (2308) at 12:47 on 08/01/2014

## **Samples Chilled Details**

The	ermometer Types	s: DT = Dig	ital (Temp. Bottle	) IR =	Infrared (Sur	face Temp)	All Temperatu	ıres in °C.
							<u>Samples</u> Collected Same	
<u>Cooler #</u>	Thermometer ID	Corrected Temp	<u>Therm. Type</u>	<u>lce Type</u>	Ice Present?	Ice Container	Day as Receipt?	Elevated Temp?
1	DT121	1.6	DT	Wet	Y	Bagged	Ν	Ν

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#### Lancaster Laboratories Environmental

# **Explanation of Symbols and Abbreviations**

The following defines common symbols and abbreviations used in reporting technical data:

RL	Reporting Limit	BMQL	Below Minimum Quantitation Level
N.D.	none detected	MPN	Most Probable Number
TNTC	Too Numerous To Count	CP Units	cobalt-chloroplatinate units
IU	International Units	NTU	nephelometric turbidity units
umhos/cm	micromhos/cm	ng	nanogram(s)
С	degrees Celsius	F	degrees Fahrenheit
meq	milliequivalents	lb.	pound(s)
g	gram(s)	kg	kilogram(s)
μg	microgram(s)	mg	milligram(s)
mL	milliliter(s)	Ĺ	liter(s)
m3	cubic meter(s)	μL	microliter(s)
		pg/L	picogram/liter

- < less than The number following the sign is the <u>limit of quantitation</u>, the smallest amount of analyte which can be reliably determined using this specific test.
- > greater than
- **ppm** parts per million One ppm is equivalent to one milligram per kilogram (mg/kg), or one gram per million grams. For aqueous liquids, ppm is usually taken to be equivalent to milligrams per liter (mg/l), because one liter of water has a weight very close to a kilogram. For gases or vapors, one ppm is equivalent to one microliter per liter of gas.
- ppb parts per billion

#### **Dry weight basis** Results printed under this heading have been adjusted for moisture content. This increases the analyte weight concentration to approximate the value present in a similar sample without moisture. All other results are reported on an as-received basis.

Data Qualifiers:

C - result confirmed by reanalysis.

- J estimated value The result is  $\geq$  the Method Detection Limit (MDL) and < the Limit of Quantitation (LOQ).
- U.S. EPA CLP Data Qualifiers:

### Organic Qualifiers

- A TIC is a possible aldol-condensation product
- B Analyte was also detected in the blank
- C Pesticide result confirmed by GC/MS
- D Compound quantitated on a diluted sample
- E Concentration exceeds the calibration range of the instrument
- **N** Presumptive evidence of a compound (TICs only)
- P Concentration difference between primary and confirmation columns >25%
- U Compound was not detected
- **X,Y,Z** Defined in case narrative

### Inorganic Qualifiers

- **B** Value is  $\langle CRDL, but \geq IDL$
- E Estimated due to interference
- M Duplicate injection precision not met
- N Spike sample not within control limits
- S Method of standard additions (MSA) used for calculation
- U Compound was not detected
- W Post digestion spike out of control limits
- \* Duplicate analysis not within control limits
- + Correlation coefficient for MSA < 0.995

### Analytical test results meet all requirements of NELAC unless otherwise noted under the individual analysis.

Measurement uncertainty values, as applicable, are available upon request.

Tests results relate only to the sample tested. Clients should be aware that a critical step in a chemical or microbiological analysis is the collection of the sample. Unless the sample analyzed is truly representative of the bulk of material involved, the test results will be meaningless. If you have questions regarding the proper techniques of collecting samples, please contact us. We cannot be held responsible for sample integrity, however, unless sampling has been performed by a member of our staff. This report shall not be reproduced except in full, without the written approval of the laboratory.

Times are local to the area of activity. Parameters listed in the 40 CFR part 136 Table II as "analyze immediately" are not performed within 15 minutes.

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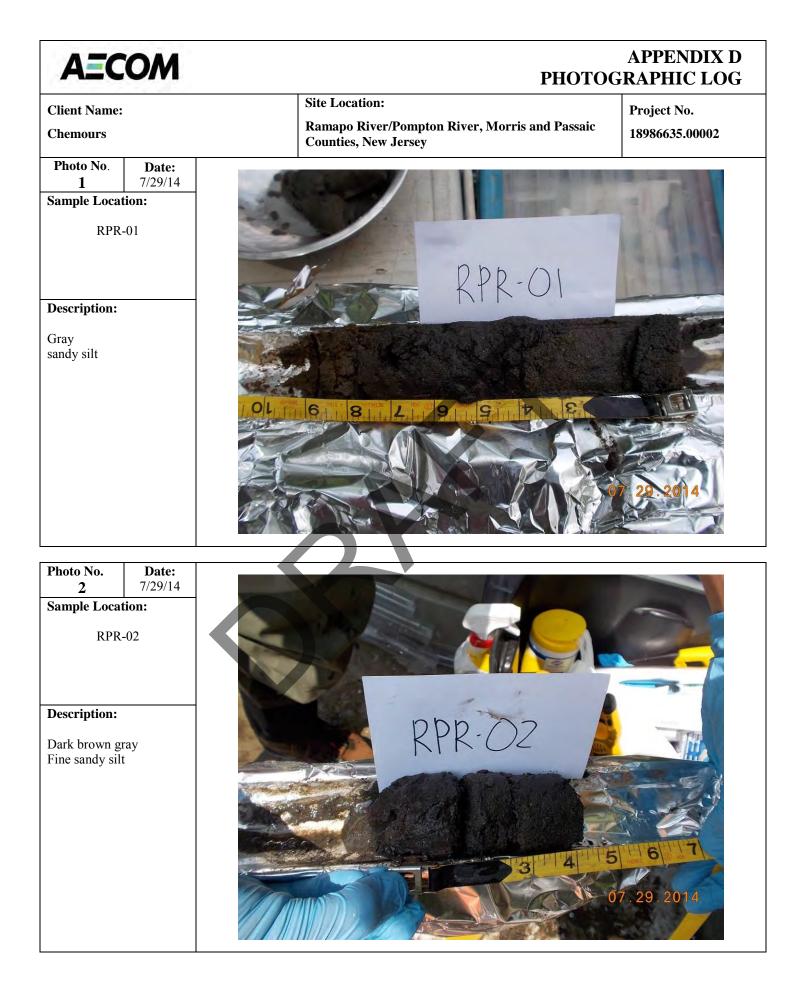


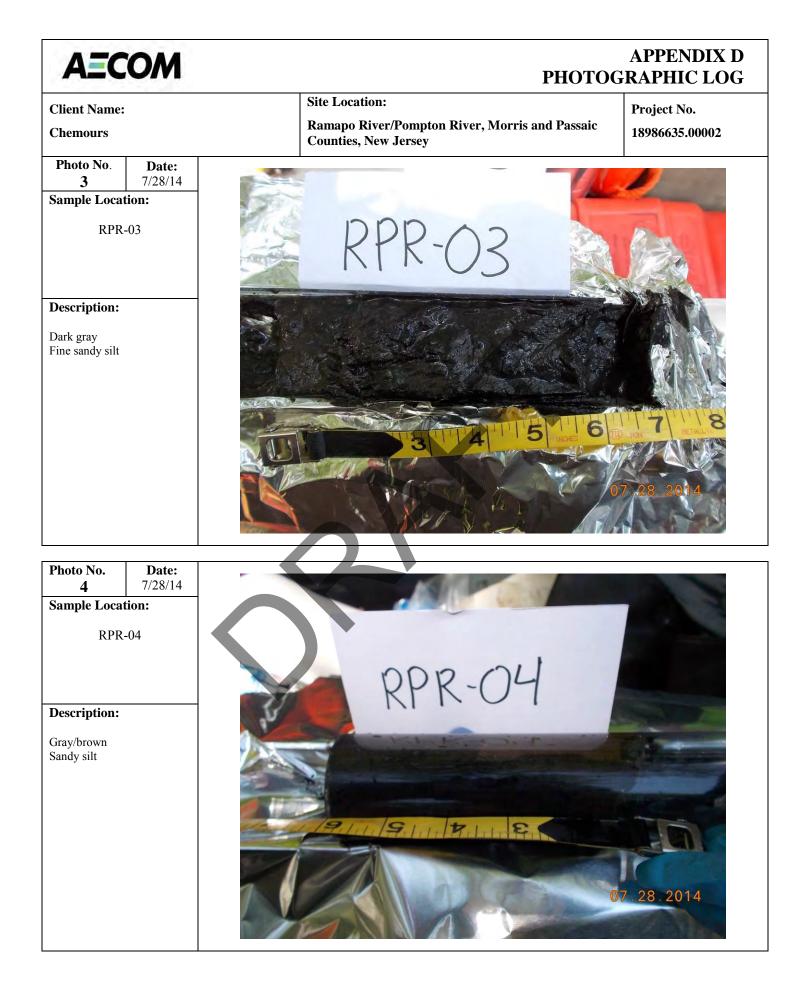
Appendix D

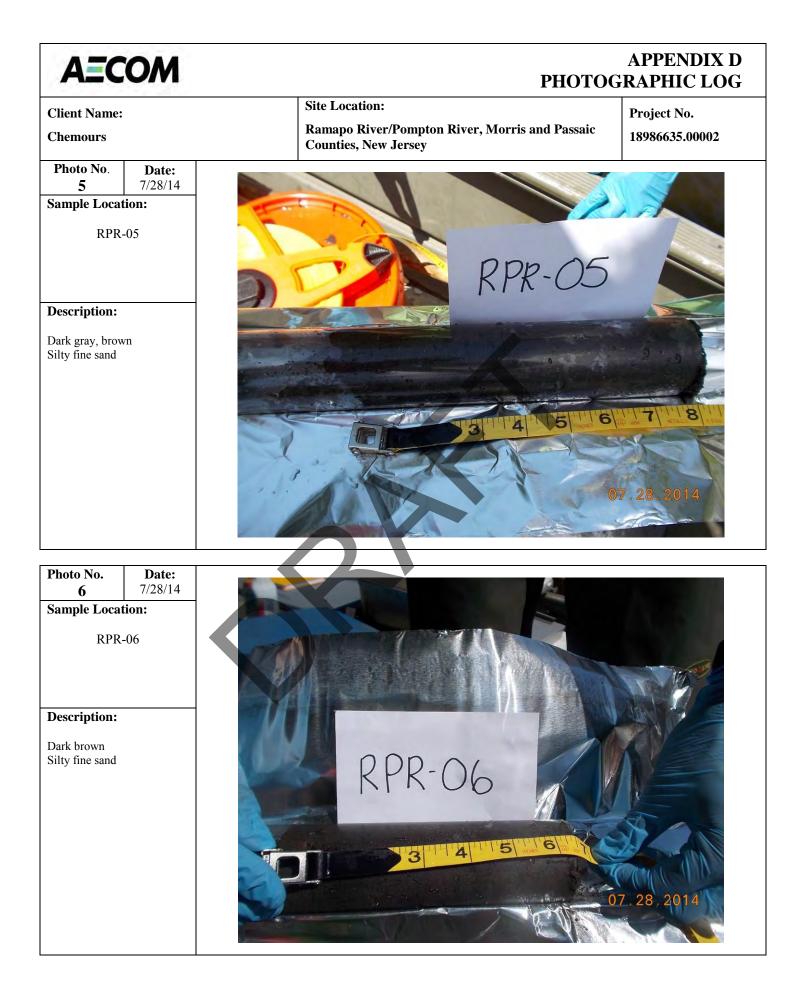
Sediment Coring Photographic Log

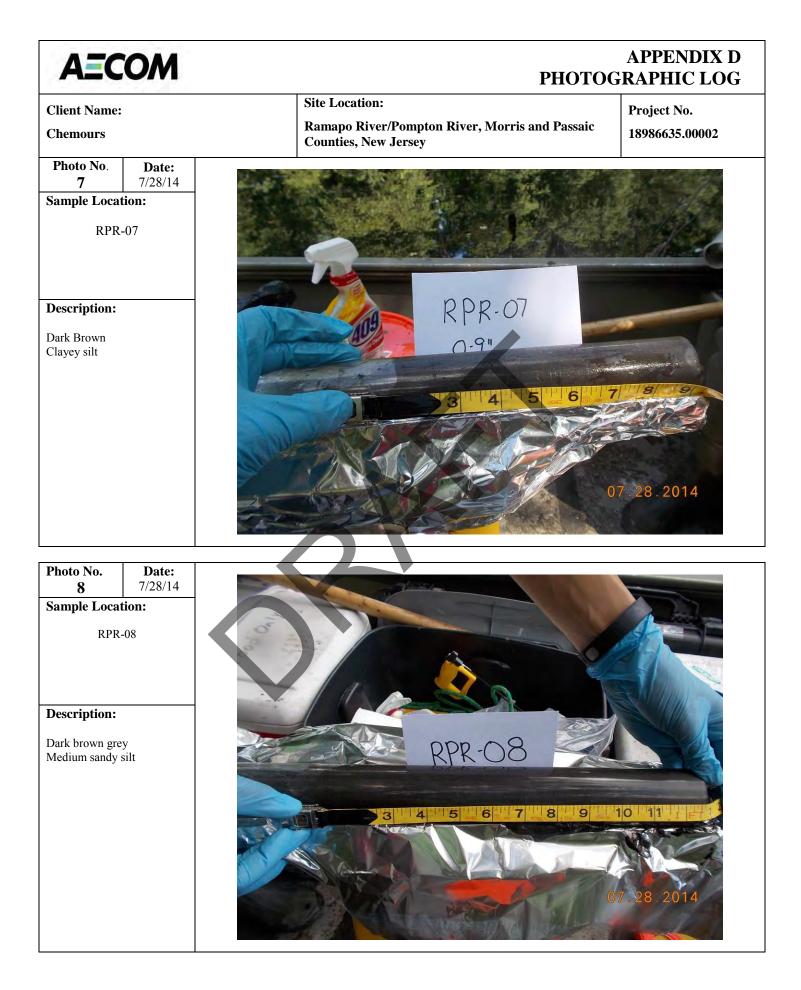


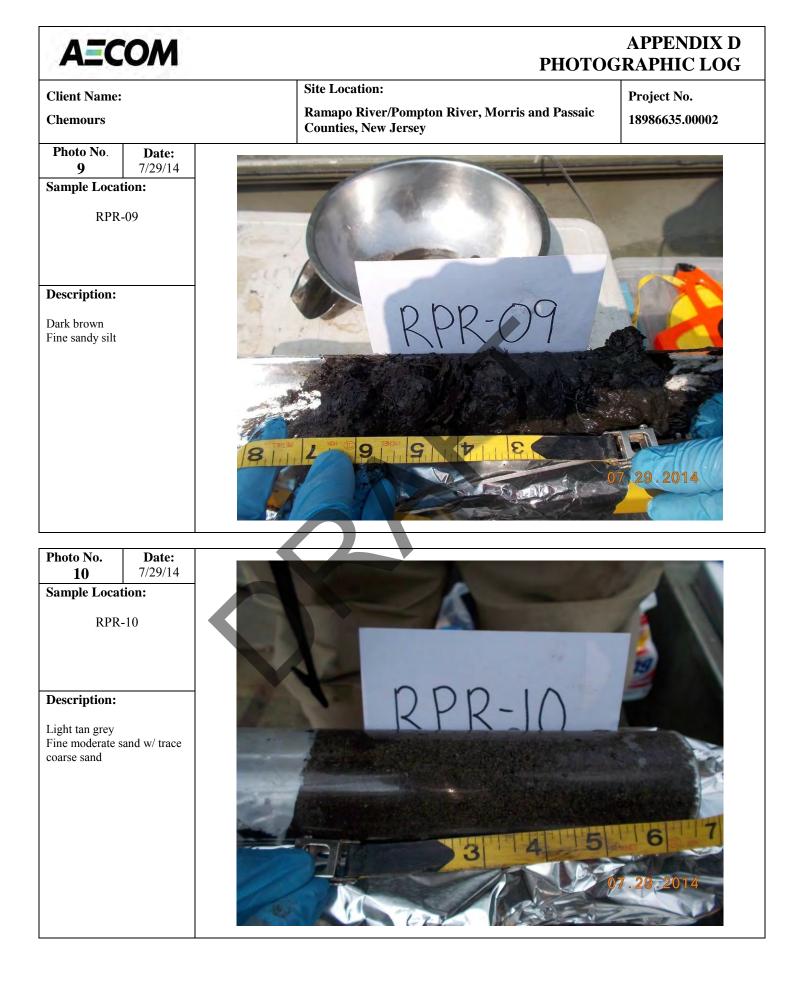
Ramapo-Pompton River Sediment Investigation Report POM\_Ram-Pom River Sediment\_070815.docx

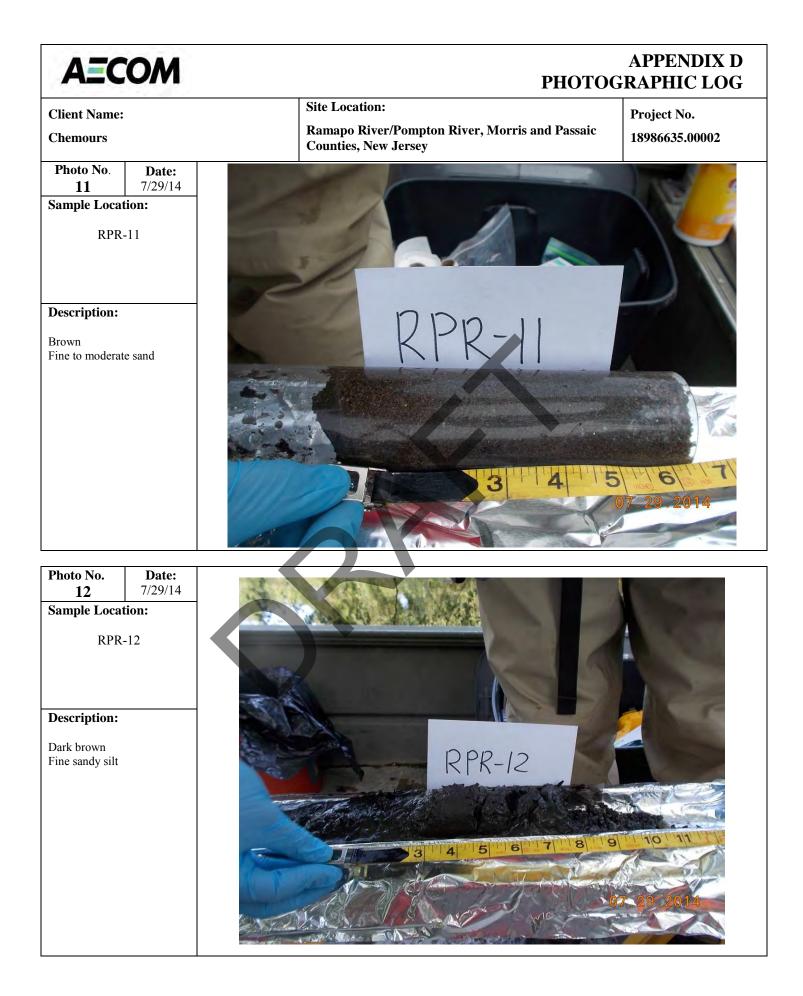


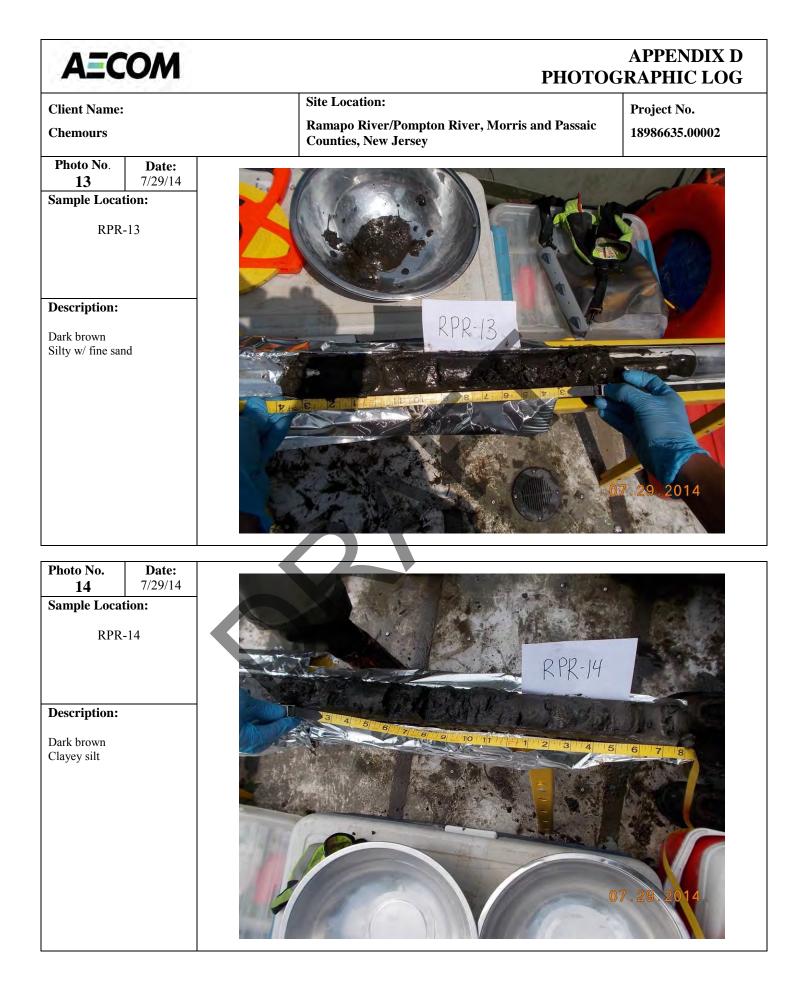


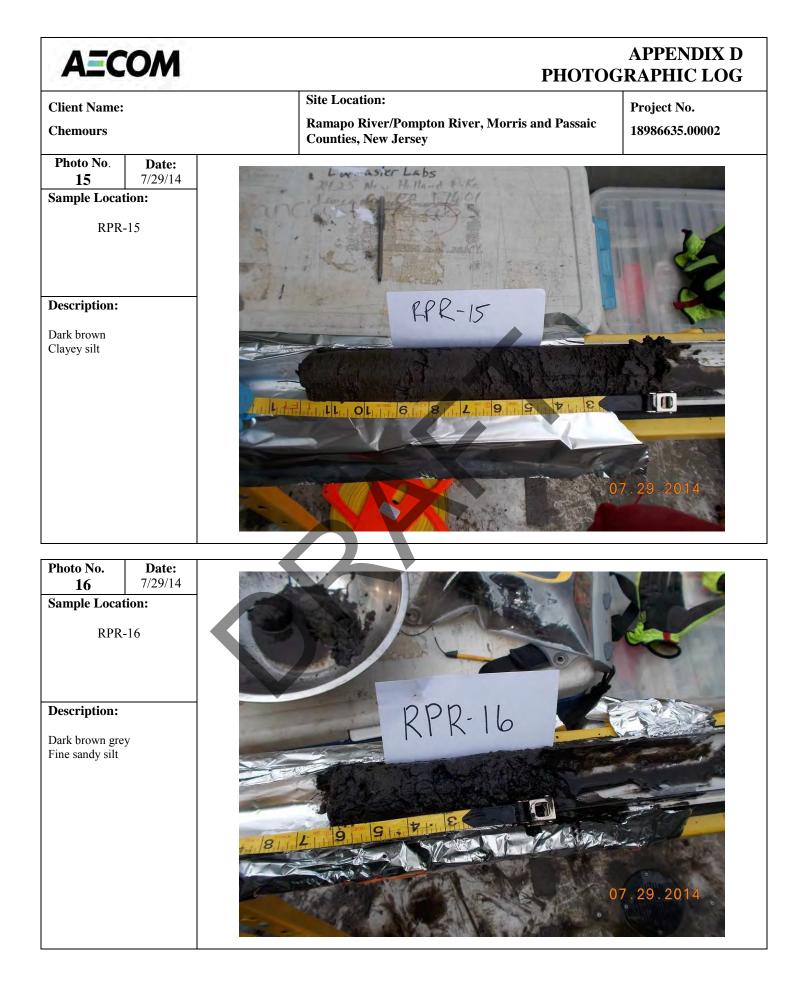


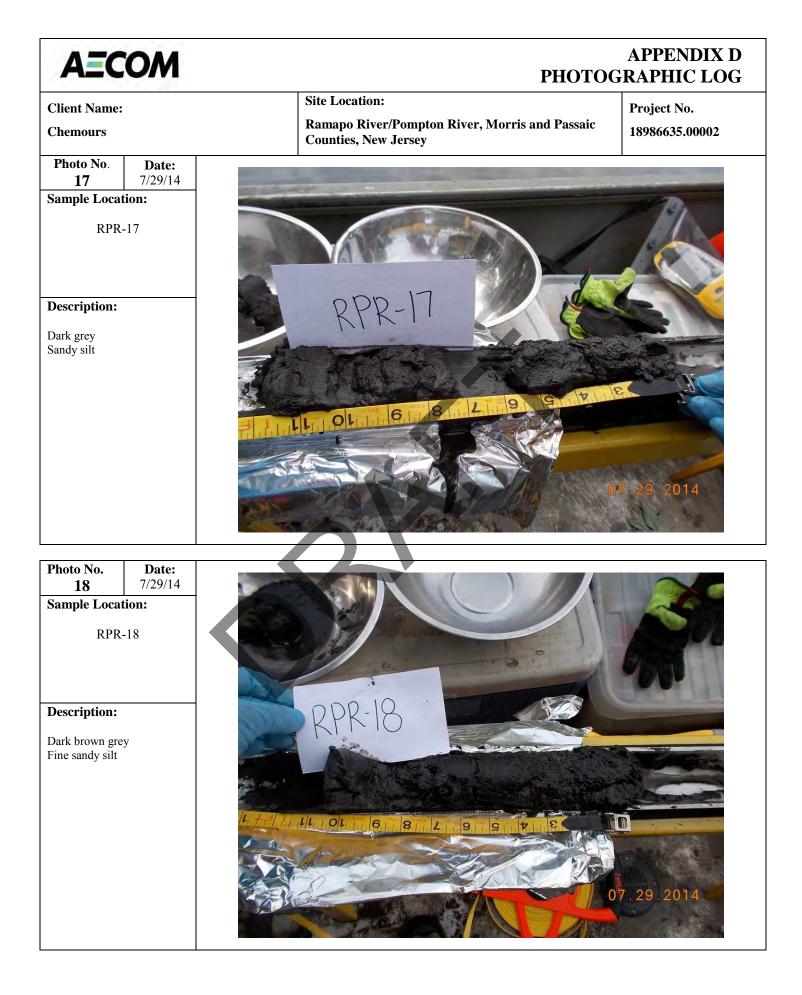


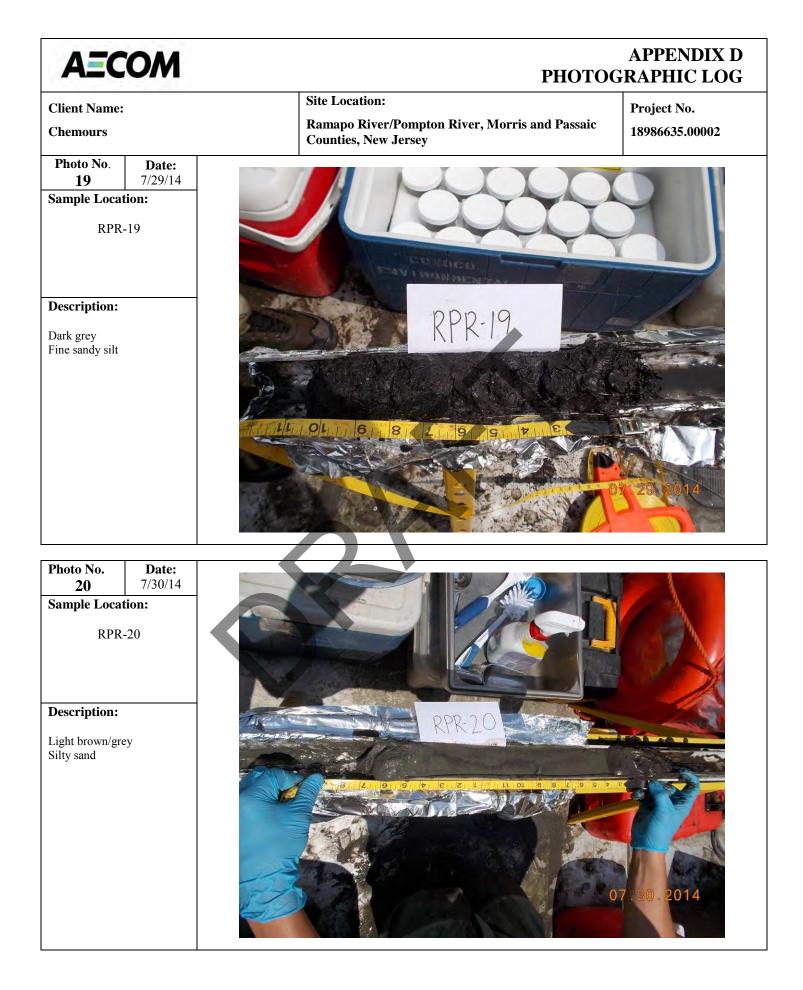


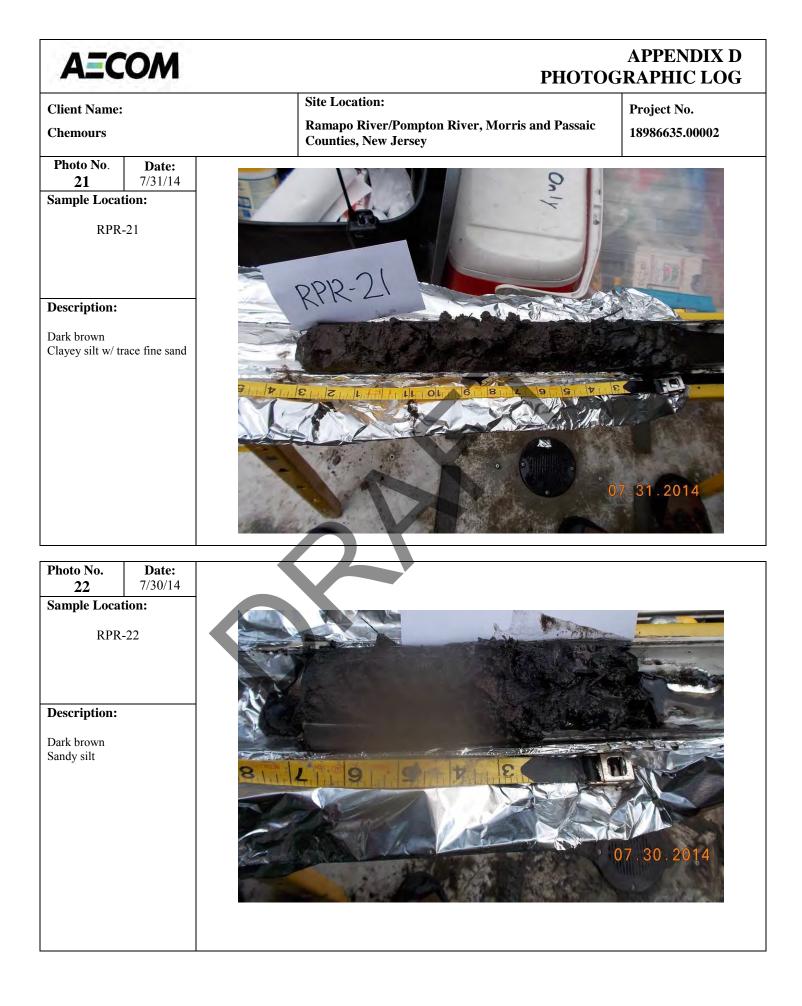


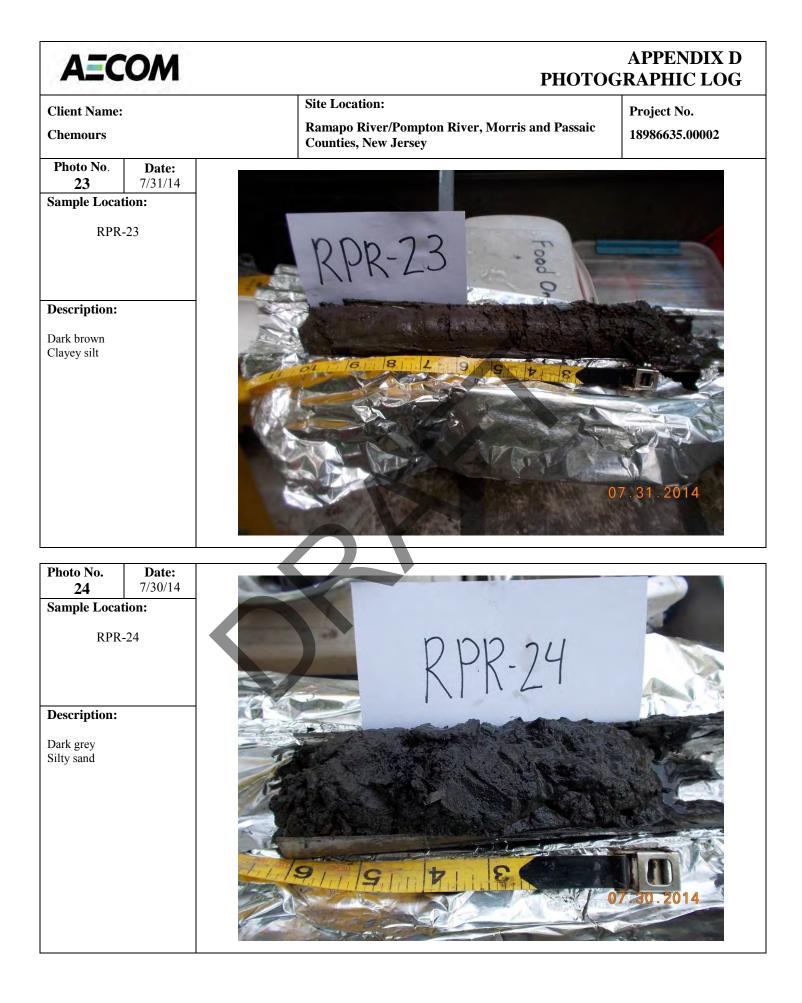


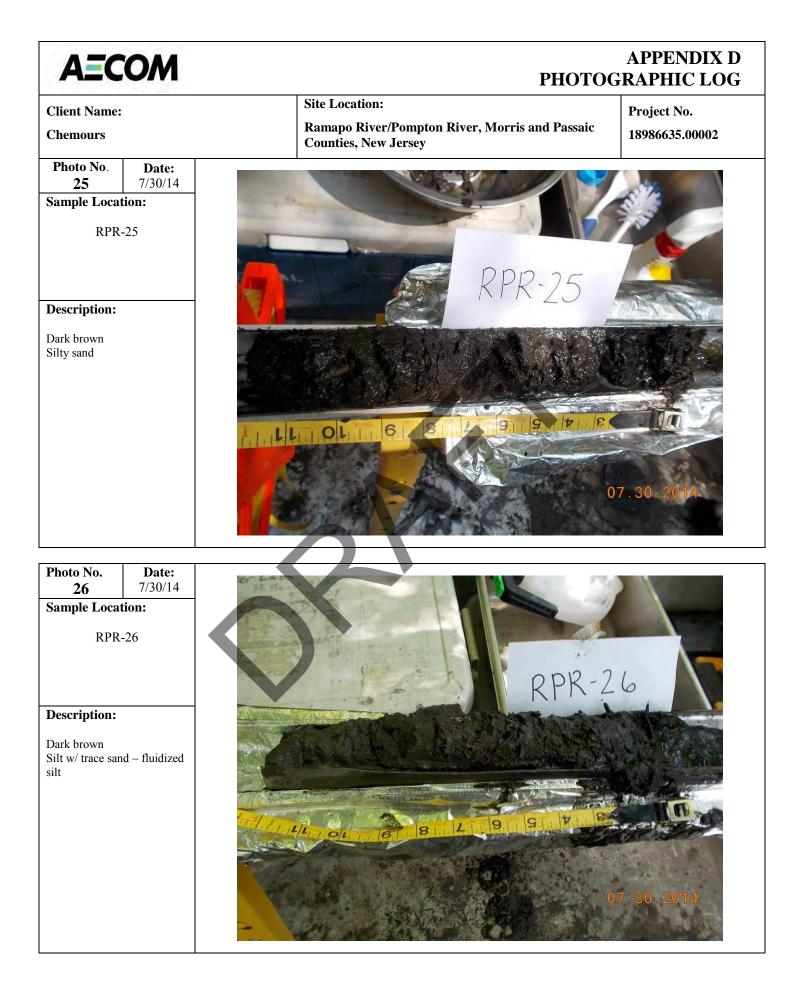


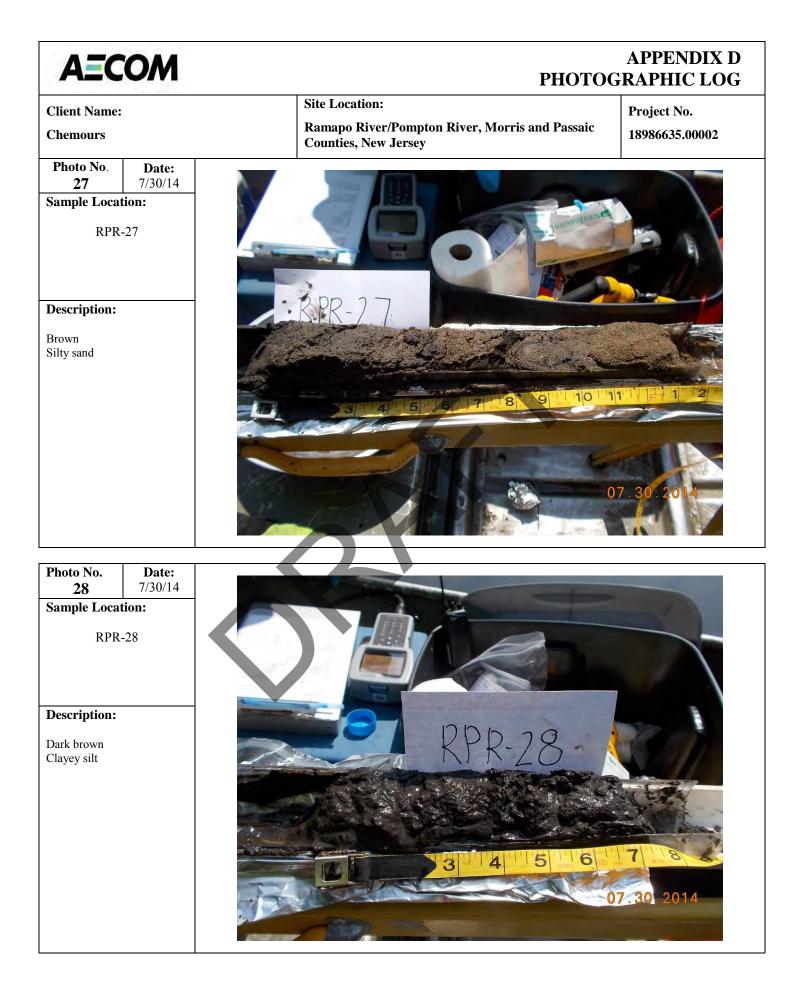


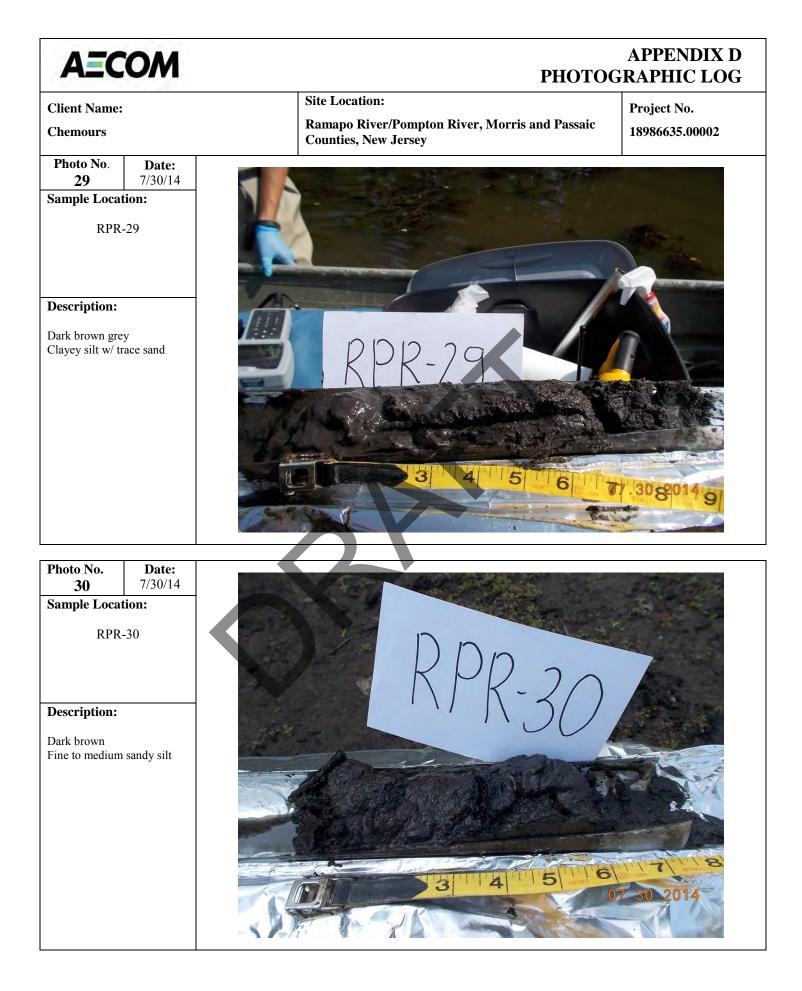


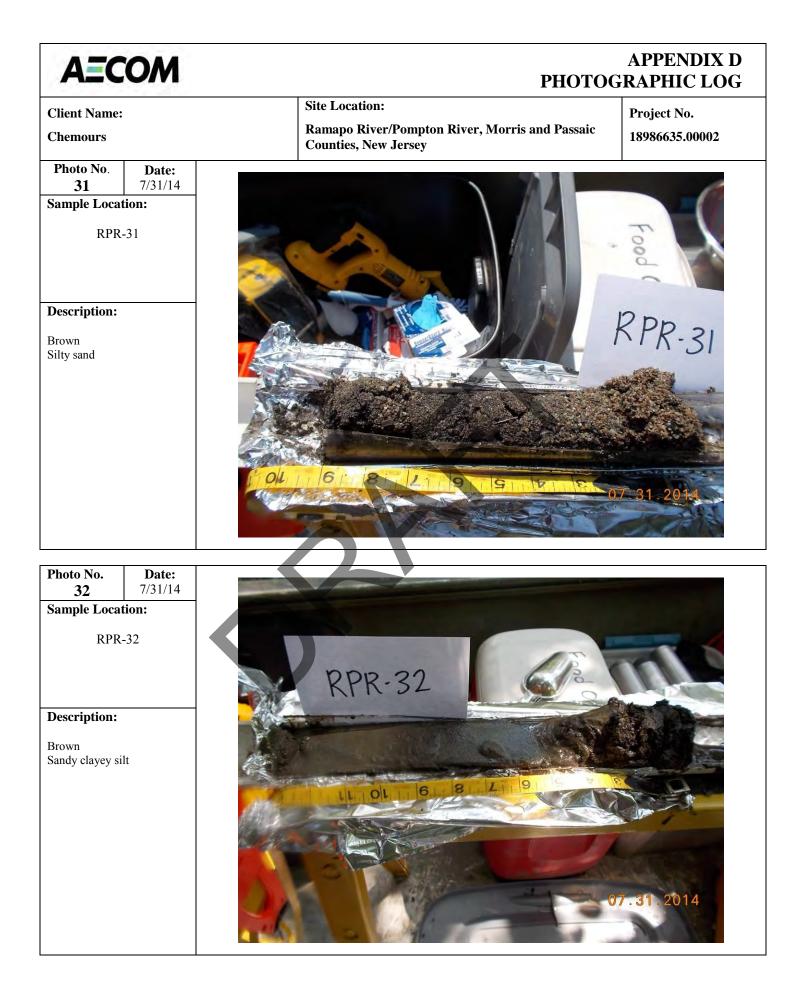


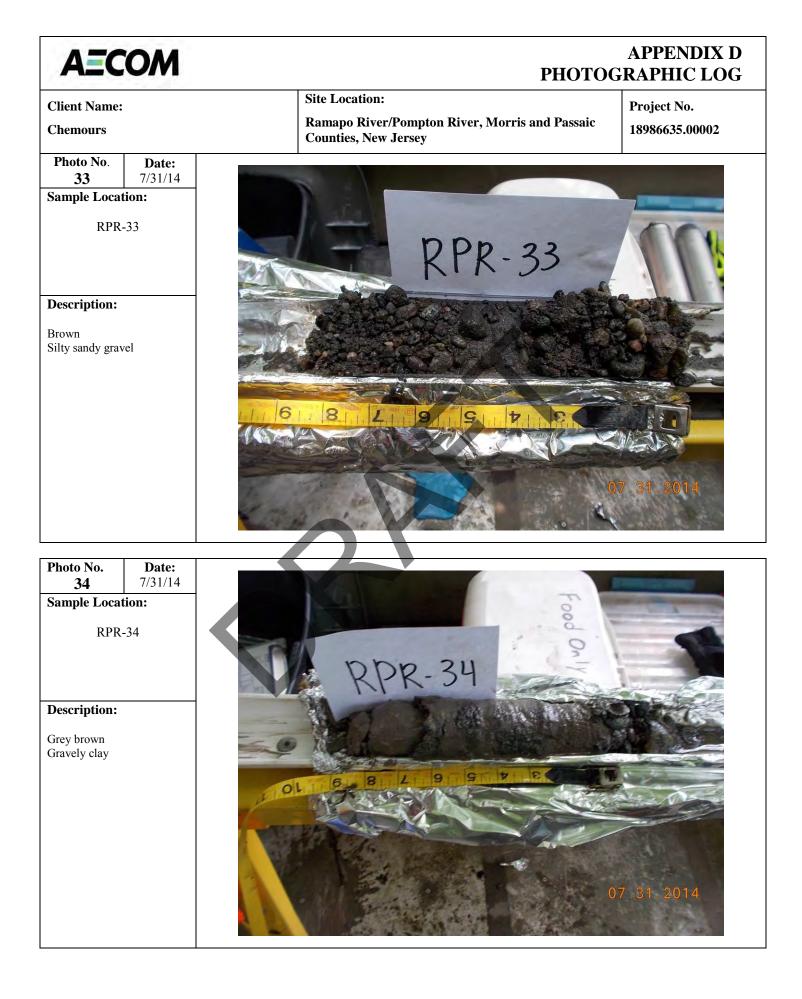












Appendix E

# **Field Data Sheets**



Ramapo-Pompton River Sediment Investigation Report POM\_Ram-Pom River Sediment\_070815.docx

	S				RIVER INVES		
SAMPLE ID	DENTIFICATIO	N:			NORTHING		EASTING:
INVESTIGA		4			RIVER REA	ACH: NIA	
Collins	Musumeci						
	APLETED BY:					29/14	WATER DEPTH:
Collins	Musumeci	)-			TIME: 13:	00	
WEATHER		Now	Past 24 ho	storm rain showers partly cloud clear/sunny	-	Has there been a Air Temperature Other:	a heavy rain in the last 7 days
I	NORGANIC SI	IBSTRATE	COMPONE	NTS			RATE COMPONENTS
		ild add up to 1		NTO		2.	arily add up to 100%)
Substrate Type	Charac		Appro	oximate % tion in Sample	Substrate Type	Charactéristic	Approximate % Composition Sample
Bedrock					Detritus	sticks, wood	<i>n</i>
Boulder	> 256 mm (10'	-				coarse plant	trace
Cobble Gravel	64-256 mm (2 2-64 mm (0.1-			_	Muck-Mud &	materials (CPOM) black, very fine	
Sand	0.06-2 mm (0.1-		55			organic (FPOM)	none
Silt	0.004-0.06mm		45		Marl	grey,	the second second
Clay	<0.004 mm (sl	ick)			a found	shell fragments	HERE Trace
Substrate col Substrate cor Floc layer pre Moisture cone	nsistency:	andy s nm levate	to low		CORE LOG: 0'		- consistent- throughout - see description
Substrate col Substrate cor Floc layer pre Moisture cond Benthic fauna Odors Normal Chemical Other	lor: Gveg nsistency: S esent: Z-3v ditions: Moo a: Chigach ugut hy	<u>andy s</u> <u>hm</u> <u>levate</u> <u>ecutr + C1</u> Sewage Anaerobic (H <sub>2</sub> OWCOLLOG	to (oran automotion s)	Pétroleum None	CORE LOGI		- consistent- throughout - see description on left
Substrate col Substrate cor Floc layer pre Moisture cond Benthic fauna Odors Normal Chemical Other	or: Gveg nsistency: S esent: 2-3v ditions: YNOC a: Chigan	<u>amchy S</u> <u>m</u> <u>levate</u> <u>sewage</u> Anaerobi <u>c (H</u> 2	to love	Petroleum			- consistent- through out - see description on left
Substrate col Substrate cor Floc layer pre Moisture cond Benthic fauna Odors Normal Chemical Other Oils Absent NEAR BOT Temperatur DO (mg/L): pH: 7,75	Insistency: Sesent: 7-3 v ditions: 1000 a: Chigath Ught hy Slight TOM WATER e (°C): 25 - 0.35 v (mS/cm): 0	Anchy S Min Levate Court + CA Sewage Anaerobic (H of Without Moderate QUALITY: 2 S DO (% Sat):	s) Profuse	Petroleum	QA/QC: Duplicate Sa	ample Station? ( Y RPR- ample Station? ( Y RPR= RPR-	-DUP -MS
Substrate col Substrate cor Floc layer pre Moisture com Benthic fauna Odors Normal Chemical Other Oils AbsenD NEAR BOT Temperature DO (mg/L): pH: 1.25 Conductivity ORP (mV):	Insistency: Sesent: 7-3 v ditions: 1000 a: Chigath Ught hy Slight TOM WATER e (°C): 25 - 0.35 v (mS/cm): 0	Anchy S Min Levate Court + CA Sewage Anaerobic (H of Without Moderate QUALITY: 2 S DO (% Sat):	s) Profuse	Petroleum	QA/QC: Duplicate Sa	ample Station? ( Y RPR ample Station? ( Y RPR=	-DUP -MS
Substrate col Substrate cor Floc layer pre Moisture com Benthic fauna Odors Normal Chemical Other Oils NEAR BOT Temperature DO (mg/L): pH: 1,25 Conductivity ORP (mV):	Ior: GV(1) Insistency: S asent: 7-3v ditions: Mod a: Chigadh Chigadh Slight TOM WATER e (°C): 25 0,35 y (mS/cm): 0 491	andy s Melevate Sewage Anaerobic (Hg CHUC CHOC Moderate QUALITY: 2 S DO (% Sat): -405	s) Profuse	Pétroleum None	QA/QC: Duplicate Sa MS/MSD Sa	ample Station? ( Y RPR ample Station? ( Y RPR=	-DUP -MS
Substrate col Substrate cor Floc layer pre Moisture com Benthic fauna Odors Normal Chemical Other Oils NEAR BOT Temperature DO (mg/L): pH: 1,25 Conductivity ORP (mV):	Insistency: Sesent: 2-3 v ditions: 1000 a: (119000 a: (119000) a: (119000	Andy S Min Levate Court + CA Sewage Anaerobic (Hz CAN)COURCE Moderate QUALITY: 2 S BO (% Sat):	S) Profuse	Petroleum None	QA/QC: Duplicate Sa MS/MSD Sa	ample Station? ( Y RPR ample Station? ( Y RPR=	-DUP
Substrate col Substrate cor Floc layer pre Moisture cond Benthic fauna Odors Normal Chemical Other Oils NEAR BOT Temperatur DO (mg/L): pH: 7.75 Conductivity ORP (mV): SEDIMENT Para	Insistency: Sesent: 2-3 v ditions: 1000 a: (119000 Slight TOM WATER e (°C): 25 ( 0,35) v (mS/cm): 0 UP 1 ANALYSES: meter	andy s Melevate Sewage Anaerobic (Hg CHUC CHOC Moderate QUALITY: 2 S DO (% Sat): -405	5) Profiuse	Pétroleum None	QA/QC: Duplicate Sa MS/MSD Sa	ample Station? ( Y RPR ample Station? ( Y RPR=	-DUP

 $\widehat{}$ 

U

	S					TIGATION	
SAMPLE ID	ENTIFICATIO	DN:			NORTHING		EASTING:
I	RPR-02	_					
INVESTIGA Collins					RIVER REA	CH: NA	
	PLETED BY:				DATE: 712		WATED DEDTU-
Collins (	Musumeci		_		TIME: 12:4		WATER DEPTH:
WEATHER	15	Now	Past 24 ho	urs storm rain showers partly cloud clear/sunny		Has there been a Air Temperature	heavy rain in the last 7 days? (Yes)/ No <u>75</u> °F
IN	ORGANIC SI		OMPONE	NTS	1 0	PCANIC SUPETE	ATE COMPONENTS
		uld add up to 1		115	l v	dia.	rily add up to 100%)
Substrate	Charac		Appro	oximate %	Substrate	Characteristic	Approximate % Composition in
Туре			Composit	ion in Sample	Туре	16 19/2	Sample
Bedrock	050				Detritus	sticks, wood,	F 61
Boulder	> 256 mm (10)		-			coarse plant	5%
Cobble Gravel	64-256 mm (2 2-64 mm (0.1-				Muck-Mud	materials (CPOM) black, very fine	
Sand	0.06-2 mm (gr	-	25	- have	-WILCK-WILL	organic (FPOM)	non
Silt	0.004-0.06mm		15	1194	Mari	grey,	
Clay	<0.004 mm (sl		1			shell fragments	Non
	CHARACTER				CORE LOG	and a second	
	ditions: mgc	huradi	cheates				
Odors Normal Chemical Other Oils Absent		Sewage Anaerobic (H <sub>2</sub> ,	S) Profuse	Petroleum None	۲"		
Normal Chemical Other Oils Absent	Slight	Anaerobic (H <sub>2</sub> : Moderate		11. 22	4"		
Normal Chemical Other Oils NEAR BOTT Temperature DO (mg/L): pH: 8,03 Conductivity	Slight TOM WATER e (°C): 24,1 ().38	Anaerobic (H <sub>2</sub> : Moderate QUALITY: DO (% Sat): C	Profuse	11. 22		ample Station? ( Y) RPR- mple Station? ( Y)	-DUP
Normal Chemical Other Oils NEAR BOTT Temperature DO (mg/L): pH: 8,03 Conductivity ORP (mV): SEDIMENT / Paran THg	Slight TOM WATER (°C): 24,1 (0.38) (mS/cm): () 50,1 ANALYSES: meter	Anaerobic (H <sub>2</sub> : Moderate QUALITY: DO (% Sat): C	Profuse	11. 22	Duplicate Sa MS/MSD Sa NOTES:	RPR- mple Station? ( Y RPR= RPR-	-DUP N -MS
Normal Chemical Other Oils Absent NEAR BOTT Temperature DO (mg/L): pH: 8,63 Conductivity ORP (mV): SEDIMENT / Parar THg Grain Size	Slight TOM WATER (°C): 24,1 (0.38) (mS/cm): () 50,1 ANALYSES: meter	Anaerobic (H <sub>2</sub> ) Moderate QUALITY: DO (% Sat): UOS	Profuse	None	Duplicate Sa MS/MSD Sa NOTES:	RPR- mple Station? ( Y ) RPR= RPR- <u>נוע עד ל ע "</u>	-DUP -MS -MSD
Normal Chemical Other Oils NEAR BOTT Temperature DO (mg/L): pH: 8,03 Conductivity ORP (mV): SEDIMENT / Paran THg	Slight TOM WATER (°C): 24,1 (0.38) (mS/cm): () 50,1 ANALYSES: meter	Anaerobic (H <sub>2</sub> Moderate QUALITY: DO (% Sat): C 405	Profuse	None	Duplicate Sa MS/MSD Sa NOTES:	RPR- mple Station? ( Y ) RPR= RPR- <u>נוע עד ל ע "</u>	-DUP -MS -MSD

	S		RAMAPO-		CHARACTER RIVER INVES	TIGATION	
SAMPLE ID	ENTIFICATIO	N:	5010		NORTHING		EASTING:
	<b>RPR-</b> ()	)			10 1945	5,48 N	557245 50;
INVESTIGA Collins	Musumeci				RIVER REA	NIA	
	IPLETED BY:				DATE: 7		WATER DEPTH:
Collins	Musumeci	>			TIME: 12		2'
WEATHER	۹S		Past 24 hou	storm rain showers partly cloud clear/sunny	*	Has there been a Air Temperature _ Other:	heavy rain in the last 7 days? Yes No <u>기  </u> 아
IN	NORGANIC SU	JBSTRATE C		ITS		RGANIC SUBSTR	ATE COMPONENTS
		Id add up to 10				100	rily add up to 100%)
Substrate Type	Charac	teristic		kimate % on in Sample	Substrate Type	Characteristic	Approximate % Composition in Sample
Bedrock					Detritus	sticks, wood,	· ·
Boulder	> 256 mm (10"	~				coarse plant	trace
Cobble	64-256 mm (2.	.*			Much Maria	materials (SPOM)	
Gravel Sand	2-64 mm (0.1-2 0.06-2 mm (gri		15		Muck-Mud	black, very fine organic (FPOM)	none
Silt	0.004-0.06mm		80		Marl	grey,	
Clay	<0.004 mm (si		5		in the second	shell fragments	now
SEDIMENT	CHARACTER				CORE LOG		
Substrate colo	or: dave g	iver			0		
Substrate con Floc layer pre Moisture cond Benthic fauna Odors Normal Chemical Other Silve Oils NEAR BOT Temperature DO (mg/L): pH: 7.07 Conductivity	sistency: Fire sent: None ditions: Mod a: None ght hydno Slight TOM WATER e (°C): 21.3 3,56 (mS/cm): 0	Sahdy Si olosever Uvcite J Sewage Anaerobic (H <sub>2</sub> S Anaerobic (H <sub>2</sub> S) Anaerobic (H <sub>2</sub> S) Anaero	cl S) Profuse	Pétroleum	رن" QA/QC: Duplicate S	ample Station? ( Y RPR- ample Station? ( Y / RPR= RPR-	-DUP
Substrate con Floc layer pre Moisture cond Benthic fauna Odors Normal Chemical Other Silv Oils Absent NEAR BOTT Temperature DO (mg/L): pH: 7.02 Conductivity ORP (mV):	sistency: Fire sent: None ditions: Mod a: None ght hydno Slight TOM WATER e (°C): 21.3 3,56 (mS/cm): 0	Sahdy Si observed Uncete J Sewage Anaerobic (H <sub>2</sub> S Anaerobic (H <sub>2</sub> S) (Moderate QUALITY: 7 BO (% Sat): C	cl S) Profuse	1	ر ( '' QA/QC: Duplicate St MS/MSD Sa NOTES:	ample Station? ( Y RPR- ample Station? ( Y / RPR= RPR-	No left - Inc stratification or layening observed No -DUP No -MS -MSD
Substrate con Floc layer pre Moisture cond Benthic fauna Odors Normal Chemical Other Silv Oils Absent NEAR BOTT Temperature DO (mg/L): pH: 7.02 Conductivity ORP (mV):	sistency: Fire sent: None ditions: Mode a: None Slight TOM WATER e (°C): 21.3 3,5(0 (mS/cm): 0 75, 4 ANALYSES:	Sahdy Si olosever Uvcite J Sewage Anaerobic (H <sub>2</sub> S Anaerobic (H <sub>2</sub> S) Anaerobic (H <sub>2</sub> S) Anaero	cl S) Profuse	1	ر ( '' QA/QC: Duplicate St MS/MSD Sa NOTES:	ample Station? ( Y RPR- ample Station? ( Y / RPR=	No left - Inc stratification cr layening observed No -DUP No -MS -MSD
Substrate con Floc layer pre Moisture cond Benthic fauna Odors Normal Chemical Other Silv Oils Absent NEAR BOTT Temperature DO (mg/L): pH: 7.07 Conductivity ORP (mV): SEDIMENT	ANALYSES: meter	Sahdy Si olosever Luvcut J Sewage Anaerobic (H <sub>2</sub> t Cavbor Moderate QUALITY: 7 BO (% Sat): C 39 (b 	cd s) Profuse 10.3	None	ر ( '' QA/QC: Duplicate St MS/MSD Sa NOTES:	ample Station? ( Y RPR- ample Station? ( Y / RPR= RPR-	No left - Inc stratification cr layening observed -DUP No -MS -MSD

UR	LS		RAMAPO	D-POMPTON	CHARACTER RIVER INVES ON LAKES WO	TIGATION	
SAMPLE I	DENTIFICATIO	N:			NORTHING		EASTING:
	RPR- DL	1			7818.	30.44N	552055.7
INVESTIG					RIVER REA	СН:	
Collins	Musumeci MPLETED BY:	2			DATE: 725	201	WATER DEBTIL
Collins	Musumeci					:30	WATER DEPTH:
WEATHER		Noncoda	Past 24 ho	ours storm rain showers partly cloud clear/sunny		Has there been a Air Temperature Other:	heavy rain in the last 7 days Yes / No GS_°F
	NORGANIC SL	IBSTRATE	COMPONE			10 m 20	ATE COMPONENTS
		ld add up to				lin.	rily add up to 100%)
Substrate Type	Charac	teristic		oximate % ition in Sample	Substrate Type	Characteristic	Approximate % Composition i Sample
Bedrock				Sumpro	Detritus	sticks, wood,	
Bouider	> 256 mm (10"	'}				coarse plant	trace
Cobble	64-256 mm (2.					materials (CPOM)	
Gravel	2-64 mm (0.1-2		10 1	ak	Muck-Mud	black, very fine	NONE OBS
Sand Silt	0.06-2 mm (gri 0.004-0.06mm		15 F	int	Marl	organic (FPOM) grey,	
Clay	<0.004-0.0011111 <0.004 mm (sli		5			shell fragments	
1	CHARACTER		1		CORE LOG:		
Benthic faur Odors Normal Chemical Other Oils Absent		Sewage Anaerobic (H		Petroleum None			darle grey Sandy Silt
NEAR BOT	TOM WATER	QUALITY:			QA/QC:		
DO (mg/L): pH:	1.76 2./¥ y (mS/cm): (	DO (% Sat):	20. D		Duplicate Sa	ample Station?(Y, RPR- mple Station?(Y( RPR=	-DUP
					1	RPR-	-MSD

					NORTHING	6:	EASTIN	G:
	RPR-05	)				_		
INVESTIGA Collins	<b>TORS:</b> Musumeci				RIVER REA		A	
FORM CON	PLETED BY	1			DATE: 7	28/14	WATER	DEPTH: 11
Collins	Musumeci	2			TIME: [4	1:00		1
WEATHER	NS	Now	ra D si D p	torm ain howers eartly cloudy lear/sunny	1	Has there bee Air Temperatu Other:	(res)	/
11		UBSTRATE	COMPONENTS	3	0	ORGANIC SUBS (does not nece		
Substrate Type	Charac	cteristic	Approxim Composition i		Substrate Type	Charactéristi	LANN	imate % Composition in Sample
Bedrock	> 050 // 2	10)	-		Detritus	sticks, wood	three	
Boulder Cobble	> 256 mm (10 64-256 mm (2			-	-	coarse plant materials (CPO)	tro	
Gravel	2-64 mm (0.1-				Muck-Mud	black, very fine		\. I
Sand	0.06-2 mm (gr		60		12/2	organic (FPOM)	No	V.
Silt Clay	0.004-0.06mm <0.004 mm (s		40	-	Marl	grey. shell fragments	No	ni
			1			singa nagments		
Substrate col Substrate cor Floc layer pre Moisture con	asistency: Silly esent: Zmm ditions: Madu	how say	ow		CORE LOG:		due	pud 0-6" " not sampud lo insufficient
Substrate col Substrate con Floc layer pre Moisture con Benthic fauna Odors Normal Chemical Other Oils	or: <u>Clavk</u> g nsistency: Sill esent: Zmm ditions: McCla a: frw chord	Note to In Note to In Note to In Normal Sewage Anaerobic (H.	nd GW Q Netholoc S)	etroteum ione	111		due	pod 0-6" " not sampted lo insufficient cvial e coves aftempted maternal not ve
Substrate col Substrate con Floc layer pre Moisture cond Benthic fauna Odors Normal Chemical Other Oils Absent	or: <u>Clavk</u> g nsistency: <u>Silly</u> esent: <u>Zwww</u> ditions: <u>Medu</u> a: <u>ftW (Word</u> Slight	Vote to 1 Noterate	nd GW Q Vematoc 25)	etroteum			due	lo insufficient
Substrate col Substrate con Floc layer pre Moisture con Benthic fauna Odors Normal Chemical Other Oils Absent NEAR BOT Temperatur DO (mg/L): pH: 7, 17	or: Clayk g nsistency: Sill esent: Zwyw ditions: McCla a: ftw churd Slight TOM WATER e (°C): Z \_& ]. 4 Z	Vott 101 Noterate QUALITY: 23 DO (% Sat):	nd CVV A Nethaltic 25) Profuse	etroteum	QA/QC: Duplicate S	ample Station? ( RF ample Station? ( RP	(Y/N) Y/N)	lo insufficient
Substrate col Substrate con Floc layer pre Moisture com Benthic fauna Odors Normal Chemical Other Olls Absent NEAR BOT Temperatur DO (mg/L): pH: 7,12 Conductivity ORP (mV):	or: Clayk g nsistency: Sill esent: Zwyw ditions: Mada a: frw chora Slight TOM WATER e (°C): Z \ _8 ]. 4 Z 3 / (mS/cm): C	Vote 101 Noterate QUALITY: 0.396	nd CVV A VEWCIDO S) Protuse T(p. 2	etroteum	QA/QC: Duplicate S MS/MSD Sa	ample Station? ( RF ample Station? ( RP RF	(Y/N) (Y/N) PR- (Y/N) R= PR-	lo insufficient cvial e coves aftempted maternal not ve -DUP -MS -MSD
Substrate col Substrate cor Floc layer pre Moisture cone Benthic fauna Odors Normal Chemical Other Oils Absent NEAR BOT Temperatur DO (mg/L): pH: 7,17 Conductivity ORP (mV): SEDIMENT Para	or: Clavk g nsistency: Sill esent: Zww ditions: Medu a: frw chord Slight TOM WATER e (°C): $2 \ .2$ $1.4 \ 2$ 3 4 (mS/cm): O 129, 7	VCULL TO IN NUCULL TO IN NUCULL TO IN NUCULL TO IN NUCULL TO IN Sewage Anaerobic (H, Moderate QUALITY: 23 DO (% Sat): 0.3916	nd cvv a remarket police	etroteum	QA/QC: Duplicate Si MS/MSD Sa	ample Station? ( RF ample Station? ( RP RF	(Y/N) (Y/N) PR- (Y/N) R= PR-	lo insufficient cvial e coves aftempted maternal not ve -DUP -MS
Substrate col Substrate cor Floc layer pre Moisture com Benthic fauna Odors Normal Chemical Other Oils Absent NEAR BOT Temperatur DO (mg/L): pH: 7,19 Conductivity ORP (mV): SEDIMENT Para THg	or: Clayle g nsistency: Sill esent: Zwyw ditions: Medde a: ftw clyoro Slight TOM WATER e (°C): 2 \_& 1.4 2 3 (mS/cm): O 129, 7. ANALYSES: meter	ICY, by hy san vcta to h nonad Sewage Anaerobic (H Moderate QUALITY: 0.396 0.05 €	nd CVV A VEWCIDO S) Protuse T(p. 2	etroteum	QA/QC: Duplicate S MS/MSD Sa	ample Station? ( RF ample Station? ( RP RF	(Y/N) (Y/N) PR- (Y/N) R= PR-	lo insufficient cvial e coves aftempted maternal not ve -DUP -MS -MSD
Substrate col Substrate cor Floc layer pre Moisture cone Benthic fauna Odors Normal Chemical Other Oils Absent NEAR BOT Temperatur DO (mg/L): pH: 7,17 Conductivity ORP (mV): SEDIMENT Para	or: Clayle g nsistency: Sill esent: Zwyw ditions: Medde a: ftw clyoro Slight TOM WATER e (°C): 2 \_& 1.4 2 3 (mS/cm): O 129, 7. ANALYSES: meter	VCULL TO IN NUCULL TO IN NUCULL TO IN NUCULL TO IN NUCULL TO IN Sewage Anaerobic (H, Moderate QUALITY: 23 DO (% Sat): 0.3916	nd cvv a remarket police	etroteum	QA/QC: Duplicate S MS/MSD Sa	ample Station? ( RF ample Station? ( RP RF	(Y/N) (Y/N) PR- (Y/N) R= PR-	lo insufficient cvial e coves aftempted maternal not ve -DUP -MS -MSD

(**-**)

SAMPLE ID	ENTIFICATIO	NI+	DUPC	ONT POMPTO	NORTHING		EASTING:		
					NORTHING		EASTING.		
INVESTIGA Collins					RIVER REA	NIA			
	IPLETED BY:			-	DATE: 7 2		WATER DEPTH:		
Collins	(Musumeci)				TIME: 14 30 1-1.5 1				
WEATHER CONDITION	IS		Past 24 hou	urs storm rain showers partly cloud clear/sunny		Has there been a Air Temperature Other:	heavy rain in the last 7 day Yesy No <u>C</u> Z °F		
IN	ORGANIC SU	BSTRATE	COMPONE	NTS		ORGANIC SUBSTR	RATE COMPONENTS		
	(shoul	d add up to 1	100%)			(does not necessa	arily add up to 100%)		
Substrate Type	Charact	eristic		ximate % on in Sample	Substrate Type	Characteristic	Approximate % Composition Sample		
Bedrock					Detritus	sticks, wood,			
Boulder	> 256 mm (10")					coarse plant	10°10		
Cobble Gravel	64-256 mm (2.5			_	Muck-Mud	black, very fine	¥		
Sand	2-64 mm (0.1-2 0.06-2 mm (grit		50			organic (FPOM)	none		
Silt	0.004-0.06mm		50		Marl	grey,			
Clay	<0.004 mm (sli	ck)				shell fragments	none		
Substrate colo Substrate con Floc layer pre Moisture cond	sistency: Sill sent: 2 mm	the sa	to I cur		CORE LOG:		- no layers - see ouscription to UPT		
Substrate colo Substrate con Floc layer pre Moisture cond	or: Insistency: Sill Insent: 2 mm ditions: Mod In Colloi culo	LANCUS LANCUS Choromo Sewage Anaerobic (H.	to low muo va	2 Petroleum None	- ///		- no layers - see ouscription to UPT		
Substrate cold Substrate con Floc layer pre Moisture cond Benthic fauna Odors Normal Chemical Other Oils Absen	or: Insistency: Sill Insistency: Sill Insistency: Sill Insistency: Sill Slight	Anaerobic (H	to low	Pétroleum			- no layers -see ouscription to UFT		
Substrate cold Substrate con Floc layer pre Moisture cond Benthic fauna Odors Normal Chemical Other Oils Absent NEAR BOT Temperature DO (mg/L): pH: 7.22	or: Isistency: Sill Isent: 2 mm ditions: M.o.d a: (0/01culo Slight TOM WATER ( e (°C): 22.1 0.83 (mS/cm): ().	Moderate	Profise	Pétroleum	QA/QC: Duplicate S				
Substrate cold Substrate con Floc layer pre Moisture cond Benthic fauna Odors Normal Chemical Other Oils Absen NEAR BOTT Temperature DO (mg/L): pH: 7.22 Conductivity ORP (mV):	or: Isistency: Sill Isent: 2 mm ditions: M.o.d a: (0/01culo Slight TOM WATER ( e (°C): 22.1 0.83 (mS/cm): ().	Moderate	Profise	Pétroleum	QA/QC: Duplicate S	ample Station? ( Y RPR- ample Station? ( Y RPR=			
Substrate cold Substrate con Floc layer pre Moisture cond Benthic fauna Odors Normal Chemical Other Oils Absen NEAR BOT Temperature DO (mg/L): pH: 7.22 Conductivity ORP (mV):	or: Isistency: Sill Isent: 2 mm ditions: M.o.d a: (0/01culo, Slight TOM WATER ( e (°C): 22.1 0.83 (mS/cm): 0. 186-7	Moderate	Profuse	Pétroleum	QA/QC: Duplicate S MS/MSD Sa NOTES:	ample Station? ( Y RPR- ample Station? ( Y RPR- RPR-			
Substrate cold Substrate con Floc layer pre Moisture cond Benthic fauna Odors Normal Chemical Other Oils Absen NEAR BOT Temperature DO (mg/L): pH: 7.22 Conductivity ORP (mV):	or: Isistency: Sill Isent: 2 mm ditions: M.o.d I: (0//01 culo. Slight TOM WATER ( e (°C): 2 2 . 1 0.83 E (mS/cm): (). 130-7 ANALYSES:	Moderate	Profuse	Pétroleum	QA/QC: Duplicate S MS/MSD Sa NOTES:	ample Station? ( Y RPR: ample Station? ( Y RPR= RPR: RPR:	- DUP - MS - MS - MSD		
Substrate cold Substrate con Floc layer pre Moisture cond Benthic fauna Odors Normal Chemical Other Oils Absent NEAR BOTT Temperature DO (mg/L): pH: 7.27 Conductivity ORP (mV): SEDIMENT	or: Isistency: Sill Isent: 2 mm ditions: M.o.d a: (0/01culo Slight TOM WATER ( e (°C): 22.1 0.83 (mS/cm): 0. ISb-7 ANALYSES: meter	A A A A A A A A A A A A A A	Profisse	Petroleum None	QA/QC: Duplicate S MS/MSD Sa NOTES:	ample Station? (Y RPR- ample Station? (Y RPR= RPR= RPR= Sample 75 Ito Iow Wat			

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	LS		RAMAPO-	POMPTON	CHARACTER RIVER INVES	<b>FIGATION</b>	
SAMPLE I	DENTIFICATIO	N:			NORTHING		EASTING:
	RPR- 🔿	l					
INVESTIGA	ATORS:				RIVER REA	CH: ALLA	
Collins	Musumeci					NIA	
FORM CON Collins	MPLETED BY: Musumeci	>			DATE: 7 28 TIME: 15 1		WATER DEPTH:
WEATHER CONDITIO		Now	Past 24 hou	rs storm rain showers partly cloud clear/sunny	-	Has there been a Air Temperature Other:	heavy rain in the last 7 days' Yes / No 80 °F
	NORGANIC SL	IBSTRATE	COMPONEN	21			RATE COMPONENTS
		Id add up to 1				12	arily add up to 100%)
Substrate Type	Charact		Approx	kimate % on in Sample	Substrate Type	Characteristic	Approximate % Composition i Sample
Bedrock					Detritus	sticks, wood,	- Cample
Boulder	> 256 mm (10"	)				coarse plant	trace
Cobble	64-256 mm (2.5	1-				materials (CPOM)	
Gravel	2-64 mm (0.1-2				Muck-Mud	black, very fine	none
Sand Silt	0.06-2 mm (grit	((y)	That	5 fin Jan	Marl	organic (FPOM) grey,	VIOVA
Clay	<0.004 mm (sli	ck)	20			shell fragments	Non
Floc layer pre	100	ne					
Floc layer pre Moisture con	a: ('Mananananananananananananananananananan	ive	ĊW	Pétroteum None	9"		0.6"-see notrs to the left 6-9"-light bhonn Clayay silt
Floc layer pre Moisture con Benthic fauna Odors Normal Chemical Other Oils Absent	a: ('Mananananananananananananananananananan	NL LVCU Moderate	ĊW				the lift
Floc layer pre Moisture con Benthic fauna Odors Normal Chemical Other Oils Absent NEAR BOT Temperatur DO (mg/L): pH: 7.12	seent: Nor ditions: Mood a: ('Movovor Slight TOM WATER ( ce (°C): 22.5 0.67	ML LVCU Moderate QUALITY: 20 (% Sat):	cw s) Profuse		9* QA/QC:	mple Station? ( Y RPR-	the left 6-9" - light brown Clayay silt
Floc layer pre Moisture con Benthic fauna Odors Normal Chemical Other Oils Absent NEAR BOT Temperatur DO (mg/L): pH: 7.12 Conductivity	seent: Nor ditions: M. C. a: ('\\CVOVO Slight TOM WATER ( Ce (°C): 22.5 0.67	ML LVCU Moderate QUALITY: 20 (% Sat):	cw s) Profuse		QA/QC: Duplicate Sa	RPR- mple Station? () RPR=	the left 6-9" - light brown Clayay silt (N) -DUP
Floc layer pre Moisture con Benthic fauna Odors Normal Chemical Other Oils (Absent) NEAR BOT Temperatur DO (mg/L): pH: 7.12 Conductivity ORP (mV):	seent: Nor ditions: M. C. a: ('\\CVOVO Slight TOM WATER ( Ce (°C): 22.5 0.67	NU LVCU Moderate Anaerobic (H, Moderate QUALITY: 200 (% Sat): 595	EW S) Profuse		QA/QC: Duplicate Sa	RPR- mple Station? () RPR=	4 10 6 ft 6-9" - light bronn Clayay silt N) -DUP (N) 07-0.0-0.5 -MS
Floc layer pre Moisture con Benthic fauna Odors Normal Chemical Other Oils (Absent) NEAR BOT Temperatur DO (mg/L): pH: 7.12 Conductivity ORP (mV):	esent: Nor ditions: Mood a: ('Movement a: ('Movement a: ('Movement Slight TOM WATER ( ce (°C): 22.5 0.67 1 (mS/cm): (), 86.1	NU LVCU Moderate Anaerobic (H, Moderate QUALITY: 200 (% Sat): 595	cw s) Profuse		QA/QC: Duplicate Sa MS/MSD Sat	RPR- mple Station? () RPR=	4 10 6 ft 6-9" - light bronn Clayay silt N) -DUP (N) 07-0.0-0.5 -MS
Floc layer pre Moisture con Benthic fauna Odors Normal Chemical Other Oils Absent NEAR BOT Temperatur DO (mg/L): pH: 7.12 Conductivity ORP (mV): SEDIMENT Para	ANALYSES: meter	NL LVCU Moderate Anaerobic (H, Moderate QUALITY: 200 (% Sat): 595	Profuse	None	QA/QC: Duplicate Sa MS/MSD Sat	RPR- mple Station? () RPR=	4 10 6 ft 6-9" - light bronn Clayay silt N) -DUP (N) 07-0.0-0.5 -MS

UR	5		RAMAPO-P		CHARACTER RIVER INVES	TIGATION	
SAMPLE ID	ENTIFICATIO	DN:	DOPON	FOMPTO	NORTHING		EASTING:
	RPR- 09						
INVESTIGA		<u>,</u>			RIVER REA	ACH:	
Collins	Musumeci					NIA	
FORM CON	PLETED BY				DATE: 7	28/14	WATER DEPTH:
Collins	Musumeci	)		-	TIME: 15	45	
WEATHER		Now	Past 24 hours			Has there been a	a heavy_rain in the last 7 days?
CONDITION	IS			storm ain showers partly cloud clear/sunny		Air Temperature Other:	(Yes)/No
II		UBSTRATE	COMPONENT	S	0	da.	RATE COMPONENTS arily add up to 100%)
Substrate	Chara	cteristic	Approxim		Substrate	1	Approximate % Composition in
Туре	Chara	olonalio	Composition	in Sample	Туре	Characteristic	Sample
Bedrock			1		Detritus	sticks, wood,	~ ~ /
Boulder	> 256 mm (10				-	coarse plant	5%
Cobble Gravel	64-256 mm (2 2-64 mm (0.1				Muck-Mud /	black, very fine	
Sand	0.06-2 mm (g		10			organic (FPOM)	hone
Silt	0.004-0.06mm		85		Marl	grey.	10.00
Clay	<0.004 mm (s	lick)	5			shell fragments	noni
SEDIMENT	CHARACTER	RIZATION			CORE LOG:		
Benthic fauna Odors Normal Chemical Other Oils Absent	n: Nevre	Sewage Anaerobic (H, Moderate		retroteum	(2"		- no layers or Shrahfication - see closumption to left
Temperature DO (mg/L): pH: 기기식	(mS/cm): ()	20 DO (% Sat):	1.2			ample Station?(Y RPR ample Station?(Y RPR= RPR-	DUP
SEDIMENT	ANALYSES:				NOTES:	/ 1 <del>.</del> .	
Para	meter		05 - 1'	-	- moved	d to left ba	nk due to
THg		Image: Second se	B		firm	center of	channel
Grain Size	/TOC	D		<u></u>			
Moisture		Q'					

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SAMPLE IF	DENTIFICATIO	N.	DUPUN		ON LAKES W		EASTING:	
					NORTHING		EASTING:	
INVESTIGA					RIVER REA	CH:		
Collins	Musumeci					NIA		
FORM COM	MPLETED BY:				DATE: 7		WATER DEPTH:	
Collins	Musumeci			-	TIME: 10:15 (0"			
WEATHER CONDITION		Now		storm rain showers partly cloud clear/sunny		Has there been a Air Temperature	heavy rain in the last 7 days? (Yes) No (05_ °F	
	NORGANIC SI	IDSTDATE				BCANIC SUBST	ATE COMPONENTS	
		lid add up to 1		13		39.	rily add up to 100%)	
Substrate Type	Charac		Approxi	mate % n in Sample	Substrate Type	Characteristic	Approximate % Composition in Sample	
Bedrock	1			.F. 2	Detritus	sticks, wood	40	
Boulder	> 256 mm (10'	')				coarse plant	10-15% barpac	
Cobble	64-256 mm (2.				-	imaterials (CPOM)	10 10 tongs	
Gravel	2-64 mm (0.1-		200		Muck-Mud	and the second second	non	
Sand Silt	0.06-2 mm (gri 0.004-0.06mm		30-Fi	NU	Marl	organic (FPOM) grey,	1000	
Clay	<0.004-0.0011m		10			shell fragments	none	
			-		-			
Substrate col	nsistency: fill	own I Sandy si	ut.		CORE LOG:		-See description	
Substrate col Substrate con Floc layer pre Moisture con Benthic fauna Odors Normal Chemical Other Oils Absent NEAR BOT	Ior: Clark Br nsistency: (Two esent: Mod ditions: Mod a: ACAF 0 Slight TOM WATER	DIWN D SQIACIY SI DIVOLU DISCINICO Sewage Anaerobic (H; Moderate QUALITY:	heromenta	2 Petroleum None	6"		- See description on ult heaven hat pack	
Substrate col Substrate con Floc layer pre Moisture con Benthic fauna Odors Normal Chemical Other Oils Absent NEAR BOT Temperatur DO (mg/L): pH: 7,20	Ior: Clark Br nsistency: (TM esent: Mod ditions: Mod a: MAAF 0 Slight TOM WATER re (°C): [9, 7 O 49]	DIVIN D SQIACIY S L L L VocU Sewage Anaerobic (H Moderate QUALITY: DO (% Sat): <sup>4</sup>	(heromormul s) Profuse	Petroleum	وم روبر QA/QC: Duplicate St	ample Station? ( Y) RPR- ample Station? ( Y) RPR= RPR-	(N) -DUP (N) -MS	
Substrate col Substrate cor Floc layer pre Moisture com Benthic fauna Odors Normal Chemical Other Oils Absent NEAR BOT Temperatur DO (mg/L): pH: 7,20 Conductivity ORP (mV):	Ior: Clank Br nsistency: (TM esent: Mod ditions: Mod a: McAAF 0 Slight TOM WATER re (°C): [9,7 0,4] y (mS/cm): 0, 155.4 ANALYSES:	DWN SQUICIYS L L L L L Sewage Anaerobic (H, Moderate QUALITY: 7 DO (% Sat): 405	(heromormul s) Profuse	Petroleum	۲ ۵ ۵ ۵ ۵ ۵ ۵ ۵ ۵ ۵ ۵ ۵ ۵ ۵ ۵ ۵ ۵ ۵ ۵ ۵	ample Station? ( Y) RPR- ample Station? ( Y) RPR= RPR-	(B) -DUP (D) -MS -MSD	
Substrate col Substrate con Floc layer pre Moisture com Benthic fauna Odors Normal Chemical Other Oils Absent NEAR BOT Temperatur DO (mg/L): pH: 7,20 Conductivity ORP (mV): SEDIMENT Para	Ior: Clank Br nsistency: (TM esent: Mod ditions: Mod a: HEARF 0 Slight TOM WATER re (°C): [9, 7 O <sub>4</sub> 4] y (mS/cm): O <sub>4</sub>	DIVIN D SQUICTY S L LVAU Moderate QUALITY: DO (% Sat): 405 0 - 0,5	Profuse	Petroleum None	QA/QC: Duplicate Si MS/MSD Sa NOTES: - Rotoco	ample Station? ( Y ) RPR- ample Station? ( Y ) RPR= RPR-	(B) -DUP (D) -MS -MSD	
Substrate col Substrate cor Floc layer pre Moisture com Benthic fauna Odors Normal Chemical Other Oils Absent NEAR BOT Temperatur DO (mg/L): pH: 7,20 Conductivity ORP (mV):	Ior: Clank Br nsistency: (TM esent: Mod ditions: Mod a: MAAF 0 Slight TOM WATER re (°C): [9, 7 O <sub>A</sub> 4] y (mS/cm): O <sub>A</sub> 155.4 ANALYSES: imeter	DWN SQUICIYS L L L L L Sewage Anaerobic (H, Moderate QUALITY: 7 DO (% Sat): 405	(heromormul s) Profuse	Petroleum	۲	ample Station? (Y) RPR- ample Station? (Y) RPR= RPR-	(B) -DUP (D) -MS -MSD	

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UR	S		RAMAPO	NT SAMPLE ( POMPTON R	IVER INVES	TIGATION	
SAMPLE ID	ENTIFICATIO	N:			NORTHING		EASTING:
	RPR- 10						
INVESTIGA					RIVER REA	CH:	
Collins	Musumeci				1	NA	
	PLETED BY:				DATE: 7 2		WATER DEPTH:
Collins (	Musumeci	2			TIME:09:4	5	1.5 - 2'
WEATHER CONDITION	NS	Now	Past 24 hor	urs storm rain showers partly cloudy clear/sunny	ý	Has there been a Air Temperature Other:	heavy rain in the last 7 days? Yes / No <u>(05</u> °F
II	NORGANIC SU	JBSTRATE C		NTS	0	RGANIC SUBSTR	RATE COMPONENTS
		ild add up to 10				20.5	rily add up to 100%)
Substrate Type	Charac	teristic		ximate % on in Sample	Substrate Type	Charactéristic	Approximate % Composition in Sample
Bedrock			P.C.		Detritus	sticks, wood	100
Boulder	> 256 mm (10'	-				coarse plant	none
Cobble Gravel	64-256 mm (2. 2-64 mm (0.1-2				Muck-Mud	materials (CPOM) black, very fine	
Sand	0.06-2 mm (0.1		95	Find to moderate	WIDCK-WIDD	organic (FPOM)	none
Silt	0.004-0.06mm		5	illa la higentelle	Mari	grey,	
Clay	<0.004 mm (sl	ick)			leanin	shell fragments	trail
Floc layer pre Moisture cond Benthic fauna Odors Normal Chemical Other Sug Oils Absent NEAR BOT	Assent: 3/// Assent: 3/// Additions: Mod a: (0)/// b) (0) Additions: Mod a: (0)// b) (0) Additions: Mod Additions: Mo	Anaerobic (H <sub>2</sub> Moderate QUALITY:	5) Profuse	Petroleum	QA/QC: Duplicate Sa	umple Station? ( Y RPR-	
ORP (mV):	(mS/cm): () (57, 4 ANALYSES: meter	<b>0</b> -0.5		]	MS/MSD Sa	mple Station? ( Y RPR= RPR-	-MS
THg Grain Size Moisture	P/TOC	छ छ छ					

 $(1,1) \in \{1,\dots,n\}$ 

and the second sec	S				CHARACTER	<b>FIGATION</b>	
	DENTIFICATIO	N.	DUPO	POMPTO	NORTHING		EASTING:
	RPR-				DACK HING:		LAGTING.
INVESTIGA	11				RIVER REA	CH:	
Collins	Musumeci					NIA	
	PLETED BY:	-			DATE: 7 20	1 14	WATER DEPTH:
Collins	Musumeci	)		-	TIME: OP:1		
WEATHER CONDITIO			Past 24 hou	urs storm rain showers partly cloud clear/sunny		Has there been a Air Temperature Other:	a heavy rain in the last 7 days? (Ves / No <u>V5</u> °F
H	NORGANIC SU	JBSTRATE		ITS	0	110	RATE COMPONENTS arily add up to 100%)
Substrate			1	ximate %	Substrate		Approximate % Composition in
Туре	Charac	teristic		on in Sample	Type	Characteristic	Sample
Bedrock					Detritus	sticks, wood.	
Boulder	> 256 mm (10"			_		coarse plant	trave
Cobble Gravel	64-256 mm (2.	1			Muck-Mud //	materials (CPOM)	
Sand	2-64 mm (0.1-2 0.06-2 mm (gri	-	5-Camer	90- Fine to mad		black, very fine organic (FPOM)	hove
Silt	0.004-0.06mm		5.	to the power	Marl	grey,	
Clay	<0.004 mm (sl				an exercise	shell fragments	trace
Benthic fauna	a: (orbicula		-6	Petroleum			
Normal Chemical		Sewage Anaerobic (H	,SD	None			
Normal Chemical Other Oils Absent	Slight	Anaerobic (H	Profuse		G		-5.5 ·6" coauser sand
Normal Chemical Other Oils Absent NEAR BOT	Slight	Anaerobic (H Moderate QUALITY:			(° )		- 5.5 -6" coauser sand
Normal Chemical Other Oils Absent NEAR BOT Temperatur	Slight TOM WATER re (°C): 1억, 4	Anaerobic (H Moderate QUALITY: 2	Profuse		QA/QC:		-
Normal Chemical Other Oils Absent NEAR BOT Temperatur DO (mg/L):	Slight TOM WATER re (°C): 1 ମ. ୳ 0.3ଚ	Anaerobic (H Moderate QUALITY:	Profuse		QA/QC:	mple Station? ( Y	
Normal Chemical Other Oils Absent NEAR BOT Temperatur DO (mg/L): pH: 7.06	Slight TOM WATER re (°C): 1 ମ. ୳ 0.3ଚ	Anaerobic (H Moderate QUALITY: 2 DO (% Sat):	Profuse		QA/QC:	mple Station? ( Y RPR	- / <u>@</u> )
Normal Chemical Other Oils Absent NEAR BOT Temperatur DO (mg/L): pH: 7.00 Conductivity	Slight TOM WATER ୧୧ (°C):   ୩.୯ ୦.3ରି ୦.3ରି ୦.୦୦୦୦୦୦୦୦୦୦୦୦୦୦୦୦୦୦୦୦୦୦୦୦୦୦୦୦୦୦୦୦୦୦୦	Anaerobic (H Moderate QUALITY: 2 DO (% Sat):	Profuse		QA/QC: Duplicate Sa	RPR	DUP
Normal Chemical Other Oils Absent NEAR BOT Temperatur DO (mg/L): pH: 7.00 Conductivity	Slight TOM WATER ୧୧ (°C):   ୩.୯ ୦.3ରି ୦.3ରି ୦.୦୦୦୦୦୦୦୦୦୦୦୦୦୦୦୦୦୦୦୦୦୦୦୦୦୦୦୦୦୦୦୦୦୦୦	Anaerobic (H Moderate QUALITY: 2 DO (% Sat):	Profuse		QA/QC: Duplicate Sa		/( <sup>((k)</sup> ) - DUP / <sup>(k)</sup> )
Normal Chemical Other Oils Absent NEAR BOT Temperatur DO (mg/L): pH: 7.00 Conductivity	Slight TOM WATER ୧୧ (°C):   ୩.୯ ୦.3ରି ୦.3ରି ୦.୦୦୦୦୦୦୦୦୦୦୦୦୦୦୦୦୦୦୦୦୦୦୦୦୦୦୦୦୦୦୦୦୦୦୦	Anaerobic (H Moderate QUALITY: 2 DO (% Sat):	Profuse		QA/QC: Duplicate Sa	RPR mple Station?(Y	/( <sup>(i</sup> )) DUP / <sup>(i</sup> )) = - MS
Normal Chemical Other Oils Absent NEAR BOT Temperatur DO (mg/L): pH: 7.06 Conductivity ORP (mV):	Slight TOM WATER ୧୧ (°C):   ୩.୯ ୦.3ରି ୦.3ରି ୦.୦୦୦୦୦୦୦୦୦୦୦୦୦୦୦୦୦୦୦୦୦୦୦୦୦୦୦୦୦୦୦୦୦୦୦	Anaerobic (H Moderate QUALITY: 2 DO (% Sat):	Profuse		QA/QC: Duplicate Sa	RPR mple Station?(Y RPR=	/( <sup>(i</sup> )) - DUP /( <sup>(i</sup> )) = -MS
Normal Chemical Other Oils Absent NEAR BOT Temperatur DO (mg/L): pH: 7.00 Conductivity ORP (mV): SEDIMENT	Slight TOM WATER (°C): 19.4 0.38 (mS/cm): 0 178.3	Anaerobic (H Moderate QUALITY: 2 DO (% Sat): , 403	Profuse		QA/QC: Duplicate Sa MS/MSD Sa	RPR mple Station?(Y RPR=	/( <sup>(i</sup> )) - DUP /( <sup>(i</sup> )) = -MS
Normal Chemical Other Oils Absent NEAR BOT Temperatur DO (mg/L): pH: 7.00 Conductivity ORP (mV): SEDIMENT	Slight TOM WATER e (°C): 19.4 0.38 1 y (mS/cm): 0 178.3 ANALYSES:	Anaerobic (H Moderate QUALITY: 2 DO (% Sat):	Profuse		QA/QC: Duplicate Sa MS/MSD Sa	RPR mple Station?(Y RPR=	/( <sup>(i</sup> )) - DUP /( <sup>(i</sup> )) = -MS
Normal Chemical Other Oils Absent NEAR BOT Temperatur DO (mg/L): pH: 7.00 Conductivity ORP (mV): SEDIMENT Para THg	Slight TOM WATER (°C): 19.4 0.38 (mS/cm): 0 178.3 ANALYSES: meter	Anaerobic (H Moderate QUALITY: 2 00 (% Sat): .403	Profuse	None	QA/QC: Duplicate Sa MS/MSD Sa	RPR mple Station?(Y RPR=	/( <sup>(i</sup> )) - DUP / <sup>(i</sup> )) = -MS
Normal Chemical Other Oils Absent NEAR BOT Temperatur DO (mg/L): pH: 7.00 Conductivity ORP (mV): SEDIMENT Para	Slight TOM WATER (°C): 19.4 0.38 (mS/cm): 0 178.3 ANALYSES: meter	Anaerobic (H Moderate QUALITY: 2 DO (% Sat): , (03	Profuse	None	QA/QC: Duplicate Sa MS/MSD Sa	RPR mple Station?(Y RPR=	/( <sup>(i</sup> )) - DUP / <sup>(i</sup> )) = -MS

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UR	S		RAMAPO	POMPTON	CHARACTER RIVER INVES	TIGATION		
SAMPLE ID	ENTIFICATIO	DN:			NORTHING	-	EASTING:	
	RPR- 12				1.1		1	
INVESTIGA	TORS:				RIVER REA	CH: I A		
Collins	Musumeci			_		NIA		
	PLETED BY:				DATE: 7 2		WATER DEP	TH:
Collins	(Musumeci)				TIME: 0.4	C	1.5	
WEATHER CONDITION	IS	Now	Past 24 hou	urs storm rain showers partly cloud clear/sunny		Has there been a Air Temperature Other:	(res) / No	the last 7 days?
IN	IORGANIC SI		OMPONEN	ITS	1 0	RGANIC SUBSTR	ATE COMPO	NENTS
		uld add up to 10				(does not necessa		
Substrate Type	Charac	teristic		kimate % on in Sample	Substrate Type	Characteristic ,	Approximate	% Composition in ample
Bedrock					Detritus	sticks, wood,	1	
Boulder	> 256 mm (10	")				coarse plant	10	
Cobble	64-256 mm (2					materials (GPOM)		
Gravel	2-64 mm (0.1-		1.02		Muck-Mud	black, very fine	how	
Sand Silt	0.06-2 mm (gr 0.004-0.06mm		10		Mari	organic (FPOM) grey,	vuro,	
Clay	<0.004-0.00mm (sl		5			shell fragments	non	
	CHARACTER				CORE LOG:			
Substrate con Floc layer pres Moisture cond Benthic fauna Odors Normal Chemical Other Oils Absent NEAR BOTT Temperature DO (mg/L): pH: (0, 92)	Slight OM WATER (mS/cm): ()	Sandy S h wrd Sewage Anaerobic (H <sub>2</sub> S Moderate QUALITY: O DO (% Sat):	5) Profuse	Petroleum None			- 6" - dutri 7.5 · 8" - 1 10	ive scholy Silf ntus-befpace nad-coarse sand DUP MS
SEDIMENT / Parar	ANALYSES: neter		0.5-0.7		NOTES:			
THg		Image: Second se						
Grain Size/	тос			_				
Moisture		U						

SAMPLE ID	ENTIFICATIO	N:		NORTHING	i:	EASTING:
	<b>RPR-</b> 13					
INVESTIGA				RIVER REA	CH: NIA	
Collins	Musumeci				,	Lock marks
	MUSUMECI				29/14 .00	WATER DEPTH:
Collins 🤇	Musumeci	-		[IIME: 16		
WEATHER	IS				Has there been a Air Temperature Other:	a heavy rain in the last 7 days (res)/ No <u>75</u> <sub>°F</sub>
11	ORGANIC SU	BSTRATE (	OMPONENTS		PGANIC SUBST	RATE COMPONENTS
		d add up to 10			200	arily add up to 100%)
Substrate	1		Approximate			Approximate % Composition
Type	Charact	eristic	Composition in Sa		Characteristic	Sample
Bedrock				Detritus	sticks, wood,	
Boulder	> 256 mm (10")				coarse plant	5
Cobble	64-256 mm (2.5			Muck-Mud	materials (CPOM)	
Gravel Sand	2-64 mm (0.1-2 0.06-2 mm (grit		5-64		black, very fine organic (FPOM)	none
Silt	0.004-0.06mm		90	Marl	grey,	
Clay	<0.004 mm (sli	ck)	5	e en en	shell fragments	none
SEDIMENT	CHARACTERI			CORE LOG:		
	or: Dark Bur			CORELOG		1
Substrate cor		VVI				0-8". silt withau
	esent: 5mm					Fine Samel
	ditions: MOOL	Neito				fine sound 5% pernitus
	anions: moude					
Odors	1010 001			05		
Normal	5	Sewage	Petro	leum 8°		1
Chemical		Anaerobic (H <sub>2</sub>				E-14" - silty sand
onemical					1	
Other			100 CO 100 CO			60- fine sand
Other	Slight	Moderate	Profuse	14"		1 40-silt
Other Oils Absent			Profuse	<u> </u>	L	- 40° silt
Other Oils Absent NEAR BOT	TOM WATER O	QUALITY:	Profuse	1		
Other Oils Absent NEAR BOT Temperatur	том water ( e (°C): 12.45	QUALITY:		QA/QC:		
Other Oils Absent NEAR BOT Temperatur DO (mg/L):	TOM WATER ( e (°C): 12. 식영 고리역 표	QUALITY:		QA/QC:	ample Station? ( Y	(N)
Other Oils Absent NEAR BOT Temperatur DO (mg/L):( pH: 7,12	TOM WATER ( e (°C): 12.45	QUALITY:		QA/QC:		(N)
Other Oils Absent NEAR BOT Temperatur DO (mg/L): pH: 7,12 Conductivity	TOM WATER ( e (°C):   2. 년 5 고   역 표 (mS/cm): ()	QUALITY:		QA/QC: Duplicate S	ample Station? ( Y RPR	(N) DUP
Other Oils Absent NEAR BOT Temperatur DO (mg/L):( pH: 7,12	TOM WATER ( e (°C):   2. 년 5 고   역 표 (mS/cm): ()	QUALITY:		QA/QC: Duplicate S	ample Station? ( Y RPR ample Station? ( Y	(N) DUP (N)
Other Oils Absent NEAR BOT Temperatur DO (mg/L): pH: 7,12 Conductivity	TOM WATER ( e (°C):   2. 년 5 고   역 표 (mS/cm): ()	QUALITY:		QA/QC: Duplicate S	ample Station?(Y RPR ample Station?(Y RPR=	(N) DUP (N) = -MS
Other Oils Absent NEAR BOT Temperatur DO (mg/L):( pH: 7,12 Conductivity	TOM WATER ( e (°C):   2. 년 5 고   역 표 (mS/cm): ()	QUALITY:		QA/QC: Duplicate S	ample Station? ( Y RPR ample Station? ( Y	<ul> <li>(N)</li> <li>- DUP</li> <li>(N)</li> <li>- MS</li> </ul>
Other Oils Absent NEAR BOT Temperatur DO (mg/L):( pH: 7,12 Conductivity	TOM WATER ( e (°C):   2. 년 5 고   역 표 (mS/cm): ()	QUALITY:		QA/QC: Duplicate S	ample Station?(Y RPR ample Station?(Y RPR=	<ul> <li>(N)</li> <li>- DUP</li> <li>(N)</li> <li>- MS</li> </ul>
Other Oils Absent NEAR BOT Temperatur DO (mg/L): pH: 7,12 Conductivity ORP (mV):	TOM WATER ( e (°C):   2. 년 5 고   역 표 (mS/cm): ()	2UALITY: 5 00 (% Sat): ( .38(6	.2	QA/QC: Duplicate S MS/MSD Sa	ample Station?(Y RPR ample Station?(Y RPR=	(N) DUP (N) = -MS
Other Oils Absent NEAR BOT Temperatur DO (mg/L):( pH: 7,12 Conductivity ORP (mV): SEDIMENT	TOM WATER ( e (°C): 12.45 2.19 2 (mS/cm): 0 -11(0.8	2UALITY: 5 00 (% Sat): ( .38(6	.2	QA/QC: Duplicate S MS/MSD Sa	ample Station?(Y RPR ample Station?(Y RPR=	(N) DUP (N) = -MS
Other Oils Absent NEAR BOT Temperatur DO (mg/L):( pH: 7,12 Conductivity ORP (mV): SEDIMENT	TOM WATER ( e (°C): 12.45 D.19 E (mS/cm): 0 -1110.8 ANALYSES:	2UALITY: 5 00 (% Sat): ( .38(6	0,5 - 1.0 1.0	QA/QC: Duplicate S MS/MSD Sa	ample Station?(Y RPR ample Station?(Y RPR=	<ul> <li>(N)</li> <li>- DUP</li> <li>(N)</li> <li>- MS</li> </ul>
Other Oils Absent NEAR BOT Temperatur DO (mg/L): pH: 7,12 Conductivity ORP (mV): SEDIMENT Para THg	TOM WATER ( e (°C): 12.45 2.9 2 (mS/cm): () 11(2.8 ANALYSES: meter	0-0.5	0,5 - 1.0 1.0	QA/QC: Duplicate S MS/MSD Sa NOTES:	ample Station?(Y RPR ample Station?(Y RPR=	<ul> <li>(N)</li> <li>- DUP</li> <li>(N)</li> <li>- MS</li> </ul>
Other Oils Absent NEAR BOT Temperatur DO (mg/L): pH: 7,12 Conductivity ORP (mV): SEDIMENT Para	TOM WATER ( e (°C): 12.45 2.9 2 (mS/cm): () 11(2.8 ANALYSES: meter	QUALKTY: 5 00 (% Sat): ( .38(6 0 - 0.5	0,5 - 1.0 1.0	QA/QC: Duplicate S MS/MSD Sa NOTES:	ample Station?(Y RPR ample Station?(Y RPR=	<ul> <li>(N)</li> <li>- DUP</li> <li>(N)</li> <li>- MS</li> </ul>

	S		DUPO	NT POMPTO		_	
					NORTHING		EASTING:
	RPR-  4						
INVESTIGA					RIVER REA	ACH: NIA	
Collins	Musumeci IPLETED BY:				DATE: 7		WATER DEPTH:
Collins	Musumeci					30	1,5 <sup>1</sup>
WEATHER		Now	Past 24 hou	rs storm rain showers partly cloudy clear/sunny	/	Has there been Air Temperature Other:	a heavy rain in the last 7 days? (Yes)/ No 90°F
11	NORGANIC SU	BSTRATE		ITS	T (	ORGANIC SUBST	RATE COMPONENTS
	(should	add up to 1	00%) ()	-6"	-	De.	arily add up to 100%) 6-0"
Substrate	Characte	eristic		cimate %	Substrate	Characteristic	Approximate % Composition in
Type			Compositio	on in Sample	Type		Sample
Bedrock Boulder Cobble	> 256 mm (10") 64-256 mm (2.5	-10")			Detritus	sticks, wood, coarse plant materials (CPOM)	trace
Gravel	2-64 mm (0.1-2		A 1	10	Muck-Mud	black, very fine	how
Sand	0.06-2 mm (gritt	y)	5 h		Mod	organic (FPOM)	1013
Silt Clay	0.004-0.06mm <0.004 mm (slic	k)	8591 0	)	Marl	grey, shell fragments	none
	CHARACTERI				CORELOG		
Moisture con Benthic fauna <b>Odors</b> Normal Chemical	a: <u>nove obs</u> s	ewage naerobi <u>c (H</u> 2	S)	Petroleum None	19		Gvey Grey Fini sandy silt
Oils					1 1	-	1,1
Oils Absent	Slight	Moderate	Profuse	1			-13
Oils Absent	Slight TOM WATER C e (°C): 23.75 0.05 b y (mS/cm):	UALITY:			QA/QC: Duplicate S	Cample Station? ( \ RPF ample Station? ( \ RPR	-DUP
Oils Absent NEAR BOT Temperatur DO (mg/L): pH: 7.09 Conductivity ORP (mV):	Slight TOM WATER C e (°C): 23.15 0.08 (mS/cm): ~(9.1	UALITY:			QA/QC: Duplicate S MS/MSD S	ample Station? ( \ RPF ample Station? ( Y	
Oils Absent NEAR BOT Temperatur DO (mg/L): pH: 7.09 Conductivity ORP (mV): SEDIMENT	Slight TOM WATER C e (°C): 2 3.15 0.08 (mS/cm): ~(9.1 ANALYSES:	O (% Sat):(	5.9		QA/QC: Duplicate S	Cample Station? ( \ RPF ample Station? ( \ RPR	
Oils Absent NEAR BOT Temperatur DO (mg/L): pH: 7.09 Conductivity ORP (mV): SEDIMENT Para	Slight TOM WATER C e (°C): 23.15 0.08 (mS/cm): ~(9.1	0 (% Sat):( 0 (% Sat):(	0.5 -1.0	10 1	QA/QC: Duplicate S MS/MSD S	Cample Station? ( \ RPF ample Station? ( \ RPR	
Oils Absent NEAR BOT Temperatur DO (mg/L): pH: 7.09 Conductivity ORP (mV): SEDIMENT Para THg	Slight           TOM WATER C           e. (°C.): 23.15           Ø.08           Ø.08           (mS/cm);           ~(.9.1)           ANALYSES:           meter	0 -() 5	5.9		QA/QC: Duplicate S MS/MSD S	Cample Station? ( \ RPF ample Station? ( \ RPR	
Oils Absent NEAR BOT Temperatur DO (mg/L): pH: 7.09 Conductivity ORP (mV): SEDIMENT Para	Slight           TOM WATER C           e. (°C.): 23.15           Ø.08           Ø.08           (mS/cm);           ~(.9.1)           ANALYSES:           meter	0 (% Sat):( 0 (% Sat):(	0.5 -1.0	10 1	QA/QC: Duplicate S MS/MSD S	Cample Station? ( \ RPF ample Station? ( \ RPR	

 $(1,1) \in \mathbb{R}$ 

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SAMPLE I	DENTIFICATIO	N:			N LAKES W		EASTING:
	RPR- 15						
INVESTIG					RIVER REA	ACH:	
Collins	Musumeci					NIA	
FORM CO	MPLETED BY:				DATE: 7	914	WATER DEPTH:
Collins	Musumeci	)			TIME: 10	0Ú	ľ
WEATHER CONDITIO		Now	Boo	s storm rain showers partly cloud clear/sunny	y	Has there been a Air Temperature Other:	heavy rain in the last 7 d (e3)/No (65_°F
ł	NORGANIC SI (shou	UBSTRATE		ſS	0	- 50m	RATE COMPONENTS
Substrate	1		Approxir	mate %	Substrate	1	Approximate % Compositi
Туре		teristic	Composition		Туре	Characteristic	Sample
Bedrock			1		Detritus	sticks, wood,	
Boulder	> 256 mm (10				-	coarse plant	trace
Cobble	64-256 mm (2				Mugle Maria	materials (CPOM)	-
Gravel Sand	2-64 mm (0 1- 0.06-2 mm (gr		5-6V		Muck-Mud	black, very fine	none
Sand	0.004-0.06mm		5-61	u	Marl	organic (FPOM) grey,	
Clay	<0.004 mm (s		30			shell fragments	none
	CHARACTER			_	CORE LOG		
Oils Absent NEAR BOT Temperatur DO (mg/L): pH: 8-9	911 hydhod Slight TOM WATER TOM WATER (°C): 23,91 0,55 4 4 y (mS/cm): 0.	Moderate QUALITY: DO (% Sat):	S) Profuse	Petroleum None	grain si	ample Station? (? RPR-	(S-0.0-0√5-DUP
Conductivit ORP (mV):							MCD
ORP (mV): SEDIMENT Para THg Grain Size	ANALYSES: imeter	<u> </u>	05-1.0 I	· 	NOTES:	RPR-	-MSD
ORP (mV): SEDIMENT Para THg	imeter	<u> </u>			NOTES:	RPR	
ORP (mV): SEDIMENT Para THg Grain Size	imeter	<u> </u>	র্ত্র		NOTES:	RPR	

ER DEPTH: rain in the last 7 days? No °F
ER DEPTH: rain in the last 7 days?
rain in the last 7 days?
rain in the last 7 days?
rain in the last 7 days?
No
COMPONENTS (up to 100%)
roximate % Composition in
Sample
~
5
none
ione
onsistant throughout ee description on left
-DUP -MS -MSD

Substrate TypeCharacterBedrockBoulder> 256 mm (10")Cobble64-256 mm (2.5-		st 24 hours storm rain showers partly clou clear/sunn MPONENTS		N (A 9/14 50	
Collins Musumeci FORM COMPLETED BY: Collins Musumeci WEATHER CONDITIONS INORGANIC SUE (should Substrate Type Character Bedrock Boulder > 256 mm (10") Cobble 64-256 mm (2.5-		storm    rain    showers    partly clou    clear/sunn	DATE: 77 77 TIME: 5	N (A 9/14 50	heavy rain in the last 7 d
FORM COMPLETED BY: Collins Musumeci WEATHER CONDITIONS INORGANIC SUE (should Substrate Type Character Bedrock Boulder > 256 mm (10") Cobble 64-256 mm (2.5-		storm    rain    showers    partly clou    clear/sunn	TIME: 5	9/14 50	heavy rain in the last 7 d
Collins Musumeci WEATHER CONDITIONS INORGANIC SUE (should Substrate Type Character Bedrock Boulder > 256 mm (10") Cobble 64-256 mm (2.5-		storm    rain    showers    partly clou    clear/sunn	TIME: 5	50	heavy rain in the last 7 d
WEATHER CONDITIONS INORGANIC SUE (should Substrate Type Bedrock Boulder > 256 mm (10") Cobble 64-256 mm (2.5-		storm    rain    showers    partly clou    clear/sunn			
CONDITIONS		storm    rain    showers    partly clou    clear/sunn		Has there been a	
(should Substrate Type Character Bedrock Boulder > 256 mm (10") Cobble 64-256 mm (2.5-		MPONENTS		Air Temperature Other:	(Yes)/ No <u>15</u> ⁰F
Type Character Bedrock Boulder > 256 mm (10") Cobble 64-256 mm (2.5-			0	30	RATE COMPONENTS
Boulder         > 256 mm (10")           Cobble         64-256 mm (2.5-	ristic	Approximate % Composition in Sample	Substrate Type	Characteristic	Approximate % Composit Sample
	10")			sticks, wood, coarse plant materials (CPOM)	trace
Gravel 2-64 mm (0.1-2.5 Sand 0.06-2 mm (gritty	5")	20 - Filve 80	Muck-Mud	black, very fine organic (FPOM)	none
Silt 0.004-0.06mm Clay <0.004 mm (slick	0	00		grey, shell fragments	none
SEDIMENT CHARACTERIZ	ATION		CORE LOG		
	ewage haerobic (H <sub>2</sub> S)	Petroleum None	12"		65-silt 35- Givi Sand
		Profuse			
Temperature (°C):         2         4         2           DO (mg/L):         (µ. 4)         ØC           pH:         9.02         ØC           Conductivity (mS/cm):         0.2	) D (% Sał): ((	<u>, 1</u>		mple Station?(Y RPR·	-DUP
ORP (mV): 44.8			MS/MSD Sar	nple Station?(Y RPR= RPR-	-MS
SEDIMENT ANALYSES:			NOTES:		
Parameter	0-0,5 05	5 -1.0 -			
THg	d I				
Grain Size/TOC	U				
Moisture					

UR	S		SEDIMENT SAMP	N RIVER INVES	TIGATION	
SAMPLE I		ON:	DUPONT POM	NORTHING		EASTING:
	RPR- 18					
INVESTIGA				RIVER REA		
Collins	Musumeci			DATE: 7 29 14 WATER DEPTH:		
Collins	Musumeci	5		a should be should be should be a should be a should be a should be a should b	00	WATER DEPTH:
WEATHER		Now	Past 24 hours storm rain showers partly clu clear/su	Has there been a heavy rain in the last 7 day (es) No Air Temperature°F		
		UBSTRATE	COMPONENTS		RGANIC SUBST	ATE COMPONENTS
		uld add up to '			26	rily add up to 100%)
Substrate Type	1	cteristic	Approximate % Composition in Samp	Substrate	Characteristic.	Approximate % Compos Sample
Bedrock				Detritus	sticks, wood,	~c. Stru
Boulder	> 256 mm (10				coarse plant	
Cobble	64-256 mm (2			Muck-Mud 📈	materials (CPOM)	5 lo Decar
Gravel Sand	2-64 mm (0.1- 0.06-2 mm (gr		20- Gine		black, very fine organic (FPOM)	none
Silt	0.004-0.06mm		80	Marl	grey,	
Clay	<0.004 mm (s		0.0		shell fragments	hone
Moisture con Benthic fauna Odors Normal Chemical Other Oils Absent	a: Mone of	Sewage Anaerobic (H.	Pétroleur	10"		- Consistent Throughout -see description on left
Absent	Slight		Floidae			
NEAR BOT Temperatur DO (mg/L): pH: 9.33	TOM WATER e (°C): 24(3 7(26 y (mS/cm): ()	39 DO (% Sat):			ample Station? ( Y RPR mple Station? ( Y RPR= RPR	-DUP
NEAR BOT Temperatur DO (mg/L): pH: 9.33 Conductivity ORP (mV): SEDIMENT Para THg	TOM WATER e (°C): 24,3 7,26 y (mS/cm): 0 -32,2 ANALYSES: meter	0 - 0,5		Duplicate Sa MS/MSD Sa NOTES: - attemp divect	RPR mple Station? ( Y RPR= RPR=	-DUP -MS -MSD
NEAR BOT Temperatur DO (mg/L): pH: 9.33 Conductivity ORP (mV): SEDIMENT Para	TOM WATER e (°C): 24,3 7,26 y (mS/cm): 0 -32,2 ANALYSES: meter	9 DO (% Sat): 0.399 0 -0,5	05.08	Duplicate Sa MS/MSD Sa NOTES: - attemp divect	RPR mple Station? (Y RPR= RPR <u>Strol ta coluct</u> <u>push</u> as most re(	-DUP -MS -MSD

SAMPLE I	ENTIFICATIO	DN:			N LAKES V	G.	EASTING:
	RPR-	. 0				0.	LASTING.
-		-11					2
INVESTIGA Collins	Musumeci				RIVER RE	ACH: NA	
	APLETED BY				DATE: 7		WATER DEPTH:
	Musumeci				TIME: 14		21
WEATHER		Now	Past 24 hours	s		Has there been	a heavy rain in the last 7 d
CONDITION				storm			(Yes)/No
			_	rain			75 -
			=	showers partly cloudy	,	Air Temperatur	e <u>15</u> °F
				clear/sunny		Other:	
			COMPONENT		-	OPGANIC SUBSI	TRATE COMPONENTS
		uid add up to 1		5		26	sarily add up to 100%)
Substrate	T		Approxin	nate %	Substrate		Anoroximato % Composit
Туре	Charao	cteristic	Composition		Туре	Characteristic	Sample
Bedrock	1	-			Detritus	sticks, wood,	~ ~ ~ ~
Boulder	> 256 mm (10				-	coarse plant	5%
Cobble Gravel	64-256 mm (2 2-64 mm (0.1-		/		Muck-Mud.	black, very fine	
Sand	0.06-2 mm (gr		20			organic (FPOM)	none
Silt	0.004-0.06mm	1	80		Marl	grey,	
Clay	<0.004 mm (s	lick)	1 m		21 (1993)	shell fragments	none
Substrate col Substrate con Floc layer pre Moisture con Benthic fauna	nsistency:	ey N Sandy M	silt		CORE LOG		- top inch SAV mix fini scincly silt 80-silt 20-sand fiw sandy silt
Substrate col Substrate con Floc layer pre Moisture con Benthic fauna Odors Normal Chemical Other Oils	or: Dayle Gv nsistency: (1) esent: 4-5 m ditions: (1-5 m)) (1-5 m ditions: (1-5 m)) (1-5 m) (1-5 m) ditions: (1-5 m) (1-5 m) ditions: (1-5 m) d	evy Al Sandy Sewage Anaerobic (H <sub>2</sub>	5)	Petroleum			find scandy silt 80-silt 20-sand
Substrate col Substrate con Floc layer pre Moisture con Benthic fauna Odors Normal Chemical Other Oils Absent NEAR BOT	or: Dayle Gv nsistency: A esent: 4-5 m ditions: Mgb a: AbitUla Slight TOM WATER	Sewage Anaerobic (H <sub>2</sub> Moderate			10		find scendy silt 80-silt 20-sand Find sandy silt
Substrate col Substrate con Floc layer pre Moisture com Benthic fauna Odors Normal Chemical Other Oils Absent NEAR BOT Temperatur	or: Dayle Gv nsistency: In esent: 4-5 m ditions: Mgb a: abiluta Slight TOM WATER e (°C): 24-1	Al Sandy Marchy Sewage Anaerobic (H <sub>2</sub> Moderate QUALITY: 7	S) Profuse		[0] QA/QC:		find scency silt 80-silt 70-sand fiw sandy silt 60-silt 40-find scence
Substrate col Substrate con Floc layer pre Moisture con Benthic fauna Odors Normal Chemical Other Oils Absent NEAR BOT	or: Dayle Gy nsistency: In esent: 4-5 m ditions: Mgb a: (Abi(Ua Slight TOM WATER e (°C): 24.1 5.99	Al Sandy Marchy Sewage Anaerobic (H <sub>2</sub> Moderate QUALITY: 7	5)		[0] QA/QC:		find scandy silt 80-silt 20-sand fiw sandy silt 60-silt 40-find scand
Substrate col Substrate con Floc layer pre Moisture con Benthic fauna Odors Normal Chemical Other Oils NEAR BOT Temperatur DO (mg/L): pH: 0.02	or: Dayle Gy nsistency: In esent: 4-5 m ditions: Mgb a: (Abi(Ua Slight TOM WATER e (°C): 24.1 5.99	evy Al Sandy Sewage Anaerobic (H <sub>2</sub> Moderate QUALITY: 7 DO (% Sat):	S) Profuse		[0] QA/QC:	Sample Station? (	find scandy silt 80-silt 20-sand fiw sandy silt 60-silt 40-find scand
Substrate col Substrate con Floc layer pre Moisture con Benthic fauna Odors Normal Chemical Other Oils Absent NEAR BOT Temperatur DO (mg/L): pH: 0.02	or: Dayle Gv nsistency: [1] esent: 4-5 m ditions: [A19] a: (Abi(Ula Slight TOM WATER e (°C): 24, 1 5,99	evy Al Sandy Sewage Anaerobic (H <sub>2</sub> Moderate QUALITY: 7 DO (% Sat):	S) Profuse		QA/QC: Duplicate S	Sample Station? (	Find scandy silt 80-silt 70-sand fiw sandy silt 60-silt 40-find scand
Substrate col Substrate con Floc layer pre Moisture com Benthic fauna Odors Normal Chemical Other Oils Absent NEAR BOT Temperatur DO (mg/L): pH: 9.02 Conductivity	or: Dayle Gv nsistency: [1] esent: 4-5 m ditions: [A19] a: (Abi(Ula Slight TOM WATER e (°C): 24, 1 5,99	evy Al Sandy Sewage Anaerobic (H <sub>2</sub> Moderate QUALITY: 7 DO (% Sat):	S) Profuse		QA/QC: Duplicate S	Sample Station? (	YNN 
Substrate col Substrate con Floc layer pre Moisture con Benthic fauna Odors Normal Chemical Other Oils Absent NEAR BOT Temperatur DO (mg/L): pH: 9.02 Conductivity	or: Dayle Gv nsistency: [1] esent: 4-5 m ditions: [A19] a: (Abi(Ula Slight TOM WATER e (°C): 24, 1 5,99	evy Al Sandy Sewage Anaerobic (H <sub>2</sub> Moderate QUALITY: 7 DO (% Sat):	S) Profuse		QA/QC: Duplicate S	Sample Station? (	YNN R- - - - - - - - - - - - - -
Substrate col Substrate con Floc layer pre Moisture com Benthic fauna Odors Normal Chemical Other Oils Absent NEAR BOT Temperatur DO (mg/L): pH: 9.02 Conductivity ORP (mV):	or: Dayle Gv nsistency: In esent: 4-5 m ditions: MgV a: avbitula Slight TOM WATER e (°C): 2 4, 1 5,99 v (mS/cm): 0, 49,7	evy Al Sandy Sewage Anaerobic (H <sub>2</sub> Moderate QUALITY: 7 DO (% Sat):	S) Profuse		QA/QC: Duplicate S MS/MSD S	Sample Station? ( Sample Station? ( RPF	YNN R=DUP YNN R=MS
Substrate col Substrate con Floc layer pre Moisture com Benthic fauna Odors Normal Chemical Other Oils Absent NEAR BOT Temperatur DO (mg/L): pH: 0.02 Conductivity ORP (mV):	or: Dayle Gy nsistency: In esent: 4-5 m ditions: Mgb a: abilition a: abilition a: abilition Slight TOM WATER e (°C): 24.1 5.99 (mS/cm): 0, 49,7 ANALYSES:	evi Al Sandy Sewage Anaerobic (H <sub>2</sub> Moderate QUALITY: 7 DO (% Sat): 400	S) Protuse	None	QA/QC: Duplicate S	Sample Station? ( Sample Station? ( RPF	YNN R=DUP YNN R=MS
Substrate col Substrate con Floc layer pre Moisture com Benthic fauna Odors Normal Chemical Other Oils Absent NEAR BOT Temperatur DO (mg/L): pH: 9.02 Conductivity ORP (mV): SEDIMENT Para	or: Dayle Gv nsistency: In esent: 4-5 m ditions: MgV a: avbitula Slight TOM WATER e (°C): 2 4, 1 5,99 v (mS/cm): 0, 49,7	evi Al Sandy Sewage Anaerobic (H <sub>2</sub> Moderate QUALITY: 7 DO (% Sat): 906	5) Profuse 70.9	None	QA/QC: Duplicate S MS/MSD S	Sample Station? ( RPf Sample Station? ( RPf	YNN R= DUP DUP 
Substrate col Substrate con Floc layer pre Moisture com Benthic fauna Odors Normal Chemical Other Oils Absent NEAR BOT Temperatur DO (mg/L): pH: 9.02 Conductivity ORP (mV): SEDIMENT Para THg	or: Dayle Gy nsistency: In esent: 4-5 m ditions: Mgb a: avbitula Slight TOM WATER e (°C): 24,1 5,99 (mS/cm): 0, 49,7 ANALYSES: meter	evi Al Sanchy Moderate QUALITY: 7 DO (% Sat): 400 0 - 0.5	S) Protuse	None	QA/QC: Duplicate S MS/MSD S	Sample Station? ( RPf Sample Station? ( RPf	YNN R= DUP DUP 
Substrate col Substrate con Floc layer pre Moisture com Benthic fauna Odors Normal Chemical Other Oils Absent NEAR BOT Temperatur DO (mg/L): pH: 9.02 Conductivity ORP (mV): SEDIMENT Para	or: Dayle Gy nsistency: In esent: 4-5 m ditions: Mgb a: avbitula Slight TOM WATER e (°C): 24,1 5,99 (mS/cm): 0, 49,7 ANALYSES: meter	evi Al Sandy Sewage Anaerobic (H <sub>2</sub> Moderate QUALITY: 7 DO (% Sai): 906	5) Profuse 70.9	None	QA/QC: Duplicate S MS/MSD S	Sample Station? ( RPf Sample Station? ( RPf	YNN R=DUP YNN R=MS

	ENTIFICATIO	M.	DUPONT POMPTO	NORTHIN		EASTING:	
0					3.	EASTING;	
5	RPR- 20						
INVESTIGA Collins	TORS: Musumeci			RIVER RE	ACH: NA		
	PLETED BY:	-		DATE: 73019 WATER DEPTH			
	Musumeci )			TIME: 13:45 3'			
WEATHER		Now	Past 24 hours			heavy rain in the last 7 days	
CONDITION	is 🛛		storm		Thas there been a	Yes) No	
			🔲 rain			50	
1 0 0			showers partly cloud	4. <i>7</i>	Air Temperature		
		V	clear/sunny	-	Other:		
			COMPONENTS				
I		d add up to			11.	RATE COMPONENTS arily add up to 100%)	
Substrate	1		Approximate %	Qubetrat-		n H	
Type	Charact	eristic	Composition in Sample	Substrate Type	Characteristic	Approximate % Composition Sample	
Bedrock				Detritus	sticks, wood		
Boulder	> 256 mm (10"				coarse plant		
Cobble	64-256 mm (2.				materials (CPOM)		
Gravel Sand	2-64 mm (0.1-2 0.06-2 mm (grif		65	Muck-Mud	black, very fine	have	
Sand	0.004-0.06mm	(y)	35	Marl	organic (FPOM) Igrey,		
Clay	<0.004 mm (sli	ck)		1 a paras	shell fragments	nove	
SEDIMENT	CHARACTER			CORELOG			
Substrate col		ZATION		CORELOG	ALC: NOT	In march sill	
Substrate con	100 L	v san	0	1		stft sandy sill	
Floc layer pre	0.11		~	-			
	litions: Mal			The second secon		the second	
			the second	6"	M	SILLY Sana	
Benthic fauna	: nome -			1		and and	
Benthic fauna	none c	105evve				85% sand	
		Sewage				Silly Sand 85% sand 15% Silt grey	
Odors			Petroleum	12"		85% sand 15% silt grey	
Odors Normal		Sewage	Petroleum	12"		85% sand 15% silt grey	
<b>Odors</b> Normal Chemical		Sewage	Petroleum			85% sand 15% silt grey	
Odors Normal Chemical Other		Sewage Anaerobic (H	Petroleum	12"		85% sand 15% silt grey	
Odors Normal Chemical Other Oils Absent	Slight	Sewage Anaerobic (H Moderate	2SI None			85% sand 15% silt grey	
Odors Normal Chemical Other Oils Absent NEAR BOT	Slight	Sewage Anaerobic (H Moderate	2SI None	17		85% sand 159 Silt grey	
Odors Normal Chemical Other Oils Absent NEAR BOT Temperature	Slight	Sewage Anaerobic (H Moderate QUALITY:	Profuse	17 QA/QC:	n		
Odors Normal Chemical Other Oils Absent NEAR BOT Temperature DO (mg/L):	Slight TOM WATER ( e) (°C): 23, 49 5, 87	Sewage Anaerobic (H Moderate	Profuse	17 QA/QC:	Sample Station? ( Y		
Odors Normal Chemical Other Oils Absent NEAR BOT Temperature DO (mg/L): pH: 2.2	Slight FOM WATER ( e (°C): 23, 49 5, 87	Sewage Anaerobic (H Moderate QUALITY: 300 (% Sat):	Profuse	17 QA/QC:	n		
Odors Normal Chemical Other Oils Absent NEAR BOT Temperature DO (mg/L): pH: $\widehat{>}$ Conductivity	Slight TOM WATER ( (°C): 23, 49 5, 87 17 (mS/cm): 0.	Sewage Anaerobic (H Moderate QUALITY: 300 (% Sat):	Profuse	QA/QC: Duplicate S	Sample Station? ( Y RPR-	-DUP	
Odors Normal Chemical Other Oils Absent NEAR BOT Temperature DO (mg/L): pH: 2.2	Slight TOM WATER ( (°C): 23, 49 5, 87 17 (mS/cm): 0.	Sewage Anaerobic (H Moderate QUALITY: 300 (% Sat):	Profuse	QA/QC: Duplicate S	Sample Station? ( Y RPR- ample Station? ( Y)	-DUP	
Odors Normal Chemical Other Oils Absent NEAR BOT Temperature DO (mg/L): pH: $\widehat{>}$ Conductivity	Slight TOM WATER ( (°C): 23, 49 5, 87 17 (mS/cm): 0.	Sewage Anaerobic (H Moderate QUALITY: 300 (% Sat):	Profuse	QA/QC: Duplicate S	Sample Station? ( Y RPR- ample Station? ( Y RPR=	-DUP -MS	
Odors Normal Chemical Other Oils Absent NEAR BOT Temperature DO (mg/L): pH: $\widehat{>}$ Conductivity	Slight TOM WATER ( (°C): 23, 49 5, 87 17 (mS/cm): 0.	Sewage Anaerobic (H Moderate QUALITY: 300 (% Sat):	Profuse	QA/QC: Duplicate S	Sample Station? ( Y RPR- ample Station? ( Y)	-DUP -MS	
Odors Normal Chemical Other Oils Absent NEAR BOT Temperature DO (mg/L): pH: $\widehat{>}$ Conductivity	Slight TOM WATER ( (°C): 23, 49 5, 87 17 (mS/cm): 0.	Sewage Anaerobic (H Moderate QUALITY: 300 (% Sat):	Profuse	QA/QC: Duplicate S	Sample Station? ( Y RPR- ample Station? ( Y RPR=	-DUP -MS	
Odors Normal Chemical Other Oils Absent NEAR BOT Temperature DO (mg/L): pH: 0 Conductivity ORP (mV):	Slight TOM WATER ( (°C): 23, 49 5, 87 17 (mS/cm): 0.	Sewage Anaerobic (H Moderate QUALITY: 000 (% Sat): 410	Profuse	QA/QC: Duplicate S MS/MSD S	Sample Station? ( Y RPR- ample Station? ( Y) RPR= RPR-	-DUP -MS -MSD	
Odors Normal Chemical Other Oils Absent NEAR BOT Temperature DO (mg/L): pH: © Conductivity ORP (mV):	Slight FOM WATER ( (°C): 23, 45 5, 87 17 (mS/cm): 0, 44, 1	Sewage Anaerobic (H Moderate QUALITY: 00 (% Sat): 410	Profuse	QA/QC: Duplicate S MS/MSD S	Sample Station? ( Y RPR- ample Station? ( Y RPR=	-DUP -MS -MSD	
Odors Normal Chemical Other Oils Absent NEAR BOT Temperature DO (mg/L): pH: © Conductivity ORP (mV):	Slight TOM WATER ( (°C): 23, 45 5, 87 17 (mS/cm): 0, 40, 1 ANALYSES:	Sewage Anaerobic (H Moderate QUALITY: 6 00 (% Sat): 4 10 0 - 0.5	Profuse	QA/QC: Duplicate S MS/MSD S	Sample Station? ( Y RPR- ample Station? ( Y) RPR= RPR-	-DUP -MS -MSD	
Odors Normal Chemical Other Oils Absent NEAR BOT Temperature DO (mg/L): pH: 2 Conductivity ORP (mV): SEDIMENT Para	Slight FOM WATER ( e (°C): 23, 45 5, 87 17 (mS/cm): 0, 44, 1 ANALYSES: meter	Sewage Anaerobic (H Moderate QUALITY: 00 (% Sat): 410	Profuse	QA/QC: Duplicate S MS/MSD S NOTES:	Sample Station? ( Y RPR- ample Station? ( Y RPR= RPR- RPR-	-DUP -MS -MSD	

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SAMPLE I	DENTIFICATION	N:	5010		N LAKES WO		EASTING:			
	RPR- 21									
INVESTIGA					RIVER REACH:					
Collins	Musumeci				NA					
	MPLETED BY:				DATE: 7 31 14 WATER DEPTH:					
Collins	Musumeći)	1			TIME: 0845					
WEATHER CONDITIO			Past 24 hou	rs storm rain showers partly cloud clear/sunny		Has there been a Air Temperature Other:	e heavy rain in the last 7 days? (es) No (65) °F			
-	NORGANIC SU	BSTRATE	OMPONEN		ORGANIC SUBSTRATE COMPONENTS					
		Id add up to 10		-6"	(does not necessarily add up to 100%)					
Substrate Type	ubstrate		Approx	imate % In in Sample	Substrate Type	Charactéristic	Approximate % Composition in Sample			
Bedrock					Detritus	sticks, wood,				
Boulder	> 256 mm (10")	)				coarse plant	5%			
Cobble	64-256 mm (2.5				Must M. 1.	materials (CPOM)				
Gravel	2-64 mm (0.1-2		5		Muck-Mud	black, very fine	none			
Sand Silt	0.06-2 mm (grit 0.004-0.06mm	(y)	85		Marl	organic (FPOM) grey.				
Clay	<0.004 mm (slie	ck)	10		1 Alimona	shell fragments	hone			
CEDIMENT	CHARACTERI		-		CORE LOG					
Floc layer pro- Moisture com Benthic faun Odors Normal Chemical Other Oils Absent NEAR BOT Temperatur DO (mg/L): pH: 7,2	a:       Nove       Nove         Slight       Sight         TOM WATER (Construction):       Sight         53,,8       1         4       (mS/cm):       O	Moderate	5) Profuse	Petroleum None		ample Station? ( Y RPR mple Station? ( Y RPR:	DUP			
					NOTES:	RPR	MSD			

\* DO - likely not accurate

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UR	S		RAMAPO-	POMPTON F	CHARACTER RIVER INVES	TIGATION		
	RPR- 24	122	Jan .		NORTHING		EASTING:	
INVESTIGA		E	/		RIVER REACH:			
Collins	Musumeci						1	
FORM COM	Musumeci				DATE: 14	15	WATER DEPTH: 21	
			-		111006. 1-1		<u> </u>	
WEATHER CONDITIO			Past 24 hou	irs storm rain showers partly cloud clear/sunny		Has there been a Air Temperature Other:	a heavy rain in the last 7 days? Yesy No °F	
1				271	1 0	PGANIC SUBST	RATE COMPONENTS	
		Id add up to 1				- Da	arily add up to 100%)	
Substrate Type	Charac		Approx	kimate % on in Sample	Substrate Type	Characteristic	Approximate % Composition in Sample	
Bedrock				.F	Detritus	sticks, wood	100	
Boulder	> 256 mm (10'	")				coarse plant	10-15%	
Cobble	64-256 mm (2		1			materials (CPOM)	10 10 10	
Gravel	2-64 mm (0.1-		100		Muck-Mud	black, very fine	none	
Sand Silt	0.06-2 mm (gri		15	-	Mari	organic (FPOM)	nova	
Clay	<0.004-0.06mm		65		Mari	grey, shell fragments	none	
	CHARACTER				CORE LOG:	ponen nagmenta		
Floc layer pro Moisture con Benthic faun: Odors Normal Chemical Other Oils Absent	ditions: [Hig] a: Now ob	CL M DSC Wrd Sewage Anaerobic (H <sub>2</sub> : Moderate	5) Profuse	Petroleum None	6"			
	re (°C): 23.3			1	04/00			
DO (mg/L): pH: 8-78	S 10 y (mS/cm): 0	DO (% Sat):	0.1	-	QA/QC: Duplicate Sa	ample Station?(Y RPR		
ORP (mV):				]	MS/MSD Sa	mple Station? ( Y RPR= RPR	-MS	
SEDIMENT	ANALYSES:				NOTES:			
Para	meter	0-0.5			-aba	ndant SA	N & Wordy	
THg		V					depns	
Grain Size	e/TOC	V		12				
Moisture		2						

SAMFLLI	DENTIFICATIO	N:		NT POMPTO	NORTHING		EASTING:	
	RPR- 23	2						
INVESTIG					RIVER REACH:			
Collins	Musumeci				N/A			
	MPLETED BY:	~			DATE: 7		WATER DEPTH:	
Collins (	Musumeci	>			TIME: 09	15		
WEATHER CONDITIO		Now	Past 24 hou	urs storm rain showers partly cloud clear/sunny	-	Has there been a Air Temperature Other:	a heavy rain in the last 7 days? (res) No 0_°F	
	NORGANIC SU	IBSTRATE	COMPONEN	ITS	1 (	ORGANIC SUBST	RATE COMPONENTS	
-		ild add up to 1		-6"		2	arily add up to 100%)	
Substrate Type	Charac		Approx	kimate % on in Sample	Substrate Type	Characteristic	Approximate % Composition in Sample	
Bedrock					Detritus	sticks, wood,		
Boulder	> 256 mm (10"	1				coarse plant	5% fire nots	
Cobble	64-256 mm (2.				Muck-Mud	materials (CPOM)		
Gravel Sand	2-64 mm (0.1-2 0.06-2 mm (gri		trautin	Sand		black, very fine organic (FPOM)	hone	
Silt	0.004-0.06mm		85	A GEORICI	Marl	grey.	10	
Clay	<0.004 mm (sl	ick)	15			shell fragments	none	
SEDIMENT	CHARACTER				CORE LOG:			
and and and	disistency. (10)	Lev Silt					- (Unsistent	
Floc layer pr Moisture cor Benthic faun Odors Normal Chemical Other Oils Absent NEAR BOT Temperatur DO (mg/L): pH: 7,7	Inditions:         I//////         OI           a:         //////         OI           Slight         Slight           TOM WATER         I           re (°C):         21,67           J5,30         3	Al to Indile DSCIVED Sewage Anaerobic (H. Moderate QUALITY: 5 DO (% Sat):	,s)> Proluse	Petroleum None	G <sup>tv</sup> G <sup>tv</sup> 10 <sup>tv</sup> QA/QC: Duplicate S		Silty fine sand 65%	
Floc layer pr Moisture cor Benthic faun Odors Normal Chemical Other Oils Absent NEAR BOT Temperatur DO (mg/L): pH: 7, 7 Conductivit ORP (mV):	esent: 2 w/ nditions: [0W na: [N//W 0] Slight TOM WATER re (°C): 21,50 [5,30]	NI to Indice USEL VEO Sewage Anaerobic (H Moderate QUALITY: 5 DO (% Sat): 479	,s)> Proluse	None	g <sup>th</sup> 10 <sup>th</sup> QA/QC: Duplicate S MS/MSD St NOTES:	ample Station? ( Y	<ul> <li>4hvorghat</li> <li>see description on left</li> <li>silty five sand</li> <li>sold bestee</li> <li>- DUP</li> <li>- MS</li> <li>- MSD</li> </ul>	

\* DO -likely not accurate

ÜR	S		RAMAPO	NT SAMPLE POMPTON F	RIVER INVES	TIGATION		
SAMPLE ID	ENTIFICATIO	N:			NORTHING		EASTING:	
	RPR- 7 U	\						
INVESTIGA	TORS:				RIVER REACH: NA			
Collins	Musumeci							
	IPLETED BY:				DATE: 713		WATER DEPTH:	
Collins (	Musumeci	>	_		тіме: 14	15	2.5	
	IS	Now	Past 24 hou	urs storm rain showers partly cloud clear/sunny	-	Has there been Air Temperature Other:	a heavy rain in the last 7 days? Yes / No 9 O °F	
iN				ITS		RGANIC SUBST	RATE COMPONENTS	
		ild add up to 1				20-	sarily add up to 100%)	
Substrate Type	Charac	teristic		ximate % on in Sample	Substrate Type	Characteristic	Approximate % Composition in Sample	
Bedrock					Detritus	sticks, wood.		
Boulder	> 256 mm (10'	')		_		coarse plant	5%	
Cobble	64-256 mm (2.					materials (CPOM)	)	
Gravel	2-64 mm (0.1-		T.C.	and the set	Muck-Mud	black, very fine	none	
Sand Silt	0.06-2 mm (gri		45	ivy fince	Marl	organic (FPOM) grey,	nove	
Clay	<0.004 mm (sl		1)		Wian .	shell fragments	None	
	CHARACTER				CORE LOG	and noghierite	1	
Floc layer pre Moisture cond Benthic fauna Odors Normal Chemical Other Oils	ditions: mc a: NcM	Anaerobic (H <sub>2</sub> Moderate		Petroleum	Ch G		detutus located in lop l'12"	
NEAR BOT	TOM WATER	QUALITY:	1		S			
DO (mg/L): pH:	(mS/cm): ()	DO (% Sat):	51.4			ample Station? ( ` RPF	₹DUP	
ORP (mV):	53.7			1	MS/MSD S	ample Station?() RPR RPF	-MS	
SEDIMENT	ANALYSES:	÷		2 - 1	NOTES:			
Para	meter	0-0.5	-					
THg								
Grain Size	TOC							
Moisture								

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SAMPLE IC	DENTIFICATIO	DN:		N	ORTHING	:	EASTING:
	RPR- 25	5					
INVESTIGA	TORS:			R		CH: LL O	
Collins	Musumeci					NIA	1
	PLETED BY	5		D	ATE: 113 ME: 5	0114	WATER DEPTH:
Collins	Musumeci	2					
WEATHER		Now	Past 24 hours			Has there been	a heavy rain in the last 7 days
CONDITIO	12		□ sto □ rai	orm —			(Yes) No
				owers		Air Temperature	<u>−</u> <u>∀</u> O°F
i		R		rtly cloudy ear/sunny		Other	
				ansunny		Other:	
					C	(Inc.	
Substrate	1	uld add up to	Approxima	te %	Substrate		arily add up to 100%) Approximate % Composition
Type	Charao	cteristic	Composition in		Type	Characteristic	Sample
Bedrock				De	etritus	sticks, wood,	100
Boulder	> 256 mm (10 64-256 mm (2	<u>^</u>				coarse plant	15%
Cobble Gravel	2-64 mm (0.1-			M	uck-Mud	materials (CPOM) black, very fine	1
Sand	0.06-2 mm (gr	itty)	20-6		Pro-	organie (FPOM)	none
Silt	0.004-0.06mm		08	Ma	arl	grey,	nene
Clay	<0.004 mm (s	иск)			ORE LOG:	shell fragments	,
Floc layer pre Moisture con Benthic fauna Odors Normal Chemical Other Oils Absent	ditions: Moo	levate	No	etroleum	ll <sub>n</sub>		-consistent throughout 'See description on Uff
	TOM WATER				-		
	re (°C): 23.9	00 (% Sat):	53.2		A/QC:		(A)
DO (mg/L):		00 (% Saf):	0 L		uplicate S	ample Station? ( ) RPF	
0H: 0.41	y (mS/cm): 🔾	.474					
pH: 8.94 Conductivity	60.4			м	S/MSD Sa	ample Station?	
							-25-0.0-05 -MS
Conductivity						RPF	-25-0.0-05-MSD
Conductivity							
Conductivity ORP (mV):	ANAI VOES.				OTES.		
Conductivity ORP (mV): SEDIMENT	ANALYSES:	0-05	05.08	N	DTES:	DIPERAN A	
Conductivity ORP (mV): SEDIMENT Para	ANALYSES:	0-0.5	0.5 - 0.95 S	N		present	
Conductivity ORP (mV): SEDIMENT Para THg	meter			· □	-SAV	1	JG& N12~18"
Conductivity ORP (mV): SEDIMENT Para	meter	Y		· □	-SAV	1	Vas № 12-18 "

UN	S		RAMAPO-POMP	MPLE CHARACTER TON RIVER INVES	TIGATION			
SAMPLE ID	ENTIFICATIO	DN:		NORTHING	i:	EASTING:		
- X - F	RPR-26			100				
INVESTIGA				RIVER REA	CH:			
Collins	Musumeci				NA			
FORM COM	PLETED BY			DATE: 713	DATE: 713014 WATER DEPTH:			
Collins	Musumeci	>		TIME: IS:	45	1'		
WEATHER		Now	Past 24 hours		Has there been a	heavy rain in the last 7 days?		
CONDITION	IS		storn	ı		(Yes) No		
			🔲 rain			80		
			show		Air Temperature	<u>00</u> ⁰F		
			and a second sec	/ cloudy /sunny	Other:			
IN			OMPONENTS		96	RATE COMPONENTS		
	(sho	uld add up to 1	00%)		(does not necessa	rily add up to 100%)		
Substrate	Charao	cteristic	Approximate		Characteristic	Approximate % Composition in		
Туре			Composition in Sa			Sample		
Bedrock	> 250	,u \		Detritus	sticks, wood,	200		
Boulder Cobble	> 256 mm (10	-			coarse plant	20%		
Gravel	64-256 mm (2 2-64 mm (0.1-			Muck-Mud	black, very fine			
Sand	0.06-2 mm (gr		5 File		organie (FPOM)	pone		
Silt	0.004-0.06mm		95	Marl	grey,			
Clay	<0.004 mm (s	lick)			shell fragments	none		
	CHARACTER			CORE LOG				
				CORELUG	T. C.	1		
Substrate cold		Skinn	1.0.1.1.1			- fluidized sill throughout - consistant throughout - see dejumption on left		
			nd-fluiched sil					
Floc layer pre	6.00	nm	#			throughout		
Moisture cond	1.	igh				J		
Benthic fauna	Chuboner	mas				- Consistant		
Odors			the first			throughout		
Normal		Sewage	Petro	leum		- 100 ACTIVANTIA		
Chemical	<	Anaerobic (H <sub>2</sub>	S) None			an ca forprion		
Other						IN ON OFF		
Oils				12		" - II-12" slightly		
Absent	Slight	Moderate	Profuse			firmer		
NEAR BOTT	TOM WATER	OUAL ITY:						
				QA/QC:				
Temperature			2					
Temperature DO (mg/L):		DO (% Sat)	5.3		ample Station? 🕜			
Temperature DO (mg/L): pH: 8.95	5,55	DO (% Sat)	5,3			//N) //6-0.0-0.5 -DUP		
Temperature DO (mg/L): / pH:	5,55 (mS/cm): () (	DO (% Sat)	5,3	Duplicate S	RPR	26-0.0-0.5 -DUP		
Temperature DO (mg/L): / pH:	5,55 (mS/cm): () (	DO (% Sat)	5,3	Duplicate S		26-0.0-0.5 -DUP		
Temperature DO (mg/L): / pH:	5,55 (mS/cm): () (	DO (% Sat)	5,3	Duplicate S	RPR	26-00-0-5 -DUP		
Temperature DO (mg/L): / pH:	5,55 (mS/cm): () (	DO (% Sat)	5,3	Duplicate S	RPR- ample Station? ( Y	-26-0.0-0.5 -DUP		
Temperature DO (mg/L): / pH:	5,55 (mS/cm): () (	DO (% Sat)	5,3	Duplicate S	RPR- ample Station? ( Y RPR=	-26-0.0-0.5 -DUP		
Temperature DO (mg/L): ' pH: 징. 위5 Conductivity ORP (mV):	5,55 (mS/cm): 0, 75,7	DO (% Sat)	5,3	Duplicate S	RPR- ample Station? ( Y RPR=	-26-0.0-0.5 -DUP		
Temperature DO (mg/L): pH: 3.95 Conductivity ORP (mV): SEDIMENT	5,55 (mS/cm): () ( 75. 7 ANALYSES:	00 (% Sat){(		Duplicate S MS/MSD S NOTES:	RPR- ample Station? ( Y RPR- RPR-	-26-0.0-0.5 -DUP -MS MSD		
Comperature DO (mg/L): pH: $\Im$ . 95 Conductivity DRP (mV): SEDIMENT	5,55 (mS/cm): 0, 75,7	00 (% Sal)}{ 474 0 - 0.5	0.5 - 1.0	Duplicate S MS/MSD S NOTES: CL	RPR- ample Station? ( Y RPR=	-26-0.0 0.5 -DUP -MS MSD		
Temperature DO (mg/L): pH: 0.95 Conductivity ORP (mV): SEDIMENT Paran THg	5,55 (mS/cm): 0, 75. 7 ANALYSES: meter	00 (% Sat){ 474 0 - 0.5	0.5 - 1.0	Duplicate S MS/MSD S NOTES:	RPR- ample Station? ( Y RPR- RPR-	-26-0.0 0.5 -DUP -MS MSD		
Temperature DO (mg/L): pH: 0.95 Conductivity ORP (mV): SEDIMENT Parat THg Grain Size	5,55 (mS/cm): 0, 75. 7 ANALYSES: meter	0 (% Sal){ 474 0 - 0.5	0.5 - 1.0 🗹	Duplicate S MS/MSD S NOTES:	RPR- ample Station? ( Y RPR- RPR-	-26-0.0-0.5 -DUP -MS MSD		
Temperature DO (mg/L): pH: 0.95 Conductivity ORP (mV): SEDIMENT Paran THg	5,55 (mS/cm): 0, 75. 7 ANALYSES: meter	00 (% Sat){ 474 0 - 0.5	0.5 - 1.0	Duplicate S MS/MSD S NOTES: CL	RPR- ample Station? ( Y RPR- RPR-	-26-0.0.0.5 -DUP -MS MSD		

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SAMPLE ID	ENTIFICATIO	DN:	DUPONT POMP	NORTHING		EASTING:		
	RPR- 27	)				LASTING.		
INVESTIGA	L			RIVER RE	RIVER REACH:			
Collins Musumeci					NA			
FORM COMPLETED BY: Collins Musumeci					DATE: 7 30 14 WATER DEPTH:			
	Musumeci			TIME: Htt	母   30	l l'		
WEATHER       Now       Past 24 hours         CONDITIONS       Image: storm       Image: storm         Image: storm       Image: storm       Image: storm       Image: storm         Image: storm       Image: storm       Image: storm       Image: storm         Image: storm       Image: storm       Image: storm       Image: storm         Image: storm       Image: storm       Image: storm       Image: storm         Image: storm       Image: storm       Image: s								
II		UBSTRATE	COMPONENTS 100%)		to,	TRATE COMPONENTS		
Substrate	1	teristic	Approximate %	Substrate	1	Approximate % Composition in		
Type Bedrock			Composition in Samp	e Type Detritus	sticks, wood,	Sample		
Boulder	> 256 mm (10				coarse plant	have		
Cobble Gravel	64-256 mm (2 2-64 mm (0.1-		-	Muck-Mud /	materials (CROM	0		
Sand	0.06-2 mm (gr		90 GW	Index-Inde	organic (FPOM)	none		
Silt Clay	0.004-0.06mm <0.004 mm (sl		10	Marl	grey, shell fragments	hone		
	CHARACTER		1	CORELOG				
Moisture cond Benthic fauna Odors Normal Chemical	noni	Sewage Anaerobic (H	Petroleum			See ausunphin on lift 6-12 - fine to modern scince in [true		
Other Oils Absent	Slight	Moderate	Profuse	10" 12'		95% scind 5% silt 10-12-higher scind		
Temperature DO (mg/L): pH: 7.79	(mS/cm): ()	86 DO (% Sat):	102.5	<b>QA/QC:</b> Duplicate S	Sample Station?( RP <sup>i</sup>			
ORP (mV):				MS/MSD S	ample Station? ( RPF RP	R= -MS		
	ANALYSES:			NOTES:				
	neter	<u> </u>						
Para								

SAMPLE ID	ENTIFICATION:	_		ONT POMPTO	NORTHING		EASTING	2.
<b>RPR-</b> 78								
INVESTIGA	10				RIVER REACH:			
Collins	Musumeci					NA		
FORM COMPLETED BY: Collins Musumeci				DATE: 7 30 14 WATER DEPTH:			DEPTH:	
				TIME: 10	10	-		
NEATHER         Now         Past 24 hours           CONDITIONS         Image: Condition in the storm in the storm in the storm in the storm in the store in the sto					Yes /			
Image: state sta					Air Temperatur Other:	re <u>15</u> °F		
IN	IORGANIC SUB	STRATE O	OMPONE	NTS	ORGANIC SUBSTRATE COMPONENTS			
		add up to 1				(does not neces		
Substrate Type	Character	stic	Appro Composit	oximate % ion in Sample	Substrate Type	Charactéristic	71.23	nate % Composition i Sample
Bedrock	0.50				Detritus	sticks, wood		Lo of Shuks &
Boulder Cobble	> 256 mm (10") 64-256 mm (2.5-1	0")				coarse plant materials (CPOM	0	10°10 Shuks a
Gravel	2-64 mm (0.1-2.5		1		Muck-Mud	black, very fine	9	
Sand	0.06-2 mm (gritty)			to mechan	100	organic (FPOM)	hc hc	M
Silt	0.004-0.06mm		85		Marl	grey,	ne	M
Clay	<0.004 mm (slick	)	10			shell fragments	1	
Benthic fauna Odors Normal Chemical Other SU Oils Absent NEAR BOT Temperature DO (mg/L): 0 pH: (0,000	ditions: MOCUN : MOU Observed Served An: Ight hydroco Slight FOM WATER QL a (°C): 2.29 0.20 DC (mS/cm): (), 9	wage aerobic (H <sub>2</sub> : Noderate JALIEY:	5) Profuse	Petroleum None		ample Station? ( RPI ample Station? ( RPF	Y(N) R- Y(N)	-DUP
	ANALYSES:	0-05		· ·	NOTES:	RP ! Sectimen		-MSD

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SAMPLE I	DENTIFICATIO	ON:	DUPONT POMP	NORTHING		EASTING:
	RPR- 20					
INVESTIG	ATORS:			RIVER REA	ACH:	
Collins	Musumeci			4	NA	
	MPLETED BY	5		DATE: 14	73014	WATER DEPTH:
Collins	Musumeci			TIME: O	5	4
WEATHER		Now	Past 24 hours		Has there been a	heavy rain in the last 7 days
CONDITIO	NS		☐ storm ☐ rain			(Yes)/No
			showers		Air Temperature	75 °F
	÷		partly close			
			Clear/sun	ny	Other:	
I	NORGANIC S	UBSTRATE	COMPONENTS			RATE COMPONENTS
	(sho	uld add up to	100%) () ()		(does not necess	arily add up to 100%)
Substrate	Chara	cteristic	Approximate %	Substrate	Characteristic	Approximate % Composition
Type			Composition in Sample	71		Sample
Bedrock Boulder	> 256 mm (10	)")		Detritus	sticks, wood, coarse plant	trace
Cobble	64-256 mm (2				unaterials (CPOM)	IVUCC
Gravel	2-64 mm (0.1-	-2.5")		Muck-Mud	black, very fine	10 000
Sand	0.06-2 mm (g		5.61	117	organic (FPOM)	hone
Silt Clay	0.004-0.06mm <0.004 mm (s		85	Marl	grey, shell fragments	trace
				- A CONTRACT		
Substrate co Substrate co Floc layer pro Moisture con Benthic faunt	nsistency: Cla	statum G yey silt m m evictle	ver I trav sanct	CORE LOG		Clayer silt wil trace
Substrate co Substrate co Floc layer pro Moisture con Benthic faun: Odors Normal Chemical Other Other	lor: Down P nsistency: Cla esent: 3 nditions: Mock a: CV b) CV c	Sewage Anaerobic (H	4 <sub>2</sub> S) None			Gandy silf 85%-5,
Substrate co Substrate co Floc layer pro Moisture com Benthic faum Odors Normal Chemical Other Oils Absent	lor: Down P nsistency: Clo esent: 3 ditions: Mock a: CV b) CV c Slight	Sewage Anaerobic (F	Petroleum	6"		five sand
Substrate co Substrate co Floc layer pro Moisture con Benthic faun: Odors Normal Chemical Other Oils Absent NEAR BOT	Ior: Down P nsistency: Clo esent: 3 m ditions: Mock a: CV bic CC Slight TOM WATER	Sewage Anaerobic (H Moderate	4 <sub>2</sub> S) None	6" 6"		Gandy silf 85%-5,
Substrate co Substrate co Floc layer pro Moisture con Benthic faun: Odors Normal Chemical Other Oils Absent NEAR BOT Temperatur	Ior: Down P nsistency: Clo esent: 3 mu ditions: mock a: coloridation Slight TOM WATER re (°C): 20.5	Sewage Anaerobic (H Moderate QUALITY:	HVALY SAUCE Petroleum None Profuse	QA/QC:		Five sand Sandy silf 85%-Si 15°10 five Invaria
Substrate co Substrate co Floc layer pro Moisture con Benthic faun: Odors Normal Chemical Other Oils Absent NEAR BOT	Ior: Dawk P nsistency: Cla esent: 3 ditions: Mock a: (cVb)(UC Slight TOM WATER e (°C): 20.5 0.68	Sewage Anaerobic (H Moderate	HVALY SAUCE Petroleum None Profuse	QA/QC:		Fine sand Sandy silf BS%-Si 15% fine Ineganna
Substrate co Substrate co Floc layer pro- Moisture con Benthic faun: Odors Normal Chemical Other Oils Absent NEAR BOT Temperatur DO (mg/L): pH: ( 9 ( )	Ior: Dawk P nsistency: Cla esent: 3 ditions: Mock a: (cVb)(UC Slight TOM WATER e (°C): 20.5 0.68	Sewage Anaerobic (H Moderate QUALITY: 55 DO (% Sat)	HVALY SAUCE Petroleum None Profuse	QA/QC:	ample Station? (Y	Fine sand Sandy silf BS%-Si 15% fine Ineganna
Substrate co Substrate co Floc layer pro- Moisture con Benthic faun: Odors Normal Chemical Other Oils Absent NEAR BOT Temperatur DO (mg/L): pH: ( 9 ( )	Ior: Down P nsistency: Clo esent: 3 mu ditions: Mood a: CV bit (1 C Slight TOM WATER re (°C): 20.5 0.68 ) y (mS/cm): ()	Sewage Anaerobic (H Moderate QUALITY: 55 DO (% Sat)	HVALY SAUCE Petroleum None Profuse	۵۲ ۵۲ ۵۳ ۵۳ ۵۳ ۵۳ ۵۳ ۵۳ ۵۳ ۵۳ ۵۳ ۵۳ ۵۳ ۵۳ ۵۳	ample Station? (Y	Sandy silf 85%-si Isolo fine Invariance
Substrate co Substrate co Floc layer pro Moisture con Benthic faun: Odors Normal Chemical Other Oils Absent NEAR BOT Temperatur DO (mg/L): pH: ( ). 90 Conductivity	Ior: Down P nsistency: Clo esent: 3 mu ditions: Mood a: CV bit (1 C Slight TOM WATER re (°C): 20.5 0.68 ) y (mS/cm): ()	Sewage Anaerobic (H Moderate QUALITY: 55 DO (% Sat)	HVALY SQUICE	۵۲ ۵۲ ۵۳ ۵۳ ۵۳ ۵۳ ۵۳ ۵۳ ۵۳ ۵۳ ۵۳ ۵۳ ۵۳ ۵۳ ۵۳	ample Station? ( Y RPR	Sandy silf 85%-si Isolo fine Invariant No -DUP
Substrate co Substrate co Floc layer pro Moisture con Benthic faun: Odors Normal Chemical Other Oils Absent NEAR BOT Temperatur DO (mg/L): pH: ( ). 90 Conductivity	Ior: Down P nsistency: Clo esent: 3 mu ditions: Mood a: CV bit (1 C Slight TOM WATER re (°C): 20.5 0.68 ) y (mS/cm): ()	Sewage Anaerobic (H Moderate QUALITY: 55 DO (% Sat)	HVALY SQUICE	۵۲ ۵۲ ۵۳ ۵۳ ۵۳ ۵۳ ۵۳ ۵۳ ۵۳ ۵۳ ۵۳ ۵۳ ۵۳ ۵۳ ۵۳	ample Station? ( Y RPR ample Station? ( Y	Sandy sill 85%-51 Isolo fine Inegana No -DUP
Substrate co Substrate co Floc layer pro- Moisture con Benthic faun: Odors Normal Chemical Other Oils Absent NEAR BOT Temperatur DO (mg/L): pH: (QC Conductivity ORP (mV):	Ior: Down P nsistency: Clo esent: 3 widitions: Mood a: CV bit Clo Slight TOM WATER re (°C): 20.5 0.68 ) y (mS/cm): () 121.0	Sewage Anaerobic (H Moderate QUALITY: 55 DO (% Sat)	HVALY SQUICE	GA/QC: Duplicate St MS/MSD Sa	ample Station? ( Y RPR- ample Station? ( Y RPR-	Sandy sill 85%-51 Isolo fine Inegana No -DUP
Substrate co Substrate co Floc layer pro Moisture con Benthic faun: Odors Normal Chemical Other Oils Absent NEAR BOT Temperatur DO (mg/L): pH: ( 9.90 Conductivity ORP (mV):	Ior: Down P nsistency: Clo esent: 3 mu ditions: Mock a: (cVb)(UC Slight TOM WATER re (°C): 20.5 (0.68 ) y (mS/cm): () -121, 6 ANALYSES:	Sewage Anaerobic (H Moderate QUALITY: 55 DO (% Sat): 1,492	42S) Petroleum None	QA/QC: Duplicate St MS/MSD Sa NOTES:	ample Station? ( Y RPR- ample Station? ( Y RPR- RPR-	Sandy silf 85%-si Sandy silf 85%-si Isolo fine Inegana - DUP N - MS - MSD
Substrate co Substrate co Floc layer pro Moisture con Benthic faun: Odors Normal Chemical Other Oils Absent NEAR BOT Temperatur DO (mg/L): pH: ( ) .9(C Conductivity ORP (mV): SEDIMENT Para	Ior: Down P nsistency: Clo esent: 3 widitions: Mood a: CV bit Clo Slight TOM WATER re (°C): 20.5 0.68 ) y (mS/cm): () 121.0	Sewage Anaerobic (F Moderate QUALETY: 55 DO (% Sat): 1,492	Profuse	QA/QC: Duplicate St MS/MSD Sa NOTES:	ample Station? ( Y RPR- ample Station? ( Y RPR-	Sandy silf 85%-si Sandy silf 85%-si Isolo fine Inegana - DUP N - MS - MSD
Substrate co Substrate co Floc layer pro Moisture con Benthic faun: Odors Normal Chemical Other Oils Absent NEAR BOT Temperatur DO (mg/L): pH: (QC Conductivity ORP (mV): SEDIMENT Para THg	Ior: Dawk P nsistency: Cla esent: 3 widitions: Mock a: CV bit (1) Slight TOM WATER c (°C): 20.5 0.68 ) y (mS/cm): () 111.0 ANALYSES: meter	Sewage Anaerobic (H Moderate QUALITY: 5 DO (% Sat): 1,492	42S) Petroleum None	QA/QC: Duplicate St MS/MSD Sa NOTES:	ample Station? ( Y RPR- ample Station? ( Y RPR- RPR-	Sandy silf 85%-si Sandy silf 85%-si Isolo fine Inegana - DUP N - MS - MSD
Substrate co Substrate co Floc layer pro Moisture con Benthic faun: Odors Normal Chemical Other Oils Absent NEAR BOT Temperatur DO (mg/L): pH: ( ) .9(C Conductivity ORP (mV): SEDIMENT Para	Ior: Dawk P nsistency: Clo esent: 3 widitions: Mock a: CV bit (1) Slight TOM WATER c (°C): 20.5 0.68 ) y (mS/cm): () 111.0 ANALYSES: meter	Sewage Anaerobic (F Moderate QUALETY: 55 DO (% Sat): 1,492	Profuse	QA/QC: Duplicate St MS/MSD Sa NOTES:	ample Station? ( Y RPR- ample Station? ( Y RPR- RPR-	Sandy silf 85%-si Sandy silf 85%-si Isolo fine Inegana - DUP N - MS - MSD

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UR	S		RAMAPO	NT SAMPLE ( -POMPTON R ONT POMPTO	IVER INVES	TIGATION		
SAMPLE ID	ENTIFICATIO	N:			NORTHING		EASTING:	
	RPR-30							
INVESTIGA	TORS:				RIVER REA	CH:		
Collins	Musumeci					NIA		
FORM CON	PLETED BY:				DATE: 73	OH	WATER DEPTH:	
Collins	Musumeci				TIME: 00	0	(0)	
WEATHER	IS	Now	Past 24 ho	urs storm rain showers partly cloudy clear/sunny	4	Has there been a Air Temperature Other:	heavy rain in the last 7 days? (Yes) No 75 °F	
IN	IORGANIC SL		OMDONIE					
IF		Id add up to 10		15		26		
	(shou					(does not necessa	rily add up to 100%)	
Substrate ⊤ype	Charac	teristic		ximate % on in Sample	Substrate Type	Characteristic	Approximate % Composition in Sample	
Bedrock					Detritus	sticks, wood		
Boulder	> 256 mm (10"	)				coarse plant	10%	
Cobble	64-256 mm (2.		100 1			materials (CPOM)	t te	
Gravel	2-64 mm (0.1-2				Muck-Mud	black, very fine	none	
Sand	0.06-2 mm (gri			U /2 medium		organic (FPOM)		
Silt	0.004-0.06mm		70		Marl	grey,	non	
Clay	<0.004 mm (sli	ick)				shell fragments		
Moisture cond Benthic fauna Odors Normal Chemical Other Oils Absent	1014 00	vali to 1		Petroleum None	6"	<u>.</u>	- consistent Hiwughout - see description on left	
NEAR BOT	OM WATER	QUALITY:	1	1				
Temperature DO (mg/L): pH: 7.10	≥ (°C): <u>7(), (</u> [,34] (mS/cm): ()	0) 00 (% Sat):	5.1			ample Station?(Y RPR- mple Station?(Y RPR= RPR-	-DUP	
SEDIMENT	ANALYSES:				NOTES:			
	meter	0-0.5				Margh Marile	MUSS WERE N14"	
	noter							
THg	700					www. por		
Grain Size	/IOC						to original	
Moisture					locat	ion being a	y	
						J		

CAMPLE ID	ENTIFICATIO		DUPO	NTPOMPTO	IN LAKES W		FACTING.		
RPR- 3					NORTHING:		EASTING:		
INVESTIGA Collins	TORS: Musumeci				RIVER REACH: N A				
FORM CON	PLETED BY:				DATE: 7	31 14	WATER DEPTH:		
Collins	Musumeci	-			TIME: 110	10'	2		
WEATHER       Now       Past 24 hours         CONDITIONS       Image: Storm       Image: Storm         Image: Image: Store       Image: Store       Image: Store         Image: Image: Image: Store       Image: Store       Image: Store         Image: Image: Image: Image: Image: Store       Image: Store       Image: Store         Image: Ima									
IN	ORGANIC SU	JBSTRATE	COMPONEN	ITS	1 0	ORGANIC SUBST	RATE COMPONENTS		
		ld add up to		10		91-	arily add up to 100%)		
Substrate Type	Charac	teristic	Approx	kimate % on in Sample	Substrate Type	Characteristic	Approximate % Compositi Sample		
Bedrock					Detritus	sticks, wood,	rg Shu		
Boulder	> 256 mm (10'				-	coarse plant	5% wave		
Cobble Gravel	64-256 mm (2. 2-64 mm (0.1-2		5	5	Muck-Mud	black, very fine			
Sand	0.06-2 mm (gri			S-coarte		organic (FPOM)	none,		
Silt	0.004-0.06mm		10		Mart	grey,			
Clay	<0.004 mm (sl	ick)		1		shell fragments	none		
Floc layer pre Moisture conc	ditions: High	the second s	1				- (CONSISTENT THOUG		
Moisture cond	ditions: High a: (arb) Luice	1	7	Petroleum None	رم ۱۵۳		- Consistent troug U-U" 5% silt 90% sand 5% Gravel		
Moisture cond Benthic fauna Odors Normal Chemical Other Oils Absent NEAR BOT Temperature DO (mg/L): pH: 7.28	Slight TOM WATER e (°C): [0, 4 3,76 y (mS/cm): 0,	Moderate	2S) Proluse	11	ال) AA/QC: Duplicate S		5 46 Silt 90% Sand 570 Gravel		
Moisture cond Benthic fauna Odors Normal Chemical Other Oils Absent NEAR BOT Temperature DO (mg/L): pH: 7.2 { Conductivity ORP (mV):	Slight TOM WATER e (°C): [0, 4 3,76 y (mS/cm): 0,	A Sewage Anaerobic (H Moderate QUALITY: LO DO (% Sat): -(67	2S) Proluse	None	ال) QA/QC: Duplicate S MS/MSD S	Sample Station? ( Y RPR ample Station? ( Y RPR= RPR	5 % Silt 90% Sand 57 Gvavel - DUP - MS - MSD		
Moisture cond Benthic fauna Odors Normal Chemical Other Oils Absent NEAR BOT Temperature DO (mg/L): pH: 7.2 { Conductivity ORP (mV):	Slight TOM WATER e (°C): [8, 4 3,76 2 (mS/cm): 0, 67,1	A Sewage Anaerobic (⊢ Moderate QUALITY: DO (% Sat): Ч(07) Ч(07)	2S) Profuse 4(0.1	None	ال) QA/QC: Duplicate S MS/MSD S	Sample Station? ( Y RPR ample Station? ( Y RPR= RPR	5 % Silt 90% Sand 57 Gvavel - DUP - MS - MSD		
Moisture cond Benthic fauna Odors Normal Chemical Other Oils Absent NEAR BOT Temperature DO (mg/L): pH: 7.2 { Conductivity ORP (mV):	ditions: 119 Slight TOM WATER e (°C): [8, 4 3, 16 (mS/cm): 0, G7, 1 ANALYSES:	Noderate QUALITY: () DO (% Sat): -() -() -() -() -() -() -() -() -() -()	2S) Proluse	None	ال) QA/QC: Duplicate S MS/MSD S	Sample Station? ( Y RPR ample Station? ( Y RPR= RPR	5 46 Silt 90% Sand 570 Gravel		
Moisture cond Benthic fauna Odors Normal Chemical Other Oils Absent NEAR BOT Temperature DO (mg/L): pH: 7,2 & Conductivity ORP (mV): SEDIMENT	Slight Slight TOM WATER e (°C): [8, 4 3, 76 3, 7	A Sewage Anaerobic (⊢ Moderate QUALITY: DO (% Sat): Ч(07) Ч(07)	2S) Profuse 4(0.1	None X	ال) QA/QC: Duplicate S MS/MSD S	Sample Station? ( Y RPR ample Station? ( Y RPR= RPR	5 % silt 90% sand 57 Gvavel - DUP - MS - MSD		

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	S		N RIVER INVESTIGATION TON LAKES WORKS	
	ENTIFICATION:		NORTHING:	EASTING:
	RPR- 37			
INVESTIGA			RIVER REACH:	I
Collins		use	NIA	1
	PLETED BY:		DATE: 7 31 14 TIME: 1 30	WATER DEPTH: U
(	Musumeci		TIME: (130	
WEATHER		Image: Storm         storm           Image: Storm         rain           Image: Storm         showers           Image: Storm         partly closes	Air Temper budy	een a heavy rain in the last 7 day Yes/ No ature <u>10</u> °F
-				
11	NORGANIC SUBSTR			BSTRATE COMPONENTS
Quibatanta	(should add u			ecessarily add up to 100%)
Substrate Type	Characteristic	Approximate % Composition in Sampl	le Substrate Character	istic Approximate % Compositio Sample
Bedrock			Detritus sticks, wood	
Boulder	> 256 mm (10")		coarse plant	
Cobble Gravel	64-256 mm (2.5-10") 2-64 mm (0_1-2_5")	trad	Muck-Mud // black, very fi	
Sand	0.06-2 mm (gritty)	15 TU-Fine	organic (FPC	none
Silt	0.004-0.06mm	70%	Marl grey,	MARE
Clay	<0.004 mm (slick)	15 to clay	shell fragmer	nts
Odors Normal Chemical Other Oils Absent		bic (H <sub>2</sub> S) None	12"	100% o sand trau silt
	Slight Mode			
NEAD POT	TOM WATER QUALI	TY:	Contraction of the second s	
Temperatur DO (mg/L):, pH: 7.28	e (°C): 19.40 3,43 DO (% (mS/cm): (),460	Sat): 3.0.1	MS/MSD Sample Station	RPRDUP
Temperatur DO (mg/L):, pH: 7.16 Conductivity ORP (mV): SEDIMENT Para	e (°C): 19.40 3,43 00 (% (mS/cm): (),466 [[],4 [[],4 ANALYSES: meter 0.	.0505.10	Duplicate Sample Station MS/MSD Sample Station NOTES:	RPRDUP P?(YN) RPR= -MS RPRMSD ISITION
Temperatur DO (mg/L):, pH: 7.26 Conductivity ORP (mV): SEDIMENT Para THg	e (°C): 19.00 3,43 00 (% (mS/cm): (),466 [[],4 [],4 ANALYSES: meter 0		Duplicate Sample Station MS/MSD Sample Station NOTES:	RPRDUP ?(YN) RPR= -MS RPRMSD
Temperatur DO (mg/L):, pH: 7.16 Conductivity ORP (mV): SEDIMENT Para	e (°C): 19.00 3,43 00 (% (mS/cm): (),466 [[],4 [],4 ANALYSES: meter 0	.0505.10	Duplicate Sample Station MS/MSD Sample Station NOTES:	RPRDUP P?(YN) RPR= -MS RPRMSD ISITION

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SAMPLE IC	ENTIFICATION	N:		NORTHING	:	EASTING:	
	<b>RPR-</b> 33					1.1	
INVESTIGA	TORS:			RIVER REACH:			
Collins	Musumeci	pees	e	N/A			
FORM COM Collins	Musumeci			DATE: 713 TIME: 12	30	WATER DEPTH: 9'	
	THE DUTTICOL		D : 041	1111112. 1.6.		· · · · · · · · · · · ·	
WEATHER	15	Now	Past 24 hours storm rain showers partly cloud clear/sunny	-	Air Temperature Other:	heavy rain in the last 7 da Yeg / No <u>70</u> °F	
I	ORGANIC SU	BSTRATE	COMPONENTS	0	RGANIC SUBSTR	ATE COMPONENTS	
	(should	d add up to 1	00%)		(does not necessa	rily add up to 100%)	
Substrate Type	Characte	eristic	Approximate % Composition in Sample	Substrate Type	Characteristic	Approximate % Composition Sample	
Bedrock	> 050	-		Detritus	sticks, wood,		
Boulder Cobble	> 256 mm (10") 64-256 mm (2.5				coarse plant materials (CPOM)	trale	
Gravel	2-64 mm (0.1-2		50%	Muck-Mud,	black, very fine	none	
Sand	0.06-2 mm (gritt	ty)	2500	174	organic (FPOM)		
Silt	0.004-0.06mm <0.004 mm (slic	ck)	2546	Marl	grey. snell fragments	trace	
Floc layer pro Moisture con Benthic faun Odors Norma Chemical Other	ditions: High a: MOVAL ( S A	Anaerobic (H Moderate	Petroleum	Ğ		- Consistent throughout - See clesiniph on left	
Absent		ALLAL DELL					
Absent NEAR BOT Temperatur DO (mg/L): pH: 8 ()	<u>ලි</u> y (mS/cm): () ,	00 (% Sat):	\$0,5		ample Station?(Y RPR ample Station?(Y RPR= RPR	-DUP	
Absent NEAR BOT Temperatur DO (mg/L): pH: 8 () Conductivit ORP (mV):	re (°C): 2 .(65 4.42 8 y (mS/cm): 0,	90 (% Sat): 4716		Duplicate S MS/MSD Sa NOTES:	RPR ample Station? ( Y RPR= RPR	-DUP	
Absent NEAR BOT Temperatur DO (mg/L): pH: 8 () Conductivit ORP (mV): SEDIMENT Para	re (°C): 21.(6 4.42 8 y (mS/cm): 0, 97,9	0-05		Duplicate S MS/MSD Sa NOTES:	RPR ample Station? ( Y RPR= RPR	-DUP -MS -MSD -MSD	
Absent NEAR BOT Temperatur DO (mg/L): pH: 8 () Conductivit ORP (mV): SEDIMENT Para THg	e (°C): 21.(6 4.42 8 y (mS/cm): 0, 97,9 ANALYSES:	0 - 0.5		NOTES:	RPR ample Station? (Y RPR= RPR <u>d Several Con</u>	-DUP -DUP -MS -MSD -MSD -MSD	
Absert NEAR BOT Temperatur DO (mg/L): pH: 8 () Conductivit ORP (mV): SEDIMENT Para	e (°C): 21.(6 4.42 8 y (mS/cm): 0, 97,9 ANALYSES:	0-05		NOTES:	RPR ample Station? (Y RPR= RPR <u>d Several Con</u>	-DUP -DUP -MS -MSD	

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Solution       ICOUST         FORM COMPLETED BY:       DATE: 7/3/14/         Collins       Musumed         WEATHER       Now         Past 24 hours       Has         CONDITIONS       Image: storm         Image: storm       Image: storm         Image: store       Image: store         Image: store <td< th=""><th>EASTING: WATER DEPTH: there been a heavy tain in the last 7 days? Yes No emperature 75 °F r: NC SUBSTRATE COMPONENTS</th></td<>	EASTING: WATER DEPTH: there been a heavy tain in the last 7 days? Yes No emperature 75 °F r: NC SUBSTRATE COMPONENTS		
RPR- 34         INVESTIGATORS:         Collins Musumeci Reace:         DATE: 7[3] [14]         TIME: 1330         VEATHER         Conditions         DATE: 7[3] [14]         TIME: 1330         WEATHER         CONDITIONS         Image: Storm         CONDITIONS         INORGANIC SUBSTRATE COMPONENTS         CORGANIC SUBSTRATE COMPONENTS         (should add up to 100%)         Substrate Characteristic         Approximate %         Type         Composition in Sample         Detritus         Substrate Characteristic         Composition in Sample         Substrate consistency: (should add up to 100%)         Composition in Sample         Substrate colsm (10")         Composition in Sample         Substrate colsman         Colspan="2">Composition in Sample         Substrate colsman         Colspan= 2"Se mm (10") <td colspan="2" se<="" th=""><th>WATER DEPTH: there been a heavy tain in the last 7 days? Yes No emperature 75 °F r: NC SUBSTRATE COMPONENTS</th></td>	<th>WATER DEPTH: there been a heavy tain in the last 7 days? Yes No emperature 75 °F r: NC SUBSTRATE COMPONENTS</th>		WATER DEPTH: there been a heavy tain in the last 7 days? Yes No emperature 75 °F r: NC SUBSTRATE COMPONENTS
INVESTIGATORS:       RIVER REACH:         Collins       Musumeci       Quipter         FORM COMPLETED BY:       DATE: 713/114         Collins       Musumeci       DATE: 713/114         TIME:       1330         WEATHER       Now       Past 24 hours       Has         Conditions       Image: showers       Air T         Image: showers       Air T       partly cloudy       Other         Image: showers       Air T       Substrate       Composition in Sample       Substrate         Substrate       Characteristic       Composition in Sample       Detritus       stick:         Bedrock       Edited       Approximate %       Composition in Sample       Detritus       stick:         Bedrock       Boulder       > 256 mm (10")       Composition in Sample       Detritus       stick:         Bedrock       Boulder       > 256 mm (2.5-10")       Mark       organistick:       organistick:       organistick:       organistick:       organistick:       organistick:	WATER DEPTH: there been a heavy rain in the last 7 days? Yes No emperature 75 °F r: NIC SUBSTRATE COMPONENTS		
Collins       Musumeci       Resse         FORM COMPLETED BY:       DATE: 7/31/14         Collins       Musumeci       DATE: 7/31/14         TIME:       1330         WEATHER       Now       Past 24 hours       Has         CONDITIONS       Image: 1330         Image: 1330       Image: 1330         WEATHER       Now       Past 24 hours       Has         CONDITIONS       Image: 1330       Storm       Image: 1330         Weather       Storm       Image: 1330       Image: 1330         Weather       Now       Past 24 hours       Has         Conditions       showers       Air T         Image: 1330       Storm       Image: 1330         Weather       Conditions       Showers       Air T         Image: 1400       Gody       Class       Composition in Sample       Type         Substrate       Characteristic       Approximate %       Substrate for the store       Composition in Sample       Type       Class         Gravel       2-64 mm (0.1-2.5")       Image: 100       Muck-Mud & black       organ         Sand       0.06-2 mm (gritty)       Marid       grav       grav       grav       grav       grav	WATER DEPTH: there been a heavy rain in the last 7 days? (Yes) No emperature °F r: NIC SUBSTRATE COMPONENTS		
Control       Course         Control       Course         Collins       Musumed         Collins       Musumed         Collins       Musumed         Conditions       Image: Course         Conditions       Course         Course       Course </td <td>WATER DEPTH: there been a heavy rain in the last 7 days? (Yes) No emperature °F r: NIC SUBSTRATE COMPONENTS</td>	WATER DEPTH: there been a heavy rain in the last 7 days? (Yes) No emperature °F r: NIC SUBSTRATE COMPONENTS		
Collins       Musumed       TIME: 1330         WEATHER CONDITIONS       Now       Past 24 hours       Has         Image: Storm       Image: Storm       Image: Storm       Has         Image: Storm       Image: Storm       Image: Storm       Image: Storm       Image: Storm         Image: Storm       Image: Storm       Image: Storm       Image: Storm       Image: Storm       Image: Storm         Image: Store	there been a heavy-tain in the last 7 days? (Ves) No emperature °F r: NIC SUBSTRATE COMPONENTS		
WEATHER CONDITIONS       Now       Past 24 hours       Has         CONDITIONS       Image: storm       Image: storm       Image: storm         Image: store       Image: store       Air T         Image: store       Image: store       Air T         Image: store       Image: store       Air T         Image: store       Image: store       Image: store         Image: store       Image: store       Image: store       Image: store         Image: store       Image: store       Image: store       Image: store       Image: store         Image: store       Image: store       Image: store       Image: store       Image: store       Image: store       Image: store       Image: store       Image: store       Image: st	(ves) No emperature <u>75</u> °F r: NC SUBSTRATE COMPONENTS		
CONDITIONS       storm         showers       Air T         showers       Air T         partly cloudy       clear/sunny         Other       ORGAN         (should add up to 100%)       Craateristic         Substrate       Characteristic         Type       Characteristic         Composition in Sample       Type         Bedrock       Detritus         Boulder       >256 mm (10")         Gravel       2-64 mm (0.1-2.5")         Gravel       2-64 mm (0.1-2.5")         Sand       0.06-2 mm (gritty)         Sand       0.06-2 mm (gritty)         Sand       0.06-2 mm (gritty)         Stilt       0.004-0.06mm         Substrate color:       GYC Y Browth         Substrate color:       GYC Y Browth         Substrate conditions:       MCCLOVCLTR         Benthic fauna:       CoVLUCLR         Benthic fauna:       CoVLUCLR         Benthic fauna:       CoVLUCLR         Benthic fauna:       Slight         Moderate       Profuse         None       Other         Oils       Absent         Slight       Moderate         Profuse       Do(	(ves) No emperature <u>75</u> °F r: NC SUBSTRATE COMPONENTS		
(should add up to 100%)       (doe         Substrate       Characteristic       Approximate % Composition in Sample       Substrate Type       Ch         Bedrock       Detritus       sticks       crars         Boulder       > 256 mm (10")       Detritus       sticks         Cobble       64-256 mm (2.5-10")       Muck-Mud       black         Gravel       2-64 mm (0.1-2.5")       0       Muck-Mud       black         Sand       0.06-2 mm (gritty)       Sticks       organ         Silt       0.004-0.06mm       Marl       grey,         Clay       <0.004 mm (slick)       TO       Marl       grey,         Substrate color:       Gvey Brawon       Substrate color:       Gvey Brawon       Substrate color:       Gvey Brawon         Substrate consistency:       Would V Clay       Floc       Gor       Of         Substrate conditions:       Moderate       Petroleum       Gits       Gits         Normai       Sewage       Petroleum       Gits       Gits         Other       Oils       Slight       Moderate       Profuse       GA/QC:         Do (mg/L):       Gits       DO (% Sat): DO, Z       Duplicate Sample			
Substrate Type       Characteristic       Approximate % Composition in Sample       Substrate Type       Cl         Bedrock       Detritus       sticks         Boulder       > 256 mm (10")       Detritus       sticks         Cobble       64-256 mm (2.5-10")       Muck-Mud       bfack         Gravel       2-64 mm (0.1-2.5")       IO       Muck-Mud       bfack         Sand       0.06-2 mm (gritty)       Marl       gravel       gravel         Sand       0.06-2 mm (gritty)       Marl       gravel	1 Mar and a second second		
Type       Composition in Sample       Type       C         Bedrock       Detritus       stick:         Boulder       > 256 mm (10")       Detritus       stick:         Cobble       64-256 mm (2.5-10")       Muck-Mud       black         Gravel       2-64 mm (0.1-2.5")       O       Muck-Mud       black         Sand       0.06-2 mm (gritty)       Muck-Mud       black       organize         Silt       0.004-0.06mm       Mari       gray.       organize         Silt       0.004-0.06mm       Mari       gray.       organize         Silt       0.004-0.06mm       Mari       gray.       organize         Substrate color:       GYRY Brown       Statum       gray.       organize         Substrate color:       GYRY Brown       Substrate color:       GYRY Brown       organize         Substrate color:       GYRY Brown       Sewage       Petroteum       organize         Normal       Sewage       Petroteum       organize       organize         Other       Other       Other       None       organize       organize         Normal       Sewage       Petroteum       organize       organize       organize       organize <td>s not necessarily add up to 100%)</td>	s not necessarily add up to 100%)		
Type       Controlstation in Sample       Type         Bedrock       Detritus       stick:         Boulder       > 256 mm (10")       make         Cobble       64-256 mm (2.5-10")       Muck-Mud       black         Gravel       2-64 mm (0.1-2.5")       IO       Muck-Mud       black         Sand       0.06-2 mm (gritty)       Muck-Mud       black       organ         Sand       0.06-2 mm (gritty)       Mari       grave,         Clay       <0.004 mm (slick)	Approximate % Composition in		
Boulder       > 256 mm (10")       crars         Cobble       64-256 mm (2.5-10")       mate         Gravel       2-64 mm (0.1-2.5")       IO       Muck-Mud       black         Sand       0.06-2 mm (gritty)       IO       Muck-Mud       black         Sand       0.06-2 mm (gritty)       Marl       grey,         Silt       0.004-0.06mm       Marl       grey,         Clay       <0.004 mm (slick)	Sample		
Cobble       64-256 mm (2.5-10")       market         Gravel       2-64 mm (0.1-2.5")       O         Sand       0.06-2 mm (gritty)       Silt       0.004-0.06mm         Silt       0.004-0.06mm       Marl       grey,         Clay       <0.004 mm (slick)	wood		
Gravel         2-64 mm (0.1-2.5")         O         Muck-Mud         black organ           Sand         0.06-2 mm (gritty)         Marl         organ         organ           Silt         0.004-0.06mm         Marl         grey,           Clay         <0.004 mm (slick)	e plant W CVU		
Sand       0.06-2 mm (gritty)       organ         Silt       0.004-0.06mm       Marl       grey,         Clay       <0.004 mm (slick)	ials (CPOM)		
Silt       0.004-0.06mm       Marl       grey, shiell         Clay       <0.004 mm (slick)	IC (FPOM) NCM		
Clay       <0.004 mm (slick)	Interesting Mores		
SEDIMENT CHARACTERIZATION       CORE LOG:         Substrate color: GYRY Brown       Substrate consistency: GYRY Brown         Substrate consistency: Model of the constraint of the constration of the constraint of the constraint of the constraint of the	fragments NCM		
Substrate color: GVEY BIDWIN Substrate consistency: GVAVELY CLAY Floc layer present: M (A Moisture conditions: MOCLEVELE Benthic fauna: Confectiona Odors Normal Sewage Chemical Anaerobic (H2S) None Other Oils Absent Slight Moderate Profuse NEAR BOTTOM WATER QUALITY: Temperature (°C): 21, 108 DO (mg/L): 41, 43 DO (% Sat): 50, 2 DO (mg/L): 41, 43 DO (% Sat): 50, 2			
pH:	RPRDUP		
SEDIMENT ANALYSES:     NOTES:       Parameter     0 - 0.5     0.5     - 0.75       THg     Image: Contract of the second			

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