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April 5, 2017

Mr. Geoffrey Seibel
de maximis, inc.
1550 Pond Road, Suite 120
Allentown, Pennsylvania 18104

148177.150.007

Subject: Post-Remedial Monitoring
Ecological Verification Sampling Report
Mercury Refining Superfund Site, Colonie, New York

Dear Mr. Seibel:

On behalf of the Mercury Refining Site Remedial Action Group ("the Group") and at your the direction as the Group's Project Coordinator, Brown and Caldwell Associates ("BC") submits to you the attached letter report summarizing the results of the 2016 ecological verification sampling event.

Please contact me with any questions or comments.

Very truly yours,

Brown and Caldwell Associates

Tamara L. Sorell

Tamara Sorell, Ph.D., BCES
Chief Scientist/National Risk Practice Lead

Attachments

Post-Remedial Monitoring
Ecological Verification Sampling Report
Mercury Refining Superfund Site
Colonie, New York

Prepared for

Mercury Refining Site Remedial Action Group

April 2017

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Attachments

Executive Summary

Sediment Sampling

- Sediment sampling was completed at all locations identified in the Operation and Maintenance Plan (O&M Plan).
- Total mercury concentrations ranged from 0.18 to 0.63 mg/kg, with the highest concentrations observed at sample location MR-SD-07 in the Tributary. No concentrations exceeded the ROD-specified sediment cleanup objective of 1.3 mg/kg.
- Total Organic Carbon (TOC) in the sediment samples was highly variable ranging from 8,990 to 64,500 mg/kg. There does not appear to be a correlation between sediment mercury concentrations and TOC or grain size.
- Methyl mercury concentrations in sediment ranged from 0.11 µg/kg (J qualified) at location MR-SD-06 to 2.9 µg/kg at location MR-SD-10. There is currently no New York State Department of Environmental Conservation (NYSDEC) or United States Environmental Protection Agency (USEPA) criterion for methyl mercury in sediment.

Surface Water Sampling

- Surface water samples were collected from the unnamed Tributary, Patroon Creek and the I-90 Pond as required in the O&M Plan.
- Total mercury was not detected in samples analyzed using laboratory Method 7471A at any of the three surface water sampling locations (at a minimum detection limit of 120 ng/L). The NYSDEC chronic water quality criterion for mercury for the protection of aquatic life is 770 ng/L (dissolved), and the NYSDEC criterion for the protection of human health based on fish consumption is 0.7 ng/L
- Using the more sensitive laboratory analytical Method 1630, methyl mercury was detected at concentrations of 0.052 ng/L at the Unnamed Tributary sampling location (MR-SW-07 DUP), 0.026 ng/L (J qualified) at the Patroon Creek sampling location (MR-SW-09) and 0.055 ng/L at the I-90 Pond sampling location (MR-SW-10). There is currently no NYSDEC criterion for methyl mercury. The Oak Ridge National Laboratory Tier II Secondary Chronic Value for freshwater aquatic life is 2.8 ng/L.

Fish Tissue Sampling

- Fish collection (location, type) and sample preparation (whole body) were completed in accordance with the requirements of the O&M Plan.
- Total mercury concentrations in fish tissue samples were non-detect at detection limits ranging from 0.13 to 0.14 mg/kg. These detection limits are below the USEPA target fish tissue concentration of 0.3 mg/kg for methyl mercury. Percent lipids and percent moisture were comparable in the three samples.

Section 1

Introduction

The Mercury Refining Superfund Site (Site) is located at 26 Railroad Avenue on the border of the Towns of Guilderland and Colonie, Albany County, New York. The Site is defined by the extent of potential contamination associated with past mercury reclamation processes conducted at the Mercury Refining Company, Inc. (MERECO) Site. The Superfund Site includes the MERECO property (located at 26 Railroad Avenue) and portions of the Allied Building property, portions of the SealMaster property, the former Albany Pallet Property and an additional property owned by MERECO that is located south of the SealMaster Property. The Site also includes the portion of the Unnamed Tributary that is located immediately south of the MERECO property. The Unnamed Tributary reportedly received contaminated stormwater drainage from the storm sewer system that formerly serviced the MERECO property. As part of the remedial action completed in 2013, sediments in the Unnamed Tributary containing mercury above the Record of Decision (ROD) specified clean-up objective of 1.3 mg/kg total mercury in sediments were removed. The Unnamed Tributary discharges to the Patroon Creek which flows into the I-90 Pond (Attachment A, Figure 1). The implementation of the remedy for the Site, as specified in the ROD, is detailed in a document entitled "Remedial Action Report, Mercury Refining Superfund Site, 26 Railroad Avenue, Towns of Colonie and Guilderland, Albany, County, New York, Superfund ID No. NY00048148175": prepared by Brown and Caldwell Associates (BC) and dated August 2015.

Per Attachment C of the Operations and Maintenance (O&M) Plan [Appendix P of the USEPA-approved August 2013 Remedial Design Report (RDR)], five annual Ecological Verification Sampling events are required following the completion of the remediation. This report presents the results of the second of the five sampling events. The first was conducted in November 2015. This monitoring event consisted of the collection of five sediment samples (two from the Unnamed Tributary, two from the Patroon Creek and one from the I-90 Pond), three surface water samples (one each from the Unnamed Tributary, the Patroon Creek and the I-90 Pond), and three fish tissue samples (two from the Patroon Creek and one from the I-90 Pond). A Site plan depicting the location of the ecological verification samples is provided as Attachment A. Samples were collected per the procedures described in the O&M Plan.

Section 2

Sediment Sampling

Sample Collection

The following sediment samples were collected on November 7 and 8, 2016:

- Two samples in the Unnamed Tributary at locations MR-SD-06 and MR-SD-07
- Two samples from the Patroon Creek at locations MR-SD-08 and MR-SD-09
- One sample from the I-90 Pond at location MR-SD-10

Sample locations are depicted on the Site Plan provided as Attachment A. Sampling was completed to a depth of approximately six inches below the sediment surface. Sediment samples were collected in a "downstream" to "upstream" direction (i.e., in a direction opposite the flow), to minimize the chance of spreading disturbed sediment to unsampled locations.

Sediment sampling was completed via the use of a decontaminated stainless steel sampling scoop. Sediment samples were collected with minimum disturbance and exposure to air. Samples were screened and logged in the field as described in Section 5.3 of the Quality Assurance Project Plan (QAPP, Appendix N of the RDR). Using a decontaminated scoop, the sediment was transferred directly to the laboratory supplied sampling containers and stored and handled in accordance with the procedures outlined in Section 5.2 of the QAPP. Sampling equipment was decontaminated after the collection of each sample in accordance with the procedures outlined in Section 4.10 of the QAPP.

Sediment samples were analyzed for total mercury by USEPA Method SW-846 7471B methyl mercury by USEPA Method 1630, Total Organic Carbon (TOC) by the Lloyd-Khan Method and particle size by ASTM D422 63.

Sediment samples analyzed for methyl mercury were sent to TestAmerica Canton, which holds a National Environmental Laboratory Accreditation Program (NELAP) certification and accreditation in the State of New York (Certification ID 10975).

Sediment samples analyzed for total mercury were sent to TestAmerica Buffalo, which holds a National NELAP certification and accreditation in the State of New York (Certification ID 10026).

Sediment samples analyzed for particle size were sent to TestAmerica Burlington, which holds a NELAP certification and accreditation in the State of New York (Certification ID 10391).

Sediment samples analyzed for TOC were sent to TestAmerica Pittsburgh, which holds a NELAP certification and accreditation in the State of New York (Certification ID 11182).

Analytical Data Validation

The analytical data were validated in accordance with the QAPP. A Data Usability Summary Report (DUSR; Attachment B) was prepared for the ecological verification sample data packages. The analytical data for sediment samples were determined to be acceptable for the intended purposes. No data were rejected during the validation. Matrix Spike/Matrix Spike Duplicate (MS/MSD) recovery Relative Percent Differences (RPDs) were below the statistically derived control limits for mercury recoveries for sample MR-SD-08. The mercury result for sample MR-SD-08 has been qualified as estimated (J flagged). Field duplicate imprecision for the sediment samples MR-SD-9 and DUP-110716 exceeded the control limit

for mercury and methyl mercury and most grain size parameters. These results have been qualified as estimated (J flagged). Estimated results should be used with caution.

Analytical results appear in Attachment C and are discussed below.

Analytical Results

Analytical results of the sediment sampling are presented in Table 1 provided in Attachment C. Sample locations are shown on the Site plan provided as Attachment A.

Total mercury concentrations ranged from 0.18 to 0.63 mg/kg with the highest concentrations observed at sample location MR-SD-07 in the Unnamed Tributary. No observations exceeded the ROD-specified sediment cleanup objective of 1.3 mg/kg. A total mercury concentration of 0.27 mg/kg was detected at sample location MR-SD-06, the most upstream sample location (closest to the Site) in the remediated sediment area in the Unnamed Tributary. The two sampling locations in Patroon Creek, MR-SD-08 (more upstream) and MR-SD-09 (more downstream), had detections of mercury of 0.38 mg/kg (J qualified) and 0.55 mg/kg (J qualified), respectively. The I-90 pond sample (MR-SD-10) had a mercury concentration of 0.28 mg/kg.

Total Organic Carbon (TOC) in the sediment samples was highly variable ranging from 8,990 to 64,500 mg/kg. As shown in Table 2, the samples consisted primarily of fine-to-coarse-grained sand. MR-SD-10 had the highest TOC consistent with its considerable silt component (52%) and location in relatively stagnant water. MR-SD-06, MR-SD-07 and MR-SD-09 locations had a considerable gravel component (27.6 to 41.1%).

The mercury concentrations were relatively consistent across the sampled area, all within 3.5-fold. The RPDs from the field duplicates at location MR-SD09 further suggest that there is localized variability in matrix and mercury presence. There does not appear to be a correlation between sediment mercury concentrations and TOC or grain size within this small data set.

Methyl mercury concentrations in sediment ranged from 0.11 µg/kg (J qualified) at location MR-SD-06 to 2.9 µg/kg at location MR-SD-10. There is currently no NYSDEC or USEPA cleanup criterion for methyl mercury in sediment. The fraction of total mercury to methyl mercury represented by the methylated fraction appears to increase with distance downstream from around 0.04 percent in the tributary to 1 percent in the I-90 Pond.

Section 3

Surface Water Sampling

Sample Collection

The following surface water samples were collected on January 10, 2017:

- One sample from the Unnamed tributary at location MR-SW-07
- One sample from the Patroon Creek at location MR-SW-09
- One sample from the I-90 Pond at location MR-SW-10

Sample locations are depicted on the Site Plan provided as Attachment A. The surface water samples discussed in this report were collected approximately two months after the corresponding sediment samples. Initially, the samples were collected contemporaneously with the sediment samples (as specified in the O&M Plan). However, a preservation error occurred at the analytical laboratory in which samples were mistakenly placed into warm storage instead of cold. It was decided to resample due to the potentially unstable nature of methyl mercury in improperly preserved aqueous samples[1].

The following procedure was used to collect surface water directly from the water bodies in sample containers provided by the project laboratory:

- Don a clean pair of latex gloves.
- Estimate sampling depth by visual observation (for shallow samples) or measure depth using a weighted, flexible measuring tape or a rigid gage.
- Invert the laboratory-supplied sample container (without preservatives), insert the sample container into the water to the desired level, and then turn the mouth of the sample container up and towards the upstream direction thus allowing the container to fill.
- Cap sample container while container is still underwater, if possible.
- Remove sample container from water body and cap if not already capped.
- Rinse the exterior of the sample container thoroughly with deionized water and label container.
- Add preservatives and check for appropriate pH.
- Record appropriate data (including sampling location, sampling depth, time of sampling, and description of sample) in field logbook or the Surface Water Sampling Log.

Surface water samples were analyzed for mercury by USEPA Method SW 846 7470A, methyl mercury by USEPA Method 1630, alkalinity by USEPA Method 310.2, hardness by USEPA Method 130.2 and Total Dissolved Solids (TDS) by USEPA Methods 160.1 and SM 2540C.

Surface water samples analyzed for methyl mercury were sent to TestAmerica Canton. The remaining surface water analyses were conducted at TestAmerica Buffalo.

[1] Parker, Jennifer F., and Nicolas S. Bloom. "Preservation and storage techniques for low-level aqueous mercury speciation." *Science of the Total Environment* 337 (2005): 253-63. *Science Direct*. Web. 23 Nov. 2016.

Analytical Data Validation

The analytical data were validated in accordance with the QAPP. A Data Usability Summary Report (DUSR; Attachment B) was prepared for the ecological verification sample data packages. The analytical data for surface water samples were determined to be acceptable for the intended purposes and none of the data was rejected or qualified.

Analytical Results

Analytical results of the surface water sampling are presented in Table 1 and field parameters of surface water at all sample locations are presented in Table 3 provided in Attachment C.

Total mercury was not detected in samples analyzed using USEPA Method 7471A at any of the three surface water sampling locations (at a minimum detection limit of 120 ng/L). However,, methyl mercury was detected in samples using a more sensitive laboratory method, USEPA Method 1630. Methyl mercury was detected at concentrations of 0.052 ng/L at the Unnamed Tributary sampling location (MR-SW-07 DUP), 0.026 ng/L (J qualified) at the Patroon Creek sampling location (MR-SW-09) and 0.055 ng/L at the I-90 Pond sampling location (MR-SW-10). The NYSDEC chronic water quality criterion for mercury for the protection of aquatic life is 770 ng/L (dissolved). The NYSDEC criterion for the protection of human health based on fish consumption is 0.7 ng/L. There is currently no NYSDEC criterion for methyl mercury. The Oak Ridge National Laboratory Tier II Secondary Chronic Value for freshwater aquatic life is 2.8 ng/L[2]. Observed concentrations of methyl mercury detected at the three surface water sampling locations were well below both of this criterion.

[2] G. W. Suter, GW II and Tsao, CL. 1996. Toxicological Benchmarks for Screening Potential Contaminants of Concern for Effects on Aquatic Biota: 1996 Revision. ES/ER/TM-96/R2. June.

Section 4

Fish Tissue Sampling

Sample Collection

Composite fish tissue samples were collected from two locations in Patroon Creek (MR-FT-08, immediately downstream from the Unnamed Tributary, and MR-FT-09, further downstream) and from one location in the I 90 Pond (MR-FT-10; Attachment A). These sample stations are co-located with the sediment and surface water samples discussed above. Fish were captured by electroshocking (Model Halltech HT-2000 Battery Backpack Electrofisher, 300 volts).

Timing of the fish tissue sampling is important. Periods of low to moderate stream flow (typically late summer or fall) are best for sampling fish tissue. Sampling in the late summer or fall also minimizes disturbance to the nests of fish as by this time most young are mobile and are free swimmers. Samples were collected on November 10, 2016.

Prior to sampling, standard water quality measurements were made at each sampling location. A Habitat Evaluation Sheet, which identifies physical and biological features of each habitat, was also completed for each location (Attachment D). These data sheets record the field variables that document habitat features for later comparison of species composition, abundance, and general health. During the fish sampling, for each individual fish, the following parameters were noted:

- Waterbody/location/depth or position in waterbody
- Species
- Length, in cm, measured from snout to lower part of tail
- Weight, in grams
- General appearance; special attention was given to readily observable physical malformations

Whole bodies of specimen fish were included in the sample. The composition of each sample (size, species, number of individuals) is summarized further below and on the evaluation sheets included in Attachment D.

Fish collected at the upstream sample location (MR-FT-08) included 13 white suckers (*Catostomus commersoni*) and six creek chub (*Semotilus atromaculatus*). The white suckers ranged in size from 8.8 to 28.7 centimeters (cm) and the creek chub ranged in size from 12.4 to 15.2 cm. One white sucker and one creek chub were retained for chemical analysis. At the midstream sample (MR-FT-09), seven white suckers (8.6 to 29.0 cm), three creek chub (7.7 to 18.7 cm), two blacknose dace (*Rhinichthys atratulus,* 6.2 to 6.4 cm), and five pumpkinseed (*Lepomis gibbosus,* 6.3 to 7.1 cm) were captured. One of each of the species were retained for chemical analysis. At the I-90 Pond sample location (MR-FT-10), 39 pumpkinseeds (4.3 to 8.1 cm) and one white sucker (10.5 cm) were captured. One white suckers and four pumpkinseeds were retained for chemical analysis.

All fish appeared healthy upon gross examination with no abnormalities noted.

Once collected, fish samples were put on ice and shipped to the laboratory via overnight mail. All fish tissue samples were analyzed whole body for mercury by USEPA Method SW 846 7471A, percent lipid and percent solid.

Fish tissue samples were processed and analyzed at TestAmerica Pittsburgh.

Analytical Data Validation

The analytical data were validated in accordance with the QAPP. A Data Usability Summary Report (DUSR; Attachment B) was prepared for the ecological verification sample data packages. The analytical data for fish tissue samples were determined to be acceptable for the intended purposes and none of the data were rejected or qualified.

Analytical Results

Results of the fish tissue analysis are provided in Table 1 of Attachment C. Total mercury concentrations in fish tissue samples were non-detect at detection limits ranging from 0.13 to 0.14 mg/kg. These detection limits are below the USEPA target fish tissue concentration of 0.3 mg/kg[3] for methyl mercury. Percent lipids and percent moisture were comparable in the three samples.

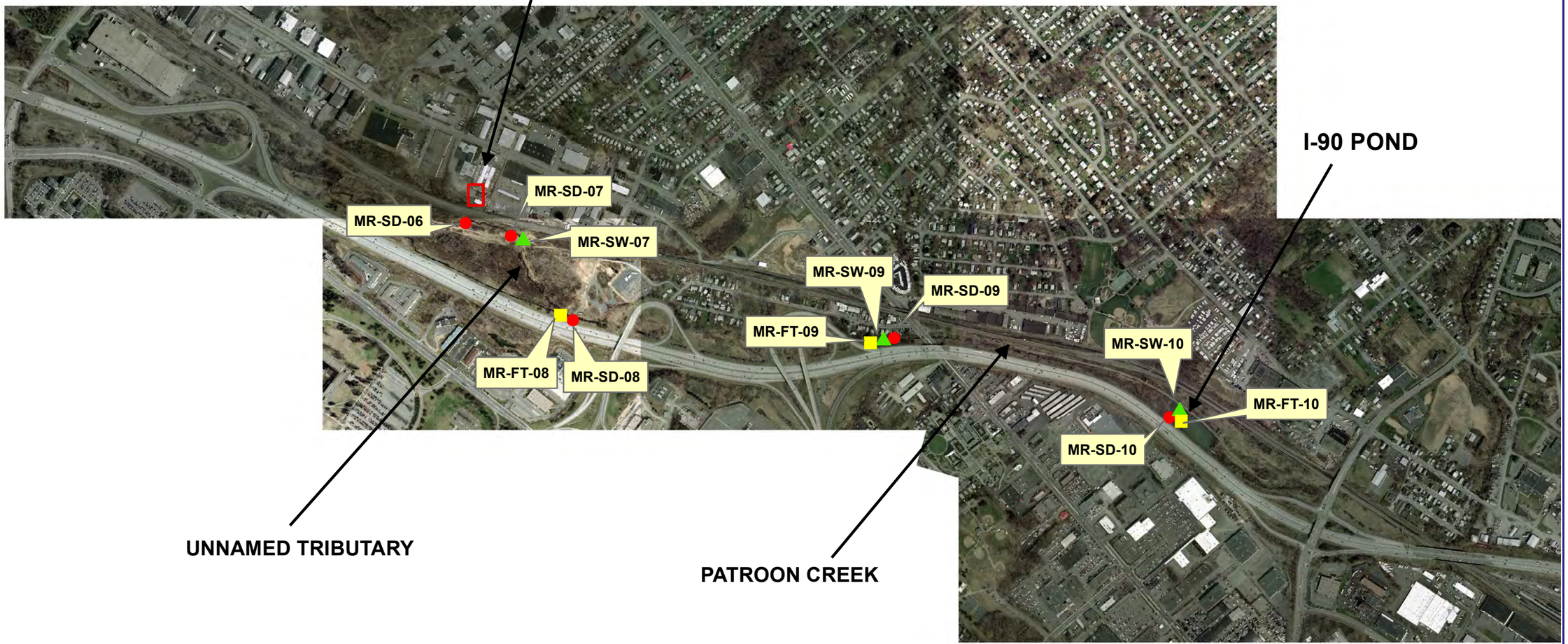
[3] USEPA, 2009. Guidance for Implementing the January 2001 Methylmercury Water Quality Criterion, Final. January.

Attachment A: Site Plan

3/7/2016

N

MERCURY REFINING SITE



I-90 POND

UNNAMED TRIBUTARY

PATROON CREEK

Legend:

- MR-SD-04 Sediment Sample
- MR-SW-04 Surface Water Sample
- MR-FT-01 Fish Tissue Sample

Author: BFTaylor Path: P:\GIS\Mercury_Refining_Superfund\Eco_Samples_022916.mxd

Brown AND Caldwell

FIGURE 1
ECOLOGICAL SAMPLE LOCATIONS
MERCURY REFINING SUPERFUND SITE
COLONIE, NY

0 490 980
Feet

Attachment B: Data Usability Summary Report

QUALITATIVE
DATA USABILITY SUMMARY REPORT
Colonie, New York, Mercury Refining Site
November 2016 Fish Tissue, Surface Water, and Sediments

SDG Nos.: 180-60767-1, 240-57243-1, and 480-90056-1

Laboratories: TestAmerica Laboratories, Inc., Pittsburgh, Pennsylvania
TestAmerica Laboratories, Inc., North Canton, Ohio
TestAmerica Laboratories, Inc., Amherst, New York

Site: Mercury Refining Site, Colonie, New York

Date: February 23, 2017

Samples

Data from the following samples were reviewed:

Laboratory ID	Client ID	Matrix
180-60767-1	MR-FT-10	Tissue
180-60767-2	MR-FT-09	Tissue
180-60767-3	MR-FT-08	Tissue
480-109285-1	MR-SD-10	Sediment
480-109285-2	MR-SD-09	Sediment
480-109285-3	MR-SD-08	Sediment
480-109285-4	DUP-110716	Sediment
480-109285-5	MR-SD-07	Sediment
480-109285-6	MR-SD-06	Sediment
480-109286-1	MR-SW-10	Water

480-109286-2	MR-SW-09	Water
480-109286-3	MR-SW-07	Water
480-109286-4	FB-110716-SW	Water
480-109286-5	FB-110716-SD	Water
480-109286-6	DUP-110816	Water
480-112048-1	MR-SW-07	Water
480-112048-2	MR-SW-09	Water
480-112048-3	DUP-20170110	Water
480-112048-4	FB-20170110	Water
480-112048-5	MR-SW-10	Water

A Qualitative Data Usability Review was performed on all analytical data from SDGs 180-60767-1, 480-109285-1, and 480-112048-1. The samples were collected at the Mercury Refining Site, in Colonie, New York. The following table outlines the analytical methods used to analyze the samples;

Analysis	Method
Mercury in Solids	SW846 7471B
Mercury in Water	SW846 7470A
Moisture	SM 2540G
Percent Lipids	TestAmerica SOP
Methyl Mercury	EPA 1630
Alkalinity	MCAWW 310.2
Total Organic Carbon	EPA Lloyd Kahn
Total Organic Carbon	SW846 9060A
Total Hardness	SM 2340C
Total Dissolved Solids	SM 2540C
Grain Size	D422

Samples were analyzed for all methods requested on the COCs.

This review was performed in accordance with the general guidance provided by the National Functional Guidelines for Data Review.

Review Items

The following were reviewed for the analyses in this report:

- Chain of Custodies (COCs)
- Case narrative
- Analysis data sheets (Form 1's)
- Holding time and sample preservation
- Lab Control Sample (LCS)/LCS duplicate (LCSD) recoveries and Relative Percent Differences (RPDs)
- Field duplicate precision
- Blank contamination

Chains of Custody

The Chains-of Custody (COCs) were reviewed for completeness and accuracy. No issues noted.

Case Narrative

The case narratives were reviewed for completeness and accuracy. There were no discrepancies noted in the data that were not also mentioned in the case narratives.

Analysis Data Sheets (Form 1s)

The analysis data sheets were reviewed for completeness and accuracy. All requested results were present and accounted for.

Holding Time and Sample Preservation

None of the analysis holding times was violated and all samples were properly preserved, with the exception of the water samples 480-109286-1 to -6. These samples were mistakenly placed into warm storage upon receipt. The samples were recollected and reanalyzed. Results for the original samples have been coded as unreportable in the

database.

LCS/LCSD Recoveries and RPDs

All LCS/LCSD recoveries and RPDs were within the laboratories statistically derived control limits.

Matrix Spike/Matrix Spike Duplicate (MS/MSD) Recoveries and RPDs

All MS/MSD recoveries and RPDs were within the laboratories statistically derived control limits with the exception of low mercury recoveries for sample MR-SD-08. The mercury result for sample MR-SD-08 has been qualified as estimated (J flagged).

Field Duplicate Precision

All field duplicate RPDs were below 40 with the exceptions of Methyl mercury and mercury in samples MR-SD-9 and DUP-110716 which had RPDs of 166 and 101, respectively. The methyl mercury and mercury results for samples MR-SD-9 and DUP-110716 have been qualified as estimated (J flagged) due to field duplicate imprecision.

Blank Contamination

All blanks were non detect with the exception of low level detections of alkalinity. Alkalinity in Site samples was much higher and no qualification was warranted.

Validation Qualifiers

The following validation qualifiers may have been applied to the data, as appropriate.

- J = The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.
- UJ = The analyte was not detected above the sample method detection limit; and the method detection limit is approximate.
- U = 'The analyte was tested, but was not detected above the sample method detection limit.
- R = The sample result is rejected due to serious deficiencies. The presence or absence of the analyte cannot be verified.

Summary Evaluation of Data and Potential Usability Issues

The data are acceptable for the intended purposes. No data were rejected as a result of this review. MS/MSD recovery RPDs were below the statistically derived control limits for mercury recoveries for sample MR-SD-08. The mercury result for sample MR-SD-08 has been qualified as estimated (J flagged). Field duplicate imprecision for the sediment samples MR-SD-9 and DUP-110716 exceeded the control limit for mercury and methyl mercury and most grain size parameters. These results have been qualified as estimated (J flagged). Estimated results should be used with caution.

Signed  Dated: 2/23/2017

Gregory J. Cole
Senior Chemist

Attachment C: Ecological Verification Sampling Results

TABLE 1
ECOLOGICAL ANALYTICAL RESULTS
MERCURY REFINING SUPERFUND SITE
POST-REMEDIAL MONITORING
COLONIE, NEW YORK

Analyte	Location / Sample Date / Units	MR-SD-06 11/8/2016	MR-SD-07 11/8/2016	MR-SD-08 11/7/2016	MR-SD-09 11/7/2016	MR-SD-09 DUP 11/7/2016	MR-SD-10 11/7/2016
Sediment Results							
Mercury	mg/kg	0.27	0.63	0.38 J	0.55 J	0.18 J	0.28
Methyl Mercury	µg/kg	0.11 J	0.24	0.23	2.2 J	0.28 J	2.9
Total Organic Carbon	mg/kg	9880	9050	11500	11100	8990	64500

Constituent	Location / Sample Date / Units	MW-SW-07 1/10/2017	MW-SW-07 DUP 1/10/2017	MR-SW-09 1/10/2017	MR-SW-10 1/10/2017
Surface Water Results					
Mercury	ng/L	120 U	120 U	120 U	120 U
Methyl Mercury	ng/L	0.048 J	0.052	0.026 J	0.055

Constituent	Location / Sample Date / Units	MR-FT-08 11/10/2016	MR-FT-09 11/10/2016	MR-FT-10 11/10/2016
Fish Tissue Results				
Mercury	mg/kg	0.14 U	0.14 U	0.13 U
Lipids	%	0.87	1.2	1.2
Solids	%	22.8	23.7	24.8

Notes:
U - The analyte was tested for, but was not deteted above the sample method detection limit.
J - The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.
mg/kg - milligram per kilogram (parts-per-million)
µg/kg - microgram per kilogram (parts-per-billion)
ng/L - nanogram per liter (parts-per-trillion)

TABLE 2
ECOLOGICAL VERIFICATION SEDIMENT SAMPLE GRAIN SIZE RESULTS
MERCURY REFINING SUPERFUND SITE
POST-REMEDIAL MONITORING
COLONIE, NEW YORK

Location	Analyte	Results		Unit
MR-SD-06	Clay	0.7		%
	Silt	2.1		%
	Fine Sand	35		%
	Medium Sand	10.8		%
	Coarse Sand	10.3		%
	Total Sand	56.1		%
	Gravel	41.1		%
MR-SD-07	Clay	0.7		%
	Silt	22.7		%
	Fine Sand	27.7		%
	Medium Sand	9.4		%
	Coarse Sand	10.6		%
	Total Sand	47.2		%
	Gravel	29.4		%
MR-SD-08	Clay	1.3		%
	Silt	6.2		%
	Fine Sand	90.1		%
	Medium Sand	2.1		%
	Coarse Sand	0.4		%
	Total Sand	92.6		%
	Gravel	0		%
MR-SD-09	Clay	0.7	J	%
	Silt	4.5	J	%
	Fine Sand	16.9	J	%
	Medium Sand	28.8	J	%
	Coarse Sand	21.5	J	%
	Total Sand	67.2		%
	Gravel	27.6	J	%

TABLE 2
ECOLOGICAL VERIFICATION SEDIMENT SAMPLE GRAIN SIZE RESULTS
MERCURY REFINING SUPERFUND SITE
POST-REMEDIAL MONITORING
COLONIE, NEW YORK

Location	Analyte	Results	Unit
MR-SD-10	Clay	5.1	%
	Silt	52	%
	Fine Sand	32	%
	Medium Sand	5.2	%
	Coarse Sand	4.5	%
	Total Sand	41.7	%
	Gravel	1.2	%

= Primary Grain Size

Notes:

J - The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.

TABLE 3
SURFACE WATER FIELD PARAMETERS
MERCURY REFINING SUPERFUND SITE
POST-REMEDIAL MONITORING
COLONIE, NEW YORK

Parameter	Location / Sample Date / Units	MR-SD-06 11/8/2016	MR-SD-07 11/8/2016	MW-SW-07 1/10/2017	MR-SD-08 11/7/2016	MR-SD-09 11/7/2016	MW-SW-09 1/10/2017	MR-SD-10 11/7/2016	MR-SW-10 1/10/2017
Temperature	°C	8.4	8.35	5.06	11.16	8.99	4.21	11.67	2.75
pH	--	7.2	6.52	7.12	8.41	8.17	8.16	7.65	7.66
ORP	mV	181	155	228	194	179	217	60	219
COND	S/m	1.93	1.91	1.73	1.64	1.64	1.82	1.08	1.73
DO	mg/L	8.04	8.19	5.34	7.21	7.57	2.31	4.93	0.00
Turbidity	NTU	4.6	5	8.1	4.4	5.7	6.6	44.2	11.3

Notes:
°C - degrees centigrade
S/m - Siemens per meter
mV - millivolts
mg/L - milligrams per liter
NTU - nephelometric turbidity units

Attachment D: Fish Tissue Sampling Field Data Sheets

Fish Sampling Data Form **Date: 11-10-2016** **Page: 1 of 2**

Study Area: Mereco Site upstream sample
Sample Number: MR-FT-08
Lat N '42.688167 Lon W '-73.810794 GPS River basin: N/A
Investigators: Newhouse, Baird MacDougall **Time: 12-1pm**

Weather:
Weather: (Last 24 hours) Cool, Sunny

Equipment Used:
Gear X back pack (Model: HallTech LR-24) □ seine (Size/mesh: _____) □ other _____
Block nets used? □ Upstream □ Downstr X None Barrier extent □ Upstream □ Downstream
Sampling Duration Start time ~12:00 pm End time ~1:00 pm Shock seconds _____
Specific conductance 1.466 µS/cm Shocker voltage 125 Shocker settings **DO 11.5 mg/L**
Water temp 8.84°C **8.09 pH**
Coincident with habitat survey? □ Yes X No **218.8 ORP**
No Reference reach candidate? □ Yes X No
Habitat Description:
Swift flowing stream ~2-4 ft deep. Under cut bank with dense herbaceous and shrub vegetation right up to and overhanging stream. Hard gravel/rock bottom.
HABITAT TYPES
Indicate the percentage of each habitat type present
X Riffles 10% X Pools 10% X Runs 80% □ Snags_____%
X Submerged Macrophytes 1% □ Other ( )_____% **Crayfish**

Species	Length	Condition	Total Number		
White Sucker	196 mm	healthy		Crawfish	healthy
	287	healthy			
	180	healthy			
	265	healthy			
	230	healthy			
	232	healthy			
	210	healthy			
	233	healthy			
	203	healthy			
	135	healthy			
	119	healthy			
	109	healthy			
▼	88	healthy	13		
Creek chub	152	healthy			
	137	healthy			
	131	healthy			
	127	healthy			
	135	healthy			
▼	124	healthy	6		
			19 fish		

Aquatic Habitat Assessment Sheet (MR-FT-08) **Date 11-10-2016**

Waterbody Type: Stream
Waterbody Name: Patroon Creek

Instream Features (within 300 feet) cut bank - significant fish habitat, rocks on bottom, algae covered

Estimated Stream Width (ft): 10-12 ft
Estimated Stream Depth (ft): ~3 ft
Surface Velocity (ft/sec): moderate
State Water Quality Classification 863-712 NYSDEC Standard C(T) Class C
Stream/River Segment: _____
Canopy Cover 20% trees 20% shrubs Total 40

Dominant Substrate(s) (Circle) (Boulder/Cobble) (Gravel) Sand Silt/Mud Concrete Rip-rap

Water Odors: (Normal/None) Sewage Petroleum Chemical Fishy Other -

Turbidity: (Clear, slightly turbid,) turbid, opaque, stained

Forest, Commercial, Pasture, Agricultural, Residential, (Industrial)
Highway adjacent to stream
Overhead electrical

Collected for tissue sampling 1 white sucker (70g), 1 creek chub (40g).

Fish Sampling Data Form **Date: 11-10-2016**

Study Area: Mereco stream sampling - midstream- behind Unique Auto
Sample Number: MR- FT- 09
Lat N '42.687578 Lon W '-73.799507 GPS River basin: N/A
Investigators: Newhouse, MacDougall, Baird **Time: 10:30am 11:30am**

Weather:
Weather: (Last 24 hours) Cool, sunny

Equipment Used:
Gear X back pack (Model: HallTech LR-24) □ seine (Size/mesh: _____) □ other _____
Block nets used? □ Upstream □ Downstr X None Barrier extent □ Upstream □ Downstream
Sampling Duration Start time 10:30 End time 11:30 Shock seconds _30hz_ **DO 12.18 mg/L**
Specific conductance _1.473_µS/cm Shocker voltage__125_ Shocker settings **7.86 pH**
Water temp 8.02°C **175 ORP**
Coincident with habitat survey? □ Yes X No
No Reference reach candidate? □ Yes X No
Habitat Description:
Fast flowing deep channel stream, large pipe entering stream nearby, significant woody debris (logs) in stream, located in urban area. Very good canopy 70%+

HABITAT TYPES
Indicate the percentage of each habitat type present
X Riffles 45% □ Pools_____% X Runs 45% X Snags 10%
□ Submerged Macrophytes_____% □ Other ( )_____%
none noted

Species	Length (mm)	Condition	Total Number
White Sucker	290	healthy	
	246	healthy	
	215	healthy	
	154	healthy	
	122	healthy	
	104	healthy	
	86	healthy	7
Creek Chub	187	healthy	
	117	healthy	
	77	healthy	3
Blacknosed Dace	62	healthy	
	64	healthy	2

Species	Length (mm)	Condition	Total Number
Pumpkinseed	68	healthy	
	65	healthy	
	71	healthy	
	63	healthy	
	66	healthy	5

Total
17 fish

Aquatic Habitat Assessment Sheet (MR-FT-09) **Date 11-10-2016**

Waterbody Type: Stream- behind Unique Auto
Waterbody Name: Patroon Creek

Instream Features (within 300 feet)	significant woody debris, some gravel bar/deposits, large culvert pipe (storm overflow)
Estimated Stream Width (ft):	15 ft
Estimated Stream Depth (ft):	0.5-3 ft
Surface Velocity (ft/sec):	moderate
State Water Quality Classification	863-712 NYSDEC Standard C(T) Class C
Stream/River Segment: _____	
Canopy Cover	70+%

Dominant Substrate(s) (Circle) Boulder/Cobble Gravel Sand Silt Mud Concrete Rip-rap **None (slopes vegetated)**

Even amount

Water Odors: Normal/None Sewage Petroleum Chemical Fishy Other

Turbidity: Clear slightly turbid, turbid, opaque, stained

Forest, Commercial, Pasture, Agricultural, Residential, Industrial

Highway, parking lots near by

Collected fish for tissue sampling: 1 white sucker (32g), 1 pumpkinseed sunfish (5g), 1 blacknose dace (6g), 1 creek chub (18g)

Fish Sampling Data Form **Date: 11/10/2016** **Page: 1 of 2**

Study Area: I90 Pond
Sample Number: MR-FT-10
Lat N '42.687578 Lon W '-73.799507 GPS River basin: N/A
Investigators: M. Newhouse, D. MacDougall, E. Baird **Time: 1-2:00pm**

Weather:
Weather: (Last 24) hours Cool, sunny

Equipment Used:
Gear X back pack (Model: HallTech LR-24) □ seine (Size/mesh: _____) □ other _____
Block nets used? □ Upstream □ Downstr X None Barrier extent □ Upstream □ Downstream
Sampling Duration Start time ~1:00 End time2:00 Shock seconds 30 Hz
Specific conductance 1.397 µS/cm Shocker voltage 125volts Shocker settings
Water temp 9.41 °C
Coincident with habitat survey? □ Yes X No **11.70 mg/L DO** **8.6 Turbidity**
No Reference reach candidate? □ Yes X No **8.17 pH** **215 ORP**
Habitat Description:
Large open, back water area - large carp previously observed in 2010 sampling event - deep muck present - stream channel to the south

HABITAT TYPES
Indicate the percentage of each habitat type present
□ Riffles_____% X Pools 100% □ Runs_____% □ Snags_____%
□ Submerged Macrophytes_____% □ Other ( )_____% None

Species	Length (mm)	Condition	Species	Length (mm)	Condition	Species	Length (mm)	Condition	Total Number
Pumpkinseed	52	healthy	Pumpkinseed	81	healthy	Pumpkinseed	50	healthy	
	66	healthy		44	healthy		61	healthy	
	65	healthy		55	healthy		55	healthy	
	52	healthy		46	healthy		70	healthy	
	60	healthy		50	healthy		46	healthy	
	54	healthy		70	healthy		50	healthy	
	75	healthy		58	healthy		48	healthy	
	55	healthy		50	healthy		57	healthy	
	65	healthy		47	healthy		65	healthy	
	43	healthy		54	healthy		44	healthy	
	64.0	healthy		75.0	healthy		53.0	healthy	**39**
	45	healthy		59	healthy				
	57.0	healthy		48.0	healthy	White sucker	105.0	healthy	**1**
	45	healthy		54	healthy				**Total**
									40 fish

Aquatic Habitat Assessment Sheet **MR-FT-10** **Date 11/10/2016**

Waterbody Type: Pond/Stream
Waterbody Name: I90 Pond

Instream Features (within 300 feet)	mud flat - dense cattail area
Estimated Stream Width (ft):	N/A
Estimated Stream Depth (ft):	2-3 ft where sampled - muck possible 3 ft
Surface Velocity (ft/sec):	None
State Water Quality Classification	863-711 NYSDEC Standard C Class C
Stream/River Segment: _____	
Canopy Cover	0%

Dominant Substrate(s) (Circle) Boulder/Cobble Gravel Sand (Silt/Mud) Concrete Rip-rap

Water Odors: (Normal/None) Sewage Petroleum Chemical Fishy Other

Turbidity: (Clear, slightly turbid, turbid, opaque, stained)

Near highway and rail line Forest, Commercial, Pasture, Agricultural, Residential, (Industrial)

Collected fish for tissue sampling: 1 white sucker (10g), 4 pumpkinseed sunfish (5g each)